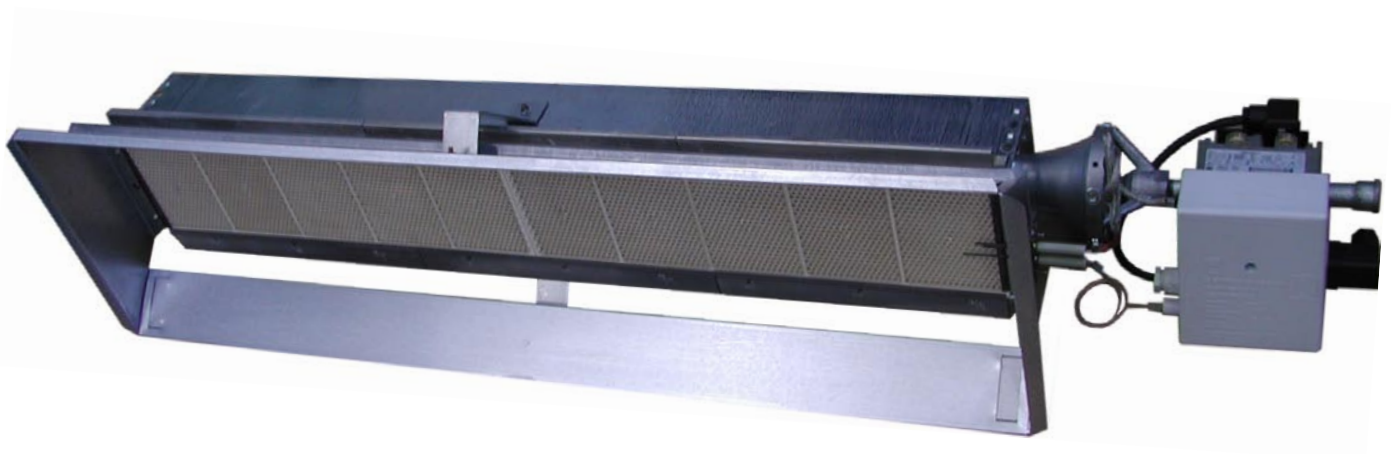


Schwank
INNOVATIVE HEATING SOLUTIONS



ecoSchwank

Gas-Infrared-heater with single stage automatic control



Installation and Operating Instruction

CE 0085AP0459

Technical Data
Installation and Maintenance
Operation
Mounting
Commissioning
Service Guide
Ventilation
Spare Parts

Schwank
INNOVATIVE HEATING SOLUTIONS



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1 Introduction

Thank you for choosing a SCHWANK gas-infrared-heater for your heating-system.

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

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

Please pay attention to the warnings in chapter 2 „Your Safety“.

This unit must be exclusively used for the purpose it was intended. Any other use is to be considered improper and therefore dangerous.

Its observance is imperative for the proper operation of our devices, and is thus the condition for our warranty.

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 highly dangerous. Pay attention while working at electrical equipments.

Notes for your safety

This appliance is constructed according to the requirements of the existing standards. Nevertheless it's possible that dangers for you and others result from installation and operation errors.

To avoid this please read the following notes carefully.

General Notes

Only use the radiant heater if it's in technical 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.

Pay attention that any person who do the following works have read this manual:

- operation
- mounting
- installation
- putting into operation
- maintenance / trouble shooting

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

Use original spare parts only.

Safety for the electrical equipment

Danger of electrical shocks!
Electrical shocks can be highly 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 power supply while working with the electrical equipment. Make sure that nobody can connect the appliance to the power supply while you are working.

After-sale service

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

If in doubt, contact SCHWANK.

3 Heater Structure and Function

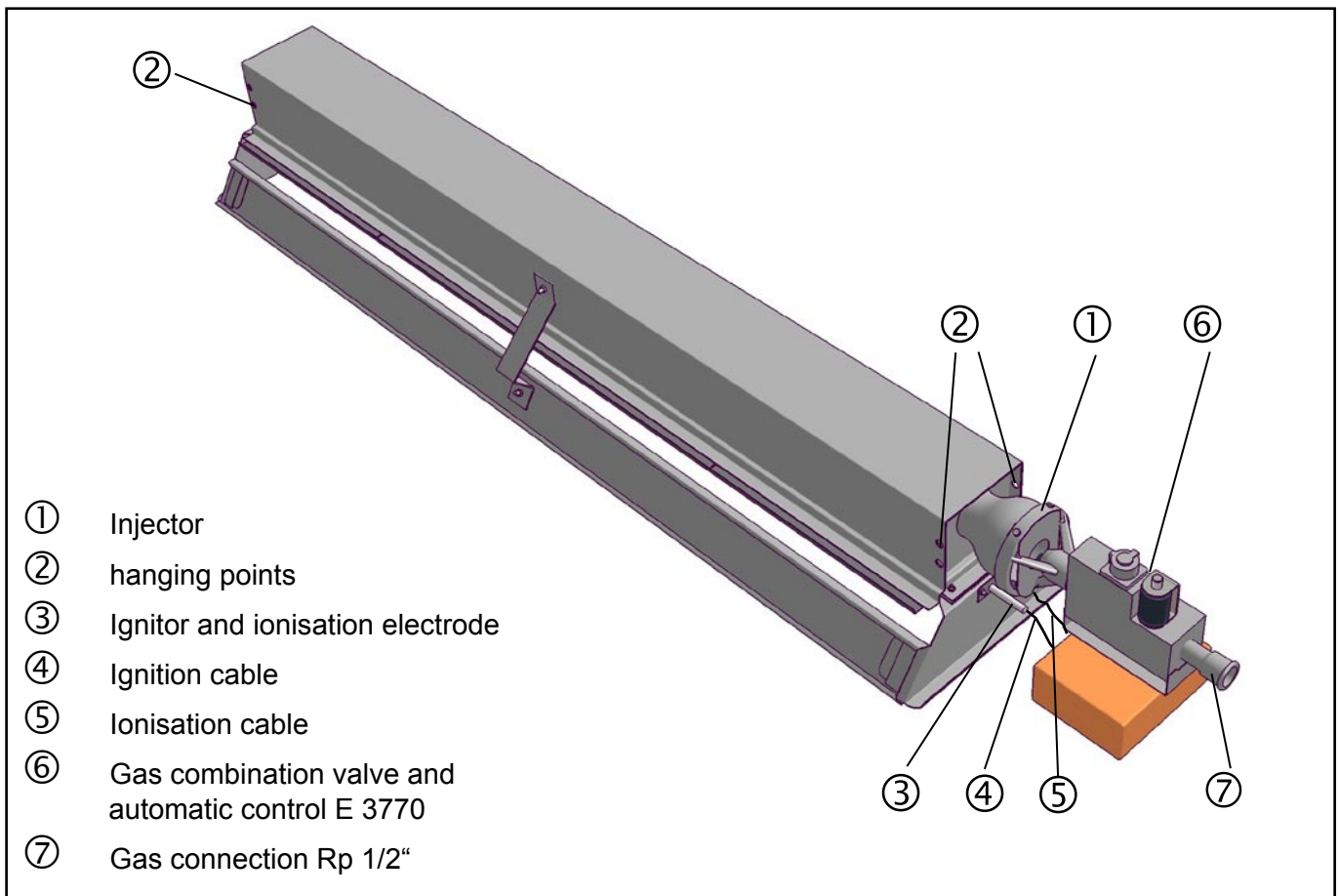


Fig. 1: Heater structure

Scope of Delivery

- Basic device consisting of:
 - Integrated radiation surfaces with ceramic plaques
 - Reflector
 - Injector mixing system
- Ignition and control unit with:
 - Controller
 - Spark ignition with ionisation control, automatic switching
 - Ignition and monitoring electrode
 - Gas combination valve with gas pressure regulator

Accessories

- connection hose with gas cock 1/2 "
- Support brackets for angled application
- Standard control box with switch, indicator lamp and connection terminals
- Control with temperature and time programs
- Pressure compensation grille (for ceiling installations and in case of wind effects)

Function

When the heater is on, the glowing ceramic plaque emits infrared radiation. An additional gas radiation is created by the flue in the reflector area. The hot surfaces of the reflectors emit long-wave radiation and a further increase in the efficiency of the heater. These radiation sources create together with the optimal shape and construction of the reflectors a characteristic distribution of intensity to goods and surfaces in the direction of the radiation.

The electromagnetic radiation passes through the air with practically no heat loss. Heat is only generated – as in the sun – when the radiation hits an object like the human skin. Schwank gas- infrared-heaters create a comfortable level of felt temperature although the air temperature is lower. Additionally the temperature of the surrounding surfaces (floor, casing of machines, other objects) rises slightly.

Safety check

Directly after the start-up of the ignition and control unit the E 3770 controls the ionisation current. If an ionisation current is registered without flame, which is for example created by a foreign current, ignition doesn't take place. If no ionisation current is registered during the safety time the ignition starts up.

Start-up

If the ignition and control unit is switched on manually or by a thermostat, a delay of 1 second begins.

Then the automatic ignition starts the gas supply of the burner by opening the gas-valve. Simultaneously the high-voltage spark begins at the ignition electrode.

The gas air mixture flows through the ceramic plaque and is ignited by the high-voltage spark.

The created burner flame is monitored by an ionisation electrode. The ignition is switched off, if the ionisation electrode reports a flame to the ignition and control unit during 30 seconds (safety time).

Fault

If no flame is reported during the safety time (30 seconds) the ignition unit closes the gas valve and the heater will go to fault position.

The fault release can be carried out by switching the ignition and control unit off and on after 3 seconds. A new start-up begins. If the flame goes out during the operation the ignition process is repeated. If no flame is created during the safety time the heater switches off automatically.

Safety equipment

Flame monitoring

During the whole operation the automatic control E 3770 controls the ionisation current which indicates the flame.

As long as an ionisation current exists the gas-valve stays open.

If no ionisation current is registered the gas-valve stops the gas supply automatically.

4 Legal Requirements

We recommend that these installations guidelines should be observed together with the national „Rules in Force“, any local Byelaws and the current IEE wiring regulation, concerning:

- gas installation
- heater installation
- electrical installation
- ventilation

Notwithstanding their limited scope, the appliance should be installed by a competent person in accordance with the relevant provisions of installation and use. Full compliance with all the relevant regulations, including amendments, in force at the time of installation is a pre-requisite of our warranty.

5 Planning

Gas connection

The pipe should be dimensioned so that the minimum connection pressures upstream of the combination valve of the individual heater are available at the nominal heat load of the entire system (**Tab. 1 below**).

Maximum connection pressure: 60 mbar.

min. connection pressure (mbar)	
Natural gas H ¹⁾	16
Natural gas L ²⁾	22
Propane	41
Butane	32

Tab.1: Min. connection pressure

1) Natural gas H:	$H_{i,n}$	= 9.97 kWh/m ³
	$W_{s,n}$	= 14.8 kWh/m ³
2) Natural gas L:	$H_{i,n}$	= 8.57 kWh/m ³
	$W_{s,n}$	= 12.1 kWh/m ³

* 0°C / 1013 mbar

Installing the gas connection pay attention to the following notes:

- ⇒ If flexible connection lines are used, the hose lines must be of stainless steel.
- ⇒ Heaters must not be mounted on gas lines

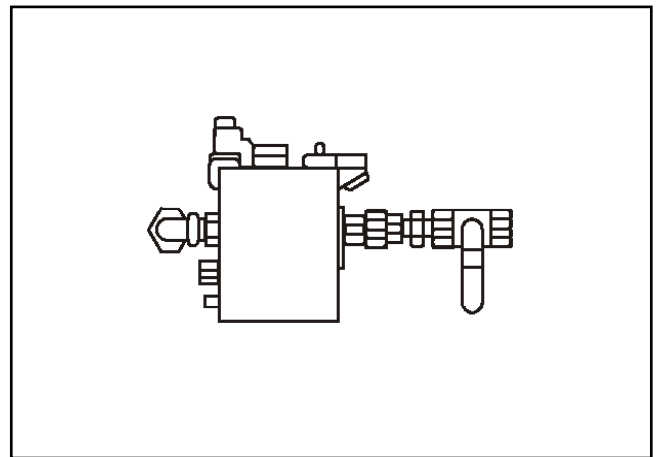


Fig. 2: Ignition and control unit with permanent connection

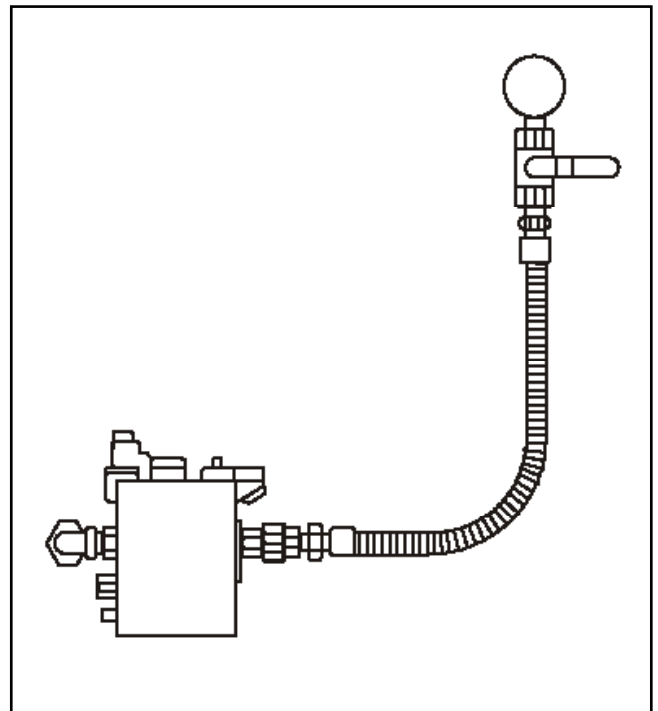


Fig. 3: Ignition and control unit with hose line connection

Installation room / Flue installation

Since February 2001 the **European Standard EN 13410** describes the ventilation requirements for gas fired overhead radiant heaters in non domestic premises. All CEN-members are bound to translate these regulations into national standards without change.

EN 13410 defines ventilation requirements for gas appliances **type A**. These are appliances which take combustion air from the room and are intended for non-direct evacuation of the combustion products. The products of combustion leave the appliance, mix with the surrounding air in the installation room and leave the building.



We recommend observing these installation instructions in addition to the national and local rules and regulations. Its observance is imperative for the proper operation of our heaters and is the condition of our warranty. Please ask for our advice if in doubt.



These appliances must be installed in accordance with the "Rules in Force" in a well ventilated area.

According to EN 13410 the following requirements have to be observed:

1 Installation room

The installation room shall have a **volume of at least 10 m³/kW of installed nominal heat input of the radiant heaters.**

2 Evacuation of the products of combustion

This ventilation may be achieved by any of the three following different means:

- A) thermal evacuation of the products of combustion/ air mixture;
- B) mechanical evacuation of the products of combustion/air mixture;
- C) natural air change.

A) Ventilation by thermal evacuation

- The air of the room mixed with the products of combustion shall be evacuated above the radiant heaters, if possible near the ridge by means of exhaust air openings.
- Exhaust air openings shall be constructed and located so that suction of the exhaust air shall not be disturbed by wind influence.
European or National regulations and guidelines

may prescribe the location of exhaust air openings.

- Shut down devices and restrictors at exhaust air openings are permissible if an automatic safety device ensures opening of the devices/restrictors for the safe operation of the appliances. Otherwise exhaust air openings shall not be restricted or closed.
- The number and arrangement of the exhaust air openings depend on radiant heater arrangement and room geometry.
- The horizontal distance between a radiant heater and an exhaust air opening shall not exceed six times the exhaust air opening height (measured to the centre of the opening) for wall openings and three times the exhaust air opening height (measured to the centre of the opening) for roof openings.
Remark: These are the maximum measures in distance for normal industrial buildings. For detailed planning or if in doubt please call Schwank.
- Ventilation by thermal evacuation is sufficient if **10 m³/h of exhaust air per kW** of operating heat input are ventilated out of the installation room. For calculation please see EN 13140 or call Schwank.
- When applicable, the exhaust air flow rate shall take into account any exhaust air flow rate required for other purposes. The size and number of openings is then computed based on the higher of these air flow rates.

B) Ventilation by mechanical evacuation

- The products of combustion mixed with room air shall be evacuated from above the radiant heaters using fans. Only fans with a steep characteristic shall be used.
- It shall only be possible to operate the radiant heaters when the exhaust air evacuation is assured.
- The number and arrangement of the fans depend on radiant heater arrangement and room geometry.
- The horizontal distance between a radiant heater and a fan shall not exceed six times the fan mounting height (measured to the axis of the fan) for wall mounted fans and three times the fan mounting height (measured to the axis of the fan) for roof mounted fans.

Remark: These are the maximum measures in distance for normal industrial buildings. For detailed planning or if in doubt please call Schwank.

- *The fans shall be installed above the radiant heaters, if possible near the ridge.*
- *Ventilation by mechanical evacuation is sufficient if **10 m³/h of exhaust air per kW** of operating heat input are ventilated out of the installation room. For calculation please see EN 13140 or call Schwank.*
- *When applicable, the exhaust air flow rate shall take into account any exhaust air flow rate required for other purposes. The fan capacity is then computed based on the higher of these air flow rates.*

C) Ventilation by natural air change

- *Gas-fired radiant heaters may be operated without any special exhaust system, if the exhaust gases are discharged to the outside atmosphere by a sufficient natural air change in the installation room.*
- *No provision for thermal or mechanical ventilation is needed in the following particular cases:*
 - *buildings with natural air change greater than 1,5 volumes per hour;*
 - *buildings with density of operating heat input not greater than 5 W/m³.*

Combustion Air Supply

Air openings are required to supply combustion air and shall be located below the heaters.

Exceptions are possible if the air supply openings are between the individual heaters and their location has been planned after proper evaluation of the air flow.

Pay attention to the following requirements:

- To prevent drafts, ventilation openings must be located at least 2 m above the floor, however below the hanging height of the heater.
- The total of the free cross-section of all ventilation openings may not be less than the total of the free cross-section of all exhaust openings.
- Inalterable gaps and joints in their cross-section may also be used as ventilation openings.
- If the ventilation openings can be closed, the gas supply to the heaters may only be enabled when ventilation is ensured.
- The combustion air is sucked in from the room by the injector. Select the installation so that the air supply is not impaired (e. g. by brackets).

Hanging position

Minimum distances

In the diagram you find the minimum height for different hanging angles. Heaters are to be positioned so that persons in the radiation area are not subjected to an unreasonable high heat level. This is ensured when the minimum hanging heights shown in the diagram are adhered to.

The minimum hanging heights in the diagram apply for an air temperature of + 10°C. In case of different air temperatures, the minimum hanging heights result from multiplication by the following factor:

t_L	0	5	10	15
f_L	0.9	0.95	1	1.1

t_L = Air temperature in °C

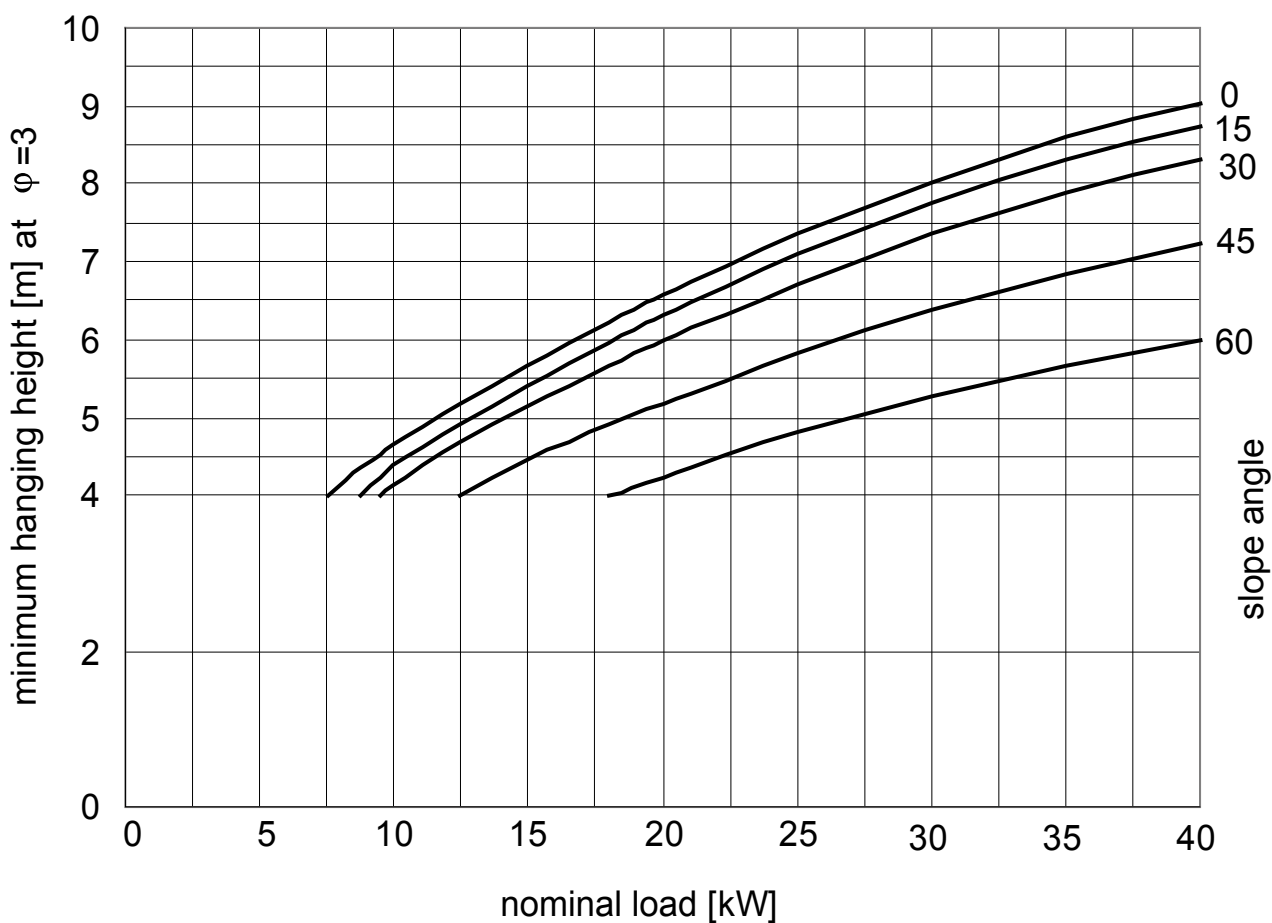
f_L = Multiplication factor



Attention!
The minimum mounting height may not be below 4 meters.



A correction with the factor f is not necessary for heaters with output control when the air temperature is above 10°C.



Diag. 1: Minimum hanging height dependent on angle and nominal load

Distances to flammable materials in the radiation area

Heaters must be positioned so that the surface temperature of

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

never rises above 85°C.

This is ensured when the following distances are maintained:

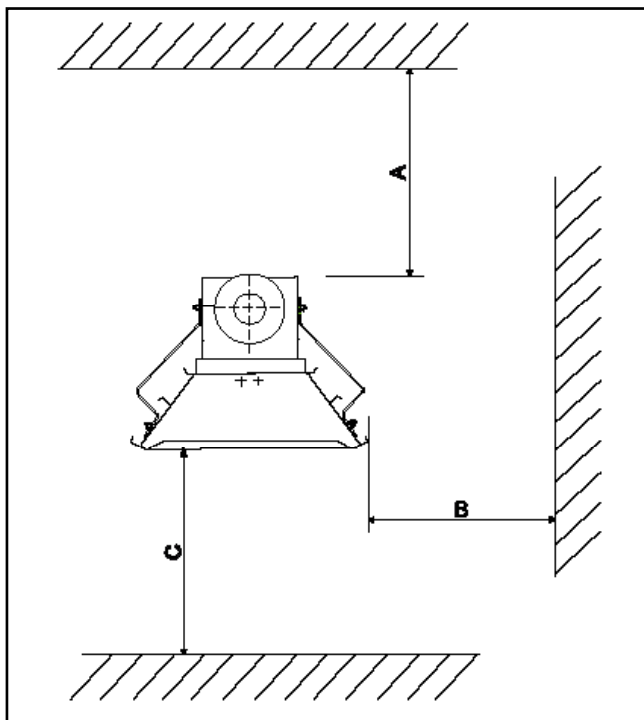


Fig. 4: Minimal distances in and outside the radiation area

A = Minimum upper safety distance (outside radiation area)

B = Minimum lateral distance (inside radiation area)

C = Minimum lower safety distance (inside radiation area)

type	A (cm)	B (cm)	C (cm)
ecoSchwank 6	80	40	100
ecoSchwank 10	80	50	120
ecoSchwank 13	80	60	160
ecoSchwank 18	80	70	200
ecoSchwank 26	80	70	220

Tab. 2: Requirement of minimal distances ecoSchwank



Danger!

Flammable materials in the radiation area can begin to burn and cause a fire. Install permanent warning signs in the dangerous area at a visible position which prohibit the storage in this area.

If distance cannot be maintained, the components must be protected with heat shields. Please observe for cranesways.

Here we expressly refer to the local regulations of the government supervisory agencies.

Distances to flammable materials outside the radiation area

Heaters must remain so far away from components with flammable materials on all sides outside the radiation area that no temperature higher than 85°C can occur at them at the nominal thermal load. This is generally ensured when a distances of at least 20cm is maintained to the sides and upward (above the heater) a distance **A** (Fig. 4, page 12) of at least 80cm is maintained.

The maximum permissible angle is 60° from the vertical radiation direction.

Pay attention that nozzle, igniter, gas valve and E 3770 control are in easy reach even after the installation.

Position of gas combination valve

- in upright position (see Fig. 7, page 15)
- maximum 90° turns to the central line.

Support brackets for angled application Code no.: 126 2193 0

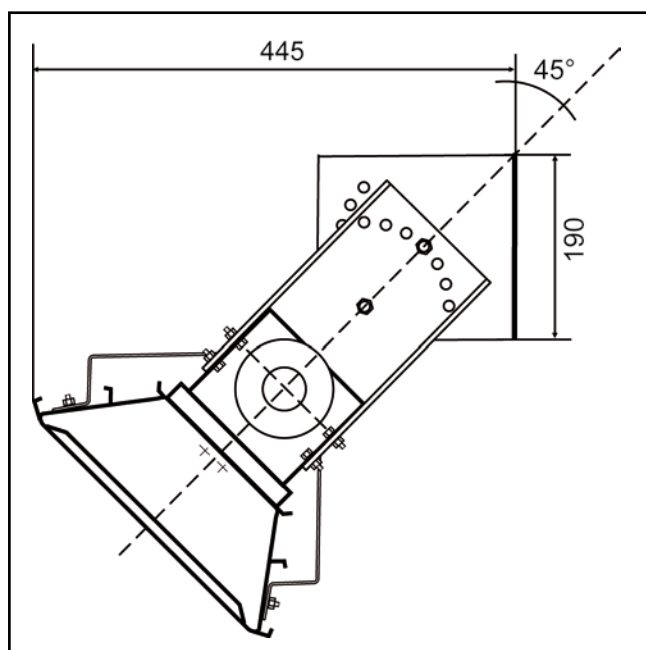


Fig. 5: Angled position with wall brackets

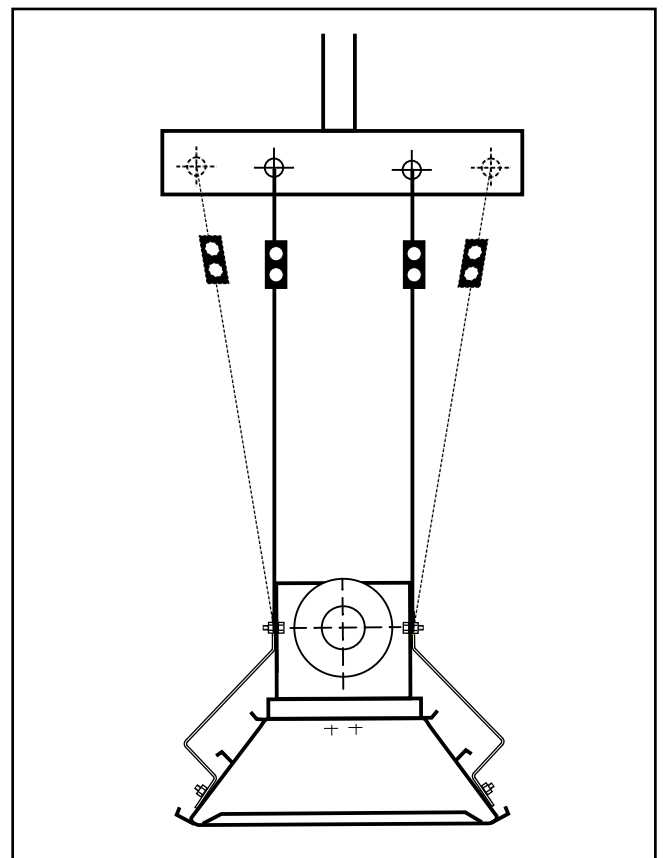


Fig. 6: Horizontal hanging position

6 Operation



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

Manual operation

Starting the heater

⇒ Switch on the heater with the main switch

The ignition starts automatically.

Stopping the heater

⇒ Switch off the heater with the main switch.

Automatic operation

When the heaters operate automatically starting and stopping is done by a regulation with the temperature regulator.

Fault

If the heater doesn't ignite during 30 seconds the heater switches off automatically and goes in fault position.

⇒ Switch the heater off and 3 seconds later on again, for a reset and a new start.

If the heater doesn't start although you have reseted a few times:

⇒ Switch the heater off.

⇒ Close the main gas valve.

⇒ Call SCHWANK.

Maintenance

The maintenance of heating systems is a condition for proper operation. The maintenance of gas heaters is therefore required and recommended. The maintenance is to be carried out annually. Depending on the operating conditions (e. g. for operating within dusty air), we recommend maintenance at shorter intervals.

7 Technical Data and Connections

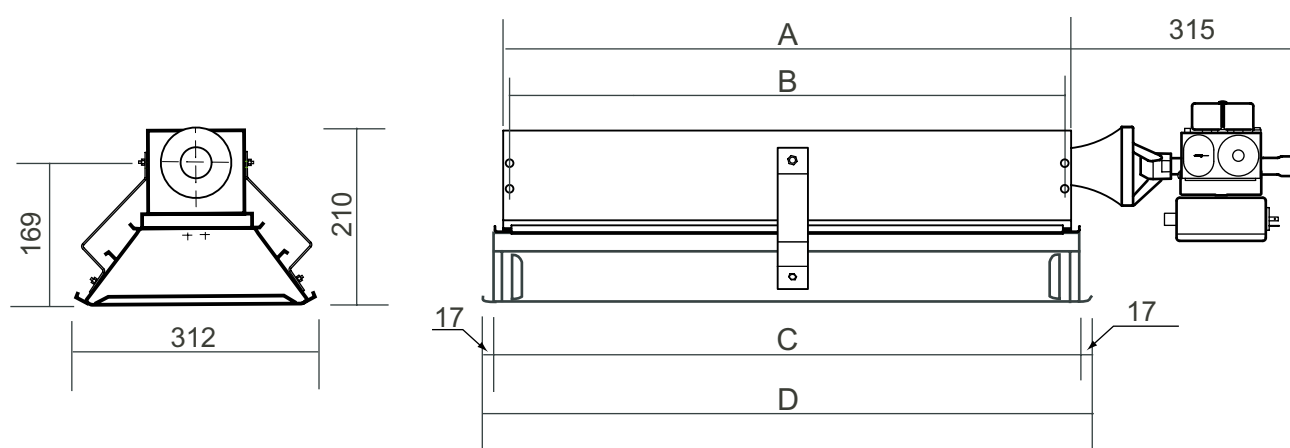


Fig. 7: Dimensions of the heater

		ecoSchwank 6	ecoSchwank 10	ecoSchwank 13	ecoSchwank 18	ecoSchwank 26
Nominal load* [kW]	Natural gas	5.6	9.4	13.0	18.0	26.0
	LPG	5.6	9.4	13.0	18.0	26.0
Gas consumption**	Natural gas	0.56 m ³ /h	0.94 m ³ /h	1.3 m ³ /h	1.81 m ³ /h	2.61 m ³ /h
	LPG	0.43 kg/h	0.73 kg/h	1.01 kg/h	1.4 kg/h	2.02 kg/h
Weight [kg]	Heater	3.45	4.85	6.25	8.25	10.45
	Control device	1.9	1.9	1.9	1.9	1.9
Dimension [mm]	A	297	481	666	943	1311
	B	282	466	651	928	1296
	C	337	517	705	980	1347
	D	371	551	739	1014	1387
CE-identification		CE-0085AP0459				

Tab. 3: Technical data

1) The nominal heat load is the heat quantity supplied by the gas based on its thermal value $H_{i,n}$

2) connection values: Nat. gas H: $H_{i,n}=9.97 \text{ kWh/m}^3$ Nat. gas L: $H_{i,n}= 8.57 \text{ kWh/m}^3$ Propane: $H_{i,n}=12.87 \text{ kWh/kg}$

* for 0°C / 1013 mbar

Application

Heater with increased radiation efficiency, heat transfer mainly by means of infrared bright and dark radiation.

Fuels

Natural gas
Propane, Butane

Min. Connection Pressure

Nat. gas H	16 mbar
Nat. gas L	22 mbar
Propane	41 mbar
Butane	32 mbar

Max. Connection Pressure

Nat. gas, Propane, Butane: 60 mbar

Electrical Connection

Single-phase a.c. 230 V, N, PE
50 Hz (approx. 25 VA)

Exhaust Flue

- indirect via lower edge of housing
- direct via exhaust system

Gas Connection

threaded fitting R=1/2" (female)

Hanging

The heater can be mounted with the holes in the front sheets (screws M8) (see Fig. 5 and 6, page 13).

Pay attention of the notes concerning the hanging position, given in chapter 5 "Planning".

8 Before Starting Installation

Your Safety



Danger of fire and explosion!
Unprofessional handling with gas pipes, gas connections and supplied devices can produce gas leaks. It is highly dangerous if gas is ignited!
Working with gas pipes and supplied appliances is only allowed by approved installers.

Routing of gas pipes to the appliance, supply and the mounting of the appliance is only allowed by a competent person who is corgi registered holding a current certificate of competence and in accordance with the relevant provisions of installation and use and in accordance with the „Rules in Force“ in a well ventilated area.

Additional installation notices of national or local institutions must be observed.

Electrical Installation



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



Isolate the electrical supply while working at the electrical equipment of the appliance.

The gas supply and electrical cable must be situated in the area of the heater radiation or it's combustion products. Only use heat-resistant cables near the heaters.

Gas supply



If the connection pressure is higher than 60 mbar it is necessary to install a pressure regulator before the ignition and control unit.

If you don't reach the necessary connection pressure and nozzle pressure it's not allowed to put the heater into operation.

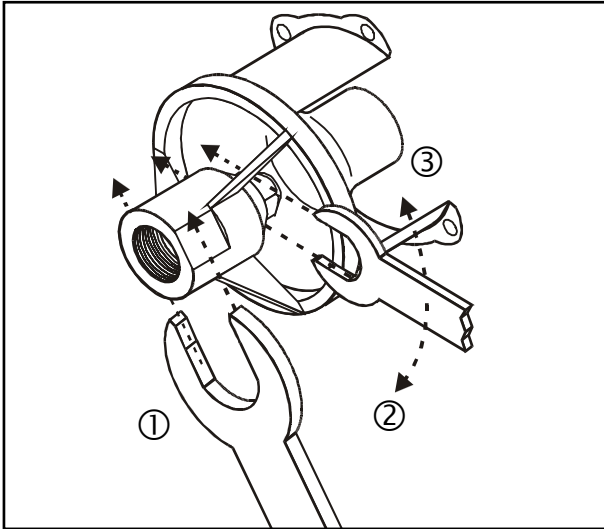


Fig. 8: Changing the nozzle

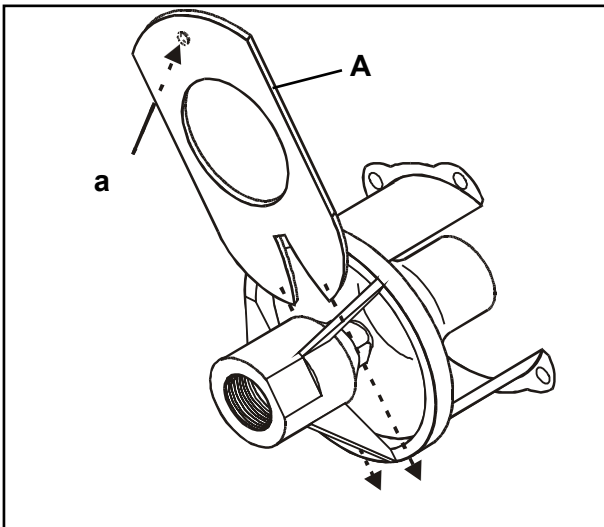


Fig. 9: Mounting of the air baffle plate

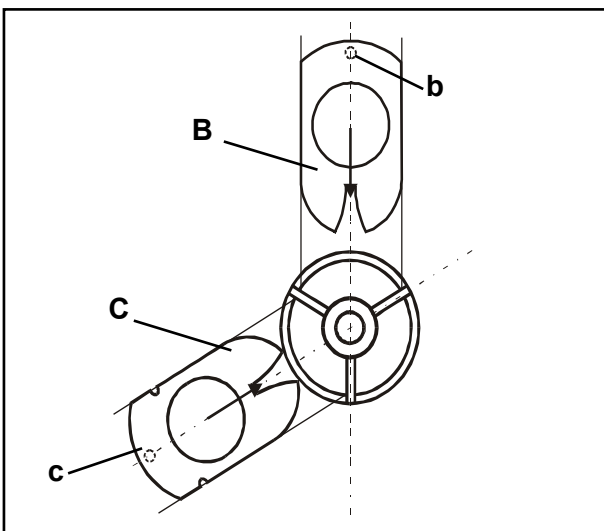


Fig. 10: Mounting of two air baffle plates

Changing gas-dependent parts

The gas-dependent parts of the heater are fitted for your applications when the heater is delivered. If you use an other gas type it is necessary to change the gas-dependent parts.

For any questions please contact SCHWANK.

Pay attention of the following steps, to change gas-dependent parts:

Changing of the nozzle (Fig. 8):

- ⇒ Use an open-end wrench (width 30 mm) to lock to the connection part. ①
- ⇒ Remove the nozzle with an open-end wrench (width 17 mm). ②
- ⇒ Fit the new nozzle. ③

Changing the air baffle plate

- ⇒ Push against the two pointed ends of the air baffle plate until the nipple (a) slides over the edge of the connection part and remove the air baffle plate.
- ⇒ Push the new air baffle plate (A) on the connection part until the rib is between the two pointed ends and the nipple (a) notches behind the edge of the connection part (Fig. 9).

Mounting of two air baffle plates (Fig. 10)

If you need two air baffle plates, one of them must have two gaps for the ribs of the connection part.

- ⇒ Push the air baffle plate (C) on the connection part until the rib is between the two pointed ends and the nipple (c) notches behind the edge of the connection part.
- ⇒ Lift the air baffle plate (C) and push the air baffle plate (B) between the edge of the connection part and the air baffle plate (C), until the nipple (b) notches behind the edge of the connection part.

9 Installation of the ignition and control unit

Device with gas combination valve SIT TANDEM 830 and control unit E 3770

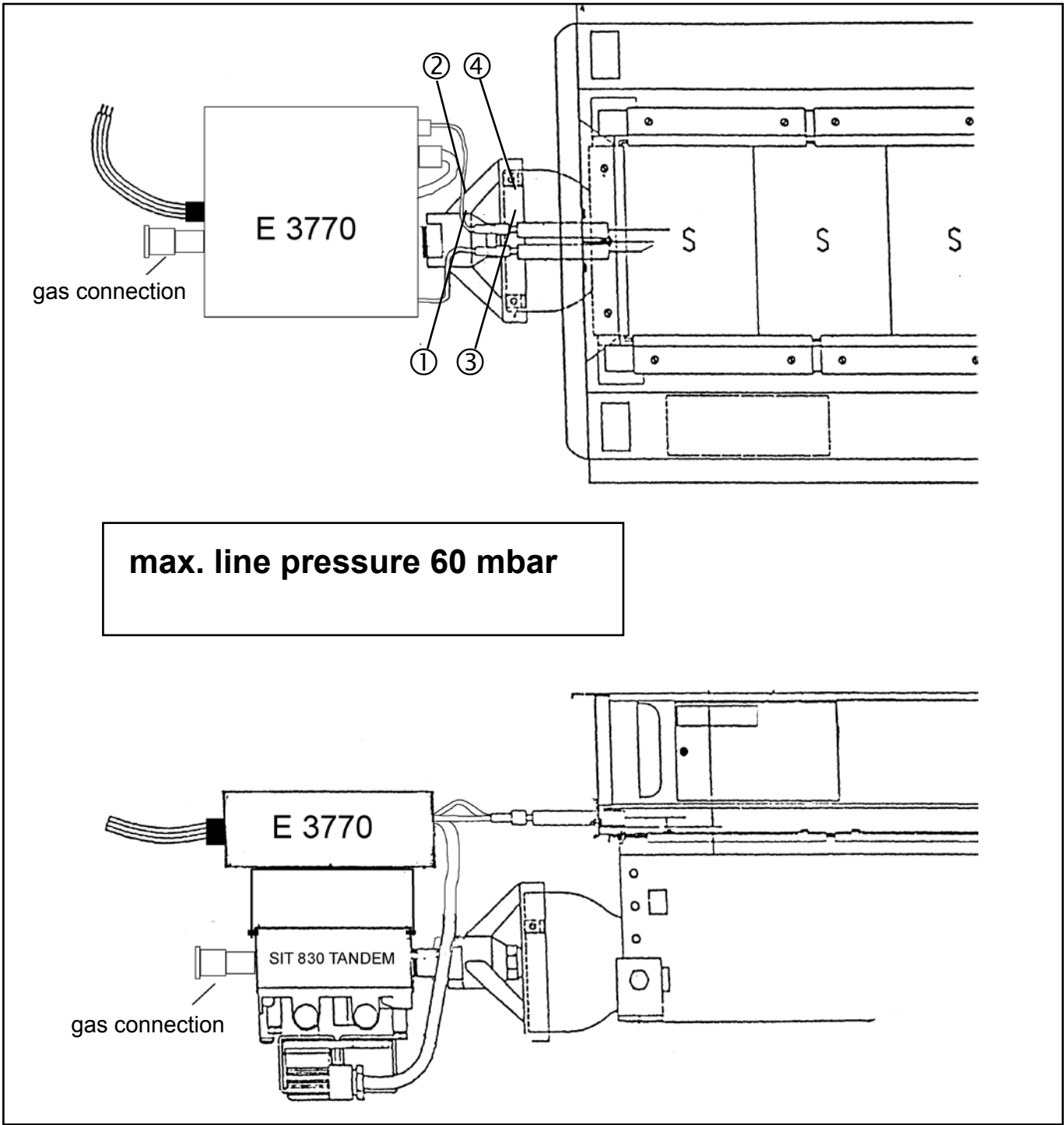



Fig. 11: Installation of the ignition and control unit

x-ecoSchwank_international_002_0606 Technical specification subject to change

Installation of the ignition and control unit

 The ignition and control unit can be assembled in any position up to 90° to the central line.

- ⇒ Connect the ignition cable (1) with the ignition electrode (3). Ensure proper seating.
- ⇒ Connect the ionisation cable (2) with the ionisation electrode (4) (Fig.11).

Adjusting nominal load



Caution!
Pressure regulators are not adjusted at the factory. The system may not be put into operation until adjustment has been carried out. Maximum line pressure 60 mbar!

- ⇒ Determine the related nozzle pressure by using the Pressure-Wobbe-Diagram. Ask your regional gas supplier for the Wobbe-Index-No..

Choose the heater which is installed furthest away from the inlet of the gas to carry out the following steps:

- ⇒ Open the test nipple (7) (Fig.12).
- ⇒ Connect a pressure measuring device to the test nipple and determine the line pressure. The line pressure must be at least 3,5mbar higher than the related nozzle pressure.
- ⇒ Close the test nipple.



Check the test nipple after every measurement. The test nipple must be closed!

- ⇒ Connect the pressure measuring device to the test nipple (8) and determine the nozzle pressure.
- ⇒ Remove the sealing screw on the gas combination valve (9).
- ⇒ Put the heater in operation.
- ⇒ Slowly screw-in the adjustment screw (10) while continuously watching the pressure measuring device until the related nozzle pressure is exceeded. Set the correct or-nozzle pressure by screwing the adjustment screw counterclockwise.
- ⇒ Close the test nipple.
- ⇒ Readjust the sealing screw.
- ⇒ Check all connections for gas-tightness with leak detector emulsion.

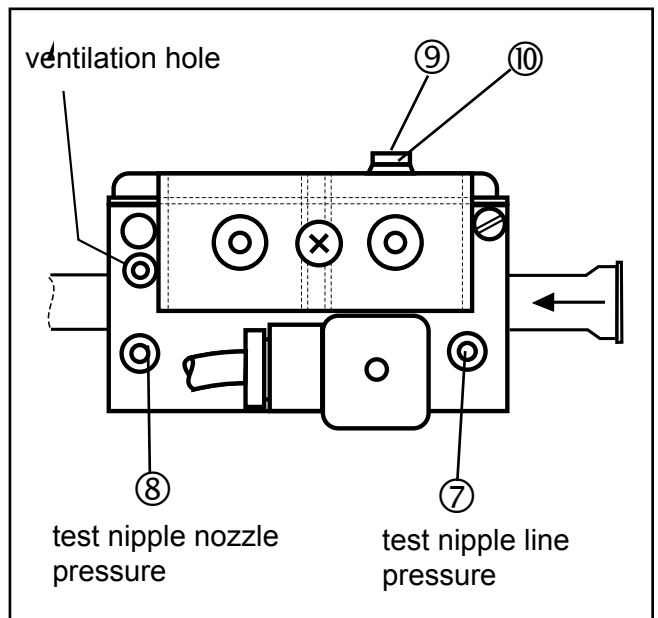


Fig. 12: Top view of the gas combination valve

Wiring diagram of the ignition and control unit

with gas combination valve SIT TANDEM 830 and
control unit E 3770 (preassembled)

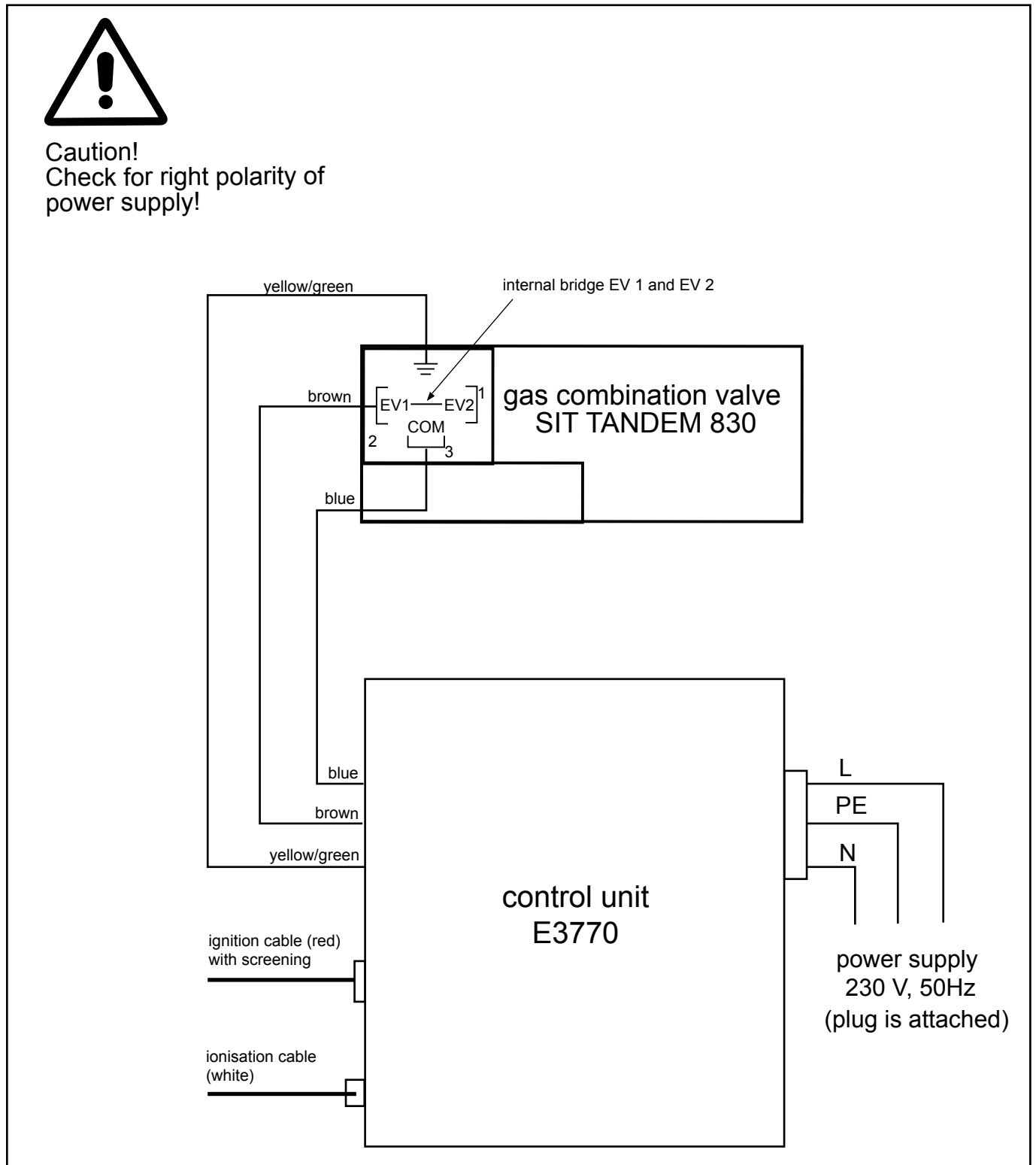


Fig. 13: Wiring diagram of the ignition and control unit

Determine the nozzle pressure

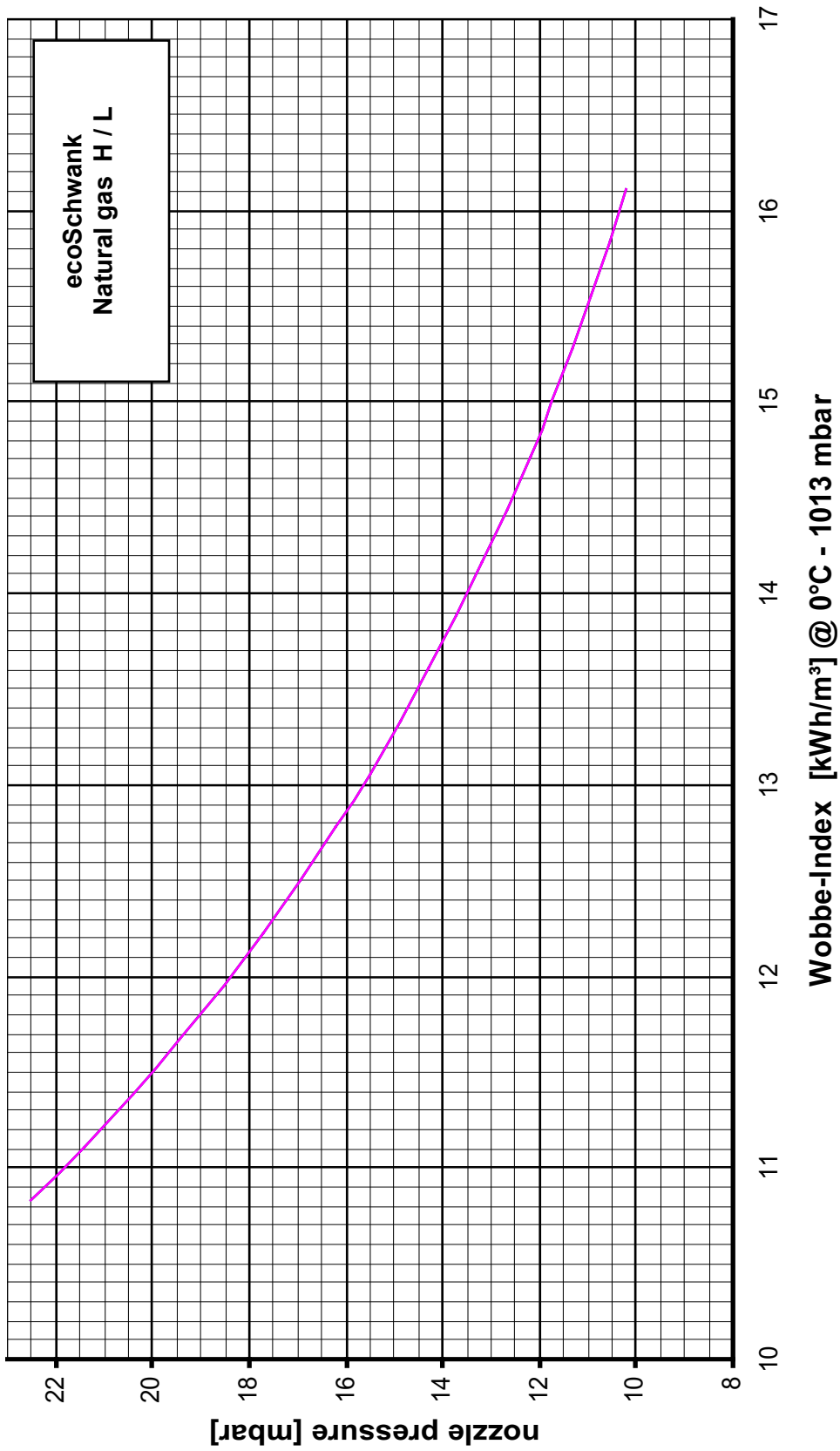
General determination of the nozzle, pressure and air baffle for different gases

Type	Gas	Nominal load [kW]	Nozzle pressure [mbar]	Nozzle diameter [mm]	Air baffle plate [mm]
ecoSchwank 6	Natural gas H*	5.6	12	1.95	28
	Natural gas L*	5.6	18	1.95	18x30 + 28
	Butane	5.6	28	1.15	28
	Propane	5.6	37	1.15	18x30 + 50
ecoSchwank 10	Natural gas H*	9.4	12	2.50	35
	Natural gas L*	9.4	18	2.50	2x28
	Butane	9.4	28	1.50	45
	Propane	9.4	37	1.50	18x30
ecoSchwank 13	Natural gas H*	13.0	12	3.17	35
	Natural gas L*	13.0	18	3.17	18 x 30
	Butane	13.0	28	1.80	40
	Propane	13.0	37	1.80	32
ecoSchwank 18	Natural gas H*	18.0	12	3.60	45
	Natural gas L*	18.0	18	3.60	32
	Butane	18.0	28	2.12	52
	Propane	18.0	37	2.12	2x 52
ecoSchwank 26	Natural gas H*	26.0	12	4.15	58
	Natural gas L*	26.0	18	4.15	45
	Butane	26.0	28	2.50	55 x 73
	Propane	26.0	37	2.50	55

Tab. 4: Nozzle list for ecoSchwank

* Natural gas H: $H_{i,n} = 9.97 \text{ kWh/m}^3$ / Natural gas L: $H_{i,n} = 8.57 \text{ kWh/m}^3$ / Propane: $H_{i,n} = 12.87 \text{ kWh/kg}$
 Natural gas H: $W_{s,n} = 14.8 \text{ kWh/m}^3$ / Natural gas L: $W_{s,n} = 12.1 \text{ kWh/m}^3$ (at 0°C / 1013 mbar)

x-ecoSchwank_international_002_0606 Technical specification subject to change



Diag. 2: Wobbe-Index / nozzle pressure ecoSchwank

10 Assembly

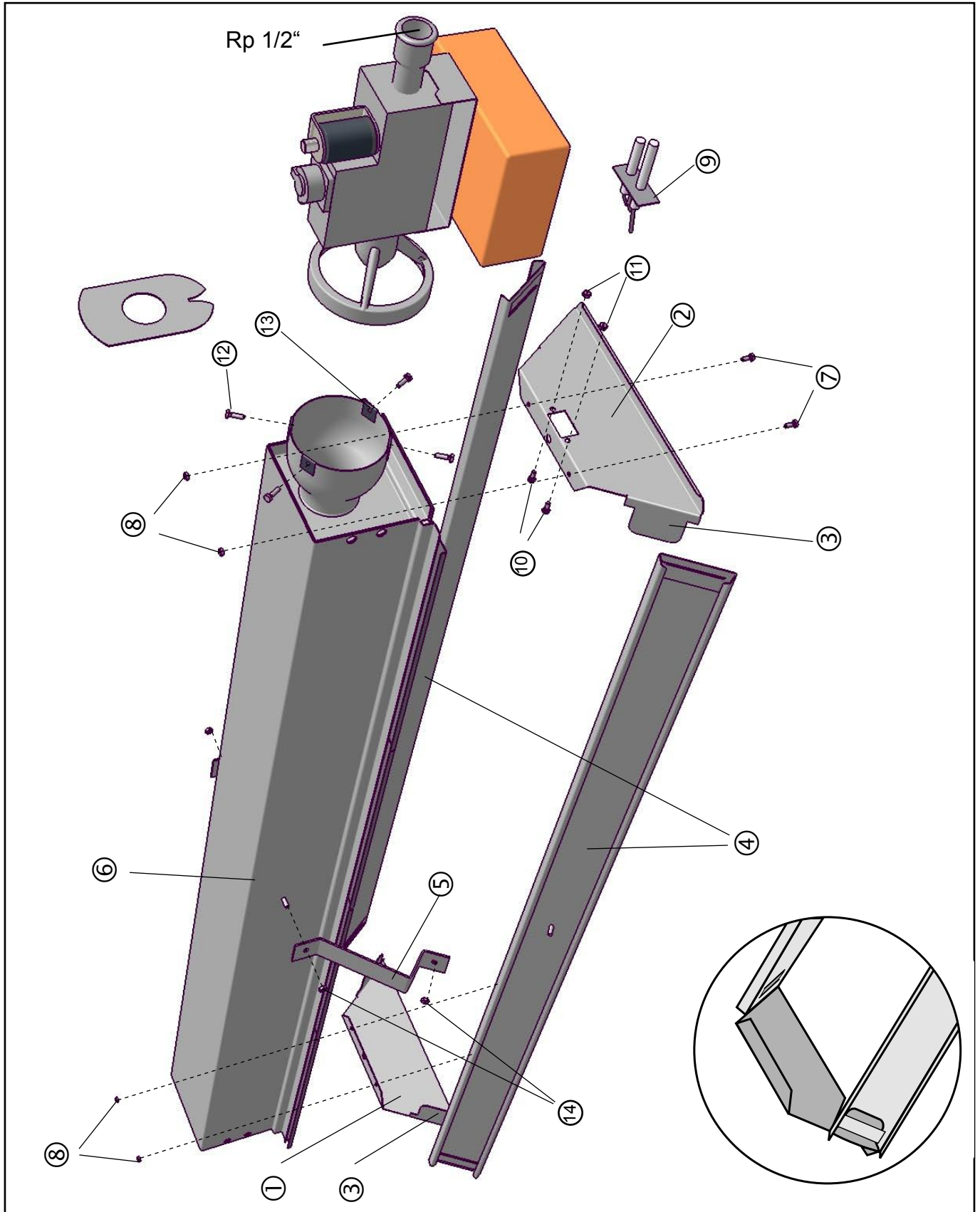


Fig. 14: Assembly ecoSchwank



Pay attention during assembling that the ceramic tiles will not be damaged.

Assembly of the reflector (Fig. 14)

- ⇒ Plug the slide plates (3) of the reflector end plates (1 and 2) into the pre-punched side bars of the side reflectors (4).

Reflector assembly at the burner housing

- ⇒ Place the burner housing on a flat surface (tiles upside).
- ⇒ Place the assembled reflector with the end plates (1 and 2) on the flange of the burner housing.

for ecoSchwank 18 and 26 only:

Pay attention that the support angles (5) will be plug on the corresponding bolts of the side reflectors (4) and the burner housing (6) and are fixed with hexagon nuts (14).

- ⇒ Fix the reflector with 4 bolts (7) and hexagon nuts (8). Nuts outside.

Assembly of the ignitor

- ⇒ Place the ignitor (9) from outside into the cutout of the reflector end plate (2).
- ⇒ Fix the ignitor with 2 bolts (10) and 2 hexagon nuts (11). Nuts outside. The staggered holes in the reflector end plate (2) specify the fitting position. The ground electrode (center electrode) should have a distance of 3.2mm to the ceramic tile surface.

Assembly of the nozzle holder

- ⇒ Push the 4 speed nuts (flat side outside) over the existing holes on the venturi inlet until stop position. The lock clip arrests in the hole (Fig. 15).
- ⇒ Put the nozzle holder with the 4 holes on the 4 speed nuts (13) at venturi inlet.
- ⇒ Fix the nozzle holder with hexagon nuts (12) in the attached speed nuts (13) (Fig 16).
- ⇒ In case that an air restrictor must be installed please assemble as described in **chap. 8 Before starting installation, page 18** of this manual.



Fig. 15: Push speed nuts on venturi inlet



Fig. 16: Fix nozzle holder on venturi inlet

11 Putting into Operation/Adjusting

Please refer to SCHWANK to put your heating system into operation. A qualified service engineer must carry out this operation. The correct operation and fixing of the heater is prerequisite for our liability. Checking gas lines and exhaust system is not included in the fixing.

Check function of the following equipments:

- Exhaust flue
- combustion air supply
- control unit
- safety equipment
- safety of electrical circuit

Check all connections and gas supplies for leaks.

12 Maintenance / Trouble Shooting



Maintenance of all electrical an safety equipment must be done by qualified persons which are competent and instructed.

Maintenance and annual check

A regular maintenance is recommended for a faultless operation.

Please contact SCHWANK.

Heating-systems with radiant heaters must be checked minimum once a year.

Maintenance and trouble shooting is only allowed by persons which are competent and instructed in gas-infrared-heaters.

Maintenance must include the following works:

- Maintenance of the heaters, especially the ceramic plaques:
Clean the plaques with compressed-air (5 bar, nozzle 3 mm) or a fan:
 - blow through the holes of the ceramic plaques from outside the heater,
 - clean the heater inside by blowing through the opening of the injector,
 - again blow through the holes of the ceramic plaques from outside the heater.
- Leak-test of all gas-connections. Check gas-tightness of threaded fittings, solenoid valve, and pressure regulator.
- Check the ignition and control unit and the flame monitoring.
- Check the nozzle pressure.
- Check all electrical connections.
- Check the natural and mechanical ventilation.
- Check the warning signs.

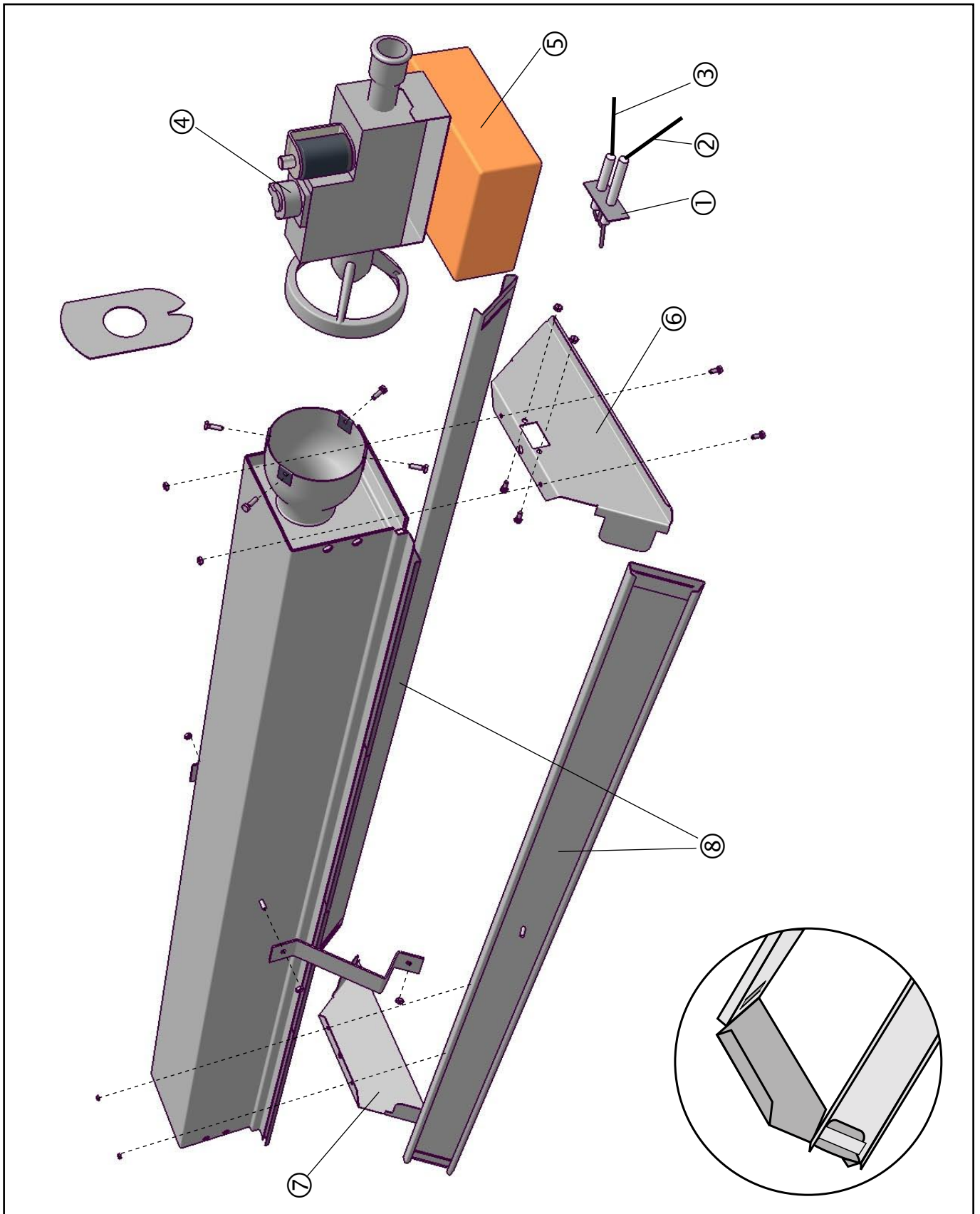
Works which are necessary must be done immediately. Defect parts must be changed.

Air with high dust content

Schwank gas-infrared-heaters are high-performance combination heating devices which emit high thermal radiation, a mixture of bright and dark radiation.

It is possible that the surfaces of some parts of the heaters change colour due to air with high dust content. Safety and thermal load of the heater are not impaired.

13 Spare parts



x-ecoSchwank_international 002_0606 Technical specification subject to change

Fig. 18: Spare parts ecoSchwank

13 Spare parts

x-ecoSchwank_international 002_0606 Technical specification subject to change

Code no.	Description
122 1017 5	Ignitor ecoSchwank (Propane/Butane) ①
122 1140 6	Ignition cable E3770 ecoSchwank (Propane/Butane) ②
127 02175	Ionisation cable E3770 ecoSchwank (Propane/Butane) ③
192 0749 8	Gas combination valve SIT Tandem 830 with start step (Propane/Butane) ④
192 0753 6	Gas combination valve SIT Tandem 830, with fittings and nozzle holder (Propane/Butane) ④
192 1081 2	Control unit E 3770 with bracket for ecoSchwank (Propane/Butane) ⑤
168 0361 8	Socket GDM 2011 with screw (Propane/Butane)
168 0362 6	Gasket type GDM 3-16 (for power supply) (Propane/Butane)
192 0739 0	Gas combination valve Honeywell VK 4115 (Natural gas, single-stage)
192 1067 7	Control unit S 4565 for ecoSchwank (Natural gas, single-stage)
126 5004 0	Ignitor with ionisation cable for ecoSchwank (Natural gas, single-stage)
192 1114 0	Ignition cable S 4565 with beak for ecoSchwank (Natural gas, single-stage)
192 1109 0	Adapter cable ionisation cable S 4565 (Natural gas, single-stage)
011 0057 2	Ceramic tile 14/4 E-F Ultra (20 pieces per box)
128 0010 0	Reflector end plate (ignitor side) ecoSchwank ⑥
128 0011 0	Reflector end plate ecoSchwank ⑦
128 0190 0	Side reflector ecoSchwank 6 ⑧
128 0191 0	Side reflector ecoSchwank 10 ⑧
128 0192 0	Side reflector ecoSchwank 13 ⑧
128 0201 0	Side reflector with bolt coSchwank 18 ⑧
128 0202 0	Side reflector with bolt ecoSchwank 26 ⑧
128 0165 0	Plate holder strips (longitudinal side) L=322mm for ecoSchwank type 26, 18, 13
128 0166 0	Plate holder strips (longitudinal side) L=276mm for ecoSchwank type 6, 18
128 0167 0	Plate holder strips (longitudinal side) L=230mm for ecoSchwank type 10
128 0013 0	Plate holder strips (front side) for für ecoSchwank
122 1153 8	Ceramic tiles gasket set for ecoSchwank 6
122 1151 1	Ceramic tiles gasket set for ecoSchwank 10
122 1147 3	Ceramic tiles gasket set for ecoSchwank 13
122 1148 1	Ceramic tiles gasket set for ecoSchwank 18
122 1150 3	Ceramic tiles gasket set for ecoSchwank 26

Code no.	Description
149 1115 4	Nozzle Ø 1,15mm
149 1150 2	NozzleØ 1,50mm
149 1180 4	Nozzle Ø 1,80mm
149 1195 2	Nozzle Ø 1,95mm
149 1212 6	Nozzle Ø 2,12mm
149 1250 9	Nozzle Ø 2,50mm
149 1317 3	Nozzle Ø 3,17mm
149 1360 2	Nozzle Ø 3,60mm
149 1415 3	Nozzle Ø 4,15mm

Code no.	Description
126 0477 7	Air baffle plate 18x30mm
126 0550 1	Air baffle plate Ø 28mm
126 0478 5	Air baffle plate Ø 32mm
126 0327 4	Air baffle plate Ø 35mm
126 0553 6	Air baffle plate Ø 40mm
126 0552 8	Air baffle plate Ø 45mm
126 0479 3	Air baffle plate Ø 50mm
126 0483 1	Air baffle plate Ø 52mm
126 0557 9	Air baffle plate Ø 55mm
126 0480 7	Air baffle plate Ø 58mm
126 0316 9	Air baffle plate 55x73mm

Tab. 5: Spare parts ecoSchwank

Notice of composition longitudinal plate holder strips:

ecoSchwank 6: 2x L=276mm / ecoSchwank 10: 4x L=230mm / ecoSchwank 13: 4x L=322mm
 ecoSchwank 18: 4x L=322mm + 2x L= 276mm / ecoSchwank 26: 8x L=322mm

14 EC type examination certificate

CE 0085

DVGW
Zertifizierungsstelle

EG-Baumusterprüfbescheinigung

EC type examination certificate

CE-0085AP0459

Produkt-Identnummer
product identification no.

Anwendungsbereich <i>field of application</i>	EG-Gasgeräterichtlinie (90/396/EWG) EC Gas Appliances Directive (90/396/EEC)
Zertifikatinhaber <i>owner of certificate</i>	Schwank GmbH Bremerhavener Straße 43, D-50735 Köln
Vertreiber <i>distributor</i>	Schwank GmbH Bremerhavener Straße 43, D-50735 Köln
Produktart <i>product category</i>	Gaswärmeerzeuger: Hellstrahler mit atmosphärischem Brenner (3302)
Produktbezeichnung <i>product description</i>	Heizstrahler mit Brenner ohne Gebläse für Raumheizzwecke als Vollautomat mit elektr. Zündung und Ionisations-Flammenüberwachung als Hellstrahler mit Heizflächentemperaturen über 500 °C ecoSchwank...
Modell <i>model</i>	
Bestimmungsländer <i>countries of destination</i>	AT, BE, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR
Prüfberichte <i>test reports</i>	Baumusterprüfung: B06/01/0809EU vom 19.01.2006 (DBI) Baumusterprüfung: B06/03/0838EU vom 24.03.2006 (DBI)
Prüfgrundlagen <i>basis of type examination</i>	EU/90/396/EWG (29.06.1990) DIN 3372-1 (01.01.1980) DIN EN 419-1 (01.04.2003) DIN EN 419-2 (Entwurf 01.01.2002)
Aktenzeichen <i>file number</i>	05-0930-GER

19.05.2006 Rie A-1/2

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

DVGW-Zertifizierungsstelle - von der Deutschen Bundesregierung benannte und von der Europäischen Kommission offiziell registrierte Stelle für die Konformitätsbewertung von Gasgeräten

DVGW Certification Body - notified by the government of the Federal Republic of Germany and officially registered by the European Commission for conformity assessment of gas appliances

ZLS

ZLS-ZE-349/03

DVGW Deutsche Vereinigung
des Gas- und Wasserfaches e.V.
Technisch-wissenschaftlicher
Verein

Zertifizierungsstelle

Josef-Wirmer-Straße 1-3
53123 Bonn

Telefon: +49 (228) 91 88 807
Telefax: +49 (228) 91 88 993

A-2/2

CE-0085AP0459

Elektrische Daten: 230 V AC, 50 Hz
electrical data

Geräte Kategorien <i>appliance categories</i>	Versorgungsdrücke <i>supply pressures</i>	Bestimmungsländer <i>countries of destination</i>	Bemerkungen <i>remarks</i>
I2E+	20/25 mbar	BE	
I3+	28-30/37 mbar	BE, FR, 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	
II2E Lw3P	20,20, 37 mbar	PL	
II2E+3+	20/25, 28-30/37 mbar	FR	
II2E+3+	20/25, 29/37 mbar	BE	
II2E3B/P	20, 30 mbar	PL	
II2ELL3B/P	20, 50 mbar	DE	
II2ELL3P	20, 50 mbar	DE	
II2H3B/P	20, 30 mbar	DK, EE, FI, LU, SE	
II2H3B/P	20, 50 mbar	AT, CH, CZ, GR, LU	
II2H3B/P	25, 50 mbar	HU	
II2H3P	20, 30 mbar	EE, GR, LT, LV, NO, SK	
II2H3P	20, 37 mbar	ES, FR, GB, GR, IE, IT, PT, SI, TR	
II2H3P	20, 50 mbar	CH, CZ, ES, FR, GB	
II2HS3B/P	25, 50 mbar	HU	
II2L3P	25, 50 mbar	NL	

Installationsarten <i>installation codes</i>	Bestimmungsländer <i>countries of destination</i>	Bemerkungen <i>remarks</i>
A1	AT, BE, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR	

Typ <i>type</i>	Technische Daten <i>technical data</i>	Bemerkungen <i>remarks</i>
...6	Wärmebelastung (Hi): 3,4...5,6 kW	
...10; ...13a	Wärmebelastung (Hi): 5,6...9,4 kW	
...13; 18a	Wärmebelastung (Hi): 7,8...13,0 kW	
...18	Wärmebelastung (Hi): 10,8...18,0 kW	
...26	Wärmebelastung (Hi): 15,6...26,0 kW	

Verwendungshinweise / Bemerkungen
hints of utilization / remarks

Heizflächentemperatur als Hellstrahler: > 500 °C
Zusätzlich geprüfte Geräteklasse, Anschlussdruck und Bestimmungsland:
RO: II2H3B/P (20, 50 mbar)
Typ ...13a; ...18a nur für DE: I1a (9 mbar)
Die CE-Kennzeichnung wird in Rumänien erst dann als Konformitätsnachweis akzeptiert, wenn Rumänien die EG-Gasgeräterichtlinie (90/396/EWG) in nationales Recht umgesetzt hat.
Zubehör: Flexible Schlauchleitungen nach DIN 3384; Typen RS 331L (NG-4602AR0643, Fa. Witzmann), MW 22 U (NG-4602BL0115, Fa. Senior Berghöfer) und WSO (NG-4602BL0002, Fa. AZ-Pokorny)



15 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 terminates the validity of this declaration.

Description: Gas-fired Overhead Luminous Heater

Model / Type: ecoSchwank 6 / 10 / 13 / 18 / 26

Applied EC-Directives: -EC-Directive 89/392 EWG (98/37/EWG)
-EC-Directive 73/23/EWG version 93/68/EWG
-EC-Directive 89/336/EWG
-EC-Gas Appliance Directive 90/396/EWG

EC-Type Examination Certificate: CE-0085AP0459

Issued by: DVGW Bonn / Germany

Basis of Harmonized Standards: DIN EN 419-1 (01.04.2003)

Basis of National Standards: DIN 3372-1 (01.01.1980)

SCHWANK GMBH
Cologne, 2005-12-14


J.P. Jochims
Managing Director

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x-ecoSchwank_international_002_0606 Technical specification subject to change