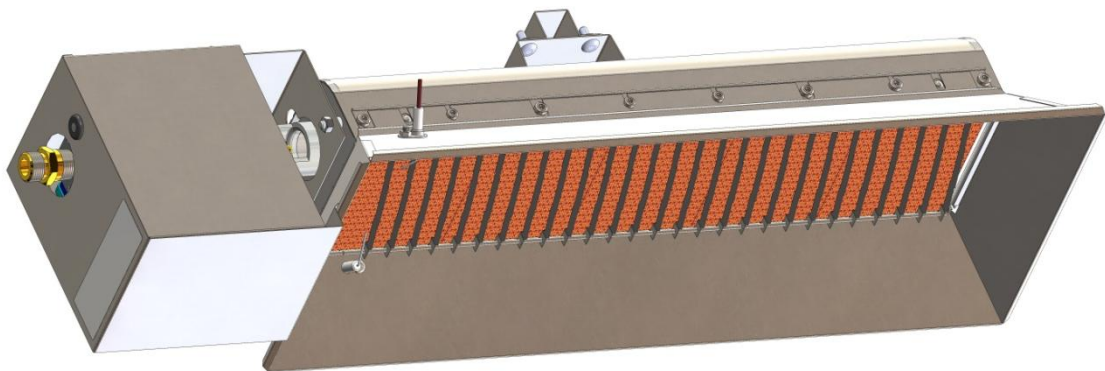


RI 6 / 8 / 10 / 12 / 16 HEATERS

INSTALLER INSTRUCTIONS

(INSTALLATION - MAINTENANCE – GAS CONVERSION)

N° 05000310/08



***Radiant luminous heaters with ceramic emitter
Stainless steel burner
Stainless steel body
Electronic ignition and safety device***

SUMMARY

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GENERALITIES

- To improve its products, SBM reserve the right to modify the products characteristics without notice.

1. WARNINGS

Into this manual, the symbol



means "**IMPORTANT**"

Into this manual, the symbol



means "**DANGER**"



The installation and maintenance of the appliance shall be done by a qualified installer.



This appliance shall be installed in accordance with the applicable regulation.



This appliance shall be used in a well-ventilated premise according to the requirements of EN 13410 standard.



Read this manual before installing and use this appliance.



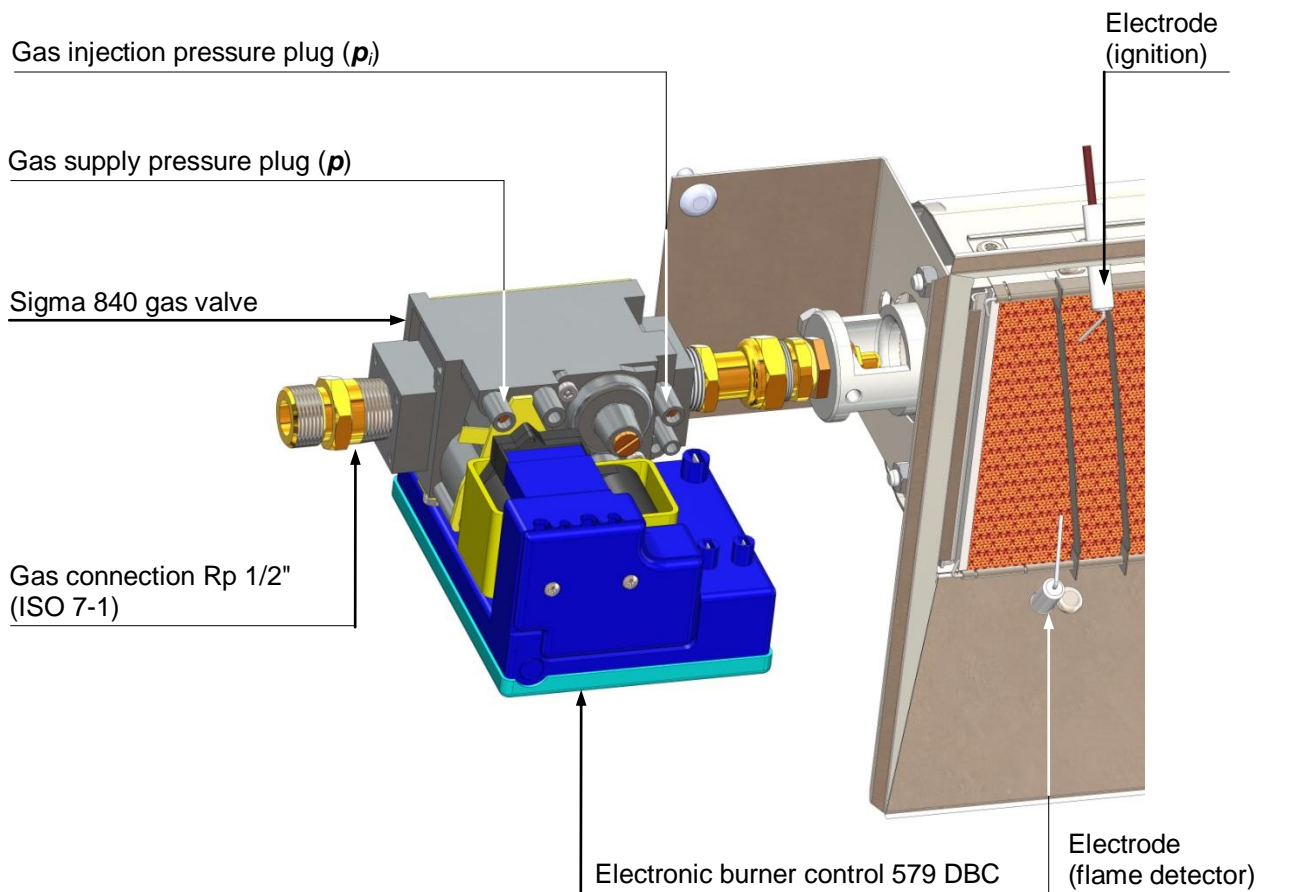
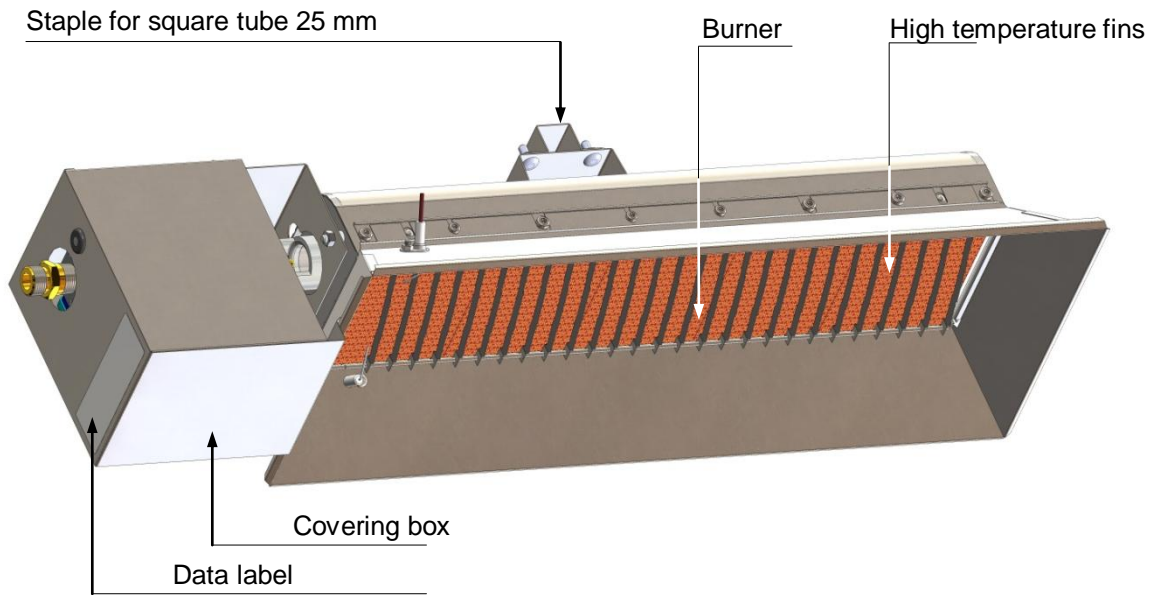
Turn off the appliance and shut off the gas valve before executing the maintenance operations.



These instructions and the user manual shall be given to the user at the end of the heating installation.

2. PRODUCT SPECIFICATION

2.1 Description



2.2 Technical specifications:

GAS : G20 - Category : I_{2H} GB/IE/TR

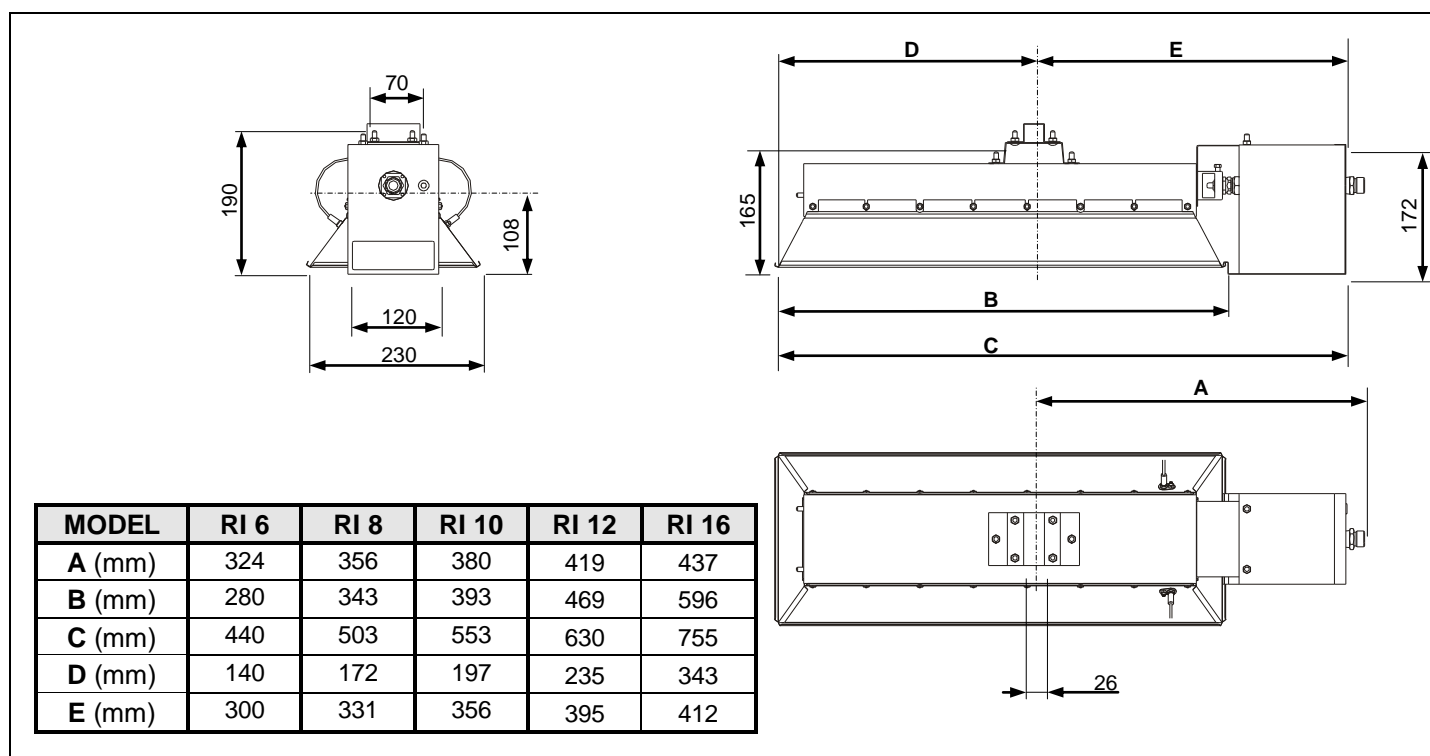
MODEL			RI 6	RI 8	RI 10	RI 12	RI 16
Certificate number CE			1312 AP 230	1312 AP 230	1312 AP 231	1312 AP 231	1312 AP 232
NOx class			5 (< 50 mg/kWh)				
Weight	(kg)		3.00	3.40	3.60	3.90	4.40
Nominal heat input	ΣQ_n (Hi)	(kW)	2.50	3.30	3.80	5.10	6.75
	ΣQ_n (Hs)	(kW)	2.80	3.65	4.25	5.65	7.50
GAS							
Nominal inlet pressure p	(mbar)		20				
Minimal inlet pressure	(mbar)		17				
Maximal inlet pressure	(mbar)		25				
Injection pressure p_i	(mbar)		13.0	11.0	12.0	15.0	16.0
Volumetric flow rate	(m ³ /h)		0.265	0.350	0.400	0.540	0.715
Ø orifice (injector)	(1/100 mm)		135	165	170	180	205
Ø primary orifice (restrictor)	(1/100 mm)		-	-	-	-	-
Gas connection			Rp1/2" (ISO 7-1)				
Exhaust gases evacuation			A ₁ typ (no connected)				
ELECTRICITY							
Power supply			230V (+10% -15%) – 50Hz Neutral mandatory				
Intensity	(A)		0.1				
Consumption	(VA)		19				
Ingress Protection			IP40				
External individual fuse 5x20 (RP3)	(A)		0.25				
Maximum ignition cycle length			30 seconds				
VENTILATION							
Combustion air	(m ³ /h)		2.60	3.40	3.90	5.30	7.00
Required air renewal (EN 13410)	(m ³ /h)		25	33	38	51	67.5

GAS: G31 - Category: I_{3p} GB/IE/TR

MODEL	RI 6	RI 8	RI 10	RI 12	RI 16	
Certificate number CE	1312 AP 230	1312 AP 230	1312 AP 231	1312 AP 231	1312 AP 232	
NOx class	5 (< 50 mg/kWh)					
Weight (kg)	3.00	3.40	3.60	3.90	4.40	
Nominal heat input	ΣQ_n (Hi) (kW)	2.50	3.30	3.80	5.10	6.75
	ΣQ_n (Hs) (kW)	2.75	3.65	4.25	5.65	7.30
GAS						
Nominal inlet pressure p (mbar)	37					
Injection pressure p_i (mbar)	36 : régulateur bloqué = vis C serrée à fond (voir page 22)					
Mass flow rate (kg/h)	0.195	0.260	0.300	0.400	0.530	
Ø orifice (injector) (1/100 mm)	82	105	110	125	135	
Ø primary orifice (restrictor) (1/100 mm)	155	140	130	180	-	
Gas connection	Rp1/2" (ISO 7-1)					
Exhaust gases evacuation	A ₁ typ (no connected)					
ELECTRICITY						
Power supply	230V (+10% -15%) – 50Hz Neutral mandatory					
Intensity (A)	0.1					
Consumption (VA)	19					
Ingress Protection	IP40					
External individual fuse 5x20 (RP3) (A)	0.25A					
Maximum ignition cycle length	30 seconds					
VENTILATION						
Combustion air (m ³ /h)	2.30	3.10	3.60	4.80	6.30	
Required air renewal (EN 13410) (m ³ /h)	25	33	38	51	67.5	

2.3 RI heaters dimensions:

RI 6, RI 8, RI 10, RI 12 and RI 16



3. INSTALLATION

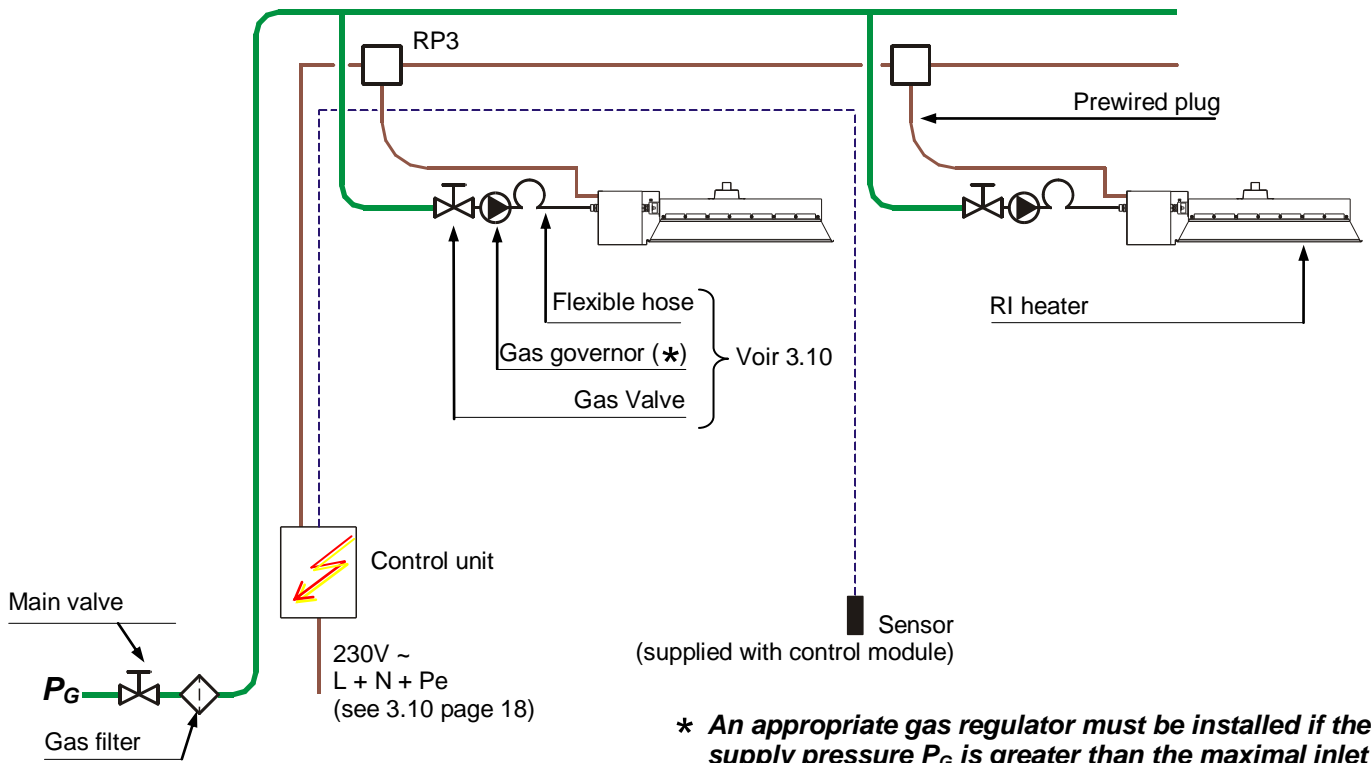


Before installation, check the compatibility between the local distribution conditions, the gas nature, the gas pressure, and the appliance settings.

3.1 Rules and Regulations

- SBM ceramic heaters are **CE** approved in Great Britain, Ireland and Turkey.
- The premises must be ventilated in accordance with the norm EN 13410.
- Building Standards (Scotland) (Consolidated) Regulations.
- Building regulations.
- Gas safety (Installations and Use) Regulations.
- Institute of Electrical Engineers (I.E.E.) Regulations.
- BS6896 Specification for Installation of Gas Fired Overhead Radiant Heaters for Industrial and Commercial Heating (2nd and 3rd family gases).
- Local British Gas Region Regulations.
- Local Authority Bylaws.
- Health and Safety at Work Act 1974
- Not for domestic use.

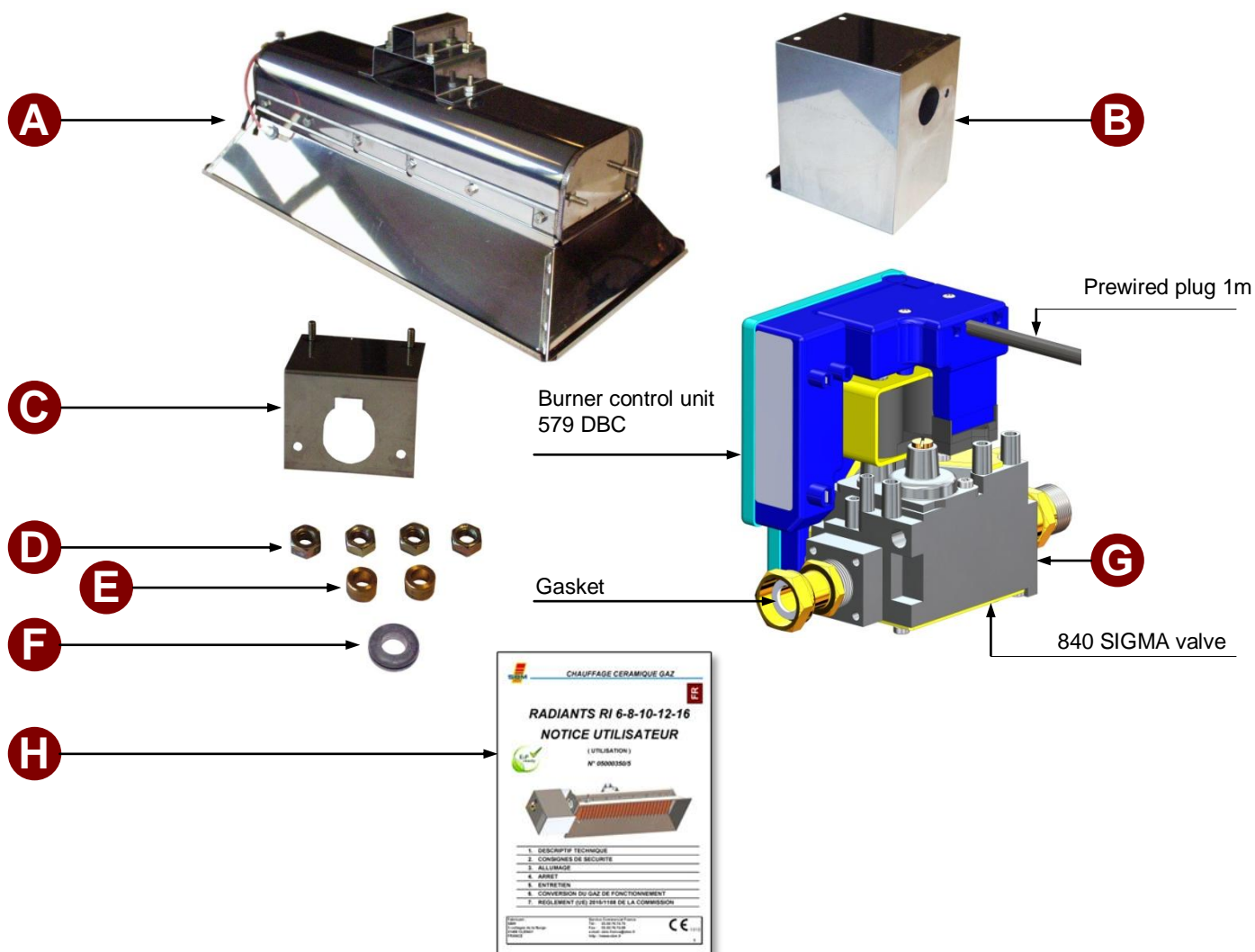
3.2 Diagram of a typical installation



*** An appropriate gas regulator must be installed if the supply pressure P_G is greater than the maximal inlet pressure (G20) or than the nominal pressure (G31) of the heaters (see 2.2)**

3.3 Unpacking and checking of equipment

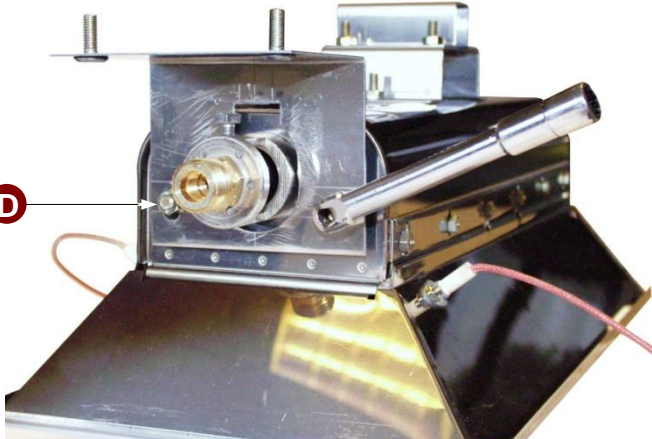
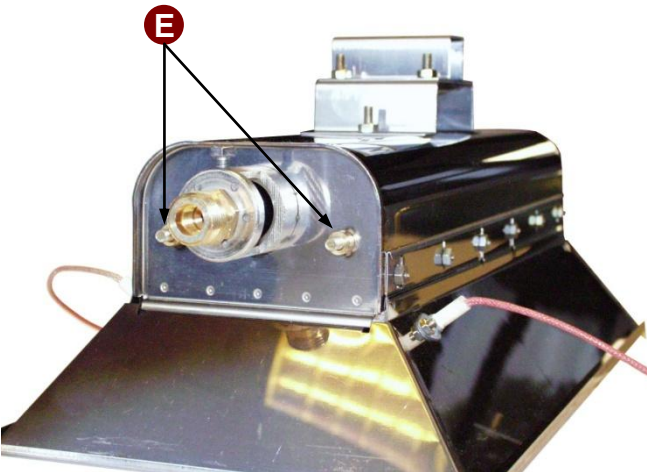
- Check the type and quantities of equipment against your order.
- Check that packing and equipment are intact.
If this is not the case, please register a complaint to this effect with the carrier.
- Check gas type and pressure to be used on heaters.
- Check the content of each box.



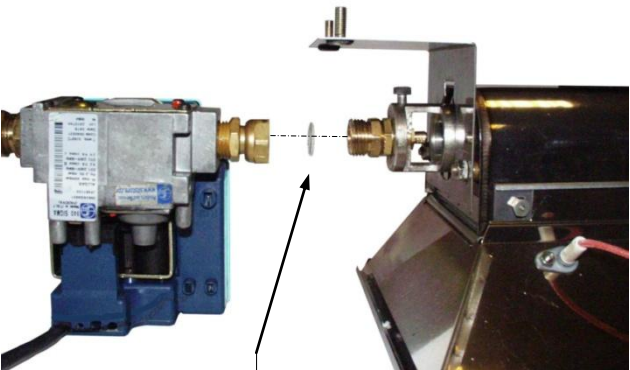
REP.	PART	QUANTITY
A	Radiant gas heater	1
B	Covering box	1
C	Bracket for covering box	1
D	Hex nuts H-M6	4
E	Spacing ring	2
F	Wire passage	1
G	840 SIGMA valve + EBC 579 DBC+ Prewired plug 1m assembled	1
H	User manual	1

3.4 Heaters assembling procedure

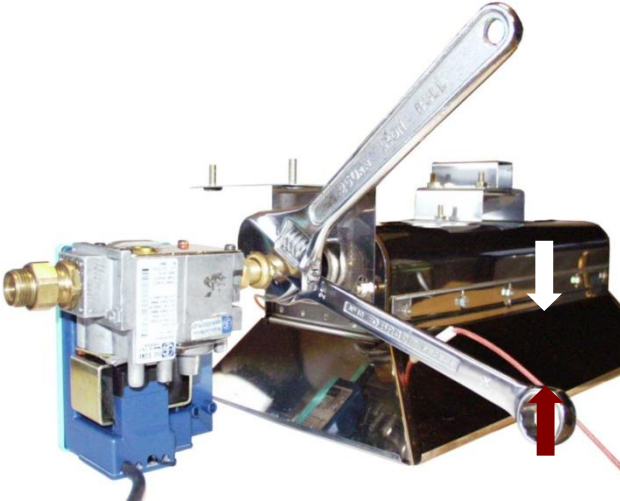
- Mounting of the bracket for the covering box, on the heater



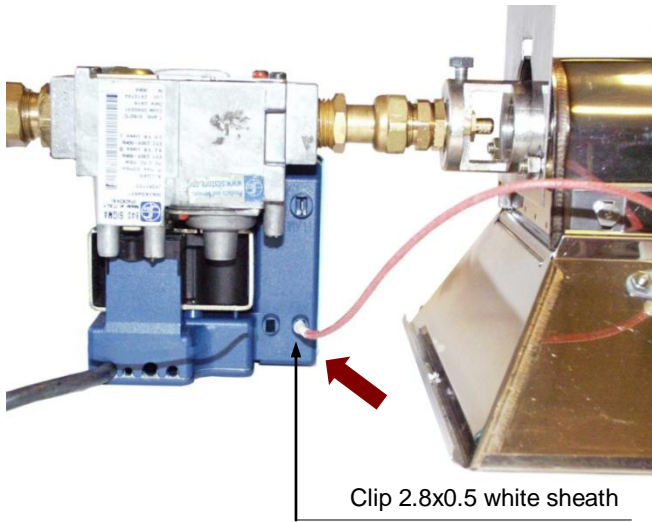
- Assembling of the 840 SIGMA valve on the heater



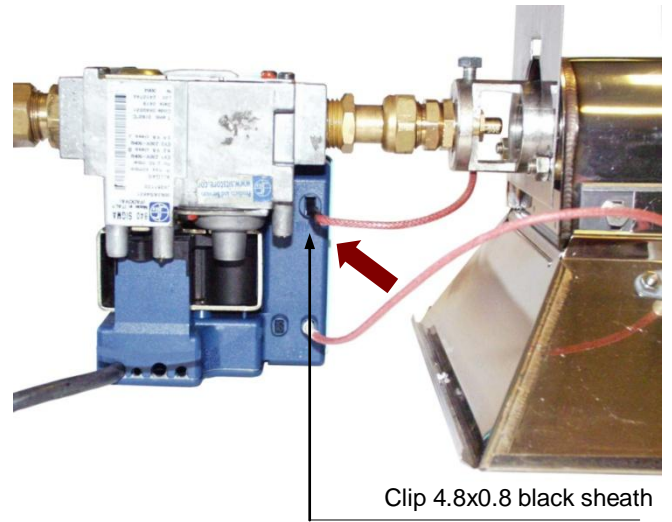
Do not forget the gasket!



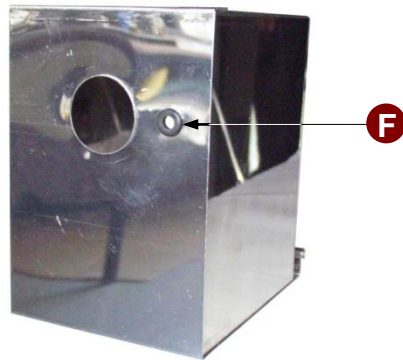
- ❑ Connection of the ignition electrode



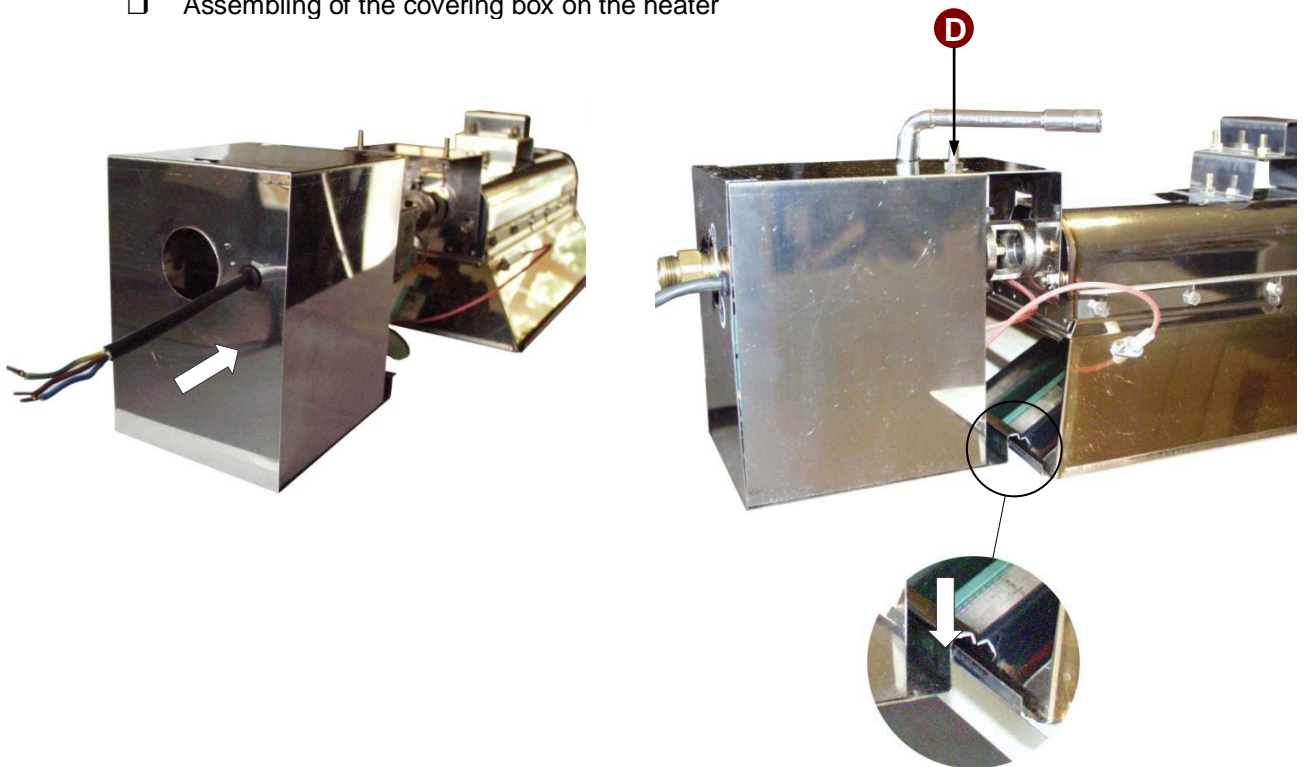
- ❑ Connection of the flame detector



- ❑ Assembling of the wire passage on the covering box



- ❑ Assembling of the covering box on the heater



3.5 Fixing of heaters

- Minimum recommended **safety** heights:

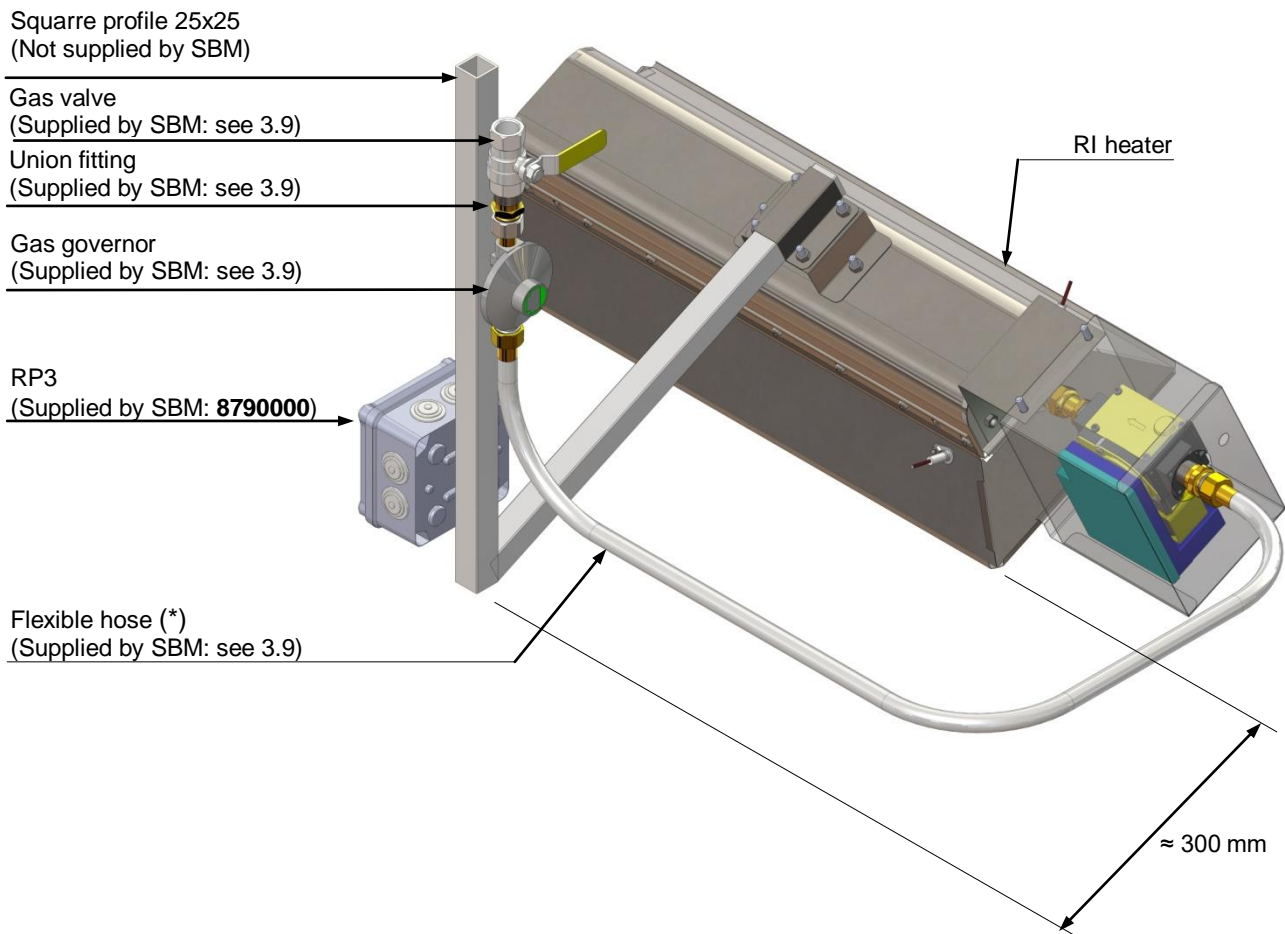
MODEL	MIN. HEIGHT (m)
RI 6	3.00
RI 8	3.10
RI 10	3.20
RI 12	3.40
RI 16	3.60

- Minimum comfort heights: refer to the specific SBM case study for each project.

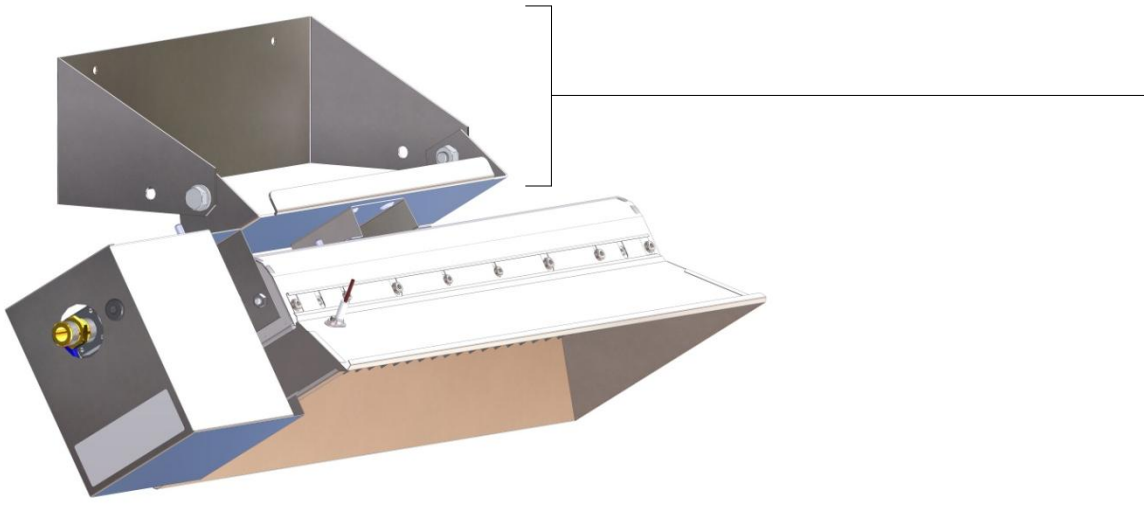
Special application: **TERRACES HEATING**

MODEL	MIN. HEIGHT (m)
RI 6	2.20
RI 8	2.20
RI 10	2.20
RI 12	2.50
RI 16	2.50

- Example of hanging brackets to be manufactured by the installer

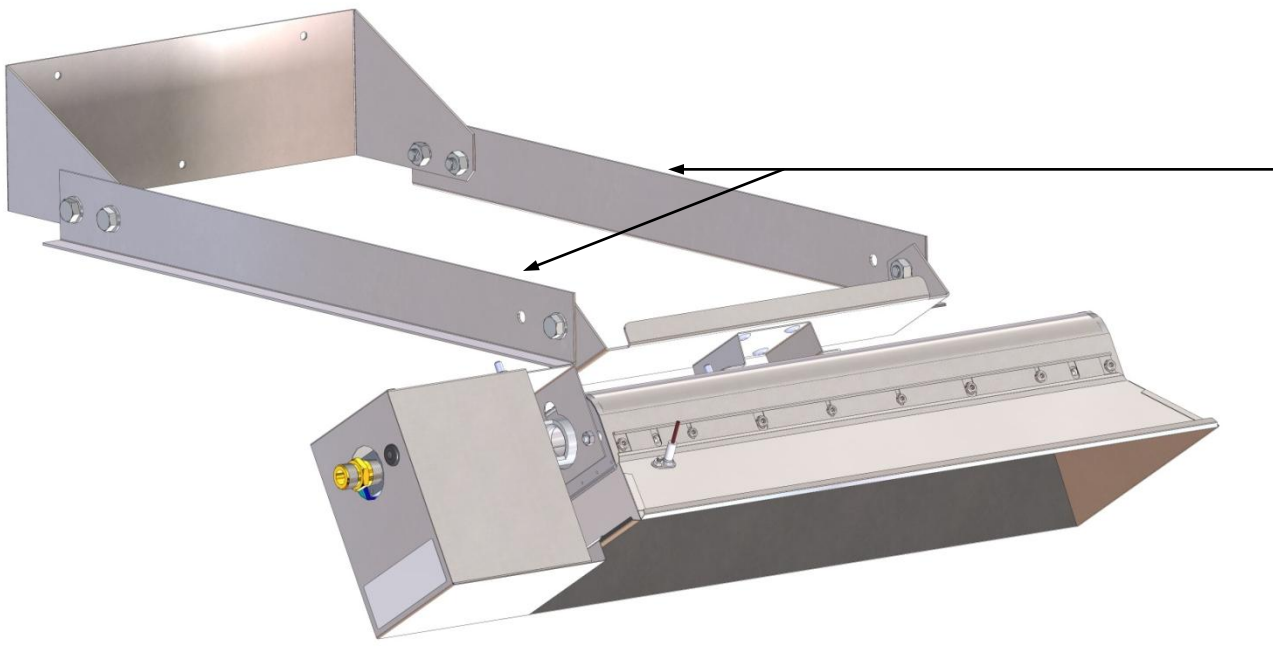


- Example of orientable hanging brackets supplied by SBM for RI 6 to RI 16



Art n°	Designation	Model
18515	BRACKET B6-B8-B10	RI 6, RI 8, RI 10
18516	BRACKET B12-B16	RI 12, RI 16

With these brackets, it is possible to use an 60 cm extension to deport the radiant from the wall.



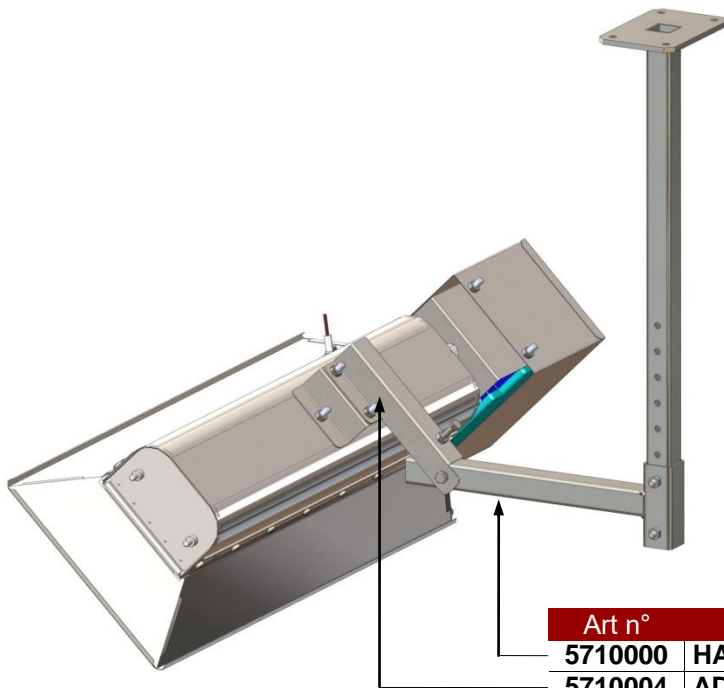
Art n°	Designation	Model
18602	EXTENSION 60CM INOX	RI 6 to RI 16

- Example of fixation with XD/XDI hanging bracket and adapter for RI 6 à RI 16.

With the bracket and adapter, it is possible to install the heater to the ceiling or the wall.



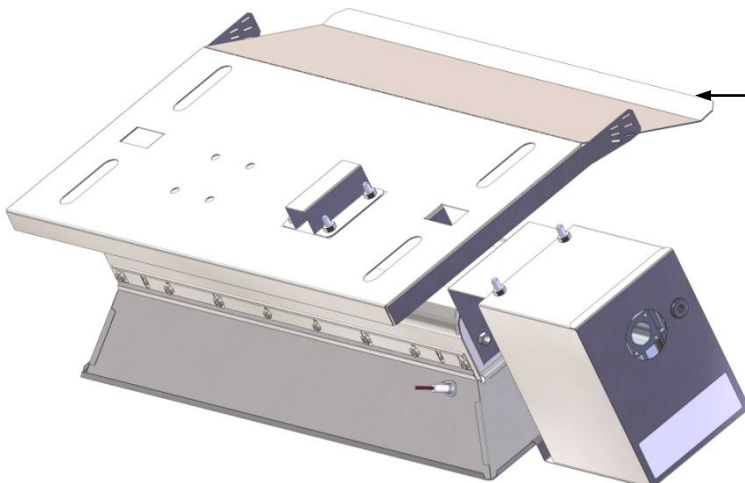
Bracket installation: see instructions **05000396**.
Adapter installation: see instructions **05000724**.



Art n°	Designation	Model
5710000	HANGING BRACKET FOR XD/XDI	RI 6 to RI 16
5710004	ADAPT. ORIEN. BRACKET XD/XDI	

3.6 Accessories

- Deflectors:
To use when heat protection above the heater is necessary (see chapter 3.7).



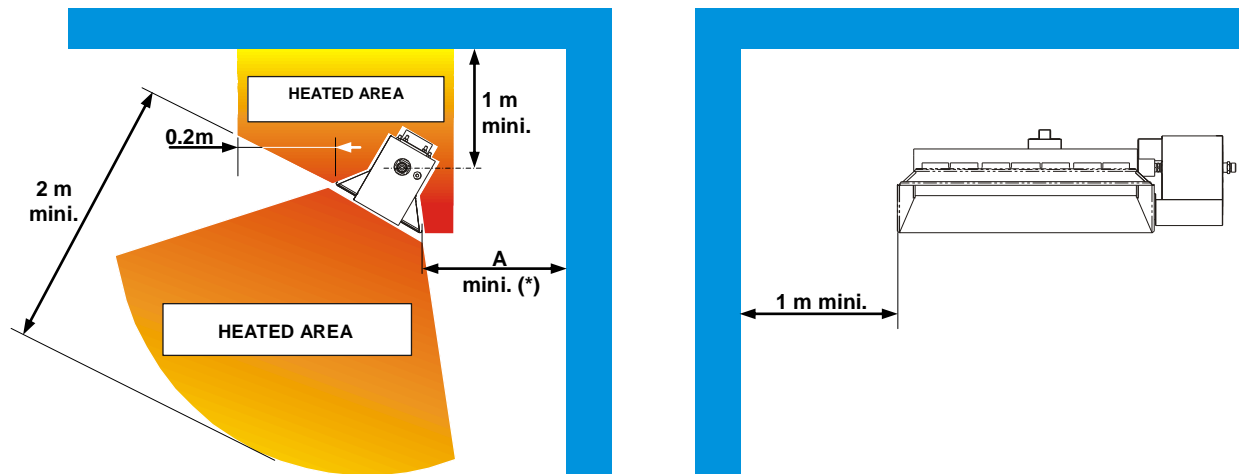
Art n°	Designation	Model
5710034	HEAT DEFLECTOR 8 i	RI 8 inclin. i
5710035	HEAT DEFLECTOR 10 i	RI 10 inclin. i
5710036	HEAT DEFLECTOR 12 i	RI 12 inclin. i
5710037	HEAT DEFLECTOR 16 i	RI 16 inclin. i

Installation: see instructions **05000575**.



There is no deflector available for RI 6 heater.

3.7 Minimum safety clearances



(*) For an inclination "I" or a slope "P" between 20° and 35°, A=0.6m.



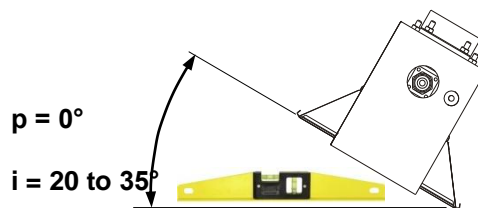
Inflammable materials ($\theta_{max} = 70^{\circ}\text{C}$), electric cables or gas pipes, shall not be located into the heated area



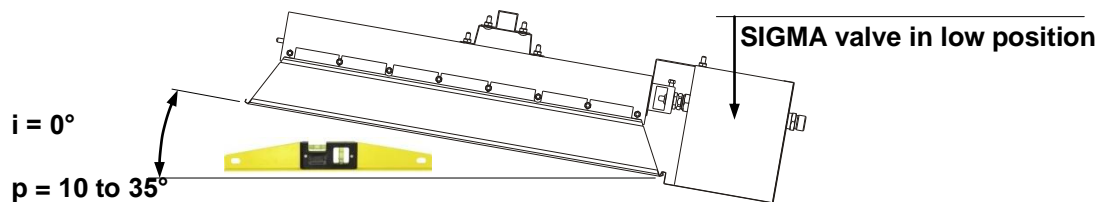
In the case where the distances cannot be respected, provide a thermal protection above the heater (see 3.6)

3.8 Inclination of heaters

- ☐ Lateral inclination "i".



- ☐ Longitudinal inclination "p"



In all cases, inclination "i" or slope "p" shall be at least 10°.



The "P" and "I" values recommended for your installation are indicated on the SBM plan attached to the case study (if one has been carried out).



The « rainfall » position corresponds to $i = 0^{\circ}$ or $p = 10^{\circ}$.



Always position the gas inlet in low position

3.9 Gas connection



Before installation, check that local conditions of supply, gas type/pressure and equipment settings are compatible.



Gas piping shall not be located into a heated area.
(voir 3.7)



The gas pipes shall not product forces on the gas valve of the heater : use a gas flexible hose with a length between 0.5 m and 2 m.

MEDIUM PRESSION GAS SUPPLY

Gas supply pressure P_G greater than heater nominal inlet pressure
(see 2.2).

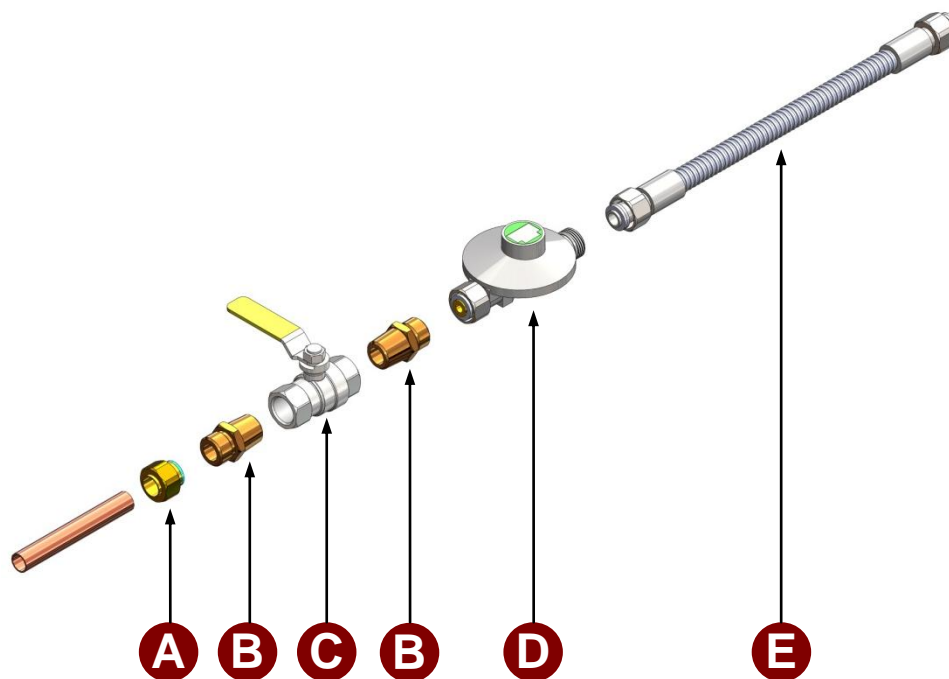
GAS	GAS NETWORK PRESSURE
G20	200 mbar to 1.5 bar maxi
G31	200 mbar to 1.5 bar maxi

LOW PRESSURE GAS SUPPLY

Gas supply pressure P_G identical to heater nominal inlet pressure
(see 2.2).

GAS	GAS NETWORK PRESSURE
G20	20 mbar
G31	37 mbar

□ Gas supply kits



		A	B	C	D			E	
					FITTING FOR SOLDERING 12 G1/2			FLEXIBLE HOSE G1/2F ERP 750mm	
					UNION FITTING R1/2m-G1/2m			METALLIC HOSE G1/2F 700mm	
					Rp1/2 DN15 VALVE				
					DF64 G1/2 G31-37 4KG/H				
					DF64 G1/2 G20-20 3M3/H				
					DF64 G1/2 G25-25 3M3/H				
					DF64 G1/2 G20-20 4BAR 6M3/H				
					METALLIC HOSE G1/2F 700mm				
					FLEXIBLE HOSE G1/2F ERP 750mm				
9805038	KIT GAZ 1x0.7m G20 0.3b	1	2	1	-	1	-	1	-
9805042	KIT GAZ 1x0.7m G31 1.5b	1	2	1	1	-	-	1	-
9805050	KIT GAZ 1x0.7m G20 4b	1	2	1	-	-	-	1	-
9805052	KIT GAZ 1x0.7m BP	1	2	1	-	-	-	1	-



Gas flexible hoses exist in **1500 mm** length, please contact SBM.

Assembling: see instructions **05000570**.

3.10 Electrical connections

See diagram of a typical installation (3.2)



Electrical connections must be made in accordance with I.E.E regulations.



Connect all radiants to the EARTH.



Electrical cables and bypass boxes must not be placed in a radiant heating zone.

(see 3.7)



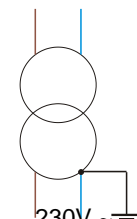
No tension, even temporary, between Neutre and Ground is allowed.

In case of installation without neutral (or poor quality neutral), provide an insulation transformer to create an artificial neutral.

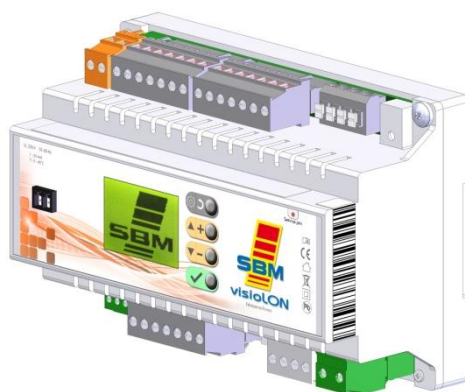
To do this, connect a terminal of the secondary of the transformer directly to the ground.

- ❑ Control : **RI** radiant heaters are controlled by **VisioLon Ind-I** programmable control module (SBM reference: **8050202**)
See technical instructions **05000635**.

230V ~



230V ~
L + N + G
To Control module



Each module can control **2 separated heating zones**.

This module shall be installed into a waterproof electrical box or a power distribution cabinet.

KIT ENCLOSURE 2 ZONES (SBM reference: **9704014**), including:

- Un watertight enclosure IP65 1 row 12 M with transparent door and ground terminal
- Residual current circuit breaker 16A - 30mA

Ce kit permet l'installation du module de contrôle pour piloter **40 radiants maximum** par zone.

KIT ENCLOSURE.REL. 2 ZONES (SBM reference: **9704015**), including:

- Un watertight enclosure IP65 1 row 12 M with transparent door and ground terminal
- Residual current circuit breaker 16A - 30mA
- 2 x power relays 230VAC 10A

This kit allows the installation of the VISIOLON Ind-I to control up to 100 radiant heaters per heating area.

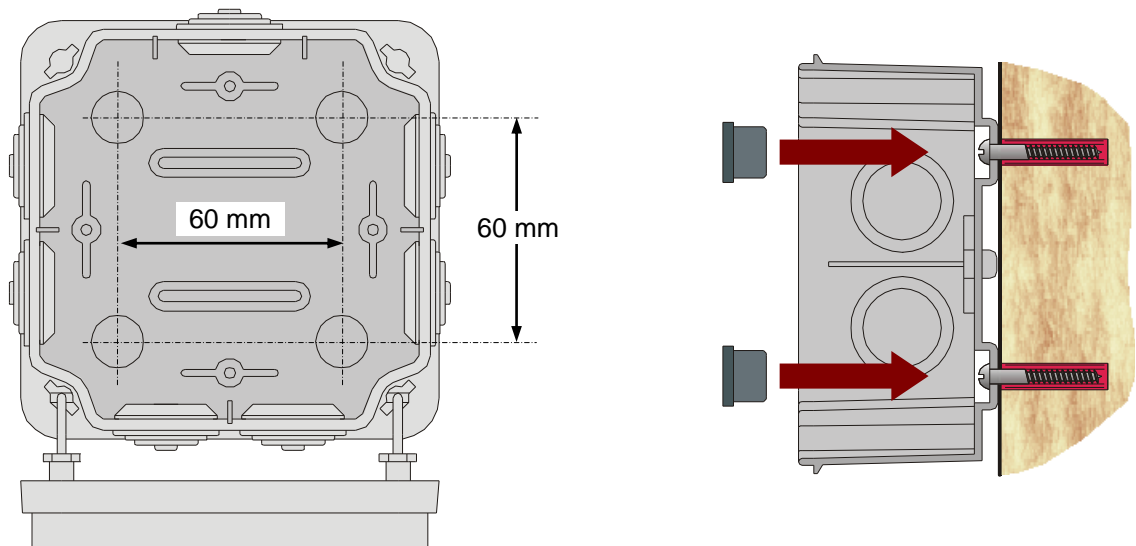
- ❑ Temperature sensor location (1 per zone)
 - Install the sensor at around 1,5 m from the ground between 2 heaters, in order to it receive an homogeneous radiation.
 - Do not install the sensor in the direct sun radiation.
 - Isolate the sensor from the wall where it is install to avoid the cold radiation of the wall, by an insulated material (glasswool, wood...).


- The connection between the sensor and the module shall be done with the SBM shield cable:
ROLL SENSOR CABLE 20M/66FT (SBM reference: **8791000**)
ROLL SENSOR CABLE 60M/197FT (SBM reference: **8791001**)
ROLL SENSOR CABLE 300M/984FT (SBM reference: **8791002**)
- In every case, do not install this cable into cables path with power cables.


- ☐ Types of connection cables

LINK	TYPE OF CABLE
Control unit to RP3 (and RP3 to RP3)	3-core 0.75mm ² 85°C temperature rated PVC sheathed cable to BS6500 Table 9.
RP3 to heater	Use the connector supplied with the heater. Green/Yellow wire : EARTH / GROUND Blue wire : NEUTRAL Brown wire : LIVE
Control unit to sensor	Use the coaxial cable supplied by SBM (see above).

- ☐ RP3 quantity: **1 RP3 per radiant heater from RI 6 to RI 16.**
- ☐ Fixing RP3 units: see instructions supplied in the box.



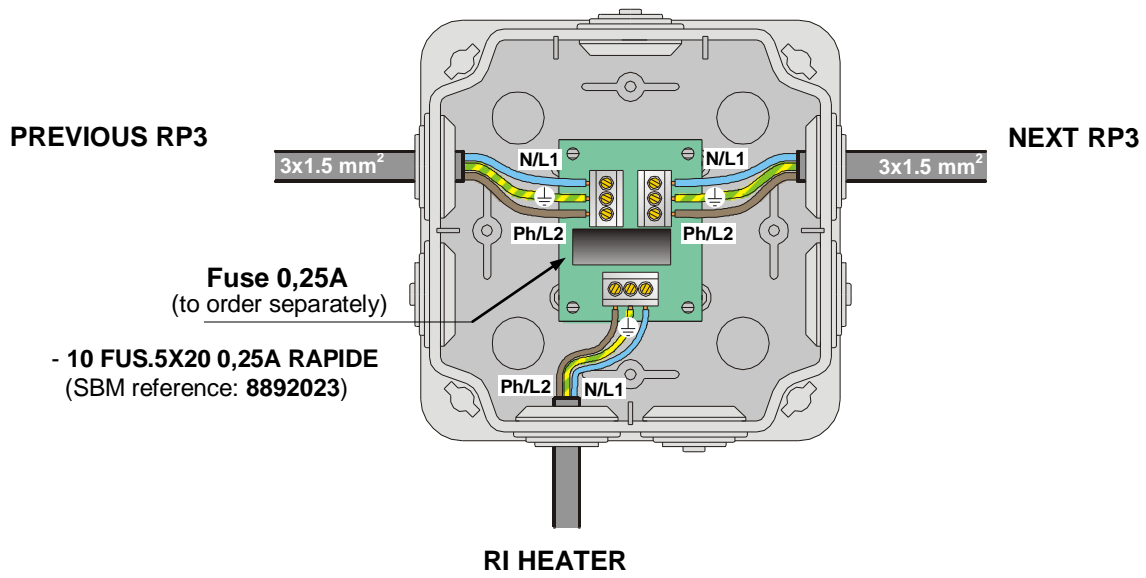
 **Always set the plastic protective plastic cap if the box is fasten form inside.**

 **Install the *RP3 box* at less than 1 meter from the 579 DBC burner control of the heater, because the prewired plug are 1 meter length.**

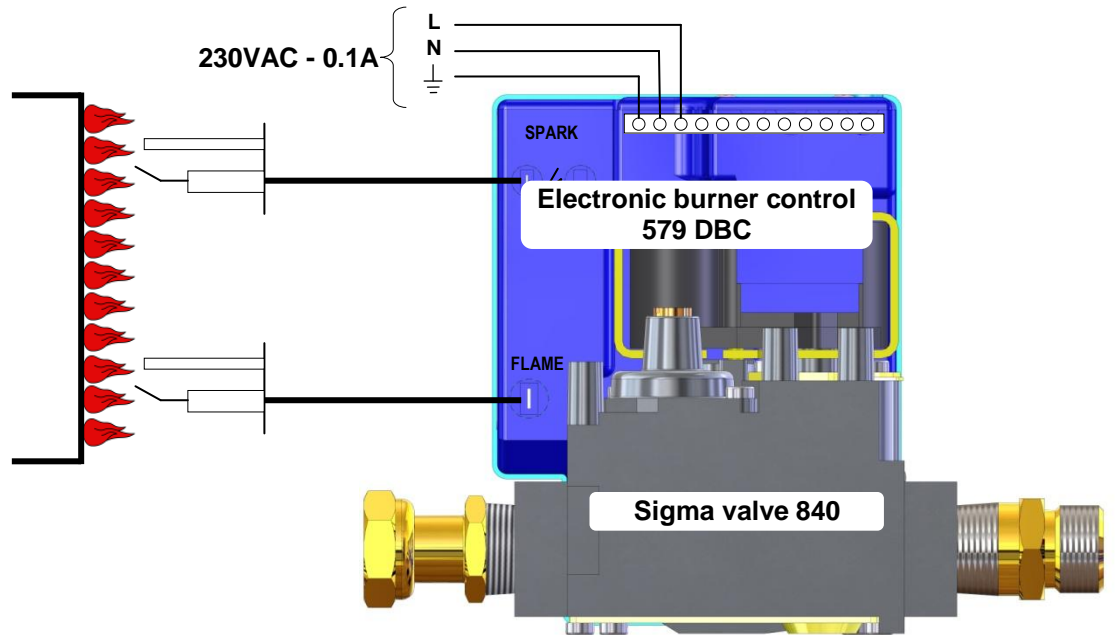


The box shall not be located into the heated area around the heater
(voir 3.7)

- Connect the heater to the RP3 according to the following diagram:



- Internal electrical diagram of the heater

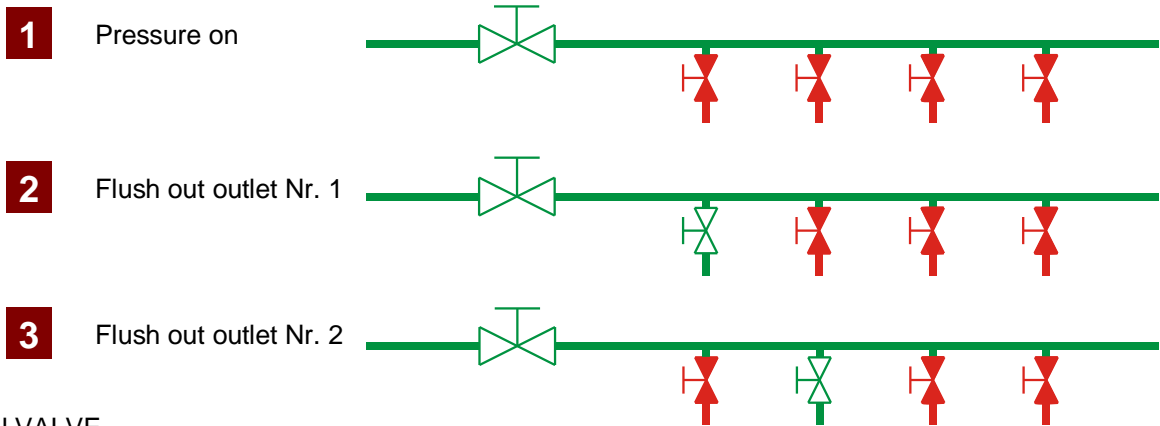



3.11 Start Up


- ❑ Clean out

Objective : flush out impurities in the gas piping

Principe : clean out gas piping with dry air, or even better with nitrogen, **AFTER DISCONNECTING ALL ACCESSORIES.**

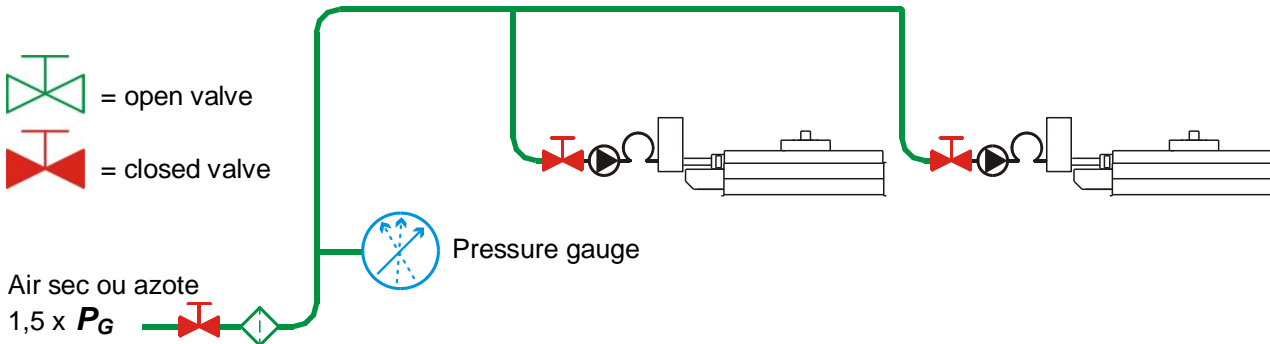



 = OPEN VALVE


 = CLOSED VALVE

- ❑ Contrôle d'étanchéité gaz des **installations industrielles**

- Ensure that the installation is at a pressure (nitrogen or dry air) equals to 1.5 times the gas operating pressure P_G
- Turn off the nitrogen or dry air supply and wait 15 minutes for the pressure to stabilise.
- Check the pressure gauge.
- After two hours, the pressure gauge need must still show **the same pressure**.
- If pressure has dropped, detect leaks with a foaming product, fix them and repeat the operation.



 = open valve

 = closed valve

Air sec ou azote
 $1,5 \times P_G$

Pressure gauge



***This principle is only a guideline.
Local regulations may apply.***

☐ First start-up

a) Preliminary checks:

- * calibration of control unit fuses
- * ground fault breaker operation ("TEST" button)

b) Initial settings:

- * main valve closed
- * individual valves open
- * ground-fault breaker set to "ON"
- * thermostat or programmable controller set to correct temperature setting

c) Ignition

- Open the main gas valve
- Check the settings (temperature, time)
- Change the module programming if required
- Check the operating cycle:
 - . Ignition with a set of sparks
 - . If after 3 attempts of 30 seconds, the flame is not detected, it is go in safety state.
 - . The sequence of ignition can begin again only after switching the power off. After 5 seconds, switch the power on.
 - . The heater is on as long as : power supply is on and the valves are opened.
 - . If for any reason, the flame is no longer lit, the heater starts a new ignition cycle

d) Checking of injection gas pressure

* The injection pressure of each heater p_i shall be equal to the indicated value into the table shown paragraph 2.2 pages 5 and 6.

* Proceed as following:

- . Open the screw of pressure plug (2 or 3 turns)
- . Connect a manometer (with adapted range) to the pressure plug
- . If the read value is different from the theoretical value shown into the table, check the gas supply pressure and check the property of gas filter
- . Disconnect the manometer
- . Tighten the screw of the pressure plug



Do not forget to tighten the screw of the pressure plug



Proceed to the injection pressure checking when **all the heaters are operating.**

e) Tightness of heater connection

* for each heater, check gas tightness with a foaming product, from the outlet of the individual valve to the outlet fitting of the 840 SIGMA valve.

4. RECEIPT OF INSTALLATION



To be performed by the installer in the presence of the customer.

- Check that **the gas type and pressure comply with** the type of heater installed (see rating plate)

- Check that an **individual valve** is installed prior to each heater.

- Check that the "**RI 6 / 8 / 10 / 12 / 16 USER GUIDE**" (Manual operation or Automatic control) is displayed next to the control unit, after being **stamped by the installer**.

- Indicate to the customer the **locations** of:
 - Gas valves.
 - **Electrical switches**
 - **Control units**

- Explain** to the customer how all **control units operate**.

- Plan the **initial maintenance visit (1 year** after start-up).



Give to the user an example of each instructions included into the box and the installer instructions.

5. MAINTENANCE



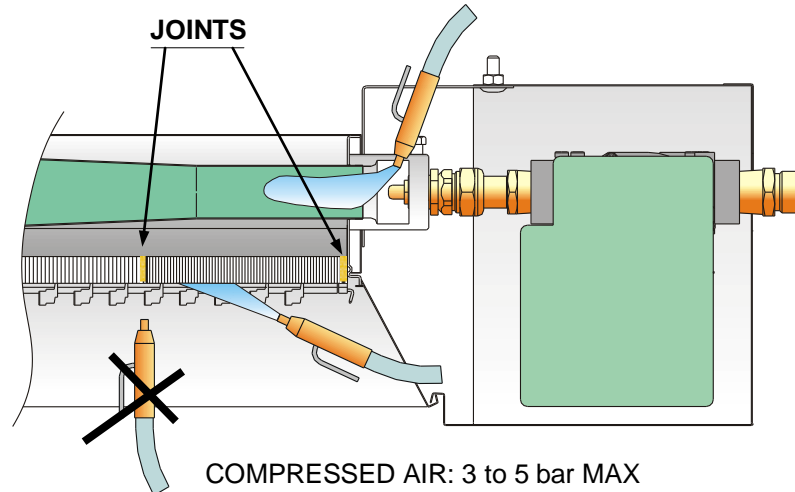
Do not forget to turn off the concerned appliance and to close the gas valve before maintenance operation.



List of operation to realise during the yearly maintenance visit:

- Removal of dust from heaters

- On site, without disassembly, heaters off and cold.



**DO NOT BLOW AIMING AT JOINTS BETWEEN CERAMIC PLATES
(Risk of damaging the burner)**

- Check condition of ceramic plates (**visual inspection**).
- Check heater fixing
- Check tightness of gas accessories
- Check heater operation:
Switch on all heaters, check ignition and combustion. A combustion temperature of approximately 900°C (uniform orange red colour) ensures heater cleanliness and correct gas supply pressure.
- Check the good operation of control unit(s).
- Check all temperatures settings



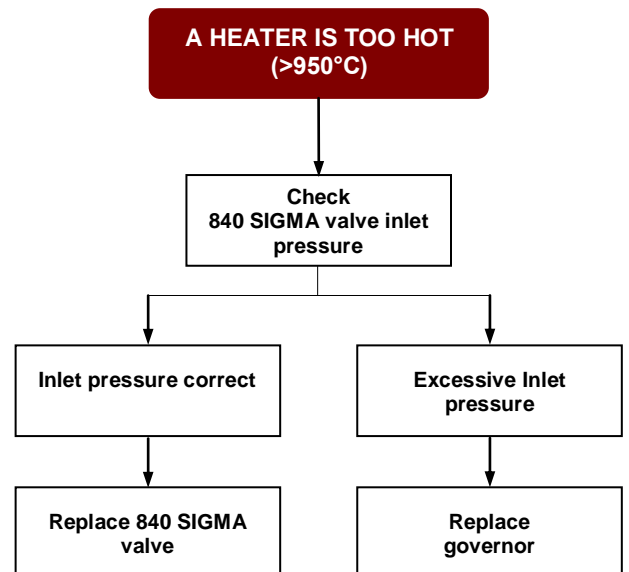
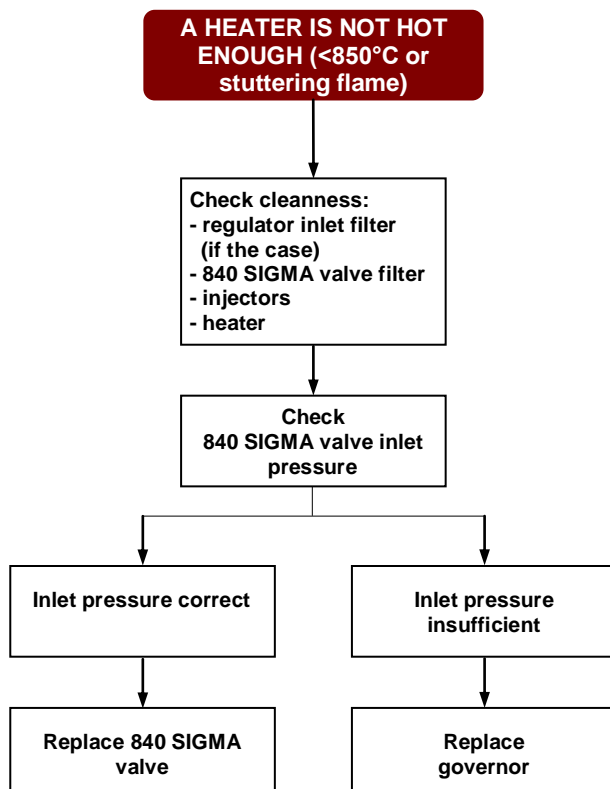
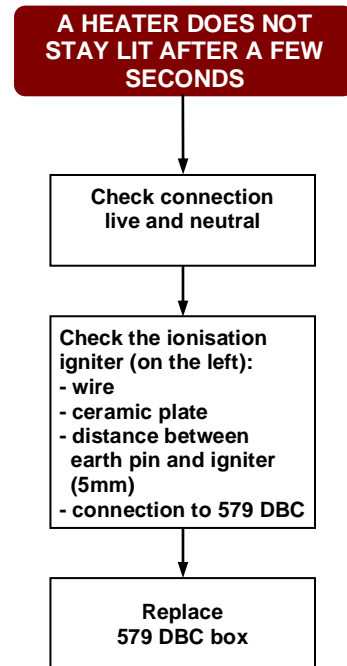
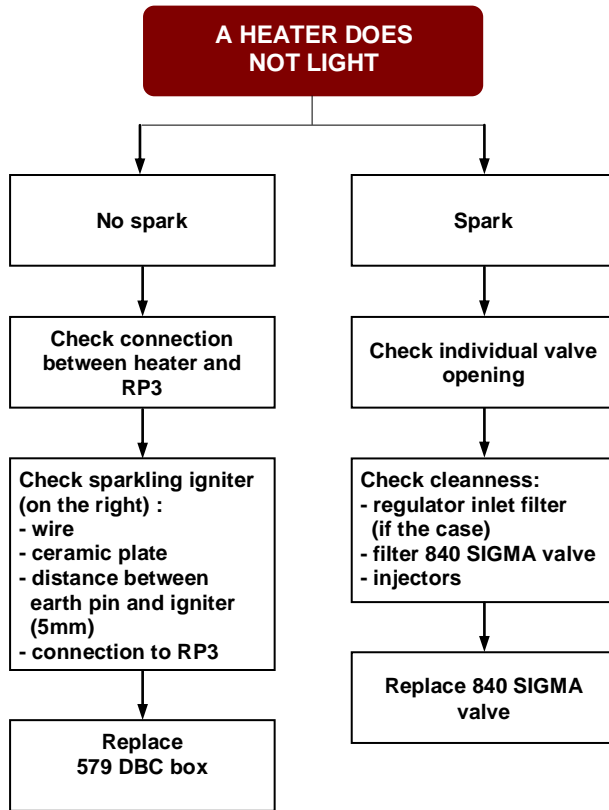
Once the maintenance done, reset the installation settings with initials.

6. REPAIRS

- ☐ Troubles on a single heater



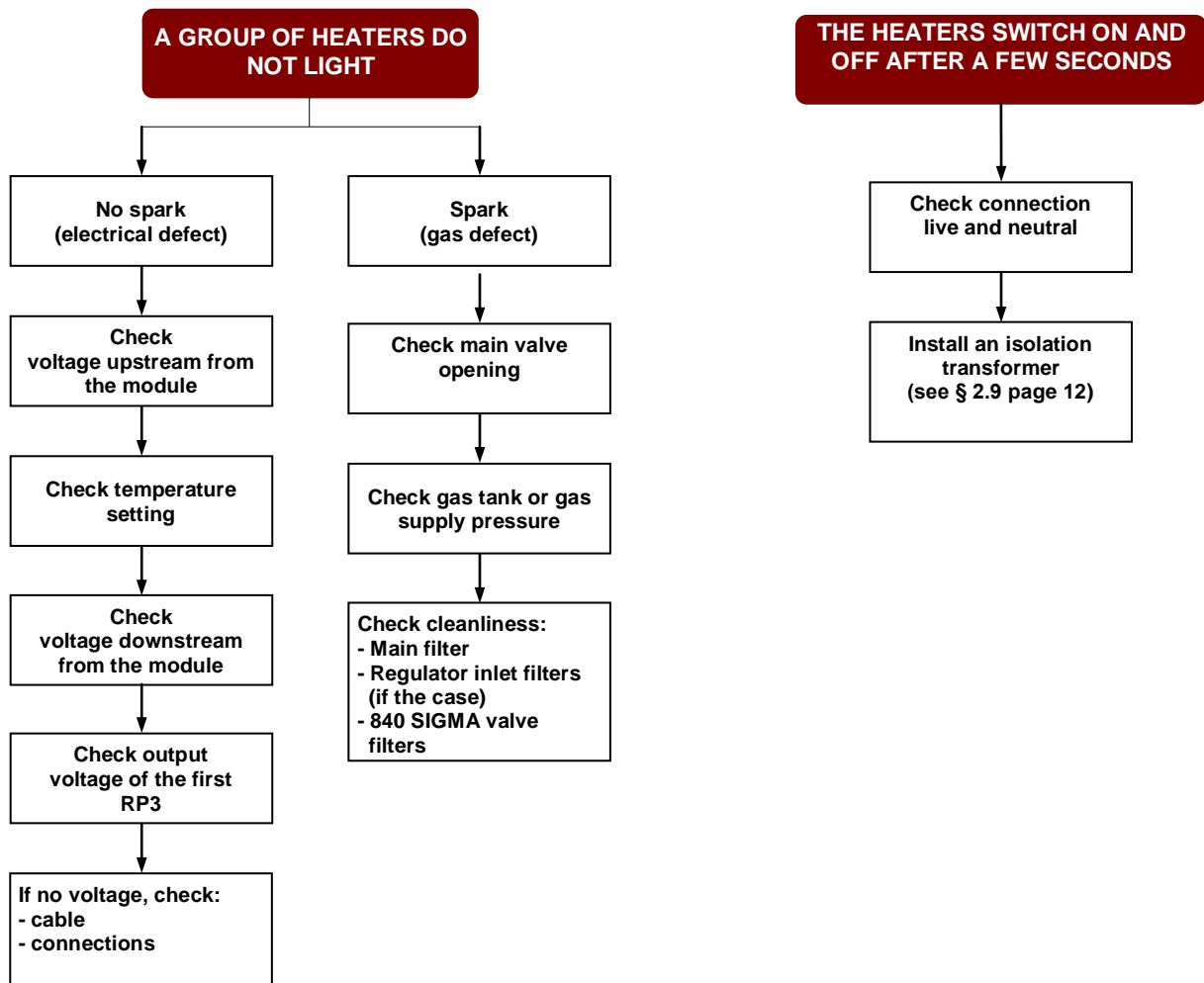
First, do not forget to check the compatibility of the heaters with the gas type and pressure.



- ☐ Troubles on a group of heaters.



First, do not forget to check the compatibility of the heaters with the gas type and pressure.



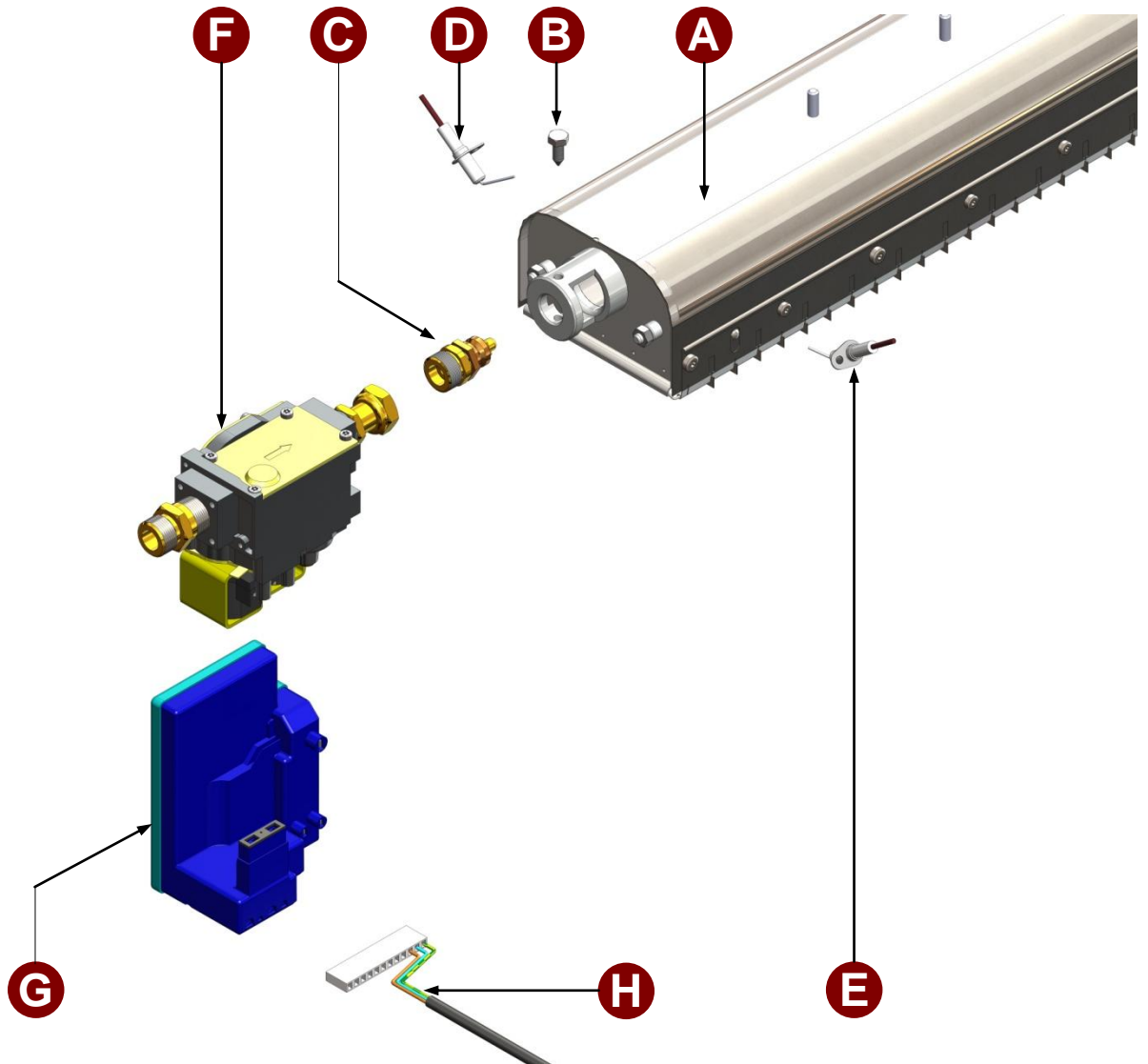
- ☐ Spare parts for RI radiant heaters.



For all order of spare parts, please specify:

- The radiant type and its serial number
- The gas type.
- The gas pressure.

All these informations are shown on the data label stick on the heater.



REP	SPARE PARTS		
	SBM Designation	Information	
A	5006010	BR 6 SX 96	Burner for RI 6
	5008010	BR 8 SX 96	Burner for RI 8
	5010010	BR 10 SX 96	Burner for RI 10
	5012010	BR 12 SX 96	Burner for RI 12
	5016010	BR 16 SX 96	Burner for RI 16
B	9804000	10 LOCKING SCREW 6X100/16	Supplied by 10
C	5814603	BLOC U-0-XXX-XXX-00-A-12G	Supplied with injectors mounted for RI 6 RI 8, RI 10, RI 12 et RI 16
D	9801019	IGNITER 300 CLIP 4.8	Flame detection. Cable of 300 mm length with cos 4.8x0.8
E	9801020	IGNITER 250 CLIP 2.8x0.5	Ignition. Cable of 250 mm length cos 2.8x0.5
F	9803011	840 SOLENOID VALVE FITTING SET	Supplied with 2 gas fittings mounted and gasket
G	9803018	BLOCK 579 DBC 0579011	Supplied with 2 screws and gasket
H	9801021	RI CONNECTOR 1M/3FT	

7. CHANGING THE GAS USED



The gas conversion of the appliance shall be done by a qualified installer

- Gas used in Great Britain, Ireland and Turkey with the RI heater range

FAMILY	GAS	OPERATING PRESSURE
I ₂ H	G20	20 mbar
I ₃ P	G31	37 mbar

- Gas conversion:

To realise the gas conversion from one to another, please contact SBM.

- Principle

This operation must be done by a skilled technician.

It is composed of changing the BLOCK U-0-XXX-XXX-00-A-12G (see page 20) and setting the VALVE 840 SIGMA.

SBM can supply a conversion kit, composed of:

- one block: BLOCK U-0-XXX-XXX-00-A-12G with gas specific orifices.
- a gas changing label to stick near the rating plate.

With all conversion kit order, please indicate:

- type / serial number of the heater.
- gas type.
- operating pressure.

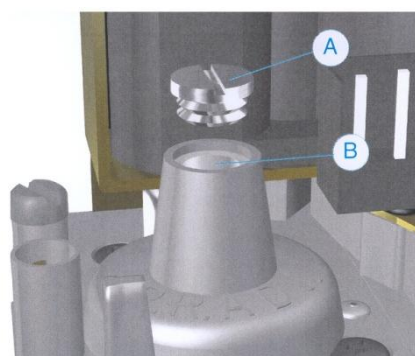
All this information can be found on the rating plate on the heater.

- Successive operations:

- Replace BLOCK U-0-XXX-XXX-00-A-12G.
- Light the heater.
- Check the inlet pressure of the heater by means of an appropriate pressure gauge connected to the pressure control socket **C**. (see table page 2 for inlet minimal, nominal and maximal pressures)
- Check the injecting pressure at pressure control socket **D**.
- Adjust this injecting pressure by means of setting screw **B** after removing the cap **A**. (see table page 2 for injecting pressures)
- When the regulator needs to be blocked, tight the screw **B** to maximum but without excessive force.



Do not forget to tight again the screws when removing gauge hose.



- Stick the new gas changing label near the rating plate.



When replacing a 840 SIGMA valve, check all settings as described above.

8. COMMISSION REGULATION (EU) 2015/1188

Requirements for product information applicable to commercial local space heaters

Luminous heaters RI

Model identifier	RI 6	RI 8	RI 10	RI 12	RI 16	RI 20	RI 20-2	RI 24	RI 24-2	RI 32	RI 32-2	RI 48-2	RI 64-2
Type of heating	Luminous heaters												
Fuel	Gaseous												
Space heating emissions													
NO _x emissions (mg/kWh _{PCS})	< 50												
Heat input													
Nominal heat input (kW _{PCS})	2,8	3,7	4,2	5,7	7,5	8,4	8,4	11,4	11,4	15,0	15,0	22,5	30,0
Minimum heat input e (kW _{PCS})	n.d	n.d	n.d	n.d	n.d	n.d	4,2	n.d	5,7	n.d	7,5	15,0	15,0
Minimum heat input e (% of P _{nom})	n.d	n.d	n.d	n.d	n.d	n.d	50	n.d	50	n.d	50	66	50
Radiant factor													
Radiant factor at nominal heat output	0,65	0,65	0,64	0,64	0,63	0,64	0,64	0,64	0,64	0,65	0,65	0,65	0,65
Radiant factor at minimum heat output	n.d	n.d	n.d	n.d	n.d	n.d	0,64	n.d	0,64	n.d	0,65	0,65	0,65
Auxiliary electricity consumption													
At nominal heat input (kW)	0,019	0,019	0,019	0,019	0,019	0,019	0,038	0,019	0,038	0,019	0,038	0,038	0,038
At minimum heat input (kW)	0,019	0,019	0,019	0,019	0,019	0,019	0,019	0,019	0,019	0,019	0,019	0,019	0,019
In standby mode (kW)	0	0	0	0	0	0	0	0	0	0	0	0	0
Heat output control type													
Single stage	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No
Two stages	No	No	No	No	No	No	Yes	No	Yes	No	Yes	Yes	Yes
Modulating	No	No	No	No	No	No	No	No	No	No	No	No	No
Seasonal efficiency													
Seasonal space heating efficiency	85,9 %	85,9 %	85,4 %	85,4 %	85,0 %	85,4 %	87,8 %	85,4 %	87,8 %	85,9 %	88,3 %	88,3 %	88,3 %

End of life :

SBM radiant heaters includes electronic elements (gas valve and electronic block) which must be brought to a collection point for waste electrical equipment and electronics (WEEE). Comply with the waste disposal regulations in force, when decommissioning



