



GAS INFRARED HEATERS

SX INSTALLER INSTRUCTIONS

Nr 05000048/11

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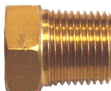
Manufacturer :
SBM
3 cottages de la Norge
21490 CLENAY - FRANCE

Agent :


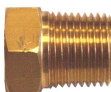
1. PRODUCT SPECIFICATION

1.1 Technical specifications :


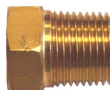
GAS : G20 (Natural gas) - Category : I₂Esi

MODEL	B6 SX	B8 SX	B10 SX	B12 SX	B16 SX	B20 SX	B20 2SX	B24 SX	B24 2SX	B32 SX	B32 2SX	B48 2SX	B64 2SX
Weight (kg)	2.5	2.9	3.1	3.4	4.1	5.0	5.0	5.5	5.5	6.7	6.7	9.4	12.2
Net calorific value ΣQn (kW) Hi	2.50	3.30	3.80	5.10	6.75	7.60	7.60	10.20	10.20	13.50	13.50	20.25	27.00
GAS													
Inlet pressure	20 mbar												
Injection pressure (mbar)	13.0	11.0	12.0	15.0	16.7	12.0	12.0	15.0	15.0	16.7	16.7	(See B)	16.7
Gas consumption (m³/h)	0.265	0.350	0.400	0.540	0.715	0.805	0.805	1.080	1.080	1.430	1.430	2.145	2.860
Ø prim. Inject. (1/100 mm)	170	180	195	240	320	260	2x195	380	2x240	-	2x320	(See A)	-
Ø sec. Inject. (1/100 mm)	135	165	170	180	195	2x170	2x170	2x180	2x180	2x195	2x195	(See A)	4x195
Gas input connection	Fitting G1/2" cylindrical (ISO 228-1) or Tapered fitting R1/2" conical (ISO 7-1)												
													
ELECTRICITY													
Power supply	230V (+10% -15%) - 50Hz Neutral mandatory												
Consumption	0.1A						2x0.1A	0.1A	2x0.1A	0.1A	2x0.1A		
Individual fuse	0.25A						2x0.25A	0.25A	2x0.25A	0.25A	2x0.25A		
Ignition cycle length	45 seconds												
VENTILATION													
Combustion air (m³/h)	2.60	3.40	3.90	5.30	7.00	7.90	7.90	10.50	10.50	13.90	13.90	21.00	27.80
Req. air change (m³/h)	25	33	38	51	67.5	76	76	102	102	135	135	202.5	270

GAZ : G31 (Propane) - Category : I₃p

MODEL	B6 SX	B8 SX	B10 SX	B12 SX	B16 SX	B20 SX	B20 2SX	B24 SX	B24 2SX	B32 SX	B32 2SX	B48 2SX	B64 2SX
Weight (kg)	2.5	2.9	3.1	3.4	4.1	5.0	5.0	5.5	5.5	6.7	6.7	9.4	12.2
Net calorific value ΣQn (kW) Hi	2.50	3.30	3.80	5.10	6.75	7.60	7.60	10.20	10.20	13.50	13.50	20.25	27.00
GAS													
Inlet pressure	37 mbar												
Injection pressure (mbar)	34.0	21.0	21.0	28.0	37.0	21.0	21.0	27.5	28.0	34.0	37.0	(See B)	34.0
Gas consumption (kg/h)	0.195	0.260	0.300	0.400	0.530	0.595	0.595	0.800	0.800	1.055	1.055	1.590	2.110
Ø prim. Inject. (1/100 mm)	155	140	130	180	-	185	2x130	240	2x180	370	-	(See A)	2x370
Ø sec. Inject. (1/100 mm)	82	105	110	125	135	2x110	2x110	2x125	2x125	2x135	2x135	(See A)	4x135
Gas input connection	Fitting G1/2" cylindrical (ISO 228-1) or Tapered fitting R1/2" conical (ISO 7-1)												
													
ELECTRICITY													
Power supply	230V (+10% -15%) - 50Hz Neutral mandatory												
Consumption	0.1A						2x0.1A	0.1A	2x0.1A	0.1A	2x0.1A		
Individual fuse	0.25A						2x0.25A	0.25A	2x0.25A	0.25A	2x0.25A		
Ignition cycle length	45 seconds												
VENTILATION													
Combustion air (m³/h)	2.30	3.10	3.60	4.80	6.30	7.10	7.10	9.60	9.60	12.60	12.60	18.90	25.20
Req. air change (m³/h)	25	33	38	51	67.5	76	76	102	102	135	135	202.5	270

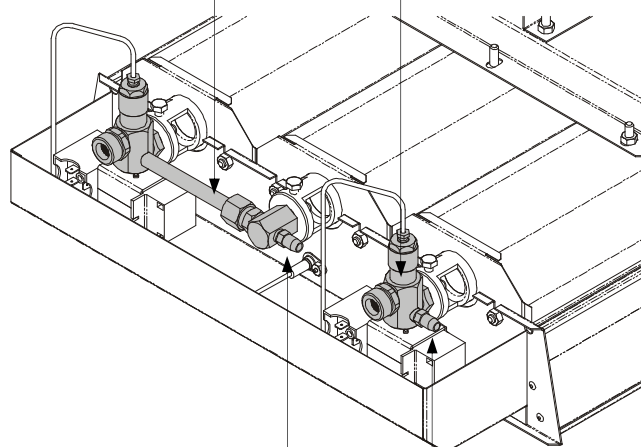
GAZ : G31 (Propane) - Category : I_{3p}

MODEL	B6 SX	B8 SX	B10 SX	B12 SX	B16 SX	B20 SX	B20 2SX	B24 SX	B24 2SX	B32 SX	B32 2SX	B48 2SX	B64 2SX
Weight (kg)	2.5	2.9	3.1	3.4	4.1	5.0	5.0	5.5	5.5	6.7	6.7	9.4	12.2
Net calorific value ΣQn (kW) Hi	2.50	3.30	3.80	5.10	6.75	7.60	7.60	10.20	10.20	13.50	13.50	20.25	27.00
GAS													
Inlet pressure	30 mbar												
Injection pressure (mbar)	30.0	21.0	21.0	28.0	30.0	21.0	21.0	28.0	28.0	28.0	30.0	(See B)	28.0
Gas consumption (kg/h)	0.195	0.260	0.300	0.400	0.530	0.595	0.595	0.800	0.800	1.055	1.055	1.590	2.110
Ø prim. Inject. (1/100 mm)	-	130	145	220	-	210	2x145	260	2x220	-	-	(See A)	-
Ø sec. Inject. (1/100 mm)	82	105	110	125	137	2x110	2x110	2x125	2x125	2x137	2x137	(See A)	4x137
Gas input connection	Fitting G1/2" cylindrical (ISO 228-1) or Tapered fitting R1/2" conical (ISO 7-1)												
													
ELECTRICITY													
Power supply	230V (+10% -15%) - 50Hz Neutral mandatory												
Consumption	0.1A						2x0.1A	0.1A	2x0.1A	0.1A	2x0.1A		
Individual fuse	0.25A						2x0.25A	0.25A	2x0.25A	0.25A	2x0.25A		
Ignition cycle length	45 seconds												
VENTILATION													
Combustion air (m³/h)	2.30	3.10	3.60	4.80	6.30	7.10	7.10	9.60	9.60	12.60	12.60	18.90	25.20
Req. air change(m³/h)	25	33	38	51	67.5	76	76	102	102	135	135	202.5	270

A

G20	prim : - sec : 2 x 195	prim : 320 sec : 195
G31-37	prim : 370 sec : 2 x 135	prim : - sec : 135
G31-30	prim : - sec : 2 x 137	prim : - sec : 137

B48-2SX

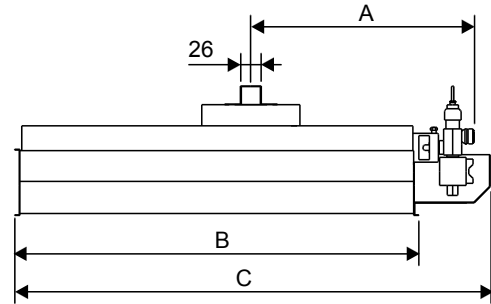
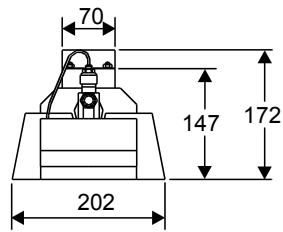


B

G20	16,7 mbar	16,7 mbar
G31-37	34,0 mbar	37,0 mbar
G31-30	28,0 mbar	30,0 mbar

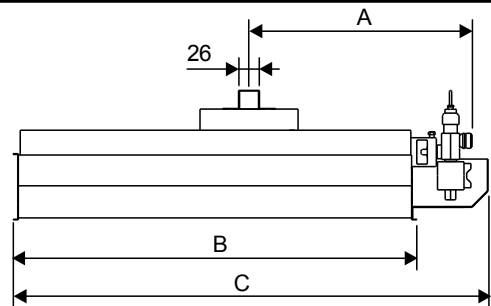
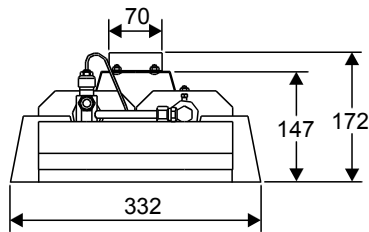
1.2 SX heater dimensions :

B6, B8, B10, B12 and B16 SX



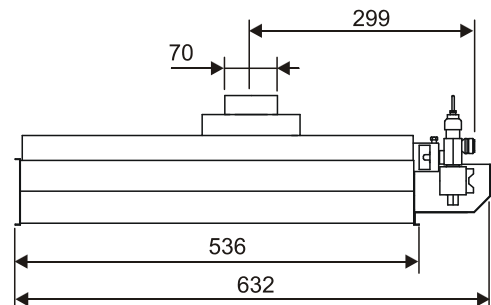
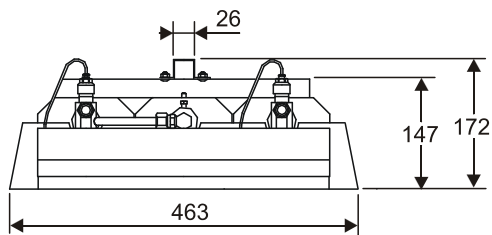
MODEL	B6-SX	B8-SX	B10-SX	B12-SX	B16-SX
A (mm)	186	218	243	281	299
B (mm)	222	285	334	411	536
C (mm)	318	382	431	508	632

B20, B20-2, B24, B24-2, B32 and B32-2SX

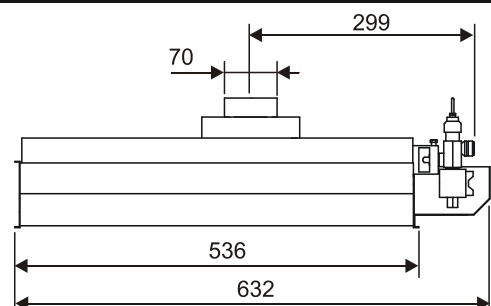
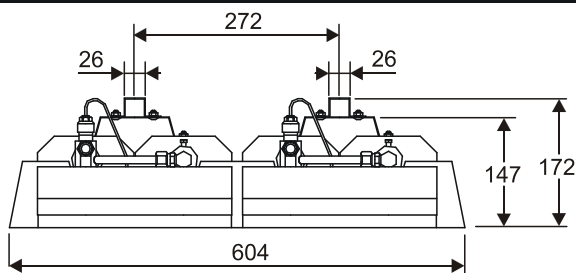


MODEL	B20-SX	B20-2SX	B24-SX	B24-2SX	B32-SX	B32-2SX
A (mm)	243	243	281	281	299	299
B (mm)	334	334	411	411	536	536
C (mm)	431	431	508	508	632	632

B48-2 SX



B64-2 SX



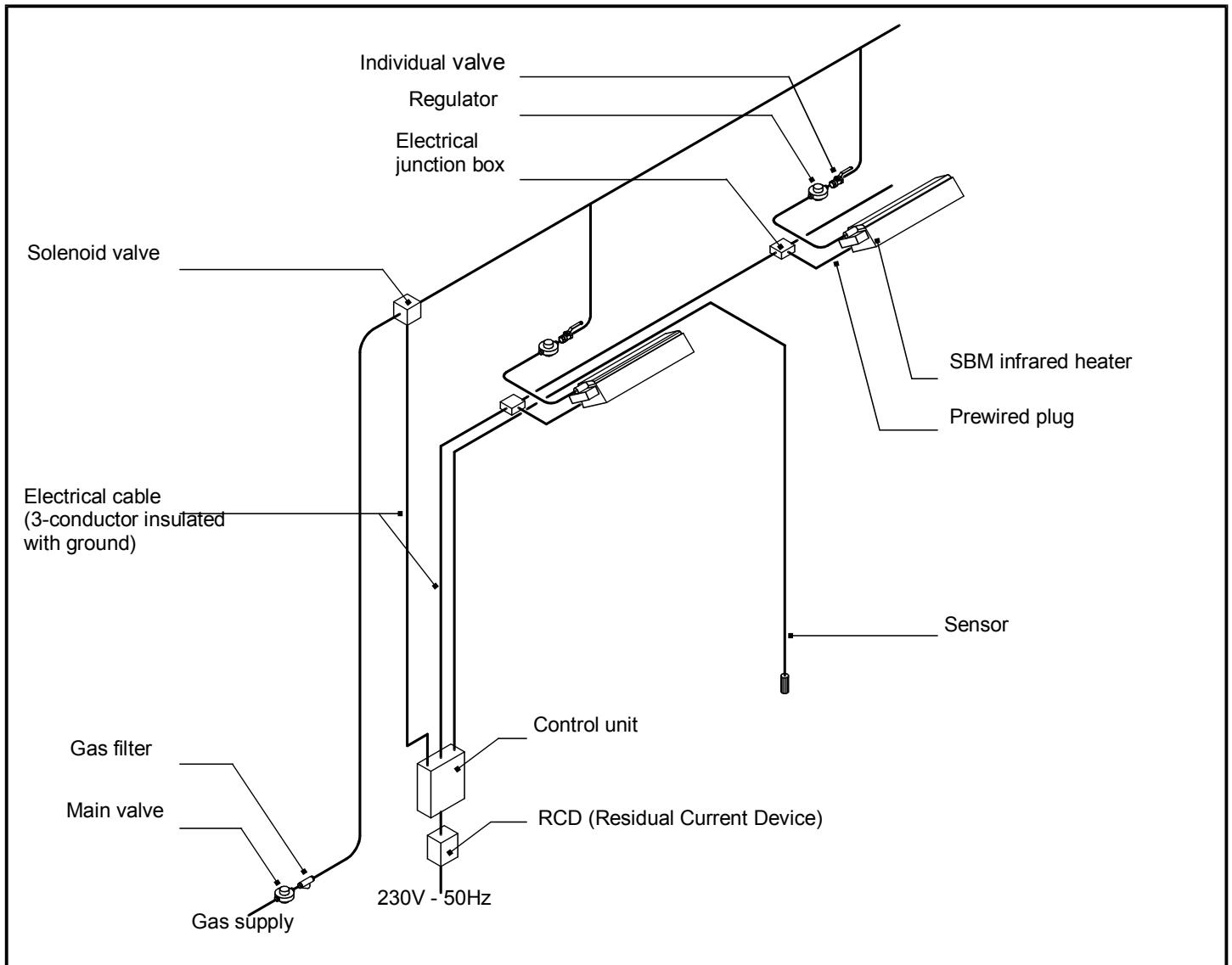
2. INSTALLATION

2.1 Regulations

THESE HEATERS MUST BE INSTALLED IN ACCORDANCE WITH APPLICABLE REGULATIONS AND IN WELL VENTILATED PREMISES.

- ❑ The ideal level of ventilation for the premises is 10 m³/h per kW of heating installed.

2.2 Diagram of a standard installation.



2.3 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, register a complaint to this effect with the carrier.
- ☐ Check gas type and pressure to be used on heaters.

2.4 Fixing of heaters

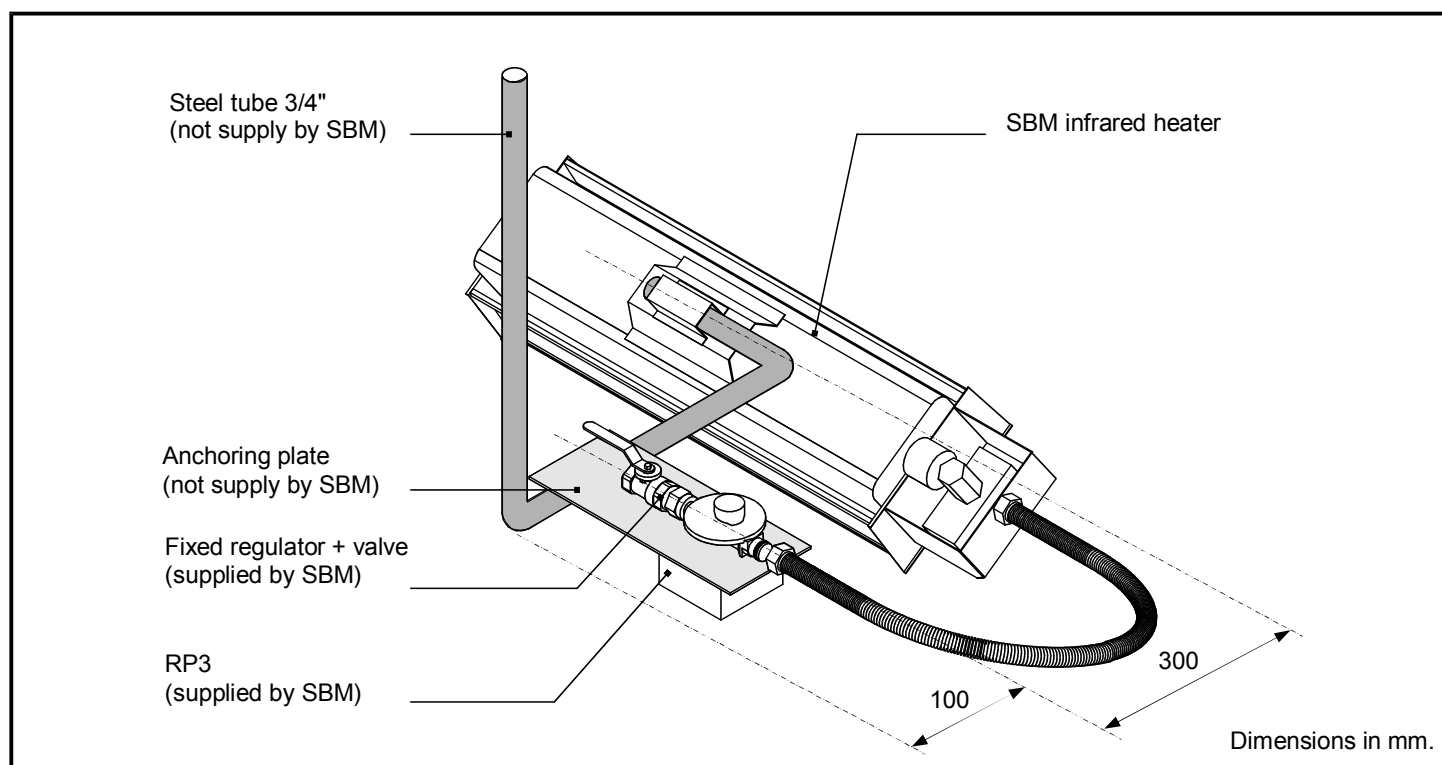
- ☐ Minimum recommended safety heights :

MODEL	MIN HEIGHT (m)
B6-SX	3.00
B8-SX	3.10
B10-SX	3.20
B12-SX	3.40
B16-SX	3.60
B20-SX / B20-2SX	3.80
B24-SX / B24-2SX	4.10
B32-SX / B32-2SX	4.50
B48-2SX	5.00
B64-2SX	5.50

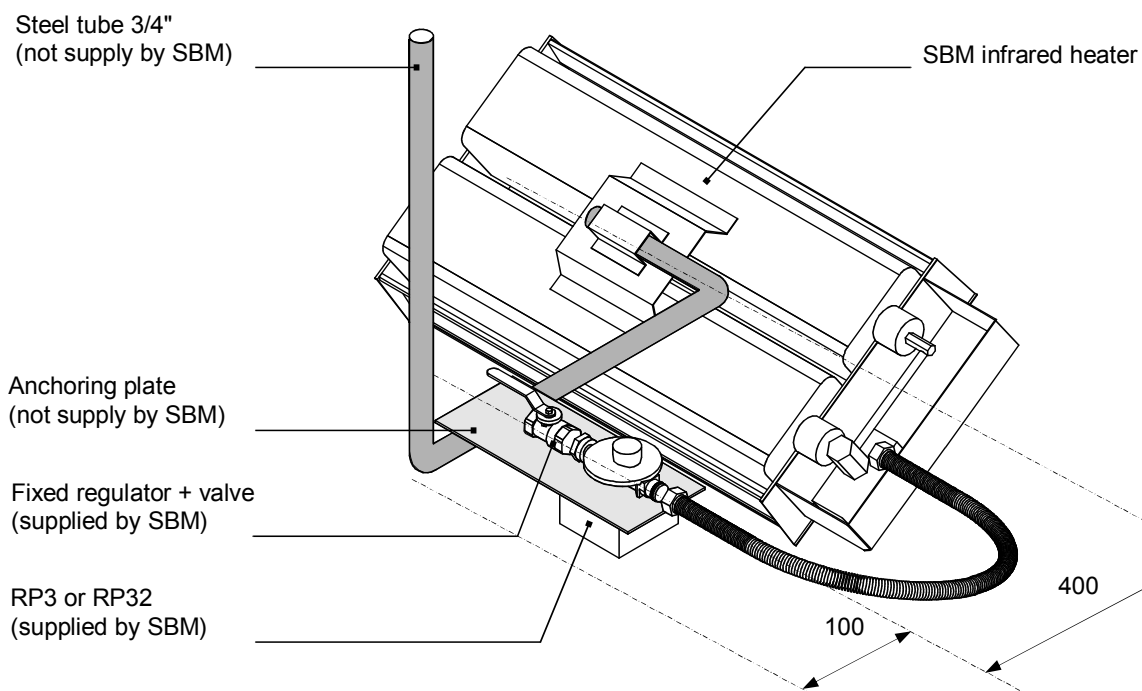
MINIMUM COMFORT HEIGHTS : refer to the specific SBM study for each project.

- ☐ Examples of fixtures to be supplied by the installer :

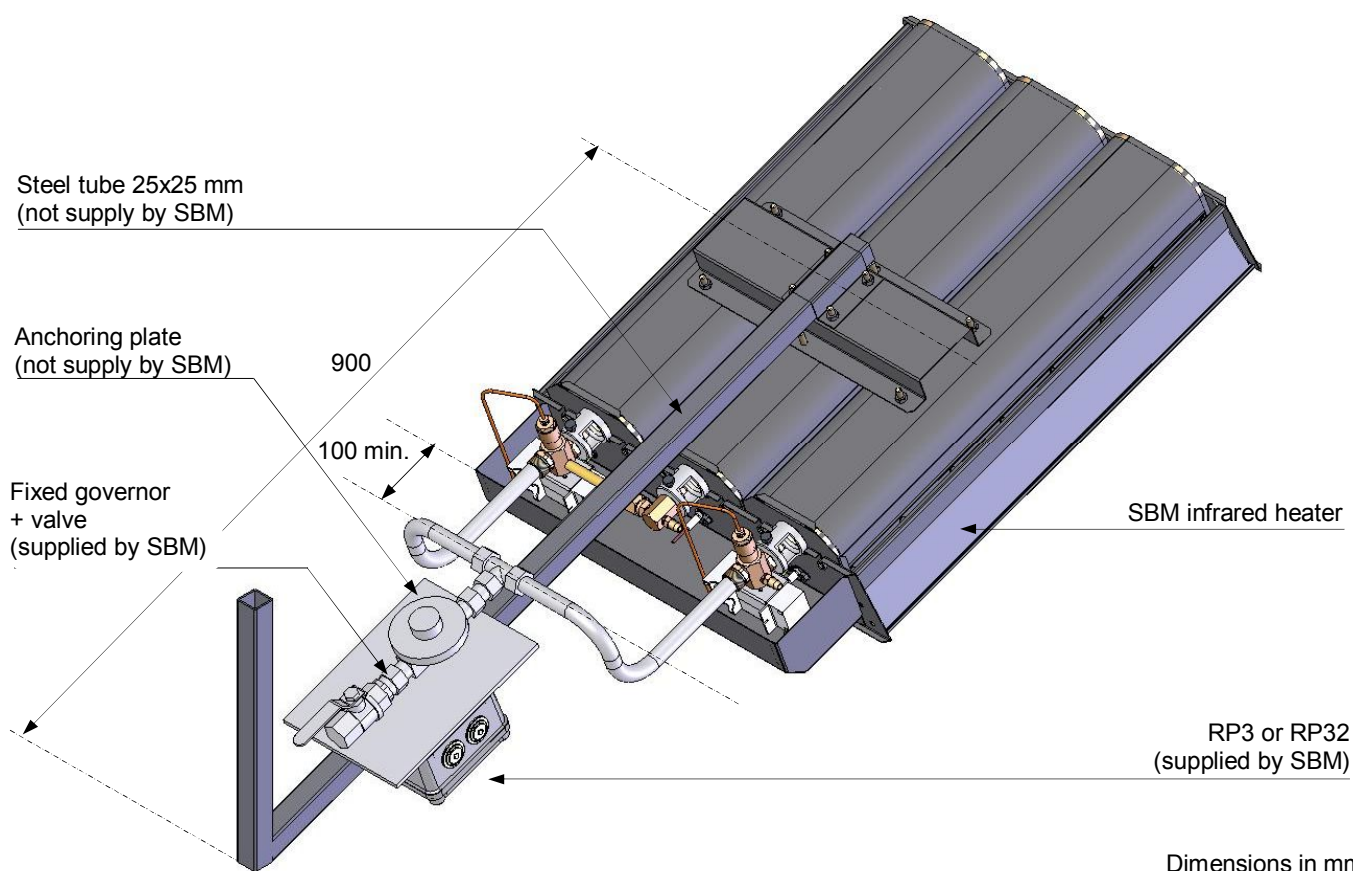
FOR TYPE B6, B8, B10, B12 and B16 SX HEATERS



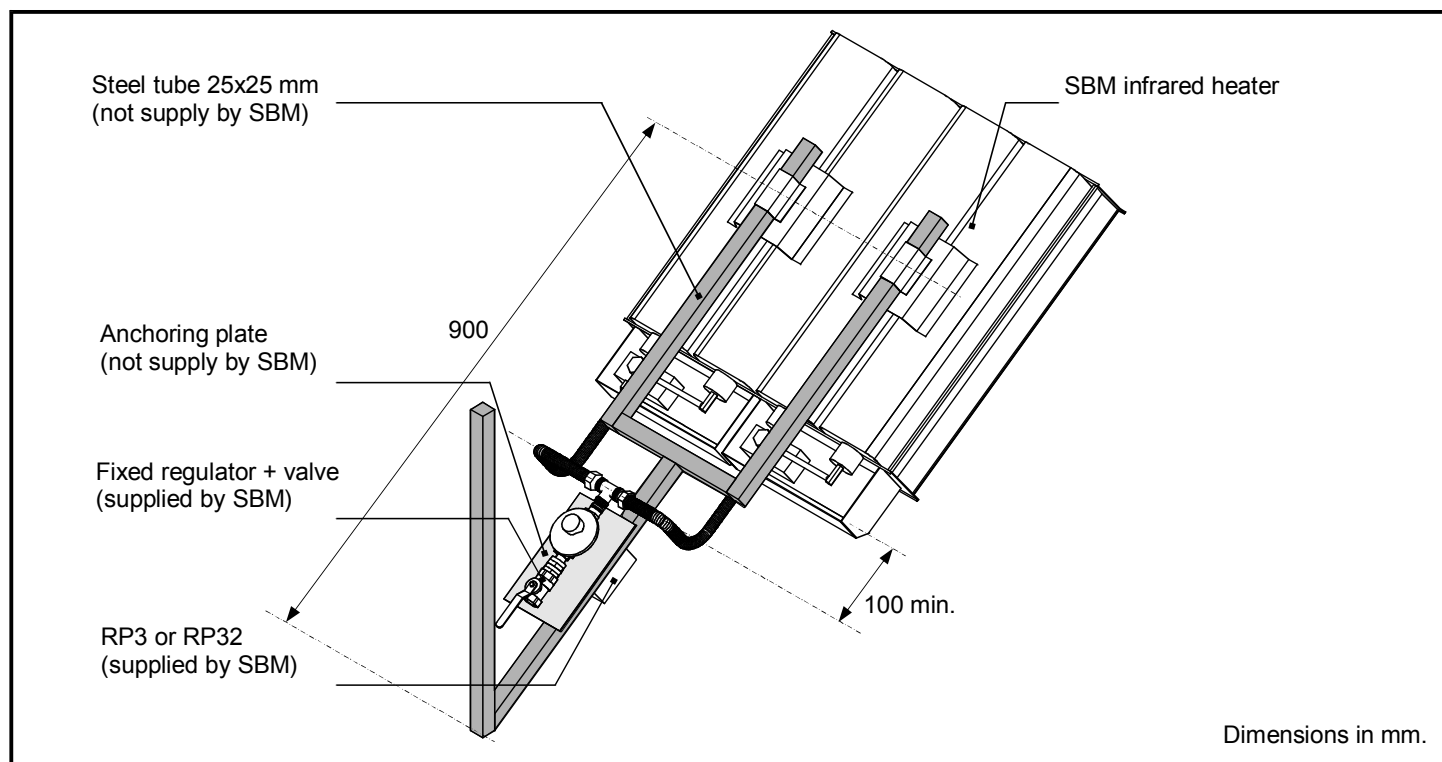
FOR TYPE B20, B20-2, B24, B24-2, B32 and B32-2SX HEATERS



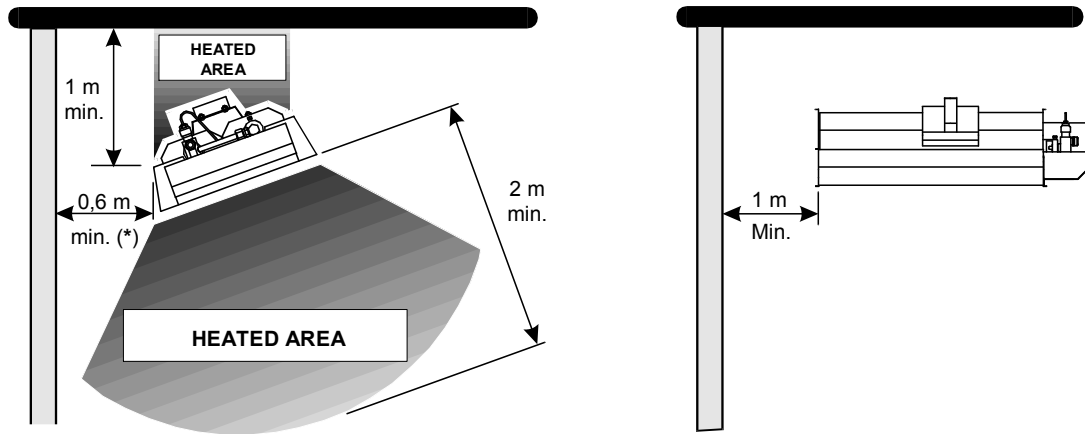
FOR TYPE B48-2SX HEATERS



FOR TYPE B64-2SX HEATERS



2.5 Minimum safety clearances (Inflammable materials : $\theta_{\max} = 70^{\circ}\text{C}$)

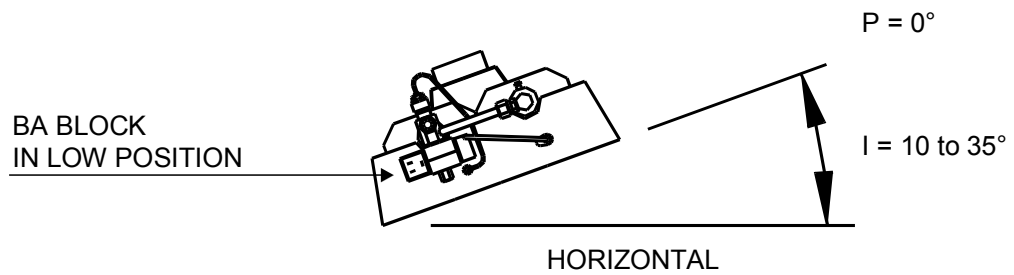


(*) For minimum 20° inclination

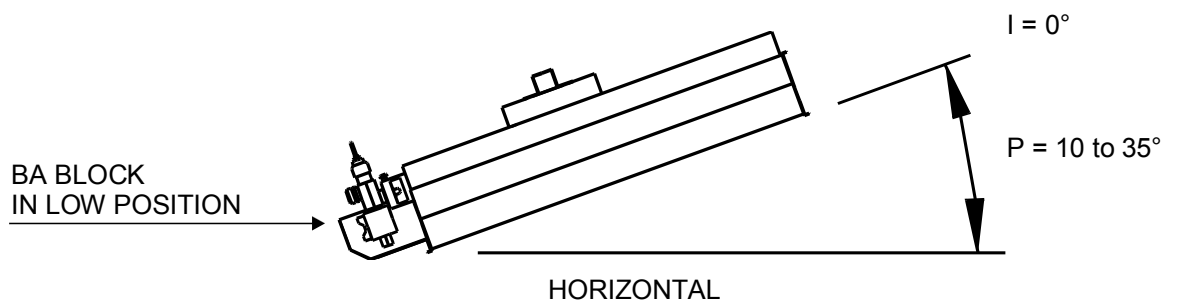
- ❑ Where safety clearances cannot be respected, **heat-protection** must be provided above heater.

2.6 Inclination of heaters

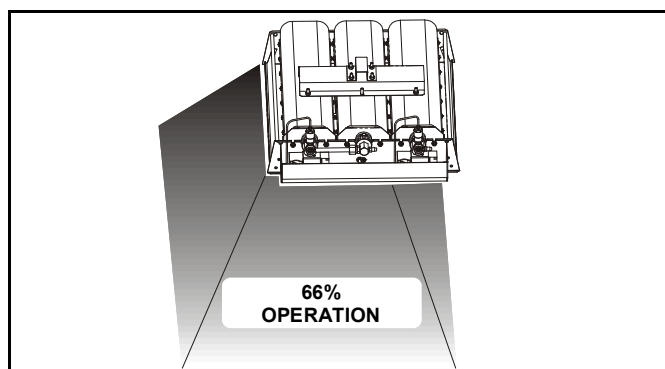
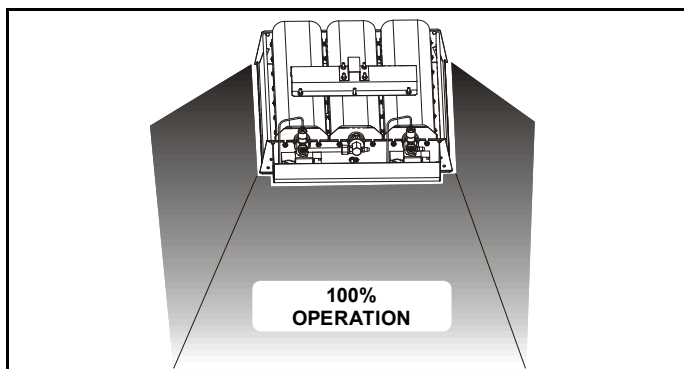
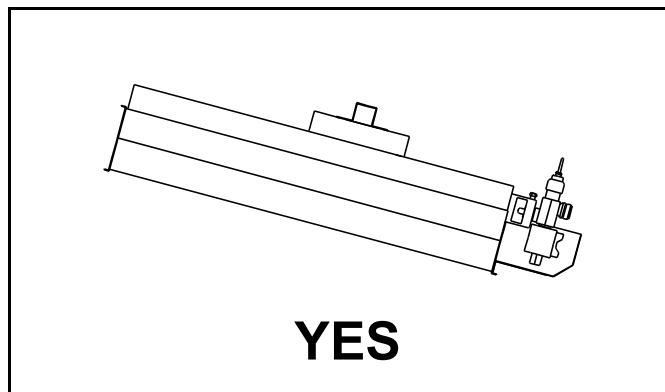
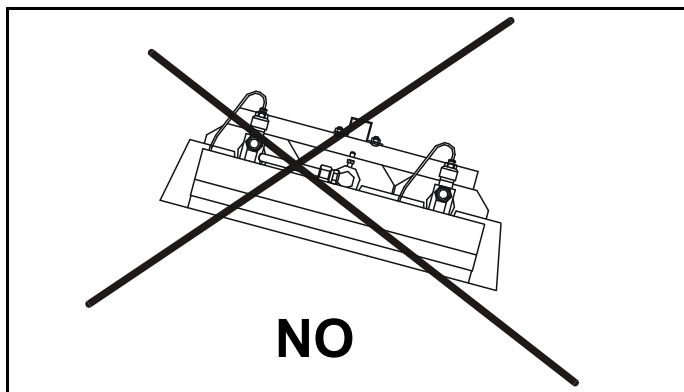
- ❑ In all cases, slope "P" or inclination "I" must be at least 10° .
- ❑ **Always** install the automatic ignition block (BA block) in **low position**.
- ❑ Lateral inclination "I".



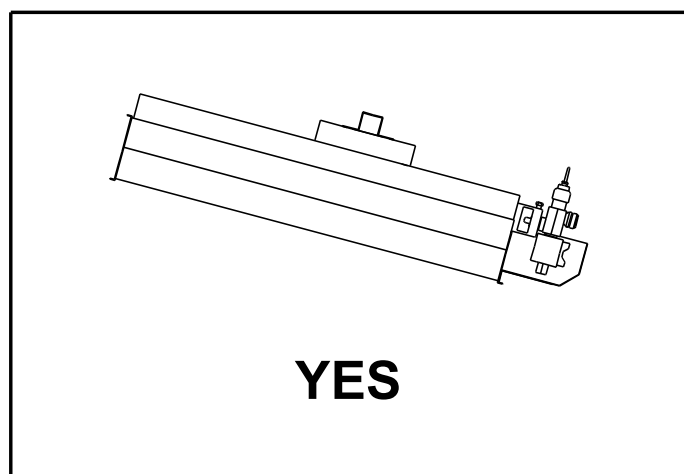
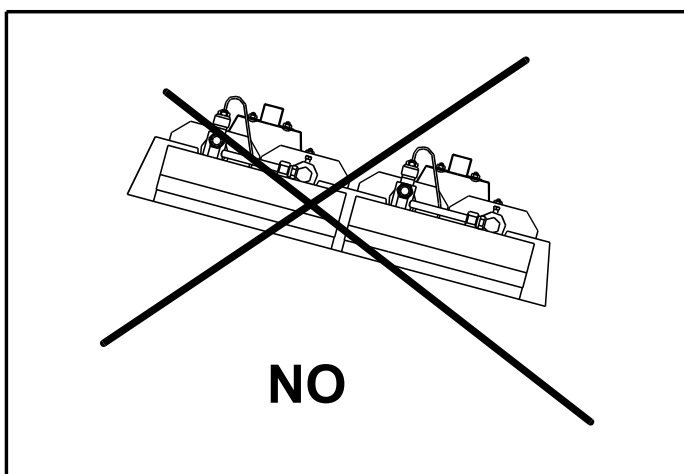
- ❑ Longitudinal inclination "P".



❑ For B48-2SX

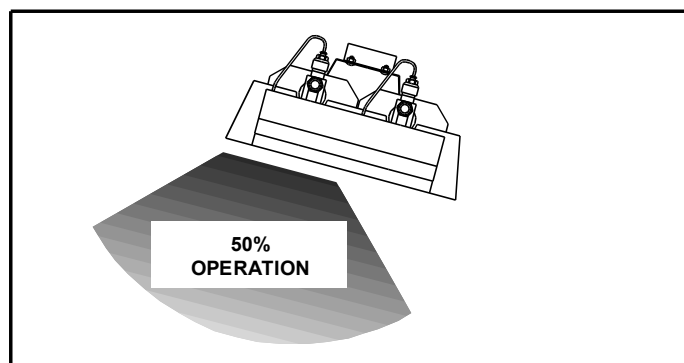
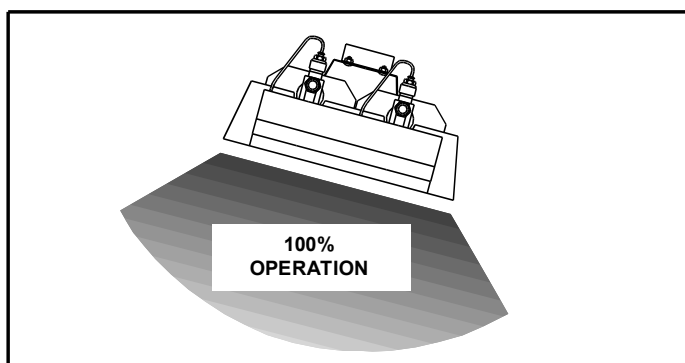


❑ For B64-2SX



❑ For B20-2SX, B24-2SX and B32-2SX with lateral inclination.

ALWAYS LIGHT THE TOP BURNER FIRST.

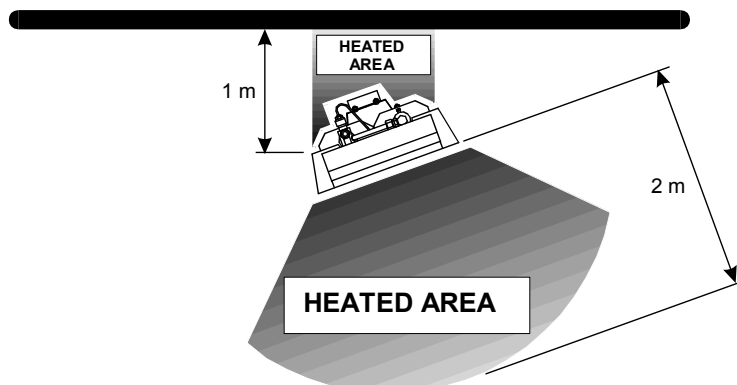


2.7 Gas connection

BEFORE INSTALLATION, CHECK THAT LOCAL CONDITIONS OF SUPPLY, GAS TYPE / PRESSURE AND EQUIPMENT SETTINGS ARE COMPATIBLE.

❑ Gas piping must not :

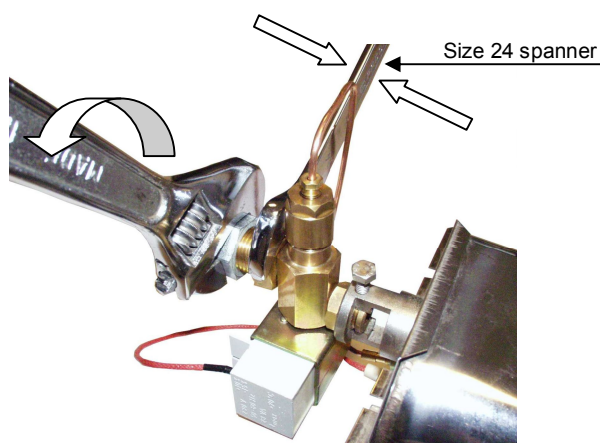
- be located in the heated area around a heater (see diagram below).



- produce any stress on the injector block. (Use preferably a metallic hose)



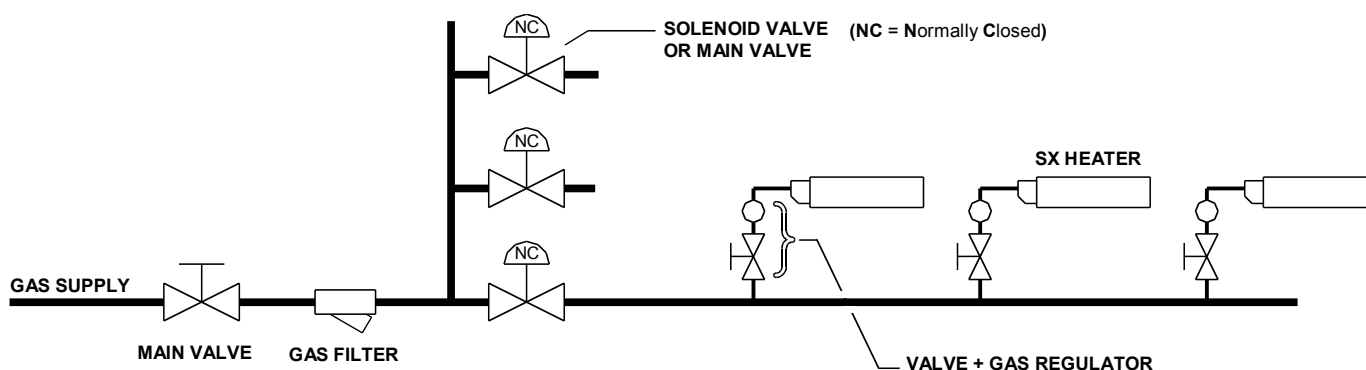
heater with tapered fitting R1/2" conical : maintain the tapered inlet with a size 24 spanner while securing the gas connection (see picture below).



❑ **MEDIUM PRESSURE GAS SUPPLY**

Gas supply pressure greater than the heater operating pressure (see tables on pages 2 and 3).

GAS	GAS SUPPLY PRESSURE
G20 (Natural gas)	200 mbar at 1.5 bar max.
G31(Propane)	500 mbar at 1.5 bar max.

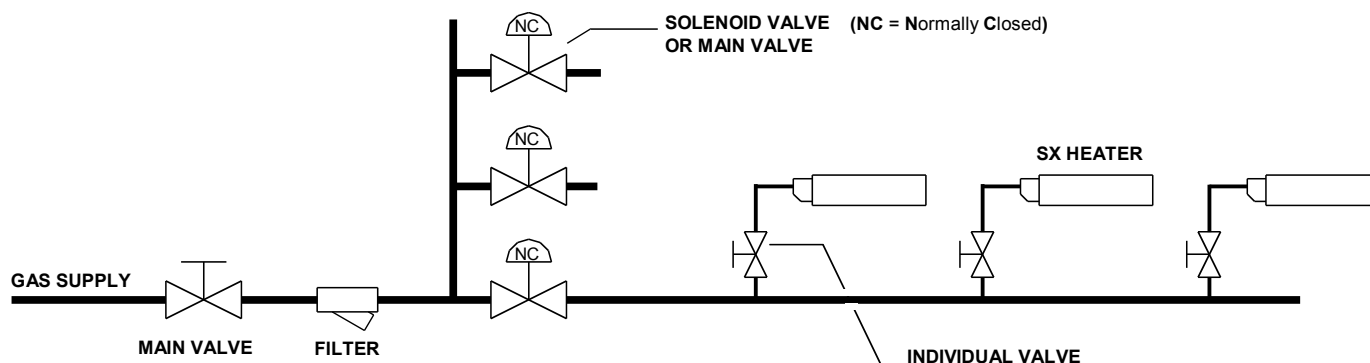


❑ LOW PRESSURE GAS SUPPLY

The gas supply pressure is identical to the heater operating pressure (see tables on page 2 and 3).

GAS	GAS SUPPLY PRESSURE
G20 (Natural gas)	20 mbar (*)

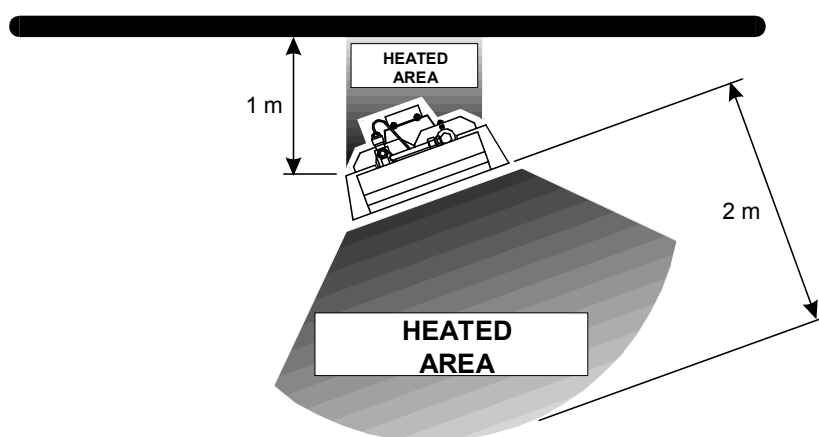
* acceptable total pressure loss : approx. 1 mbar.



2.8 Electrical connections

See diagram of a standard installation. (§2.2, page 5)

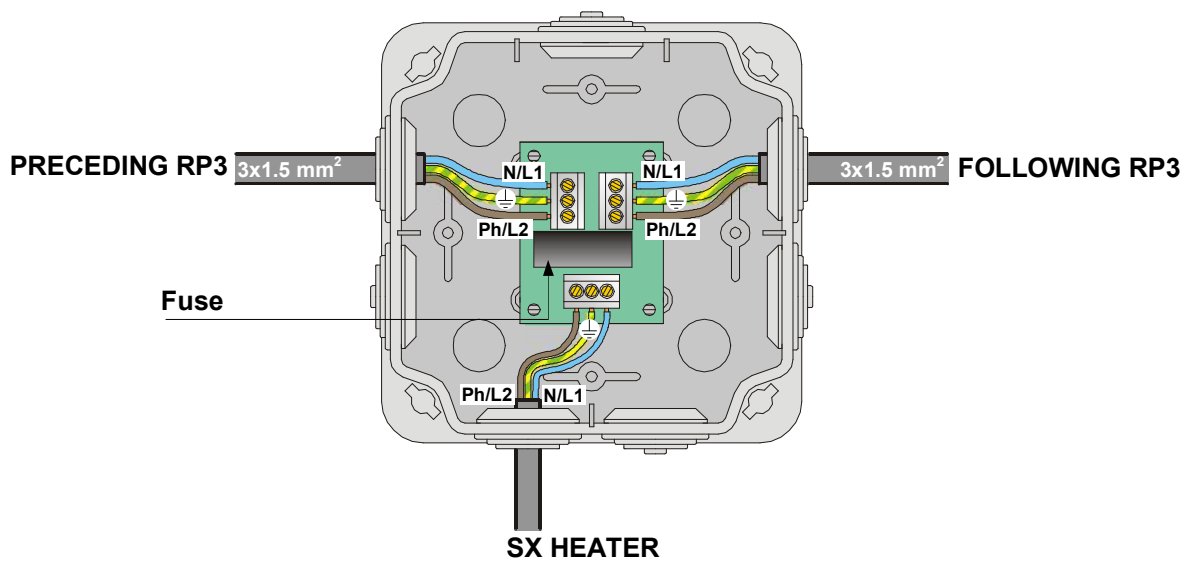
- ❑ Use a **NEUTRAL** conductor or provide an **ISOLATION TRANSFORMER**.
- ❑ All heaters must be properly **GROUND**ED.
- ❑ Control : **SX** heaters are controlled by **VisioLon Ind-T** programmable controller. Refer to the technical instructions.
- ❑ Electric cables must not be located in the heated area around a heater. (see diagram below)



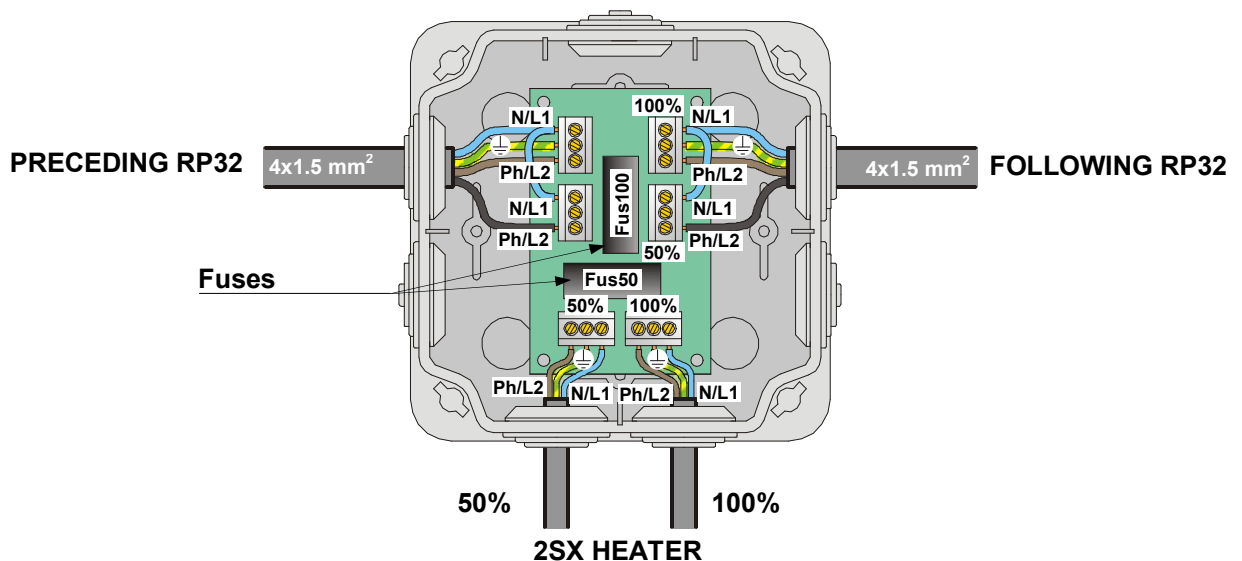
❑ Types of connection cable

LINK	TYPE OF CABLE
Control unit to RP3 (and RP3 to RP3)	3 - conductors insulated with ground.
Control unit to RP32 (and RP32 to RP32)	4 - conductors insulated with ground.
RP3 and RP32 to heater	Use the prewired plug(s) supplied with the heater green/yellow wire: EARTH blue wire: NEUTRAL brown wire: LIVE
Control unit to sensor	Use the sensor cable supplied by SBM. (in 20m, 60m or 300m rolls)

- ❑ Number of RP3 and RP32 units : 1 RP3 per type B6, B8, B10, B12, B16, B20, B24 and B32 heater.
1 RP32 per type B20-2, B24-2, B32-2, B48-2 and B64-2 heater.
- ❑ Fixing RP3 and RP32 units : see instructions supplied in box.
- ❑ Wire RP3's as shown in the diagram below.



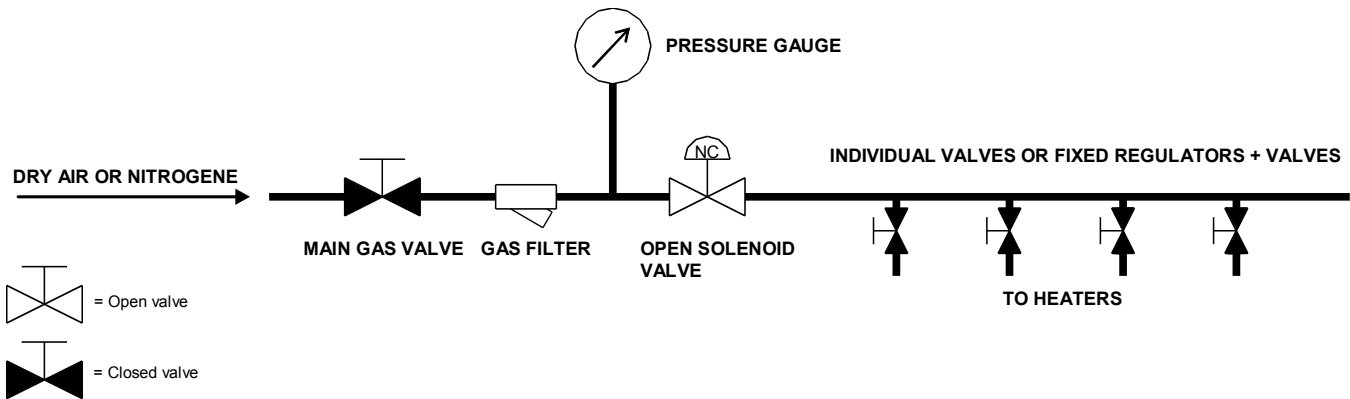
- ❑ Wire RP32's as shown in the diagram below.



2.9 Start-up

❑ Gas-tightness test for **industrial** installations : (see diagram below)

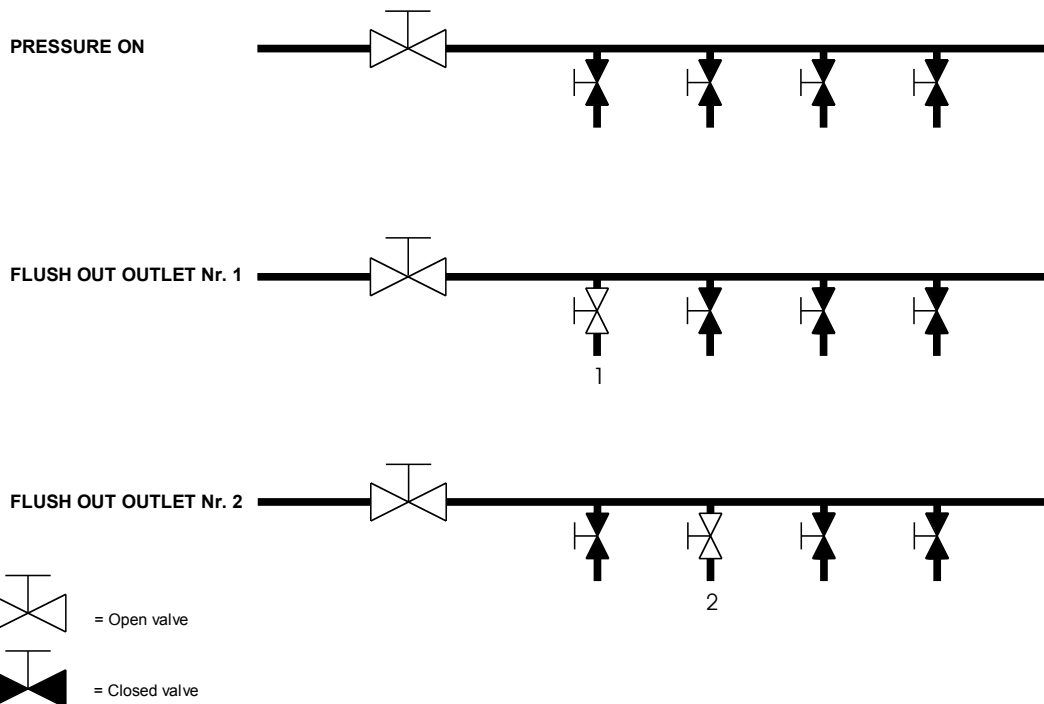
- Ensure that the installation is at a pressure (nitrogen or dry air) equal to 1.5 times the gas operating pressure.
- Turn off the nitrogen or dry air supply and wait 15 minutes for the pressure to stabilise.
- Check the pressure on the pressure gauge.
- After two hours, the pressure gauge needle must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



❑ Clean out

Aim : flush out impurities in gas piping

Clean out gas piping with dry air or, better, with nitrogen, **AFTER DISCONNECTING ALL ACCESSORIES.**



❑ First start-up

a) Preliminary checks:

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

b) Initial settings:

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

c) Ignition

* manual operation

- open the main gas valve.
- start the heater ignition cycle.
- if the flame is not lit after 45 seconds, start a second ignition cycle
- if the flame is still not lit or goes out, refer to chapter 5 (REPAIRS).

* automatic control

- open the main gas valve.
- check the settings (temperature, time).
- change module programming if required.
- run a full heating and cooling cycle and check:
 - . ignition cycle length (45 seconds maximum).
 - . ignition and shut-down of heaters according to temperature settings.

3. RECEIPT OF INSTALLATION

TO BE PERFORMED BY THE INSTALLER IN THE PRESENCE OF THE CUSTOMER.
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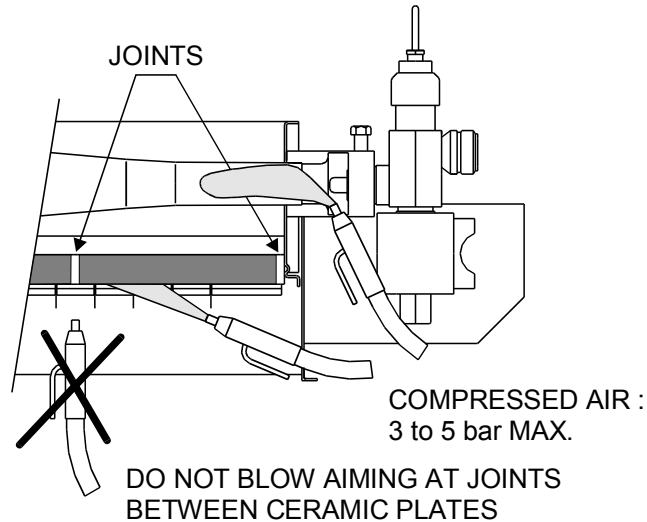
- ☐ Check that **the gas type and pressure comply with** the type of heater installed (see rating plate)
- ☐ Check that an **individual valve** is installed prior to each heater.
- ☐ Check that the **"SX USER GUIDE"** (Manual operation or Automatic control) is displayed next to the control unit, after being **stamped by the installer**.
- ☐ Provide the customer with **a copy of each SX USER INSTRUCTIONS** supplied in the product boxes.
- ☐ Indicate to the customer the **locations** of:
 - **valves.**
 - **electric switches.**
 - **control units.**
- ☐ **Explain** to the customer how all **control units operate**.
- ☐ Plan the **initial maintenance visit (1 year after start-up)**.

4. MAINTENANCE

LIST OF OPERATIONS TO BE PERFORMED DURING THE ANNUAL MAINTENANCE VISIT.

- ☐ Removal of dust from heaters

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



- ☐ Check condition of ceramic plates (**visual** inspection).

- ☐ Check heater fixture.

- ☐ Check tightness of 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 operation of solenoid valves.

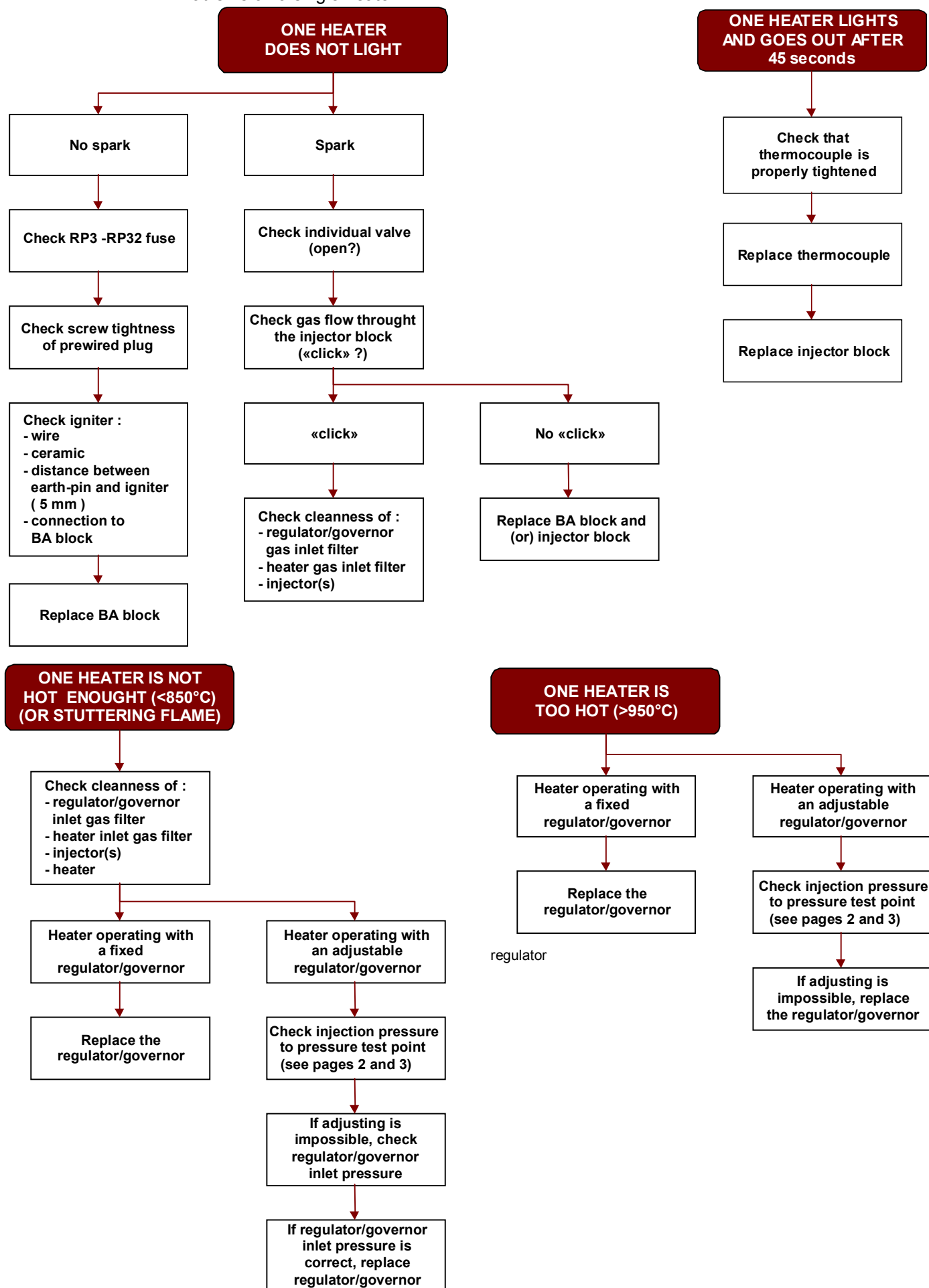
Check that all solenoid valves properly close (heaters switched off).

- ☐ Check controls.

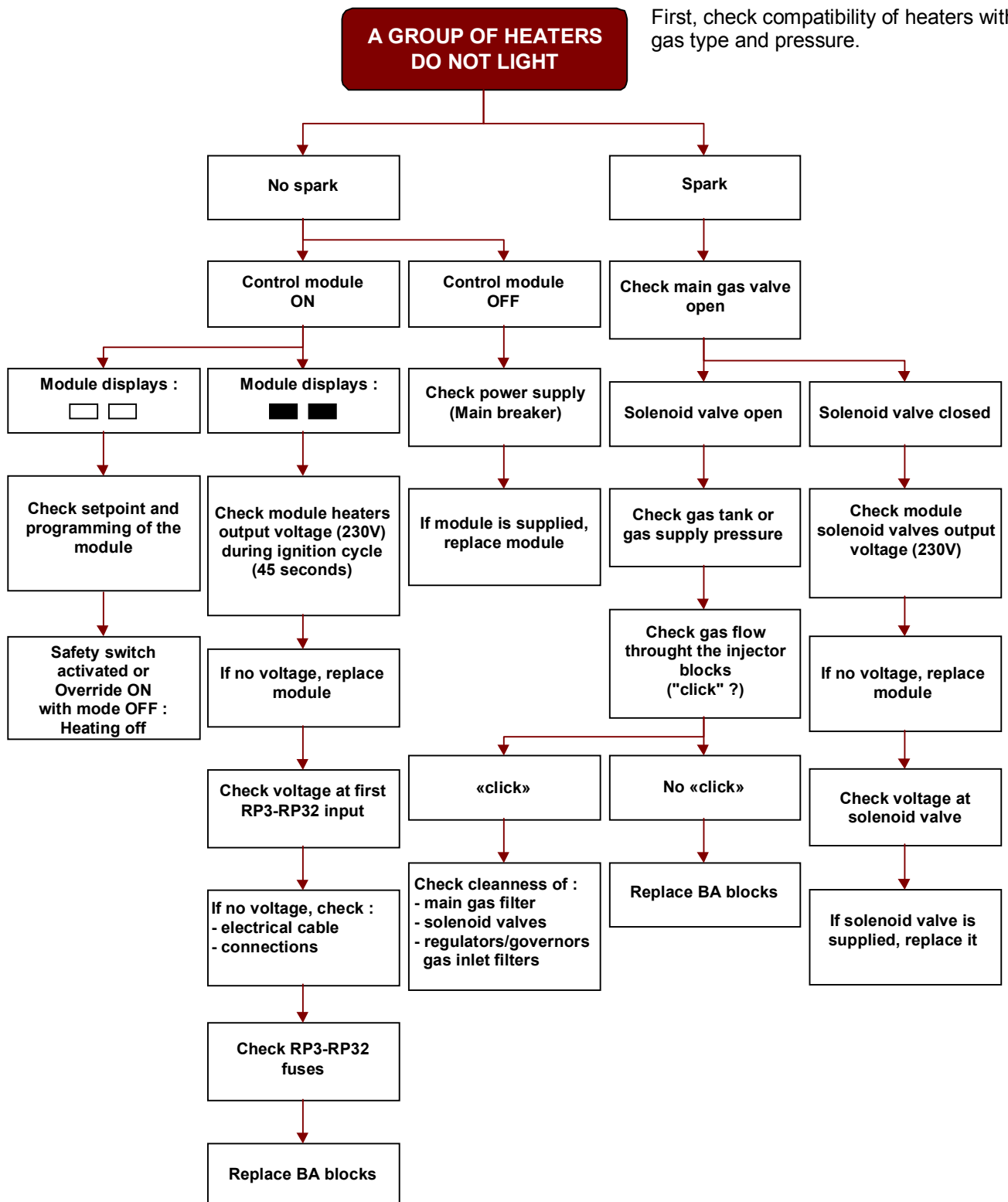
- ☐ Check all settings (do not forget anti-freeze setting).

5. REPAIRS

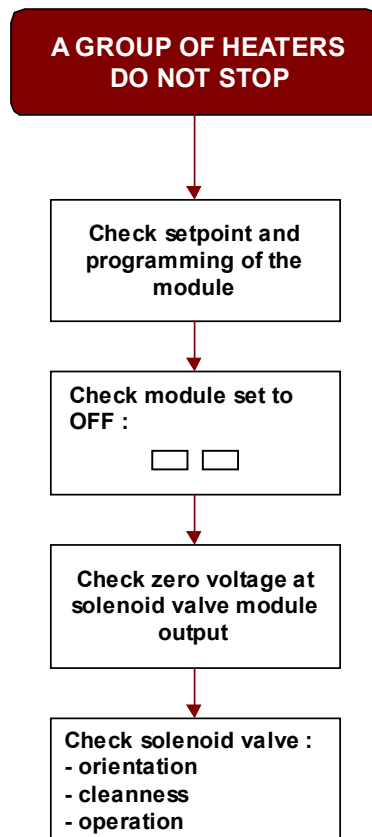
❑ Problems on a single heater.



- ❑ Problems on a group of heaters.



- ❑ Problems on a group of heaters (cont.).



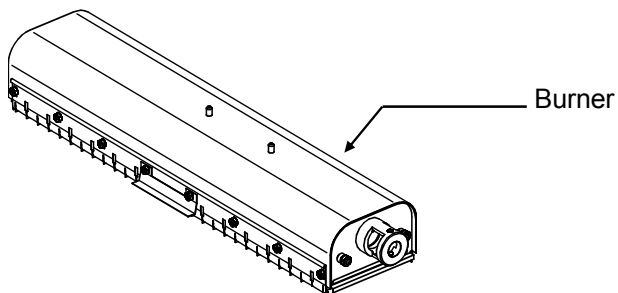
First, check that the temperature setting is lower than ambient temperature.

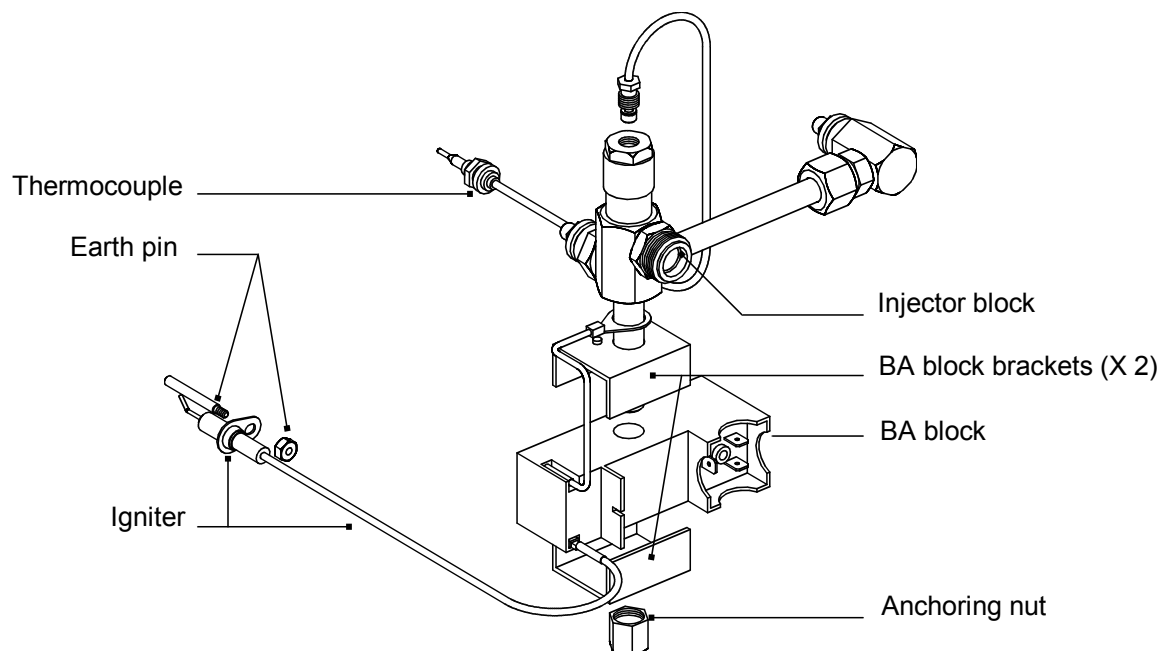
- ❑ SX heater spare parts.

WITH ALL SPARE PART ORDERS, 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.





6. CHANGING THE GAS USED

- ☐ gas used with the SX heater range.

FAMILY	GAS	OPERATING PRESSURE
I ₂ Esi	G20 (Natural gas)	20 mbar
I ₃ P	G31 (Propane)	37 mbar
I ₃ P	G31 (Propane)	30 mbar

- ☐ For all changes in the gas used, contact your SBM agent.