



GAS INFRARED HEATERS

RI 12 - RI 32 HEATERS INSTALLER INSTRUCTIONS

N° 05000310/0 – AUS

AGA APPROVAL # 7278 – Natural Gas or Propane

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1. PRODUCT SPECIFICATION

1.1.1 Technical specifications

GAS : NATURAL - AU

MODEL	RI 12	RI 16
Certificate number CE	1312 AP 231	1312 AP 232
Class NOx [EU]	4	
Weight (kg)	3.90	4.40
Nominal heat input ΣQ_n (Hi) MJ	15.0	23.0
GAS		
Nominal inlet pressure [kPa]	1.13	
Minimum inlet pressure [kPa]	1.13	
Maximum inlet pressure [kPa]	6.0	
Injector pressure (SIGMA valve output) [kPa]	0.9	0.9
Volumetric flow rate [m ³ /h]	0.395	0.605
Ø orifice (injector) [1/100 mm]	180	220
Gas connection	Rp1/2" (ISO 7-1)	
ELECTRICITY		
Power supply	230V (+10% -15%) – 50Hz Neutral mandatory	
Consumption [VA]	19	19
Ignition cycle length	30 seconds	
VENTILATION		
Combustion air [m ³ /h]	5.30	7.00
Required air renewal [m ³ /h]	51	67.5

GAS: PROPANE - AU

MODEL	RI 12	RI 16
Certificate number CE	1312 AP 231	1312 AP 232
Class NOx	4	
Weight [kg]	3.90	4.40
Nominal heat input ΣQ_n (Hi) MJ	18.4	24.3
GAS		
Nominal inlet pressure [kPa]	2.75	
Injection pressure (SIGMA valve output) [kPa]	2.60 : blocked regulator (see page 21)	
Mass flow rate [kg/h]	0.368	0.486
Ø orifice (injector) [1/100 mm]	125	140
Ø primary orifice (restrictor) [1/100 mm]	180	none
Gas connection	Rp1/2" (ISO 7-1)	
ELECTRICITY		
Power supply	230V (+10% -15%) – 50Hz Neutral mandatory	
Consumption [VA]	19	19
Ignition cycle length	30 seconds	
VENTILATION		
Combustion air [m ³ /h]	4.80	6.30
Required air renewal [m ³ /h]	51	67.5

1.1.2 Technical specifications

GAS: NATURAL – AU

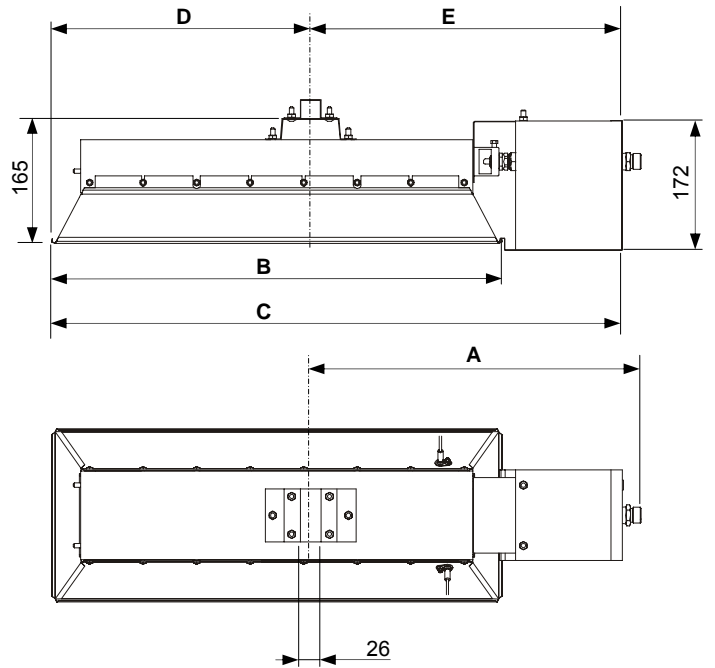
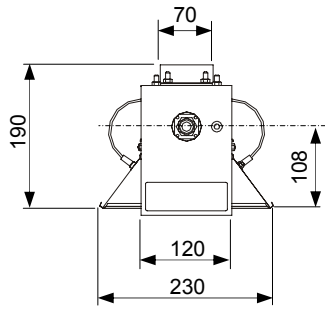
MODEL		RI 24	RI 32
Certificate number CE			
Class NOx		4	
Weight (kg)		8.20	9.00
Nominal heat input ΣQ_n (Hi) MJ		30.0	46.0
GAS			
Nominal inlet pressure [kPa]		1.13	
Minimum inlet pressure [kPa]		1.13	
Maximum inlet pressure [kPa]		6.0	
Injector pressure (SIGMA valve output) [kPa]		0.9	0.9
Volumetric flow rate [m ³ /h]		0.790	1.210
Ø orifice (injector) [1/100 mm]		2 x 180	2 x 220
Gas connection		Rp1/2" (ISO 7-1)	
ELECTRICITY			
Power supply		230V (+10% -15%) – 50Hz Neutral mandatory	
Consumption [VA]		19	19
Ignition cycle length		30 seconds	
VENTILATION			
Combustion air [m ³ /h]		10.60	14.00
Required air renewal [m ³ /h]		102	135

GAS: PROPANE – AU

MODEL		RI 24	RI 32
Certificate number CE			
Class NOx		4	
Weight [kg]		8.20	9.00
Nominal heat input ΣQ_n (Hi) MJ		36.8	48.6
GAS			
Nominal inlet pressure [kPa]		2.75	
Injection pressure (SIGMA valve output) [kPa]		2.60 : blocked regulator (see page 21)	
Mass flow rate [kg/h]		0.80	1.06
Ø orifice (injector) [1/100 mm]		2 x 125	2 x 140
Ø primary orifice (restrictor) [1/100 mm]		180	none
Gas connection		Rp1/2" (ISO 7-1)	
ELECTRICITY			
Power supply		230V (+10% -15%) – 50Hz Neutral mandatory	
Consumption [VA]		19	19
Ignition cycle length		30 seconds	
VENTILATION			
Combustion air [m ³ /h]		10.60	12.60
Required air renewal [m ³ /h]		102	135

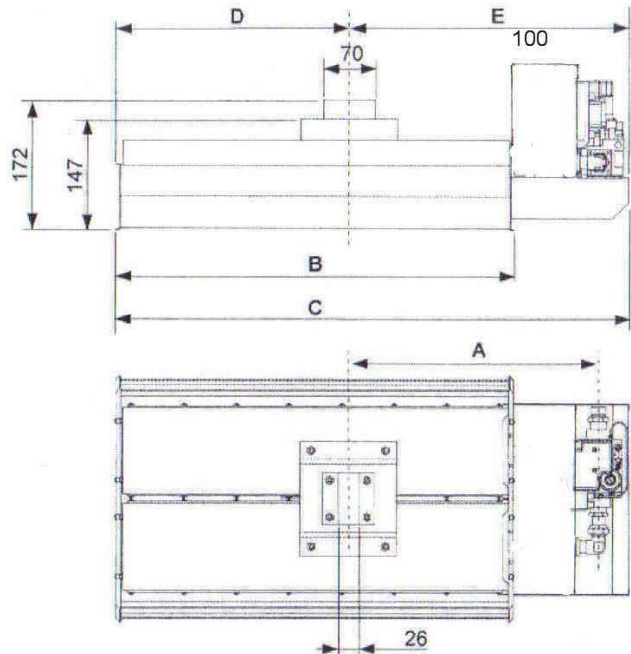
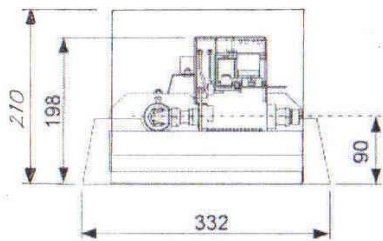
1.2. Heater dimensions

RI 12 and RI 16



MODEL	RI 12	RI 16
A (mm)	420	438
B (mm)	469	596
C (mm)	630	755
D (mm)	235	343
E (mm)	395	412

RI 24 and RI 32



MODELE	RI 24	RI 32
A (mm)	320	337
B (mm)	411	536
C (mm)	567	692
D (mm)	207	314
E (mm)	360	378

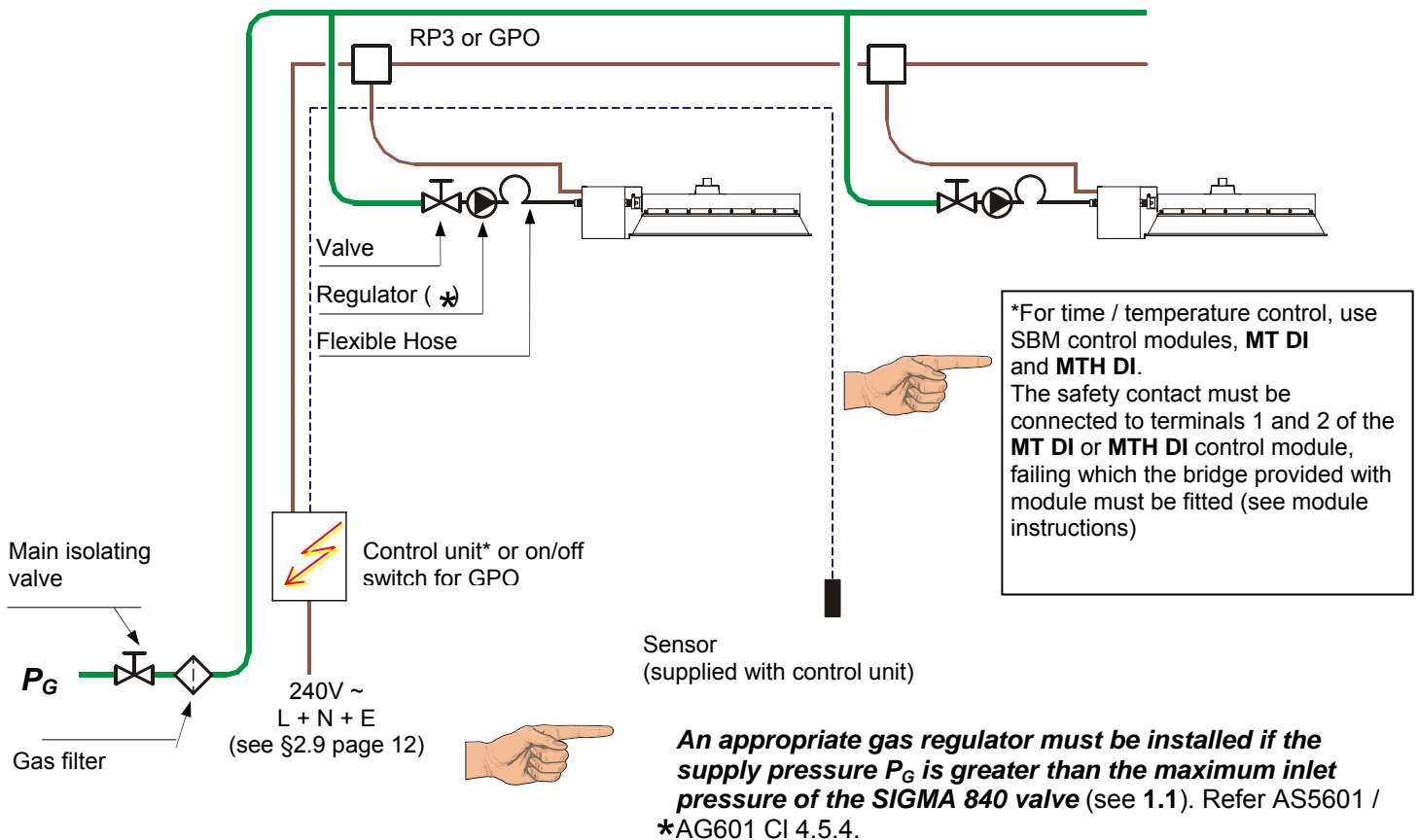
2. INSTALLATION

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

2.1 Rules and Regulations

- AGA Approval # 7278 – Natural Gas or Propane Only
- Models RI 12 & RI 16 ONLY are Approved for Outdoor use and Indoor Non-Residential use.
- Models RI 24 & RI 32 are Approved for Indoor Non-Residential use only.
- Installation must comply with AS5601 / AG601
- Local Electrical Authority Regulations.
- Building Regulations.
- Local Authority Bylaws.
- Appliances are not approved for internal domestic use.

2.2 Diagram of a standard installation

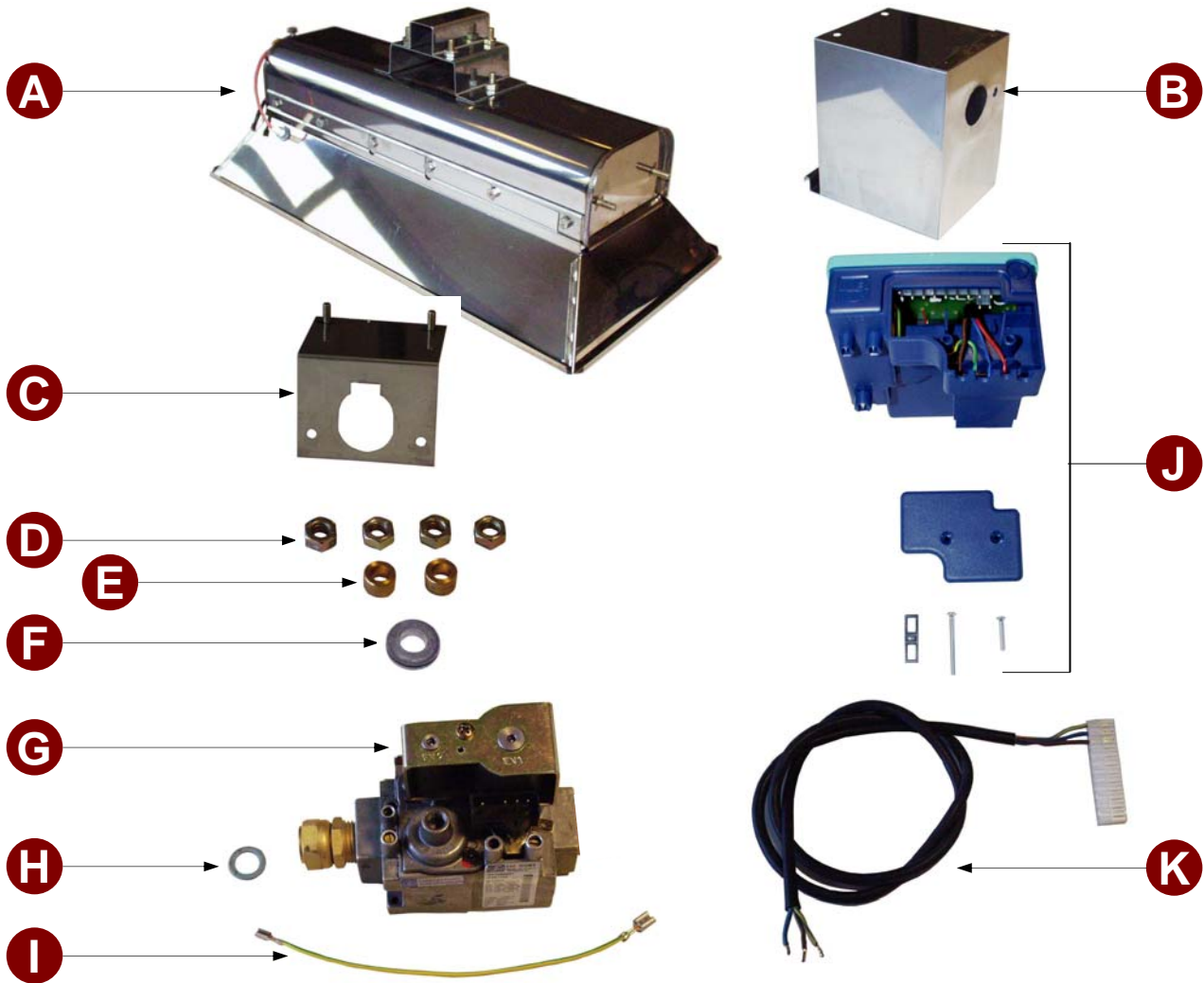


2.3 Unpacking and checking of equipment

Assembly information following applies only to sub-assembled RI 12 & RI 16 models.

RI 24 and RI 32 are supplied fully assembled.

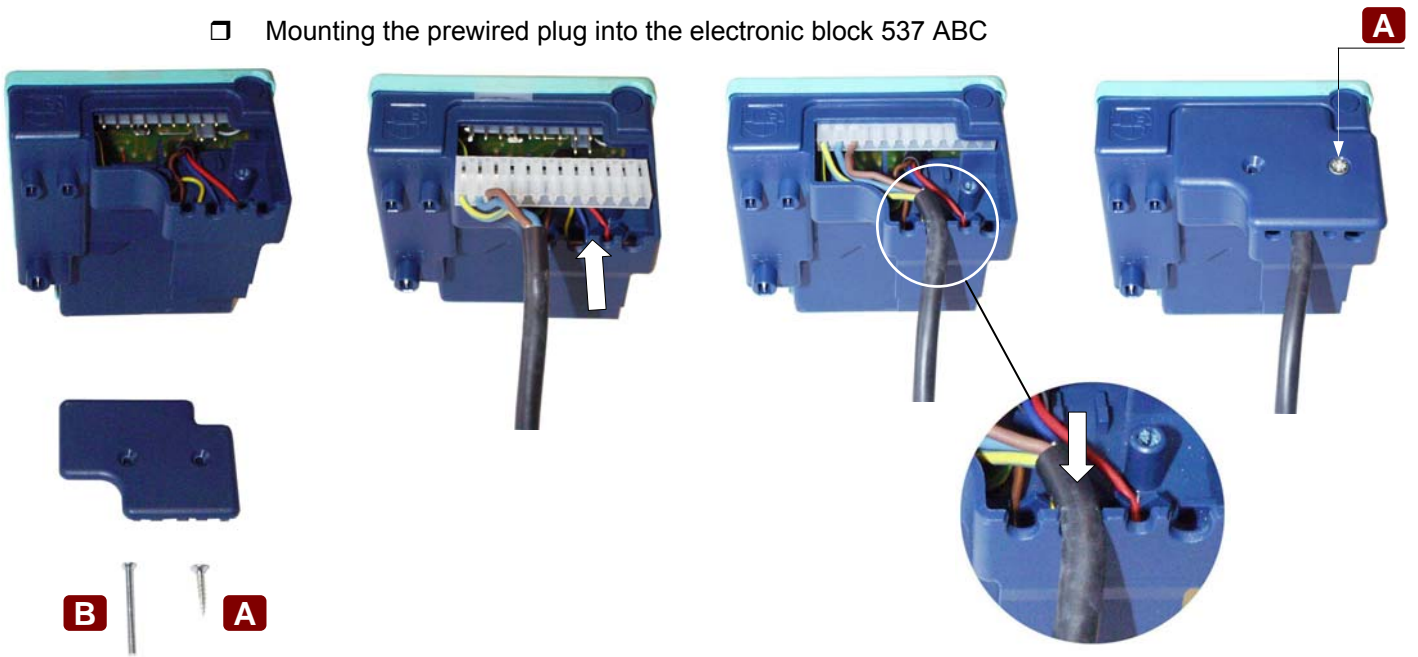
- Check the type and quantities of equipment against your order.
- Check that packing and equipment are intact.
If this is not the case please register a complaint to this effect with the carrier.
- Check gas type and pressure to be used on heaters.
- Check the contents of each box.



REP.	PART	RI 12	RI 16
A	Heater	1	1
B	Covering box	1	1
C	Bracket for covering box	1	1
D	Screw H-M6	4	4
E	Spacing ring	2	2
F	Wire passage	1	1
G	840 SIGMA valve	1	1
H	Washer	1	1
I	Ground wire	1	1
J	Electronic block 537 ABC	1	1
K	Prewired plug 1m	1	1

2.4 Heater assembly procedure [RI 12 & RI 16 only].

- Mounting the prewired plug into the electronic block 537 ABC



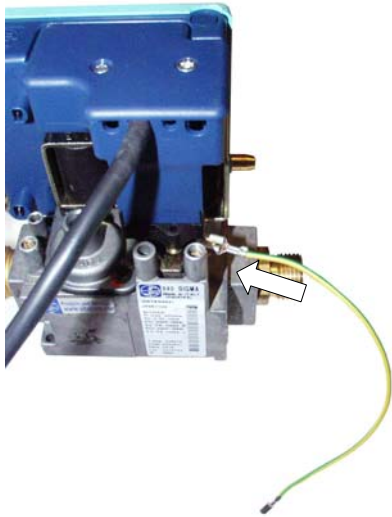
- Installation of the power supply gasket on the 840 SIGMA valve



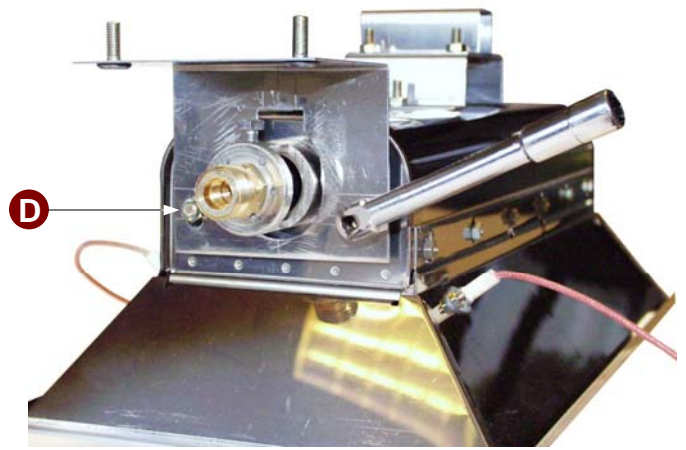
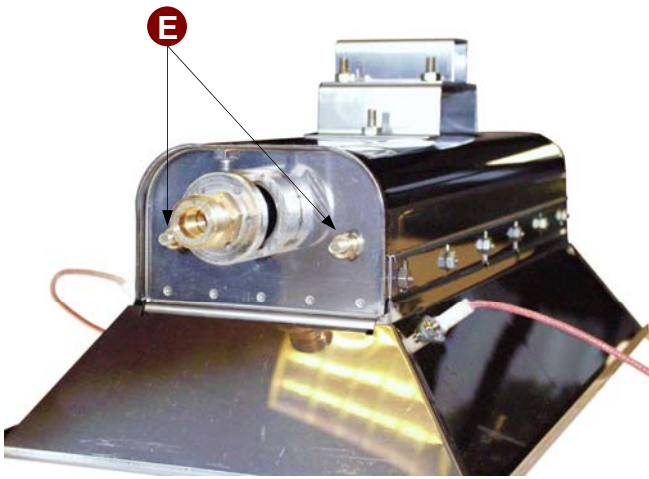
- Fitting the electronic block 537 ABC on the 840 SIGMA valve



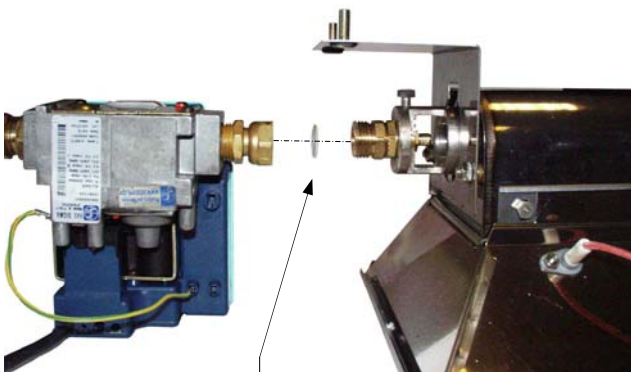
- ❑ Connection of the earth [ground] wire



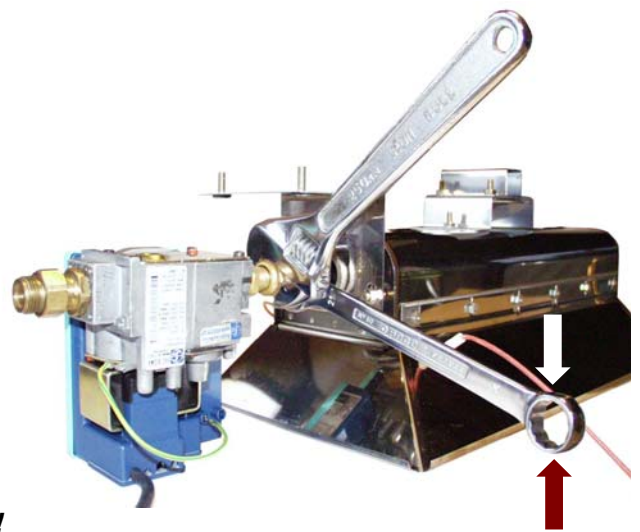
- ❑ Mounting the bracket for the cover box on the heater



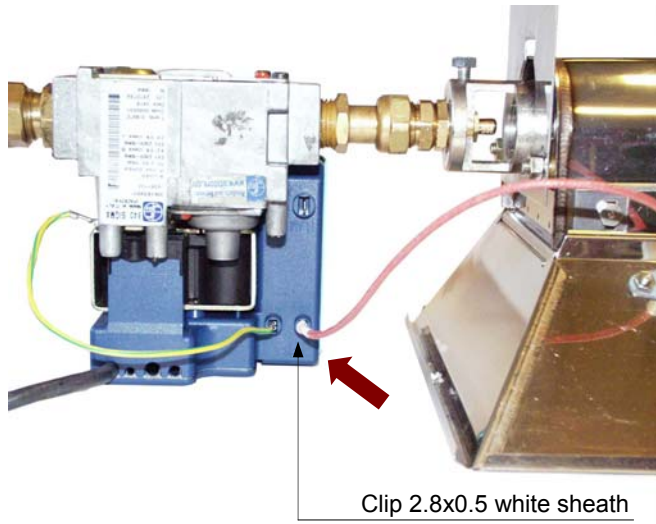
- ❑ Fitting the 840 SIGMA valve on to the heater



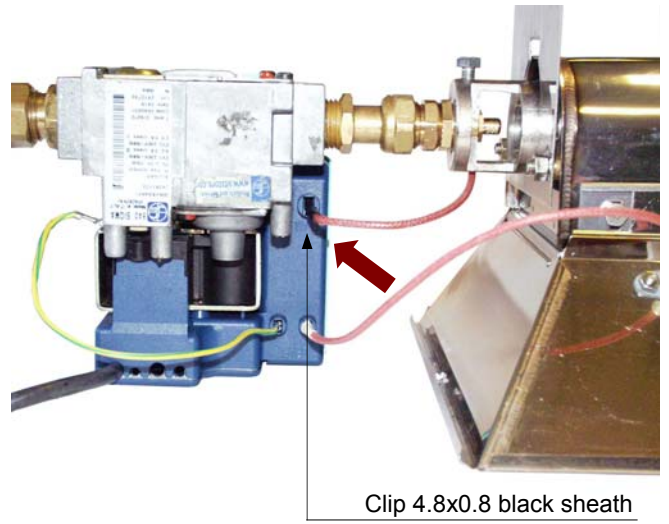
Do not forget the washer!



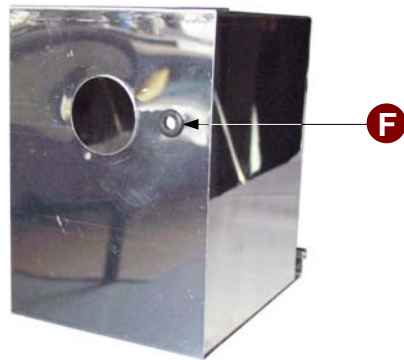
- ❑ Connection of the ignition electrode



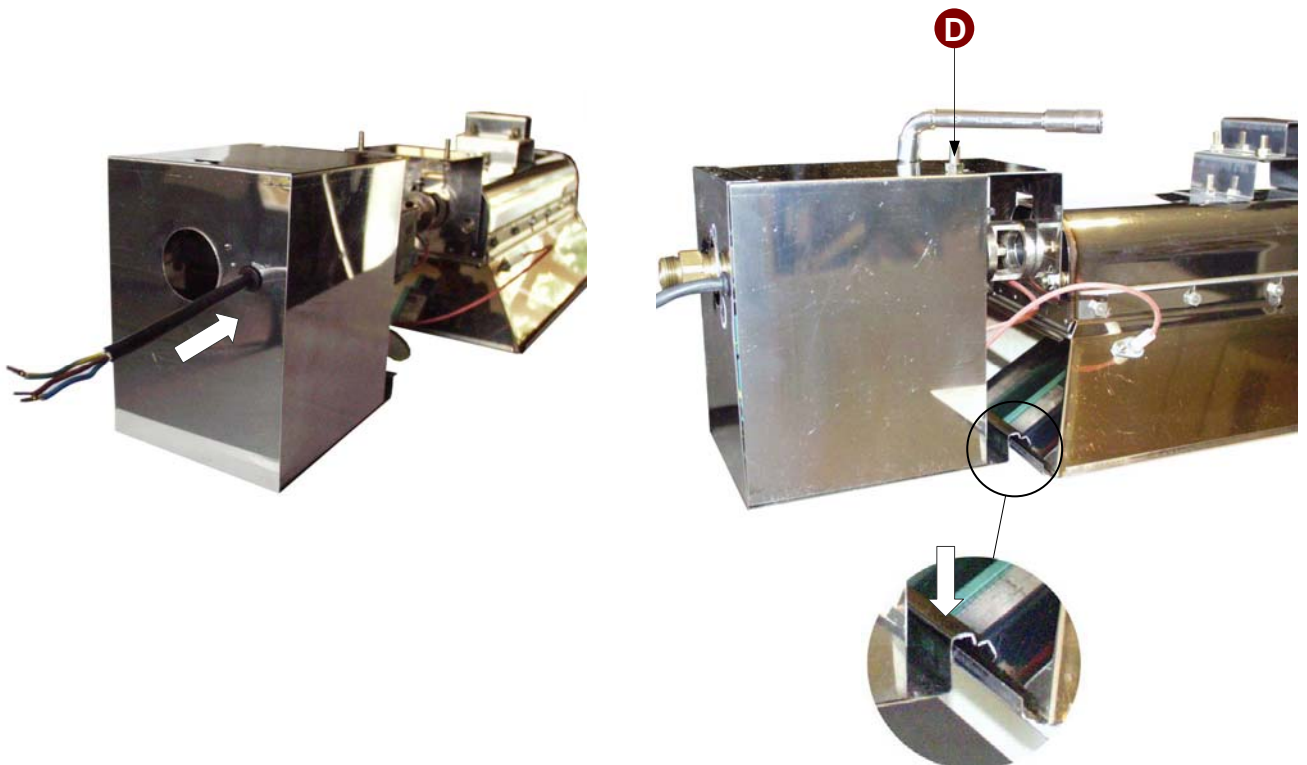
- ❑ Connection of the flame detector



- ❑ Fitting the grommet or cable gland on the cover box



- ❑ Fitting the cover box on the heater



2.5 Installation of heaters: Mounting heights

□ INDOOR COMMERCIAL & INDUSTRIAL APPLICATIONS.

MODEL	MIN. HEIGHT (m)
RI 12	2.50
RI 16	3.00
RI 24	4.00
RI 32	5.0

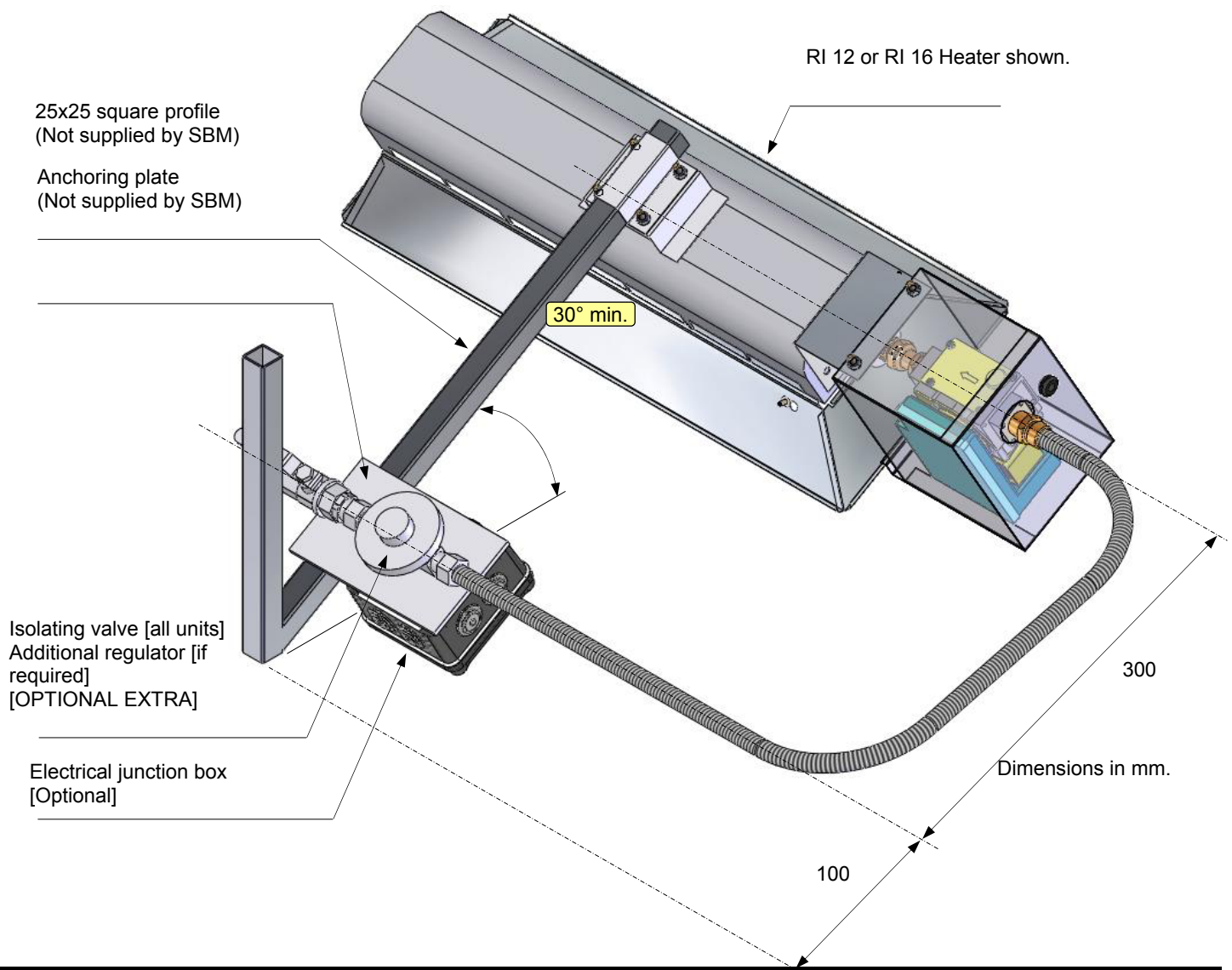
MINIMUM COMFORT HEIGHTS: Refer to the specific SBM case study for each project.

OUTDOOR TERRACE & PATIO HEATING [RI 12 & RI 16 ONLY]

*Subject to the requirements of AS5601 and the Regulatory Authority Models RI 12 & 16 may be installed at a minimum height of 1.8 metres. Outdoor appliances must be protected from rain and not installed in locations subject to wind speeds in excess of 8 kph.

MODEL	MIN. HEIGHT (m)
RI 12	2.50*
RI 16	2.50*

- Example of hanging brackets to be manufactured by the installer is shown below.
- Pre-fabricated 30° or 45° brackets are available for wall mount applications.



Appliance Ventilation Requirements:

1. Indoor Non-Residential Installations [All Models]

Appliances must not be installed in rooms smaller than:

RI 12;	95 cubic metres.
RI 16;	125 cubic metres
RI 24;	185 cubic metres
RI 32;	245 cubic metres

And areas must be well ventilated in accordance with AS 5601

2. Outdoor Installations [RI 12 & RI 16 ONLY]

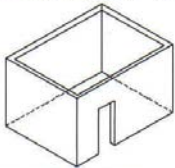
In all cases, these appliances shall be protected from rain and wind speeds in excess of 8kph. In addition:

Appliances shall only be used in above ground open-air situations with natural ventilation, without stagnant areas, where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.

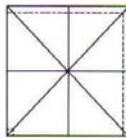
Any enclosure in which the appliance is used shall comply with one of the following [refer diagrams attached]:

1. An enclosure with walls on all sides, but at least one permanent opening at ground level and no overhead cover.
2. Within a partial enclosure that includes an overhead cover and no more than two walls.
3. Within a partial enclosure that includes an overhead cover and more than two walls, the following shall apply:
 - At least 25% of the total wall area is completely open, and
 - At least 30% of the remaining wall area is open and unrestricted.
4. In the case of balconies, at least 20% of the total wall area shall be and remain open and unrestricted.

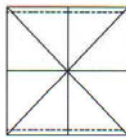
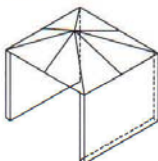
WALLS, NO ROOF, NATURAL VENTILATION



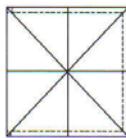
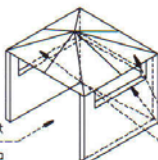
ROOF, 2 SIDE WALLS ONLY



ROOF, BOTH ENDS OPEN

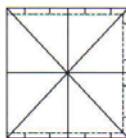
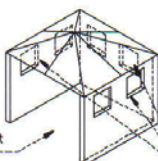


ROOF, 1 OPEN WALL, SEE NOTES



Open side at least
25% of total wall area

30% or more in total of the
remaining wall area is open and
unrestricted

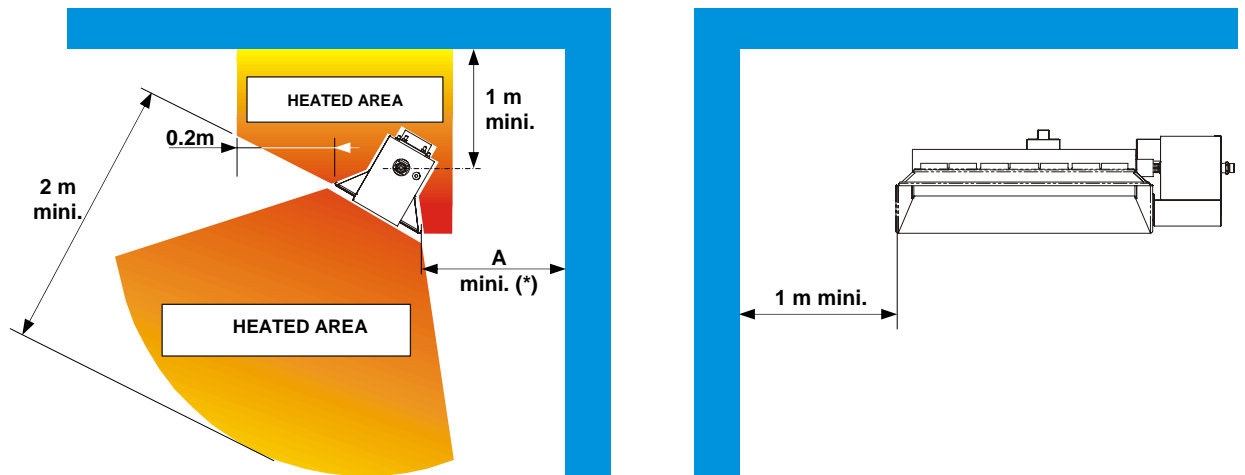


Open side at least
25% of total wall area

30% or more in total of the
remaining wall area is open and
unrestricted

Note: Examples show rectangular areas but principles apply to any other shaped area.

2.6 Minimum safety clearances from combustible materials: $\theta_{max} = 65^{\circ}\text{C}$



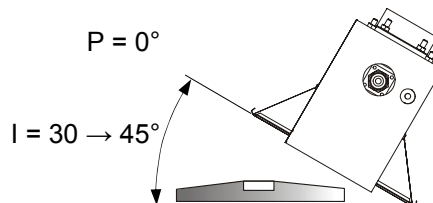
(*) For an inclination "I" between 30° and 45° , $A=0.6\text{m}$.



Where safety clearances cannot be respected, heat-protection must be provided above and behind heater in accordance with AS5601 / AG601

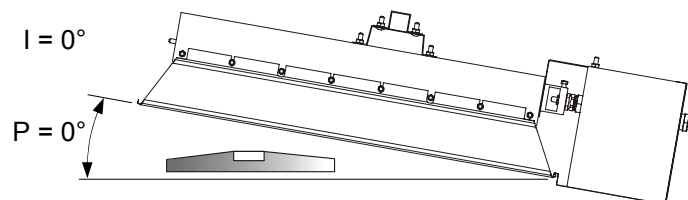
2.7 Inclination of heaters

- In all case :
inclination "I" must be at least **30°**
or slope "P" must be **0°**
- 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).
- Lateral Inclination "I"



Use 30° or 45° angled bracket supplied.

- Longitudinal inclination "P".

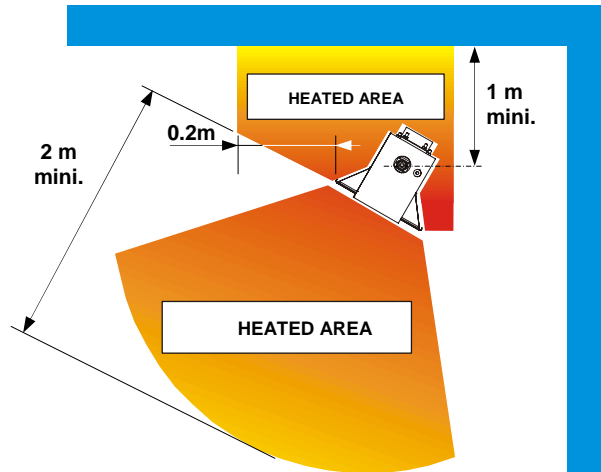


2.8 Gas connection

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

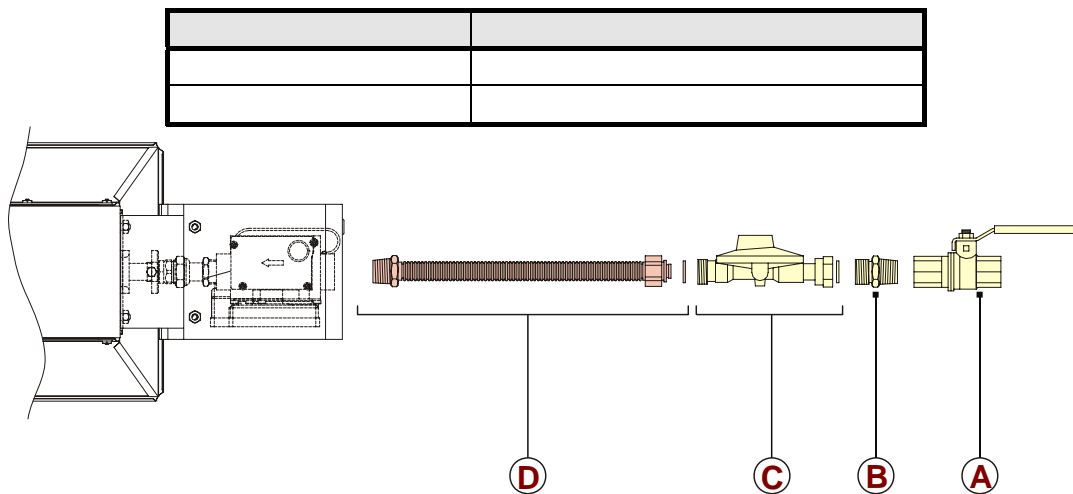
❑ Gas supply piping must NOT:

- be located in the heated area around a heater (see diagram below).
- produce any stress on the 840 SIGMA valve. (Use preferably a flexible gas hose)



❑ **MEDIUM [OVER] PRESSURE GAS SUPPLY**

Where gas supply pressure P_G is greater than appliance rated working pressure of [6 kPa] (see tables on page 2). Ref AS5601 / AG601 Cl 4.5.4.

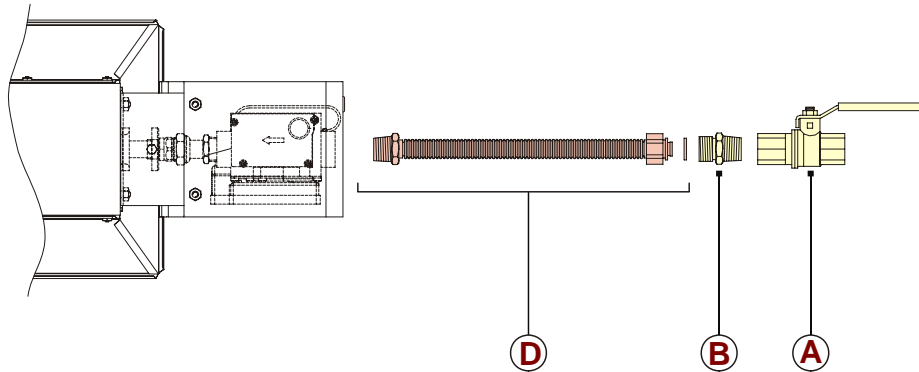


A	DN15 1/4 turn gas ball-valve I/O: Rp1/2" female – AGA Approved type.
B	Union fitting R1/2" male - R1/2" male
C	Fixed regulator R1/2" female – female – AGA Approved type.
D	Flexible hose I: coupling nut G1/2": R1/2" male – AGA Approved type.

LOW PRESSURE GAS SUPPLY

Gas supply pressure P_G identical to heater nominal inlet pressure (see tables on page 2).

GAS	GAS SUPPLY PRESSURE
NG	1.13 kPa
PROPANE	2.75 kPa

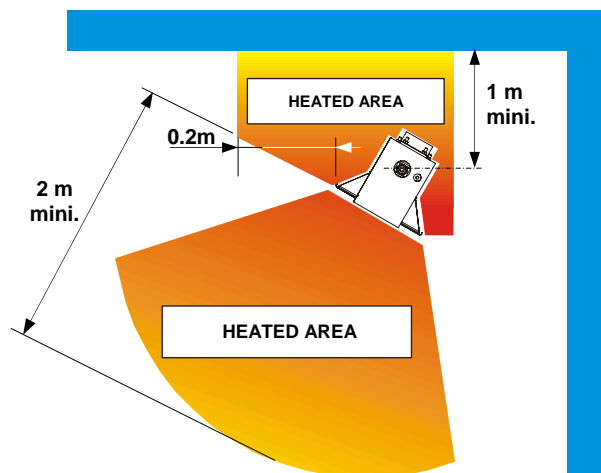


A	DN15 1/4 turn gas ball-valve I/O: Rp1/2" female – AGA Approved type.
B	Union fitting R1/2" male - G1/2" male [supplied with hose D]
D	Flexible hose 1 : coupling nut G1/2" : R1/2" male – AGA Approved type

2.9 Electrical connections

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

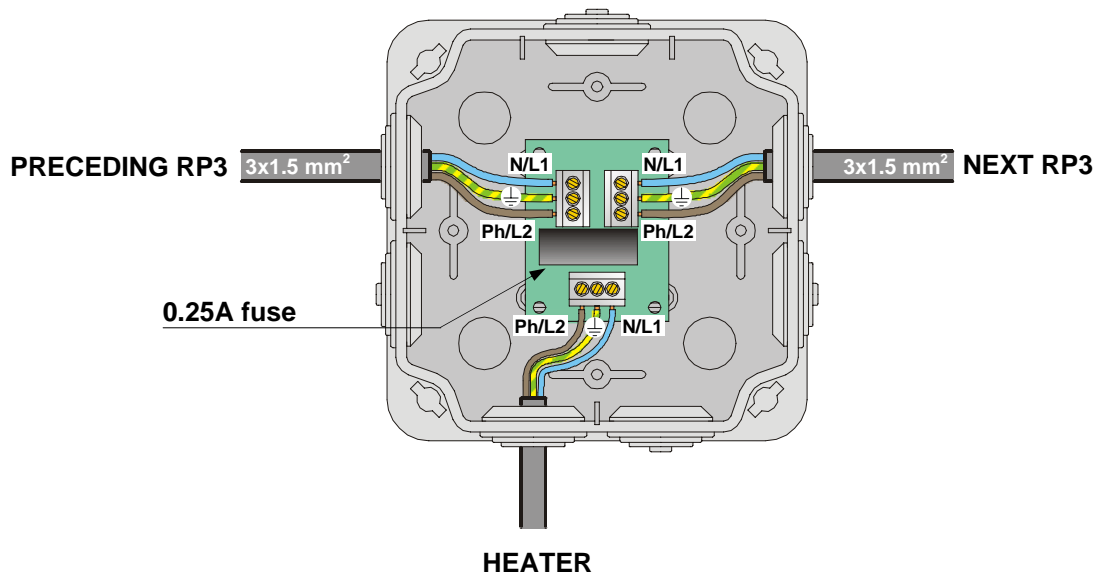
- Electrical connections must comply with local Regulations.
- Standard on/off control to single remote switched GPO
- All heaters must be **EARTHED**.
- When **RI** heaters are controlled by **MT100 DI**, **MT150 DI**, **MTH100 DI** or **MTH150 DI** or other programmable controllers refer to the corresponding technical instructions.
- Electric cables must not be positioned in the heated area around the heater.
(See diagram below)



- Types of connection cables [when applicable].

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 or GPO to heater	Use the cable supplied with the heater. Green/Yellow wire : EARTH / GROUND Blue wire : NEUTRAL Brown wire : LIVE
Control unit to sensor [where applicable]	Use the coaxial cable supplied by SBM. (20m, 60m or 300m long rolls of cable)

- Number of RP3: 1 RP3 per RI 12 and RI 16 heater.
- Fixing RP3 units: see instructions supplied in the box.
- Wire RP3's as shown in the diagram below.

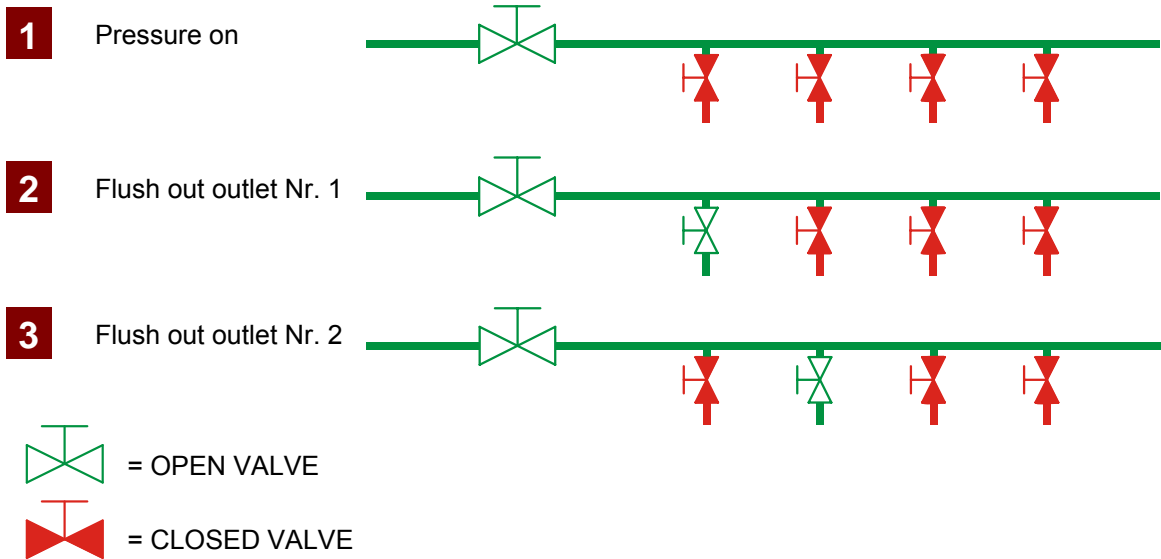


2.10 Start Up

□ Clean out

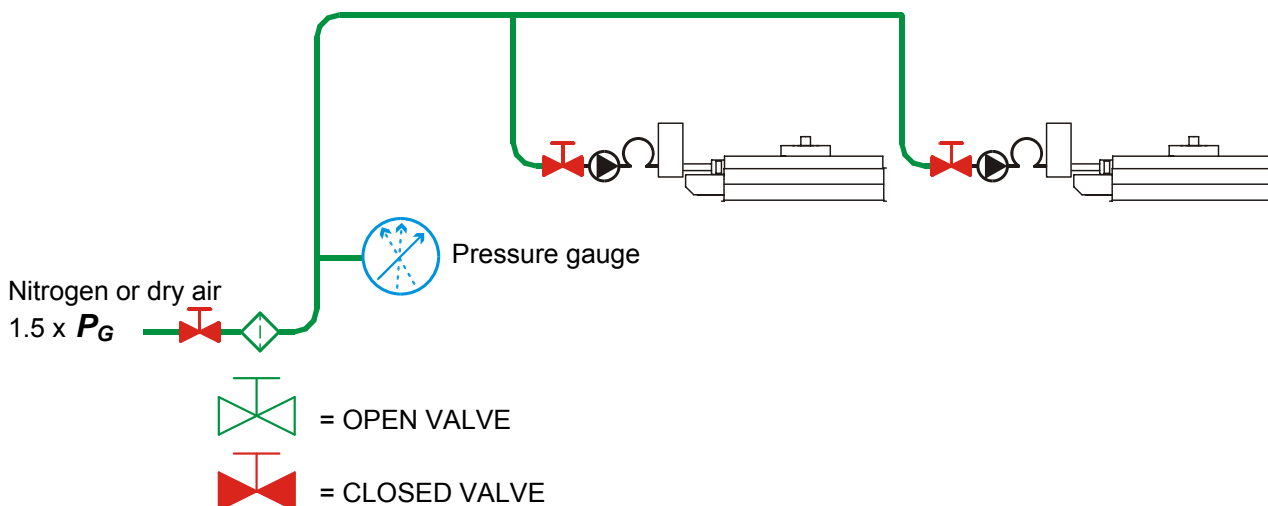
Objective: flush out impurities in the gas piping

Principle: clean out gas piping with dry air, or even better with nitrogen, **AFTER DISCONNECTING ALL APPLIANCES AND/OR ACCESSORIES.**



□ 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 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 must still show **the same pressure**.
- If pressure has dropped, detect leaks with a foaming product, fix them and repeat the operation.



***This principle is only a guideline.
Refer AS5601 / AG601 Appendix E***

☐ 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 the heater does not light after 10 seconds, then it goes to lockout.
 - . 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 open.
 - . If for any reason, the flame goes out, the heater will attempt a restart.

d) 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.

3. 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 Series 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 the **USER INSTRUCTIONS** supplied in the product boxes.

- Indicate to the customer the **locations** of:
 - **valves**
 - **electrical switches**
 - **control units**

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

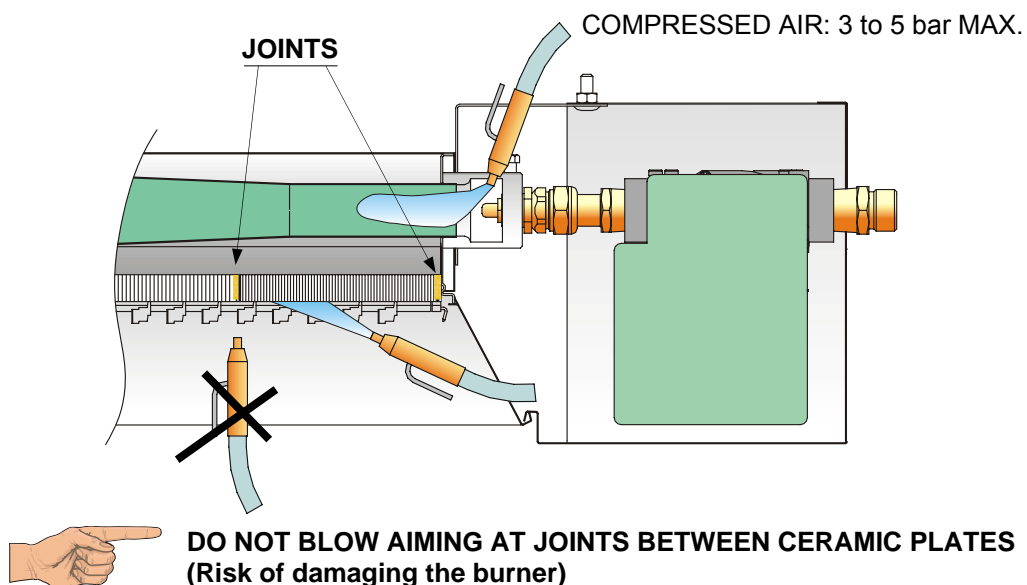
- Plan the **initial maintenance visit (1 year** after start-up).

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 fixing
Check that inclination I is **30° or 45°**.
Check hanging fixing of the group of heaters (in case of group of heaters)

- Check tightness of accessories

- Check heater operation

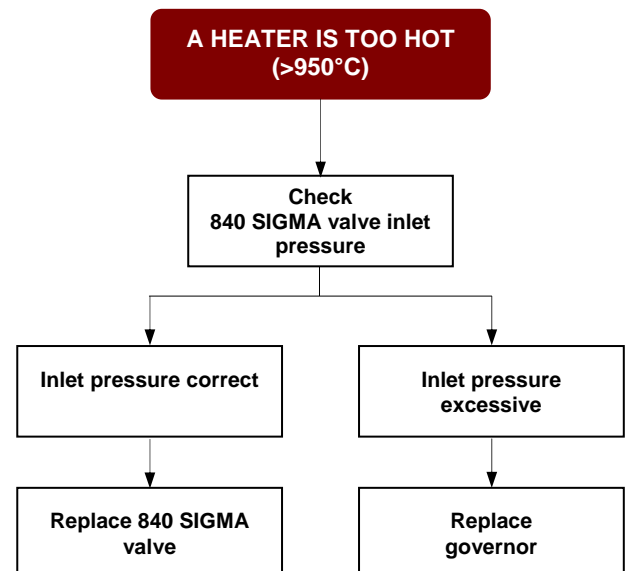
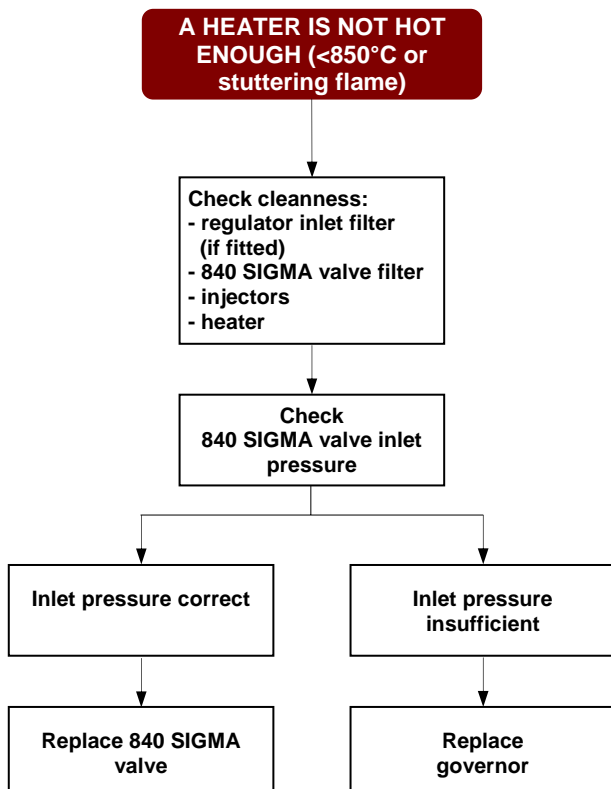
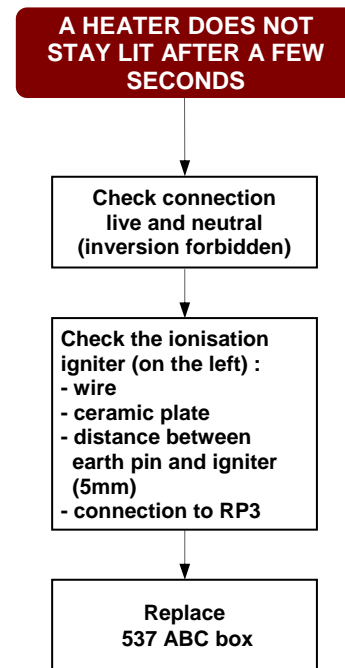
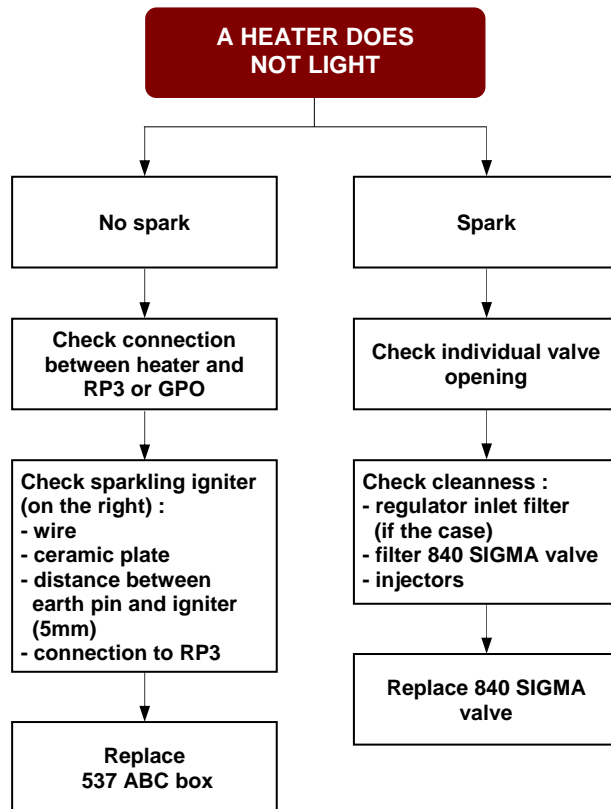
Switch on all heaters, check ignition and combustion. A combustion temperature of approximately 900°C (uniform orange red colour) ensures heater cleanliness and correct gas supply pressure.

- Check controls.

- Check all settings on time/temperature controls [if used].

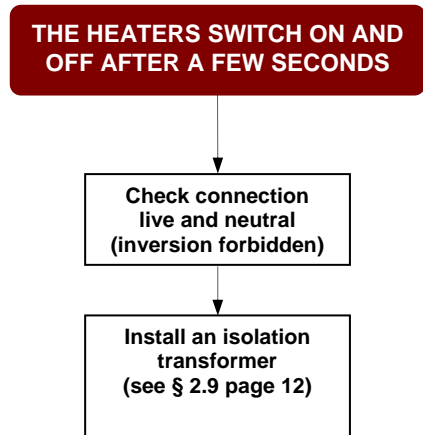
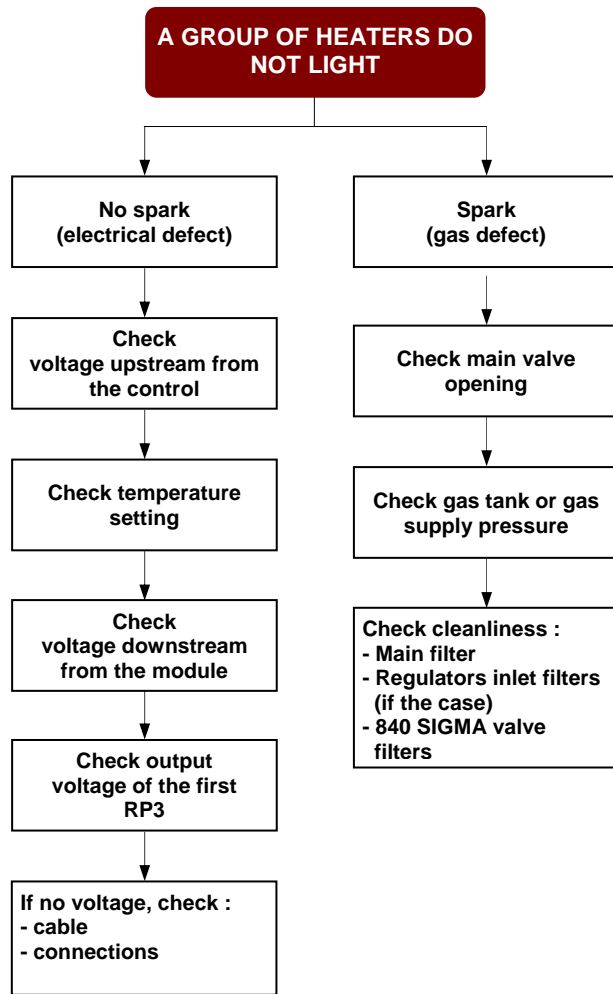
5. REPAIRS

- ❑ Problems on a single heater



❑ Problems on a group of heaters

First, check compatibility of heaters with the gas type and pressure.

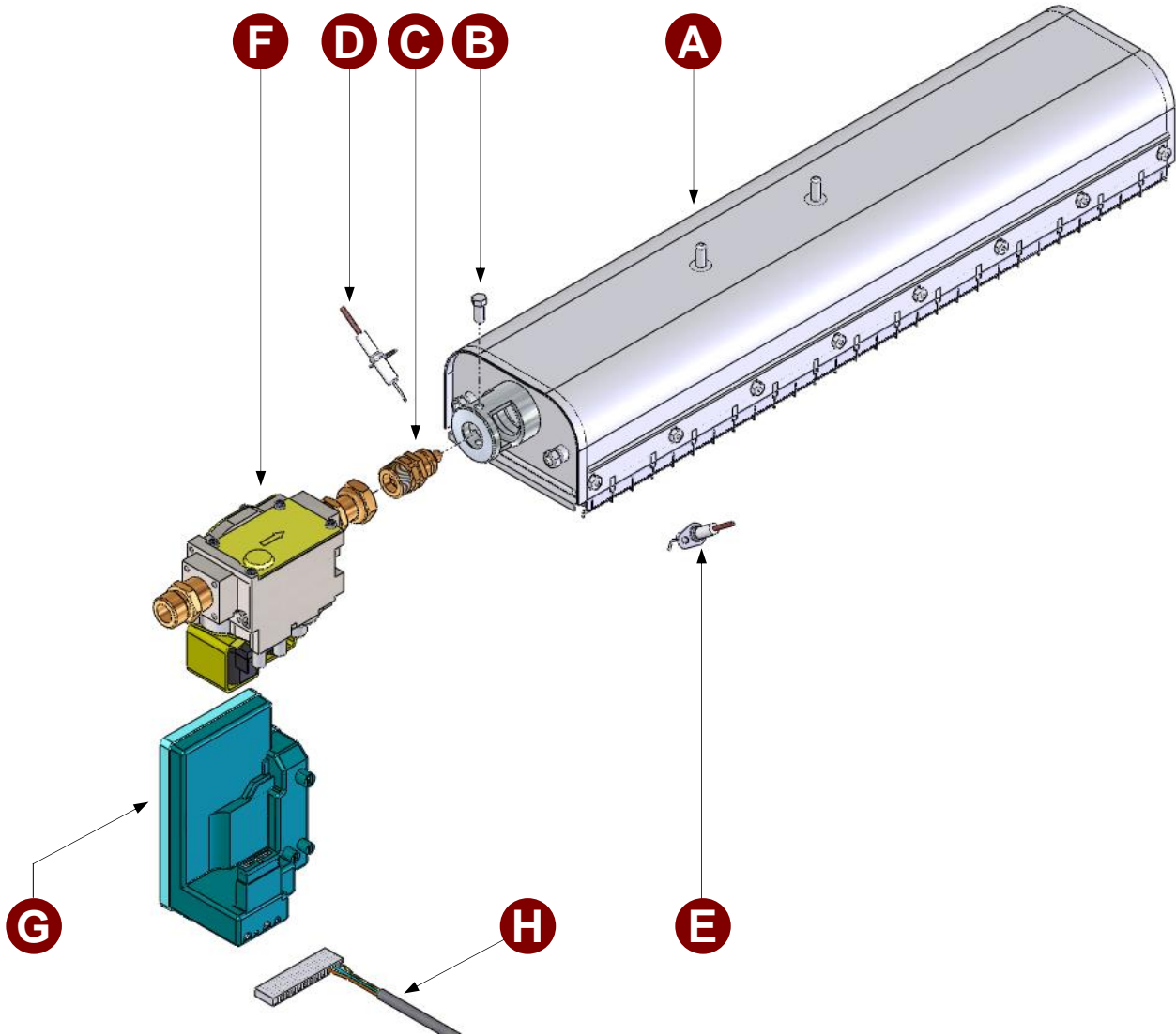


☐ RI heaters spare parts

WITH ALL SPARE PARTS 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.



REP.	SPARE PARTS	
A	BR 12 SX 96 BR 16 SX 96	(for RI 12 & RI 24 [2 pieces]) (for RI 16 & RI 32 [2 pieces])
B	LOCKING SCREW 6X100/16	(supplied lots of 10 only)
C	BLOCK U-0-XXX-XXX-00-A-12G	(supplied with injector fitted) – RI 12 & RI 16
C'	BLOCK***	(supplied with injector fitted) – RI 24 & RI 32
D	IGNITER 300 CLIP 4.8	(flame detector)
E	IGNITER 250 CLIP 2.8x0.5	(ignition electrode)
F	VALVE 840 SIGMA - FITTINGS	(supplied with 2 fittings mounted)
G	BLOCK 537 ABC	
H	RI CONNECTOR 1M/3FT	

6. CHANGING THE GAS USED

- ☐ Gases used in Australia with the RI heater range:

FAMILY	GAS	OPERATING PRESSURE
--	NG	1.13 kPa
--	PROPANE	2.75 kPa

- ☐ Principle

This operation must be performed 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 will supply a conversion kit, consisting 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.

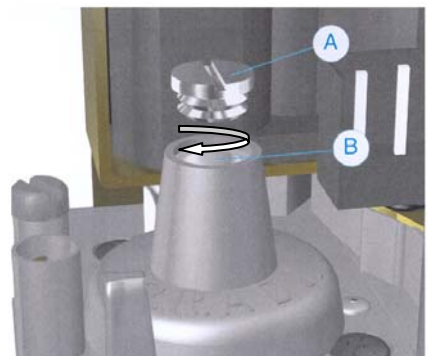
With all conversion kit orders, please indicate:

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

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

- ☐ 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 minimum, nominal and maximum pressures)
- Check the injector 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 injector pressures)
*When the regulator needs to be blocked [for ULPG], tighten screw **B** to maximum but without excess force.*
- ***Do not forget to tighten the setting screws when removing gauge hose.***
- Stick the new gas changing label near the rating plate.



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

For any further information please contact your SBM agent

