

KAPPA R

Gas-Fired Natural Draft Hot Water Boilers

**Please Read Instructions Carefully
Save for Future Reference**

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
 - Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you can not reach your gas supplier call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- These instructions must be affixed on or adjacent to the boiler.

Manufactured by:

BIASI

Biasi S.p.A.
Verona, Italy



Distributed By:

QHT
INCORPORATED

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3560 Lafayette Rd. Bldg. 2 Unit A
Portsmouth, NH 03801
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Dear Customer:

Thank you for buying a Biasi KAPPA R Boiler System.

The KAPPA R is an efficient floor standing gas fired boiler for central heat.

We realize that it is not possible to answer all questions about the KAPPA R boiler system in this manual. Reading this installation manual does not make the reader an expert in all aspects of installation and operation, and does not replace the need for a qualified, licensed heating contractor. We urge you to contact your installing contractor or distributor if you are in question about any aspect of your boiler's performance. Our main concern is that you are satisfied with your boiler and its performance. We require that your contractor complete efficiency tests using instruments.

The external controls and accessories listed in this manual (excluding those supplied inside the boiler) are intended to serve as guidelines rather than specific recommendations. We realize that other makes and models of such devices are available and can be used as successfully as those we specify. The installing contractor is the best judge of a system's specific requirements, as well as the local availability of certain makes and models of controls and accessories. The preceding does not apply, however, to the equipment that comes with every boiler, such as the overheat control and pressure relief valves. **The installation of the specific devices supplied with every boiler is absolutely necessary to the safe operation of the boiler and protection of the heating system.**

All BIASI KAPPA R boilers are built in accordance with the ASME boiler and pressure vessel code, and bear the "H" stamp. The Entire range of applications for the KAPPA R boiler has been tested to standard ANSI Z21.13/CSA4.9 and is CSA compliant.

This KAPPA R boiler has a 1 year warranty on parts and a limited lifetime warranty on the heat exchanger only. Please be sure to return the warranty registration card as the warranty will be void without your boiler's serial numbers (located on label affixed to the boiler), date of installation and the name of your installer being on record in our files.

Thank you for purchasing our KAPPA R boiler. If you have questions or comments, please don't hesitate to contact us immediately. Our goal is 100% customer satisfaction.

QHT inc.

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WARNING

Boiler is certified as an indoor appliance. Do not install boiler outdoors or locate where it will be exposed to freezing temperatures.

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- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
 - Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you can not reach your gas supplier call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- These instructions must be affixed on or adjacent to the boiler.

DANGER

Caution: Do not store or use flammable materials, chemicals or flammable liquids, especially gasoline, in the vicinity of this heating appliance.

Caution: Should overheating occur or the gas supply fail to shut off, do not turn off or disconnect the electrical supply to the pump. Instead, shut off the gas supply at a location external to the appliance.

Caution: Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.

WARNING

Any appliance that burns natural gas, propane gas, fuel oil, wood or coal is capable of producing carbon monoxide (CO). Carbon Monoxide (CO) is a gas which is odorless, colorless and tasteless but is very toxic. CO is lighter than air and thus may travel throughout the building.

**BRIEF EXPOSURE TO HIGH CONCENTRATIONS OF CO, OR
PROLONGED EXPOSURE TO LESSER AMOUNTS OF CO MAY
RESULT IN CARBON MONOXIDE POISONING. EXPOSURE CAN BE
FATAL AND EXPOSURE TO HIGH CONCENTRATIONS MAY RESULT
IN THE SUDDEN ONSET OF SYMPTOMS INCLUDING
UNCONSCIOUSNESS.**

Symptoms of CO poisoning include the following:

dizziness	vision problems	shortness of breath
headache	loss of muscle control	unclear thinking
nausea	weakness	unconsciousness

The symptoms of CO poisoning are often confused with those of influenza, and the highest incidence of poisoning occurs at the onset of cold weather or during flu season.

A victim may not experience any symptoms, only one symptom, or a few symptoms.

Suspect the presence of carbon monoxide if symptoms tend to disappear when you leave your home.

The following signs may indicate the presence of carbon monoxide:

- Hot gasses from appliance, venting system pipes or chimney, escaping into the living space.
- Flames coming out around the appliance.
- Yellow colored flames in the appliance.
- Stale or smelly air.
- The presence of soot or carbon in or around the appliance.
- Very high unexplained humidity inside the building.

If any of the symptoms of CO occur, or if any of the signs of carbon monoxide are present, **VACATE THE PREMISES IMMEDIATELY AND CONTACT A QUALIFIED HEATING SERVICE COMPANY OR THE GAS COMPANY OR THE FIRE DEPARTMENT.**

ONLY QUALIFIED, LICENSED SERVICE CONTRACTORS SHOULD PERFORM WORK ON YOUR BIASI KAPPA R BOILER.

IMPORTANT INFORMATION

Please read this page carefully.

- **ALL BOILERS MUST BE INSTALLED IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL PLUMBING, HEATING AND ELECTRICAL CODES AND ORDINANCES, AS WELL AS THE REGULATIONS OF THE SERVING ELECTRICAL, WATER AND GAS UTILITIES.**
- **All systems should be designed by competent contractors, and only persons knowledgeable in the layout and installation of heating systems should attempt the installation of any boiler. It is the responsibility of the installing contractor to see that all controls are correctly installed and operating properly when the installation is completed.**
- **This boiler is intended for use, only with propane or natural gas. All flammable liquids (especially gasoline), chemicals, rags, paper, wood scraps, debris, etc., should be kept away from the boiler at all times. Keep the boiler area clean and free of all fire hazards.**
- **Please read the literature and warranties supplied by the manufacturers of the various accessory equipment. This equipment is warranted by the respective manufacturers, not by Quincy Hydronic Technology, Inc. Each piece of equipment must be installed and used according to the recommendations of the manufacturer.**

Codes and Regulations:

Installation of the boiler and related equipment must conform to national, state and local regulating agencies and codes applicable to the installation of the equipment. In the absence of local requirements, the following codes apply:

A. ANSI/NFPA	-	#70 National Electric Code
B. ANSI/NFPA	-	#211 Chimneys and Vents
C. ANSI/NFPA	-	#Z223.1 National Fuel Gas Code
C. ANSI/NFPA	-	Domestic Gas Conversion Burner
D. CAN/CGA	-	B149 Installation Codes
E. ANSI/ASME	-	CSD-1

The above codes are available from:

National Fire Protection Association (NFPA)
Battery March Park
Quincy, Massachusetts, 02269
<http://www.nfpa.org>

Canadian Standards Association Standards Division
5060 Spectrum Way, Suite 100
Mississauga, Ontario, L4W 5N6

1. Product Description

The KAPPA R series boiler is a cast iron gas fired water boiler designed for use in closed forced circulation heating systems.

This boiler is a Category I draft hood equipped appliance, which must be vented by natural draft using a lined masonry or listed metal chimney system. An adequate supply of air for combustion, ventilation and dilution of flue gases must be available in the boiler room.

2. Specifications

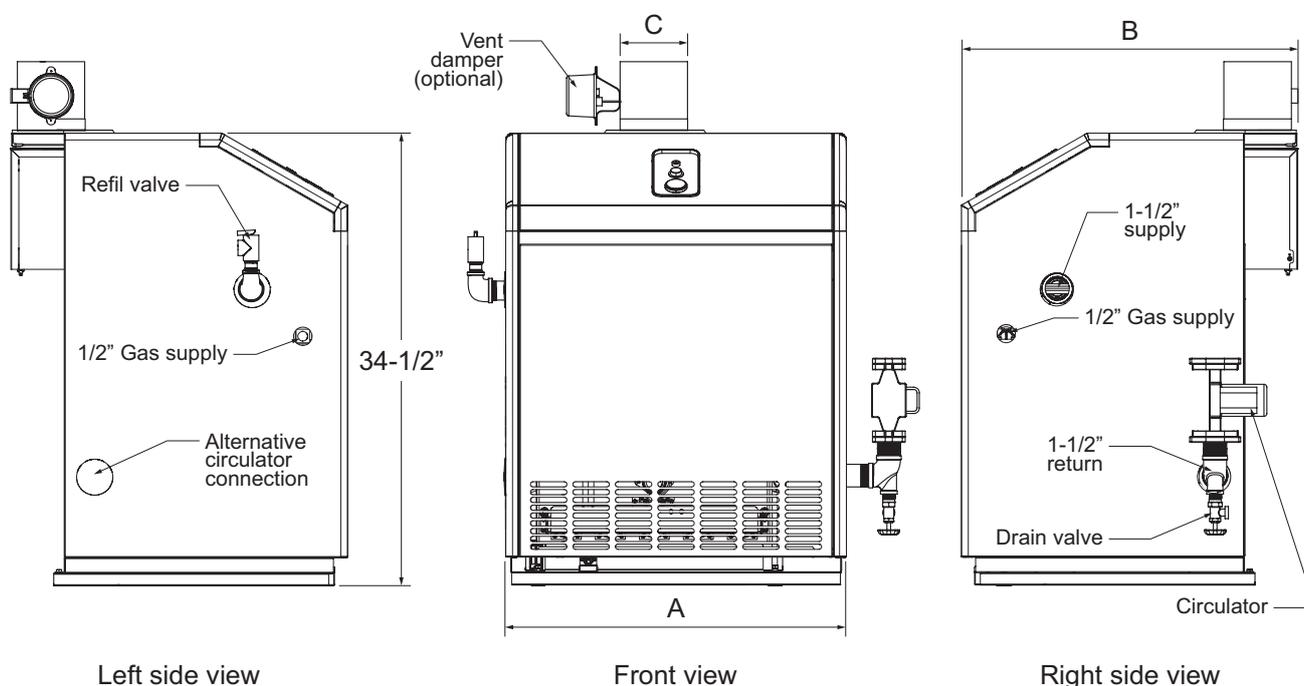


Figure 2.1 (General configuration)

BASIC BOILER MODEL	RATINGS		NATURAL GAS		PROPANE GAS		DIMENSIONS (inches)		
	NUMBER OF SECTIONS	INPUT	HEATING CAPACITY	INPUT	HEATING CAPACITY	AFUE %	A	B	C
		MBH	MBH	MBH	MBH				
KAPPA 27R	4	106	91	94	80	85.5	19-3/4	25-3/4	5
KAPPA 35R	5	141	121	125	107	85.5	19-3/4	25-3/4	6
KAPPA 44R	6	177	151	157	134	85.5	25-3/4	25-3/4	6
KAPPA 53R	7	213	182	188	161	85.5	25-3/4	25-3/4	7

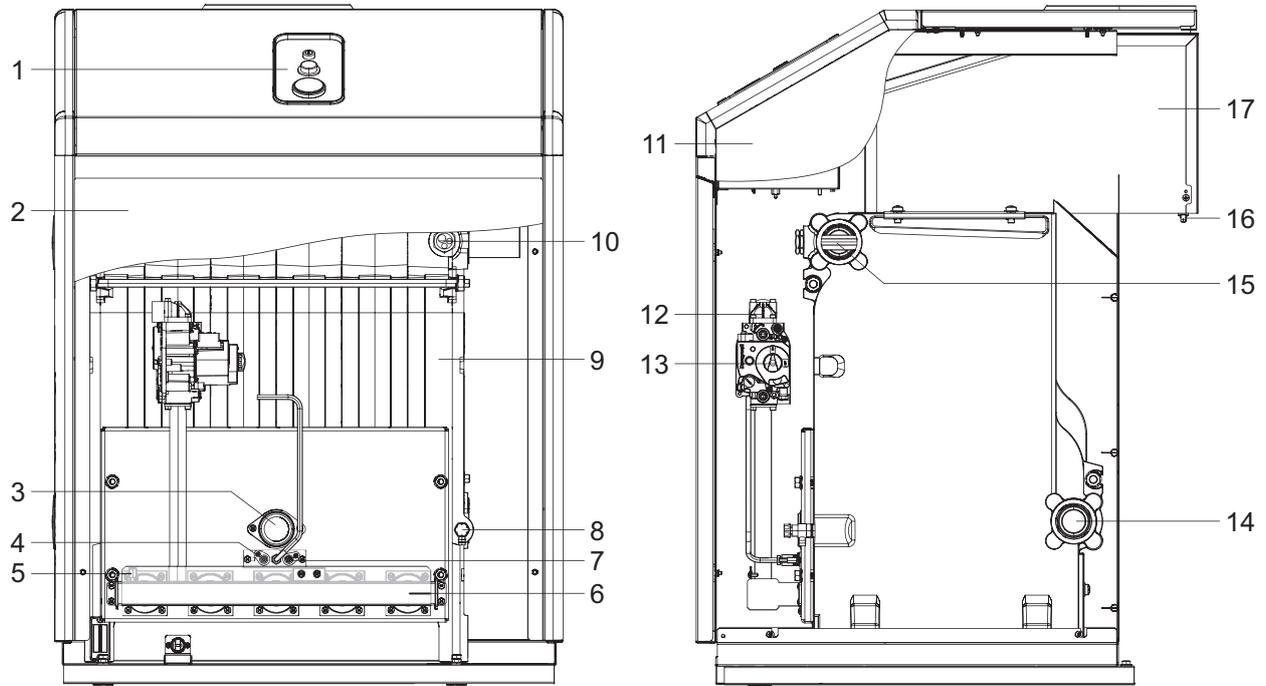
Table 2.1 (Specifications)

Note: The manufacturer should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.

DESCRIPTION	KAPPA				
	27R	35R	44R	53R	
Fuel	G20				
Destination country/countries	USA - CANADA				
Appliance category	I2H				
Type of appliance	B11BS				
Max rated heat input (MBH)	106	141	177	213	MBH
Max heat output (MBH)	90.5	120.5	151	182	MBH
Max rated heat input LP (MBH)	94	125	157	188	MBH
Max heat output LP (MBH)	80	107	134	161	MBH
Useful efficiency at Pn Max	85.5				%
Flue gas temperature (ΔT)	76 / 168	72 / 161	86 / 186	85 / 185	$^{\circ}\text{C} / ^{\circ}\text{F}$
Required draught	0.02 ÷ 0.05 in W.C.				
CO ₂ (*)	5.4	5.2	6.2	5.6	%
CO (*)	< 10				p.p.m.
Maximum admissible temperature	110 / 230				$^{\circ}\text{C} / ^{\circ}\text{F}$
Operating temperature (range)	32÷99 / 92÷210				$^{\circ}\text{C} / ^{\circ}\text{F}$
Minimum return temperature	38 / 100				$^{\circ}\text{C} / ^{\circ}\text{F}$
Maximum operating pressure "PMS"	50				psi
Power supply	120~60				Volt~Hz
Maximum power input (functioning)	125				W
Index of protection	X0D				IP
Classification	Low temperature				
Diameter of the stack fitting	5	6	6	7	inch
Water-side pressure drop (ΔT 18 $^{\circ}\text{C}$)	1.6	3.2	6.7	10.1	ft head
Water content in the boiler	3.25	3.90	4.55	5.20	Gal
Sections	4	5	6	7	n $^{\circ}$

(*) Values achieved with G20 (natural gas) and with parameters referred to 0% residual O₂ in the products of combustion and with pressure 30 inHg.

Table 2.2 (Other specifications)



1. Control panel
2. Front panel
3. Flame inspection opening
4. Ignition electrode
5. Burner gas pressure test point
6. Burner
7. Flame detection sensor
8. Boiler drain cock
9. Boiler body

10. Immersion Well
11. Side panel
12. Gas supply
13. Gas valve
14. Central heating return inlet pipe
15. Central heating flow outlet pipe
16. Flue gas thermostat
17. Flue gas hood

Figure 2.2 (Primary components)

3. Instructions for Use

3.1 Warnings:

- In order to guaranty safety and correct operation, it is essential that all the tests are carried out by a competent and responsible licensed service person before lighting up the boiler.
- The tests are described in the installation, operation and service instructions manual in Section 11 Start Up and Check Out.
- Ensure that the Central Heating circuit is regularly filled with water checking that the pressure indicated on the pressure gauge is not lower than 1 bar (14.5 psi) as shown on Figure 3.1.
- If the pressure reading on the pressure gauge is below 1 bar (14.5 psi), then the system will require filling. An automatic filling valve is normally provided by the installer for this purpose.
- **If you are in any doubt regarding this procedure you are advised to contact your Installer or an Approved Service Person.**
- Therefore, when the boiler is not lit or used in cold weather, with consequent risk of freezing **do not switch off the boiler at the circuit breaker or close the gas inlet cock.**
- When you expect not to use the boiler for a long period follow the instructions given in section 3.4 on page 11.

3.2 Refilling Procedure:

- Isolate the boiler from the electrical supply at the circuit breaker.
- The boiler should have been installed with an automatic fill valve, external to the unit. Open the cold water supply to the automatic fill valve.
- The pressure should be 1 – 1.5 bar (14.5 – 22 psi).
- The automatic fill valve should maintain this pressure, but not exceed it.

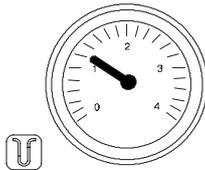


Figure 3.1 (Pressure gauge)

Air introduced into the boiler during this filling process will vent through the automatic air purger fitted to the boiler. You may also find it necessary to vent air from your heating circuit using the installed vents, however be aware that excessive venting will cause the pressure in the system to drop. Always ensure that the pressure gauge is set at the required pressure.

3. Instructions for Use (Cont.)

3.3 Lighting/Operating Instructions:

Warnings: Do not attempt to start the boiler unless all cleanout doors are secured and sealed. Do not attempt to light the burner by hand.

1. Check that the cocks connected to the gas inlet pipe and to the supply cold water inlet pipe are open.
2. Power the boiler electrically by setting the power switch shows the sequence (Figure 3.2).
3. If the appliance will not operate, follow the extinguishing instructions on page 12 and call your service technician or gas supplier.

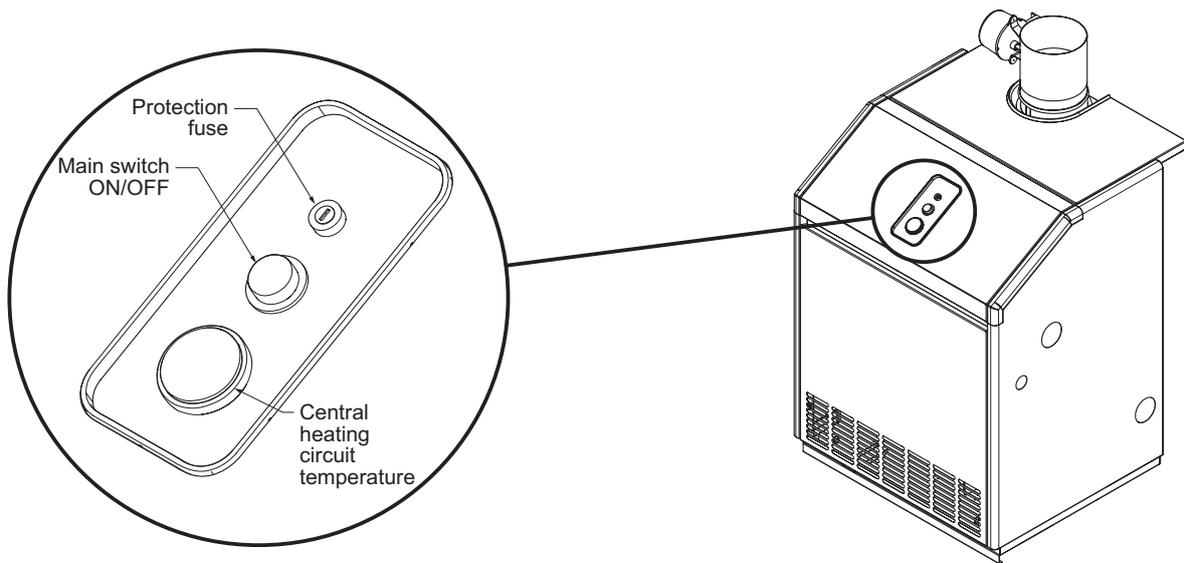


Figure 3.2

3.4 Extinguishing Instructions:

When you expect not to use the boiler for a long period:

- Switch off the electricity supply to the boiler, by means of the circuit breaker;
- Shut off the gas supply cock connected to the gas inlet pipe and the cock connected to the supply cold water inlet pipe (for pipes see Section 8 System Piping in the installation, operation and service instructions manual);
- Empty the water circuit, if there is a risk of freezing.

3.5 Boiler Safety Controls:

1. Every KAPPA R boiler is equipped with a block flue control. The control is designed to prevent the boiler from running if exhaust products are escaping from the boiler draft control. If the blocked vent control prevents the boiler from running, do not attempt to place the boiler in operation, shut the power off to the boiler, close the gas supply and contact your service professional to fix the underlying problem.
2. Every KAPPA R boiler is equipped with a flame roll out control. The control is designed to prevent the boiler from running if flames are pulled out of the burner tray of the boiler. If the flame roll out control prevents the boiler from running, do not attempt to place the boiler in operation, shut the power off to the boiler, close the gas supply and contact your service professional to fix the underlying problem.

3. Instructions for Use (Cont.)

FOR YOUR SAFETY READ BEFORE LIGHTING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

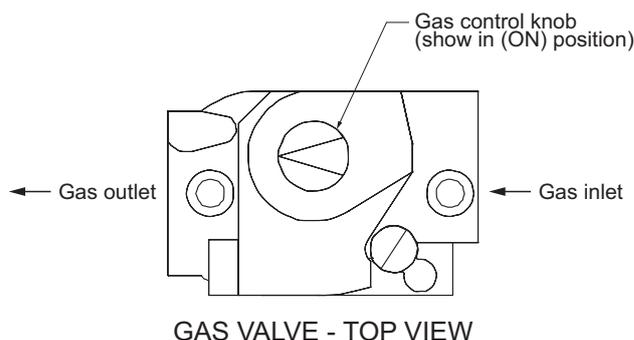
- A. This appliance is equipped with an ignition device which automatically lights the pilot. Do **NOT** try to light the pilot by hand.
- B. **BEFORE LIGHTING** smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
 - D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

3. **STOP!** Read the safety information above on this label.
4. Set the thermostat to lowest setting.
5. Turn off all electric power to the appliance.
6. This appliance is equipped with an ignition device which automatically lights the pilot. Do **NOT** try to light the pilot by hand.
7. Remove front access panel.
8. Rotate the gas control knob clockwise ↻ to OFF.
9. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you then smell gas, **STOP!** Follow "B" in the safety information above on this label. If you don't smell gas go to the next step.
10. Rotate the gas control knob counter clockwise ↺ to "ON".
11. Replace front access panel.
12. Turn on all electric power to the appliance.
13. Set thermostat to desired setting.
14. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.



TO TURN OFF GAS TO APPLIANCE

15. Set the thermostat to lowest setting.
16. Turn off all electric power to the appliance if service is to be performed.
17. Push in gas control knob slightly and turn clockwise ↻ to "OFF". Do not Force.

4. Maintenance

4.1 Periodic Maintenance:

- For efficient and continuous operation of the boiler, it is required to arrange maintenance and cleaning by an Authorised Service Person, at least once a year.
- During the service, the most important components of the boiler will be inspected and cleaned. This service can be part of a maintenance contract.

In particular, you are advised to have the following checks carried out:

- primary heat exchanger;
- burner;
- exhaust fume duct and flue;
- pressurization of the expansion vessel;
- filling up of the central heating circuit;
- bleeding of air from the central heating system;
- general check of the appliance's operation.

4.2 Daily Maintenance:

Boiler Area:

- Check that the area around the boiler is clear of debris.
- Do not store combustible materials, gasoline or any other flammable vapors or liquids near the boiler. Remove immediately if found.
- Check for any indication of leakage or corrosion. If anything is found, contact a service technician.

Pressure Gauge:

- Check the pressure on the pressure gauge. Make sure that it does not go below 8 psi or above 24 psi. If the boiler regularly operates out of this range contact a service professional.

Air Openings:

- Check to make sure that all air openings into the room are free and clear. Also check that the air openings on the front of the boiler are not obstructed. If there are any blockages clean them away.

4.3 Monthly Checks:

Boiler Piping:

- Visually check all the piping around the boiler to ensure there are no leaks. If any leaks are discovered call a service professional.

If the pressure on the pressure gauge has gone down:

- It is necessary to fill up the appliance with water again, so as to raise the pressure to an adequate level.
- If filling up with water has to be done very frequent, have a service professional check for leaks.

If noises due to air bubbles are heard during operation:

- You should check that the pressure on the pressure gauge (Figure 3.1 on page 10) is not below the correct setting.
- If required, fill up the system correctly, as described in the Section 3.2 of this manual.
- Bleed any air present in the radiators, if necessary.

Boiler Relief Valve:

- Visually inspect the boiler relief valve for any evidence of leakage. If any problems are found contact your service professional.

Venting System:

- The venting system of the KAPPA R boiler must be checked on a monthly basis. Failure to do so can cause vent system failure that could lead to serious injury or property loss.
- Check all components of the vent system for blockage, evidence of leaks, or for corrosion. If anything is found contact a service professional.

4. Maintenance (Cont.)

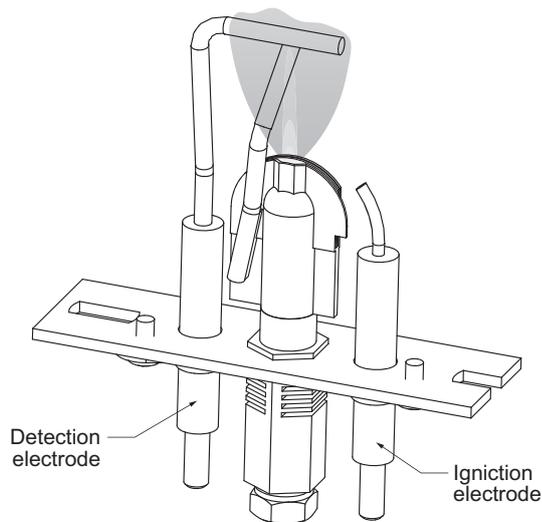


Figure 4.1 (Pilot burner flame)

The pilot flame should have the following properties:

- Blue flame.
- Flame sensor glowing red.

Improper Pilot Flame:

- Large flame past flame sensor.
- Small flame not reaching flame sensor.
- Yellow tip flame.

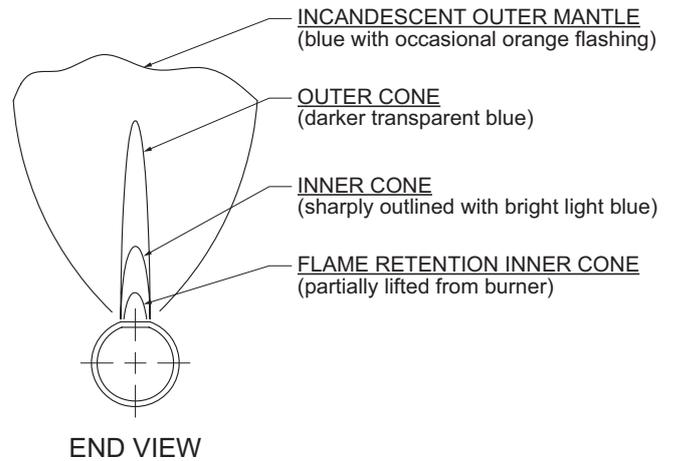


Figure 4.2 (Main burner flame)

The main burner flame should have the following properties:

- See figure above.

Improper Main Flame:

- Large yellow tip flame.
- Small flame not showing inner or outer cone.

4.4 External Cleaning:

- Before performing any cleaning, disconnect the appliance from the electrical mains, using the dedicated circuit breaker or serviceman's switch located adjacent to the appliance.
- To clean the external panels, use a cloth soaked in soapy water. Do not use solvents, abrasive powders or sponges.
- Do not carry out cleaning of the appliance and/or its parts with readily flammable substances (for example petrol, alcohols, naphtha, etc.).

**Warranty
For KAPPA R Residential
Floor Standing Gas Boilers**

FIRST YEARS-WARRANTY FOR KAPPA R SERIES RESIDENTIAL HOT WATER BOILERS: QHT warrants that its boiler and casing are free from defects in material and workmanship for 1 year from the date of installation. If any part on the boiler is found to be defective within this period, QHT will replace the part free of charge.

LIMITED LIFETIME WARRANTY FOR KAPPA R RESIDENTIAL HOT WATER BOILERS: Biasi warrants that the heat exchanger of the KAPPA R boilers are free from defects in material and workmanship for lifetime from the date of installation to the original purchaser. If the heat exchanger is found to be defective within the time frame Biasi will replace the heat exchanger.

These warranties are subject to the condition that a heating contractor whose principal occupation is the sale and installation of heating equipment must have installed the boiler. PARTS, WHICH ARE COVERED, consists of all materials supplied by Biasi, identified by QHT's part numbers in its literature. Other parts supplied by the installer carry their own warranty and each manufacturer has responsibility for its own products.

NOTE: ANY PART, WHICH IS REPLACED UNDER WARRANTY, CARRIES ONLY THE UNEXPIRED PORTION OF THE ORIGINAL WARRANTY.

OWNER RESPONSIBILITIES:

1. Provide for proper installation, which includes pressure relief and pressure reducing valves and high limit safety controls on closed systems.
2. Provide qualified periodic service to prolong proper operation and service.
3. Insure that boiler is installed in accordance with all codes and ordinances.
4. This warranty does not apply to boilers, which are subject to misuse, abuse, neglect, alteration, accident, excessive temperature, excessive pressure, or corrosive water or atmosphere.
5. Owner will be responsible for return of faulty components to Portsmouth, NH, freight pre-paid.

QHT and Biasi will not be responsible for:

1. Components that are part of the heating system, but were not manufactured by Biasi or QHT as part of the boiler.
2. The workmanship of the installers of KAPPA R boilers. Furthermore, this warranty does not assume any liability for unsatisfactory performance caused by improper installation.
3. Any costs for labor to remove or replace the faulty component.
4. Improper boiler application or adjustments, control settings, care or maintenance.
5. Any damage associated with corrosion or leakage due to the use of "non-barrier", plastic pipe in the heating system.

* IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY. BIASI AND QHT EXPRESSLY DISCLAIM AND EXCLUDE ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE.

For prompt warranty service, notify the installer, who, in turn, will notify the distributor from whom the boiler was purchased. If this does not result in corrective action, contact Biasi through Quincy Hydronic Technology (Address Below) with details in support of the warranty claim. All claims must be processed through proper trade channels. Contact with Biasi directly is not recommended for rapid claim settlement.

Quincy Hydronic Technology Inc.,
3560 Lafayette Road, Bldg. 2, Unit A
Portsmouth, NH, 03801
Tel. (603) 334-6400

BIASI BOILER WARRANTY REGISTRATION

IMPORTANT., Registration required. To gain complete warranty Protection, fill in and mail this card, within 1 year of installation to the address listed below

NAME: _____ ADDRESS: _____
CITY: _____ STATE: _____ ZIP: _____
BOILER SERIAL NO.: _____ DATE OF INSTALL: _____
NAME OF INSTALL CO.: _____ ADDRESS: _____
CITY: _____ STATE: _____ ZIP: _____

RETURN TO: QHT, INC., 3560 Lafayette Road, Bldg. 2 Unit A, PORTSMOUTH, NH 03801



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