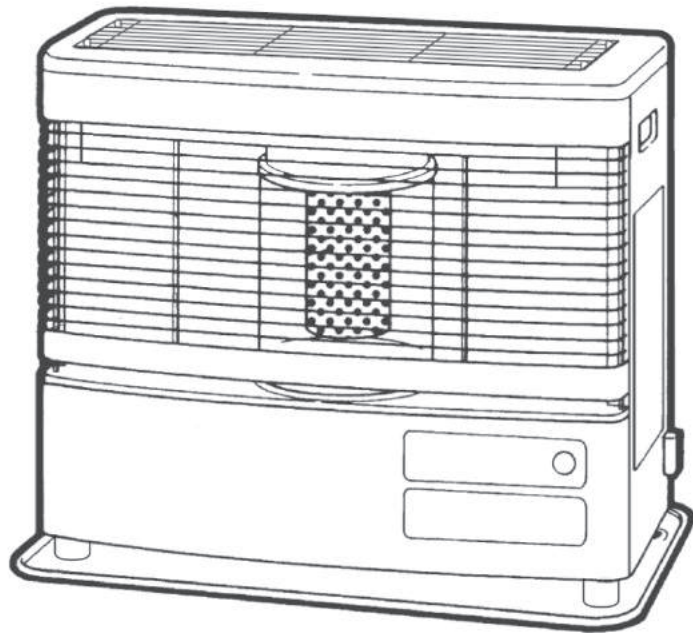


TÖYÖTÖMI

VENTED HEATING SYSTEM INSTALLATION AND OPERATION INSTRUCTIONS



MODEL FR-700F

IMPORTANT

READ AND UNDERSTAND INSTRUCTIONS BEFORE INSTALLING OR USING HEATER.
RETAIN INSTRUCTIONS FOR FUTURE REFERENCE. CHECK LOCAL CODES AND ORDINANCES FOR PERMITTED USE.

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SECTION A: SPECIFICATIONS

Model:	FR-700F
Heater Efficiency:	92.4% (1)
Heat Rating:	High - 7.00 kW (23,900 BTU/h) Low - 1.75 kW (5,980 BTU/h)
Fuel Consumption:	High - 0.791 L/h Low - 0.198 L/h
Fuel system:	External tank (2)
Fuel Type:	Kerosene only
Dimensions (W × H × D):	700 × 593 × 422 mm
Weight:	28 kg
Vent Pipe Hole:	70 ~ 80 mm diameter
Maximum Length of Vent Pipe System:	3 m, 3 bents or less
Electrical Rating:	220 Volts AC, 50 Hz Preheat - 260 W Burning - 45 W

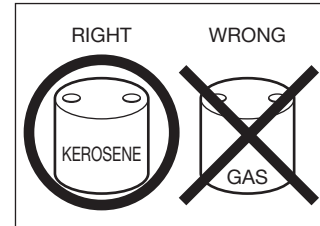
(1) Heat and vaporized water are produced by the combustion process of this heater. This rating does not take into account heat loss due to condensation of water vapor.

(2) External tank to be purchased from local suppliers.

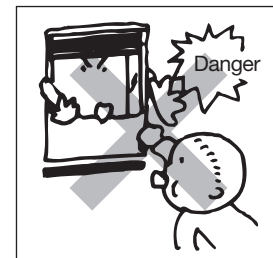
SECTION B: SAFETY TIPS FOR OPERATION

CAUTION: Heater and vent pipe system must be properly installed before operation. Please follow instructions under "Installation", Section F.

1. Never use any fuel other than Kerosene. NEVER USE GASOLINE. Use of gasoline can lead to uncontrollable flames, resulting in destructive fire.



2. Due to high surface temperatures, keep heater away from children, furniture and clothing while in operation (See Page 12).



3. To prevent abnormal operation and prolong heater life, be sure to perform routine maintenance (See Pages 9).



4. Never store or transport fuel in other than a metal or plastic container that is (1) acceptable for fuel and (2) clearly marked "KEROSENE". Never store fuel in the living space.



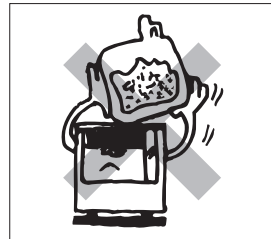
SECTION C: FUEL GUIDE

The FF-70AQ is designed for use with Kerosene. Use of low-quality fuel will cause burner performance to drop, leading to abnormal combustion and reduced heater life.

Purchase only Kerosene, in non-red cans reserved exclusively for fuel and marked accordingly with the word "KEROSENE". Always store your fuel in a separate area from where you store gasoline for your power equipment to avoid accidental use of gasoline in your heater.

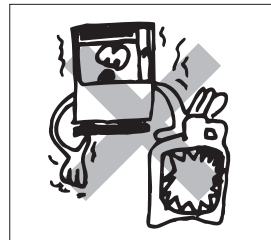
What to Buy . . .

- ALWAYS: Clean and high-quality Kerosene.
- ALWAYS: Fuel free of contaminants, water or cloudiness.
- NEVER: Gasoline, alcohol, white gas, camp stove fuel or additives.
- NEVER: Yellow or sour-smelling fuel.



How to Use It . . . (when optional removable fuel tank is used)

- ALWAYS: Fill heater away from living quarters when heater is cool; use siphon.
- ALWAYS: Watch fuel gauge to avoid overfilling heater.



How to Store It . . .

- ALWAYS: Store in a clean container, clearly marked KEROSENE.
- ALWAYS: Store away from direct sunlight, heat sources or extreme temperature changes.
- NEVER: In a glass container, or one that has been used for other fuels.
- NEVER: For longer than six months. Begin each heating season with fresh fuel; discard at the end of season.
- NEVER: In the living space.



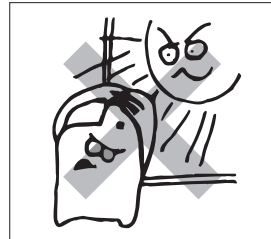
Why It is Important . . .

Pure, clean fuel is essential for safe and efficient heater operation. Poor quality or contaminated fuel can cause:

- Excess tar deposits on burner and flue pipe
- Incomplete combustion
- Reduced heater life



Use of a highly volatile flammable fuel such as gasoline can produce uncontrollable flames, creating a severe fire hazard.



SECTION D: OPERATION

1. Introduction

The heater is an easy to use vented petroleum heater. It provides considerable quantities of heat, automatically regulates the room temperature, uses very little fuel and electricity and has options for automatic or manual operation.

This section provides all the information required for the operation of the Vented heating system. All specified operating procedures must be carried out in the order in which they are described.

2. Operating elements and lights

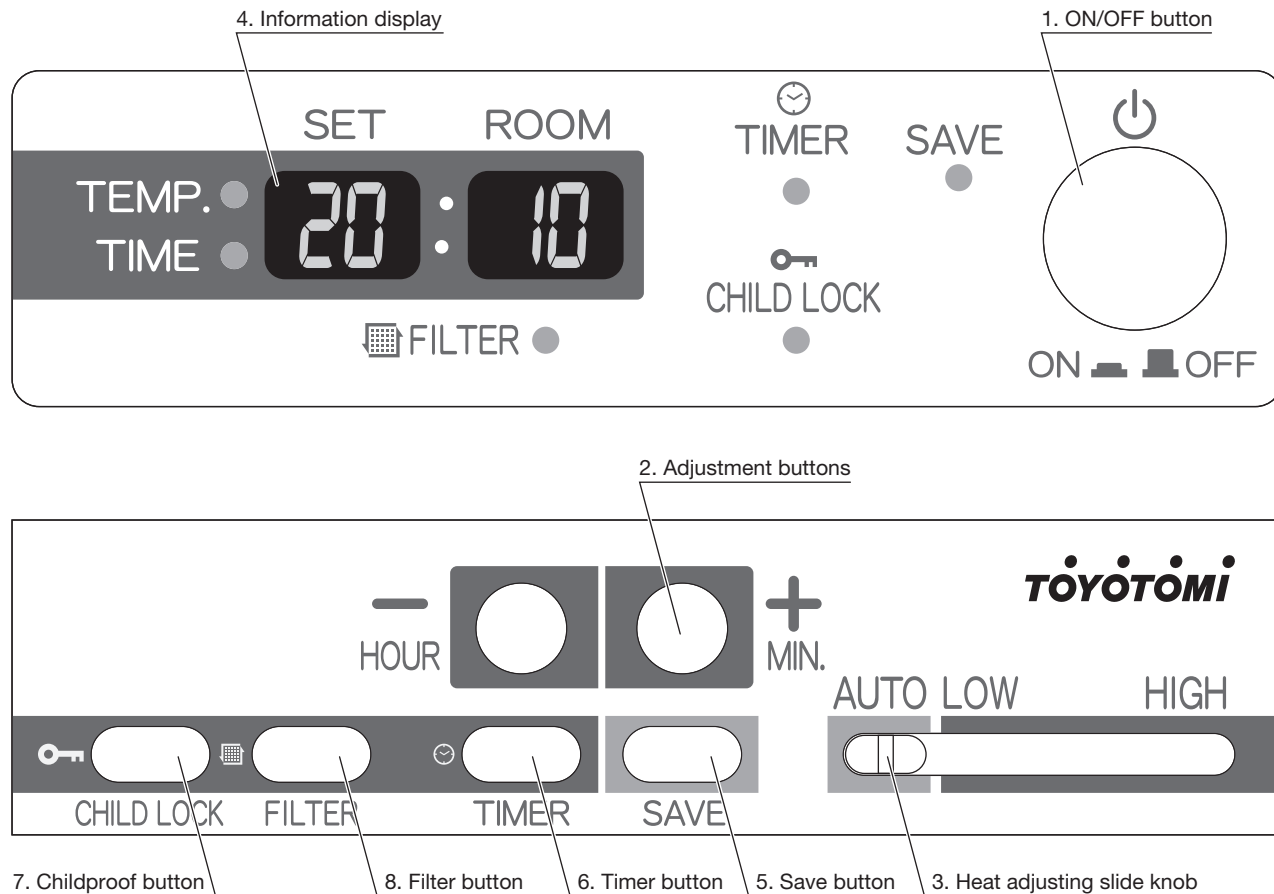


Fig. D-1 Operation panel

1. ON/OFF button:

The main switch to turn the heater on and off. Switch it "ON" to activate the heater. Combustion will start after a 2-6 minutes pre-heating period. The heater has 4 settings "HIGH", "MEDIUM", "LOW" and "OFF".

2. Adjustment buttons:

Temperature selection switches offer the user the option to select the desired temperature during operation.

3. Information display:

Displays the clock, set temperature, room temperature and error codes.

4. Heat adjusting slide knob

• Manual operation ...

Slide the heat adjusting slide knob to right-side to select your desired heat yield from "LOW" to "HIGH".

• Automatic operation ...

Set the heat adjusting slide knob to left-side "Auto" position to set the Automatic operation. The heater will operate automatically in accordance with the set and room temperature.

5. SAVE button:

Allows you to limit the temperature. When this function is activated, the heater will automatically switch off and on again.

6. TIMER button:

Allows you to switch on the heater automatically at a preset time.

7. CHILDPROOF LOCK button:

Can be used to prevent children accidentally changing the heater settings.

8. Filter button:

This button is for releasing the filter lamp.

• To release the filter lamp

When the filter lamp is on, please clean the fan filter (See pages 10). After cleaning, please keep pressing the filter button for more than 3 seconds. Then the filter lamp will be off.

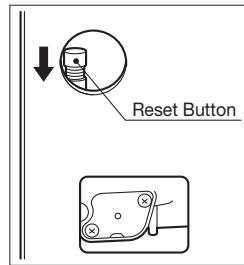
3. Prior to use

Step 1: Open the Valve(s)

Open the valve(s) of the external fuel tank.

Step 2: Start the Fuel flow

If using heater for the first time, or after heater has been out of fuel, press the red reset button once for a period of one second in order to send fuel to the fuel sump.

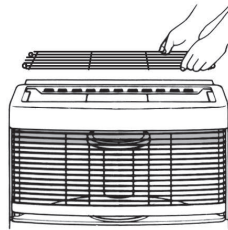


Note: Make sure there is no fuel leakage from the fuel line or joints.

Also make sure fuel tank is not too high. See installation instructions.

Step 3: Set the top guard

The top guard is in the carton box. Please take it out from the box, and set it on the top plate of the heater before using it to prevent a fire.



Step 4: Plug in the heater

Insert the plug into the wall-socket (220 Volts – AC/50Hz).

Step 5: Setting the clock

Important: The clock on the heater must always be set to the correct time.

It is only possible to set the correct time, when the heater is connected to the mains and not burning.

Use the adjustment buttons to set the time.

First press either of the two buttons to switch on the function "empty full"(the CLOCK light and the information display will start blinking). Next, set the hours using the button on the left (-HOUR) and the minutes using the button on the right (+MIN.). Press once to increase the value by one step. When you hold down the button, the value will continue going up, until you release the button again. After approximately 10 seconds the blinking will stop and the setting will be locked. After switching off the heater, the clock time will be displayed.

4. Igniting the heater

The heater is operated directly by the user. You can choose the heat yield is controlled automatically in accordance with the room temperature registered by the temperature sensor or selected manually by setting the heat adjusting slide knob.

Step 1: Switch the heater ON

Press the ON/OFF button. The current room temperature is displayed on the information display when the heater is in the manual operation. However the set temperature is also displayed when you choose the automatic operation. The ON/OFF light starts to flash, after which the heater will switch on.



Note: (*) The start-up time depends on the room temperature.

After 8-12 minutes, the heater will automatically select the correct operating mode and the ON/OFF button will now be illuminated continuously.

Room temperature:

under 0°C	12 minutes
0°C - 15°C	10 minutes
15°C	8 minutes

If no flames are visible after the start-up period, the heater will deactivate and then restart automatically. If flames are still not detected, the heater will deactivate and will have to be restarted manually (error code E-2 on the information display).

Step 2: Setting the room temperature

Set the heat adjusting slide knob to left-side "Auto" position. The temperature setting can only be adjusted, when the heater is burning. Use the adjustment buttons to adjust the temperature. First press either of the two buttons to switch on the function (the TEMP light next to the information display will start blinking). Next, adjust the temperature using the button on the right (+MIN.) to set the temperature to a higher setting and the button on the left (-HOUR) to lower the temperature. Press once to increase the value one step. After approximately 10 seconds the light will stop blinking and setting will be locked. The available temperature settings range from 10°C minimum to 32°C maximum. When the heater has been unplugged (or after a power failure), the temperature will reset to the factory setting of 20°C. The operating mode is automatically controlled in accordance with the room temperature detected by the room temperature sensor. The heater works in the "HIGH" operating mode until the room temperature has reached the desired level.

When the room temperature reaches the chosen setting the heater automatically switches to the "MED" or "LOW" operating mode in order to maintain the desired temperature.

Step 3: The correct use of 'SAVE'

The 'SAVE' function allows you to limit the temperature. When this function is activated, the heater will automatically switch off, when the room temperature exceeds the set temperature by 2°C. Subsequently, when the room temperature has dropped again to the set temperature, the heater will automatically switch on again. Activate the 'SAVE' setting by pressing the appropriate button. The SAVE indicator light will light up. Switch off the function by pressing the SAVE button once again.



Without the 'SAVE' setting your heater will maintain the set temperature by approximation as well, by adjusting its heating capacity. 'SAVE' is an economy setting, which you can use when, for instance, you are not present in the room or to keep it frost-free.

Step 4: Setting the heat yield (Manual operation)

Adjust your desired combustion mode by setting the heat adjusting slide knob between "LOW" and "HIGH". The combustion will keep the selected position.



The first 8-12 minutes from switched ON the heater, the heater will keep "Min." combustion mode for the pre-combustion. After that, the combustion will change automatically to selected position. You cannot change the heat yield first 8-12 minutes.

5. Timer operation

The timer allows you to switch on the heater automatically at a preset time.

In order to switch on the timer, the correct time must have been set and the heater should be off. Follow the procedure below:

- [1] Press the TIMER button. The TIMER light and the information display will start blinking.
- [2] Use the adjustment buttons to set the time at which the heater must ignite. Use the button on the left (-HOUR) to set the hours and the button on the right (+MIN.) to set the minutes (interval of 10 minutes).
- [3] Press the ON/OFF button while the information display is blinking.
- [4] After approximately 10 seconds the information display will show CLOCK again and the TIMER indicator light will light up, indicating that the timer function has been activated. To clear the timer setting, press the ON/OFF button once.



Note: When the room temperature is less than 15°C, the preset time is changed automatically depending on the room temperature in order to heat the room by the desired time.

6. Room temperature sensor

The room temperature sensor is fitted with a 2.5 meter cable. This is located on the back of the heater. Ensure that the cable does not touch the outlet tube. The room temperature sensor can be installed with cellotape or with a wood screw.

Select the location where the sensor is to be installed in such a way that it will not be exposed to direct sunlight, draughts or the warm air flowing out of the heater.

7. Childproof lock

The childproof lock can be used to prevent children accidentally changing the heater settings. When the heater is burning and the childproof lock is on, the heater can only be switched off. Other functions are blocked then. If the heater has already been switched off, the childproof lock also prevents accidental ignition of the heater. Activate the childproof lock by pressing the appropriate button and holding it down for more than 3 seconds. The CHILD LOCK indicator light will light up, indicating that the childproof lock has been activated. Switch off the childproof lock by pressing the button and holding it down for more than 3 seconds once again.

8. Switching off the heater

There are two ways to switch off the heater.

- [1] Press the ON/OFF button. The information display will show the CLOCK signal. The air circulation ventilator and the ventilator motor continue to operate for approximately 3 minutes in order to cool the heater down.
- [2] Press the TIMER button, when you want to switch off the heater and ignite it again with the timer the next time. This not only switches off the heater, but it also activates the timer function. You can change the required time with the adjustment buttons.

9. Recovery after overheating

The heater is protected against damage caused by overheating.

A sensor will activate if the temperature in the housing exceeds 90°C.

Step 1: Switch the heater OFF.

Step 2: Allow the heater to cool down.




Ensure that the metal housing has cooled sufficiently before touching it.


Under normal conditions, a period of 30 to 45 minutes is sufficient.

Step 3: Pull the heater plug out of the socket.

- Step 4: Look for the source of the overheating. Overheating is usually caused by objects that obstruct the free flow of air. Check that the circulation ventilator or exhaust pipes are not blocked. Check that there are no objects blocking the outlet system.
- Step 5: Remove the front panel.
- Step 6: Clean the inside of the heater.

 Before starting to clean the heater, ensure that the interior is cool enough to touch. Wipe all dust off the outside of the housing with a clean, non-fluffy, damp cloth or another suitable cleaning aid. Do not forget to clean the outside of the heat chamber and the heat exchanger.

- Step 7: Re-attach the front panel.
- Step 8: Insert the heater plug into the socket.
- Step 9: Switch the heater ON.
- Step 10: Re-program the heater (clock and timer).


 If the heater overheats after the completion of a recovery procedure, contact your dealer and do not switch the heater on until the problem has been resolved.

10. Cleaning the filter (monthly)

Switch off the heater and let it cool down, before you start any maintenance work. Also disconnect the plug from the mains.

Your needs hardly any maintenance. It is, however, important that you clean the louvers, grilles and circulation fancover on the back of the heater weekly. Periodically check the flue pipe connection for leakage or separation.

We recommend that you remove dust and stains in time with a damp cloth, because otherwise these may cause stains that are hard to remove.

 Do not remove any heater components yourself. Always contact your dealer for repairs. When the power cord is damaged, it may only be replaced by an authorized fitter. Use a new cord of the type H05 VV-F.

11. Before consulting an expert

The following situations do not indicate defects.

While switching the heater on or off.

White smoke can be seen when the heater is switched on for the first time.

Machine oil or dust on the burner chamber or heat exchanger is burning.

The flames flicker for several minutes after the heater has been ignited.

The ignition rod continues to function when the heater is cold, even several minutes after ignition. This may cause the flames to be a little larger.

The heater makes intermittent creaking sounds when warming up or cooling down.


Expansion and shrinkage of metal parts may cause a slight creaking sound.

Circulation of air in the room does not start immediately when the heater is lit.

To prevent unpleasant cold draughts, the ventilator only switches on when the heater has become warm.

A loud clicking sound can be heard during the first use or when the fuel runs out.

There is air in the fuel pump. This should be gone within approximately 1 minute.

 Note: The fuel pump may make a slight ticking sound during normal operation. This does not indicate a problem.

While the heater is in operation

A part of the burner pot and/or heat exchanger becomes red in color during operation. This is normal and does not indicate a problem.

SECTION E: ERROR MESSAGE

ERROR CODE	INFORMATION	WHAT TO DO
E-0	Power interrupted.	Re-ignite the heater
E-2	Ignition safety feature is activated.	Contact your dealer
E-6	Extinguished during operation.	Contact your dealer
E-8	Blower motor malfunction.	Contact your dealer
E-12	Overheating safety feature is activated.	Clean the air filter and remove dust.
E-13	Burner thermistor malfunction	Contact your dealer
	Excess fuel in the burner	Contact your dealer
E-22	Ignition failure three times	Contact your dealer
E-23	Primary flame (Flame sensor) is malfunction and / or dirty.	Contact your dealer.
-- : --	Timer is not setting.	Set the timer.
Hi	Room temperature is higher than 35°C. Position of room temperature sensor is not correct.	Check the position of room temperature sensor.
Lo	Room temperature is lower than -10°C. Room thermistor malfunction or disconnected.	Check the position of room temperature sensor.

SECTION F: INSTALLATION

1. Introduction

This section contains all the relevant information, specifically:

- Installation specifications
- List of installation tools
- Instructions for the installation of the Vented Heating System

The heater can be installed at any location, on condition that there is full compliance with electrical, fuel and emission regulations.

Before you start installing the heating system (including electrical wiring), check the local building and fire safety regulations. The requirements stipulated in these regulations must be respected in order to guarantee a legally approved installation and correct operation.



The heater was designed to be used to a maximum altitude of 1000m above sea level. Contact your dealer for the necessary adjustments if you wish to use it at a higher altitude.

2. Moving the heater

In addition to the space required for the heater, extra room must be kept free for air circulation. The Vented Heating System can be placed on any type of flooring and operate safely, unless fuel or fire safety regulations specify otherwise. Check the gaps in the manner stipulated in the instructions in the manual.

Recommended tool kit

1. Crosshead screwdriver
2. Steel tape measure
3. Felt-tip pen or pencil
4. Cement for exterior use
5. Electric drill (clockwise and anti-clockwise recommended)
6. Hole cutting saw, jig saw or other tools suitable for sawing a hole of 70~80 mm for the exhaust pipe
7. Long drill
8. Standard screwdrivers
9. Volt, Ohmmeter
10. Spirit level
11. Small range of self-tapping screws
12. Insulated screwdriver
13. Protective material for your floor
14. Container for fuel exhaust pipe

3. The electrical supply system

The electrical system must be protected from overloads by an at least 5-Ampere fuse or contact breaker.



Some installations (such as for use in mobile homes) must be fitted with a permanent connection to the household power circuits. This must be done by a recognised electrician.

4. Wiring for the room temperature sensor

A temperature sensor that can be fitted to a wall measures the room temperature in order to automatically regulate the heating. The standard sensor wire is approximately 2.5 m long.



The sensor may not be placed in a draught, direct sunlight or the warm air flowing out of the heater. This may cause incorrect temperature indications.

5. Unpacking

Save all packaging materials for possible future transportation.

- A) Remove the cardboard (drilling) template and the user's manual from the packaging.
- B) Remove the drip tray from the packaging.
- C) Remove the box with the installation kit from the packaging.
- D) Remove the heater from the packaging.
- E) Remove the plastic bag containing the parts.
- F) Remove the exhaust pipe from the bottom of the box.
- G) Check that all parts are present.



Only the standard feed and exhaust system is supplied with the heater.

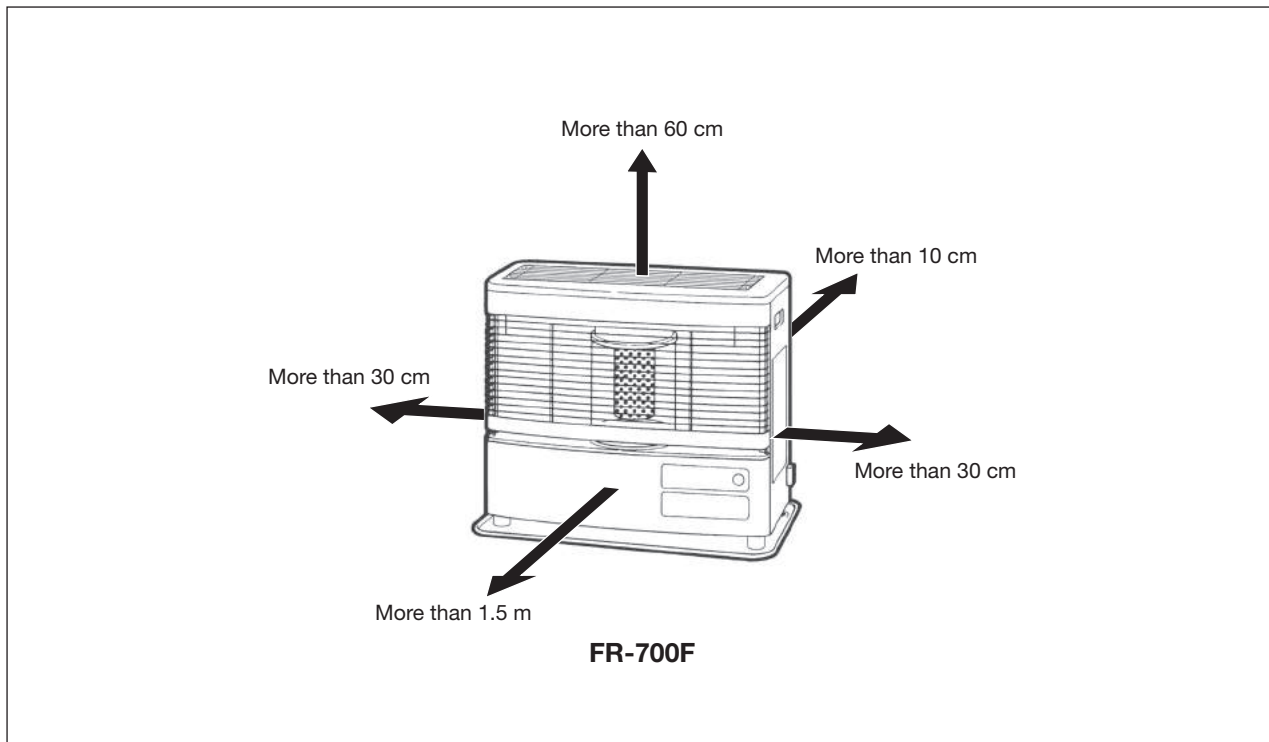


Fig. 1: Gaps heater/exhaust pipe

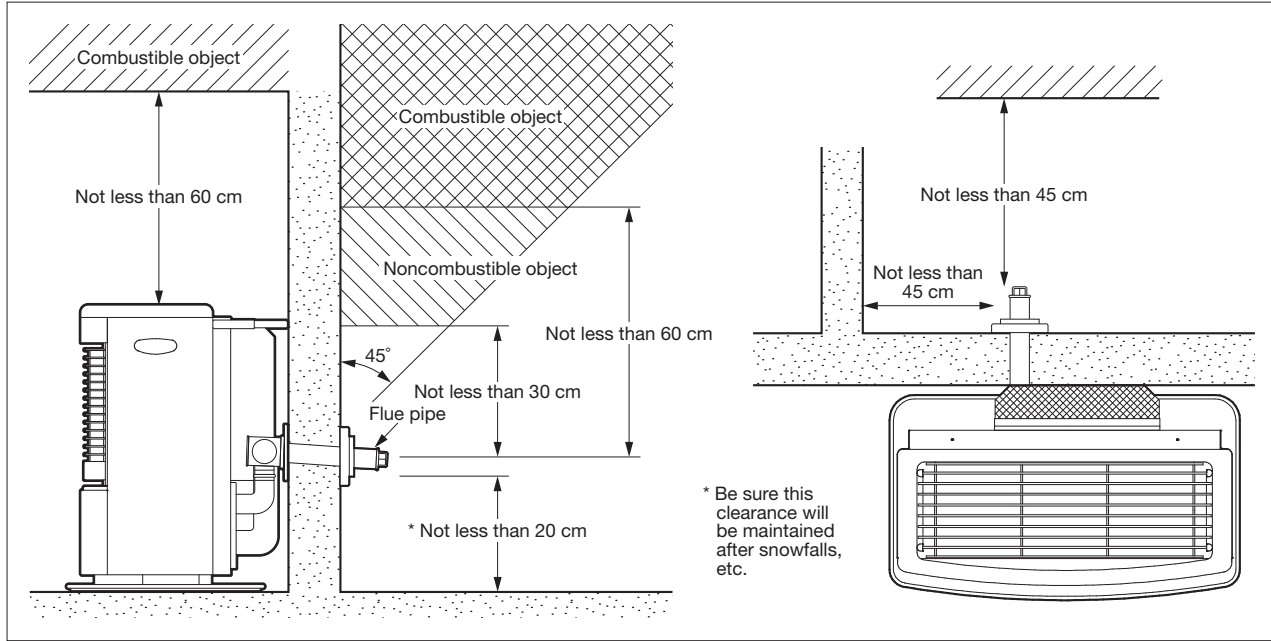


Fig. 1 (continued) gaps heater/exhaust pipe

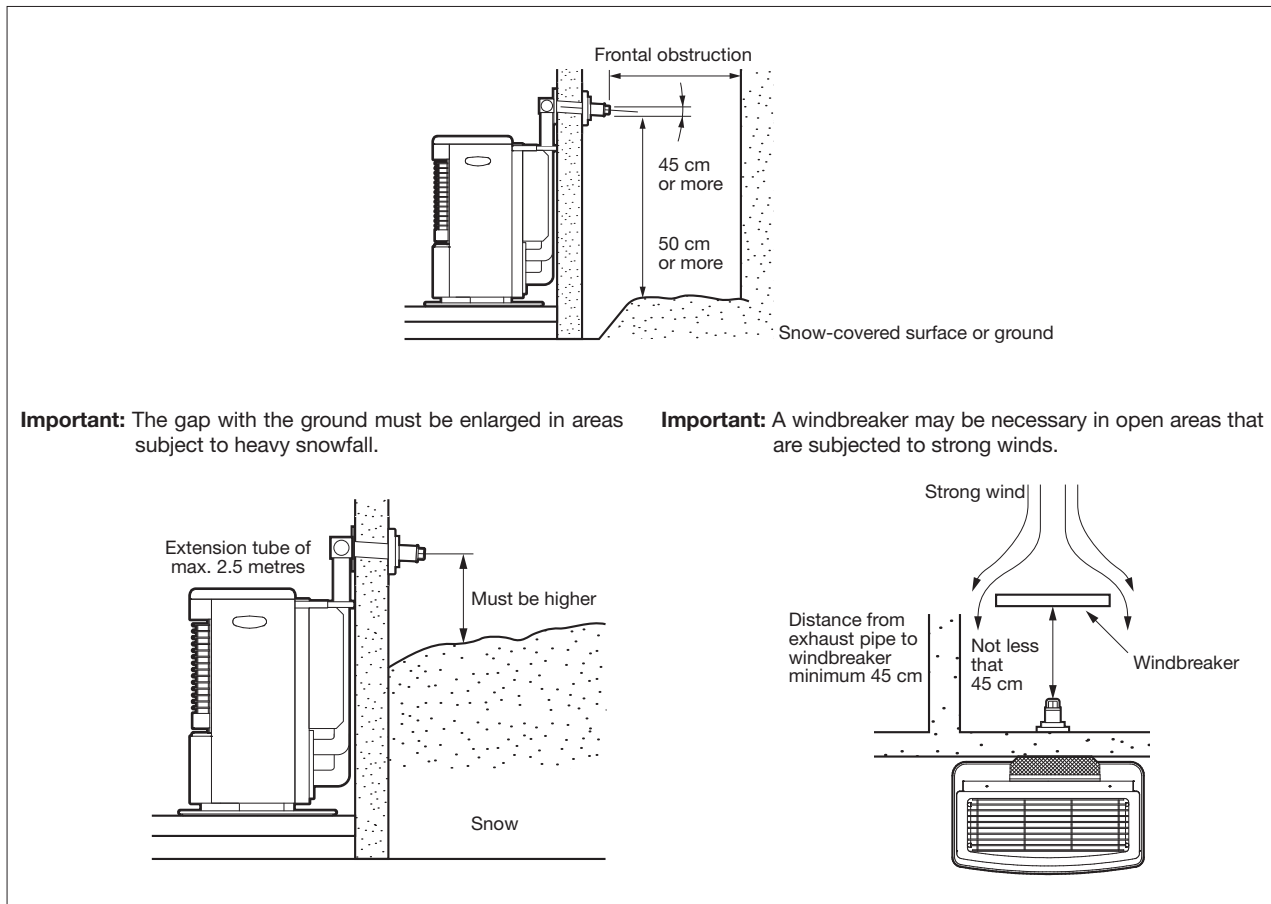


Fig. 2 Gaps heater/exhaust pipe

After using the installation template as a guide for the drilling of the hole for the exhaust pipe, the heater can be installed normally, according to the procedure in the illustration.

If the template is lost or the heater has to be moved, these are the dimensions and locations of the holes for the fuel pipe and exhaust pipe.

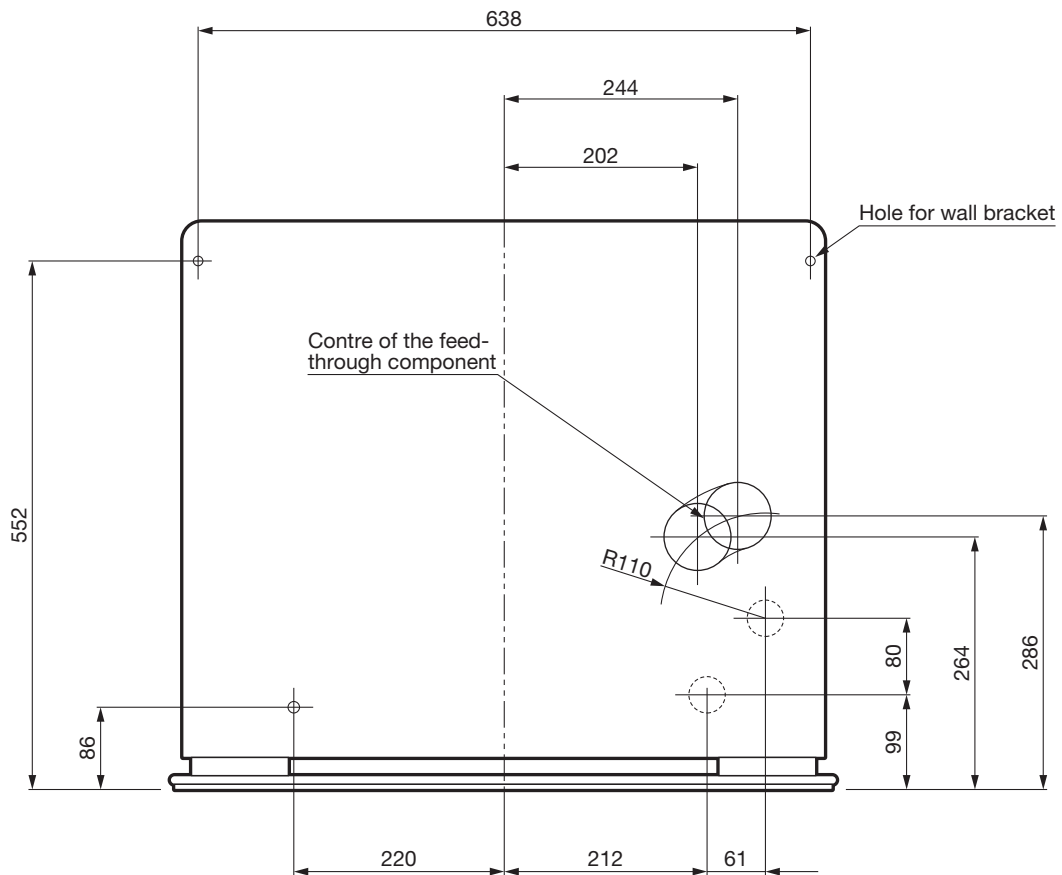

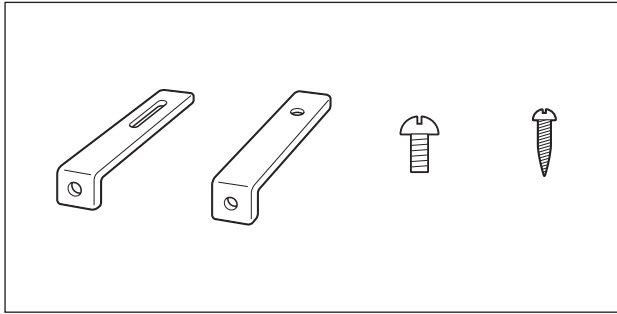


Fig. 3 Template

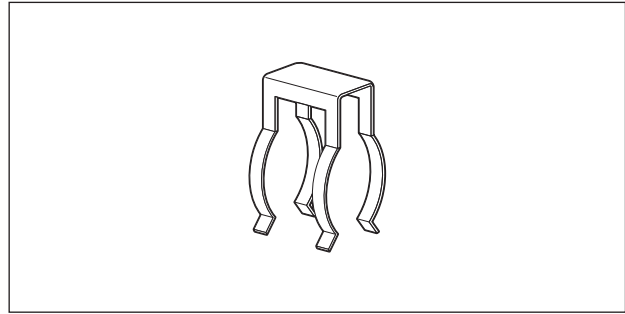
 Do not remove any components from the heater. Always contact your dealer if repairs are required.
If the electricity cable is damaged, this may only be replaced with type H05 VV-F and by a recognised installer.

Standard installation parts

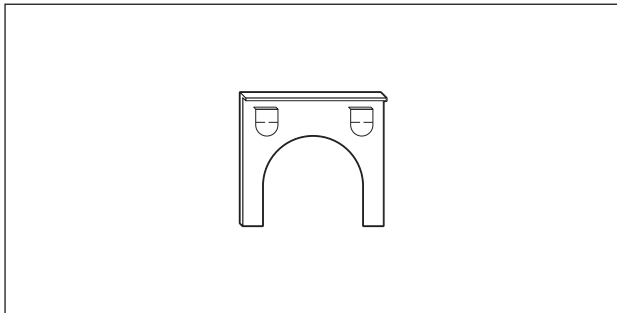
The following list of standard installation parts is supplied with your heater. It may be necessary to order extra parts from your dealer if other installation methods are required.



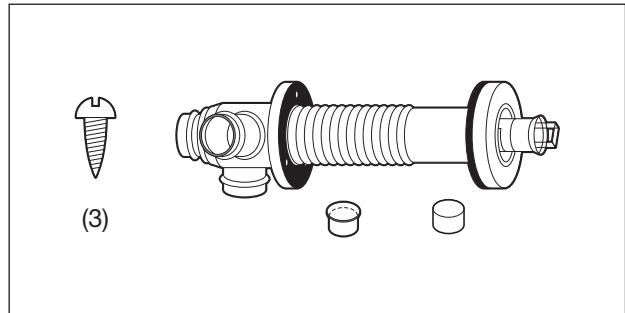
Wall bracket (2 set)



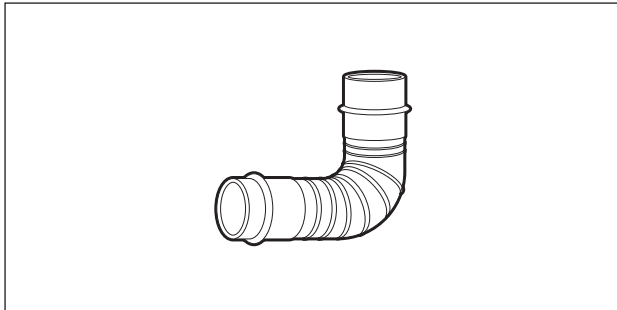
Pipe holder (1)



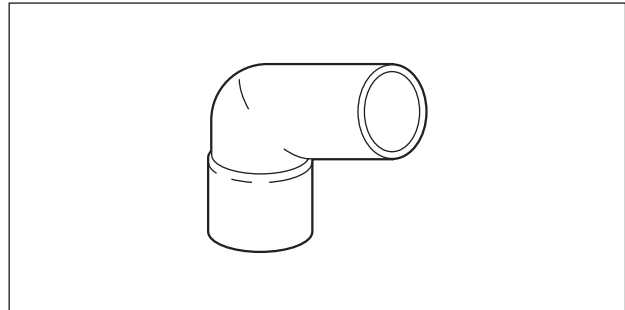
Pipe stopper (1)



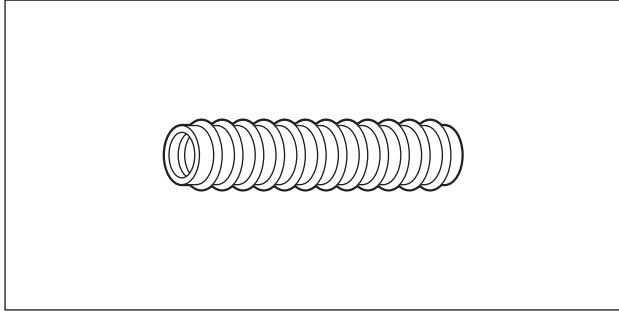
Flue pipe (1)



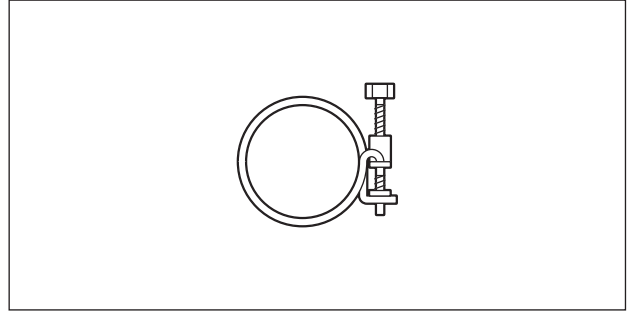
Bent joint (1)



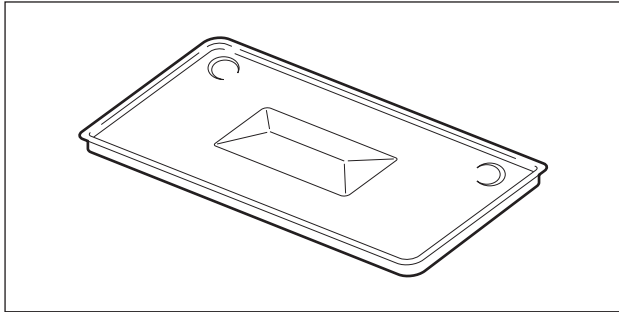
L-shaped hose (2)



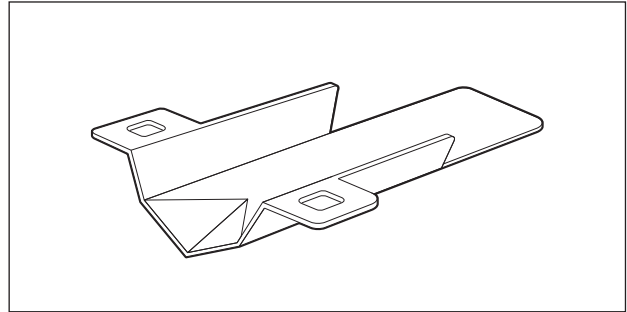
Inlet hose (1)



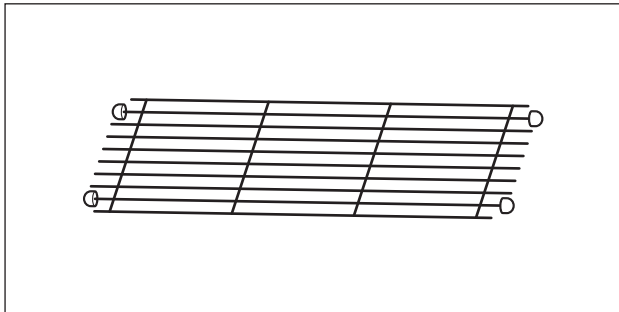
Hose band (2)



Drip tray (1)



Oil catch (1)



Top guard assembly (1)

1. For the standard installation, use the template supplied to position the hole for the flue pipe correctly.

Use cellotape or small nails to attach the template to the desired position on the wall (see Fig. 1).

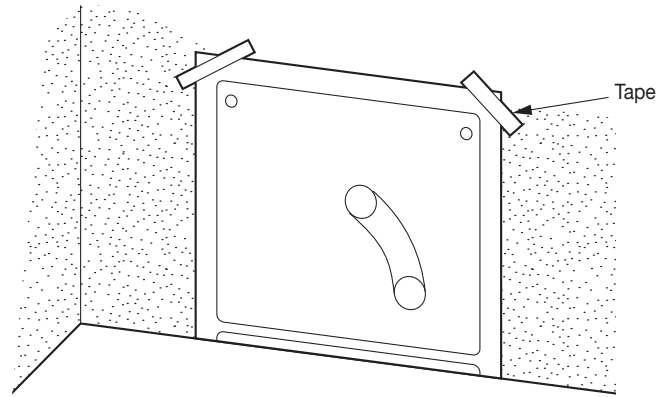


Fig. 1

Comment: The heater must be installed on a strong and stable floor. The floor must be flat and level. If this is not the case, the heater can be levelled by means of adjustable legs. This can be checked with the plumb line.

2. Drill the hole for the flue pipe. Use a hole saw with a diameter of 70~80 mm (see Fig. 2). The opening on the interior side of the wall must be a little higher than the opening on the outside in order to create a slight gradient in the feed-through and flue pipe after

installation (approximately 2°) (see Fig. 3). This ensures that condensed water in the flue pipe flows to the outside and prevents the penetration of rainwater and snow after installation.

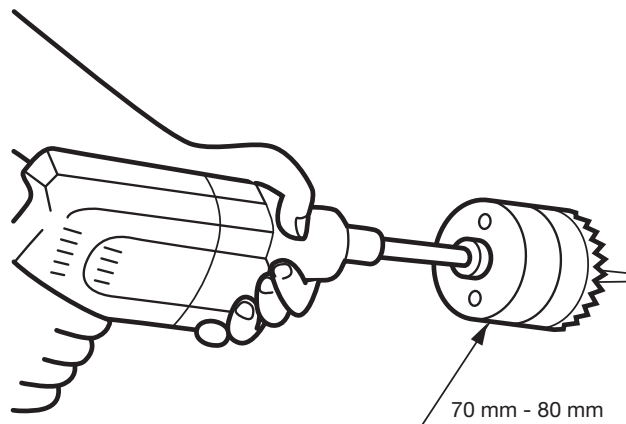


Fig. 2

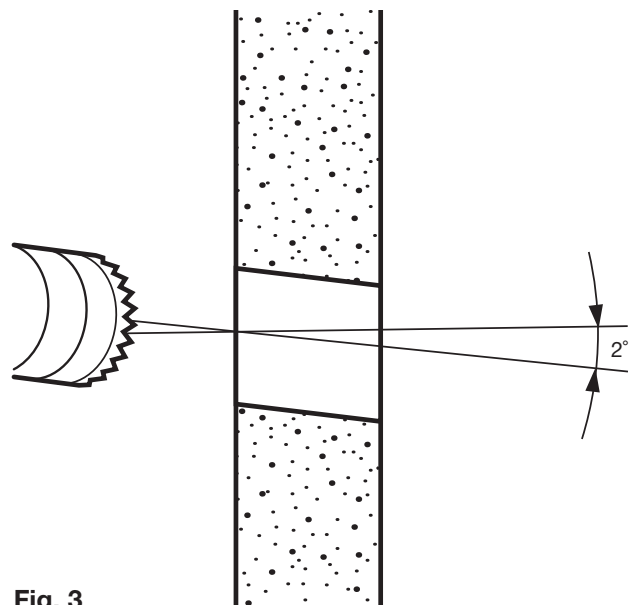


Fig. 3

3. Install the inner flue pipe.

- a. From inside the room, insert the inner flue pipe through the hole. Make sure the arrow on the inner flue pipe is pointing up. Secure the inner flue pipe to the wall with the three wood screws. (See Fig. 4)

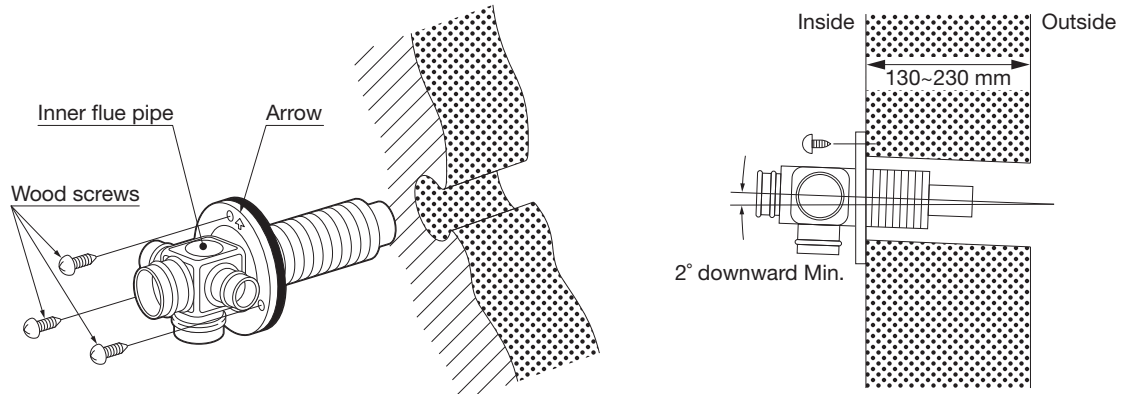


Fig. 4

- c. From outside, insert the outer flue pipe through the hole. Secure the outer flue pipe to the wall by turning it clockwise. This locks the two halves together (See Fig. 5).

IMPORTANT: Make sure the arrow on the outer flue pipe flange is pointing up.

Make sure to secure the outer flue pipe well. (A-part shown in Fig. 5)

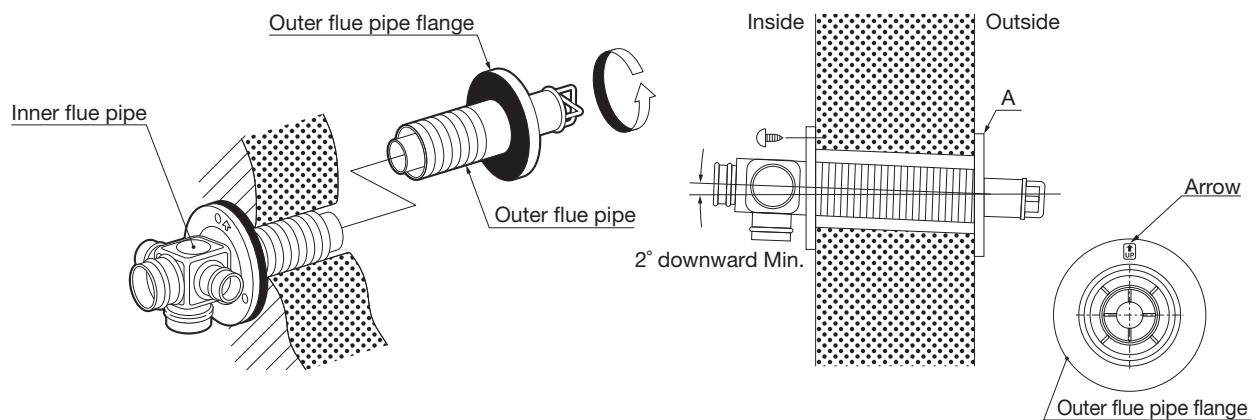


Fig. 5

4. Insert the bent joint to the exhaust opening of the flue pipe. Cut the inlet hose for desired length if necessary. Attach the L-shaped hose to each end of the inlet hose and attach the L-shaped hose to the intake opening of the flue pipe. Secure the L-shaped hose to the intake opening with the hose band. Plug the unused exhaust and intake opening with the caps provided with the heater. Make sure the caps fit tightly onto the opening (See Fig. 6).

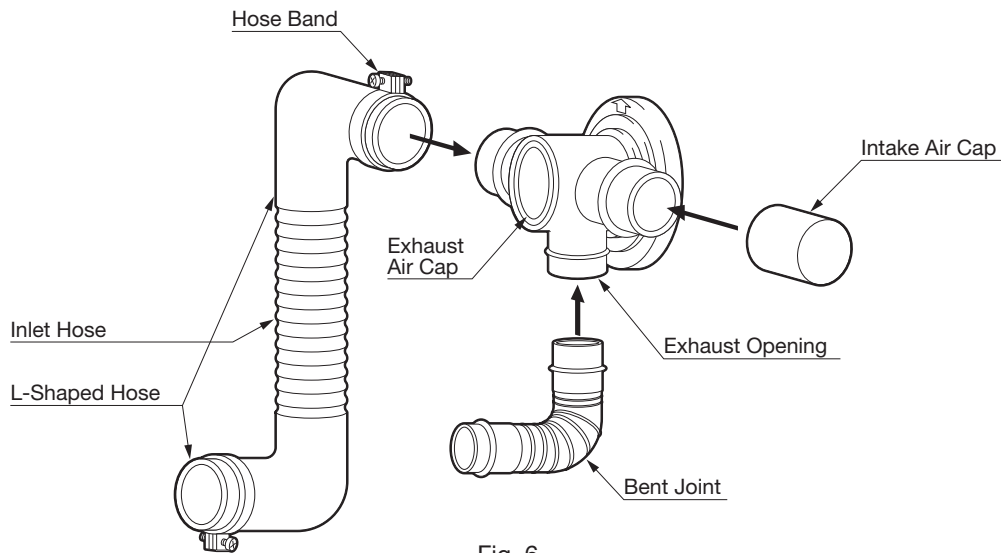


Fig. 6

NOTE: If the inlet hose is not smoothly inserted into the L-shaped hose, apply water or soap suds to the inlet hose.

5. Move the heater into position. Connect the bent joint to the exhaust outlet opening (upper opening) and attach the L-shaped hose to the intake inlet opening. Make sure all connections are tight (See Fig. 7).

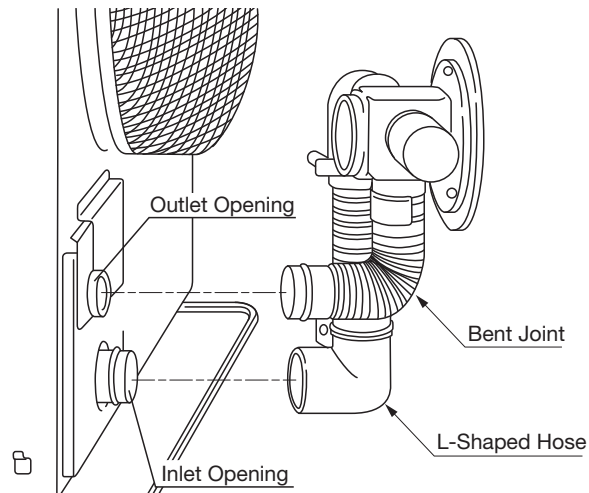


Fig. 7

- Secure the L-shaped hose to the intake inlet opening with the hose band. Secure the bent joint to the flue pipe with the pipe holder (If the extension pipe is used, also attach the pipe holder to the connection of the bent joint and the extension pipe). Secure the bent joint (or the extension pipe) to the exhaust outlet opening by sliding the pipe stopper in the exhaust opening bracket (See Fig. 8).

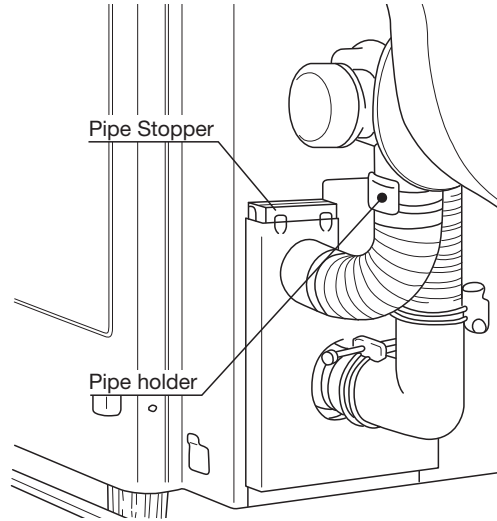
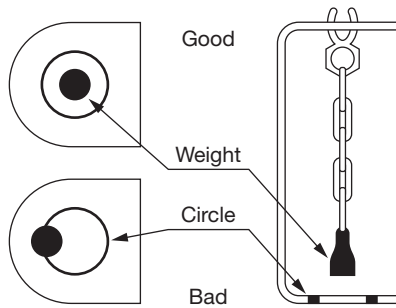


Fig. 8

- Make sure the position of the heater is level by using the plumb bob located at the right side of the heater. The plumb bob weight should be within the circle. If the plumb bob weight is not within the circle, adjust the heater legs until the plumb bob weight is within the red circle (See Fig. 9 & 10).



Plumb bob as viewed from above

Fig. 9

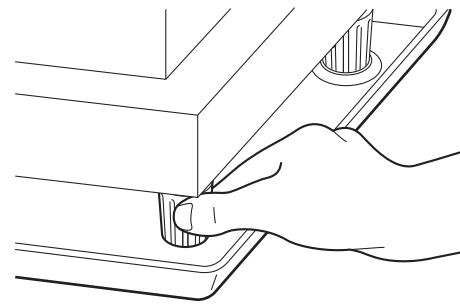


Fig. 10

CHECKLIST

- Check whether the heater has been connected to a suitable socket.
- Ensure that the fuel is free of water or other contaminants.
- Check outside the building in order to ascertain that there is no fuel or obstructions to the free circulation of air in the area immediately adjacent to the exhaust pipe.
- Inspect the inlet air hose for cracks, loose connections or blockages.
- Check the outlet air hose for cracks, loose connections or blockages.
- Check the back of the heater to ensure that the airflow to the air circulation ventilator is not obstructed.
- Inspect the interior of the building to ensure that the area immediately adjacent to the heater is free of fuel and objects that may obstruct the free flow of air.
- Check that the room sensor is not exposed to draughts, direct sunlight or heat radiated directly from the heater.
- Use a spirit level to check that the heater is level.

If this inspection brings any faults to light, resolve these problems before using the heater.



Use only water-free high quality pure Kerosene. Never use gasoline, LPG, camping gas or other flammable liquids. The use of these substances may cause explosions or fire.

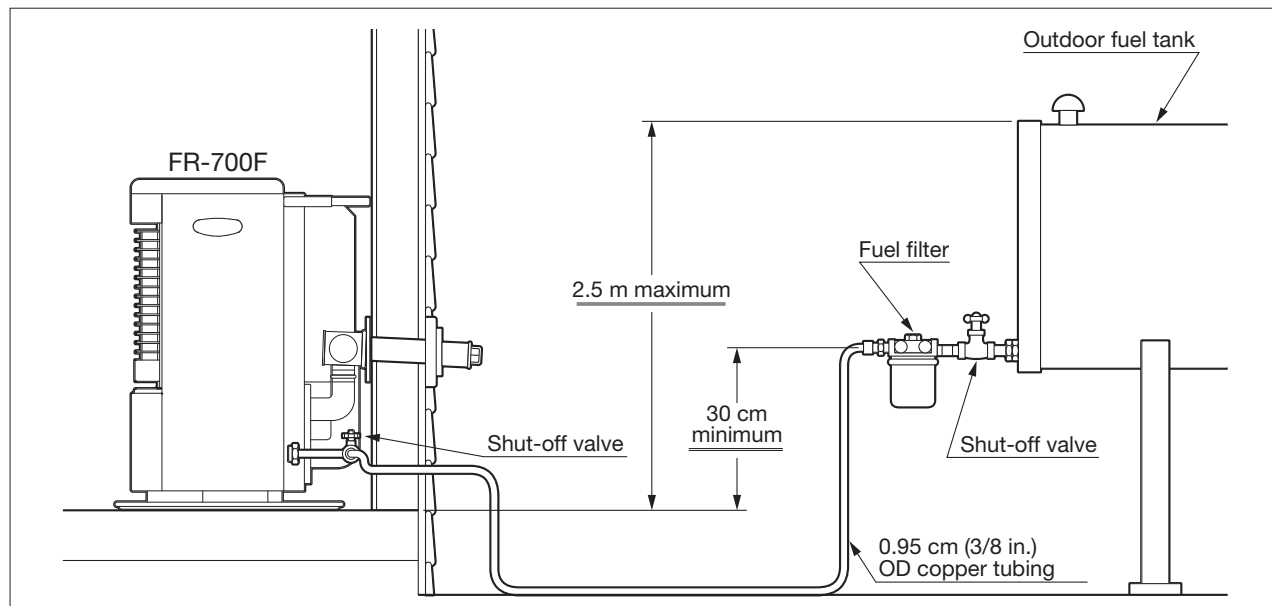
SECTION G: FUEL STORAGE AND SUPPLY SYSTEM

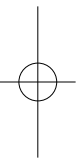
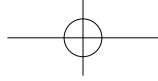
WARNING: Only use clean, fresh, paraffin. NEVER USE GASOLINE, White Spirits, or other flammable liquids, which can lead to explosive and destructive fire, and may cause serious injury or death.

EXTERNAL TANK INSTALLATION

External tank installations must comply with any applicable local Authority Codes or Rules. The following information will be of interest to the owner.

- 1) Check your local Council website, or your installer, for local rules that apply to your installation address.
- 2) Remote Fuel Tanks must be installed “outside”.
- 3) The fuel tank vent must be a minimum of 1000 mm from any opening into the building. The definition of “Opening” means fixed and opening windows and doors, and any foundation ventilation grates in raised floor homes.
- 4) Install the fuel tank so the bottom of the tank is not less than 400 mm above the surface of the floor upon which the Laser Heater is installed. (For gravity to assist fuel flow to the heater).
- 5) Where the remote fuel tank can only be installed below the heater, (multi story homes and hillsides) an optional “fuel lifter pump” is available to “lift” fuel from up to 8 m below the heater, to the heater. Contact your supplier for further information.
- 6) To avoid excess gravity fuel pressure to heater, the top of the fuel tank must not be more than 2.5 m higher than the floor surface upon which heater rests.
- 7) Fuel tank should be located at least 1.5 m away from all significant heat sources (Fuel Tank contents must not exceed 40°C in normal operation ...).
- 8) Only use clean, new, soft drawn copper tubing for fuel line (8 mm or 5/16” OD). If necessary to braze joint (extend) copper tube, ensure that internal “scale” caused by brazing, is blown away with dry compressed air, dry nitrogen, CO₂, or by allowing at least three liter’s of diesel to flow through the pipe to “wash away” internal copper pipe “scale”, so the scale does not cause restriction the integral fuel filter /strainer (Part No 17187513). Galvanized pipe fittings or fuel tanks must not be used to store or transport paraffin fuel.
- 9) To prevent “air locks” in fuel pipe, the path of the fuel line should be generally parallel to horizontal with no U-shaped or “P” trap type “rise and fall” bends.
- 10) Use of a high quality fuel filter in fuel line adjacent to tank is recommended, also a shut-off valve at the fuel tank outlet and a drain valve on the tank, as shown below.
- 11) “Fuel tanks must be fitted with an effective fuel filter.
- 12) Fuel pipe-work must be located or guarded so that it is protected against physical damage in normal service. Secure with pipe saddles as appropriate.





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