

TOYOTOMI

9.5kW Laser FF-95 Diesel Heater

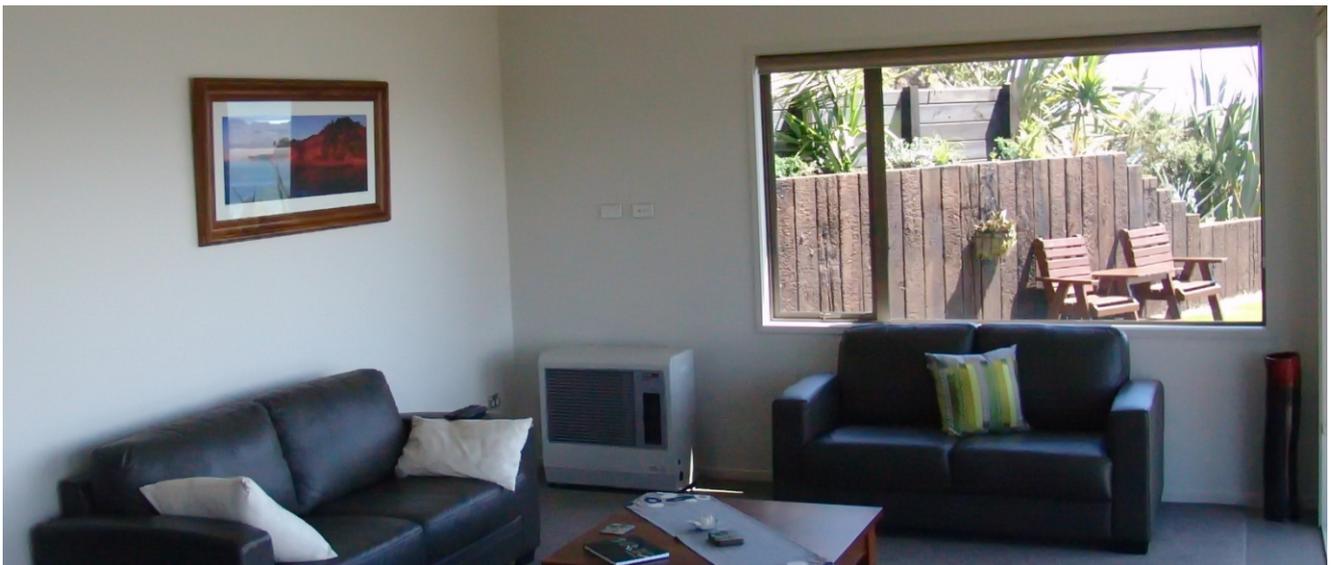
*Made in Japan,
sold throughout
NZ since 2005*



No tall flue - Ultra quiet - Easy to use - Energy efficient

Laser FF-95 Diesel Heaters

- Just press a button - the rest is automatic - as easy to use as a light switch.
- Safe, convenient & easy to use - no mess, no fuss.
- Energy Efficient (92% Certified).
- Burns ordinary automotive diesel fuel.
- Costs up to 50% less than electric or gas heating to operate.
- No diesel smell in the home EVER !
- No tall flue. Flue passes through an outside wall, simple to install.
- No hearth or fire surround required.
- Weekly Timer - set up to 30 programs for automatic operation (i.e. night "setback temperatures")
- DIY or Trade install.



Everything needed to install

The Laser FF-95 is \$3,890.00 including GST*. (Freight additional). Price includes standard installation accessories, i.e. a "through the wall" flue, a "GARBER" fuel filter and external fire safety valve... basically everything to "make it go"... except the fuel tank and the 7.5mm (5/16") diameter copper pipe which connects the tank to the heater.

*All prices quoted include 15.00% GST. Prices and GST are subject to change without notice.

Installation Consent

Local Authorities require every combustion burner, i.e. gas, pellet, log fire or diesel burner, to be issued with Installation Consent (A Council fee will apply), and then the heater can be installed. After installation your Local Authority will inspect the FF-95 Heater installation and issue a Code Compliance Certificate.

Diesel Tank

An external Fuel Tank is required. Numerous types and sizes are available. Avon offers a small **84-litre Toyotomi made Stainless Steel tank (\$795.00 incl. GST with fuel outlet and drain valves)**. Some Councils approve the use of a second hand fuel tank -- (try Trade Me!). In some cities, Fuel Delivery Companies (who charge 5 to 15 cents below “pump prices”) will not deliver less than 200 litres, but the 84-litre Toyotomi tank is suitable if you arrange to fill the tank yourself. The FF-95's high efficiency and low fuel consumption makes providing your own diesel fuel (a 20-litre plastic container is quite convenient), an attractive option for many homeowners, particularly Farmers and Contractors who use diesel elsewhere.



Energy Efficient and Economical

Diesel has always been extremely energy efficient and cost effective. The FF-95 costs up to 50% less than Electric or gas heating to operate. To compare the operating cost of the FF-95 with electric heating, apply the following formula...

A) Note the total cost of your power account, including GST. To identify the actual cost of electricity per Kilowatt-Hour (kW/Hr), **B)** Subtract the “daily charge” and **C)** divide that figure by the number of “units” used. Most Electricity suppliers charge between 25 to 35 cents per kW/hr.

To compare with electricity: Multiply your buying price of diesel per litre by 1.07 (max consumption of the FF-95 on High). Divide the answer by 9.5 (max heat output of the FF-95 on high). Answer is the diesel equivalent cost of one “unit” of electricity when the FF-95 is on High-Fire.

As of April 2020, in most of NZ, Diesel retails at approx 1.10 per litre.....

i.e. $1.10 \text{ (cents)} \times 1.07 \text{ (litres / hr on Hi-fire)} \text{ divide by } 9.5 \text{ (kW output)} = 12.38 \text{ cents per Kilowatt-hour.}$

Note: the Heater automatically “switches down” from high, 9.5kW to 5.49kW to 2.96kW, as the heated space “warms up”. Because it is so powerful and efficient, it is unusual for the FF-95 to operate continuously on High fire for extended periods.

For most of NZ, (Hamilton and South), on the coldest winters days, the heat output of one FF-95 is approximately equivalent to 2 x average heat pumps, i.e.... 9.5kW of heat is available to be delivered into the home continuously (compare costs!).



Built in Fan

The Laser FF-95 has a large circulation fan that distributes heat quickly and evenly. A permanent mesh filter/fan cover protects the circulation fan & inside components from dust.

Safety Features

Each FF-95 is equipped with the following features...

- **Flame Sensor** - detects if the heater is ignited or not. If not an error code will be displayed & the heater stops operating.
- **Overheat Protection** - Detects and Stops operation if the fan stops and the FF-95 overheats.
- **Self diagnosis function** - when there is a fault with the heater, i.e. ignition failure, the LED indicator will display an error code to assist with troubleshooting.
- **Spring Lever Fire Valve** - installed outside on the fuel pipe to shut off fuel supply in the event of a fault.

Low Maintenance

FF-95 Diesel Heaters are very low maintenance...

The Diesel nozzle (fuel jet) needs to be cleaned. If the controls are set to "Automatic" the nozzle is automatically cleaned at 2am each day. If controls are set to "Manual" (push button start), the Nozzle is manually cleaned by pushing a button. After the automatic cleaning function (approx. 10 minutes) the heater returns to its previous setting.

The fan cover at the rear of the heater is also an air filter to filter pet hairs and fabric / carpet dust from the air entering the heater. Approximately weekly, make a visual check to ensure that it is clear of dust and dirt approximately weekly.

Warranty

The FF-95 is sold with a two year parts, labour, mileage warranty, with a further 3 years parts warranty on the Stainless Steel the Combustion Chamber, Heat Exchanger and the Balanced Flue Assembly.



Quality

The FF-95 is a truly remarkable heater. Unless one knew that the FF-95 is a diesel heater, one would not readily identify or believe that the FF-95 is diesel fired. Its appearance and finish is instantly recognisable as Japanese quality. Inside, its simple, but extremely clever technology, combined with performance unmatched by any other similar diesel heater, makes the FF-95 a product that is genuinely under rated.

Over 65 Million Toyotomi Heaters have been manufactured since 1949, and sold in over 96 countries.

Customise

While the outer cabinet of the Toyotomi FF-95 Heaters can be powdercoated to match any colour scheme.

The front Louvre is finished with a special paint and is unable to be refinished.

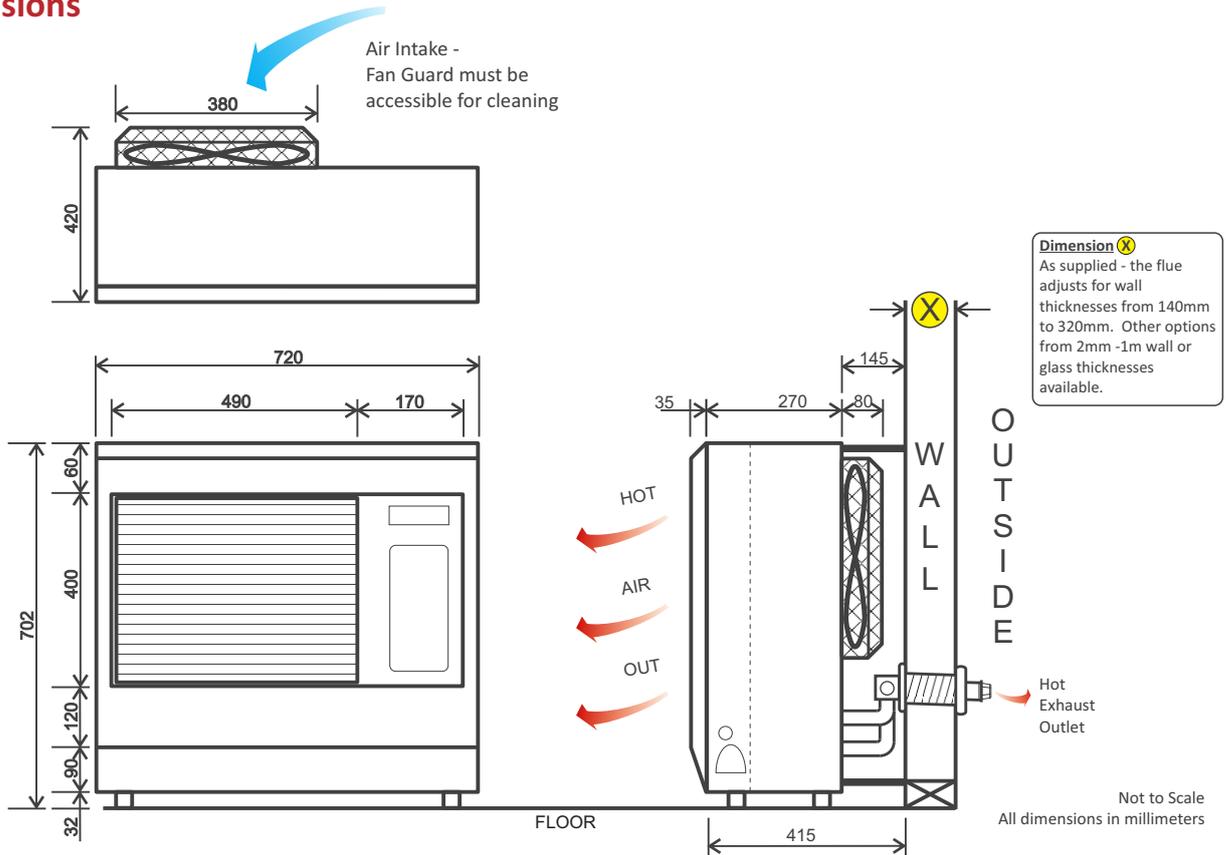


Specifications

Heat Efficiency	92%		
Fuel	Automotive Diesel Only		
Heat Rating	Output		
High	9.5kW (32,400 BTU)		
Medium	5.49kW (18,700 BTU)		
Low	2.96kW (10,100 BTU)		
Fuel Consumption			
High	1.07 litres/hr	} 3 stage thermostat automatically controls heating stages	
Medium	0.620 litres/hr		
Low	0.334 litres/hr		
CO2 Emissions			
High	2.789 kg/hr	} Compare to any other heater!	
Medium	1.963 kg/hr		
Low	0.981 kg/hr		
Dimensions			
	720 (w) x 427 (d) x 700 (h) mm	34kg	
(Packed)	795 (w) x 505 (d) x 775 (h) mm	39kg	
Noise (dB @ 1m)			High 40dB, Med 36dB, Low 30dB.
Electrical Rating			
Power Supply			AC 230V / 50Hz
Auto Ignition			260W (only for 3-5 minutes)
Continuous Burning			50W
Fuel Tank			External Tank
Flue			Balanced Flue - supplied with heater, (70-80mm Hole thru wall)
Flue Extensions			Refer to Avon



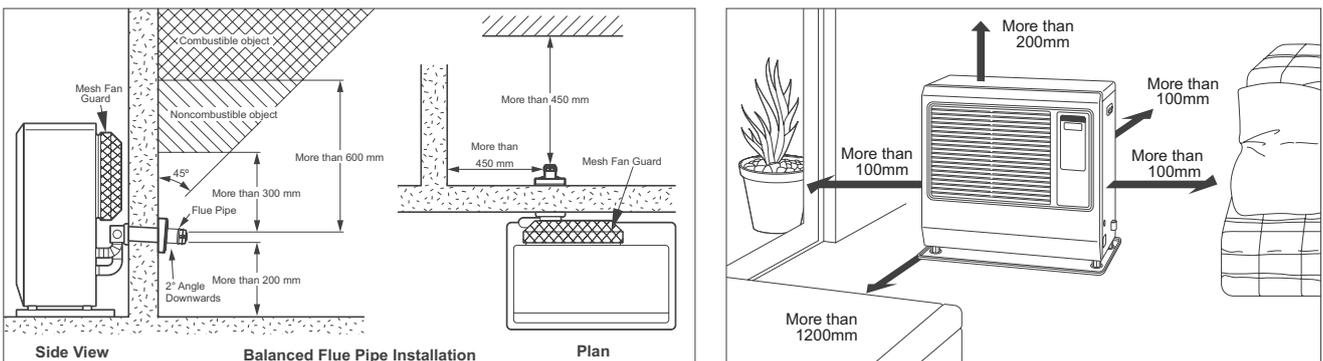
Dimensions



Unpacked Weight: 40kg - Packed Weight: 46kg - Packed Size: 785mm x 760mm x 500mm

Clearances to Combustibles

No hearth or fire surround is required. Each FF-95 is supplied with a pressed metal floor tray. Minimum Clearance to Combustibles: Sides: 100mm - Above: 200mm - Front: 1200mm



Installation

The Laser FF-95 installs on an outside wall. No hearth or fire surround is necessary. A 3-pin plug socket is required. Flue extensions make Building Code compliance difficult to achieve, but any extensions up to 3m are possible.

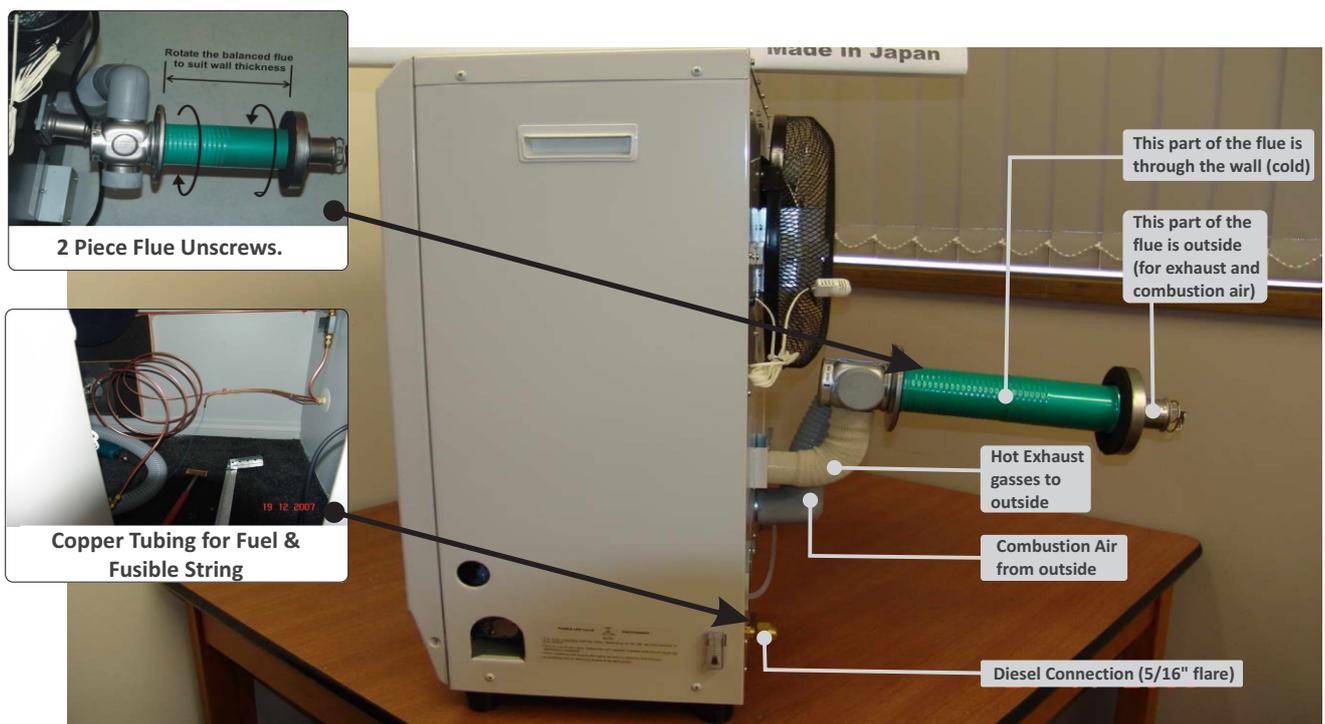
The “balanced flue” passes through a 72mm hole through any outside wall, **NO TALL FLUE REQUIRED**. The balanced flue supplies the heater with combustion air from outdoors and takes the products of combustion (Diesel exhaust odours) outside. The unique design of the fully sealed heater combustion system ensures that there can NEVER be any diesel combustion odors or fumes inside the home.



Because each installation is different, a site visit is preferable, or for remote areas it is important to either e-mail or post photos & plans if available.

It is best for photos to show inside, where the heater is to be located, the outside where the flue exits the wall and the outdoor area where the tank is to be located. Then, with your detailed information, we can advise installation compliance, requirements and any additional parts required to complete the installation.

Installation is relatively simple and does not require a specialist installer (as necessary for a heat pump), so we can easily arrange installation anywhere in NZ. Clients with DIY skills can install the FF-95 themselves (or can arrange via a local installer). We provide detailed installation instructions. We can supply custom made tank mounting brackets and can lend the special pipe flare tools for the pipe connections.



External Diesel Tank Installation

The Laser FF-95 must be installed with an external Diesel Tank. Each FF-95 is supplied with a high quality Garber fuel filter (for the tank) and a remote spring lever operated fire valve.

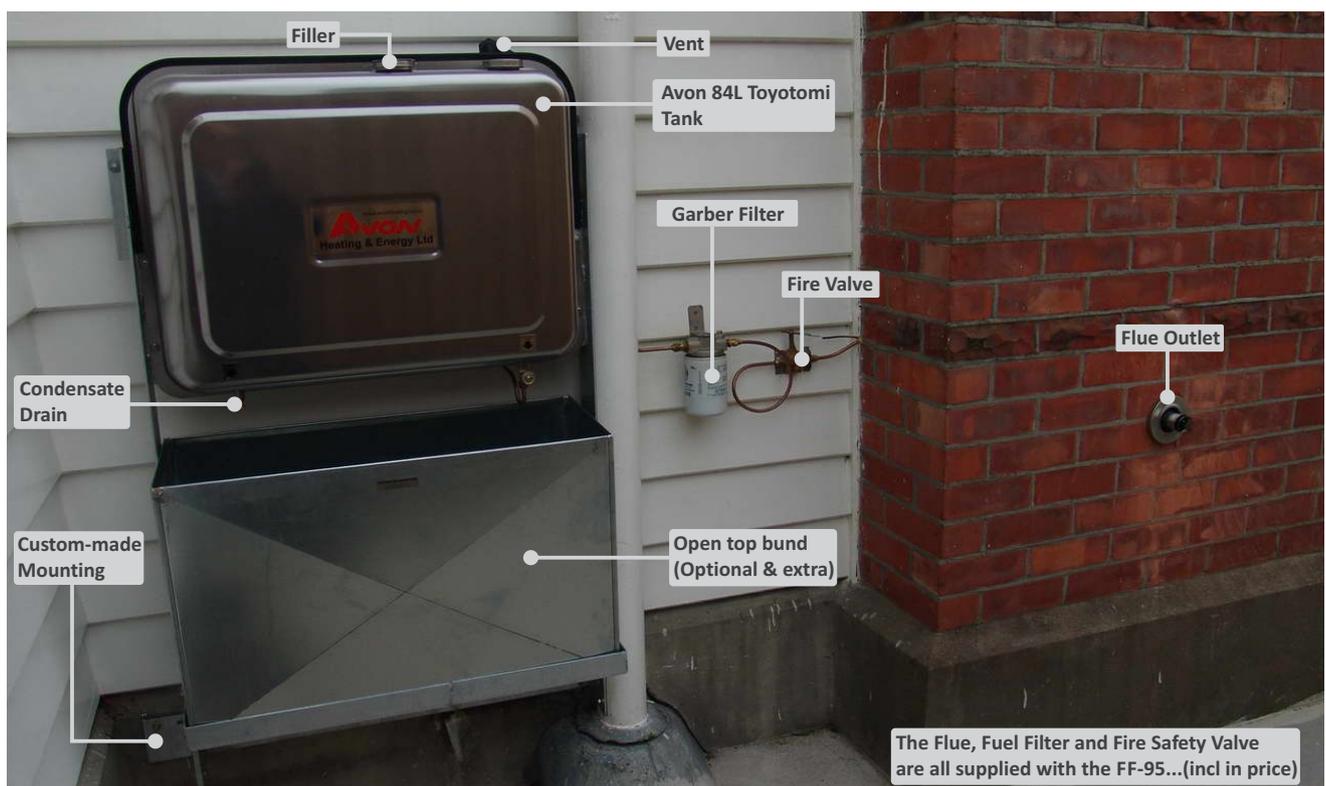


Some important things to consider regarding the Diesel Tank.....

- The fuel tank must be installed “outside”.
- The Tank “Vent” & Filler must be not less than 1 metre (39 inches) clear of any opening into the home. (“opening” includes a fixed pane window)
- The tank must be secured in compliance with the Seismic Restraint Regulations to the foundations, an outside concrete path, or a dedicated concrete slab. .
- The tank can be up to 100m from the heater, but will require an additional fire valve if the distance between the tank and the heater is greater than 3m.
- One tank can supply several FF-95 heaters. I.e. Churches, halls, showrooms, offices and classrooms

As fuel flows to the FF-95 by gravity, either the bottom of the fuel tank must be 400mm (16in) higher than the floor that the heater is installed upon (for a suitable gravity flow), OR a “fuel lifter” pump is required. The fuel lifter pump can “lift” fuel from a fuel tank that is as much as 8m (25 feet) below the floor on which the heater is installed. Contact Avon for Fuel Lifter Pump pricing and details.

If a concrete base or foundation mounting is required for the tank and you can arrange, then the complete FF-95 installation (in a typical site, within 15m of the heater) normally takes not more than one day.



Time and Temperature Controlled

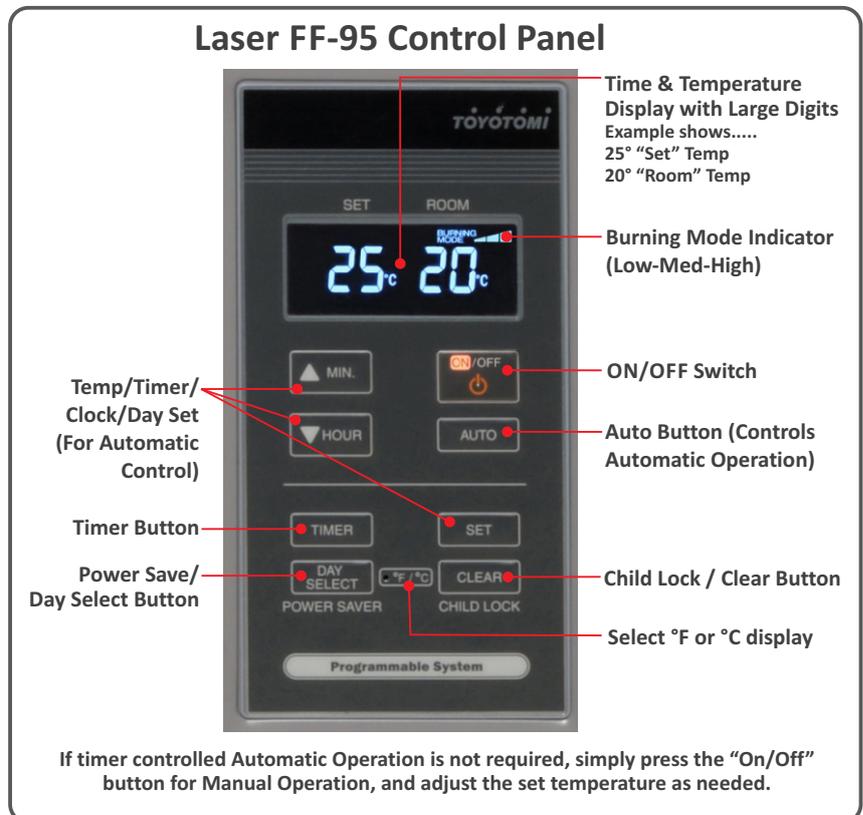
The Laser FF-95 features a simplified digital control panel that displays room temperature, set temperature, clock and error codes. When the temperature is set with the thermostat, the heater automatically selects one of 3 burning modes "High", Medium" or "Low" to reach and maintain the set temperature, and includes an automatic on/off cycle if the room is goes approx 2°C above the set temperature to maintain cozy and economical heating.

Manual Operation

To manually operate simply press the ON/OFF Button & set the room temperature and the FF-95 will start and be controlled by the 3 stage thermostat.

Weekly Timer

The weekly timer can be preprogrammed with up to 30 patterns in a 24 hour period of the week. It is designed for energy efficiency, by shifting automatically to a lower burning mode, generally at night.



Custom Surrounds

The FF-95 can be installed with a custom surround, provided there is sufficient access to the mesh fan cover at the back of the heater for maintenance / regular cleaning, and allowance for sufficient air circulation (note examples below have circulation air louvres). Clearances to combustibles must be adhered to, or non-combustible board used for the surround.



Installation Solutions

Where there is no standard external wall to install the FF-95 on, there are a couple of options including installing the heater across a corner (where one of the walls is an external wall), installing the heater through an existing (external) fireplace (ensuring there is clearance to access the fan at the back of the heater), or installing the heater with the Green Balanced Thru Wall Flue at a 90°C angle to the heater, provided it is passing through an external wall.



Example Tank Installs

Some councils (e.g. Christchurch & Nelson City Council) require tanks to be installed with a bund. Please check with your local authority to find out the requirements for your area.



Tropicair 480L Tank with open bund



Avon 84L Toyotomi Stainless Steel Tank



Example 450L Tank