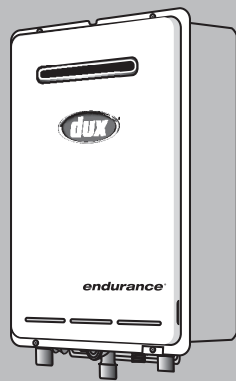




endurance[®]

Operation / Installation Manual

Continuous flow water heaters



To Suit Water Heater Models -

**Endurance 16
Endurance 20
Endurance 26
Endurance 32**

This appliance shall be installed in accordance with:

- Manufacturer's Installation Instructions
- Current AS/NZS 3000, AS/NZS 3500 & AS/NZS 5601
- Local Regulations and Municipal Building Codes including local OH&S requirements

This appliance must be installed, maintained and removed by an Authorised Person.

For continued safety of this appliance it must be installed operated and maintained in accordance with the manufacturers instructions.

OPERATION MANUAL

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REGULATORY INFORMATION

Your Dux Endurance Continuous Flow Water Heater has been certified by the Australian Gas Association.

The A.G.A. Certification Number is shown on the data plate.

This Appliance must be installed correctly by an authorised person. The installation of gas, water, and electricity must conform to local regulations.

The installation must also comply with the instructions supplied by Dux.

All dimensions referred to in these instructions are in millimetres, unless otherwise specified.

Please keep this instruction booklet in a safe place for future reference.

Notice to Victorian Consumers

This appliance must be installed by a person licensed with the Plumbing Industry Commission.

Only a licensed person will have insurance protecting their workmanship.

So make sure you use a licensed person to install this appliance and ask for your Compliance Certificate. For Further information contact the Plumbing Industry Commission on 1800 015 129.

WARNING ABOUT HOT WATER



Heated water can be dangerous, especially for young children and the infirm.

Water temperatures above 50°C can cause severe burns instantly and may even result in death.

Those most at risk are children, disabled, elderly and the infirm.

Hot water at 65°C (a very common hot water temperature in Australia) can severely burn a child in less than half a second. At 50°C it takes five minutes.

ALWAYS.....

Test the temperature of the water with your elbow before placing your child in the bath, also carefully feel water before bathing or showering yourself.

Supervise children whenever they are in the bathroom.

Make sure that the hot water tap is turned off tightly.

CONSIDER.....

Installing child proof tap covers or child resistant taps (both approaches will prevent a small hand being able to turn on the tap).

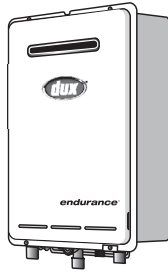
Setting your appliance at a maximum temperature of 50°C (Contact Dux).

NEVER.....

Leave a toddler in the care of another child. They may not understand the need to have the water temperature set at a safe level.

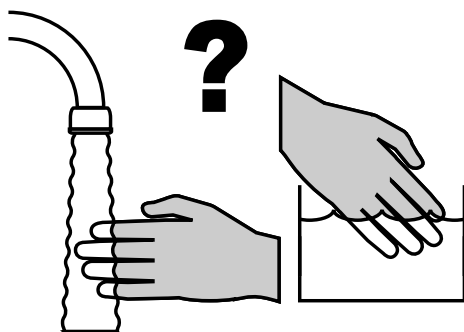
FEATURES AND BENEFITS

Congratulations on purchasing the latest technology temperature controlled Dux® Endurance Continuous Flow Water Heating system.

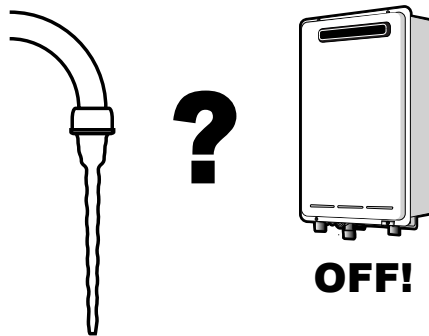


- The Dux Endurance Continuous Flow Water Heater products NEVER RUN OUT of hot water. Whilst electricity, water and gas supplies are connected, hot water is available whenever hot water taps are open.
- Built into the main micro-processor is the facility to LIMIT THE MAXIMUM TEMPERATURE of the hot water supplied. The water temperature may be limited to various values. This is particularly useful when the hot water unit is installed where young children or the infirm may be using the hot water.
- The Dux Endurance Continuous Flow Water Heater products are power flued appliances. This makes them COMPACT, saving both floor and wall space.
- The temperature of hot water is CONSTANTLY MONITORED by a BUILT-IN SENSOR. If the temperature of the hot water rises to more than 3°C above the selected temperature the burner is turned OFF and only turned ON again when the temperature falls below the selected temperature.
- The burner lights automatically when the hot water tap is opened, and goes out when the tap is closed. IGNITION IS ELECTRONIC, so there is no pilot light. When the hot water tap is off, no gas is used.
- The "Readyhot" system when fitted can pre-heat the water in the pipe-work between the water heater and the hot water outlets. This results in water savings and reduces waiting time for heated water at the outlets.
- Operating NOISE LEVEL IS VERY LOW.
- ERROR MESSAGES ARE DISPLAYED on the Water Controllers assisting with service.

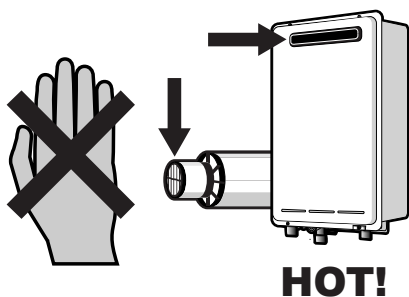
IMPORTANT INFORMATION



Always check water temperature carefully before use. Refer to the **WARNING ABOUT HOT WATER** on "page 1" of this manual for important safety information.



At low water flows, the hot water unit may extinguish without warning. Opening the tap further will restart the appliance.



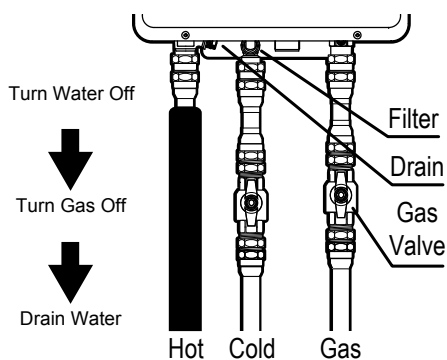
Do Not touch the unit cover or the flue outlet.
Do Not insert objects into the flue outlet.

On colder days steam may discharged from the flue outlet. This condition is normal for high efficiency appliances and does not indicate a fault.

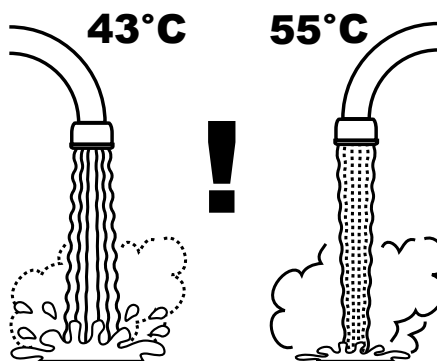


Keep flammable materials, spray cans, fuel containers, pool chemicals, trees, shrubs, etc. well clear of the flue outlet.

Do Not spray water directly into the flue terminal.

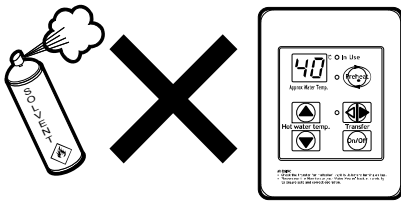


If freezing conditions are expected, turn off water and gas and drain all water from the appliance. If power and the automatic frost protection are connected, freezing will be prevented. (Anti-frost protection is fitted as standard equipment).



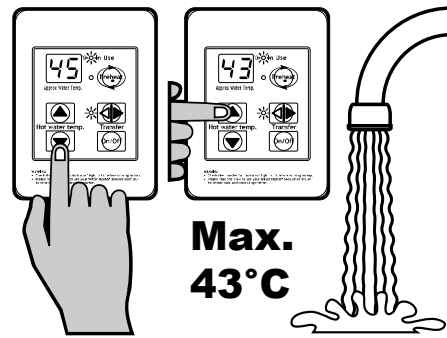
The delivered water temperature is controlled automatically. The flow may vary depending on the delivery temperature selected and the ambient water temperature.

IMPORTANT INFORMATION

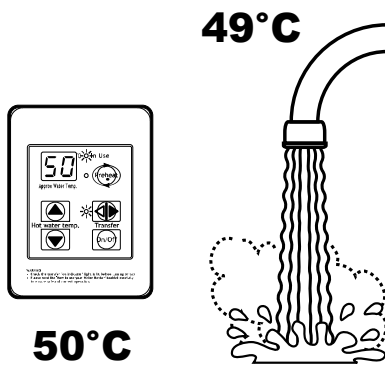


To clean your water controller(s) use a soft damp cloth with a mild detergent.

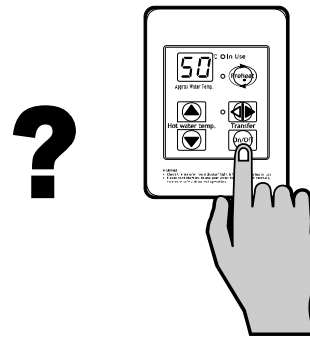
Do Not use solvents!



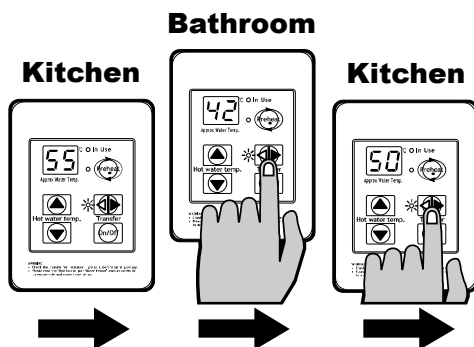
Whilst hot water outlets are open the set temperature may be lowered. However they cannot then be raised above 43°C. In addition transfer of 'priority' between controllers is not possible. These are safety features.



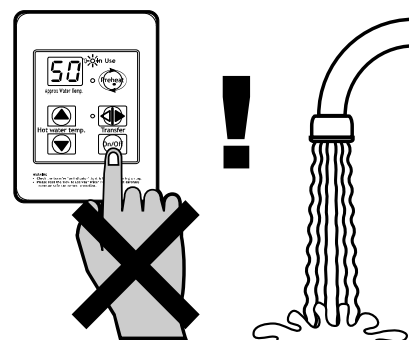
Depending on the weather conditions and the length of the pipe between the hot water unit and the outlet in use, there may be a variation between the temperatures displayed at the water controller(s) and the temperature of the water at the outlet.



There is no need to turn the water controller(s) off after use. However, if you prefer to turn the water controller(s) off, selected temperatures to a maximum of 50°C will be stored in the system memory at all times whilst mains power remains connected.



As a safety precaution, if a Kitchen Controller's temperature is set above 50°C, transferring and then returning 'priority' to the Kitchen Controller will result in a default set temperature of 50°C being selected. This is a safety feature.



Do Not push the On/Off button on any Controller when the 'Red' water heater 'In Use' indicator is illuminated as this will turn off the water heater causing the water to go cold. Someone maybe in the middle of having a shower or filling a bath.

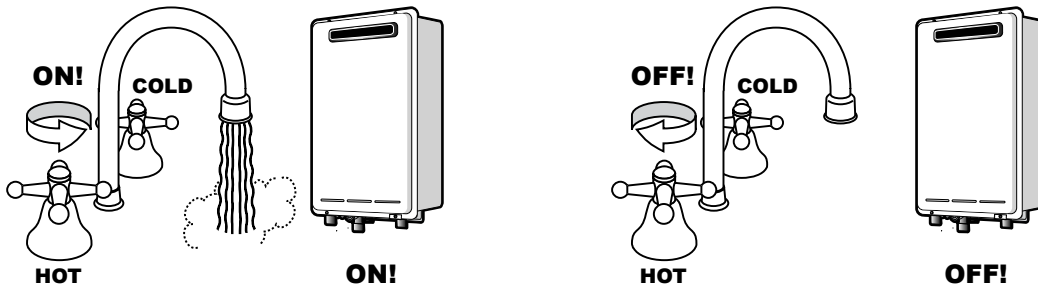
OPERATION WITHOUT CONTROLLERS

Dux Endurance Continuous Flow Water Heater products do not use a pilot light.

When installed and operated without water controllers, the opening of any hot water tap will automatically start the appliance.

Once water is flowing through the appliance the burner will be ignited by electronic ignition.

When the hot water tap is closed and water flowing through the appliance has stopped the burner flame will extinguish.



CAUTION

Heated water can be dangerous, especially for young children and the infirm.

Water temperatures above 50°C can cause severe burns instantly and may even result in death.

Those most at risk are children, disabled, elderly and the infirm.

Hot water at 65°C (a very common hot water temperature in Australia) can severely burn a child in less than half a second. At 50°C it takes five minutes.

ALWAYS.....

Test the temperature of the water with your elbow before placing your child in the bath, also carefully feel water before bathing or showering yourself.

Supervise children whenever they are in the bathroom.

Make sure that the hot water tap is turned off tightly.

CONSIDER.....

Installing child proof tap covers or child resistant taps (both approaches will prevent a small hand being able to turn on the tap).

Setting your appliance at a maximum temperature of 50°C (Contact Dux).

NEVER.....

Leave a toddler in the care of another child. They may not understand the need to have the water temperature set at a safe level.

GENERAL WATER CONTROL INFORMATION

MAXIMUM DELIVERY TEMPERATURES

Dux Endurance Continuous Flow Water Heaters are factory pre-set to various maximum delivery temperatures depending on model and their intended application. For the majority of applications, the factory pre-set temperature is appropriate. In the unlikely event this is not the case this setting can be increased or decreased by an authorised person such as a licensed plumber.



This does not apply to “50 degree compliant” models. To meet the regulatory requirements for these models, the maximum delivery temperature is factory set and sealed.

Factory pre-set delivery temperatures for the various models are as follows:

Model Name	Appliance Data Plate Codes	Factory “pre-set” Maximum Delivery Temperature (°C)	Can The Factory “Pre-Set” Maximum Delivery Temperature Be Changed By An Authorised Person?
Endurance 16	DEU-VR1620WG-AK	60	Yes
Endurance 20	DEU-VR2024WG-AK	60	Yes
Endurance 26	DEU-VR2626WG-AK	60	Yes
Endurance 32	DEU-VR3237WG-AK	60	Yes
Endurance 16 - 50°C Compliant	DEU-VR1620WG(50)-AK	50	No
Endurance 20 - 50°C Compliant	DEU-VR2024WG(50)-AK	50	No
Endurance 26 - 50°C Compliant	DEU-VR2626WG(50)-AK	50	No
Endurance 32 - 50°C Compliant	DEU-VR3237WG(50)-AK	50	No

GENERAL WATER CONTROL INFORMATION

Water controllers allow precise temperature control by the user. When used correctly, the hot water unit will deliver the selected temperature, even when the water flow is varied, or more than one tap is in use. Each water controller can be individually programmed, however the water heater can only deliver one set temperature at any time. The available temperatures (°C) are as follows:

37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 50, 55*, 60*, 65* and 75°C*

Whilst hot water outlets are open the set temperature may be lowered. However the set temperature cannot then be raised above 43°C. In addition, transfer of 'priority' between water controllers is not possible. These are safety features.

Suggested temperatures are:

Kitchen 50°C ~ 55°C* Shower 37°C ~ 43°C, Bath 39°C ~ 45°C

** Temperature may not be available refer to "Delivery Temperatures".*

These temperatures are suggestions only. You may find higher or lower temperatures more comfortable. Maintaining lower temperatures helps save energy. To obtain water temperatures lower than 37°C simply add cold water.

Water controllers allow the water temperature to be set from the various locations where they are installed. The temperature selected will be available to all outlets.

WATER CONTROLLERS

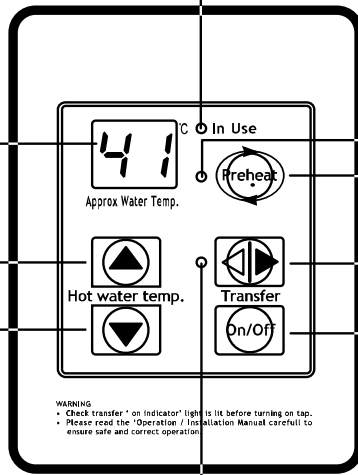
ABOUT THE WATER CONTROLLER

WATER HEATER 'In Use' INDICATOR
Indicates that a water heater is in operation and delivering hot water.

DIGITAL MONITOR
Indicates the temperature selected. Error message flash in event of a fault.

TEMPERATURE CONTROL BUTTONS
Used to select water temperature.

CONTROLLER ON INDICATOR
Indicates if this temperature controller is in control of water delivery temperature.



PREHEAT INDICATOR
Indicates that the Readyhot® preheater (when fitted) is activated.

PREHEAT BUTTON
Used to start and stop the Readyhot preheat unit (when fitted). See Readyhot® operation on page 10.

TRANSFER BUTTON
Used to transfer control priority between the temperature controllers. The controller with priority has command of the hot water delivery temperature.



ON/OFF BUTTON
Used to switch the water heater on and off.

TURNING ON THE CONTROLLER



If the water controller is switched off (No digits displayed in the digital monitor window) press the On/Off button once.

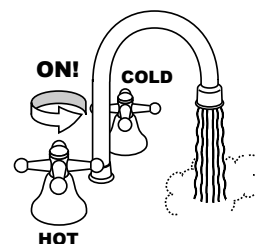
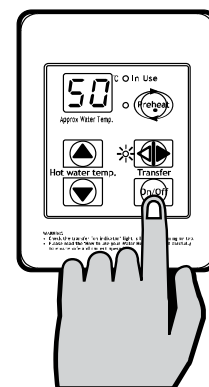
The ON indicator will illuminate, indicating that the hot water unit will be ready to supply hot water once a hot water tap is opened.

ADJUSTING TEMPERATURE

Select the desired temperature using the 'Hot water temp'  or  buttons until the required temperature is displayed on the digital monitor.

To operate the hot water unit, open any hot water tap. This will automatically light the burner providing hot water. The water heater 'In Use' indicator will illuminate on the water controller.

Once the hot water is running, if the set temperature is either too hot or cold press the 'Hot water temp'  or  buttons until the desired temperature is reached. (Refer to the Note Warning below).



CHECK WATER TEMPERATURE BEFORE USE.

A parent or carer should always check the temperature before a child is placed in contact with hot water, see page 1.



Whilst hot water outlets are open the set temperature may be lowered. However they cannot then be raised above 43°C. In addition, transfer of 'priority' between controllers is not possible. These are safety features.

The 'beep' sound can be muted by pressing the 'Hot water temp' Up  and Down  buttons simultaneously for more than 3 seconds.

WATER CONTROLLERS

HOW TO USE TWO OR MORE WATER CONTROLLERS

TURNING ON THE CONTROLLERS

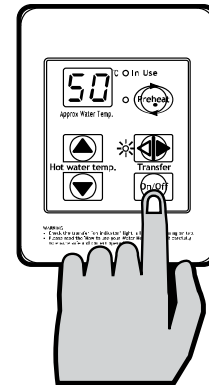
If the controllers are switched off (No digits displayed in the digital monitor window) press the On/Off button once at any controller.

The ON indicator on the desired controller will illuminate, indicating that the hot water unit will be ready to supply hot water once a hot water tap is opened.

TRANSFERRING PRIORITY

An illuminated On/Off indicator confirms that the desired controller is in control of the water delivery temperature, if the On/Off indicator is not illuminated press the TRANSFER button once.

The On/Off indicator on the controller will now illuminate indicating that hot water temperature control has now been transferred to this controller and that the hot water unit will be ready to supply hot water once a hot water tap is opened.



CAUTION

CHECK WATER TEMPERATURE BEFORE USE.

A parent or carer should always check the temperature before a child is placed in contact with hot water, see page 1.



NOTE

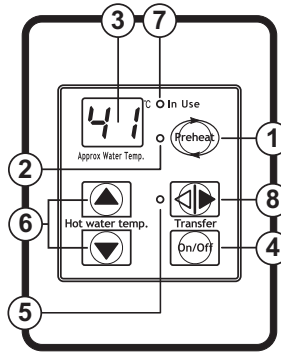
Whilst hot water outlets are open the set temperature may be lowered. However they cannot then be raised above 43°C. In addition transfer of 'priority' between controllers is not possible. These are safety features.

Temperatures higher than 50°C should not be able to be selected on controllers installed in bathrooms, ensuites or toilets. This is to help reduce the risk of burns from hot water. If this is not the case, the controllers have been incorrectly installed. **CONTACT YOUR INSTALLER.**

The temperature of outgoing hot water is constantly monitored by a built-in sensor. If the temperature of the outgoing hot water rises to more than 3°C above the selected temperature shown on the digital monitor or the pre-set limit when water controllers are not fitted, the burner will automatically go out. The 'in use' indicator will also go out. The burner will ignite again once the outgoing hot water temperature falls to that shown on the digital monitor (or the pre-set limit of the appliance).

READYHOT PRE-HEAT OPERATION

ABOUT THE READYHOT PREHEAT SYSTEM



1 PREHEAT BUTTON
Used to start and stop 'Readyhot' preheater.

2 PREHEAT INDICATOR
Indicates that 'Readyhot' preheater is activated*

3 DIGITAL MONITOR

5 CONTROLLER ON INDICATOR

7 WATER HEATER 'IN USE' INDICATOR

4 ON/OFF BUTTON

6 TEMPERATURE BUTTONS

8 TRANSFER BUTTON

Preheat Function

The "Preheat" function works in conjunction with the various Dux Endurance models and the separately installed and optional Dux "Readyhot" module.

When the "Preheat" function is activated and used in accordance with these instructions, water in the pipework connected between the water heater and the hot water outlets in your house is warmed before any outlets are opened. This results in water savings and added convenience.

The "Preheat" function is activated as follows:

1. Ensure that the hot water unit is on (temperature digits are displayed in the digital monitor (3)). If more than one controller is fitted press the 'Transfer' (8) button to pass on priority to your desired controller, the 'Controller On' (5) indicator will illuminate to confirm that priority has been assigned to this controller and that the hot water unit is ready to deliver hot water.
2. Select the desired temperature using the 'Temperature' (6) buttons until the required temperature is displayed in the digital monitor (3).
3. Press the 'Preheat' (1) button once. The 'Preheat' (2) indicator and the 'In Use' (7) indicators will illuminate, signifying that the preheat system has been activated.
4. Wait approximately two minutes before opening an outlet. This will allow the water in the pipework to be warmed.



NOTE

The waiting time may be longer or shorter than two minutes depending on your particular installation configuration.

The "Preheat" function is cancelled 5 minutes after activation and the 'Preheat' indicator will go out. This is to conserve energy. To reactivate, simply repeat steps 2-4 above.

* If the 'Preheat' button is pressed and the 'Readyhot' preheat unit is not installed, the 'Preheat' indicator will still light but there will be no "Preheat" function. The 'Preheat' indicator will go out after a short time and will not affect the other functions of the water controller or water heater.

Other Controller Functions

Controller functions such as temperature control and transfer of priority between multiple controllers is not affected by the operation of the preheat. Such functions are described in the applicable sections of this manual.

TROUBLESHOOTING

Your Dux Endurance Continuous Flow Water Heaters has a self diagnostic capability. If a fault occurs, an Error Code will flash on the digital monitor if you have water controllers. This assists with diagnosing the fault, and may enable you to overcome a problem without a service call. Please quote the code displayed when enquiring about service.

ERROR	FAULT	REMEDY
-	Noticeable reduction in water flow.	Inlet water filter needs to be cleaned. Service call.
03	Power interruption during Bath fill (Water will not flow on power reinstatement).	Turn off all hot water taps. Press On/Off twice.
10	Air intake or flue blocked.	Service Call.
11	No ignition / No gas supply.	Check gas is turned on at water heater and gas meter or cylinder.
12	Flame Failure / Low gas flow.	Check gas is turned on at water heater and gas meter or cylinder. Check there are no obstructions to the flue outlet.
14	Remaining Flame Safety Device.	Service Call.
16	Over Temperature Warning.	Service Call.
32	Outgoing Water Temperature Sensor Faulty.	Service Call.
33	Heat Exchanger Outlet Sensor Faulty.	Service Call.
34	Combustion Air Temperature Sensor Faulty.	Service Call.
52	Gas Modulating Valve Faulty.	Service Call.
61	Combustion Fan Failure.	Service Call.
71	Micro-processor Failure.	Service Call.
72	Micro-processor Failure.	Service Call.
LC	Scale build-up inside the heat exchanger.	Service Call.

In all cases, you may be able to clear the Error Code simply by turning the hot water tap OFF, then ON again. If this does not clear the Error Code, try pushing the On/Off button OFF, then ON again. If the Error Code still remains, contact Dux for advice.

Troubleshooting Without Controllers

If you have no water controllers and experience the following symptoms, carry out these suggestions. If the symptom continues, contact Dux for advice.

FAULT	REMEDY
The unit does not attempt to start at all.	Check the power is on at the unit. Check the isolation valves at the unit are open.
The unit starts then shuts down immediately.	Check the power is still on. Check the gas isolation valves at the unit and the gas meter are fully open. Open your hot water tap fully.
The unit starts then the water goes cold.	Check the power is still on. Open your hot water tap further.



Faults caused by insufficient gas supply, insufficient water supply, gas quality, water quality, installation errors or operation errors are not covered by the Dux warranty. Refer to separate warranty booklet for details.

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GENERAL INSTALLATION INSTRUCTIONS

REGULATIONS

This appliance must be installed in accordance with:

- Current AS/NZS 3000, AS/NZS 3500 and AS/NZS 5601
- Dux Installation Instructions
- Local regulations and municipal building codes including local OH&S requirements

Installation, Service and Removal MUST BE by an Authorised Person only.

APPLICABLE MODELS

These Installation Instructions apply only to the Dux Endurance Continuous Flow Water Heater models listed on page 6.

APPLIANCE LOCATION

This appliance is designed for 'Outdoor' Installation only. As such, it must be located in an above ground open air situation with natural ventilation, without stagnant areas, where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.

This appliance must be mounted on a vertical structure with the water and gas connections on the underside pointing downwards. For appliances installed on elevated structures or under floors specific requirements apply. Refer to AS/NZS 5601 Section 6 for details.

This appliance must not be used as a domestic spa or swimming pool heater.

Location of the appliance flue terminal must be in accordance with Section 6 and Figure 6.2 of AS/NZS 5601. Figure 6.2 is reproduced in the 'Horizontal Flue Terminal Clearances' section of these instructions. Note that AS/NZS 5601 was current at the time of printing but may have been superseded. It is the installers' responsibility to ensure current requirements are met.

This appliance must be placed as close as practicable to the most frequently used hot water outlet or outlets to minimise the delay time for hot water delivery. For installations where the distance between the water heater and the outlets is considerable, a flow and return system or the Dux Readyhot system can be used which minimise the waiting time for hot water delivery.

Alternatively, multiple appliances can be strategically placed to serve outlets with minimal delay time. Contact Dux for further information.

An AC240V, 10 Amp, earthed power point must be provided adjacent to the appliance. For outdoor installations this power point must be weather proof. It must be clear of the gas and water connections to the appliance and also the flue exhaust and water pressure relief valve. The power cord of the appliance is 1.5 Metres long.

All appliances must be installed to ensure access can be gained without hazard or undue difficulty for inspection, repair, renewal or operational purposes. Sufficient clearances shall allow access to, and removal of, all serviceable components. Appliances should not be mounted higher than 2.5 metres above the ground or floor level unless the customer can arrange permanent and safe access or can provide another means of access, for example, by means of scissor or boom lifts acceptable to local authorities.

PIPE SIZING

See Table 1 page 16 for appliance gas consumption. If the gas pipe sizing is insufficient the customer will not get the full performance benefit. Gas pipe sizing must consider the gas input to this appliance as well as all the other gas appliances in the premises. The gas meter and regulator must be specified for this gas rate. An approved sizing chart such as the one in AS/NZS 5601 should be used.

Water pipe sizing and layout should be performed in accordance with AS/NZS 3500. All hot water pipe-work should be insulated to optimise performance and energy efficiency.

WATER SUPPLY

See Table 1, page 16 for applicable water pressures. Approved pressure limiting valves may be required if the 'Maximum' rated water supply pressures in Table 1 are exceeded. To achieve the rated flow, the 'Minimum' water supply pressures in Table 1 must be supplied. The water heaters will operate at lower pressures but will not achieve the rated flow. Contact Dux for 'gravity fed' or 'low pressure' installations.

Water chemistry & impurity limits are detailed in separate Warranty booklet. Most metropolitan water supplies fall within the requirements. If you are unsure about your local water quality, contact your water authority. If sludge or foreign matter is present in the water supply, a suitable filter or strainer should be incorporated in the water supply to the water heater.

GENERAL INSTALLATION INSTRUCTIONS

HOT WATER DELIVERY TEMPERATURE

Local regulations and or the requirements of AS/NZS 3500.4 must be considered regarding the temperature limitations of hot water supplied to areas used primarily for personal hygiene. The temperature of water to these areas may be limited to 50° C or less. To ensure these regulations and or requirements are met the system **MUST** be installed in accordance with the 'Water Heater and Controller Installation Configurations' Section of these instructions.

WATER HEATER AND CONTROLLER INSTALLATION CONFIGURATIONS

If the appliance is marked to state that it delivers water not exceeding 50°C, local regulations may permit it's installation without a Temperature Limiting Device. Installations without a Temperature Limiting Device are shown in Diagram 1 (page 15). If you are unsure about your local regulations contact your regulating authority or Dux.

If the appliance is **NOT** marked to state that it delivers water not exceeding 50°C, or your local regulations require installation with a Temperature Limiting Device then install the appliance in accordance with Diagram 2 (page 15).

MOUNTING THE APPLIANCE

See Table 1, page 17 for individual appliance weights. The wall or structure on which the units are to be mounted must be capable of supporting these weights and the associated pipe-work.

The top bracket has a keyhole slot so that the appliance can be positioned by hanging it on one screw, then the other screws can be secured.

The appliance can be mounted directly against the wall or structure. There is no need to use, non combustible sheeting or leave an air gap between the appliance back panel and the wall or structure for the purposes of meeting the temperature hazard requirements of AS/NZS 5601.



If the appliance is to deliver water primarily for the purposes of personal hygiene in an early childhood centre, primary or secondary school, nursing home or a similar facility for the care of young, aged, sick or disabled persons as defined in AS/NZ 3500.4 a Temperature Limiting Device (TLD), such as a Tempering Valve may be required even if the appliance is set to 50° C or less.

For these types of applications contact Dux.

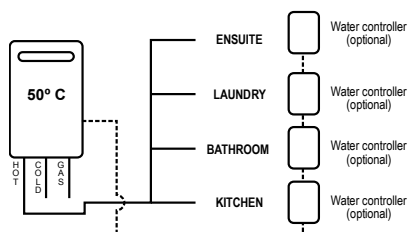


Diagram 1 - 50°C Appliance
Minimum length of pipe from hot outlet to nearest hot water tap 2 metres.

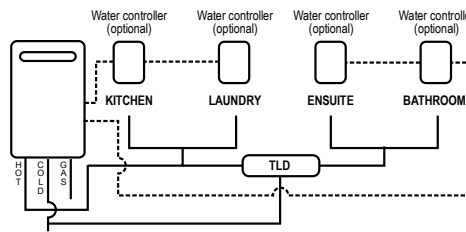


Diagram 2 - Not a 50°C Appliance
Note: TLD = Temperature Limiting Device

Ensure that suitable fixing screws or bolts are used to secure the units to the wall, in accordance with AS/NZS 5601 Section 5. Wooden plugs shall not be used.

The top bracket has a keyhole slot so that the appliance can be positioned by hanging it on one screw, then the other screws can be secured.

SERVICE CONNECTION POINTS

See Table 1 for individual appliance connection / fitting dimensions. Note that these dimensions are NOT an indication of the pipe sizes required.

An Approved full flow isolation valve and disconnection union **MUST** be fitted to the cold water inlet. A non return valve is not required unless required by local regulations.

Isolation Valves must not be fitted directly to the appliance.

If may be necessary to fit a temperature limiting device for delivery to areas used primarily for the purposes of personal hygiene. Refer to the 'Water Heater and Controllers Installation Configurations' Section of this document.

GENERAL INSTALLATION INSTRUCTIONS

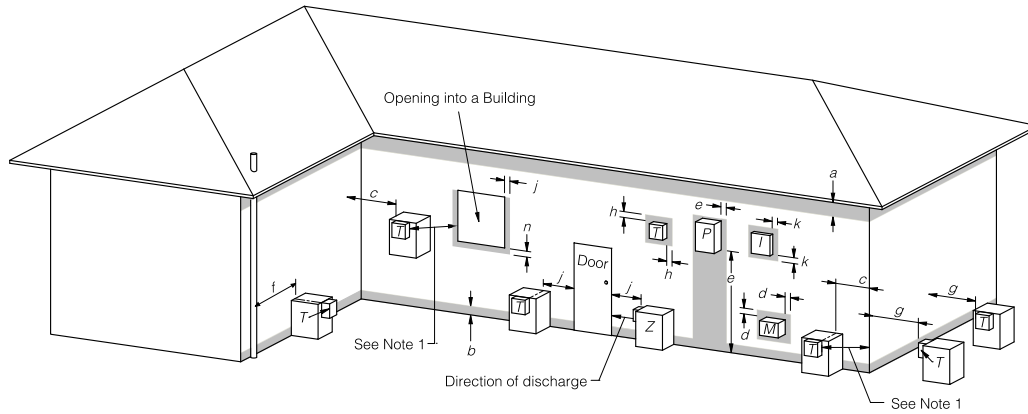
Purge gas and cold water supply lines to remove air and swarf before final connection of the appliance. Swarf in either the gas or water supplies may cause damage.

Table 1.

Model:	Gas Consumption MJ/h	Water Supply kPa		Weight kg	Fittings		
		Min.	Max.		Hot	Cold	Gas
16	125	120	1000	15	R ½ (15mm)	R ½ (15mm)	R ¾ (20mm)
20	160	160	1000	15	R ¾ (20mm)	R ¾ (20mm)	R ¾ (20mm)
26	199	200	1000	16	R ¾ (20mm)	R ¾ (20mm)	R ¾ (20mm)
32	250	180	1000	29	R ¾ (20mm)	R ¾ (20mm)	R ¾ (20mm)

GENERAL INSTALLATION INSTRUCTIONS

HORIZONTAL FLUE TERMINAL CLEARANCES (Extract from AS/NZS 5601)



T = Flue terminal Z = Fan assisted flue appliance only M = Gas meter P = Electricity meter or fuse box I = Mechanical air inlet

Shading indicates prohibited areas for flue terminals

Ref.	Item	Min. clearances (mm)	
		Natural draft	Fan assisted
a	Below eaves, balconies and other projections:		
	• Appliances up to 50 MJ/h input	300	200
	• Appliances over 50 MJ/h input	500	300
b	From the ground, above a balcony or other surface *	300	300
c	Front a return wall or external corner *	500	300
d	From a gas meter (M) (see 5.11.5.9 for vent terminal location of regulator) (see Table 6.6 for New Zealand requirements)	1000	1000
e	From an electricity meter or fuse box (P) †	500	500
f	From a drain pipe or soil pipe	150	75
g	Horizontally from any building structure* = or obstruction facing a terminal	500	500
h	From any other flue terminal, cowl, or combustion air intake †	500	300
j	Horizontally from an openable window, door, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation:		
	• Appliances up to 150 MJ/h input *	500	300
	• Appliances over 150 MJ/h input up to 200 MJ/h input *	1500	300
	• Appliances over 200 MJ/h input up to 250 MJ/h input *	1500	500
	• Appliances over 250 MJ/h input *	1500	1500
	• All fan-assisted flue appliances, in the direction of discharge	-	1500
k	From a mechanical air inlet, including a spa blower	1500	1000
n	Vertically below an openable window, non-mechanical air inlet, or any other opening into a building with the exception of sub-floor ventilation:		
	• Space heaters up to 50 MJ/hr input	150	150
	• Other appliances up to 50 MJ/hr input	500	500
	• Appliances over 50 MJ/h input and up to 150 MJ/h input	1000	1000
	• Appliances over 150 MJ/h input	1500	1500

* - unless appliance is certified for closer installation

† - Prohibited area below electricity meter or fuse box extends to ground level.

NOTES:

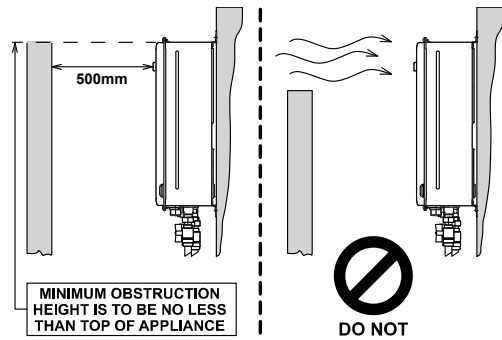
- Where dimensions c, j or k cannot be achieved an equivalent horizontal distance measured diagonally from the nearest discharge point of the terminal to the opening may be deemed by the Technical Regulator to comply.
- See Clause 6.9.4 for restrictions on a flue terminal under a covered area.
- See Figure J3 for clearances required from a flue terminal to an LP Gas cylinder. A flue terminal is considered to be a source of ignition.
- For appliances not addressed above acceptance should be obtained from the Technical Regulator.

FIGURE 6.2 (in-part) MINIMUM CLEARANCES REQUIRED FOR BALANCED FLUE TERMINALS, FAN-ASSISTED FLUE TERMINALS, ROOM-SEALED APPLIANCE TERMINALS AND OPENINGS OF OUTDOOR APPLIANCES

GENERAL INSTALLATION INSTRUCTIONS

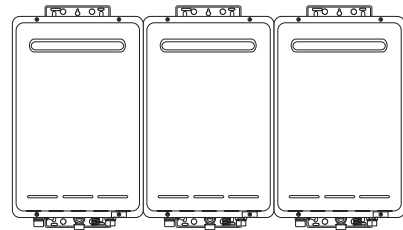
HORIZONTAL OBSTRUCTIONS

AS/NZS 5601 'Gas Installations' stipulates a minimum horizontal clearance of 500 mm between a building structure and obstruction facing the terminal. For Dux external continuous flow water heaters such a building structure must 'obstruct' the full front cover height of the appliance, or extend vertically above and below the front cover. There must be no partial obstructions to the front cover of the appliance or any other parts of the appliance casing. This will avoid the appliance failing to operate under windy conditions.



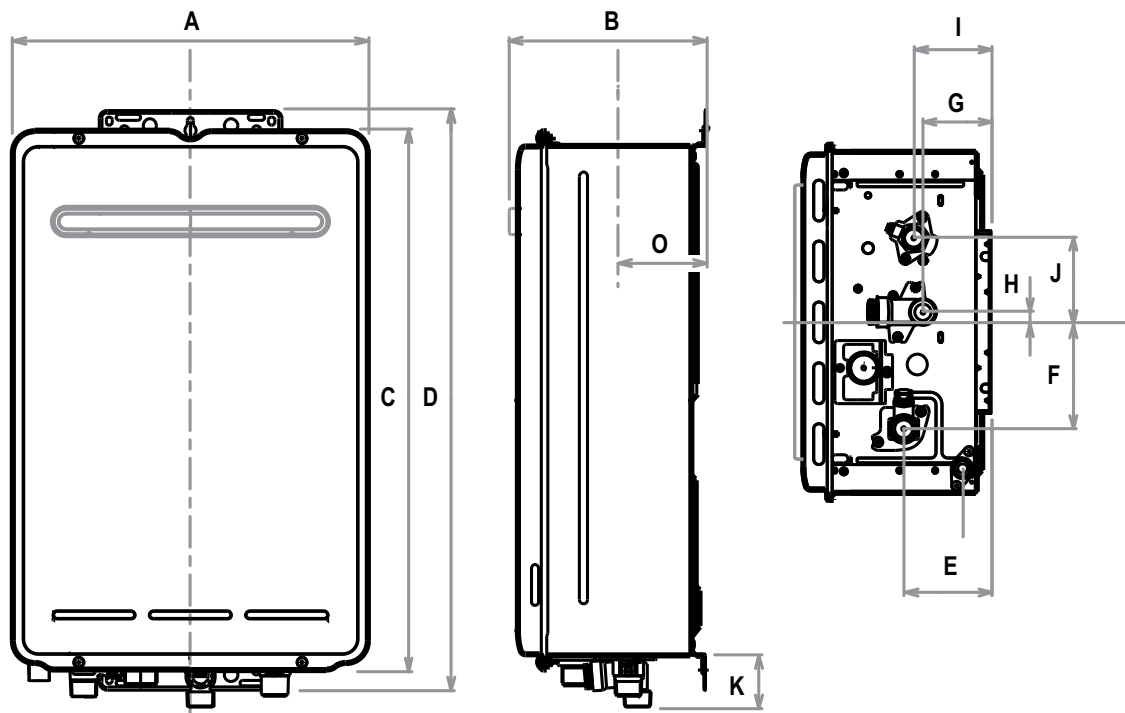
MULTIPLE INSTALLATIONS OF EXTERNAL MODELS

Dimension 'h' above does not apply when multiple Dux external water heaters of the same model are installed on the same vertical face with flue terminals at the same height. Under these conditions appliances can abut each other as shown. The total gas consumption of all appliances applies when determining other clearances.



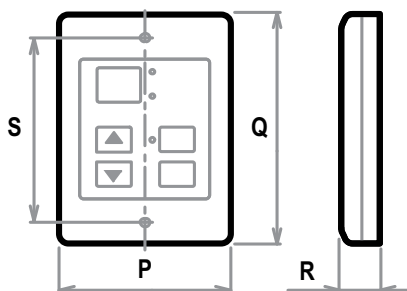
GENERAL INSTALLATION INSTRUCTIONS

APPLIANCE AND WATER CONTROLLER DIMENSIONS



Dim'	Description	Endurance Models			
		32	26	20	16
A	Width	470	350	350	350
B	Depth	244	194	194	194
C	Height - Unit	600	530	530	530
D	Height - Including Brackets	644	571	571	571
E	Hot Water outlet (from wall)	115	87	87	87
F	Hot Water outlet (from centre)	61	105	105	105
G	Cold Water inlet (from wall)	99	68	68	68
H	Cold Water inlet (from centre)	52	10	10	10
I	Gas Connection (from wall)	61	77	77	77
J	Gas Connection (from centre)	110	83	83	83
K	Gas Connection Length (from base)	41	40	40	40
	Cold Connection Length (from base)	51	50	50	50
	Hot Connection Length (from base)	42	42	39	39
L	Gas: Fitting Diameter	20	20	20	20
	Cold: Fitting Diameter	20	20	20	15
	Hot: Fitting Diameter	20	20	20	15

* Please note that this measurement is to the left of the centre line.



Dim'	Description	DMC-91Q-2A
P	Width	90
Q	Height	120
R	Depth	20
S	Distance between mounting hole centres	83

WATER CONTROLLER INSTALLATION

WATER CONTROLLERS

Water controllers are available as an optional extra.



Other manufacturers water controllers are NOT compatible with Dux Endurance water heaters.

Water controllers brought in from other countries are not compatible with Dux appliances sold in Australia.

POSITIONING OF WATER CONTROLLERS

Water controllers must be installed in shaded and clean locations. They should be fitted out of reach of children (suggested height from floor to be at least 1500 mm).

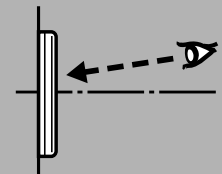


- **Do not install Water Controllers near a heat source, such as a cook top, stove or oven. Heat, steam, smoke and hot oil may cause damage.**
- **Do not install remote controllers in direct sunlight.**
- **Do not install remote controllers outdoors unless protection from dust ingress and sunlight are provided.**
- **Do not install remote controllers against a metal wall unless the wall is earthed in accordance with AS/NZS 3000.**
- **Water controllers MUST NOT be installed where chemicals such as benzene, alcohol, turpentine or other similar chemicals are in use.**

POSITIONING CONSIDERATIONS FOR THE WATER CONTROLLER.

The water controller uses a Liquid Crystal Display (LCD) for the digital monitor. Light reflections can make the LCD difficult to see at direct eye level.

For best results when installing the water controller mount lower than your eye-level to avoid these light reflections.



WATER CONTROLLER CABLES

Water controllers operate at extra low voltage (12 Volts DC) which is supplied from the water heater. Each Water controller comes supplied with 15 m of electrical cable. The appliance end of the cables are fitted with spade terminals. Extension cabling is available from Dux.



Alternatively two core sheathed (double insulated) flex with minimum cross-sectional area of 0.5 mm² may be used. Maximum individual cable runs should not exceed 50 m.

FITTING THE WATER CONTROLLER

1. Determine the most suitable position for the water controller.
2. Mark and drill 3 holes, locating the cable access as shown in (Fig. 1).
3. When running cable through the access hole ensure the connector end of the cable is located nearest to the controller (Fig.2).
4. Carefully remove face plate from the water controller, using a screw driver (Fig. 3).
5. Connect the cable to the water controller. Feed any excess cable lengths into the wall cavity to avoid the pinching of cables between the wall and the controller.
6. Fix the water controller to the wall using the appropriate fixings as shown in (Fig. 4).

WATER CONTROLLER INSTALLATION

7. Remove protective film from the water controller face as shown in (Fig. 4) and replace face plate.

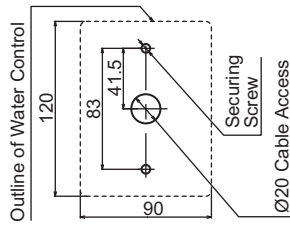


Fig. 1

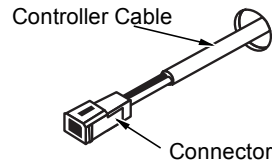


Fig. 2

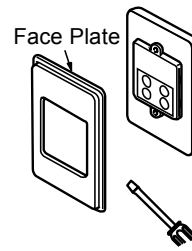


Fig. 3

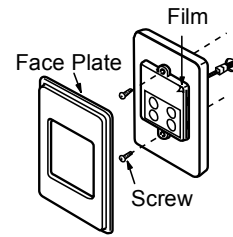


Fig. 4

OPTIONAL PROGRAMMING FOR THE WATER CONTROLLER



1 Are there four water controllers connected ?

IF NO: (You have three water controllers or fewer), go to Question 2.

IF YES: You will need to activate the fourth water controller as follows:

STEP 1: For the water controller in the KITCHEN ONLY, press and hold the 'Transfer' and 'On/Off' buttons simultaneously (see Fig. 5) until a 'beep' is heard (approximately 5 seconds).

STEP 2: Check that the display on ALL FOUR water controllers is lit and displaying a temperature when 'switched on'. If any ONE of the controller displays two dashes (see Fig. 6) repeat STEP 1.

This completes the activation procedure for the fourth controller, you may ignore Question 2.

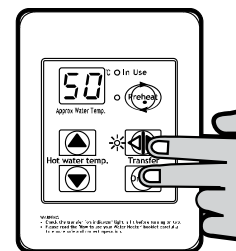


Fig. 5



Fig. 6



2 Is the water heater marked to state it delivers water not exceeding 50°C ?

IF YES: No further action required.

IF NO: You will need to program the kitchen controller to enable selection of temperatures higher than 50°C.

STEP 1: For the controller in the KITCHEN ONLY, press and hold the 'Transfer' and 'On/Off' buttons simultaneously (Fig. 7) until a 'beep' is heard (approximately 5 seconds).

STEP 2: When the controller fitted in the KITCHEN is switched On, it should be possible to select temperatures higher than 50°C. If not, repeat STEP 1.

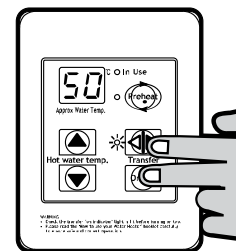


Fig. 7



If the water controller in the kitchen is replaced, repeat STEP 1 above for the replacement controller.

If the water controller in the kitchen is swapped with another controller (for example, the controller fitted in a bathroom), repeat STEP 1 for the controller moved from the kitchen to the bathroom. Then perform STEP 1 for the controller moved from bathroom to the kitchen.

WATER CONTROLLER INSTALLATION

CONNECTING COMMUNICATION CABLES TO THE WATER HEATER

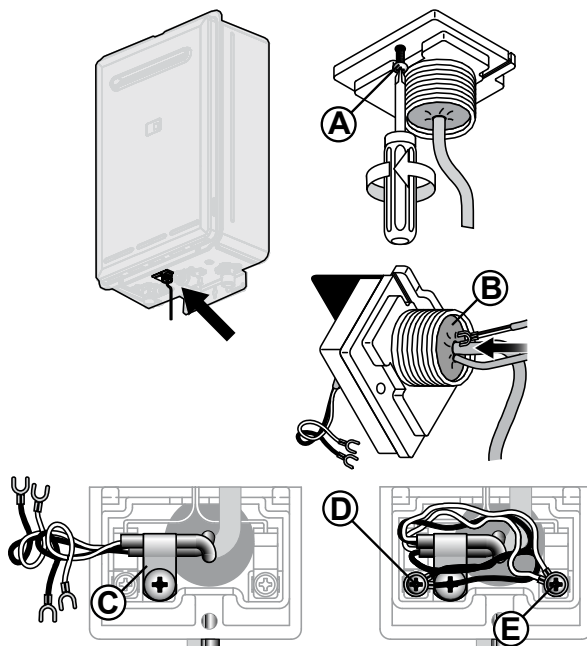
Communication cables connect the water heater to water controllers and operate at an extra low voltage (12 Volts DC) which is supplied from the water heater. Communication cables are supplied with the water controllers (15m) and are fitted with spade terminals for connection to water heater. Up to two cables can be connected directly to the water heater. Extension cables are available from Dux. Alternatively, two core sheathed (double insulated) flex with minimum cross sectional area of 0.5mm² may be used. Cable lengths must not exceed 20 metres.



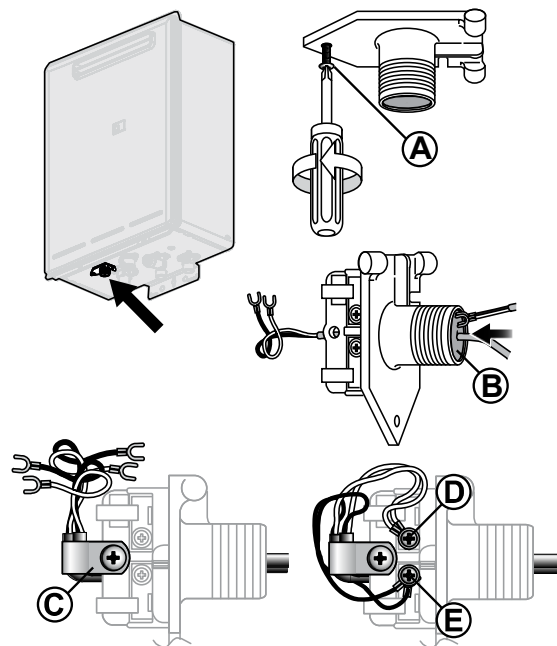
DO NOT attempt to connect cables to the water heater unless the electric power to the water heater is switched 'off' otherwise damage to electrical components may occur.

To connect up to two cables to the Water Heater

1. Isolate the electric power supply by switching the power point off and removing the power plug of the water heater from the electric power socket.
2. Remove the retaining screw (A) at the base of the appliance.
3. Swing the door open and thread the cable through the weather seal of the cable access hole (B) in the direction shown allowing sufficient cable length so that the sheath of the cable can be secured with cable clamp (C) supplied with the transceiver.
4. Loosen screw terminals (D) and (E) and connect the cable spade connectors to these terminals and re-tighten. Polarity is not important, either wire colour can be connected to either terminal.
5. Return to the original position taking care not to damage cable wires in the process and replace the retaining screw (A).



Suits Water Heater 16, 20, 26 Litre Models



Suits Water Heater 32 Litre Model only

COMMISSIONING

TESTING

1. Before final connection of the water heater purge gas, hot water and cold water supply lines. Swarf in either the gas or water supplies may cause damage.
2. Turn on gas and cold water supplies.
3. Test for water leaks and gas escapes near the unit.
4. Isolate gas supply. Remove test point screw located on the gas inlet connection and attach pressure gauge.
5. Turn the power 'on' at the power point socket and turn on gas.
6. If water controllers are fitted, turn ensure they are controller 'ON', select the maximum delivery temperature and open ALL available hot water taps including the shower. If remote controllers are not fitted, simply open all available hot water taps. (CAUTION: Ensure building occupants do not have access to hot water outlets during this procedure.)
7. Operate ALL other gas appliances at their maximum gas rate, in accordance with manufacturers instructions.
8. With all gas appliances in operation at maximum gas rate, the pressure should read between 1.13 - 3.0 kPa on Natural Gas. On LPG the pressure should be 2.75 - 3.0 kPa. If the pressure is lower, the gas supply is inadequate and the appliance will not operate to specification. It is the Installers responsibility to check the gas meter, service regulator and pipe work for correct operation/sizing and rectify as required. Note that the gas regulator on the appliance is electronically controlled and factory pre-set. Under normal circumstances it DOES NOT need adjustment during installation.
9. Close hot water taps including the shower.
10. Inspect and clean the strainer located on the cold water inlet connection. This procedure may need to be repeated to ensure the strainer remains clear, especially on new installations.
11. If water controllers are fitted, it is necessary to test their operation through the complete range of functions (refer to the Operation sections of this manual).
12. Confirm the hot water delivery temperature(s) using a thermometer. If controllers are fitted, ensure temperatures exceeding 50°C cannot be selected on bathroom or ensuite controllers. Refer to the section 'Delivery Temperature' below for more details.
13. After testing is completed, explain to the householder the functions and operation of the water heater and temperature controllers (if fitted). Ensure the "PRODUCT RECORDS" on page 25 of this manual is filled in and that the booklet is handed to the customer.

DELIVERY TEMPERATURE

"50°C Compliant" appliances are 'factory set' to deliver a maximum temperature not exceeding 50°C. However, they have an incremental adjustment mechanism that allows the installer to increase the appliance delivery temperature incrementally from the 'Factory Set' value to temperatures exceeding 50°C. This is intended to enable compensation for temperature losses in the pipe-work between the water heater and any outlets and achieve the required temperature at the outlet. Instructions for incremental temperature adjustment are located in the instruction pocket inside the appliance front cover.

For all other models

Dux Endurance Continuous Flow Water Heaters are factory pre-set to various maximum delivery temperatures depending on model and their intended application. For the majority of applications, the factory pre-set temperature is appropriate. In the unlikely event it is not this setting can be increased or decreased by the installer. Instructions for changing the maximum delivery temperature are located in the instruction pocket inside the appliance front cover.

COMMISSIONING

GAS PRESSURE SETTING

The regulator is electronically controlled and factory pre-set. Under normal circumstances it does not require adjustment during installation.

Make adjustments only if the unit is not operating correctly and all other possible causes for incorrect operation have been eliminated.

Instructions for Gas Pressure Setting are to be found in the instruction pocket located inside the appliance front cover.

COMMISSIONING CHECK LIST

A commissioning check list is provided on the appliance front cover to enable the installer to step through the correct commissioning procedure when installing a Dux Endurance Continuous Flow Water Heater.

The check list can also assist the installer to identify potential installation errors that may prevent the appliance from operating correctly.

ACCESSORIES

Recess Box (RBP1):

These allow the appliance to be recessed into the cavity of the wall saving precious space.
Suitable for painting.

Contact Dux for further information about our accessory range and model suitability details.

PRODUCT RECORDS

Please take a moment to record the following information below for your own records.

Model No : _____ Serial No : _____
Your Retailer : _____
Address : _____
Contact Number: () _____
Purchase Date : / / _____
Your Installer : _____
Address : _____
Installers License No. : _____
Contact Number : () _____
Installation Date : / / _____
Certificate of Compliance No. : _____



endurance[®]

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Dux has a Service and Spare Parts network with personnel who are fully trained and equipped to give the best service on your appliance. If your appliance requires service, please call. We recommend that this appliance be serviced every 3 years.



GWA
Smarter Solutions

Internet: www.dux.com.au

For advice, repairs and service, call:
1300 365 115 (Australia)
0800 729 389 (New Zealand)

U298-1310(00)



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