

HYCO
Manufacturing Ltd

Inline Instantaneous Water Heaters

Models IN95 and IN120
Installation and User Manual

Version 2.0 January 2009

HYCO INLINE INSTANTANEOUS WATER HEATERS

MODELS IN95 AND IN120

1. INTRODUCTION & TECHNICAL SPECIFICATION

Thank you for purchasing a Hyco Inline instant water heater.

To use this equipment safely please read this manual carefully. When the unit is installed the operation and maintenance section should be explained to the user of the equipment and this manual left with the user.


Hyco Inline water heaters operate on the instantaneous principle. This means that they heat water at the time of consumption as it flows through the unit, rather than storing a volume of pre-heated hot water as a storage water heater would.

The advantages of this system are that the Inline heater will never run out of hot water, energy is only used when the heater is in use and the heater is physically small because it does not need to contain a storage tank.


The power consumption of the Inline Heaters is fixed at either 9.5kW or 12.0kW, depending on the model. For a given flow rate (in Litres per minute) the fixed power consumption (in kW) will result in a fixed temperature increase from the inlet to the outlet. Reducing the flow rate will result in a greater temperature rise and vice versa.

As a general guide, Hyco instantaneous water heaters will provide enough hot water for hand washing, light dish washing or for a shower but not enough for a bath or whole house applications. As an aid to visualisation, 9kW is the power consumption of a typical electrical shower.

The unit can supply more than one outlet, but performance will drop if more than one outlet is used simultaneously.

 REMEMBER THE TEMPERATURE RISE DEPENDS ON WATER FLOW - THE SLOWER THE FLOW, THE HOTTER THE WATER.


 WATER TEMPERATURES DROP IN WINTER SO PERFORMANCE WILL VARY SEASONALLY.


 CHECK THE TEMPERATURE / FLOW TABLES IN SECTION 4 TO ENSURE THE INLINE WILL MEET YOUR NEEDS.


 WITH COLD INLET TEMPERATURES, A SPRAYHEAD TAP IS RECOMMENDED.

If you have any queries regarding operation or installation please contact our technical department on 01977 517555.

2. KEY SAFETY POINTS

 THE PRODUCT CANNOT BE PLUGGED TO A WALL SOCKET DUE TO THE HIGH CURRENT CONSUMPTION - DIRECT WIRING TO THE DISTRIBUTION BOARD IS REQUIRED AND SHOULD BE UNDERTAKEN BY A PROFESSIONAL ELECTRICIAN.

 DO NOT PROCEED WITH INSTALLATION OR OPERATION IF THERE IS SIGN OF ANY DAMAGE TO THE PRODUCT.

 THE SUPPLIED 6 BAR PRESSURE RELIEF VALVE MUST BE FITTED AND PLUMBED SO THAT ANY WATER DISCHARGE DOES NOT CAUSE DAMAGE TO PROPERTY.

 DO NOT BLOCK THE RELIEF VALVE OUTLET.

 ELECTRICAL CABLING MUST BE APPROPRIATE TO THE POWER OF THE UNIT.

3. KEY FEATURES:

- Small size – saves space.
- Endless supply of hot water.
- No standing energy losses
- Undersink installation possible.
- Can be connected to several outlets (simultaneous use not recommended)
- Ordinary taps can be used (but not thermostatic mixers).
- Sprayhead taps are recommended.

4. TECHNICAL PARAMETERS (SEE CHART BELOW):

 THE SUPPLIED PRESSURE RELIEF VALVE MUST BE INSTALLED.

* If inlet pressure exceeds 4 bar fit a pressure reducing valve (eg Hyco PRV30T).

5. INSTANT WATER HEATER CALCULATIONS

The temperature increase achieved by any instant water heater depends only on the physical properties of water and is related to flow rate according to the formula:

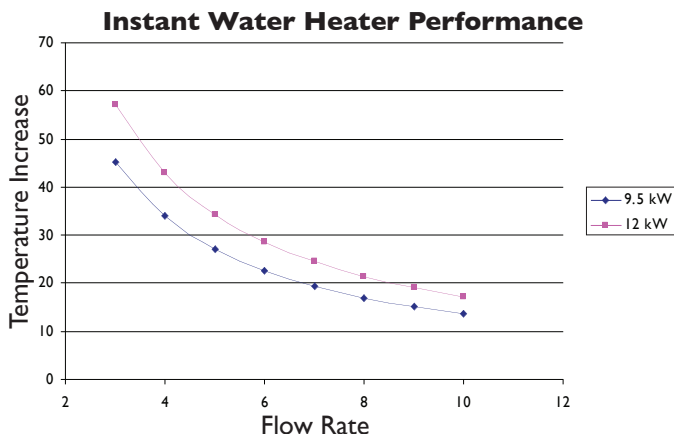
$$\text{Temperature Rise} = \frac{14.3 \text{ kW Rating}}{\text{Litres / minute flow}}$$

So a 12kW heater with a flow rate of 10 litres would raise the temperature by $(14.3 \times 12) / 10 = 17.2$ degrees. This would produce an outlet temperature of 37.2 degrees if the inlet temperature was 20 degrees, but only 22.2 degrees if the inlet temperature was only 5 degrees.

Model	Power	Voltage/ Frequency	Min. Pressure	Pressure Relief Valve	Max. Temp.	Min. Flow Rate	Max. Inlet Pressure*	Dimension (mm)		
								Height	Width	Depth
IN95	9.5 kW	220~240V/50Hz	0.5 bar	External (6 bar)	60° C	1.2 Lit/min	4 bar	185	300	110
IN120	12.0 kW	220~240V/50Hz	0.5 bar	External (6 bar)	60° C	1.2 Lit/min	4 bar	185	300	110

5. INSTANT WATER HEATER CALCULATIONS (Cont.)

Typical figures for different flow rates are illustrated in the below chart:



These figures ignore effects such as heating pipework and should be taken as a guide.

6. INSTALLATION

- Remove all packaging.
- Gently pry off the grey plastic pipe cover plate surrounding the pipes.
- Unscrew front cover screw, remove cover and put to one side.
- Fix back plate to wall using four screws at each corner of the unit.

7. PLUMBING CONNECTIONS

- Fit a service valve to aid future maintenance
- If the incoming water pressure could exceed 4 bar, fit a 3 bar pressure limiting valve. Part PRV30T from Hyco is suitable.
- The cold inlet is the left hand connection and the hot outlet is the right hand connection as viewed from the front.
- Both connections are 1/2" male.
- A 1/2" to 15mm adapter is required to connect to copper pipe. It is NOT possible make a direct 15mm compression fitting to the heater.
- Use PTFE tape to ensure a water tight seal. Do not over tighten connections.
- Run water through the unit for at least 30 seconds to purge air from the unit.
- The Inline can be connected to more than one outlet, but simultaneous use of more than one outlet will result in a drop in performance.

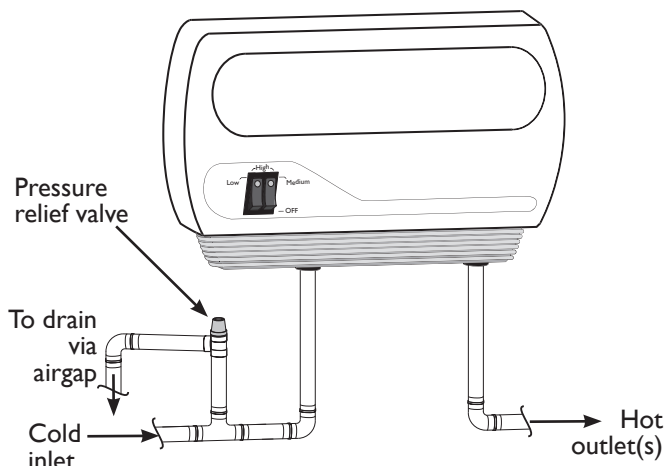
! THE SUPPLIED PRESSURE RELIEF VALVE MUST BE FITTED TO THE COLD INLET PIPEWORK.

! THE SAFETY VALVE DISCHARGE PIPE MUST BE DIRECTED TO A DRAIN SO THAT ANY HOT WATER DISCHARGE WILL NOT CAUSE DAMAGE OR INJURY.

! DO NOT FIT ANY KIND OF VALVE BETWEEN THE PRESSURE RELIEF VALVE AND THE COLD WATER INLET.

! THE HEATER MUST BE INSTALLED VERTICALLY WITH THE PIPES POINTING DOWNWARDS.

A typical plumbing arrangement for the relief valve is illustrated below:



8. ELECTRICAL CONNECTION

Electrical installation must be undertaken by a competent person in accordance with the latest edition of the IEE Wiring Regulations.

! ELECTRICAL INSTALLATION IS NOT A DIY TASK.

! BEFORE COMMENCING ELECTRICAL INSTALLATION, DOUBLE CHECK THAT THE UNIT IS FULL OF WATER BY OPENING A TAP AND ENSURING THERE IS A STEADY FLOW OF WATER.

! SWITCHING THE UNIT ON WHEN DRY WILL VOID THE WARRANTY.

- Connect the unit directly to the distribution board with a dedicated circuit using suitable cable.
- Protecting the circuit with an RCD device is highly recommended.
- There are several potential cable entry points in the back of the unit.
- Connect cable to unit at terminal block. Red/brown = Live, blue/black = neutral and green/yellow = earth.
- Secure cable using cable grip.
- Refit front cover and grey pipe cover (ie reverse instructions in Section 6).

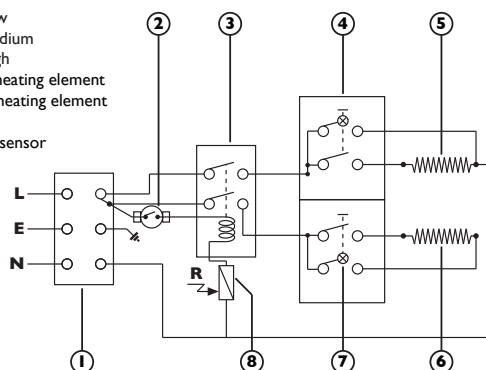
! THIS UNIT MUST BE EARTHED.

9. WIRING DIAGRAMS

Wiring diagrams for the IN95 and IN120 are as follows:

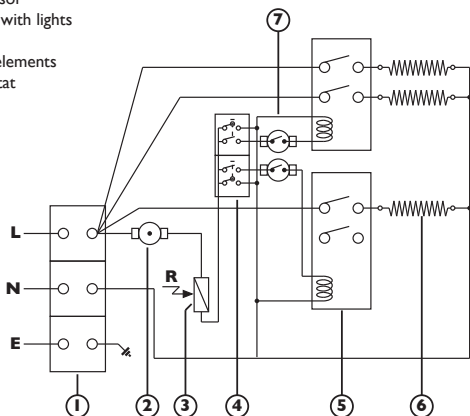
IN95 Wiring Diagram

1. Terminal block
2. Thermal cut-out
3. Relay
4. Switch
Off
Low
Medium
High
5. Low heating element
6. High heating element
7. Light
8. Reed sensor



INI20 Wiring Diagram

- 1. Terminal block
- 2. Thermostat with reset
- 3. Reed sensor
- 4. Switches with lights
- 5. Relay
- 6. Heating elements
- 7. Thermostat



10. OPERATION

- Select power level using switches on front of unit. The two switches give 4 levels (including off). In UK conditions the unit should normally be switched to full power.
- Switch on electrical supply.
- Turn on tap. When the flow rate exceeds about 1.2 litres per minute the unit will start to heat the water.
- As the flow rate is increased the temperature will start to fall.
- If the flow rate is gradually reduced the temperature will rise again. If the temperature exceeds approximately 60 degrees the unit will switch off to prevent scalding. It will restart again when the unit has cooled provided the flow is maintained.

! DO NOT FIT A THERMOSTATIC MIXING VALVE WITH THE INLINE. UNPREDICTABLE PERFORMANCE WILL RESULT.

! IF A TAP IS CLOSED BRIEFLY AND THEN SWITCHED BACK ON AGAIN, SUPPLIED WATER MAY BE TEMPORARILY BE VERY HOT DUE TO RETAINED ENERGY WITHIN THE HEATING ELEMENT BEING TRANSFERRED TO A SMALL VOLUME OF WATER.

! DO NOT SWITCH ON IF THERE IS ANY POSSIBILITY THAT THE PIPEWORK COULD BE FROZEN.

11. MAINTENANCE

- To clean, switch power off and wipe with a damp cloth. Do not use abrasive materials as this may cause permanent scratches.

! NEVER ALLOW WATER TO COME INTO CONTACT WITH ELECTRICAL PARTS.

! NOTE THAT THE CONSEQUENCES OF LIMESCALE ARE EXCLUDED FROM THE WARRANTY.

12. WARRANTY

Hyco Manufacturing Ltd will in its sole discretion repair or replace any defective product arising within a period of one year from the date of purchase, provided that:

- It has been used in accordance with these instructions.
- Failures are not the result of limescale, misuse or vandalism.

In the event of a failure please call our technical department on 01977 517555 before taking further action.

Please note that we would normally send spares or arrange collection and return of the unit for repair. We are generally unable to perform repairs on site. We will use reasonable endeavors to effect a repair within an acceptable period, but we cannot guarantee to meet any specific timescale.

13. TROUBLE SHOOTING

Symptom	Cause	Solution
No water from tap	No water supply.	Switch on if necessary
Water temperature too cold (Consult Performance Chart in Section 5.)	Excess flow rate	Reduce flow, fit sprayhead taps.
	Simultaneous use of multiple outlets Thermostat has tripped due to low flow rate	Restrict use to one outlet at a time Thermostat will reset itself. Increase flow.
Water temperature too high	Too much power	Reduce power level using switches on front of unit
	Insufficient flow	Increase flow rate
Water dripping from relief valve	Excess water pressure	Fit 3 bar pressure reducing valve (Hyco PRV30T or similar)

! ALWAYS SWITCH POWER OFF BEFORE UNDERTAKING MAINTENANCE.

H Y C O
Manufacturing Ltd

Hyco Manufacturing Ltd
California Drive
Whitwood
Castleford
West Yorkshire
WF10 5QH

Tel: 01977 517555 Fax: 01977 517666

Web: www.hyco.co.uk

E-mail: sales@hyco.co.uk