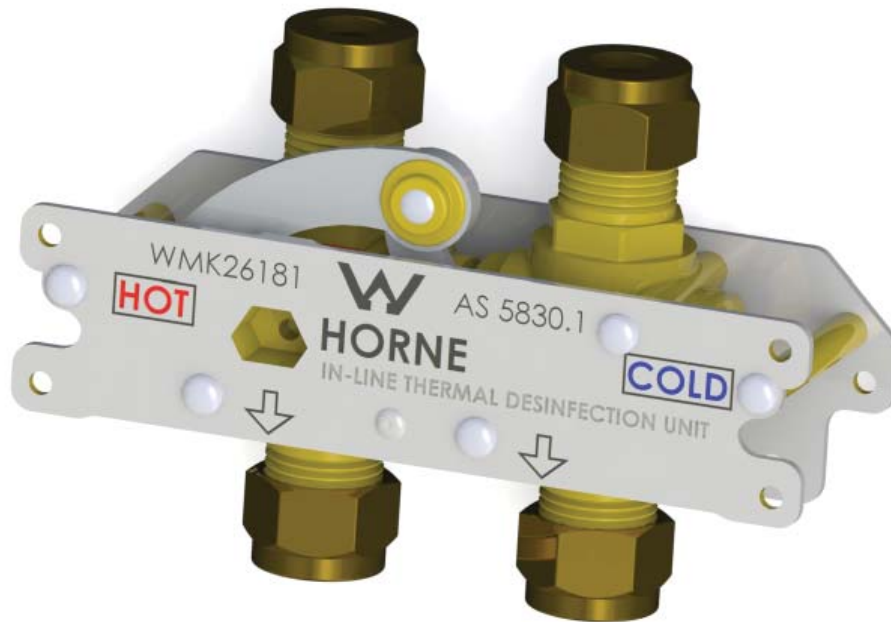


# HORNE ILTDU

*In-Line Thermal Disinfection Unit for TMV's.*



## Owner's Manual

Containing Installation, Commissioning and Maintenance guides





## Note

The Horne ILTDU is designed to be installed in line prior to any Thermostatic Mixing Valve (TMV) or tap, with the objective of sanitising the down stream pipes and components by thermal disinfection. Any process for thermal disinfection should take into account a local risk assessment and the any requirements set out in the "Guidelines for Legionella Control - operation and maintenance of water distribution systems in health and aged care facilities" (particularly section 4.1, control measures) and/or any other relevant national or local standards.

Citation: enHealth (2015). Guidelines for Legionella control in the operation and maintenance of water distribution systems in health and aged care facilities. Australian Government, Canberra.

## Copies

Additional copies of the HORNE In-Line Thermal Disinfecting Unit Report Template shown on pages 11 may be obtained from Zip Heaters (Aust) Pty Ltd. Contact details are shown on the back of the Manual.

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## Overview

The HORNE In-Line Thermal Disinfection Unit (HORNE ILTDU) provides a simple and convenient way to pass hot water, at system hot water temperature, through a Thermostatic Mixing Valve (TMV) in order to thermally disinfect the TMV and associated local pipework. All integral strainers, check valves, isolating valves, outlet fittings, and all pipework downstream of the HORNE ILTDU are disinfected during this process.

The HORNE ILTDU is intended to be used to disinfect a single outlet. It has been designed to pass only enough hot water to treat a single outlet at one time, without wasting water or energy. It may not pass enough hot water to thoroughly heat all the pipework and outlets if used to feed multiple outlets.

The ILTDU has a maximum operating temperature of 85°C, and a maximum static pressure of 1000kPa. For maximum effectiveness, it should be used with a Hot Water Supply of at least 60°C at the point of discharge.

A local risk assessment should be undertaken to determine the required disinfection routine, but in the absence of such data, as a guide, performing a disinfection routine for 10 minutes at 60°C can be used until this can be undertaken. This should eradicate most pseudomonas and legionella colonisations.

## How it works

The HORNE ILTDU passes hot water from the Domestic Hot Water System through the downstream pipework. It passes hot water to both the hot inlet and the cold inlet of the TMV, thus raising the whole TMV to system hot water temperature. This effects disinfection of the TMV and local pipework. The HORNE ILTDU has two operating modes – NORMAL and DISINFECTING. In NORMAL mode, the unit passes the hot and cold water supplies straight through to the TMV and the TMV operates completely normally.

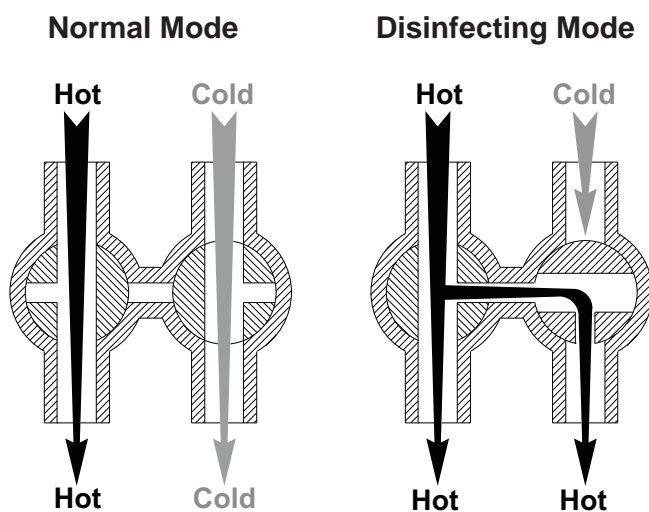


Fig.1

An OPERATING KEY is used to switch between NORMAL and DISINFECTING modes. A single clockwise half turn of the OPERATING KEY activates DISINFECTING mode. This synchronously operates two 3-way ball valves to divert the hot water supply into both the HOT and COLD outlets of the HORNE ILTDU, and into both the HOT and COLD inlets of the TMV. The outlet is run and this rapidly results in the pipework downstream of the HORNE ILTDU, the TMV and the Outlet Fitting all being raised to system hot water temperature.

NB Scalding water at system hot water temperature will come out of the tap fed by the TMV during disinfection and so suitable safety precautions must be taken to prevent the risk of scalding, or of damage to porcelain, etc.

The OPERATING KEY is specially shaped and interlocked such that it cannot be removed from the unit while the unit is in DISINFECTING mode. The OPERATING KEY has a large red warning triangle chained on to it. This serves as a local visual reminder on the unit that it is being used in DISINFECTING mode. Please note that it is impossible to safely operate the unit without the correct operating key, and it is dangerous to make any attempt to do so.

After passing hot water through the TMV for the desired period, the OPERATING KEY is turned back to its original position and the key is removed from the unit. Removal of the OPERATING KEY from the unit confirms that the unit is in NORMAL mode and that disinfection has ceased.

Note that the OPERATING KEY should ALWAYS be immediately removed from the unit and must NEVER be left in the unit when in the NORMAL mode, as unauthorised operation of the key could result in scalding water coming out of the outlet.

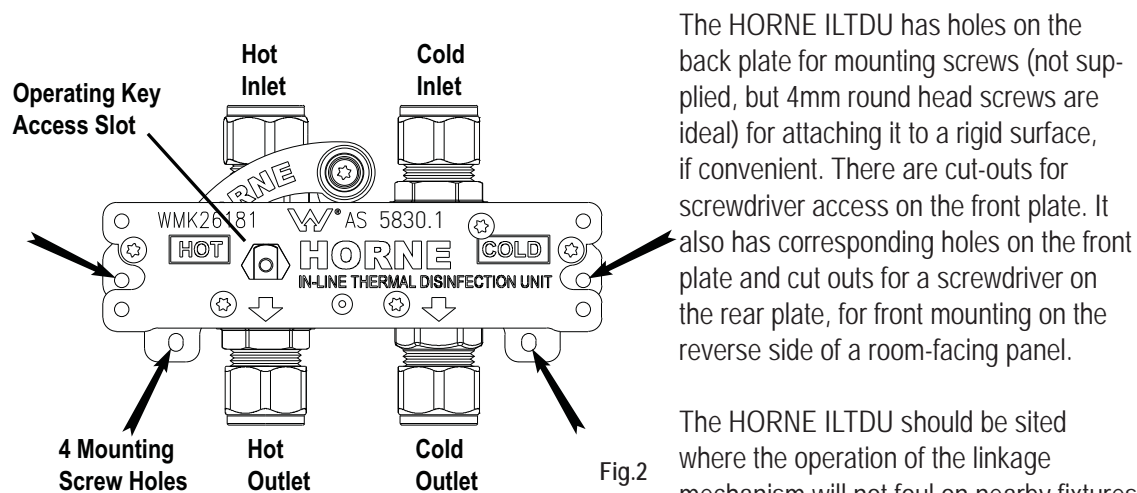
It should be noted that disinfection is a completely separate process from cleaning, and this unit only disinfects components using system hot water. A high velocity flush should also be undertaken to help clean the treated system and get rid of any loosened biofilm.

## Fitting the HORNE ILTDU

The HORNE ILTDU is fitted into the hot and cold supply pipework feeding a thermostatic mixing valve, a thermostatic shower or a mixer tap. It should be fitted within 2m of the outlet being protected to ensure that the hot water does not cool down significantly before it reaches the outlet.

Notes: Local plumbing regulation may require installation of an approved back flow prevention device on the hot and /or cold inlets to the ILTDU.

The HORNE ILTDU has markings on the body showing the hot and cold connections, and arrows showing the direction of flow. It is important to plumb-in the HORNE ILTDU correctly, respecting all the connections and the directions of flow. **The HORNE ILTDU will not work if it is not plumbed in correctly.** The OPERATING KEY ACCESS SLOT should be readily accessible to the OPERATING KEY when the unit is installed. Note that the operating key is approx. 150mm long, so clearance is required for this. Note that the OUTLET of the HORNE ILTDU connects to the INLETS of the TMV.



The HORNE ILTDU has holes on the back plate for mounting screws (not supplied, but 4mm round head screws are ideal) for attaching it to a rigid surface, if convenient. There are cut-outs for screwdriver access on the front plate. It also has corresponding holes on the front plate and cut outs for a screwdriver on the rear plate, for front mounting on the reverse side of a room-facing panel.

The HORNE ILTDU should be sited where the operation of the linkage mechanism will not foul on nearby fixtures or fittings, and where there is no danger

of falling debris interfering with the workings of the unit.

The main features of the HORNE ILTDU are shown in the illustration, Fig 2, which shows the front view. Note the flow direction arrows on the front plate, the screw holes on the rear plate (identified by arrows), and the hot and cold designations. The hot and cold sides, and inlets and outlets must be plumbed correctly for the unit to work as intended. The mounting holes on the front plate are shown, but not highlighted.

Observe good plumbing practice and use two spanners to make off the compression fittings at the inlets and outlets of the HORNE ILTDU. Operate the mechanism using the OPERATING KEY to provide access to all spanner flats when making off the compression fittings. Do not strain the mechanism linkage with the spanners while making off the compression fittings.

## Commissioning the HORNE ILTDU

Ensure that the installation is free from leaks and then commission the unit as follows:

- The unit will not operate as intended unless it is plumbed in exactly as shown in Fig 2. It is expressly not permissible to swap over inlets and outlets, or hot and cold pipework, even if these are done symmetrically. Check the plumbing against the connections shown in Fig 2, and double check that the outlet of the HORNE ILTDU is connected to the INLETS of the TMV.
- Before inserting the OPERATING KEY, open the supplies and run the outlet until normal temperature at the outlet is reached. Measure and record this temperature. Ensure that the HOT water pipe to the TMV is HOT, and that the COLD water pipe to the TMV is COLD.
- Insert the OPERATING KEY into the ACCESS SLOT on the front plate, and DO NOT TURN THE KEY. Ensure that the short leg of the OPERATING KEY is pointing in the same direction as the outlet pipes going to the TMV. If it is not, the unit is not plumbed correctly, so correct the pipework before proceeding.
- Turn the OPERATING KEY exactly a half turn clockwise, until you feel the mechanism reaching the end stop. The short leg of the OPERATING KEY should now be pointing towards the inlet pipework.
- The OPERATING KEY cannot be removed from the unit in this position. This is intentional, to prevent the unit from being accidentally left in the DISINFECTING MODE.
- Turn on the outlet and ensure that the HOT water pipe between the HORNE ILTDU and the TMV is HOT, and also that the COLD water pipe between the HORNE ILTDU and the TMV is HOT. BOTH pipes should be hot (this is how the HORNE ILTDU heats up the TMV for disinfection purposes).
- Measure the water temperature at the outlet and ensure that it is at system hot water temperature.
- Turn the OPERATING KEY back half a turn anti-clockwise against the end stop and remove the key. Ensure that the temperature at the outlet rapidly returns to normal.
- Perform a cold water failure test on the TMV to ensure that it is still providing scald protection.

- Get into the habit of ALWAYS removing the OPERATING KEY from the HORNE ILTDU when the device is in the NORMAL MODE. Do NOT leave the OPERATING KEY in the device when in the NORMAL position.

The HORNE ILTDU is now commissioned.

## Using the HORNE ILTDU

Before the ILTDU is used, a local risk assessment should be undertaken to establish:

- Any bacterial load present and the most appropriate time/temperature regime to deal with it.
- The scalding risk and how to minimise it during disinfection.
- Any necessary precautions to protect sanitary ware from the hot water.
- The most appropriate frequency for a disinfection routine to be scheduled.

The use of the HORNE ILTDU will now be described in the context of it having been fitted to pipework feeding a Horne TMV.

- Ensure that the Hot Water Temperature available is consistent with that recommended by the local risk assessment.
- Ensure that no vulnerable people are able to access the outlet while the disinfection process is underway.
- Perform a cold water failure test on the TMV being disinfected. If the cold water failure test is satisfactory then proceed with the disinfection procedure. If the TMV does not pass the cold water failure test, then address that before proceeding by following normal maintenance procedures for the TMV.
- Fully turn on the outlet, and then insert the OPERATING KEY into the HORNE ILTDU, and turn it 180 degrees clockwise, against the end stop. The OPERATING KEY will remain in the HORNE ILTDU during this time – it cannot be removed.
- The red warning triangle attached to the OPERATING KEY serves as a highly visible reminder that the unit is in DISINFECTING MODE.
- Measure the temperature of the water coming out of the outlet. This should rise to system hot water temperature. When it reaches the minimum temperature recommended by the local risk assessment, start timing, and permit the water to run for the required duration. Measure the temperature during this time to ensure that the temperature is maintained at the required high level. If the temperature does not reach the required level, or is not maintained at the required level, stop the process and address the water temperature as satisfactory disinfection cannot be assured.
- After the water has run for the required time, turn the OPERATING KEY 180 degrees anti-clockwise back to its original position, and again against the end stop, and then remove the key. Develop the habit of always removing the OPERATION KEY whenever the unit is returned to the Normal mode. Do not leave the OPERATING KEY in the unit.

- Let the tap run for a few minutes and monitor the temperature to make sure the water temperature drops to a safe and comfortable limit.
- Perform a cold water failure test on the TMV and ensure that it closes off the hot water supply, and is thus still preventing scalding, and check that the mixed water temperature is within appropriate limits.
- Note that disinfecting is a separate process from cleaning. This process will disinfect the TMV and pipework, but will not, in itself, clean the system. It is advisable to perform a high velocity flushing procedure, using an appropriate Horne Flushing Kit for the TMV in question, to encourage removal of loosened biofilm and accumulated debris. The use of a Horne Flushing Kit permits full-bore flushing and bypasses flow regulators within the TMV in order to ensure flushing the pipework with the maximum water velocity possible.
- Where the outlet fitting is a thermostatic tap or shower, the tap or shower should also be appropriately cleaned.

## Maintenance

The HORNE ILTDU has no user serviceable parts, and does not require any ongoing maintenance, other than occasional cleaning and lubrication of the metal link mechanism to prevent jams.

If the unit fails to work properly, it should be replaced with part no.94697. No attempt should be made to disassemble the unit.

If the OPERATING KEY is lost, do not attempt to operate the unit without it. It will not operate satisfactorily, the unit could be damaged, and it could be dangerous. Replacement Keys (Part No 94340 Kit ILTDU key) can be ordered from Zip. (Contact details on back covers).

## Service

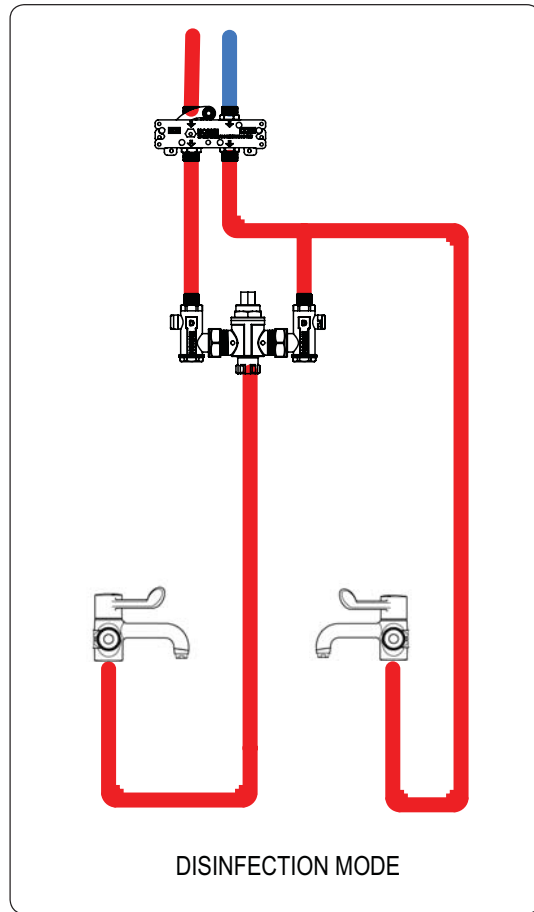
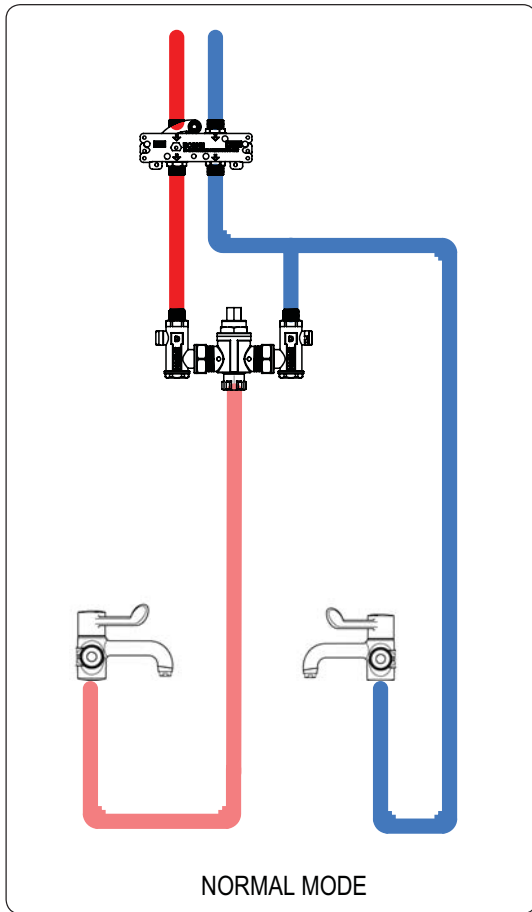
All service work must only be carried out by a suitably qualified and experienced service person.


Before calling for service, check the water supply is turned 'ON' and OK.

Call Zip in Australia on 1800-638-633 for assistance, service, spare parts, or enquiries.



## Typical installation





The following report template is designed to assist the installer in recording the details of disinfection process.

The method for testing and maintaining thermostatic mixing valves is detailed in AS4032.3 appendix B. and includes both Hot and Cold operational tests.

## HORNE In-Line Thermal Disinfecting Unit Report Template

Establishment:		Outlet ID No.:									
Risk Assessment Reference:		Outlet protected (e.g. tap, shower etc):									
<b>Recommended temperature and duration of disinfection – 60°C minimum, continuously for 10 minutes, recorded at the outlet (flow rate can be minimised via on/off)</b>											
Date	Confirm satisfactory TMV performance before disinfecting (CW isolation test)	Elevated Velocity Flush included?	Disinfection temperature (°C)	Disinfection Duration (Mins)	Confirm satisfactory TMV performance after disinfecting (CW isolation test)	Operator Name	Signature	3 day water Sampler	Water sample test results. E.g. P.A cfu = 0		
									Pre-flush	Post-flush	

Zip Water (Aust) Pty. Ltd. 67-77 Allingham Street, Condell Park NSW 2200. Website: [www.zipwater.com](http://www.zipwater.com) Note: Print this sheet as required



#### Head Office

Zip Water (Aust) Pty. Ltd  
ABN: 46 000 578 727  
67-77 Allingham Street  
Condell Park NSW 2200  
Postal: Locked Bag 80  
Bankstown 1885 Australia

Website: [www.zipwater.com](http://www.zipwater.com)  
Telephone: (02) 9796 3100  
Free Call: 1 800 638 633

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