



**ENGINEERED AIR**

**INSTALLATION, OPERATION  
AND MAINTENANCE MANUAL  
FOR  
DRAIN WATER TEMPERING KIT  
FOR USE WITH SH(X) GAS FIRED HUMIDIFIER  
OUTDOOR MODELS**

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**SALES OFFICES ACROSS CANADA AND USA**

Retain instructions with unit and maintain in a legible condition.  
Please give model number and serial number when contacting  
factory for information and/or parts.

[www.engineeredair.com](http://www.engineeredair.com)

**Warning:**  **Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.**

## YOU HAVE RESPONSIBILITIES TOO

This installation, operation and maintenance manual cannot cover every possibility, situation or eventuality. Regular service, cleaning and maintaining the equipment is necessary. If you are not capable of performing these tasks, hire a qualified service specialist. **Failure to perform these duties can cause property damage and/or harm to the building occupants and will void the manufacturers' warranty.**

## INTRODUCTION

Engineered Air units are high quality products designed and manufactured to provide many years of trouble-free operation. We recommend that this manual be read thoroughly to ensure proper installation, efficient operation and proper maintenance of this equipment. The submittal record is considered to be part of the Installation, Operation and Maintenance Manual. Please report any omissions to the national service manager.

## WARRANTY

**LIMITED WARRANTY** ENGINEERED AIR will furnish without charge, F.O.B. factory, freight collect, replacement parts for, or repairs to products covered herein which prove defective in material or workmanship under normal and proper use for a period of twelve (12) months from the initial start-up or eighteen (18) months from the date of shipment, whichever expires sooner, provided the customer gives ENGINEERED AIR written notice of such defects within such time periods and provided that inspection by ENGINEERED AIR establishes the validity of the claim and all pertinent invoices have been paid in full. The repairs or replacements will be made only when the complete product(s) or part(s) claimed to be defective are returned to ENGINEERED AIR or a depot designated by ENGINEERED AIR, transportation charges prepaid. Repairs or replacements as provided for by this paragraph shall constitute fulfillment of all ENGINEERED AIR's obligations with respect to this warranty. The refrigerant charge is not included in any part of this warranty. This warranty does not apply to any products or parts thereof that have been subject to accident, misuse or unauthorized alterations, or where ENGINEERED AIR's installation and service requirements have not been met.


The foregoing warranty is in lieu of all other warranties, express or implied. ENGINEERED AIR specifically disclaims any implied warranty of merchantability and/or fitness for purpose. Under no circumstances shall ENGINEERED AIR be liable to, nor be required to indemnify, Buyer or any third parties for any claims, losses, labour, expenses or damages (including special, indirect, incidental, or consequential damages) of any kind, resulting from the performance (or lack thereof) of this Agreement or the use of, or inability to use the goods sold hereunder, including, but not limited to, damages for delay, temporary heating/cooling costs, loss of goodwill, loss of profits or loss of use. Furthermore, the parties agree that the Buyer's sole remedy under this Agreement shall be limited to the limited warranty set forth in the preceding paragraph relating to the repair or replacement of any defective goods. Under no circumstances shall any claim or award against ENGINEERED AIR exceed the original contract price whether awarded through arbitration, litigation or otherwise.

ENGINEERED AIR Warranty is void if:

1. The unit is not installed in accordance with this manual.
2. The start-up and operation of the unit is not performed in accordance with this manual.
3. The unit is operated in an atmosphere containing corrosive substances.
4. The unit is allowed to operate during building construction.

## PARTS

**Warning:** Any replacement part must be of equivalent listing or certification and be functionally equivalent. The replacement part must meet the original's specification in terms of functionality including certifications, timing, input and output range, accuracy and operation.

 Failure to replace parts or components with equivalent parts can cause property damage, injury or death.

Contact the nearest Engineered Air sales office or factory. Be sure to include Model Number, Serial Number, date of installation and nature of failure along with the description of the parts required. Some parts may not be stocked items that must be made or ordered.

## RECEIVING

Refer to the back of the packing slip for receiving unit instructions.

On receipt of the unit, check for damage. Inspect protective covers for punctures or other signs that there may be internal damage.

## INSTALLATION

**Warning:** This unit is not rated for hazardous locations and cannot be installed in areas requiring any hazardous location rating.



**Caution:** All wiring, piping and fuel line installation must be completed by qualified persons in accordance with all federal, state, provincial and/or local codes.



**Note:** Installation shall be in accordance with this manual and all other associated component and control Installation, Operation and Maintenance Manuals.

## **CODES**

### **IN CANADA**

1. The installation of this unit shall be in accordance with the latest edition of the National Plumbing Code of Canada, Provincial and Local Codes, and in accordance with the local authorities having jurisdiction.
2. The installation of this unit shall be in accordance with all other National, Provincial and Local Codes, and in accordance with the local authorities having jurisdiction.

### **IN USA**

1. The installation of this unit shall be in accordance with the latest edition of the National Standard Plumbing Code (NSPC), State and Local Codes and in accordance with the local authorities having jurisdiction.
2. The installation of this unit shall be in accordance with all other National, State and Local Codes, and in accordance with the local authorities having jurisdiction.

## **KIT DESCRIPTION**

The Engineered Air SH Drain Water Tempering Kit provides a level of protection to drainage systems by tempering hot effluent drain water with a dedicated domestic cold water line. The device is passive and used for protecting drain lines during power outages. As hot effluent makes contact with the sensing element, a valve opens allowing cold water to quench the draining fluid. When the sensing element cools it closes the valve, stopping the flow of cold water. The valve can close rapidly, therefore a water hammer arrester is highly recommended to be installed in the line.

## **DRAIN PIPING INSTRUCTIONS**

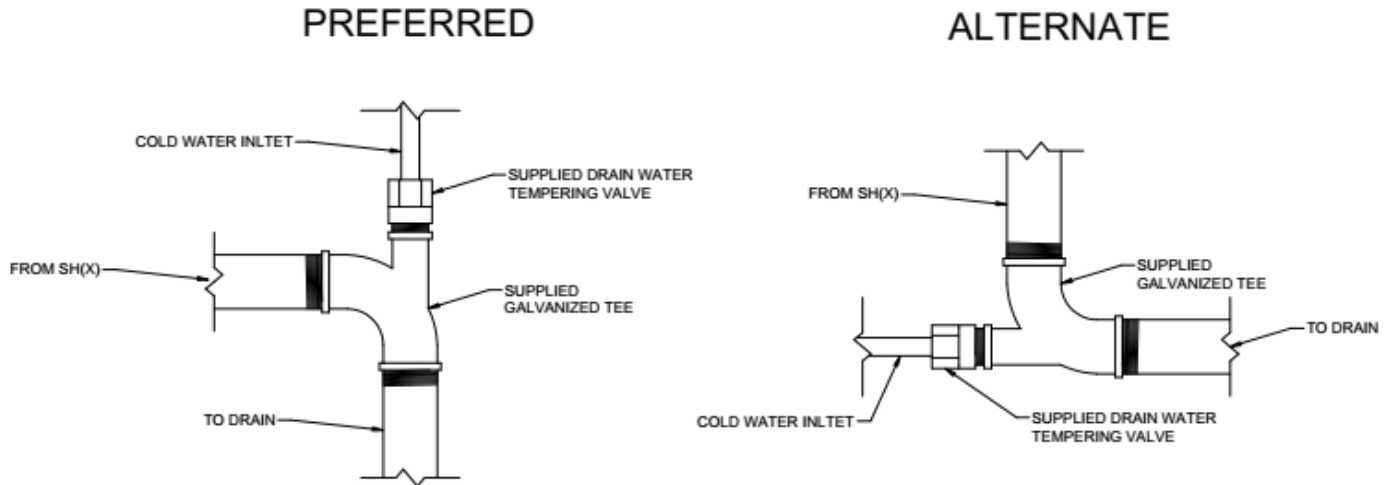
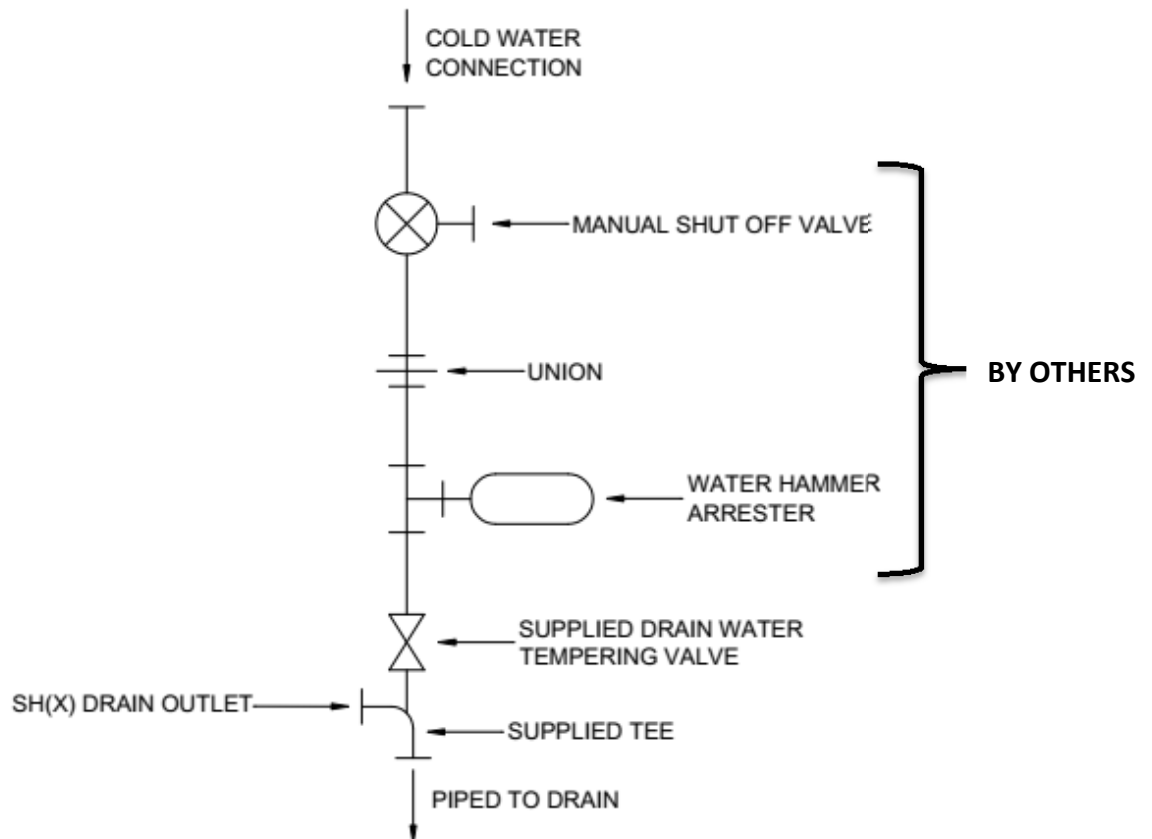
Drain piping must be sloped down towards the drain at a minimum slope of  $\frac{1}{4}$ " per foot. Care should be taken to ensure that the slope is continuous throughout the length of the piping run. Poorly sloped piping could cause vapor locks or additional trapping,

Proper plumbing practices must be followed. All piping and venting must be in accordance with all local codes and the authorities having jurisdiction. Attached are a number of suggested piping layouts. AAV (air admittance valves) may be used if allowed by code; however the installation should be confirmed with the local plumbing inspector.

**SH DRAIN WATER TEMPERING KIT INSTALLATION**

The following schematics display the recommended orientation and connections for the SH Drain Water Tempering Kit. These orientations shall be followed to allow the valve to operate effectively.

A suitable backflow preventer may be required by local or national plumbing codes.

**CONNECTION DIAGRAM**

## SUPPLY WATER

The supply water pressure range must be between 25 psi (172kPa) and 80 psi (551kPa) and a minimum flow rate of 35 GPM (2.21 l/s). Do not use heated supply water. Engineered Air recommends installing a water hammer arrester.

A suitable backflow preventer may be required by local or national plumbing codes.

**NOTE: Always install a supply water manual shut off valve at the SH Drain Water Tempering Kit.**

## DRAIN CONNECTION

Drain water temperatures will normally be tempered by mixing the domestic cold water with the hot drain water to a leaving temperature between 120°F (49°C) and 140°F (60°C). In the event of a power failure, near boiling water could enter the drain line. Piping from the SHX to the supplied tee must be rated to withstand 212°F (100°C).

The drain line must not be trapped or valved and must gravity drain to an open indoor drain, with a 1" (25) air gap.

## MAINTENANCE

### DRAIN CONNECTIONS

It is recommended that all drain connections be inspected and cleaned at least once a year. If the drain connection is found to have an accumulation of debris, clean more often if necessary.

### VALVE

It is recommended that the drain water tempering valve connections and valve seat be inspected and cleaned at least once a year. If the valve is found to have an accumulation of debris, clean more often if necessary.