



ENGINEERED AIR



**INSTALLATION, OPERATION
AND MAINTENANCE MANUAL
FOR
TRU (HRP)
FIXED TILT HEAT PIPES**

UNIT MODEL NO. _____
UNIT SERIAL NO. _____
SERVICED BY: _____
TEL. NO: _____

North America Toll-free Technical
1-888-796-1359

Canadian Head Office
1401 Hasting Cres. SE
Calgary, Alberta, Canada
T2G 4C8
(403) 287-2590

North American Toll-free Parts
1-888-796-1332

USA Head Office
32050 W 83rd Street
De Soto, Kansas, USA
66018
(913) 583-3181

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

www.engineeredair.com



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INTRODUCTION

Engineered Air Thermal Recover Units (TRUs) are fixed mounted heat pipes that have no moving parts or replaceable items. Each heat pipe is self contained and permanently sealed. Once installed in accordance with the submittal drawing the TRU functions independently of external controls. It is critical that the heat pipe be installed exactly as indicated on the submittal drawing for it to operate properly. Operation at air flows and/or temperatures different from the design criteria may result in a loss in performance and/or damage to the unit.

WARNING:

Operation at temperatures above the soak temperature indicated on the TRU nameplate and in the submittal record may result in the uncontrolled release of refrigerant.

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.

RECEIVING

All Engineered Air TRUs are inspected and factory tested prior to shipment. All TRUs should be inspected upon receipt to determine that all items on the bill of lading are received and are in an undamaged condition. If there is any damage or shortage it should be reported immediately and a claim filed with the carrier. Should hidden damage be found upon uncrating or during installation, file a concealed damage claim with carrier. Several TRUs may be shipped within a single crate. Refer to the IMPORTANT FREIGHT PROCEDURE notice located on the back of the packing slip.

TEMPORARY STORAGE

If a unit is to be stored prior to installation the following precautions are required:

- Store in a well drained area that will not accumulate surface water.
- Store in an area where the unit will not get damaged.
- The entire perimeter and any full height cross members of the unit must be supported by a level surface and the supporting surface must be adequate for supporting the entire weight of the unit.
- All protective coverings that were provided for shipping must be in place.
- Protect indoor units from rain and snow.

TRU TYPES

Engineered Air TRUs are custom designed for each application. While two TRUs may look similar, there may be variations in the fin spacing, and charge amounts and types. Note the tag number on each TRU for reference.

RIGGING

Move and lift using only the outer frame, using two slings.

INSTALLATION

GENERAL

Carefully remove the TRU from the shipping container to avoid damage to the finned surface and tubing. Damaged fins can be straightened using a fin comb.

Confirm the tag number and orientation of the TRU prior to installation.

Air entering the face of the TRU must be of uniform velocity for proper heat transfer. Do not locate the TRU near fan outlets, duct elbows or transitions which could affect the airflow.

If possible, filter the air prior to entering the TRU.

The TRU must be regularly inspected for cleanliness. Ensure the system has adequate provisions for cleaning, including access doors in all four sections and drain pans.

DRAINAGE

All TRU heat pipes must be located with two properly sized drain pans with properly sized drain traps and piping. All water must collect in the drain and leave through the drain pipe. This drain pipe must be trapped and drained according to local codes and the authorities having jurisdiction. If the installation requires two TRUs to be stacked on top of one another, a diverter plate and intermediate drain pan is required on each airflow side. The drain from the upper TRU can be piped directly into the lower drain pan, without a need for trapping.

An auxiliary drain pan is recommended due to condensate drainage from the end cover areas.

MOUNTING - LEVEL

Level installed TRUs can provide heat transfer in both directions, whichever side is hotter. Since thermal recovery is highly dependent on the heat pipe angle with respect to the horizontal, provisions such as leveling jacks, turnbuckles, etc. should be included in the installation to provide means for obtaining a true level position.

MOUNTING - TILTED

Tilt installed TRUs at a permanently fixed angle provide heat transfer from one direction only, with the down tilt side being in the hotter air stream (typically the exhaust). Tilted TRUs must be installed at the correct tilt angle in order to achieve the most heat transfer. Refer to the submittal records for the correct mounting angle.

MOUNTING – VERTICAL

TRU heat pipes installed in the vertical can only transfer heat from the bottom air stream up to the top air stream. The warm (typically the exhaust) air stream must be connected to the bottom section.

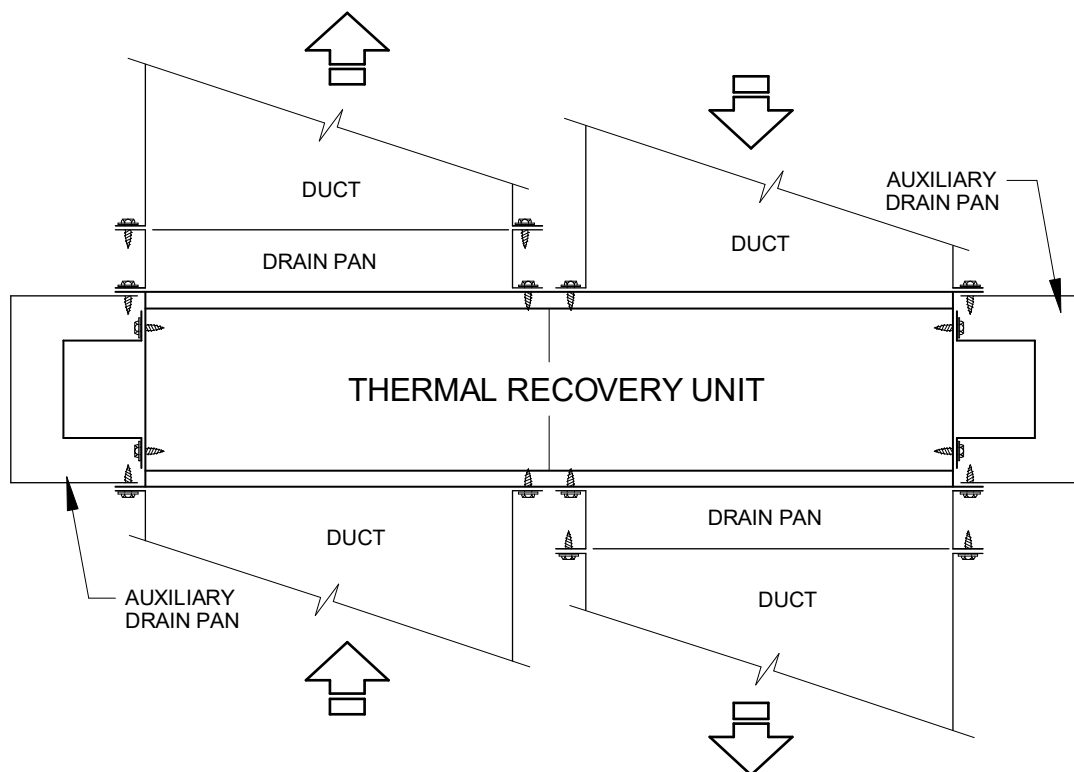
CONNECTIONS

The perimeter of the TRU must be sealed to the surrounding enclosure to prevent air from bypassing the TRU.

Make duct connects with #10 sheet metal screws at 6" (152) o.c. All connections must be sealed with waterproof sealant. Ensure the sealant exceeds the maximum operating (soak) temperature of the TRU.

Recommended sealants:

- | | |
|---------|--|
| RTV-108 | Adhesive/Sealant – Silicone Rubber
Silicone Products Division
General Electric Company
For airflow temperatures up to 400°F (204°C) |
| RTV-106 | Adhesive/Sealant – Silicone Rubber
Silicone Products Division
General Electric Company
For airflow temperatures above 400°F (204°C) |



SOAK

Soak is defined as the maximum temperature the entire unit may be exposed. This temperature is noted on the TRU nameplate and on the submittals.

Systems with exhaust temperatures higher than the soak temperature rating on the TRU must never operate without the supply (colder) air stream operating, to prevent overstressing the individual tubes.

OPERATION

Both the supply and exhaust air supplies must be interlocked to ensure they both operate at the same time.

MAINTENANCE

As there are no moving parts the TRU is considered maintenance free except for cleaning.

It is recommended that a program of at least weekly observations be initiated immediately after system startup to determine the required cleaning frequency and method. If cleaning criteria are not established promptly, the TRU heat pipe may become sufficiently coated to prevent cleaning in place by any method. Sufficiently coated is defined as a 3 Mil thick coating or a bridge of 10% across the fins on either face.

An increase in pressure drop across the TRU is directly related to the amount of particulate collected. A method of measuring pressure drop across the exhaust and supply side of the TRU is recommended. A pressure drop of 10% greater than that initially measured at startup is a good guideline for determining the cleaning frequency.

CLEANING – IN PLACE

Successful cleaning depends upon the utilization of a cleaning frequency which does not preclude spraying through the unit.

- Vacuum cleaning of dry lint or felt accumulation on the TRU face.
- OSHA approved solvent with tap water (warm or cold) or low pressure steam. Do not exceed 25psig (172kPa). Do not exceed the Soak temperature. Spray from the leaving air side of the TRU.

CLEANING – REMOVAL

The entire TRU heat pipe may be removed and submerged in a dip tank using OSHA approved solvents or detergents. Copper units with stainless steel frames may use a caustic solution of 10-20% strength at 180°F (82°C).

WARNING:

Property damage or personal injury may result from mold or bacterial growth arising from improper installation, inadequate maintenance, or failure to inspect. The manufacturer has no responsibility for and makes no express or implied warranties regarding mold or bacterial growth or and other indoor air quality issues. If mold or bacterial growth is present determine and fix the cause and remove the contamination. Properly clean and sanitize the affected area using only approved sanitizer's approved for HVAC equipment. Moisture carry over can also result from dirty TRUs.

CAUTION:

Use of high pressure steam or water may damage the TRU.

CAUTION:

TRU fins are easily damaged. The finned surfaces of TRUs can be cleaned using a low pressure water spray. When using cleaning additives or solutions they must be compatible with the TRU materials or coatings. Where possible clean TRUs reverse to airflow so dirt is pushed back out rather than deeper into the TRU.

HERESITE® MAINTENANCE

Heresite® is a baked on phenolic coating used to protect metals from some forms of chemical corrosion.

Inspect once per year or more often as required.

Clean with low pressure air and vacuum with a soft brush.

Low pressure, chemical free water may be used.

Repair Instructions:

- 1) Ensure surfaces are completely dry.
- 2) Use a nylon brush to remove any loose scale.
- 3) Roughen up areas to be repaired with a wire brush.
- 4) Vacuum fins or the affected area to ensure any loose residue is gone.
- 5) Spray or brush S-440 solvent* (or any equivalent cleaner) to dissolve any oils or grease.
- 6) Again, vacuum the affected area.
- 7) Allow one hour for the solvent to dissolve completely.
- 8) Cover areas not requiring repair with plastic (or equivalent) and masking tape.
- 9) Using Heresite® VR-554-T* coating spray all affected areas from different angles to ensure complete coverage. Apply 2-3 full coats. Let dry 3 to 4 hours between coats.
- 10) Allow Heresite® to cure 24 hours before putting equipment back into service.

* Review the MSDS documentation included with the solvent and coating spray.