

MODEL H

INSTALLATION & MAINTENANCE FOR ALPHA AIRE UNITS



HEATEX

NORTH AMERICAN ADDRESS AND CONTACT DATA

Mailing Address:

Heatex INC.
P.O. Box 254
Natural Bridge Station, VA 24579
USA

Physical Address:

Heatex INC.
70 Douglas Way
Natural Bridge Station, VA 24579
USA

Telephone: +1 540-291-4001

info.northamerica@heatex.com

www.heatex.com

DISCLAIMER, COPYRIGHT NOTICE, AND DECLARATION OF INCORPORATION

This information is available upon request from Heatex Inc., or via the complete Heatex General Design Information for AHU Manufacturers Manual, available on Heatex's website. The herein manual is tailored to only include information pertinent to the Model H plate exchanger included in this Alpha Aire Unit.

CONTENTS

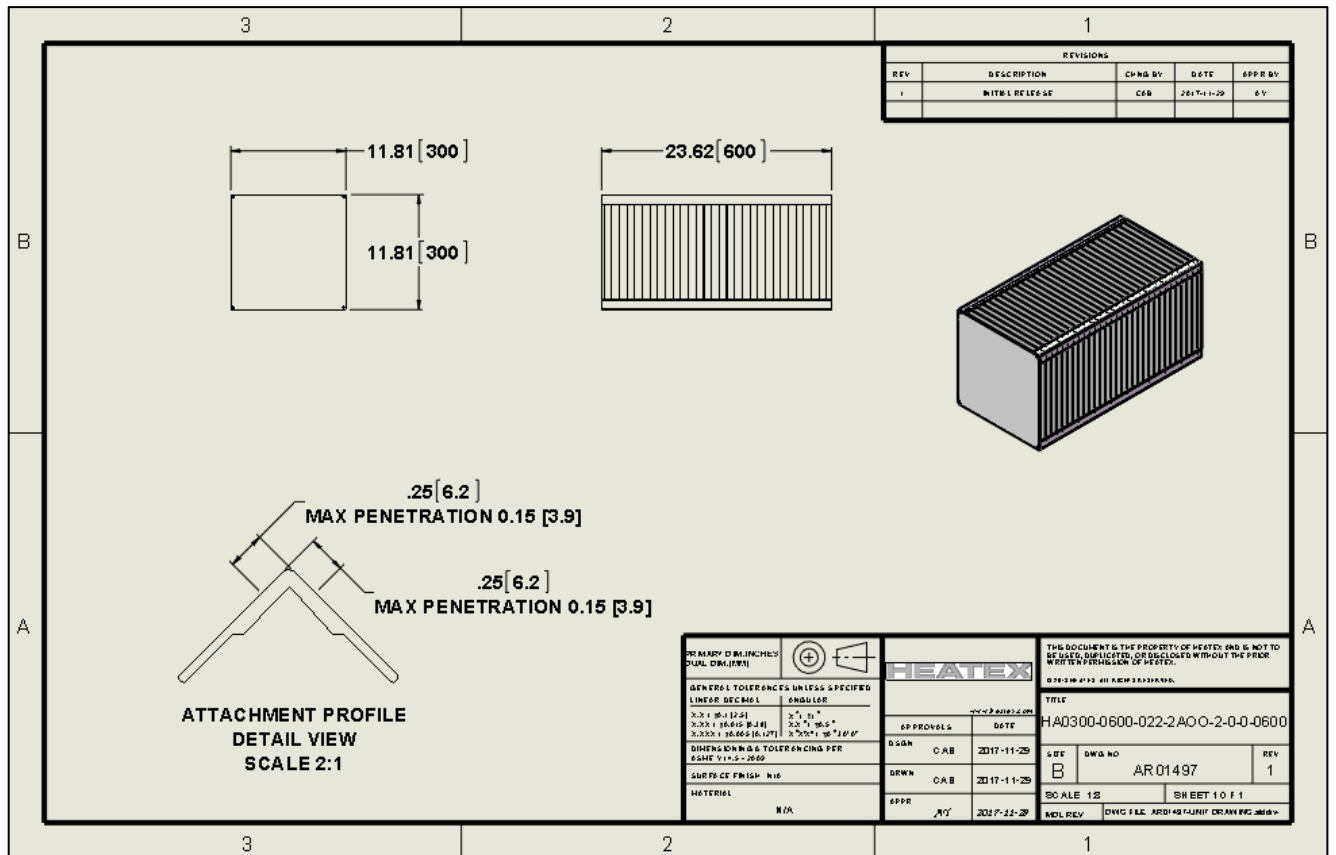
1. General.....	4
2. ALLOWED PRESSURE DIFFERENCE	5
3. MATERIALS AND CORROSION RESISTANCE	5
3.1. Corrosion Resistance.....	6
4. HANDLING INSTRUCTIONS FOR PLATE HEAT EXCHANGERS.....	8
4.1. Lifting	8
4.1. Transportation.....	8
4.2. Deformation	8
4.3. Installation.....	8
5. MAINTENANCE AND CLEANING	9
5.1. General.....	9
5.2. Recommended Cleaning Products.....	9
5.3. Cleaning.....	10
5.4. Disinfection	11
6. DISPOSAL.....	11
6.1. Aluminum Plate Material	11
6.2. Gables	11
6.3. Glue	11
7. SUPPORT	11

1. General

The model H plate heat exchanger included in this Alpha Aire product is as follows, and pictured in picture 1:

Product Code: AR01497

Model Code: HA0300-0600-022-2A00-2-0-0-0600



Picture 1. Plate exchanger unit drawing

2. ALLOWED PRESSURE DIFFERENCE

The following maximum allowed pressure differences apply to H300 heat exchanger is 700 Pa (2.8" WC). The listed pressure difference is the maximum values the heat exchanger can manage without permanent deformation of the channels. The pressure drop in the channels will however be influenced by pressure differences below these values. Heatex Select can calculate this effect if the differential pressure is entered.

3. MATERIALS AND CORROSION RESISTANCE

Heatex heat exchangers of type H are manufactured in aluminum. The aluminum material standard is listed below:

Alloy	8006/8009/8011/8111/1200
Temper	H00/H19

The aluminum plate heat exchangers have end plates made of Aluzinc or aluminum depending of size. Corner profiles are made of aluminum.

Standard sealant material on all aluminum heat exchangers is a silicone free sealant. This can be used for air temperatures up to 90°C (190°F). The physical and chemical properties of non-silicone sealant are listed below:

Type:	MS-hybrid polymer, 1-component	MS-hybrid polymer, 2-component
Colors:	Grey	Grey
Contains fungicide:	No	No
Consistency	Paste, thixotropic	Paste, thixotropic
Specific gravity:	approx. 1.50 kg/liter (12.52 lb/gal)	approx. 1.49 kg/liter (12.43 lb/gal)

3.1. Corrosion Resistance

Table 4 is a guide for choosing material when different substances are present in the airstream. We recommend that when possible actual tests are made to verify that the chosen material will work in the real application.

The information in Table 4 is accurate to the best of our knowledge and experience but no guarantee is expressed nor implied in application or services over which we have no control.

Resistance to fumes at normal temperatures				
A=Excellent	B=Good	C=Fair	D=Poor	*=No Information

Substance	Formula	Aluminum	MS Polymer
Acetic Acid	CH_3COOH	A	C
Acetone	$\text{C}_3\text{H}_6\text{O}$	A	C
Ammonium Hydroxide	NH_4OH	D	B
Ammonium Sulfate	$(\text{NH}_4)_2\text{SO}_4$	C	B
Bakery Vapors		A	A
Beer		A	C
Benzene	C_6H_6	A	*
Boric Acid	H_3BO_3	A	*
Calcium Chloride	CaCl_2	B	B
Carbon Dioxide	CO_2	A	A
Carbon Tetrachloride	CCl_4	B	D
Carbonic Acid	H_2CO_3	A	*
Chlorine, water		C	B
Chloroform	CHCl_3	*	D
Chromic Acid	CrO_3	B	D
Citric Acid	$\text{C}_6\text{H}_8\text{O}_7$	B	*
Copper Cyanide	CuCN	D	*
Creosote		*	*
Diesel Oil		A	D
Ethyl Alcohol	$\text{C}_2\text{H}_5\text{OH}$	A	D
Ethylene Dichloride	$\text{C}_2\text{H}_4\text{Cl}_2$	*	*
Fatty Acids		B	*
Ferric Chloride	FeCl_3	D	*
Fluorine Gas	F_2	D	*
Formaldehyde	CH_2O	*	*
Fruit Vapors		A	A
Fuel Oil		A	B
Gasoline		A	*
Glycerin	$\text{C}_3\text{H}_8\text{O}_3$	A	C
Glycol	$\text{C}_2\text{H}_6\text{O}_2$	A	*
Hydrochloric Acid	HCl	D	D
Hydrocyanic Acid	HCN	*	*
Hydrofluoric Acid	HF	D	*
Hydrogen Peroxide	H_2O_2	C	D
Hydrogen Sulfide	H_2S	D	D
Jet Fuel		A	D
Kerosene		A	D

Substance	Formula	Aluminum	MS Polymer
Lactic Acid	$\text{CH}_3\text{CHOHCOOH}$	C	C
Lube Oils		A	*
Mercury	Hg	*	*
Milk		A	B
Mineral Thinner		A	*
Molasses		A	*
Nitric Acid	HNO_3	B	D
Oils & Fats		B	B
Oleic Acid	$\text{CH}_3(\text{CH}_2)_{27}\text{CHCH}(\text{CH}_2)_{27}\text{COOH}$	B	*
Oxalic Acid	$\text{C}_2\text{Cl}_2\text{O}_2$	C	D
Petroleum Oils		A	C
Phosphoric Acid	H_3PO_4	*	B
Photographic Chemicals		*	*
Potassium Permanganate	KMnO_4	*	*
Silver Cyanide	AgCN	*	*
Soaps		C	B
Sodium Hydroxide	NaOH	D	D
Sodium Hypochlorite	ClONa	D	D
Stearic acid	$\text{C}_{18}\text{H}_{36}\text{O}_2$	B	*
Sulfur Dioxide	SO_2	D	*
Sulfuric Acid	H_2SO_4	C	D
Sulfurous Acid	H_2SO_3	C	*
Syrups		A	B
Tannic Acid	$\text{C}_{76}\text{H}_{52}\text{O}_{46}$	C	*
Tetrahydrofuran	$\text{C}_4\text{H}_8\text{O}$	*	*
Toluene	C_7H_8	A	*
Tricresyl phosphate	$(\text{CH}_3)_3\text{C}(\text{C}_6\text{H}_4\text{O})_3\text{PO}$	B	*
Turpentine		A	*
Urine		D	C
Vegetable Oils		A	B
Vegetable Vapors		A	A
Vinegar		D	*
Vinyl Acetate	$\text{C}_4\text{H}_6\text{O}_2$	*	*
Water, Fresh		A	B
Water, salt		D	B
Whiskey		A	C
Wine		*	C
Xylene	C_8H_{10}	A	*
Zinc Sulfate	ZnSO_4	D	*

Table 4. Corrosion resistance table.

4. HANDLING INSTRUCTIONS FOR PLATE HEAT EXCHANGERS

4.1. Lifting

Heat exchangers from Heatex are designed for an optimal function with a frame that allows high performance. Heat exchangers with a size that makes it necessary to use some kind of lifting device must be handled according to the picture below.

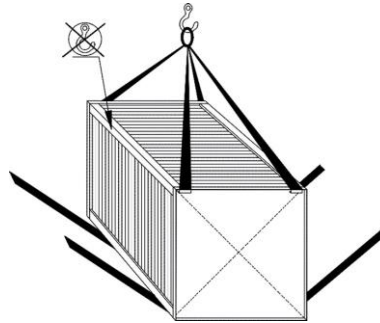


Figure 5. Recommended placement of slings.

4.1. Transportation

The heat exchangers should preferably be transported with the plates oriented in a vertical position. The plates are to be protected by cardboard or plastic wrapping during transportation. Make sure not to top-load in a way that can damage the plates and/or deform the framework.

4.2. Deformation

A framework that is not straight, irregular channels or any other deformation to the heat exchanger may seriously influence the performance of the heat exchanger.

4.3. Installation

If ducts shall be directly connected to the heat exchanger it is recommended that self-tapping screws or pop rivets are used. Make sure that the length is chosen so that the fastener does not penetrate the heat exchanger channels. In case of welding care must be taken not to melt or damage the sealant. The aluminum heat exchangers must never be submitted to larger pressure differences than those allowed during start-up or normal running.

5. MAINTENANCE AND CLEANING

5.1. General

All Heatex plate heat exchangers have been designed to prevent dirt from coming into contact with the heat transfer surfaces. Most of the dirt and pollutants in the air will just pass through the heat exchanger. Substances which have the highest risk of fouling the exchanger are sticky substances that condense on surfaces and fibers from, for example, dry tumblers.

From the heat exchanger point of view it is preferable to use a filter before the exchanger to prevent dirt from depositing, but it is however not necessary except in a few special applications. The disadvantage of using filters is that they need to be changed regularly. There is also a hygienic risk because the filters will collect particles, which otherwise would leave the building (or process) with the exhaust airstream.

Experience has shown that the buildup of dirt in a heat exchanger is often limited to the first 50 mm (1.97") in the exchanger, which simplifies cleaning. For normal ventilation applications, it is most of the time sufficient to clean the inlet and outlet with a brush.

For dirtier applications, compressed air or high pressure water cleaning and disinfection may be necessary. For instructions regarding cleaning and disinfection, see below.

Please observe that high pressure cleaning must not be made directly against the plates and the pressure must be kept below 100 bar. Make sure that the plates do not deform or brake when removing dirt mechanically.

5.2. Recommended Cleaning Products

The detergent recommended for cleaning is YES/Fairy. The detergent shall be sprayed on the heat exchanger with a low pressure sprayer. The detergent can be diluted with up to 75% water. YES/Fairy is available in grocery stores and can also be purchased through Heatex. Heatex article number: 42715.

The disinfectant recommended for disinfection is LIV +45 (45% Concentration Isopropyl Alcohol).



Figure 6. YES/Fairy detergent.



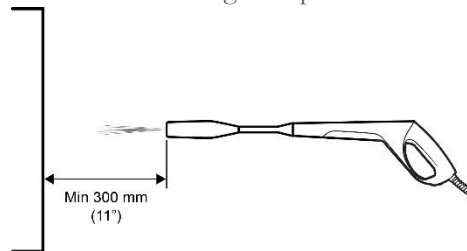
Figure 7. LIV +45

5.3. Cleaning

The cleaning process consists of three steps. First, rinse the heat exchanger with water using a high pressure cleaner to remove dust, particles, deposits etc. Then, use detergent to clean the heat exchanger. As a third step, remove the detergent with water. Make sure that the nozzle of the high pressure cleaner is adjusted to a plain jet.

Plate Heat Exchanger Cleaning Procedure:

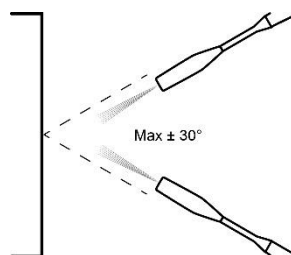
1. Place the nozzle at a distance of approximate 300 mm (11") from the heat exchanger to not damage the plates.



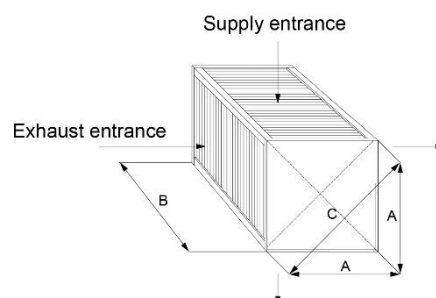
2. Have the nozzle adjusted to plane jet



3. Clean the heat exchanger plates by spraying water into the area between the plates.
4. Vary the spray angle between + 30 and - 30 degrees from the openings at a distance of 300 mm (11") from the entrance.



5. Repeat point 3 and 4 on one of each entrance.



6. Spray the heat exchanger with detergent (YES/Fairy detergent) with a low pressure sprayer.
7. Repeat point 1-5 in order to remove all detergent.
8. Let the heat exchanger air dry.

5.4. Disinfection

The disinfection process consists of two steps. First, spray the heat exchanger with disinfectant LIV +45 and leave to dry. Then, rinse the heat exchanger with water using a high pressure water cleaner. The disinfectant LIV +45 is used on both the plate and rotary heat exchangers. LIV +45 is used undiluted.

Plate Heat Exchanger Disinfection Procedure:

1. Spray generously of disinfectant into the heat exchanger at a distance of 50-100 mm (1-4"). Use the standard LIV +45 bottles with easy spray tap.
2. Spray both plates in every channel and spray into all four sides of the heat exchanger.
3. Let the heat exchanger air dry for 30 minutes.
4. Clean the heat exchanger in the same way as before (but without detergent) to assure all disinfectant has been removed.

6. DISPOSAL

Plate heat exchangers can consist of up to 98 % aluminum depending on size and configuration.

Different material such as Aluzinc or galvanized steel may be used as gables.

6.1. Aluminum Plate Material

Heatex heat exchangers consist of pure aluminum marked with an A in the product code as the second letter.

Example:

HA = Pure aluminum

6.2. Gables

Gables can be of aluminum or carbon steel and should be disposed as metal, either they are coated with aluzinc, galvanized or painted. Local country regulations apply.

6.3. Glue

The glue used to hold the aluminum plates to the gable and corner profiles comply with combustible waste and can be sent with the aluminum waste and removed during fragmentation if needed.

7. SUPPORT

For questions or information, please state order number, product name and message. Heatex is available for support during office hours, 8 am – 4.30 pm (EST) on weekdays.