



Rigging & Assembly Instructions



DRY,
ADIABATIC
AND SPRAY
FLUID COOLERS
& CONDENSERS



Mr. GoodTower®

Bulletin EA26RIG Metric 02/26

Table of Contents

Introduction	4
eco-Air Product Lines	4
Method of Shipment	4
Receiving	5
Offloading Requirements	5
Support Structure	5
Piping Consideration for Temperature/Pressure Sensor Installation	6
Flat Coil Configuration Products	7
Forklift Requirements	7
Crane Lift Requirements	8
Lifting Requirements – Flat Coil Configuration EC Motor Models	9
Lifting Requirements – Flat Coil Configuration NEMA Motor Models	10
V-Coil Configuration Products	11
Forklift Requirements	11
Crane Lift Requirements	11
Lifting Requirements – V-Coil Configuration EC Motor Models	13
Lifting Requirements – V-Coil Configuration NEMA Motor Models	14
Double Stack Configuration Products	14
Lower Section Lifting Requirements - Double Stack Base Dry Units	15
Upper Section Lifting Requirements - Double Stack Base Dry Units	16
Fan Screen Installation - Double Stack Super Low Sound Fan Units	17
Joining Upper and Lower Sections - Double Stack Base Dry Units	18
Adiabatic Sections Rigging	18
Installing Lower Section Adiabatic Modules	19
Installing Upper Section Adiabatic Modules	21
Adiabatic Water Distribution System - Field Assembly Instructions	22
External Service Platform Installation Instructions	25
Appendix A	26
Notes	27

Review these instructions in detail prior to lifting any units or sections. Lifting incorrectly may cause permanent damage to the equipment and/or serious injury to nearby personnel.



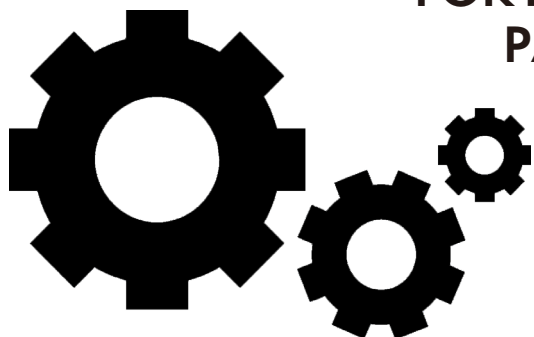
EVAPCO's eco-Air units should be rigged and assembled using the instructions and recommendations outlined in this bulletin.

All personnel should review these procedures, as well as the latest industry-approved installation practices, prior to rigging and assembly. The information in this bulletin is for informational purposes only.

These instructions do not purport to cover all variations and possible contingencies in connection with installation. Additionally, the procedures described herein are subject to change without prior notice, due to EVAPCO's ongoing research and development.

EVAPCO makes no representations or warranties with respect to these instructions or the products described herein. Nor shall EVAPCO be responsible for any loss or damage (direct, indirect, consequential, or other) during installation or handling of equipment after shipment.

For a full description of EVAPCO's liability policy, please visit www.evapcoasia.com to access our Terms and Conditions.



**FOR EVAPCO AUTHORIZED
PARTS AND SERVICE,
CONTACT YOUR
LOCAL EVAPCO
REPRESENTATIVE
OR THE LOCAL
SERVICE CENTER**



Mr. GoodTower®



EVAPCO Asian Pacific

1159 Luoning Rd, Baoshan Industrial Zone, Shanghai China 200949
Phone: (86) 21-6687-7786 • E-mail: marketing@evapcochina.com

North America

EVAPCO, Inc.
World Headquarters
Westminster, MD USA
410.756.2600
marketing@evapco.com

EVAPCO East
Taneytown, MD USA

EVAPCO East
Key Building
Taneytown, MD USA

EVAPCO Midwest
Greenup, IL USA
217.923.3431
evapcomw@evapcomw.com

Evapcold Manufacturing
Greenup, IL USA

EVAPCO Newton
Newton, IL USA
618.783.3433
evapcomw@evapcomw.com

EVAPCO West
Madera, CA USA
559.673.2207
contact@evapcowest.com

EVAPCO Alcoil, Inc.
York, PA USA
717.347.7500
info@evapco-alcoil.com

EVAPCO Iowa
Lake View, IA USA

EVAPCO Iowa
Sales & Engineering
Medford, MN USA
507.446.8005
evapcomn@evapcomn.com

EVAPCO LMP ULC
Laval, Quebec, Canada
450.629.9864
info@evapcolmp.ca

EVAPCO Select Technologies, Inc.
Belmont, MI USA
844.785.9506
emarketing@evapcoselect.com

Refrigeration Vessels & Systems Corporation
Bryan, TX USA
979.778.0095
rvs@rvscorp.com

Tower Components, Inc.
Ramseur, NC USA
336.824.2102
mail@towercomponentsinc.com

EvapTech, Inc.
Edwardsville, KS USA
913.322.5165
marketing@evaptech.com

EvapTech Gulf Services
Houston, TX USA
281.529.6526
angie.montes@evaptech.com

EVAPCO Dry Cooling, Inc.
Bridgewater, NJ USA
908.379.2665
info@evapcodc.com

EVAPCO Dry Cooling, Inc.
Littleton, CO USA
908.895.3236
info@evapcodc.com

Asia Pacific

EVAPCO Asia Pacific Headquarters
Baoshan Industrial Zone Shanghai, P.R. China
(86) 21.6687.7786
marketing@evapcochina.com

EVAPCO (Shanghai) Refrigeration Equipment Co., Ltd.
Baoshan Industrial Zone, Shanghai, P.R. China

EVAPCO (Beijing) Refrigeration Equipment Co., Ltd.
Huairou District, Beijing, P.R. China
(86) 10.6166.7238
marketing@evapcochina.com

EVAPCO Air Cooling Systems (Jiaxing) Company, Ltd.
Jiaxing, Zhejiang, P.R. China
(86) 573.8311.9379
info@evapcochina.com

EVAPCO Australia (Pty.) Ltd.
Riverstone, NSW, Australia
(61) 02.9627.3322
sales@evapco.com.au

EvapTech (Shanghai) Cooling Tower Co., Ltd.
Baoshan District, Shanghai, P.R. China
Tel: (86) 21.6478.0265

EvapTech Asia Pacific Sdn. Bhd.
Puchong, Selangor, Malaysia
(60) 3.8070.7255
marketing-ap@evaptech.com

Europe | Middle East | Africa

EVAPCO Europe EMENA Headquarters
Tongeren-Borgloon, Belgium
(32) 12.39.50.29
evapco.europe@evapco.be

EVAPCO Europe BV
Tongeren-Borgloon, Belgium

EVAPCO Europe, S.r.l.
Milan, Italy
(39) 02.939.9041
evapcoeurope@evapco.it

EVAPCO Europe, S.r.l.
Sondrio, Italy

EVAPCO Europe A/S
Aabybro, Denmark
(45) 9824.4999
info@evapco.dk

EVAPCO Europe GmbH
Meerbusch, Germany
(49) 2159.69560
info@evapco.de

EVAPCO Middle East DMCC
Dubai, United Arab Emirates
(971) 56.991.6584
info@evapco.ae

Evap Egypt Engineering Industries Co.
A licensed manufacturer of EVAPCO, Inc.
Nasr City, Cairo, Egypt
(20) 10.054.32.198
evapco@tiba-group.com

EVAPCO S.A. (Pty.) Ltd.
A licensed manufacturer of EVAPCO, Inc.
Isando, South Africa
(27) 11.392.6630
evapco@evapco.co.za

South America

EVAPCO Brasil
Equipamentos Industriais Ltda.
Sorocaba, São Paulo, Brazil
(55) 11.5681.2000
vendas@evapco.com.br

FanTR Technology Resources
Sorocaba, São Paulo, Brazil
(55) 11.4025.1670
fantr@fantr.com

TECHNOLOGY FOR THE FUTURE, AVAILABLE TODAY
Visit EVAPCO's website: evapcoasia.com

Introduction

Thank you for purchasing your EVAPCO eco-Air Series closed circuit cooler or condenser. This manual will provide detailed instructions for rigging and installation of the unit(s). If any questions arise during the installation, please contact your local EVAPCO representative.

eco-Air Product Lines

Throughout this manual, the terms “Flat Coil,” “V-Coil,” and “Double Stack” are used. Below is a list of EVAPCO eco-Air Series products covered by this rigging manual and their associated terminology.

The eco-Air Series includes the following product models:

■ Dry Products

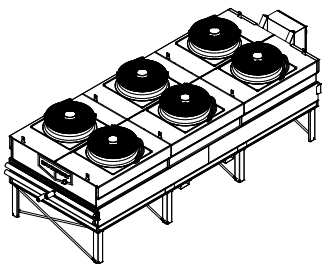
- EAW-FD/EAFWD: Flat Coil Dry Fluid Cooler
- EAW-VD/EAVWD: V-Coil Dry Fluid Cooler
- EAW-DD/EADWD: Double Stack Dry Fluid Cooler
- EAFCD: Flat Coil Dry Condenser
- EAVCD: V-Coil Dry Condenser

■ Dry Products with Air Pre-Cooling Systems

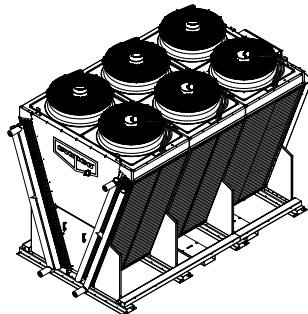
- EAW-VA/EAWVA: V-Coil Adiabatic Fluid Cooler
- EAW-VS/EAVVS: V-Coil Spray Fluid Cooler
- EAW-DA/EADWA: Double Stack Adiabatic Fluid Cooler
- EAVCA: V-Coil Adiabatic Condenser
- EAVCS: V-Coil Spray Condenser

Method of Shipment

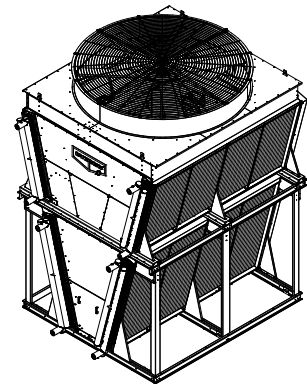
EVAPCO’s eco-Air products are available in Flat Coil, V-Coil, and Double Stack configurations.



Flat Coil Units



V-Coil Units



Double Stack Units

The Flat Coil and V-Coil units will ship as a single section, and will require little to no assembly on site, except for external piping, electrical connections, and optional accessories as selected.

The Double Stack units will ship in two sections, each of which will have mating double break flanges that will be bolted together during rigging. Adiabatic pad modules, if supplied, will be crated separately for field assembly to the unit. Optional accessories, such as a remote mounted EVAPCO PLC/VFD control panel, external service platform, and internal ladder, ship loose for field installation. For Double Stack units accessorized with Super Low Sound Fans, fan screens and fan screen supports will ship mounted to the lower section for field assembly. Miscellaneous items such as rigging hardware (if applicable) and other required materials and documentation are packaged in a rigging box which is placed inside the unit for shipment.

Receiving

Carefully inspect all units, sections, and accessories upon arrival to verify that no damage has occurred during shipment. If any units have been damaged during transit, immediately notify the carrier and file a claim with that carrier.

The coils on all EVAPCO eco-Air Series fluid coolers and condensers are shipped from the factory with a low-pressure nitrogen charge. Maintain the nitrogen charge until connecting each unit to the system piping.

Each coil is shipped with a pressure gauge to verify the nitrogen charge in the coil. A coil without the factory nitrogen charge may indicate damage occurred during shipment. In this case, coil(s) should be pressure tested with dry nitrogen gas to assure that it is leak free prior to installation. Please notify your EVAPCO representative before installing any unit that has lost the factory nitrogen charge during shipment. Once the nitrogen charge is verified, release the nitrogen charge by opening the valve located on the outlet coil connection.

Offloading Requirements

All eco-Air Series air cooled units covered in this manual are designed to be removed from the truck via crane. Aside from the Double Stack product line, smaller units that are less than 19' (5850mm) in length also have provisions for removal from the truck via forklift. All units can be installed onto acceptably sized and level support structure via crane.

Ensure that the crane operator and/or the truck driver lift the unit securely. Always consider the weight of the unit with regard to crane or forklift.

Tubes, return bends, coil connections and headers are never to be used for lifting.

Remove any packaging material and verify that no damage has occurred. Slightly bent fins can be repaired easily using a fin comb.

Damaged tubes are only to be repaired by a qualified welder. If the damaged tubes cannot be repaired by a qualified welder, contact your local EVAPCO representative to arrange for inspection and/or repairs.

Support Structure

eco-Air units can be mounted on structural steel "I" beams, concrete pads, concrete piers, or another similar acceptably sized and level support structure. It is recommended that you contact your local EVAPCO representative if you have any questions about the support requirements.

EVAPCO's recommendations are related to structural steel support, however the information below, along with any external accessory dimensions and unit weight from the factory submittal can be used to size alternative support structures, such as a concrete pad.

Two structural "I" beams running the length of the unit are shown below for supporting the eco-Air series units. These beams should be located underneath the outer flanges of the unit as shown in Figure 1.

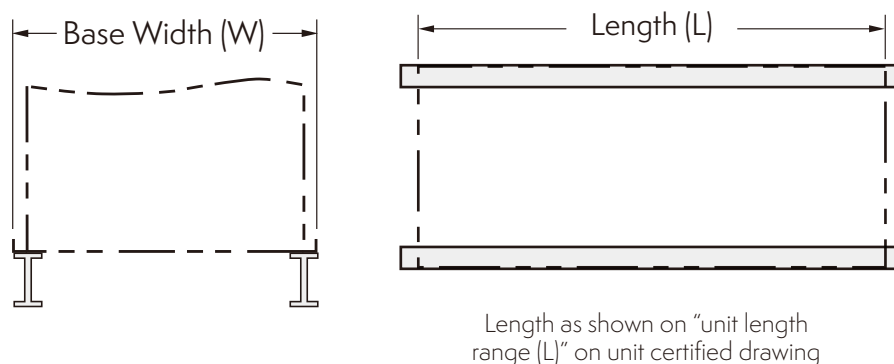


Figure 1 – Supporting Steel Diagram



See Table 1 for Steel Support Dimensions. Mounting holes, 3/4" (19mm) in diameter, are provided for bolting the unit to the structural steel. Refer to the recommended structural steel support drawing and certified print in the factory submittal for exact bolt hole location.

eco-Air Series Supporting Steel Dimensions		
V Models	Dry & Spray Unit Base Width (W)	Adiabatic Unit Base Width (W)
4' (1.3m) Wide	4' 2" (1270mm)	5' 10" (1778mm)
7' (2.2m) Wide	7' 2-1/2" (2197mm)	8' 9-1/2" (2680mm)
8' (2.4m) Wide	7' 3-3/4" (2229mm)	9' 3/4" (2762mm)
Double Stack Models	Dry Unit Base Width (W)	Adiabatic Unit Base Width (W)
12' (3.6m) Wide	11' 10-1/2" (3620mm)	13' 5-5/8" (4105mm)
F Models	Base Width (W)	-
6' (1.8m) Wide	5' 7-5/16" (1710mm)	-
7' (2.2m) Wide	6' 11-1/8" (2111mm)	-
8' (2.4m) Wide	7' 7" (2311mm)	-

Table 1 – eco-Air Series Supporting Steel Dimensions

Beams should be sized in accordance with accepted structural practices. Maximum deflection of the beam under the unit should be 1/360 of the unit length, not to exceed 1/2" (13mm). The supporting "l" beams should be level before setting the unit in place. Do not level the unit by shimming between it and the beams as this will not provide proper longitudinal support.

Support beams/structure and anchor bolts are to be provided by others.

Piping Considerations for Temperature/Pressure Sensor Installation

If supplied with the optional EVAPCO Control Panel, there are additional considerations for the installation of the factory supplied temperature/pressure sensor in pipework. Please refer to the EVAPCO Controller User's Manual for more detail on installation guidelines.

Flat Coil Configuration Products

Flat coil units are typically shipped with legs attached. However there could be instances when flat coil units are strapped to a wooden pallet or enclosed in an open slatted or fully enclosed crate. To avoid handling damage, EVAPCO recommends that the product is offloaded from the vehicle while still attached to its pallet or in its crate if provided.

When flat units are shipped crated with the legs removed, the legs will need to be attached before placing the unit on the acceptably sized and level support structure. Below is a drawing showing proper attachment of the legs.

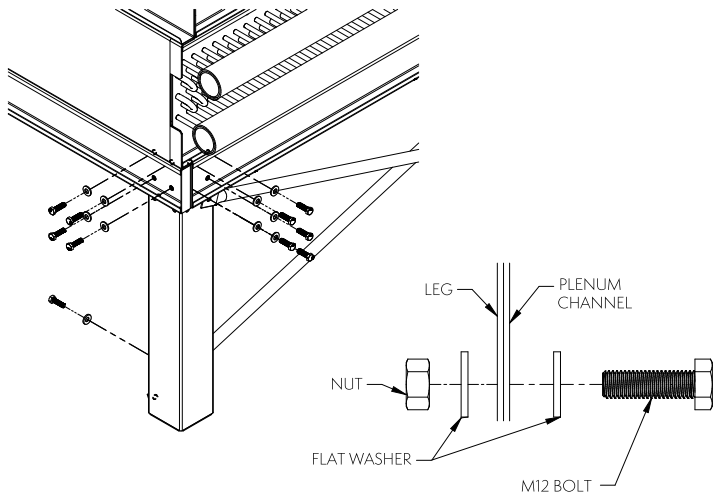


Figure 2 – Flat Coil Unit Leg Attachment

Forklift Requirements

Ensure that the forklift truck is large enough to handle the size and weight of the product required to be offloaded. Unit weights can be found on the unit certified drawing. Units with a length less than 19' (5850mm) are provided with standard EVAPCO steel forklift channels positioned under the unit. Forklift channels will be identified by a label on the unit. If labels and forklift channels are not present, **STOP!** The unit will need to be lifted via a crane. Forklift channels are only provided on units that are capable of being lifted via forklift. Larger units will need to be lifted via a crane or else unit and coil damage may occur.

Below is a diagram representing the location of the forklift channels on flat units.

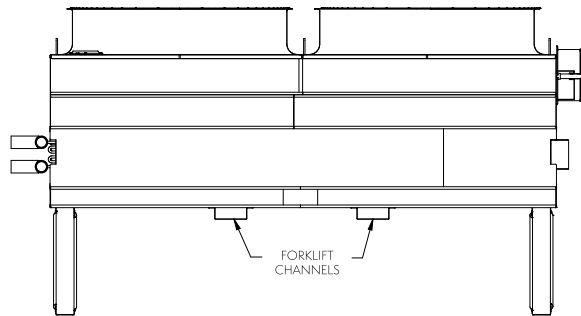


Figure 3 – Flat Coil Unit Forklift Channel Locations

The forks must be long enough to protrude at least 12" (30cm) beyond the width of the product.



Figure 4 – Flat Coil Unit Forklift Lifting Requirements

Under no circumstances, even if forklift channels are fitted, should 'short forks' be used as this will result in damage to the unit casing and/or coil of the unit. Ensure that the weight is evenly distributed before attempting to lift the product. Follow industry standard forklift recommendations and guidelines.

Crane Lift Requirements

Ensure that the crane operator uses adequate straps, chains, adjustable/spreader lifting beam ect., to safely and securely handle the weight of the product. The minimum angles for lifting by crane, when viewed from the unit end, must **NEVER** be less than a 60° angle from horizontal as shown in Figure 5. When viewed from the side of the unit, the lifting angle must **ALWAYS** be 90° (perpendicular) to the fan deck of the unit.

To achieve a minimum 60° angle, the chains attached to the lifting device must be a minimum dimension “H” above the unit casing to prevent undue strain on the lifting ears. See Table 2 for the minimum “H” dimension. These lifting devices should not be used for extended lifts or where any hazard exists unless safety slings are employed under the unit.

NOTE: A system of adjustable/spreader lifting beams can be utilized in lieu of a single beam which runs the entire unit length, provided the unit is supported along its entire length and all requirements are followed.

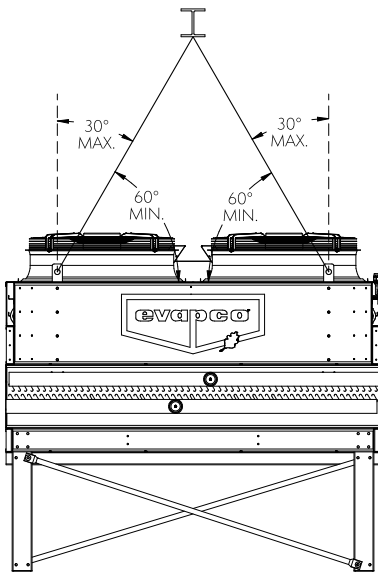


Figure 5 – Minimum Crane Lifting Requirements

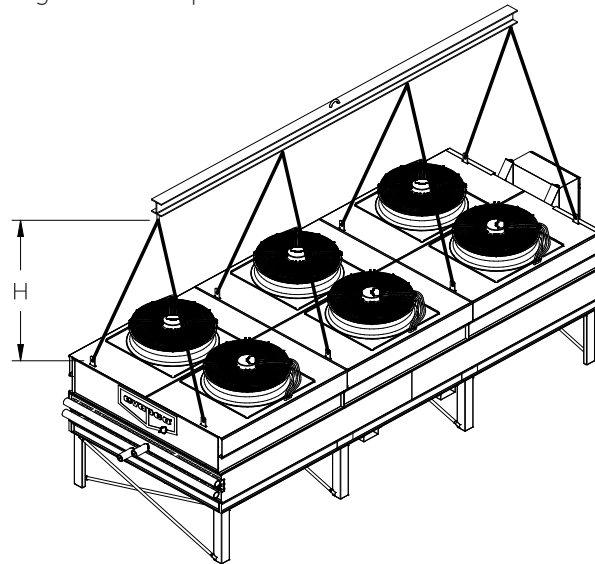


Figure 6 – Rigging Beam Height Requirements

Unit Width	Minimum Height (H) Dimension
5' (1.8m)	3.5' (1.1m)
7' (2.2m)	5.0' (1.6m)
8' (2.4m)	5.0' (1.6m)

Table 2 – Minimum “H” Dimensions

Carefully and securely attach chains to unit lifting ears based on the below information. Lifting ears are provided on the top of the fan sections for lifting the unit into final position. The unit will only be supplied with the lifting ears required, **THEREFORE USE ALL LIFTING EARS THAT ARE PROVIDED**. The lifting ear requirements vary depending on incremental fin length, or distance between tube sheets and lifting ears, therefore you will need to refer to the unit model number to accurately determine which of the below details describes your unit.

The 12th character in the model number depicts incremental fin length. For example in the model number:

EAVCD-15S2Z**K**xxxx-xxxxxxxx the **K** depicts the incremental fin length. Possible incremental fin length characters are **B**, **K**, and **I**. This can be further broken down by the type of fans.

On the next page is a table for a quick reference guide, showing which unit type applies to which lifting ear requirement figure.

Incremental Fin Length Designator	Incremental Fin Length	Fan Type	Figure Number
B	5' 9" (1755mm)	EC	N/A
		NEMA/AC	9
K	6' 4" (1950mm)	EC	7
		NEMA/AC	9
I	7' 8" (2340mm)	EC	8
		NEMA/AC	10

Table 3 – Lifting Ear Requirements - Flat Coil Units

Lifting Requirements – Flat Coil Configuration EC Motor Models

Units with EC motors will have either a **K** [6' 4" [1950mm]], or **I** [7' 8" [2340mm]] incremental fin length designator. Below are the lifting requirements for these units.

The arrows shown on the unit drawings below indicate two (2) lifting ears per arrow.

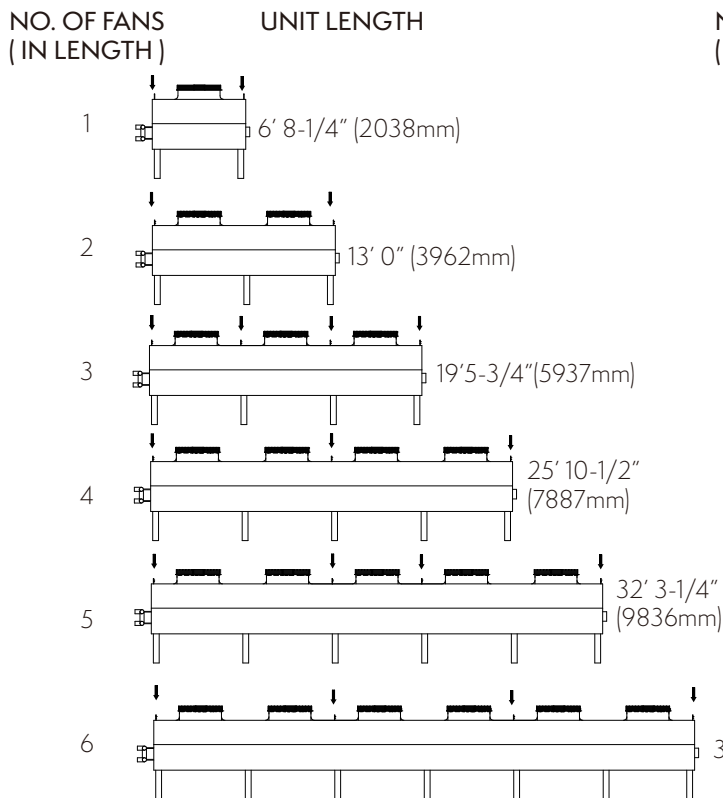


Figure 7 – Lifting Ear Requirements for 6' 4" (1950mm) Incremental Fin Length

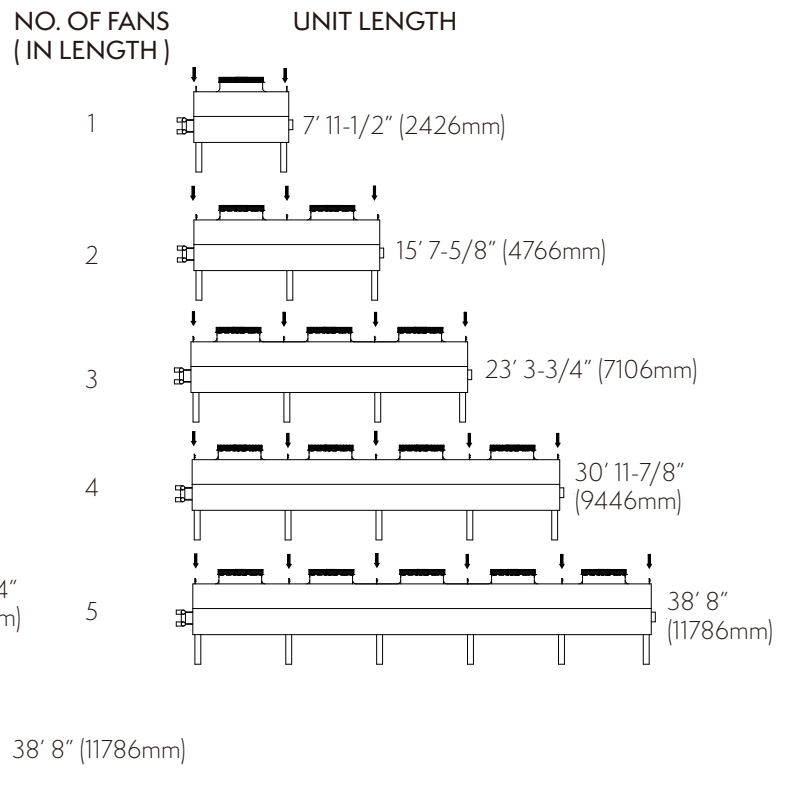


Figure 8 – Lifting Ear Requirements for 7' 8" (2340mm) Incremental Fin Length

Lifting Requirements – Flat Coil Configuration NEMA/AC Motor Models

Units with NEMA/AC motors will have either a **B** (5' 9" [1755mm]), **K** (6' 4" [1950mm]) or **L** (7'8" [2340mm]) incremental fin length designator. Below are the lifting requirements for these units.

The arrows shown on the unit drawings below indicate two (2) lifting ears per arrow.

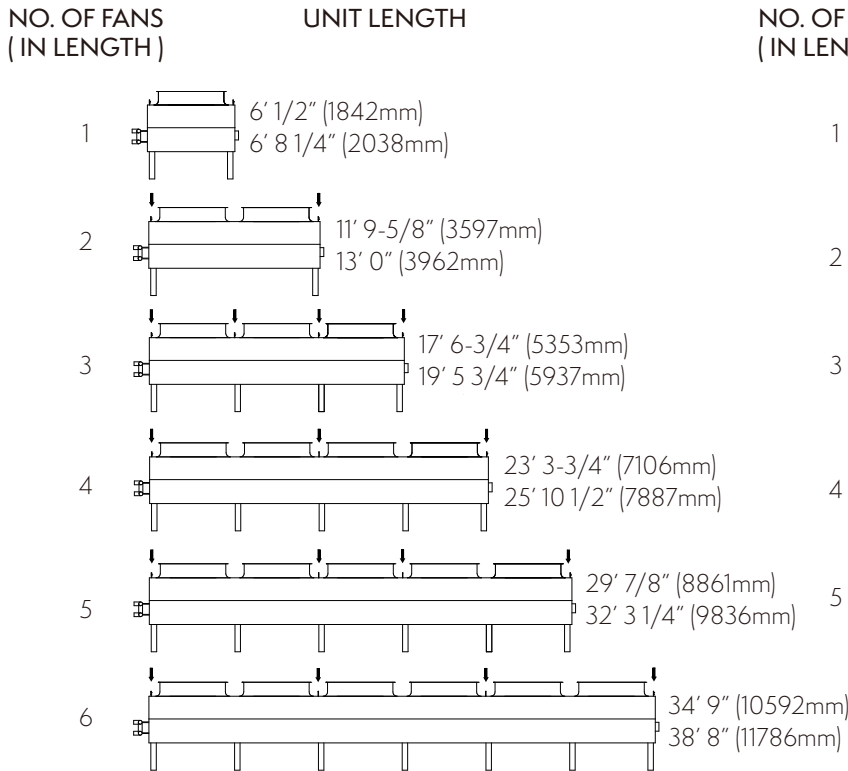


Figure 9 – Lifting Ear Requirements for 5' 9" (1755mm) and 6' 4" (1950mm) Incremental Fin Length

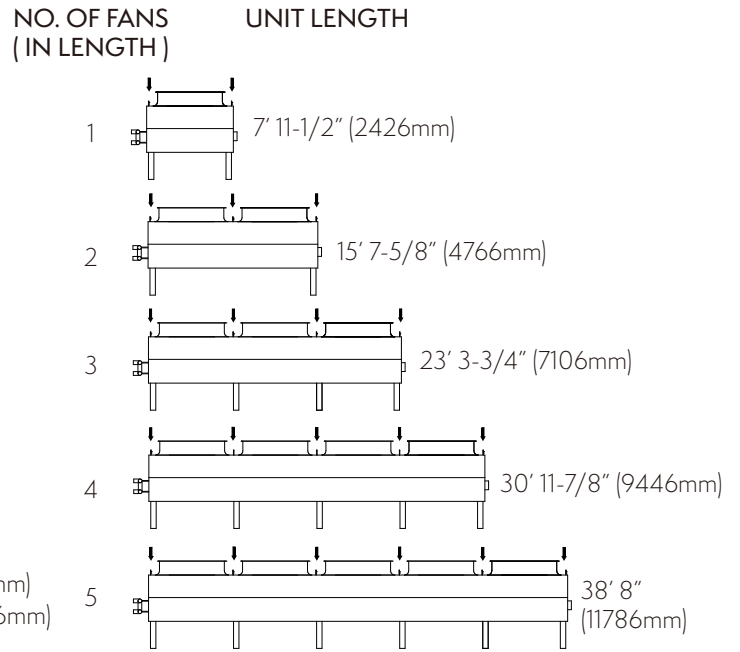


Figure 10 – Lifting Ear Requirements for 7' 8" (2340mm) Incremental Fin Length

V-Coil Configuration Products

EVAPCO eco-Air V-Coil units utilize a skidless design allowing for ease of installation and transportation.

Forklift Requirements

Ensure that the forklift truck is large enough to handle the size and weight of the product required to be offloaded. Unit weights can be found on the unit certified drawing.

Units with a length less than 19' (5850mm) are provided with standard EVAPCO steel forklift channels positioned under the unit. Forklift channels will be identified by a label on the unit. If labels and forklift channels are not present, **STOP!** The unit will need to be lifted via a crane. Forklift channels are provided on all units that are capable of being lifted via forklift. Larger units will need to be lifted via a crane or unit and coil damage may occur.

See Figure 11 for a diagram representing the location of the forklift channels on V-Coil units.

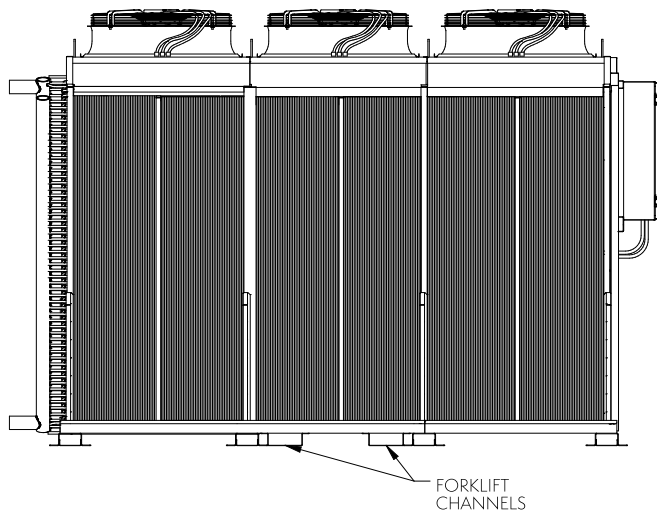


Figure 11 – V-Coil Unit Forklift Channel Locations



Figure 12 – V-Coil Unit Forklift Lifting Requirements

The forks must be long enough to protrude at least 12" (30cm) beyond the width of the product.

Under no circumstances, even using forklift channels, should 'short forks' be used as this will result in damage to either the unit casing or coil of the unit.

Ensure that the weight is evenly distributed before attempting to lift the product. Follow industry standard forklift recommendations and guidelines.

Crane Lift Requirements

Ensure that the crane operator uses adequate lifting straps, chains, adjustable/spreader lifting beam etc., to safely and securely handle the weight of the product. The minimum angles for lifting by crane when viewed from the unit end, must **NEVER** be less than a 60° angle from horizontal as shown in Figure 13. When viewed from the side of the unit, the lifting angle must **ALWAYS** be 90° (perpendicular) to the fan deck of the unit.

To achieve a minimum 60° angle, the chains attached to the lifting device must be a minimum dimension "H" above the unit casing to prevent undue strain on the lifting ears. See Table 4 for the minimum "H" dimension. These lifting devices should not be used for extended lifts or where any hazard exists unless safety slings are employed under the unit

NOTE: A system of adjustable/spreader lifting beams can be utilized in lieu of a single beam which runs the entire unit length, provided the unit is supported along its entire length and the below requirements are followed.

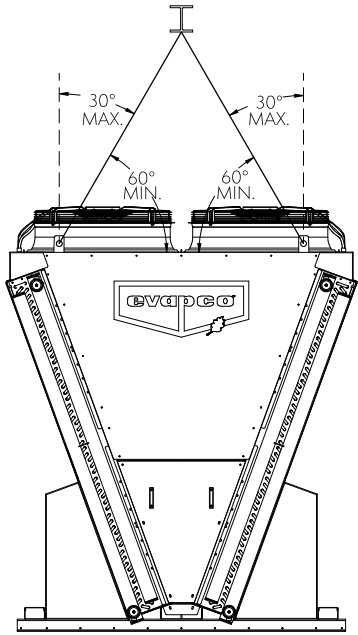


Figure 13 – Minimum Crane Lifting Requirements

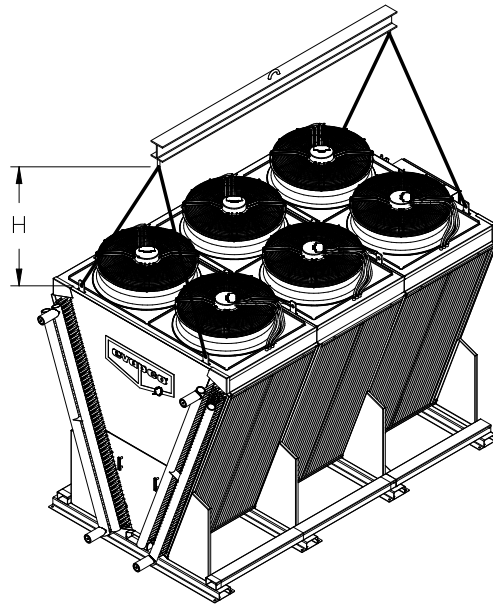


Figure 14 – Rigging Beam Height Requirements

Unit Width	Minimum Height (H) Dimension
4' (1.2m)	2.5' (0.8m)
7' (2.2m)	5.0' (1.6m)
8' (2.4m)	5.0' (1.6m)

Table 4 – Minimum “H” Dimensions

Carefully and securely attach chains to unit lifting ears based on the below information. Lifting ears are provided on the top of the fan sections for lifting the unit into final position. Unit will only be supplied with the lifting ears required, **THEREFORE USE ALL LIFTING EARS THAT ARE PROVIDED**. The lifting ear requirements vary depending on incremental fin length, or distance between tube sheets and lifting ears, therefore you will need to refer to the unit model number to accurately determine which of the below details describes your unit.

The 12th character in the model number depicts incremental fin length. For example in the model number:

EAVCD-15S2Z**K**xxxx-xxxxxxx the **K** depicts the incremental fin length. Possible incremental fin length characters are **A, J, B, K,** and **I**. This can be further broken down by the type of fans.

Below is a table for a quick reference guide, showing which unit type applies to which lifting ear requirement figure.

Incremental Fin Length Designator	Incremental Fin Length	Fan Type	Figure Number
A	3' 10" (1170mm)	EC	15
J	4' 3" (1300mm)	EC	15
K	6' 4" (1950mm)	EC	16
B	5' 9" (1755mm)	NEMA/AC	17
K	6' 4" (1950mm)	NEMA/AC	17
I	7' 8" (2340mm)	NEMA/AC	18

Table 5 – Lifting Ear Requirements - V-Coil Units

Lifting Requirements – V-Coil Configuration EC Motor Models

Units with EC motor assemblies will have either an **A** (3' 10" [1170mm]), **J** (4' 3" [1300mm]), or **K** (6' 4" [1950mm]) incremental fin length designator. Below are the lifting requirements for units with **A** (3' 10" [1170mm]) and **J** (4' 3" [1300mm]) incremental fin lengths.

The arrows shown on the unit drawings below indicate two (2) lifting ears per arrow.

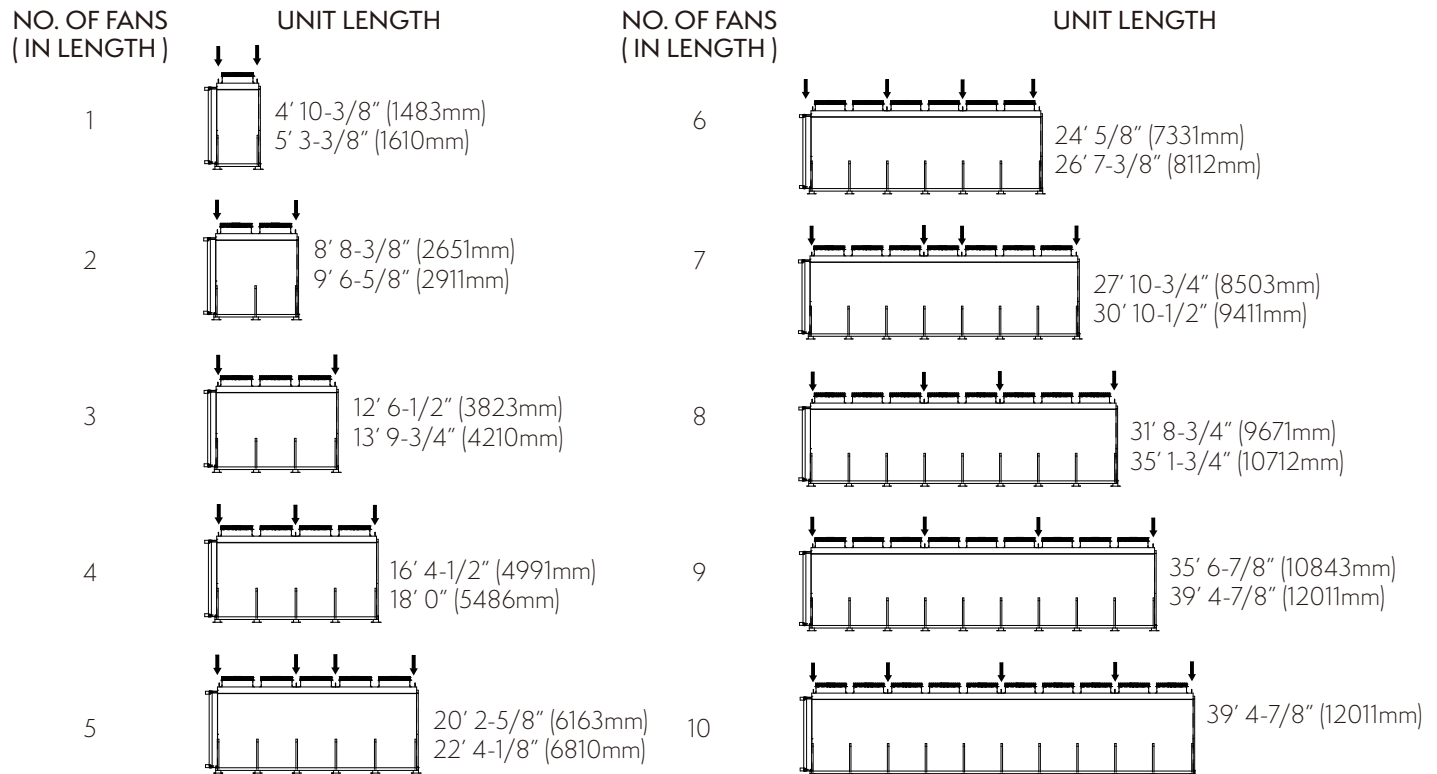


Figure 15 – Lifting Ear Requirements for 3' 10" (1170mm) and 4' 3" (1300mm) Incremental Fin Lengths

Below are the lifting requirements for units with **K** (6' 4" [1950mm]) incremental fin lengths.

The arrows shown on the unit drawings below indicate two (2) lifting ears per arrow.

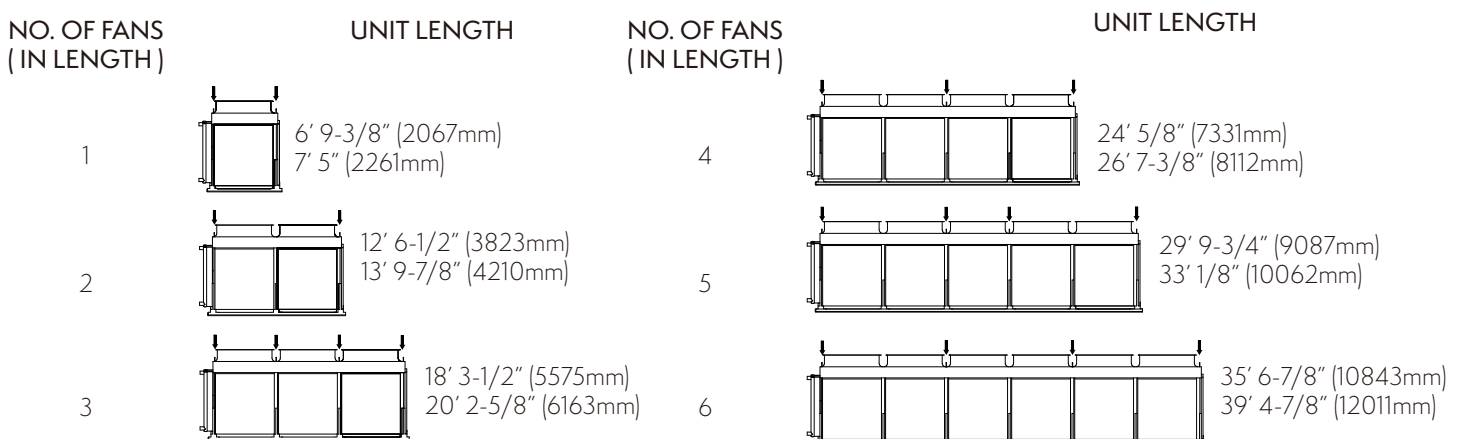


Figure 16 – Lifting Ear Requirements for 6' 4" (1950mm) Incremental Fin Lengths

Lifting Requirements – V-Coil Configuration NEMA/AC Motor Models

Units with NEMA/AC motors will have either a **B** (5' 9" [1755mm]), **K** (6' 4" [1950mm]), or **I** (7' 8" [2340mm]) incremental fin length designator.

The arrows shown on the unit drawings below indicate two (2) lifting ears per arrow.

Below are the lifting requirements for these units.

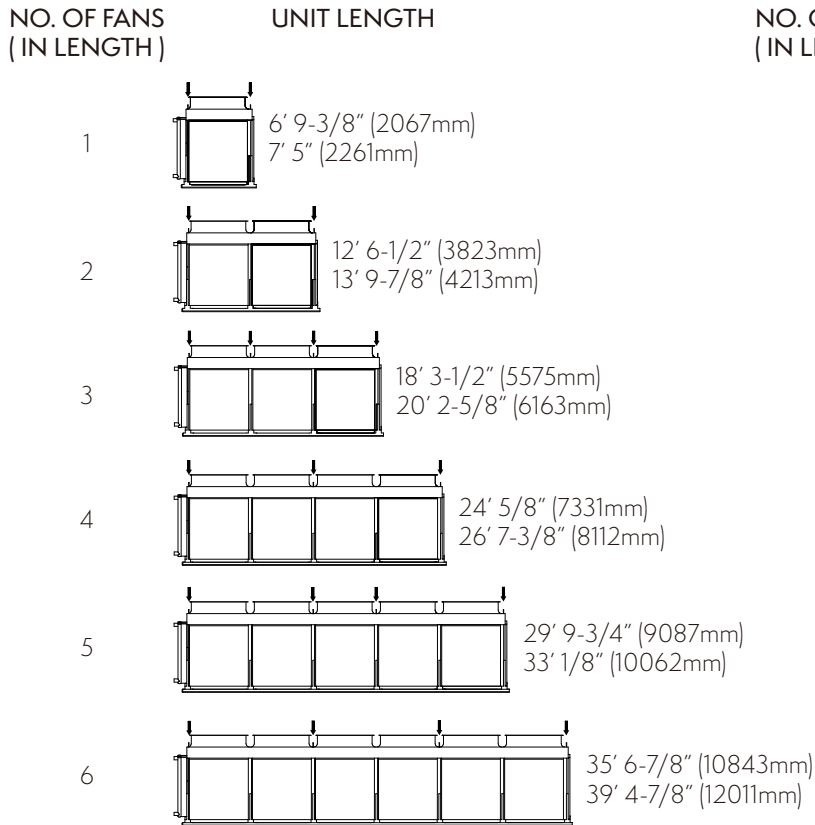


Figure 17 – Lifting Ear Requirements for 5' 9" (1755mm) and 6' 4" (1950mm) Incremental Fin Lengths

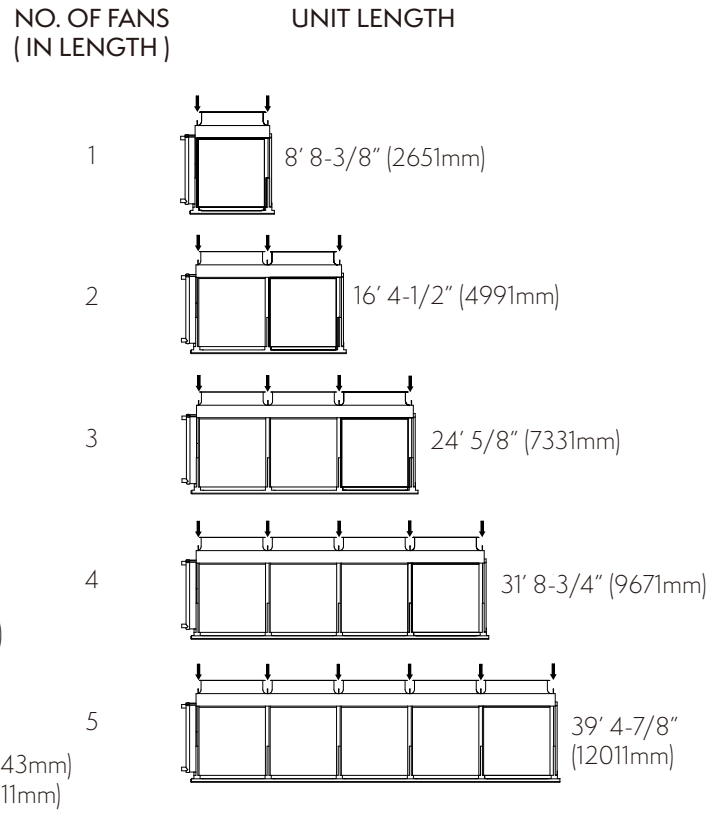


Figure 18 – Lifting Ear Requirements for 7' 8" (2340mm) Incremental Fin Lengths

Double Stack Configuration Products

EVAPCO eco-Air Double Stack units ship in a minimum of two (2) sections. If equipped with adiabatic pad modules or accessories like external service platforms, control panels, and internal ladders, those will be loose components which will ship separately and require assembly in the field.

Lower Section Lifting Requirements - Double Stack Base Dry Units

For units with optional Super Low Sound Fans, fan screens and fan screen supports will ship loose. Please refer to Fan Screen Installation Requirements - Double Stack Super Low Sound Fan Units section for details on these installation requirements.

1. Use lifting ears on top of the lower section. An adjustable/spreader lifting beam is required to be used along the entire unit length. Refer to the below instructions for lifting the Double Stack lower section.

NOTE: A system of adjustable/spreader lifting beam can be utilized in lieu of a single beam which runs the entire unit length, provided the unit is supported along its entire length and the below requirements are followed.

2. Use shackles (or other appropriate lifting devices) large enough to span the lifting ear and C-channel located on the unit ends as shown in Detail A below. Shackle/lifting device jaw opening must be greater than 2-1/2" (64mm). Pin diameter must be less than 1-1/2" (40mm), see Detail B. The anchor shackle length must be greater than 2-1/2" (64mm).

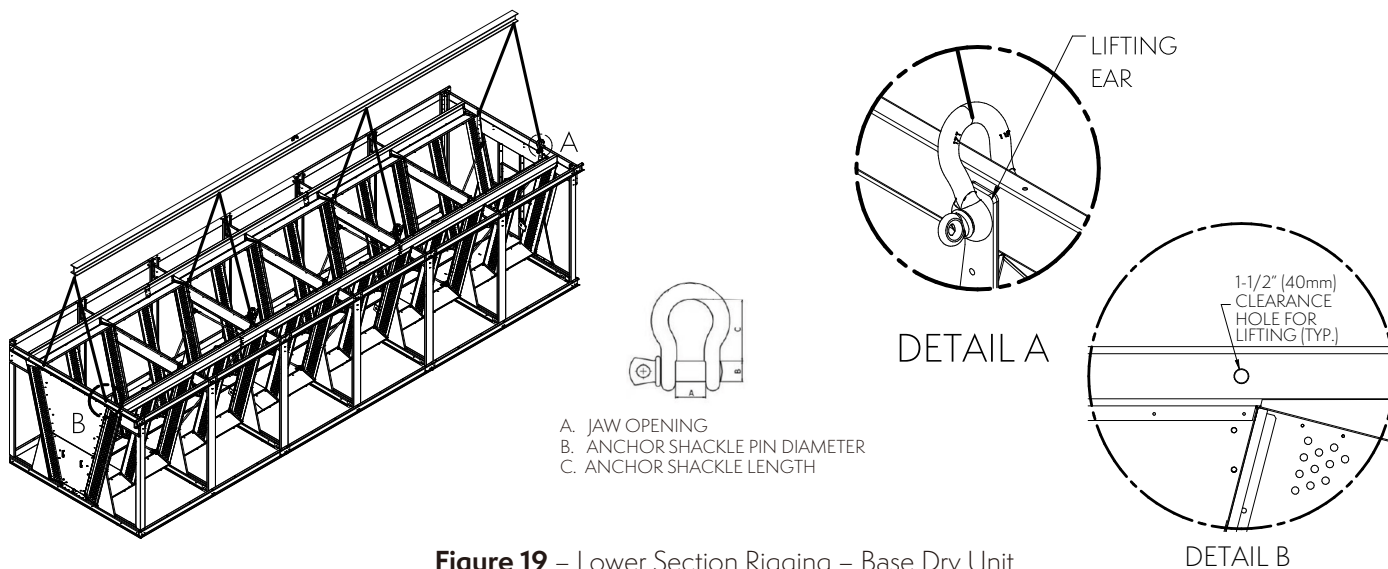


Figure 19 – Lower Section Rigging – Base Dry Unit

3. Care must be taken to ensure that the 'H' dimension for the crane lift is greater than or equal to 6' (1.8m) from the lifting ears as shown in Figure 20.1. When viewed from the side, the lifting angle must **ALWAYS** be 90° (perpendicular) to the top of the unit, as shown in Figure 20.2. The centerline distance between the lower section lifting ears on the end elevation view is 5' 5-3/4" (1670mm).

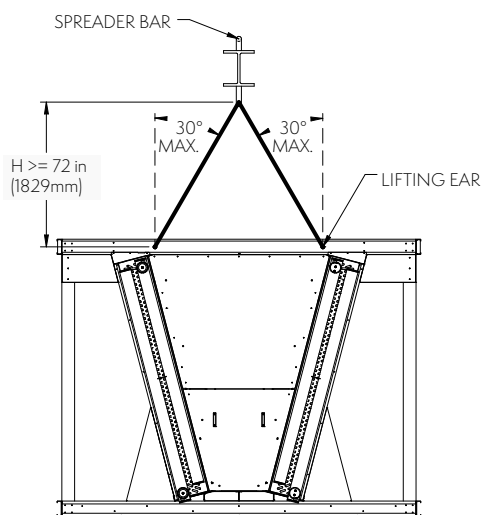


Figure 20.1 – Lower Section End Elevation View

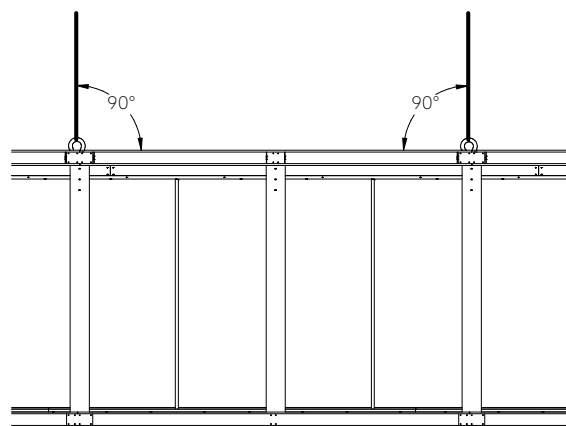


Figure 20.2 – Lower Section Side Elevation View

4. Once the section is lifted off the truck, place section onto staging area (riggers yard) or support structure (e.g., steel support, concrete pad, frame). If mounted to support structure, fasten using anchor hardware (by others)- size & quantity shown on 'Recommended Steel Support Arrangement' drawing in the factory submittal.

Upper Section Lifting Requirements - Double Stack Base Dry Units

For units with optional Super Low Sound Fans, fan screens and fan screen supports will ship loose. Please refer to Fan Screen Installation Requirements - Double Stack Super Low Sound Fan Units section for details on these installation requirements.

1. Use lifting ears on top of the upper section as shown in Figure 21. An adjustable/spreader lifting beam is required to be used along the entire unit length. Refer to the below instructions for lifting the Double Stack upper section.

NOTE: A system of adjustable/spreader lifting beams can be utilized in lieu of a single beam which runs the entire unit length, provided the unit is supported along its entire length and the below requirements are followed.

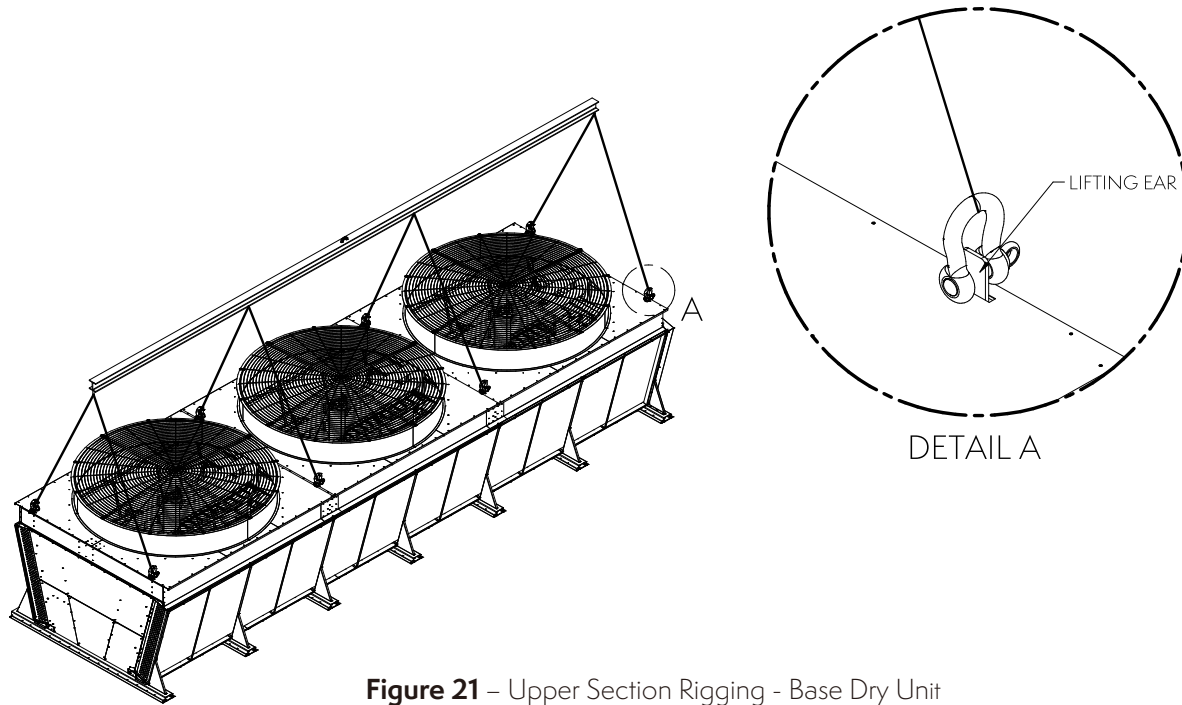


Figure 21 – Upper Section Rigging - Base Dry Unit

2. Care must be taken to ensure that the 'H' dimension for the crane lift is greater than or equal to 9' (2.7m) from the fan deck as shown in Figure 22.1. When viewed from the side, the lifting angle must **ALWAYS** be 90° (perpendicular) to the fan deck of the unit, see Figure 22.2. The centerline distance between the upper section lifting ears on the end elevation view is 9' 1-7/8" (2790mm).

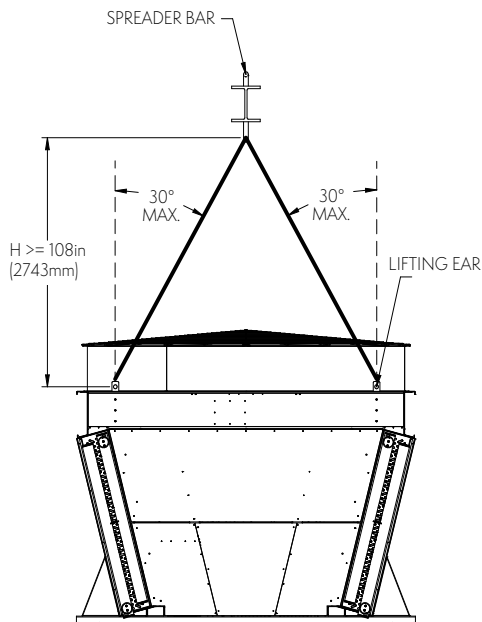


Figure 22.1 – Upper Section End Elevation View

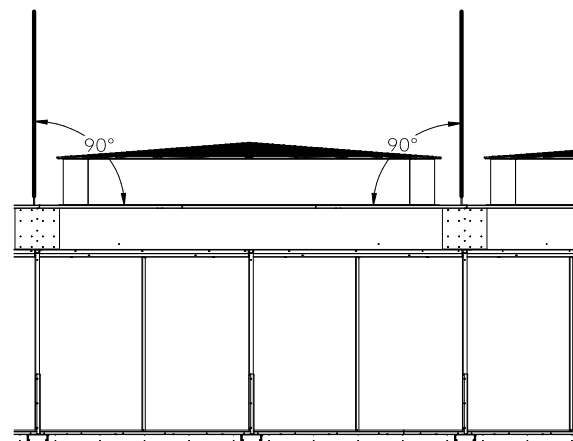


Figure 22.2 – Upper Section Side Elevation View

Fan Screen Installation Requirements - Double Stack Super Low Sound Fan Units

If equipped with optional Super Low Sound Fans, the fan screens and fan screen supports will be secured to skids and ship mounted on the lower section of the Double Stack unit as shown in Figure 23.

Prior to rigging the upper section to the lower section, the fan screens and fan screen supports must be removed from the lower section and secured onto the fan cylinders on the upper section. The fan screen and fan screen support will ship secured to skids bolted to the unit's frame.

Both of these components will need to be removed from their respective skids, and secured to each fan cylinder on the upper section, as shown in Figure 24.

Follow the below instructions for fan screen and fan screen support installation:

1. The fan screen and support assemblies along with their respective skids should be lifted off the lower section after removing the bolts attaching the skid to the frame. These skids must be placed on the ground to un-bolt the fan screen & support assemblies.

2. Once unbolted from the from the skids, lift and set the fan screen and fan screen supports across their respective fan cylinders.

3. Align the (8) holes on each fan screen support assembly with the pre-drilled 3/8" (10mm) holes in each fan cylinder. Secure the fan screen supports to the cylinder with 3/8" (10mm) hardware as shown in Figure 25.

4. Align the (12) eyelets on each fan screen assembly with the pre-drilled 1/2" (13mm) holes in each fan cylinder. Secure the fan screen to the cylinder with 1/2" (13mm) hardware as shown in Figure 26.

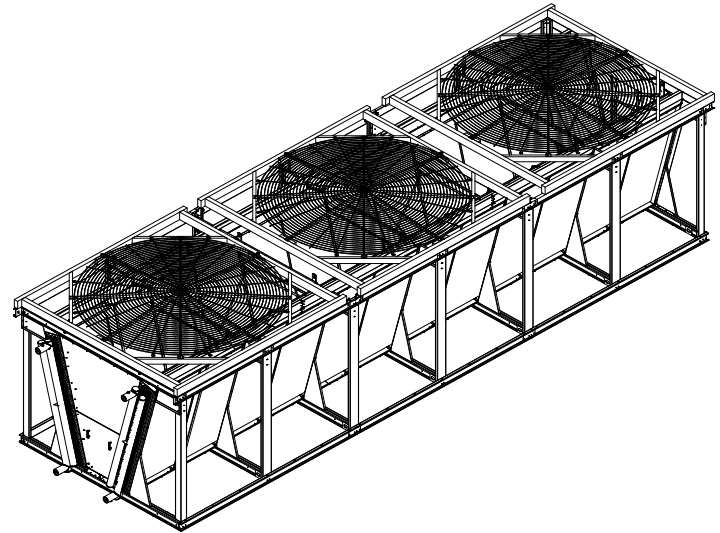


Figure 23 – Fan Screens & Fan Screens Supports Mounted to Lower Section for Shipping.

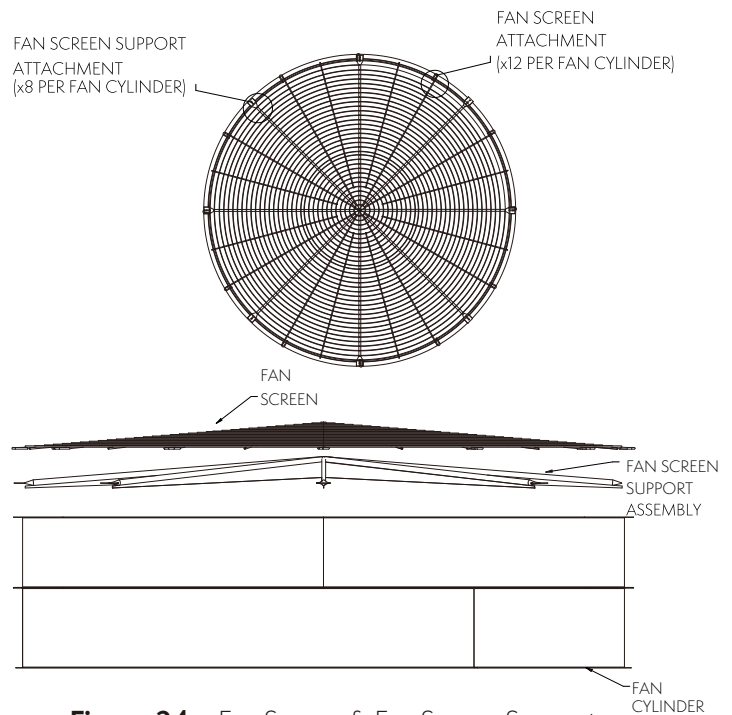


Figure 24 – Fan Screen & Fan Screen Support

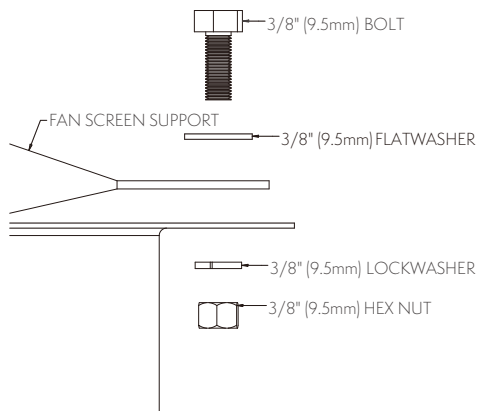


Figure 25 – Fan Screen Support Attachment Hardware

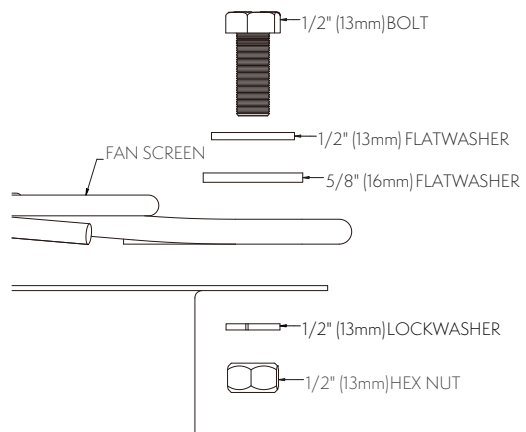


Figure 26 – Fan Screen Attachment Hardware

Joining Upper and Lower Sections - Double Stack Base Dry Units

- Carefully lift upper section onto lower section using drift pins in the four corners and as needed to align rigging holes in the mating double break flanges. Fasten upper section to lower section rigging seam as shown below. Units are provided with match markings on each section, as shown in Appendix A. Rigging hardware is provided.

NOTE: Upper and lower sections cannot be lifted together. This will cause permanent damage to the equipment and/or serious injury to nearby personnel.

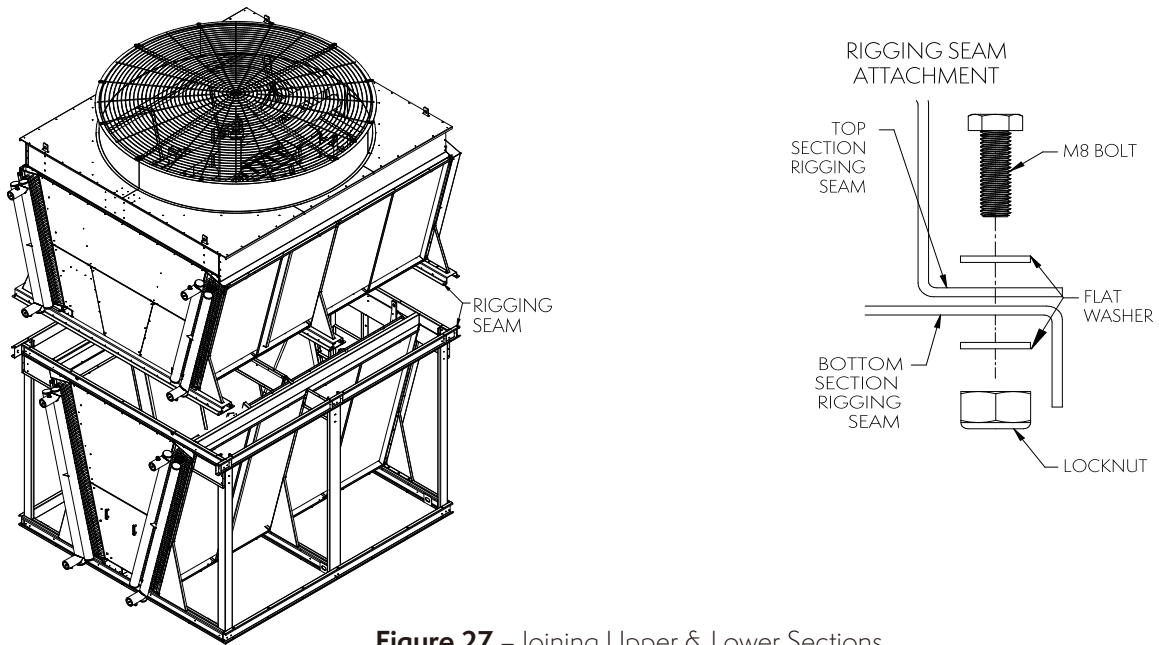


Figure 27 – Joining Upper & Lower Sections

Adiabatic Sections Rigging

The adiabatic modules for the Double Stack unit are shipped separately due to maximum shipping width restrictions – these components are crated for shipment and require field installation.

Adiabatic Module Crate Weights				
	Upper Section Crate	Lower Section Crate	# of Modules per Crate	Total # of Crates per Unit
1-cell	1360 lbs (617kg)	1940 lbs (880kg)	2	2
2-cell	2520 lbs (1143kg)	3640 lbs (1651kg)	4	
3-cell	3660 lbs (1660kg)	5340 lbs (2422kg)	6	

Table 6 – Adiabatic Module Crate Weights - Double Stack Modules

NOTE: The dry weight for each lower and upper adiabatic module is 820 lbs. (372kg) and 550 lbs. (250kg) respectively. Follow the steps outlined below to complete installation of the adiabatic modules on the base dry unit.

Installing Lower Section Adiabatic Modules

1. Once the base dry unit is rigged, remove the adiabatic modules and associated components from the lower section crate. Install lower adiabatic module supports (Qty. (8) per 1-cell unit, (16) per 2-cell unit & (24) per 3-cell unit) on the lower section as show - Use M8 bolts. Rivnuts at these sections are factory installed.

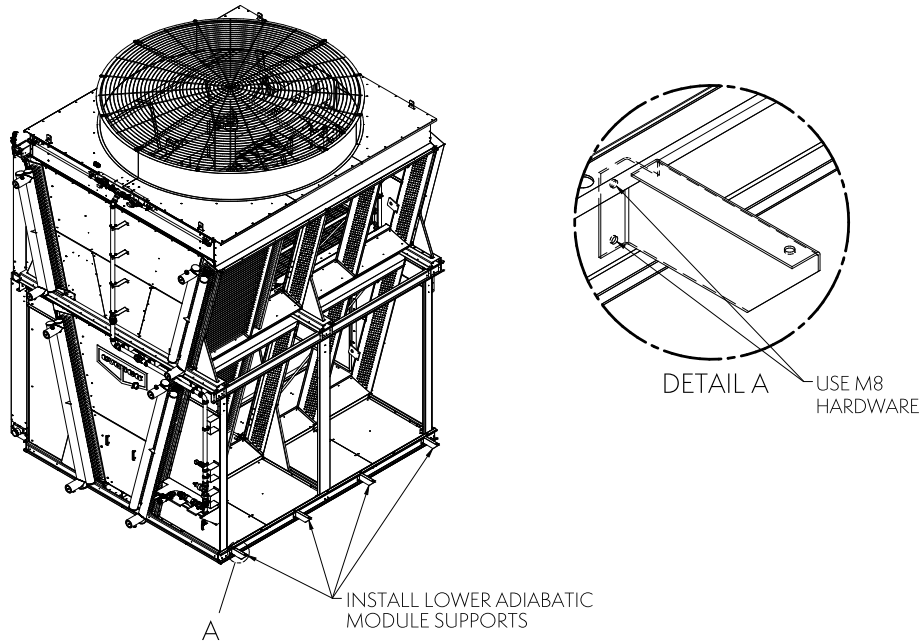


Figure 28 – Installing Lower Section Adiabatic Module Supports

2. Mount and fasten the lower frame module on the supports installed in Step 1. The lower frame module will then provide the support necessary for the sloped drain channel & adiabatic modules.

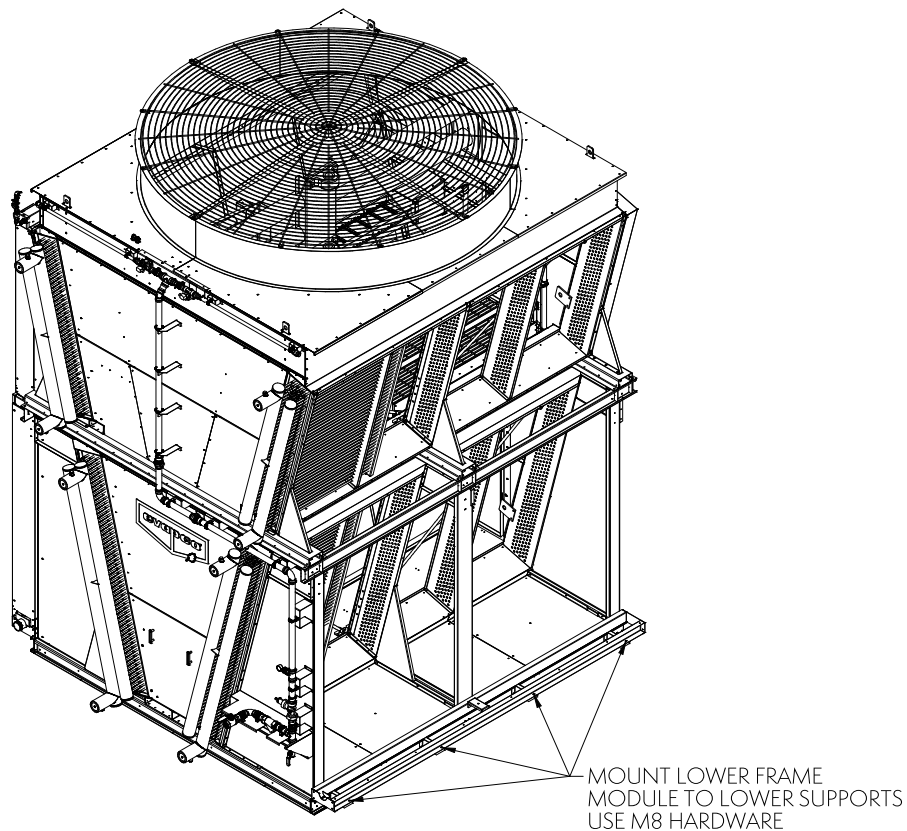


Figure 29 – Installing Lower Frame Modules

- Once the lower frame module has been installed, place the sloped drain channel in the module, taking care to ensure that the end of the sloped drain channel (1) is flush or inside the end of the lower frame module (2) as shown in Detail A below to allow placement of the lower adiabatic module(s) in the following steps.

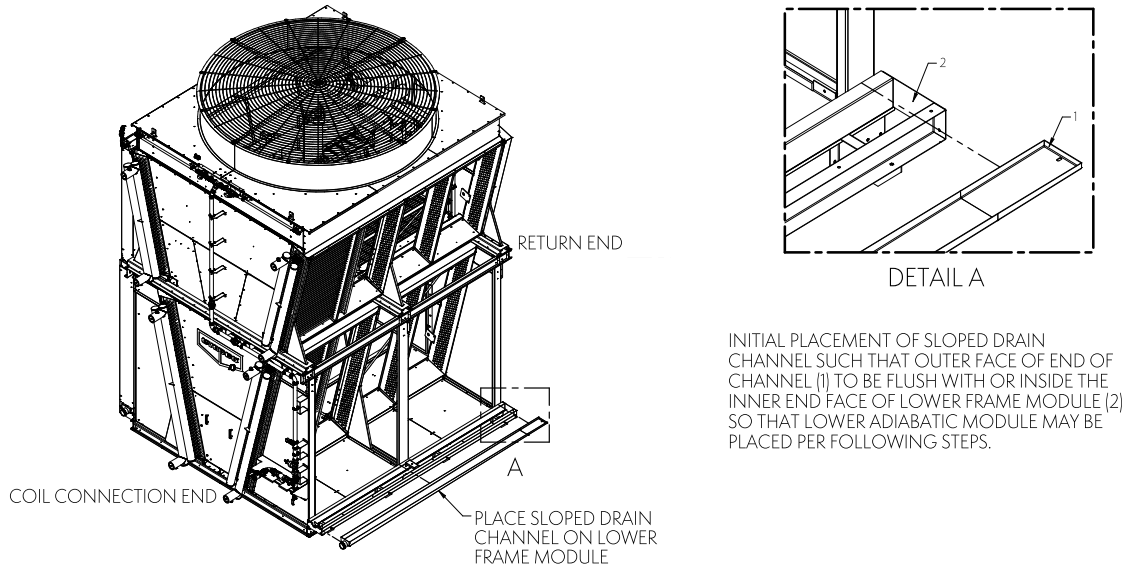


Figure 30 – Installing Sloped Drain Channel on Lower Frame Modules

- Place lower adiabatic pad modules onto the lower frame module, starting on the connection end of the unit. Total of (1) lower adiabatic pad module per side of a 1-cell unit. Total of (3) lower modules per side of 3-cell unit. Largest 3-cell unit will require a total of (6) lower adiabatic pad modules.
- Ensure each module is fastened before moving on to the next. In the case of a multi-cell unit, install retention brackets as shown in Detail B using M8 hardware.

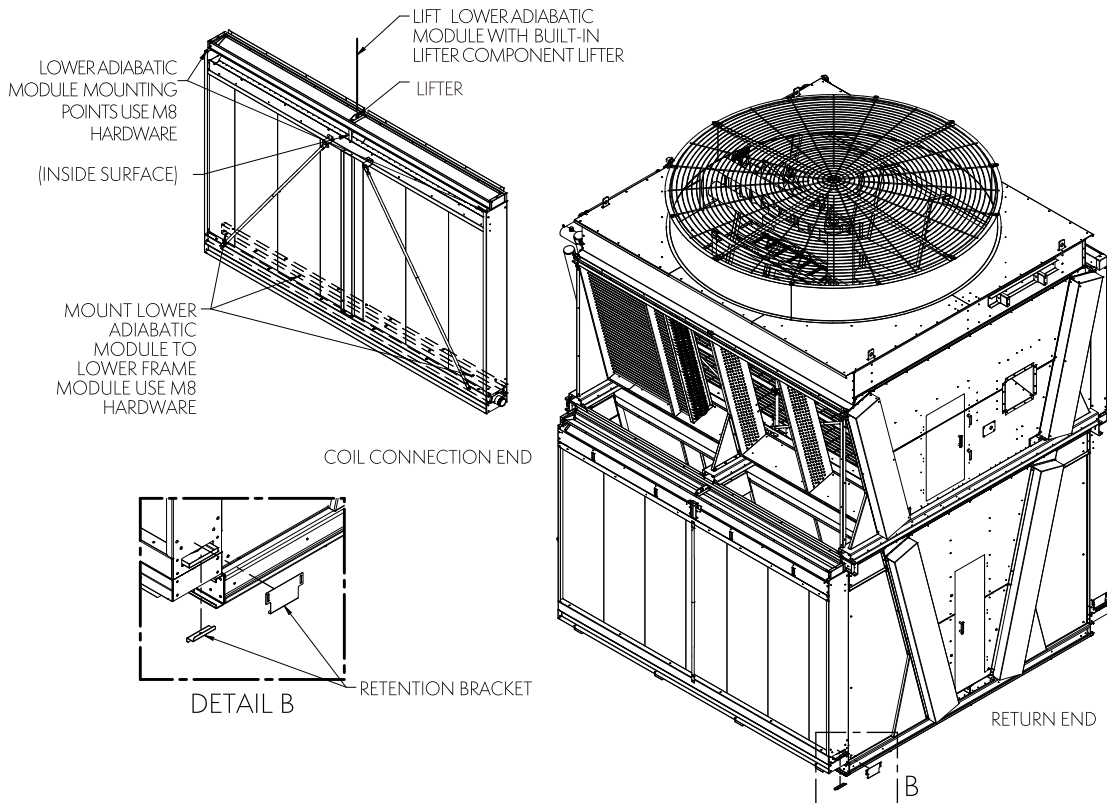


Figure 31 – Installing Lower Section Adiabatic Modules

Installing Upper Section Adiabatic Modules

- Once all adiabatic modules on both sides of the lower section are in position, install brackets for the upper modules. See Detail A below for location of bracket installation.

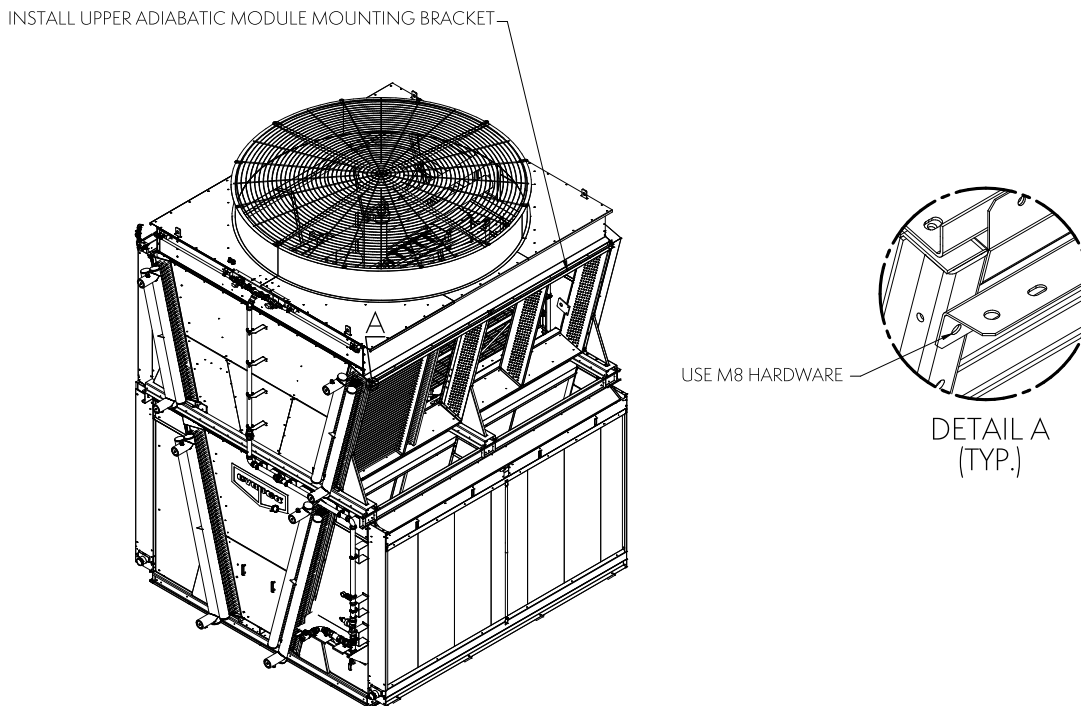


Figure 32 – Installing Mounting Brackets for Upper Section Adiabatic Modules

- Install upper adiabatic pad modules as shown below in Figure 33. Fasten each individual module, starting on the connection end, in the locations shown before moving to the next module.

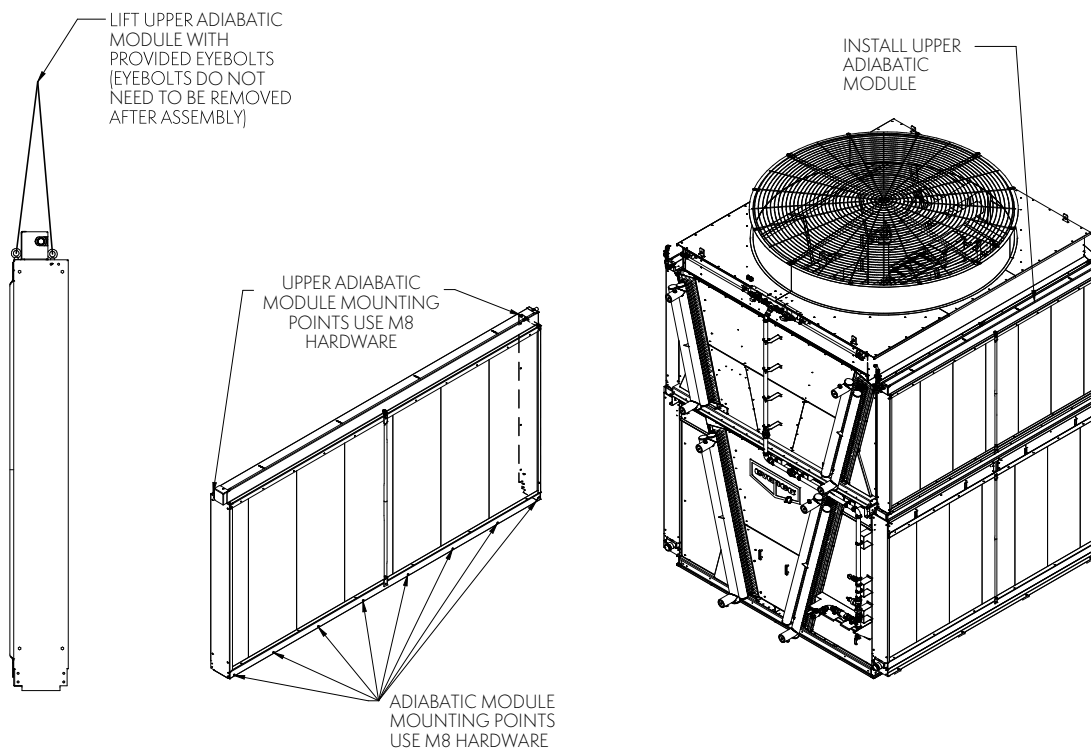


Figure 33 – Installing Upper Section Adiabatic Modules

3. Follow this step only for 2-cell or 3-cell units. 2-cell unit shown below. For 3-cell units, the below step will need to be followed twice on each side.

Install the connector piece first, as shown in Detail A, followed by the trim components on the upper and lower section as shown in Figure 34.

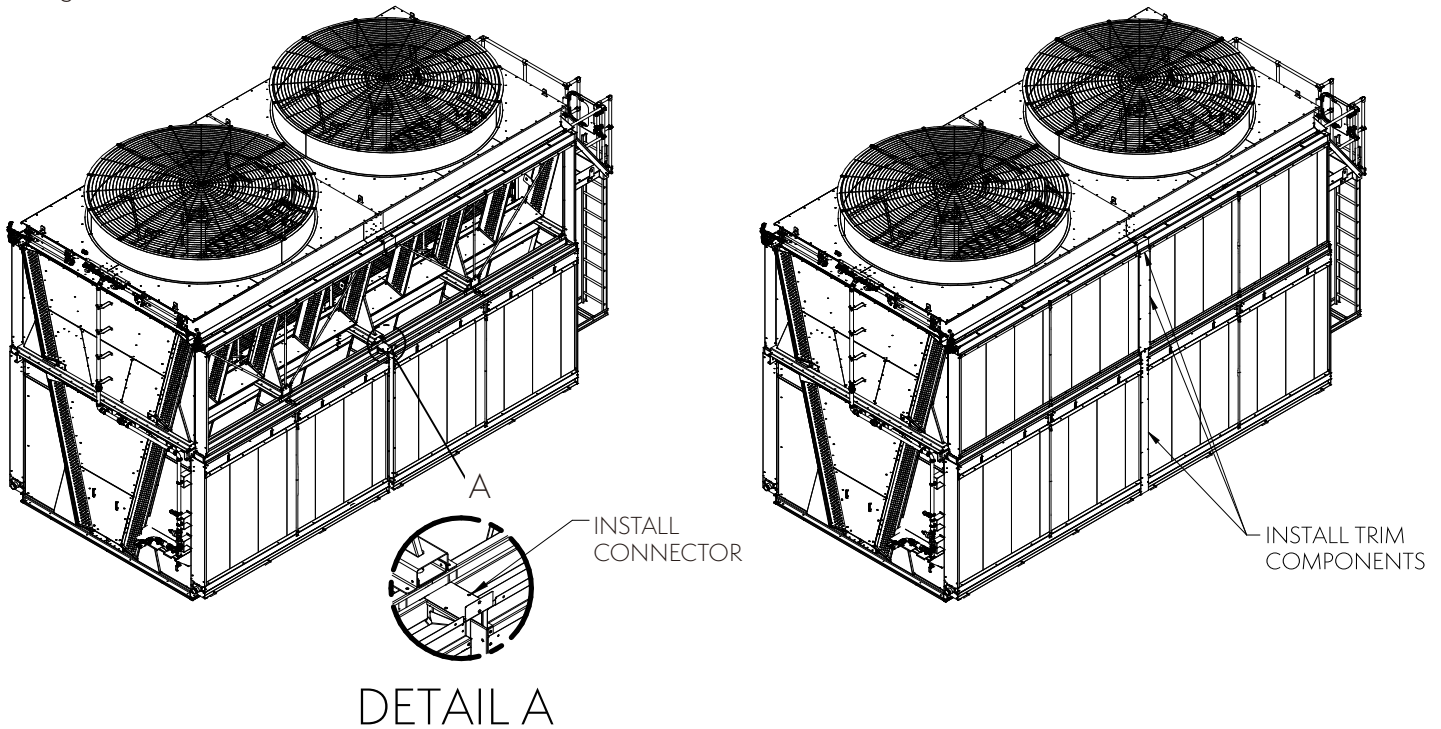


Figure 34 – Installing Trim Components in Between Cells

Adiabatic Water Distribution System Field Assembly Instructions

The supply piping for the adiabatic air pre-cooling system is partially factory installed, with some components requiring installation in the field. Much like the adiabatic modules, some sections of the water distribution system cannot ship mounted due to shipping width restrictions.

Follow the steps outlined below to complete adiabatic water distribution system assembly.

1. Once both upper and lower adiabatic modules are installed, remove all the cover panels from the water distribution tray above the upper modules.

The removed panels will expose pipe clamps which will need to be unclamped before installing the spray branches.

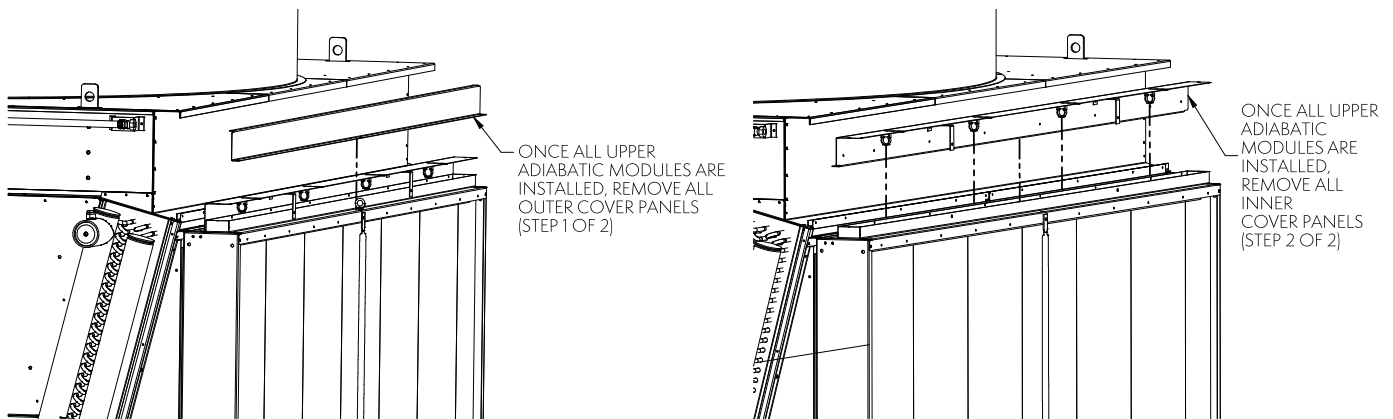


Figure 35 – Removing Cover Panels from Water Distribution Tray

2. Install the longer spray branch first as shown below. The longer spray branch is always located inboard within the distribution system. Install the shorter branch (on 2-cell & 3-cell units) next.

Reinstall cover panels when spray branch installation is complete.

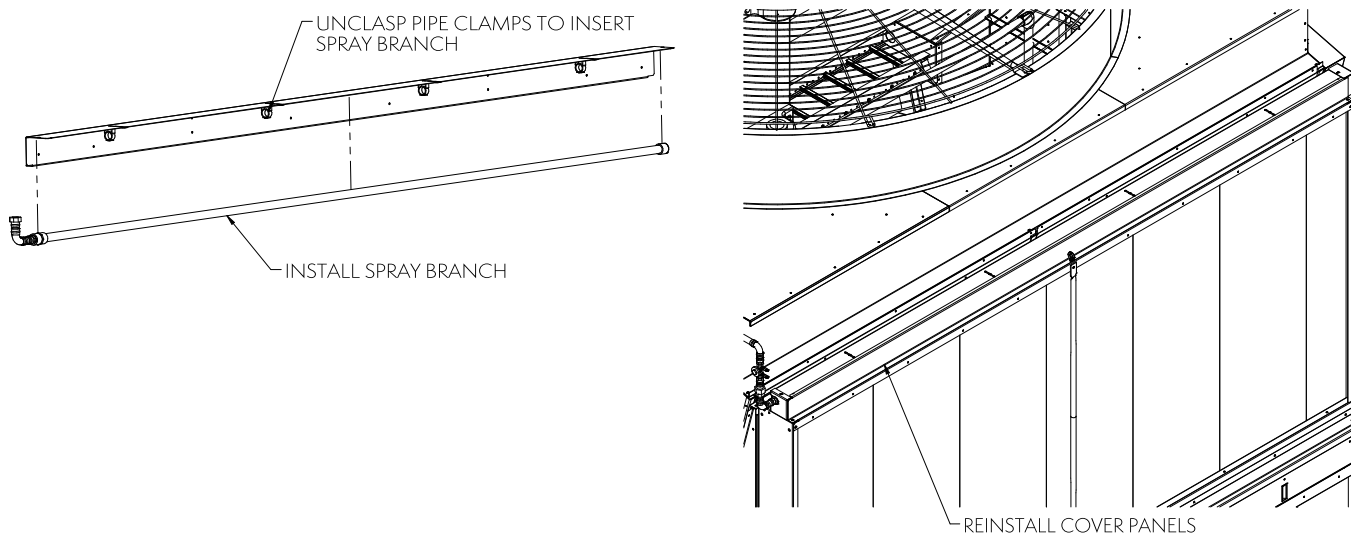


Figure 36 – Installing Spray Branches & Reinstalling Cover Panels

3. Install front and rear trim plates. The front and rear trim plates are for the upper section only. Install trim caps on water distribution trays. All components use M8 hardware. 1-cell unit shown below, typical for 3-cell unit.

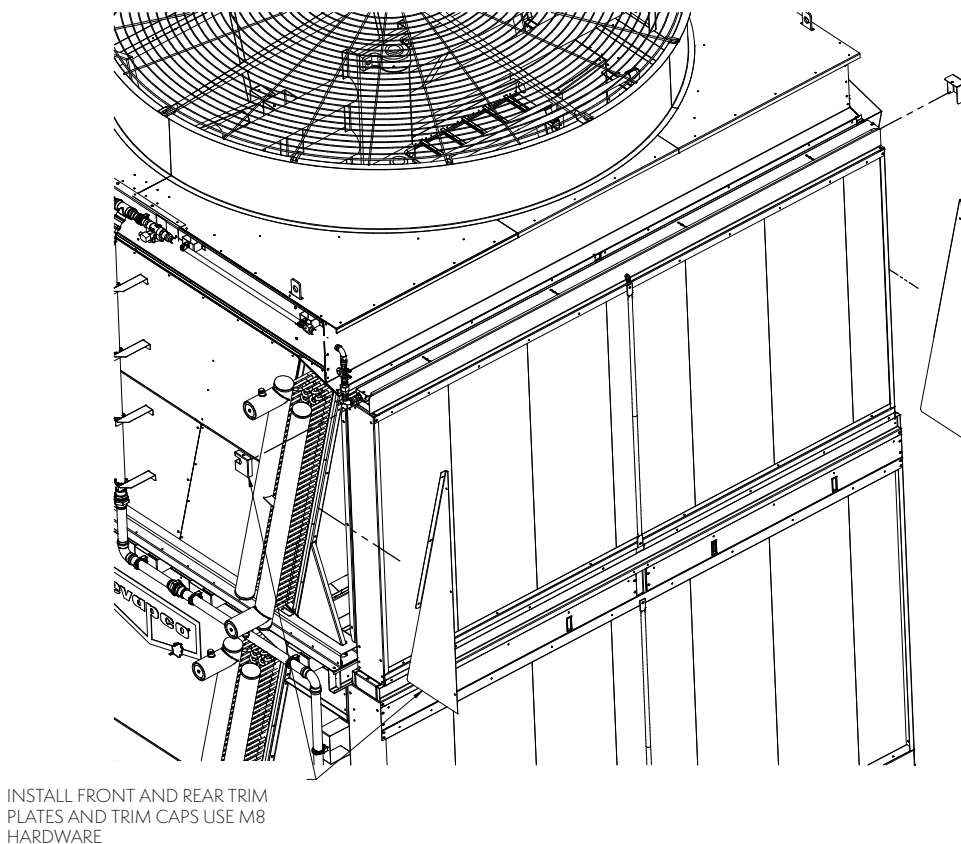


Figure 37 – Installing Front & Rear Trim Plates & Water Distribution System Trim Caps

4. Install intermediate pipe section to connect factory installed adiabatic water distribution piping on upper and lower sections as shown below. Install spray branch feed pipe sections on either side of the factory installed upper adiabatic water distribution piping as shown in Detail A below. The factory installed pipe sections ship with unions to simplify field installation. There are no PVC glue joints or soldering joints.

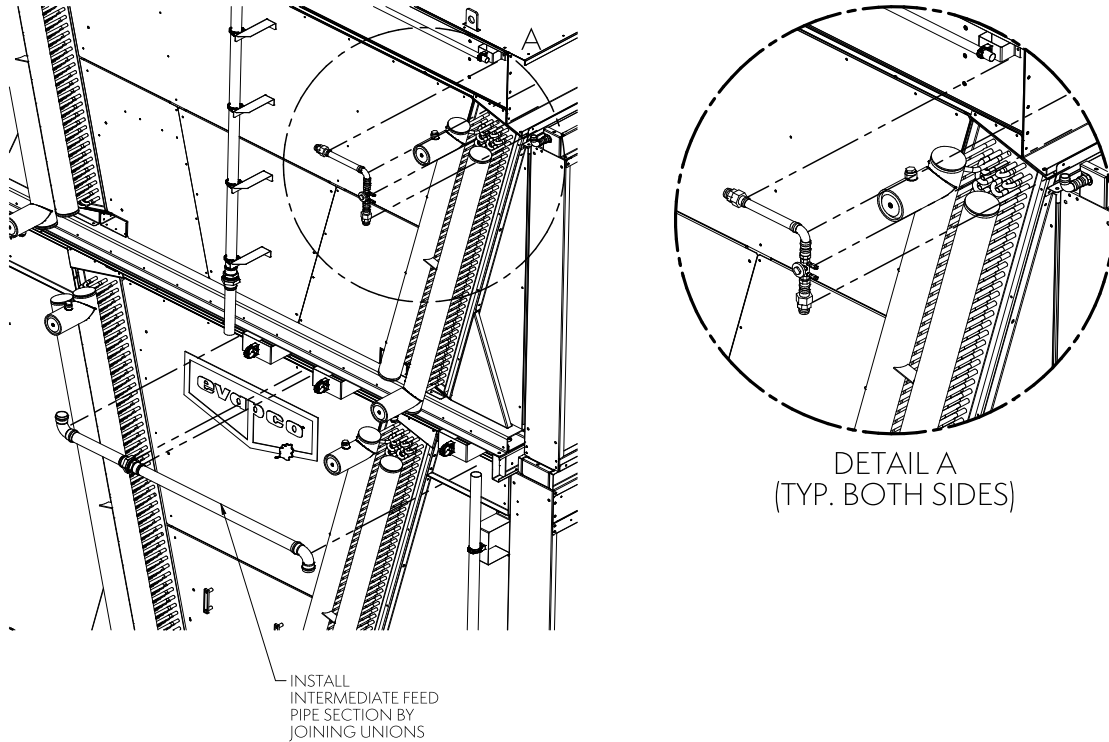


Figure 38 – Installing Intermediate Spray Feed Piping & Intermediate Spray Branch Feed Sections

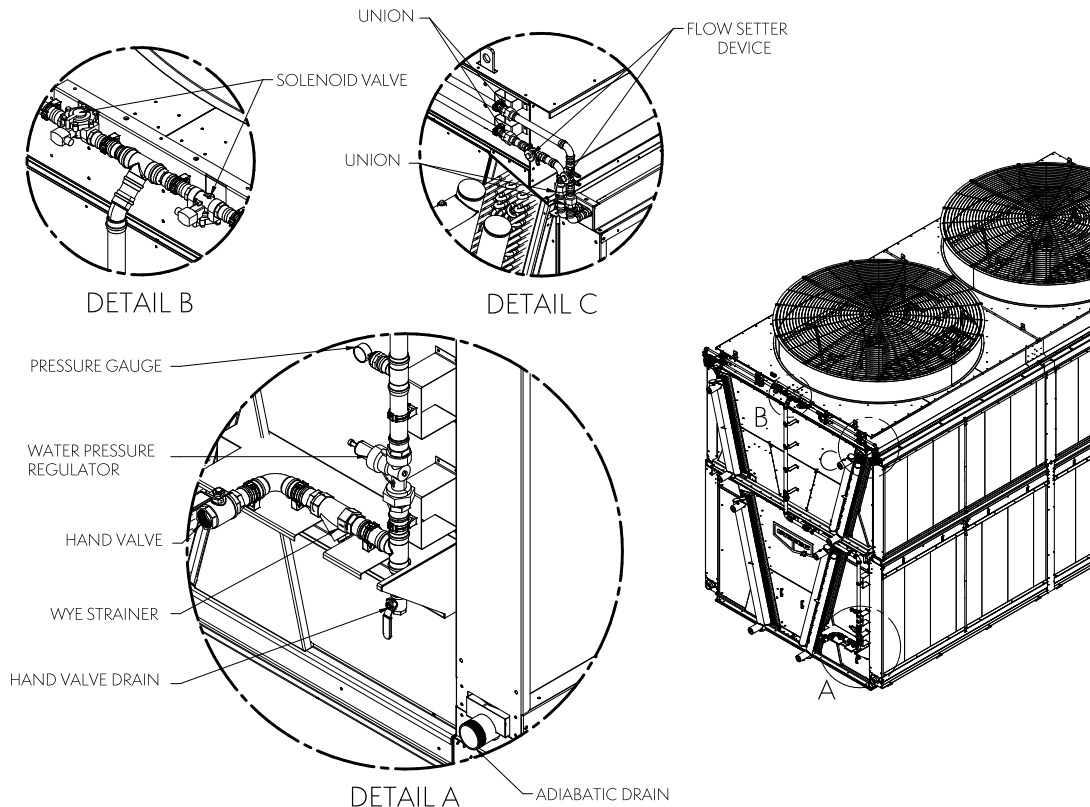


Figure 39 – eco-Air™ Double Stack Pad Pre-Cooling System Components

External Service Platform Installation Instructions

Follow the instructions below to install the optional external service platform with a ladder on the return end of each dry or adiabatic double stack unit. The platform mounting channels are installed on the unit from the factory. Follow the instructions sequentially, starting with Detail A.

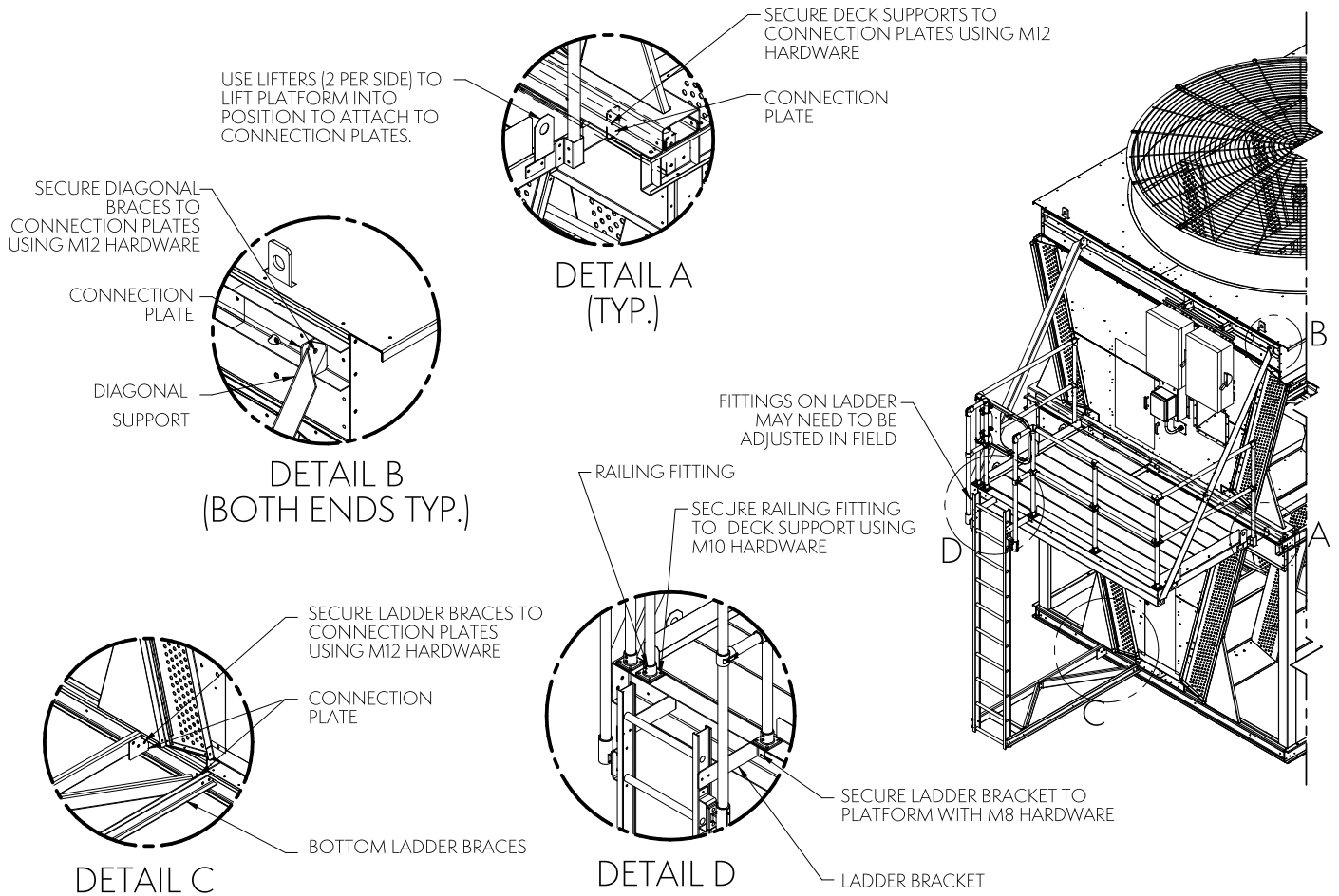
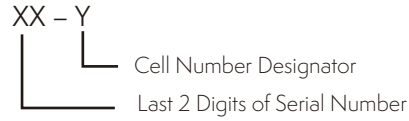


Figure 40 – External Platform Installation - Double Stack Models

Appendix A

Double Stack Units are provided with match markings on each section. Standard match marking location is at the rigging seam on the connection face. Standard match marking designation is shown below:



Example:

Serial Number: 23p123456 Number of Cells: 1
↓
Match Marks: Cell #1: 56-1

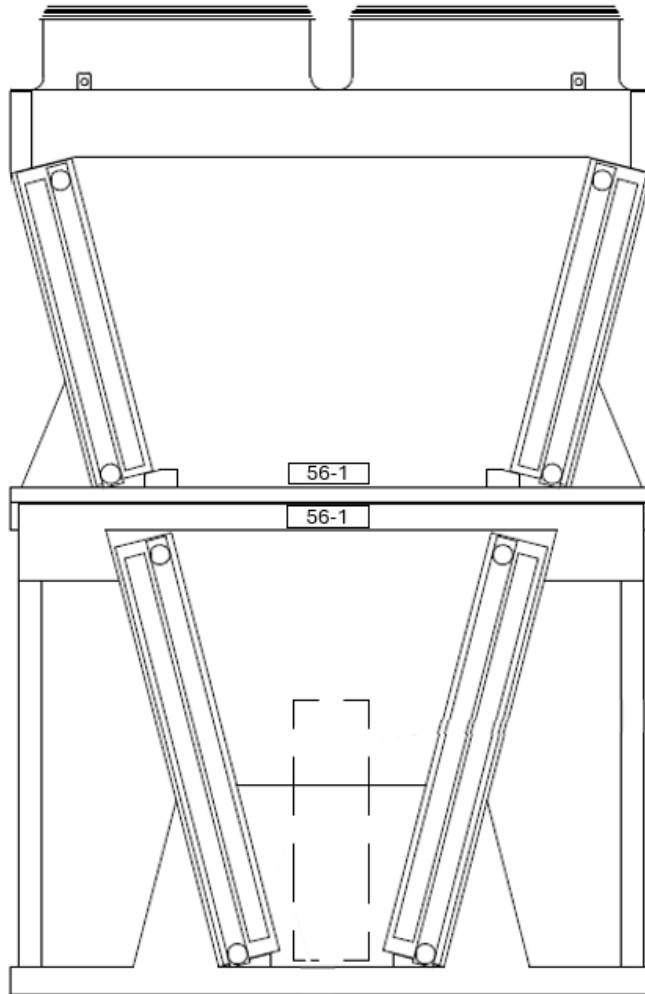


Figure 41 - Match Markings on Double Stack Unit Sections

