



**BALTIMORE  
AIRCOIL AUSTRALIA**



VXT

VXI-S

VXC-S

# VX Series

**RIGGING & ASSEMBLY INSTRUCTIONS**



VX Line units should be rigged and installed as outlined in this bulletin. These procedures should be thoroughly reviewed prior to the actual rigging operation to acquaint all personnel with the procedures to be followed and to assure that all necessary equipment will be available at the jobsite.

Locate the unit nameplate on the connection end of the unit and record the model number for reference. Cooling Towers are identified as VXT, Evaporative Condensers as VXC-S, and Industrial Fluid Coolers as VXI-S.

Be sure to have a copy of the unit certified drawing available for reference. If you do not have a copy of this drawing or if you need additional information about the unit, contact the local B.A.C. representative. His name and phone number are on a label at the connection end of your unit.



Be sure to have a copy of the submittal drawings available for reference. If you do not have a copy of these drawings, or if you need additional information about this unit, contact your local BAC Representative whose name and telephone number are on the outside of the cold water basin. The model number and serial number of the unit are also located in this area.



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RIGGING & ASSEMBLY INSTRUCTIONS » VX SERIES

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# 1 Introduction

**WARNING:** Failure to use designated lifting points can result in a dropped load causing severe injury, death, and/or property damage. Lifts must be performed by qualified riggers following BAC published Rigging Instructions and generally accepted lifting practices. The use of supplemental safety slings may also be required if the lift circumstances warrant its use, as determined by the rigging contractor.



**WARNING:** Operation, maintenance and repair of this equipment should be undertaken only by personnel qualified to do so. Proper care, procedures and tools must be used in handling, lifting, installing, operating, maintaining and repairing this equipment to prevent personal injury and/or property damage. Units with PVC eliminators should not be covered with a clear plastic tarpaulin.



## Safety

Adequate precautions appropriate for the installation and location of these products should be taken to safeguard the equipment and the premises from damage and the public from possible injury as appropriate for the installation and location of these products.

Air inlet bottom screens or solid bottom panels may be desirable or necessary for safety and other reasons depending on the location and conditions at the installation site.

For a discussion of Safety Precautions to be followed when operating or maintaining this equipment, please refer to the equipment's Operating & Maintenance Instructions.

## Leveling

The unit must be level for proper operation. This is especially true for Industrial Fluid Coolers (VXI-S units), which should be level to 0.5 mm per m over the unit length and width. This will help ensure proper coil draining in an emergency freeze situation (See Freeze Protection Note below). Support beams must also be level as shims should not be used between the pan and support beams to level the unit.

## Pre-Rigging Checks

When the unit is delivered to the jobsite, it should be checked thoroughly to ensure all required items have been received and are free of any shipping damage prior to signing the bill of lading.

The following parts should be inspected:

- Sheaves and Belts
- Bearings
- Bearing Supports
- Fan Motors
- Fan Wheels & Shafts
- Wet Deck Surface (VXT)
- Coils (VXC-S & VXI-S)
- Water Distribution System
- Strainers
- Float Valve Assembly
- Eliminators
- Interior & Exterior Surfaces
- Miscellaneous Items: A checklist inside the envelope attached to one of the access doors and marked "For Rigger" indicates what miscellaneous parts, such as sealer, hardware and accessory items, are included and where they are packed. Be sure to remove all miscellaneous items from the pan before the unit is assembled.



### Safety

### Leveling

### Pre-Rigging Checks

Unit Weights

Anchoring

### Cold Weather Operation

### Warranties

## Unit Weights

Before rigging any VX unit, the weight of each section should be verified from the unit certified drawing.

Notice: These weights are approximate only and should be confirmed by weighing before lifting when available hoisting capacity provides little margin for safety.

## Anchoring

Caution: Unit must be properly anchored in place before operation begins. Holes suitable for 19 mm bolts are provided in the bottom flange of the pan section for bolting the unit to the support beams. Refer to the suggested support details on the certified drawing for locations of the mounting holes. Anchor bolts must be supplied by others.

## Cold Weather Operation

These products must be protected against damage and/or reduced effectiveness due to possible freeze-up by mechanical and operational methods. Please refer to the Product catalog or contact the local B.A.C. representative for recommended protection alternatives

## Warranties

Please refer to the Limitation of Warranties (located in the submittal package) applicable to and in effect at the time of the sale/purchase of these products.



**ATTENTION:** Before an actual lift is undertaken, ensure no water, snow, ice, or debris has collected in the basin or elsewhere in the unit. Such accumulations will add substantially to the equipment's lifting weight.

# Unit Rigging & Assembly

**NOTE:** For weight information, refer to the submittal drawing package.



**WARNING:** Unless unit ships fully assembled, pan-fan and casing components must be rigged separately. Never assemble the unit before lifting as the lifting devices provided are not designed to support the weight of the entire assembled unit.



## Rigging

To simplify rigging and installation, most VX units are shipped in sections consisting of the pan-fan assembly and one or more casing sections. Some smaller units ship fully assembled. See Figure 1 for further identification of these sections.

The proper rigging sequence for units is to lift the pan-fan section into place, apply sealer to the pan where the casing(s) will be located, and then lift the casing(s) into place. For a fully assembled unit, only one lift is required. Lifting devices have been provided on all sections. Spreader bars of the full width of the section must be used between the lifting cables to prevent damage to the section. The use of safety slings is recommended whenever hazards exist.

Tables 1, 2 & 3 give the preferred method for rigging each section of any VX unit. With the information from the tables and the additional instructions on page 8 through 11, rigging a VX unit can be quickly accomplished as follows:

Enter the appropriate table and locate the model number of the unit to be rigged. Following the model number are tabulated the type and number of sections to be rigged; pan rigging method with required spreader bar length and minimum allowable vertical distance “H” from the lifting ears to the rigging hook; sealing method; casing rigging method with spreader bar length and minimum “H”; and the correct steel eliminator placement.

Rig the pan-fan section by the method shown in the unit tables. Before proceeding to the next operation, bolt the section securely to the supporting steel.

Apply sealer to the flanges where the casings are to be located. Again, refer to the unit tables for the proper method.

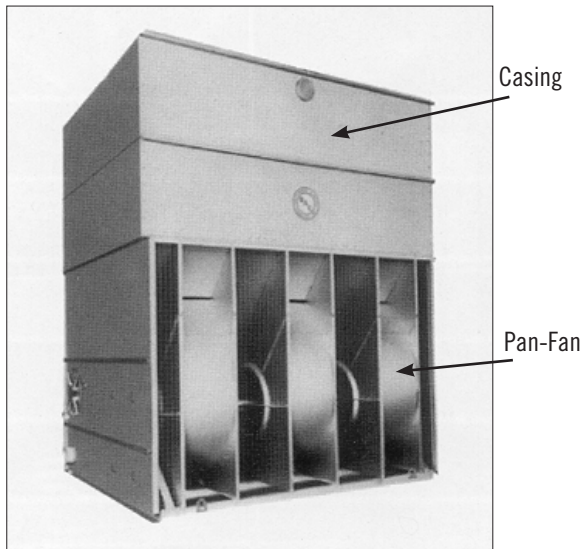
Rig the casing section(s) by the method in the unit tables, ensuring correct mounting hole alignment with the pan-fan section.

Rig optional discharge accessories using the same method as the casing section, ensuring correct mounting hole alignment with the casing section.

Complete the final assembly details outlined on page 12.

For correct placement of optional steel eliminators, refer to the unit tables.

For optional intake attenuators refer to assembly instructions / drawing sent separately within the “For Rigger” envelope.


**Figure 1.**

| COOLING TOWERS     |                 |               |                 |                     |             |                |                |                     |             |                            |
|--------------------|-----------------|---------------|-----------------|---------------------|-------------|----------------|----------------|---------------------|-------------|----------------------------|
| Model No           | No of Pans      | No of Casings | Pan-Fan Section |                     |             | Sealing Method | Casing Section |                     |             | Steel Eliminator Placement |
|                    |                 |               | Rigging Method  | Spreader Bar Length | Minimum "H" |                | Rigging Method | Spreader Bar Length | Minimum "H" |                            |
| VXT-10 thru 25     | Fully Assembled |               | A               | 914                 | 2438        | -              | -              | -                   | -           | S                          |
| VXT-30 thru 45     | Fully Assembled |               | A               | 1829                | 2438        | -              | -              | -                   | -           | S                          |
| VXT-55             | 1               | 1             | C               | 1219                | 3048        | H              | L              | 1829                | 2438        | S                          |
| VXT-65 thru 85     | Fully Assembled |               | A               | 2743                | 3048        | -              | -              | -                   | -           | S                          |
| VXT-95             | Fully Assembled |               | A               | 3658                | 3658        | -              | -              | -                   | -           | S                          |
| VXT-105 thru 135   | 1               | 1             | C               | 1219                | 3658        | H              | L              | 3658                | 3658        | S                          |
| VXT-150 thru 185   | 1               | 1             | C               | 1473                | 3658        | H              | M              | 1473                | 2438        | S                          |
| VXT-N215 thru N265 | 1               | 1             | C               | 2438                | 3658        | H              | M              | 2007                | 3048        | U                          |
| VXT-N310 thru N395 | 1               | 1             | C               | 2438                | 4877        | H              | M              | 2007                | 3048        | U                          |
| VXT-N430 thru N535 | 1               | 2             | C               | 2438                | 6096        | J              | M              | 2007                | 3048        | U                          |
| VXT-315 thru 400   | 1               | 1             | C               | 3048                | 3658        | H              | M              | 3048                | 3658        | U                          |
| VXT-470 thru 600   | 1               | 1             | C               | 3048                | 4877        | H              | M              | 3048                | 3658        | U                          |
| VXT-630 thru 800   | 1               | 2             | C               | 3048                | 6096        | J              | M              | 3048                | 3658        | U                          |
| VXT-870 thru 1200  | 1               | 3             | D               | 3048                | 6096        | K              | M              | 3048                | 3658        | U                          |
| VXT-1260 thru 1600 | 2               | 4             | C               | 3048                | 6096        | J              | M              | 3048                | 3658        | U                          |
| VXT-1740 thru 2400 | 2               | 6             | D               | 3048                | 6096        | K              | M              | 3048                | 3658        | U                          |
| VXT-250 thru 3200  | 4               | 8             | C               | 3048                | 6096        | J              | M              | 3048                | 3658        | U                          |
| VXT-3480 thru 4800 | 4               | 12            | D               | 3048                | 6096        | K              | M              | 3048                | 3658        | U                          |

**Table 1. Preferred method for rigging all VX Series Cooling Tower Units.**

## EVAPORATIVE CONDENSERS

| Model No                | No of Pans      | No of Casings | Pan-Fan Section |                     |             | Sealing Method | Casing Section |                     |             | Steel Eliminator Placement |
|-------------------------|-----------------|---------------|-----------------|---------------------|-------------|----------------|----------------|---------------------|-------------|----------------------------|
|                         |                 |               | Rigging Method  | Spreader Bar Length | Minimum "H" |                | Rigging Method | Spreader Bar Length | Minimum "H" |                            |
| VXC-S14, 18, 36, 45     | Fully Assembled |               | B               | 1092                | 2438        | -              | -              | -                   | -           | S                          |
| VXC-S25, 28, 52 thru 65 | 1               | 1             | C               | 1219                | 2438        | H              | N              | 1092                | 2438        | S                          |
| VXC-S72 thru 135        | 1               | 1             | C               | 1219                | 3658        | H              | N              | 1092                | 3658        | S                          |
| VXC-S150 thru 205       | 1               | 1             | C               | 1473                | 3658        | H              | N              | 1473                | 3658        | S                          |
| VXC-S221 thru 265       | 1               | 1             | C               | 2438                | 3658        | H              | N              | 2007                | 3658        | V                          |
| VXC-S288 thru S350      | 1               | 1             | C               | 2450                | 3700        | H              | N              | 2450                | 4300        | V                          |
| VXC-S403 thru S504      | 1               | 1             | C               | 2450                | 5000        | H              | N              | 2450                | 5500        | V                          |
| VXC-S576 thru S700      | 1               | 2             | C               | 2450                | 6000        | J              | N              | 2450                | 4300        | V                          |
| VXC-S806 thru S1010     | 1               | 2             | D               | 2450                | 6700        | J              | N              | 2450                | 5500        | V                          |
| VXC-S357 thru 454       | 1               | 1             | C               | 3050                | 3700        | H              | N              | 3050                | 4300        | V                          |
| VXC-S562 thru 680       | 1               | 1             | C               | 3050                | 5000        | H              | N              | 3050                | 5500        | V                          |
| VXC-S714, 798, 908      | 1               | 2             | C               | 3050                | 6000        | J              | N              | 3050                | 4300        | V                          |
| VXC-S1124, 1240, 1360   | 1               | 2             | D               | 3050                | 6000        | J              | N              | 3050                | 5500        | V                          |
| VXC-S495 & 516          | 1               | 1             | C               | 3650                | 4300        | H              | N              | 3650                | 4300        | V                          |
| VXC-S715, 775, 804      | 1               | 1             | C               | 3650                | 5500        | H              | N              | 3650                | 5500        | V                          |
| VXC-S990 & 1032         | 1               | 2             | C               | 3650                | 6700        | J              | N              | 3650                | 4300        | V                          |
| VXC-S1430 thru 1608     | 1               | 2             | D               | 3650                | 6700        | J              | N              | 3650                | 5500        | V                          |

**Table 2. Preferred method for rigging all VX Series Evaporative Condenser Units.**





| INDUSTRIAL FLUID COOLERS                                 |                 |               |                 |                     |             |                |                |                     |             |                            |
|--|-----------------|---------------|-----------------|---------------------|-------------|----------------|----------------|---------------------|-------------|----------------------------|
| Model No   | No of Pans      | No of Casings | Pan-Fan Section |                     |             | Sealing Method | Casing Section |                     |             | Steel Eliminator Placement |
|  |                 |               | Rigging Method  | Spreader Bar Length | Minimum "H" |                | Rigging Method | Spreader Bar Length | Minimum "H" |                            |
| VXI-S9-1<br>VXC-S14, 18, 36, 45<br>VXI-S27-1             | Fully Assembled |               | B               | 1092                | 2438        | -              | -              | -                   | -           | S                          |
| VXI-S9-2, -3; 18-2, -3<br>VXI-S27-2, -3<br>VXI-S36-2, -3 | 1               | 1             | C               | 1219                | 3658        | H              | N              | 1092                | 3658        | S                          |
| VXI-S50-2, -3, -4  | 1               | 1             | C               | 1473                | 3658        | H              | N              | 1473                | 3658        | S                          |
| VXI-S70-2, -3, -4  | 1               | 1             | C               | 2438                | 3658        | H              | N              | 2007                | 3658        | V                          |
| VXI-S95-2, -3, -4  | 1               | 1             | C               | 2450                | 3700        | H              | N              | 2450                | 4300        | V                          |
| VXI-S145-1, -2, -3, -4                                   | 1               | 1             | C               | 2450                | 5000        | H              | N              | 2450                | 5500        | V                          |
| VXI-S190-2, -3, -4                                       | 1               | 2             | C               | 2450                | 6000        | J              | N              | 2450                | 4300        | V                          |
| VXI-S290-1, -2, -3, -4                                   | 1               | 1             | D               | 2450                | 6700        | J              | N              | 2450                | 5500        | V                          |
| VXI-S180-2, -3, -4                                       | 1               | 1             | C               | 3048                | 4877        | H              | N              | 3048                | 4877        | V                          |
| VXI-S360-2, -3, -4                                       | 1               | 2             | D               | 3048                | 6096        | J              | N              | 3048                | 4877        | V                          |
| VXI-S144-2, -3, -4                                       | 1               | 1             | C               | 3650                | 4300        | H              | N              | 3650                | 4300        | V                          |
| VXI-S215-1, -2, -3, -4                                   | 1               | 1             | C               | 3650                | 5500        | H              | N              | 3650                | 5500        | V                          |
| VXI-S288-2, -3, -4                                       | 1               | 2             | C               | 3650                | 6700        | J              | N              | 3650                | 4300        | V                          |
| VXI-S430-1, -2, -3, -4                                   | 1               | 2             | D               | 3650                | 6700        | J              | N              | 3650                | 5500        | V                          |

Table 3. Preferred method for rigging all VX Series Industrial Fluid Cooler Units.

**NOTE:** Safety Slings are recommended.



### Pan-Fan Rigging Methods

1. Rig-pan section. Bolt section securely to the supporting steel before proceeding to the next step.

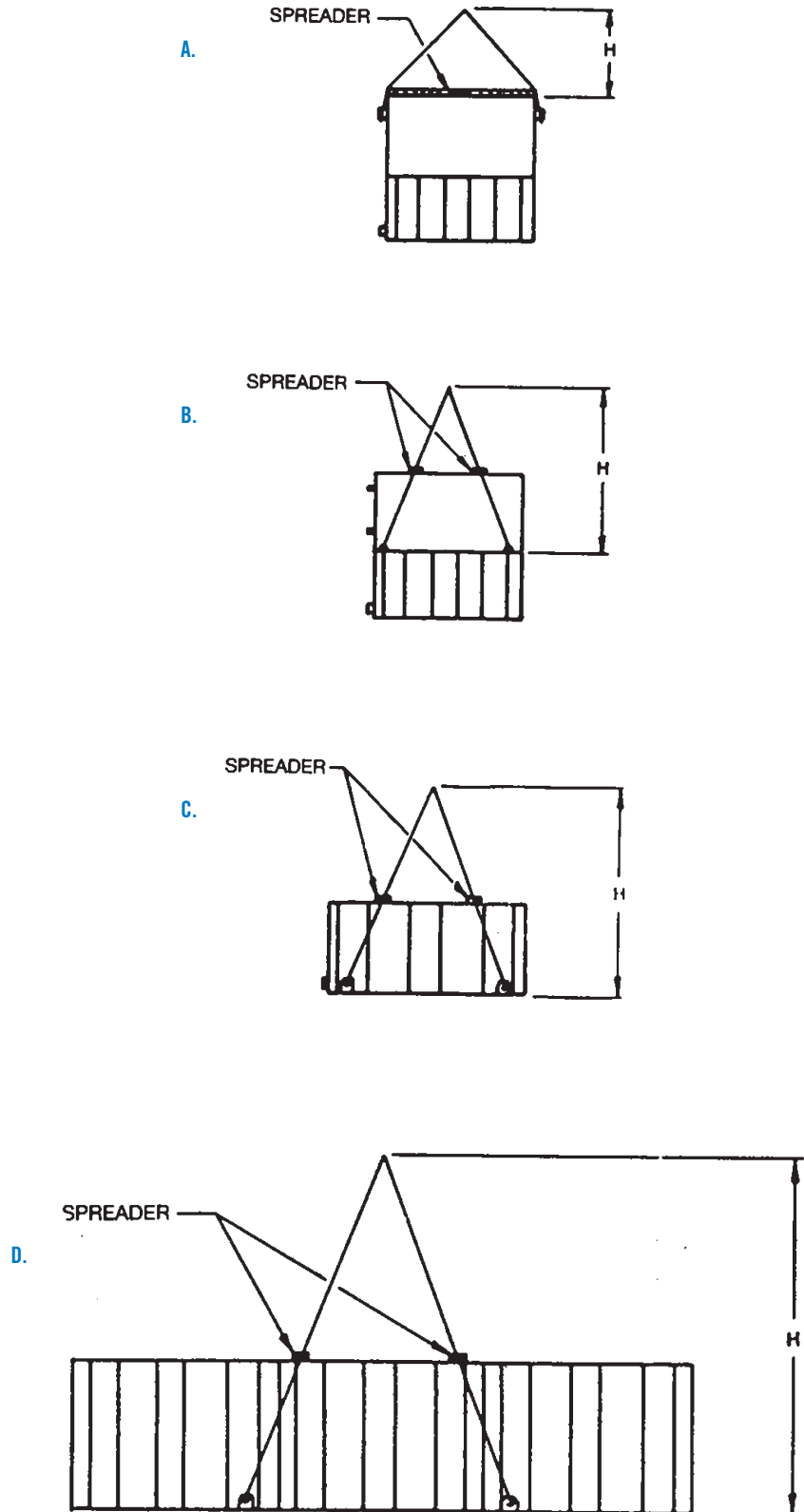


Figure 2.

## Rigging

Pan-Fan Rigging Methods  
Sealing Methods

### Sealing Methods

- Remove any protective wood from the top horizontal flanges of pan-fan section. Wipe down the flanges to remove dust, dirt or moisture that may have accumulated during shipment and storage.
- Apply the 25 mm flat (trapezoidal cross section) tape sealer around the periphery of the top flange of the panfan section as shown in Figure 3. This tape sealer must be centered directly over the centreline of the taper holes and on the centreline of the end flanges where there are no taper holes.

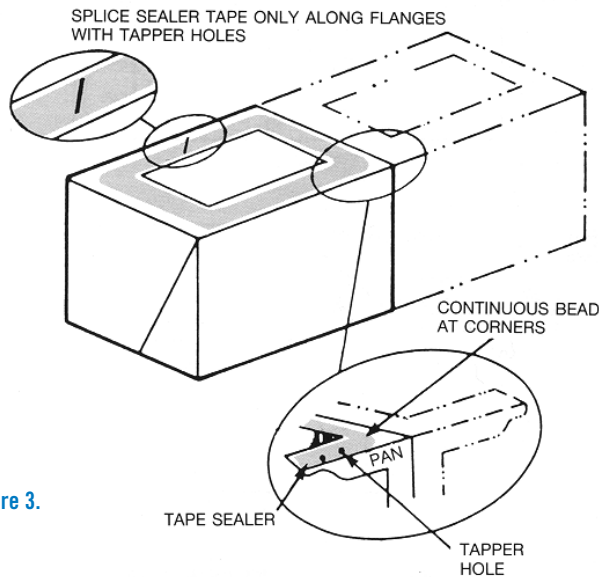


Figure 3.

- Sealer applied to end flanges of a single cell section unit and to the end and centre flanges of two cell units must be continuous. The sealer is to be spliced only along the flanges with taper holes. When it is necessary to splice sealer, miter and press the two ends together so as to form a smooth, continuous bead.
- On VXI-S & VXC-S units, lower the flexible connection on the pump discharge piping below the elevation of the pan-fan section top flange before rigging casing section.

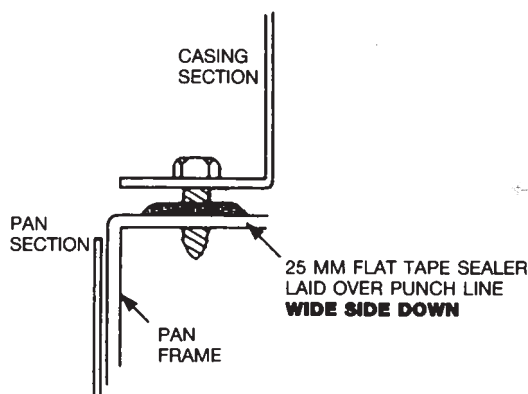


Figure 4.

- On units with more than one casing section, install the remaining casing sections using the same procedure as with the first. However, when installing two or more casings on the pan-fan section, sealer must be applied to both cross flanges. See arrangements J & K in Figure 5.



**NOTE:** Tape sealer is trapezoidal in shape and must be installed wide side down (Figure 4).

1. Apply 25 mm flat tape sealer over centreline of screw holes.
2. Apply 25 mm flat tape sealer over centreline of cross flanges

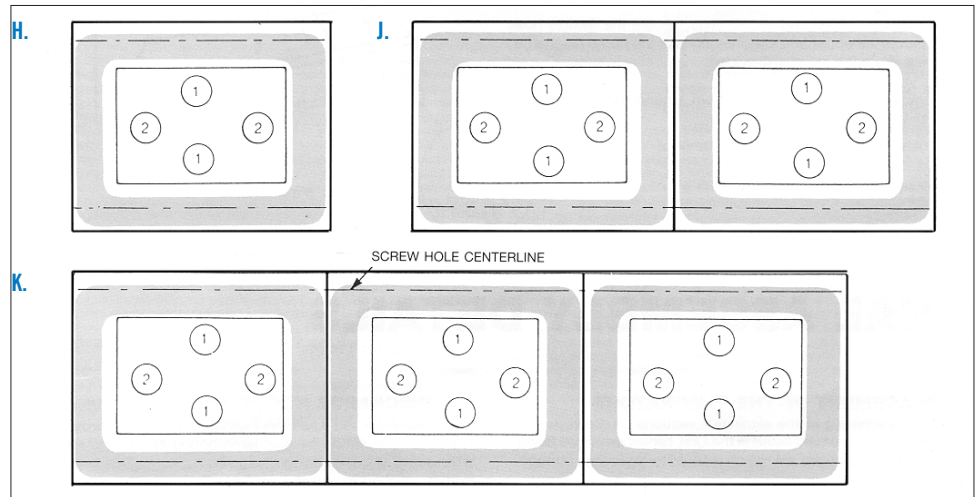


Figure 5.

### Casing Rigging Methods

7. After applying sealer to the pan-fan flanges, remove the casing skid. Lift the casing section and position it over the pan-fan section so that the casing flanges are about 50 mm above the pan-fan section. Do not let the casing swing and damage the sealer.
8. Insert drift pins downward through the four corner screw holes in the casing section. Continue to lower the casing section slowly, maintaining alignment with the drift pins until it rests on the pan-fan section.
9. Using the 5/16" self-tapping screws, drive the corner screws down through the casing section and into the pan-fan section. Working from the corners towards the centre, continue to install the screws using the drift pin to align the screw holes.
10. On VXI-S and VXC-S units, secure the flexible hose that connects the upper and lower sections of the pump discharge pipe using the hose clamps provided.
11. Remove any wooden bracing from around the eliminators or casing(s).

## Rigging

Casing Rigging Methods

Optional Discharge Accessories

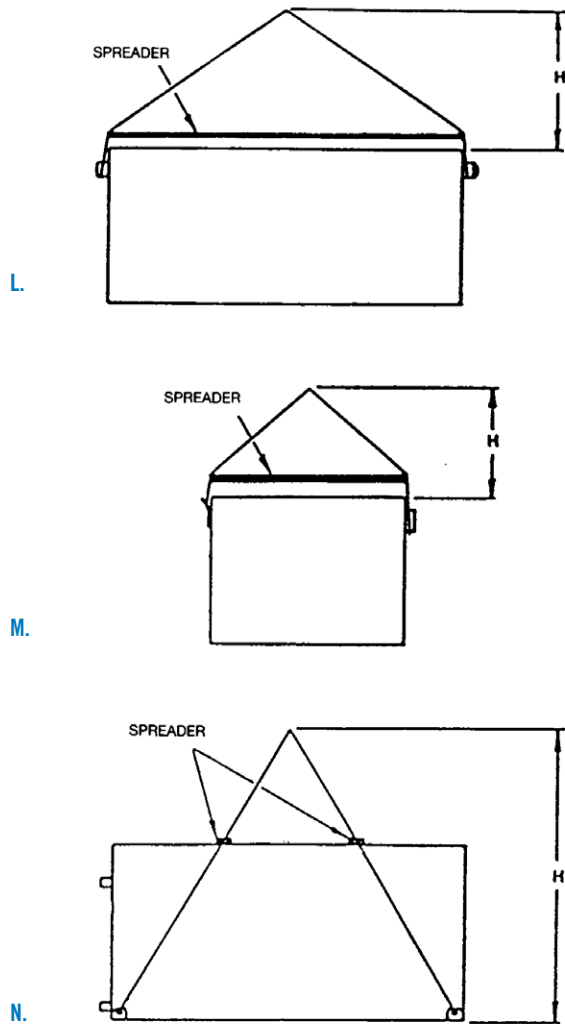


Figure 6.

### Optional Discharge Accessories

12. Optional discharge accessories such as tapered Hoods, Positive Closure Dampers, Discharge Sound Attenuators, Desuperheaters, Reheat Coils and/or access Plenums can be fitted:

- refer to unit certified print for installation sequence.
- sealing methods are the same as for the casing section.

# Final Assembly Details

## Inspection

Prior to start-up, the following services, which are described in detail in the Operating and Maintenance Manual, must be performed.

- Inspect general condition of unit.
- Inspect fans, motors, bearings, drives, locking collars, and belts for condition and alignment.
- Lubricate all bearings and purge them of old grease.
- Inspect spray nozzles and heat transfer section.
- Check make-up valve and sump water level.
- Check fans and air inlet screens for obstructions.
- Clean and flush sump and strainer.

Proper start-up procedures and scheduled periodic maintenance will prolong the life of the equipment and ensure trouble-free performance for which the unit is designed.

## Bleed Line Installation

On VXI-S and VXC-S units operating with a remote sump tank and VXT units, install a bleedline with valve between the system circulating pump discharge riser and a convenient drain. Locate the bleed line in a portion of the riser piping that drains when the pump is off. VXI-S and VXC-S units that are furnished with a factory-installed circulating pump include a bleed line with valve. The bleed valve should always be open when the unit is in operation, unless the bleed rate is automatically controlled by a water treatment system. Recommended bleed rates may be found in the Operating and Maintenance Manual.

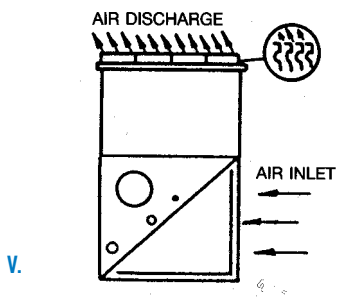
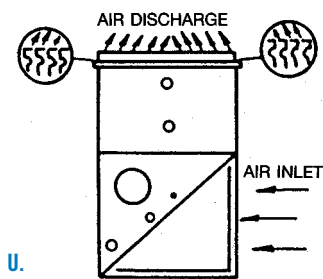
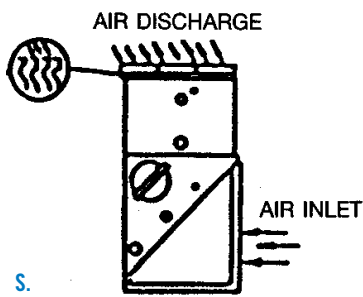


Figure 9.

**COOLING TOWERS**

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**CLOSED CIRCUIT COOLING TOWERS**

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ICE THERMAL STORAGE

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**EVAPORATIVE CONDENSERS**

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HYBRID PRODUCTS

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PARTS & SERVICES



**w w w . B a l t i m o r e A i r c o i l . c o m . a u**

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