Split System
Air-Cooled Condensers — 20 to 120 Tons
Introduction

Trane has the right condenser... If you are designing a new system or replacing an existing air-cooled condenser, Trane can satisfy virtually any application need. Whether coupled with an industrial compressor, a single zone commercial self-contained unit, compressor chiller or a Cold Generator™ chiller, Trane has the right air-cooled condenser for the job. When teamed with any one of a wide range of compressor-evaporator combinations, Trane air-cooled condensers, available in 20 to 120 tons, are ideal for multistory office buildings, hotels, schools, municipal and industrial facilities.

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Revision History

- Added Corrosive Atmosphere information to Application Considerations section.
- Reformatted general, electrical and weight tables.
- Updated unit model numbers to show all option selections.
- Updated Mechanical Specifications to add missing information and review existing wording for content.
- Content organization reviewed and updated to meet current standards.
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Features and Benefits

20 to 120 Ton Units

Trane® 20 to 120 ton model CAUJ air-cooled condensers have an operating range of 40°F to 115°F, with a low ambient option down to 0°F.

The control panel is factory-installed and wired to prevent potential damage and to provide weathertight protection.

The control panel contains:

• fan motor contactors
• fan cycling controls
• terminal point connection for compressor interlock
• 115-volt control power transformer

These standard features reduce installation costs and provide easy interface with control logic.

All Trane air-cooled condenser coils are an all aluminum microchannel design. The 20 to 30 ton condensers are single circuit; 40 to 120 ton units are dual circuited; all feature integral subcooling.

Units can have optional corrosion protected condenser coil.

Durable Construction

Trane® 20 to 120 ton condensers are built for long life. The unit frame is constructed of 14 gauge galvanized steel. Louvered panels provide excellent coil protection while enhancing unit appearance and strength. The unit surface is phosphatized and finished with Trane slate grey air-dry paint. This air dry-paint finish exceeds 672 consecutive hour salt spray resistance in accordance with ASTM B117.

Microchannel Condenser Coil

Microchannel condensing coils are all-aluminum coils with fully-brazed construction. This design reduces risk of leaks and provides increased coil rigidity — making them more rugged on the jobsite. Their flat streamlined tubes with small ports and metallurgical tube-to-fin bond allow for exceptional heat transfer. Microchannel all-aluminum construction provides several additional benefits:

• Light weight (simplifies coil handling)
• Easy to recycle
• Minimize galvanic corrosion
Slit Fins and Braze Contact for Improved Heat Transfer and Strength

Air Condenser Inlet

Microchannels for Refrigerant

Air Condenser Outlet
Application Considerations

Certain application constraints should be considered when sizing, selecting and installing Trane® air-cooled condensers. Unit reliability is dependent upon these considerations. Where your application varies from the guidelines presented, it should be reviewed with the local Trane sales engineer.

Unit Location

Foundation

A base or foundation is not required if the selected unit location is level and strong enough to support the unit’s operating weight.

Isolation and Sound Emission

Since the environment in which a sound source is located affects sound pressure, unit placement must be carefully evaluated. The most effective form of noise isolation is proper unit location. Units should be placed away from noise sensitive areas.

Structurally transmitted sound can be reduced by using isolators, which are recommended for sound sensitive installations. For maximum isolation effect, the refrigeration lines and electrical conduit should also be isolated and flexible electrical conduit used.

An acoustical engineer should always be consulted on critical applications.

State and local codes on sound emissions should always be considered.

Air Flow Considerations

Unobstructed flow of condenser air is essential for maintaining capacity and operating efficiency. When determining unit placement, careful consideration must be given to assure proper air flow across the condenser heat transfer surface. Inadequate air flow will result in warm air recirculation and coil air flow starvation.

- Warm air recirculation occurs when discharge air from the condenser fans is recycled back at the condenser coil inlet.
- Coil starvation occurs when free air flow to the condenser is restricted.

Both warm air recirculation and coil starvation cause reductions in unit efficiency and capacity. In more severe cases, nuisance unit shutdowns will result from excessive head pressures. Accurate estimates of the degree of efficiency and capacity reduction are not possible due to the unpredictable effect of varying winds.

When hot gas bypass is used, reduced head pressure increases the minimum ambient condition for proper operation. In addition, wind tends to further reduce head pressure. Therefore, it is advisable to protect the air-cooled condensing unit from continuous direct winds exceeding 10 miles per hour.

Debris, trash, supplies, etc., should not be allowed to accumulate in the vicinity of the air-cooled condenser. Supply air movement may draw debris between coil fins and cause coil starvation. Special consideration should be given to units operating in low ambient temperatures. Condenser coils and fan discharge must be kept free of snow and other obstructions to permit adequate air flow for satisfactory unit operation.

Clearances

Adequate service clearance is required for unit access and maintenance. See Dimensions chapter for service clearance recommendations. Local code requirements may take precedence.

Vertical condenser air discharge must be unobstructed. While it is difficult to predict the degree of warm air recirculation, a unit installed with a ceiling or other obstruction above it will lose capacity and the maximum ambient operation will be reduced. Nuisance high head pressure trips may also occur.

The inlet to the coil must also be unobstructed. A unit installed closer than the minimum recommended distance to a wall or other vertical riser may experience a combination of coil
starvation and warm air recirculation, resulting in unit capacity and efficiency reductions, as well as possible excessive head pressures. The recommended lateral distances are listed in the Dimensional Data section.

**Voltage**

Nominal voltage is the nameplate rating voltage. The actual range of line voltages at which the equipment can satisfactorily operate is given below:

**Table 1. Voltage range**

<table>
<thead>
<tr>
<th>Nominal Voltage</th>
<th>Voltage Utilization Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>200/230(a)</td>
<td>180-220 or 208-254</td>
</tr>
<tr>
<td>460</td>
<td>416-508</td>
</tr>
<tr>
<td>575</td>
<td>520-635</td>
</tr>
</tbody>
</table>

(a) Units rated for 200/230-volts ship from the factory set for operation in the 180 through 220-volt range. By changing leads on unit transformers, the unit will operate in the 208 through 254-volt range.

**Effect of Altitude on Capacity**

Capacities given in the performance data tables are at sea level. At elevations substantially above sea level, the decreased air density will decrease condenser capacity. The adjustment factors shown in can be applied directly to the catalog performance data to determine the unit’s adjusted performance.

**Ambient Considerations**

Trane condensers are designed for year-around applications in ambients from 0°F through 115°F. For operation below 0°F or above 115°F, contact the local Trane sales office.

Start-up and operation at lower ambients requires sufficient head pressure be maintained for proper operation. Minimum operating ambient temperatures for standard unit selections and units with hot gas bypass are shown in the General Data section. These temperatures are based on still conditions (winds not exceeding five mph.) Greater wind velocities will result in a drop in head pressure, therefore, increasing the minimum starting and operating ambient temperatures.

Units with the low ambient option are capable of starting and operating in ambients down to 0°F, 10°F with hot gas bypass. Optional low ambient units use a condenser fan damper arrangement that controls condenser capacity by modulating in response to head pressure.

Maximum cataloged ambient temperature operation of a standard condenser is 115°F. Operation at design ambients above 115°F can result in excessive head pressures.

For proper operation outside these recommendations, contact the local Trane sales office.

**Corrosive Atmospheres**

Trane’s large condensers are designed and built to industrial standards and will perform to those standards for an extended period depending on the hours of use, the quality of maintenance performed, and the regularity of that maintenance. One factor that can have an adverse effect on unit life is its operation in a corrosive environment. Since the microchannel condenser coil is an all-aluminum design, it provides a high level of corrosion protection on its own. Uncoated, it withstands a salt spray test in accordance with ASTM B117 for 1,000 hours. When condensers are operated in highly corrosive environments, Trane recommends the corrosion protected condenser coil option. This corrosion protection option meets the most stringent testing in the industry, including ASTM B117 Salt Spray test for 6,000 hours and ASTM G85A2 Cyclic Acidified Salt Fog test for 2,400 hours. The acid fog test is the most stringent available today. This coating is added after coil construction covering all tubes, headers, fins and edges. The design provides superior protection from any corrosive agent.

*Note: Field coating is not allowed on microchannel coils.*
Application Considerations

The exterior panels are durable enough to withstand a minimum of 672 hours consecutive salt spray application in accordance with standard ASTM B117. All screws are coated with zinc-plus-zinc chromate.
Selection Procedures

When manually matching condensers with compressors, performance cross plotting becomes necessary. The following procedure should be used to determine the correct condenser.

1. Determine the total cooling load. Make a preliminary compressor selection based on the expected evaporator SST and condensing temperature.

Example

Given: Total cooling load = 101 tons (1212 Mbtu) Design outdoor temperature = 95°F  
Assume: Evaporator SST = 45°F (used in this example - application dependent) Condenser SCT between 115°F and 125°F (20-30°F ITD SCT-ambient)

2. Select compressors from manufacturer’s data to meet the load at the evaporator SST (for chiller low suction applications contact Trane applications).

Table 2. Compressor capacity with subcooling

<table>
<thead>
<tr>
<th>Qty 2</th>
<th>CSHN611 Trane R-410A Trio Scrolls Performance data includes 15°F subcooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>SST</td>
<td>SCT</td>
</tr>
<tr>
<td>45</td>
<td>115</td>
</tr>
<tr>
<td>45</td>
<td>125</td>
</tr>
</tbody>
</table>

Notes:

1. SST = Saturated Suction Temperature
2. SCT = Saturated Condensing Temperature

3. Remove the subcooling effect from the compressor performance at two or more compressor capacity points.
   a. R-410A capacity increases 0.75% for every degree of subcooling (0.75% x 15°F = 11.25%).
   b. If compressor performance is at 15°F subcooling, divide capacity by 1.1125 to get capacity at 0°F subcooling.
   c. Plot these two points (SCT vs. compressor tons a 0°F subcooling) as shown in the selection example. See “Figure 1,” p. 9.

Figure 1. Selection example
### Table 3. Compressor capacity with subcooling removed

<table>
<thead>
<tr>
<th>SST(a)</th>
<th>SCT(b)</th>
<th>(Qty 2) CSHN611 Trane R-410A Trio Scrolls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Capacity</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tons</td>
</tr>
<tr>
<td>45</td>
<td>115</td>
<td>110</td>
</tr>
<tr>
<td>45</td>
<td>125</td>
<td>103</td>
</tr>
</tbody>
</table>

(a) SST = Saturated Suction Temperature  
(b) SCT = Saturated Condensing Temperature

4. Select a condenser on the Condenser Heat Rejection graph in Performance Data chapter and read two condenser-only heat rejection points.

5. Divide the condenser heat rejection by the compressor N factor found in Table 4, p. 10 to convert from heat rejection to net capacity (Net Tons Less Subcooling).

**Note:** The N factor equals the ratio of compressor heat rejection divided by compressor capacity at 0°F subcooling.

### Table 4. N factor - Trane R-410A scroll compressors

<table>
<thead>
<tr>
<th>Sat cond temp °F</th>
<th>Saturated suction temperature, °F</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>1.33</td>
<td>1.30</td>
<td>1.27</td>
<td>1.24</td>
<td>1.22</td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>1.36</td>
<td>1.33</td>
<td>1.30</td>
<td>1.27</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>1.40</td>
<td>1.36</td>
<td>1.33</td>
<td>1.30</td>
<td>1.27</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>1.45</td>
<td>1.40</td>
<td>1.37</td>
<td>1.33</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>1.50</td>
<td>1.45</td>
<td>1.41</td>
<td>1.37</td>
<td>1.34</td>
<td></td>
</tr>
<tr>
<td>135</td>
<td>1.57</td>
<td>1.51</td>
<td>1.46</td>
<td>1.41</td>
<td>1.37</td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>1.64</td>
<td>1.57</td>
<td>1.51</td>
<td>1.46</td>
<td>1.42</td>
<td></td>
</tr>
<tr>
<td>145</td>
<td>1.73</td>
<td>1.65</td>
<td>1.58</td>
<td>1.53</td>
<td>1.48</td>
<td></td>
</tr>
</tbody>
</table>

6. Plot these two points (SCT vs. Net Tons at 0°F subcooling) as shown in Figure 1, p. 9 selection example.

### Table 5. Condenser net capacity Mbh (less subcooling)

<table>
<thead>
<tr>
<th>Assumed ΔT°F ITD (SCT - ambient)</th>
<th>Ambient °F</th>
<th>SCT °F</th>
<th>Cond only heat rejection Mbh</th>
<th>N factor</th>
<th>Net capacity less subcooling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>95</td>
<td>115</td>
<td>938</td>
<td>1.27</td>
<td>739</td>
</tr>
<tr>
<td></td>
<td>95</td>
<td>125</td>
<td>1418</td>
<td>1.33</td>
<td>1066</td>
</tr>
</tbody>
</table>

**Notes:**
1. ITD = Initial Temperature Difference  
2. SCT = Saturated Condensing Temperature  
3. N Factor = Compressor Efficiency Ratio

7. As shown on “Figure 1,” p. 9, draw a line though the points representing the compressor capacity at 0°F subcooling.

8. Draw a line through the points representing condenser net capacity less subcooling.

9. At the point of intersection of the compressor and condenser lines, draw dashed lines to the left and bottom margins as shown in Figure 1, p. 9. The end points of these lines will show a resultant gross capacity of 92 tons at 126.1°F condensing temperature.
10. From the condenser heat rejection increase graph:
   a. Calculate the percent increase in total heat rejection due to subcooling
   b. Multiply by the N factor from “Table 4,” p. 10 to get the percent increase in net capacity due to subcooling.

   **Example (using a 100T condenser):**
   - At 95°F ambient and 126.1°F condensing temperature, the condenser heat rejection increase graph shows a 7.8% increase in total heat rejection due to subcooling.
   - N factor table shows a 1.34 N factor by linear interpolation.
   - This yields a system capacity of $92 \text{ tons} \times (1 + 0.078 \times 1.34) = 102 \text{ tons}$.

11. If necessary, use the values in the Altitude Correction Multiplier table to adjust the system capacity for altitude.

12. Compare this result with the design capacity and condensing temperature.

   **Note:** In the example above, the required cooling load is 101 tons. Therefore, the 100T CAUJ is the proper selection.

13. Repeat steps 2 through 12 above as necessary to achieve the most economic condenser selection.

   **Note:** Evaporator selection must also meet performance requirements. For this example, the evaporator needs to provide at least 105 tons at 45°F SST. A conservative estimate for liquid temperature entering the evaporator is the SCT minus the design subcooling (125.1 - 15°F = 110.1°F for the example above). Contact Trane Applications if excessive refrigerant line lengths or pressure drops are required.
Model Number Description

Digit 1 — Unit Type
C = Condenser

Digit 2 — Condenser
A = Air-Cooled

Digit 3 — System Type
U = Upflow

Digit 4 — Development Sequence
J = Third

Digit 5, 6, 7 — Nominal Capacity
C20 = 20 Tons
C25 = 25 Tons
C30 = 30 Tons
C40 = 40 Tons
C50 = 50 Tons
C60 = 60 Tons
C80 = 80 Tons
D10 = 100 Tons
D12 = 120 Tons

Digit 8 — Voltage and Start Characteristics
E = 200/60/3 XL (80 to 120 tons only)
F = 230/60/3 (80 to 120 tons only)
G = 200–230/60/3 (20 to 60 tons only)
4 = 460/60/3 XL
S = 575/60/3 XL

Digit 9 — Condenser Circuit
1 = Single (20 to 30 tons)
2 = Dual (40 to 120 tons)

Digit 10 — Design Sequence
Factory Assigned

Digit 11 — Ambient Control
0 = Standard
1 = 0°F

Digit 12 — Agency Approval
0 = None
3 = cULus (60 Hz only)

Digit 13 — Corrosion Protected Condenser Coil
0 = None
J = Corrosion Protected Condenser Coil

Digit 14 — Unit Isolation
1 = Spring Isolator
2 = Neoprene Isolators (20 to 60 tons only)

Note: The service digit for each model number contains 14 digits. All 14 digits must be referenced.
# General Data

Table 6. General data — CAUJ condensers

<table>
<thead>
<tr>
<th>Unit Size (tons)</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condenser Fan Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type/Drive Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qty</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Diameter (in)</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
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</tr>
<tr>
<td>Power/motor (hp)</td>
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<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Nominal Total Airflow (cfm)</td>
<td>14600</td>
<td>20700</td>
<td>20700</td>
<td>26790</td>
<td>36890</td>
<td>40490</td>
<td>56490</td>
<td>73890</td>
<td>76280</td>
</tr>
<tr>
<td><strong>Condenser Coil Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Type</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Coils</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (in)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face Area (ft²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rows/Fin Per Ft.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Capacity(a) (lbs)</td>
<td>18.7</td>
<td>18.7</td>
<td>18.7</td>
<td>23.5</td>
<td>25.0</td>
<td>25.0</td>
<td>47.1</td>
<td>50.0</td>
<td>62.9</td>
</tr>
<tr>
<td><strong>Refrigerant Data(b)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Charge(c) (lbs)</td>
<td>11.9</td>
<td>11.8</td>
<td>11.8</td>
<td>22.7</td>
<td>23.4</td>
<td>23.8</td>
<td>57.1</td>
<td>59.1</td>
<td>65.3</td>
</tr>
<tr>
<td><strong>Outdoor Air Temperature for Mechanical Cooling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard Ambient Operating Range (°F)</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
<td>40-125</td>
</tr>
<tr>
<td>Low Ambient Option (°F)</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
<td>0-125</td>
</tr>
</tbody>
</table>

(a) Condenser storage capacity is given at conditions of 95°F outdoor temperature, and 95% full.
(b) Condensing units are shipped with nitrogen holding charge only.
(c) Operating charge is approximate for condensing unit only, and does not include charge for low side or interconnecting lines. Condensing units are shipped with a nitrogen holding charge only.
Performance Data

Performance Adjustment Factors

Figure 2. Condenser heat rejection increase due to subcooling (R-410A)

Table 7. Altitude correction multiplier for cooling capacity — air-cooled condenser

<table>
<thead>
<tr>
<th>Altitude (ft)</th>
<th>2,000</th>
<th>4,000</th>
<th>6,000</th>
<th>8,000</th>
<th>10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correction Multiplier</td>
<td>0.977</td>
<td>0.949</td>
<td>0.917</td>
<td>0.881</td>
<td>0.843</td>
</tr>
</tbody>
</table>
Figure 3. Condenser heat rejection (R-410A) — 20 to 120 tons
## Electrical

*Note: Local codes may take precedence.*

### Table 8. CAUJ electrical data

<table>
<thead>
<tr>
<th>Unit Size (ton)</th>
<th>Rated Voltage(a)</th>
<th>Unit Characteristics</th>
<th>Condenser Fan Motor(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MCA(c)</td>
<td>Max Fuse(d)</td>
</tr>
<tr>
<td>20</td>
<td>200-230/60/3</td>
<td>9.2</td>
<td>15</td>
</tr>
<tr>
<td></td>
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(a) Voltage Utilization Range is +/- 10% of Rated voltage (use range): 200/60/3 (180-220), 230/60/3 (208-254), 460/60/3 (414-506), 575/60/3 (516-633)
(b) Electrical information is for each individual motor.
(c) Minimum circuit ampacity (MCA) is 125 percent of the RLA of one compressor motor plus the total RLA of the remaining motors.
(d) Maximum fuse size is permitted by NEC 440-22 is 300 percent of one motor RLA plus the RLA of the remaining motors.
(e) All kW values taken at conditions of 45°F saturated suction temperature at the compressor and 95°F ambient.
Unit Dimensions

Figure 4. Air-cooled condenser — 20 ton

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT OF UNIT CLEARANCE 72", BACK OF UNIT CLEARANCE 72", LEFT AND RIGHT SIDE OF UNIT CLEARANCE 42".

DOOR 43 1/4" W/ 180 DEG SWING —
3/4" X 4 MTG HOLES
72 1/2"
FRONT (SEE NOTE 3 FOR ALL MIN. CLEARANCE)
8"
CONTROL PANEL
SEE DETAIL A
FAN GRILLE
CONTROL BOX BOTTOM
LOW AMBIENT DAMPER (SEE NOTE 2)
4" LINE VOLTAGE ACCESS
1 1/4" X 4 1/2" SLOT FOR 115 VOLT CONTROL
4 1/2"
6 1/4"
13"
Figure 5. Air-cooled condenser connections — 20 ton

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

PLAN VIEW OF UNIT
CONNECTION DRAWING

ORIENTATION VIEW OF UNIT
ISOMETRIC DRAWING

20 TON UNIT
DIMENSIONAL CONNECTION DRAWING
Figure 6. Air-cooled condenser — 25 and 30 ton

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT OF 20 AND 30 UNIT CLEARANCE 72". BACK OF UNIT CLEARANCE 72". LEFT AND RIGHT SIDE OF 20 AND 30 UNIT CLEARANCE 42".

ACDS-PRC003E-EN 19
Figure 7. Air-cooled condenser connections — 25 and 30 tons

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

25 - 30 TON UNIT
DIMENSIONAL CONNECTION DRAWING
Figure 8. Air-cooled condenser — 40 ton

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT AND BACK OF UNIT CLEARANCE 72”, LEFT AND RIGHT SIDE OF UNIT CLEARANCE 42”.

DETAIL A
BOTTOM OF CONTROL BOX

CONTROL PANEL (SEE DETAIL A)
FAN GRILLE

FAN GRILLE
3/4” X 6 MTG HOLES

DOOR 43 1/4” W/ 180 DEG SWING

1 3/4” KD LOW VOLTAGE (30V MAX.)

1/2” X 4 KO (115V)
1/2” X 2 KO (115V)

FRONT (SEE NOTE 3 FOR ALL MIN.
CLEARANCE)

88 9/16”

36 1/8”

36 1/8”

8”

1 1/4”

4” CONDUIT MAIN POWER

29 1/4”
31 1/4”
35 13/16”
37 11/16”
Figure 9. Air-cooled condenser connections — 40 ton

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

PLAN VIEW OF UNIT
CONNECTION DRAWING

ORIENTATION VIEW OF UNIT
ISOMETRIC DRAWING

CONTROL PANEL SIDE VIEW OF UNIT
CONNECTION DRAWING

40 TON UNIT
DIMENSIONAL CONNECTION DRAWING
Figure 10. Air-cooled condenser — 50 ton

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT AND BACK OF UNIT CLEARANCE 72" - LEFT AND RIGHT SIDE OF UNIT CLEARANCE 42".

DETAIL A
BOTTOM OF CONTROL BOX

FAN GRILLE

CONTROL PANEL
(SEE DETAIL A)

4" LINE VOLTAGE ACCESS

1 1/4" x 4 1/2" SLOT FOR 115 VOLT CONTROL

LOW AMBIENT DAMPER (SEE NOTE 2)

1/2" X 2 KO (115V)
1/2" X 4 KO (115V)
5 3/8"
3 3/8"
5 5/16"
3 1/4"
3 5/16"
3 7/16"
3 1/2"
4 7/8"
4 7/2"
4 1/2"
4 1/2"
4 1/2"
4 1/2"
4 1/2"
4 1/2"
Figure 11. Air-cooled condenser connections — 50 ton

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

CONTROL PANEL SIDE

LIQUID LINE

1 3/8" O.D.
DISCHARGE LINE

7/8" O.D.
LIQUID LINE

VOLTAGE ACCESS

ORIENTATION VIEW OF UNIT
ISOMETRIC DRAWING

50 TON UNIT
DIMENSIONAL CONNECTION DRAWING
Figure 12. Air-cooled condenser — 60 ton

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT AND BACK OF UNIT CLEARANCE 72" - LEFT AND RIGHT SIDE OF UNIT CLEARANCE 42".

DETAIL A
BOTTOM OF CONTROL BOX
Figure 13. Air-cooled condenser connections — 60 ton

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

PLAN VIEW OF UNIT
CONNECTION DRAWING

CONTROL PANEL SIDE VIEW OF UNIT
CONNECTION DRAWING

60 TON UNIT
DIMENSIONAL CONNECTION DRAWING
Figure 14. Air-cooled condenser — 80 ton

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT AND BACK OF UNIT CLEARANCE 96°, LEFT AND RIGHT SIDE OF UNIT CLEARANCE 48°.

DETAIL A
DIMENSIONAL DETAIL

CONTROL PANEL
(SEE DETAIL A)

LOW AMBIENT DAMPER
(SEE NOTE 2)

FAN GRILLE

1/2" X 2 KO (115V)
1/2" X 4 KO (115V)
2 5/8" X 5 5/16"
3 3/8"
3 1/8"
3 1/8"
3 1/8"
4" CONDUIT MAIN POWER

BOTTOM OF CONTROL BOX (SEE DETAIL A)

4" LINE VOLTAGE ACCESS
2 1/4" X 1 1/4"
24 VOLTAGE CONTROL WIRING
79 1/4"
16 1/16"
6 1/4"
14"
1 1/4" X 4 1/2"
SLOT FOR 115 VOLT CONTROL

8 1/8"
8 1/4"
30 1/8"
83 1/8"
176 7/16"
83 1/4"
1 13/16"
37 11/16"
35 13/16"
5 3/8"
1 3/8" KO LOW VOLTAGE (30V MAX.)
16" FRONT (SEE NOTE 3 FOR ALL MIN. CLEARANCE)
72 1/8"
72 1/8"
8 1/4"
8 1/4"
1 1/4"
8 5/16"
DOOR 43 1/4" W/ 180 DEG SWING
3/4" X 8 MTG HOLES

CONTROL PANEL

FAN GRILLE

85 5/8"
Figure 15. Air-cooled condenser connections — 80 ton
Figure 16. Air-cooled condenser — 100 and 120 tons

NOTES:
1. SEE CONNECTION DRAWING FOR CONNECTION LOCATION AND SIZES.
2. LOW AMBIENT DAMPER ONLY COMES WITH SELECTED UNIT.
3. FRONT AND BACK OF UNIT CLEARANCE 90°. LEFT AND RIGHT SIDE OF UNIT CLEARANCE 48°.

DETAIL A
DIMENSIONAL DETAIL
Figure 17. Air-cooled condenser connections — 100 and 120 tons
## Unit Weights

Table 9. CAUJ air-cooled condenser weights

| Unit Size (tons) | Weights (lbs) |  |
|-----------------|---------------|--|---|
|                 | Shipping      | Operating  |
| 20              | 1163          | 1188       |
| 25              | 1213          | 1238       |
| 30              | 1211          | 1236       |
| 40              | 1758          | 1808       |
| 50              | 2078          | 2120       |
| 60              | 2086          | 2136       |
| 80              | 3142          | 3212       |
| 100             | 3877          | 3960       |
| 120             | 4325          | 4451       |
Mechanical Specifications

Air-Cooled Condenser — Model CAUJ

General

Units shall be constructed of 14-gauge welded galvanized steel frame with 14 and 16-gauge galvanized steel panels and access doors. Unit surface shall be phosphatized and finished with an air-dry paint. This air-dry paint finish shall be durable enough to withstand a minimum of 672-consecutive-hour salt spray application in accordance with standard ASTM B117.

Refrigeration Circuits

The 20 to 30 ton units shall be single circuit. The 40 to 120 ton units shall be dual circuited. All units shall ship with factory installed liquid line service valves.

Unit control

The control panel shall contain fan motor contactors, terminal point connection for compressor interlock and 115 volt control power transformer.

Condenser Coils

Condenser coils shall have all aluminum microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil shall be pressure tested to 650 psig.

Condenser Fans

All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with aluminum blades and zinc plated steel hubs. Condenser fan motors shall be three-phase motors with permanently lubricated ball bearings, built in current and thermal overload protection and weather-tight slingers over motor bearings.

Options

Low Ambient Control

Low ambient option shall allow operation down to 0°F through the use of fan cycling and head pressure control dampers. The control shall consist of a heavy gauge damper assembly that is modulated by an actuator. The actuator shall be controlled by a low ambient control module. All components are factory-mounted.

Corrosion Protected Condenser Coil

All-aluminum microchannel condenser coil protection shall consist of a corrosion resistant coating that will withstand ASTM B117 Salt Spray test for 1000 hours and ASTM G85 A2 Cyclic Acidified Salt Fog test for 2400 hours. This coating shall be added after coil construction to cover all tubes, headers and fin edges, providing optimal protection in more corrosive environments.

Spring Isolation Package

Spring vibration isolators shall be supplied for field installation under the unit base to minimize transmission of unit vibrations. Isolators shall consist of a cast, spring loaded, telescoping housing as the isolation medium. Mountings shall include built-in leveling bolts, resilient inserts that act as centering guides, and ribbed neoprene acoustical pads bonded to the bottom of the isolator. The kit shall include instructions for field installation.

Neoprene Vibration Isolation Package

Neoprene-in shear isolators shall be supplied for field installation under the unit base to minimize transmission of unit vibration. The isolators shall consist of a steel top plate and base completely imbedded in color coded oil-resistant neoprene stock. Mountings have a 1/4-inch...
deflection. The kit shall include instructions for field installation. (Available on 20 to 60 ton units only).
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