



# Airtek Cold Energy Saver

Models CESM200 - CESM1000

User Guide - PUB041511 Rev K

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding

## Contents

|            |   |           |
|------------|---|-----------|
| <b>1.</b>  | <b>Transport / Inspection</b>           | <b>3</b>  |
| 1.1        | Environmental & Location Considerations | 3         |
| <b>2.</b>  | <b>Dryer Installation</b>               | <b>3</b>  |
| 2.1        | Plumbing the Air Lines                  | 3         |
| 2.2        | Electrical Connections                  | 4         |
| <b>3.</b>  | <b>Controls</b>                         | <b>6</b>  |
| 3.1        | Controller                              | 6         |
| <b>4.</b>  | <b>Start Up Procedures</b>              | <b>8</b>  |
| 4.1        | When Operating Dryer                    | 8         |
| <b>5.</b>  | <b>Routine Maintenance</b>              | <b>9</b>  |
| <b>6.</b>  | <b>Maintenance Schedule</b>             | <b>10</b> |
| 6.1        | Maintenance Procedures                  | 10        |
| <b>7.</b>  | <b>List of Alarms / Warnings</b>        | <b>11</b> |
| <b>8.</b>  | <b>Troubleshooting / Service</b>        | <b>12</b> |
| 8.1        | Refrigerant Charging Procedure          | 13        |
| <b>9.</b>  | <b>Technical Data</b>                   | <b>14</b> |
| <b>10.</b> | <b>Spare Parts List</b>                 | <b>16</b> |
| <b>11.</b> | <b>Technical Specifications</b>         | <b>17</b> |
| 11.1       | Air-Cooled Units                        | 17        |
| 11.2       | Water-Cooled Units                      | 18        |
| <b>12.</b> | <b>Associated Drawings</b>              | <b>19</b> |
| <b>13.</b> | <b>Exploded Views</b>                   | <b>28</b> |
| <b>14.</b> | <b>Warranty</b>                         | <b>36</b> |

## 1. Transport / Inspection

Before unpacking/uncrating your new dryer, inspect the carton/crate for damage. Note any damage on the freight bill. File notice of concealed damage if:

- (a) there are any dents in the cabinets
- (b) there is any sign of oil on the skid or floor
- (c) the refrigerant gauge shows NO pressure  
(Upper right side – look for hole in packing)

File these claims with the carrier immediately!

Otherwise, proceed with unpacking/uncrating the unit.

### 1.1 Environmental & Location Considerations

**CAUTION**



Following these guidelines will help insure that your new dryer will provide safe and reliable service.

- Unless supplied for special conditions, all CESM dryers must be located indoors in an area with an ambient temperature between 41 - 100°F (5-38°C) and free from explosive and corrosive fumes. Three (3) feet (92cm) of space must be allowed between all open grills, walls, or other objects.

If the dryer is installed in a confined area, an exhaust system must be provided to eliminate re-circulation of hot atmospheric air.

- With air cooled dryers, high ambient temperatures affect the outlet dewpoint of the dryer. The unit must not operate in an ambient of over 115°F (46°C). If ambient temperature conditions are over 100°F (38°C), water cooled dryers are generally recommended.
- Unit must be installed indoors.
- **Watercooled units** - A water strainer should be installed in the water inlet circuit to protect the heat exchanger from partial or complete blockage with a 16 - 20 mesh minimum, 20 - 40 mesh is a better choice.
- **Watercooled units** - The water media pH value should be maintained at 7.4 (not less than 7.0 and no higher than 8.0) for proper heat exchanger life expectancy.

## 2. Dryer Installation

**IMPORTANT**

**CAUTION**



- NEVER work on unit under pressure
- NEVER work on unit when power is connected
- DO NOT over pressurize unit.
- DO NOT pass air through the unit until it has been stabilized (operating about 15-20 minutes)

### 2.1 Plumbing the Air Lines

The dryers are shipped ready to run. All connections are made to the outside of the cabinet.

- Air piping must be supported independently of the dryer.
- A properly sized Parker Airtek pre-filter must be installed ahead of the dryer to maintain optimal performance and warranty validation. It should be installed as close to the dryer as possible. Any piping between the pre-filter and inlet of the dryer must be stainless steel, copper, galvanized, aluminum or other non-corroding material.
- Direction of the air flow must be observed for proper installation.
- Install a bypass line and gate valves to permit isolation of the dryer from the air system. This is done to provide easy service and/or removal of the dryer without interruption of air to the system.
- Make the connection to the draining system, avoiding connection in a closed circuit shared by other pressurized discharge lines. Check the correct flow of condensate discharges. Dispose of all condensate in conformity with current local environment regulations.

## 2.2 Electrical Connections

SHOCK HAZARD



To be performed by a qualified person only. Risk of serious injury or death. Observe Lock out/Tag Out Procedure: Disconnect, lock out and tag all power at source prior to attempting repairs or adjustments to rotating machinery and prior to handling any ungrounded conductors.

ATTENTION



Provide breach and short circuit protection as well as disconnect means per local and national codes.

Before connecting electrical power to the dryer check for correct voltage at the connection box. Panel Removal: To remove front or side panels, remove screws and lift panel up, then pull out the bottom.

All units must be externally grounded to protect against severe electrical shock.

1. Remove electric box cover from inside unit.
2. Locate the wires.
3. Locate hole on side of box, place and tighten connector, run wires through connector.
4. Make sure no bare wire is exposed; replace box cover and screw closed.
5. Line input wiring connections are made to line side on compressor contactor
6. Should the compressor not start, see start up procedure.

CAUTION

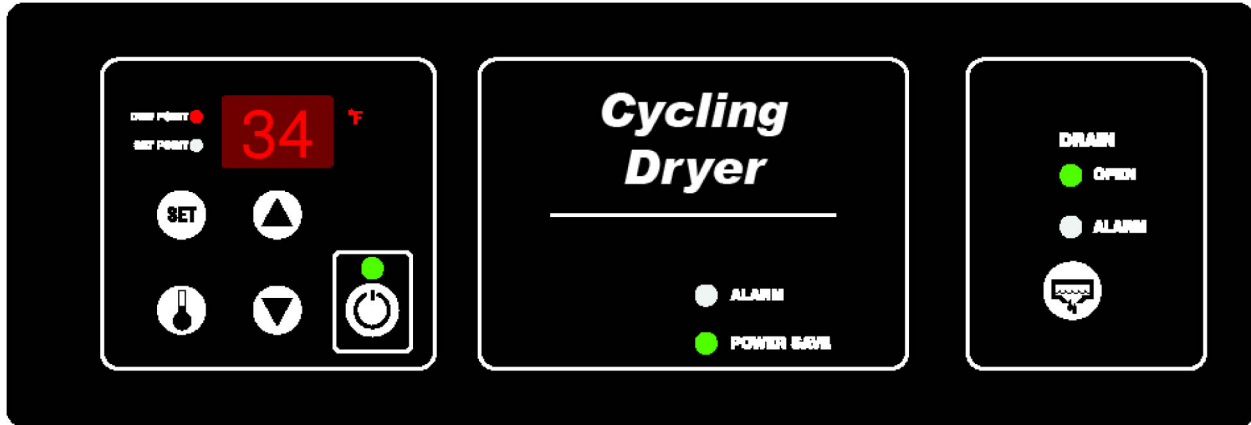


Wire the dryer separately from the air compressor. The dryer must not cycle with the air compressor.


Crankcase heaters are pre-wired from the factory to the line side of the compressor contactor. When power is applied to the dryer, the heater will energize. Heater must be energized for 8 hours prior to start-up and after prolonged shut down. The power must be left on at all times except when servicing.


### 3. Controls

#### 3.1 Controller





(1) Digital Controller and Display. The controller has two temperature sensors. The thermal mass fluid temperature, and dewpoint temperature. The default setting for the controller display is the current dewpoint. When the SET button is depressed, the unit displays the dryer dewpoint setting. The factory dewpoint setting is 39°F. It is adjustable from 36°F to 50°F in 1° steps or 1°C to 10°C in 1/2°C steps. (°C) LED indicates the display is in Celsius. (°F) LED- indicates the temperature display in Fahrenheit. Dewpoint LED – indicates dewpoint temperature being measured by the system. SET POINT LED – INDICATES that the display is in programming mode during which the set point can be changed and stored. The dewpoint display also displays diagnostic alarms / shutdown codes if they occur (See Diagnostic Codes).

(2)  ON/OFF & RESET button. When LED is on, this indicates the unit is operating. This button is also used to reset alarms.

(3)  Up and Down Arrows. These are used to adjust the set point values. The set point will change once for each time pressed. If the button is pressed and held, the set point will change one step per second. These buttons are also used to reset the maintenance “Sr” indicator when pressed simultaneously.

(4) Set Button. Toggles between Dewpoint Display, Set Point mode and drain time mode (no LED). During the Set Point Display mode, you can use the up/down arrows to Raise or Lower the dewpoint setting which is then stored in non-volatile memory when the mode is set back to dewpoint. When the SET button is depressed twice, it will display a number between 1 and 60 which represent minutes between the drain solenoid energizing.

If no keys are pressed within 15 seconds, the mode automatically reverts back to Dewpoint. This button is also used to select the temperature scale that the unit will operate in by pressing and holding for 5 seconds. (The unit will toggle between °F and °C)

- (5)  When pressed, the display will show the thermal mass fluid temperature. When the fluid temperature falls to 36°F (1.5°C), the refrigeration compressor will cycle off.
- (6) Power Saver LED. Illuminates when dryer has cycled off indicating you are saving energy.
- (7) Alarm LED. Indicates a problem with the dryer. The display will then flash an alarm code indicating what caused the alarm. The alarm also has dry contacts for remote annunciation.
- (8) Drain Control. The control panel will operate on either a “Level sensor” or “Timed” interval. Dryers 200 to 325 SCFM have a timed drain with a factory setting of 5 minutes, 400 SCFM and larger are equipped with a Level sensor, and will respond to the sensor signal on demand to operate the drain. The drain valve will also operate automatically every 30 minutes (independent to the sensor signal) if the board has not received a signal from the sensor within that time (back-up drain). The timed interval setting can be adjusted down to 1 minute or raised up to 60 minutes as desired. To adjust the drain. “Timed Interval” setting press the SET Button twice. The value displayed will be the timed Interval setting in minutes. Use the UP or DOWN Arrow to change the set point. Press the set button again to set/exit and return to dewpoint display.
- (9) Drain Open LED. Indicates that the drain valve is open.
- (10) Drain Alarm LED. Indicates the drain valve is not draining. Upon alarming, the controller will pulse fire the drain solenoid in an attempt to unplug itself. After 5 minutes the valve will open on a 5 minute back-up drain interval and the display will flash “dr” until it is reset.
- (11)  Drain test button. This button also resets the Drain alarm.

#### 4. Start Up Procedures



There should be NO air flow through the dryer before or during start-up. It is recommended that the dryer be installed with bypass piping to better service the unit. Inlet & outlet valves to the dryer should be closed with the by-pass valve open.

1. After electrical connection (Section 2), apply power.

**IMPORTANT**

2. Leave power on for 8 hours before attempting to start. This allows the crank case heater time to warm the refrigerant compressor oil and dissipate any refrigerant migration that can occur during storage.
3. Verify suction pressure gauge reads above 80 psi (bar). If it is less, the dryer has a refrigerant leak, (see "A3" in trouble shooting section). This may be the result of shipping damage – see section 1.0.
4. Switch unit on. ON/Off indicator will light green when unit is running.

**IMPORTANT**

Do not pass air through the dryer until it stabilizes and cycles off (Typically 15-25 minutes).

5. Once the dryer cycles off, you can now introduce compressed air to the dryer.
6. SLOWLY pressurize the dryer. Once completed slowly open the outlet valve, then close the bypass valve. The dryer is now on line.
7. Clean the condensate drain Y-Strainer after the first 8 hours of operation. (See section 5.0 Routine Maintenance)

**IMPORTANT**

8. Restart dryer using this procedure after maintenance, power outage or prolonged periods of shutdown.

##### 4.1 When Operating Dryer

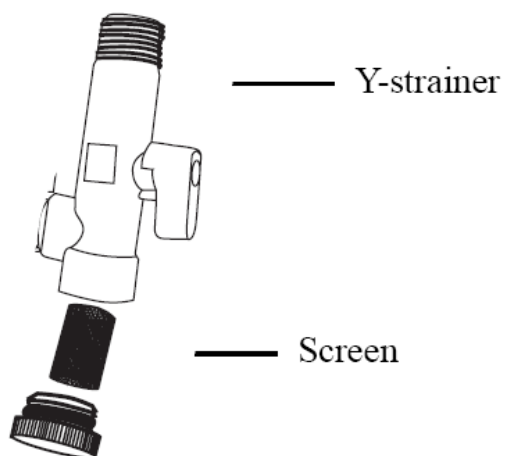
1. Turn dryer On and Off at control panel only.
2. Keep power to unit at all times except when servicing.
3. Start dryer prior to allowing air flow through unit.
4. Clean condenser when necessary.
5. Maintain ambient temperature between 41-100°F (5-38°C)
6. Keep inlet temperature under 101°F (38°C)
7. Check and clean Y-strainer regularly.
8. NEVER allow dryer to cycle ON/OFF with air compressor.



## 5. Routine Maintenance












The air cooled condenser must be kept clean. Inspect on a regular basis for dirt or debris that might accumulate. Remove any debris immediately.


The Y-strainer should be checked weekly.



## 6. Maintenance Schedule

The maintenance chart below indicates the components that should be checked while performing routine maintenance on the dryer. The chart also indicates how often a specific check should be performed.

| Description of Service Required |   | Service recommended every:   |   |   |   |
|---------------------------------|---|--|---|---|---|
| Component                       | Operation   | Day  | Week  | Month   | Year  |
| Dryer                           | Check control panel indicators                                |  |   |   |   |
| Dryer                           | Visually inspect dryer  |  |   |   |   |
| Dryer                           | Drain line Y Strainer   |  |  |   |   |
| Dryer                           | Clean condensing coil fins<br>(air cooled units only)         |  |   |  |   |
| Dryer                           | Cooling water Y Strainer (watercooled<br>units only)          |  |   |  |   |
| Dryer                           | Compressor oil level sight<br>glass (200 to 1000 SCFM)        |  |   |  |   |
| Filtration                      | Depressurized dryer.<br>Replace pre and after filter elements |  |   |   |    |
| Dryer                           | Check for refrigerant leaks                                   |  |   |   |    |
| Dryer                           | Depressurized dryer.<br>Complete drain maintenance            |  |   |   |   |
| Filtration                      | Replace pre-filter element                                    |  |   |   |  |
| Dryer                           | SR indicator  |  |   |   |  |

 Check       Replace

### 6.1 Maintenance Procedures

Before performing any maintenance on the machine ensure that air pressure is vented from the system. Also make sure that personnel performing the maintenance have read the maintenance section of the manual.

Some of the maintenance tasks will require the refrigeration system to run, but when not required, turn the unit off before proceeding. Refer to lock-out/tag-out procedures.

Upon completion of the maintenance tasks be sure that the machine has been properly reassembled prior to restarting and reintroducing air.

**7. List of Alarms / Warnings**

| <b>ALARM</b>                              | <b>CODE</b> | <b>CONDITION</b>   | <b>TIME-OUT</b> | <b>SHUT-DOWN</b> | <b>RESET</b> | <b>OFF STATE</b> |
|---|-------------|--|-----------------|------------------|--------------|------------------|
| LOW EVAPORATOR TEMPERATURE                | A1          | Dewpoint <= 33°F (2°C)                                   | 2 minutes       | YES              | AUTO         | RESETS           |
| DRYER OVERLOAD                            | A2          | Dewpoint is 30 de-grees above the set point.             | 40 minutes      | YES              | AUTO         | RESETS           |
| LOW REFRIGERANT PRESSURE                  | A3          | Suction Pressure switch is open while compressor is on   | 1 seconds       | YES              | MANUAL       | RESETS           |
| HIGH REFRIGERANT PRESSURE                 | A4          | Discharge Pressure switch is open while compressor is on | none            | YES              | MANUAL       | RESETS           |
| LOW COOLANT TEMPERATURE                   | A5          | Glycol Temp < 32°F (0°C)                                 | 2 minutes       | YES              | MANUAL       | RESETS           |
| DRAIN FAULT                               | dr          | Drain switch is closed for too long                      | 15 seconds      | NO               | MANUAL       | ENABLED          |
| SENSOR FAULT OPEN DEWPOINT SENSOR         | F0          | Dewpoint Sensor is open (or greater than 200°F (93.33°C) | 1 second        | YES              | MANUAL       | RESETS           |
| SENSOR FAULT SHORTED DEWPOINT SENSOR      | F1          | Dewpoint Sensor is shorted (or less than 4°F (-15.55°C)  | 1 second        | YES              | MANUAL       | RESETS           |
| SENSOR FAULT OPEN GLYCOL/WATER SENSOR     | F2          | Glycol Temp Sensor is open                               | 1 second        | YES              | MANUAL       | RESETS           |
| SENSOR FAULT SHORTED GLYCOL/ WATER SENSOR | F3          | Glycol Temp Sensor is shorted                            | 1 second        | YES              | MANUAL       | RESETS           |
| HIGH DEWPOINT TEMPERATURE                 | Hd          | Dewpoint is 15 de-grees above the set point              | none            | NO               | AUTO         | ENABLED          |
| COMPRESSOR PROTECTION                     | CP          | Excessive cycling  | none            | NO               | MANUAL       | RESETS           |
| SERVICE                                   | Sr          | Service Interval Perform Maintenance                     | 360 days        | NO               | MANUAL       | ENABLED          |

8. Troubleshooting / Service

| Fault Code | Description                          | Cause  | Remedy   |
|------------|--------------------------------------|--|--|
| A1         | Low dewpoint temperature             | 1) Ambient temperature is below 35°F (.6°C)<br>2) Inlet air temperature is below 35°F (1.6°C)<br>3) Water / glycol too cold  | 1) Install dryer in warmer area<br>2) Raise inlet temperature.<br>3) see "A5" Fault code                             |
| A2         | Dryer Overload                       | Excessive thermal load on dryer  | Reduce compressed air quantity and/or inlet temperature  |
| A3         | Low refrigerant pressure             | 1) Refrigerant leak<br>2) Low pressure switch defective<br>3) Water/glycol pump stopped/defective  | 1) Locate leak. Repair & recharge.<br>2) Replace<br>3) Check pump, wiring. Replace if defective                      |
| A4         | High refrigerant discharge           | 1) Condenser dirty / blocked<br>2) Fan pressure switch defective<br>3) Fan motor does not work/defective<br>4) Ambient temperature above 115°F (46°C)<br>5) High pressure switch defective | 1) Clean condenser<br>2) Replace<br>3) Replace motor<br>4) Improve room ventilation<br>5) Replace                    |
| A5         | Water/glycol below 30°F              | 1) Compressor contactor welded closed<br>2) Control board defective  | 1) Replace<br>2) Replace   |
| **CP       | Compressor protection                | 1) Leak in water/glycol loop<br>2) Excessive inlet temperature   | 1) Repair leak and refill tank with 30% water/glycol mixture<br>2) Reduce temperature. Inspect aftercooler upstream. |
| dr         | Drain not working                    | 1) Valve strainer clogged<br>2) Drain valve clogged<br>3) Solenoid defective<br>4) Drain sensor defective  | 1) Clean<br>2) Dis-assemble and clean.<br>3) Replace<br>4) Replace   |
| F0         | Open dewpoint sensor                 | 1) Loose connection<br>2) Break in sensor line   | 1) Check connections / tighten<br>2) Replace sensor  |
| F1         | Short in dew-point sensor            | 1) Defective sensor<br>2) Sensor expose to 4°F (-14.5°C) or less   | 1) Replace<br>2) Increase temperature  |
| F2         | Open water/glycol temperature sensor | 1) Loose connection<br>2) Break in sensor line   | 1) Check connections / tighten<br>2) Replace sensor  |
| F3         | Short in water/glycol sensor         | 1) Defective sensor<br>2) Sensor expose to 4°F (-14.5°C) or less   | 1) Replace<br>2) Increase temperature.   |

|   |                              |   |  |
|---|------------------------------|---|--|
| Sr  | Service/Maintenance reminder | 1 year timer has elapsed  | See maintenance sect. in manual & reset by pressing up/down arrows at the same time  |
| Hd  | High dewpoint                | 1) Excessive thermal load.<br>2) Compressor stopped<br>3) Control board defective | 1) Reduce inlet and/or ambient temperature and/or inlet flow<br>2) Check circuit for loose connection / open<br>3) Replace |
| <p>**The refrigerant compressor has exceeded the maximum allowable starts per hour. If the number of starts/hr. is exceeded, the “CP” warning will flash on the display. The dryer will automatically increase the dewpoint setting to 50°F (10°C) from its current setting to reduce the number of starts/hr. below the maximum.</p> |                              |   |  |

**ATTENTION**



It is not advisable to tamper with the other adjustments unless you are familiar with refrigeration. The controls interact with each other and, although the effect of an adjustment may not be immediately obvious, it will affect the dryer’s performance.

---

**CAUTION**



**8.1 Refrigerant Charging Procedure**

- Charge liquid refrigerant only. Do not use vapor.
- The dryer needs to be pulled into a vacuum (500 micron minimum).
- Charge refrigerant into the high side schraeder port located at the bottom of the condenser.
- The full charge may not be accepted. If this occurs, the dryer can be started and the remainder of the charge should be slowly metered into the refrigeration service valve (suction side) located under the expansion valve.

9. Technical Data

| TECHNICAL DATA |             | Air-Cooled Units |     |           |     |     |      |      |       |          |
|----------------|-------------|------------------|-----|-----------|-----|-----|------|------|-------|----------|
| Model          | Electrical  | Compressor       |     | Fan motor |     |     | Pump |      | Dryer |          |
|                | V / Ph / Hz | RLA              | LRA | Qty       | FLA | HP  | FLA  | HP   | MCA   | Max Fuse |
| CESM200        | 230/1/60    | 8.5              | 47  | 1         | 1   | 1/6 | 1.2  | 1/15 | 12.2  | 20       |
| CESM250        | 230/1/60    | 12.1             | 49  | 1         | 1.2 | 1/5 | 1.2  | 1/15 | 17.0  | 25       |
|                | 230/3/60    | 7.9              | 38  | 1         | 1.2 | 1/5 | 1.2  | 1/15 | 11.6  | 15       |
|                | 460/3/60    | 4.3              | 16  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 6.6   | 10       |
|                | 575/3/60    | 4.3              | 16  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 5.2   | 10       |
| CESM325        | 230/1/60    | 12.1             | 49  | 1         | 1.2 | 1/5 | 1.2  | 1/15 | 17.0  | 25       |
|                | 230/3/60    | 7.9              | 38  | 1         | 1.2 | 1/5 | 1.2  | 1/15 | 11.6  | 15       |
|                | 460/3/60    | 4.3              | 16  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 6.6   | 10       |
|                | 575/3/60    | 4.3              | 16  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 5.2   | 10       |
| CESM400        | 230/3/60    | 7.9              | 38  | 1         | 1.2 | 1/5 | 1.2  | 1/15 | 11.6  | 15       |
|                | 460/3/60    | 4.3              | 16  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 6.6   | 10       |
|                | 575/3/60    | 4.3              | 16  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 6.6   | 10       |
| CESM500        | 230/3/60    | 11.4             | 57  | 1         | 1.2 | 1/5 | 1.2  | 1/15 | 16.1  | 25       |
|                | 460/3/60    | 5.4              | 23  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 7.9   | 10       |
|                | 575/3/60    | 5.4              | 23  | 1         | 0.6 | 1/5 | 1.2  | 1/15 | 6.3   | 10       |
| CESM700        | 230/3/60    | 15.7             | 98  | 1         | 3   | 1/2 | 1.2  | 1/15 | 23.2  | 35       |
|                | 460/3/60    | 7.1              | 38  | 1         | 1.5 | 1/2 | 1.2  | 1/15 | 11.0  | 15       |
|                | 575/3/60    | 7.1              | 38  | 1         | 1.5 | 1/2 | 1.2  | 1/15 | 8.8   | 15       |
| CESM850        | 230/3/60    | 15.7             | 98  | 1         | 3   | 1/2 | 1.2  | 1/15 | 23.2  | 35       |
|                | 460/3/60    | 7.1              | 38  | 1         | 1.5 | 1/2 | 1.2  | 1/15 | 11.0  | 15       |
|                | 575/3/60    | 7.1              | 38  | 1         | 1.5 | 1/2 | 1.2  | 1/15 | 8.8   | 15       |
| CESM1000       | 230/3/60    | 17.9             | 115 | 2         | 1.2 | 1/5 | 2.1  | 1/6  | 25.3  | 40       |
|                | 460/3/60    | 8.6              | 47  | 2         | 0.6 | 1/5 | 2.1  | 1/6  | 12.5  | 20       |
|                | 575/3/60    | 8.6              | 47  | 2         | 0.6 | 1/5 | 2.1  | 1/6  | 10.0  | 15       |

| Settings            | Fan 1   | Fan 2   | High pressure switch                          | Low pressure switch          |
|---------------------|---|---|---|------------------------------|
| CESM200-<br>CESM850 | ON: 260 psig (18 barg)<br>OFF: 210 psig (14.5 barg) | -   | 406 psig (28 bar)<br>reset: 305 psig (21 bar) | 35 - 60 psig<br>2.4 - 4 Barg |
| CESM1000            |   | ON: 230 psig (15.8 barg)<br>OFF: 180 psig (12.4 barg) |   |                              |

| Model    | Refrigerant   |      | Water/<br>glycol<br>capacity | Ambient<br>temperature* | Air inlet<br>temperature* | Max<br>working<br>pressure | Connections | Drain      | Sound |
|----------|---|------|------------------------------|-------------------------|---------------------------|----------------------------|-------------|------------|-------|
|          | (oz)  | (kg) |                              |                         |                           |                            | Gal.        | Min. / Max |       |
|          | R404A   |      |                              |                         |                           |                            | Air in/out  | Drain      | dBA   |
|          |   |      |                              | Min. / Max              | Min. / Max                | Min / Max                  | FNPT        | FNPT       |       |
| CESM200  | See serial<br>number label<br>on dryer<br>for charge<br>amount. |      | 6                            | 41-115°F<br>(5-45°C)    | 41-140°F<br>(5- 60°C)     | 60-200 psig<br>(4-14 barg) | 2"          | 1/4"       | 80    |
| CESM250  |   |      | 8                            |                         |                           |                            |             |            |       |
| CESM325  |   |      | 8                            |                         |                           |                            |             |            |       |
| CESM400  |   |      | 10                           |                         |                           |                            |             |            |       |
| CESM500  |   |      | 10                           |                         |                           |                            |             |            |       |
| CESM700  |   |      | 19                           |                         |                           |                            |             |            |       |
| CESM850  |   |      | 19                           |                         |                           |                            |             |            |       |
| CESM1000 |   |      | 21                           |                         |                           |                            |             |            |       |

\*Dryer capacity decreases as ambient and/or inlet temperature increases above 100°F (38°C). See DRYER CORRECTION FACTORS.

| Water-Cooled Units |            |            |     |           |      |       |           |
|--------------------|------------|------------|-----|-----------|------|-------|-----------|
| Model              | Electrical | Compressor |     | Pump 120v |      | Dryer |           |
|                    | V/Ph/Hz    | RLA        | LRA | FLA       | HP   | MCA   | Max. Fuse |
| CESM250            | 230/1/60   | 12.1       | 49  | 1.2       | 1/15 | 15.8  | 25        |
|                    | 230/3/60   | 7.9        | 38  | 1.2       | 1/15 | 10.4  | 15        |
|                    | 460/3/60   | 4.3        | 16  | 1.2       | 1/15 | 6.0   | 10        |
|                    | 575/3/60   | 4.3        | 16  | 1.2       | 1/15 | 4.8   | 10        |
| CESM325            | 230/1/60   | 12.1       | 49  | 1.2       | 1/15 | 15.8  | 25        |
|                    | 230/3/60   | 7.9        | 38  | 1.2       | 1/15 | 10.4  | 15        |
|                    | 460/3/60   | 4.3        | 16  | 1.2       | 1/15 | 6.0   | 10        |
|                    | 575/3/60   | 4.3        | 16  | 1.2       | 1/15 | 4.8   | 10        |
| CESM400            | 230/3/60   | 7.9        | 38  | 1.2       | 1/15 | 10.4  | 15        |
|                    | 460/3/60   | 4.3        | 16  | 1.2       | 1/15 | 6.0   | 10        |
|                    | 575/3/60   | 4.3        | 16  | 1.2       | 1/15 | 4.8   | 10        |
| CESM500            | 230/3/60   | 11.4       | 57  | 1.2       | 1/15 | 14.9  | 25        |
|                    | 460/3/60   | 5.4        | 23  | 1.2       | 1/15 | 7.3   | 10        |
|                    | 575/3/60   | 5.4        | 23  | 1.2       | 1/15 | 5.8   | 10        |
| CESM700            | 230/3/60   | 15.7       | 98  | 1.2       | 1/15 | 20.2  | 35        |
|                    | 460/3/60   | 7.1        | 38  | 1.2       | 1/15 | 9.5   | 15        |
|                    | 575/3/60   | 7.1        | 38  | 1.2       | 1/15 | 7.6   | 10        |
| CESM850            | 230/3/60   | 15.7       | 98  | 1.2       | 1/15 | 20.2  | 35        |
|                    | 460/3/60   | 7.1        | 38  | 1.2       | 1/15 | 9.5   | 15        |
|                    | 575/3/60   | 7.1        | 38  | 1.2       | 1/15 | 7.6   | 10        |
| CESM1000           | 230/3/60   | 17.9       | 115 | 2.1       | 1/6  | 23.1  | 40        |
|                    | 460/3/60   | 8.6        | 47  | 2.1       | 1/6  | 11.5  | 20        |
|                    | 575/3/60   | 8.6        | 47  | 2.1       | 1/6  | 9.2   | 15        |

| Settings            | High pressure switch                          | Low pressure switch            |
|---------------------|---|--------------------------------|
| CESM200-<br>CESM850 | 406 psig (28 bar)<br>reset: 305 psig (21 bar) | 35 - 60 psig<br>(2.4 - 4 Barg) |
| CESM1000            |   |                                |

| Model    | Refrigerant   |      | Water/glycol capacity | Ambient temperature* | Air inlet temperature* | Water temperature*   | Max. working pressure        | Connections |              | Drain | Sound |
|----------|---|------|-----------------------|----------------------|------------------------|----------------------|------------------------------|-------------|--------------|-------|-------|
|          | (oz)  | (kg) |                       |                      |                        |                      |                              | Gal.        | Min. / Max.  |       |       |
|          | R404A   |      |                       |                      |                        |                      |                              | Air in/out  | Water in/out | Drain |       |
| CESM250  | See serial number label on dryer for charge amount. |      | 8                     | 41-115°F<br>(5-45°C) | 41-140°F<br>(5-60°C)   | 50-95°F<br>(10-35°C) | 60-200 psig<br>(4-13.8 barg) | 2"          | 1/2"         | 1/4"  | 80    |
| CESM325  |   |      | 8                     |                      |                        |                      |                              |             |              |       |       |
| CESM400  |   |      | 10                    |                      |                        |                      |                              |             |              |       |       |
| CESM500  |   |      | 10                    |                      |                        |                      |                              |             |              |       |       |
| CESM700  |   |      | 19                    |                      |                        |                      |                              |             |              |       |       |
| CESM850  |   |      | 19                    |                      |                        |                      |                              |             |              |       |       |
| CESM1000 |   |      | 21                    |                      |                        |                      |                              |             |              |       |       |

\*Dryer capacity decreases as water temperature increases above 85°F (29.5°C) and or inlet temperature increases above 100°F (38°C). See DRYER CORRECTION FACTORS.

10. Spare Parts List

| Item # | Replacement parts                              | MODEL                         |                               |                               |                               |                               |                               |                               |                                |
|--------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|
|        |  | CESM200<br>(DWG #<br>AD11525) | CESM250<br>(DWG #<br>AD11524) | CESM325<br>(DWG #<br>AD11523) | CESM400<br>(DWG #<br>AD11522) | CESM500<br>(DWG #<br>AD11521) | CESM700<br>(DWG #<br>AD11520) | CESM850<br>(DWG #<br>AD11519) | CESM1000<br>(DWG #<br>AD11518) |
|        | <b>Refrigerant Compressor</b>                  |                               |                               |                               |                               |                               |                               |                               |                                |
| 1A     | 230V/1PH/60Hz                                  | DP14231-1-C                   | DP14245-2-C                   |                               |                               | n/a                           |                               |                               |                                |
| 1B     | 230V/3PH/60Hz                                  | n/a                           | DP14245-3-C                   |                               | DP16211-3                     | DP14341-3-C                   |                               | DP14371-3-C                   |                                |
| 1C     | 460V-3PH-60Hz                                  | n/a                           | DP14245-4-C                   |                               | 398H147601                    | DP14341-4-C                   |                               | DP14371-4-C                   |                                |
|        | <b>Fan motor</b>                               |                               |                               |                               |                               |                               |                               |                               |                                |
| 2A     | 230V/1PH/60Hz                                  | DP14231-2-M                   | DP14245-2-M                   |                               |                               | DP18184-2-M                   |                               | DP14245-2-M                   |                                |
| 2B     | 460V/1PH/60Hz                                  | n/a                           | DP18105-4                     |                               |                               | DP18184                       |                               | DP18105-4                     |                                |
| 3      | <b>Fan blade</b>                               | DP18182-B                     | DP18172-B                     |                               |                               | DP18158-B                     |                               | DP18172-B                     |                                |
|        | <b>Refrigerant condenser</b>                   |                               |                               |                               |                               |                               |                               |                               |                                |
| 4A     | Air-cooled                                     | DP14231-CD                    | DP14245-CD                    |                               | DP14295-C                     | DP14313-CD                    |                               | DP14371-CD                    |                                |
| 4B     | Water-cooled                                   | n/a                           | XF2350-PL                     |                               |                               |                               |                               |                               |                                |
| 5      | <b>Water regulating valve</b>                  | n/a                           | DP38100                       |                               |                               | DP38105                       |                               |                               |                                |
| 6      | <b>Water-air/separator/air-air exchanger</b>   | XF0325-TMC                    | XF0325-TMC                    |                               | XF0500-TMC                    | *XF1000-TMC                   |                               |                               |                                |
| 7      | <b>Coolant-to-refrigerant exchanger</b>        | XF2350-PL                     | XF2450-PL                     |                               |                               | XF2550-PL                     |                               |                               |                                |
| 8      | <b>Expansion valve</b>                         | DP34181-404                   | DP34182-404-1                 |                               | DP34183-404                   | DP34185-404                   |                               |                               |                                |
| 9      | <b>Refrigerant filter</b>                      |                               | DP28125                       |                               |                               | DP28137                       |                               |                               |                                |
| 10     | <b>Circulation pump</b>                        |                               | DP7000-P                      |                               |                               |                               |                               | DP7000-P2                     |                                |
| 11     | <b>Fan #1 pressure switch (260-210)</b>        |                               | DP40080                       |                               |                               |                               |                               |                               |                                |
| 12     | <b>Fan #2 pressure switch (230-190)</b>        |                               | n/a                           |                               |                               |                               |                               | DP40081                       |                                |
| 13     | <b>High refrigerant pressure switch</b>        |                               | DP40051                       |                               |                               |                               |                               |                               |                                |
| 14     | <b>Low refrigerant pressure switch</b>         |                               | DP40026                       |                               |                               |                               |                               |                               |                                |
| 15     | <b>Refrigerant gauge</b>                       |                               | DP42106                       |                               |                               |                               |                               |                               |                                |
| 16     | <b>Coolant Storage Tank</b>                    |                               | DP7000-10-M                   |                               |                               | *DP7000-22-M1                 |                               |                               |                                |
| 17     | <b>Thermal design BOM</b>                      | DP7002-1                      | DP7003-1                      | DP7004-1                      | DP7005-1                      | DP7006-1                      |                               |                               |                                |
| 18     | <b>Electronic controller</b>                   |                               | DP5050-PCD-TM                 |                               |                               |                               |                               |                               |                                |
| 19     | <b>Thermal mass temperature probe</b>          |                               | DP5060-M                      |                               |                               |                               |                               |                               |                                |
| 20     | <b>Dew point temperature probe</b>             |                               | DP5060-DP-10                  |                               |                               |                               |                               |                               |                                |
| 21     | <b>Demand drain level sensor</b>               |                               | n/a                           |                               |                               | DP7000-LS1-A                  |                               |                               |                                |
| 22     | <b>Drain solenoid valve</b>                    |                               | TP8002-1                      |                               |                               |                               |                               |                               |                                |
| 23     | <b>Valve strainer screen</b>                   |                               | KP5025-S                      |                               |                               |                               |                               |                               |                                |
| 24     | <b>Compressor contactor</b>                    |                               | ES5035                        |                               |                               |                               |                               |                               |                                |
| 25     | <b>Transformer</b>                             |                               | ET0250                        |                               |                               | ET0250(AC)/ET0350(WC)         |                               | *ET0350                       |                                |
|        | <b>Transformer for 575v.units (2 per unit)</b> | n/a                           | ET1000-D                      |                               |                               | ET1500-D                      |                               |                               |                                |
|        | <b>Transformer cover (575v. Unit)</b>          | n/a                           | DP0325-CAB-TH                 |                               |                               | n/a                           |                               |                               |                                |
|        | <b>Cabinet panels</b>                          |                               |                               |                               |                               |                               |                               |                               |                                |
| 26     | Front panel                                    |                               | DP0325-CAB-FP2                |                               | DP0500-CAB-FP2                | *DP1000-CAB-FP3               |                               |                               |                                |
| 27     | Left panel                                     |                               | DP0325-CAB-LP2                |                               | DP0500-CAB-LP2                | *DP1000-CAB-LP3               |                               |                               |                                |
| 28     | Right panel                                    |                               | DP0325-CAB-RP2                |                               | DP0500-CAB-RP2                | *DP1000-CAB-RP5               |                               |                               |                                |
| 29     | Top panel                                      |                               | DP0325-CAB-TP1                |                               | DP0500-CAB-TP1                | *DP1000-CAB-TP3               |                               |                               |                                |

\* Consult Factory to verify your model uses these components if your serial # starts with 13 or less.



## 11. Technical Specifications

### 11.1 Air-Cooled Units

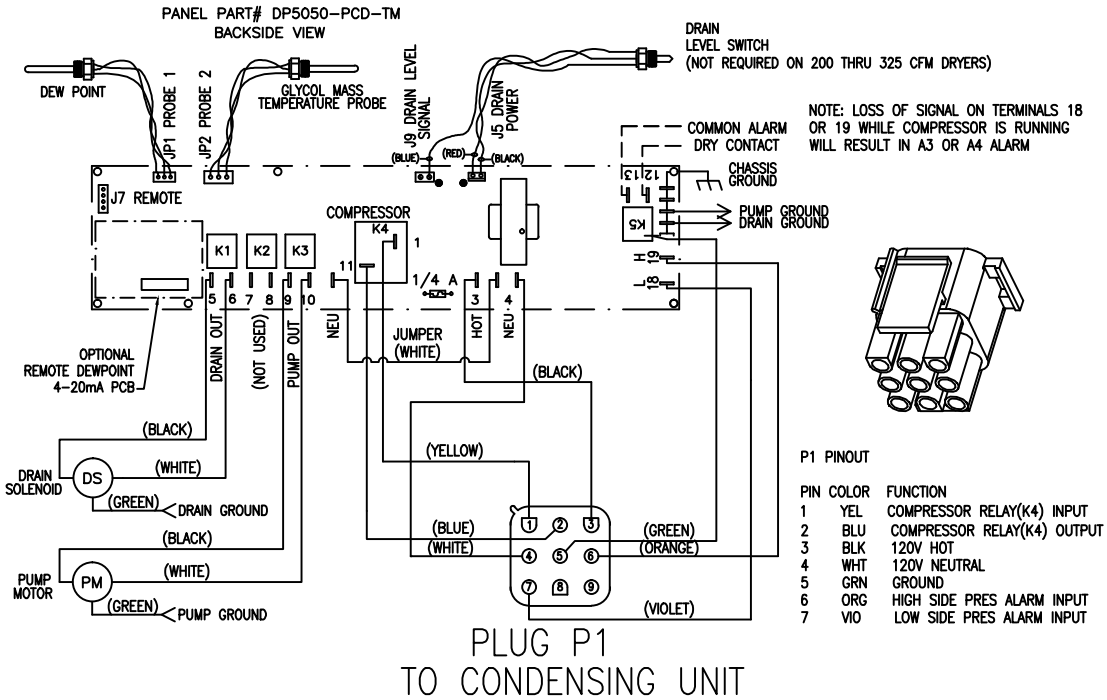
| Model           | Nominal Capacity (scfm) | Pipe Size | Drain    | Electrical Supply  | Recommended Pre-Filter | Replacement Element | Recommended After-Filter | Replacement Element |
|-----------------|-------------------------|-----------|----------|--|------------------------|---------------------|--------------------------|---------------------|
| <b>CESM200</b>  | 200                     | 2" NPT    | 1/4" NPT | 230V/1PH/60Hz  | JD0340H-7CPY           | JF0340H-7CPK        | JD0320H-6CY              | JF0320H-6CK         |
| <b>CESM250</b>  | 250                     | 2" NPT    | 1/4" NPT | 230V/1PH/60Hz<br>230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz | JD0340H-7CPY           | JF0340H-7CPK        | JD0320H-6CY              | JF0320H-6CK         |
| <b>CESM325</b>  | 325                     | 2" NPT    | 1/4" NPT | 230V/1PH/60Hz<br>230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz | JD0340H-7CPY           | JF0340H-7CPK        | JD0320H-6CY              | JF0320H-6CK         |
| <b>CESM400</b>  | 400                     | 2" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD0465H-7CPY           | JF0465H-7CPK        | JD0430H-6CY              | JF0430H-6CK         |
| <b>CESM500</b>  | 500                     | 2" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD0900J-7CPY           | JF0900J-7CPK        | JD0650J-6CY              | JF0650J-6CK         |
| <b>CESM700</b>  | 700                     | 3" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD1300K-7CPY           | JF1300K-7CPK        | JD0900K-6CY              | JF0900K-6CK         |
| <b>CESM850</b>  | 850                     | 3" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD1300K-7CPY           | JF1300K-7CPK        | JD0900K-6CY              | JF0900K-6CK         |
| <b>CESM1000</b> | 1000                    | 3" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD1300K-7CPY           | JF1300K-7CPK        | JL1250-C                 | JE-C1600            |

11.2 Water-Cooled Units

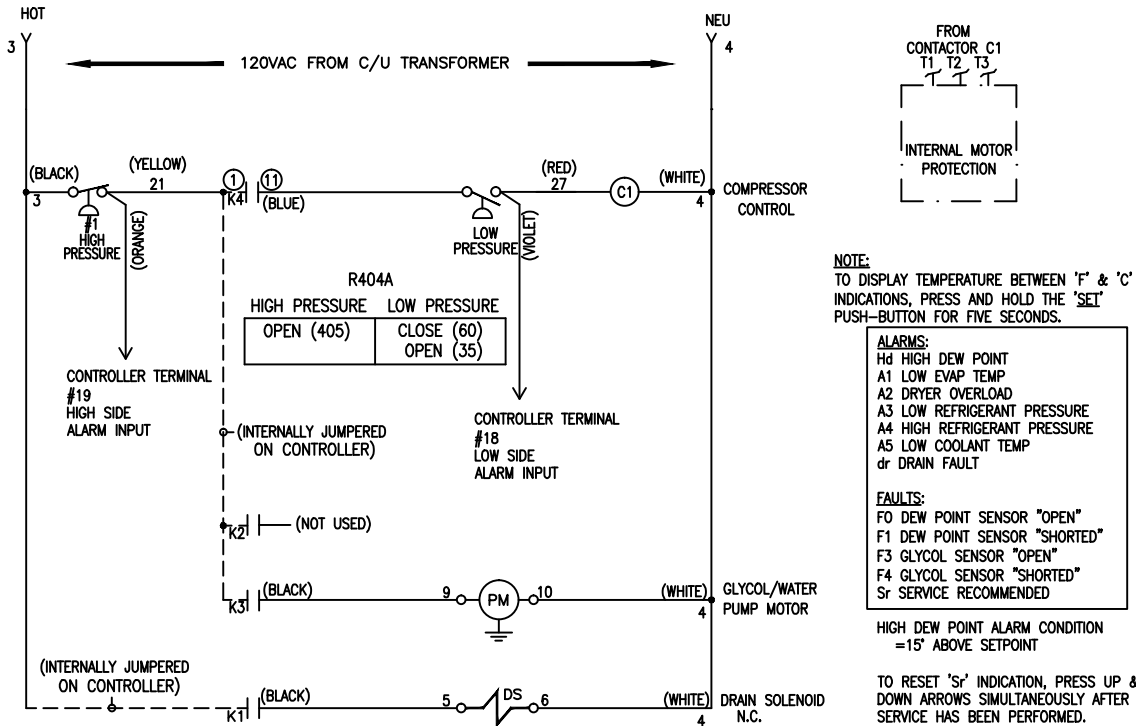
| Model    | Nominal Capacity (scfm) | Pipe Size | Drain    | Electrical Supply  | Recommended Pre-Filter | Replacement Element | Recommended After-Filter | Replacement Element |
|----------|-------------------------|-----------|----------|--|------------------------|---------------------|--------------------------|---------------------|
| CESM250  | 250                     | 2" NPT    | 1/4" NPT | 230V/1PH/60Hz<br>230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz | JD0340H-7CPY           | JF0340H-7CPK        | JD0320H-6CY              | JF0320H-6CK         |
| CESM325  | 325                     | 2" NPT    | 1/4" NPT | 230V/1PH/60Hz<br>230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz | JD0340H-7CPY           | JF0340H-7CPK        | JD0320H-6CY              | JF0320H-6CK         |
| CESM400  | 400                     | 2" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD0465H-7CPY           | JF0465H-7CPK        | JD0430H-6CY              | JF0430H-6CK         |
| CESM500  | 500                     | 2" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD0900J-7CPY           | JF0900J-7CPK        | JD0650J-6CY              | JF0650J-6CK         |
| CESM700  | 700                     | 3" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD1300K-7CPY           | JF1300K-7CPK        | JD0900K-6CY              | JF0900K-6CK         |
| CESM850  | 850                     | 3" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD1300K-7CPY           | JF1300K-7CPK        | JD0900K-6CY              | JF0900K-6CK         |
| CESM1000 | 1000                    | 3" NPT    | 1/4" NPT | 230V/3PH/60Hz<br>460V/3PH/60Hz<br>575V/3PH/60Hz                  | JD1300K-7CPY           | JF1300K-7CPK        | JL1250-C                 | JE-C1600            |

12. Associated Drawings

CONTROL PANEL WIRING  
200-1000 SCFM



CONTROL SCHEMATIC



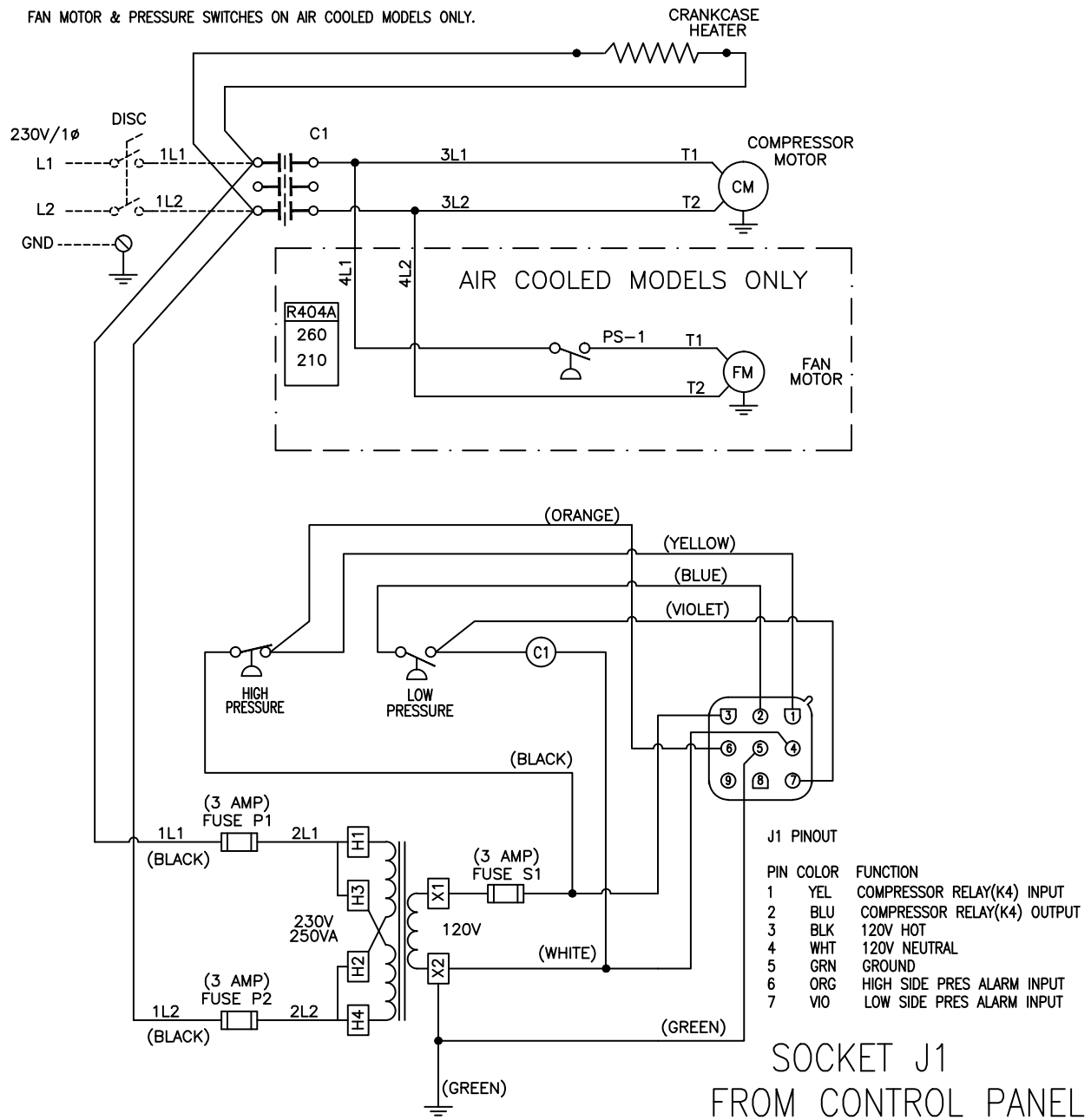
REF: ADE11249 REV E.

# CONDENSING UNIT 230V SINGLE PHASE 200 THRU 850 SCFM

CUSTOMER TO PROVIDE BREACH & SHORT CIRCUIT PROTECTION AND DISCONNECTION MEANS PER LOCAL & NATIONAL CODES.

CUSTOMER WIRING SHOWN IN HIDDEN (-----) LINES.

FAN MOTOR & PRESSURE SWITCHES ON AIR COOLED MODELS ONLY.



# CONDENSING UNIT

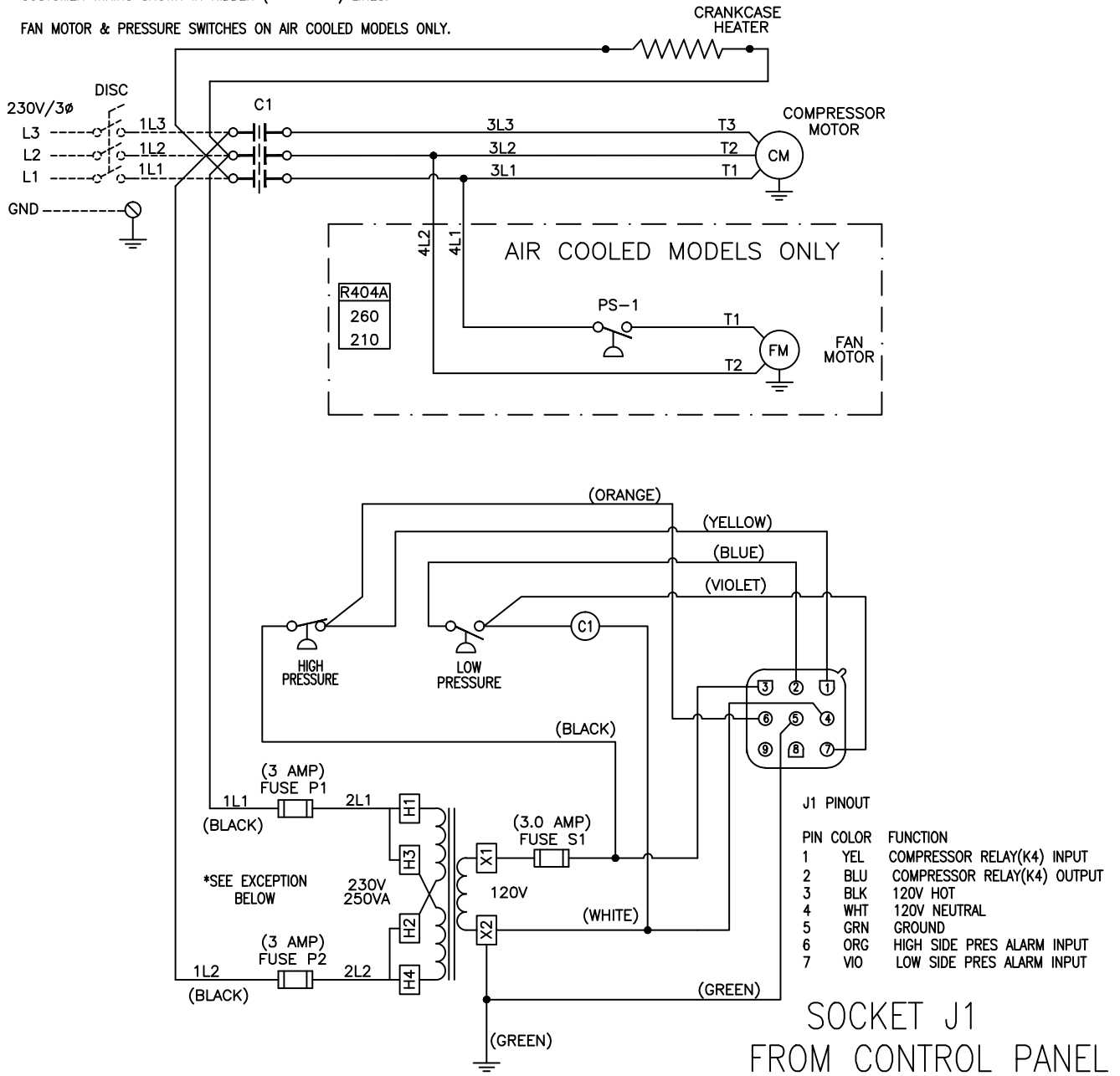
## 230V 3 PHASE

### 250 THRU 850 SCFM

CUSTOMER TO PROVIDE BREACH & SHORT CIRCUIT PROTECTION AND DISCONNECTION MEANS PER LOCAL & NATIONAL CODES.

CUSTOMER WIRING SHOWN IN HIDDEN (-----) LINES.

FAN MOTOR & PRESSURE SWITCHES ON AIR COOLED MODELS ONLY.



700-850 SCFM WATERCOOLED  
USE 350VA TRANSFORMER & 3.5 AMP S1 FUSE

REF: ADE11249 REV E.

# CONDENSING UNIT

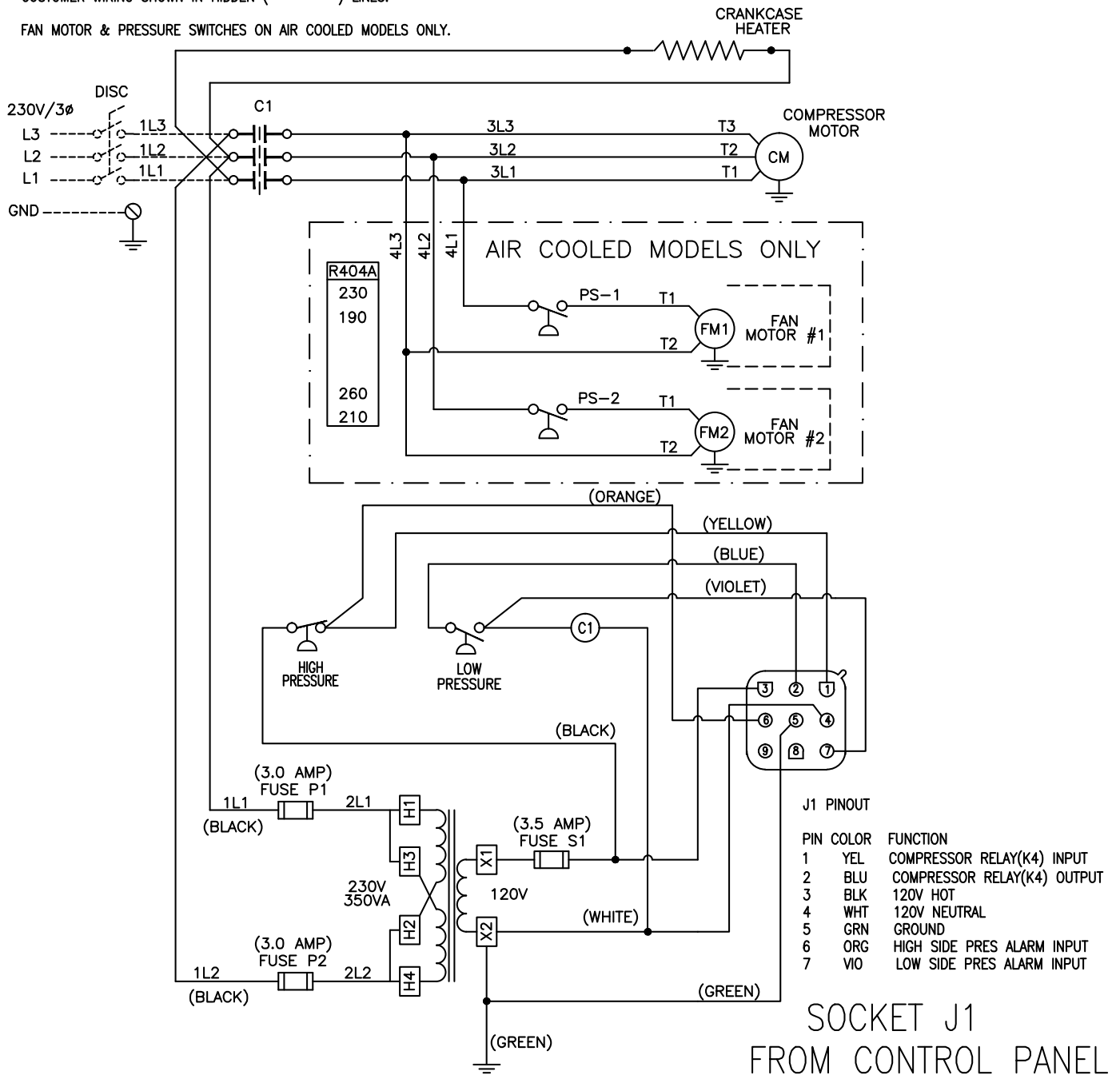
## 230V 3 PHASE

## 1000 SCFM

CUSTOMER TO PROVIDE BREACH & SHORT CIRCUIT PROTECTION AND DISCONNECTION MEANS PER LOCAL & NATIONAL CODES.

CUSTOMER WIRING SHOWN IN HIDDEN (-----) LINES.

FAN MOTOR & PRESSURE SWITCHES ON AIR COOLED MODELS ONLY.



# CONDENSING UNIT

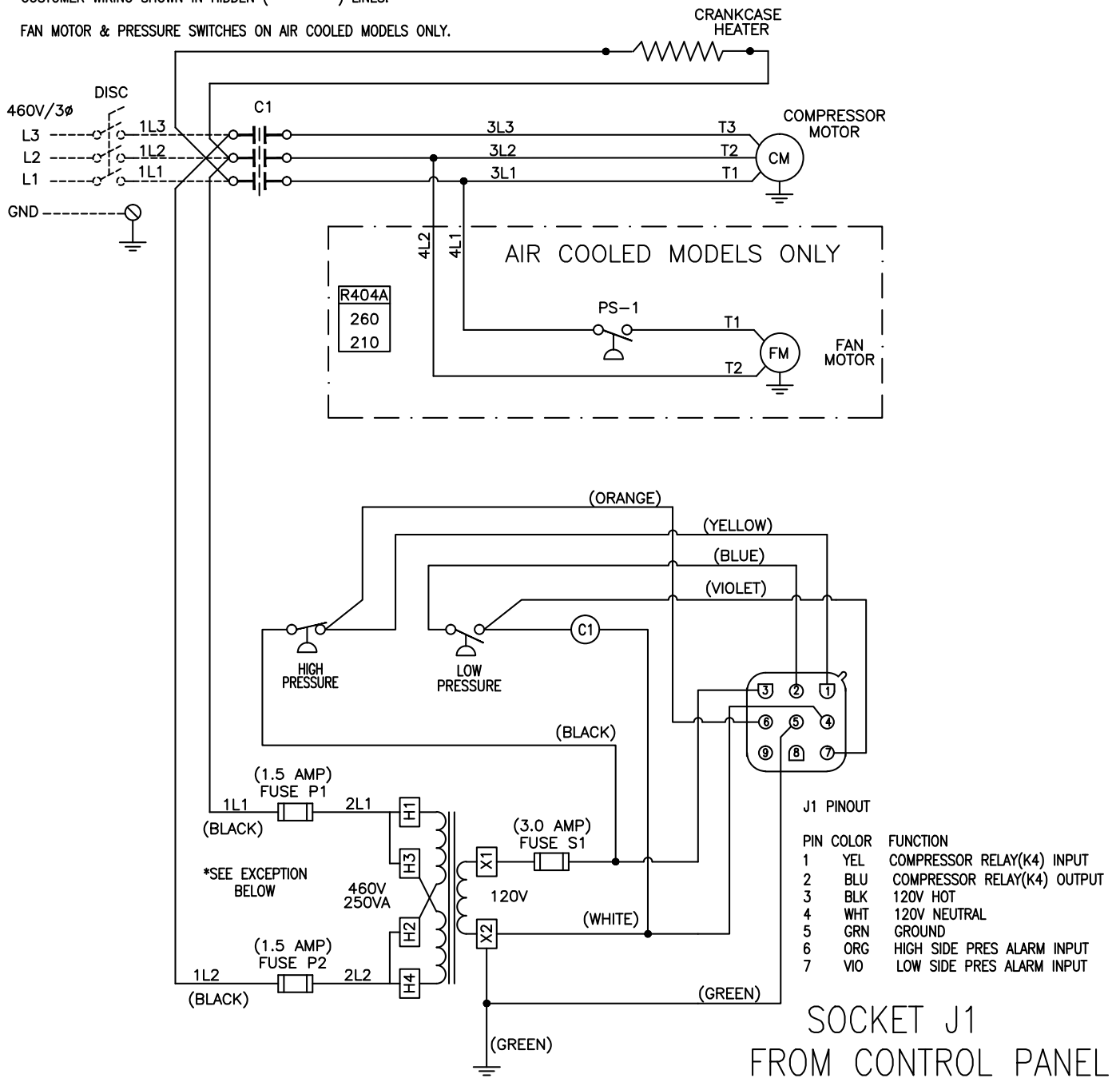
## 460V 3 PHASE

## 250 THRU 850 SCFM

CUSTOMER TO PROVIDE BREACH & SHORT CIRCUIT PROTECTION AND DISCONNECTION MEANS PER LOCAL & NATIONAL CODES.

CUSTOMER WIRING SHOWN IN HIDDEN (-----) LINES.

FAN MOTOR & PRESSURE SWITCHES ON AIR COOLED MODELS ONLY.



700-850 SCFM WATERCOOLED  
USE 350VA TRANSFORMER & 3.5 AMP S1 FUSE

REF: ADE11249 REV E.

# CONDENSING UNIT

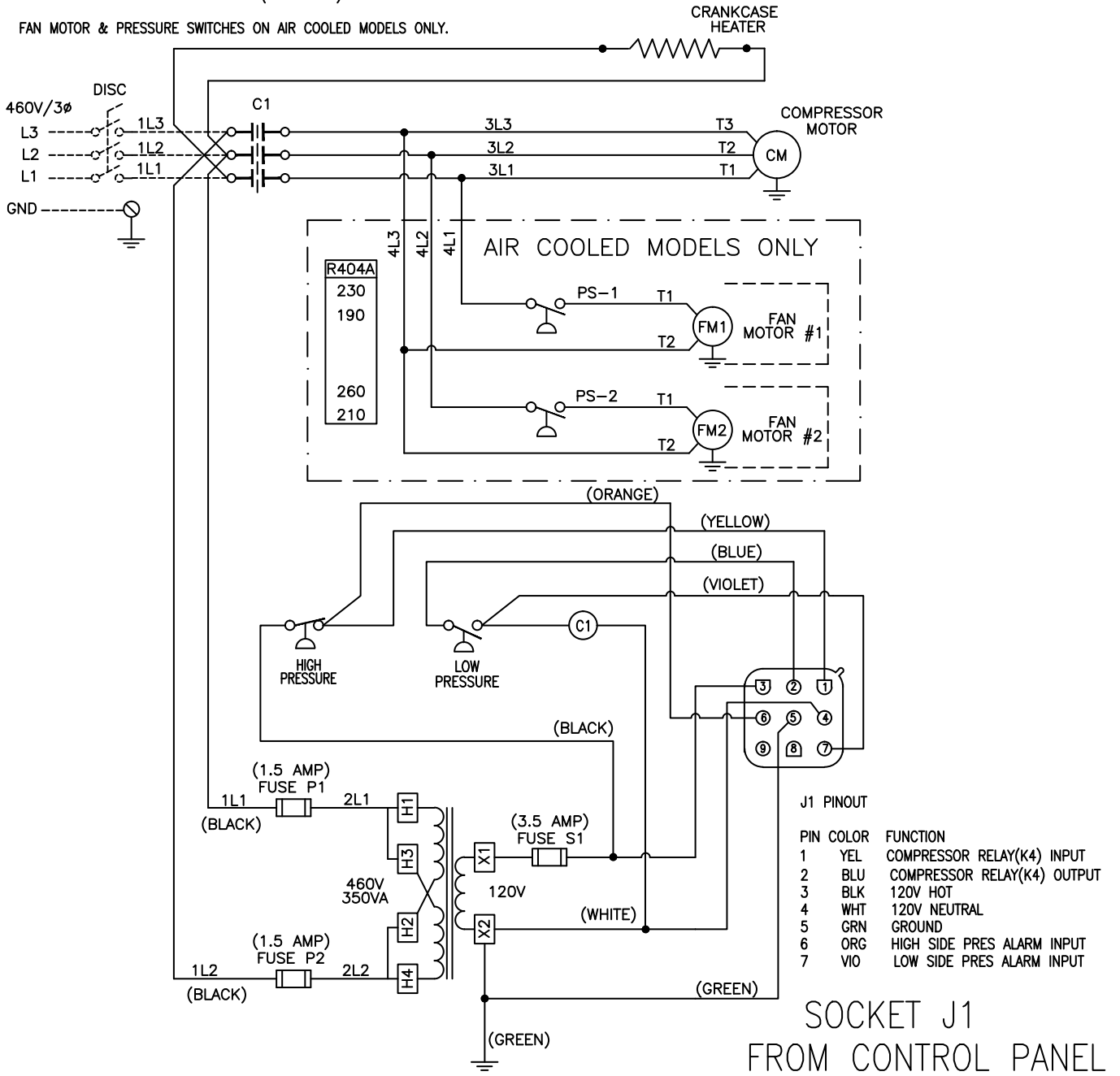
## 460V 3 PHASE

## 1000 SCFM

CUSTOMER TO PROVIDE BREACH & SHORT CIRCUIT PROTECTION AND DISCONNECTION MEANS PER LOCAL & NATIONAL CODES.

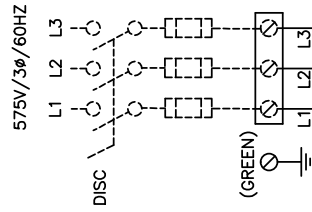
CUSTOMER WIRING SHOWN IN HIDDEN (-----) LINES.

FAN MOTOR & PRESSURE SWITCHES ON AIR COOLED MODELS ONLY.

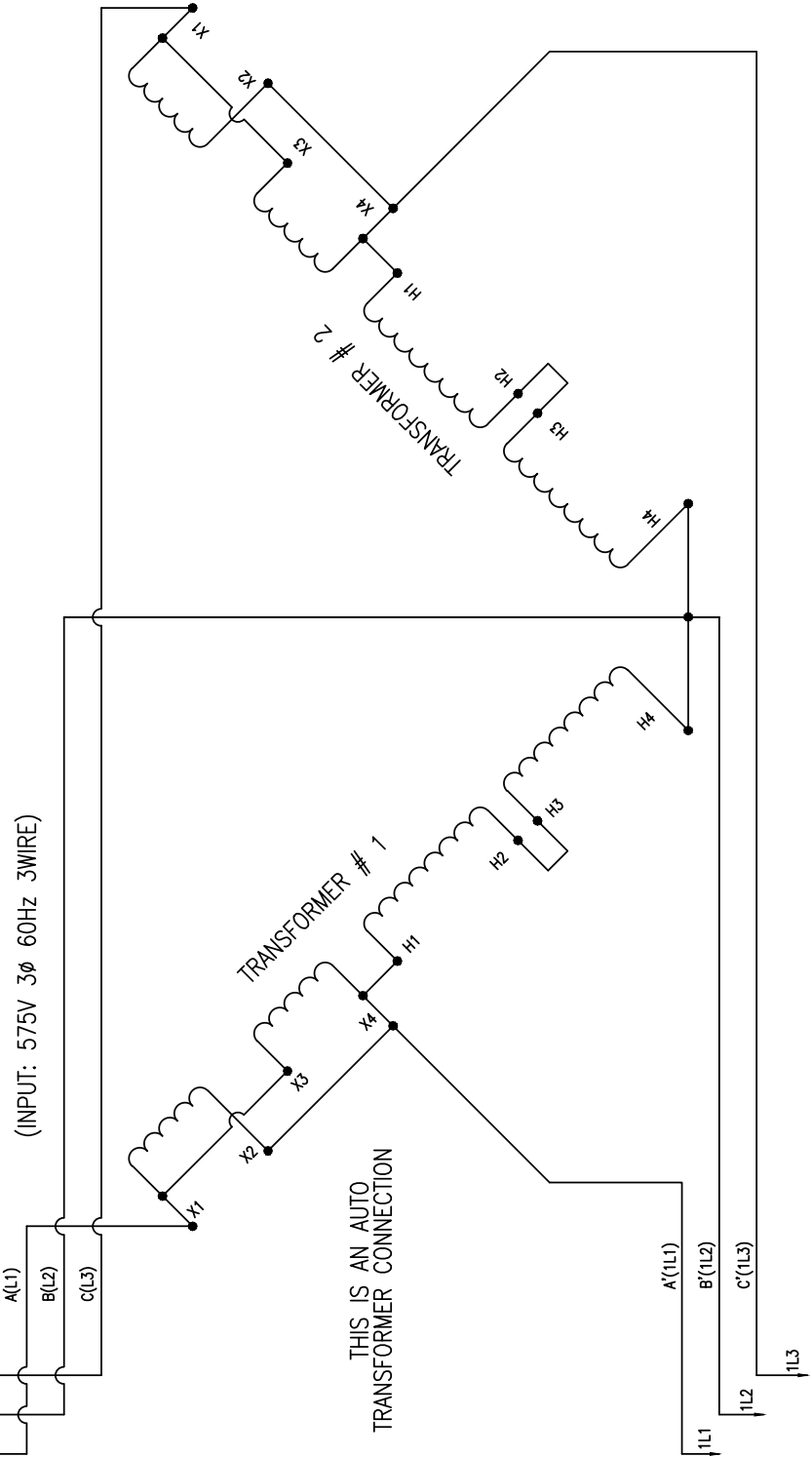




# 575 VOLT INPUT BUCK-TRANSFORMER



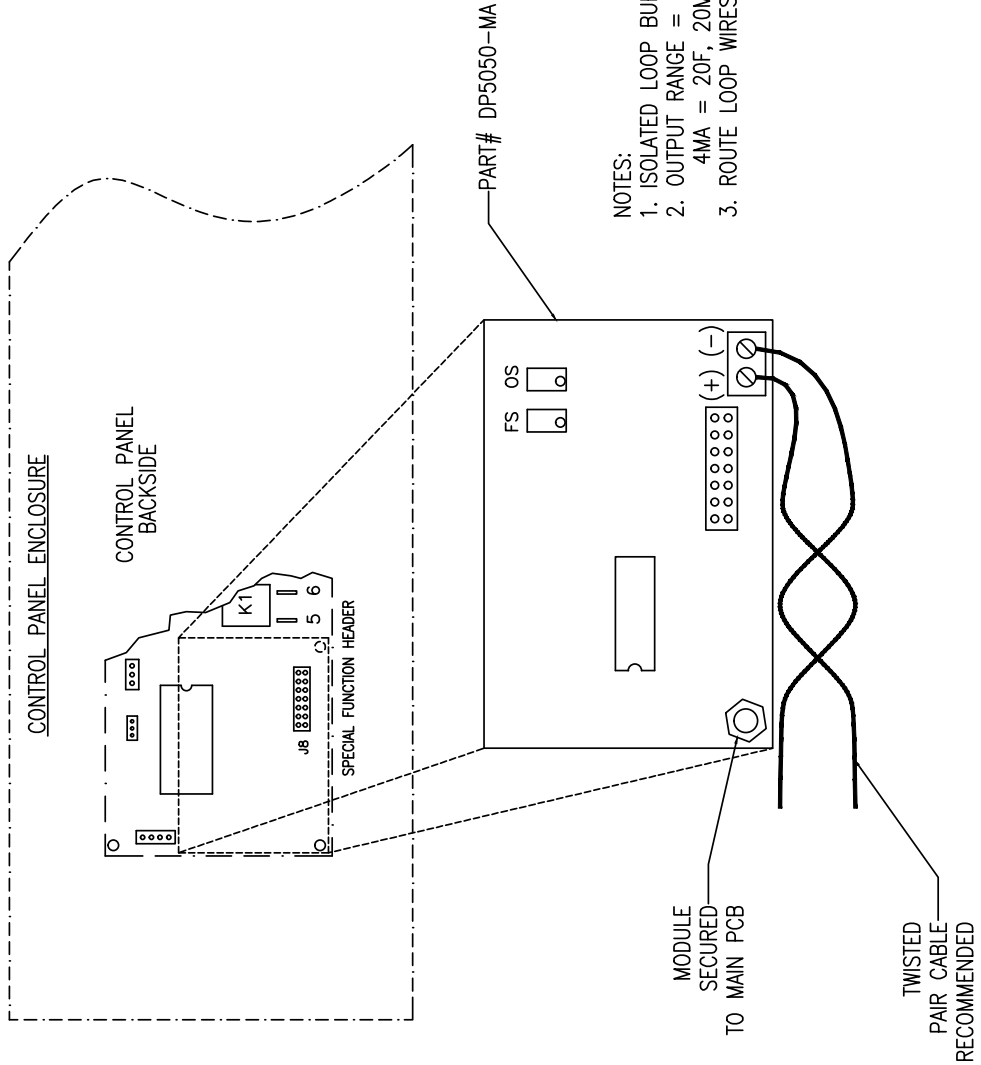
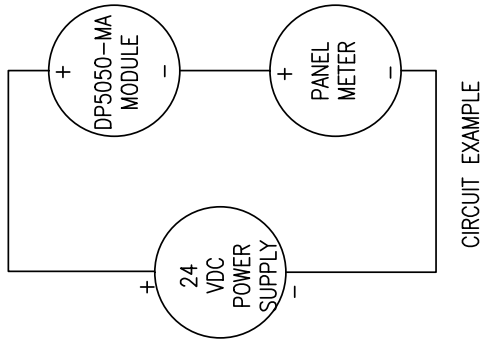
CUSTOMER TO PROVIDE BREACH & SHORT CIRCUIT PROTECTION AND DISCONNECTION MEANS PER LOCAL & NATIONAL CODES.  
REFER TO TRANSFORMER MANUFACTURER'S DOCUMENTATION FOR RECOMMENDED SHORT CIRCUIT FUSE RATINGS  
CUSTOMER WIRING SHOWN IN HIDDEN (-----) LINES.



# 460V 3 PHASE LINE INPUT TO DRYER

REF: ADE11249 REV E.

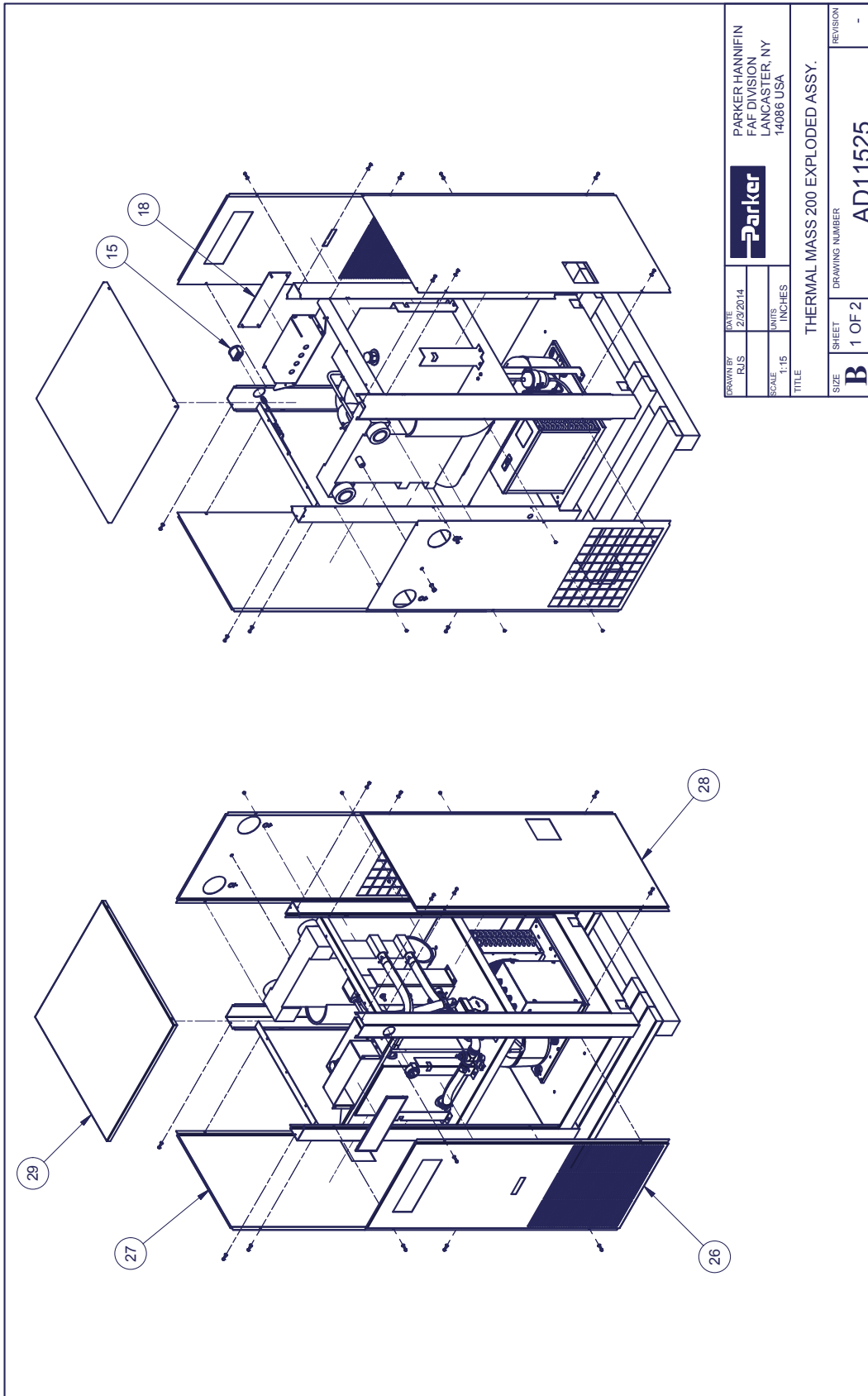
4-20 mA ADD ON MODULE  
FOR REMOTE DISPLAY  
OF SYSTEM DEW POINT



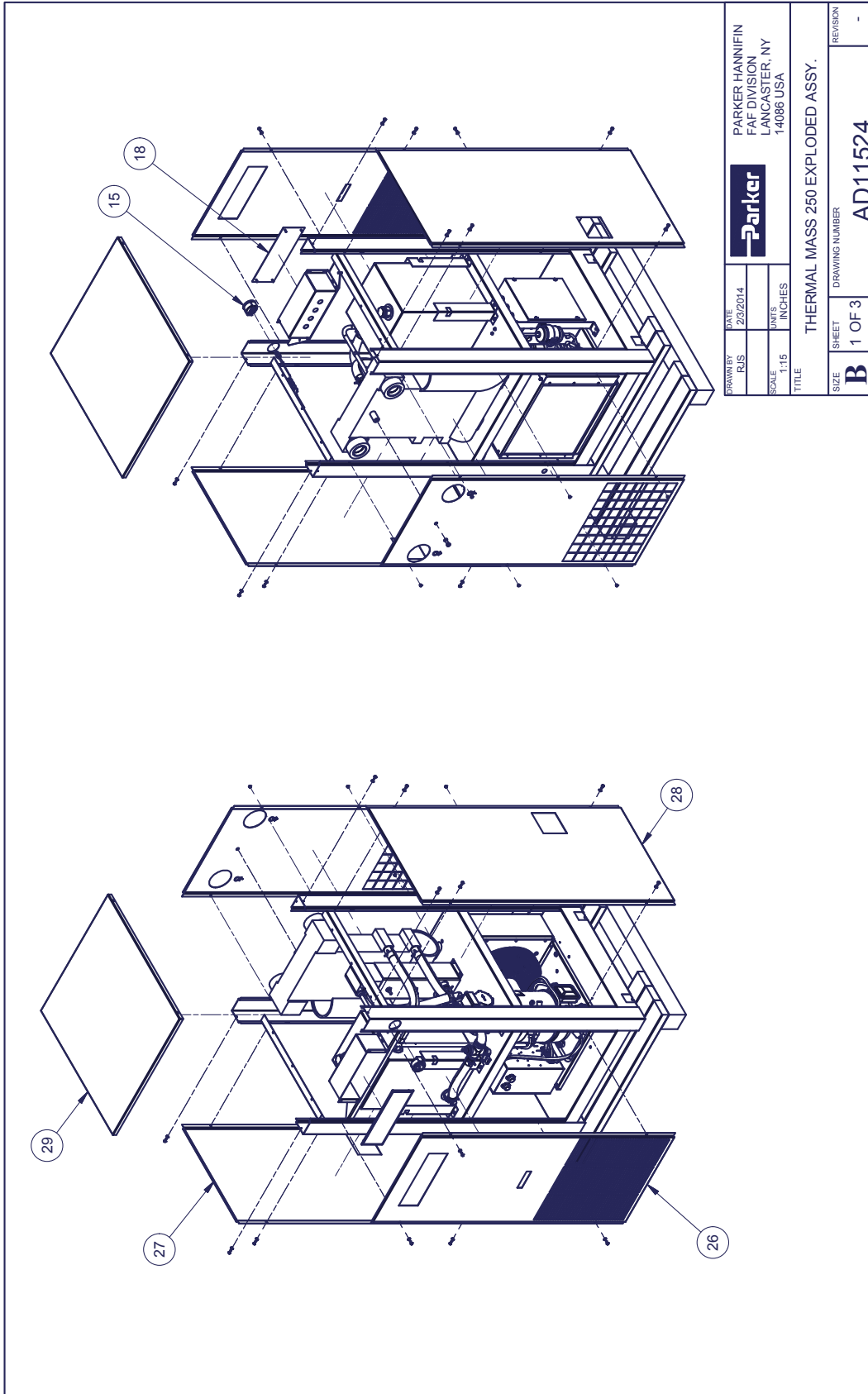
- NOTES:
1. ISOLATED LOOP BURDEN IS 10V. EXTERNALLY POWERED LOOP REQUIRED.
  2. OUTPUT RANGE = 4 TO 20 MA WHERE:  
 4MA = 20F, 20MA = 99F, >=22MA = FAULT.
  3. ROUTE LOOP WIRES AWAY FROM 120V CONTROL WIRING.



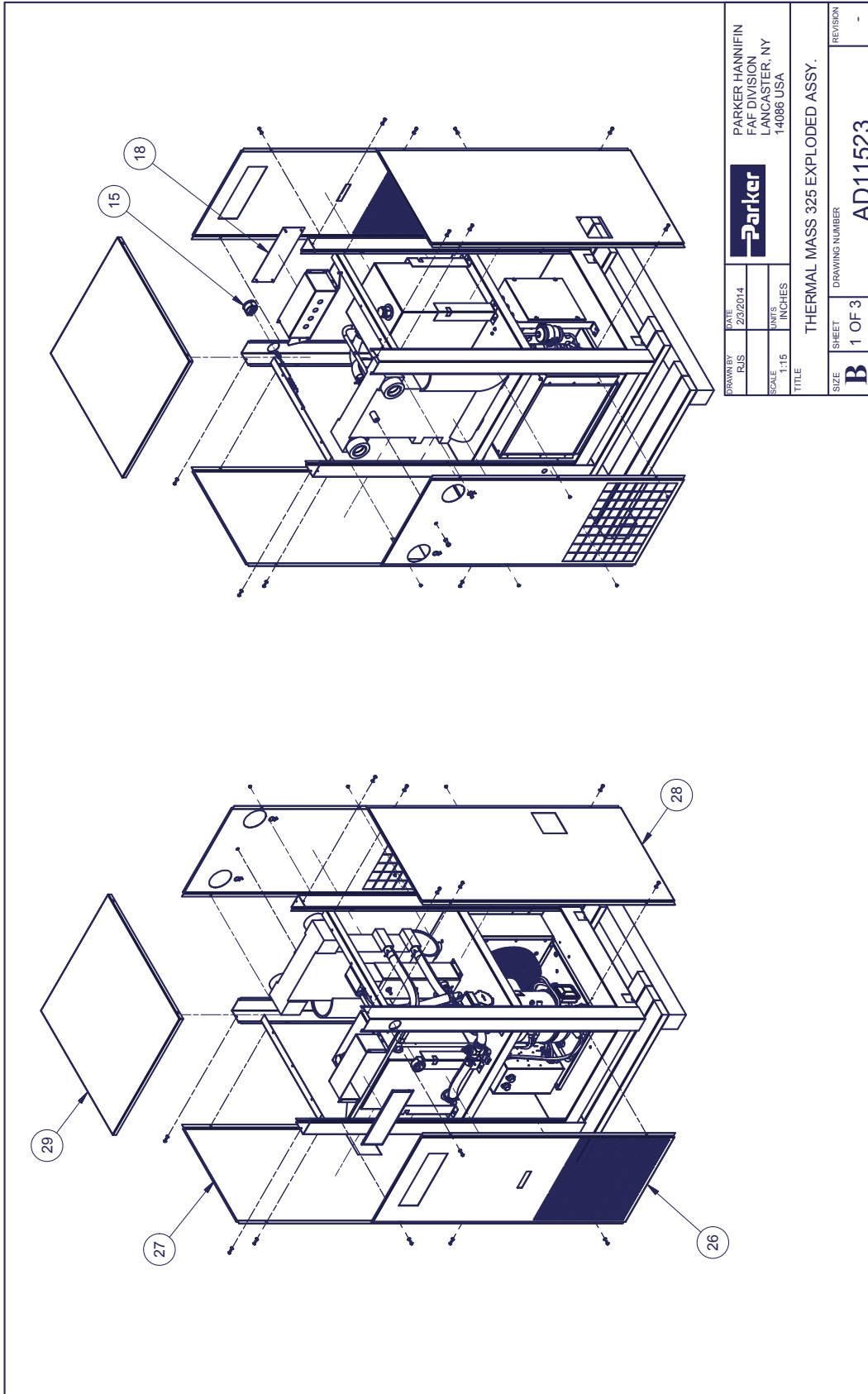
13. Exploded Views



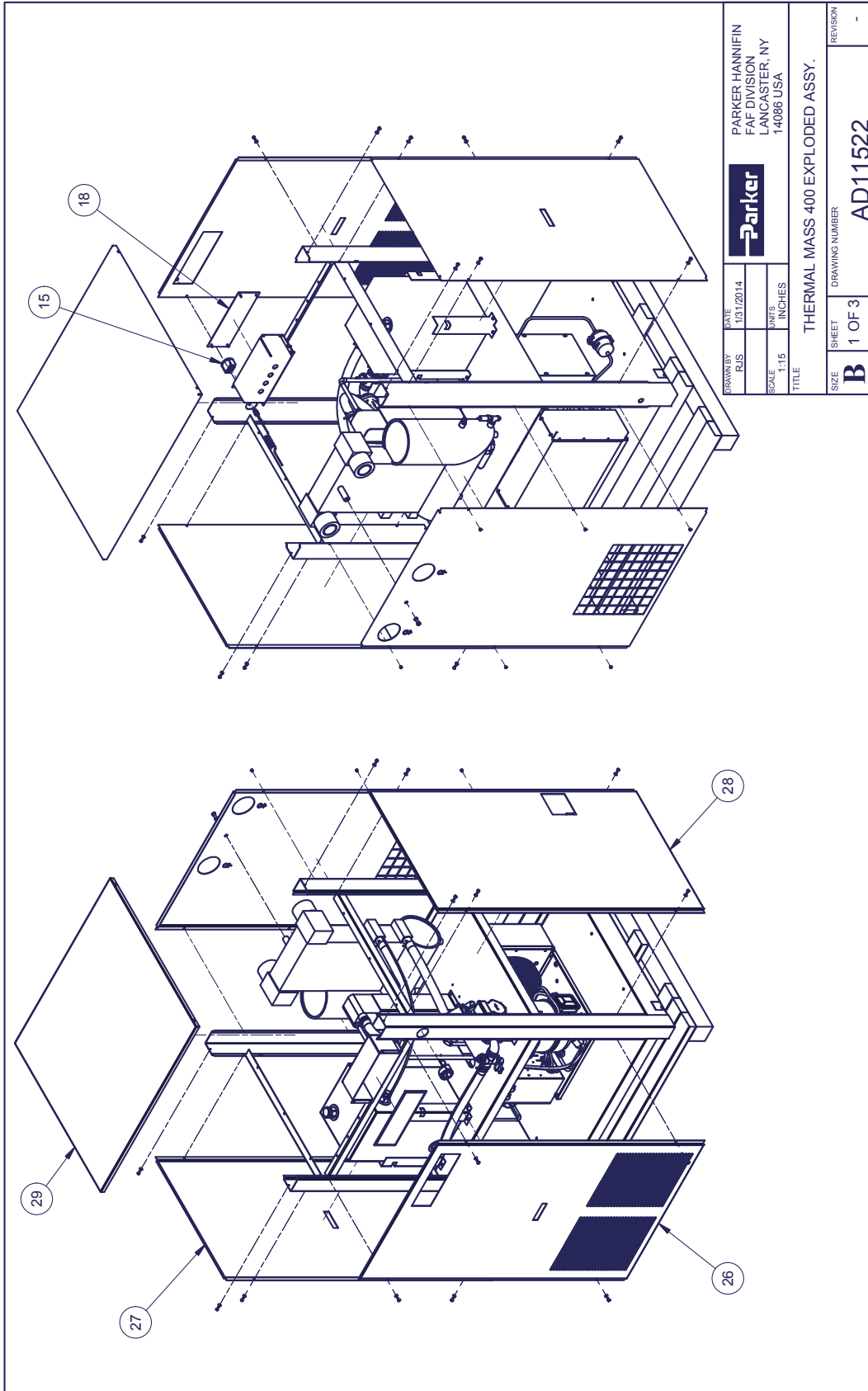
|                 |                  |   |  |
|-----------------|------------------|---|--|
| DRAWN BY<br>RJS | DATE<br>2/3/2014 | <br>PARKER HANIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |  |
| SCALE<br>1:15   | UNITS<br>INCHES  | TITLE<br>THERMAL MASS 200 EXPLODED ASSY.  |  |
| SIZE<br>B       |                  | DRAWING NUMBER<br>AD11525   |  |
| SHEET<br>1 OF 2 |                  | REVISION<br>-   |  |

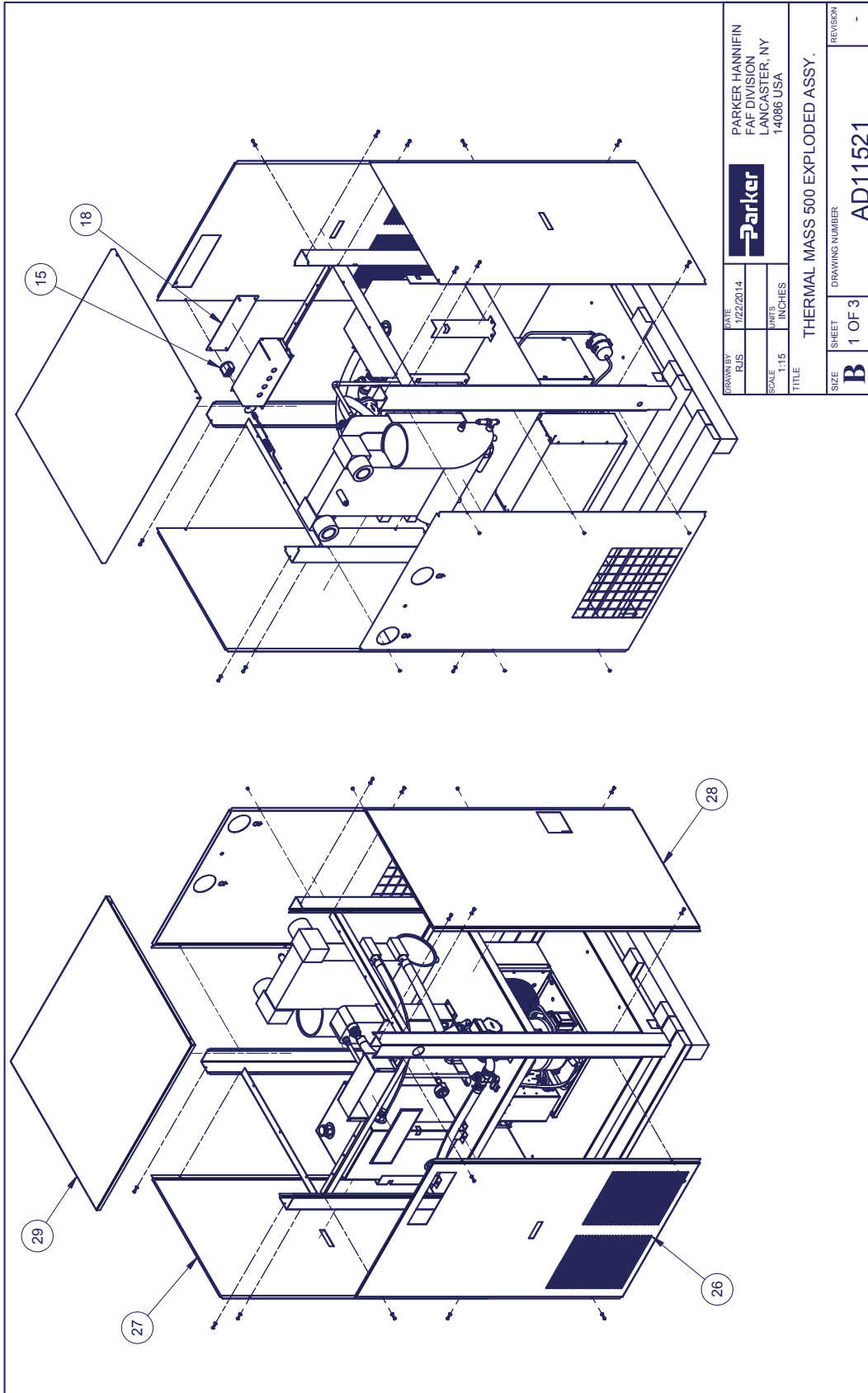


|  |                  |   |               |
|--|------------------|---|---------------|
| <b>Parker</b>                            |                  | PARKER HANNIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |               |
| DRAWN BY<br>RJS                          | DATE<br>2/3/2014 |   |               |
| SCALE<br>1:15                            | UNITS<br>INCHES  |   |               |
| TITLE<br>THERMAL MASS 250 EXPLODED ASSY. |                  |   |               |
| SIZE<br><b>B</b>                         | SHEET<br>1 OF 3  | DRAWING NUMBER<br><b>AD11524</b>                              | REVISION<br>- |



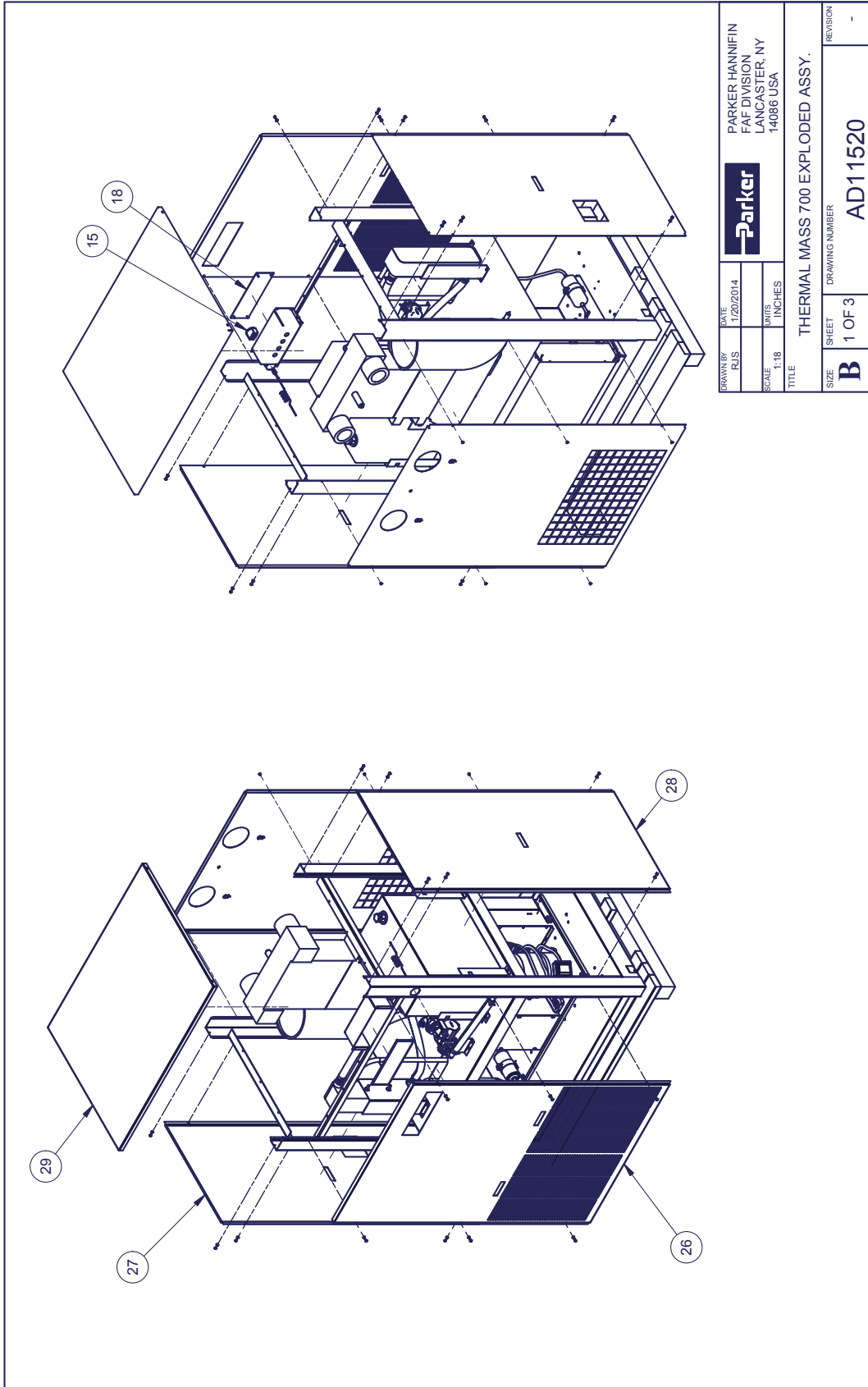
|   |          |   |                                 |
|---|----------|---|---------------------------------|
|  |          | PARKER HANNIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |                                 |
| DRAWN BY  | DATE     | SHEET   | TITLE                           |
| RJS   | 2/3/2014 | 1 OF 3  | THERMAL MASS 325 EXPLODED ASSY. |
| SCALE   | UNITS    | DRAWING NUMBER  | REVISION                        |
| 1:15  | INCHES   | AD11523   | -                               |



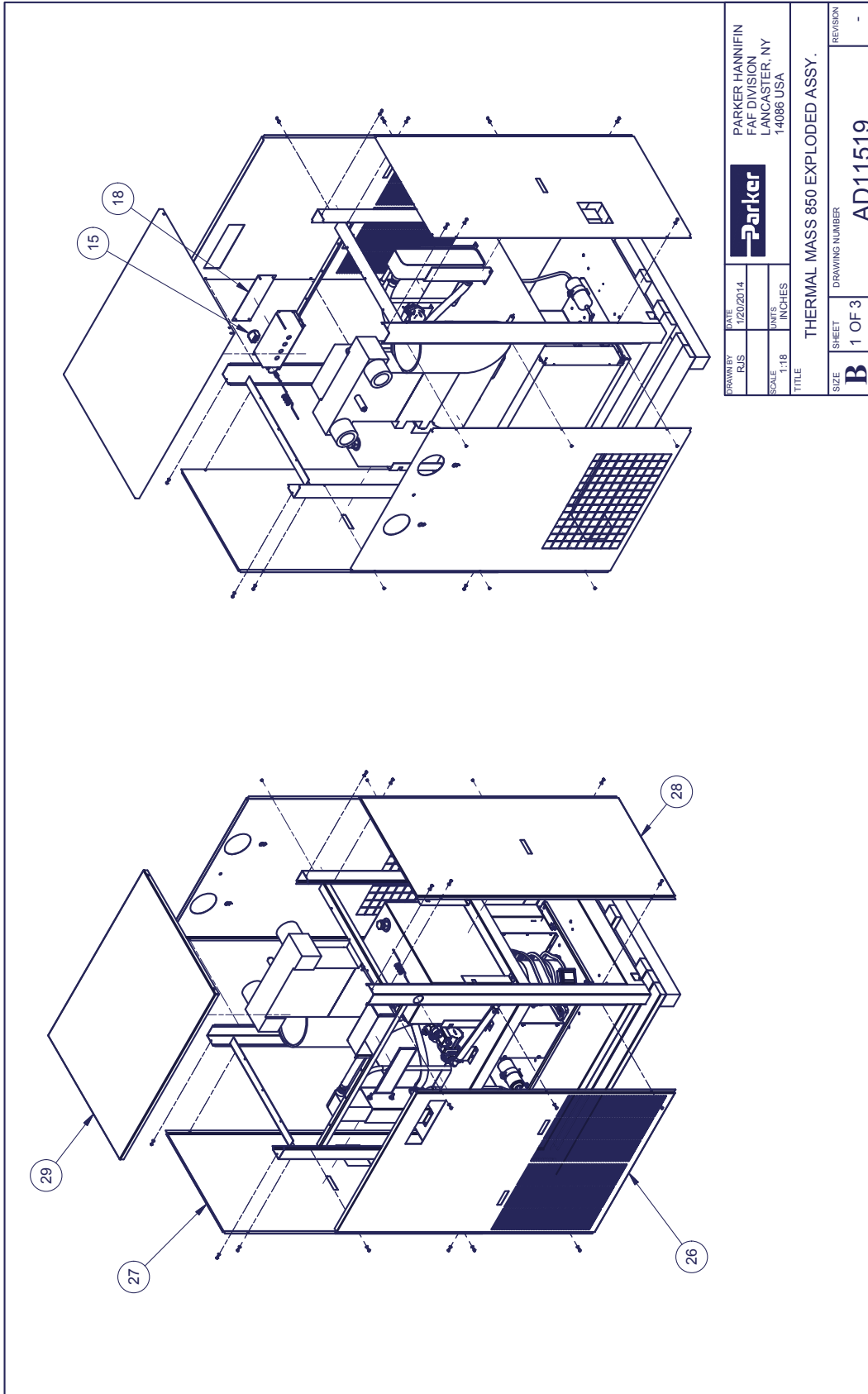


|   |                   |   |                 |
|---|-------------------|---|-----------------|
|  |                   | PARKER HANNIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |                 |
| DRAWN BY<br>RJS   | DATE<br>1/22/2014 | SCALE<br>1:15   | UNITS<br>INCHES |
| TITLE<br>THERMAL MASS 500 EXPLODED ASSY.  |                   |   |                 |
| SIZE<br>B   | SHEET<br>1 OF 3   | DRAWING NUMBER<br>AD11521                                     | REVISION<br>-   |

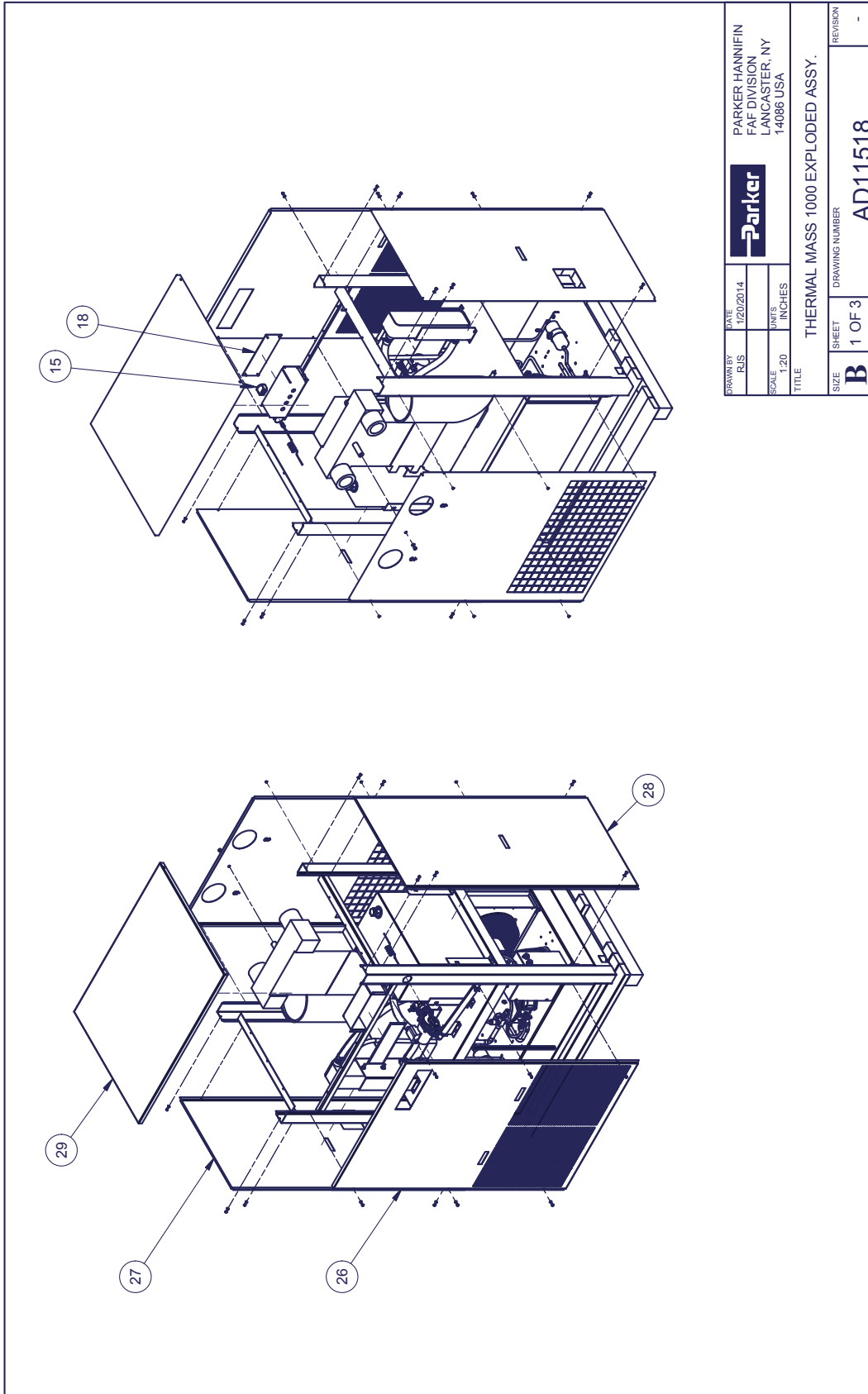




|   |           |   |          |
|---|-----------|---|----------|
|  |           | PARKER HANNIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |          |
| DRAWN BY  | DATE      | UNITS   | INCHES   |
| RJS   | 1/20/2014 |   |          |
| SCALE   | 1:18      | TITLE   |          |
|   |           | THERMAL MASS 700 EXPLODED ASSY.                               |          |
| SIZE  | SHEET     | DRAWING NUMBER  | REVISION |
| B   | 1 OF 3    | AD11520   | -        |



|   |           |   |        |
|---|-----------|---|--------|
|  |           | PARKER HANNIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |        |
| DRAWN BY  | DATE      | TITLE   |        |
| RJS   | 1/20/2014 | THERMAL MASS 850 EXPLODED ASSY.                               |        |
| SCALE   | UNITS     | SIZE  | SHEET  |
| 1:18  | INCHES    | B   | 1 OF 3 |
| DRAWING NUMBER  |           | REVISION  |        |
| AD11519   |           | -   |        |



|                                  |           |   |          |
|----------------------------------|-----------|---|----------|
| DRAWN BY                         | DATE      |  PARKER HANNIFIN<br>FAF DIVISION<br>LANCASTER, NY<br>14086 USA |          |
| RJS                              | 1/20/2014 |   |          |
| SCALE                            | UNITS     |   |          |
| 1:20                             | INCHES    |   |          |
| TITLE                            |           |   |          |
| THERMAL MASS 1000 EXPLODED ASSY. |           |   |          |
| SIZE                             | SHEET     | DRAWING NUMBER  | REVISION |
| B                                | 1 OF 3    | AD11518   | -        |



# Worldwide Filtration Manufacturing Locations

## North America

### Compressed Air Treatment Filtration & Separation/Balston

Haverhill, MA  
978 858 0505  
www.parker.com/balston

### Finite Airtek Filtration Airtek/domnick hunter/Zander

Lancaster, NY  
716 686 6400  
www.parker.com/faf

### Finite Airtek Filtration/Finite

Oxford, MI  
248 628 6400  
www.parker.com/finitefilter

### Engine Filtration & Water Purification Racor

Modesto, CA  
209 521 7860  
www.parker.com/racor

Holly Springs, MS  
662 252 2656  
www.parker.com/racor

Beaufort, SC  
843 846 3200  
www.parker.com/racor

### Racor – Village Marine Tec.

Gardena, CA  
310 516 9911  
desalination.parker.com

### Parker Sea Recovery

Carson, CA  
310 637 3400  
www.searecovery.com

### Hydraulic Filtration Hydraulic Filter

Metamora, OH  
419 644 4311  
www.parker.com/hydraulicfilter

Laval, QC Canada  
450 629 9594  
www.parkerfarr.com

### Process Filtration domnick hunter Process Filtration

Oxnard, CA  
805 604 3400  
www.parker.com/processfiltration

Madison, WI  
608 824 0500  
www.scilog.com

Phoenixville, PA  
610 933 1600  
www.parker.com/processfiltration

### Aerospace Filtration

Velcon Filtration  
Colorado Springs, CO  
719 531 5855  
www.velcon.com

## Europe

### Compressed Air Treatment domnick hunter Filtration & Separation

Gateshead, England  
+44 (0) 191 402 9000  
www.parker.com/dhfn

### Parker Gas Separations

Etten-Leur, Netherlands  
+31 76 508 5300  
www.parker.com/dhfn

### Hiross Zander

Padova Business Unit  
Padova, Italy  
+39 049 9712 111  
www.parker.com/hz

### Hiross Zander

Essen Business Unit  
Essen, Germany  
+49 2054 9340  
www.parker.com/hz

### Engine Filtration & Water Purification Racor

Dewsbury, England  
+44 (0) 1924 487 000  
www.parker.com/rfde

### Racor Research & Development

Stuttgart, Germany  
+49 (0)711 7071 290-10  
www.parker.com/rfde

### Hydraulic Filtration Hydraulic Filter

Arnhem, Holland  
+31 26 3760376  
www.parker.com/hfde

### Ujala Operation

Ujala, Finland  
+358 20 753 2500  
www.parker.com/hfde

### Condition Monitoring Centre

Norfolk, England  
+44 (0) 1842 763 299  
www.parker.com/hfde

### Parker Kittiwake

West Sussex, England  
+44 (0) 1903 731 470  
www.kittiwake.com

### Parker Procal

Peterborough, England  
+44 (0) 1733 232 495  
www.kittiwake.com

### Process Filtration domnick hunter Process Filtration

Birtley, England  
+44 (0) 191 410 5121  
www.parker.com/processfiltration

### Parker Twin Filter BV

Zaandam, Netherlands  
+31(0)75 655 50 00  
www.twinfilter.com

## Asia Pacific

### Australia

Castle Hill, Australia  
+61 2 9634 7777  
www.parker.com/australia

### China

Shanghai, China  
+86 21 5031 2525  
www.parker.com/china

### India

Navi Mumbai, India  
+91 22 651 370 8185  
www.parker.com/india

### Parker Fowler

Bangalore, India  
+91 80 2783 6794  
www.johnfowlerindia.com

### Japan

Tokyo, Japan  
+81 45 870 1522  
www.parker.com/japan

### Parker Techno

Osaka, Japan  
+81 66 340 1600  
www.techno.taiyo-ltd.co.jp

### Korea

Hwaseon-City  
+82 31 359 0852  
www.parker.com/korea

### Singapore

Jurong Town, Singapore  
+65 6887 6300  
www.parker.com/singapore

### Thailand

Bangkok, Thailand  
+66 2186 7000  
www.parker.com/thailand

## Latin America

### Parker Comercio Ltda. Filtration Division

Sao Paulo, Brazil  
+55 12 4009 3500  
www.parker.com/br

### Pan American Division

Miami, FL  
305 470 8800  
www.parker.com/panam

## Africa

Aeroporto Kempton Park, South Africa  
+27 11 9610700  
www.parker.com/africa



Parker Hannifin Corporation  
**Finite Airtek Filtration Division**

4087 Walden Avenue  
Lancaster, NY 14086  
phone 716 686 6400  
www.parker.com/faf