Copeland Scroll
F-Line Condensing Units
**F-Line**

**Features**
- Scroll Compressors
- Air & Water Cooled Condensers
- Flat Metal & Copevap™ Bases
- 1 to 13 HP
- 1, 2 & 4 Fans
- 14” to 44” Wide

**Applications**
- Walk-Ins
- Reach-Ins
- Display Cases
Multi-Ref Chassis Explanation

A multi-ref unit can be operated with any refrigerant and application listed for that unit in OPI.

There are capacity differences between refrigerants and applications so it is important that you review electrical, mechanical and performance specs prior to selecting a unit.

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Example:
FFAP-020Z With ZS13KAE Compressor

<table>
<thead>
<tr>
<th>Refrigerant</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R404A</td>
<td>6310</td>
</tr>
<tr>
<td>R404A</td>
<td>12150</td>
</tr>
<tr>
<td>R134a</td>
<td>8250</td>
</tr>
<tr>
<td>R22</td>
<td>13050</td>
</tr>
<tr>
<td>R407A</td>
<td>12400</td>
</tr>
<tr>
<td>R407C</td>
<td>12100</td>
</tr>
<tr>
<td>R404A</td>
<td>18050</td>
</tr>
<tr>
<td>R134a</td>
<td>13200</td>
</tr>
<tr>
<td>R22</td>
<td>20100</td>
</tr>
<tr>
<td>R407A</td>
<td>19200</td>
</tr>
<tr>
<td>R407C</td>
<td>18650</td>
</tr>
</tbody>
</table>

Condenser Sized For Largest Capacity = Chassis C
404A LT And R134a Have Significantly Less Capacity = Chassis B
Horsepower Does Not Guarantee An Accurate Cross

### Cross References Must Be Made By Capacity At The Operating Conditions

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Size</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>FJAL-B200</td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>FPAK-020Z</td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>FFAP-020Z</td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td>FPAK-013Z</td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
</tbody>
</table>
Multi-Ref Electrical Explanation

Compressors are run at a UL specified condition and then the voltage is dropped in steps until the protector trips.

The current where the protector trips is the MCC.

\[ RLA = \frac{mcc}{1.4} \]

\[ MCA = 1.25 \times (RLA + (\text{fan amps} + 0.3)) \]

Each refrigerant will trip at a different current but multi-ref units must use the highest of all the refrigerants.

In some cases, the new models will have higher MCA and fuse size requirements because of this.
Electronic Unit Controller

Key Functions
• Controls Unit Based On Suction Pressure
• Fan Cycling With Mid Coil Temperature*
• Discharge Line Protection*

Key Benefits
• Quick & Easy Set-Up
• Improved Set-Point Accuracy
• Enables Multi-Refrigerant Product
• Trouble Shooting Diagnostics
• Added System Safeguards

* Feature Dependent On System Design
Unit Simplification

**Mechanical Controls**

- Condenser
- Discharge Line T-Stat
- TXV
- Evaporator
- Fan Cycling Control
- High Pressure Switch
- Time Delay
- Performance Alert Light
- Low Pressure Control

**Electronic Control**

- Condenser
- TXV
- Evaporator
- Temp Sensor
- Pressure Sensor

Presentation name (update in Slide Master)
Mechanical Vs Electronics
Ease Of Use – Adjusting Pressure Controls

**Mechanical**

- Coarse Adjustments
- Drift Over Time

**Steps For Adjusting Mech. Low Pressure Control**

1. Hook Up Gage Set
2. Read System Pressure
3. Adjust The Mechanical Pressure Control With A Wrench Or Screwdriver
4. Allow System Pressures To Settle
5. Read System Pressures
6. Final Adjustment To The Mechanical Pressure Control
7. Remove The Gage Set

**Electronics**

- Fine Adjustments
- 1.5% Accuracy Over Life

**Steps For Adjusting Electronic Low Pressure Control**

1. Hold 3 Seconds To Enter Menu (PSI Light Flashing)
2. Cycle Through Menu Options
3. Select Value
4. Adjust Value
5. Store Value

**Up To 25 Minutes!**

**Less Than 1 Minute!**
Digital Temperature Display

- Press The Up Arrow Button To Display The Current Condenser Temperature.
- Press The Down Arrow Button To Display The Current Discharge Line Temperature.
Electronic Unit Control Service Parts

• Controllers:
  – 115V Without Fan Cycling (943-0152-00)
  – 115V With Fan Cycling (943-0154-00)
  – 230V Without Fan Cycling (943-0153-00)
  – 230V With Fan Cycling (943-0155-00)

• Sensors:
  – Low Pressure Transducer / Cable (929-0114-00)
  – Discharge Line Temperature Sensor (929-0113-00)
  – Mid Coil Temperature Sensor (929-0114-01)

Important:
Replacement Control Set Points Must Be Set to Match Settings Listed On Unit Label.
Information Is At Your Finger Tips

On The Box

In The Box

On The Unit

In The Unit
EUC One Minute Challenge

- [http://emersonclimate.com/oneminutechallenge/](http://emersonclimate.com/oneminutechallenge/)

On-Line Simulator For Set Point And Troubleshooting Training.