

***PR SERIES SELECTION AND OPTIMIZATION GUIDE***



##

**SOLUTIONS TO FREQUENTLY MISSED SELECTIONS**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field #** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **Field Position & Length** | **1-2** | **3** | **4** | **5-6-7** | **8-9** | **10** | **11** | **12** | **13** | **14-15** |
| **Field Definition** | **Product Family** | **Type** | **Application** | **Nominal Capacity** | **Cabinet Size** | **Controls** | **Unit Voltage** | **Model Vintage** | **Airflow Orientation** | **Supply Blower / Size Type** |
| **Example** | **PR** | **O** | **A** | **240** | **C3** | **A** | **2** | **A** | **A** | **BG** |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **Field #** | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| **Field Position & Length** | **16** | **17** | **18** | **19** | **20** | **21** | **22-23** | **24** | **25** | **26-27** |
| **Field Definition** | **Supply Blower Options** | **Supply Motor Size** | **Supply Motor Type** | **Cooling Coil** | **Compressor Type** | **Reserve for future use** | **Refrigeration Controls / Options** | **Heating Type** | **Electric Heating Capacity** | **Gas Heating Capacity** |
| **Example** | **F** | **E** | **1** | **B** | **5** | **0** | **CF** | **0** | **0** | **00** |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **Field #** | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| **Field Position & Length** | **28** | **29** | **30** | **31** | **32** | **33-34** | **35** | **36** | **37** | **38-39** |
| **Field Definition** | **Heater Control** | **Heating Gas Safety Controls** | **Energy Recovery** | **Energy Recovery Options** | **Ventilation** | **Exhaust Blower Size** | **Exhaust Blower Options** | **Exhaust Motor Size** | **Exhaust Motor Type** | **Corrosion Protection** |
| **Example** | **0** | **0** | **F** | **F** | **C** | **00** | **T** | **D** | **1** | **00** |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **Field #** | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 |  |  |
| **Field Position & Length** | **40-41** | **42-43** | **44-45** | **46-47** | **48** | **49** | **50-51** | **52-53** |  |  |
| **Field Definition** | **Maintenance Options** | **Power Options** | **Control Options** | **Safety Controls** | **Pre-Filter** | **Reserve for Future Use** | **ALC Ship With Options** | **PR ROOF CURBS** |  |  |
| **Example** | **00** | **00** | **00** | **00** | **0** | **0** | **BK** | **CC** |  |  |

Airflow Orientation &Ventilation

* These options are dependent upon the unit application and PR Controls selected. Use the tables in the Controls Guidelines section to ensure what is compatible.

Refrigeration Controls/Options

* These options are dependent upon the compressor type selected. Refer to the Refrigeration Controls Guideline section to ensure the correct components are selected with the desired application.

Supply Blower Options & Supply Blower Type

* The ACE Selection Software tool auto selects the fan based on the data entered, and this needs to be verified in order to make sure the fans do not conflict.
* If the ACE Selection Software selects an ECM Fan, then **ONLY** select from the ECM options.
* ANPL and ANPA fans are Comefri, and this fan is compatible **ONLY** with options labeled with “Comefri”
* Refer to the PR Cabinet Rules section to verify which fans are compatible with which unit.

Exhaust Blower Options and Exhaust Motor Type

* The ACE Selection Software tool auto selects the fan based on the data entered, and this needs to be verified in order to make sure the fans do not conflict.
* If the ACE Selection Software selects an ECM Fan, then **ONLY** select from the ECM options.
* ANPL and ANPA fans are Comefri, and this fan is compatible **ONLY** with options labeled with “Comefri”
* Ensure that options with no exhaust air flow do not select any options regarding exhaust fans. This will cause a conflict in the software.
* As of right now, 25” fans select with 3 HP, however the lowest available is 5 HP. If this occurs contact the apps department.
* Refer to the PR Cabinet Rules section to verify which fans are compatible with which unit

## PR CABINET RULES

*Use the following matrix to determine which PR Components are compatible.*

PR Rules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cabinet** | **MAX Blower** | **MAX ECW** | **Max Heating Capacity** | **Max Furnace XL Cabinet** |
| **A Cabinet**450-2500 CFM | **GHKM400****355,315,280****(ECM Motors ONLY)** | **ECW364****244,324** | **100 MBH****(30 KW)** | **N/A** |
| **B Cabinet**2000-4000 CFM | **GHKM450****450,355** | **ECW424****244,324,****364** | **200 MBH****(100 KW)** | **(2)200 MBH** |
|  | **ANPL16****10,11,12,14,16** |  |  |
| **C Cabinet**3000-7000 CFM | **GHKM450****ANPL20****14,16,18** | **ECW486****324,364,****424,484** | **300 MBH****(100 KW)** | **(2)400 MBH** |
| **D Cabinet** | **2-GHKM450****2-355, 450,** | **ECW706****484,486,** | **400 MBH****(150 KW)** | **(2)600 MBH** |
| 6000-11000 CFM | **ANPL25** | **544,606,****664,666** |  |
|   | **22,20,18** |  |   |
| **E Cabinet**8000-20000 CFM | **(2) ANPL20****(1) ANPL25** | **ECW8412** | **600 MBH****(150 KW)** | **Vertical Supply****(4)400 MBH** |
|  |  | **(No horizontal supply available)** | **Horizontal Supply****(2)600** |
|   |   |  |  |

Furnace Options

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Furnace MBH Input** | **Furnace MBH Output** | **Heaters** | **Stages** | **Modulation** |
| **75** |  **60** | **(1) 75**  | **2** | **5:1** |
| **100** |  **80** | **(1)100** | **2** | **5:1,10:1** |
| **150** |  **120** | **(1)150** | **2** | **5:1,10:1** |
| **200** | **160** | **(1)200** | **2** | **5:1,10:1** |
| **250** | **200** | **(1)250** | **2** | **5:1,10:1** |
| **300** | **240** | **(1)300** | **2** | **5:1,10:1** |
| **350** | **280** | **(1)350** | **2** | **5:1,10:1** |
| **400** | **320** | **(1)400** | **2** | **5:1,10:1** |
| **500** | **400** | **(1)500** | **2** | **5:1,10:1** |
| **600** | **480** | **(1)600** | **2** | **5:1,10:1** |
| **200** | **160** | **(2)100** | **4** |  **10:1** |
| **300** | **240** | **(2)150** | **4** |  **10:1** |
| **400** | **320** | **(2)200** | **4** |  **10:1** |
| **500** | **400** | **(2)250** | **4** |  **10:1** |
| **600** | **480** | **(2)300** | **4** |  **10:1** |
| **700** | **560** | **(2)350** | **4** |  **10:1** |
|  **800** | **640** | **(2)400** | **4** |  **10:1** |
|  **1000** | **800** | **(2)500** | **4** |  **10:1** |
|  **1200** | **960** | **(2)600** | **4** |  **10:1** |
| **800** | **640** | **(4)200** | **8** |  **20:1** |
|  **1000** | **800** | **(4)250** | **8** |  **20:1** |
|  **1200** | **960** | **(4)300** | **8** |  **20:1** |
|  **1400** |  **1120** | **(4)350** | **8** |  **20:1** |
|  **1600** |  **1280** | **(4)400** | **8** |  **20:1** |

## OPTIMIZING PR CABINET SELECTIONS

*Use the following matrix for determining an optimal PR Cabinet when price is a concern.*

PR Cabinet Selection Guide

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cabinet** | **CFM Range** | **Gas Heater Max Size** | **When to use XL** | **Notes** |
| **A Cabinet** | **450-3,300****Horizontal SA 3,300 Max****Horizontal RA 2,700 Max** | **100 MBH** | **NA** | **ECM supply fans ONLY.****If you need ODP or TEFC use B Cabinet.** **On a PRRA, will require 6 row coil for DOE.** |
| **B Cabinet** | **2,500-5,200****Horizontal SA 5,200 Max****Horizontal RA 3,300 Max** | **200 MBH****400 MBH (XL)** | **When you need between****350-400 MBH** | **If you need 250-300 MBH use the C cabinet. (Price will be lower always)** |
| **C Cabinet** | **3,000-6,200****Horizontal SA 6,200 Max****Horizontal RA 3,000 Max** | **300 MBH****800 MBH (XL)** | **350-800 MBH** | **You might not be able to run ECW above 5,000 CFM in Ace. If this occurs send to apps.** |
| **D Cabinet** | **6,000-11,000****Horizontal SA 9,500 Max****Horizontal RA 5,500 Max** | **400 MBH****1,200 MBH (XL)** | **400 MBH-1,200 MBH****Some Heat Pumps** | **D Cabinet is going to be a better price than E 99% of the time.** **Use Sub-cooling and always check 4 row coil performance compared to 6 row coils.** |
| **E Cabinet** | **8,000-20,000****Horizontal SA 16,000 Max (XL ONLY)****NO Horizontal RA (E AND EXL)** | **600 MBH****1,600 MBH XL (Vertical)****1,200 MBH XL (Horizontal)** | **Required for some** **Tandem compressors****OR over 600 MBH** | **Check 4 row coil performance** **to ensure price savings for minimal performance drop.**  |

Cabinets

* Smaller cabinet size will **ALWAYS** result in a better price. C is cheaper than BXL, CXL is cheaper than D, etc...

When to go to EXL

* Only go to EXL when furnace size requires it.

##

## REFRIGERATION CONTROLS GUIDELINES

*Use the following table to ensure the correct PR selections are made.*

PR Series Refrigeration Controls Application Based on Compressor Selection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compressor Type** | **How to Implement****HGRH** | **How to Implement****HGBP** | **Notes** | **How to Implement****Liquid Subcooling** |
| **Standard Scroll/Single Circuit** | **ONLY** Single Circuit. Staged **OR** Modulating. | **REQUIRED** for 100% OA applications.Recommended for RA and MA applications. | Units 96 MBH and **BELOW** Standard Scroll **MUST** select Single Circuit. | **DO NOT** select with Dual Circuit HGRH.Selectwith Single Circuit HGRH **OR** alone.**DO NOT** select with Heat Pump applications **ABOVE** 360 MBH. |
| **Dual Scroll/****Dual Circuit** | Select Dual Circuit **OR**Single CircuitStaged **OR** Modulating. | Select Dual Circuit **ONLY** | Units 120 MBH and **ABOVE** |
| **Digital Scroll/Single Circuit** | Single Circuit **ONLY.**Staged **OR** Modulating. | **No HGBP with Digital Scrolls.** | Heat Pump and Water Source units **MUST** use Digital Scroll(s).Units 96 MBH and **BELOW** |
| **Single Digital and Single Scroll/Dual Circuit** | Select Dual Circuit **OR**Single CircuitStaged **OR** Modulating. | Lag Circuit **ONLY**.(Optional) | Digital Scroll **ALWAYS** on lead circuit.Units 120 MBH and **ABOVE** |
| **Dual Digital Scroll/****Dual Digital Circuit** | Select Dual Circuit **OR**Single CircuitStaged **OR** Modulating. | **No HGBP with Digital Scrolls.** | Units 120 MBH and **ABOVE** |

**Price Optimizing Measures**

Compressors

* Digital **ALWAYS** more expensive than regular scroll compressors.

Liquid Subcooling

* Recommended as a method to improve upon cost and provide more efficiency for 100% OA Units.
* No Liquid Subcooling is available for Heat Pump applications **ABOVE** 360 MBH. The receiver for this application is too big and it cannot be implemented for that purpose.

4 row coils vs. 6 row coils (Especially when deciding between the E and D cabinet).

* 4 row coils will **ALWAYS** result in a lower price, however compare with 6 row coils to ensure performance drop is minimal/acceptable.

**ACE Selection Notes for Refrigeration Controls**



Required when regular scroll compressor are used for 100% OA systems.

Staged HGRH

**Only**  with single circuit HGRH

**CONTROLS GUIDELINES**



Economizer for 100% OA units: It is included in the standard SOO. Refrigeration system will turn off and only fans will work to introduce 100% OA when conditions are cold and dry enough.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PR Controls****Vs.** **Airflow Orientation** | **A** = Vertical Supply and Vertical Return | **B** = Horizontal Supply and Vertical Return | **C** = Vertical Supply and Side Return | **D** = Horizontal Supply and Side Return | **E** = Vertical Supply and No Return | **F** = Horizontal Supply and No Return |
| **A** = ALC, Standard Program, DOAS |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  |
| **B** = ALC, Standard Program, DOAS w/ Recirc NSB |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  |   |   |
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| **E** = ALC, Standard Program, DOAS for Lonworks |   |   |   |   | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  |
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| **J**= Controls by others, factory mounted |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |
| **K**= Terminal strip, controls provided and field mtd. by others |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  |
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| **M**= Compressor Lockout Thermostat |   |   |   |   |  C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png | C:\Users\gerald.hornik\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\I0MOGA84\Check_mark_23x20_02.svg[1].png  |
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