



# Carrier Bryant Mini VRF Installation Checklist



Site Name:  
 Address:  
 City, State:  
 Contact:

Zip:  
 Phone:

**NOTE: Please fill one checklist out per system to be started up and commissioned. Check boxes and fill in fields if applicable.**

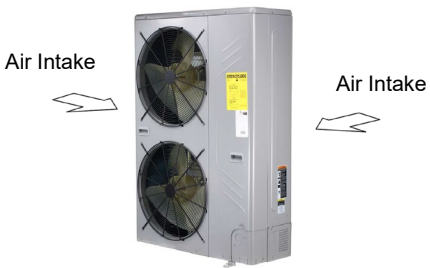
Model Number of Outdoor Unit: Quantity of Indoor Units:  
 Total number of Mini VRF systems to be commissioned at time of request:  
 Centralized Control type. If two, list both.  
 Use separate Centralized Control Checklist for startup request.

Local Controls Used:  
 Select Type and qty.

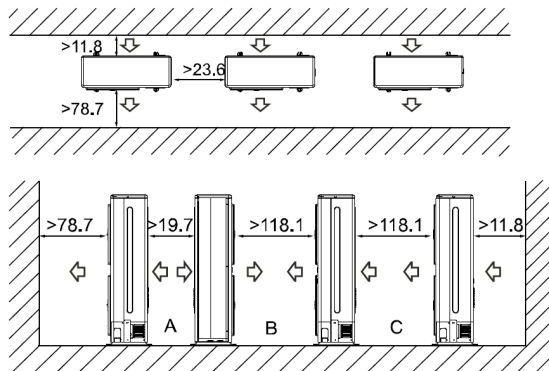
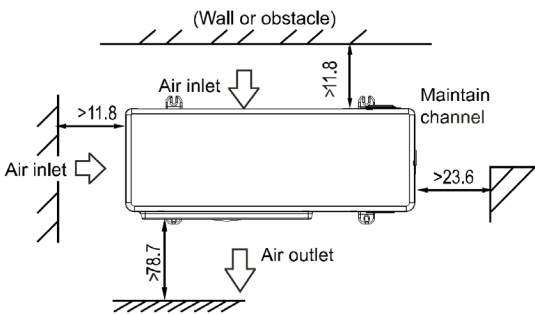
Prior to startup we recommend you walk the job site referencing the Refrigerant Piping and Control Wiring layout (from V-Pro Software), supplied by Carrier Enterprise. Note any changes on the V-Pro software drawing and return the drawing to the designer for review. This is necessary to verify that any changes will not break the piping rules and/or alter the corrected capacity of the equipment. This is also what we will use to calculate the additional refrigerant charge for the system. After verification, a revised drawing will be provided. It is important to have the additional refrigerant charge calculation before the end of the evacuation process, see Section 7.3. Please plan accordingly.

## 1. Outdoor Unit – Placement:

Clearances - Enter actual measurements below:



Front	Inches	Back	Inches
≥ 80" service & air flow clearance.		≥ 12" service & air flow clearance.	
Left Side	Inches	Right Side	Inches
≥ 12" service & air flow clearance.		≥ 24" service & air flow clearance.	
Top	Inches		
≥ 24" clearance to any obstacle above unit.			
Between Unit(s):	Inches		
≥ 24" service & air flow clearance			
Wall height around unit (If within 40" of unit) – height	Inches		





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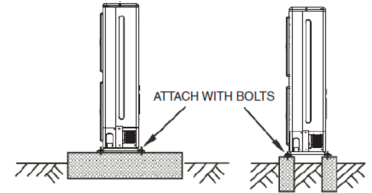


Contractor:  
Address:  
City, State:  
Contact:

Zip:  
Phone:

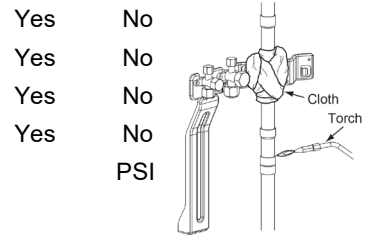
## 2. Outdoor Units – Mounting:

- The outdoor unit is level. Yes    No
- The mounting base fully supports the unit across front and back. Yes    No
- All four anchor bolts have been installed and secured. Yes    No
- There is adequate water drainage, for defrost operation. Yes    No
- The mounting base height is more than the expected snow level. Yes    No



## 3. General Refrigerant Piping:

- There are NOT any added refrigerant components - driers, sight glasses, solenoid valves, etc. Yes    No
- Full port ball valves may be used for component isolation during service. Yes    No
- Were ball valves installed. Yes    No
- If yes, verify all ball valves are in the open position. Yes    No
- Ball valves are installed in the correct configuration per their installation instructions. Yes    No
- Nitrogen was purged through the system during all brazing. Yes    No
- Enter the pressure setting used to purge nitrogen. PSI
- 15% brazing rods must be used for all brazed joints. Yes    No
- During brazing, a wet cloth was wrapped around valves. Yes    No
- A R-410A rated flaring tool to form all flare connections. Yes    No
- A back up wrench and torque wrench were used on all flare fittings. Yes    No



OUTSIDE DIAMETER (in.)	RECOMMENDED TORQUE (ft-lb)
1/4	15
3/8	26
1/2	41
5/8	48

## 4. Outdoor Unit – Refrigerant Piping:

- Piping can exit the unit from the SIDE. Yes    No
- Field installed refrigerant lines are connected per the outdoor unit Install Manual. Yes    No
- Field installed refrigerant lines are within the allowable length & height differences. Outdoor Unit Install Instructions pages 5 thru 7. Yes    No
- The field installed refrigerant line sizes and lengths, match the V-Pro Report\* Yes    No
- \*If at anytime there is a change in the actual piping installation from the design layout, it must be reported back to the designer for verification. Yes    No
- All refrigerant lines are insulated separately with min. 3/4" insulation. Yes    No
- Check local code, some municipalities require thicker insulation. Yes    No



## 5. Indoor Unit Mounting:

All indoor unit locations have been verified by Model/Size, site plans & V-Pro Report.	Yes	No
All indoor units are mounted and secured per their installation instructions.	Yes	No
All indoor units are level.	Yes	No

## 6. Indoor Refrigerant Piping – Y Branching Joints:

Branching Joints Heat Pump – 40900031, 032

Horizontal within  $\pm 10^\circ$  per instructions.

Are there any "Ys" installed vertically.

Installed with single end always towards outdoor unit.

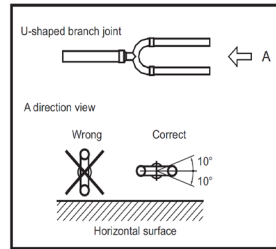
Y Joints are supported before and after.

Sockets, joints and insulation were installed per instructions.

"Y" joints are the correct size and match the locations as shown on the V-Pro Report.

Maintain a minimum distance of 20" between branching joints, headers, elbows and equipment.

Recommend horizontal runs to be 3 times that of the vertical when traps cannot be avoided.



Yes	No
Yes	No
Yes	No
Yes	No
Yes	No
Yes	No
Yes	No

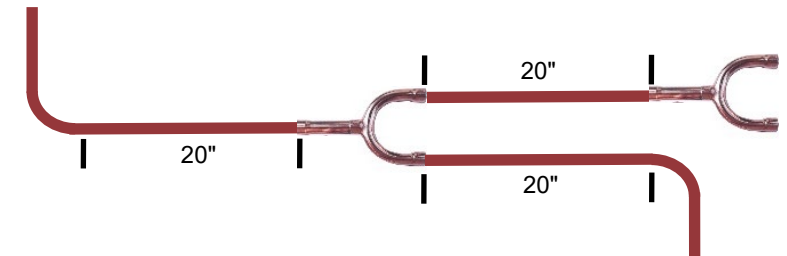
### <Gas / Liquid side>

Install the branching pipes horizontally or vertically to make the flow split evenly.

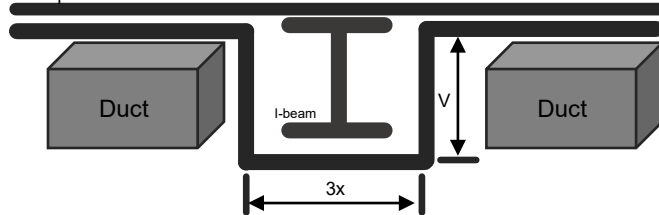


**Vertical**

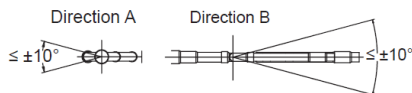
Installed with single end always towards outdoor unit.



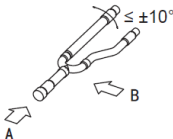
Example:



### Horizontally Placing Branch Pipe



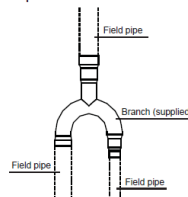
A horizontally incline angle should not larger than  $10^\circ$ .



### Heat insulation

Be sure to insulate the branches against heat

1) Example of connected branch.

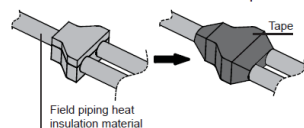


2) Use the supplied heat insulation material to insulate the branches against heat.



heat insulation material(supplied)

3) Apply the heat insulation material and seal all connections with tape.





# Carrier Bryant Mini VRF Installation Checklist

## 7.1 Refrigerant Piping – Leak Check:

For Heat Pump Systems, connect to the two main refrigeration stop valves at outdoor unit.	Yes	No
Only use Dry Nitrogen.	Yes	No
Enter indoor temp/outdoor temps during 24hr Pressure Test start: Inside <span style="float: right;">°F</span> Outside <span style="float: right;">°F</span>		
Pressure tested for 24hrs. @ 500PSI.	Yes	No
If not 500PSI enter your final pressure test.		PSI

If the pressure test resulted in a loss of pressure, locate and repair the leak(s). Then re-test as above while taken in to account the following. Compare temperature differences above - there could be an approximate 2.6 PSI difference for every 1°F of temperature change. i.e. - If there was a 10°F temperature rise from start to end, the pressure would have increased approx. 26 PSI. Likewise, if there was a 10°F temperature fall the pressure would have decreased by approx. 26 PSI.

## 7.2 Refrigerant Piping – Evacuation:

Do NOT open service valves until the deep vacuum of 500 microns or below has been achieved and the additional charge has been added. See Section 7.3 for additional charge instructions.

A micron gauge was used.	Yes	No
Verify that the micron gauge is connected at a point where it can read the system's pressure at all times during this process, even when the vacuum pump is not running during the hold test.		
All refrigeration piping has held below 500 microns for 1 hour. Enter final reading.	Yes	No

Enter Triple Evacuation readings and times below.

Step 1	Microns	Day/Time	Length of Time
Step 2	Microns	Day/Time	Length of Time
Step 3	Microns	Day/Time	Length of Time

Vacuum was broken with additional refrigerant charge.	Yes	No
If not with what, please explain.		

## 7.3 Refrigerant Piping – Additional Refrigerant Charge:

Do NOT open unit service valves until additional refrigerant charge has been calculated, added and recorded. The V-Pro software calculates the additional refrigerant charge based on the refrigerant piping layout. If at anytime there is a change in the actual piping installation from the design layout, it must be reported back to the designer for verification.

Has the updated copy of Refrigerant Piping & Wiring Layout been sent into CE.	Yes	No
If not send your revised version to your sales representative for updating.		

Enter additional refrigerant charge amount - R410A.	Lbs.	Oz.
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Above is the preferred method of determining the additional refrigerant charge. Refer to the outdoor unit installation instructions for an alternate method. If the alternate method is used, please use the notes page of this document to show how the above amount was calculated. With the system at 500 microns or less the majority (or all) of the additional refrigerant charge can be added at this time breaking the vacuum.

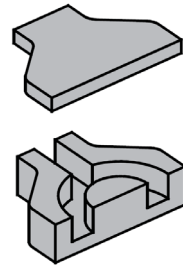
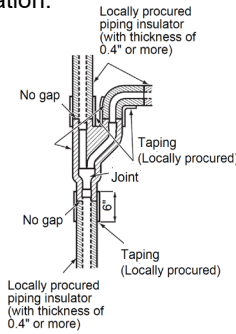
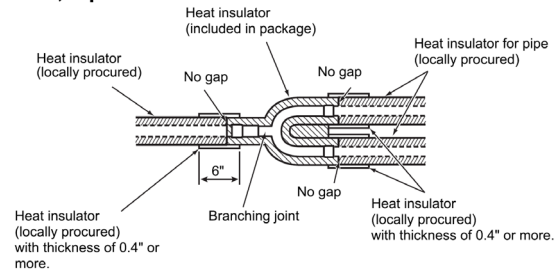
Digital refrigerant scale used to weight in the additional charge on the liquid side of the system.	Yes	No
Was the total additional charge added at this time.	Yes	No
If NO, enter the amount of charge added at this time.	Lbs.	Oz.
The remainder of the additional charge can be added during the system start up process.		

Record additional charge amount inside the outdoor unit using a permanent marker.	Yes	No
Open the unit service valves – Suction and Liquid.	Yes	No

## 8. Refrigerant Piping – Insulation:

All refrigerant lines are insulated individually.	Yes	No
Pipe insulation has temperature rating > 248°F and ≥ 3/4" wall thickness.	Yes	No
Check local codes where job site is located, some areas by code require 1.5" thickness or greater.		
Indoor unit line connections are insulated individually.	Yes	No
Heat insulators supplied with branching "Y" joints are installed per their instructions.	Yes	No
Heat insulators supplied with indoor units are installed per their instructions.	Yes	No
There are no gaps between heat insulators and pipe insulation.	Yes	No

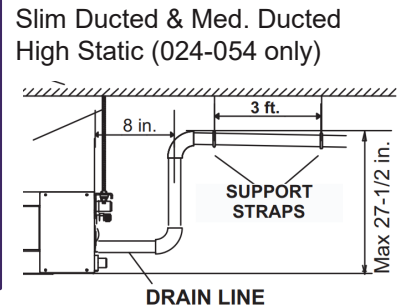
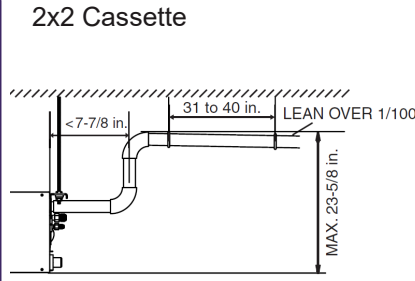
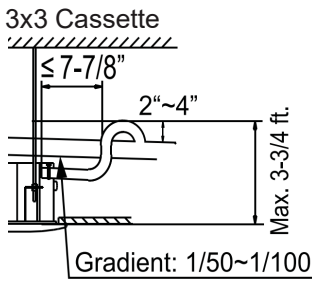
**<Gas, liquid side>**



## 9. Indoor Unit – Condensate Drain Lines:

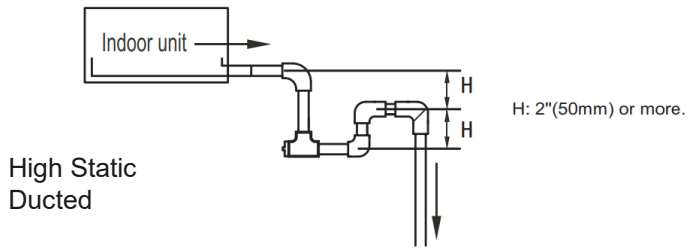
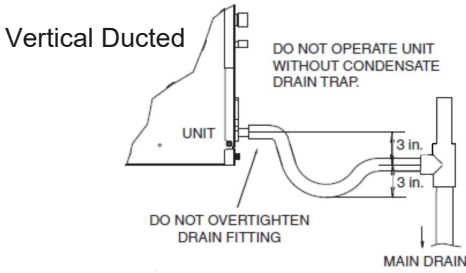
The following units either have an internal pump or the drain is located on the positive side of the blower. High Wall; Compact 4 Way Cassette; 4 Way Cassette; Under Ceiling - Floor; Slim Duct; Medium Duct; High Static Duct (024~054kbtu - ONLY); Outside Air and Floor Console Units - Do Not require an external condensate trap.

Verify there are no external traps on the above indoor listed units.	Yes	No
Condensate lift pump accessories are available for most indoor units		
Were any accessory pumps required for this application.	Yes	No
If YES, verify these accessories have been installed per their instructions.	Yes	No
Are there condensate pump safety switch(s) wired to the indoor unit.	Yes	No
Cassette's; Slim, Medium & High Static Ducted (024-054) units have a built-in condensate lift pump.		
Verify the drain line is installation within the limitations shown in the installation instructions.	Yes	No



## 9. Indoor Unit – Condensate Drain Lines(cont.):

The following units require an external condensate trap.  
Vertical & High Static Ducted (072-096)

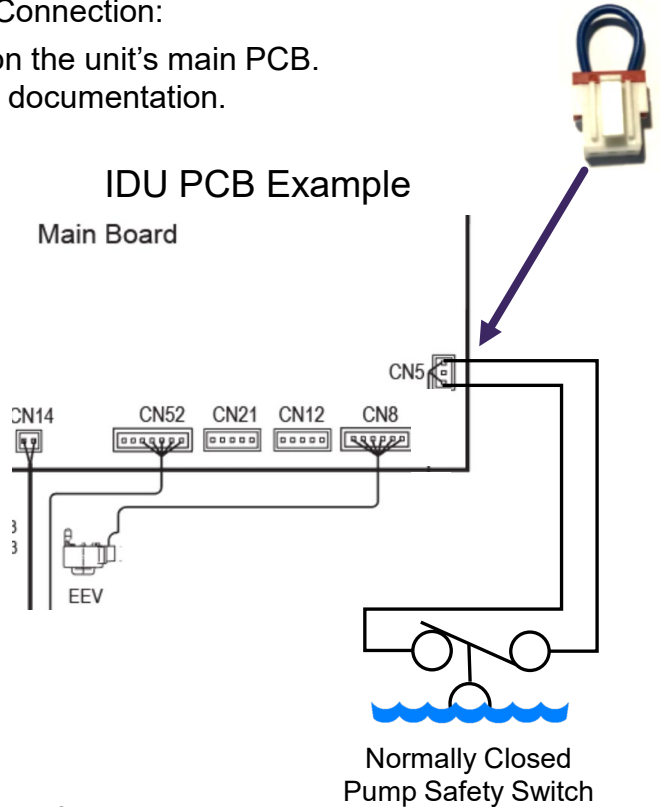


All drains have been insulated.	Yes	No	All drains are sloped properly.	Yes	No
All drains have been checked for leaks.	Yes	No	All drains are supported properly.	Yes	No
All drains installed per instructions and local codes.				Yes	No

## 10. Indoor Unit – External Condensate Safety Connection:

The following Indoor Units have a connection on the unit's main PCB.  
NOTE: Some of these may not show in factory documentation.

- 40VMA Outside Air
- 40VMC Compact Cassette
- 40VMF Cassette
- 40VMH High Static
- 40VML Low Static
- 40VMM Med Static
- 40VMR Floor Console
- 40VMU Under Ceiling/Floor
- 40VMV Vertical
- 40VMI 1-Way Cassette
- } CN5
- 40VMW High Wall
- } CN19
- 40VMD – Multi-Port Box
- } CN27



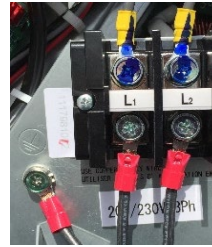
**Attention:**  
Zero Volt Connection

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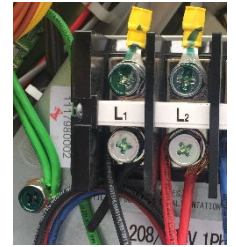
## 11.1 Electric Wiring – Power Wiring Outdoor Unit:

Every outdoor unit must have a dedicated power supply.  
Power supply wiring shall be installed in compliance with NEC and local codes.

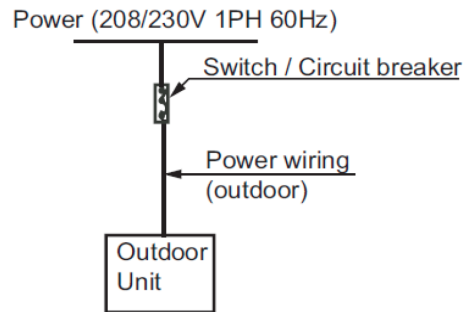
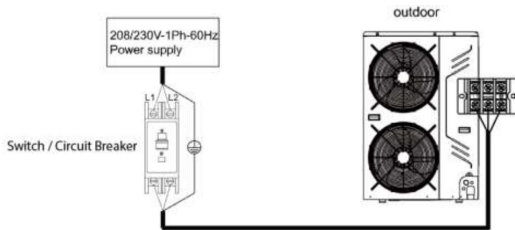
Outdoor Unit circuit breaker size.		AMP
Outdoor Unit Wire Size.		AWG
Use crimp style ring connectors for all wiring connections.		
L1, L2, wiring connected.	Yes	No
Ring crimp connectors used.	Yes	No
Ground wire connected.	Yes	No
Strain relief wire strap is tight.	Yes	No



**Correct**



**Not Acceptable**



## 11.2 Electric Wiring – Power Wiring Indoor Unit(s):

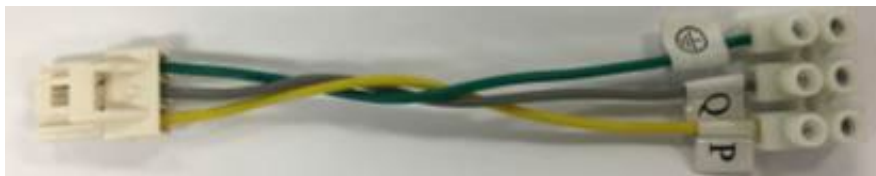
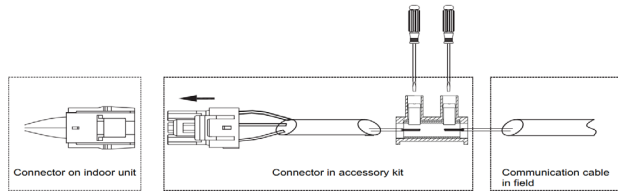
The power supply for the indoor units must be separate from the outdoor unit.

Enter circuit breaker size.	AMP	L1, L2 wiring connected.	Yes	No
Enter line voltage wire size.	AWG	Ground wire connected.	Yes	No
Strain relief wire clamp is tight.			Yes	No

## 11.3 Electric Wiring – Control Wiring:

Reference the V-Pro Report's for Control Wiring layout drawing.

All Control Wiring is stranded, 2-conductor, non-polarity, shielded wire 16 AWG.	Yes	No
If not, enter what was used here.		
Wiring shield is connected to the "Earth" screw.	Yes	No
P & Q control wiring is connected from the Header outdoor unit and daisy chained to each indoor unit and stopping at the last indoor unit on this refrigerant circuit.	Yes	No



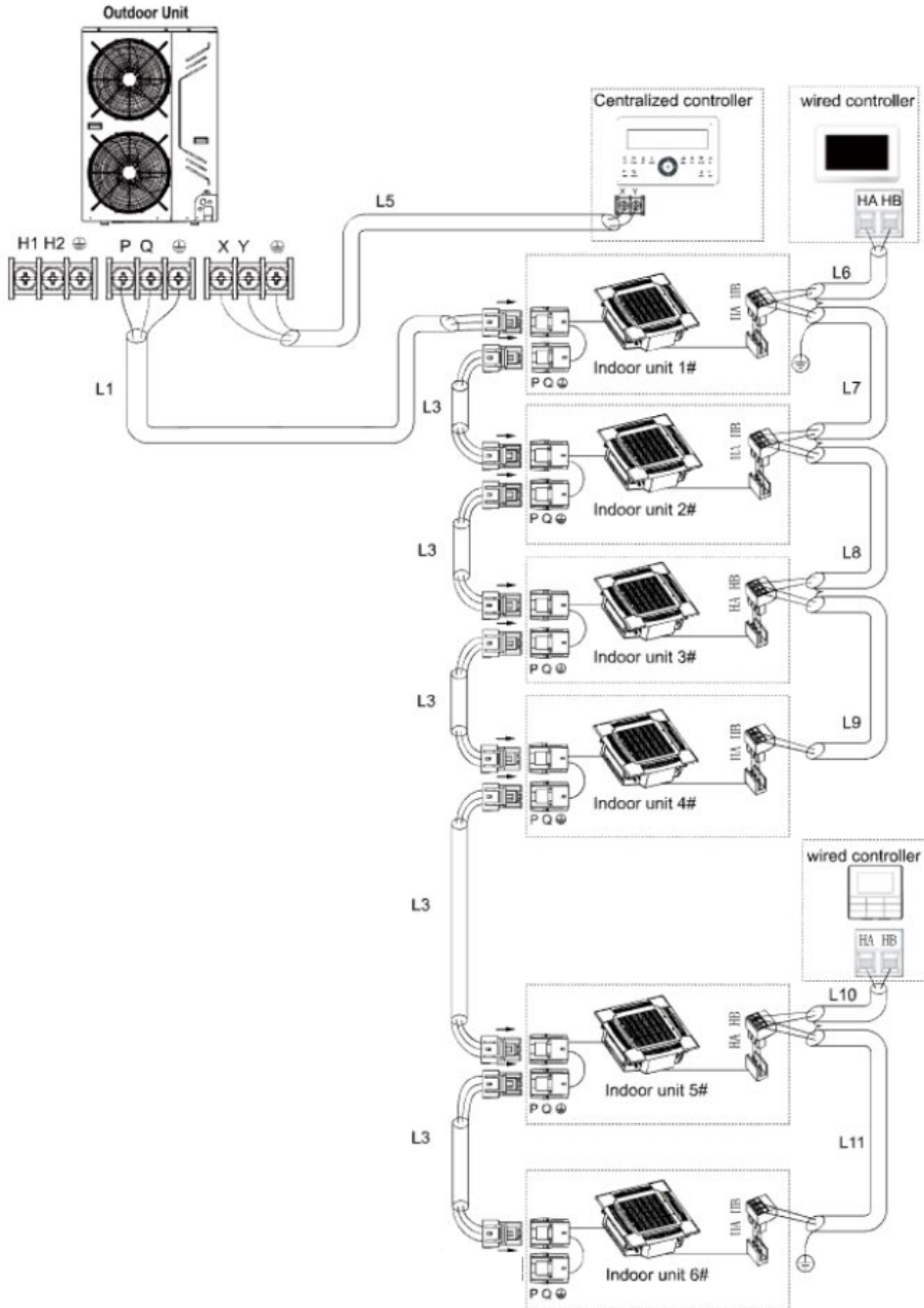


Go Above.  
Think Beyond.

## Carrier Bryant Mini VRF Installation Checklist

### 11.3 Electric Wiring (cont.) – Control Wiring Example:

Reference the V-Pro Report's for Control Wiring layout drawing.



# Carrier Bryant Mini VRF Installation Checklist

## 11.4 Electric Wiring – Control Wiring Wired Remote Controller:

Reference the V-Pro Report's for Control Wiring layout drawing.

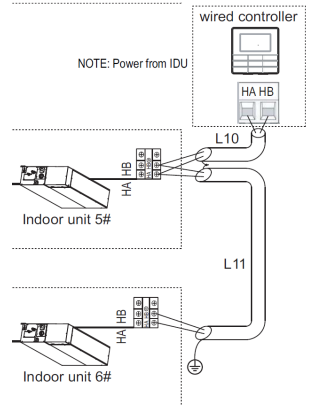
Remote Controller wiring is stranded, 2-conductor, non-polarity, 16 AWG wire Yes    No  
 The remote controller does not have to be shielded.

If the remote controller wire is different then above, enter type of wire used.

Remote controller is connected to HA & HB on corresponding indoor unit. Yes    No

For group control of indoor units, HA & HB wiring is connected to the header indoor unit of the group and daisy chained to the follower unit's HA & HB terminals. Yes    No

Are there any group controlled. Yes    No

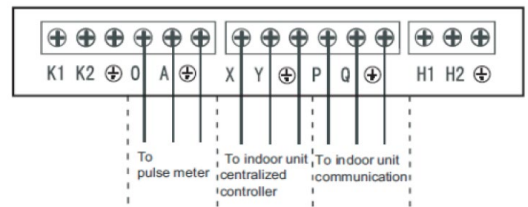


## 11.5 Electric Wiring – Control Wiring Outdoor Unit:

Indoor Unit daisy chain connected to P, Q. Yes    No

Centralized control connected to X, Y. Yes    No

All control wire shields connected to their Ground. Yes    No



## 12. Final Installation Checks:

All indoor units, flow selectors and outdoor units are installed per the installation instructions. Yes    No

All condensate lines have been installed, insulated and supported per indoor unit installation instructions, local codes and state codes. Yes    No

All refrigerant piping has been installed, insulated and supported per indoor unit, flow selector & outdoor unit installation instructions, local and state codes. Yes    No

All control and power wiring has been installed and secured per indoor & outdoor unit installation instructions, local codes and national codes. Yes    No

All wired controllers have been installed per the installation instructions. Yes    No

All outdoor units stop valves are open. Yes    No

All shipping supports (blue tape) have been removed from the indoor blower wheels. Yes    No

All equipment covers and panels have been re-installed. Yes    No

After the additional refrigerant charge has been added and all of the outdoor unit service valves have been fully opened, power should be applied to the outdoor unit only - for a minimum of 24 hours. **If this is not done start up will not be able to be performed.** Yes    No

### 13. Start Up Assistance Request

For start-up assistance - coordinate with CE Technical Support a minimum of 2 weeks prior to the expected start-up date. Send us this fully completed form for each system requiring an assisted commissioning. If you have a Centralized Control such as a Touch Screen, BACnet or LonWorks, please fill out a Controls Installation Checklist as well.

1st Choice Scheduled Date:

2nd Choice Scheduled Date:

Once received our VRF Specialist will call to review these forms, once reviewed CE will confirm a date for commissioning.

Forms must be completed by Installing Contractor.

Today's Date:

Company Name:

Technician / Installer:

Signature:

By signing this the contractor confirms all information provided is correct. If CE arrives on site and system is not ready for commissioning additional fees may be charged.