

Toshiba Carrier VRF Supervised Pre-Startup Check List

Note: Please review all the sheets utilizing the tabs on the bottom of the screen. Please email back this completed document along with as built and any other information you have on the jobsite.

Placement:

- | | | |
|--|----------------------|---------------------------|
| 1 Are proper clearances maintained in front of the unit for service (>40")? | <input type="text"/> | Provide Dimension inches |
| 2 Are proper clearances maintained in back of the unit for air flow (>20")? | <input type="text"/> | Provide Dimension inches |
| 3 Are proper clearances maintained on each side of the unit for air flow (>8")?
If there is an obstacle above the Outdoor unit, | <input type="text"/> | Provide Dimension inches |
| 4 is it greater than 60" above the top of the unit?
If installed in a cold climate, is the mounting base greater than 24" | <input type="text"/> | (Yes/No) |
| 5 Does the mounting base fully support the unit (refer to example 1)? | <input type="text"/> | (Yes/No) |
| 6 Is the unit secured in compliance with install manual? | <input type="text"/> | (Yes/No) |
| 7 Is the height difference between Outdoor units less than 4 inches? | <input type="text"/> | (Yes/No) |
| 8 Is the maximum equivalent piping length of twinned piping connecting outdoor units less than 33 Feet? | <input type="text"/> | Provide Dimension in feet |

Piping:

- (Unless otherwise listed all distances are actual)**
- | | | |
|---|----------------------|---------------------------|
| 1 Did you receive selection tool piping layout from your distributor? | <input type="text"/> | (Yes/No) |
| 2 What is the total combined liquid line length in FT? (see example 2) | <input type="text"/> | Provide Dimension in feet |
| 3 Is the Farthest equivalent piping length from the
the First Branch less than 215 Feet? (see example 3/4) | <input type="text"/> | (Yes/No) |
| 4 Is the maximum length of pipe connecting each Branch or Header
to an Indoor Unit less than 98 Feet? (see example 3/4) | <input type="text"/> | (Yes/No) |
| 5 Is the maximum length between the FS box and Indoor Unit less than 50 feet? | <input type="text"/> | (Yes/No) |
| 6 Does this system comply with all of the height limitations
in the installation manual or as otherwise approved (see example 3/4) | <input type="text"/> | (Yes/No) |
| 7 Is the twinned piping for the outdoor units installed per example 5 | <input type="text"/> | (Yes/No) |
| 8 Is the diameter of the connecting pipe correct? | <input type="text"/> | (Yes/No) |
| 9 Are all of the refrigerant lines insulated including
(Liquid, Gas, Branch kits, Headers, oil balance lines)? | <input type="text"/> | (Yes/No) |
| 10 Is the drain piping installed per the installation manual? | <input type="text"/> | (Yes/No) |
| 11 Was refrigerant piping installed with a low pressure nitrogen purge?
(Per the installation manual) | <input type="text"/> | (Yes/No) |

Electrical:

- | | | | | | | | | | | | | | | |
|--|---|----------|----------|--|----------|--|----------|---|--------------------------|----------|--|----------|--|----------|
| Are all Outdoor units wired individually? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| Have the outdoor unit power connection been made with crimp ring connectors? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| Is the over current protection appropriate for the Outdoor and Indoor loads? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| Is the gauge of the field wiring appropriate? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| Is the field wiring grounded correctly? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| What gauge is the Header unit power wiring (AWG)? | <input type="text"/> | | | | | | | | | | | | | |
| What gauge is the Follower unit power wiring (AWG)? | <input type="text"/> | | | | | | | | | | | | | |
| What gauge is the Indoor unit power wiring (AWG)? | <input type="text"/> | | | | | | | | | | | | | |
| What is measured outdoor unit Voltage? | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="width: 50px;">Header</td><td style="width: 50px;">L1 to L2</td></tr> <tr><td></td><td>L2 to L3</td></tr> <tr><td></td><td>L1 to L3</td></tr> </table> | Header | L1 to L2 | | L2 to L3 | | L1 to L3 | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="width: 50px;">Follower (if applicable)</td><td style="width: 50px;">L1 to L2</td></tr> <tr><td></td><td>L2 to L3</td></tr> <tr><td></td><td>L1 to L3</td></tr> </table> | Follower (if applicable) | L1 to L2 | | L2 to L3 | | L1 to L3 |
| Header | L1 to L2 | | | | | | | | | | | | | |
| | L2 to L3 | | | | | | | | | | | | | |
| | L1 to L3 | | | | | | | | | | | | | |
| Follower (if applicable) | L1 to L2 | | | | | | | | | | | | | |
| | L2 to L3 | | | | | | | | | | | | | |
| | L1 to L3 | | | | | | | | | | | | | |
| Is the Indoor Voltage sufficient (rated \pm 10%)? | <input type="text"/> | | | | | | | | | | | | | |
| What type of wire was used for communication? | <input type="text"/> | (Type) | | | | | | | | | | | | |
| Is the communication cable shielded? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| What gauge is the communication cable? | <input type="text"/> | (Size) | | | | | | | | | | | | |
| Is the communication cable wired correctly? (see example 6) | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |
| Is the communication cable grounded correctly? | <input type="text"/> | (Yes/No) | | | | | | | | | | | | |

Preparation for Startup:

- Leak Test:**
 Be sure to apply pressure to both gas lines, liquid and balance piping (if it exists).
 Apply 500 Psi for 24 hours.
 The pressure will change by approx. 2.6 Psi per 1 degree F.
 Record start time and temperature for the leak test.
 After 24 hours, compare current temperature to start temperature
 and adjust pressure for temperature difference.
 If there is no leak, continue to Vacuuming.
- | | | |
|---|----------------------|----------|
| Has the above procedure been followed? | <input type="text"/> | (Yes/No) |
| What was actual test pressure? | <input type="text"/> | (PSI) |
| If this has not been completed please provide the expected date of completion | <input type="text"/> | (date) |

- Vacuuming:**
 Be sure to perform vacuuming through both gas, liquid and balance ports.
 Use a vacuum pump with high vacuum capacity
 and Large exhaust gas flow.
 Triple evacuate system. Evacuate to 1500 microns
 Purge to 0 psig with nitrogen, evacuate to 1000 microns
 Purge to 0 psig with nitrogen and hold for 1 hour, evacuate to minimum 500 microns
 Perform rise test for at least one hour prior to charging.
- | | | |
|--|----------------------|-----------|
| Has the above procedure been followed? | <input type="text"/> | (Yes/No) |
| What was actual micron reading achieved? | <input type="text"/> | (microns) |
| If this has not been completed please provide the expected date of completion | <input type="text"/> | (date) |
| Was the additional refrigerant charge added to the system per the above calculation? | <input type="text"/> | (lbs) |

- Refrigerant Charge**
 Was the additional refrigerant charge added to the system per the as built? (lbs)

Do not open the service valves on the outdoor units

Powering the system:

Outdoor unit must be powered ON for a minimum of 12 hours before starting the system. Do not power indoor units until startup

All of the items described on the above checklist must be completed along prior to any Carrier personnel arriving on the jobsite to perform startup supervision, unless otherwise approved by Carrier start-up personnel. Carrier requires at least a two weeks notice to schedule. If Carrier personnel arrives on site to find that the site conditions are not as stated, Carrier reserves the right to charge up to \$2000 per day plus expenses. Any additional site visits required to complete the start-up supervision will be subject to additional charges of up to \$2000 per day plus expenses. Any additional site visits will be at the discretion of the Carrier personnel's schedule.

Name

Signature

Date