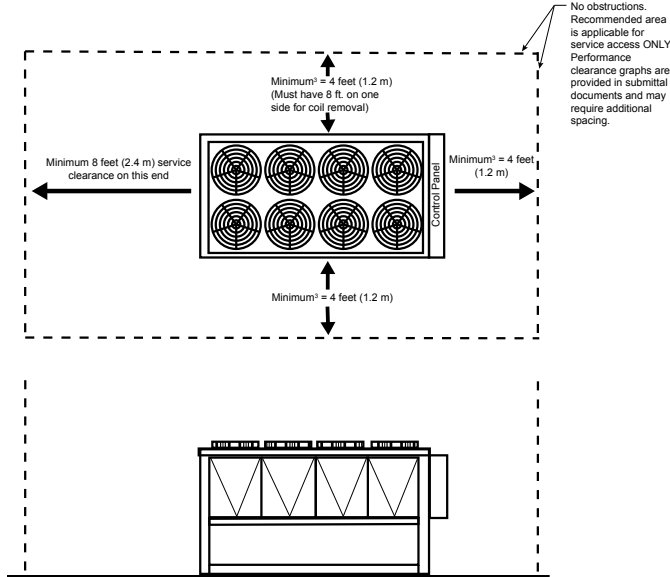


certain circumstances. No solid obstructions are allowed above the unit at any height, see Case 5 on page 15. If low ambient temperature operation is expected, optional louvers should be installed if the unit has no protection against prevailing winds.

Figure 4: Spacing Guidelines for Sufficient Airflow



- NOTE:**
1. There should be no obstruction above the fan deck to interfere with fan discharge.
 2. Electrical conduit and field installed electrical devices should not block service access to any chiller components.
 3. Integrated Waterside Economizer (IWSE) units need a minimum side clearance of 5 ft (1.5 m) as measured from the outer base rail of the unit.
 4. For installations of 2 or more units, refer to Case 2 and Case 3.
 5. Stated spacing guidelines are for achieving sufficient airflow without incurring performance losses. See Cases 1 to 5 for capacity reduction and power increases when sufficient airflow cannot be achieved.

Case 1: Building or Wall on One Side of Unit

For most models, maintain a 4 foot minimum from a wall of any height; however, performance may be affected at this distance due to air recirculation and elevated condenser pressure. Assuming all service clearance requirements are met, Figure 6 to Figure 10 depict Case 1 performance adjustments as the wall height and distance increases. For AWW models with IWSE option, the minimum distance from a wall of any height is 5 feet as measured from the outer base rail of the unit and performance adjustments are represented in Figure 11 to Figure 13.

Figure 5: Building or Wall on One Side of Unit

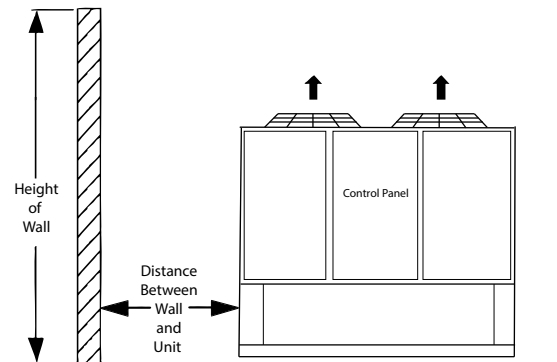


Figure 6: Case 1 for AWW 008-010 Models

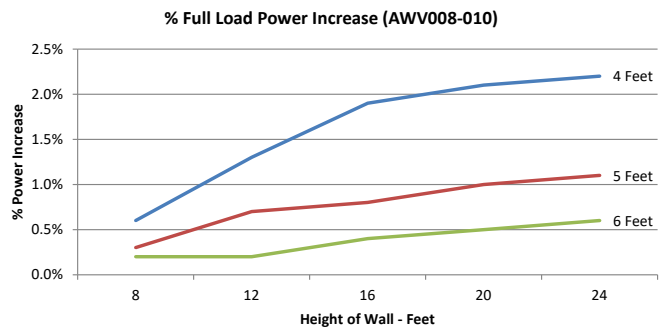
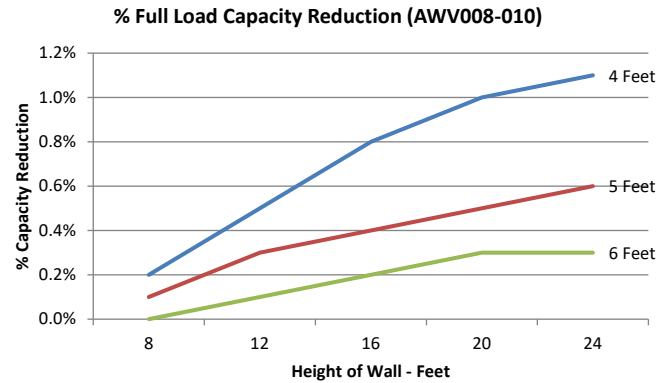


Figure 7: Case 1 for AWW012-014 Models

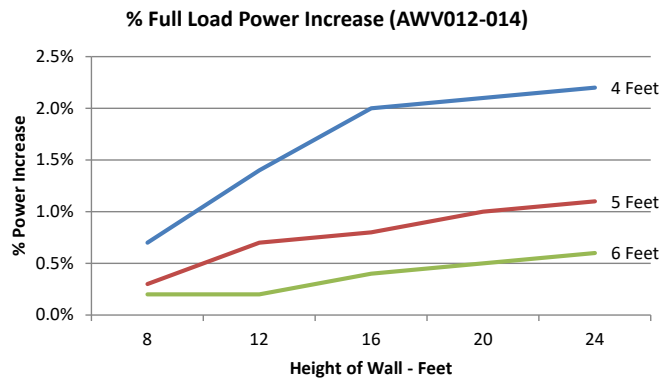
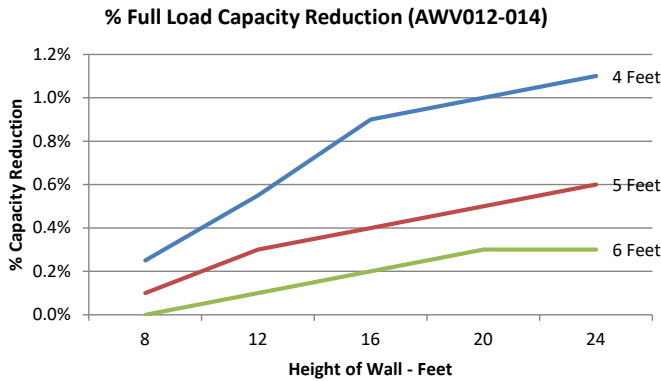


Figure 9: Case 1 for AWW020-024 Models

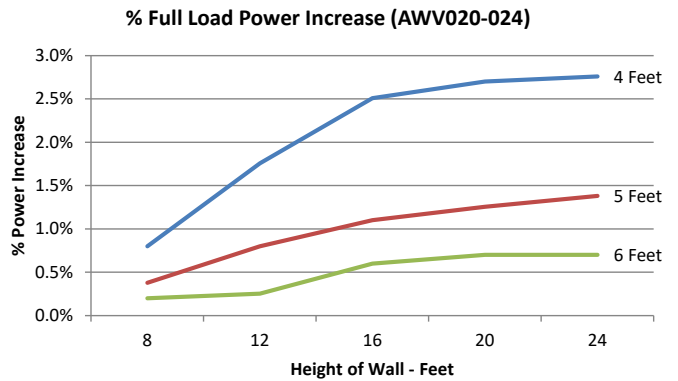
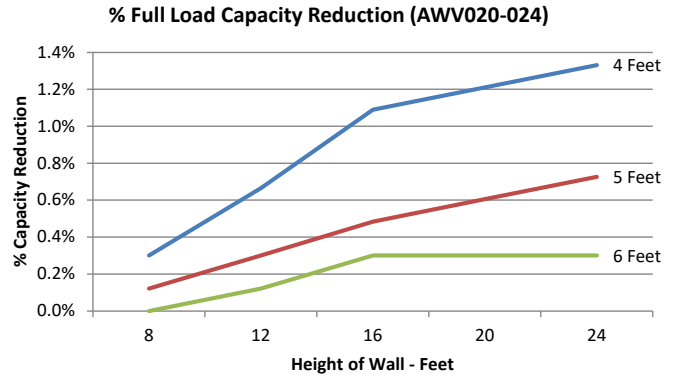


Figure 8: Case 1 for AWW016-018 Models

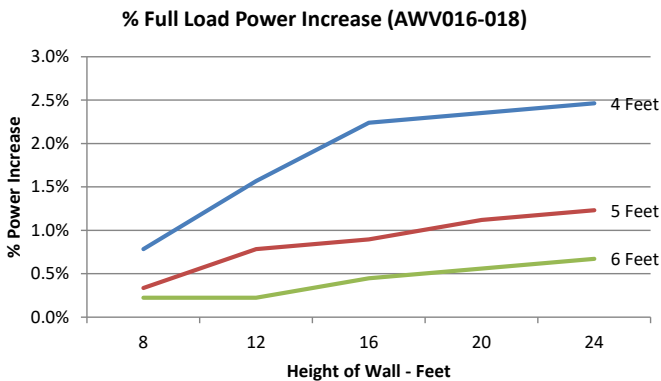
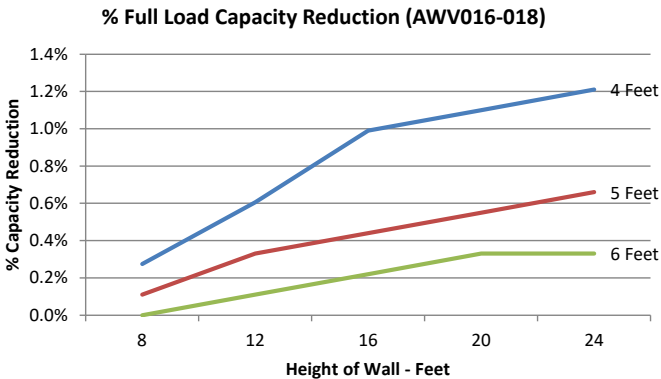


Figure 10: Case 1 for AWW026-030 Models

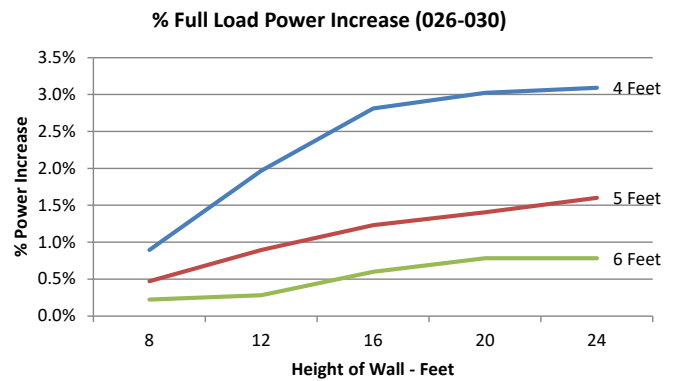
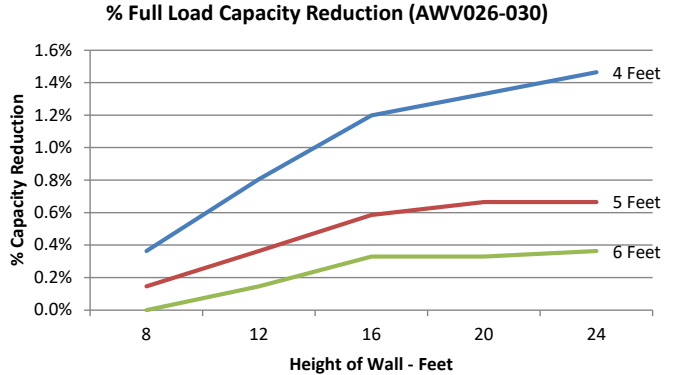
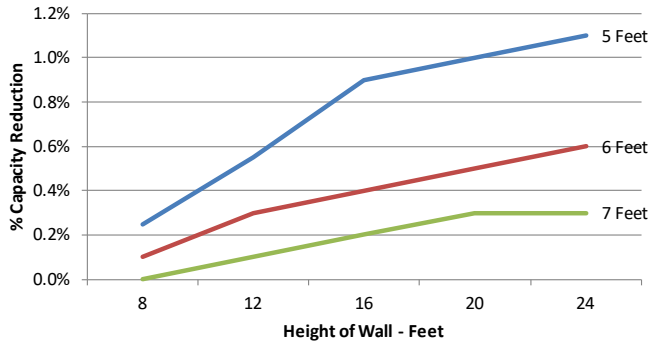


Figure 11: Case 1 for AWV 012-014 Models - IWSE Option
 % Full Load Capacity Reduction (AWV012-014)



% Full Load Power Increase (AWV012-014)

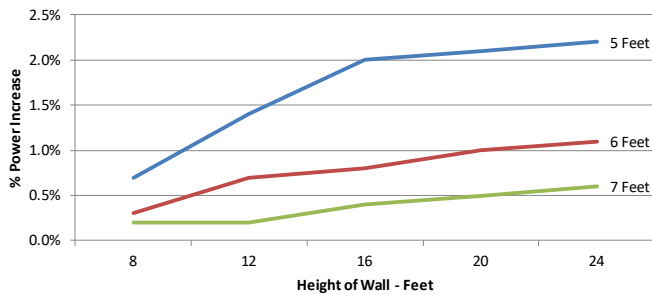
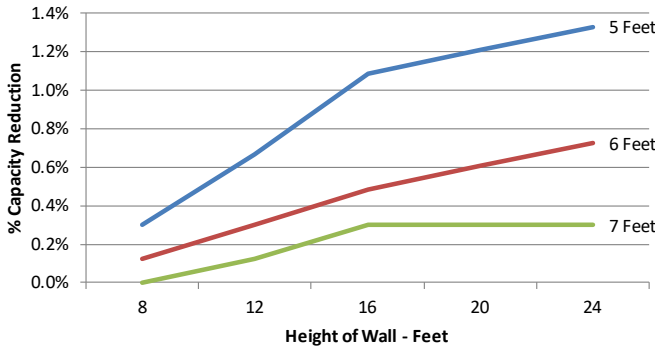


Figure 12: Case 1 for AWV 016-022 Models - IWSE Option

% Full Load Capacity Reduction (AWV016-022)



% Full Load Power Increase (AWV016-022)

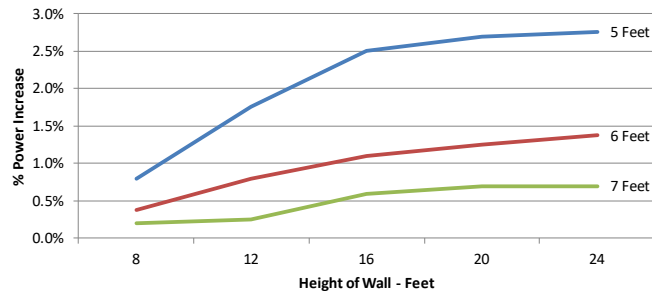
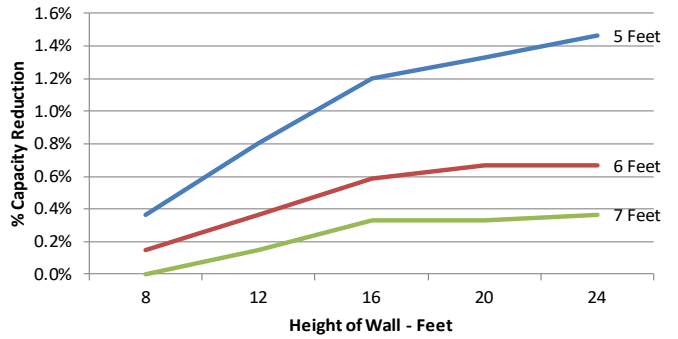
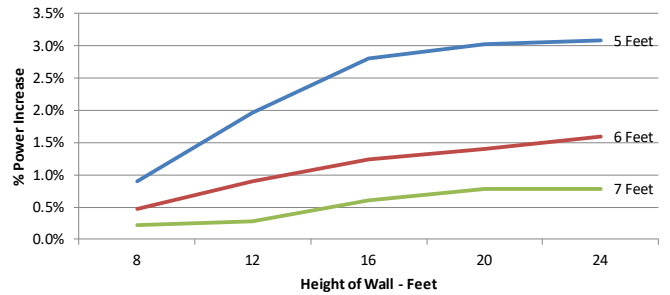


Figure 13: Case 1 for AWV 024-030 Models - IWSE Option
 % Full Load Capacity Reduction (AWV024-030)



% Full Load Power Increase (AWV024-030)



Case 2: Two Units Side-by-Side

For most models, there must be a minimum of 6 feet between two units placed side-by-side; however, performance may be affected at this distance due to air recirculation and elevated condenser pressure. Assuming all service clearance requirements are met, Figure 15 and Figure 16 depict Case 2 performance adjustments as the distance between two units increases. For AWV models with IWSE option, the minimum distance between two units side-by-side is 8 feet as measured from the outer base rail of the unit and performance adjustments are represented in Figure 17 and Figure 18.

Figure 14: Two Units, Side-by-Side

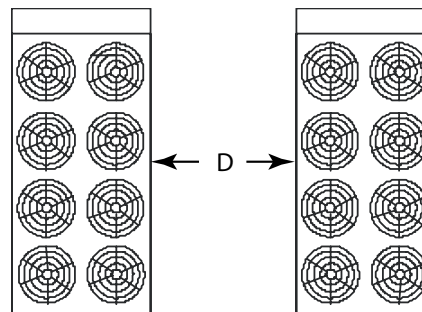


Figure 15: Case 2 - Full Load Capacity Reduction

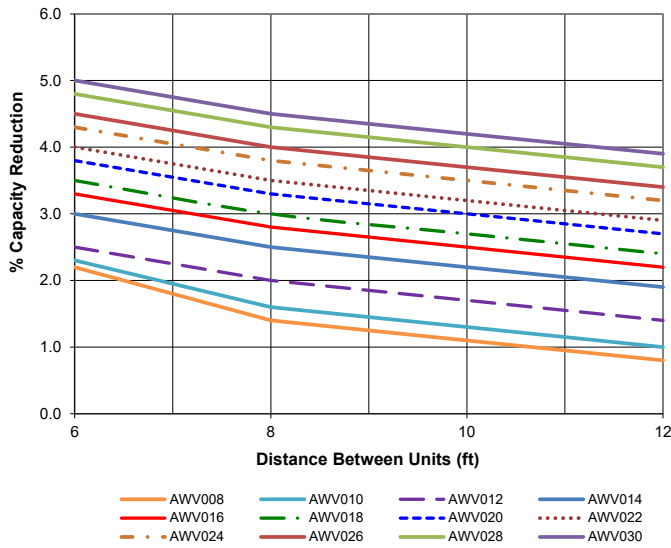


Figure 17: Case 2 - Full Load Capacity Reduction - IWSE Option

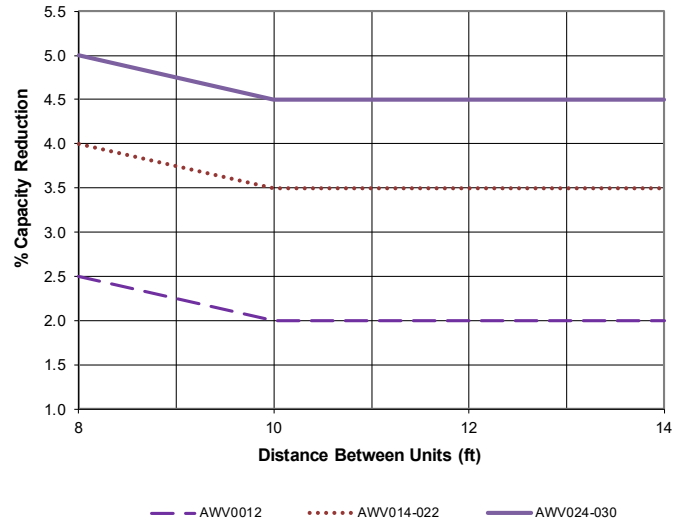


Figure 16: Case 2 - Power Increase

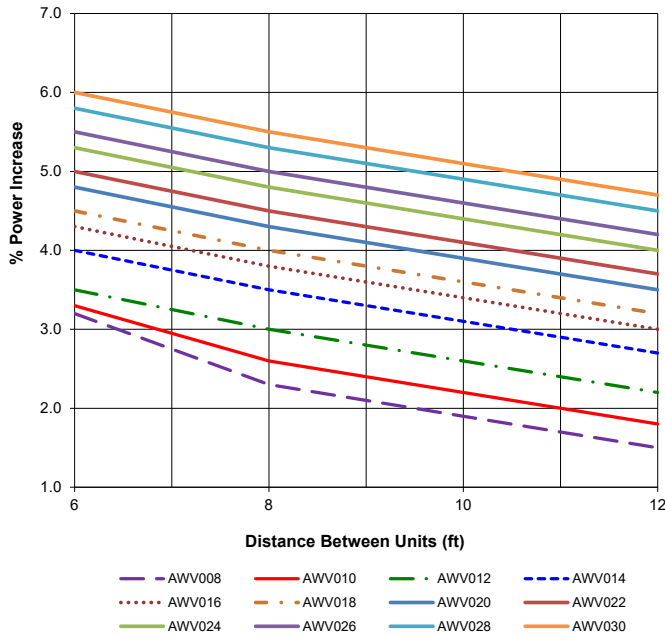
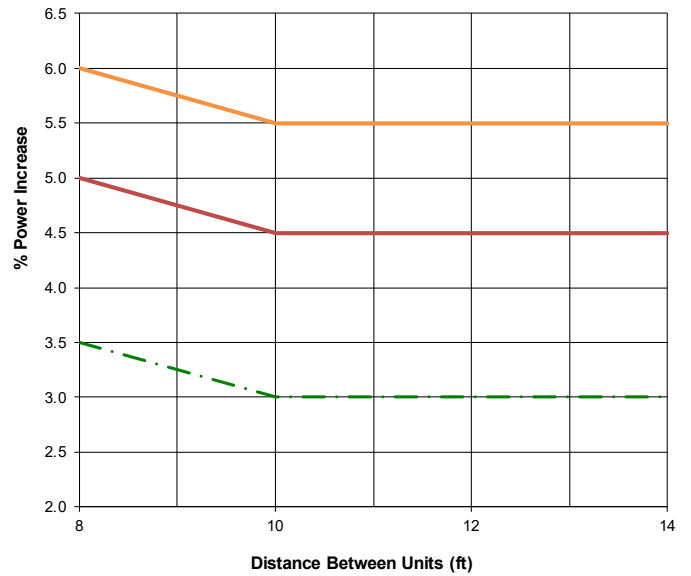


Figure 18: Case 2 - Power Increase - IWSE Option



Case 3: Three or More Units, Side-by-Side

For most models, there must be a minimum of 8 feet between any units placed side-by-side; however, performance may be affected at this distance. Figure 20 and Figure 21 depict Case 3 performance adjustments as the distance between units increases. For AWW models with IWSE option, the minimum distance between multiple units is 10 feet as measured from the outer base rail of the unit and performance adjustments are represented in Figure 22 and Figure 23.

NOTE: Data in Figure 20 to Figure 23 is for the middle unit with a unit on each side. See Case 2 adjustment factors for the two outside units.

Figure 19: Three or More Units, Side-by-Side

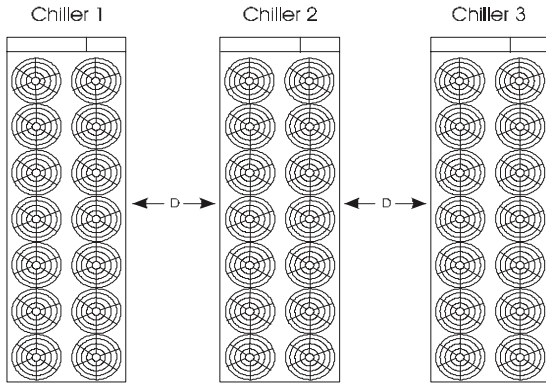


Figure 20: Case 3 - Full Load Capacity Reduction

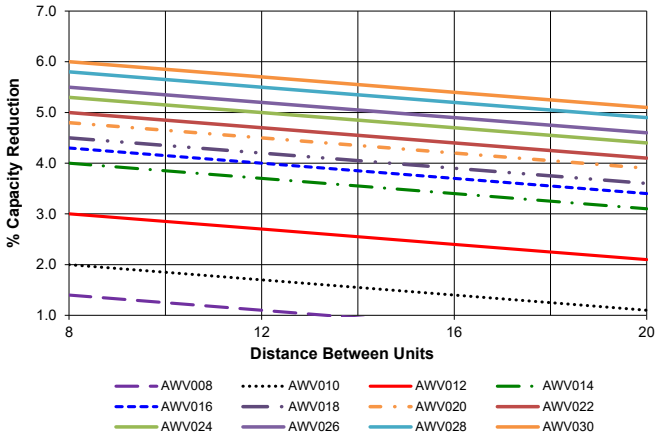


Figure 21: Case 3 - Power Increase

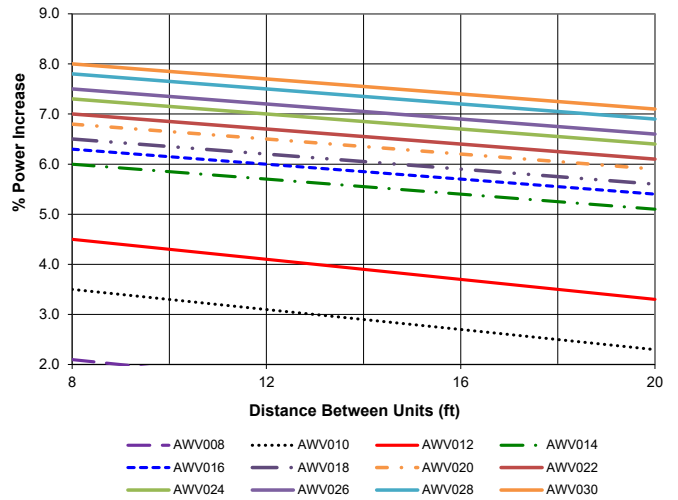


Figure 22: Case 3 - Full Load Capacity Reduction - IWSE Option

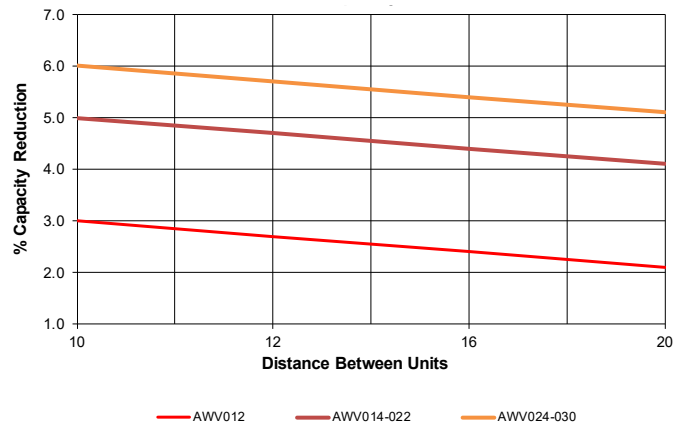


Figure 23: Case 3 - Power Increase - IWSE Option

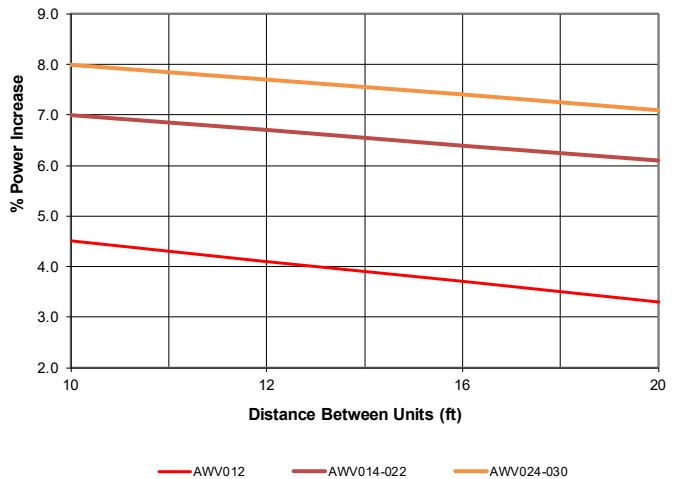


Figure 24: Case 4: Open Screening Walls

Decorative screening walls are often used to help conceal a unit either on grade or on a rooftop. When possible, design these walls such that the combination of their open area and distance from the unit (see Figure 25) do not require performance adjustment. If the wall opening percentage is less than recommended for the distance to the unit, it should be considered as a solid wall. It is assumed that the wall height is equal to or less than the unit height when mounted on its base support. If the wall height is greater than the unit height, see Case 5: Pit/Solid Wall Installation. The distance from the sides of the unit to the side walls must be sufficient for service, such as opening control panel doors. For uneven wall spacing, the distance from the unit to each wall can be averaged providing no distance is less than 4 feet for most models and 5 feet as measured from the outer base rail of the unit for IWSE models. Values are based on walls on all four sides.

Figure 25: Allowable Wall Open Area

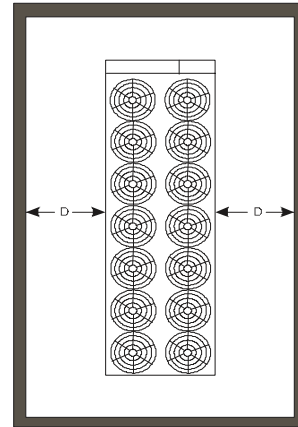


Figure 26: Case 4 - Adjustment Factor

Wall Free Area vs. Distance

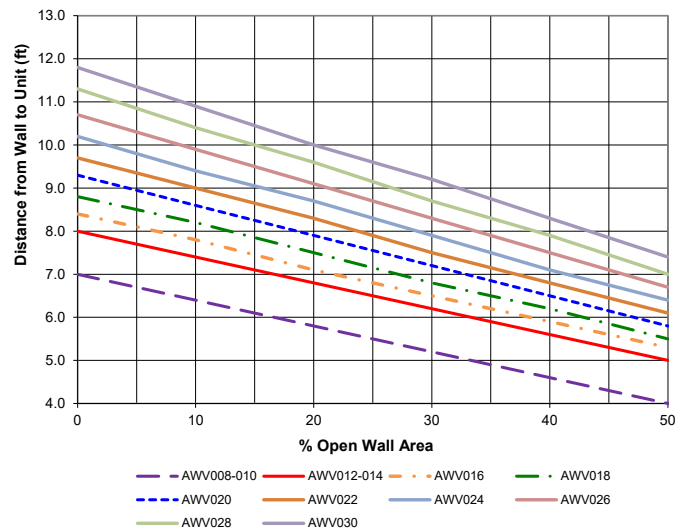
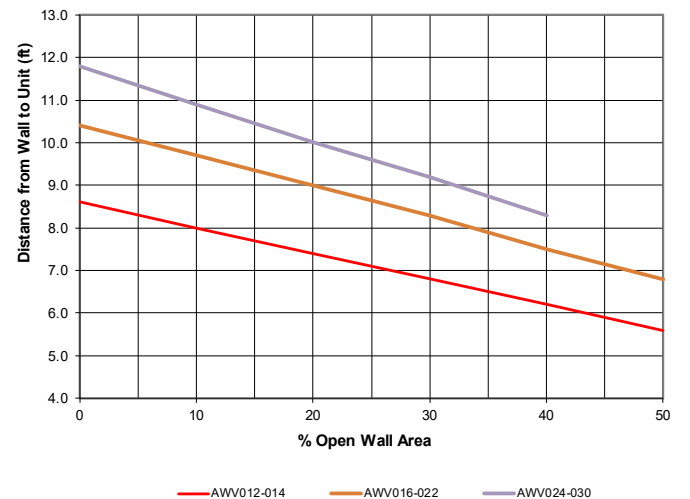


Figure 27: Case 4 - Adjustment Factor - IWSE Option

Wall Free Area vs. Distance



Case 5: Pit/Solid Wall Installation

Pit installations can cause operating problems resulting from air recirculation and restriction and require care that sufficient air clearance is provided, safety requirements are met and service access is provided. A solid wall surrounding a unit is substantially a pit and this data should be used. Derates are based on single chiller installation only. For IWSE chillers, distances are measured from the outer base rail of the unit.

Steel grating is sometimes used to cover a pit to prevent accidental falls or trips into the pit. The grating material and installation design must be strong enough to prevent such accidents, yet provide abundant open area to avoid recirculation problems. Have any pit installation reviewed by the Daikin Applied sales representative prior to installation to ensure it has sufficient air-flow characteristics and approved by the installation design engineer to avoid risk of accident.

Figure 28: Pit Installation

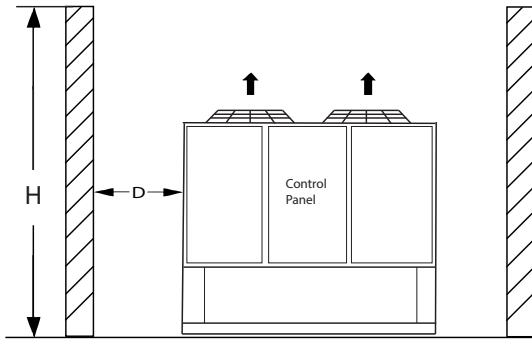


Figure 29: Case 5 for AWW008-010

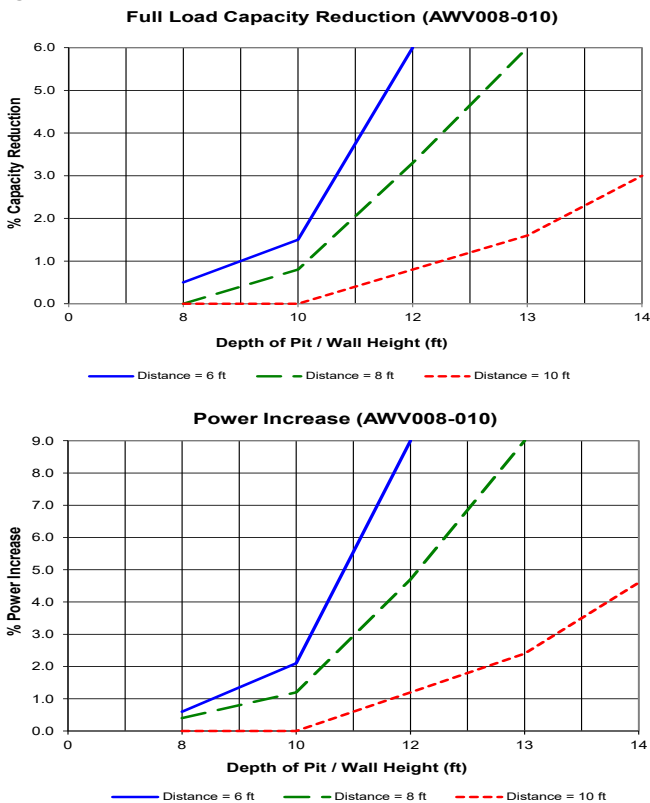


Figure 30: Case 5 for AWW012-014

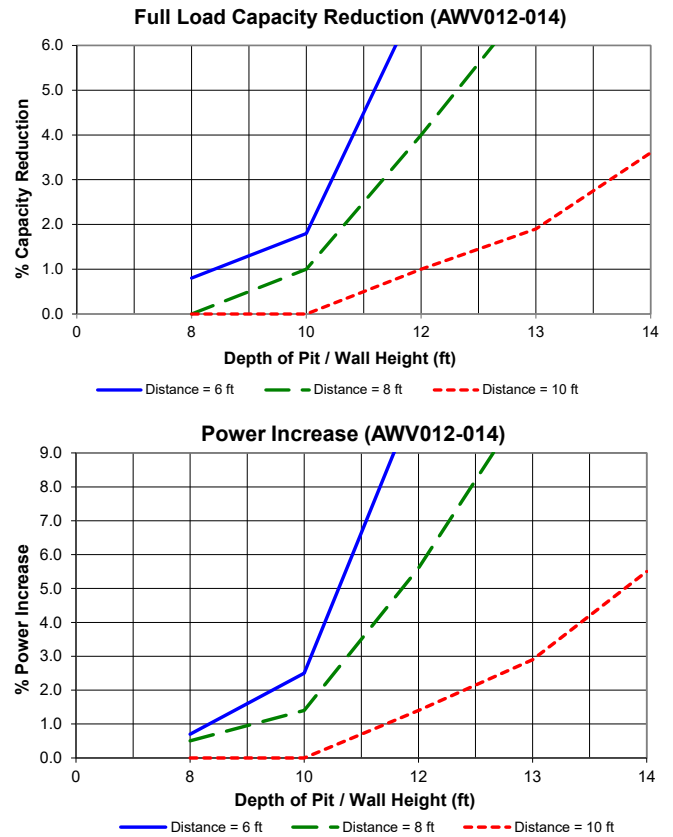


Figure 31: Case 5 for AWW016-018

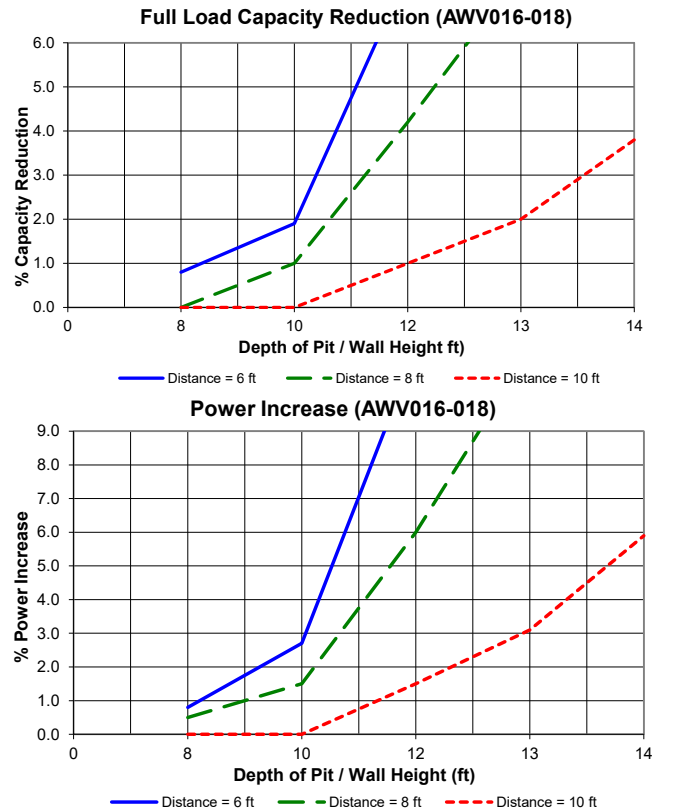


Figure 32: Case 5 for AWW020-024

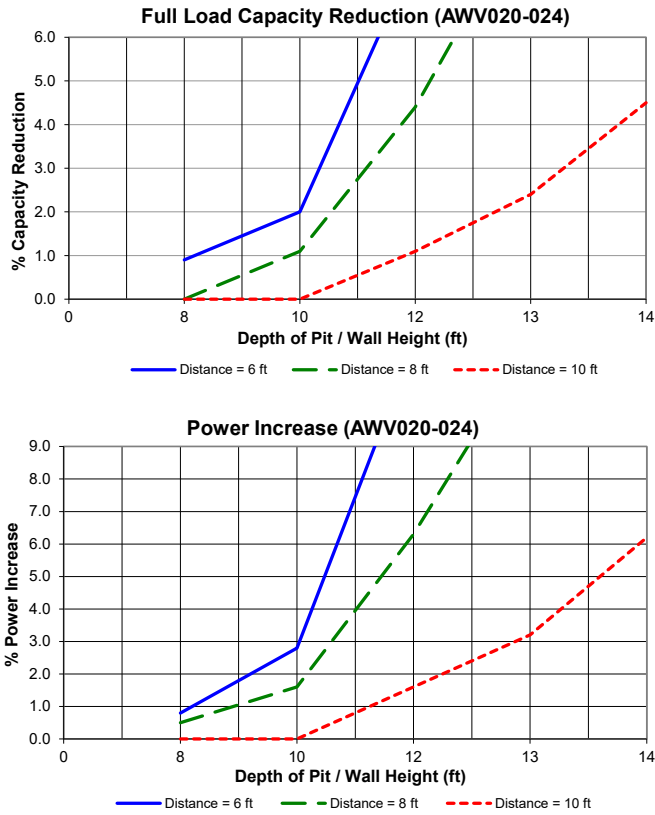


Figure 34: Case 5 for AWW012-014 - IWSE Option

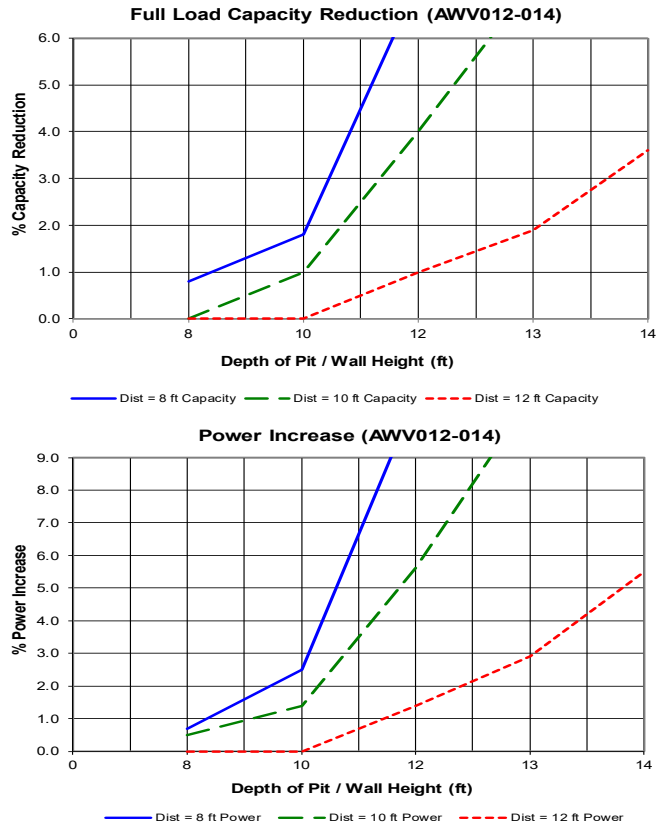


Figure 33: Case 5 for AWW026-030

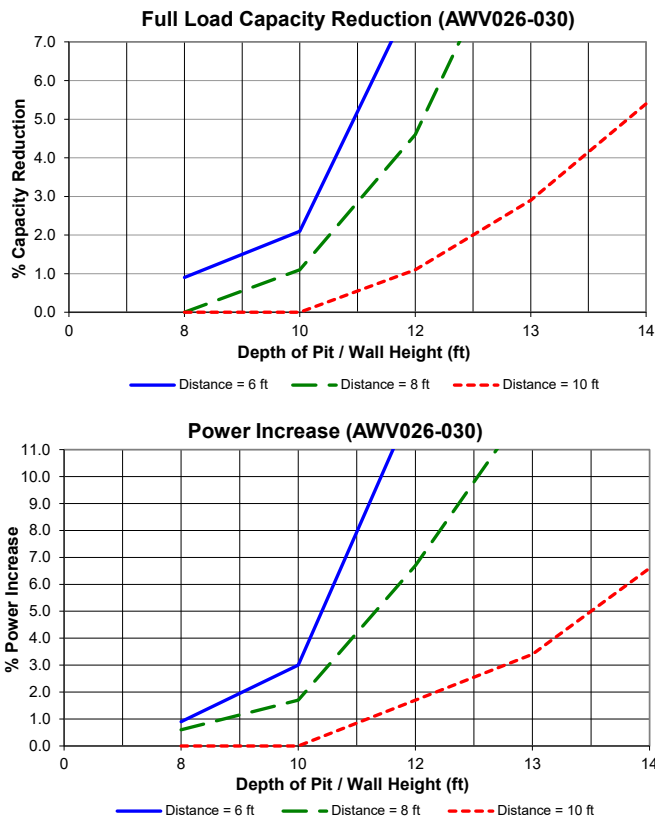


Figure 35: Case 5 for AWW016-022 - IWSE Option

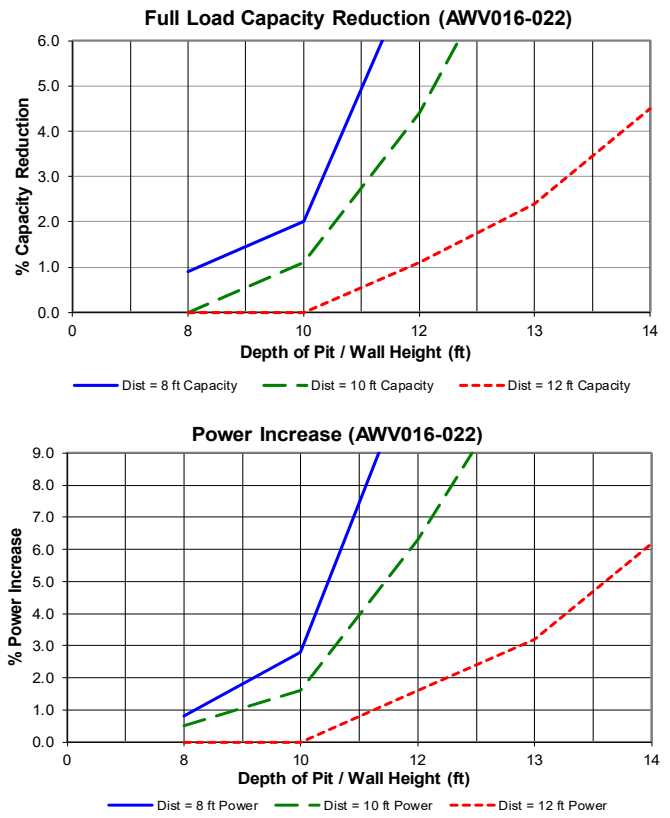
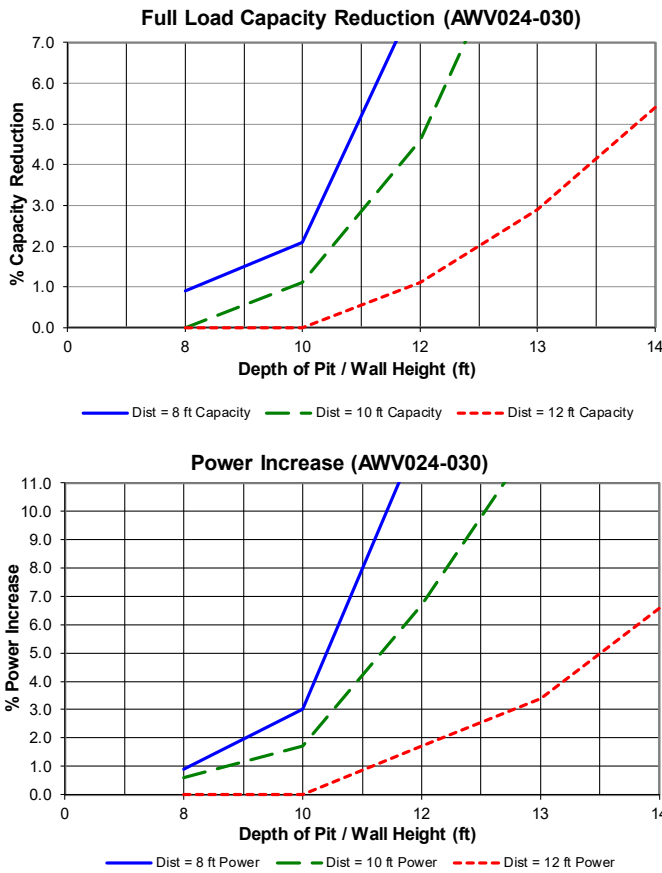


Figure 36: Case 5 for AWW024-030 - IWSE Option



- A water flow switch must be installed in the horizontal piping of the supply (evaporator outlet) water line to avoid evaporator freeze-up under low or no flow conditions. See [page 19](#) for more information.
- Purge air from the water system before unit startup to provide adequate flow through the evaporator.
- Piping for units with brazed plate evaporators must have a drain and vent connection provided in the bottom of the lower connection pipe and to the top of the upper connection pipe, respectively, see [Figure 37](#). These evaporators do not have drain or vent connections due to their construction.
- Adequate piping support, independent from the unit, to eliminate weight and strain on the fittings and connections.

It is **recommended** that the field installed water piping to the chiller include:

- Thermometers at the inlet and outlet connections of the evaporator.
- Water pressure gauge connection taps and gauges at the inlet and outlet connections of the evaporator for measuring water pressure drop.
- Shutoff valves to isolate the unit from the piping during unit servicing.
- Minimum bends and changes in elevation to minimize pressure drop.
- An expansion tank and regulating valve to maintain adequate water pressure. Tank becomes required for closed loop systems based on water volume and temperature ranges.
- Vibration eliminators in both the supply and return water lines to reduce transmissions to the building.
- Flushing the system water piping thoroughly **before** making connections to the unit evaporator.
- Piping insulation, including a vapor barrier, helps prevent condensation and reduces heat loss.
- Regular water analysis and chemical water treatment for the evaporator loop is recommended immediately at equipment startup.

Chilled Water Piping

Startup procedures should confirm that the chilled water piping system had been properly flushed out before being connected to the chiller vessel.

All evaporators have OGS-type grooved water connections (adhering to Standard AWWA C606) or optional flange connections. The installing contractor must provide matching mechanical connections. PVC and CPVC piping should not be used. Be sure water inlet and outlet connections match certified drawings and nozzle markings.

CAUTION

To prevent damage to the evaporator and potential chiller failure, a supply strainer is required in the inlet water piping which connects to the evaporator. This strainer must be installed prior to operation of the chilled liquid pumps.

Field installed water piping to the chiller **must** include:

- A cleanable strainer installed at the water inlet to the evaporator or IWSE connection to remove debris and impurities before they reach the evaporator. Install cleanable strainer within 5 feet (1500 mm) of pipe length from the evaporator inlet connection and downstream of any welded connections (no welded connections between strainer and evaporator). AWW models require a strainer as specified in Inlet Strainer Guidelines on [page 18](#).

WARNING

Daikin Applied recommends against the use of PVC and CPVC piping for chilled water systems. In the event the pipe is exposed to POE oil used in the refrigerant system, the pipe can be chemically damaged and pipe failure can occur.