

# QuickSpecs

## YORK Air-Cooled Scroll Chillers (Model YLAA)

From Customer Need to Competitive Advantage

Version 1.0 – October 2009



# QuickSpecs

YORK Air-Cooled Scroll Chillers (Model YLAA)

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This QuickSpec document is designed to help Johnson Controls HVAC salespeople work with their Consulting Engineer customers and help them to specify YLAA Projects efficiently and effectively. Each QuickSpec item summarizes an advantage that should be included in the project specifications in order to ensure the owner receives the full benefit of the features included with YORK Air-Cooled Scroll Chillers (Model YLAA).

## The Bottom Line

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This section tells you what specific language should be included in the project specifications in order to ensure that the owner receives the full benefit of the features of YORK Air-Cooled Scroll Chillers (Model YLAA).

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# The Bottom Line 1-8

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**Bottom Line 1:** Provide chiller that meets or exceeds ASHRAE 90.1 efficiency standards for full load kW/ton and IPLV/ NPLV and that meets or exceeds scheduled IPLV or NPLV.

**Bottom Line 2:**

- Provide condenser coils that pass a 3,000 hour salt spray test per ASTM B-117.
- Provide condenser coils made of a single material.
- Provide condenser coils that are washable with a 1,500 psi pressure washer.

**Bottom Line 3:** Provide air-cooled chiller with a water-cooled condenser capable of recovering up to 100% of the available chiller heat.

**Bottom Line 4:**

- Provide chiller that meets or exceeds ASHRAE 90.1 efficiency standards.
- Provide chiller that uses a refrigerant with Zero Ozone Depletion Potential, low global warming potential and helps earn a LEED point for E&A Credit 4.

**Bottom Line 5:** Provide a factory designed and installed pump package that includes pump, strainer, flow switch, circuit balancing valve, and expansion tank.

**Bottom Line 6:** Provide BACnet MS/TP interface factory installed. If field-installed gateways are required, chiller manufacturer shall include the cost to provide, install and commission the gateway in the field.

**Bottom Line 7:** Provide chiller and remote evaporator with less than 150 equivalent feet of refrigerant piping between them. Refrigerant piping shall not be installed underground or in otherwise inaccessible places.

**Bottom Line 8:**

- Provide chiller capable of reliable operation in a variable primary flow system. Chiller shall operate stably with up to a 10% per minute evaporator flow change.
- Provide chiller with minimum evaporator flow equal to or less than scheduled value, and maximum evaporator flow equal to or greater than scheduled value.
- Provide chiller with controls to prevent freezing in the evaporator upon rapid loss of flow.

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## The Details

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This section tells you the background and peripheral information pertinent to each individual “Bottom Line” QuickSpec item, including:

- The customer need, including a sample of how the customer would actually say it
- The feature that addresses the stated need
- A “So what” statement highlighting the feature’s value and impact
- The competitive advantage the feature provides
- The Bottom Line: What specific language should be included in the project specification

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# QuickSpec 1:

## Energy Efficiency

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**What customers are saying:** "I need low energy costs without sacrificing comfort in my building."

**Customer Need:** Energy efficient chillers.

**YLAA feature:** Full load and part load efficiencies that meet or exceeds ASHRAE 90.1 and keep the customer's electricity bills low.

**So what:** The average air-cooled chiller operates at part load 99% of the time. A chiller optimized for part load efficiency will have the biggest positive impact on total energy use, and on energy bills.

**Competitive Advantage:** The YLAA chiller is one of the most efficient chillers at part load on the market.

**What to specify:** Provide chiller that meets or exceeds ASHRAE 90.1 efficiency standards for full load kW/ton and IPLV/ NPLV and that meets or exceeds scheduled IPLV or NPLV.

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# QuickSpec 2:

## Condenser Coils

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**What customers are saying:** "I don't want the chiller performance to degrade over time. But cleaning condenser coils difficult. I need an air-cooled chiller that's easy to clean and maintain. The condenser coils must also resist corrosion, so I don't have to prematurely replace the coils, or worse – the chiller."

**Customer need:** Sturdy, corrosion resistant condenser coils that are pressure washable and easy to replace should they be punctured or otherwise damaged.

**YLAA feature:** Aluminum microchannel condenser coils that are easily cleaned with a 1,500 psi pressure washer, pass an ASTM B-117 3,000-hour salt spray test, are light weight and can be replaced without special lifts or cranes.

**So what:** Traditional copper tube coils with aluminum fins are subject to galvanic corrosion. They are also heavy and therefore difficult to replace if damaged. Traditional coils are more difficult to clean, and are therefore not likely to be properly maintained by many customers. Over time, corrosion and dirt build-up reduces chiller efficiency, increases energy use, reduces chiller capacity and may lead to leaks.

**Competitive Advantage:** Compared to copper tube aluminum fin coils, microchannel coils are easy to clean and maintain, saving time and money. They resist corrosion much better, are lightweight, and far easier to replace if damaged. This helps the chiller to be one of the most efficient, compact, lightweight chillers on the market, widely applicable in retrofit and new buildings. Carrier is the only major competitor that offers microchannel coils on air-cooled chillers.

**What to specify:**

- Provide condenser coils that pass a 3,000 hour salt spray test per ASTM B-117.
- Provide condenser coils made of a single material.
- Provide condenser coils that are washable with a 1,500 psi pressure washer.

**Notes:** YLAA chillers may be selected with round tube condenser coils. Some applications, like remote evaporators, require round tube condensers. Do NOT specify microchannel coils on every project.

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# QuickSpec 3:

## Heat Recovery

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**What customers are saying:** “There are many times when my building needs simultaneous heating and cooling. Can I reclaim chiller heat and use it, instead of rejecting it all to the atmosphere?”

**Customer need:** Heat recovery at the chiller.

**YLAA feature:** Additional water cooled condenser to allow 100% heat recovery.

**So what:** Traditional systems use electricity to run chillers for cooling, and burn fossil fuels for heat. However, chillers reject heat as part of the chilling process. If that heat can be captured and used in the building, then fossil fuel consumption is reduced. Less energy is used, and utility bills are lowered.

**Competitive advantage:** Competitors use a desuperheater to recover heat. However, desuperheaters can only reclaim a small amount of heat. Most of the heat is still rejected to the atmosphere. The YLAA with heat recovery uses a full water-cooled condenser. This condenser allows 100% of the chiller’s heat to be reclaimed.

**What to specify:** Provide air-cooled chiller with a water-cooled condenser capable of recovering up to 100% of the available chiller heat.

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# QuickSpec 4:

## LEED Energy and Atmosphere (E&A) Credit 4 – Enhanced Refrigerant Management

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**What customers are saying:** “I want a chiller that can help qualify for the LEED E&A Credit 4 (Enhanced Refrigerant Management) point on my LEED project.”

**Customer need:** A chiller with green refrigerant and low charge to help HVAC systems earn a point for LEED E&A Credit 4.

**YLAA features:** A low refrigerant charge to capacity ratio means that every YLAA with microchannel coils will help the customer get this LEED credit. HFC-410A is a green refrigerant with zero Ozone Depletion Potential (ODP) and very low global warming potential.

**So what:** Meeting E&A Credit 4 helps a building earn LEED certification.

**Competitive advantage:** Competitors’ chillers likely have this feature, option, or capability as well. Know how this LEED credit works so you can explain how the YLAA helps the customer earn this point.

### What to specify:

- Provide chiller that meets or exceeds ASHRAE 90.1 efficiency standards.
- Provide chiller that uses a refrigerant with Zero Ozone Depletion Potential, low global warming potential and helps earn a LEED point for E&A Credit 4.

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# QuickSpec 5:

## Factory Installed Hydro Kit

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**What customers are saying:** “We have an air cooled chiller that needs to be replaced, but our budget is tight and we don’t have much space. I need a chiller system with low installation costs and small footprint.”

**Customer need:** Factory packaged chilled water pumps that are easy to apply and do not add to the chiller’s foot print.

**YLAA feature:** Factory designed and installed hydro-kit option with a wide range of total head pressures and a variety of pump package combinations.

**So what:** Factory packaged pumps are simple to apply to many smaller systems, saving the customer time and money.

**Competitive advantage:** Competitors’ chillers may have this feature, option, or capability. Educate customers about the advantages of factory installed pumps and field installed pumps to help them make the correct selection for the application. Contact the small tonnage chiller application team for help.

**What to specify:** Provide a factory designed and installed pump package that includes pump, strainer, flow switch, circuit balancing valve, and expansion tank.

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# QuickSpec 6:

## Native BACnet or Modbus Protocol

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**What customers are saying:** "I need to connect the chiller to my Building Automation System (BAS) without extra cost and complexity of gateways or translators."

**Customer need:** Native communication protocols to reduce installation cost and reduce commissioning time.

**YLAA feature:** BACnet MS/TP and Modbus communications are standard on all YLAA chillers.

**So what:** BACnet is quickly becoming one of the most popular controls protocols because it is open and non-proprietary. Chillers with native BACnet controls are easily installed in BACnet systems. Modbus is also native for buildings using that protocol.

**Competitive advantage:** Johnson Controls is the only major chiller manufacturer to offer BACnet-native control boards standard. The BAS connects directly into the chiller control panel, reducing installation time and complexity. No extra space is needed for control enclosures, separate power supplies or wiring conduit. Native communications reduce commissioning complexity. Communications configuration is contained in the chiller Installation & Operating Manual (IOM), available on the Johnson Controls Portal and shipped with each chiller.

**What to specify:** Provide BACnet MS/TP interface factory installed. If field-installed gateways are required, chiller manufacturer shall include the cost to provide, install and commission the gateway in the field.

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# QuickSpec 7:

## Remote Evaporator

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**What customers are saying:** "I need to protect the chiller barrel from freezing during the harsh winter months and not worry about it shutting down. We're not interested in using glycol or heat tracing for freeze protection because both are just a waste of energy."

**Customer need:** The ability to place the evaporator barrel indoors to protect from freezing.

**YLAA feature:** Remote Evaporator option is available on the entire range of YLAA chillers.

**So what:** Remote (indoor) evaporators are more easily protected against freezing than evaporators in outdoor chillers. This may allow the customer to avoid using glycol in the chilled water system.

**Competitive advantage:** Competitors' chillers likely have this feature, option, or capability. However, remote evaporators are not always the best way to avoid freezing in chillers. Understand your customer's needs and the application to offer the best solution.

**What to specify:** Provide chiller and remote evaporator with less than 150 equivalent feet of refrigerant piping between them. Refrigerant piping shall not be installed underground or in otherwise inaccessible places.

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# QuickSpec 8:

## Variable Primary Flow (VPF)

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**What customers are saying:** “I want to save pump energy by varying chilled water flow but want assurance that I won’t have the control problems I’ve had with Primary/Secondary pumping systems.”

**Customer need:** A chilled water system that can handle varying flow through the evaporator without sacrificing reliability, stability or performance.

**YLA feature:** Innovative and proprietary chiller controls with algorithms that allow evaporator flow to vary while maintaining reliability, stability and performance.

**So what:** Traditional chiller designs keep flow through the chiller constant at the level needed when the chiller is running at full capacity. However, the average air-cooled chiller runs at part load 99% of the time. Therefore, most of the time the system runs with more flow than required for the cooling load, using more pump energy than necessary. Higher than required flow also yields lower than ideal temperature differences. In some systems low temperature differences can lead to system control problems, causing humidity and temperature control loss. At best this makes the building uncomfortable and at worst damages critical processes, assets, or the building itself.

**Competitive advantage:** Leverage Johnson Controls combined systems expertise in controls and equipment to help the customer successfully apply VPF in his building.

**What to specify:**

- Provide chiller capable of reliable operation in a variable primary flow system. Chiller shall operate stably with up to a 10% per minute evaporator flow change.
- Provide chiller with minimum evaporator flow equal to or less than scheduled value, and maximum evaporator flow equal to or greater than scheduled value.
- Provide chiller with controls to prevent freezing in the evaporator upon rapid loss of flow.

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