

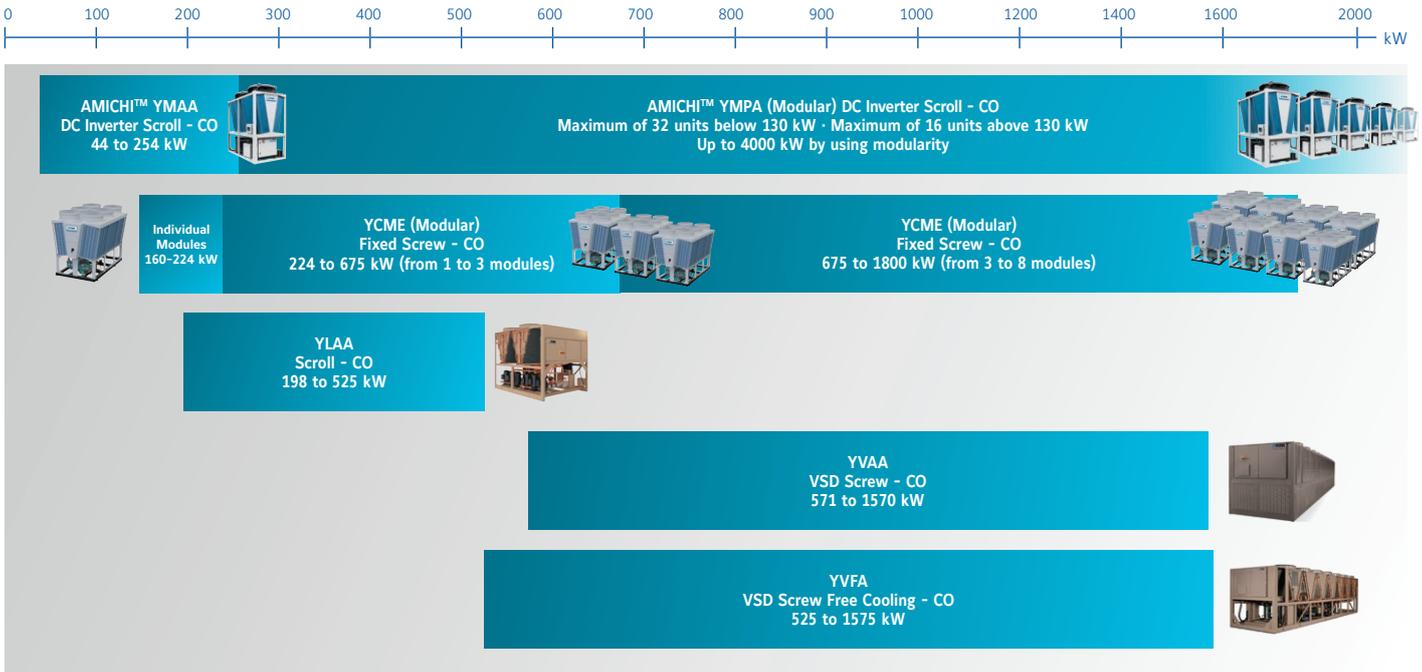


YORK[®] Air to Water chiller & heat pump Positioning guide

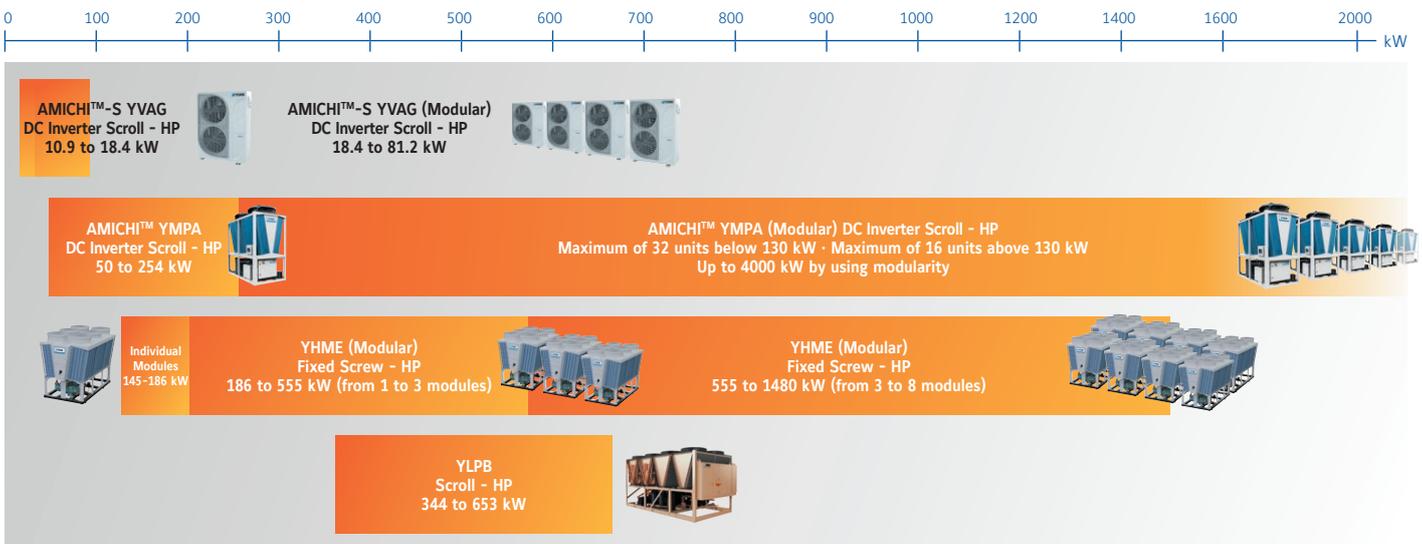
Summary

The purpose of this guide is to enable sales representatives to effectively position and lead with the right air-cooled chiller within the **10 – 4000 kW range**, by providing product differentiation. Knowing which chiller to recommend includes uncovering the customer needs, understanding the application, product knowledge and competitive environment.

Air-cooled cooling only units



Air-cooled heat pump units



Uncovering customer needs

Before a chiller can be effectively positioned and recommended to the customer, the following should be discussed.



The following core questions are essential for an effective recommendation

- 】 Cooling only or heat pump?
- 】 Which is the application? Process cooling or comfort cooling? Industrial application or living appliance?
- 】 Target capacity? Cooling (heating) power required?
- 】 What are the minimum/maximum leaving evaporator (LEWT) at ambient temperatures? Gap of temperatures?
- 】 Any specific request on the compressor? Scroll/Screw?
- 】 Where will the product reside? Location, size of space, weather conditions and altitude
- 】 Any restriction on the refrigerant?

Uncovering the following will further solidify the recommendation

- 】 What are the energy rates/run hours?
- 】 Minimum efficiency level required?
- 】 Is sound important?
- 】 When will the chiller need to be installed (lead time)?
- 】 Who is the competition?
- 】 How will various options be evaluated? Hydrokit, heat recovery, fan, buffer tank...
- 】 What is the budget?

For retrofit units, in addition to the above questions

- 】 Do they need more or less capacity than currently designed?
- 】 Does the chiller need to fit existing electrical?
- 】 Does the chiller need to fit existing space/footprint? (length, width, height)
- 】 Is the customer looking to improve efficiency?
- 】 Does the customer require a minimum cooling capacity?
- 】 Are there any restrictions for access or installing the unit(s)? (such as elevator shaft)

YORK® AMICHI™ – S

Air-cooled scroll DC inverter reversible heat pumps

Cooling capacity: 11.2 to 17.8 kW

Heating capacity: 10.9 to 18.5 kW

Model sizes: 4 heat pumps

Refrigerant R410A

Performance

- SEER: Ecodesign Comfort Cooling Tier 2 (2021) compliant
- SCOP: Ecodesign Comfort Heating Tier 2 (2017) compliant
- EER 2.87 ÷ 3.00 ESEER 4.75 ÷ 5.10
- COP 2.78 ÷ 3.08 SCOP 3.30 ÷ 3.54

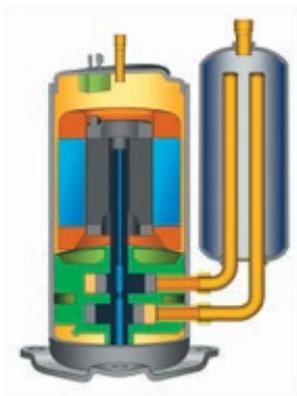
Operation range

- Ambient at cooling: -5°C ~ 48°C
- Leaving water temperature at cooling: 5°C ~ 15°C
- Ambient at heating: -20°C ~ 25°C
- Leaving water temperature at heating: 30°C ~ 52°C



Hitachi DC inverter compressor

- ▶ Compressor range goes from 15 ~ 120%, to quickly and efficiently meet the needs of residential load changes.
- ▶ Hitachi inverter compressor extends heating operation range for low temperature application, as low as to -20°C operation, don't need additional heating device such as electric heater to save power distribution cost by this function.



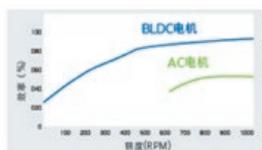
Wide operating range

- ▶ With the wide operating range, YVAG is perfect for the most of climates. It does not matter if the ambient temperature in summer is 48°C or if in winter is -20°C, as the unit will maintain the efficiency in stable operation, to provide users with the most comfortable air conditioning experience.



DC inverter fan motor

- ▶ Low noise. 54 dB(A) Sound Pressure at full capacity, down to 40 dB(A) in partial load.
- ▶ Adjusts the air flow to exactly match the capacity in a more accurate and efficient way.



Modular design

- ▶ Up to 4 module to meet the needs of different residential and light commercial buildings demands.



YORK® AMICHI™

Air-cooled scroll DC inverter chillers & heat pumps

Cooling capacity: 44 to 254 kW

Heating capacity: 50 to 254 kW

Model sizes: 9 cooling only and 9 heat pumps

Refrigerant R410A

Performance

- SEER: Ecodesign Comfort Cooling Tier 2 (2021) compliant
- SCOP: Ecodesign Comfort Heating Tier 2 (2017) compliant
- EER 2.87 ÷ 3.00 ESEER 4.75 ÷ 5.10
- COP 2.78 ÷ 3.08 SCOP 3.30 ÷ 3.54

Operation range

- Ambient at cooling: -18°C ~ 48°C
- Leaving water temperature at cooling: -8°C ~ 20°C
- Ambient at heating: -15°C ~ 25°C
- Leaving water temperature at heating: 25°C ~ 55°C



AMICHI Unit	45-65	80-100-130	160-200	230-260
Refrigerant circuits	1	2	3	4
Scroll compressors	2	3/4	5/6	7/8
Fans	1	2	3	4
Dimensions (w/o pump kit)	1200 x 1500 x H2440 mm	1200 x 2240 x H2440 mm	3050 x 2240 x H2500 mm	3050 x 2240 x H2500 mm
Hydrokit Option	VSD (External Mounting) / Fix speed single pump (Internal Mounting)		VSD single pump (Internal Mounting)	



YORK® YCME & YHME

Modular screw chillers and heat pumps

Cooling capacity: 160 to 225 kW

Heating capacity: 145 to 185 kW

Model sizes: 4 cooling only and 4 heat pumps

Refrigerant R134a

Performance

- SEER: Ecodesign Comfort Cooling Tier 2 (2021) compliant
- SCOP: Ecodesign Comfort Heating Tier 2 (2017) compliant
- EER 2.87 ÷ 3.00 ESEER 4.75 ÷ 5.10
- COP 2.78 ÷ 3.08 SCOP 3.30 ÷ 3.54

Operation range

- Ambient at cooling: -18°C ~ 48°C
- Leaving water temperature at cooling: -8°C ~ 20°C
- Ambient at heating: -15°C ~ 25°C
- Leaving water temperature at heating: 25°C ~ 55°C



Modular concept

› Provide flexibility

Up to 8 modules in one water system brings important benefits.

› Achieve reliability

Full redundancy – safety first. Should a module fail, the remaining modules maintain operational continuity.



YORK® YLAA

Air-cooled scroll compressor chiller

Cooling capacity: 198 to 527 kW

Model sizes: 10 cooling only

Refrigerant R410A - R454B

Features

- Scroll compressors
- Microchannel condenser
- SEER meets EcoDesign requirements
- Low sound operation
- Single point electrical connection
- Optional pump packages
- Optional heat recovery to 60°C
- Ambient operation from -18°C to 52°C
- Chilled water supply from -12°C to 15°C



- 】 Selecting the unit version with new refrigerant the customer can benefit of an improved efficiency and a reduced GWP (75% lower)
- 】 Partial heat recovery well suited for hotels or other applications with need for hot water during cooling hours
- 】 Onboard pumps with VSD save footprint on retrofit jobs

Scroll compressors

- 】 Tandem / Trio configurations and capacity control contributes to high part load efficiencies.

VSD fans as standard

- 】 Greatly improving part load efficiency and sound, maintaining optimum head pressure while minimizing the airflow by utilizing full coil surface area.

Optimum control of Electrical Expansion Valve (EEV)

- 】 Prevents any liquid presence in the suction line that could be sensed by the EEV.



YORK® YLPB

Air-cooled scroll compressor heat pump

Cooling capacity: 336 to 629 kW

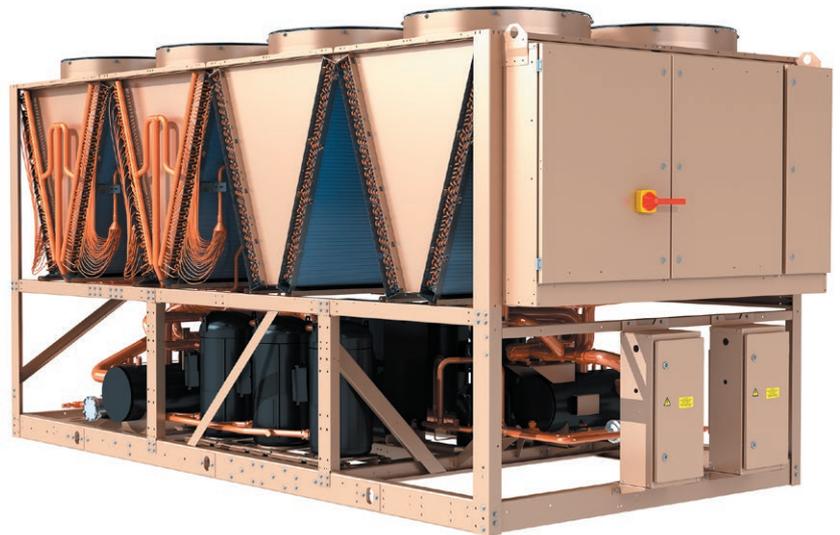
Heating capacity: 344 to 653 kW

Model sizes: 5 heat pumps

Refrigerant R410A

Features

- Scroll compressors
- Desuperheater
- Soft starter
- Low noise (Low Sound Fans VSD)
- Operating limits:
 - Cooling mode (Std unit): 0 to 46°C
 - Heating mode (Std unit): -10 to 35°C
- Round Tube Plate Fins (RTPF) in copper and aluminum



▶ **High partial load efficiency: YLPB models are one of the most efficient reversible heat pump in the market with a SEER up to 4.25**

Scroll compressors

- ▶ Tandem / Trio configurations and capacity control contributes to high part load efficiencies.

VSD fans as standard

- ▶ Greatly improving part load efficiency and sound, maintaining optimum head pressure while minimizing the airflow by utilizing full coil surface area.

Optimum control of Electrical Expansion Valve (EEV)

- ▶ Prevents any liquid presence in the suction line that could be sensed by the EEV.

Smaller diameter coil tubes (7 mm copper tubes)

- ▶ Improves heat transfer area on the refrigerant and air sides and reduces the air side pressure drop.

Coils are designed to remove water quickly

- ▶ Standard hydrophilic coating on wavy fins, as opposed to slit fins, to remove potential water traps that would otherwise accelerate frost formation.



YORK® YVAA

Air-cooled VSD screw compressor chiller

Cooling capacity: 569 to 1654 kW

Refrigerant R134a - R513A

Features

- Desuperheater
- Quick start
- VSD fans
- Microchannel condenser battery
- Falling film evaporator
- VSD compressor
- Screw compressor



- 】 Heat exchangers – high efficiency falling-film evaporator & advanced microchannel condenser coil designs
- 】 Controls – leveraging YORK® and Johnson Controls technology & 'know-how'
- 】 Variable Speed Drive – VSD compressor from the industry pioneer and VSD condenser fan to maximize performance
- 】 Screw compressors – proven, industry leading screw compressor design with more than 30,000 VSD compressors operating worldwide



YORK® YVFA

Air-cooled VSD screw chiller with integrated free-cooling

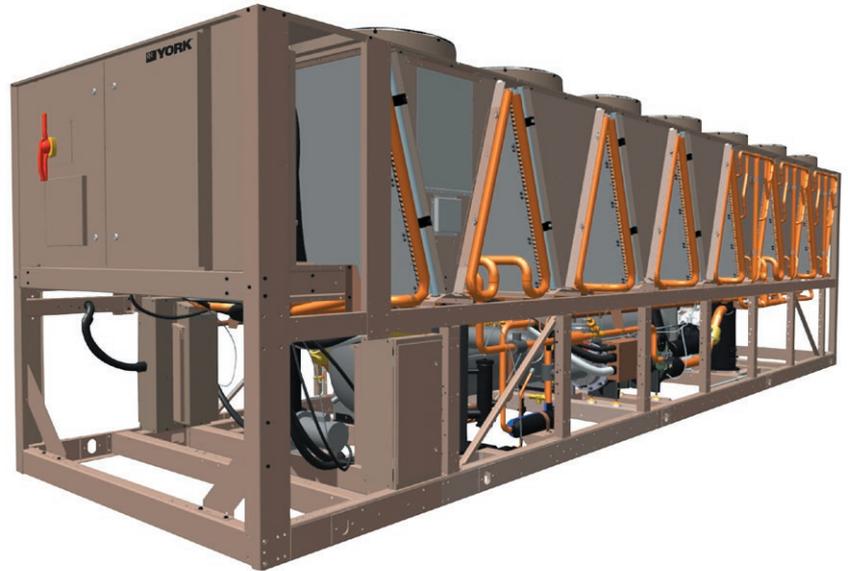
Cooling capacity: 525 to 1575 kW

Screw compressor

Refrigerant R134a - R513A

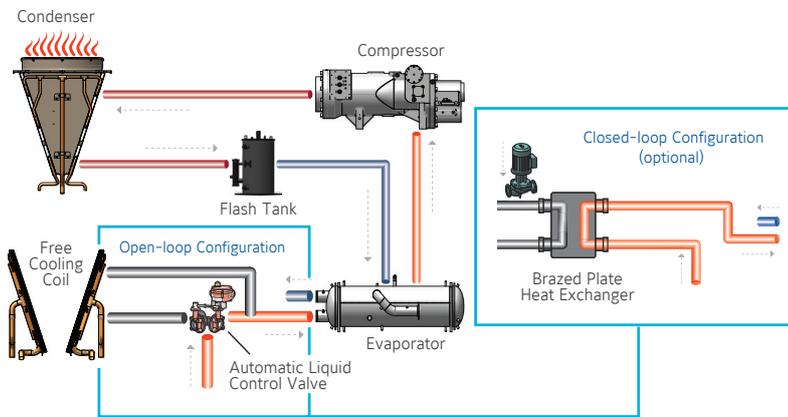
Features

- Free cooling
- VSD screw compressor
- Quick start
- Microchannel condenser
- Advanced controls
- Low temperature application options



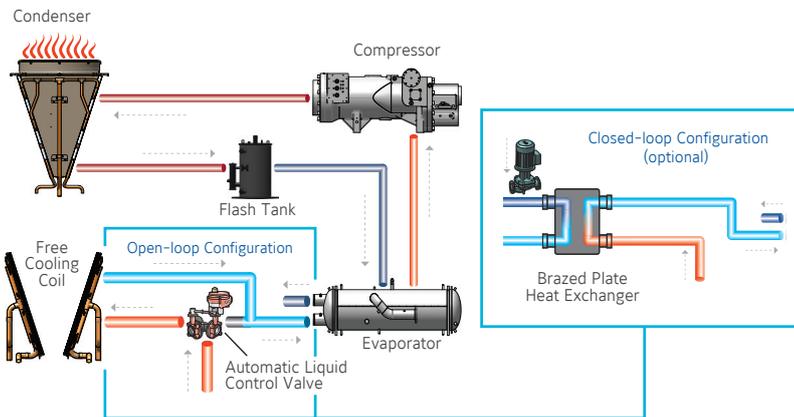
- 】 YORK® YVFA air-cooled variable speed screw free cooling chillers. Available in open and closed (glycol free) loop configurations
- 】 Optimized annual energy savings thanks to the unique combination of the YORK® Variable Speed Drive technology expertise and the sophisticated free-cooling controls
- 】 Lower ambient operating range when in free-cooling mode, compared to standard units
- 】 Reduced installation footprint, thanks to the integration of the free-cooling coils together with the chiller
- 】 Focused on data centers (sometimes in large facilities such as hospitals, banks, telecom, universities, government)
- 】 Focused on process applications including facilities such as bakeries, materials manufacturing (concrete, plastics), 24/7 government sites (prisons, call centers), paint lines at equipment factories, etc

Saving energy is simple in every situation



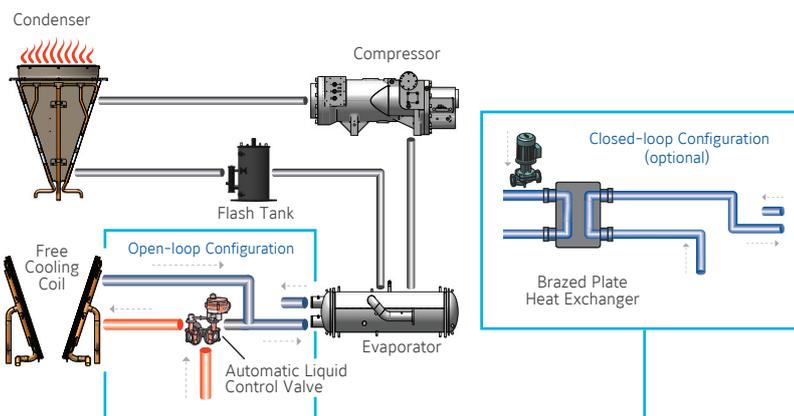
1 Mechanical cooling mode

When it's too warm to use ambient air for cooling, the YVFA performs as a standard chiller. The automatic flow-control valve in the open-loop configuration bypasses the free-cooling coils to reduce pump energy. When either cooling load or ambient temperature are less than full design condition, the variable-speed screw compressors and condenser fans modulate to optimize energy use. In a closed-loop configuration, the free-cooling coils are also bypassed.



2 Hybrid cooling mode

When ambient temperatures permit, liquid flow through the free-cooling coils is enabled. This pre-cooling reduces energy use while the compressors deliver final cooling to meet setpoint. Thanks to YORK® VSD screw technology, at reduced ambient the compressors may draw less power than the fan motors required to move air through the free-cooling coils. Advanced controls provide the most efficient operation rather than simply shutting off compressors as quickly as possible. The annual energy cost report demonstrates the benefit of this intelligent control.



3 Free cooling mode

At lower ambient temperatures, full cooling load can be most efficiently delivered by the free-cooling coils. Compressors are shut off and the VSD fans are modulated to meet the cooling setpoint.

Cooling only product features

	YMAA	YCME	YLAA	YVAA	YVFA
Product features (min-max)					
Cooling capacity (modularity)	44 - 254 kW (up to 4000 kW)	160 - 224 kW (up to 1800 kW)	198 - 527 kW with R410A 195 - 517 kW with R454B	569 - 1654 kW	525 - 1575 kW
First cost	\$	\$\$	\$\$\$	\$\$\$\$	\$\$\$\$
SEER	4.17 - 4.50	4.11 - 4.13	3.86 - 4.42	4.27 - 4.80	N/A **
ηsc	164 - 177	161 - 162	151 - 174	163 - 189	N/A **
EER	2.79 - 3.11	3.14 - 3.20	2.60 - 3.20	2.83 - 3.23	2.84 - 3.19
Foot Print [mm] Single module	W: 1500 - 2240 L: 1200 - 3050 H: 2440 - 2500	W: 2290 - 3230 L: 1955 H: 2450	W: 2911 - 4769 L: 2242 - 2254 H: 1706 - 3615	W: 5741 - 15222 L: 2241 H: 2401	W: 6280 - 11864 L: 2242 - 2243 H: 7394 - 17140
Weight [kg] Standard unit *	575 - 2316	1300 - 1680	1706 - 3615	6208 - 14066	7394 - 17140
Sound power level [dB(A)] Standard unit *	80 - 89	96 - 99	87 - 95	95 - 99	103 - 110
Refrigerant (GWP)	R410A (2088)	R134a (1430)	R454B (467) or R410A (2088)	R134a (1430) or R513A (631)	R134a (1430) or R513A (631)
Circuits	1 - 4	1	2	2	2
Compressor	DC Inverter + Fixed Speed Scroll	Semi hermetic screw	Scroll	VSD Screw	VSD Screw

* Info based on standard unit, various options available for improvements, please contact your JCI representative for the details.

** Free cooling chillers are out of the scope of Ecodesign Regulation

Heat pump product features

	YVAG	YMPA	YHME	YLPB
Product features (min-max)				
Cooling capacity (modularity)	11.18 - 17.80 kW (up to 71.2 kW)	44 - 254 kW (up to 4160 kW)	150 - 210 kW (up to 1680 kW)	336 - 629 kW
Heating capacity (modularity)	10.9 - 18.4 kW (up to 81.2 kW)	50 - 254 kW (up to 4000 kW)	145 - 185 kW (up to 1480 kW)	344 - 653 kW
First cost	\$	\$\$	\$\$\$	\$\$\$\$
SEER	4.05 - 4.52	4.17 - 4.5	4.11 - 4.13	4.15 - 4.25
η_{sc}	159 - 177	164 - 167	161 - 162	163 - 167
EER	2.56 - 2.79	2.79 - 3.12	3.14 - 3.20	2.90 - 3.03
SCOP	3.47 - 4.02	3.30 - 3.54	3.22 - 3.25	3.25
η_{sh}	136 - 158	130 - 138		127
COP	2.94 - 3.29	2.97 - 3.26	2.83 - 2.85	2.99 - 3.07
Foot print [mm]	W: 1320 L: 360 H: 995	W: 1500 - 2240 L: 1200 - 3050 H: 2440 - 2500	W: 2290 - 3230 L: 1955 H: 2450	W: 4721-6958 L: 2242 H: 2391
Weight [kg]	126 - 141	575 - 2316	1300 - 1680	3793 - 5495
Sound power level [dB(A)]	68 - 74	80 - 89	96 - 99	96 - 99
Refrigerant (GWP)	R410A (2088)	R410A (2088)	R134a (1430)	R410A (2088)
Circuits	1	1 - 4	1	2
Compressor	Scroll DC Inverter	DC Inverter + Fixed Speed Scroll	Semi hermetic screw	Scroll

Application

The table below shows the BEST (★), the BETTER (☆) and the GOOD (★) application for each YORK® series. There is also a short explanation for the most suitable applications.

APPLICATION	YVAG	YMAA / YMPA	YCME / YHME	YLPB	YLAA	YVAA / YVFA
Residential & Small Properties	★ Customer is looking for quick delivery of ready to start, small capacity, highly efficient, Scroll compressors, modular Chillers/Heat pumps equipped with Hydrokit	☆ Customer is looking for quick delivery of ready to start, small to mid-capacity, highly efficient, inverter Scroll compressor, modular Chillers/ Heat pumps equipped with Hydrokit	★ Customer is looking for quick delivery of ready to start, small to mid-capacity, highly efficient, Screw compressors, modular Chillers/ Heat pumps equipped with Hydrokit	★	★ Customer is looking for highly efficient, medium capacity, Scroll compressors, small footprint, Heat Recovery option, ready to start Chillers with VSD / fixed speed pump Hydrokit, R410A or low GWP ref R454B	★
Small to Medium sized Commercial properties	★ Customer is looking for quick delivery of ready to start, small capacity, highly efficient, Scroll compressors, modular Chillers/Heat pumps equipped with Hydrokit	★ Customer is looking for quick delivery of ready to start, small to mid-capacity, highly efficient, inverter Scroll compressor, modular Chillers/ Heat pumps equipped with Hydrokit	☆ Customer is looking for quick delivery of ready to start, small to mid-capacity, highly efficient, Screw compressors, modular Chillers/ Heat pumps equipped with Hydrokit	★	★ Customer is looking for highly efficient, medium capacity, Scroll compressors, small footprint, Heat Recovery option, ready to start Chillers with VSD / fixed speed pump Hydrokit, R410A or low GWP ref R454B	★
Schools / Higher Education	★	☆	☆	★ Customer is looking for ready to start, efficient, Heat Recovery option, low sound Heat pump w VSD fans, VSD Hydrokit to meet hot water requirement.	★ Highly efficient, medium capacity, Scroll compressors, small footprint, Heat Recovery option, ready to start Chillers with VSD / fixed speed pump Hydrokit, R410A or low GWP ref R454B	★ Schools care about total cost of ownership so robust inverter screw compressor and inverter fans technology resulting in very high efficiency, Heat Recovery option, efficiency, sound and R134a or low GWP ref R513A is important to them
Healthcare	★	☆	☆	★ Low sound, efficiency, Heat Recovery, Hydrokit, Reliable, maintenance free Heat pump supplying hot water is very critical for Healthcare facilities	★ Healthcare facilities look for highly efficient, medium capacity, small footprint, ready to start Chillers with Hydrokit and low GWP ref R454B	★ Robust inverter screw compressor and inverter fans technology resulting in very high efficiency, Heat Recovery option, efficiency, sound and R134a or low GWP ref R513A is important for healthcare facilities
Hotel	★	☆	☆	★ Low sound, low operating cost, low down time, Heat Recovery option, VSD Hydrokit, reliable Heat pump important for Hotel industry	★ Low sound, low operating cost, low down time, Low GWP refrigerant, Heat Recovery option, reliable Chillers with VSD Hydrokit is important for Hotel industry	★ Hotels care the most for low cost of operation, maintenance cost and sound levels. Also available with low GWP R513A
Industrial	★	★	★ Best year round efficiency, Robust and Industrial VSD Screw compressor technology with modular configuration	☆ Customer is looking for highly efficient, medium capacity, ready to start Heat pump with VSD Hydrokit	☆ Customer is looking for highly efficient, medium capacity, ready to start Chillers w Hydrokit and low GWP ref R454B	★ Best year round efficiency, Robust and Industrial VSD Screw compressor technology with Low GWP Ref R513A
Data Centers	★	★	☆	☆	☆	★ Industry best quick start time of <5 minutes, offers free cooling option with YVFA series, best year round efficiency, Robust and Industrial VSD Screw compressor technology with Low GWP Ref R513A

Competitive landscape

The chart below outlines the major competition for each YORK® chiller and how YORK® is well positioned against the strength presented by the competition.

YORK® Product	Closest competitor	Competitor strength	Why YORK® chiller?
YVAG	Daikin EWYQ	<ol style="list-style-type: none"> 1. Channel reach and marketing 2. Offers LWT down to -10°C 	<ol style="list-style-type: none"> 1. Better efficiency 2. Better footprint 3. Better price
YMAA / YMPA	Carrier - 30RBM/RBS Aermec - NRL	<ol style="list-style-type: none"> 1. Brand and channel reach 2. Pricing 3. Lead time 	<ol style="list-style-type: none"> 1. YMAA has market leading ηs,c and ESEER values (for a scroll chiller) 2. Better footprint and capacity range 3. Better operation envelope 4. Better sound levels
YLAA	Trane -CGAF Daikin - EWAT	<ol style="list-style-type: none"> 1. Trane has multiple efficiency levels 2. Daikin can offer low GWP R32 	<ol style="list-style-type: none"> 1. Efficiency 2. Footprint 3. Hydrokit option 4. Low GWP R454B
YLPB	Trane -CXAF Carrier - 30RQ	<ol style="list-style-type: none"> 1. Trane - Higher efficiency in heating 2. Carrier - Better pricing and lead times 	<ol style="list-style-type: none"> 1. Average B class efficiency 2. VSD - hydrokit, fans
YVAA / YVFA	Trane RTAF Carrier 30KAV	<ol style="list-style-type: none"> 1. Efficiency 2. Lead time 3. Price 	<ol style="list-style-type: none"> 1. Experience of > 12 year in offering air cooled VSD screw chillers 2. Optimized full load and part load efficiency 3. After market service 4. Glycol cooled VSD prevents dust intrusion to cabinet, less maintenance than air cooled with filters



 **YORK[®]**

INSTALL CONFIDENCE.