Johnson Controls

YORK

Commercial and Industrial Air-Conditioning Products

The World of Mini Chillers and Heat Pump Solutions

johnsoncontrols.in

The power behind **your mission**

YORK® Commercial and Industrial Air-Conditioning Products

Indoor units, Mini Chillers and Heat Pump Solutions

YORK® MINI CHILLERS

AIR-COOLED

YVAG 012 to 040
Cooling capacity:
11.2 kW to 40 kW
Air-cooled DC Inverter Scroll
R410A

YMAE 045 to 140
Cooling capacity:
45 kW to 140 kW
Air-cooled DC Inverter Scroll
R410A

YMPA 0080 to 0260
Cooling capacity:
78 kW to 255 kW
Air-cooled DC Inverter Scroll
R454B and R410A

YCAE 065 to 130
Cooling capacity:
65 kW to 130 kW
Air-cooled Scroll
R410A

YLAA 0195 to 0517
Cooling capacity:
199 kW to 520.6 kW
Air-cooled Scroll
R410A

WATER-COOLED

YCWE 021 to 042
Cooling capacity:
76.2 kW to 151.9 kW
Water-Cooled Scroll
R410A

YGWS 100 to 330
Cooling capacity:
350.4 kW to 1150 kW
Water-Cooled Screw
R134a

YORK® HEAT PUMPS

AIR-COOLED

YVAG 012 to 040
Heating capacity:
12.6 kW to 42 kW
Air-cooled DC Inverter Scroll
R410A

YMAE 045 to 140
Heating capacity:
46 kW to 145 kW
Air-cooled DC Inverter Scroll
R410A

YMPA 0080 to 0260
Heating capacity:
87 kW to 255 kW
Air-cooled DC Inverter Scroll
R454B and R410A

YCAE 065 to 130
Heating capacity:
66 kW to 131.9 kW
Air-cooled Scroll
R410A

WATER-COOLED

YCWE 021 to 042
Heating capacity:
90.6 kW to 180.6 kW
Water-Cooled Scroll
R410A

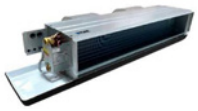
YORK® AIR HANDLING UNIT

YMZ
Modular AHU
Airflow range:
1000 – 100 000 m³/h
589 – 58 860 CFM

YORK® INDOOR UNITS

JCDFCU 20 to 75
Ductable
Cooling capacity:
2.0 TR to 7.5 TR
7.0 kW to 26.4 kW
Air flow: 1360 to 5100 m³/h

YGFC 04 to 14
Ceiling concealed
Cooling capacity:
1 TR to 4 TR
3.5 kW to 14.0 kW
Air flow: 680 to 2380 m³/h



JCRCT 500 to 1200
Round Cassette
Cooling capacity:
4.5 kW to 10.8 kW
Air flow: 850 to 2040 m³/h

JCHI 08 to 20
High Wall
Cooling capacity:
0.8 TR to 2 TR
2.8 kW to 7.0 kW
Air flow: 680 to 1400 m³/h

JCCT 010 to 015
One Way Cassette
Cooling capacity:
1 TR to 1.5 TR
3.6 kW to 4.5 kW
Air flow: 680 to 850 m³/h

JCCT 15 to 40
Heavy Duty Cassette
Cooling capacity:
1.5 TR to 4 TR
5.4 kW to 12.6 kW
Air flow: 1020 to 2380 m³/h

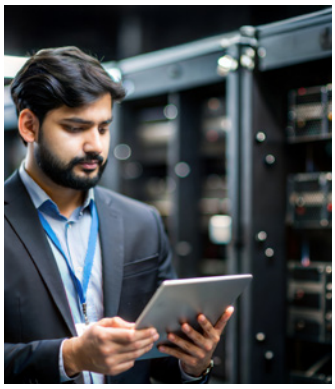
JCCT 08 to 13
Compact Cassette
Cooling capacity:
0.8 TR to 1.3 TR
3.3 kW to 4.5 kW
Air flow: 510 to 850 m³/h

Nominal conditions:
Cooling capacities in kW given for 12/7°C water leaving temperature Δt 5°C and 35°C ambient temperature.
Heating capacities in kW given for 40/45°C water leaving temperature and 7°C ambient temperature.
Sound data is tested in YORK lab which may vary according to different installation conditions.

Multiple Applications, One Solution


Airports

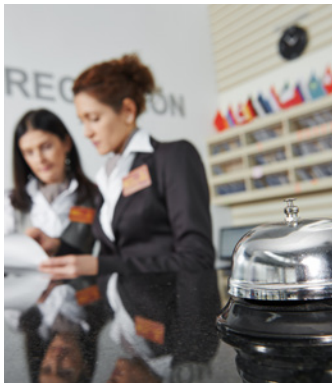

Commercial Real Estate


Data Centers


Food & Beverages


Government


Healthcare


Hospitality


Industrial & Manufacturing


Life Sciences


Marine and Navy


Oil & Gas


Rail & Metro


Retail


Schools & Higher Education


Smart Cities


Sport and Entertaiment

HVAC – Useful formulas & Conversion

PLANT ROOM EQUIPMENT

Water Flow Measurements

USGPM = m^3/hr x 4.404

USGPM = l/s x 15.85

l/s x 3.6 = m^3 / hr

Air Flow Measurements

CFM = l/s x 2.118

CFM = m^3/hr x 0.588

Pressure Measurements

1 bar = 100 kPa = 10.2m of water = 14.5 PSIG

1 kPa = 0.1m of water column

1 PSIG = 2.31 feet of water column

Chillers

1 TR = 12000 Btu / hr = 3.516 kW

$$\text{Chiller Capacity (TR)} = \frac{\text{Evaporator Flow (USGPM) x Delta T(*F)}}{24}$$

$$\text{Coefficient Of Performance (COP)} = \frac{\text{Output Cooling Capacity (kW)}}{\text{Input Electric Energy (kW)}} = 3.516 / (\text{iKW/TR})$$

EER = 12 / (iKW/TR) = 3.4 x COP

$$\text{IPLV / NPLV} = \frac{1}{\frac{0.01}{\text{COP at 100\%}} + \frac{0.42}{\text{COP at 75\%}} + \frac{0.45}{\text{COP at 50\%}} + \frac{0.12}{\text{COP at 25\%}}}$$

Pumps

$$\text{Pressure (PSI)} = \frac{\text{Head (Feet) x Specific Gravity}}{2.31}$$

$$\text{Brake Horsepower (BHP)} = \frac{\text{GPM x Head (Feet) x Specific Gravity}}{3960 \text{ x Pump Efficiency}}$$

Affinity Law

Law 1a: Flow is proportional to shaft speed $\frac{Q_1}{Q_2} = \frac{N_1}{N_2}$

Law 1b: Pressure or head is proportional to the square of shaft speed $\frac{H_1}{H_2} = \left(\frac{N_1}{N_2}\right)^2$

Law 1c: Power is proportional to the cube of shaft speed $\frac{P_1}{P_2} = \left(\frac{N_1}{N_2}\right)^3$

Where Q = GPM, H = Head, P = BHP, N = RPM

Cooling Tower

$$\text{Heat Rejected by Machine (TR)} = \text{Evaporator Capacity (TR)} + \frac{\text{Compressor Thermal Load (kW)}}{3.516}$$

$$\text{Cooling Tower Approach} = \left(\text{Entering Condenser water temperature}\right) - \left(\text{Ambient Wet Bulb Temperature}\right)$$

$$\text{Cooling Tower Efficiency (\%)} = 100 \text{ x } \frac{\text{Range}}{\text{(Range + Approach)}}$$

Electrical

1 Horsepower (HP) = 746 Watts

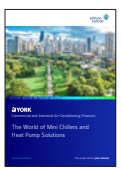
1 kW = 3412 Btu

Power (P) = Voltage (V) x Current (I)

Power (3 Phase) = 1.732 x Voltage x Current x Power Factor

$$\text{Speed of Electric Motor (RPM) (N)} = \frac{120 \text{ x frequency of power (f)}}{\text{Number of motor poles (P)}}$$

Scan the QR-code



Commercial and Industrial HVAC

Scan the QR-code

YORK® Variable Water Flow (YVWF)

Scan the QR-code

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