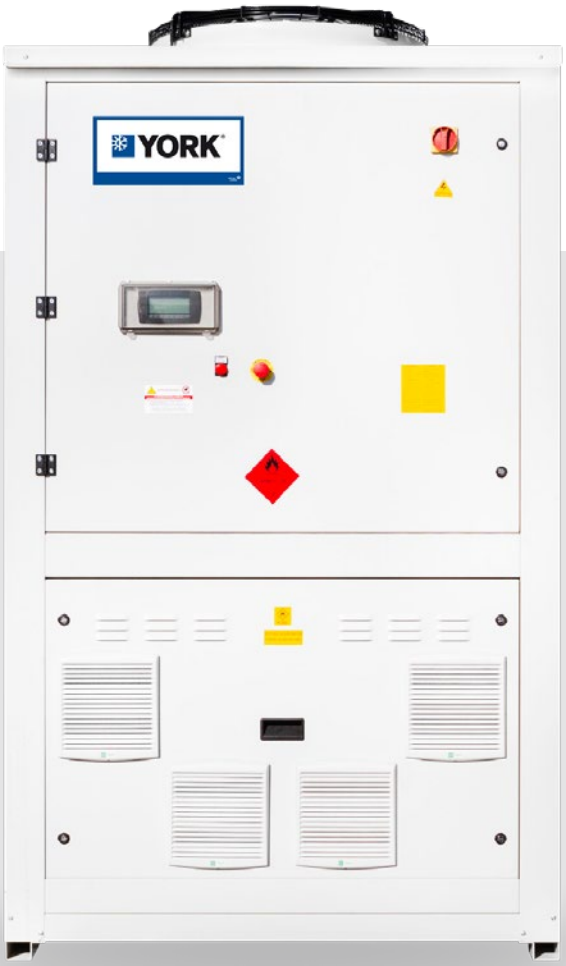
YAS/Rc-WP

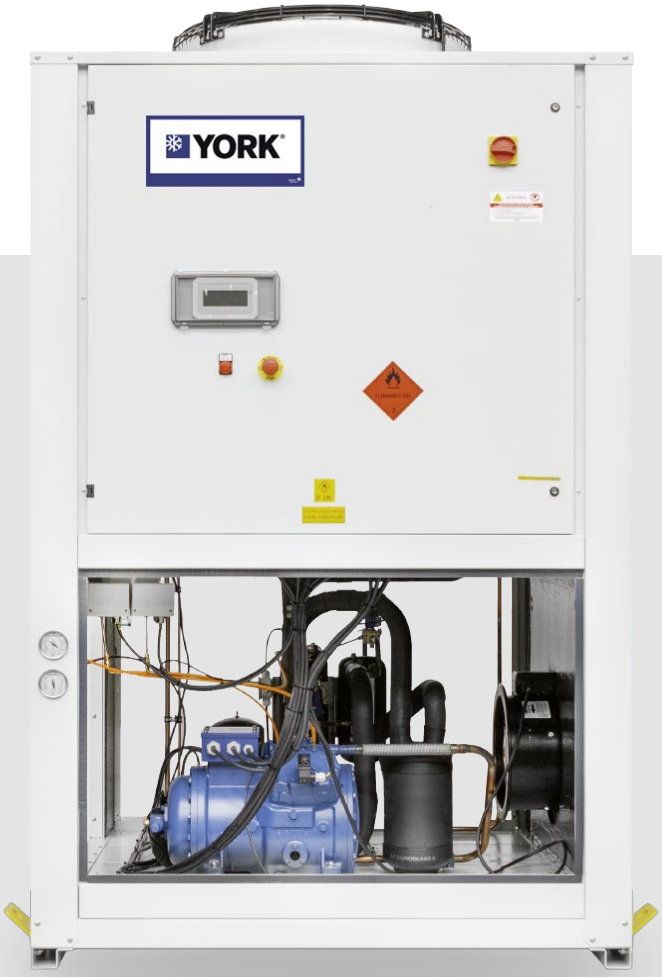
Air-cooled heat pumps with reciprocating compressor, axial fans and R290 refrigerant

The air-cooled heat pumps with reciprocating compressors and axial fans are suitable for installation outdoors. The refrigerant used is propane, which is not harmful to the environment. Propane is also particularly efficient and at the same time retains its optimal thermodynamic properties.

Depending on the required heating capacity, the units are available in mono or multi compressor with 1 or 2 independent cooling circuits. Thanks to the many available options, these heat pumps are particularly versatile and are easily adaptable to the different types of plant, where production of chilled water is required. All the units are completely factory-assembled and tested and supplied with refrigerant and non-freezing oil charge. So, once on site, they only need to be positioned and connected to the hydraulic line and power supply.

Units CE certified in compliance with the European regulation 813/2013 at working condition.





Main components

Frame
Structure strong and compact, made of base and frame with high-thickness galvanised steel elements, assembled with stainless steel rivets. All galvanised steel surfaces externally positioned are superficially coated by an oven powder-painting with colour RAL 7035. The technical section which contains compressors and the other cooling circuits elements, except the condensing part, is hermetically closed from the rest of the ambient, equipped with a leakage sensor and a forced ventilation system. To reduce the sound level, it is possible to insulate the technical section with a sound and fire proof mattress.

Compressors
Semi-hermetic reciprocating compressors optimized to operate with the hydrocarbons and realized in compliance with the regulations on safety in force. The compressors and all the relevant components of the cooling circuit are closed inside a technical compartment which is hermetically closed and kept in constant forced ventilation to avoid air stagnation and refrigerant pockets which can comes out from possible leaks. The electrical motor, arranged for starting with low inrush current (option PW), is equipped with thermal protection module (installed inside the electrical cabinet). The lubricating system, of forced type, is equipped with oil filters and check valves to survey the lubricating pressure and is made through a high pressure pump. Each compressor, which works on a single independent circuit, is installed on rubber isolation dampers and provided with anti-vibration dampers and valves on suction and discharge side.

Evaporator
The evaporator is available as a plate heat exchanger made of stainless steel, in a single or double circuit design, insulated and equipped with a differential pressure flow monitor. The external heat exchanger consists of copper tubes in several rows, which have been mechanically expanded inside the aluminum register.

With micro-finned copper tubes and a hydrophilic treatment, positioned in staggered rows and mechanically expanded into an aluminium finned pack. Fins are designed with such a shape providing the highest heat exchange efficiency. The coil is placed directly on a condensate drip tray. The frontal section of the coil can have, as an option, the safety protection grid (Option GP).

Fans
The axial fans with low motor speed are driven directly and controlled by a frequency converter with integrated thermal protection and a 6-pole electric motor, aluminum blades with profile for low-noise and efficient operation. The fan is always equipped with a galvanized touch guard. The motors are completely closed and have an IP54 degree of protection.

Cooling circuits
Each provided with a shut-off valve for refrigerant charge, antifreeze sensor, 4 way valve for circle inversion liquid separator, shut-off valves on liquid line, sight glass, dehydrating filter for R290 with wide filtering surface, high-pressure safety valve on high pressure refrigerant side equipped with a connector to the discharged refrigerant conveying piping, solenoid valve on liquid line with coil, mechanical thermostatic expansion valve, calibrated high and low pressure switches and gauges for R290 specifically. All units are equipped with a special sensor that turning off the compressors in the event of a gas leak.

Electric board
The power and control housing contains all components that are required to regulate and control all motors in the complete unit. This is assembled and tested in the factory. Inside are the power and control elements, a display and keyboard, the main switch and fuses for the motors, the compressors and the fans. It is possible to connect to a BMS system.

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Technical data

Models		1001	1201	1502	1702	2102	2502	2902	3402
Nominal cooling capacity	kW	90.9	104.3	129.7	148.4	180.6	209.5	248.2	296.8
Nominal absorbed capacity	kW	29.3	35.4	40.0	47.5	58.7	70.9	78.4	96.0
Nominal absorbed current	A	52.0	63.8	74.8	83.6	104.0	128.2	145.5	169.8
EER	-	3.10	2.94	3.24	3.13	3.08	2.96	3.17	3.09
Cooling circuit		1	1	2	2	2	2	2	2
Number of compressors		1	1	2	2	2	2	4	4
Refrigerant charge	kg	13	13	15	20	37	37	46	57
Evaporator: Water									
Water flow	m³/h	15.6	17.9	22.3	25.5	31.1	36.0	42.7	51.1
Pressure drop	kPa	23	29	15	19	27	24	32	26
Axial Fan									
Quantity		2	2	3	3	4	4	5	5
Air flow	m³/h	41700	41700	64710	62580	83400	83400	104250	125250
Absorbed power	kW	3.9	3.9	5.8	5.8	7.8	7.8	9.7	12.4
Absorbed current	A	7.8	7.8	11.7	11.7	15.6	15.6	19.5	25.8
Heat pump working at external air temp. 7°C and water inlet 40/45°C									
Nominal thermical power	kW	103.3	119.5	142.2	168.0	209.3	239.8	280.1	333.8
Nominal absorbed power	kW	29.3	34.4	38.7	46.2	58.8	68.0	76.7	94.2
Nominal absorbed current	A	52.3	62.5	73.6	82.2	104.5	123.9	144.1	168.4
SCOP	-	3.45	3.35	3.30	3.25	3.29	3.29	3.38	3.27
COP	-	3.53	3.48	3.68	3.63	3.56	3.53	3.65	3.54
Weight									
Transport	kg	1416	1466	1798	1876	2246	2366	2918	3106
Operation	kg	1422	1472	1812	1890	2260	2388	2949	3138
Dimensions									
Length	mm	2660	2660	3700	4850	4850	4850	5890	5890
Width	mm	1370	1370	1370	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420	2420	2420	2420
Noise level									
Unit total LWA	dB(A)	93.2	93.2	93.7	93.7	95.2	95.2	95.2	95.5
Unit total SPL at 1 m free field	dB(A)	74.7	74.7	74.6	74.6	75.6	75.6	75.1	75.4
Power supply									
Tension/Phases/Frequence	V/ph/Hz	400/3/50+N+PE							

YAS/Rc-WP equipment

Models		1001	1201	1502	1702	2102	2502	2902	3402
Amperometer+ Voltmeter	A+V	o	o	o	o	o	o	o	o
Electrical power supply different from standard	AE	★	★	★	★	★	★	★	★
Soundproofed compressors cabinet	CFU	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o
Victaulic insulation on pump side	L1	o	o	o	o	o	o	o	o
Victaulic insulation on buffer tank side	L2	o	o	o	o	o	o	o	o
RS485 Serial interface	IH	o	o	o	o	o	o	o	o
BACnet Serial interface	IH BAC	o	o	o	o	o	o	o	o
SNMP or TCP/ IP Serial interface	IWG	o	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o	o
Buffer tank module	MV	■	■	■	■	■	■	■	■
Single pump module	P1	o	o	o	o	o	o	o	o
Higher available pressure single pump	P1H	o	o	o	o	o	o	o	o
Twin pump group	P2	o	o	o	o	o	o	o	o
Higher available pressure double pump module (only one working)	P2H	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o	o
Part-Winding compressors start up system	PW	o	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o
Power factor correction system Cosfi >0,9	RF	o	o	o	o	o	o	o	o
Compressors overload relays	RL	o	o	o	o	o	o	o	o
Microchannel coil	PCP	■	■	■	■	■	■	■	■
Microchannel coil with anticorrosive treatment	ECP	■	■	■	■	■	■	■	■
Partial heat recovery	RP	o	o	o	o	o	o	o	o
Personalized frame painting in alternative colour	RV	★	★	★	★	★	★	★	★
Electronic thermostatic valve	TE	o	o	o	o	o	o	▲	▲
External air low temperature operation (-10°C)	BT	▲	▲	▲	▲	▲	▲	▲	▲
External air low temperature operation (-20°C)	BF	o	o	o	o	o	o	o	o
EC-Fans	EC	o	o	o	o	o	o	o	o
High pressure double safety valve	HRV2	o	o	o	o	o	o	o	o
Axial fan diffusor	AXT	o	o	o	o	o	o	o	o
Inverter for compressors	VSC	o	o	o	o	o	o	o	o
Inverter for pump	VSP	o	o	o	o	o	o	o	o

▲ Standard ■ Not available

o Optional ★ Please contact your JCI representative