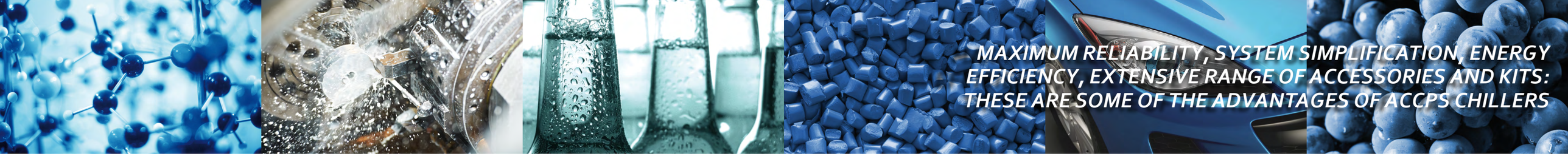
PROCESS COOLING SOLUTIONS

GENERAL AIR PRODUCTS

Air cooled industrial chillers with Scroll compressors and R410A refrigerant Cooling capacity 1.71 – 57.5 Tons

Cooling your industry,
optimizing your process.



MAXIMUM RELIABILITY, SYSTEM SIMPLIFICATION, ENERGY EFFICIENCY, EXTENSIVE RANGE OF ACCESSORIES AND KITS: THESE ARE SOME OF THE ADVANTAGES OF ACCPS CHILLERS

The ACCPS Series is an air cooled liquid chiller, designed for industrial use and for installation in an indoor or outdoor environments. A broad range of options available in product configuration and accessories in kit form, complete the already loaded standard unit and allows this machine to meet the majority of requirements of industrial applications. The ACCPS Series chiller is therefore the solution for all applications that require high performance, reliability, continuous operation and reduced operating costs.

Higher energy efficiency

Thanks to the energy efficient scroll compressors, the oversized evaporator and the R410A refrigerant, the ACCPS Chiller achieves leading energy efficiency levels. This is mated to low maintenance needs, ensuring any ACCPS Chiller is a highly economical long-term proposition.

Respect for the Environment

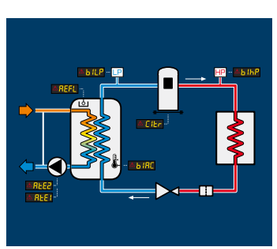
The eco-friendly refrigerant R410A (ODP=0) with outstanding heat conductivity, coupled with the low absorbed power level of the scroll compressors, reduces the environmental impact, minimizing the energy waste. Recyclable and high quality materials ensure respect for the environment, and reduces the carbon footprint.

IC208CX microprocessor control

ACCPS Chiller features a new advanced microprocessor control technology, with all models fitted with a unique IC208CX digital control. A comprehensive digital display allows the user to view and change parameters/settings and monitor alarm readings.

User friendly

The operation principle of the unit is displayed in a simple and intuitive summary sticker with new design. The meaning of the codes of the main alarms shown on the display of the controller are easy to understand, without having to refer back to the instruction manual, thus facilitating the maintenance activities.



Standard features

- Refrigerant R410A;
- Hermetic Scroll compressors;
- High-efficiency finned coil evaporator with copper tubes and aluminum fins, installed inside the water storage tank;
- Axial fans with galvanized steel (mod. 015-020) or die-cast aluminum/plastic crescent-shaped blades (mod. 031-802);
- Air-cooled condensers (copper tubes/aluminium fins) fitted on one side of the chiller. Air filter standard from mod. 031;
- Storage tank (design pressure 87 psig) complete with P3 pump, filling/drain valve, pressure gauge;
- Internal hydraulic bypass between the inlet and outlet connections;
- Electronic level sensor with water conductivity function;
- High and low refrigerant pressure switches;
- Refrigerant pressure gauges (mod. 031-802);
- Parametric microprocessor control IC208CX;
- Protection rating: IP54 (mod. 031-802) or IP44 (mod. 015-020);
- Phase monitor against phase loss and phase reversal;
- Compressor crankcase heater.

Main benefits

- Energy efficiency class A;
- Refrigerant R410A is an environmentally friendly fluid (zero ozone depletion potential) and provides high performances due to its outstanding heat conductivity;
- The innovative evaporator-in-tank configuration has been designed specifically for industrial process cooling. It allows a reliable operation with high flow rates and low pressure drops;
- Large cold water tank keeps outlet water temperature consistent even under varying load conditions;
- Scroll compressors ensure high efficiency, excellent performance and elevated energy savings;
- Plug-in solution with integrated pump and tank, perfectly suited to the needs of the industrial User;
- Protection class IP44 (mod. 015-020) and IP54 (mod. 031-802) makes ACCPS units suitable for outdoor installation;
- Extended operating limits: ACCPS units standard allows water inlet temperatures up to 85 °F, and delivers outlet temperatures down to 14 °F. Maximum ambient temperatures up to 114.8 °F (with reduced performance) and minimum ambient temperature down to 23 °F;
- Extensive range of accessories and kits, allow each unit to match the specific customer requirements;
- Cooling circuit suitable both for atmospheric and pressurized hydraulic circuits (up to 85 psig);
- Comprehensive safety equipment, including phase monitor pressure switches, antifreeze sensors, level sensors, crankcase heaters and an internal hydraulic bypass circuit.

The perfect solution, whatever your application

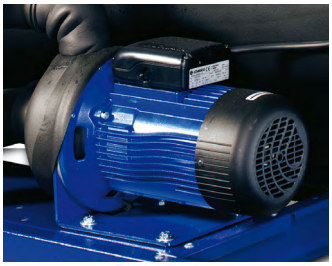
Plastics & rubber: presses, injection moulding, extrusion (sheet & profile), blow moulding, thermoforming, PET.
Lasers, with a specific Laser chiller: cutting, welding, profiling, optics, medical, engraving.
Food & drinks: confectionary, bakeries, distilleries, breweries, wineries, dairies, bottling, carbonation, meat & fish processing, vegetable & salad processing, storage.
Chemical & pharmaceutical: jacketed vessels, polyurethane foam mixers, natural gas, industrial cleaning, laboratories, healthcare, solvents, paints.
Metal working: processing & transformation of precious metals, aluminium working & processing.
Mechanical & Engineering: machine tools, welding machines, rolling mills, presses, extruders, cutting, profiling, polishing, electric spark machinery, hydraulic control unit oil cooling, pneumatic transport, heat treatment.
Paper & related applications: printers, cardboard, labels, plastic film.
Other applications: ceramics, textiles, wood, rental, air compressor cooling, other applications.

Automotive · Food & Beverage · Chemical & Pharmaceutical · Plastics · Laser · Machine Tools · Wineries · Rental

Customize to your individual needs...

Main options and kits

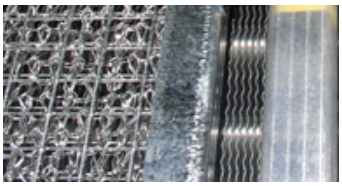
The high quality of the standard unit, the wide range of options and kits suitable to develop customized solutions, make ACCPS chillers the ideal choice for every type of industrial cooling application.



Internal pump

- Pump options: No pump, P3 (45 psig), P5 (72 psig);
- Condenser option: version with painted fins against corrosion;
- Version for low environmental temperature -5 °F (mod. 031-802): electrical panel heating, electronic fan speed control
- Manual filling tank kit: suitable for atmospheric pressure (mod. 015-802);
- Automatic filling kit: suitable for pressurized hydraulic circuits (up to 85 psig);
- Glycol filling kit: suitable for pressurized fluid circuits;
- Painted condensing coils;
- Remote control kit: VICX620 display LED
- Supervisor kits: RS485 ModBus, xWEB300D.

xWEB300D



Aluminum Mesh Condenser Filters

Versions

- Non Ferrous Version (mod. 015-351): stainless steel water tank, copper/brass exchanger, stainless steel pump;
- Dual frequency version (mod. 015-161): 400V/3/50 Hz – 460V/3/60 Hz power supply;
- 50 Hz version (mod. 015-802): 400/3/50 Hz power supply; comply with CE directives; certified by Eurovent.

Copeland ZP Scroll Compressors

Built to perform

High-efficiency evaporator

High-efficiency finned coil exchanger features copper pipes and aluminum fins, shoulders and cabinet made of galvanized steel. The evaporator is installed inside the water storage tank ensuring reduced ambient heat gain and a steady temperature of the pro-cess fluid. The process fluid flows in contact with the finned sur-face, cooled by the refrigerant which evaporates inside the tubes. This particular technical solution allows the ACCPS chiller to operate with high flow rates and reduced pressure drops, ensuring a high level of reliability in heavy industrial applications and also with liquids containing impurities. The heat exchanger is protected from the risk of freezing by a temperature sensor and a control level, by means of which the controller is able to turn the com-pressors off in case of fault.

Pumps

Centrifugal pumps with seals made of silicon carbide (SiC/SiC/EPDM), available in two different configurations:
Pump P3 - nominal head pressure 43 psig, stainless steel water side mod. 015–251; cast iron mod. 301-802.
Pump P5 - nominal head pressure 12 psig, in stainless steel wa-ter side mod. 015-161; cast iron mod. 201-802.
Dual pumps are available with automatic switching (For models 201-802 only)
NP- No pump

Scroll compressors

Compressors with orbiting scrolls, with 2-pole electric motor, mounted on rubber antivibration dampers and complete with protection against overheating, excessive currents and against high temperature of the exhaust gases. Due to the axial/radial compliance, the low weight of the rotating components and the absence of suction and discharge valves, they offer a series of benefits as a reduced energy consumptions, low vibrations, less moving parts and high resistance to liquid refrigerant returns.

Electric panel

The control section is electrically isolated from the power section through a transformer. The power section is fitted with an inter-locked door main switch to prevent access while power supply is on. Electrical equipment and electrical panel protection degree IP54 The chiller is tested for electromagnetic compatibility in accordance with applicable EMC standards. A phase monitor standard provides protection against phase loss and phase reversal.

Condensing section

The air-cooled condenser (copper tubes/aluminum fins) is fit-ted on one side only, reducing space requirements. It has an high working efficiency at high ambient temperatures (115 °F). A condenser aluminum cleanable air filter is standard from model 031.

Structure

Heavy duty structure with galvanized carbon steel panels pro-tected by an epoxy polyester power coating RAL 7035 (base RAL 5013). Due to the configuration of the base, the handling of the unit is easy and secure with a forklift (mod. 015-351) or by lifting bars (mod. 402-802).

Multiple components

Units with 2 compressors (mod. 201-351) ensure a precise step control of the cooling capacity. Models 402-802 are equipped with 4 compressors within 2 circuits, they guarantee maximum efficiency both at full and partial load, featuring compressor rotation and unloading function.

Pressurised fill kit

This kit, is suitable for pres-surised hydraulic circuits (up to 87 psig). The pressurised fill kit features all components required for safe and easy op-eration, including a pressure reducer, water inlet valve, pressure gauge, automatic re-lief valve, safety valve and ex-pansion tank.

Atmospheric pressure fill kit

This kit is simply installed onto the back of the chiller itself, and features a generous tank with an easy to read water level indication encased within a tough painted steel cabinet. A tap offers easy chiller water tank filling (atmospheric hydraulic circuits).

Remote control options

The following kits allow the remote control of the unit:
- Simple remote control module (ON/OFF, unit status) for instal-lation at up to 500 ft from unit;
- Advanced remote control kits VICX620 and VISOGRAPH VGI890, both with LED display (full control), for installation at up to 500 ft.

Supervisor options

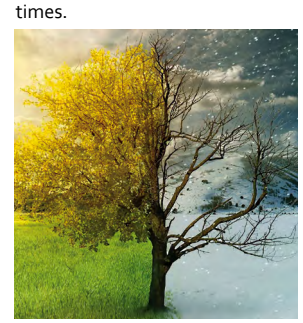
ACCPS units can be linked to vari-ous external Supervisor systems:
- RS485 serial connection to an external Supervisor system (MODBUS and other leading systems);
- xWEB300D Supervisor kit, operating via Internet;
- xWEB300D + GPRS modem for remote GSM connection directly to a smartphone.

Maximum control

The large tank and evaporator ensure steady water tempera-tures, even during sudden load variations. This is further en-hanced by passing the water through the evaporator before entering the tank, offering a ready chilled water supply. HP, LP and water pressure gauges (from mod. 031) give a quick overview of status.

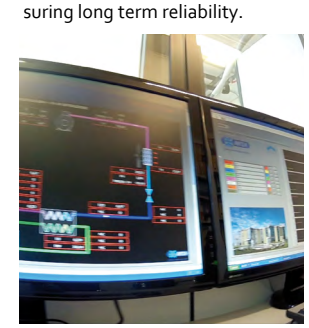
Fail-safe operation

ACCPS units always operates in all conditions, thanks to an internal by-pass, phase monitor, wide operating water temperature limits, a 115°F ambient temperature limit, antifreeze protection and an internal water level sensor. The advanced microprocessor ensures fail-safe operation at all times.



Factory test

All models are individually tested to guarantee trouble-free installation out-of-the-box. Each model is wet-tested to verify plumbing integrity of the water circuit and cycled through operation to verify microprocessor and safety device settings. Leading brand compo-nents are used throughout, en-suring long term reliability.



Technical data

		015	020	031	051	081	101	121	161	201	251	301	351	381	401	402	502	602	702	802
Cooling capacity (1)	Tons	1.71	2.01	3.19	4.5	7.5	9.8	11.9	13.7	15.8	18.1	21.0	23.3	28.7	32.7	29.6	34.1	39.5	48.1	57.5
Total absorbed power (1)	kW	2.38	2.65	4.28	6.14	10.0	11.5	14.4	17.7	19.7	23.2	25.7	31.2	34.3	38.9	41.4	47.8	53.6	60.1	69.9
EER (7)	-	8.62	9.12	8.96	8.83	8.94	10.22	9.97	9.32	9.68	9.35	9.85	8.95	10.07	10.08	8.59	8.56	8.85	9.62	9.88
Compressor																				
Cooling circuits	N°	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Compressors for each circuit	N°	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
Capacity control	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-25-50-75-100				
Electrical power supply (2)																				
Power	V/Ph/Hz	460Y/266V/3Ph/60Hz																		
Auxiliary	V/Ph/Hz	24/1/60; 230/1/60																		
Condensers																				
Condenser number	N°	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
Ranks number	N°	2	4	2	4	4	4	5	5	4	5	5	5	4	5	3	4	5	3	4
Total frontal surface	ft^2	3.33	3.33	6.78	6.78	11.8	11.8	11.8	11.8	23.2	23.2	23.2	23.2	32.2	32.2	45.2	45.2	45.2	62.4	62.4
Axial fans																				
Fans number	N°	1	1	1	1	1	2	2	2	2	2	3	3	2	2	2	2	2	3	3
Total airflow	cfm	2795	2470	4530	3590	5825	9945	9415	9415	11535	11415	15625	15625	25662	24367	25895	25070	24285	43967	42378
Nominal power (each)	kW	0.45	0.45	0.76	0.76	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Hydraulic group																				
Water flow rate P3 (3)	gal/min	2.1/21.2	2.1/21.2	4.1/21.2	5.8/21.2	11.1/42.3	13.3/42.3	16.4/83.2	20.1/83.2	21.8/83.2	25.5/83.2	29.2/105.7	33.9/105.7	39.5/220.1	43.9/220.1	42.3/211.3	49.7/211.3	56.4/211.3	69.2/220.1	81.3/220.1
Available pump head pressure P3 (4)	p.s.i.	44.9/25.2	44.9/25.2	44.0/28.5	43.2/29.7	42.6/22.2	42.0/25.8	42.4/24.1	42.1/25.0	42.2/29.4	41.9/29.4	59.5/23.2	58.1/22.4	54.4/31.9	54.3/31.9	48.7/17.7	48.9/17.7	48.9/17.7	62.9/40.8	61.8/40.8
Nominal power P3	kW	0.75	0.75	0.75	0.75	0.90	0.90	1.85	1.85	1.85	1.85	2.20	2.20	4.0	4.0	4.0	4.0	4.0	5.5	5.5
Water flow rate P5 (3)	gal/min	2.1/26.4	2.1/26.4	4.1/26.4	5.8/26.4	11.1/66.1	13.3/66.1	16.4/66.1	20.1/66.1	21.8/132.1	25.5/132.1	29.2/132.1	33.9/132.1	39.5/220.1	43.9/220.1	42.3/211.3	49.7/211.3	56.4/211.3	69.2/378.6	81.3/378.6
Available pump head pressure P5 (4)	p.s.i.	85.6/44.8	85.6/44.8	84.1/50.5	82.5/49.2	86.8/50.0	86.1/56.8	84.9/56.8	83.3/57.5	72.9/20.4	72.2/20.4	71.4/20.6	70.2/19.4	84.0/56.2	83.8/56.2	79.4/39.5	78.8/39.5	78.3/39.5	70.2/43.5	70.0/43.5
Nominal power P5	kW	1.50	1.50	1.50	1.50	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	7.5	7.5	7.50	7.50	7.50	11.0	11.0
Tank volume	gal	15.9	15.9	30.4	30.4	37.0	67.4	67.4	67.4	92.5	92.5	92.5	92.5	108.0	108.0	132.1	132.1	132.1	179.0	179.0
Max pressure	psi	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
Water connections	NPT	3/4"	3/4"	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"
Sound levels (5)																				
Sound power	dB (A)	82.5	81.9	82.6	83.7	83.9	85.0	84.2	85.1	87.2	87.1	88.6	88.3	91.0	93.2	92.5	92.6	92.3	92.4	93.6
Sound pressure	dB (A)	54.5	53.9	54.6	55.7	55.9	57.0	56.2	57.1	59.2	59.1	60.6	60.3	63.0	65.2	64.5	64.6	64.3	64.4	65.6
Dimensions and installed weight (6)																				
Width	inch	22.0	22.0	26.0	26.0	29.9	29.9	29.9	29.9	34.1	34.1	34.1	34.1	45.3	45.3	49.4	49.4	49.4	49.2	49.2
Length	inch	49.8	49.8	51.6	51.6	73.4	73.4	73.4	73.4	88.8	88.8	88.8	88.8	109.8	109.8	129.7	129.7	129.7	139.2	139.2
Height	inch	31.4	31.4	55.1	55.1	57.0	57.0	57.0	57.0	81.3	81.3	81.3	81.3	82.3	82.3	85.0	85.0	85.0	84.7	84.7
Weight without pump	lbs	423	434	686	736	1032	1382	1398	1433	2042	2225	2260	2284	3003	3191	3646	3754	3834	4879	4923
Weight with P3	lbs	452	463	714	765	1065	1415	1446	1482	2090	2273	2346	2370	3104	3291	3750	3858	3937	4998	5043
Weight with P5	lbs	459	470	721	772	1088	1439	1455	1490	2161	2344	2379	2403	3140	3328	3821	3929	4008	5048	5092

(1) Evaporator water inlet/outlet temperature 55/45 °F, external air temperature 95 °F.
(2) Protection class IP 44 (mod. 015-020); IP 54 (mod. 031-602).
(3) Mimimum and maximum water flow pump.
(4) Available head pressure at outlet unit at the minimum and maximum water flow rate.
(5) Sound power: determined on the basis of measurements taken in accordance with the standard ISO 3744. Sound pressure at 32.8 ft: average value obtained in free field on a reflective surface at a distance of 32.8 ft from the side of the condenser coils and at a height of 5.2 ft from the unit support base. Values with tolerance +/- 2 dB. The sound levels refer to operation of the unit under full load in nominal conditions.
(6) The weights of the units are referred to the configuration with axial fans.
(7) EER $\left[\frac{Btu/h}{W}\right]$

The capacity correction factors in the following table should be used as a guide only, for accurate selection at conditions differing from the above the selection software should be utilised.

Evaporator ΔT ≠ 10 °F (*)	°F	7	9	10	12	14	16	18
Correction factor	K2	0.993	1	1.003	1.009	1.015	1.021	1.025

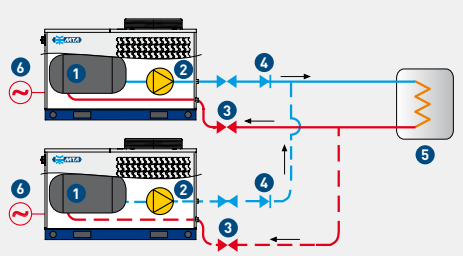
Ethylene glycol solutions	%	0	10	20	30	40	50
Correction factor - Cooling capacity	K4	1	0.99	0.98	0.97	0.96	0.93

(*) Evaporator outlet water temperature being equal

Typical configuration for users suitable for closed circuits

The below diagram shows a typical closed circuit lay-out. Pressurized closed circuit applications (5) always require an expansion vessel. ACCPS units in standard (evaporator in tank) configurations are ideal for such applications, and offer a pressurized automatic fill kit including the expansion tank (as option).

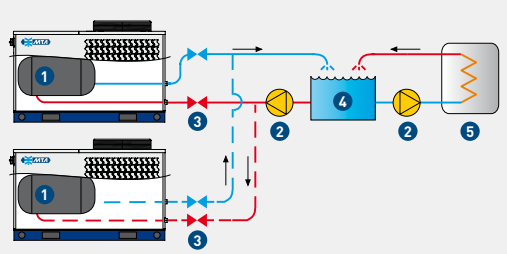
1 Accumulation tank
2 Pump
3 Valve
4 Non return valve
5 User
6 Expansion tank



Typical configuration for users suitable for open circuit

The below diagram shows a typical open circuit lay-out. For atmospheric circuit applications featuring an open tank (4), the water is in contact with the ambient air, as such no expansion vessel is required. Such applications are suited to ACCPS units in standard (evaporator in tank) configuration but without the tank kit and pump, given that the system typically features an external pump (2).

1 Accumulation tank
2 Pump
3 Valve
4 Open tank
5 User



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