



Hyperchill precision chilled water




domnick hunter

www.domnickhunter.com

Hyperchill: Precision Chilled Water

domnick hunter Hyperchill water chillers celebrate a presence of over 30 years on the industrial chiller market. This experience has led to a range which not only offers all the advantages typically offered by a quality water chiller, but also adds significant benefits for the industrial user. As such Hyperchill combines advanced design solutions, such as energy saving scroll compressors and a sophisticated microprocessor, with unique features to meet the specific needs of industrial users: these include Hyperchill's extreme flexibility towards the varying working conditions typically found in industry.

The standard models are augmented by a wide range of options and accessories, which together ensure Hyperchill is the perfect solution to each and every industrial application. Hyperchill maximizes productivity and minimizes costs, as well as easing conformity to regulations on water quality. Hyperchill is the perfect solution to industrial chilled water needs.

Why an industrial chiller?

The use of cold water is very common in industry. The motives are obvious: cold water improves productivity, secures industrial processes and reduces costs. There are several methods of creating cold water, but water chillers are increasingly becoming the preferred solution. But why? Firstly, chillers always supply the exact water temperature requested, even with differing ambient conditions and differing load requests, thus ensuring optimum efficiency. Water has furthermore become a very precious, and costly, natural resource. Chillers, by operating in a closed circuit, continuously reutilize the same water, and thereby avoid unwanted water wastage. Add to this fact that a number of directives have recently emerged to safeguard both the quality of the water being utilized (for health reasons) as well as the discharging of impure water into the ambient (to protect the environment): closed circuit chiller operation greatly simplifies conformance to these regulations. The needs of industry are changing, and a water chiller increasingly satisfies these needs.

Benefits

- n Increases productivity, reduces costs
- n Optimizes industrial applications
- n Adaptable to individual customer needs
- n Accepts wide range of water temperatures and fluctuating water flows



Applications

- n Food (beverage, confectionery, chocolate, processing, storage)
- n Plastics (injection, blow molding, extrusion, film extrusion, thermoforming)
- n Lasers (welding, profiling, cutting, optics, medical, marking, aesthetics)
- n Paper (manufacture, printing, cardboard, labels, plastic film)
- n Chemical (petrochemical, paints, solvents, temperature control)
- n Air conditioning (civil, industrial, process)
- n Mechanical (welding, cutting, profiling, polishing, rolling, grinding)
- n Other (wood, ceramics, gold & silver, biogas pharmaceutical, compressed air, textile)

Easy to Use



Hyperchill is an all-in-one solution, with all components packaged inside.

Compact dimensions and a low weight make it simple to position, while models from PCW020 can be installed outdoors.

Maintenance is facilitated by full frontal access, a removable tank and a condenser section which is isolated from the rest of the chiller (from PCW020).

Models PCW020 - 650 can be used in pressurized closed circuits, facilitating system design. (PCW007 - 0010 must be specified when ordered).

Precise Control



Unlike traditional chillers, Hyperchill places the evaporator stage within the tank, with the temperature control sensor positioned on the water outlet: this guarantees a very accurate water outlet temperature control. Water temperature stability is further improved thanks to the oversized water tank.

An antifreeze thermostat and water level sensor secure continuous operation in all conditions, as does the internal water by-pass (standard on PCW013 - 650).

Economical & Environmentally Friendly



Hyperchill standardly uses environmentally friendly refrigerant R407C on all models: R407C is characterized by a very high efficiency, leading to power consumption.

Compliant scroll compressors, which offer energy savings of around 20%, are fitted from PCW060.

Multiple compressors (from PCW210) ensure significant energy savings at partial loads.

Fail-safe Operation



Hyperchill operates continuously in all conditions and with all applications.

Multiple compressors and twin independent refrigeration circuits (from PCW210), with automatic rotation, offer increased peace of mind, as do an extensive list of safety devices.

The high working limits and (from PCW020) condenser pre-filter ensure that Hyperchill operates in all ambients.

When operating in closed circuits, Hyperchill avoids water fouling and the need for refilling.

Compliant scroll compressors

Hyperchill features advanced "compliant" scroll compressors (standard from PCW060). These offer significantly lower power consumption and a reduced refrigerant charge. The unique "compliant" technology offers extreme reliability and renders the compressor near indestructible. Compliant scroll compressors are also very user friendly, as they are extremely quiet and ensure the chiller requires no pre-heating. Furthermore, scroll compressors feature 50% fewer moving parts and emit lower vibration levels, thus increasing the chiller's longevity.

Microprocessor control

All models standardly feature a microprocessor, offering ease of use, precise control and reliable operation. The advanced version, standard from (PCW040), offers a vast range of programming possibilities, allowing the chiller to be optimized for operation in even the most particular conditions. The microprocessor is standardly fitted with an interface for easy connection to be a centralized supervisor system. Remote control panels can be specified from PCW020.

Integral water tank

PCW007 - 650 are standardly supplied with an integral tank. The tank's generous dimensions ensures precise water temperatures. The unique design places the evaporator (co-axial on PCW007 - 025, finned coil on PCW040 - 650) within the tank for steady temperature control, while the low water velocity configuration offers minimal pressure drops and virtually eliminates the risk of impurities blocking the water circuit.

The tank is removable, allowing easy maintenance.



Cleanable condenser pre-filter

A condenser pre-filter (standard from PCW020) improves chiller performance and reduces maintenance.

Flexibility of installation

Hyperchill standardly accepts water inlet temperatures up to 86°F (30°C) and delivers outlet temperatures down to 32°F (0°C)*. Inlet/outlet temperature differences of as much as 27°F (15°C) can be obtained.

Hyperchill operates with ambient temperatures up to 113°F (45°C), even with high water temperatures and during start-up. Models from PCW020 can be installed outdoors. The water by-pass (standard on PCW013 - 650) guarantees fault-free generation with fluctuating water flows and facilitates chiller start-up.

(*with water/glycol mixture)

Peace of mind

Every single Hyperchill is extensively tested. Performance tests with water flow are combined with helium leak tests, water circuit tests, electrical tests, and tests of the microprocessor settings.

Integral Pump

PCW007 - 650 feature, as standard, a pump installed within the chiller itself. Twin pumps (from PCW080), or pumps with lower or higher available head pressures, are available on request. The water by-pass (standard on PCW013 - 650) protects the pump in fluctuating load conditions.



Options and Accessories

Centrifugal fan option (PCW040 - 650)

Designed for indoor installation, this version features fans which permit the condenser discharge air to be ducted.

Water-cooled option (PCW040 - 650)

In those cases where air-cooled models cannot be used, or a supply of warm water is desirable, Hyperchill offers water-cooled models featuring a shell & tube condenser and a pressostatic water control valve.

Special & multiple pumps

On request the standard pump can be substituted by pumps for either lower or high available head pressures (from PCW020). Furthermore, twin pumps can be installed on board (from PCW080), offering a stand-by capacity.

Low ambient option (from PCW020)

A 14°F (-10°C) ambient temperature version (0°F [-18°C] on PCW160 - 330) is available for operation in cold environments.

Low water temperature option (from PCW020)

This option allows operation with water outlet temperatures of as low as 14°F (-10°C).

Water fill kits (PCW007 - 650)

Two types of water fill kits are offered: a pressurized version for operation up to 87 psi (6 bar), and an atmospheric pressure version (available with either manual or automatic refilling). PCW007 - 013 are standardly supplied with an atmospheric pressure water fill kit (with manual refill). PCW020 - 650 are available with optional atmospheric pressure or the pressurized fill kit.

Non-ferrous option (PCW020 - 650)

This version features a water side using non-ferrous materials, and is used in industries such as lasers.

Remote control kits (from PCW020)

Two remote control kits are offered. The base version features remote on/off switching and gives an on/off and general alarm signal. The advanced version allows the user to perform all operations available on the microprocessor.

Low noise option (from PCW020)

This version further reduces the standard models already impressively low noise levels.

Close control option

Used in applications such as lasers, where very precise outlet water temperatures are required ($\pm 1^\circ\text{F}$ [0.5°C]); this version features a twin hot gas by-pass system, enhanced condensing control, and a P+I control algorithm.

Other options

Transport wheels (PCW007 - 013)
Metal control panel cover (from PCW040)
Antifreeze heating for tank (PCW020 - 650)



internal pump



centrifugal fans



water fill kit



remote control

Technical Specifications

MODEL	PCW	007	013	020	025	040	060	080	110	130	160	210	260	330	420	510	650		
Cooling capacity (1)																			
Air-cooled	BTU/h	6513	13379	18910	25267	37882	60989	78783	107869	128006	160021	212597	253498	326242	421329	513919	648981		
Water-cooled	BTU/h	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF	CF		
Power supply	V/ph/Hz	230/1/60					460/3/60												
Protection class	IP	IP33			IP44			IP54											
Compressors																			
Type	hermetic, piston								hermetic compliant scroll										
Compressors / circuits		1/1	1/1	1/1	1/1	1/1	1/1	1 / 1	1/1	1/1	1/1	2/2	2/2	2/2	4/2	4 / 2	4/2		
Nom. abs. power - 1 compr.	kW	0.8	1.7	2.2	3.2	4.9	7.1	9.1	12.6	15.8	19.0	12.6	15.8	19.0	12.6	15.8	19.0		
Axial fans																			
Quantity		1	1	1	1	1	1	1	2	2	3	3	3	3	2	2	3		
Max. abs. power - 1 fan	kW	0.1	0.1	0.2	0.2	0.7	0.7	0.9	0.7	0.7	0.7	0.9	0.9	0.9	2.4	2.4	2.4		
Airflow	scfm	1350	1350	2590	2410	4180	4000	5410	7300	7060	10240	15000	14710	15540	27660	27070	38850		
Pumps																			
Type		Peripheral						Centrifugal											
Water flow (nom / max)	GPM	1.3	2.7	3.8	5.1	7.6	12.2	15.8	21.6	25.6	32.0	42.5	50.7	65.2	84.3	102.8	129.8		
P30 nominal power	kW	0.30	0.30	0.30	0.30	0.75	0.75	0.75	1.50	1.50	1.50	2.20	2.20	2.20	4.20	4.20	4.20		
P30 available head pressure	psi	44	42	49	41	45	44	41	51	48	45	44	44	41	49	48	44		
P50 nominal power	kW	0.66	0.66	0.37	0.37	1.50	1.50	1.50	1.85	1.85	1.85	4.00	4.00	4.00	7.50	7.50	7.50		
P50 available head pressure	psi	73	68	87	73	86	83	78	84	81	75	68	67	64	78	75	71		
Dimensions and weight																			
Depth	ins	20.9	20.9	38.6	38.6	44.2	44.2	65.0	65.0	65.0	85.6	85.6	85.6	85.6	118.1	118.1	128.7		
Width	ins	29.5	29.5	21.0	21.0	28.7	28.7	29.3	29.3	29.3	29.3	35.4	35.4	35.4	50.8	50.8	50.8		
Height	ins	31.5	31.5	48.3	48.3	53.5	53.5	53.5	53.5	53.5	53.5	76.9	76.9	76.9	89.4	89.4	89.4		
Connections in/out	in	1"	1"	1"	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"	2 1/2"	2 1/2"	2 1/2"		
Tank capacity	gal	6.0	6.0	12.0	12.0	32.0	32.0	48.0	48.0	66.0	80.0	132.0	132.0	132.0	264.0	264.0	264.0		
Weight (axial fan version) (2)	lbs	230	240	370	400	550	595	840	904	950	1150	1765	1990	2205	3310	3970	4630		
Noise level																			
Sound pressure (3)	dB (A)	52	52	53	53	50	50	52	52	52	55	58	58	58	62	62	64		

(1) at water in/out temperature = 45/55°F (7/12°C), glycol 0% , 95°F (35°C) ambient temperature air-cooled models

(2) weights are inclusive of pallet and refrigerant charge.

(3) referred to axial fan version in free field conditions at a distance of 32.8 ft (10 m) from unit, measured on condenser side.

Correction factors for the calculation of the cooling capacity

A) ambient temperature (air-cooled models)	°F [°C]	35 (2)	45 (7)	55 (13)	65 (18)	75 (24)	85 (29)	95 (35)	105 (40)	113 (45)
correction factor (f1)		1.18	1.18	1.18	1.18	1.12	1.02	1.00	0.94	0.77
B) water outlet temperature	°F [°C]	35 (2)	45 (7)	55 (13)	65 (18)	75 (24)				
correction factor (f2)		0.83	1.00	1.20	1.40	1.45				
C) glycol (in weight)	%	0	10	20	30	40	50			
correction factor (f3)		1.00	0.99	0.98	0.97	0.96	0.94			

To obtain the required cooling capacity multiply the value at nominal conditions by the above correction factors (i.e. cooling capacity = P x f1 x f2 x f3, where P is the cooling capacity at conditions (1)). PCW, in its standard configuration, can operate up to ambient temperatures of max 113°F (45°C) and min. 41°F (5°C) and water temperatures of max. 86°F (30°C) inlet and min. 32°F (0°C) outlet. The above correction factors are approximative: for a precise selection always refer to the software selection program.

www.domnickhunter.com

dh and domnick hunter are registered trademarks of Parker-Hannifin Corporation.

domnick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact domnick hunter for detailed information and advice on a products suitability for specific applications. All products are sold subject to the Company's standard conditions of sale.



domnick hunter
Parker Hannifin
domnick hunter division
North Carolina, USA
Tel: (704) 921-9303
Toll Free: 1-800-345-8462
Telefax: (704) 921-1960

domnick hunter Canada
Ontario, Canada
Tel: (905) 820-7146
Toll Free: 1-888-342-2623
Telefax: (905) 820-5463