Hyperchill

precision chilled water

domnick hunter hiross SpA

HIROSS

Compressed Air Treatment

HYPERCHILL: PRECISION CHILLED WATER

Hiross' 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.

BENEFITS

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

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 reutilise the same water, and thereby avoid unwanted water wastages. Add to this the fact that a number of directives have recently emerged to safeguard both the quality of the water being utilised (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.

APPLICATIONS

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

VERSIONS AND ACCESSORIES

CENTRIFUGAL VERSION (ICE015-230)
Designed for indoor installation, this version features fans which permit the condenser discharge air to be ducted.

WATER-COOLED VERSION (ICE015-230)
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 higher available head pressures (from ICE007). Furthermore, twin pumps can be installed on board (from ICE029), offering stand-by capacity.

LOW AMBIENT VERSION (from ICE007)
A –10°C ambient temperature version (-18°C on ICE057-116) is available for operation in cold environments.

LOW WATER TEMPERATURE VERSION (from ICE007)
This option allows operation with water outlet temperatures of as low as –10°C.

WATER FILL KITS (ICE007-230)
Two types of water fill kit are offered: a pressurised version for operation up to 6 bar, and an atmospheric pressure version (available with either manual or automatic refilling). ICE003-005 are standardly supplied with an atmospheric pressure water fill kit (with manual refill).

NON-FERROUS VERSION (ICE007-230)
This version features a water side using non-ferrous materials, and is used in industries such as lasers.

REMOTE CONTROL KITS (from ICE007)
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 VERSION (from ICE007)
This version further reduces the standard models already impressively low noise levels.

CLOSE CONTROL VERSION (ICE015-116)
Used in applications such as lasers, where very precise outlet water temperatures are required (< +/- 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 (ICE003-005)
- Metal control panel cover (from ICE015)
- Antifreeze heating for tank (ICE007-230)


internal pump


centrifugal fans


water fill kit


remote control

COMPLIANT SCROLL COMPRESSORS

Hyperchill features advanced "compliant" scroll compressors (standard from ICE022). These offer significantly lower power consumptions 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 ICE015, offers a vast range of programming possibilities, allowing the chiller to be optimised for operation in even the most particular conditions.
The microprocessor is standardly fitted with an interface for easy connection to a centralised supervisor system.
Remote control panels can be specified from ICE007.

INTEGRAL WATER TANK

ICE003-230 are standardly supplied with an integral tank (optional on ICE310-360). The tank's generous dimensions ensures precise water temperatures. The unique design places the evaporator (co-axial on ICE003-010, finned coil on ICE015-230) within the tank for steady temperature control, whilst 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.

CONDENSER PRE-FILTER

A condenser pre-filter (standard from ICE007) improves chiller performance and reduces maintenance.

SUITED TO ALL OPERATING CONDITIONS

Hyperchill standardly accepts water inlet temperatures up to 30°C, and delivers outlet temperatures down to 0°C *. Inlet/outlet temperature differences of as much as 15°C can be obtained. Hyperchill operates with ambient temperatures up to 45°C, even with high water temperatures and during start-up. Models from ICE007 can be installed outdoors.
The water by-pass (standard on ICE005-230) guarantees fault-free opera-tion with fluctuating water flows and facilitates chiller start-up.

(* with water/glycol mixtures)

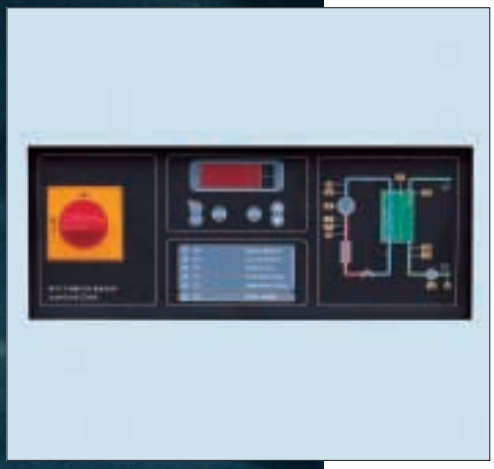
EXTENSIVELY TESTED

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.

INTERNAL PUMP

ICE003-230 feature, as standard, a pump installed within the chiller itself (optional on ICE310-360).
Twin pumps (from ICE029), or pumps with lower or higher available head pressures, are available on request.
The water by-pass (standard on ICE005-230) protects the pump in fluctuating load conditions.

EASY TO USE



microprocessor control

Hyperchill is an all-in-one package, with all components standardly supplied inside.
Compact dimensions and a low weight make it simple to position, whilst models from ICE007 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 ICE007).
Every model in the range can be used in pressurised closed circuits, facilitating system design.

MAXIMUM CONTROL

integral water tank

Unlike traditional chillers, Hyperchill places the evaporator stage before 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 ICE005-230).

ECONOMICAL & ENVIRONMEN-TALLY FRIENDLY

advanced scroll compressors

Hyperchill standardly uses environmentally friendly refrigerant R407C on all models: R407C is characterized by a very high efficiency, leading to reduced power consumptions.
Compliant scroll compressors, which offer energy savings of around 20%, are fitted from ICE022.
Multiple compressors (from ICE076) ensure significant energy savings at partial loads.

FAIL-SAFE OPERATION

condenser pre-filter

Hyperchill operates continuously in all conditions and with all applications.
Multiple compressors and twin independent refrigeration circuits (from ICE076), with automatic rotation, offer increased peace of mind, as do an extensive list of safety devices.
The high working limits and (from ICE007) condenser pre-filter ensure that Hyperchill operates in all ambients.
When operating in closed circuits, Hyperchill avoids water fouling and the need for refilling.

CHOOSE YOUR HYPERCHILL ...

	MODEL	ICE	003	005	007	010	015	022	029	039	046	057	076	090	116	150	183	230	310	360
air-cooled	Cooling capacity [1]	kW	2,5	5,1	7,0	9,5	14,3	21,8	28,1	38,2	45,2	56,4	76,0	90,2	115,5	149,2	182,3	227,9	309,1	359,7
	Compr. abs. power [1]	kW	0,70	1,40	2,00	2,27	3,43	5,19	5,66	7,69	10,1	12,3	15,4	20,3	24,9	30,8	40,1	51,4	64,6	81,5
	Cooling capacity [2]	kW	1,8	3,8	5,2	7,0	10,6	16,2	20,8	28,4	33,8	42,1	56,5	67,1	86,4	110,9	135,4	165,3	223,8	259,1
	Compr. abs. power [2]	kW	0,62	1,31	1,67	2,16	3,24	4,46	5,93	8,26	10,6	13,1	16,4	21,2	25,8	33,5	42,1	54,3	66,4	83,7
water-cooled	Cooling capacity [1]	kW	N.A.				on request		29,6	39,5	47,6	59,0	79,8	97,5	120,1	156,7	195,0	on request	N.A.	
	Compr. abs. power. [1]	kW							5,16	7,13	9,04	11,01	13,85	17,27	22,60	27,63	34,8			
	Cooling capacity [2]	kW							21,9	29,3	35,3	43,9	59,1	72,3	89,4	116,11	144,5			
	Compr. abs. power [2]	kW							5,17	7,17	8,93	11,1	13,9	17,0	22,8	27,8	34,4			
Power supply		V/ph/Hz	230/1/50		400/ 3 / 50 without neutral															
Protection class			IP33		IP44		IP54													
Compressors																				
Type			hermetic, piston					hermetic compliant scroll												
Compressors / circuits			1 / 1										2 / 2			4 / 2				
Max. abs. power - 1 compr.		kW	0,7	1,5	2,0	3,0	4,3	6,9	7,8	11,1	13,7	16,8	11,1	13,7	16,8	11,1	13,7	16,8	23,3	28,7
Axial fans																				
Quantity		n°	1						2			3				2		3	4	
Max. abs. power - 1 fan		kW	0,12	0,12	0,14	0,14	0,61	0,61	0,78	0,61	0,61	0,61	0,78	0,78	0,78	2,0	2,0	2,0	2,0	2,0
Airflow		m^3/h	2300	2300	4400	4100	7100	6800	9200	12400	12000	17400	25500	25000	26400	47000	46000	66000	88000	86000
Centrifugal fans																				
Quantity		n°	N.A.				on request		2	2	2	3	3	3	3	3	3	on request	N.A.	
Max. abs. power - 1 fan		kW							1,1	1,1	1,1	1,1	1,5	1,5	1,5	3	3			
Airflow		m^3/h							9200	12400	12000	17400	25500	25000	26400	47000	46000			
Available head pressure		kPa							200	180	160	200	100	100	100	180	180			
Water-cooled																				
Water flow [1]		m^3/h	N.A.				on request		2,57	3,94	5,36	7,79	10,84	10,96	16,16	18,88	29,17	on request	N.A.	
Connessions in/out		in							1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"			
Pump P30 (standard on ICE003-230, optional on ICE310-360)																				
Max. abs. power		kW	0,5	0,5	0,78	0,78	1,04	1,34	1,34	1,34	2,35	2,35	1,85	2,24	2,24	4	4	4	7,5	7,5
Water flow (nom / max) [1]		m^3/h	0,2/2,4	0,8/2,4	1,3/3	1,5/3	2,3/6	3,5/9,6	4,5/9,6	6,3/9,6	7,6/18	9,3/18	13/18	15/26	19/27	25/50	30/50	39/48	52/90	62/90
Head pressure (nom/min) [1]		mH_2O	36/6	30/6	35/8	31/8	29/21	28/17	27/17	24/17	28/22	27/22	26/22	28/16	25/16	34/20	32/20	28/21	34/21	31/21
Water flow (nom / max) [2]		m^3/h	0,3/2,4	0,6/2,4	0,9/3	1,0/3	1,6/6	2,4/9,6	3,2/9,6	4,5/9,6	5,5/18	6,7/18	9,0/18	11,0/26	13,4/27	18/50	22/50	28/48	38/90	45/90
Head pressure (nom/min) [2]		mH_2O	38/6	34/6	42/8	39/8	30/21	29/17	28/17	27/17	28/22	28/22	27/22	32/16	30/16	36/20	35/20	32/21	36/21	35/21
Dimensions and weight																				
Depth		mm	530	530	980	980	1122	1122	1650	1650	1650	2200	2200	2200	2200	3000	3000	3270	4210	4210
Width		mm	750	750	534	534	730	730	744	744	744	744	898	898	898	1290	1290	1290	1510	1510
Height		mm	800	800	1228	1228	1358	1358	1358	1358	1358	1358	1954	1954	1954	2272	2272	2272	2238	2238
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"	4"	4"
Tank capacity		l	25	25	45	45	120	120	180	180	250	300	500	500	500	1000	1000	1000	400	400
Weight (axial fan version) [3]		kg	105	110	170	180	250	270	380	410	430	520	800	900	1000	1500	1800	2100	2900	3100
Noise level																				
Sound pressure [4]		dB (A)	52	52	53	53	50	50	53	52	52	56	58	58	58	62	62	64	65	65

(1) at water in/out temperature = 20/15°C, glycol 0% , either 25°C ambient temperature (air-cooled models) or 20°C condenser water inlet temperature with 35°C condensing temperature (water-cooled models).
(2) at water in/out temperature = 12/7°C, glycol 0% , either 32°C ambient temperature (air-cooled models) or 20°C condenser water inlet temperature with 35°C condensing temperature (water-cooled models).
(3) weights are inclusive of pallet and refrigerant charge.
(4) referred to axial fan version in free field conditions at a distance of 10m from unit, measured on condenser side.

Correction factors for the calculation of the cooling capacity

A) ambient temperature (air-cooled models)	°C	5	10	15	20	25	30	35	40	45
correction factor (f1)		**1,05**	**1,05**	**1,05**	**1,05**	**1**	**0,95**	**0,89**	**0,83**	**0,77**
B) water outlet temperature	°C	5		10		15		20		25
correction factor (f2)		**0,72**		**0,86**		**1**		**1**		**1**
C) glycol (in weight)	%	0	10		20	30		40		50
correction factor (f3)		**1**	**0,99**		**0,98**	**0,97**		**0,96**		**0,94**
D) condenser water inlet temperature (water-cooled models)	°C	20		25		30		35		40
correction factor (f4)		**1**		**0,95**		**0,9**		**0,85**		**0,8**

To obtain the required cooling capacity multiply the value at nominal conditions by the above correction factors (i.e. cooling capacity = Pxf1xf2xf3xf4, where P is the cooling capacity at conditions (1)). ICE, in its standard configuration, can operate up to ambient temperatures of max 45°C and min. 5°C and water temperatures of max. 30°C inlet and min. 0°C outlet. The above correction factors are approximative: for a precise selection always refer to the software selection program.

This is to certify that the Quality and Environment Management Systems of domnick hunter hiross S.p.A. have been approved by Lloyd's Register Quality Assurance to the following Quality and Environment Management System Standards: ISO9001:2000 and ISO14001:1996.

The Hiross product range: Aftercoolers, Separators, Filters, Refrigeration Dryers, Adsorption Dryers, Condensate Drains, Oil/Water Separators, Water Chillers, Dry Coolers.

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