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# Hyperchill and Hyperfree

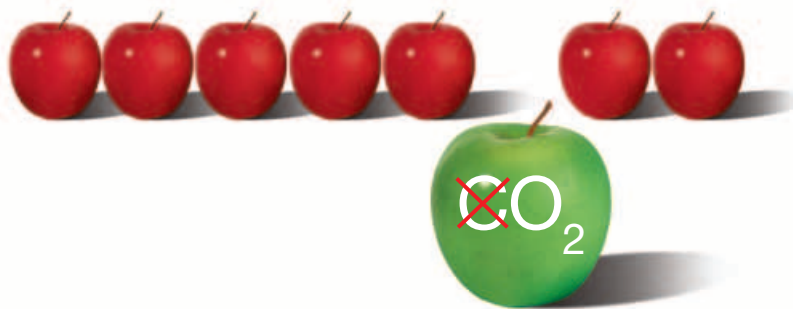
Chillers and drycoolers  
for industrial applications



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# Philosophy

Parker Hiross specialises in cooling, purification, and separation technologies, where compressed air and gas purity, product quality, technological excellence and global support are paramount. We design and manufacture compressed air treatment products and cooling equipment for many key industries where ease of integration, low cost of ownership and energy saving can make the difference. Parker Hiross has been supplying industry with high efficiency products with low lifetime costs and reduced CO<sub>2</sub> emissions since 1964. Our philosophy 'to stand out from the crowd' is our credo, encouraging our employees to achieve continuous improvement and satisfy customer expectations.



## Respecting the environment:

As an ISO14001 certified company, Parker Hiross based its product development philosophy and manufacturing processes on the respect of the environment. The industrial cooling solutions ensure:

- **No water wastage**, thanks to the use of water in a closed circuit;
- **No pollution risk**, thanks to a refrigerant circuit developed, assembled and carefully tested in order to prevent any leakage of refrigerant in the environment;
- **Maximum energy efficiency**, results in minimum energy consumption.

## A safe investment:

Designed for industrial applications, Parker Hiross cooling solutions ensure:

- **Responsible energy consumption**, by means of R407C refrigerant and compliant scroll or screw compressors, which allow up to 20% energy saving when compared with traditional reciprocating compressors. Hyperchill water chillers work in a part load logic, and aim to reach the maximum energy efficiency and control accuracy in any condition.
- **Reduced maintenance**, thanks to closed circuit operation, to the technology developments made on the use of oversized evaporators, but also to the design and testing made on all refrigerant circuits.

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The use of chilled water is essential in many industrial production and transformation processes. The range of needs varies from heat absorption to the need to maintain components, rooms and working phases under controlled temperature conditions. Reliability and ease in adjusting the cooling system to the specific application are key factors in order to ensure uninterrupted production and to optimize the entire process, reducing its costs.

**Parker Hiross' range of individual and integrated solutions includes:**

- **Hyperchill water chillers**, ideal for water or antifreeze fluid cooling in a closed circuit by means of a refrigeration cycle, featuring superior reliability, high energy efficiency and accurate temperature control of the chilled fluid;  
The chiller cools the water in a closed circuit, making use of one or more refrigeration compressors. The system consists of a cooling circuit and a water circuit: the refrigerant flows in the former and the process water circulates in the latter. The two fluids never come into direct contact, however they exchange heat in the evaporator, where the refrigerant absorbs the heat contained in the water and evaporates. The water then exits the chiller at the temperature required by the application.



- **Hyperfree drycoolers**, heat exchangers where water is cooled down thanks to forced circulating ambient air, with an extremely low energy consumption.  
The water in the coolers circulates inside a heat exchanger coil, whereas an external air flow is forced through by one or more fans, thereby cooling the water to the required temperature.



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# Applications

Water chilling and cooling is needed in almost all areas of industry. Hyperchill and Hyperfree are particularly suitable for the textile, food processing, plastics, pharmaceutical, beverages, engineering, glass, laser and electronics industries in the following applications:

To improve the quality of the finished item and increase productivity:

**Product cooling:** plastic, rubber, aluminium, steel & similar materials, foodstuffs, paints, gases.

To increase safety and control:

**Process cooling:** air, combustion fumes, solvents, contact surfaces, work surfaces.

To prevent overheating, wear and loss of production and increase operator safety:

**Machine cooling:** direct or indirect (cooling oil temperature control).

**Ambient cooling:** cold rooms, air conditioning, electrical panels, cooling tunnels.

**Drying** (in combination with aftercoolers) **of:** compressed air, technical and biogases, control air, chemical/pharmaceutical products, paints.

**Other applications:** temperature control of baths, ovens, chemical reactors, special applications.



**Printing Systems**

**Coating Systems**

**Chemical and Pharmaceutical**

**Plastics Processing**

**Thermoform Machines**

**Injection Moulding**

**Extruders**

**Plasma Coating**

**Medical Imaging**

**Food & Beverage Industry**

**Bottling systems**

**Wine production**

**Dairy products**

**Cutting tools**

**Numerical control machines**

**Spindles**

**Welding machines**

**Cooling hydraulic oil**

**Metal plating**

**Bioenergy**

**Compressed Air Treatment**

**Technical gases-cooling**

**Laser technology**

**UV systems**

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# Hyperchill

Extremely compact and easy to use, Hyperchill ensures an accurate control of the water temperature. Each model is designed for safe, reliable operation in the most varied working conditions, thanks also to the modern technical solutions used and the availability of a wide range of accessories and options.

**Water and refrigerant gauges** allow complete control of the working conditions.

**Microprocessors:** guarantee full control of the machine parameters. The proprietary software enable flexible selection, configuration of working parameters and remote control operation.

**Compliant scroll compressors:** (from ICE022) provide excellent efficiency and extremely quiet operation; the reduced number of moving parts also means much less vibration, thus reducing the risk of breakage and lengthening the life of the chiller.

**Air-cooled version with axial fans:** for outdoor installation, with no protection required.

**Circulation pump (std 3 bar):** various pressures available to meet specific application requirements. Dual pump that can be configured for 100% back-up.

**Metal filters on the condensers:** protection against dirt and knocks, thereby reducing downtime risks and maintenance costs.

**Evaporator:** immersed in the water tank, thereby reducing the system dimensions, increasing efficiency and improving temperature control.

**Water by-pass:** protects the pump and always supplies a constant water flow to the evaporator, preventing ice formation and downtime.

**Water tank:** oversized to guarantee enhanced reliability and improve temperature control.



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# ICE003-ICE010

The chillers of the Hyperchill range, from ICE003 to ICE010, are compact units designed for industrial use.

They are machines suitable for cooling fluids such as water or water and glycol mixtures or low viscosity fluids. Temperature range of the cooling fluid: from +5 °C to +30 °C.

All models are suitable for ambient temperatures of up to +45 °C and can be installed internally or externally, with suitable protection against the weather.

The integrated storage tank is closed and made of carbon steel, (ICE 003 and ICE 005 have an open plastic top loading tank or a relief valve when installed in pressurised circuits).

The evaporator immersed in the tank is coaxial, tube-in-tube and of counter flow design for excellent heat exchange.

The circulation pump is peripheral, with an available pressure of 3 bar and an integrated water by-pass.

The pump draws the water from the tank at the set temperature and delivers it to the application. A gauge always indicates the pressure available for use.

## Reference applications:

cooling of small dies, individual extruders, printing systems, thermoforming, welding and spindle machines and machine tools in general.

## Options:

Available kits for ICE003-ICE010:

- Remote control
- Wheels
- Water filters
- Water filling

ICE007 and ICE010 are available with the following options:

- Low ambient temperature: with fan speed control in order to guarantee operation even in very cold environments and reduce the noise of the machine.
- Low water temperature: water and glycol mixtures up to -10 °C can be used (the low ambient temperature option is recommended as a supplement).
- Antifreeze: prevents ice formation in cold environments if water is used with no antifreeze additive, or the heating of the process fluid to the value is not provided by the user.



# Technical data Hyperchill ICE003-ICE010

Model ICE		003	005	007	010
Cooling capacity <sup>1</sup>	kW	2,5	5,1	7	9,5
Compressor abs. power <sup>1</sup>	kW	0,7	1,4	2,0	2,3
Cooling capacity <sup>2</sup>	kW	1,7	3,7	5,0	6,7
Compressor abs. power <sup>2</sup>	kW	0,67	1,3	1,9	2,1
Power supply	V/ph/Hz	230/1/50		400/3/50 no neutral	
Protection index		33		44	
Refrigerant		R407C			

## Compressors

Type		hermetic pistons			
Compressors/circuits		1/1			
Max abs. power - 1 comp.	kW	0,7	1,5	1,8	3

## Axial fans

Quantity	n°	1			
Max abs. Power - 1 fan	kW	0,12	0,12	0,1	0,1
Air flow	m <sup>3</sup> /h	2300	2300	4400	4100

## Pump P30

Max abs. power	kW	0,4	0,4	0,5	0,5
Water flow (nom/max) <sup>1</sup>	m <sup>3</sup> /h	0,43/2,4	0,88/2,4	1,2/3	1,6/3
Head pressure (nom/min) <sup>1</sup>	m H <sub>2</sub> O	36/5	29/5	36/8	30/8
Water flow (nom/max) <sup>2</sup>	m <sup>3</sup> /h	0,29/2,4	0,64/2,4	0,86/3	1,2/3
Head pressure (nom/min) <sup>2</sup>	m H <sub>2</sub> O	38/5	33/5	42/8	36/8

## Dimensions and weight

Width	mm	530	530	980	980
Depth	mm	750	750	534	534
Height	mm	800	800	1228	1228
Connections in/out	in	1"	1"	1"	1"
Tank capacity	l	25	25	45	45
Weight (axial)	kg	105	110	170	180

## Noise level

Sound pressure (axial) <sup>3</sup>	dB(A)	52	52	53	53
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1) at water in/out temperature = 20/15°C, glycol 0%, either 25°C ambient temperature (air-cooled models) or 25°C condenser water inlet temperature with 35°C condensing temperature (water-cooled models).

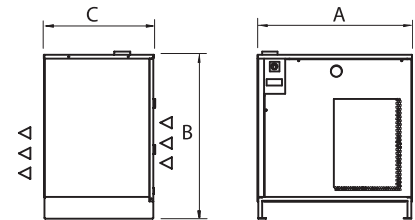
2) at water in/out temperature = 12/7°C, glycol 0%, 32°C ambient temperature (air-cooled models)

3) referred to axial fan version in free field conditions at a distance of 10m from unit, measured on condenser side, 1m from ground.

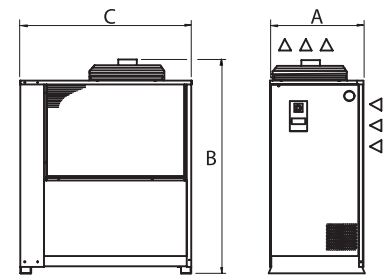
## Correction factors

A) Ambient temp. (air-cooled models) correction factor (f1)	°C	5	10	15	20	25	30	35	40	45
		1,05	1,05	1,05	1,05	1	0,95	0,89	0,83	0,77
B) Water outlet temperature correction factor (f2)	°C	5		10		15		20		25
		0,72		0,86		1		1		1
C) Glycol correction factor (f3)	%	0	10	20	30	40	50			
		1	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 = Pxf1xf2xf3xf4, where P is the cooling capacity at conditions (1)). Hyperchill, 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.



ICE003-005



ICE007-010

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# ICE015-ICE230

The chillers of the Hyperchill range, from ICE015 to ICE230, are a complete solution, easy to install and operate.

- The water circuit consists of: a storage tank, an immersed finned evaporator and a pump with a standard by-pass and does not require expensive water connections during start-up.
- As from ICE076, the tanks are equipped with a manual valve on the pump connection, in order to facilitate its replacement, in case of a fault.
- Electronic controllers with proprietary software guarantee full access to the machines operating parameters. This enables reliable operation to meet all industrial requirements, even where these demand customisation.
- Remote control and monitoring is available.
- The machines are fully configurable with various options and kits to meet all industrial process requirements.
- The protection filters on the condensers reduce dirt, thereby preventing system downtime and also guarantee protection against knocks and enhanced user safety.
- The separate condenser compartment enables routine and special maintenance to be performed without stopping the system.
- The structure and design guarantees full internal access for easy maintenance.

## High reliability and back-up eliminates downtime risks

- The oversized storage tanks alleviate the work of the compressors. Minimising the number of times the machine is switched on-off, improving temperature control and prolonging the life of the machine.
- Separate, double cooling circuits (as per ICE076) guarantee total back-up, preventing system downtime in case of faults or maintenance.
- 2 compressors as per ICE076 and 4 compressors as per ICE150, with automatic rotation, improve temperature control and reduce the wear of the individual components.
- Dual pumps in “stand-by” are available as optional to prevent any downtime risks.
- Water tank minimum level alarm, pump and compressor absorption, high and low refrigerant pressure, ice formation and high and low water temperature indication.
- Maximum ambient temperature up to +45 °C.





## Reference applications:

### The lowest energy consumption on the market

- Oversized condensers and evaporators optimise the work of the cooling cycle.
- The compliant scroll compressors guarantee low power consumption and minimum peak start-up current.
- The evaporator immersed in the cold and insulated tank optimises heat exchange and minimises heat loss to the external environment.

precision cooling of injection moulding machines and printing machines, medical scanners, compressed air or technical gas.

Heat dissipation from production processes, fermentation of beverages such as beer or wine and galvanising systems.

Temperature control of pumps, motors and machinery in general.



## Options:

- **Water fill kit:** pressurised automatic, manual or automatic under atmospheric pressure, to fill or easily top up the coolant.
- **Remote control kit:** basic version for start-up/shutdown and general alarms. Advanced model for full control of the machine. Monitoring is available.
- **Water filters:** to guarantee clean process fluid and protect the machine from dirt and contamination.
- **Control panel protection**
- **Connectivity:** remote monitoring and diagnostics.



Tank kit



Remote control



Water filter

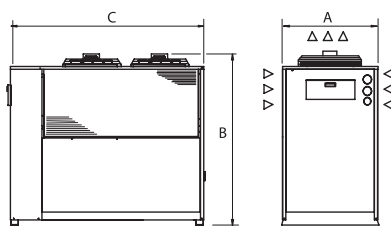
## Versions:

- Air-cooled with centrifugal fans: ideal for indoor installation. The hot air can be channelled for ventilation or heat recovery.
- Water-cooled (alternative to the air-cooled version): shell and tube condensers and pressostatic valves on board the machine.
- Low ambient temperature: additional condensation control allows the machine to work continuously in cold environments (at negative temperatures). Available for air-cooled versions with axial fans.
- Low water temperature: for negative water outlet temperature, up to  $-10\text{ }^{\circ}\text{C}$ . (The low ambient temperature option is recommended as a supplement for condensation control).
- Precision control: very precise water outlet temperature control ( $\pm 0.5\text{ }^{\circ}\text{C}$ )
- Non-ferrous: tank, pump and water circuit with no carbon steel.
- Bioenergy: protection with epoxy coating on all exposed parts made of copper, for operation in harsh environments.
- Special and multiple pumps: high pressure (5 bar) or low pressure (1.5 bar) available for different water circuits. A dual pump is available for complete reliability.
- Antifreeze: prevents ice from forming in the water circuit when the machine is stopped, when no glycol is present.

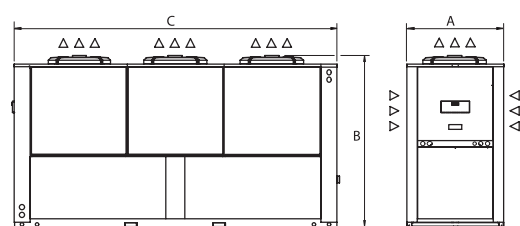


Air-cooled with centrifugal fans

Water-cooled system



ICE015-046



ICE057-230

### Correction factors

A) Ambient temp. (air-cooled models) correction factor (f1)	$^{\circ}\text{C}$	5	10	15	20	25	30	35	40	45
		1,05	1,05	1,05	1,05	1	0,95	0,89	0,83	0,77
B) Water outlet temperature correction factor (f2)	$^{\circ}\text{C}$	5	10	15	20	25				
		0,72	0,86	1	1	1				
C) Glycol correction factor (f3)	%	0	10	20	30	40	50			
		1	0,99	0,98	0,97	0,96	0,94			
D) Condenser water inlet temp. (water-cooled models) correction factor (f4)	$^{\circ}\text{C}$	20	25	30	35	40				
		1,05	1	0,95	0,9	0,85				

To obtain the required cooling capacity multiply the value at nominal conditions by the above correction factors (i.e. cooling capacity =  $P \times f1 \times f2 \times f3 \times f4$ , where P is the cooling capacity at conditions (1)). Hyperchill, in its standard configuration, can operate up to ambient temperatures of max  $45\text{ }^{\circ}\text{C}$  and min.  $5\text{ }^{\circ}\text{C}$  and water temperatures of max  $30\text{ }^{\circ}\text{C}$  inlet and min.  $0\text{ }^{\circ}\text{C}$  outlet. The above correction factors are approximative: for a precise selection always refer to the software selection program.

## Technical data Hyperchill ICE015-ICE230

Model ICE		015	022	029	039	046	057	076	090	116	150	183	230
Cooling capacity <sup>1</sup>	kW	14,3	21,8	28,1	38,2	45,2	56,4	76,0	90,2	115,5	149,2	182,3	228
Compressor abs. power <sup>1</sup>	kW	3,4	5,2	5,7	7,7	10,1	12,3	15,4	20,3	24,9	30,8	40,1	51,4
Cooling capacity <sup>2</sup>	kW	10	15,4	21,2	27,7	33,0	40,8	55,2	65,8	84,2	108	133	166
Compressor abs. power <sup>2</sup>	kW	3,2	5,5	6,0	8,2	10,3	13,1	16,4	26,2	25,8	32,5	41,3	54,6
Power supply	V/ph/Hz	400/3/50 no neutral											
Protection index		54											
Refrigerant		R407C											

### Compressors

Type		hermetic piston		hermetic scroll									
Compressors/circuits		1/1					2/2			4/2			
Max abs. power - 1 comp.	kW	5,8	6,9	7,8	11,1	13,7	16,8	11,1	13,7	16,8	11,1	13,7	16,8

### Axial fans

Quantity	n°	1		2		3			2		3		
Max abs. Power - 1 fan	kW	0,61	0,61	0,78	0,61	0,61	0,61	0,78	0,78	0,78	2	2	2
Air flow	m³/h	7100	6800	9200	12400	12000	17400	25500	25000	26400	47000	46000	66000

### Centrifugal fans

Quantity	N°	1		2		3			3				
Max abs. Power - 1 fan	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,5	1,5	1,5	3	3	3
Air flow	m³/h	7100	6800	9200	12400	12000	17400	25500	25000	26400	47000	46000	66000
Head pressure	Pa	140	130	200	180	160	200	100	100	100	180	180	130

### Water cooled version

Condenser water flow	m³/h	1,3	1,9	2,4	4	5,6	8	11,1	11,5	16,6	19,2	31	33
Condensers connections	in	1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 1/2"

### Pump P30

Max abs. power	kW	1,1	1,3	1,3	1,3	2,3	2,3	2,5	2,7	2,7	4,5	4,5	4,5
Water flow (nom/max) <sup>1</sup>	m³/h	2,3/6	3,7/9,6	4,8/9,6	6,6/9,6	7,8/18	9,7/18	13/31	15/27	20/27	25/50	30/50	39/50
Head pressure (nom/min) <sup>1</sup>	m H <sub>2</sub> O	29/21	28/17	27/17	24/17	28/22	27/22	23/13	28/16	25/16	34/20	32/20	26/20
Water flow (nom/max) <sup>2</sup>	m³/h	1,6/6	2,7/9,6	3,6/9,6	4,8/9,6	5,7/18	7,0/18	9,5/31	11/27	14/27	18/50	23/50	29/50
Head pressure (nom/min) <sup>2</sup>	m H <sub>2</sub> O	30/21	29/17	28/17	27/17	28/22	28/22	23/13	32/16	30/16	36/20	35/20	32/20

### Dimensions and weight

Width	mm	1090	1090	1650	1650	1650	2200	2200	2200	2200	3000	3000	3260
Depth	mm	744	744	744	744	744	744	898	898	898	1287	1287	1287
Height	mm	1358	1358	1358	1358	1358	1358	1984	1984	1984	2298	2298	2298
Connections in/out	in	1 ¼"	1 ¼"	1 ½"	1 ½"	1 ½"	1 ½"	2"	2"	2"	2 ½"	2 ½"	2 ½"
Tank capacity	l	120	120	180	180	250	300	500	500	500	1000	1000	1000
Weight (axial)	kg	250	270	380	410	430	520	800	900	1000	1500	1800	2100
Weight (centrif.)	kg	280	300	410	450	480	610	950	1050	1150	1700	2000	2300
Weight (water cooled)	kg	250	260	380	410	430	520	800	900	1000	1500	1800	2100

### Noise level

Sound pressure (axial) <sup>3</sup>	dB(A)	50	50	53	52	52	56	58	58	58	62	62	64
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1) at water in/out temperature = 20/15°C, glycol 0%, either 25°C ambient temperature (air-cooled models) or 25°C condenser water inlet temperature with 35°C condensing temperature (water-cooled models).

2) at water in/out temperature = 12/7°C, glycol 0%, 32°C ambient temperature (air-cooled models)

3) referred to axial fan version in free field conditions at a distance of 10m from unit, measured on condenser side, 1m from ground.

# ICE310-ICE360

The ICE310 and ICE360 chillers of the Hyperchill range are designed and built to meet the requirements of centralised industrial cooling systems. They can also be easily installed on existing systems and integrated in parallel for complete and modular solutions.

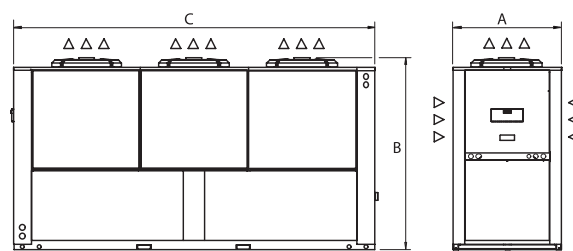
Two completely independent cooling circuits, four compliant scroll compressors, a shell and tube evaporator and an optional hydronic (internal tank and pump) kit provide maximum flexibility and allow the product to be adapted to the specific requirements of each application. The controller with proprietary software can be programmed with various customised solutions. The optional pump draws the water from the application and delivers it towards the evaporator, where it cools to the set temperature. In this configuration, the pump can work directly with external open tanks.

## Reference applications:

cooling the high-capacity extruders, multiple printing and processing systems of plastic material and production of glass, aluminium and other materials. Wine, beer, oil and general beverage industries.

## Options:

- Remote control kit
- Connectivity kit
- Control panel protection kit
- **Water tank:** inside the machine, guarantees a minimum volume to control the outlet water temperature.
- **Bioenergy:** protection with epoxy coating on all exposed parts made of copper, for operation in harsh environments (landfills, fermentation of biomass, marine environments).
- **Pump:** single or dual (automatic rotation), mounted inside the machine and controlled directly by the chiller microprocessor to guarantee the water flow and pressure required by the application.



ICE310-360

## Correction factors

A) Ambient temp. (air-cooled models) correction factor (f1)	°C	5	10	15	20	25	30	35	40	45
		1,05	1,05	1,05	1,05	1	0,95	0,89	0,83	0,77
B) Water outlet temperature correction factor (f2)	°C	5	10	15	20	25				
		0,72	0,86	1	1	1				
C) Glycol correction factor (f3)	%	0	10	20	30	40	50			
		1	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 =  $P \times f1 \times f2 \times f3 \times f4$ , where P is the cooling capacity at conditions (1)). Hyperchill, 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.

## Technical data Hyperchill ICE310-ICE360

Model ICE		310	360
Cooling capacity <sup>1</sup>	kW	309	360
Compressor abs. power <sup>1</sup>	kW	65	82
Cooling capacity <sup>2</sup>	kW	231	262
Compressor abs. power <sup>2</sup>	kW	65	85
Power supply	V/ph/Hz	400/3/50 no neutral	
Protection index		54	
Refrigerant		R407C	

### Compressors

Type		hermetic scroll	
Compressors/circuits		4/2	
Max abs. power - 1 comp.	kW	23,3	28,7

### Axial fans

Quantity	n°	4	
Max abs. Power - 1 fan	kW	2	2
Air flow	m <sup>3</sup> /h	88000	88000

### Pump P30

Max abs.power	kW	8,4	8,4
Water flow (nom/max) <sup>1</sup>	m <sup>3</sup> /h	53/90	62/90
Head pressure (nom/min) <sup>1</sup>	m H <sub>2</sub> O	26/19	23/19
Water flow (nom/max) <sup>2</sup>	m <sup>3</sup> /h	40/90	45/90
Head pressure (nom/min) <sup>2</sup>	m H <sub>2</sub> O	37/19	35/19

### Dimensions and weight

Width	mm	4200	4200
Depth	mm	1500	1500
Height	mm	2240	2240
Connections in/out	in	4"	4"
Tank capacity	l	400	400
Weight (axial)	kg	2900	3100

### Noise level

Sound pressure (axial) <sup>3</sup>	dB(A)	65	65
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1) at water in/out temperature = 20/15°C, glycol 0%, either 25°C ambient temperature (air-cooled models) or 25°C condenser water inlet temperature with 35°C condensing temperature (water-cooled models).

2) at water in/out temperature = 12/7°C, glycol 0%, 32°C ambient temperature (air-cooled models)

3) referred to axial fan version in free field conditions at a distance of 10m from unit, measured on condenser side, 1m from ground.

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# Hyperchill MAXI (ICE460-ICE880)

Hyperchill MAXI are process chillers designed to work in large industrial systems, outdoor installation and centralised cooling systems. They guarantee reliability and efficiency in all industrial environments, with compact system dimensions and low noise levels.

Quality components, meticulous construction and strict testing procedures guarantee maximum safety and reliability and prevent industrial users from experiencing production downtime.

- Two semi-hermetic screw compressors with 4 capacity steps, installed with a high efficiency oil filter and oil level control. Fitted as standard with shut-off valves and anti-vibration mounts.
- Standard options: part winding soft start, casing resistance and liquid injection to cool the oil.
- Protections for high and low cooling pressure, differential oil pressure, low water temperature and lack of water flow.
- Shell and tube evaporators, optimised for R407C refrigerant, with a separate double cooling circuit, fully insulated, equipped with anti-freeze safety and lack of water flow.
- Victaulic water inlet and outlet connections for quick installation.
- The axial fans with phase cutting adjustment guarantee maximum control of the working pressures, noise and energy efficiency.
- The microprocessor with proprietary software, developed and tested by Parker Hiross, enables full control of the machine's working parameters and contains numerous programmable options, depending on the specific user requirements.
- Water and refrigerant gauges allow the operating parameters to be easily monitored.



## Options:

- Pump: single or dual (automatic rotation), mounted inside the machine and controlled directly by the chiller microprocessor to guarantee the water flow and pressure required by the application.
- Remote control
- Connectivity: remote monitoring and diagnostics.

Other models and options are available upon request: with R134a refrigerant, water-cooled, low noise level versions and versions with an economiser.

# Technical data Hyperchill MAXI (ICE460-ICE880)

Model ICE		460	550	650	760	880
Cooling capacity <sup>1</sup>	kW	457,9	544,8	650,7	757,5	875,7
Compressor abs. Power <sup>1</sup>	kW	98,5	110,3	139,8	157,8	185,5
Water flow <sup>1</sup>	m <sup>3</sup> /h	78,8	93,7	111,9	130,3	150,6
Water pressure drops <sup>1</sup>	kPa	33,8	44,8	42,2	56,3	57,3
Cooling capacity <sup>2</sup>	kW	323,2	382,9	463,4	539,4	627,2
Compressor abs. Power <sup>2</sup>	kW	100,1	110,8	141,5	163,4	190,1
Water flow <sup>2</sup>	m <sup>3</sup> /h	56,9	67,6	81	93,7	107,9
Water pressure drops <sup>2</sup>	kPa	18,5	24,1	23,3	30,6	32,6
Power supply	V/ph/Hz	400/3/50 no neutral				
Protection inex		54				
Refrigerant		R407C				

## Compressors

Type	semihhermetic screw					
Compressors/circuits	2/2					
Max abs. power (1 comp.)	kW	71	81,3	98,1	118,1	

## Axial fans

Quantity	n°	6	8	8	10	10
Max abs. Power - 1 fan	kW	2,1	2,1	2,1	2,1	2,1
Total air flow	m <sup>3</sup> /h	109.000	144.000	144.000	195.000	195.000

## Dimensions and weight

Width	mm	2.200	2.200	2.200	2.200	2.200
Depth	mm	3.200	4.200	4.200	5.200	5.200
Height	mm	2.500	2.500	2.500	2.500	2.500
Connections in/out	in	4	4	6	6	6
Weight	kg	3.240	3.850	4.000	4.800	5.000

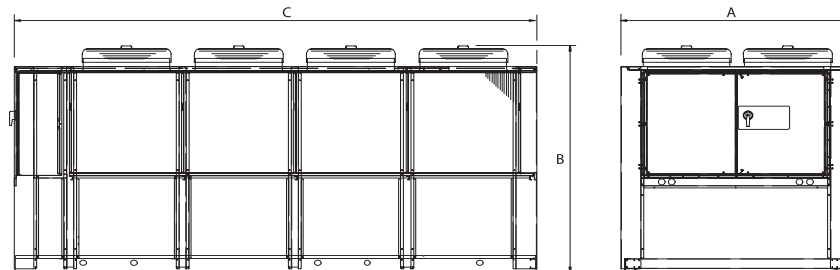
## Noise level

Sound pressure (axial) <sup>3</sup>	dB(A)	73	74	74	75	75
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1) at water inlet/outlet temperature = 20/15°C, glycol 0%, ambient temperature 25°C.

2) at water inlet/outlet temperature= 12/7°C, glycol 0%, ambient temperature 35°C.

3) measured in free field conditions at a distance of 10m from unit, on condenser side, 1m from ground.



## Correction factors

A) Ambient temp. (air-cooled models) correction factor (f1)	°C	5	10	15	20	25	30	35	40	45
		1,05	1,05	1,05	1,05	1	0,95	0,89	0,83	0,77
B) Water outlet temperature correction factor (f2)	°C	5	10	15	20	25				
		0,72	0,86	1	1	1				
C) Glycol correction factor (f3)	%	0	10	20	30	40	50			
		1	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 = Pxf1xf2xf3xf4, where P is the cooling capacity at conditions (1)). Hyperchill, 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.

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# Hyperchill Laser (HLS005-HLS116)

Industrial process chillers for Precision Cooling with a Non-Ferrous water circuit. Hyperchill Laser is designed to satisfy many applications that require stable working conditions with maximum quality and clean process fluid.

Compact and reliable machines designed for industrial applications and built to the highest standards of quality and safety.

Laser marking, cutting and welding are typical industrial processes in which the Hyperchill Laser features are necessary to achieve quality products and optimise the production processes.

## Maximum stability

- Non-ferrous water circuit. All the parts that come into contact with the cooling water are made of stainless steel or plastic to guarantee the quality of the process fluid.
- The water temperature control is very precise in all working conditions thanks to a double hot gas valve that controls the flow of the refrigerant via the evaporator ( $\pm 0.5^{\circ}\text{C}$ ). (Optional for HLS005-HLS029; std for HLS039-HLS116)

## A perfect solution, easy to install and operate

- Water circuit: storage tank, fill tank evaporator and pump, provide a compact solution, easy to install and use.
- The quality of the water is always guaranteed thanks to a filter installed on the fill tank.
- Electronic controllers with proprietary software guarantee full access to the main machine parameters and allow special configurations for specific requirements. Remote control is available.
- The software with PID logic has been developed and tested for maximum stability in temperature output, even with variable thermal loads.
- The protection filters on the condensers reduce dirt, thereby preventing system downtime and also guarantee protection against knocks and enhanced user safety.
- The separate condenser compartment allows routine and special maintenance to be performed without stopping the system.
- The structure and design guarantee full internal access for easy maintenance



## Enhanced reliability

- A maximum working environment temperature of  $45^{\circ}\text{C}$  also prevents downtime in severe working conditions.
- Each unit is extensively tested within the factory premises before being shipped.
- Compliant scroll compressors: (as from HLS022) fewer moving parts and compliant technology guarantee enhanced efficiency, reliability and reduced noise, practically indestructible.
- Minimum water level control and a differential pressure switch guarantee system operation and protect the chiller, pump and evaporator in the event of improper installation or use.



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## Reference applications:

Industrial laser applications:

the performance of a high power laser depends on an efficient cooling system.

High power lasers generate large amounts of heat that must be removed from the system to prevent overheating critical components.

CO<sub>2</sub> lasers, ion lasers, solid-state lasers and diode lasers use water-cooled systems to remove excess heat. The water-cooled system guarantees three success factors:

- maintenance of a precise wavelength and high efficiency,
- quality achievement of the desired beam,
- reduced thermal stress on the laser system.

Laser applications:

- Cutting
- Welding
- Marking
- Surface treatment
- Medical

Other applications:

- Food
- Beverages
- Chemical
- Pharmaceutical
- Flexo printing

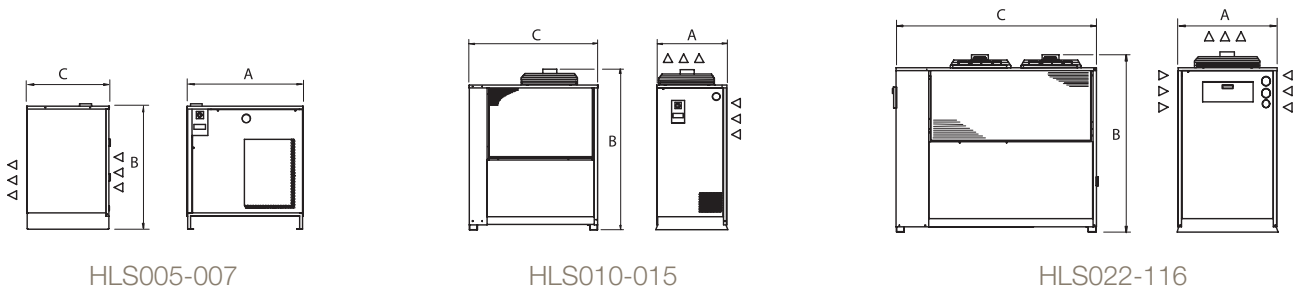
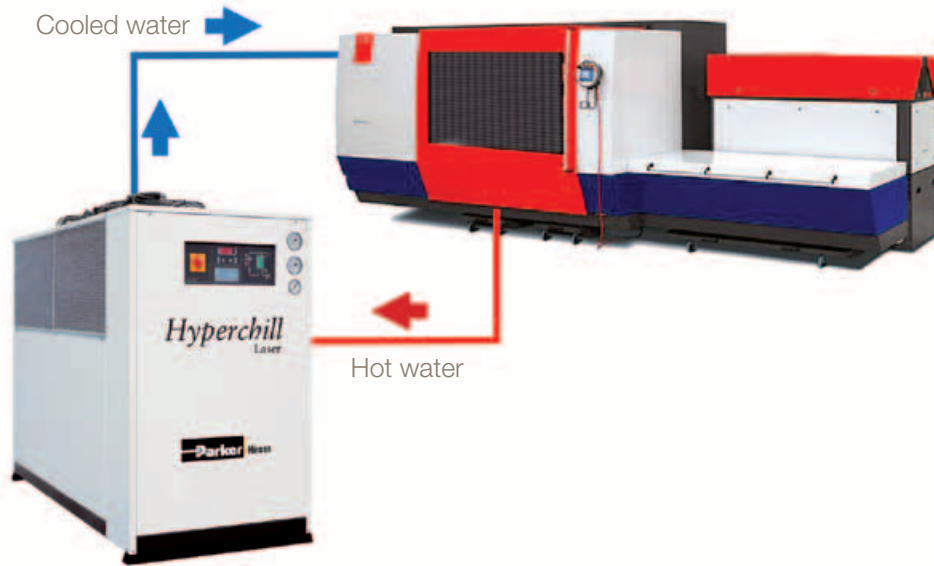
## Versions:

- Low ambient temperature (optional for HLS010-HLS029): the additional condensation control allows the machine to work continuously in cold environments (at negative temperatures). Standard from HLS039 with precision control.
- Precise control (optional for HLS005-HLS029): very precise water outlet temperature control ( $\pm 0.5$  °C). Standard from HLS039.
- Special and multiple pumps: high pressure (5 bar) available for water circuits with steep drops in pressure. Dual pump available for enhanced reliability.
- Antifreeze: prevents ice from forming in the water circuit when the machine is stopped, when no glycol is present.

## Options:

- Water by-pass: installed outside the machine, with manual calibration to set the correct water flow to the application.
- Water flowmeter: to indicate an alarm when there is no water flow.
- Check valves: an output check valve and a solenoid valve on the inlet separates the water circuit from the system when the unit is switched off.
- Wheels (HLS005 - HLS015): to facilitate handling.
- Remote control kit: basic version for start-up/shutdown and general alarms. Advanced model for full control of the machine. Monitoring is available via Modbus.

# Cooling diagram for Laser applications



## Correction factors

A) Ambient temperature Correction factor (f1)	°C	5	10	15	20	25	30	35	40	45
		1,05	1,05	1,05	1,05	1	0,95	0,89	0,83	0,77
B) Water outlet temperature Correction factor (f2)	°C	5		10		15		20		25
		0,72		0,86		1		1		1
C) Glycol (in weight) Correction factor (f3)	%	0			10		20		30	
		1			0,99		0,98		0,97	

To obtain the required cooling capacity multiply the value at nominal conditions by the above correction factors (i.e. cooling capacity =  $P \times f1 \times f2 \times f3$ , where P is the cooling capacity at conditions (1). Hyperchill Laser, 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.

# Technical data Hyperchill Laser (HLS005-HLS116)

Model HLS		005	007	010	015	022	029	039	046	057	076	090	116
Cooling capacity <sup>1</sup>	kW	5	6,8	9,5	14,2	21,8	27,8	38,2	45,2	56,4	76,2	90,2	115,5
Compressor abs. Power <sup>1</sup>	kW	1,4	1,9	2,3	3,4	5,2	5,6	7,7	10,1	12,3	15,4	20,3	24,9
Cooling capacity <sup>2</sup>	kW	4,7	6,2	8,7	13	20,6	26,2	36,4	42,9	53,7	67,1	79,9	101,3
Compressor abs. Power <sup>2</sup>	kW	1,6	2,2	2,6	3,9	6,5	7,1	9,6	13	15,3	18,7	24,2	29,9
Power supply	V/ph/Hz	230/1/50						400/3/50 no neutral					
Protection index		33				44				54			
Refrigerant		R407c											

## Compressors

Type		hermetic pistons						hermetic scroll					
Compressors/circuits		1/1						2/2					
Max abs. power - 1 comp.	kW	1,5	1,8	3	2,9	6,9	7,8	11,1	13,7	16,8	11,1	13,7	16,8

## Axial fans

Quantity	n°	1						2		3			
Max abs. Power - 1 fan	kW	0,12	0,1	0,1	0,61	0,61	0,78	0,61	0,61	0,61	0,78	0,78	0,78
Air flow	m <sup>3</sup> /h	2300	4400	4100	7100	6800	9200	12400	12000	17400	25500	25000	26400

## Pump P30

Max abs. power	kW	0,4	0,4	0,5	0,5	1,34	1,34	1,34	2,35	2,35	1,85	2,24	2,24
Water flow (nom/max) <sup>1</sup>	m <sup>3</sup> /h	0,8/2,4	1,3/3	1,5/6	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
Head pressure (nom/min) <sup>1</sup>	m H <sub>2</sub> O	30/6	28/6	31/20	29/20	28/17	27/17	24/17	28/22	27/22	26/22	28/16	25/16

## Pump P50

Max abs. power	kW	0,75	0,75	0,75	0,75	2,3	2,3	2,3	2,3	2,3	4	4	4
Water flow (nom/max) <sup>1</sup>	m <sup>3</sup> /h	0,8/2,4	1,3/3	1,5/6	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
Head pressure (nom/min) <sup>1</sup>	m H <sub>2</sub> O	58/22	52/22	52/35	50/35	58/38	55/38	48/37	47/37	46/37	47/28	45/28	41/28

## Dimensions and weight

Width	mm	530	530	980	980	1650	1650	1650	1650	2200	2200	2200	2200
Depth	mm	760	760	540	540	750	750	750	750	750	890	890	890
Height	mm	800	800	1260	1390	1390	1390	1390	1390	1390	1970	1970	1970
Connections in/out	in	3/4"	3/4"	3/4"	3/4"	1"	1"	1 1/4"	1 1/4"	1 1/2"	2"	2"	2"
Tank capacity	l	30	30	50	50	120	120	120	120	200	300	300	300
Weight (axial)	kg	95	110	150	160	270	340	380	390	470	750	870	960

## Noise level

Sound pressure (axial)	dB(A)	52	53	53	50	50	53	52	52	56	58	58	58
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(1) at water inlet/outlet temperature = 20/15°C, glycol 0%, ambient temperature 25°C. Net cooling capacity, without pump heat load.

(2) at water inlet/outlet temperature = 25/20°C, glycol 0%, ambient temperature 35°C. Net cooling capacity, without pump heat load.

(3) referred to free field conditions at a distance of 10m from unit, measured on condenser side, 1 m from ground.

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# Hyperfree (HDC040-HDC710)

Hyperfree is the ideal solution when the cooling water temperature is required to be above room temperature. All models are easy to install, have low operating and maintenance costs, are built for outdoor installation, with IP54 and galvanised aluminium panels that are epoxy coated. The new generation of Parker Hiross drycoolers is a range of competitive products, which are robust and reliable and offer excellent performance and a unique solution that can be integrated with other components, dedicated to cooling industrial systems. High efficiency fans combine low noise levels with reduced consumption.

The closed water circuit prevents all problems related to cooling towers:

- water consumption
- risks of corrosion
- problems related to legionella
- dirt
- clogging
- costly water treatment

Drycooler guarantees:

- enhanced flexibility depending on the environmental and system conditions
- power consumption always proportional to actual necessity, with no wasted electricity or inefficiencies
- low operating costs and low power installed
- quick and easy installation and start-up



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## Reference applications:

Hyperfree can be used as an option for energy saving purposes, when combined with Hyperchill. It can cool process water when the room temperature drops below the temperature required by the process.

This reduces the work carried out by the refrigeration compressors, thereby only consuming the power used by the Hyperfree fans, which is equivalent to 1/6 of the electrical power consumed by the Hyperchill compressors.

Depending on the average room temperature of the installation, the cooling temperature required and the annual operation hours experienced, energy savings can be achieved, which guarantee system pay-back in less than one year.

## Versions:

- horizontally mounted coil configuration
- vertically mounted coil configuration
- compact "V" configuration
- different levels of noise available upon request

## Distinguished features of the new Hyperfree range:

- Modular design, easy to be integrated or updated on existing installations
- Low maintenance costs
- Efficient and reliable components
- Excellent heat transfer coefficient
- Compact design for less space to be taken up
- High performance-costs ratio
- Robust construction and solid appearance
- High quality finish

## Accessories:

- Support legs for horizontal installation
- Fan wiring in an electrical box
- Electrical panel with wiring and control
- Control panel with temperature step (number of steps equal to number of fans)
- Control panel with continuous temperature control (0-100 %)
- Nebulisation cooling
- Anti-corrosion treatment

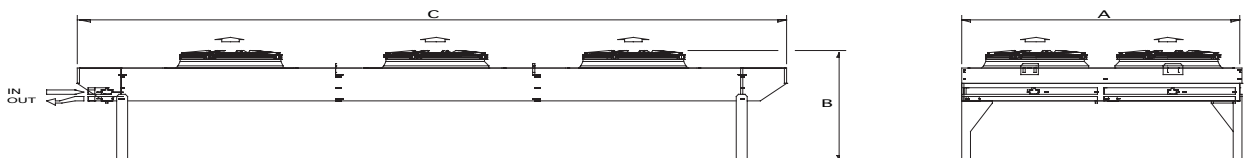


# Technical data Hyperfree

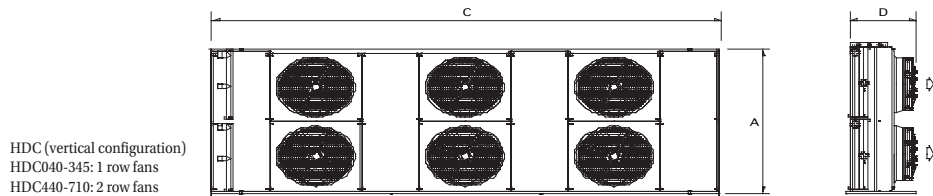
Model	Cooling Capacity*	Water Flow	Water pressure drops	Fans n° x D	Air flow	Max abs. power	Noise level	Conn.	Dimensions	Weight	
	kW					m³/h		kPa			n° x mm
HDC040	39,5	6,8	39,3	2x500	15729	0,8	47	1"1/4	830x950x2042x530	97	
HDC060	59,1	10,2	37,3	3x500	23593	0,8	49	1"1/2	830x950x2942x530	134	
HDC080	80,7	13,9	80,8	3x500	20638	0,8	49	2"	830x950x2942x530	165	
HDC110	107,9	18,6	74,8	4x500	27517	0,8	50	2"	830x950x3842x530	223	
HDC 140	137,7	23,7	17,3	2x630	33848	2,6	59	2"	1255x1220x3235x850	380	
HDC 165	164,1	28,2	44,5	3x630	53118	2,6	61	2"	1255x1220x4635x850	480	
HDC 190	192,2	33,0	39,7	3x630	51951	2,6	61	2"	1255x1220x4635x850	525	
HDC 210	207,0	35,6	30,4	3x630	50709	2,6	61	2"1/2	1255x1220x4635x850	570	
HDC 250	247,4	42,5	44,4	2x910	60529	3,6	58	2"1/2	1494x1290x4635x850	580	
HDC 345	344,5	59,3	8,3	3x910	93167	3,6	60	3"	1494x1290x6735x850	795	
HDC 440	438,1	75,3	48,7	4x910	112224	3,6	60	2x3"	2290x1290x4650x790	940	
HDC 510	506,6	87,1	72,8	6x910	183482	3,6	62	2x4"	2290x1290x6750x790	980	
HDC 580	579,7	99,7	9,7	6x910	175746	3,6	62	2x4"	2290x1290x6750x790	1073	
HDC 660	655,1	112,7	71,2	6x910	168088	3,6	62	2x4"	2290x1290x6750x790	1159	
HDC 710	714,4	122,9	18,6	8x910	244541	3,6	63	2x4"	2290x1290x8850x790	1318	

HDCV 490	486,2	83,6	30,5	6x800	123000	2,0	58	2 x DN80	2230x2208x4251	1323
HDCV 540	535,5	92,1	34,2	6x910	185200	3,6	64	2 x DN80	2230x2208x4251	1167
HDCV 620	622,7	107,1	34,0	6x910	178100	3,6	64	2 x DN80	2230x2208x5560	1347
HDCV 720	717,2	123,3	42,0	8x910	247000	3,6	65	2 x DN80	2230x2208x5560	1628
HDCV 820	823,2	141,6	32,0	8x910	237700	3,6	65	2 x DN80	2230x2208x6870	1826

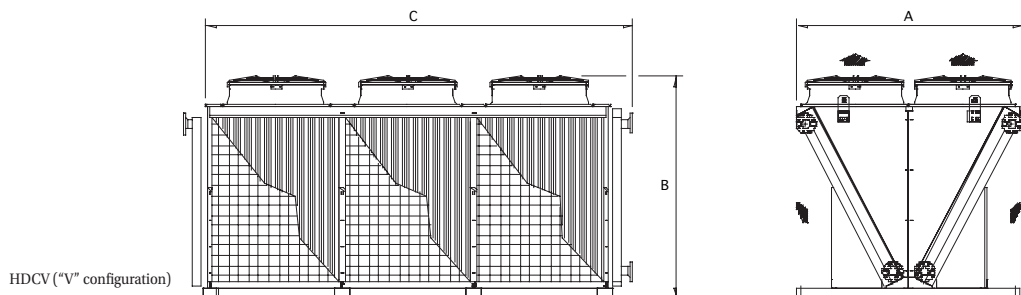
At water inlet/outlet temperature=40°/35°C, ambient temperature 25°C, glycol 0%.



HDC (horizontal configuration)  
HDC040-345: 1 row fans  
HDC440-710: 2 row fans



HDC (vertical configuration)  
HDC040-345: 1 row fans  
HDC440-710: 2 row fans

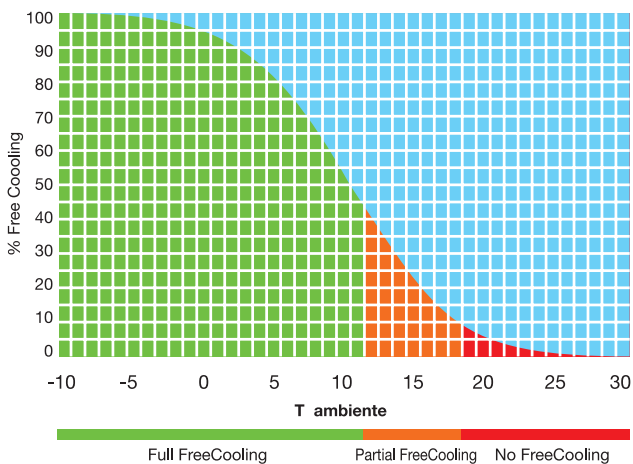


HDCV ("V" configuration)

# Free Cooling

## Efficient cooling throughout the year

The Parker Hiross Free Cooling System offers an efficient solution for applications in areas where low external temperatures remains for longer periods throughout the year. Energy savings of up to 50% can be achieved by using external air to cool the water, consequently reducing the operating hours of the chiller. Additional benefits relate on to less wear the chiller and easier maintenance when not in use.

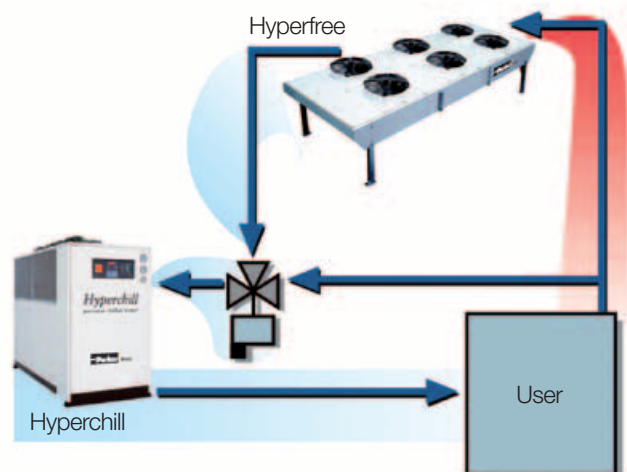


If used in combination with Hyperchill water chillers, Hyperfree water coolers guarantee an effective and extremely efficient solution. A freecooling system makes it possible to switch automatically from Hyperfree in the colder months to Hyperchill in the warmer months, resulting in significant energy savings and guaranteeing a supply of water at the same required temperature throughout the year, thus optimising running costs.

## Optimised solution

The Free Cooling System uses a drycooler combined with a chiller and a 3-way valve to optimise the water flow and the operating costs. As soon as the outside air temperature drops below 2 °C with respect to the ambient temperature, the 3-way valve diverts the water to the drycooler exchanger, which can contribute to cooling the water.

The remaining heat is removed from the chiller. When the external temperature is quite cold, the chiller goes off and maximum energy savings are achieved. The higher the temperature in the cooling water circuit, the more efficient is the chiller operation and the longer the Free Cooling can be used, thereby reducing the system operating costs.



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