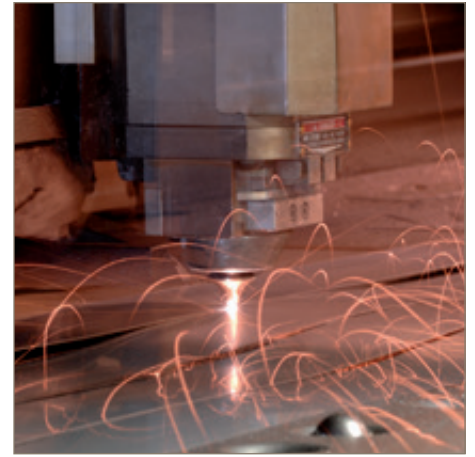


Hyperchill Laser

Industrial Process Chillers for Precision Cooling



Precision chilled water with non-ferrous hydraulic circuit

Hyperchill Laser is designed to meet the needs of many applications requiring stable working conditions with maximum quality and cleanliness of the process fluid.

Compact and reliable machines designed for industrial applications and manufactured with the highest quality and safety standards.

Laser marking, cutting and welding are typical industrial processes where the characteristics of Hyperchill Laser are vital to obtain the desired product quality and to optimise the production process.



Product Features:

High consistency

- Non ferrous hydraulic circuit. Stainless steel tank, evaporator, and water pump maintain the quality of the coolant.
- Very precise outlet water temperature control with two hot gas valves ($\pm 0,5$ °C)
- PID software developed and tested to give the highest temperature consistency even at variable loads.
- High pressure pumps supply constant water flow and pressure to the system

Perfect solution, easy to install and manage

- Hydraulic circuit: storage and filling tank, with evaporator and pump provide a compact solution, easy to use and install.
- Electronic controllers with proprietary software provide access to all the vital parameters of the unit and allow special management for specific needs, with remote monitoring available.
- Condensers filters
- Independent condensing plenum
- Full access and easy service design

Low power consumption

- Very low power consumption thanks to oversized condensers and evaporators, and use of compliant scroll compressors (from ICEP007 onwards).

High reliability

- Maximum working ambient temperature up to 48 °C for ICEP models, up to 45 °C for HLS models, prevents downtime even under extremely harsh conditions.

The performance of high-powered lasers depends on effective cooling. High-powered lasers generate a significant amount of heat that must be removed from the laser system to avoid overheating critical

components. Carbon dioxide (CO₂) lasers, excimer lasers, ion lasers, solid-state lasers, and dye lasers all use liquid cooling to remove excess heat. Laser liquid cooling can help accomplish three goals: maintain-

ing a precise laser wavelength and higher output efficiency, achieving desired beam quality, and reducing thermal stress on a laser system.

Microprocessors: allow complete control of the unit parameters. Proprietary software from ICEP007 onwards allows a wide range of programming and remote monitoring options.

Compliant scroll compressors: (from ICEP007 onwards) with less moving parts and compliant technology provide excellent efficiency, high reliability, and very low noise levels.

Water and refrigerant manometers permit easy control of the working conditions.

Stainless steel plate evaporators, compact and efficient, external to the tank.



Mesh filters: (from ICEP007 onwards) condenser protection from dirt and contamination, reduces maintenance costs and the risk of downtime.

Water pump: available with different head pressures to fit the end user application, can be also configured as twin system for redundancy.

MODBUS interface fitted on ICEP models (from ICEP007); optional for HLS models

Water tank: generously dimensioned guarantee high reliability and improved temperature control.

Differential pressure switch: protects pump and evaporator in case of flow shut down.



Versions:

- Low ambient temperature (from ICEP007 onwards): additional condensing control for continuous operation in cold ambients (negative temperature). Available for air cooled versions with axial fans.

- Precision control: when very precise water temperature is required ($\pm 0,5$ °C).
- Special and multiple pumps: higher (P50-5bar) or lower (P15-1,5bar) head pressure available to suit different hydraulic cir-

cuits. Double stand-by pump for higher reliability.

- Antifreeze heating (from ICEP007 onwards): avoids freezing when the unit is switched off. Can also be used as a heater to warm up the system.

Options:

- Water by-pass: externally adjustable allowing the correct flow through the system to be set.
- Flow switch: to be used as an alarm signal in case of water flow shut down.

- Check valves: external non-return valve + solenoid valve to separate the hydraulic circuit when the unit is switched off.
- Wheels (ICEP002-ICEP014): for easy of transport.

- Remote control kits: base version for remote ON/OFF and general alarm monitoring or advanced version for complete unit management via remote monitoring.
- Water filters for circuit cleanliness and machinery protection.



Technical data

Model	ICEP												HLS				
	002	003	005	007	010	014	020	024	030	040	050	060	076	090	116		
Cooling capacity ¹	kW	1,7	3,3	5,2	7,8	10,8	14,6	20,3	23,6	29,7	40,6	49,0	58,3	76,0	90,2	115,5	
Compressor abs. Power ¹	kW	0,7	1,3	1,4	1,7	2,5	3,2	4,4	5,4	5,7	7,5	10,0	12,3	15,4	20,3	24,9	
Cooling capacity ²	kW	1,5	2,9	4,57	6,8	9,2	12,4	17,8	20,9	30,3	41,2	50,3	58,6	67,1	79,9	101,3	
Compressor abs. Power ²	kW	0,8	1,48	1,54	1,87	2,8	3,58	5,3	6,5	7,0	9,4	13,1	15,7	18,7	24,2	29,9	
Power supply	V/ph/Hz	230/1/50					400/3/50 no neutral										
Protection index		33					54										
Refrigerant		R407c															

Compressors

Type	hermetic pistons					hermetic scroll										
Compressors/circuits	1/1											2/2				
Max abs. power ¹ comp.	kW	0,7	1,3	1,5	2,4	3,8	4,4	5,7	6,6	8,3	11,4	14,9	17,3	11,1	13,7	16,8

Axial fans

Quantity	n°	1					2					3				
Max. abs. Power ¹ fan	kW	0,07	0,12	0,12	0,3	0,3	0,4	0,4	0,4	0,45	0,69	0,69	0,69	0,78	0,78	0,78
Air flow	m³/h	430	1295	1295	3437	3437	4337	6878	6159	9437	16029	15215	16875	25500	25000	26400

Pump P30

Max abs. power	kW	0,4	0,4	0,4	0,9	0,9	1,0	1,3	1,3	1,3	2,2	2,2	2,2	2,7	2,7	2,7
Water flow (nom/max) ¹	m³/h	0,3/1,9	0,6/1,9	0,9/1,9	1,3/4,8	1,8/4,8	2,5/6	3,4/9,6	4,9/9,6	5,1/9,6	6,9/18	8,4/18	10,1/18	13,1/27	15,5/27	19,8/27
Head pressure (nom/min) ¹	m H ₂ O	36/5	32/5	27/5	32/12,8	30/12,8	31/21	30/17,3	29/17,3	26/17,3	29/23,1	27/23,1	25/23,1	30/18	28/18	25/18

Pump P50

Max abs. power	kW	0,6	0,6	0,6	0,9	0,9	0,9	1,2	1,5	2,2	2,2	2,2	3,0	4,5	4,5	4,5
Water flow (nom/max) ¹	m³/h	0,3/2,7	0,6/2,7	0,9/2,7	1,3/4,2	1,8/4,2	2,5/4,2	3,5/2	4,1/7,2	5,1/9	6,8/12,6	8,8/12,6	10,1/12,6	13,1/27	15,5/27	19,8/27
Head pressure (nom/min) ¹	m H ₂ O	58 / 8	52 / 8	45 / 8	53 / 26	52 / 26	45 / 26	49 / 21	56 / 26	52 / 44	49 / 40	46 / 40	52/49	47/30	45/30	40/30

Dimensions and weight

Width	mm	520	755	755	756	756	756	756	756	756	856	856	856	898	898	898
Depth	mm	500	535	535	806	806	806	1206	1206	1206	1956	1956	1956	2200	2200	2200
Height	mm	550	801	801	1405	1405	1405	1405	1405	1405	1680	1680	1680	1984	1984	1984
Connections in/out	in	1/2"	3/4"	3/4"	3/4"	3/4"	3/4"	1"	1"	1"	1" 1/2	1" 1/2	1" 1/2	2"	2"	2"
Tank capacity	l	15	15	22,5	65	65	65	100	100	130	250	250	250	300	300	300
Weight (axial)	kg	40	80	85	160	165	175	220	230	250	450	470	510	750	870	960

Noise level

Sound pressure (axial)	dB(A)	52	52	52	53	53	50	50	50	51	52	52	53	58	58	58
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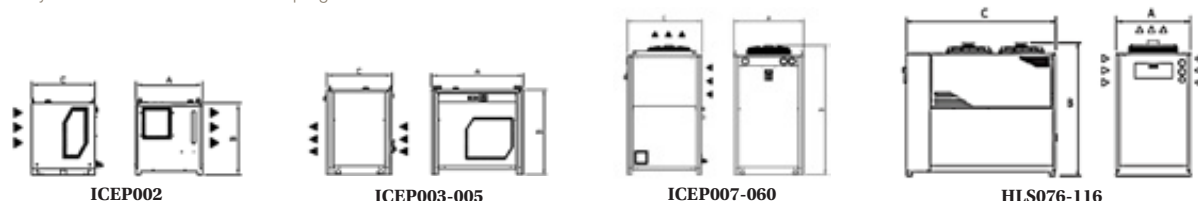
(1) at water inlet/outlet temperature = 20/15 °C, glycol 0 %, ambient temperature 25 °C.

(2) at water inlet/outlet temperature = 25/20 °C, glycol 0 %, ambient temperature 35 °C.

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

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 temp. 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 = Pxf1xf2xf3, where P is the cooling capacity at conditions (1). Hyperchill Laser, in its standard configuration, can operate up to ambient temperatures of max 48 °C for ICEP models, 45 °C for HLS models 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.



Parker Worldwide

Europe, Middle East, Africa

AE – United Arab Emirates,
Dubai

Tel: +971 4 8127100
parker.me@parker.com

AT – Austria, Wiener Neustadt

Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener
Neustadt

Tel: +43 (0)2622 23501 900
parker.easteurope@parker.com

AZ – Azerbaijan, Baku

Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles

Tel: +32 (0)67 280 900
parker.belgium@parker.com

BG – Bulgaria, Sofia

Tel: +359 2 980 1344
parker.bulgaria@parker.com

BY – Belarus, Minsk

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

CH – Switzerland, Etoy

Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany

Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst

Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup

Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid

Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa

Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve

Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Piraeus

Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budaörs

Tel: +36 23 885 470
parker.hungary@parker.com

IE – Ireland, Dublin

Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IL – Israel

Tel: +39 02 45 19 21
parker.israel@parker.com

IT – Italy, Corsico (MI)

Tel: +39 02 45 19 21
parker.italy@parker.com

KZ – Kazakhstan, Almaty

Tel: +7 7273 561 000
parker.easteurope@parker.com

NL – The Netherlands, Oldenzaal

Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Asker

Tel: +47 66 75 34 00
parker.norway@parker.com

PL – Poland, Warsaw

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal

Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest

Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow

Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga

Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SK – Slovakia, Banská Bystrica

Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto

Tel: +386 7 337 6650
parker.slovenia@parker.com

TR – Turkey, Istanbul

Tel: +90 216 4997081
parker.turkey@parker.com

UA – Ukraine, Kiev

Tel: +48 (0)22 573 24 00
parker.poland@parker.com

UK – United Kingdom, Warwick

Tel: +44 (0)1926 317 878
parker.uk@parker.com

ZA – South Africa, Kempton Park

Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

North America

CA – Canada, Milton, Ontario

Tel: +1 905 693 3000

US – USA, Cleveland

Tel: +1 216 896 3000

Asia Pacific

AU – Australia, Castle Hill

Tel: +61 (0)2-9634 7777

CN – China, Shanghai

Tel: +86 21 2899 5000

HK – Hong Kong

Tel: +852 2428 8008

IN – India, Mumbai

Tel: +91 22 6513 7081-85

JP – Japan, Tokyo

Tel: +81 (0)3 6408 3901

KR – South Korea, Seoul

Tel: +82 2 559 0400

MY – Malaysia, Shah Alam

Tel: +60 3 7849 0800

NZ – New Zealand, Mt Wellington

Tel: +64 9 574 1744

SG – Singapore

Tel: +65 6887 6300

TH – Thailand, Bangkok

Tel: +662 186 7000

TW – Taiwan, Taipei

Tel: +886 2 2298 8987

South America

AR – Argentina, Buenos Aires

Tel: +54 3327 44 4129

BR – Brazil, Sao Jose dos Campos

Tel: +55 800 727 5374

CL – Chile, Santiago

Tel: +56 2 623 1216

MX – Mexico, Toluca

Tel: +52 72 2275 4200