



## Water Chiller Ultracool

# Ultracool – The ultimate water chiller

## Easy to handle and high operational security

► Chillers provide cooling and temperature control of water flow. The Ultracool can be used to cool down lasers, ozone generators, plastic applications, vacuum pumps, cutting and welding machines, solvents recovery, x-ray machines and many others. Selected materials and high production quality guarantee secure and longlasting operation. All units are carefully inspected before delivery, with regards to function of all systems in the chiller. Generous interpretation of all components pay out immediately for every user: low energy consumption and low operation costs.

## The Ultracool Standard

► Ultracool water chiller convinces by an extensive and generous equipment. The Ultracool standard is already equipped with an antifreeze protection thermostat to prevent freezing of the heat exchanger. Integrated pressure switches protect the circuit against too high or too low pressures. Housings in galvanized steel and externally coated with epoxy resin protect against corrosion even in aggressive surroundings.

Execution according to the IP 54 enables outdoors installation. All three series are equipped with environmentally friendly and non-ozone harming refrigerants. The Ultracool mini series UC 0010-UC 0240 uses R-134a as refrigerant, the midi and maxi series UC 0300 - UC 4500 uses R407C as refrigerant.

## The Ultracool Superplus

► The extensive equipment of the standard series becomes even improved in the Superplus version and ensures secure processing in fluctuating conditions as they can appear in many processes.

It is a plug & play design. In order to achieve a constant temperature level of chilled water also in fluctuating conditions, the Ultracool Superplus are equipped with an additional cold water tank. The process water is stored at required temperature and then pumped by the integrated pump to the application. A level indicator and a level switch prevent the pump against running dry. An internal by pass ensures the right water temperature independently of the water flow, which can be adjusted from 0 to 100%.



## Ultracool Mini- UC 0010 - 0240

► Cooling is essential in many production processes to draw away heat of the mechanical work or chemical reaction. A constant temperature improves productivity, shortens the cycle time and reduces production costs.

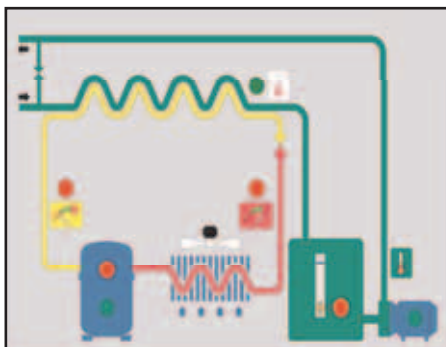
### Optimal suited performance for optimal results

The Ultracool Mini series covers 10 units with cooling performances between 1 and 30 kW. These units can be mounted on wheels as an option, which enables chilling at the point of use, either central or decentral.

### How does the Ultracool work?

The hot water enters the Ultracool unit through the evaporator of the refrigerant circuit where, due to the low refrigerant temperature, it is cooled to the required temperature. In the Superplus version, the cold water is stored in the internal tank, properly insulated to avoid thermal losses. The internal tank keeps the temperature constant even under varying load conditions. Then the cold water is pushed by the centrifugal pump, also incorporated in its interior, towards its use. A calibrated by-pass orifice between the water inlet and outlet ensures correct operation independently of

the position of the outlet valve. The Ultracool condenser and evaporator are very oversized in order to achieve the maximum fridge efficiency and reduce power consumption.



## Features and advantages Ultracool Mini

- Refrigerant Environmentally friendly R-134a, admits ambient temperatures up to 50°C
- Housings in galvanised steel and externally coated with epoxy resin
- Evaporator in stainless steel AISI 316L water pipes of PE
- Protection degree: IP54 from UC-0060
- Highly precise thermostat
- Antifreeze thermostat
- Thermal flow switch
- Refrigerant pressure gauges from UC-0100
- Oversized condenser
- Large cold water tank of PE
- Level switch, Level indicator
- Pump: impeller, intermediate chambers and shaft in stainless steel
- Internal calibrated by-pass orifice
- Water filter included from UC-0060

# Ultracool – The ultimate water chiller

## Ultracool Midi UC 0300 - 1700

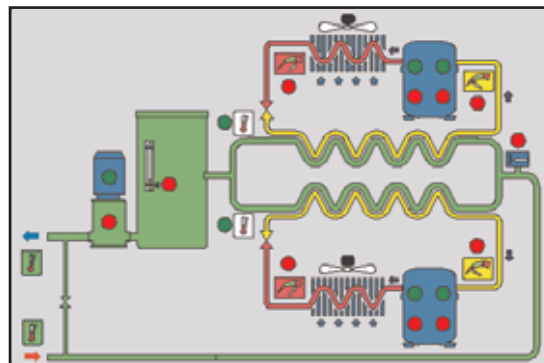
▶ Did you know that people's performance decreases drastically in ambient temperatures above 25°C? The same could be happening to your application if it has an inadequate cooling. Heat can be transmitted to water. But how does this water get chilled?



▶ Cooling performances above 30 kW are covered by the Ultracool Midi series. With 8 models for cooling performances from 35 kW to 172 kW. Also higher performance requirements are covered securely and economically. With the midi series the non-ozone harming refrigerant R-407C is used. The Ultracool Midi series offers high cooling performance and low energy consumption simply through generously sized heat exchangers and the high efficiency of the refrigerant.

### Features and advantages Ultracool Midi

- ▶ Refrigerant environmentally friendly R-407C
- ▶ Housings in galvanised steel and externally coated with epoxy resin
- ▶ Evaporator in stainless steel AISI 316L.
- ▶ Water circuit made of thermo welded PP-R
- ▶ Refrigerant pressure gauges per each circuit
- ▶ 2 Independent fridge circuits from UC-0500
- ▶ Antifreeze thermostat
- ▶ Flow switch
- ▶ Protection degree: IP54
- ▶ Large cold water tank of PE
- ▶ Level switch, level indicator
- ▶ Water filter integrated
- ▶ Pump: Impeller, intermediate chambers and shaft always in stainless steel
- ▶ Internal by-pass integrated



## Ultracool Maxi UC 2400 - 4500

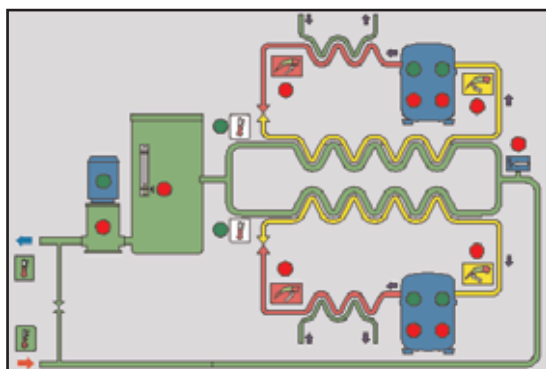
### Application

► Chillers specially prepared for central cooling. This is thanks to high cooling capacities, between 250 and 470 kW, and an internal proportional by-pass. This state of the art device, ensures an appropriate water flow per each application regardless of how many applications are working.



### How does the Ultracool work?

The water to be chilled passes through the heat exchanger, which is cooled by a separate refrigeration unit. The refrigerant gas is the environmentally friendly and highly efficient R-407C. The Ultracool Maxi Superplus is a compact unit equipped with a water pump and an additional cold water storage tank to avoid temperature increases after stand-by periods.



### Features and advantages Ultracool Maxi

- Refrigerant environmentally friendly R-407C
- Water-cooled. Increased efficiency, lower sound level and reduced chiller size
- Housings in galvanised steel and externally coated with epoxy resin
- Refrigerant pressure gauges per each circuit
- All pipes, evaporators, condensers and moving parts of the pump stainless steel
- 2 independent fridge circuits (3 fridge circuits in UC-4500)
- Antifreeze temperature control thermostat
- Flow switch
- Protection degree: IP54
- Water tank of stainless steel
- Level switch
- Level indicator
- Y strainers on both cooling and process water circuits keep water free of particles
- High resistance against corrosion
- Proportional internal by-pass integrated

# Technical Data

## Ultracool Mini-UC 0010 - 0240

UC Mini	Cooling capacity		Water flow l/h	Water pressure (1)		Water tank l	Motor fan m3/h	Power kW		
	kW	kcal/h		3 bar	5 bar			ST	SP3bar	SP5bar
0010	0,70	602	120	3,6	0,6 (2)	6	500	-	1,02	0,57 (2)
0020	1,96	1686	337	3,5	5,4	35	1500	0,92	1,49	1,82
0030	3,59	3087	617	3,5	5,2	35	2200	1,18	1,75	2,08
0040	4,81	4137	827	3,4	5,1	35	2500	1,38	1,95	2,28
0060	7,00	5020	1204	3,3	5,5 (3)	75	6000	2,27	2,89	3,37
0080	9,29	7989	1598	3,0	5,4 (3)	75	6000	2,87	3,49	3,97
0100	11,72	10079	2016	2,8	5,3 (3)	100	8800	3,71	4,33	4,81
0140	15,28	13141	2628	2,8	5,1 (3)	100	8300	4,66	5,35	5,76
0180	21,82	18765	3753	3,5 (3)	5,5 (3)	200	13000	6,28	7,03	8,13
0240	29,32	25215	5043	2,8 (3)	5,3 (3)	200	12600	8,28	9,03	10,13

### Selection example:

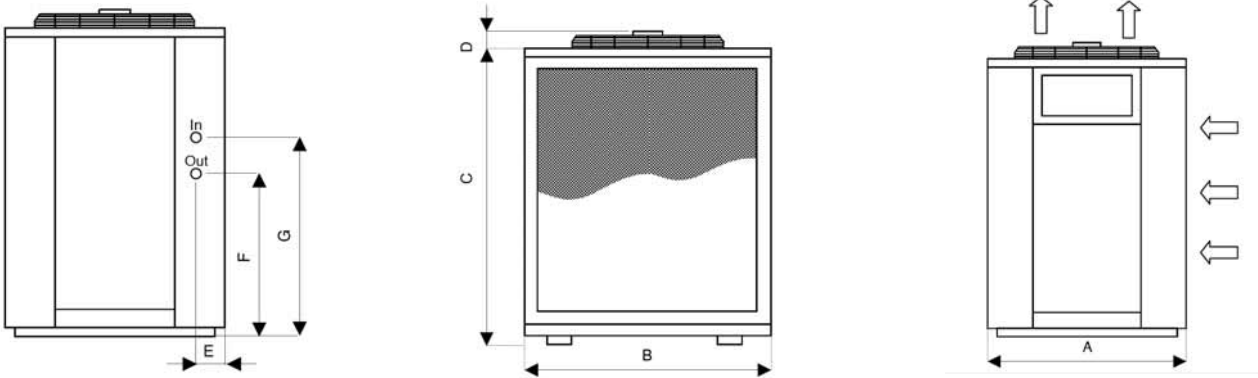
$C_{NOM} = C_{WORK} / (F1 \cdot F2)$   
 Example:  
 $C_{WORK} = 10 \text{ kW}$   
 Cold water temperature: 20°C  
 Ambient temperature: 30°C  
 $C_{NOM} = 10 / (1,25 \cdot 0,9) = 8,89 \text{ kW}$   
 ULTRACOOOL UC-0080 4% oversized

Related to nominal conditions: Water outlet temperature 10°C and ambient temperature 25°C  
 (1) Superplus units (2) Special unit with recirculating pump (3) Entirely stainless steel pump

Technical alterations reserved (1/2005)

Correction factor: cold water temperature F1						
Outlet temperature (°C)	20	15	10	5	0	-5
F2	1,25	1,17	1	0,75	0,5	0,38

Correction factor: ambient temperature F2						
Ambient temperature (°C)	25	30	35	40	45	50
F2	1	0,9	0,85	0,78	0,73	0,66



UC Mini	Water connection	Weight (kg)		A	B	C	D	E	F	G
		ST	SP							
0010	3/8"	-	60	520	415	632	0	0	330	584
0020	1/2"	100	115	530	630	890	0	80	345	627
0030	1/2"	105	120	585	713	1120	0	80	580	855
0040	1/2"	110	125	585	713	1120	0	80	580	855
0060	3/4"	165	185	800	880	1135	120	105	350	876
0080	3/4"	180	200	800	880	1135	120	105	350	876
0100	1"	215	235	845	990	1235	120	130	340	890
0140	1"	235	260	845	990	1235	120	130	340	890
0180	1"	345	375	950	1140	1635	120	130	343	1065
0240	1"	365	400	950	1140	1635	120	130	343	1065

## Ultracool Midi UC 0300 - 1700

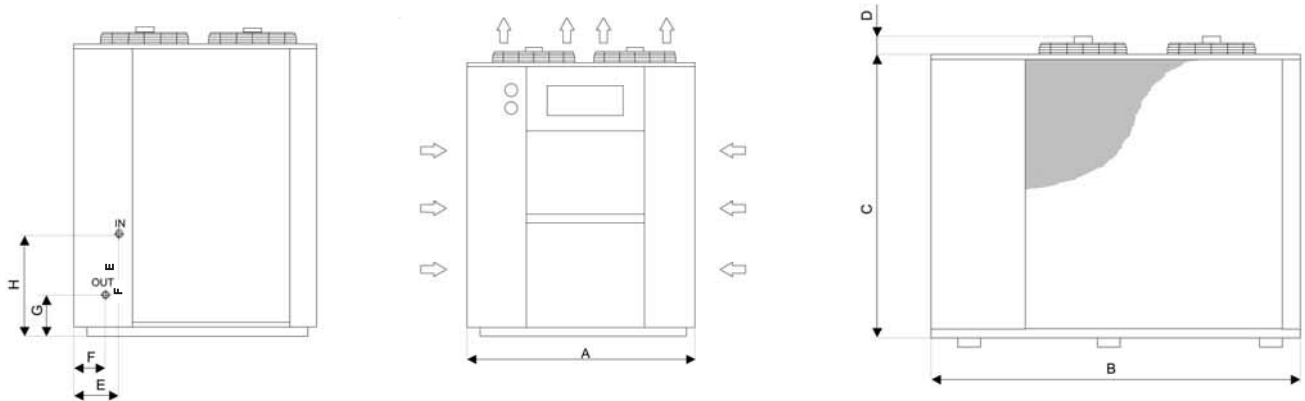
UC Midi	Cooling capacity		Fridge circuits		Water flow l/h	Water pressure (1)		Water tank (1) l	Water filter No	Motor fan		Power kW		
	kW	kcal/h	No	Compressor		3 bar	5 bar			No	m3/h	ST	SP3bar	SP5bar
0300	34,2	29412	1	1	5882	4,0 (2)	5,5 (2)	300	1	2	18000	9,5	11,0	12,1
0400	43,1	37075	1	1	7415	3,7 (2)	5,3 (2)	300	1	2	18000	12,2	13,7	14,8
0500	52,2	44909	2	2	8982	3,3 (2)	5,9 (2)	300	1	3	30600	14,7	16,2	17,7
0650	68,4	58824	2	2	11765	4,0 (2)	5,7	300	1	3	28800	18,4	20,9	22,4
0800	86,2	74149	2	2	14830	3,6 (2)	5,2	300	1	4	36000	24,3	26,8	28,3
1000	104,4	89818	2	4	17964	3,3	5,2	500	1	4	40800	28,2	31,2	33,7
1350	136,8	117648	2	4	23530	4,3	6,0	500	1	6	57000	36,7	42,2	44,2
1700	172,4	148298	2	4	29660	3,6	5,2	500	1	6	55200	47,3	52,8	54,8

Related to nominal conditions: Water outlet temperature 10°C and ambient temperature 25°C  
(1) Superplus units (2) Pump completely in stainless steel

Technical alterations reserved (1/2005)

Correction factor: cold water temperature F1						
Outlet temperature (°C)	20	15	10	5	0	-5
F2	1,25	1,17	1	0,75	0,5	0,38

Correction factor: ambient temperature F2					
Ambient temperature (°C)	25	30	35	40	45
F2	1	0,9	0,85	0,78	0,73



UC Midi	Water connection	Weight (kg)		A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm
		ST	SP								
0300	1 1/2"	520	560	1050	1610	1845	120	905	905	620	1280
0400	1 1/2"	520	560	1050	1610	1845	120	905	905	620	1280
0500	2"	840	900	1545	2230	1875	120	340	260	550	1125
0650	2"	920	980	1545	2230	1875	120	340	260	550	1125
0800	2"	960	1020	1545	2230	1875	120	340	260	550	1125
1000	2 1/2"	1380	1460	1660	3400	1975	120	260	260	360	1260
1350	2 1/2"	1480	1570	1660	3400	1975	120	260	260	360	1260
1700	2 1/2"	1540	1630	1660	3400	1975	120	260	260	360	1260



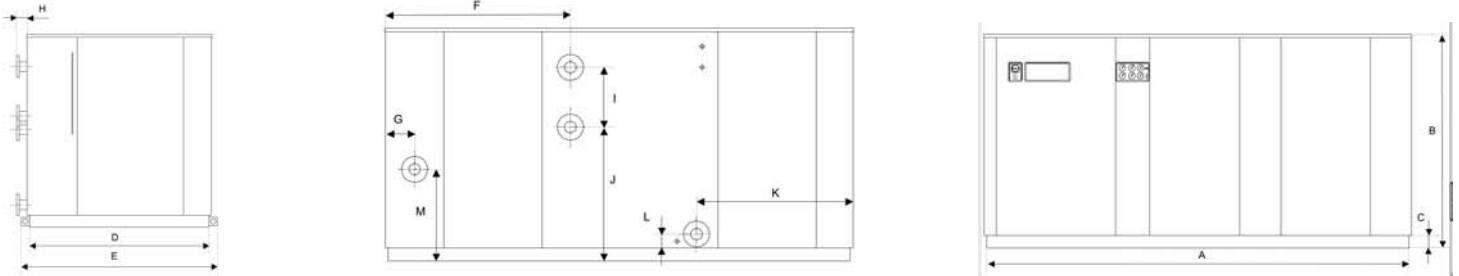
# Ultracool Maxi UC 2400 - 4500

UC Maxi	Cooling capacity		Fridge circuits		Water load	Water pressure (1)		Water tank (1)	Cooling water flow required (2)	Power kW		
	kW	kcal/h	No	Compressor	l/h	3 bar	5 bar	l	l/h	ST	SP3bar	SP5bar
2400	258	211880	2	4	44400	4,1	5,2	800	33600	54,8	62,3	65,8
3000	313	269180	2	4	53900	3,3	5,5	1200	40700	66	73,5	81
4500	470	404200	3	6	80800	4,4	5,6	1200	61100	99	114,1	121

Related to nominal conditions: Water outlet temperature 10°C and cooling water 25°C

Technical alterations reserved (1/2005)

(1) Superplus units (2) Required cooling water flow providing that the cooling water temperature drop is 10°C



UC Midi	Water connection	Weight (kg)	A	B	C	D	E	F	G	H	I	J	K	L	M
			mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2400 SP	DN80	2100	3594	1900	100	1700	1816	1422	225	70	460	1032	1165	215	695
3000 SP	DN80	2200	3594	1900	100	1700	1816	1422	225	70	460	1032	1165	215	695
4500 SP	DN125	2800	4800	1900	100	1700	1816	3975	225	70	460	1035	1165	215	695
2400 ST	DN80	1650	2940	1900	100	1700	1816	1642	1642	70	460	1029	1069	245	695
3000 ST	DN80	1750	2940	1900	100	1700	1816	1642	1642	70	460	1029	1069	245	695
450 ST	DN125	2400	4200	1900	100	1700	1816	3975	225	70	460	1035	225	245	695

## Donaldson. And everything just got better.

### Total Filtration Management

► Donaldson offers a wide variety of solutions to reduce your energy costs, improve your productivity, guarantee production quality and help preserve the environment.

**Compressed Air Filtration, Sterile Filtration, Process Filtration, Refrigerant Drying, Adsorption Drying, Condensate Drains, Condensate Purification Systems, Water Chillers, Air / Oil Separation, Dust and Fume Removal, Process Air and Gas Processing, Oil Mist Separation, Industrial Hydraulics**

### Total Filtration Service

► A comprehensive range of services especially designed to keep your production at peak performance and at the lowest total cost of ownership.

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