

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

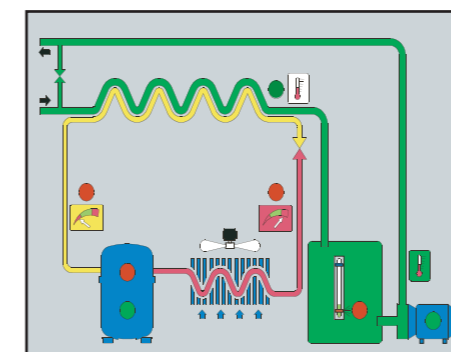
▶ Cooling is essential in many production processes to draw away heat of the mechanical work or chemical reaction. A constant temperature improves productivity, shortens the cycle time and reduces production costs.

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

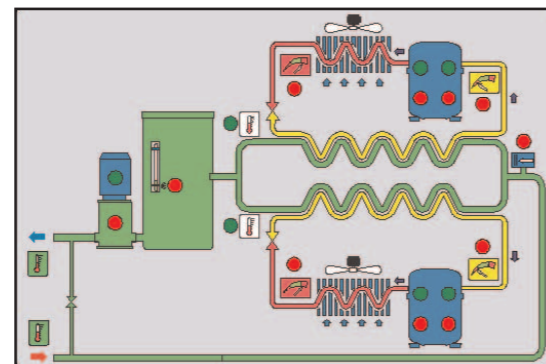
▶ Did you know that people's performance decreases drastically in ambient temperatures above 25°C? The same could be happening to your application if it has an inadequate cooling. Heat can be transmitted to water. But how does this water get chilled?



▶ 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

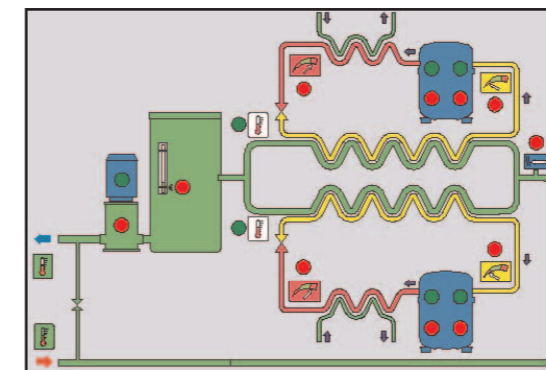
Application

▶ 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:

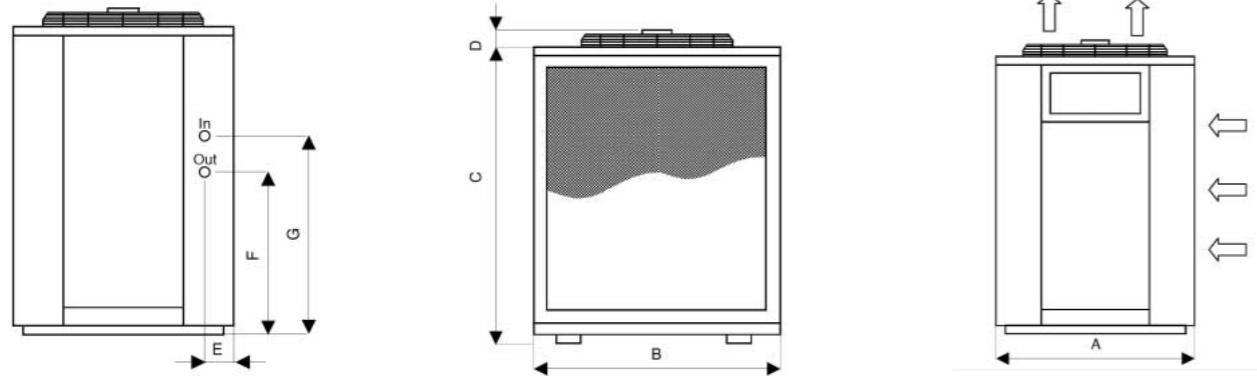
$C_{NOM} = C_{WORK} / (F1 \cdot F2)$
 Example:
 $C_{WORK} = 10 \text{ kW}$
 Cold water temperature: 20°C
 Ambient temperature: 30°C
 $C_{NOM} = 10 / (1,25 \cdot 0,9) = 8,89 \text{ kW}$
 ULTRACOOL UC-0080 4% oversized

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 | mm | mm | mm | mm | mm | mm | mm |
| 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

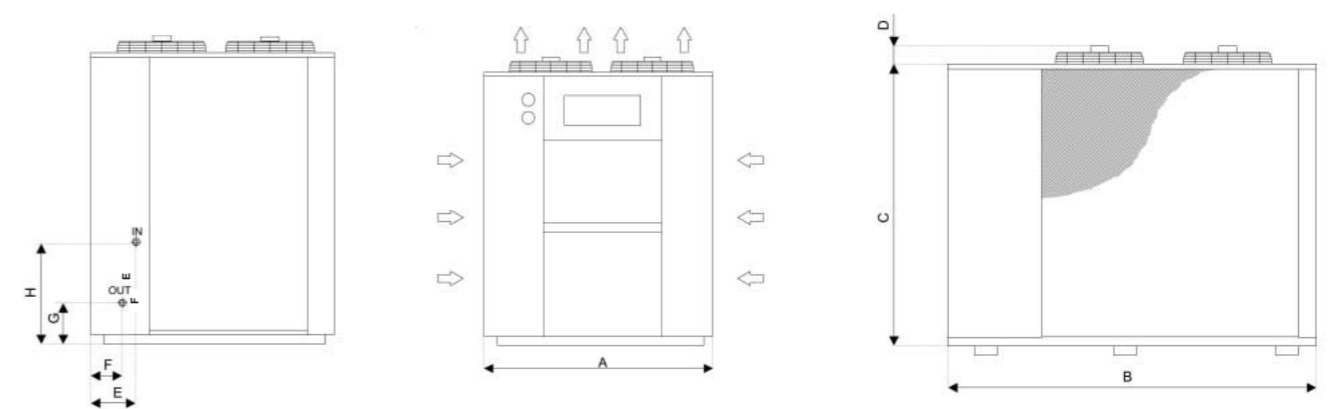
| UC Midi | Cooling capacity | | Fridge circuits | | Water flow l/h | Water pressure (1) | | Water tank (1) l | Water filter No | Motor fan | | Power kW | | |
|---------|------------------|--------|-----------------|------------|-------------------|--------------------|---------|---------------------|--------------------|-----------|-------|----------|--------|--------|
| | 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 |
| F2 | 1 | 0,9 | 0,85 | 0,78 |



| UC Midi | Water connection | Weight (kg) | | A | B | C | D | E | F | G | H |
|---------|------------------|-------------|------|------|------|------|-----|-----|-----|-----|------|
| | | ST | SP | mm | mm | mm | mm | mm | mm | mm | mm |
| 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 | 210 | 880 |
| 0650 | 2" | 920 | 980 | 1545 | 2230 | 1875 | 120 | 340 | 260 | 210 | 880 |
| 0800 | 2" | 960 | 1020 | 1545 | 2230 | 1875 | 120 | 340 | 260 | 210 | 880 |
| 1000 | 2 1/2" | 1380 | 1460 | 1660 | 3400 | 1975 | 120 | 260 | 260 | 230 | 870 |
| 1350 | 2 1/2" | 1480 | 1570 | 1660 | 3400 | 1975 | 120 | 260 | 260 | 230 | 870 |
| 1700 | 2 1/2" | 1540 | 1630 | 1660 | 3400 | 1975 | 120 | 260 | 260 | 230 | 870 |

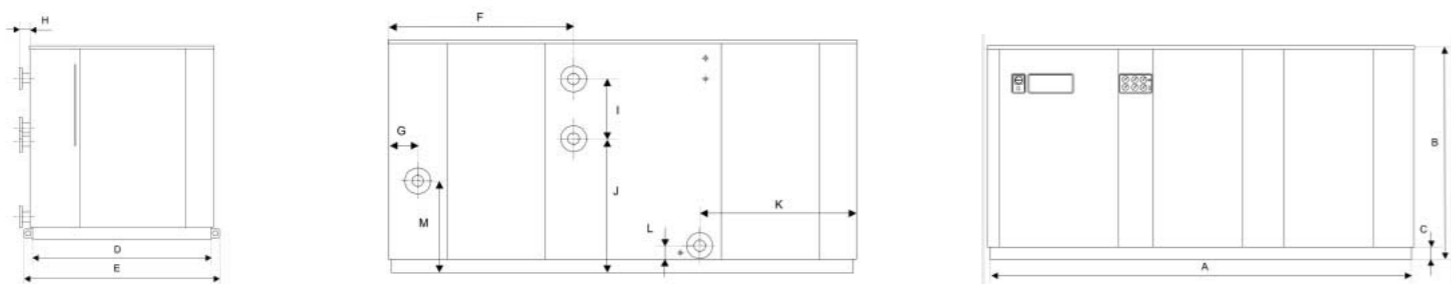
Ultracool Maxi UC 2400 - 4500



| UC Maxi | Cooling capacity | | Fridge circuits | | Water load l/h | Water pressure (1) | | Water tank (1) l | Cooling water flow required (2) l/h | Power kW | | |
|---------|------------------|--------|-----------------|------------|-------------------|--------------------|-------|---------------------|--|----------|--------|--------|
| | kW | kcal/h | No | Compressor | | 3 bar | 5 bar | | | ST | SP3bar | SP5bar |
| 2400 | 258 | 211880 | 2 | 4 | 44400 | 4,1 | 5,6 | 800 | 27500 | 54,8 | 62,3 | 65,8 |
| 3000 | 313 | 269180 | 2 | 4 | 53900 | 3,3 | 5,6 | 1200 | 33500 | 66 | 73,5 | 81 |
| 4500 | 470 | 404200 | 3 | 6 | 80800 | 4,4 | 6 | 1200 | 50000 | 99 | 114,1 | 121 |

Related to nominal conditions: Water outlet temperature 10°C and cooling water 25°C
 (1) Superplus units (2) Required cooling water flow providing that the cooling water temperature drop is 10°C

Technical alterations reserved (1/2005)



| UC Maxi | Water connection | Weight (kg) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---------|------------------|-------------|------|------|-----|------|------|------|-----|----|-----|------|------|-----|-----|
| | | ST | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 2400 SP | DN80 | 2100 | 3595 | 1825 | 103 | 1700 | 1820 | 1422 | 225 | 97 | 460 | 1032 | 1203 | 208 | 707 |
| 3000 SP | DN80 | 2200 | 3595 | 1825 | 103 | 1700 | 1820 | 1422 | 225 | 97 | 460 | 1032 | 1203 | 208 | 707 |
| 4500 SP | DN125 | 2800 | 4795 | 1825 | 103 | 1700 | 1820 | 2022 | 225 | 97 | 460 | 1032 | 1203 | 208 | 707 |
| 2400 ST | DN80 | 1700 | 2800 | 1825 | 103 | 1700 | 1820 | 1422 | 225 | 97 | 460 | 1032 | 409 | 208 | 707 |
| 3000 ST | DN80 | 1800 | 2800 | 1825 | 103 | 1700 | 1820 | 1422 | 225 | 97 | 460 | 1032 | 409 | 208 | 707 |
| 4500 ST | DN125 | 2400 | 3750 | 1825 | 103 | 1700 | 1820 | 2022 | 225 | 97 | 460 | 1032 | 1044 | 208 | 707 |



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Water Chiller Ultracool

