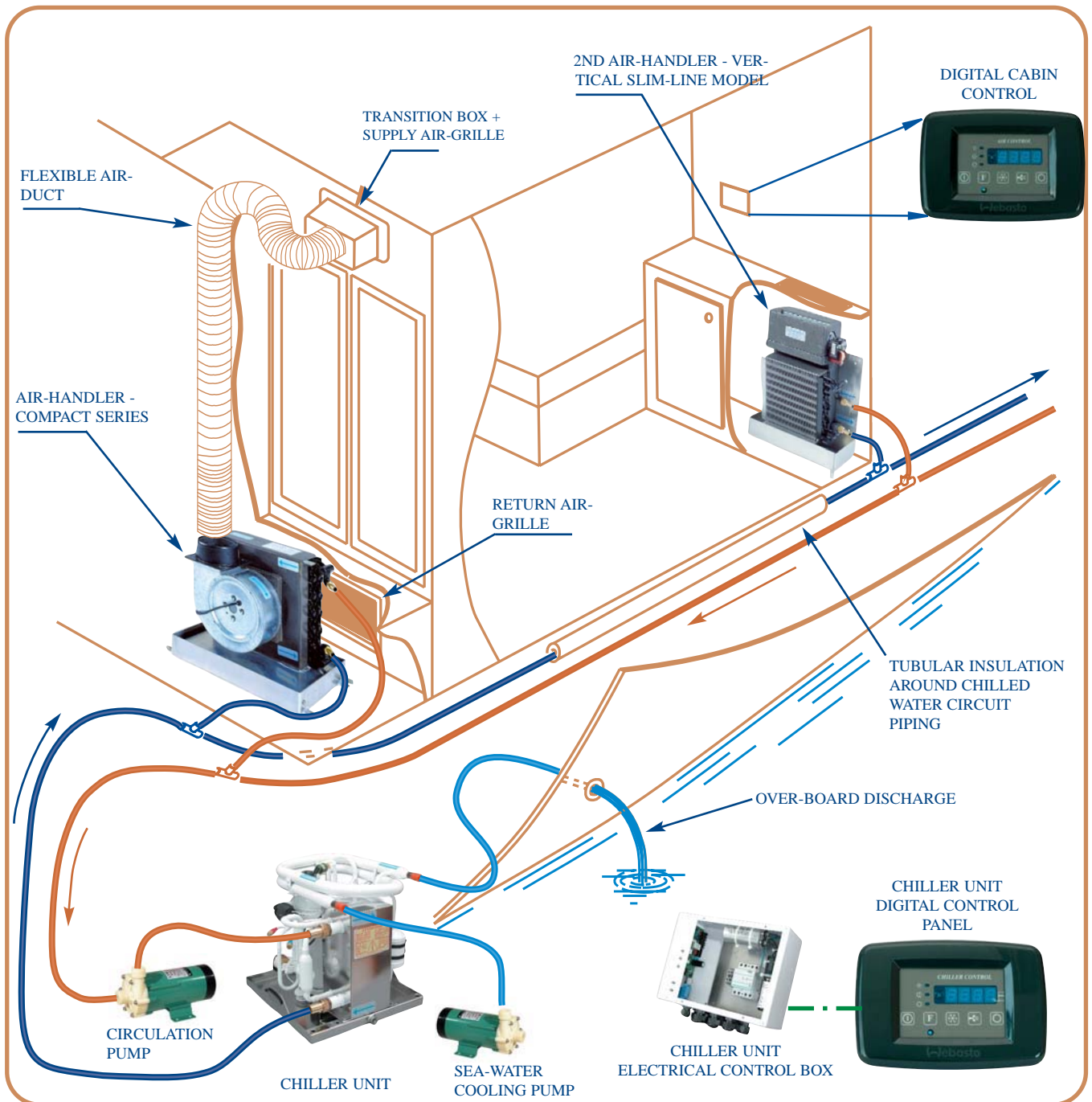


Webasto - AIR-CONDITIONING

BLUE COOL PREMIUM - Chilled Water Systems

FUNCTIONING PRINCIPLES



DIGITAL CONTROL PANEL



Webasto AG - Special Products & Markets - Kraillinger Strasse 5 - 82131 Stockdorf - Germany
 Tel. : +49(0) 89 8 57 94 543 Fax : +49(0) 89 8 57 94 753 Website : www.webasto.de

CHILLED WATER SYSTEMS - A FLEXIBLE SOLUTION

Whenever 3 or more independent volumes in a yacht need to be air-conditioned, it becomes interesting to envisage a central

chiller system.

To distribute refrigeration capacity over several independently operating air-hand-

dlers from one single central cooling unit, the most flexible and simple solution is to install a chilled water circulation system

MODEL SHOWN : New 2004 Series Mini-Chillers - 12000 to 24000 BTU

ROTARY COMPRESSOR

ENTRY CHILLED WATER EVAPORATOR RETURN FROM AIR-HANDLERS

REVERSED CYCLE VALVE (COOL/HEAT)

EXIT CHILLED WATER EVAPORATOR SUPPLY TO AIR-HANDLERS



CUPRO-NICKEL CONDENSER

CUPRO-NICKEL CONDENSER ENTRY

AVIATION QUALITY 2 COMPONENT EPOXY PROTECTION : AEROXYGLASS SIGNAL WHITE

REFRIGERANT/WATER EVAPORATOR INSULATED AND ENCAPSULATED IN STAINLESS STEEL HOUSING

STANDARD CHILLER CONDENSING UNITS AVAILABLE

SINGLE COMPRESSOR MODULES	/D Electr. 230V/400V	Slave 230V/400V	/D Electr. 115V	Slave 115V
WBCLP12 - 12000 BTU - 3.5 Kw *)	WBCL005236	WBCL005237	WBCL006805	WBCL006806
WBCLP16 - 16000 BTU - 4.7 Kw *)	WBCL005203	WBCL005204	WBCL006800	WBCL006801
WBCLP20 - 20000 BTU - 5.8 Kw *)	WBCL005227	WBCL005228	Scroll/D	Scroll/Slve
WBCLP24 - 24000 BTU - 7 Kw *)	WBCL005205	WBCL005206	230V	230V
WBCLP30 - 30000 BTU - 8.8 Kw *)	WBCL005201	WBCL005202	WBCL005207	WBCL005208
WBCLP36 - 36000 BTU - 10.5 Kw	WBCL005209	WBCL005210		
WBCLP42 - 42000 BTU - 12.3 Kw	WBCL005211	WBCL005212		
WBCLP48 - 48000 BTU - 14 Kw	WBCL005213	WBCL005214		
WBCLP60 - 60000 BTU - 17.6 Kw (400V 3Ph)	WBCL005238	WBCL005239		

between the central unit and the air-handlers. This mixed water/glycol circuit is maintained at approx. +4° C.

All Webasto chiller units are equipped with high efficiency multi-plate exchangers.

Temperature regulation of the central chiller unit only concerns the water temperature regardless of the number of active air-handlers.

TWIN COMPRESSOR MODULES - TW/CI - INDEPENDENT Evaporators/Condensers

WBCLP24/TW/LG - 24000 BTU - 7 Kw *)	WBCL005232	WBCL006802
WBCLP32/TW/LG - 32000 BTU - 9.4 KW *)	WBCL005231	WBCL006803
WBCLP40/TW/LG - 40000 BTU - 11.7 Kw *)	WBCL005233	
WBCLP50/TW/LG - 50000 BTU - 14.6 Kw *)	WBCL005234	
WBCLP60/TW/LG - 60000 BTU - 17.6 Kw *)	WBCL005235	
WBCLP60/TW/CI - 60K Btu - 17.6 Kw Scroll	WBCL005216	
WBCLP72/TW/CI - 72000 BTU - 21.1 Kw	WBCL005217	
WBCLP84/TW/CI - 84000 BTU - 24.6 Kw	WBCL005223	
WBCLP96/TW/CI - 96000 BTU - 28.1 Kw	WBCL005224	
Reversible Option **)	WBCL005073	

Air-handlers/blowers can therefore be slowed down or even completely stopped without any incidence for the normal operation of the central chiller unit.

By slowing down blower speed or stopping selected air-handlers altogether, effective capacity transfer to the other active air-handlers is obtained.

This allows to install air-handler over-capacity in specific locations to cope with particularly difficult conditions (wheelhouse with excessive glass area, etc.).

TRI COMPRESSOR MODULES - TRI/CI - INDEPENDENT Evaporators/Condensers

WBCLP60/TRI/LG - 60000 BTU - 17.6 Kw *)	WBCL005257	<p>All Compressors are Rotary Scroll except :</p> <p>*) Rotary Compressors Goldstar, Mitsubishi.</p> <p>**) All Rotary Compressor units are not available in cool only version. Standard delivery = inclusive reversed cycle option.</p>
WBCLP72/TRI/LG - 72000 BTU - 21.1 Kw *)	WBCL005258	
WBCLP90/TRI/LG - 90000 BTU - 26.4 Kw *)	WBCL005259	
WBCLP108/TRI/CI - 108000 BTU - 31.7 Kw	WBCL005250	
WBCLP126/TRI/CI - 126000 BTU - 37 Kw	WBCL005251	
WBCLP144/TRI/CI - 144000 BTU - 42.2 Kw	WBCL005252	
WBCLP180/TRI/CI - 180000 BTU - 52.8 Kw	WBCL005253	
WBCLP216/TRI/CI - 216000 BTU - 63.3 Kw	WBCL005254	
WBCLP252/TRI/CI - 252000 BTU - 73.8 Kw	WBCL005255	
Reversible Option **)	WBCL005256	

VOLTAGE - FREQUENCY

All Scroll/Rotary compressor units are dual-frequency 50/60 Hz; when running under 60Hz cooling capacity is increased by approx. 10%.

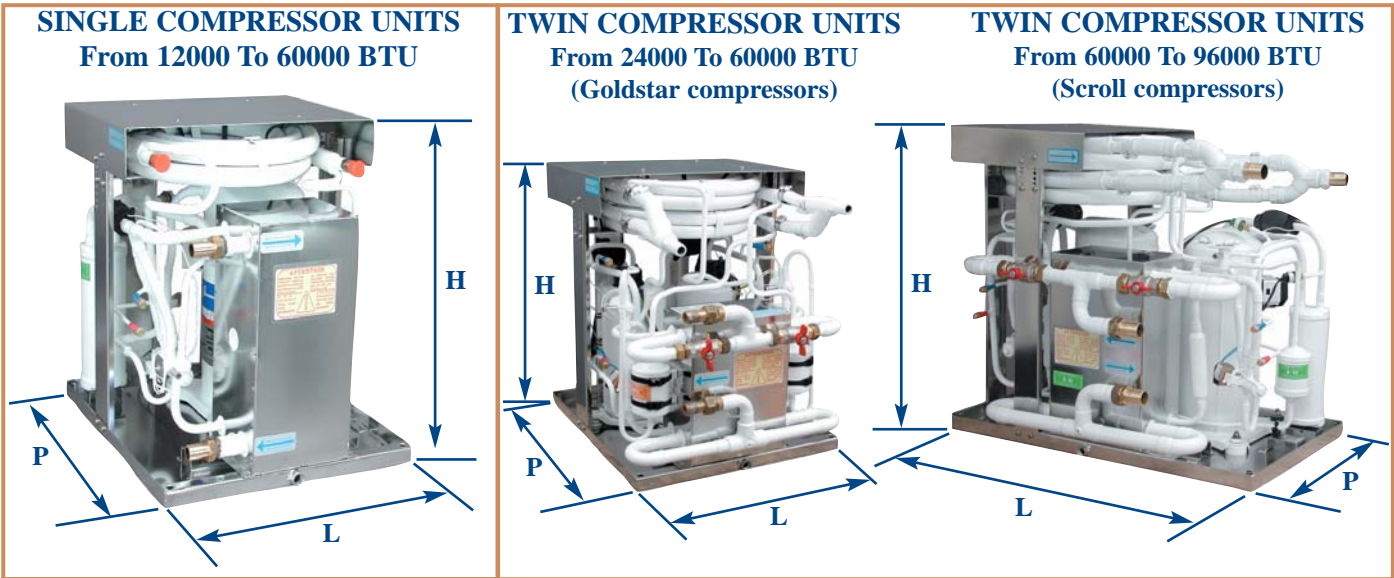
4 COMPRESSOR MODULES - QUATRO/CI - INDEPENDENT Evaporators/Condensers

WBCLP100/D LG - MINI QUATTRO - 29 Kw	WBCL005490
WBCLP120/D LG - MINI QUATTRO - 35 Kw	WBCL005491
WBCLP240/QUATTRO - 240000 BTU - 70 Kw	WBCL005503
WBCLP288/QUATTRO - 288000 BTU - 85 Kw	WBCL005504
WBCLP336/QUATTRO - 336000 BTU - 99 Kw	WBCL005505
WBCLP384/QUATTRO - 384000 BTU - 112Kw	WBCL005506
WBCLP448/QUATTRO - 448000 BTU - 132Kw	WBCL005507
WBCLP504/QUATTRO - 504000 BTU - 148Kw	WBCL005508
WBCLP572/QUATTRO - 572000 BTU - 168Kw	WBCL005509
Reversible Option	WBCL005500

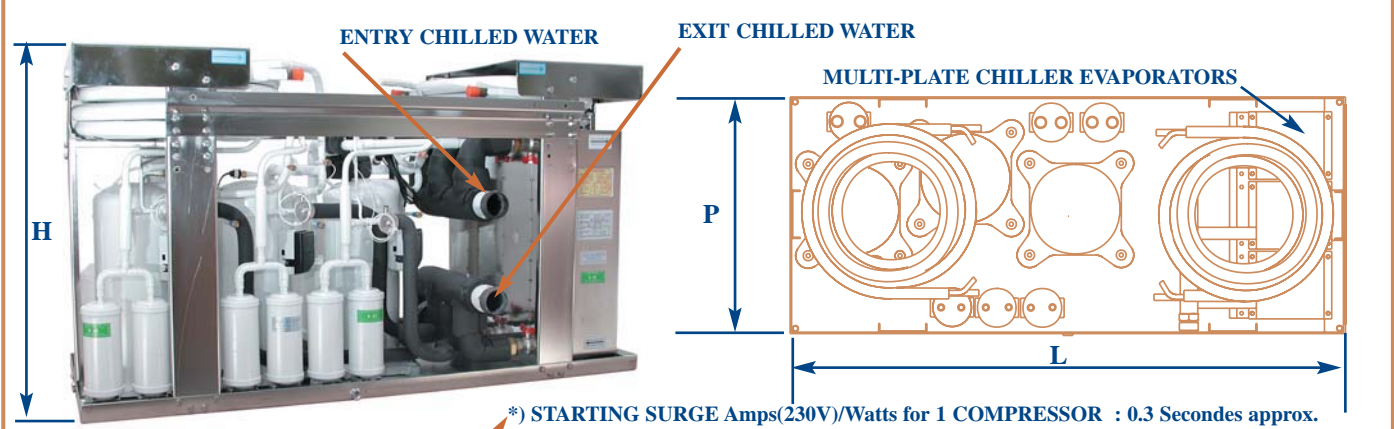
400 V - 3 PHASE

As from 30000 BTU, all single compressor as well as the multi-compressor units can be delivered in 3 ph 400V - 50/60 Hz (Scroll) .

Other Voltages such as 208 - 3 Phase 60Hz can also be delivered for certain models (please consult).



TRI COMPRESSOR UNITS - From 60000 To 252000 BTU



*) STARTING SURGE Amps(230V)/Watts for 1 COMPRESSOR : 0.3 Secondes approx.

MODEL	Voltage/Phase	Amps/Watt's Run./ Start	Refrigerant	BTU/KW	Net Weight	Cool. Pump	Diam. Chil/Water	Dimensions L x P x H
WBCP12/LG	230/115V - 1	4.2A/9A	R22/R407C	12000/3.5	35 Kgs	WB350	15 mm	345 x 370 x 380
WBCP16/LG	230/115V - 1	5.2A/11A	R22/R407C	16000/4.7	42 Kgs	WB350	15 mm	345 x 370 x 390
WBCP20/LG	230V - 1	6.3A/14A	R407C	20000/5.8	45 Kgs	WB350	15 mm	345 x 370 x 420
WBCP24/LG	230V - 1	7.5A/18A	R407C	24000/7	50 Kgs	WB350	20 mm	345 x 370 x 450
WBCP30/LG	230V - 1	9A/21A	R407C	30000/8.8	60 Kgs	WB1000	20 mm	345 x 370 x 480
WBCP30/S	230/400V - 1/3	2200/5000	R22/R407C	30000/8.8	65 Kgs	WB1000	20 mm	415 x 480 x 480
WBCP36/S	230/400V - 1/3	2650/5600	R22/R407C	36000/10.5	70 Kgs	WB1000	20 mm	415 x 480 x 480
WBCP42/S	230/400V - 1/3	3000/7300	R22/R407C	42000/12.3	75 Kgs	WB1000	20 mm	415 x 480 x 500
WBCP48/S	230/400V - 1/3	3450/9200	R22/R407C	48000/14	75 Kgs	WB1000	20 mm	415 x 480 x 500
WBCP60/S	208/400V - 3	4400/9800	R22/R407C	60000/17.6	80 Kgs	WB1500	25 mm	415 x 480 x 500
WBCP24 TwG	230/115V- 1	8.4A/9A	R407C	24000/7	70 Kgs	WB350	20 mm	415 x 480 x 500
WBCP32 TwG	230/115V- 1	10.4A/11A	R407C	32000/9.4	75 Kgs	WB1000	20 mm	415 x 480 x 500
WBCP40 TwG	230V - 1	12.6A/14A	R407C	40000/11.6	75 Kgs	WB1000	20 mm	415 x 480 x 500
WBCP50 TwG	230V - 1	15A/18A	R407C	50000/14.6	85 Kgs	WB1500	25 mm	415 x 480 x 540
WBCP60 TwG	230V - 1	18A/21A	R407C	60000/17.6	90 Kgs	WB1500	25 mm	415 x 480 x 590
WBCP60 TwS	230/400V - 1/3	4400/5000	R22/R407C	60000/17.6	95 Kgs	WB1500	25 mm	680 x 415 x 620
WBCP72 TwS	230/400V - 1/3	5300/5600	R22/R407C	72000/21.1	100 Kgs	WB2500	25 mm	680 x 415 x 620
WBCP84 TwS	230/400V - 1/3	6000/7300	R22/R407C	84000/24.6	105 Kgs	WB2500	32 mm	680 x 415 x 680
WBCP96 TwS	230/400V - 1/3	6900/9200	R22/R407C	96000/28.2	130 Kgs	WB3000	32 mm	680 x 415 x 680
WBCP60/Tri/LG	230V - 1	19A/14A	R407C	60000/17.6	120 Kgs	WB1500	25 mm	1050 x 510 x 620
WBCP72/Tri/LG	230V - 1	22.5A/18A	R407C	72000/21.1	130 Kgs	WB2500	25 mm	1050 x 510 x 650
WBCP90/Tri/LG	230V - 1	27A/21A	R407C	90000/26.4	140 Kgs	WB3000	32 mm	1050 x 510 x 650
WBCP108 Tri	230/400V - 1/3	8000/5600	R22/R407C	108000/31.6	160 Kgs	WB3000	36 mm	1320 x 510 x 720
WBCP126 Tri	230/400V - 1/3	9000/7300	R22/R407C	126000/37	180 Kgs	WB3000	36 mm	1320 x 510 x 720
WBCP144 Tri	230/400V - 1/3	10350/9200	R22/R407C	144000/42.2	190 Kgs	WB3000	42 mm	1320 x 510 x 720
WBCP180 Tri	208/400V - 3	13200/9800	R22/R407C	180000/52.7	210 Kgs	WB5500	42 mm	1320 x 510 x 780
WBCP216 Tri	208/400V - 3	16500/14500	R22/R407C	216000/63.3	250 Kgs	WB5500	48 mm	1320 x 510 x 780
WBCP252 Tri	208/400V - 3	18900/16500	R22/R407C	252000/73.9	260 Kgs	WB5500	48 mm	1320 x 510 x 780

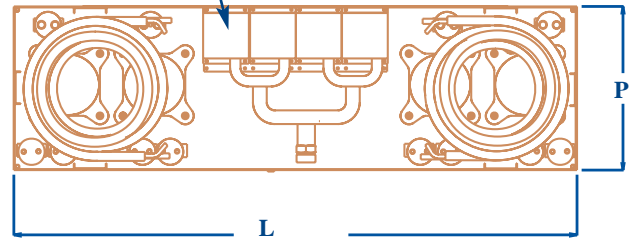
ATT : LG = LG/TwLG/TriLG = Rotary Compressors - S/TwS = Scroll Compressors

4 COMPRESSOR UNITS - QUATRO/CI - From 100000 to 572000 BTU



ACCES CHILLED WATER CIRCUIT

4 HIGH EFFICIENCY INDEPENDENT PLATE EXCHANGERS



*) STARTING SURGE Amps(230V)/Watts for 1 COMPRESSOR : 0.3 seconds approx.

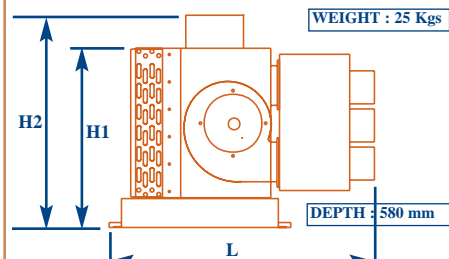
MODEL	Voltage/Ph.	Run/Start	Refrigerant	Btu/Kw	Net Weight	Cool. Pump	Diam. ChW	L x P x H (mm)
WBCP100 Qtr	230V - 1Ph	30A/18A	R407C	100000/29.3	175 Kgs	1xWB3000	32 mm	1050 x 510 x 650
WBCP120 Qtr	230V - 1Ph	36A/21A	R407C	120000/35.2	185 Kgs	1xWB3000	32 mm	1050 x 510 x 650
WBCP240 Qtr	208/400V- 3	17500/9800	R22/R407C	240000/70	270 Kgs	1xWB5500	54 mm	1720 x 500 x 720
WBCP288 Qtr	208/400V- 3	22000/14500	R22/R407C	288000/84.4	350 Kgs	1xWB5500	63 mm	1720 x 500 x 780
WBCP336 Qtr	208/400V- 3	25000/16500	R22/R407C	336000/98.5	350 Kgs	1xWB5500	63 mm	1720 x 500 x 780
WBCP384 Qtr	400V - 3	27200/18000	R22/R407C	384000/113	450 Kgs	1xWB5500	75 mm	2100 x 600 x 800
WBCP448 Qtr	400V - 3	30400/20000	R22/R407C	448000/132	670 Kgs	1xWB7400	82 mm	2100 x 600 x 850
WBCP504 Qtr	400V - 3	34200/22500	R22/R407C	504000/150	670 Kgs	1xWB7400	82 mm	2100 x 600 x 900
WBCP572 Qtr	400V - 3	38000/25000	R22/R407C	572000/168	725 Kgs	1xWB7400	82 mm	2100 x 600 x 990

FRESH-AIR UNITS 24000 AND 48000 BTU / AIR-EXTRACTION AIR UNITS

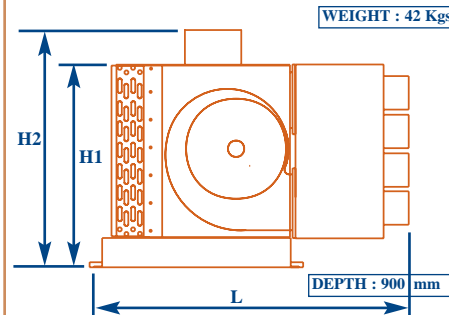
Functioning Principles :

- 1) Regulate fresh-air entry into the vessel by temperature differential outside / inside + combined air extraction control.
- 2) Basic regulation by adjustable temperature differential outside/inside with programma-

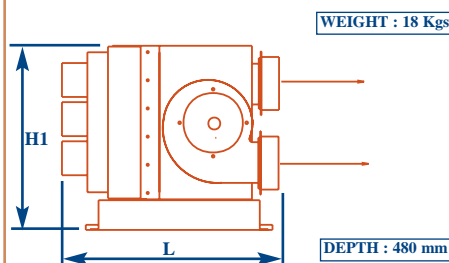
FRESHAIR24 - FRESH-AIR 24000 BTU - LAT. VIEW



FRESHAIR48 - FRESH-AIR 48000 BTU - LAT. VIEW



EXTRACT24 - AIR EXTRACTION UNIT - LAT. VIEW



DIGITAL DISPLAY <FRESH-AIR CONTROL>



- 3) Provision for 2 stage integrated reheat (AC electrical)
- 4) Electronic controller provides 2 separate blower outlets : 1 for fresh-air input and 1 for extraction air out.
- Different speed settings possible for both outlets. All speed settings including max. speed completely re-programmable. Manual only speed control possible.
- 5) Aldes flow regulators allow easy and precise balancing of outputs per volume.
- 6) Integrated Solenoid 3 way valve control
- 7) Special start-up procedure to eliminate residual moisture in system.
- 8) Three temperature read-outs : - outside air temperature - chilled water circuit temp. - treated air input temperature (after chiller coil + reheat)

DIMENSIONS :	L	H1	H2
FRESHAIR24	700	435	560
FRESHAIR48	780	485	610
FRESHAIR 2x24	840	485	610
EXTRACTAIR24	515	435	

Models Available :

FRESH-AIR MAKE-UP :	Réf. WB
FreshAir24-24KBtu/1050m3/h	WBCL005241
FreshAir24-24KBtu/1800m3/h	WBCL005242
FreshAir48-48KBtu/1800m3/h	WBCL005240
FreshAir 2x24KBtu/1800m3/h	WBCL000218
AIR EXTRACTION :	
Extract24 - 1050 m3/hr	WBCL000216
FreshAir Electronic Control	WBCL000217

FRESHAIR24 UNIT - 24000 BTU



Webasto - AIR-HANDLERS

COMPACT SERIES AIR-HANDLERS

BLOWER ROTATABLE IN 45° STEPS

H

P

L (without drain exits)

HORIZONTAL CROSS-FLOW AIR-HANDLERS - TAN/H

AIR EXIT - can be ordered with standard horizontal or upwards air exit

L

P

H

SLIMLINE AIR-HANDLERS (Centrifugal Blowers)

Left : Slim-Line 24000 BTU Right : Slim-line 4500 to 20000 BTU

H

P

L

Vertical CROSS-FLOW AIR-HANDLERS - TAN/V

AIR EXIT - can be ordered with standard vertical or lateral air exit

H

P

L

AIR-HANDLERS - SPECIFICATIONS - DIMENSIONS - BLOWER CAPACITIES

MODEL	CLD Ref. 230V	CLD Ref. 115V	Air Flow m3/hr	Running Watts	Diam. Hose Ring/mm	NetWeight Kgs	Diam. Chil/Water	BTU/Kw	Dimensions H x L X P
Comp. 4500	WBCL000744	WBCL006300	275	80	100	5	16	4500/1.3	265 x 340 x 260
Comp. 6000	WBCL000745	WBCL006301	275	80	100	7.5	16	6000/1.7	265 x 400 x 260
Comp. 9000	WBCL000746	WBCL006302	430	130	100	9	16	9000/2.6	295 x 430 x 300
Comp. 12000	WBCL000747	WBCL006303	500	150	125	9.5	16	12000/3.5	345 x 430 x 300
Comp. 16000	WBCL000748	WBCL006304	625	200	125	12.5	16	16000/4.6	345 x 505 x 300
Comp. 20000	WBCL000790	WBCL006305	625	200	125/150	14	20	20000/5.6	405 x 505 x 300
Comp. 24000	WBCL000329	WBCL006306	2 x 500	300	2 x 125	20	20	24000/7	405 x 550 x 300
Comp. 30000	WBCL000330		2 x 550	400	2 x 125	24	20	30000/8.8	405 x 650 x 320
Comp. 48000	WBCL000789		2 x 900	620	2 x 150	40	20	48000/14	450 x 960 x 350
TAN 4000/H	WBCL000750	WBCL006313	150	30	180 x 40	5	16	4000/1.1	170 x 305 x 405
TAN 6000/H	WBCL000752	WBCL006312	190	40	240 x 40	7	16	6000/1.7	170 x 360 x 405
TAN 9000/H	WBCL000753	WBCL006311	250	46	302 x 40	8	16	9000/2.6	170 x 410 x 440
TAN 12000/H	WBCL000765	WBCL006310	250	46	302 x 40	9	16	12000/3.5	170 x 410 x 495
SlimL 4500/V	WBCL000740	WBCL006350	275	80	100	6.5	16	4500/1.3	465 x 300 x 145
SlimL 6000/V	WBCL000741	WBCL006351	275	80	100	8	16	6000/1.7	465 x 355 x 145
SlimL 9000/V	WBCL000742	WBCL006352	430	130	100	10	16	9000/2.6	550 x 410 x 155
SlimL 12000/V	WBCL000743	WBCL006353	500	150	125	11	16	12000/3.5	615 x 410 x 155
SlimL 16000/V	WBCL000791	WBCL006360	625	200	125	15	16	16000/4.6	620 x 470 x 165
SlimL 20000/V	WBCL000792	WBCL006361	625	200	125	16	20	20000/5.6	670 x 470 x 165
SlimL 24000/V	WBCL000793	WBCL006362	2 x 500	300	2 x 125	30	20	24000/7	710 x 570 x 215
SlimL 4500/H	WBCL000950	WBCL006370	275	80	100	7	16	4500/1.3	170 x 305 x 470
SlimL 6000/H	WBCL000951	WBCL006371	275	80	100	8.5	16	6000/1.7	170 x 360 x 470
SlimL 9000/H	WBCL000952	WBCL006372	430	130	100	10	16	9000/2.6	170 x 410 x 560
SlimL 12000/H	WBCL000953	WBCL006373	500	150	125	11	16	12000/3.5	170 x 410 x 625
SlimL 16000/H	WBCL000954	WBCL006374	625	200	125	15	16	16000/4.6	185 x 470 x 635
SlimL 20000/H	WBCL000955	WBCL006375	625	200	125	16	20	20000/5.6	185 x 470 x 680
SlimL 24000/H	WBCL000956	WBCL006376	2 x 500	300	2 x 125	30	20	24000/7	200 x 570 x 730
TAN 4000/V	WBCL000760	WBCL006354	150	30	180 x 40	5	15	4000/1.1	410 x 305 x 150
TAN 6000/V	WBCL000762	WBCL006355	190	40	240 x 40	7.5	15	6000/1.7	410 x 360 x 150
TAN 9000/V	WBCL000763	WBCL006356	250	46	302 x 40	8.5	16	9000/2.6	440 x 410 x 155
TAN 12000/V	WBCL000766	WBCL006357	250	46	302 x 40	9.5	16	12000/3.5	480 x 410 x 155

QUICK BTU CALCULATION GUIDE & AIR DUCTING

To quickly calculate your BTU needs per volume, use the table below - be carefull with highly exposed wheelhouse areas. For extreme climatic conditions such as the Persian Gulf Area where sea-water temperatures frequently rise above 32° C and outside tempaures to above 40° C, add approx. 25/30% over-capacity.

VOLUME DESCRIPTION	BTU RATING PER M3	To obtain Total BTU's per Volume, multiply total volume by BTU rating as given to the left. Example : Sleeping Cabin : Length : 3.50 m Width : 2.75 m Average Height : 2.10 m Total BTU's needed : 3.5 x 2.75 x 2.1 x 400 = 8000 BTU
Below Deck Cabins - Portholes Only	400	
Above Deck Cabins - Average Glass Area	500	
Above Deck Dining Room/Salon Area - Average Glass Area	600	
Above Deck Wheelhouse Area - Generous Glass Area	750	
Usefull Info : 1000 BTU = 0.2934 Kw		

AIR DUCTING - VENTILATION

1) MINIMUM AIR-GRILLE SECTIONS

To obtain acceptable noise levels at max. blower speed minimum requirements for grille and ducts sections should be observed. Also the size of the transition box behind the supply air-grille is important. See table here-under :

models) can be rotated through 45° steps so as to obtain a straight-line outlet from the blower. This facility should be used whenever possible.

3) RETURN GRILLE OFFSET

It is best to avoid placing a return air grille directly opposite the finned coil surface of an air-handler. This will inevitably allow propagation of direct blower-motor noise through the grille.
Always try to offset the grille so as to chicane

smoothness.

For very long duct sections preference should be given to smooth bore ducts (in PVC for example) which offer a far greater smoothness than flexible spiral type ducting and therefore will greatly reduce internal friction.

For very short lengths non-insulated ducts may possibly be used. Over greater lengths it is advisable to use insulated type ducts to avoid condensation on the outside of the air-

AIR/HANDLER-WBCC MODEL	SUPPLY AIR GRILLE MODEL/ SECTION cm ²		RETURN AIR GRILLE MODEL/SECTION cm ²		DUCT DIAM.	DUCT DIAM.
					<2M DUCT LENGTH	>2M DUCT LEN.
4000/4500 BTU	1 x 8x4"	150 cm ²	1 x 12x5"	325 cm ²	80 mm	100 mm
6000 BTU	1 x 10x4"	190 cm ²	1 x 11x8"	490 cm ²	100 mm	125 mm
9000 BTU	1 x 12x4"	235 cm ²	1 x 11x8"	490 cm ²	100 mm	125 mm
12000 BTU	1 x 10x5"	250 cm ²	1 x 14x7"	550 cm ² or	125 mm	150 mm
16000 BTU or	1 x 12x6"	390 cm ²	1 x 14x10"	800 cm ²	125 mm	150 mm
16000 BTU	2 x 10x4"	380 cm ²			125 mm	150 mm
24000 BTU	2 x 10x5"	500 cm ²	1 x 14x12"	1000 cm ²	2 x 125 mm	2 x 150 mm
30000 BTU	2 x 12x5"	650 cm ²	2 x 14x10"	1600 cm ²	2 x 125 mm	2 x 150 mm

NB : For duct lengths over 2 ml, it may be possible to use the nominal duct diameter (for example 100 mm - 6000 BTU model), if instead of spiral type flexible ducts, smooth-bore interior ducts, are used.

2) BLOWER OUTLETS (Drawing here-under)

90° turns with flexible ducts directly from blower outlets should be avoided at all costs as they introduce severe restrictions in the air-flow.

All WB blowers (except on 24000 BTU

the return air to the coil inlet. This will lower direct noise propagation in a significant manner.

4) DUCT TYPE

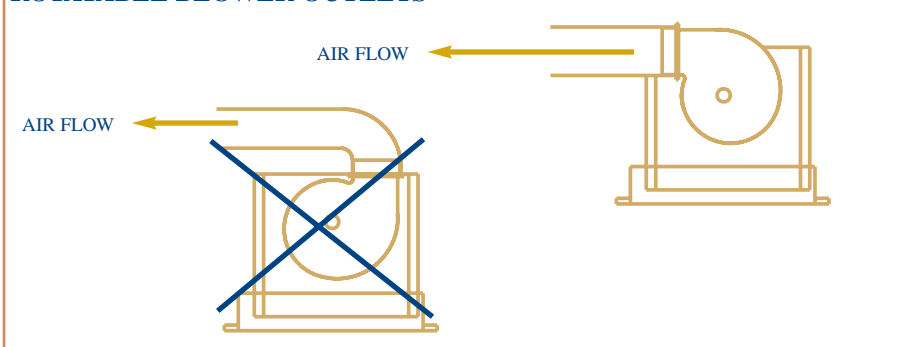
Flexible air-ducts should be of high quality with sufficiently strong steel spiral reinforcement to avoid accidental crushing. Spiral type ducts should be extended to their maximum possible length for max. interior

ducts.


5) BIG LUXURY YACHTS

In general requirments for megayachts and big luxury vessels are even more stringent than the table here-above. These special requirements can be obtained from WB on request.

ROTATABLE BLOWER OUTLETS



AIR TRANSITION BOXES - BEHIND SUPPLY AIR GRILLES



DUCT DIAM.	MIN. VALUE OF "H"
80 mm	100 mm
100 mm	120 mm
125 mm	140 mm
150 mm	165 mm

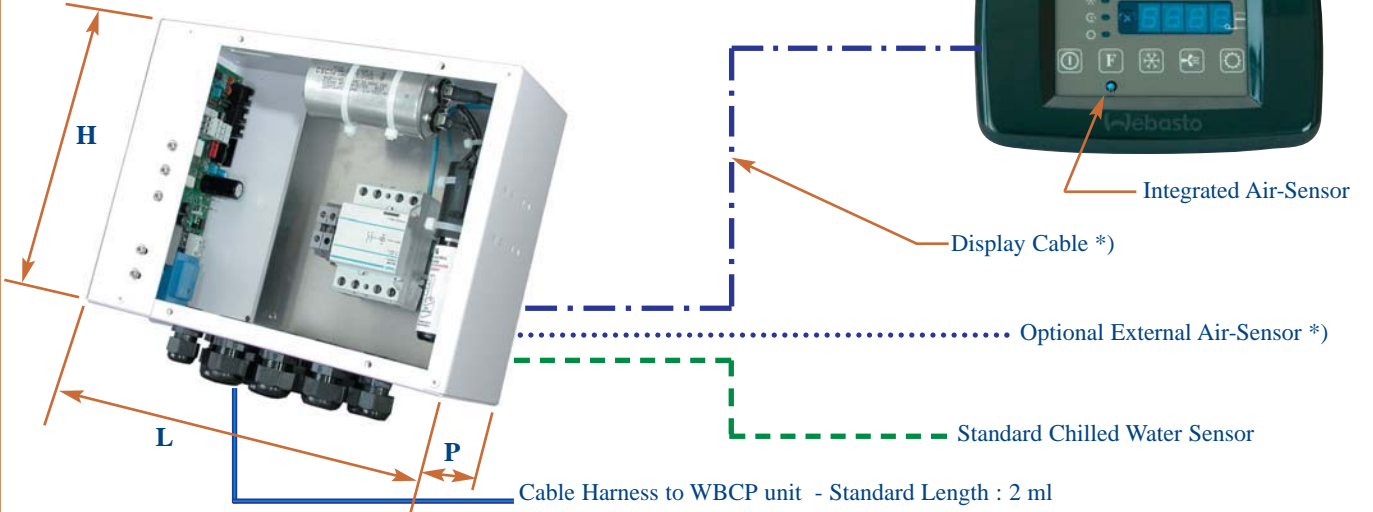
CONTROLS FOR CHILLED WATER SYSTEMS - WBCP SERIES

SCHEMATICS :

Standard Control Box inclusive TECC electronic controller card - standard delivery for all WBCP**/D references

BOX Dim.	12/24D	24/96D	100/572D
H =	225	245	344
L =	140	344	484
P =	128	154	164

Digital Control Panel *)



NB : All components marked *) should be ordered separately - see reference table here-under to choose specific lengths

FUNCTIONING PRINCIPLES

The complete Chiller Digital Control System includes a TECC controller card in alu box + Digital Chiller Control panel + cables and accessories. The Chiller Control panel allows direct read-out of chilled water temperature at the exit of the chiller condensing unit.

In addition to the standard available modes and information, the following features can also be accessed :

- key-board control, cool cycle only mode
- key-board control, heat cycle only mode
- key-board control, automatic cycle switching cool/heat
- direct control over external heat-source integrated in the chilled water circuit
- calibration of temperature read-outs
- fine tuning of blower speed settings
- choice between thermostatic and continuous blower control - 0 position blower control = blower halt
- choice between internal and external air sensor
- all TECC cards can control 4 chiller units with staged compressor start-up
- direct control chilled water circulation pump
- modification of the high and low set- points chilled water circuit temperature
- modification low-voltage cut-out settings
- Manual or automatic compressor rotation to equalize running hours
- Direct control over each compressor running status directly from digital display
- all safety controls are micro-processor controlled with direct display of all error codes.

EASY CONNECTIONS :

- all cables connections by phone type

Publication Date : 6th December 2006

DIGITAL DISPLAY : OPERATION AND KEY FUNCTIONS :



The 2004 Digital Displays are backwards compatible with the 2000 series

CHILLER CONTROLS, DISPLAYS and ACCESSORIES	WB Reference
Digital Display <Chiller Control> - 2004 Series with WB Bezel	WBCL000827
TECC Controller card 230V AC - V2 Series - 1/2 Compressors	WBCL000384
TECC Controller card 230V AC - V2 Series - 3/4 Compressors	WBCL000387
Aluminium electrical box - Twin compressor systems	WBCL000822
Aluminium electrical box - tri/quatro compressor systems	WBCL000825
Chilled water temperature sensor with 3 m cable	WBCL000368
Chilled water temperature sensor with 6 m cable	WBCL000369
Fuse Kit for TECC cards	WBCL000367
TECC Controller Card 115V AC - V2 Series - 1/2 Compressors	WBCL000845
TECC Controller Card 115V AC - V2 Series - 3/4 Compressors.....	WBCL000846
Softstart Tri 400V - Model MCI-15C - 15A	WBCL000830
Softstart Tri 400V - Model MCI-25C - 30A	WBCL000831
TECC V3 - Controller Card - 230V - 2006 series - 2 Compr.	WBCL000864
TECC V3 - Controller Card - 230V - 2006 series - 3/4 Compr.	WBCL000866
TECC V3 - Controller Card - 115V - 2006 series - 2 Compr.	WBCL000865
TECC V3 - Controller Card - 115V - 2006 series - 3/4 Compr.	WBCL000867

NB - For all display cables and external air sensors - see page 6 .

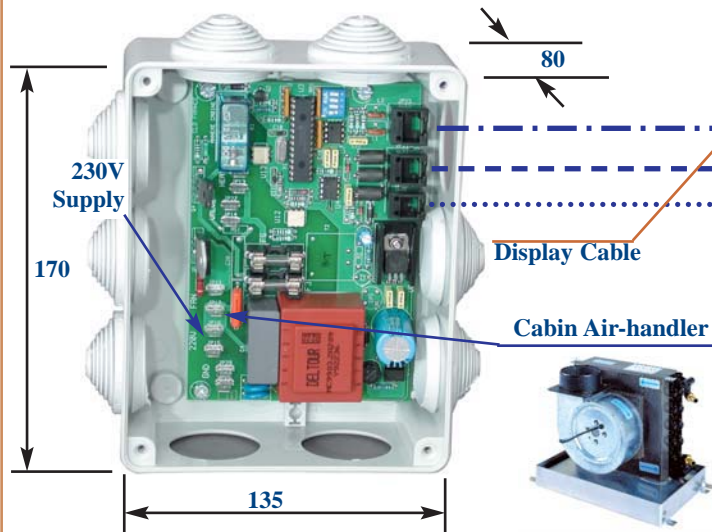
- modular jacks
- installation by adhesive strips or screws
- COLOUR AVAILABLE :**

- Grey/Blue
- LAST SETTINGS RETAINED :**
- Non-volatile memory retains last settings

CHILLED WATER SYSTEMS - CABIN BLOWER CONTROLS

CABIN BLOWER CONTROLS - SCHEMATICS

Standard Electrical Box for CAB230 Electronic Controller



Removable Bezel can be replaced by Vimar or Ticino equivalents

Digital Control Panel

Chilled Water Temp. Sensor

Optional External Air Sensor *)

Standard Digital Cabin Control Package CAB includes :

- 230/115V CAB controller in plastic box
- 4 m display cable/ 3m Chilled Water Temp. sensor
- Digital Display <AIR CONTROL>

NB : All components marked *) should be ordered separately - see reference table here-under to choose specific lengths

WEBASTO proposes a very complete choice of cabin blower controls :

- 1) The MTH system, a simple mechanical thermostat without blower speed control
- 2) Mechanical Thermostat with integrated 3 speed blower control.
- 3) Digital cabin control with CAB230 controller + <AIR CONTROL> digital display + chilled water temp. sensor

1) MTH - Mechanical Thermostat

The mechanical thermostat is reversible by a winter/summer selector. When set-point is obtained, the thermostat will stop blower operation.

2A) Belux Mechanical Thermostat + 3 Speed Blower Control

Based on an extended MTH thermostat + 3 speed selector + On/Off switch. See photo bottom left.

2B) Plana (Vimar) Mech. Thermostat + 3 Speed Blower Control

Based on the modular Plana series by Vimar with the same features as 2A

3) Standard Digital Cabin Control (CAB230)

This control system includes automatic

cycle recognition by the chilled water temperature sensor attached to the entry of the chilled water air-handler.

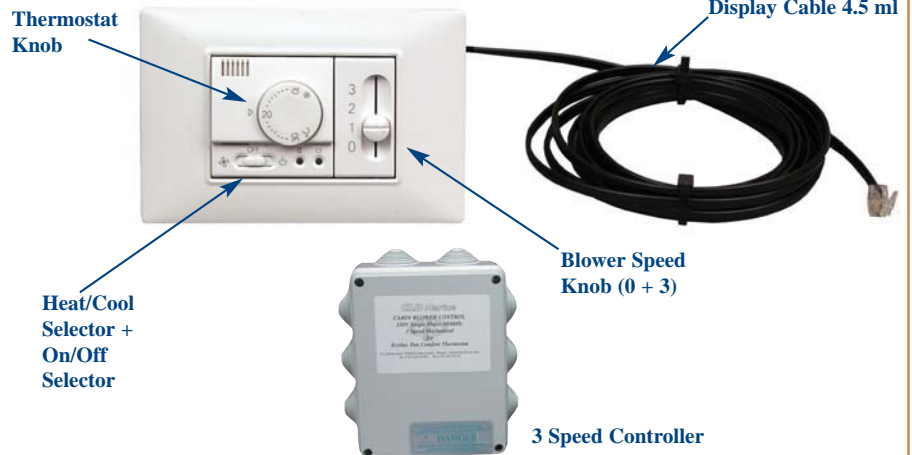
The CAB controller card includes most of the features found on the TECC master controller such as :

- direct chilled water temperature read-out
- 5 manual speed settings + 1 automatic by temperature differential
- automatic blanking of display
- calibration of all speed settings
- up to 4 blowers on 1 CAB card

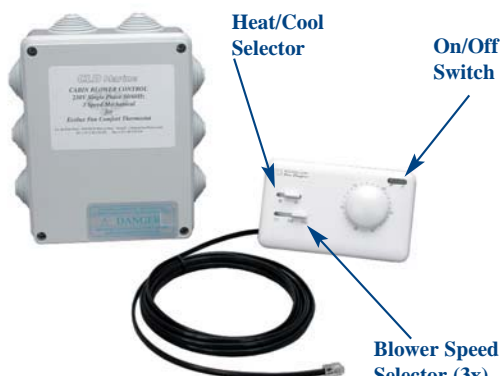
- direct set-point modification
- choice between internal and external air temperature sensor
- thermostatic or continuous blower operation
- access code to programmable functions
- visual alarm when water temperature at entry of air-handler is incompatible with set-point as requested.

The CAB standard digital control system is available in 230V AC and 115V AC.

PLANA (VIMAR) MECHANICAL THERMOSTAT + 3 SPEED BLOWER CONTROL



BELUX MECHANICAL THERMOSTAT + 3 SPEED CONTRL



WB CABIN CONTROLS + ACCESSORIES

Complete Digital Cabin Control - CAB230V - 2004 Series	WBCL000373
Complete Digital Cabin Control - CAB115V - 2004 Series	WBCL000850
MTH Thermostat230/115V without Blower speed control	WBCL000362
MTH Thermostat 230V with integrated 3 speed Blower Ctrl ..	WBCL000392
Electronic Controller CAB230 V3 - 230V - 2005/6 Series	WBCL000860
Electronic 3 speed controller 230V for ref. WBCL000392	WBCL000376
Electronic Controller CAB115 V3 - 2005/6 Series	WBCL000861
MTH Thermostat 115V with integrated 3 speed Blower Ctrl ..	WBCL000851
Electronic 3 speed controller card 115V for ref. WBCL000851	WBCL000853
Plana (Vimar) Thermostat 230V with 3 speed control	WBCL000394

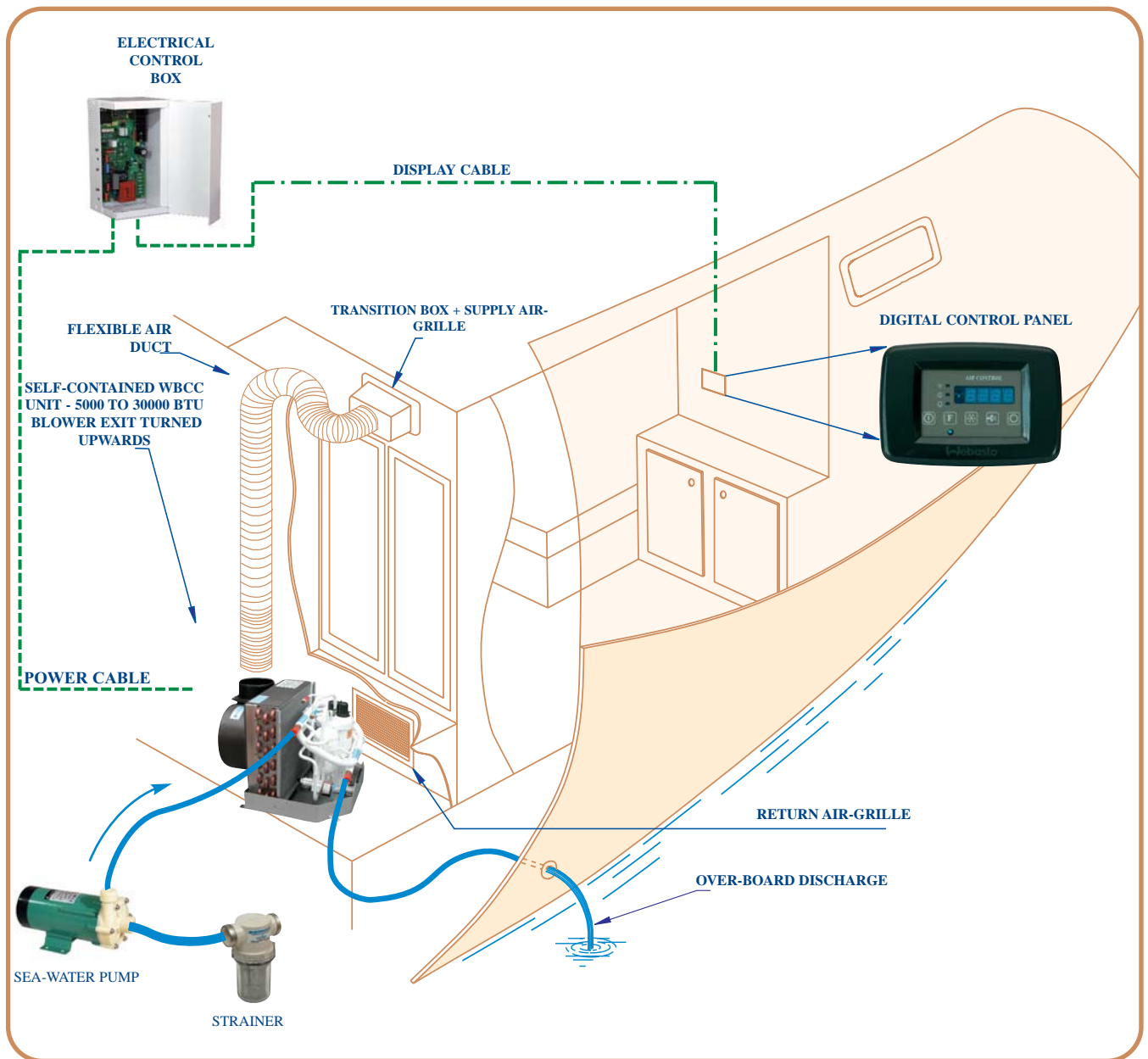
All 2004 Digital panels are backwards compatible with the 2000 Series.

NB - Water temp. sensors - see page 12 - Air Sensors : page 6

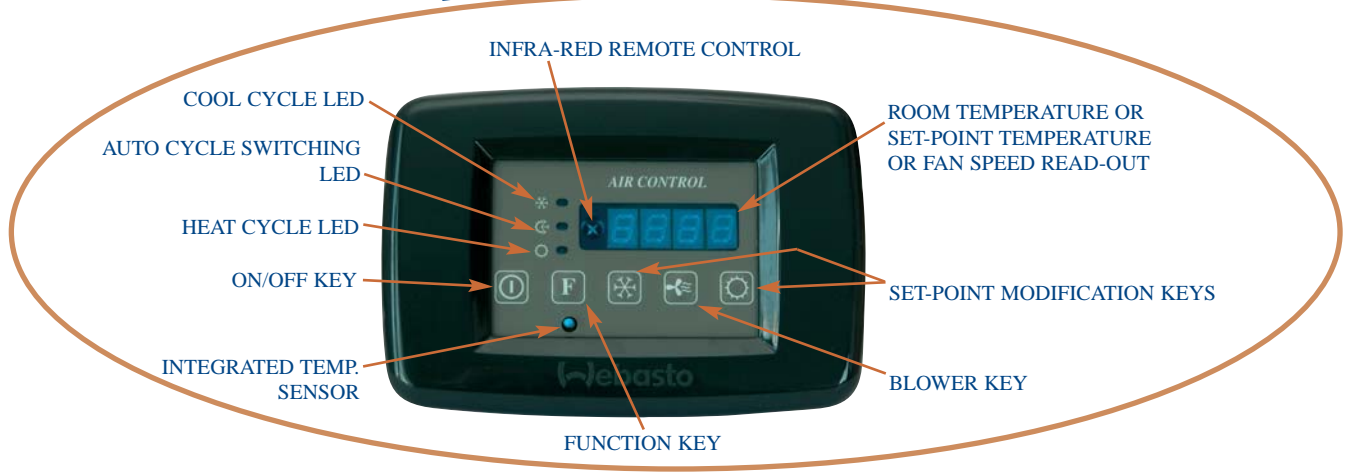
Webasto - AIR-CONDITIONING

BLUE COOL CLASSIC Units (Self Contained)

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DIGITAL CONTROL PANEL



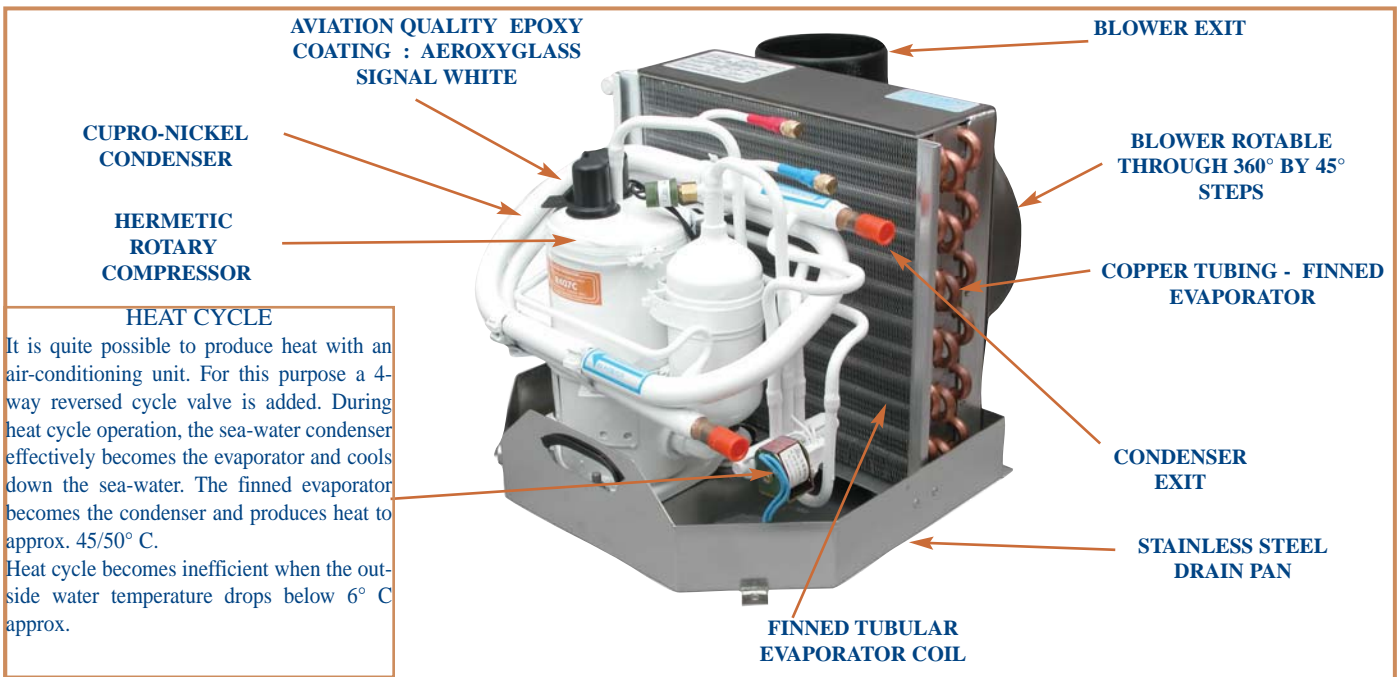
Webasto AG - Special Products & Markets - Kraillinger Strasse 5 - 82131 Stockdorf - Germany
 Tel. : +49(0) 89 8 57 94 543 Fax : +49(0) 89 8 57 94 753 Website : www.webasto.de

HOW DOES IT WORK ?

All air-conditioning units based on hermetic compressors function on the same principle : a compressor compresses the refrigerant gas which is then condensed to liquid when passing through a sea-water cooled condenser. Next the liquid refriger-

ant is injected through a small nozzle and evaporates. This evaporation process produces the refrigeration effect. The evaporation takes place in a tubular finned coil (also called : evaporator coil). A blower draws the air through the evapo-

rator coil. While passing through the evaporator the temperature of the air is lowered by approximately 15 °C. So far for the general principles.



HEAT CYCLE
It is quite possible to produce heat with an air-conditioning unit. For this purpose a 4-way reversed cycle valve is added. During heat cycle operation, the sea-water condenser effectively becomes the evaporator and cools down the sea-water. The finned evaporator becomes the condenser and produces heat to approx. 45/50° C. Heat cycle becomes inefficient when the outside water temperature drops below 6° C approx.

The BLUE COOL CLASSIC Self Contained Units - AN EASY SOLUTION

The self-contained units are extremely compact and include on one single base all the components (i.e. compressor + condenser + evaporator + blower), necessary to cool a cabin, salon/lounge or other volume.

The WBCC units are available in several capacities allowing to match almost all specific volume requirements of the yacht.

Description	Capacity BTU/Watts	230V 50/60 Hz		115V 60 Hz	
		Cool Cycle	Reversible	Cool Cycle	Reversible
WBCC 5/D *)	5000 BTU - 1465 W	WBCL005102	WBCL005101	WBCL006501	WBCL006500
WBCC 6.5/D *)	6500 BTU - 1900 W			WBCL006503	WBCL006502
WBCC 7/D *)	7000 BTU - 2000 W	WBCL005103	WBCL005101		
WBCC 9/D *)	9000 BTU - 2635 W	WBCL005104	WBCL005011	WBCL006505	WBCL006504
WBCC 12/D *)	12000 BTU - 3515 W	WBCL005105	WBCL005012	WBCL006507	WBCL006506
WBCC 16/D *)	16000 BTU - 4690 W	WBCL005106	WBCL005013	WBCL006509	WBCL006508
WBCC 20/D *)	20000 BTU - 5800 W	WBCL005133	WBCL005132		
WBCC 24/D *)	24000 BTU - 7035 W	WBCL005131	WBCL005130		
WBCC 30/D *)	30000 BTU - 8790 W	WBCL005119	WBCL005118		

*) Rotary Compressors LG Goldstar, Mitsubishi

WBCC MODELS AVAILABLE :

TECHNICAL DESCRIPTION - BLUE COOL CLASSIC Series

MINIMUM STANDARD CONTROL ELEMENTS INCLUDED WITH ALL WBCC SELF-CONTAINED UNITS
Summary : 1 Alu control box (standard for all references WBCC**/D) + 1 display cable + 1 digital control panel (see also Page 11)

ELECTRICAL CONTROL BOX

Removable Bezel can be replaced by Vimar or Ticino equivalents

SERIES 2004 DIGITAL DISPLAY

All 2004 Digital panels are backwards compatible with the 2000 Series.

WBCC5 To 12/D - 5000 To 12000 BTU



WBCC16 To 20/D - 16000 To 20000 BTU



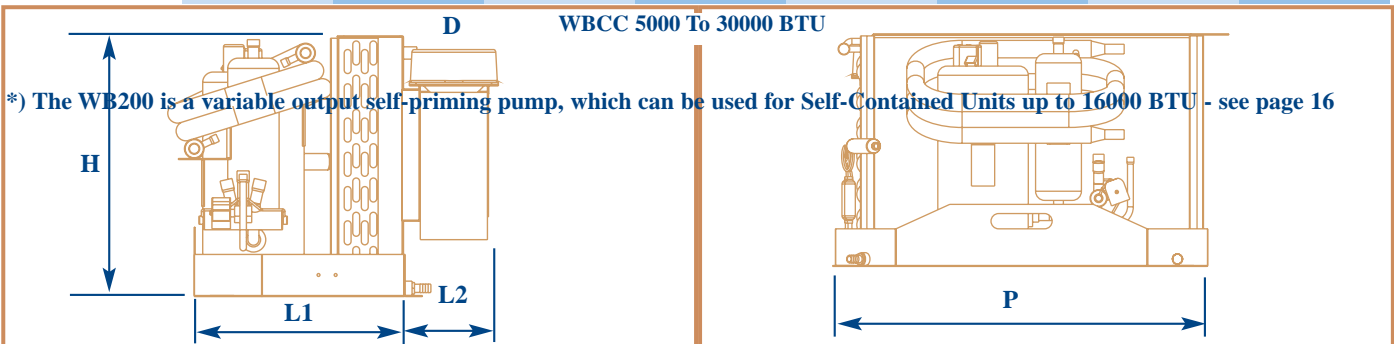
WBCC24/D - 24000 BTU



WBCC30/D - 30000 BTU



DESCR.	WBCC5	WBCC7 / 6.5	WBCC9	WBCC12	WBCC16	WBCC20	WBCC24	WBCC30
BTU Capacity	5000	7000/6500	9000	12000	16000	20000	24000	30000
Capacity in KW	1.5	2	2.6	3.5	4.7	5.8	7	8.8
Voltage	230V/115V	230V/115V	230V/115V	230V/115V	230V/115V	230V	230V	230V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Aver. Load Amps	2.1/4.2A	2.8/5.4 A	3.2/6.4 A	4.3/8.5 A	5.5/11 A	6.5 A	8 A	9.5 A
Starting Surge	5A/10 A	6A/12 A	7.5A/15 A	9A/18 A	12A/24 A	14 A	18 A	22 A
Refrigerant	R407C/R22	R407C/R22	R407C/R22	R407C/R22	R407C/R22	R407C	R407C	R407C
Net Weight	23 Kgs	24 Kgs	25 Kgs	26 Kgs	33 Kgs	34 Kgs	45 Kgs	50 Kgs
Shipping Weight	30 Kgs	30 Kgs	40 Kgs	40 Kgs	45Kgs	45 Kgs	55 Kgs	60 Kgs
Cooling Pump*)	WB200&250	WB200&250	WB200&250	WB200&350	WB200&350	WB350	WB350	WB1000
Blower	2GRE 120	2GRE 120	2GRE25/140	2GRE35/140	2GRE35/180	2GRE35/180	2 x 35/140	2 x 45/160
Blower Output	275 m3/h	275 m3/h	400 m3/h	500 m3/h	625 m3/h	625 m3/h	2 x 500 m3/h	2 x 550 m3/h
Diam. Cupro	16 mm	16 mm	16 mm	16 mm	16 mm	16 mm	16 mm	16 mm
H -Height	295 mm	295 mm	310 mm	310 mm	330 mm	385 mm	400 mm	400 mm
P - Depth	285 mm	285 mm	380 mm	450 mm	450 mm	450 mm	510 mm	610 mm
D - Diam Air Out	100 mm	100 mm	100 mm	125 mm	125 mm	125 mm	2 x 125 mm	2 x 125 mm
L - Overall L.								
L1 - Lenght L1	300 mm	300 mm	310 mm	310 mm	310 mm	310 mm	315 mm	315 mm
L2 - Length L2	115 mm	115 mm	125 mm	132 mm	132 mm	132 mm	132 mm	132 mm
Suggest. Breaker	8A/16A	10A/20A	12A/24A	16A/32A	20A/40A	20 A	28 A	32 A

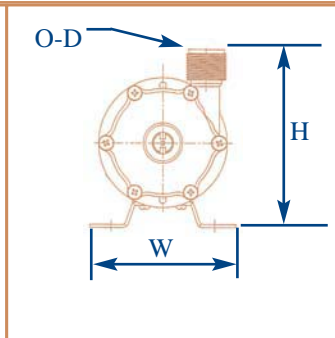
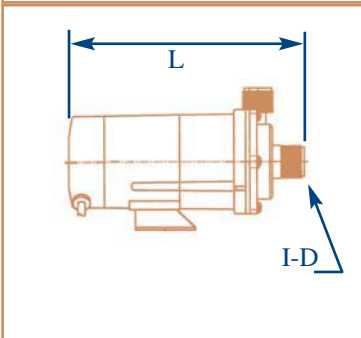


Webasto - MARINE PUMPS

MAGNETIC DRIVE PUMPS - IWAKI

PUMPS WB250 - 1000 & 1500 - 2000

PUMPS WB3500 To 9800

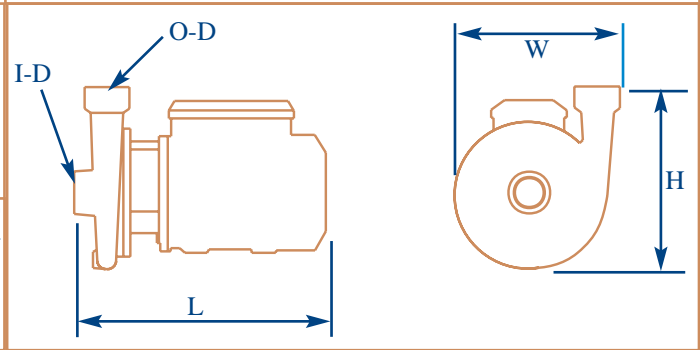


SELF-PRIMING - WB4000/5600/8000/10500

MECHANICAL DRIVE PUMPS - CALPEDA

PUMPS WB2500 To 7500 *)

*) Model WB7500 can only be used for chiller water circulation, not for sea-water cooling.



PUMPS - SPECIFICATIONS - WB REFERENCE CODES

MODEL	Webasto Ref. 230V	Webasto Ref. 115V	Output L/Min	Running /Watts	Diam. I/O I-D O-D	Weight/ Kgs	BTU Max. Chil/Loop	BTU Max. Condensing	Dimensions mm L X W x H
Iwaki 50/60 h									
WB250	WBCL001104	WBCL001301	15	30	5/8" 5/8"	2	N/A	12000	198 x 95 x 114
WB350	WBCL001105	WBCL001302	25	45	5/8" 5/8"	2.5	N/A	24000	205 x 95 x 115
WB1000	WBCL001106	WBCL001303	48	145	3/4" 3/4"	4.5	24000	48000	250 x 120 x 130
WB1500	WBCL001107	WBCL001304	85	300	1" 1"	7.5	60000	72000	250 x 156 x 168
WB2000	WBCL001108	400V Tri	115	400	1" 1"	10	84000	96000	315 x 156 x 168
WB3500	WBCL001109	WBCL001170	225	450	1.25" 1.25"	14	144000	144000	375 x 140 x 210
WB5500	WBCL001110	WBCL001171	335	750	1.25" 1.25"	22	250000	300000	495 x 160 x 248
Calpeda 50hz									
WB2500	WBCL001130		150	350	1" 1"	9.5	84000	108000	263 x 154 x 158
WB3000	WBCL001131		185	450	1" 1"	9.8	100000	144000	263 x 171 x 190
WB5500	WBCL001132	WBCL001172	320	750	1.25" 1.25"	20	250000	336000	380 x 193 x 240
WB7500 *)		WBCL001136	450	1500	2" 1.25"	23	450000	N/A	382 x 190 x 250
WB4000 #)	WBCL001160	WBCL001161	200	370	1.5" 2"	9		144000	498 x 215 x 270
WB5600 #)	WBCL001162	WBCL001163	300	750	1.5" 2"	12.2		300000	530 x 215 x 270
WB8000 #)		WBCL001164	450	1100	2" 2"	19		450000	592 x 215 x 302
WB10500 #)		WBCL001165	650	2200	2" 2"	21		650000	592 x 215 x 302
Calpeda 60hz									
WB2500	WBCL001133		150	350	1" 1"	9.5	84000	108000	263 x 154 x 158
WB3000	WBCL001134		185	450	1" 1"	9.8	100000	144000	263 x 171 x 190
WB5500	WBCL001135		320	750	1.25" 1.25"	20	250000	325000	380 x 193 x 240
WB7500 *)		WBCL001137	450	1500	2" 1.25"	23	450000	N/A	382 x 190 x 250
Iwaki 50 Hz									
WB7400		WBCL001138	420	2200	2" 1.5"	25	450000	500000	533 x 260 x 249
WB9800		WBCL001139	600	4000	2" 1.5"	32	520000	600000	560 x 260 x 270

#) = SELF-PRIMING SEA-WATER PUMPS