



MCH

R-407C

WATERCOOLED CONDENSING UNIT FOR INDOOR INSTALLATION



Size	Cooling [kW]
21	8.2
25	9.8
31	11.3
51	18.3
71	25.5
91	31.7
101	36.8
121	43.4

REPLACE: BT03G006GB-01

The MCH units are a group of water-cooled condensers, which allow the realization of "SPLIT SYSTEM" plants, as they have been destined for connection to the "Split" type air handling units. They can be combined to our terminal units; CED-CEI-CED-V series. The reduced dimensions allow the installation in lack of clearance.

BT03G006GB-02

CERTIFIED QUALITY SYSTEM ISO 9001 : 2008

STANDARD UNIT SPECIFICATIONS

COMPRESSOR

Scroll compressor complete with: overload thermal protection, high refrigerant discharge temperature, rubber antivibration mounts, oil charge, acoustic and weather proof cabinet.

STRUCTURE

The base is assembled with a hot-galvanized steel frame (Z 200 g/m2). The internal structure is a frame made from «ALUZINK» metal plate. The alloy coating the Aluzink ensures excellent corrosion strength, thanks to the galvanic protection typical of the combination of aluminium and zinc.

PANELLING

pre-painted plate easy panelling external that can be removed for complete access to the internal components. Lined with class 1 heat insulation and soundproofing material.

WATER EXCHANGER

brazed-plate external exchanger in AISI 316 stainless steel for increased surface exchange with external thermal/anticondensate insulation

REFRIGERANT CIRCUIT

The circuit is complete with:

- high pressure switch
- low pressure switch
- plug fuse: high pressure safety device
- liquid receiver

ELECTRICAL PANEL

the Power Section includes:

- main door lock isolator switch
- compressor control contactor
- compressor thermal overload relay
- auxiliary circuit fuse
- compressor fuses
- Terminals for the link to internal unit and power supply .
- working light signal / protection starting up.
- Short cycle timer protection.
- centralised alarms with remote signalling

ACCESSORIES

- stainless steel mesh mechanical filter.
- water flow valve
- connecting set: thermostatic expansion valve, sight glass, solenoid valve.

CONFIGURATION CODE

MCH-2

101

CONVERSION TABLE : DEW / MID POINT

DP (°C)	3	5	7	8	9.5	12
MP (°C)	1	3	5	6	7.5	10

THE FOLLOWING VALUES ARE REFERRED TO DEW POINT. AN INDICATION OF THE CORRESPONDING MEDIUM EVAPORATING TEMPERATURE (MID POINT) IS GIVEN IN THE TABLE.

SOUND LEVELS

Size	Sound Power Level (dB)								Sound pressure level	Sound power level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
21	66	63	63	59	61	49	38	31	49	63
25	73	71	64	59	58	49	42	35	49	63
31	70	68	68	60	57	48	42	34	49	63
51	82	77	59	54	54	46	35	32	50	64
71	76	71	60	59	60	56	44	41	50	64
91	78	78	78	70	63	61	48	44	59	73
101	75	76	77	74	66	57	48	42	60	74
121	84	84	81	72	64	65	49	55	62	76

the sound levels refer to the unit at full load, in the rated test conditions. The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.

GENERAL TECHNICAL SPECIFICATIONS

Size		21	25	31	51	71	91	101	121	
COOLING										
Cooling capacity	1	kW	8.2	9.8	11.3	18.3	25.5	31.7	36.8	43.4
Compressor power input	1	kW	1.7	2	2.6	3.8	5	7.1	7.8	10.1
COMPRESSOR										
Type of compressors	2		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
No. of Compressors		Nr	1	1	1	1	1	1	1	1
Std Capacity control steps		Nr	1	1	1	1	1	1	1	1
Oil charge (C1)		l	1	1.12	1.12	1.8	1.66	4	4	4
Refrigerant charge (C1)	3	kg	1.1	1.2	1.3	1.3	1.7	2	2.1	2.2
Refrigerant circuits		Nr	1	1	1	1	1	1	1	1
CONDENSER										
Water flow-rate		l/s	0.24	0.28	0.33	0.52	0.72	0.92	1.06	1.27
Pressure drop		kPa	27	34	45	50	40	65	43	57
Water content		l	0.7	0.7	0.7	0.8	1.2	1.2	1.8	1.8
Quantity		Nr	1	1	1	1	1	1	1	1
type of external exchanger	4	Txt	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE
CONNECTIONS										
Gas connection	5		22	22	22	22	22	28	28	28
Liquid connection	5		14	14	14	14	14	18	18	18
Water fittings		Txt	1"	1"	1"	1"	1"	1"	1"	1"
STANDARD UNIT WEIGHTS										
Shipping weight	1	kg	80	85	87	92	93	113	113	119
DIMENSIONS										
Length		mm	402	402	402	402	402	402	402	402
Depth		mm	487	487	487	602	602	602	602	602
Height		mm	790	790	790	790	790	915	915	915
POWER SUPPLY										
Standard power supply		V	230/1/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50

(1) data refers to the following conditions :
saturated suction temperature (SST) = 9.5 °C (Dew Point)
external exchanger water = 25/35°C
(2) SCROLL = scroll compressor

(3) charge to be completed during start-up
(4) PHE = plates
(5) welded connections

VOLTAGE: 400/3/50

ELECTRICAL DATA

Size		21	25	31	51	71	91	101	121	
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS										
F.L.A. - Compressor 1		A	4.8	5.8	6.7	9.8	13.6	18	21	25.2
F.L.A. - Total		A	4.8	5.8	6.7	9.8	13.6	18	21	25.2
L.R.A. LOCKED ROTOR AMPERES										
L.R.A. - Compressor 1		A	31	38	43.5	62	96	116.5	127.5	159
F.L.I. FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITION										
F.L.I. - Compressor 1		kW	3	3.5	4.2	5.7	7.6	10.8	12.3	15.2
F.L.I. - Total		kW	3	3.5	4.2	5.7	7.6	10.8	12.3	15.2
M.I.C. MAXIMUM INRUSH CURRENT										
M.I.C. - Value		A	31	38	43.5	62	96	116.5	127.5	159

power supply: 400/3/50 Hz +/-6%
voltage unbalance: max 2 %

VOLTAGE: 230/3/50

ELECTRICAL DATA

Size		21	25	31	51	71	91	101	121
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS									
F.L.A. - Compressor 1		A			19.7	25.3	31.2	35.8	45.2
F.L.A. - Total		A			19.7	25.3	31.2	35.8	45.2
L.R.A. LOCKED ROTOR AMPERES									
L.R.A. - Compressor 1		A			132.5	171	210.5	224	279.5
F.L.I. FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITION									
F.L.I. - Compressor 1		kW			5.7	7.6	10.8	12.3	15.2
F.L.I. - Total		kW			5.7	7.6	10.8	12.3	15.2
M.I.C. MAXIMUM INRUSH CURRENT									
M.I.C. - Value		A			132.5	171	210.5	224	279.5

power supply 230/3/50 Hz +/-6%
voltage unbalance: max 2 %

BT03G06GB-00

ELECTRICAL DATA

Size		21	25	31	51	71	91	101	121
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS									
F.L.A. - Compressor 1	A	13.7	16.3	19.2					
F.L.A. - Total	A	13.7	16.3	19.2					
L.R.A. LOCKED ROTOR AMPERES									
L.R.A. - Compressor 1	A	62	76	100					
F.L.I. FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITION									
F.L.I. - Compressor 1	kW	3	3.5	4.2					
F.L.I. - Total	kW	3	3.5	4.2					
M.I.C. MAXIMUM INRUSH CURRENT									
M.I.C. - Value	A	62	76	100					

power supply 230/1/50 Hz +/-6%

OPERATING LIMITS (COOLING)

Size		21	25	31	51	71	91	101	121
CONDENSER									
Max water inlet temperature	°C	48	48	48	48	48	48	48	48
Min. water inlet temperature	1 °C	10	10	10	10	10	10	10	10
Min. water inlet temperature	2 °C	18	18	18	18	18	18	18	18
Max water outlet temperature	°C	58	58	58	58	58	58	58	58
Min. water outlet temperature	1 °C	24	24	24	24	24	24	24	24
Min. water outlet temperature	2 °C	26	26	26	26	26	26	26	26
Water thermal head (min / max)	1 °C	8/10	8/10	8/10	8/10	8/10	8/10	8/10	8/10
Water thermal head (min / max)	2 °C	8/16	8/16	8/16	8/16	8/16	8/16	8/16	8/16
Max condensing temperature	°C	67	67	67	67	67	67	67	67
Min. condensing temperature	°C	29	29	29	29	29	29	29	29
COMPRESSOR									
Max saturated suction temperature (SST)	°C	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Minimum saturated suction temperature (SST)	°C	2	2	2	2	2	2	2	2

saturated suction temperature (SST) = 9.5 °C (Dew Point)

- (1) well water
- (2) tower water

EXCHANGER OPERATING LIMITS

	CONDENSER			
	DPr	DPw	Dtci	Dtco
	kPa	kPa	°C	°C
PED (CE)	3000	3000	10	58

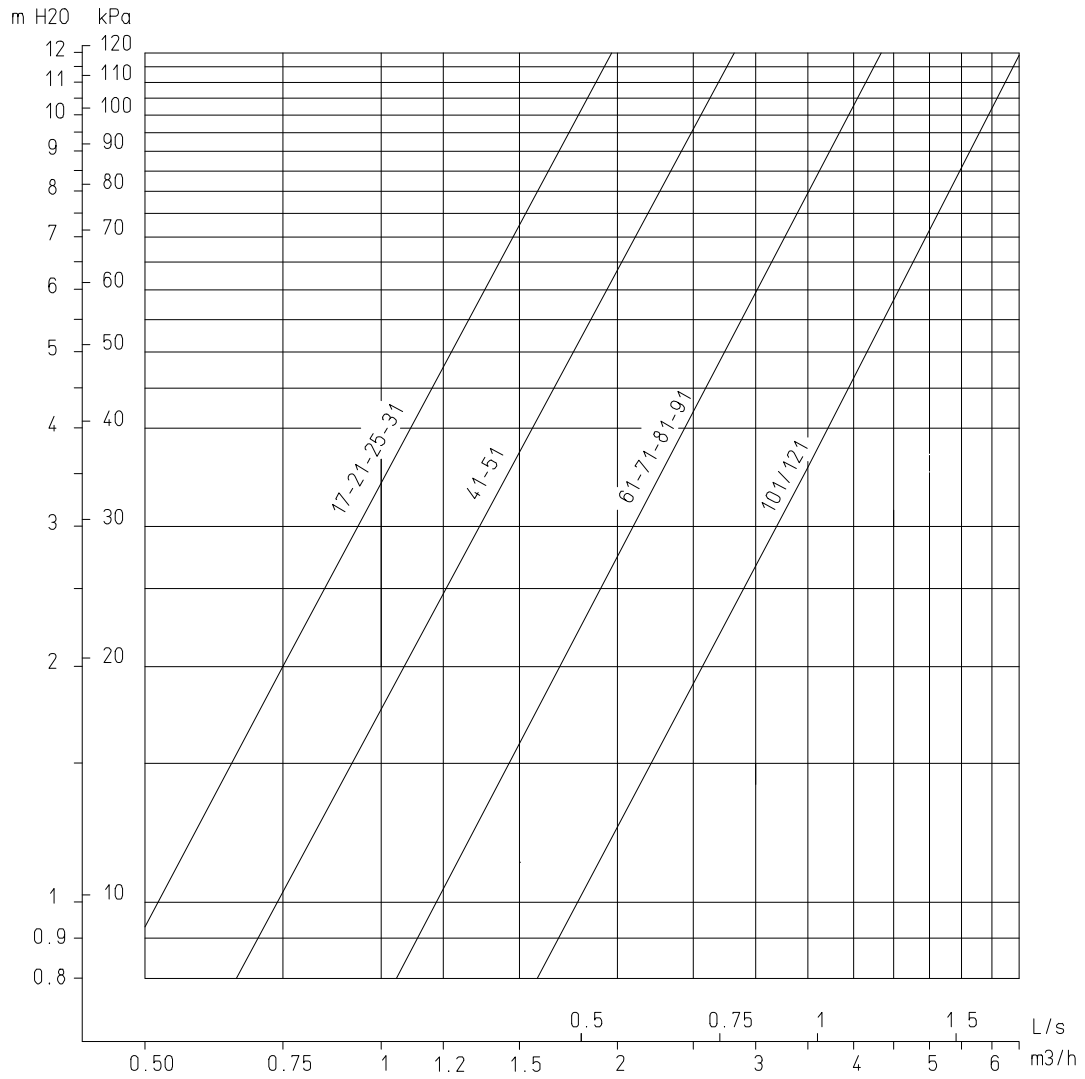
DPr = Maximum operating pressure on refrigerant side
 DPw = Maximum operating pressure on water side
 DTci = Minimum water temperature at condenser inlet
 DTco = Maximum water temperature at condenser outlet

CORRECTION FACTOR FOR ANTIFREEZE SOLUTIONS

% ethylene glycol by weight		5%	10%	15%	20%	25%	30%	35%	40%
Freezing temperature	°C	-2.0	-3.9	-6.5	-8.9	-11.8	-15.6	-19.0	-23.4
Safety temperature	°C	3.0	1.0	-1.0	-4.0	-6.0	-10.0	-14.0	-19.0
Cooling Capacity Factor	Nr	0.995	0.990	0.985	0.981	0.977	0.974	0.971	0.968
Compressor input Factor	Nr	0.997	0.993	0.990	0.988	0.986	0.984	0.982	0.981
Internal exchanger Glycol solution flow Factor	Nr	1.003	1.010	1.020	1.033	1.050	1.072	1.095	1.124
Pressure drop Factor	Nr	1.029	1.060	1.090	1.118	1.149	1.182	1.211	1.243

The correction factors shown refer to water and glycol ethylene mixes used to prevent the formation of frost on the exchangers in the water circuit during inactivity in winter.

CONDENSER PRESSURE DROP



FOULING CORRECTION FACTOR

m² °C/W	F1	FK1
0.44 x 10 ⁻⁴	1.00	1.00
0.88 x 10 ⁻⁴	0.97	0.99
1.76 x 10 ⁻⁴	0.94	0.98

F1 = Cooling capacity correction factors
FK1 = Compressor power input correction factor

COOLING PERFORMANCE

Size	SST (°C)	CONDENSER WATER INLET / OUTLET TEMPERATURE (°C)									
		15/30		25/35		30/40		35/45		40/50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
21	3	6.76	1.59	6.45	1.75	6.10	1.92	5.73	2.11	5.33	2.33
	5	7.29	1.58	6.95	1.74	6.58	1.91	6.18	2.11	5.74	2.32
	7	7.85	1.57	7.48	1.73	7.07	1.90	6.64	2.09	6.18	2.30
	8	8.14	1.56	7.75	1.72	7.33	1.89	6.88	2.08	6.40	2.29
	9.5	8.58	1.54	8.16	1.70	7.72	1.87	7.24	2.06	6.74	2.26
	12	9.34	1.51	8.88	1.67	8.39	1.83	7.87	2.01	7.32	2.21
25	3	7.99	1.85	7.67	2.02	7.27	2.24	6.80	2.50	6.25	2.80
	5	8.64	1.85	8.28	2.03	7.85	2.25	7.35	2.51	6.77	2.81
	7	9.31	1.85	8.93	2.03	8.47	2.25	7.93	2.51	7.31	2.81
	8	9.66	1.84	9.27	2.03	8.80	2.25	8.24	2.51	7.59	2.81
	9.5	10.2	1.84	9.80	2.03	9.31	2.25	8.71	2.51	8.02	2.81
	12	11.1	1.83	10.7	2.03	10.2	2.25	9.55	2.51	8.77	2.80
31	3	9.32	2.21	8.85	2.47	8.34	2.74	7.79	3.04	7.21	3.36
	5	10.1	2.23	9.57	2.49	9.03	2.77	8.44	3.07	7.80	3.40
	7	10.8	2.25	10.3	2.51	9.74	2.80	9.10	3.11	8.43	3.45
	8	11.3	2.27	10.7	2.53	10.1	2.82	9.45	3.14	8.75	3.48
	9.5	11.9	2.29	11.3	2.56	10.7	2.86	9.98	3.18	9.25	3.52
	12	12.9	2.33	12.3	2.62	11.6	2.93	10.9	3.26	10.1	3.62
51	3	15.1	3.41	14.2	3.79	13.2	4.24	12.1	4.74	10.9	5.30
	5	16.3	3.44	15.4	3.82	14.3	4.26	13.1	4.77	11.9	5.35
	7	17.6	3.47	16.6	3.84	15.5	4.29	14.2	4.80	12.9	5.39
	8	18.3	3.48	17.3	3.86	16.1	4.30	14.8	4.82	13.4	5.41
	9.5	19.3	3.49	18.3	3.88	17.1	4.33	15.7	4.84	14.2	5.43
	12	21.0	3.51	20.2	3.91	18.9	4.37	17.4	4.89	15.5	5.47
71	3	20.9	4.36	19.9	4.80	18.7	5.36	17.3	6.01	15.6	6.77
	5	22.6	4.42	21.4	4.86	20.1	5.41	18.6	6.06	17.0	6.82
	7	24.3	4.48	23.1	4.93	21.8	5.48	20.2	6.13	18.4	6.88
	8	25.2	4.52	24.1	4.97	22.7	5.52	21.0	6.17	19.1	6.91
	9.5	26.6	4.57	25.5	5.03	24.1	5.59	22.3	6.23	20.2	6.97
	12	29.0	4.67	28.1	5.15	26.7	5.71	24.7	6.36	22.1	7.09
91	3	26.3	6.32	25.0	6.94	23.4	7.70	21.8	8.58	19.9	9.60
	5	28.4	6.35	26.8	6.99	25.1	7.76	23.4	8.65	21.4	9.67
	7	30.5	6.37	28.9	7.03	27.1	7.81	25.2	8.71	23.1	9.72
	8	31.6	6.38	30.0	7.04	28.1	7.83	26.1	8.73	23.9	9.75
	9.5	33.2	6.39	31.7	7.06	29.8	7.85	27.7	8.75	25.2	9.77
	12	36.2	6.41	34.9	7.08	33.0	7.87	30.5	8.78	27.4	9.81
101	3	30.6	6.99	29.0	7.71	27.3	8.54	25.5	9.47	23.6	10.5
	5	33.0	7.02	31.2	7.76	29.4	8.60	27.5	9.55	25.4	10.6
	7	35.5	7.05	33.6	7.80	31.7	8.65	29.6	9.62	27.4	10.7
	8	36.8	7.07	34.9	7.82	32.9	8.68	30.7	9.65	28.5	10.7
	9.5	38.8	7.09	36.8	7.85	34.7	8.71	32.5	9.69	30.1	10.8
	12	42.2	7.12	40.2	7.89	38.0	8.76	35.6	9.74	33.0	10.8
121	3	36.4	8.82	34.4	9.71	32.2	10.8	29.9	11.9	27.4	13.3
	5	39.2	8.91	37.0	9.82	34.7	10.9	32.2	12.1	29.6	13.4
	7	42.1	9.02	39.8	9.94	37.3	11.0	34.7	12.2	31.9	13.6
	8	43.6	9.08	41.2	10.00	38.6	11.1	36.0	12.3	33.1	13.7
	9.5	45.8	9.17	43.4	10.1	40.8	11.2	37.9	12.4	34.9	13.8
	12	49.8	9.34	47.3	10.3	44.5	11.4	41.4	12.6	38.1	14.0

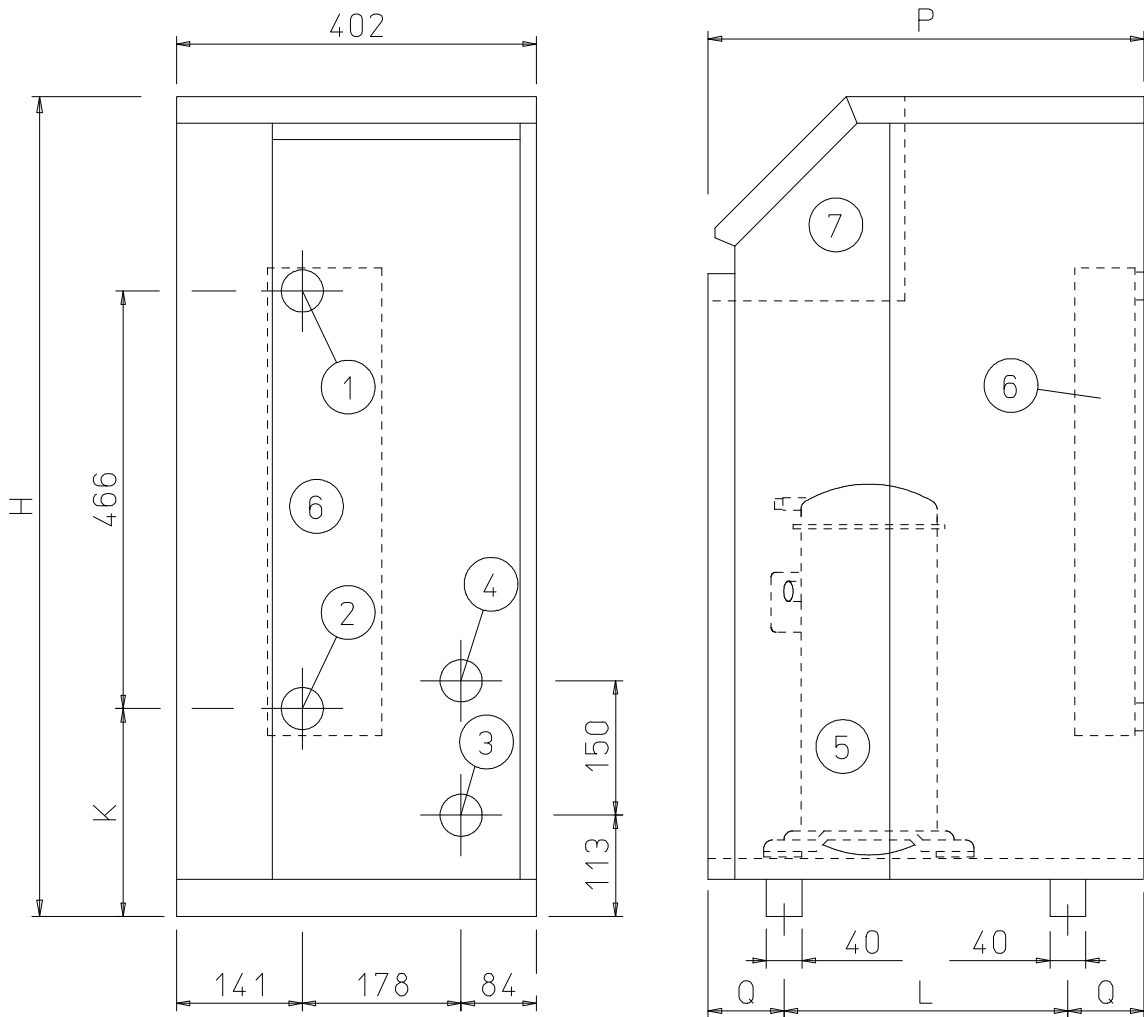
kWf = Cooling capacity in kW
kWe = Compressor power input in kW

SST = saturated suction temperature corresponds to the pressure at the compressor (°C) (dew point)

BT03G006GB-02

DIMENSIONAL DRAWING

Size		21	25	31	51	71	91	101	121
H	mm	790	790	790	790	790	915	915	915
K	mm	107	107	107	107	107	232	232	232
L	mm	317	317	317	363	363	363	363	363
P	mm	487	487	487	602	602	602	602	602
Q	mm	85	85	85	120	120	120	120	120



- (1) CONDENSER WATER OUTLET
- (2) CONDENSER WATER INLET
- (3) LIQUID FITTINGS
- (4) GAS FITTINGS
- (5) COMPRESSOR
- (6) CONDENSER
- (7) ELECTRICAL PANEL

CLIVET SPA
Feltre (BL) - Italy
Tel. + 39 0439 3131
Fax + 39 0439 313300
info@clivet.it

CLIVET UK LTD
Fareham, Hampshire -
UK United Kingdom
Tel. + 44 (0) 1489
572238 Fax + 44 (0)
1489 573033
info@clivet-uk.co.uk

CLIVET SAS
France
Tel. + 33 (0)1 69202575
Fax + 33 (0)1 69200076
info.fr@clivet.com

CLIVET ESPAÑA S.A.
Madrid - España
Tel. + 34 91 6658260
Fax + 34 91 6857806
info@clivet.es

CLIVET GmbH
Norderstedt - Germany
Tel. + 49 (0) 40 32 59 57-0
Fax + 49 (0) 40 32 59 57-194
info.de@clivet.com

CLIVET NEDERLAND B.V.
Amersfoort - Netherlands
Tel. + 31 (0) 33 7503420
Fax + 31 (0) 33 7503424
info@clivet.nl

CLIVET RUSSIA
Moscow, Russia
Tel. + 7 495 6462009
Fax + 7 495 6462009
info.ru@clivet.com

CLIVET MIDEAST FZC
Dubai Silicon Oasis -
Dubai UAE
Tel. + 97 14 3208499
Fax + 97 14 3208216
info@clivetme.com

CLIVET
AIRCONDITIONING
SYSTEMS (P) LTD
Mumbai 400 072 (INDIA)
Tel + 91 - 22 - 6193 7000
Fax + 91 - 22 - 6193 7001
sales.india@clivet.com