

NRA Free-Cooling Air-cooled water chillers With axial fans and capacities from 50 to 177 kW

R407C



Aermec adheres to the EUROVENT Certification Programme. The products concerned appear in the EUROVENT Certified Products Guide.



• STANDARD VERSION

• VERSION EQUIPPED WITH WATER PUMP AND STORAGE TANK

The devices of the NRA Free-Cooling range are water chillers provided with additional air-water coils for recovery of the chilling power supplied by the external air. This free, water cooling system, called "Free-Cooling", will supplement, to the point of even fully substituting it, the chilling power delivered by the compressors if the external air temperature permits (installation water return temperature greater than the external air temperature). In this way, E.E.R. may be obtained that is as much as ten times greater than traditional "compressors only" chillers.

Features

- 10 sizes available
- Cooling only versions with R407C
- Operation mode:
 - Free-Cooling only: is the most economical operating condition of the unit. Only the fan units work in speed modulation, the chilling power is totally recovered from the external air
 - Mix of Free-Cooling and compressors: the chilling power recovered from the external air is integrated with the total or partial operation of the compressors
 - Compressors only: the chilling power is delivered entirely by the compressors (standard operation for a chiller)
- Available in 2 versions:
 - standard with water filter and flow switch
 - with high-head pumping group, 160 kPa net of internal losses in operation without Free-Cooling, accumulation tank of 300 l with 300 W antifreeze electric heater, water filter, flow switch and expansion tank
- All versions except the motocondensing one can be ordered for low temperature operation for production of chilled water from 4 °C down to -10 °C. This option must be specified at the time of ordering
- High efficiency scroll compressors with low power consumption
- Electric heater for the compressor carter
- Adjustment by microprocessor of the compressors and of the fan units for handling the three modes of operation (Free-Cooling only, mix of Free-Cooling and compressors, and compressors only)
- Functional parameters can be displayed in any of four languages
- Simplified remote control panel. All main functions of the unit, alarms included, are possible
- High efficiency plate type heat exchangers
- Evaporator electric heating element
- Air-water exchanger (Free-Cooling) of the high efficiency type with smooth tubes and corrugated fins
- Three-way valve located on the water side for switching of the water on the Free-Cooling coils
- High and low pressure transducers
- Axial flow fan units for extremely quiet operation
- Speed adjustment device of the fan units for operation with low air temperatures. In Free-Cooling mode, manages the chilling power
- Compact size
- Metallic protective cabinet with rustproof polyester paint

Accessories

- **AER485:** RS-485 interface for supervision systems with MODBUS protocol.
- **DRE:** Electronic peak current reducer. **It must be factory-mounted.**
- **GP:** Safety grille: protects external coils from accidental impact..
- **PGS:** Daily/weekly programmer with facility to program two daily on/off cycles and set different parameters for each day of the week.
- **RIF:** Current rephaser. Parallel connection with the motor makes the reduction of input current possible. **This can only be installed when the machine is being made and must therefore be specified when the order is placed.**
- **ROMEO:** (Remote Overwatching Modem Enabling Operation) is a device that enables a remote control of a chiller from an ordinary WAP mobile phone. Furthermore it allows to send alarm or pre-alarm SMS messages up to 3 GSM mobile phones which may not be equipped with WAP. **This device includes AER485 accessory.**
- **VT:** Anti-vibration mounts: set of four mounts for installation in locations on the underneath of the baseplate.

Compatibility of accessories

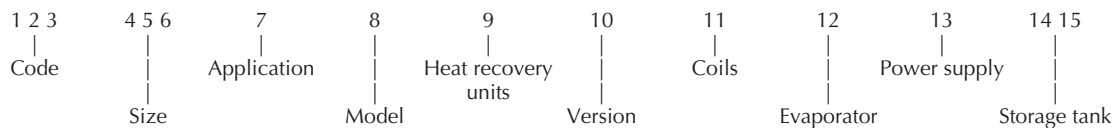
Mod.	Compatibility of accessories									
	275 A 275 L	300 A 300 L	325 A 325 L	350 A 350 L	500 A 500 L	550 A 550 L	600 A 600 L	650 A 650 L	700 A 700 L	750 - 750 L
AER485	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DRE	275	300	325	325	500	550	600	650	650	750
GP 2					✓(x2)	✓(x2)	✓(x3)	✓(x3)	✓(x3)	✓(x3)
GP 4	✓	✓	✓	✓						
PGS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RIF	62	62	62	82	63	63	64	64	64	64
ROMEO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VT 10	✓*	✓*	✓*	✓*	✓*	✓*		✓	✓	✓
VT 11							✓*	✓*	✓*	✓*
VT 13	✓	✓	✓	✓	✓	✓			✓	✓
VT 14							✓			

* = to be used in the versions with storage tank
N.B. = between brackets, the quantity necessary.

Selection

By combining the various options, each model can be configured exactly to match even the most specific system requirements.

Configuration rules:



Code: NRA

Size: 275, 300, 325, 350, 500, 550, 600, 650, 700, 750

Application:

- ° - Standard with produced water above +4 °C
- Y - Low temperature with produced water down to -6 °C

Model:

- ° - Cooling only

Heat recovery units:

- ° - Without heat recovery units

Version:

- ° - Standard
- A - High temperature
- L - Silenced

Coils:

- ° - Aluminium
- R - Copper
- S - Tinned copper
- V Painted copper / aluminium version

Evaporator:

- ° - To PED standards

Power supply:

- ° - 3N~ 400V 50Hz with thermal-magnetic cut-outs
- 4 - 3~ 230V 50Hz with thermal-magnetic cut-outs
- 9 - 3~ 500V 50Hz with thermal-magnetic cut-outs

Storage tank:

- F0 - without accumulator
- F3 - high head storage tank and single pump
- F4 - high head storage tank and standby pump

Warning:

- standard options are shown by symbol °;
- for cooling only versions, it is possible only the combination between options Y and A (please, contact the Headquarter for particular needs);
- Standard version (field 10) is not available for 275, 300, 325 and 350 sizes;
- Option Y (field 7) is not available for Standard versions (field 10).

Commercial code example: **NRA650LF3**

This is an NRA unit, of size 650, silenced version, with evaporator to PED standards, with electric panel for compressors with 3N~ 400V 50Hz motors and single pump storage tank.

Note that as each option is precisely identified, it is not necessary to specify standard options (shown with °) in the commercial code.

Technical data

Mod. NRA FC	Vers.	275	300	325	350	500	550	600	650	700	750
	°	-	-	-	-	87	95	116	132	148	177
Cooling capacity (kW)	A	54	62	71	82	91	99	120	136	160	-
	L	50	58	66	74	82	90	112	128	144	155
	°	-	-	-	-	37.5	41.0	51.0	57.0	64.0	74
Total input power (kW)	A	18.0	21.0	24.5	27.5	35.5	39.5	48.0	54.0	60.5	-
	L	20.5	24.0	27.5	31.0	39.5	42.5	52.5	58.5	68.0	77
	°	-	-	-	-	2.32	2.32	2.27	2.32	2.31	2,39
E.E.R. (W/W)	A	3.00	2.95	2.90	2.98	2.56	2.51	2.50	2.52	2.64	-
	L	2.44	2.42	2.40	2.39	2.08	2.12	2.13	2.19	2.12	2,01
	°	-	-	-	-	66.0	72.8	90.2	98.2	110.0	124
Working current (A)	A	37.0	42.0	46.0	55.0	63.5	69.8	88.7	99.6	106.8	-
	L	40.0	46.0	50.0	57.5	68.8	75.4	93.8	104.0	121.5	128
	°	-	-	-	-	14960	16340	19950	22700	25460	30440
Water flow rate (l/h)	A	9290	10660	12210	14100	15650	17030	20640	23390	27520	-
	L	8600	9976	11350	12730	14100	15480	19260	22020	24770	26660
	° F0	-	-	-	-	49	49	73	87	105	43
Pressure drops (kPa)	A F0	52	46	52	70	53	53	79	92	122	-
	L F0	43	39	44	57	43	43	67	82	101	33
	° F3/F4	-	-	-	-	191	187	173	158	139	-
Effective pressure (kPa)	A F3/F4155	156	151	130	185	181	167	153	120	-	-
	L F3/F4167	166	161	145	199	195	179	163	143	-	-
	°	-	-	-	-	50.5	50.5	51.0	52.0	52.0	56.0
♪ Sound pressure dB (A)	A	44.0	44.0	45.0	45.0	50.5	50.5	51.0	52.0	52.0	-
	L	44.0	44.0	45.0	45.0	42.0	42.5	45.0	45.0	45.0	50.0
	°	-	-	-	-	95	98	125	150	157	177
Cooling capacity (kW)	A	53	65	69	85	96	99	127	152	161	-
	L	51	63	67	82	93	96	123	149	156	169
	°	-	-	-	-	2.83	2.83	4.20	4.20	4.20	6,0
Total input power (kW)	A	1.07	1.07	1.07	1.38	2.93	2.93	4.33	4.33	4.33	-
	L	1.07	1.07	1.07	1.38	2.93	2.93	4.33	4.33	4.33	6,0
	°	-	-	-	-	33.6	34.6	29.8	35.7	37.4	29,5
E.E.R. (W/W)	A	49.5	60.7	64.5	61.6	32.8	33.8	29.3	35.1	37.2	-
	L	47.7	58.9	62.6	59.4	31.7	32.8	28.4	34.4	36.0	28,17
	°	-	-	-	-	6.7	6.7	9.0	9.0	9.0	12,0
Working current (A)	A	5.5	6.0	6.0	7.6	7.2	7.2	10.2	10.2	10.2	-
	L	5.5	6.0	6.0	7.6	7.2	7.2	10.2	10.2	10.2	12,0
	°	-	-	-	-	14960	16340	19950	22700	25460	30440
Water flow rate (l/h)	A	9290	10660	12210	14100	15650	17030	20640	23390	27520	-
	L	8600	9976	11350	12730	14100	15480	19260	22020	24770	26660
	° F0	-	-	-	-	64	67	97	115	140	36
Pressure drops (kPa)	A F0	78	71	83	110	70	73	105	122	162	-
	L F0	65	60	71	90	57	59	90	108	134	29
	° F3/F4	-	-	-	-	176	169	149	130	104	-
Effective pressure (kPa)	A F3/F4129	131	120	90	168	161	141	123	80	-	-
	L F3/F4145	145	134	112	185	179	156	137	110	-	-
	°	-	-	-	-	36000	36000	55000	55000	55000	59000
Total air flow rate (m³/h)	A	18500	17500	17500	24500	34000	34000	52000	52000	52000	-
	L	19000	18000	18000	25400	17500	20000	44000	44000	44000	49000
Compressors (n.)	All	2	2	2	2	3	3	4	4	4	4
Carter electric heater (W)	All	2 x 75	2 x 75	2 x 75	2 x 75	3 x 75	3 x 75	4 x 75	4 x 75	4 x 75	4 x 75
Peak current (A)	All	155	161	166	209	215	222	239	250	257	314
Water connections* (Ø)	All	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2
Storage tank capacity (l)	All	300	300	300	300	300	300	300	300	300	300
Expansion tank capacity (l)	All	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8,0
Safety valve setting (bar)	All	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6,0
Pump absorbed power (kW)	All	1.1	1.1	1.5	1.5	1.85	1.85	3.7	3.7	3.7	-
Pump input current (A)	All	2.14	2.14	2.92	2.92	3.60	3.60	7.21	7.21	7.21	-

Performance values refer to the following conditions:

♪ Sound pressure measured in free field conditions at distance of 10 m and direction factor = 2.

In accordance with ISO 3744 regulations

■ Cooling:

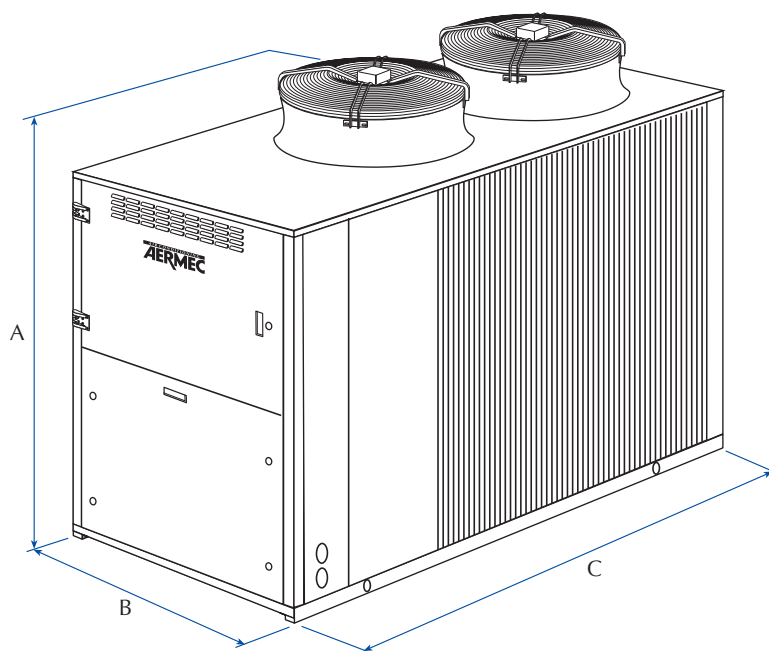
- water outlet temperature 7 °C;
- ambient air temperature 35 °C;
- Δt = 5 °C.

■ Cooling in Free-Cooling mode:

- water inlet temperature 15 °C;
- ambient air temperature 2 °C;
- nominal water flow rate;
- compressors off.

* = Gas type female couplings

Dimensions (mm)



NRA FC	Vers.	275	300	325	350	500	550	600	650	700	750
Height (A) mm	All	1606	1606	1606	1606	1875	1875	1875	1875	1875	1875
Width (B) mm	All	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
Depth (C) mm	F0	2950	2950	2950	2950	2950	2950	3950	3950	3950	4275
	F3/F4	2950	2950	2950	2950	3200	3200	3950	3950	3950	4275
Weight (kg)	° F0	-	-	-	-	1225	1250	1435	1550	1600	1785
	° F3/F4	-	-	-	-	1365	1390	1555	1670	1720	1892
	A F0	915	1035	1050	1090	1245	1295	1545	1660	1710	1815
	A F3/F4	1035	1155	1170	1210	1385	1435	1665	1780	1830	1922
	L F0	855	975	990	1030	1245	1295	1545	1660	1710	1815
	L F3/F4	975	1095	1110	1150	1385	1435	1665	1780	1830	1922

Note: the weights given for the versions with accumulator refer to the weight with empty storage tank.