Free cooling modules for AQUACIAT POWER 702V to 1800V
Packaged units
Easy start-up

Cooling capacity: 185 to 485 kW

Cooling only | Hydraulic module | Free cooling | HFC R410A

USE

The **AQUACIAT**FREE COOLING units have been developed directly from the AQUACIATPOWER range, to which a free cooling module equipped with its hydraulic circuit has been added.

AQUACIATFREE COOLING LDC - LDH series single-unit air-cooled water chillers are medium-power units particularly suited to air conditioning applications for premises in the Office, Healthcare, Administration and Shopping Centre sectors.

These packaged units are designed for outdoor installation and require no special protection against adverse weather conditions.

Each unit is delivered fully assembled, wired (control and power), charged with refrigerant and factory tested.

Simply make the necessary electrical and hydraulic connections, and your unit is ready to operate.

RANGE

AQUACIATFREE COOLING LDC series
Version with circulation pump only
16 models: 702V to 1800V.
AQUACIATFREE COOLING LDH series
Version with circulation pump and buffer tank
16 models: 702V to 1800V.

To consult the detailed specifications for the LDC - LDH units, refer to the AQUACIATPOWER instruction manual.

DESCRIPTION

AQUACIAT FREE COOLING modules are delivered with the following components as standard:

- Exchanger coils with axial fan motor assemblies.
- Hydraulic circuit with 3-way flow distribution valve, coil shut-off valve, drain and bleed valves, etc.
- Command and control electrics box.
- Aéroconnect electronic control module.

■ Complies with European EC directives

- 2006/42/EC machinery.
- EMC 2004/108/EC electromagnetics.
- 2006/95/EC low voltage.
- PED 97/23/EC pressure equipment: Article 3.3.

■ Complies with standards

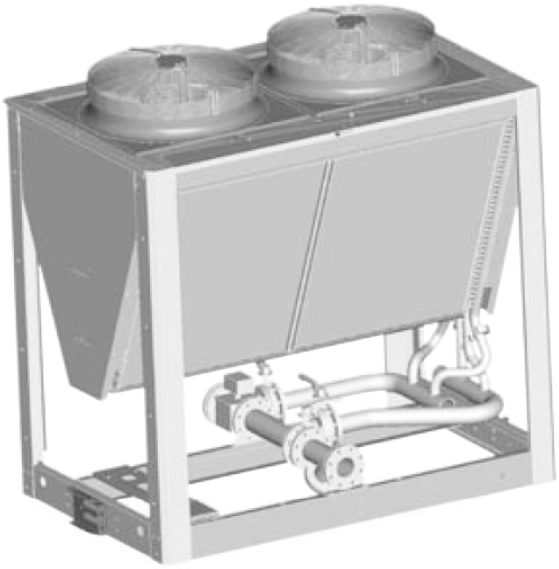
- EN 60-204, EN 378-2.

DESIGNATION (EXAMPLE)

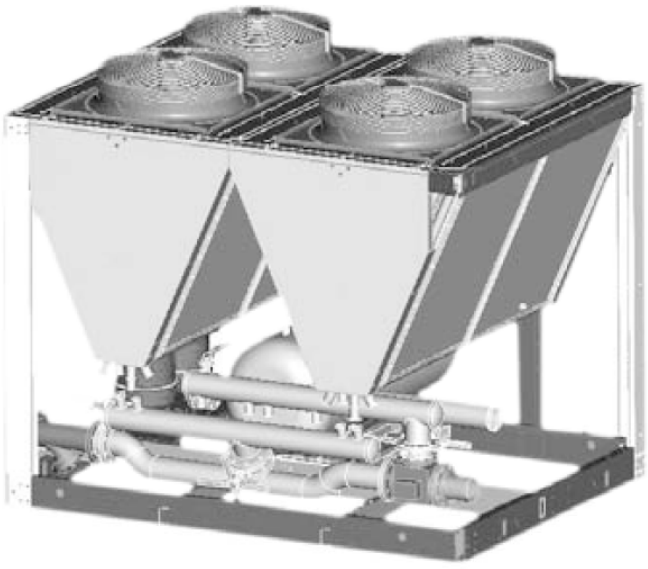
Free cooling module

2V – 4R – XLN

- **2V** — Number of free cooling V (1 or 2)
- **4R** — Number of rows on coils (2 or 4)
- **XLN** — Type of ventilation
  - STD Standard
  - LN Low Noise
  - XLN Xtra Low Noise



1V module



2V module

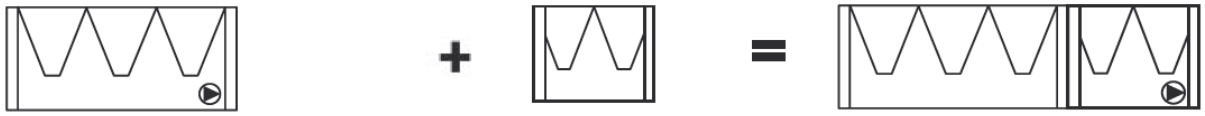
CONFIGURATION OF UNITS

aquaciat + Free cooling module = Aquaciat free cooling

LDC 702V HEE - 800V HEE
LDC 702V STD - 1100V STD

LDC 900V HEE - 1100V HEE

LDC 1200 HEE
LDC 1200V STD- 1400V STD



LDC 1400V HEE
LDC 1600V STD - 1800V STD

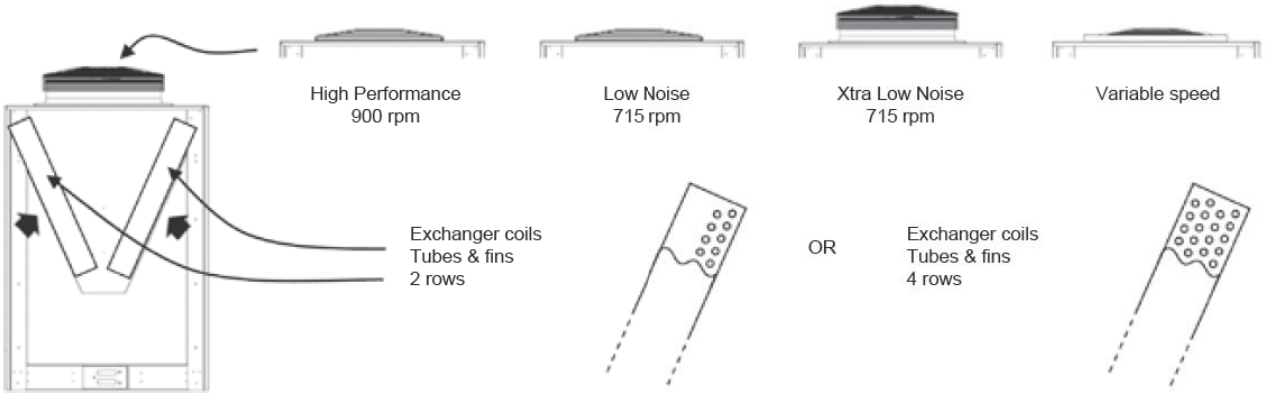
LDH 702V HEE - 800V HEE
LDH 702V STD - 1100V STD

LDH 900V HEE - 1100V HEE

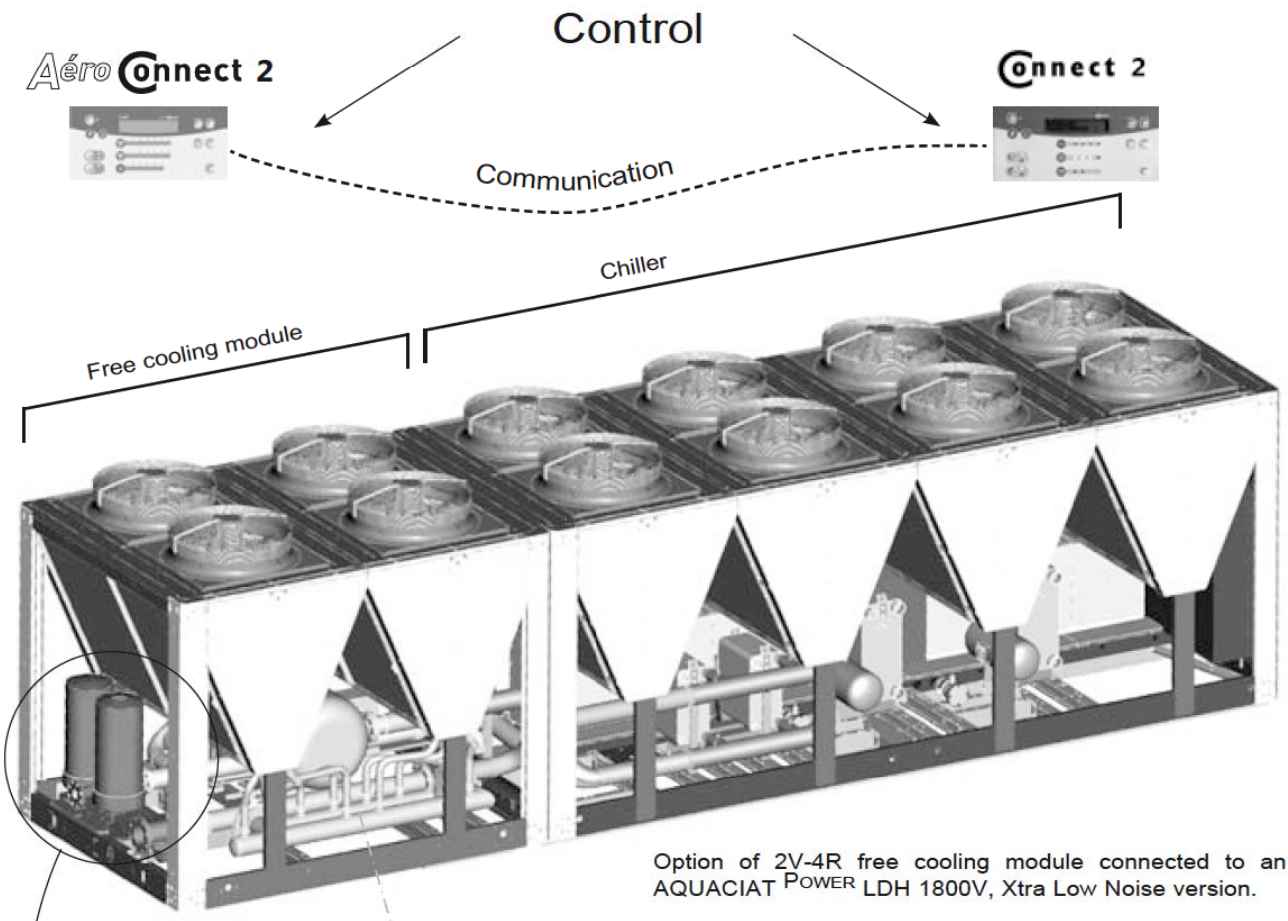
LDH 1200V HEE
LDH 1200V STD -1400V STD

LDH 1400V HEE
LDH 1600V STD - 1800V STD

FREE COOLING MODULE OPTIONS



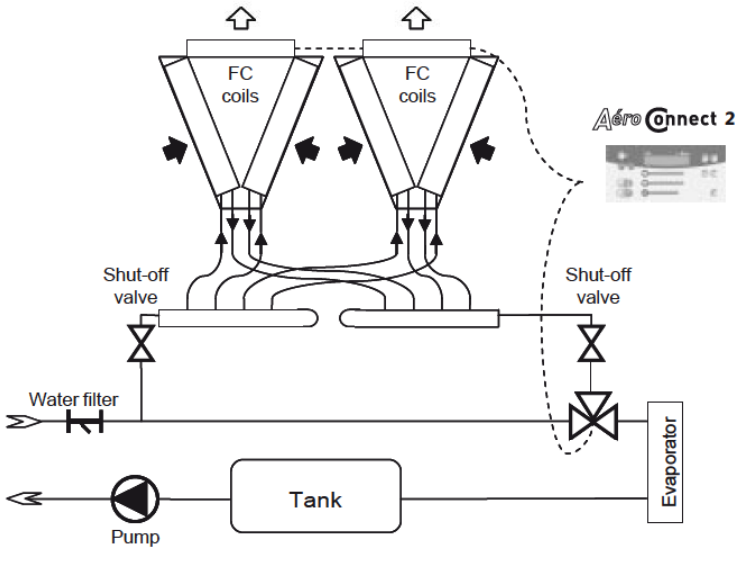
FREE COOLING MODULE ILLUSTRATION



Option of 2V-4R free cooling module connected to an AQUACIAT POWER LDH 1800V, Xtra Low Noise version.

13 single pump or dual pump models

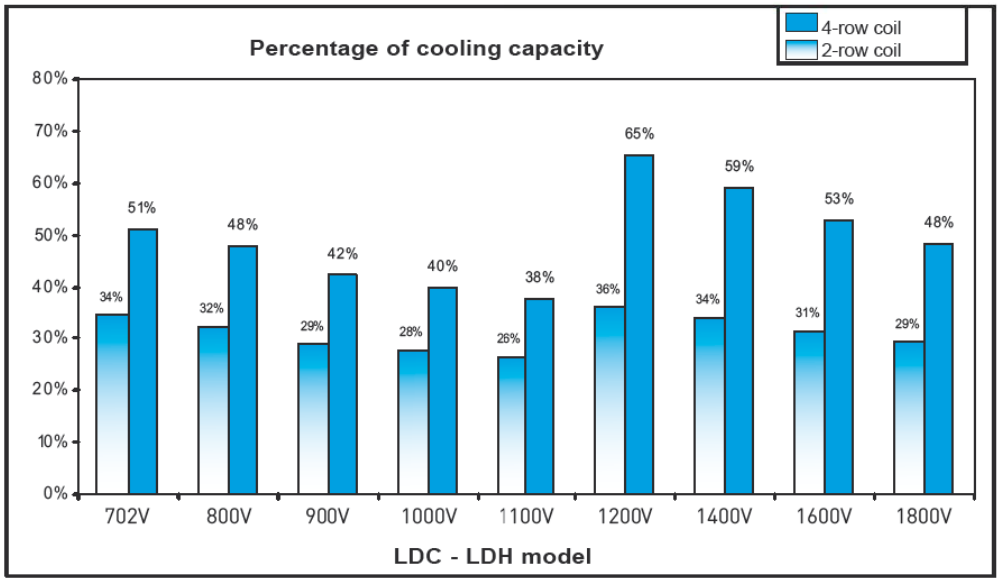
Free cooling schematic diagram



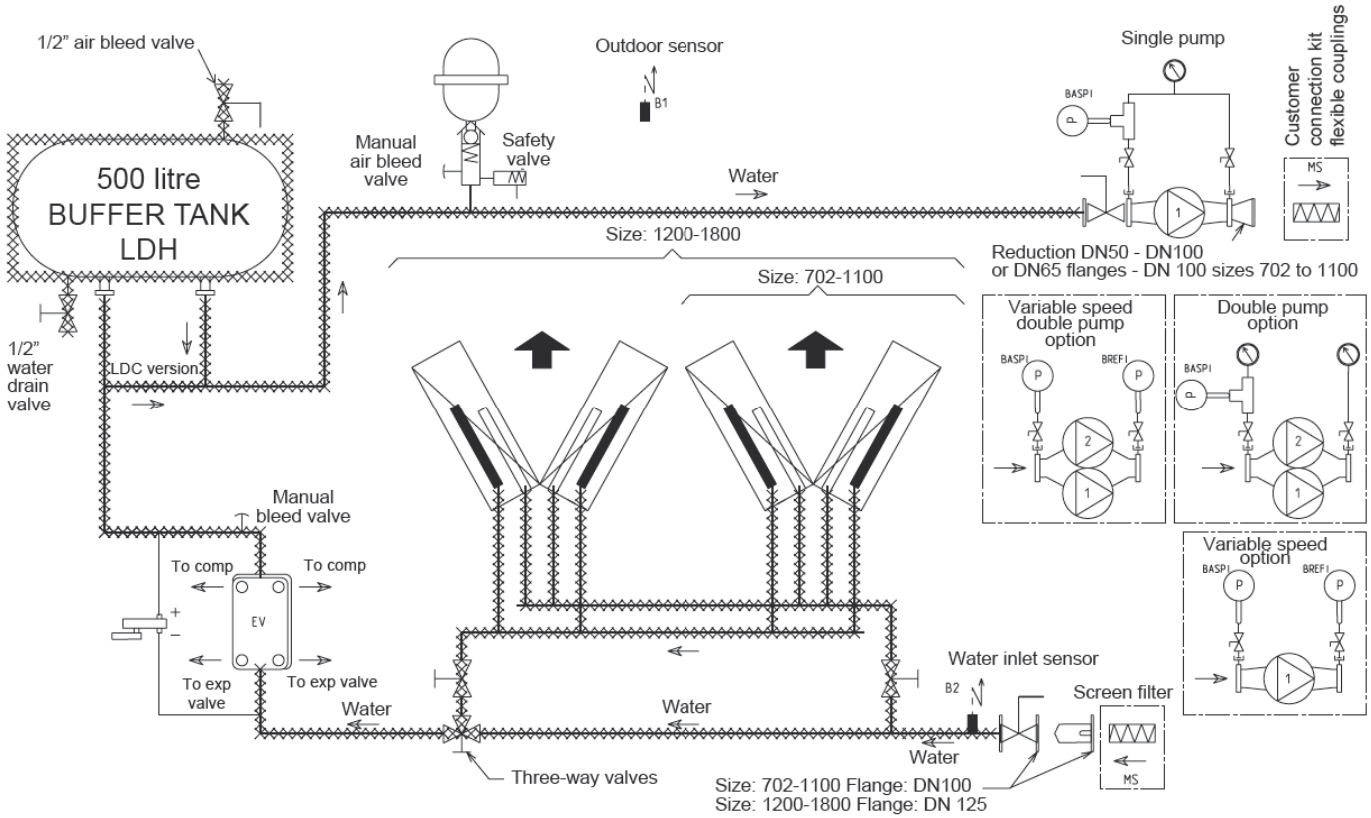
AQUACIAT FREE COOLING modules are available with 2- or 4-row chilled water coils according to winter or mid-season refrigeration requirements.

The diagram below indicates, per model, the percentage of the unit's nominal capacity generated during free cooling operation with 2- or 4-row options under the following conditions:

Water inlet temperature +12°C and outdoor air temperature +2°C.



HYDRAULIC DIAGRAM



PERFORMANCE OF CHILLERS AND FREE COOLING MODULES

STANDARD version – STD

	AQUACIAT FREE COOLING		702V	800V	900V	1000V	1100V	1200V	1400V	1600V	1800V
Standard version – STD	Cooling capacity, unit (1)	kW	185	206	246	265	286	327.0	373.0	429.0	483.0
	Power input, unit	kW	60.3	69.7	81.5	89.6	100.2	110	127	145	163
	Chiller's EER efficiency		3.08	2.95	3.02	2.96	2.85	2.96	2.92	2.95	2.96
	Lw/Lp, HP version (3)	dB(A)	90/58					94/62	95/63	97/65	95/63
	Free cooling module		1 V - 2 R					2 V - 2 R			
	Cooling capacity (2)	kW	62.9	66.1	70.9	72.8	74.5	117.7	126.2	134.5	140.9
	Power input	kW	4.0	4.0	4.0	4.0	4.0	8.0	8.0	8.0	8.0
	Free cooling EER efficiency		15.73	16.53	17.73	18.20	18.63	14.71	15.78	16.81	17.61
	Lw/Lp, HP version (3)	dB(A)	85 / 53					88 / 56			
	Free cooling module		1 V - 4 R					2 V - 4 R			
	Cooling capacity (2)	kW	91.7	95.2	100.5	102.4	104.1	173.7	183.7	193.1	200.0
	Power input	kW	4.0	4.0	4.0	4.0	4.0	8.0	8.0	8.0	8.0
	Free cooling EER efficiency		22.93	23.80	25.13	25.60	26.03	21.71	22.96	24.14	25.00
	Lw/Lp, HP version (3)	dB(A)	86 / 54					89 / 57			
Low noise – STD LN and Xtra Low Noise – STD XLN versions	Cooling capacity, unit (1)	kW	181.0	200.0	241.0	258.0	278.0	321.0	364.0	421.0	471.0
	Power input, unit	kW	60.4	70.6	81.7	90.9	102.0	111	129	146.0	164
	Chiller's EER efficiency		3.00	2..83	2.95	2.84	2.72	2.89	2.81	2.88	2.87
	Lw/Lp, LN version (3)	dB(A)	84/52	85/53	84/52	84/52	85/53	87/55	88/56	90/58	88/56
	Lw/Lp, XLN version (3)	dB(A)	81/49	82/50	81/49	81/49	83/51	85/53	86/54	88/56	86/54
	Free cooling module		1 V - 2 R					2 V - 2 R			
	Cooling capacity (2)	kW	57.1	59.6	63.4	64.8	66.1	107.5	114.4	121.0	126.0
	Power input	kW	2.54	2.54	2.54	2.54	2.54	5.08	5.08	5.08	5.08
	Free cooling EER efficiency		22.48	23.46	24.96	25.51	26.02	21.16	22.52	23.82	24.80
	Lw/Lp, LN version (3)	dB(A)	78 / 46					81 / 49			
	Lw/Lp, XLN version (3)	dB(A)	76 / 44					79 / 47			
	Free cooling module		1 V - 4 R					2 V - 4 R			
	Cooling capacity (2)	kW	78.5	80.9	84.3	85.5	86.6	150.3	157.2	163.5	167.9
	Power input	kW	2.54	2.54	2.54	2.54	2.54	5.08	5.08	5.08	5.08
	Free cooling EER efficiency		30.91	31.85	33.19	33.66	34.09	29.59	30.94	32.19	33.05
	Lw/Lp, LN version (3)	dB(A)	79 / 47					82 / 50			
	Lw/Lp, XLN version (3)	dB(A)	77 / 45					80 / 48			

(1) Cooling capacity based on: COOLING +12°C/+7°C, MEG 30% and condenser air inlet temperature +35 °C.

(2) Cooling capacity of the free cooling module based on: water inlet +12°C, MEG 30% and outdoor air temperature +2°C.

(3) **Lw**: overall power level in accordance as per standard ISO3744
Lp: overall pressure level at 10 metres in a free field calculated using the formula Lp=LW-10logS

PERFORMANCE OF CHILLERS AND FREE COOLING MODULES

High Energy Efficiency (HEE) version

	AQUACIAT FREE COOLING HIGH EFFICIENCY HEE		702V	800V	900V	1000V	1100V	1200V	1400V
High Energy Efficiency (HEE) version	Cooling capacity, unit (1)	kW	189	213	256	275	304	338	388
	Power input, unit	kW	61	70	83	91	98	110	125
	Chiller's EER efficiency		3.12	3.05	3.09	3.04	3.09	3.07	3.11
	Lw/Lp, HP version (3)	dB(A)	91	92	92	92	93	95	97
	Free cooling module		1V-4R					2V-4R	
	Cooling capacity (2)	kW	62.9	66.1	70.9	72.8	74.5	117.7	126.2
	Power input	kW	4	4	4	4	4	8	8
	Free cooling EER efficiency		15.73	16.53	17.73	18.20	18.63	14.71	15.78
	Lw/Lp, HP version (3)	dB(A)	85 / 53					88 / 56	
	Free cooling module		1V-4R					2V-4R	
	Cooling capacity (2)	kW	91.7	95.2	100.5	102.4	104.1	173.7	183.7
	Power input	kW	4	4	4	4	4	8	8
	Free cooling EER efficiency		22.93	23.80	25.13	25.60	26.03	21.71	22.96
	Lw/Lp, HP version (3)	dB(A)	86 / 54					89 / 57	
Low Noise - HEE LN and Xtra Low Noise - HEE XLN versions	Cooling capacity, unit (1)	kW	185	209	252	272	298	331	380
	Power input, unit	kW	60	70	81	89	98	110	124
	Chiller's EER efficiency		3.08	3	3.11	3.04	3.05	3.01	3.05
	Lw/Lp Low noise version (3)	dB(A)	84	84	84	84	84	87	88
	Lw/Lp Xtra Low noise version (3)	dB(A)	81	81	81	81	81	84	85
	Free cooling module		1 V - 2 R					2 V - 2 R	
	Cooling capacity (2)	kW	57.1	59.6	63.4	64.8	66.1	107.5	114.4
	Power input	kW	2.54	2.54	2.54	2.54	2.54	5.08	5.08
	Free cooling EER efficiency		22.48	23.46	24.96	25.51	26.02	21.16	22.52
	Lw/Lp Low noise version (3)	dB(A)	78 / 46					81 / 49	
	Lw/Lp Xtra Low noise version (3)	dB(A)	76 / 44					79 / 47	
	Free cooling module		1V-4R					2V-4R	
	Cooling capacity (2)	kW	78.5	80.9	84.3	85.5	86.6	150.3	157.2
	Power input	kW	2.54	2.54	2.54	2.54	2.54	5.08	5.08
	Free cooling EER efficiency		30.91	31.85	33.19	33.66	34.09	29.59	30.94
	Lw/Lp Low noise version (3)	dB(A)	79 / 47					82 / 50	
	Lw/Lp Xtra Low noise version (3)	dB(A)	77 / 45					80 / 48	

(1) Net capacity for chilled water temperature 12°C/7°C, MEG 30% and a condenser air inlet temperature of + 35°C - As per standard EN 14511-2013 conditions

(2) Cooling capacity of the free cooling module based on: water inlet +12°C, MEG 30% and outdoor air temperature +2°C.

(3) Lw: Overall power level as per standard ISO 3744
Lp: Overall pressure level measured at 10 metres in a free field, calculated using the formula Lp = Lw - 10logS

CHILLERS' TECHNICAL DATA

STANDARD version – STD

AQUACIAT FREE COOLING			702V	800V	900V	1000V	1100V	1200V	1400V	1600V	1800V
Power supply		ph/Hz/V	3~50Hz 400V (+10%/-10%) + Earth								
Machine protection rating			IP 44								
Control circuit voltage		ph/Hz/V	1~50Hz 230V (+10% / -10%) transformer fitted								
Pump		No.	As per selection in "Hydraulic pump" table								
Storage temperature		°C	+50								
Hydraulic specifications	Minimum system water volume	l	549	555	541	742	927	1165	1107	1520	1116
	Tank volume, model H	l	500								
	Expansion vessel, C & H	l	35					50			
Compressor	Type		Hermetic SCROLL								
	Rotation speed	rpm	2900								
	Start-up mode		Direct in line in series								
	Quantity		4								6
	Power control	No. of stages	8	8	6	8	8	4	6	4	6
		%	100-78-71-57-50-43-28-21-0	100-81-69-62.5-50-37.5-31-19-0	100-83-66-55-33-16-0	100-80-70-60-50-40-30-20-0	100-77-73-54-50-45-27-23-0	100-75-50-25-0	100-78-71-50-28-21-0	100-75-50-25-0	100-83.3-66.6-50-33.3-16.6-0
Refrigeration circuit	Refrigerant oil type		POLYOL ESTER POE 3MAF (32 cSt)								
	Oil capacity	l	16.2	20.4	19.4	22	26.2	25.2	25.2	25.2	37.8
	No. of refrigerating circuits		2								
	Refrigerant (GWP)		R410A (2088)								
	Refrigerant charge	kg	2x20	2x20	2x23	2x25	25+26	2x30	2x40	2x45	2x49
	CO_2 equivalent Tonne	TCO_2Eq	83.52	83.52	96.04	104.4	106.48	135.72	160.77	154.51	204.62
Evaporator	Type		Brazed-plate heat exchangers								
	Water content	l	20.3	20.3	23	29.3	29.3	32	37	50	57
	Chilled water outlet temp. (min./max.)	°C	-12 / +18								
	Minimum water flow rate	m^3/h	22	22	26	33	33	38	43	50	56
	Maximum water flow rate	m^3/h	70	70	81	105	105	113	124	137	150
	Hydraulic connection		DN 100 FLANGE					DN 125 FLANGE			
	Max. pressure, water end	bar	4 bar								
Air-cooled condenser	Type		Finned heat exchanger								
	Fan	mm	Ø 800								
	Number of fans		4					6		8	
	Motor output Standard-STD version	kW	1.64								
	Motor output Low Noise-STD LN and Xtra Low Noise - STD XLN versions	kW	1.13								
	Air flow Standard - STD version	m^3/h	84000	84000	80800	80800	80800	126000	121200	168000	161600
	Air flow Low Noise-STD LN and Xtra Low Noise - STD XLN versions	m^3/h	68800	68800	64800	64800	64800	103200	97200	137600	129600

TECHNICAL CHARACTERISTICS

High Energy Efficiency (HEE) version

AQUACIAT FREE-COOLING HIGH ENERGY EFFICIENCY HEE			702V	800V	900V	1000V	1100V	1200V	1400V
Power supply		ph/Hz/V	3~50Hz 400V (+10%/-10%) + Earth						
Machine protection rating			IP 44						
Control circuit voltage		ph/Hz/V	1~50Hz 230V (+10% / -10%) transformer fitted						
Pump		No.	As per selection in "Hydraulic pump" table						
Storage temperature		°C	+50						
Hydraulic specifications	**Minimum system water volume**	l	561	574	578	779	996	1203	1158
	Tank volume, model H	l	500				950		
	Expansion vessel, C & H	l	35					50 (C) 80 (H)	
Compressor	Type		hermetic SCROLL						
	Rotation speed	rpm	2900 rpm						
	Start-up mode		Direct in line in series						
	Quantity		4						
	Power control	No. of stages	8	8	6	8	8	4	6
		%	100-78-71-57-50-43-28-21-0	100-81-69-62.5-50-37.5-31-19-0	100-83-66-55-33-16-0	100-80-70-60-50-40-30-20-0	100-77-73-54-50-45-27-23-0	100-75-50-25-0	100-78-71-50-28-21-0
Refrigeration circuit	Refrigerant oil type		POLYOL ESTER POE 3 MAF						
	Oil capacity	l	16.2	20.4	19.4	22	26.2	25.2	
	No. of refrigerating circuits		2						
	Refrigerant (GWP)		R410A (2088)						
	Refrigerant charge	kg	2x23	2x23	2x25	2x25	2x27	2x30	2x40
	CO_2 equivalent Tonne	TCO_2Eq	96.04	96.04	104.4	104.4	112.75	135.72	160.77
Evaporator	Type		Brazed-plate exchanger						
	Water content	l	20.3	29.3	29.3	29.3	32	37	37
	Chilled water outlet temp. (min./max.)	°C	-12 / +18						
	Minimum water flow rate	m^3/h	22	33	33	33	38	38	43
	Maximum water flow rate	m^3/h	70	105	105	105	113	124	124
	Hydraulic connection		VICTAULIC DN 100				VICTAULIC DN 125		
	Max. pressure, water end	bar	4 bar						
Air-cooled condenser	Fan		AXIAL WITH DIRECT DRIVE - Ø 800						
	Number of fans		4		6				
	Motor output High Energy Efficiency (HEE) version	kW	1.64						
	Motor output Low Noise-HEE LN and Xtra Low Noise - HEE XLN versions	kW	1.13						
	Air flow High Energy Efficiency version	m^3/h	80800	80800	126000	126000	121200	121200	161600
	Air flow Low Noise-HEE LN and Xtra Low Noise - HEE XLN version	m^3/h	64800	64800	103200	103200	97200	97200	129600

FREE COOLING MODULE TECHNICAL DATA

AQUACIAT FREECOOLING			702V	800V	900V	1000V	1100V	1200V	1400V	1600V	1800V
Standard version – STD	Free cooling module		1 V - 2 R					2 V - 2 R			
	Free cooling coil		2-row finned heat exchanger					2-row finned heat exchanger			
	Fan dia.	mm	800					800			
	Qty x motor output	kW	2x2					4x2			
	Air flow rate	m³/h	43900					87800			
	Free cooling module		1 V - 4 R					2 V - 4 R			
	Free cooling coil		4-row finned heat exchanger					4-row finned heat exchanger			
	Fan dia.	mm	800					800			
	Qty x motor output	kW	2x2					4x2			
	Air flow rate	m³/h	42000					84000			
Low Noise version – LN and Xtra Low Noise version – XLN	Free cooling module		1 V - 2 R					2 V - 2 R			
	Free cooling coil		2-row finned heat exchanger					2-row finned heat exchanger			
	Fan dia.	mm	800					800			
	Qty x motor output	kW	2x1.27					4x1.27			
	Air flow rate	m³/h	34800					69600			
	Free cooling module		1 V - 4 R					2 V - 4 R			
	Free cooling coil		4-row finned heat exchanger					4-row finned heat exchanger			
	Fan dia.	mm	800					800			
	Qty x motor output	kW	2x1.27					4x1.27			
	Air flow rate	m³/h	33500					67000			
Chilled water outlet temp. (min./max.)		°C	-12 / +18								
Minimum water flow rate		m³/h	22.1	24.4	29.3	31.6	34	38	43	50	56
Maximum water flow rate		m³/h	63.2	69.5	77	77	77	106	110	110	110
Water connection		Ø	DN 100 FLANGE					DN 125 FLANGE			
Max. pressure, water end		bar	4 bar								
Storage temperature		°C	+50								

ELECTRICAL CHARACTERISTICS

STANDARD version – STD

AQUACIAT FREECOOLING		702V	800V	900V	1000V	1100V	1200V	1400V	1600V	1800V
Power supply	ph/Hz/V	3~50Hz 400V (+10%/-10%) + Earth								
		COMPRESSORS								
Maximum rated current	A	135	154	181	192	210	237	266	295	356
Starting current	A	324	380	431	442	461	488	586	615	607
Starting current with SOFT START option	A	234	271	307	318	337	364	429	458	483
		FAN MOTORS								
		STANDARD VERSION: 905 rpm								
Maximum rated current	A	13.6 (4x3.4)					20.4 (6x3.4)		27.2 (8x3.4)	
		LOW NOISE - XTRA LOW NOISE 715 rpm versions								
Maximum rated current	A	8.4 (4x2.1)					12.6 (6x2.1)		16.8 (8x2.1)	
Control circuit voltage	ph/Hz/V	1~50Hz 230V (+10% / -10%) transformer fitted								
Control circuit current	A	2.0			3.0		4.0	5.0		
		FREE COOLING OPTION								
Free cooling module		1 V - 2 R					2 V - 2 R			
		STANDARD VERSION: 905 rpm								
Maximum rated current	A	8.6 (2x4.3)					17.2 (4x4.3)			
		LOW NOISE - XTRA LOW NOISE 715 rpm versions								
Maximum rated current	A	5.0 (2x2.5)					10.0 (4x2.5)			
Free cooling module		1 V - 4 R					2 V - 4 R			
		STANDARD VERSION: 905 rpm								
Maximum rated current	A	8.6 (2x4.3)					17.2 (4x4.3)			
		LOW NOISE - XTRA LOW NOISE 715 rpm versions								
Maximum rated current	A	5.0 (2x2.5)					10.0 (4x2.5)			

ELECTRICAL CHARACTERISTICS

High Energy Efficiency (HEE) version

HIGH ENERGY EFFICIENCY (HEE) AQUACIAT FREECOOLING		702V	800V	900V	1000V	1100V	1200V	1400V
Electrical supply ph/Hz/V		3~50Hz 400V (+10%/-10%) + Earth						
		COMPRESSORS						
Maximum rated current	A	135	154	181	192	210	237	266
Starting current	A	324	380	431	442	461	488	586
Starting current with SOFT START option	A	234	271	307	318	337	364	429
		FAN MOTORS						
		High Energy Efficiency (HEE) version - 905 rpm						
Maximum rated current	A	13.6 (4 x 3.4)		20.4 (6 x 3.4)				27.2 (8 x 3.4)
		Low Noise HEE LN and Xtra Low Noise HEE XLN versions - 715 rpm						
Maximum rated current	A	8.4 (4 x 2.1)		12.6 (6 x 2.1)				16.8 (8 x 2.1)
		FREE COOLING OPTION						
Free cooling module		1 V - 2 R					2 V - 2 R	
		High Energy Efficiency (HEE) version - 905 rpm						
Maximum rated current	A	8.6 (2x4.3)					17.2 (4x4.3)	
		Low Noise HEE LN and Xtra Low Noise HEE XLN versions - 715 rpm						
Maximum rated current	A	5 (2x2.5)					10 (4x2.5)	
Free cooling module		1 V - 4 R					2 V - 4 R	
		High Energy Efficiency (HEE) version - 905 rpm						
Maximum rated current		8.6 (2x4.3)					17.2 (4x4.3)	
		Low Noise HEE LN and Xtra Low Noise HEE XLN versions - 715 rpm						
Maximum rated current		5 (2x2.5)					10 (4x2.5)	
		REMOTE CONTROL AUXILIARY CIRCUIT						
Control circuit voltage	A	1~50Hz 230V (+10%/-10%)						
Control circuit current		2			3		4	5

SOUND LEVELS

Sound power level ref $2x10^{-12}$ Pa ± 3 dB

AQUACIAT FREE COOLING		SOUND POWER LEVEL SPECTRUM (dB)							Overall level Lw dB(A)
		125	250	500	1000	2000	4000	8000	
STD version	1V	84	85	82	82	75	69	64	85
	2V	87	88	85	85	78	72	67	88
LN version	1V	81	78	76	73	67	61	56	78
	2V	84	81	79	76	70	64	59	81
XLN version	1V	76	75	74	72	66	61	57	76
	2V	79	78	77	75	69	64	60	79

Sound pressure level ref $2x10^{-5}$ Pa ±3 dB

Measurement conditions: free field, 10 metres from machine, 1.50 metres above floor level, directivity 2

AQUACIAT FREE COOLING		SOUND POWER LEVEL SPECTRUM (dB)							Overall level Lw dB(A)
		125	250	500	1000	2000	4000	8000	
STD version	1V	52	53	50	50	43	37	32	53
	2V	55	56	53	53	46	40	35	56
LN version	1V	49	46	44	41	35	29	24	46
	2V	52	49	47	44	38	32	27	49
XLN version	1V	44	43	42	40	34	29	25	44
	2V	47	46	45	43	37	32	28	47

NOTE: Sound pressure levels depend on each system. As such, the levels listed above are given for information only.
We remind you that only sound power levels are comparable and certified.
As per ISO 3744: Lp = Lw - 10 log S.

HYDRAULIC PUMPS (C AND H VERSIONS)

Single pump

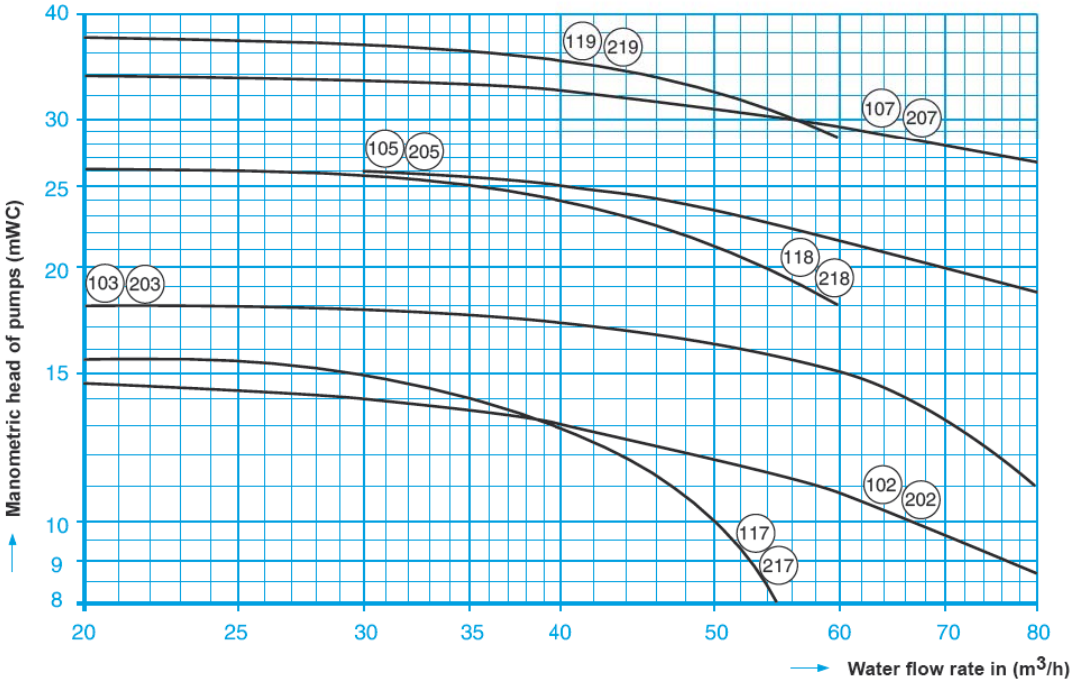
no.	102	103	104	105	106	107	108	109	110	112	117	118	119
For models from 702V to 1100V	x	x		x		x					x	x	x
For models from 1200V to 1800V			x	x	x	x	x	x	x	x			
Power kW	3	4	4	5,5	5,5	7,5	7,5	11	11	15	2,2	4	7,5
Maximum rated current A	6,3	8,0	8,0	10,3	10,3	13,8	13,8	20,0	20,0	26,5	4,5	7,8	13,8

Double pump

no.	202	203	204	205	206	207	208	209	210	212	217	218	219
For models from 702V to 1100V	x	x		x		x					x	x	x
For models from 1200V to 1800V			x	x	x	x	x	x	x	x			
Power kW	3	4	4	5,5	5,5	7,5	7,5	11	11	15	2,2	4	7,5
Maximum rated current A	6,3	8,0	8,0	10,3	10,3	13,8	13,8	20,0	20,0	26,5	4,5	7,8	13,8

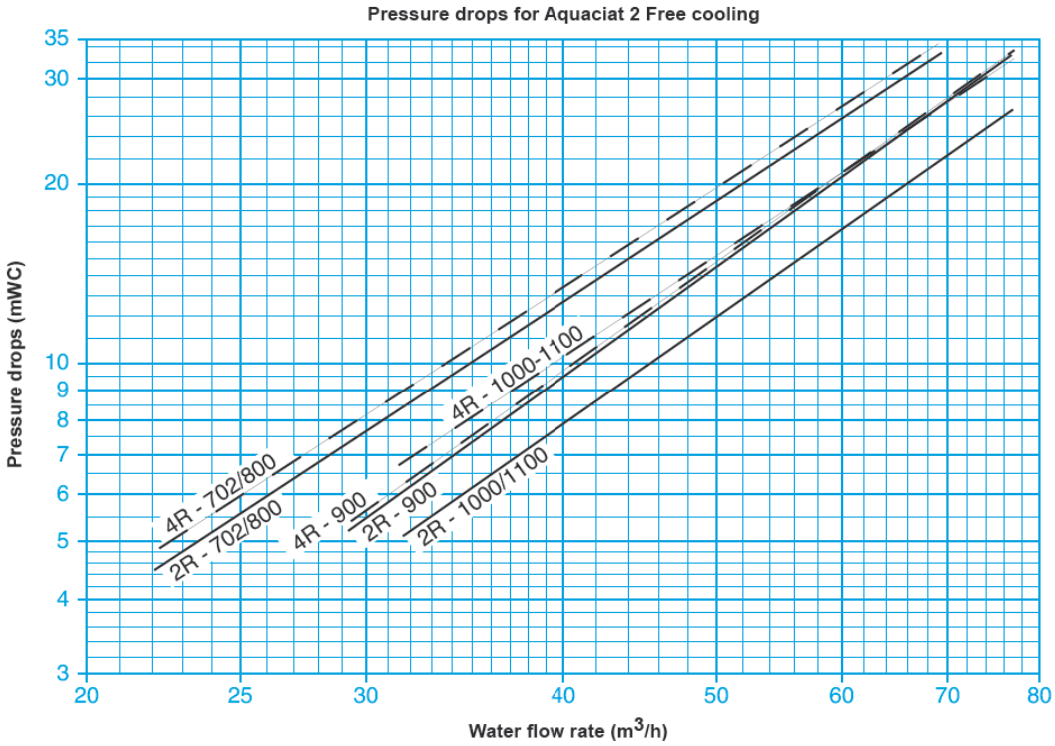
PUMP SELECTION FOR 1V MODELS - SIZES 702 TO 1100

Nos. 102 to 119: single pumps Nos. 202 to 219: dual pumps.



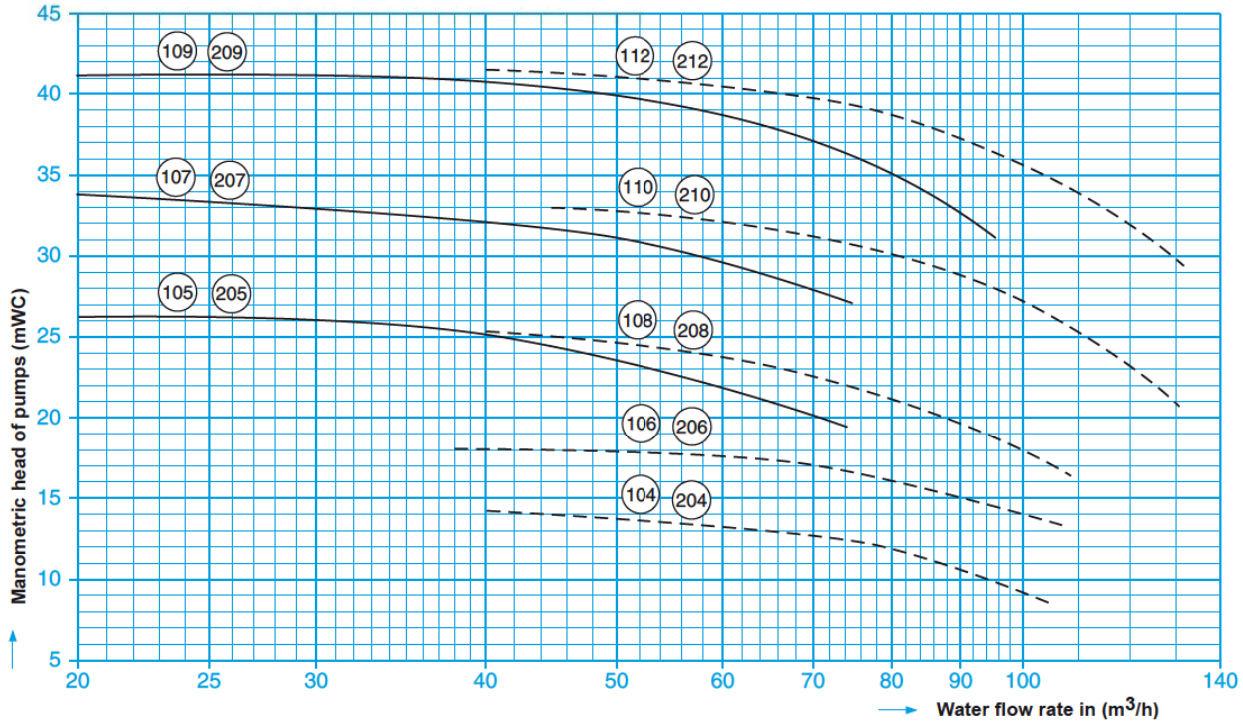
WATER PRESSURE DROP CURVES - SIZES 702-1100

Pressure drops are given for a water mix +30% MEG.



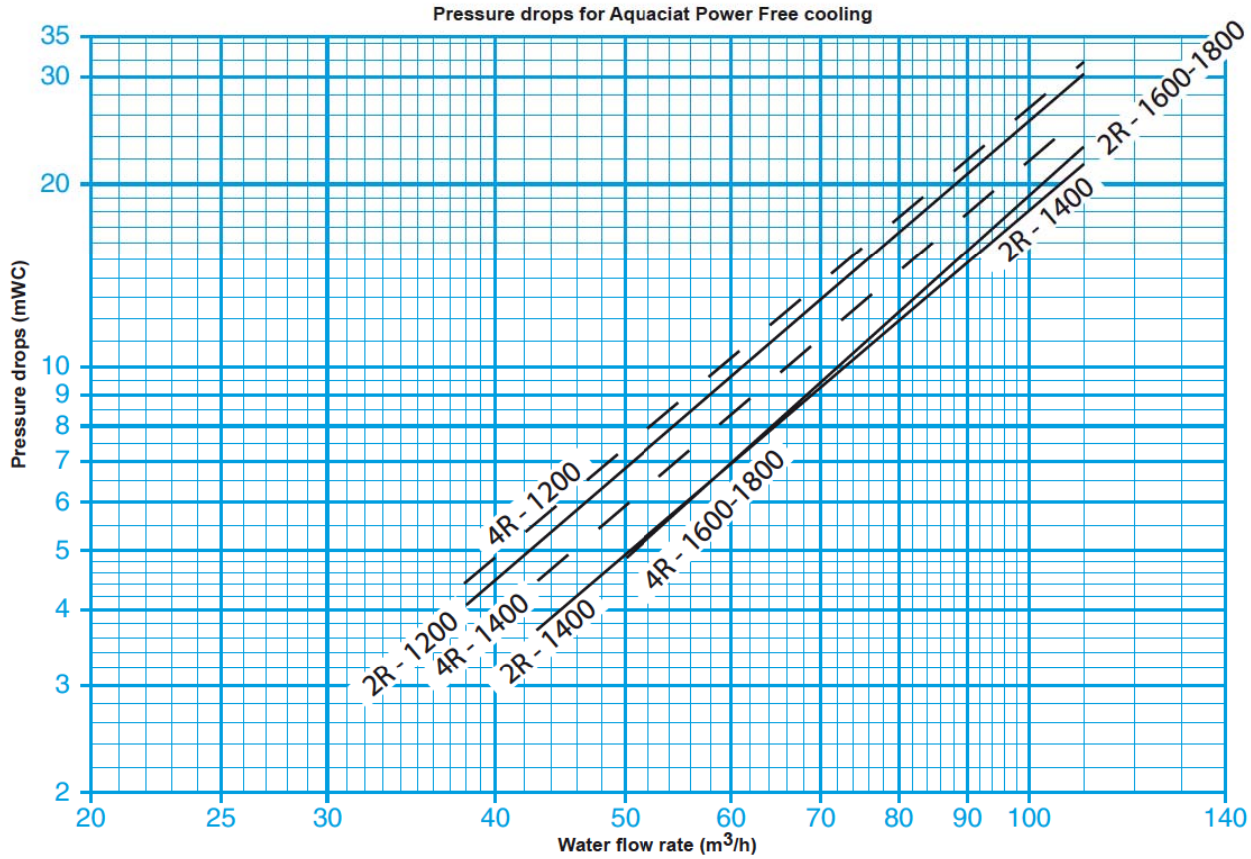
PUMP SELECTION FOR 2V MODELS - SIZES 1200 TO 1800

Nos. 104 to 112: single pumps Nos. 204 to 212: dual pumps.



WATER PRESSURE DROP CURVES - SIZES 1200-1800

Pressure drops are given for a water mix +30% MEG.



VARIABLE SPEED PUMP

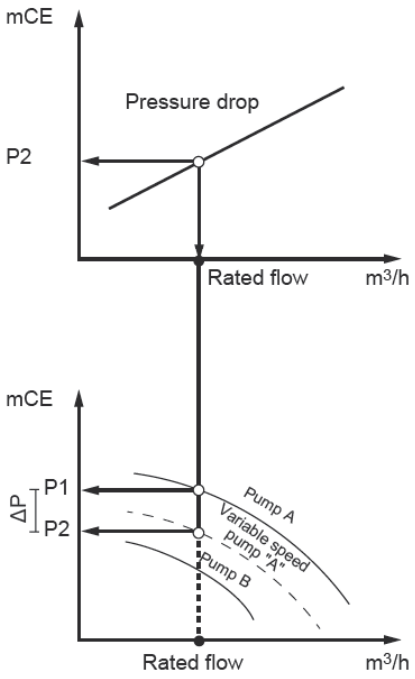
Description

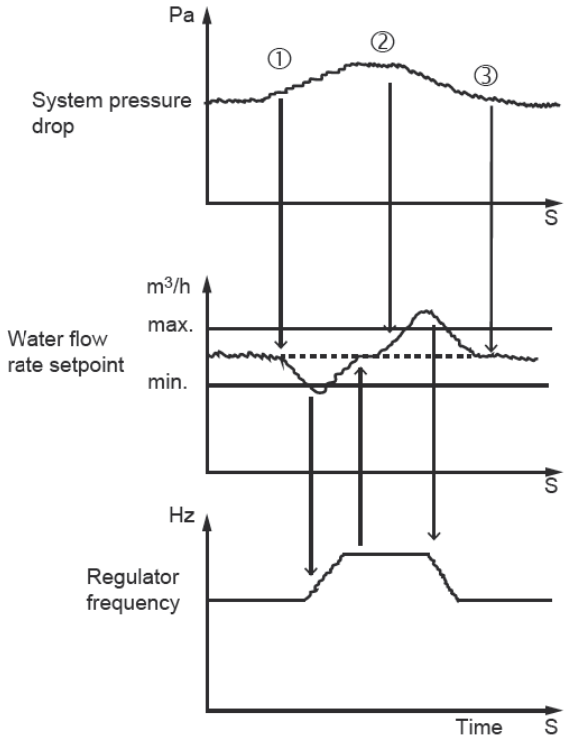
The "Variable Speed Pump" option on the primary circuit saves you energy by adjusting the electrical consumption of one pump to the actual requirements of a hydraulic system (P2 pressure), in particular for oversized installations.
A regulator enables one pump (pump A in the example below) to be adapted, by lowering its pressure P1 to the requirements of system P2, to obtain the optimal water flow setpoint.
Electricity bills relating to the pump's consumption are reduced proportionately, by around 25% per year on average; this means you will see a return on investment (ROI) in only a few years, compared with the same fixed speed pump equipped with a simple flow control valve.

Operating principle

This relies on precise adjustment of the water flow required for an installation when the unit is started up; this must subsequently be maintained within a minimum/maximum range by constantly measuring the differential pressure on the pump terminals.
The speed regulator is then triggered based on the events occurring in the hydraulic system, such as valves opening or closing, re-establishing the water flow setpoint.

Any deviation in the pressure recorded on the unit's terminals is immediately handled by the pump's variable speed control which is automatically adjusted based on the variations generated by the hydraulic system.
The machine independently controls adjustments in the water flow between two (minimum and maximum) setpoints, without any external intervention.





Simple to use

The "Variable Speed Pump" is fully integrated and protected on the CIAT machine and, as it is installed outdoors, there is no need for work to be carried out in the machine room.
The assembly is factory-fitted and pre-set on the unit by CIAT; it is therefore quick to install and reduces the cost of work, in particular because there is no water flow control valve on the outlet of the unit.
The ability to adjust the water flow to your requirements means that the pump pressure can be adapted precisely to the actual pressure drop on the system when it is started up on-site.

SOFT START

A SOFT START function prevents any current peaks when the pump is started up to protect the electrical system, thereby limiting the building's electricity use at peak times and ensuring the smooth operation of the pipework.

STANDBY function

A "Standby" function controls the electricity consumed by the pump; this works by reducing the pump's speed when the compressors are ordered to stop by the control, using a specific algorithm on the regulator.
Lowering the speed to the minimum frequency when the compressors are on standby reduces the water flow to ensure the water loop is perfectly homogenised and the control temperature sensors are well irrigated.
This reduces electricity consumption by around 70% during standby periods, which represents a significant proportion of the machine's normal operating time, in particular for air conditioning applications.

Head office
Avenue Jean Falconnier - B.P. 14
01350 - Culoz - France
Tel.: +33 (0)4 79 42 42 42
Fax: +33 (0)4 79 42 42 10
info@ciat.fr - www.ciat.com

CIAT Service
Tel. : 08 11 65 98 98 (0,15 € / mn)
Fax : 08 26 10 13 63 (0,15 € / mn)