



Water-cooled chillers

DYNACIAT LG

- High energy efficiency
- Compact and **quiet**
- Scroll compressors
- Brazed **plate** heat exchangers
- Electronic control **Self adjusting**



Cooling or heating



Cooling capacity : 35 to 350 kW
 Heating capacity : 40 to 415 kW

USE

The water-cooled packaged LG DYNACIAT series of chillers-heaters are especially designed to supply chilled or hot water with a middle capacity for air conditioning application systems encountered in collective and commercial buildings, as well as industrial premises and processes. These packaged units are designed to be implanted as standard indoors in a technical plant, sheltered against adverse weather and frost.

To operate in COOLING mode, these units must be cooled by a water circulation coming from an external source, such as underground water or city water if using a water flow control valve, or connected to an external water drycooler or a cooling tower.

On a water supply, the LGP series can be used as a heat pump during winter time.

Connected to a heating or cooling floor, fan coil units or an air handling unit, a LGP series heat pump allows the heating and the air conditioning of buildings thanks to a set of valves located on the water circuit (not supplied).

Each unit is assembled, internally wired (logic and starting box), charged with refrigerant, and is subject to a operation test in the factory.

The installation work is simple, and the only operations required on site are electrical wiring and water piping connections.

RANGE

DYNACIAT LG - LGP series

Water-cooled chillers or heat pump models

DYNACIAT ILG series

Water to Water reversible heat pumps models

DYNACIAT LGN series

Chiller models without condenser (for split system)

SPECIFICATIONS

DYNACIAT LG series units are supplied as standard with the following components:

- water cooled condenser,
- chiller evaporator,
- capacity control system on outlet chilled or hot water,
- logic, control and starting electric box :
- . Power supply : 3~50Hz 400V (+6%/-10%) + earth
- . Logic circuit : 1~50Hz 230V (+6%/-10%)
- (transformers are mounted on the unit as standard feature),
- cabinet for indoor installation.

■ Conformity with the EC European directives

- "LOW VOLTAGE" directive (LVD),
- Machines 98 / 37 CEE
- Electromagnetic EMC 89 / 336 CEE
- Pressure vessels DESP 97 / 23 CEE category 2 (LG-LGP-ILG)
- DESP is not applicable (LGN) unit not complete

■ Conforms to standards

- EN 60-204 and EN 378-2



Water-cooled chillers

DYNACIAT LG

TECHNICAL AND ELECTRICAL CHARACTERISTICS

DynaCiat® LG - LGP		120V	150V	200V	240V	300V	350V	400V	500V	540V	600V	753Z	900Z	1000Z	1100Z	1200Z	
Cooling capacity ①	kW	34.7	45.6	61.5	69.0	91.3	105.1	119.3	147.8	159.6	182.4	208.0	249.0	272.0	315.2	347.0	
Power input ①	kW	7.5	9.6	13.0	15.2	19.2	22.3	25.4	32.0	34.4	38.4	55.0	67.0	74.0	78.35	85.5	
Efficiency EER ③		4.62	4.75	4.73	4.53	4.75	4.71	4.69	4.62	4.63	4.75	3.78	3.72	3.67	4.02	4.06	
Heating capacity ②	kW	39.9	52.7	70.4	79.4	105.3	120.6	137.7	163.9	184.1	205.0	250.0	301.0	330.0	374.15	413.10	
Power input ②	kW	9.3	11.9	16.4	18.8	23.9	27.4	31.3	39.1	42.6	48.2	68.0	83.0	92.0	96.5	105.0	
COP ③		4.29	4.42	4.29	4.22	4.40	4.40	4.39	4.19	4.32	4.25	3.67	3.62	3.58	3.87	3.93	
Sound power level	dB(A)	67.0	70.0	69.0	70.0	73.0	74.0	75.0	76.0	75.0	76.0	78.0	79.0	79.0	81.0	82.0	
Compressor	Hermetic SCROLL 2900 rpm																
Starting mode	Direct in line in series																
Quantity		1		2				4				3	4				
Oil quality		POE 3MAF (32 cst).										POE ISO32-160SZ					
Oil volume	l (cir1)	3.25	4.14	6.50	6.50	8.28	8.84	9.76	11.24	8.28	8.28	16.0	16.0	16.0	16.4	16.8	
	l (cir2)	-	-	-	-	-	-	-	-	6.50	8.28	8.0	16.0	16.0	16.4	16.8	
Refrig. circuit no.		1								2							
Refrigerant type (GWP)		R410A (1720)										R407C (1520)					
Refrigerant weight	kg (cir1)	3.1	4	6.8	6.7	9	11	11.5	16.3	6.7	9.6	8	12.3	13.3	14.2	17.8	
	kg (cir2)	-	-	-	-	-	-	-	-	9.3	9.6	13	13.3	13.3	14.2	20.3	
Electric supply	ph/Hz/V	3-50Hz 400V (+6%/-10%) + Earth															
Maxi rated current	A	23.0	28.0	41.0	46.0	56.0	64.0	73.5	91.0	102.0	112.0	142.6	172.4	190.0	208.0	224.0	
Starting current	A	118.0	198.0	139.0	141.0	226.0	253.0	300.0	318.0	272.0	282.0	366.0	395.0	413.0	473.0	489.0	
Starting current Soft Start option	A	81.0	118	90.0	104.0	146.0	163.0	191.0	209.0	192.0	202.0	254.0	284.0	300.0	339.0	357.0	
Breaking capacity	kA	50								100							
Electric box protection		IP22															
Maxi wires section	mm ²	50	50	50	50	50	95	95	95	95	95	185	185	185	185	185	
Control voltage	ph/Hz/V	1~50Hz 230V (+6%/-10%) transformer mounted															
Capacity control	%	100-0	100-0	100-50-0	100-50-0	100-50-0	100-43-0	100-37-0	100-50-0	100-72-50-22-0	100-75-50-25-0	100-66-33-0	100-72-50-22-0	100-75-50-25-0	100-78-50-22-0	100-75-50-25-0	
Evaporator		Brazen plate heat exchanger type															
Water content	l	2.7	3.6	4.8	5.3	9.9	11.3	12.8	15.7	15.2	19.8	15.8	15.8	15.8	18.0	20.3	
Outlet water mini Maxi	°C	-10°C / +18°C										-8°C / +12°C					
Minimum water flow	m ³ /h	3.5	4.8	6.2	7.0	9.5	10.9	12.4	15.2	16.4	19.1	23.1	27.5	30.1	35.0	39.0	
Maximum water flow	m ³ /h	11.2	14.6	19.8	22.2	29.2	34.0	38.4	47.5	51.1	58.4	45.0	54.6	60.0	68.0	77.0	
Water connections	∅	G 1"1/4		G 1"1/2		G 2"		G 2"1/2		DN80 PN16		DN100 PN16			DN125 PN16		
Design pressure	bar	10 bars WATER side															
Condenser		Brazen plate heat exchanger type															
Water content	l	3.0	4.1	5.1	5.8	8.0	9.4	11.1	15.2	13.8	16.0	15.8	15.8	15.8	20.3	27.0	
Outlet water mini Maxi	°C	+30°C / +55°C										+30°C / +50°C					
Minimum water flow	m ³ /h	3.1	4.1	5.4	6.1	8.2	9.4	10.7	13.1	14.3	16.3	20.0	24.0	26.3	29.0	32.0	
Maximum water flow	m ³ /h	8.5	11.1	15.1	17.0	22.3	26.0	29.4	35.0	39.1	44.6	45.0	54.6	60.0	68.0	77.0	
Water connections	∅	G 1"1/2				G 2"		G 2"1/2		DN80 PN16		DN100 PN16			DN125 PN16		
Design pressure	bar	10 bars WATER side															
Storage mini Maxi	°C	-20°C / +50°C															
Mini water pipe content	l	226	299	197	222	292	286	279	454	217	274	457	364	457	451	565	
Operating height ④	mm	1201	1201	1201	1201	1201	1201	1201	1201	1201	1201	1681	1681	1681	1681	1681	
Length	mm	798	798	1492	1492	1492	1492	1492	1492	2380	2380	2200	2200	2200	2200	2200	
Width	mm	883	883	883	883	883	883	883	883	883	883	880	880	880	880	880	
Weight empty	kg	230	300	385	390	590	620	665	735	930	1125	1045	1223	1223	1321	1413	
Weight in operation	kg	240	312	400	406	617	650	703	780	990	1190	1128	1315	1315	1408	1509	

Capacities based on:

① / COOLING mode : +12°C/+7°C and +30°C/+35°C
 ② / HEATING mode : +40°C/+45°C and +12°C/+7°C

③ EER and COP are gross values

④ Height without lifting accessories



Water-cooled chillers

TECHNICAL AND ELECTRICAL CHARACTERISTICS

DynaCiat® ILG		120V	150V	200V	240V	300V
Cooling capacity ①	kW	29,2	38,0	50,8	59,1	77,0
Power input ①	kW	8,0	10,2	13,9	15,8	20,2
Efficiency EER ③		3,65	3,72	3,65	3,74	3,81
Heating capacity ②	kW	38,9	50,8	67,9	78,6	101,5
Power input ②	kW	9,1	11,7	16,1	18,1	23,3
COP ③		4,27	4,34	4,22	4,34	4,35
Sound power level	dB(A)	67	70	69	70	73
Compressor	Hermetic SCROLL 2900 rpm					
Starting mode	Direct in line in series					
Quantity		1		2		
Oil quality	POE 3MAF (32 cst).					
Oil volume	l (cir1)	3.25	3.6	5.5	8.1	9.2
Refrig. circuit no.	1					
Refrigerant type (GWP)	R410A (1720)					
Refrigerant weight	kg (cir1)	3.9	4	6.5	7.8	9.7
Electric supply	ph/Hz/V	3-50Hz 400V (+6%/-10%) + Earth				
Maxi rated current	A	23.0	28.0	41.0	46.0	56.0
Starting current	A	118.0	198.0	139.0	141.0	226.0
Starting current Soft Start option	A	81.0	118	90.0	104.0	146.0
Breaking capacity	kA	50				
Electric box protection	IP22					
Maxi wires section	mm ²	50	50	50	50	50
Control voltage	ph/Hz/V	1-50Hz 230V (+6%/-10%) transformer mounted				
Capacity control	%	100-0	100-0	100-50-0	100-50-0	100-50-0
Internal circuit	Braze plate heat exchanger type					
Water content	l	2.7	3.6	4.8	5.3	9.9
Minimum water flow	m ³ /h	5	6,5	9	10	13,5
Maximum water flow	m ³ /h	14	18	25	28	36
Water connections	Ø	G 1"1/2				G 2"
Design pressure	bar	10 bars WATER side				
External circuit	Braze plate heat exchanger type					
Water content	l	2.7	3.6	4.8	5.8	9.9
Minimum water flow	m ³ /h	5	6,5	9	10	13,5
Maximum water flow	m ³ /h	14	18	25	28	36
Water connections	Ø	G 1"1/2				G 2"
Design pressure	bar	10 bars WATER side				
Storage mini Maxi	°C	-20°C / +50°C				
Mini water pipe content	l	226	299	197	222	292
Operating height ④	mm	1201	1201	1201	1201	1201
Length	mm	798	798	1492	1492	1492
Width	mm	883	883	883	883	883
Weight empty	kg	226	289	379	452	595
Weight in operation	kg	237	301	394	468	622

Capacities based on:

① / COOLING mode : +12°C/+7°C and +30°C/+35°C
 ② / HEATING mode : +40°C/+45°C and +12°C/+7°C

③ EER and COP are gross values

④ Height without lifting accessories



TECHNICAL AND ELECTRICAL CHARACTERISTICS

DynaCiat® LGN		120Z	150Z	200Z	240Z	300Z	350Z	400Z	500Z	540Z	600Z	753Z	900Z	1000Z	1100Z	1200Z	
Cooling capacity ①	kW	28.0	41.0	55.0	67.0	81.0	95.0	110.0	134.0	150.0	162.0	204.0	245.0	268.0	296.0	327.2	
Power input	kW	7.0	11.0	15.0	19.0	22.0	27.0	30.0	37.0	41.0	45.0	55.0	67.0	73.0	81.7	90.0	
Discharge capacity ①	kW	35.0	52.0	70.0	86.0	103.0	122.0	140.0	171.0	191.0	207.0	259.0	312.0	341.0	377.7	417.2	
Efficiency EER ②		4.00	3.72	3.66	3.52	3.68	3.51	3.66	3.62	3.65	3.60	3.70	3.65	3.67	3.62	3.63	
Sound power level	dB(A)	67	70	69	70	73	74	75	76	75	76	78	79	79	81	82	
Compressor	Hermetic SCROLL 2900 rpm																
Starting mode	Direct in line in series																
Quantity	1			2					4			3		4			
Oil quality	POE ISO32-160SZ												POE ISO32-160SZ				
Oil volume	l (cir1)	3.8	6.2	7.6	10.0	12.4	14.2	16.0	16.0	12.4	12.4	16.0	16.0	16.0	16.4	16.8	
	l (cir2)	-	-	-	-	-	-	-	-	10.0	12.4	8.0	16.0	16.0	16.4	16.8	
Refrig. circuit no.	1								2								
Refrigerant type (GWP)	R407C (1520)																
Refrigerant weight	Refrigerant not supplied (nitrogen charge)																
Electric supply	ph/Hz/V	3-50Hz 400V (+6%/-10%) + Earth															
Maxi rated current	A	19.5	30.0	39.0	49.0	59.0	68.0	77.0	95.0	108.0	118.0	142.6	172.4	190.0	208.0	224.0	
Starting current	A	120.0	175.0	140.0	195.0	205.0	245.0	254.0	318.0	254.0	264.0	366.0	395.0	413.0	473.0	489.0	
Starting current Soft Start option	A	72.0	104.0	84.0	118.0	124.0	148.0	161.0	208.0	160.0	166.0	254.0	284.0	300.0	339.0	357.0	
Breaking capacity	kA	50	50	50	50	50	50	50	50	50	50	100	100	100	100	100	
Maxi wires section	mm²	50	50	50	50	50	95	95	95	95	95	185	185	185	185	185	
Electric box protection	IP22																
Control voltage	ph/Hz/V	1~50Hz 230V (+6%/-10%) - transformer mounted															
Capacity control	%	100-0	100-0	100-50-0	100-40-0	100-50-0	100-43-0	100-50-0	100-50-0	100-72-45-18-0	100-75-50-25-0	100-66-33-0	100-72-50-22-0	100-75-50-25-0	100-78-50-22-0	100-75-50-25-0	
Evaporator	Brazen plate heat exchanger type																
Water content	l	2.3	2.3	4.5	5.7	5.7	6.8	6.8	7.9	11.3	11.3	15.8	15.8	15.8	18.0	20.3	
Outlet water mini Maxi	°C	-10°C / +12°C										-8°C / +12°C					
Minimum water flow	m³/h	3.5	4.8	6.2	7.0	9.5	10.9	12.4	15.2	16.4	19.1	23.1	27.5	30.1	35.0	39.0	
Maximum water flow	m³/h	11.2	14.6	19.8	22.2	29.2	34.0	38.4	47.5	51.1	58.4	45.0	54.6	60.0	68.0	77.0	
Water connections	∅	G 1"1/4		G 1"1/2		G 2"		G 2"1/2		DN80 PN16		DN100 PN16			DN125 PN16		
Design pressure	bar	10 bars WATER side															
Discharge circuit	Without condenser																
Balance circuit 1 / circuit 2	%	100								54/46		50/50	67/33	56/44	50/50	50/50	50/50
Evaporator	∅ (cir1)	1"1/8	1"1/8	1"3/8	1"3/8	1"5/8	1"5/8	2"1/8	2"1/8	1"3/8	1"5/8	2"1/8	2"1/8	2"1/8	2"1/8	2"1/8	
Water content	∅ (cir2)	-	-	-	-	-	-	-	-	1"5/8	1"5/8	1"3/8	2"1/8	2"1/8	2"1/8	2"1/8	
Outlet water mini Maxi	∅ (cir1)	7/8"	7/8"	7/8"	1"1/8	1"1/8	1"1/8	1"3/8	1"3/8	1"1/8	1"1/8	1"3/8	1"1/8	1"1/8	1"5/8	1"5/8	
Minimum water flow	∅ (cir2)	-	-	-	-	-	-	-	-	1"1/8	1"1/8	1"1/8	1"3/8	1"3/8	1"5/8	1"5/8	
Maximum water flow	bar	29.5 bar HP															
Water connections	°C	-20°C / +50°C															
Design pressure	l	158	233	153	148	227	227	309	376	144	221	370	293	368	353	442	
Operating height ③	mm	1201	1201	1201	1201	1201	1201	1201	1202	1201	1201	1681	1681	1681	1681	1681	
Length	mm	788	788	1482	1482	1482	1482	1482	1482	2370	2370	2200	2200	2200	2200	2200	
Width	mm	873	873	873	873	873	873	873	873	873	873	880	880	880	880	880	
Weight empty	kg	223	284	375	436	518	548	586	591	835	954	975	1135	1135	1161	1229	
Weight in operation	kg	232	296	390	452	543	577	621	636	883	1008	1017	1177	1177	1203	1273	

① Capacities based on : **COOLING mode: +12°C/+7°C and condensing +45°C**

② EER is gross value

③ Height without lifting accessories



Water-cooled chillers

MAIN COMPONENTS

■ Framework

- casing with removable sheets in galvanised steel,
- enamelled paint colors RAL 7024 and RAL 7035

■ Hermetic SCROLL compressors

- Integral motor cooled by suction gas
- Motor protection by a winding internal thermostat
- Mounting on antivibration mounts

■ Evaporator

- Brazed plate heat exchanger(s) type
- End plates and internal plates in AISI 316 stainless steel
- High performance optimised plates profile
- Thermal insulation

■ Condenser

LG - LGP - ILG Series

- Brazed plate heat exchanger(s) type
- End plates and internal plates in AISI 316 stainless steel
- High performance optimised plate profile
- Thermal insulation

LGN Series

- Chiller without condenser
- Possibility of connection on a removed air-cooled condenser EUROPA 2C or AIRIAL series
- Refrigeration sleeves for LGN (without condenser).

■ Control and safety devices

- Thermostatic expansion valve
- High and low refrigerant pressure switch
- Safety relief valves on refrigerant circuit
- Temperature sensors and pressure transducers
- Chilled water flow switch
- Unit starting sequence

■ Electrics box

The entire assembly electric box, containing all the electric components and control process unit (CPU), allows complete control of the functions of the machine, operation monitoring, adjustment of the water temperature settings, or interface with an external managing system.

The electrics box includes:

- Power circuit and remote control circuit
- Wiring numbering
- Main safety switch breaker on front panel with handle
- Control circuit transformer
- Circuit breaker protections on power and control circuits
- Compressor(s) motor(s) contactor(s)
- General earth connection
- Microprocessor electronic system
 - Micro Connect ILG
 - Connect for LG - LGP - LGN
- Free contacts for field wiring signals report.

■ Connect electronic control system

A CIAT microprocessor electronic control system, with CPU, with centralisation of controls and monitoring of internal operating.

Including:

- Selector for Run, Stop, Reset or Remote,
- Running mode selector, COOLING or HEATING,
- Output. RS485 output for BMS control (ModBus-JBus),
- Output adapter for additional potential-free contact board,
- Output adapter for remote control (optional).
- LCD screen for output or internal operation and LED sight glasses

Functions:

- Monitoring of operating information by :
 - direct display of clear text messages in different languages
 - direct display of temperatures and pressures
- Global compressors' control with starting sequence, counting and equalisation of compressors' running times
- Anti-short cycle protection
- Auto-adaptative functions with adjustment of the control system on the running parameters deviation
- Capacity stage control system on each compressor (multi compressors) in accordance with the cooling or heating requirements controlled by the water temperatures
- Control of the internal operating parameters
- Second setting point control
- Direct display of water temperatures
- Diagnosis of operating status and faults :
 - HP/LP, water flow, compressor(s) motor(s), anti-frost
- Remote management and remote control

OPTIONAL EQUIPMENT (KIT TO BE MOUNTED ON-SITE)

■ Optional equipment (delivered separately)

- Remote control box, (Except ILG)
- Additional potential-free contact board, (Except ILG)
- Evaporator and condenser flexible connectors,
- 800 microns water filter, evaporator and condenser,
- For city water use (LG 120 - 500), condenser 2-way control valve,
- For starting with low water temperature (LG 120 - 500) condenser 3-way control valve,
- Phase rotation detector (rotation, phase failure, over voltage, under voltage),
- Soft starter,

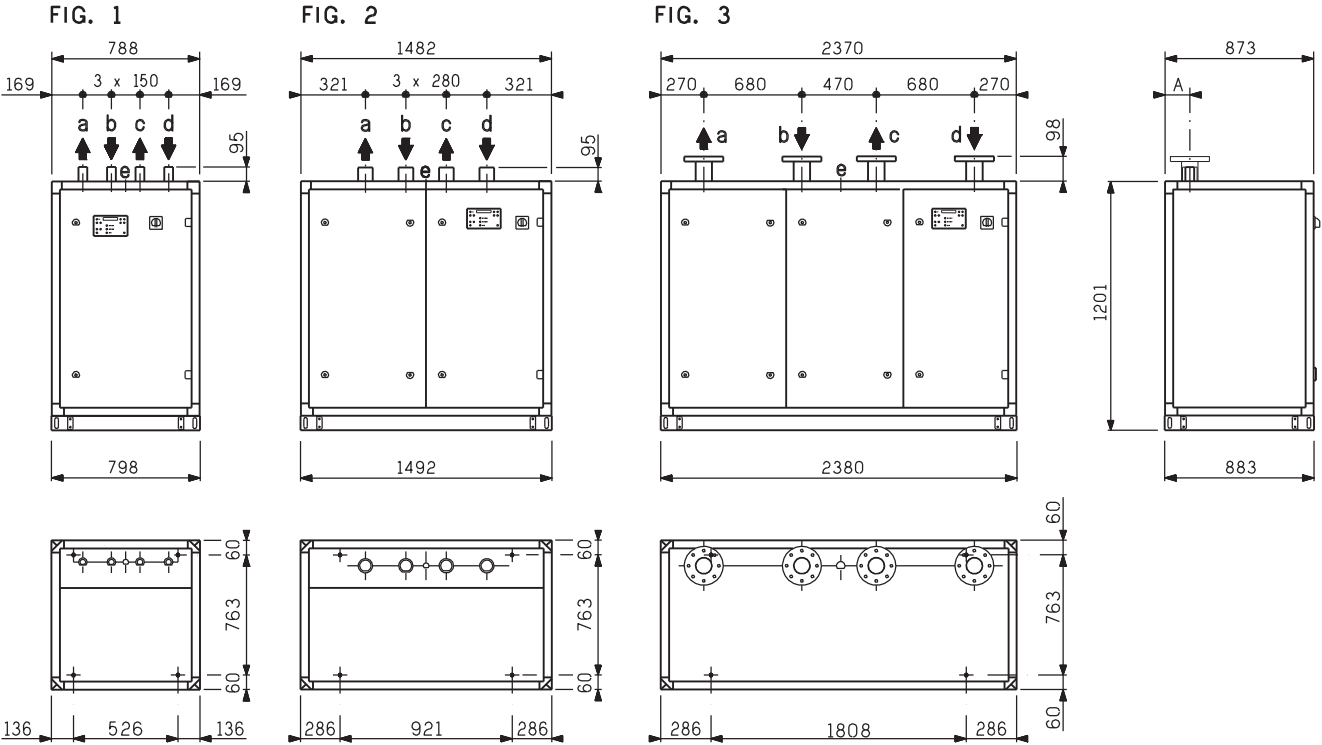




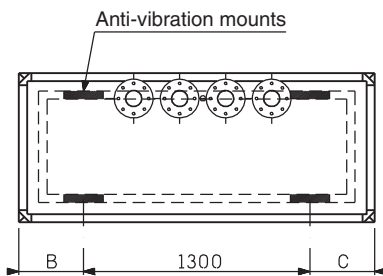
Water-cooled chillers

DIMENSIONS

DYNACIAT LG - LGP 120 - 1200



- a : Condenser cooling water outlet (LG)
Condenser hot water outlet (LGP)
- b : Condenser cooling water inlet (LG)
Condenser hot water inlet (LGP)
- c : Evaporator chilled water outlet
- d : Evaporator chilled water inlet
- e : Electrical supply



LG-LGP	120	150	200	240	300	350	400	500	540	600	753	900	1000	1100	1200		
Figure	1	2							3		4						
	Male connectors										Flange PN16						
a - b	G 1"1/2	G 1"1/2			G 2"	G 2"1/2		DN 80	DN 100		DN 125						
c - d	G 1"1/4	G 1"1/2			G 2"	G 2"1/2		DN 80	DN 100		DN 125						
A	127	126							127	122		125.8					
B											454	492	494	473			
C											446	408	406	427			
D											270	270	270	300	300		
E											690	690	690	607	607		
F											690	690	690	683	683		
Mass Kg	Empty	230	300	385	390	590	620	665	735	930	1125	1045	1223	1223	1321	1413	
	In operation	240	312	400	406	617	650	703	780	990	1190	1128	1315	1315	1408	1509	

DIMENSIONS

DYNACIAT LGN 120 - 1200

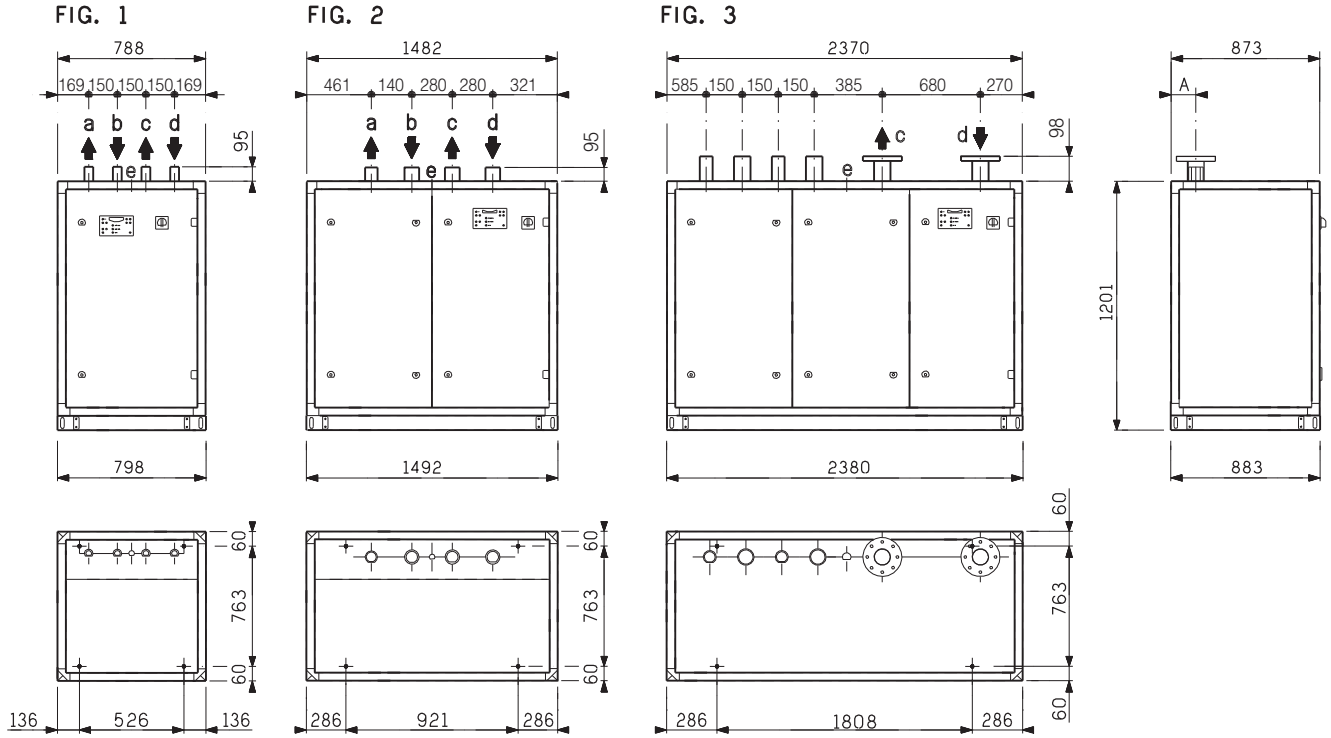
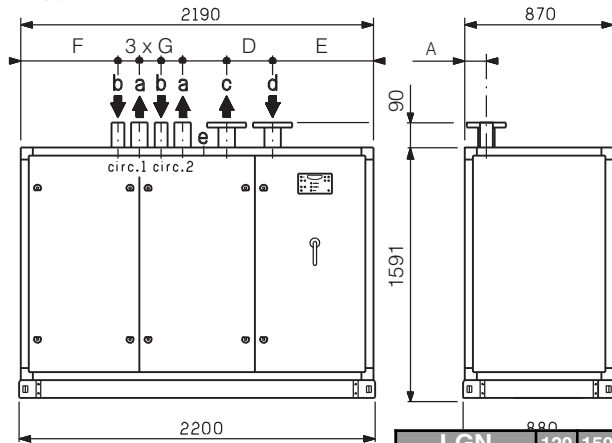
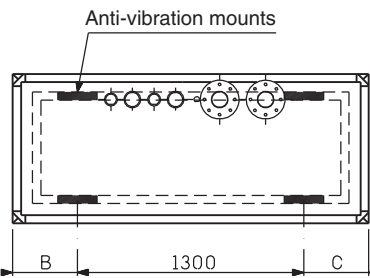


FIG. 4



- a : Discharge pipe connection
- b : Liquid return pipe connection
- c : Evaporator chilled water outlet
- d : Evaporator chilled water inlet
- e : Electrical supply



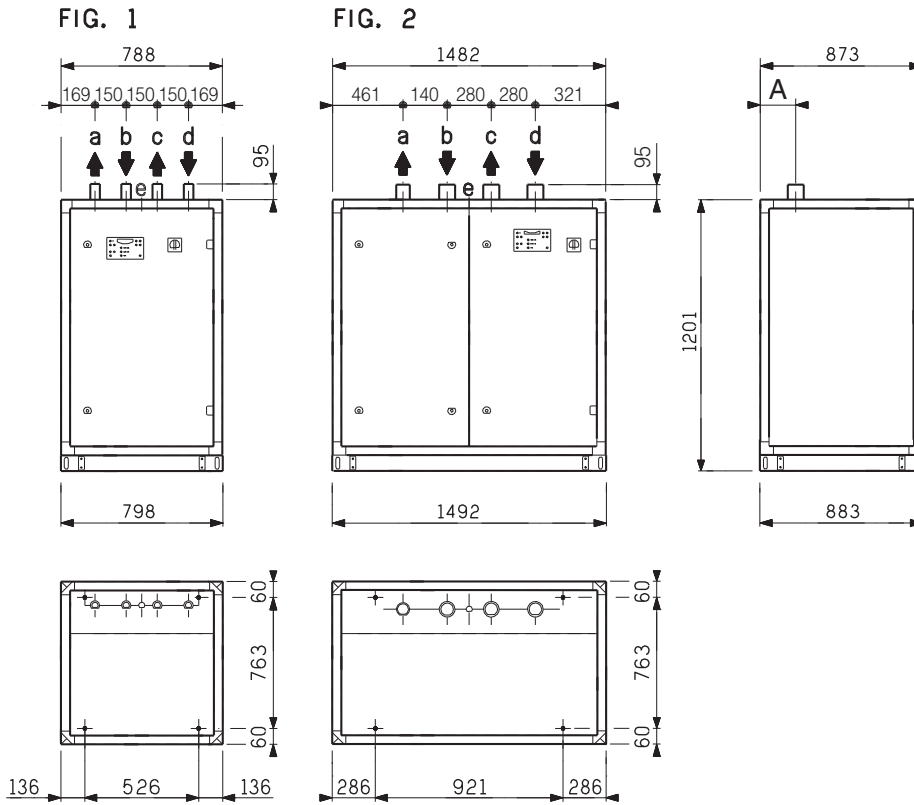
LGN		120	150	200	240	300	350	400	500	540	600	753	900	1000	1100	1200	
Figure		1		2				3		4			4				
Circuit 1	a	1 1/8"	1 3/8"	1 3/8"	1 5/8"	2 1/8"	1 5/8"		Ø 2 1/8"								
	b	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"		1 3/8"	1 1/8"	1 5/8"		1 5/8"				
Circuit 2	a							1 3/8"	1 5/8"	Tube Ø							
	b							1 1/8"	1 1/8"	1 3/8"	2 1/8"	1 5/8"					
c - d		G 1 1/4"	G 1 1/2"	G 2"	G 2 1/2"	PN 16 DN 80		PN 16 DN 100		PN 16 DN 125							
A		127		111				122		125.8							
B												535	563	563	581	568	
C												365	337	337	319	332	
D												270	270	270	300	300	
E												690	690	690	607	607	
F												775	775	775	803	803	
G												80	80	80	80	80	
Mass Kg	Empty	223	284	375	436	518	548	586	591	835	954	975	1135	1135	1161	1229	
	In operation	232	296	390	452	543	577	621	636	883	1008	1017	1117	1117	1203	1273	



Water-cooled chillers

DIMENSIONS

DYNACIAT ILG 120 - 300

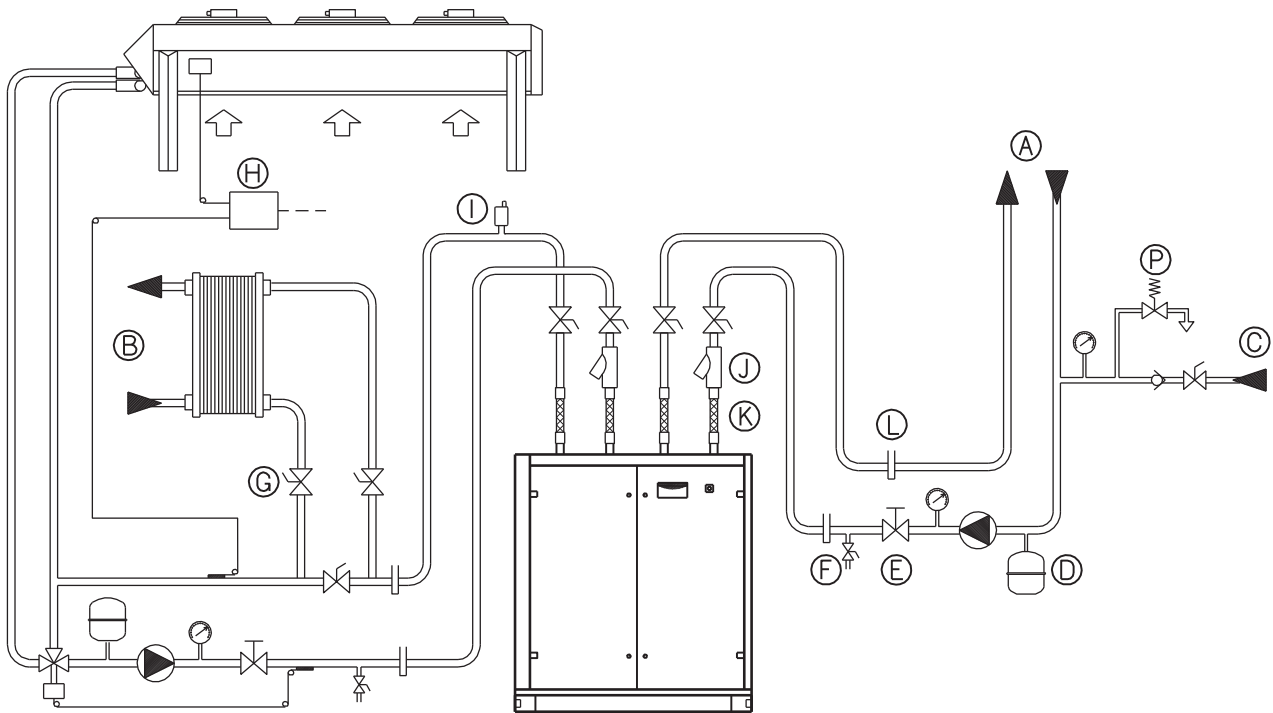


- a** : Water outlet internal circuit
- b** : Water inlet internal circuit
- c** : Water outlet external circuit
- d** : Water inlet external circuit
- e** : Electricity supply

ILG		120	150	200	240	300
Figure		1		2		
		Male connectors				
a - b		G 1"1/2				G 2"
c - d						
A		127		126		
Mass Kg	Empty	226	289	379	452	595
	In operation	237	301	394	468	622

PIPING INSTALLATION EXAMPLE LG - LGP SERIES

■ COOLING installation with water dry-cooler



- | | |
|------------------------------|-----------------------------|
| Ⓐ chilled water circuit | Ⓛ air purge |
| Ⓑ hot water recovery circuit | Ⓜ water filter (compulsory) |
| Ⓒ water filling | Ⓨ flexibles (compulsory) |
| Ⓓ expansion tank | Ⓩ thermometer wells |
| Ⓔ balance valve | ⓐ water discharge |
| Ⓕ drain | ⓑ 4 ways water valve |
| Ⓖ stop valve | ⓓ accessible exchanger |
| Ⓗ temperature controller | ⓔ relief valve |

NOTE: the above piping diagram examples are indicative only and do not constitute installation details.