HIROSS

ENGINEERING DATA MANUAL

"MINIFLEX"

AIR OR WATER COOLED

AND CHILLED WATER

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INDEX

THE SERIES

The Miniflex series consists of units of two sizes made in three versions:

M50A M75A	up flow air discharge direct expansion units	remote air condenser
M50W M75W	up flow air discharge direct expansion units	built-in, water or glycol cooled condenser
M50C M75C	up flow air discharge chilled water units	

MAIN FEATURES

Vertically shaped units, from approximately 5 to 8 kW nominal cooling capacity.
Minimum footprint, medium height air intake and high level air discharge, fully frontal access for maintenance, low noise emission are the main characteristics of the MINIFLEX series.
Electronic microprocessor control, 24 V secondary circuit.
The units are fully designed, manufactured and tested in conformity with the Company Quality Assurance System that is in accordance with EN 29000 European norms.

ARRANGEMENT AND ACCESSIBILITY

Standard maintenance of the main components can be carried out from the front. To ease the maintenance there are three main separate compartments: the upper one for electrical board with the control section; the intermediate compartment with air filter and a special reclining cooling coil to access to the fan motor; the lower section, fully isolated from the air stream, to service compressor, capillary tube, filter dryer, water condenser (on MxxW series) and humidifier (if fitted), on the 3-way valve in the MxxC units.
The extraordinary replacement of the coil can be done from the front of the unit.

METAL CABINET

Self supporting screw-mounted frame made up with steel plate panels, pearl-white colour RAL 7032, protected by powder painting.
Quick locks on the front panel for an immediate dismounting; it is possible to remove the front panel to have access to the compressor section during the unit operation.
The back panel and the back connections panel are screw mounted to the frame; the panel covering the electrical board is mounted on hinges.

Air intake from the metallic grille cut out of the front panel. Air discharge from the aluminium outlet grille fitted with two screws on top of the unit. The units are standard designed for free air discharge (extension hood, as option on request, allowes horizontal discharge using the same grille with adjustable fins).
Thermal and acoustic lining of the panels, in polyurethan foam, 1" thikness, density 30 kg/m3, self extinguishing in compliance with the following standards: ASTM D 1992, MVSS302, UL94 HBF, California Fest 117 sect. A, UNI-ISO 3795.

REFRIGERATION CIRCUIT (MxxA, MxxW units)

Single refrigeration circuit with hermetic compressor (1 phase for M50A/W and 3 phases for M75A/W).
The compressor is equipped with a proper crankcase heater; an internal thermal protection against over heating of the motor is standard provided.
The circuit incorporates a capillary tube and a filter dryer.
In the air cooled MxxA version the outdoor condenser can be easily coupled by means of precharged lines with quick connections.
Thermal lining of the low temperature refrigerant piping.
The compressor is equipped with two pressure switches to avoid a condensing pressure too high or an evaporating pressure too low. The low pressure switch has an automatic reset and a settable delay (0-300s, 180s default) for winter working while, to avoid compressor cycling at the high discharge pressures, the high pressure switch is equipped with a manual reset.

HEAT TRANSFER COILS

Plate coil in copper tubes with aluminium fins are dimensioned with a high face area to optimize the EER, by reducing the air pressure drop and turbulence and increasing the evaporating temperature.
Air vents valves are provided on the chilled water coil, to allow the discharge of undesidered air in the water circuit.
Plastic pan, corrosion-free, is installed for the condensate drain.

3-WAY VALVE (MxxC units)

A modulating 3-way valve is supplied to control water flow to the coil, equipped with an electric motor with direct or reverse action; a special P controller drives the actuator, depending from the request of regulation. The controllér is provided with the possibility of selection between P and P+I action, for a better flexibility in case of extreme operating conditions.
Manual set of the valve in the closed position (to the coil) is possible for maintenance purposes; a setscrew wrench allows the valve to be manually operated.

CONDENSING SECTION (MxxW units).

The units are provided with stainless-steel, plate type, water condenser. Additionally, a large oversizing is provided to minimize the pressure drop (and the water pump energy consumption).
The MxxW units are provided for operation with city water, tower water or rad-cooler water circuit, that means inlet water temperature up to 30°C as maximum.
To minimize the water consumption and to control the condensing pressure in case of water temperature variation, a 2-way water regulating valve is standardly fitted. By removing the rear connections panel it is possible to correct the pre-factory setting by a rotation of the upper knob (see the Installation and operating Manual for the suggested set).

REFRIGERANT, WATER AND ELECTRICAL CONNECTIONS

The refrigeration, hydraulic and electrical connections are provided from the lower back side of the unit covered by a removable panel.
To allow an easy installation of electrical connections a plastic box is standard provided in the lower part of the cabinet, with:
- voltage supply terminals;
- remote on-off;
- general alarm;
- water leakage alarm;
- on/off new air fan .

FAN SECTION

The units are equipped with a specifically designed centrifugal fan. Single inlet centrifugal fan with weels and housing in deep galvanized steel plate. Forwardely bladed weels. Built-in electrical motors, IP00, directly keyed on the motor shaft, with internal thermal protection. Single-phase, 8 poles for M50A/W and 6 poles for M75A/W , 1-speed motors.
The impellers are statically and dinamically balanced with lifetime lubricated bearings for quiet, vibration-free operation.
The replacement of the fan is available from the front of the unit thanks to the reclining coil. Special Low Flow sensor is standard installed to monitorize the ventilation fault.

AIR FILTER SECTION

The filter section is placed behind the front panel.
Disposable, 1/2" thick, flat type air filter, can be removed, for replacement, from the front of the unit, only by opening the front panel.
EU2 efficiency in compliance with Eurovent EU4/5 Standard.

ELECTRONIC CONTROL
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The units are equipped with the HIROMATIC COMPACT multiprocessor based controller, compatible with the complete HIROMATIC family through the HIROBUS interconnection system.
In the basic version the algorithm provides a control of the air temperature with a minimum of compressor starting peaks. This version can be upgraded on request to also control humidity.
For chilled water units a special algorithm controls the valve aperture giving an even more precise temperature of operations on the valve actuator.
The controller is standard equipped with a custom made Liquid Crystal Display with a very good readability due to the high contrast (20 to 1) and wide viewing angles.
A special version with GRAPHIC display can be supplied on request.

A linearized PTC sensor is provided for temperature readings, when humidity readings are required this sensor must be substituted by the HUMITEMP containing a microproccessor for linearization, temperature compensation of humidity readings and check of the integrity of the measurements.

The display continiously visualizes:
- Return air temperature in degrees Celsius or Fahrenheit
- Return air humidity (optional)
- System status e.g. UNIT ON, ALARM, MANUAL OPERATION, etc.
- Status (ON/OFF) of each single component of the conditioner using graphic symbols :
  - Fan
  - Compressor for direct expansion (MxxA/W) units
  - Valve position in steps of 25% for chilled water MxxC units
  - Heating and dehumidification (optional)
  - Humidifier (optional)

Additionally 3 coloured Light Emitting Diodes inform of:
- Presence of main supply
- Conditioner ON/OFF
- General alarm

Parameters defining the operation of the unit are gathered in the following groups, called menus (The items in brackets are active only when the relevant options on request are provided):
- SETUP: for standard settings recall, selection of °C/°F autorestart and remote ON/OFF
- CONTROL PARAMETERS: including proportional bands, selection of integral control with its integration factor and hysteresis of dehumidification.
- ALARM THRESHOLD LEVELS: for return air temperature/(humidity), room temperature/humidity with optional EEAP sensor, minimum flow threshold level. Low pressure alarm delay time is programmable on the MxxA/W units. The chilled water units have also two free inputs for LOW chilled water flow and HIGH chilled water signalizing (sensors to be provided by the customer)
- INSTALLATION OF OPTIONAL DEVICES: e.g. heaters, humidifier, liquistat sensor and additional room sensor.
- SERVICE: for intelligent manual operation including interlockings timings, electrical overload protection and monitoring of the analogue signals from sensors.

An important feature of the controller is its ease of operation. Short messages in English help the user through the menu.
Push-buttons allow modification of all parameters, passwords at two different levels avoid unauthorized oraccidental modification of the parameters and setpoints.
The push-buttons are also used to switch ON/OFF the unit, to silence and reset an alarm and to recall the status report.

ELECTRIC BOARD

The electric panel is housed in a compartment isolated from the air stream and protected by safety locks with special key.
Additionally a safety plastic shield protects the part of the electric board with power supply higer than 24 V.
The electric panel is in accordance with the recommandation 204-2 of the IEC.
Unit M50 is designed for 220-240V/1/50Hz+E and unit M75 for 380-415V/3/50Hz+N+E power supply. Special features are provided for 380-415V/3/50+N+E power supply for M50 unit and 220-240V/3/50 Hz +E for M75 unit.
Circuit breakers with thermal protection against short circuits are supplied for the electrical devices.
A single phase transformer for power supply to 24 V secondary circuit is provided for maximum safety.
A second winding of 10 Vac is provided to the electronic controller to galvanically isolate the control from the auxiliary circuit and to increase noise rejection.
The electric board is pre-arraged for the installation of the "Liquistat" optional device.
A locking disconnect switch is mounted as standard on the safety shield and is interlocked mechanically to prevent removal of the protection while the switch is in the "on" position.
Automatic restart is provided after a possible power supply failure.
To facilitate the installation, an additional terminal box is provided in the lowest part of the unit, equipped with power supply terminals and voltage-free terminals for remote start up of the unit and report of a general alarm, Liquistat alarm and on/off new-air fan. Additional terminals for report of some operation status (fan and compressor operation) or connections of external optional devices (Firestat, Smokestat) are standard provided into the electrical board.

PACKING

The units are standard packed with wood pallet and cardboard box. A polythene cap protects the unit painted surface.
On request, cardboard box with additional wood crate or wood case for sea transportation can be supplied.

TESTS

Every unit is tested, during the manufacturing and before the delivery, in accordance with the Manufacturing and Inspection Plan (PFC), as provided by the company Quality Assurance System and Manual that relates to the EN 29000 European Standards.
A Quality Test certificate is issued and supplied with the unit, guarantiing the compliance with the appliable standards and procedures.

APPLICATION RANGES

The Miniflex units are provided for operation inside following ranges (the limits are intended for new or correctly maintained and installed units):

- room conditions for MxxA and MxxW units: between 19.5°C, 35% R.H. and 30.0°C, 70% R.H.
- room conditions for MxxC units: between 17.5°C, 35% R.H. and 30.0°C 70% R.H.
- outdoor conditions for MxxA units:
  lower limit -10°C
  -25°C (with Variex accesory on the air condenser)
  upper limit(*) see following tables of performances with various condensers.

Safety device are provided to usefully protect the unit components against damages in case of operation outside the indicated limits.
(*) The surpass of this limit causes the stop of the compressor operation with consequent manual reset operation before restart.

- voltage:

M50 A/W/C		220-240V ± 10%	1-phase	50Hz
	option	380-415V ± 10%	3-phases	50Hz
M75 A/W/C		380-415V ± 10%	3-phases	50Hz
	option	220-240 ± 10%	3-phases	50Hz

- frequency: 50 Hz
- max. length of air condenser piping for MxxA units: 15 m (precharged refrigerant lines)
- max. level difference between condenser and MxxA unit: 2 m when the condenser is down; if more than 6 m above the room unit then install a syphon trap.

- storage conditions: between -20°C and +55°C

The warranty clauses are not operating for any possible damage or malfunction that may occur during or in consequence of operation outside the "application ranges"

MxxA UNITS - TECHNICAL DATA AND PERFORMANCES
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MINIFLEX AIR-COOLED UNITS - series MxxA

TYPE		M50A	M75A
POWER SUPPLY		220-240V/1Ph/ 50 Hz +E	380-415/3Ph/ 50 Hz +N+E
STANDARD RATING CONDITIONS			
room air conditions		24°C DB; 50% R.H. (17°C WB)	
condensing temperature		45°C	
PERFORMANCE CHARACTERISTICS			
total cooling capacity	kW	4.9	7.6
sensible cooling capacity	kW	3.9	6.1
total power input (fan and compr.)	kW	2.0	2.6
compressor power input	kW	1.9	2.2
compressor current input	A	10.3	4.2
fans power input	kW	0.13	0.37
fans current	A	0.8	1.6
volume air flow rate	m3/s	0.247	0.389
available static pressure	Pa	0	0
SHR (sensible/total capacity ratio)	-	0.80	0.80
EER (energy efficiency ratio, room unit only)	-	2.5	2.92
noise (SPL at 2 m free-field)	dB(A)	49.5	51.0
power supply		220/1/50	380/3/50
FAN			
quantity	no	1	1
type		12x4	15x6
poles	no	8	6
COMPRESSOR			
type		hermetic	
nominal power	HP	1.75	2.5
refrigerant		R22	R22
EVAPORATIVE COIL			
tubes/fins		Cu/Al	
fpi		12	12
rows	no	3	3
face area	m2	0.27	0.39
configuration		vertical	
AIR FILTER			
type		flat	
number	no	1	1
material		synthetic fiber	
efficiency		EU2	EU2

REFRIGERANT CONNECTIONS			
unit disch. line	with quick connector for precharged line		
unit liquid line	with quick connector for precharged line		
WATER CONNECTIONS			
condensate drain	mm	20	20
DIMENSIONS			
lenght	mm	600	700
depth	mm	320	360
height	mm	1755	1905
footprint	m2	0.19	0.25
WEIGHTS			
standard units	kg	98	122

Cooling capacities do not consider the heat removed from fan motor that must be added to the system heat load.

Performances tables

In the following tables are indicated the performances of the units at different condensing temperatures.

UNIT M50A

	INDOOR AIR					CAPACITY		COMPRESSOR		
COND.TEMP.	Tin	RHin	Tout	RHout	AIRFLOW	TOTAL	SENS.	POW.	CURR.	HEAT REJ.
[°C]	[°C]	[%]	[°C]	[%]	[m^3/s]	[kW]	[kW]	[kW]	[A]	[kW]
40.0	22.0	50	9.1	99	0.247	4.7	3.8	1.7	10.0	6.4
40.0	23.0	50	9.9	99	0.247	4.9	3.9	1.7	10.1	6.5
40.0	24.0	50	10.7	99	0.247	5.0	3.9	1.7	10.1	6.7
40.0	25.0	50	11.4	99	0.247	5.2	4.0	1.7	10.2	6.9
40.0	26.0	50	12.2	99	0.247	5.4	4.0	1.7	10.2	7.1
40.0	27.0	50	13.0	99	0.247	5.5	4.1	1.8	10.2	7.3
45.0	22.0	50	9.3	99	0.247	4.6	3.8	1.8	10.2	6.4
45.0	23.0	50	10.1	99	0.247	4.7	3.8	1.8	10.3	6.6
45.0	24.0	50	10.9	99	0.247	4.9	3.9	1.9	10.3	6.7
45.0	25.0	50	11.7	99	0.247	5.0	3.9	1.9	10.4	6.9
45.0	26.0	50	12.5	99	0.247	5.2	4.0	1.9	10.4	7.1
45.0	27.0	50	13.3	99	0.247	5.3	4.0	1.9	10.5	7.3
50.0	22.0	50	9.5	99	0.247	4.4	3.7	2.0	10.5	6.4
50.0	23.0	50	10.3	99	0.247	4.6	3.8	2.0	10.6	6.6
50.0	24.0	50	11.1	99	0.247	4.7	3.8	2.0	10.6	6.7
50.0	25.0	50	11.9	99	0.247	4.9	3.8	2.0	10.7	6.9
50.0	26.0	50	12.7	99	0.247	5.0	3.9	2.0	10.7	7.0
50.0	27.0	50	13.6	99	0.247	5.1	3.9	2.1	10.8	7.2
55.0	22.0	50	9.7	99	0.247	4.3	3.6	2.1	10.8	6.4
55.0	23.0	50	10.5	99	0.247	4.4	3.7	2.1	10.9	6.5
55.0	24.0	50	11.3	99	0.247	4.5	3.7	2.1	10.9	6.7
55.0	25.0	50	12.1	99	0.247	4.7	3.8	2.1	11.0	6.8
55.0	26.0	50	13.0	99	0.247	4.8	3.8	2.2	11.1	7.0
55.0	27.0	50	13.8	99	0.247	5.0	3.9	2.2	11.2	7.2
60.0	22.0	50	10.0	99	0.247	4.1	3.6	2.2	11.2	6.3
60.0	23.0	50	10.8	99	0.247	4.2	3.6	2.2	11.3	6.5
60.0	24.0	50	11.6	99	0.247	4.4	3.7	2.2	11.4	6.6
60.0	25.0	50	12.4	99	0.247	4.5	3.7	2.2	11.5	6.8
60.0	26.0	50	13.2	99	0.247	4.7	3.8	2.3	11.5	6.9
60.0	27.0	50	14.0	99	0.247	4.8	3.8	2.3	11.7	7.1

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motor that must be added to the system heat load.

UNIT M75A

	INDOOR AIR					CAPACITY		COMPRESSOR		
COND.TEMP.	Tin	RHin	Tout	RHout	AIRFLOW	TOTAL	SENS.	POW.	CURR.	HEAT REJ.
[°C]	[°C]	[%]	[°C]	[%]	[m^3/s]	[kW]	[kW]	[kW]	[A]	[kW]
40.0	22.0	50	9.1	99	0.389	7.4	6.1	2.0	3.9	9.5
40.0	23.0	50	9.9	99	0.389	7.7	6.2	2.0	3.9	9.7
40.0	24.0	50	10.7	99	0.389	7.9	6.2	2.0	3.9	9.9
40.0	25.0	50	11.5	99	0.389	8.1	6.3	2.1	3.9	10.2
40.0	26.0	50	12.3	99	0.389	8.3	6.4	2.1	3.9	10.4
40.0	27.0	50	13.1	99	0.389	8.6	6.4	2.1	3.9	10.6
45.0	22.0	50	9.3	99	0.389	7.2	6.0	2.2	4.1	9.3
45.0	23.0	50	10.2	99	0.389	7.3	6.0	2.2	4.2	9.6
45.0	24.0	50	11.0	99	0.389	7.6	6.1	2.2	4.2	9.8
45.0	25.0	50	11.8	99	0.389	7.8	6.2	2.2	4.2	10.0
45.0	26.0	50	12.6	99	0.389	8.0	6.2	2.2	4.2	10.2
45.0	27.0	50	13.4	99	0.389	8.3	6.3	2.2	4.2	10.5
50.0	22.0	50	9.7	99	0.389	6.8	5.8	2.3	4.4	9.1
50.0	23.0	50	10.5	99	0.389	7.0	5.9	2.4	4.4	9.4
50.0	24.0	50	11.3	99	0.389	7.2	6.0	2.4	4.4	9.6
50.0	25.0	50	12.1	99	0.389	7.5	6.0	2.4	4.4	9.8
50.0	26.0	50	12.9	99	0.389	7.7	6.1	2.4	4.5	10.1
50.0	27.0	50	13.7	99	0.389	7.9	6.1	2.4	4.5	10.3
55.0	22.0	50	10.0	99	0.389	6.5	5.7	2.5	4.6	8.9
55.0	23.0	50	10.8	99	0.389	6.6	5.7	2.5	4.6	9.2
55.0	24.0	50	11.6	99	0.389	6.9	5.8	2.5	4.6	9.4
55.0	25.0	50	12.4	99	0.389	7.0	5.9	2.6	4.7	9.6
55.0	26.0	50	13.2	99	0.389	7.3	5.9	2.6	4.7	9.9
55.0	27.0	50	14.1	99	0.389	7.5	6.0	2.6	4.7	10.1
60.0	22.0	50	10.3	99	0.389	6.1	5.5	2.7	4.7	8.7
60.0	23.0	50	11.2	99	0.389	6.3	5.6	2.7	4.8	9.0
60.0	24.0	50	12.0	99	0.389	6.5	5.6	2.7	4.8	9.2
60.0	25.0	50	12.7	99	0.389	6.7	5.7	2.7	4.8	9.4
60.0	26.0	50	13.6	99	0.389	6.9	5.8	2.8	4.9	9.6
60.0	27.0	50	14.4	99	0.389	7.1	5.8	2.8	4.9	9.9

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the system heat load.

Normally the unit M50A is matched with the appropriate remote air condenser UCAM50. Similarly the unit M75A with the air condenser UCAM75.

The air condensers are standard equipped with a pressure switch that stops the fan when the condensing pressure decreases below set values, due to the low ambient temperature, to prevent too low and undesired condensing temperatures and excessive dehumidification.

For a quiter operation, it is possible to match MxxA units with remote air condensers in reduced noise version (UCAM51 and UCAM76), with the aim of the VARIEX device. In this way we reduce the condenser fan speed to maintain the fixed value of the condensing temperature.

It is possible otherwise to select an oversized external air condenser (silenced version) to substantially decrease the noise emitted by the condensers: UCAM76 for M50A and ACL103 with Variex for M75A.

In the following table are indicated the performances of the different remote air condensers. We show the heat rejection exchanged by the air condenser with a defined value of the difference between the condensing temperature and the outdoor temperature.

Tcond-outdoor (°C)	Exchanged heat (kW)				
	UCAM50	UCAM51	UCAM75	UCAM76	ACL103
10	3.9	3.7	5.4	5.0	6.4
11	4.3	4.0	6.0	5.4	7.0
12	4.7	4.4	6.5	5.9	7.7
13	5.1	4.7	5.1	6.4	8.3
14	5.5	5.1	7.6	6.9	9.0
15	5.9	5.5	8.1	7.4	9.6
16	6.2	5.8	8.7	7.9	10.3
17	6.6	6.2	9.2	8.4	10.9
18	7.0	6.6	9.8	8.9	11.6
19	7.4	6.9	10.3	9.4	12.2
20	7.8	7.3	10.9	9.9	12.9
21	8.2	7.7	11.4	10.4	13.5
22	8.6	8.0	11.9	10.9	14.1

TECHNICAL DATA AND PERFORMANCES

MINIFLEX WATER COOLED UNIT - series MxxW

TYPE		M50W	M75W
POWER SUPPLY		220-240V/1Ph/ 50 Hz + E	380-415V/3Ph/ 50 Hz +N+E

STANDARD RATING CONDITIONS			
room air conditions		24°C DB; 50% R.H. (17°C WB)	
inlet water temperature		15°C	
condensing temperature		40°C	
PERFORMANCE CHARACTERISTICS			
total cooling capacity	kW	5.0	7.9
sensible cooling capacity	kW	3.9	6.2
total power input (fan and compr.)	kW	1.8	2.4
compressor power input	kW	1.7	2.0
compressor current input	A	10.1	3.9
fan power input	kW	0.13	0.37
fan current	A	0.8	1.6
volume air flow rate	m3/s	0.247	0.389
available static pressure	Pa	0	0
water flow rate	l/s	0.064	0.119
water pressure drop	kPa	2	3
SHR (sensible/total capacity ratio)	-	0.78	0.78
EER (energy efficiency ratio)	-	2.8	3.3
noise (SPL at 2 m free-field)	dB(A)	49.5	51.0
power supply		220/1/50	380/3/50

STANDARD RATING CONDITIONS			
room air conditions		24°C DB; 50% R.H. (17°C WB)	
inlet water temperature		30°C	
condensing temperature		45°C	
PERFORMANCE CHARACTERISTICS			
total cooling capacity	kW	4.9	7.6
sensible cooling capacity	kW	3.9	6.1
total power input (fan and compr.)	kW	2.0	2.6
compressor power input	kW	1.9	2.2
compressor current input	A	10.3	4.2
fans power input	kW	0.13	0.37
fans current	A	0.8	1.6
volume air flow rate	m3/s	0.247	0.389
available static pressure	Pa	0	0
water flow rate	l/s	0.195	0.474
water pressure drop	kPa	17	48
SHR (sensible/total capacity ratio)	-	0.80	0.80
EER (energy efficiency ratio)	-	2.5	2.9
noise (SPL at 2 m free-field)	dB(A)	49.5	51.0
power supply		220/1/50	380/3/50

FAN			
quantity	no	1	1
type		12x4	15x6
poles	no	8	6
COMPRESSOR			
type		hermetic	
nominal power	HP	1.75	2.5
refrigerant		R22	R22
EVAPORATIVE COIL			
tubes/fins		Cu/Al	
fpi		12	12
rows	no	3	3
face area	m2	0.27	0.39
configuration		vertical	
AIR FILTER			
type		flat	
number	no	1	1
material		synthetic fiber	
efficiency		EU2	EU2
CONDENSER			
type		stainless steel plate heat exchanger	
WATER REGULATING VALVE			
type		load pressure actuated	
flow		2-way	
max water operating pressure	bar	10	10
kV	m3/h	1.9	3.1
WATER CONNECTIONS			
condensate drain	mm	20	20
inlet and discharge lines, female GAS	inches	1/2	3/4
DIMENSIONS			
lenght	mm	600	700
depth	mm	320	360
height	mm	1755	1905
footprint	m2	0.19	0.25
WEIGHTS			
standard units	kg	103	127

Performances tables

In the following tables are indicated the performances of the units at different reference conditions.

UNIT M50W

INLET WATER TEMPERATURE 15°C, CONDENSING TEMPERATURE 40°C, STD AIRFLOW RATE 0.247 m3/s

INDOOR AIR				CAPACITY		COMPRESSOR			WATER SIDE	
Tin	RHin	Tout	RHout	TOTAL	SENS.	POW.	CURR.	HEAT REJ.	FLOW	TOT. PR. DROP
[°C]	[%]	[°C]	[%]	[kW]	[kW]	[kW]	[A]	[kW]	[l/s]	[kPa]
22.0	50	9.1	99	4.7	3.8	1.7	10.0	6.4	0.058	2
23.0	50	9.9	99	4.9	3.9	1.7	10.1	6.5	0.061	2
24.0	50	10.7	99	5.0	3.9	1.7	10.1	6.7	0.064	2
25.0	50	11.4	99	5.2	4.0	1.7	10.2	6.9	0.066	2
26.0	50	12.2	99	5.4	4.0	1.7	10.2	7.1	0.069	2
27.0	50	13.0	99	5.5	4.1	1.8	10.2	7.3	0.072	2

INLET WATER TEMPERATURE 30°C, CONDENSING TEMPERATURE 45°C, STD AIRFLOW RATE 0.247 m3/s

INDOOR AIR				CAPACITY		COMPRESSOR			WATER SIDE	
Tin	RHin	Tout	RHout	TOTAL	SENS.	POW.	CURR.	HEAT REJ.	FLOW	TOT. PR. DROP
[°C]	[%]	[°C]	[%]	[kW]	[kW]	[kW]	[A]	[kW]	[l/s]	[kPa]
22.0	50	9.3	99	4.6	3.8	1.8	10.2	6.4	0.172	13
23.0	50	10.1	99	4.7	3.8	1.8	10.3	6.6	0.183	15
24.0	50	10.9	99	4.9	3.9	1.9	10.3	6.7	0.195	17
25.0	50	11.7	99	5.0	3.9	1.9	10.4	6.9	0.206	19
26.0	50	12.5	99	5.2	4.0	1.9	10.4	7.1	0.219	21
27.0	50	13.3	99	5.3	4.0	1.9	10.5	7.3	0.232	24

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motor that must be added to the system heat load.

UNIT M75W

INLET WATER TEMPERATURE 15°C, CONDENSING TEMPERATURE 40°C, STD AIRFLOW RATE 0.389 m3/s

INDOOR AIR				CAPACITY		COMPRESSOR			WATER SIDE	
Tin	RHin	Tout	RHout	TOTAL	SENS.	POW.	CURR.	HEAT REJ.	FLOW	TOT. PR. DROP
[°C]	[%]	[°C]	[%]	[kW]	[kW]	[kW]	[A]	[kW]	[l/s]	[kPa]
22.0	50	9.1	99	7.4	6.1	2.0	3.9	9.5	0.110	3
23.0	50	9.9	99	7.7	6.2	2.0	3.9	9.7	0.114	3
24.0	50	10.7	99	7.9	6.2	2.0	3.9	9.9	0.119	3
25.0	50	11.5	99	8.1	6.3	2.1	3.9	10.2	0.123	3
26.0	50	12.3	99	8.3	6.4	2.1	3.9	10.4	0.128	4
27.0	50	13.1	99	8.6	6.4	2.1	3.9	10.6	0.133	4

INLET WATER TEMPERATURE 30°C, CONDENSING TEMPERATURE 45°C, STD AIRFLOW RATE 0.389 m3/s

INDOOR AIR				CAPACITY		COMPRESSOR			WATER SIDE	
Tin	RHin	Tout	RHout	TOTAL	SENS.	POW.	CURR.	HEAT REJ.	FLOW	TOT. PR. DROP
[°C]	[%]	[°C]	[%]	[kW]	[kW]	[kW]	[A]	[kW]	[l/s]	[kPa]
22.0	50	9.3	99	7.2	6.0	2.2	4.1	9.3	0.423	38
23.0	50	10.2	99	7.3	6.0	2.2	4.2	9.6	0.449	43
24.0	50	11.0	99	7.6	6.1	2.2	4.2	9.8	0.474	48
25.0	50	11.8	99	7.8	6.2	2.2	4.2	10.0	0.503	54
26.0	50	12.6	99	8.0	6.2	2.2	4.2	10.2	0.530	60
27.0	50	13.4	99	8.3	6.3	2.2	4.2	10.5	0.558	66

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motor that must be added to the system heat load.

TECHNICAL DATA AND PERFORMANCES

MINIFLEX CHILLED WATER UNITS - series MxxC

TYPE		M50C	M75C
POWER SUPPLY		220-240/1Ph/50 Hz	380-415/3Ph/50 Hz
STANDARD RATING CONDITIONS			
room air conditions		24°C DB; 50% R.H. (17°C WB)	
inlet and outlet water temperatures		7-12°C	
PERFORMANCE CHARACTERISTICS			
total cooling capacity	kW	4.6	6.8
sensible cooling capacity	kW	3.7	5.7
fans power input	kW	0.13	0.37
fans current	A	0.8	1.6
volume air flow rate (free disch.)	m3/s	0.247	0.389
water flow rate	l/s	0.219	0.324
water pressure drop, coil	kPa	34	25
water pressure drop, total	kPa	44	34
SHR (sensible/total capacity ratio)	-	0.80	0.84
noise (SPL at 2 m free field, free discharge)	dB(A)	47.7	48.0
power supply		220/1/50	380/3/50
STANDARD RATING CONDITIONS			
room air conditions		24°C DB; 50% R.H. (17°C WB)	
inlet and outlet water temperatures		10-15°C	
PERFORMANCE CHARACTERISTICS			
total cooling capacity	kW	3.4	4.9
sensible cooling capacity	kW	3.0	4.5
fans power input	kW	0.13	0.37
fans current	A	0.8	1.6
volume air flow rate (free disch.)	m3/s	0.247	0.389
water flow rate	l/s	0.160	0.233
water pressure drop, coil	kPa	19	14
water pressure drop, total	kPa	25	19
SHR (sensible/total capacity ratio)	-	0.88	0.92
noise (SPL at 2 m free field, free discharge)	dB(A)	47.7	48.0
power supply		220/1/50	380/3/50
FANS			
quantity	no	1	2
type		12x4	15x6
poles	no	8	6
CHILLED WATER COIL			
tubes/fins		copper/aluminium	
fpi		12	12
rows	no	3	3
face area	m2	0.27	0.39
configuration		vertical	
max operating pressure	bar	16	16

AIR FILTER			
type	no	flat	flat
number		1	1
material		synthetic fiber	
efficiency		EU2	EU2
3-WAY VALVE			
valve type		3-way mixing	3-way mixing
actuator		electric	modulating
max operating pressure	bar	16	16
kV	m3/h	2.5	4.0
WATER CONNECTIONS			
inlet and discharge line,			
female GAS	inch	3/4	1
condensate drain	mm	20	20
DIMENSIONS			
lenght	mm	600	700
depth	mm	320	360
height	mm	1755	1905
footprint	m2	0.19	0.25
WEIGHTS			
standard unit		83	102

Cooling capacities do not consider the heat removed from fan motors that must be added to the system heat load.

PERFORMANCES TABLES
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In the following tables are indicated the performances of the units at different reference conditions.
The water side total pressure drop includes the pressure drops of the coil, of the 3-way water valve and of the relevant water pipes.

UNIT M50C

AIR FLOWRATE 0.247 m3/s, GLYCOL CONCENTRATION 0.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet [°C]	outlet [°C]	Tin [°C]	RHin [%]	Tout [°C]	RHout [%]	TOTAL [kW]	SENS. [kW]	FLOW RATE [l/s]	PRESS.DROP [kPa]	PRESS.DROP [kPa]
6.0	11.0	22.0	50	10.3	97	4.1	3.5	0.19	28	35
6.0	11.0	23.0	50	10.4	99	4.5	3.7	0.22	33	43
6.0	11.0	24.0	50	10.6	99	5.1	4.0	0.24	41	53
6.0	11.0	25.0	50	10.8	99	5.7	4.2	0.27	50	65
6.0	11.0	26.0	50	11.0	99	6.3	4.4	0.30	60	78
6.0	11.0	27.0	50	11.1	99	6.9	4.6	0.33	71	93
7.0	12.0	22.0	50	11.1	93	3.7	3.2	0.17	23	29
7.0	12.0	23.0	50	11.2	96	4.1	3.5	0.20	28	36
7.0	12.0	24.0	50	11.4	98	4.6	3.7	0.22	34	44
7.0	12.0	25.0	50	11.5	99	5.1	4.0	0.24	41	54
7.0	12.0	26.0	50	11.7	99	5.7	4.2	0.27	50	66
7.0	12.0	27.0	50	11.9	99	6.3	4.4	0.30	61	80
8.0	13.0	22.0	50	12.0	90	3.3	3.0	0.16	19	24
8.0	13.0	23.0	50	12.1	93	3.7	3.2	0.18	24	30
8.0	13.0	24.0	50	12.2	95	4.2	3.5	0.20	29	37
8.0	13.0	25.0	50	12.4	97	4.7	3.7	0.22	35	45
8.0	13.0	26.0	50	12.5	99	5.2	4.0	0.25	42	55
8.0	13.0	27.0	50	12.7	99	5.7	4.2	0.27	51	66
9.0	14.0	22.0	50	12.9	87	2.9	2.7	0.14	15	19
9.0	14.0	23.0	50	13.0	90	3.3	3.0	0.16	19	25
9.0	14.0	24.0	50	13.1	92	3.8	3.2	0.18	24	31
9.0	14.0	25.0	50	13.2	94	4.2	3.5	0.20	29	38
9.0	14.0	26.0	50	13.3	96	4.7	3.7	0.23	36	46
9.0	14.0	27.0	50	13.5	98	5.3	3.9	0.25	43	56
10.0	15.0	22.0	50	13.8	83	2.5	2.4	0.12	12	15
10.0	15.0	23.0	50	13.9	86	2.9	2.7	0.14	15	19
10.0	15.0	24.0	50	14.0	89	3.4	3.0	0.16	19	25
10.0	15.0	25.0	50	14.0	92	3.8	3.2	0.18	24	31
10.0	15.0	26.0	50	14.2	94	4.3	3.5	0.21	30	39
10.0	15.0	27.0	50	14.3	96	4.8	3.7	0.23	36	47
11.0	16.0	22.0	50	14.8	78	2.1	2.1	0.10	9	11
11.0	16.0	23.0	50	14.8	83	2.5	2.4	0.12	12	15
11.0	16.0	24.0	50	14.8	86	3.0	2.7	0.14	15	20
11.0	16.0	25.0	50	14.9	89	3.4	3.0	0.16	20	25
11.0	16.0	26.0	50	15.0	91	3.8	3.2	0.18	24	31
11.0	16.0	27.0	50	15.2	93	4.3	3.5	0.21	30	39
12.0	17.0	22.0	50	15.8	74	1.9	1.9	0.09	7	8
12.0	17.0	23.0	50	15.8	78	2.1	2.1	0.10	9	11
12.0	17.0	24.0	50	15.7	83	2.6	2.4	0.12	12	15
12.0	17.0	25.0	50	15.8	86	3.0	2.7	0.14	15	20
12.0	17.0	26.0	50	15.9	88	3.4	3.0	0.16	20	25
12.0	17.0	27.0	50	16.0	91	3.9	3.2	0.18	25	32

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M50C

AIR FLOWRATE 0.247 m3/s, GLYCOL CONCENTRATION 0.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	10.0	22.0	50	9.8	98	4.3	3.6	0.26	45	59
6.0	10.0	23.0	50	9.9	99	4.8	3.9	0.29	55	72
6.0	10.0	24.0	50	10.1	99	5.4	4.1	0.32	68	89
6.0	10.0	25.0	50	10.3	99	6.0	4.3	0.36	81	108
6.0	10.0	26.0	50	10.5	99	6.6	4.5	0.39	96	128
6.0	10.0	27.0	50	10.7	99	7.2	4.7	0.43	113	151
7.0	11.0	22.0	50	10.6	95	3.9	3.4	0.23	38	50
7.0	11.0	23.0	50	10.8	97	4.4	3.6	0.26	46	60
7.0	11.0	24.0	50	10.9	99	4.9	3.9	0.29	56	73
7.0	11.0	25.0	50	11.1	99	5.4	4.1	0.32	68	90
7.0	11.0	26.0	50	11.3	99	6.0	4.3	0.36	82	109
7.0	11.0	27.0	50	11.5	99	6.6	4.5	0.39	98	130
8.0	12.0	22.0	50	11.5	92	3.5	3.1	0.21	32	41
8.0	12.0	23.0	50	11.6	94	4.0	3.4	0.24	39	51
8.0	12.0	24.0	50	11.8	96	4.4	3.6	0.26	47	62
8.0	12.0	25.0	50	11.9	98	4.9	3.8	0.29	57	75
8.0	12.0	26.0	50	12.1	99	5.4	4.1	0.32	68	90
8.0	12.0	27.0	50	12.3	99	6.0	4.3	0.36	83	109
9.0	13.0	22.0	50	12.4	88	3.2	2.9	0.19	26	33
9.0	13.0	23.0	50	12.5	91	3.6	3.1	0.21	32	42
9.0	13.0	24.0	50	12.6	93	4.0	3.3	0.24	40	51
9.0	13.0	25.0	50	12.8	95	4.5	3.6	0.27	48	63
9.0	13.0	26.0	50	12.9	97	5.0	3.8	0.30	58	77
9.0	13.0	27.0	50	13.1	99	5.5	4.1	0.33	70	92
10.0	14.0	22.0	50	13.3	85	2.8	2.6	0.17	21	26
10.0	14.0	23.0	50	13.4	88	3.2	2.9	0.19	26	33
10.0	14.0	24.0	50	13.5	90	3.6	3.1	0.21	33	42
10.0	14.0	25.0	50	13.6	93	4.1	3.4	0.24	40	53
10.0	14.0	26.0	50	13.7	95	4.5	3.6	0.27	49	65
10.0	14.0	27.0	50	13.9	97	5.0	3.8	0.30	59	78
11.0	15.0	22.0	50	14.2	81	2.4	2.3	0.14	16	20
11.0	15.0	23.0	50	14.2	85	2.8	2.6	0.17	21	26
11.0	15.0	24.0	50	14.3	88	3.2	2.9	0.19	26	34
11.0	15.0	25.0	50	14.4	90	3.6	3.1	0.22	33	43
11.0	15.0	26.0	50	14.6	92	4.1	3.3	0.24	41	53
11.0	15.0	27.0	50	14.7	94	4.6	3.6	0.27	50	65
12.0	16.0	22.0	50	15.1	77	2.0	2.0	0.12	12	15
12.0	16.0	23.0	50	15.1	81	2.4	2.3	0.14	16	20
12.0	16.0	24.0	50	15.2	84	2.8	2.6	0.17	21	26
12.0	16.0	25.0	50	15.3	87	3.2	2.8	0.19	26	34
12.0	16.0	26.0	50	15.4	90	3.7	3.1	0.22	33	43
12.0	16.0	27.0	50	15.6	92	4.1	3.3	0.25	41	53

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M50C

AIR FLOWRATE 0.247 m3/s, GLYCOL CONCENTRATION 20.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	11.0	22.0	50	10.7	99	3.6	3.3	0.18	28	36
6.0	11.0	23.0	50	10.9	99	4.2	3.6	0.21	36	47
6.0	11.0	24.0	50	11.0	99	4.8	3.8	0.24	46	60
6.0	11.0	25.0	50	11.1	99	5.4	4.1	0.27	57	75
6.0	11.0	26.0	50	11.3	99	6.0	4.3	0.30	69	91
6.0	11.0	27.0	50	11.5	99	6.6	4.5	0.33	83	109
7.0	12.0	22.0	50	11.6	94	3.3	3.1	0.17	24	31
7.0	12.0	23.0	50	11.7	96	3.8	3.3	0.19	30	39
7.0	12.0	24.0	50	11.8	98	4.3	3.6	0.21	37	48
7.0	12.0	25.0	50	12.0	99	4.8	3.8	0.24	46	60
7.0	12.0	26.0	50	12.1	99	5.4	4.1	0.27	58	75
7.0	12.0	27.0	50	12.3	99	6.1	4.3	0.30	70	91
8.0	13.0	22.0	50	12.5	89	3.0	2.8	0.15	20	26
8.0	13.0	23.0	50	12.6	91	3.5	3.1	0.18	26	34
8.0	13.0	24.0	50	12.7	93	4.0	3.3	0.20	33	42
8.0	13.0	25.0	50	12.8	95	4.5	3.6	0.22	40	52
8.0	13.0	26.0	50	12.9	97	5.0	3.8	0.25	49	65
8.0	13.0	27.0	50	13.1	98	5.6	4.1	0.28	60	78
9.0	14.0	22.0	50	13.4	84	2.7	2.5	0.14	17	21
9.0	14.0	23.0	50	13.5	87	3.2	2.8	0.16	22	28
9.0	14.0	24.0	50	13.6	89	3.7	3.1	0.18	28	36
9.0	14.0	25.0	50	13.7	91	4.1	3.3	0.21	35	45
9.0	14.0	26.0	50	13.8	93	4.7	3.6	0.23	43	56
9.0	14.0	27.0	50	13.9	94	5.2	3.8	0.26	53	69
10.0	15.0	22.0	50	14.4	79	2.4	2.3	0.12	14	17
10.0	15.0	23.0	50	14.4	82	2.9	2.6	0.14	18	23
10.0	15.0	24.0	50	14.4	85	3.3	2.8	0.17	24	30
10.0	15.0	25.0	50	14.6	87	3.8	3.1	0.19	30	39
10.0	15.0	26.0	50	14.7	89	4.3	3.3	0.22	37	48
10.0	15.0	27.0	50	14.8	91	4.8	3.6	0.24	46	60
11.0	16.0	22.0	50	15.3	75	2.1	2.0	0.11	11	13
11.0	16.0	23.0	50	15.3	78	2.6	2.3	0.13	15	19
11.0	16.0	24.0	50	15.4	81	3.0	2.5	0.15	20	25
11.0	16.0	25.0	50	15.4	83	3.5	2.8	0.17	25	32
11.0	16.0	26.0	50	15.6	85	3.9	3.1	0.20	32	41
11.0	16.0	27.0	50	15.7	87	4.5	3.3	0.22	39	51
12.0	17.0	22.0	50	16.3	70	1.8	1.7	0.09	8	10
12.0	17.0	23.0	50	16.2	74	2.2	2.0	0.11	12	15
12.0	17.0	24.0	50	16.3	77	2.7	2.3	0.13	16	20
12.0	17.0	25.0	50	16.3	79	3.1	2.6	0.16	21	27
12.0	17.0	26.0	50	16.4	82	3.6	2.8	0.18	27	34
12.0	17.0	27.0	50	16.6	84	4.1	3.0	0.20	33	43

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M50C

AIR FLOWRATE 0.247 m3/s, GLYCOL CONCENTRATION 20.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	10.0	22.0	50	10.2	99	4.0	3.5	0.25	50	65
6.0	10.0	23.0	50	10.3	99	4.6	3.8	0.29	64	84
6.0	10.0	24.0	50	10.4	99	5.2	4.0	0.32	79	104
6.0	10.0	25.0	50	10.6	99	5.8	4.2	0.36	96	127
6.0	10.0	26.0	50	10.8	99	6.4	4.4	0.40	114	152
6.0	10.0	27.0	50	11.0	99	7.0	4.7	0.44	135	180
7.0	11.0	22.0	50	11.0	96	3.6	3.3	0.23	41	54
7.0	11.0	23.0	50	11.1	98	4.1	3.5	0.26	52	67
7.0	11.0	24.0	50	11.3	99	4.6	3.8	0.29	64	83
7.0	11.0	25.0	50	11.4	99	5.2	4.0	0.33	79	104
7.0	11.0	26.0	50	11.6	99	5.8	4.2	0.36	96	128
7.0	11.0	27.0	50	11.8	99	6.4	4.4	0.40	116	154
8.0	12.0	22.0	50	11.9	91	3.3	3.0	0.21	36	46
8.0	12.0	23.0	50	11.9	93	3.8	3.3	0.24	45	58
8.0	12.0	24.0	50	12.1	95	4.3	3.5	0.27	55	72
8.0	12.0	25.0	50	12.2	97	4.8	3.8	0.30	68	89
8.0	12.0	26.0	50	12.4	98	5.3	4.0	0.33	81	108
8.0	12.0	27.0	50	12.6	99	5.9	4.2	0.37	98	130
9.0	13.0	22.0	50	12.7	86	3.0	2.8	0.19	30	39
9.0	13.0	23.0	50	12.8	89	3.5	3.0	0.22	39	50
9.0	13.0	24.0	50	12.9	91	4.0	3.3	0.25	48	63
9.0	13.0	25.0	50	13.1	93	4.4	3.5	0.28	59	77
9.0	13.0	26.0	50	13.3	94	4.9	3.7	0.31	71	94
9.0	13.0	27.0	50	13.4	96	5.5	4.0	0.34	86	114
10.0	14.0	22.0	50	13.6	82	2.8	2.5	0.17	25	32
10.0	14.0	23.0	50	13.7	84	3.2	2.7	0.20	32	42
10.0	14.0	24.0	50	13.8	87	3.6	3.0	0.23	41	53
10.0	14.0	25.0	50	13.9	89	4.1	3.2	0.26	51	67
10.0	14.0	26.0	50	14.1	91	4.6	3.5	0.29	62	82
10.0	14.0	27.0	50	14.3	92	5.1	3.7	0.32	76	100
11.0	15.0	22.0	50	14.5	77	2.4	2.2	0.15	20	26
11.0	15.0	23.0	50	14.6	80	2.9	2.5	0.18	27	34
11.0	15.0	24.0	50	14.7	83	3.3	2.7	0.21	34	45
11.0	15.0	25.0	50	14.8	85	3.8	3.0	0.24	43	57
11.0	15.0	26.0	50	14.9	87	4.2	3.2	0.27	54	71
11.0	15.0	27.0	50	15.1	89	4.7	3.5	0.30	66	87
12.0	16.0	22.0	50	15.4	73	2.2	1.9	0.13	16	20
12.0	16.0	23.0	50	15.5	76	2.6	2.2	0.16	22	28
12.0	16.0	24.0	50	15.6	79	3.0	2.5	0.19	29	37
12.0	16.0	25.0	50	15.7	81	3.4	2.7	0.21	36	47
12.0	16.0	26.0	50	15.8	84	3.9	3.0	0.24	46	60
12.0	16.0	27.0	50	16.0	85	4.4	3.2	0.27	56	74

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M50C

AIR FLOWRATE 0.247 m3/s, GLYCOL CONCENTRATION 30.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	11.0	22.0	50	11.2	95	3.6	3.2	0.18	31	40
6.0	11.0	23.0	50	11.2	98	4.1	3.5	0.21	39	51
6.0	11.0	24.0	50	11.3	99	4.6	3.7	0.24	49	63
6.0	11.0	25.0	50	11.4	99	5.2	4.0	0.27	61	80
6.0	11.0	26.0	50	11.6	99	5.8	4.2	0.30	75	98
6.0	11.0	27.0	50	11.8	99	6.4	4.4	0.34	89	118
7.0	12.0	22.0	50	12.0	90	3.3	3.0	0.17	27	35
7.0	12.0	23.0	50	12.0	92	3.8	3.2	0.20	35	45
7.0	12.0	24.0	50	12.2	95	4.3	3.5	0.22	43	55
7.0	12.0	25.0	50	12.3	97	4.8	3.7	0.25	52	68
7.0	12.0	26.0	50	12.4	98	5.3	4.0	0.28	63	82
7.0	12.0	27.0	50	12.5	99	5.9	4.2	0.31	76	100
8.0	13.0	22.0	50	12.9	84	3.0	2.7	0.16	23	30
8.0	13.0	23.0	50	13.0	87	3.5	3.0	0.18	30	39
8.0	13.0	24.0	50	13.0	90	4.0	3.2	0.21	37	48
8.0	13.0	25.0	50	13.1	92	4.5	3.5	0.23	46	60
8.0	13.0	26.0	50	13.3	94	5.0	3.7	0.26	56	73
8.0	13.0	27.0	50	13.4	96	5.5	4.0	0.29	67	88
9.0	14.0	22.0	50	13.9	79	2.8	2.4	0.14	20	25
9.0	14.0	23.0	50	13.8	82	3.2	2.7	0.17	26	33
9.0	14.0	24.0	50	13.9	85	3.7	3.0	0.19	33	42
9.0	14.0	25.0	50	14.0	87	4.2	3.2	0.22	41	53
9.0	14.0	26.0	50	14.1	90	4.7	3.5	0.24	50	65
9.0	14.0	27.0	50	14.3	91	5.2	3.7	0.27	60	78
10.0	15.0	22.0	50	14.8	75	2.5	2.1	0.13	16	20
10.0	15.0	23.0	50	14.8	78	2.9	2.4	0.15	22	28
10.0	15.0	24.0	50	14.8	80	3.4	2.7	0.18	28	36
10.0	15.0	25.0	50	14.9	83	3.8	3.0	0.20	35	45
10.0	15.0	26.0	50	15.0	85	4.3	3.2	0.23	43	56
10.0	15.0	27.0	50	15.1	88	4.9	3.5	0.25	53	69
11.0	16.0	22.0	50	15.9	70	2.1	1.8	0.11	12	15
11.0	16.0	23.0	50	15.8	74	2.6	2.1	0.14	18	22
11.0	16.0	24.0	50	15.7	76	3.1	2.4	0.16	23	30
11.0	16.0	25.0	50	15.8	79	3.5	2.7	0.18	30	38
11.0	16.0	26.0	50	15.9	82	4.0	3.0	0.21	37	48
11.0	16.0	27.0	50	16.0	84	4.5	3.2	0.23	46	60
12.0	17.0	22.0	50	17.0	68	1.5	1.5	0.08	7	8
12.0	17.0	23.0	50	16.7	70	2.3	1.9	0.12	14	17
12.0	17.0	24.0	50	16.7	73	2.7	2.2	0.14	19	24
12.0	17.0	25.0	50	16.7	75	3.2	2.4	0.17	25	32
12.0	17.0	26.0	50	16.8	78	3.7	2.7	0.19	32	41
12.0	17.0	27.0	50	16.9	80	4.2	3.0	0.22	39	51

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M50C

AIR FLOWRATE 0.247 m3/s, GLYCOL CONCENTRATION 30.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	10.0	22.0	50	10.4	98	3.9	3.4	0.25	55	71
6.0	10.0	23.0	50	10.5	99	4.4	3.7	0.29	68	90
6.0	10.0	24.0	50	10.7	99	5.0	3.9	0.33	86	113
6.0	10.0	25.0	50	10.8	99	5.6	4.2	0.37	105	139
6.0	10.0	26.0	50	11.0	99	6.2	4.4	0.40	125	167
6.0	10.0	27.0	50	11.2	99	6.8	4.6	0.45	149	200
7.0	11.0	22.0	50	11.2	92	3.7	3.2	0.24	49	64
7.0	11.0	23.0	50	11.3	95	4.1	3.5	0.27	60	79
7.0	11.0	24.0	50	11.5	97	4.6	3.7	0.30	73	96
7.0	11.0	25.0	50	11.6	99	5.1	3.9	0.33	88	116
7.0	11.0	26.0	50	11.8	99	5.7	4.2	0.37	105	140
7.0	11.0	27.0	50	12.0	99	6.3	4.4	0.41	127	169
8.0	12.0	22.0	50	12.1	87	3.4	2.9	0.22	43	55
8.0	12.0	23.0	50	12.2	89	3.9	3.2	0.25	53	69
8.0	12.0	24.0	50	12.3	92	4.3	3.4	0.28	65	85
8.0	12.0	25.0	50	12.5	94	4.8	3.7	0.31	78	103
8.0	12.0	26.0	50	12.6	96	5.3	3.9	0.35	94	124
8.0	12.0	27.0	50	12.8	97	5.9	4.1	0.38	111	148
9.0	13.0	22.0	50	13.0	82	3.2	2.7	0.20	37	47
9.0	13.0	23.0	50	13.1	85	3.6	2.9	0.23	46	60
9.0	13.0	24.0	50	13.2	87	4.0	3.2	0.26	57	74
9.0	13.0	25.0	50	13.3	89	4.5	3.4	0.29	69	91
9.0	13.0	26.0	50	13.5	91	5.0	3.7	0.32	83	110
9.0	13.0	27.0	50	13.7	93	5.5	3.9	0.36	99	131
10.0	14.0	22.0	50	13.9	77	2.9	2.4	0.19	31	40
10.0	14.0	23.0	50	14.0	80	3.3	2.7	0.21	39	51
10.0	14.0	24.0	50	14.1	83	3.7	2.9	0.24	49	64
10.0	14.0	25.0	50	14.2	85	4.2	3.2	0.27	60	79
10.0	14.0	26.0	50	14.4	87	4.7	3.4	0.30	73	96
10.0	14.0	27.0	50	14.5	89	5.2	3.6	0.34	88	117
11.0	15.0	22.0	50	14.8	73	2.6	2.1	0.17	25	32
11.0	15.0	23.0	50	14.9	76	3.0	2.4	0.19	33	42
11.0	15.0	24.0	50	15.0	79	3.4	2.7	0.22	42	54
11.0	15.0	25.0	50	15.1	81	3.9	2.9	0.25	52	68
11.0	15.0	26.0	50	15.2	83	4.3	3.2	0.28	64	84
11.0	15.0	27.0	50	15.4	85	4.8	3.4	0.31	77	102
12.0	16.0	22.0	50	15.8	69	2.2	1.8	0.15	20	25
12.0	16.0	23.0	50	15.8	72	2.7	2.1	0.17	27	34
12.0	16.0	24.0	50	15.9	75	3.1	2.4	0.20	35	45
12.0	16.0	25.0	50	16.0	77	3.5	2.6	0.23	44	57
12.0	16.0	26.0	50	16.1	80	4.0	2.9	0.26	55	72
12.0	16.0	27.0	50	16.3	82	4.5	3.1	0.29	66	88

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M75C

AIR FLOWRATE 0.389 m3/s, GLYCOL CONCENTRATION 0.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	11.0	22.0	50	10.7	96	6.0	5.3	0.28	20	27
6.0	11.0	23.0	50	10.9	98	6.7	5.7	0.32	24	33
6.0	11.0	24.0	50	11.0	99	7.5	6.0	0.36	30	40
6.0	11.0	25.0	50	11.2	99	8.4	6.4	0.40	36	49
6.0	11.0	26.0	50	11.4	99	9.4	6.7	0.45	44	60
6.0	11.0	27.0	50	11.7	99	10.3	7.1	0.49	52	71
7.0	12.0	22.0	50	11.6	93	5.4	4.9	0.26	17	22
7.0	12.0	23.0	50	11.7	96	6.1	5.3	0.29	21	28
7.0	12.0	24.0	50	11.8	98	6.8	5.7	0.32	25	34
7.0	12.0	25.0	50	12.0	99	7.5	6.0	0.36	30	41
7.0	12.0	26.0	50	12.2	99	8.5	6.4	0.40	37	50
7.0	12.0	27.0	50	12.4	99	9.4	6.7	0.45	44	61
8.0	13.0	22.0	50	12.4	90	4.8	4.5	0.23	14	18
8.0	13.0	23.0	50	12.5	92	5.5	4.9	0.26	17	23
8.0	13.0	24.0	50	12.7	95	6.1	5.3	0.29	21	28
8.0	13.0	25.0	50	12.8	97	6.9	5.6	0.33	26	34
8.0	13.0	26.0	50	12.9	98	7.7	6.0	0.37	31	42
8.0	13.0	27.0	50	13.2	99	8.5	6.4	0.41	37	51
9.0	14.0	22.0	50	13.4	86	4.2	4.0	0.20	11	14
9.0	14.0	23.0	50	13.4	89	4.8	4.5	0.23	14	18
9.0	14.0	24.0	50	13.5	92	5.5	4.9	0.26	17	23
9.0	14.0	25.0	50	13.6	94	6.2	5.3	0.30	22	29
9.0	14.0	26.0	50	13.8	96	7.0	5.7	0.33	26	35
9.0	14.0	27.0	50	13.9	98	7.8	6.0	0.37	32	43
10.0	15.0	22.0	50	14.3	81	3.6	3.6	0.17	9	11
10.0	15.0	23.0	50	14.3	86	4.2	4.1	0.20	11	14
10.0	15.0	24.0	50	14.4	88	4.9	4.5	0.23	14	19
10.0	15.0	25.0	50	14.5	91	5.6	4.9	0.27	18	24
10.0	15.0	26.0	50	14.6	93	6.3	5.3	0.30	22	29
10.0	15.0	27.0	50	14.8	95	7.1	5.6	0.34	27	36
11.0	16.0	22.0	50	15.2	77	3.2	3.2	0.15	7	9
11.0	16.0	23.0	50	15.3	81	3.6	3.6	0.17	8	11
11.0	16.0	24.0	50	15.3	85	4.2	4.1	0.20	11	14
11.0	16.0	25.0	50	15.3	88	4.9	4.5	0.23	14	19
11.0	16.0	26.0	50	15.5	91	5.6	4.9	0.27	18	24
11.0	16.0	27.0	50	15.6	93	6.3	5.2	0.30	22	29
12.0	17.0	22.0	50	16.1	72	2.7	2.7	0.13	5	7
12.0	17.0	23.0	50	16.2	76	3.2	3.2	0.15	7	9
12.0	17.0	24.0	50	16.2	81	3.6	3.6	0.17	8	11
12.0	17.0	25.0	50	16.2	85	4.3	4.1	0.20	11	15
12.0	17.0	26.0	50	16.3	88	4.9	4.5	0.24	14	19
12.0	17.0	27.0	50	16.4	91	5.7	4.9	0.27	18	24

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M75C

AIR FLOWRATE 0.389 m3/s, GLYCOL CONCENTRATION 0.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	10.0	22.0	50	10.2	98	6.4	5.5	0.38	34	45
6.0	10.0	23.0	50	10.4	99	7.1	5.9	0.42	40	55
6.0	10.0	24.0	50	10.6	99	8.0	6.2	0.48	49	68
6.0	10.0	25.0	50	10.8	99	8.9	6.6	0.53	60	83
6.0	10.0	26.0	50	11.0	99	9.8	6.9	0.59	71	98
6.0	10.0	27.0	50	11.2	99	10.8	7.3	0.64	83	117
7.0	11.0	22.0	50	11.0	94	5.8	5.1	0.35	28	38
7.0	11.0	23.0	50	11.2	97	6.5	5.5	0.39	34	47
7.0	11.0	24.0	50	11.3	98	7.2	5.9	0.43	41	56
7.0	11.0	25.0	50	11.5	99	8.1	6.2	0.48	50	69
7.0	11.0	26.0	50	11.8	99	9.0	6.6	0.54	60	83
7.0	11.0	27.0	50	12.0	99	9.9	6.9	0.59	71	100
8.0	12.0	22.0	50	11.9	91	5.2	4.7	0.31	23	31
8.0	12.0	23.0	50	12.0	94	5.9	5.1	0.35	29	39
8.0	12.0	24.0	50	12.2	96	6.6	5.5	0.39	35	48
8.0	12.0	25.0	50	12.3	97	7.3	5.9	0.44	42	58
8.0	12.0	26.0	50	12.5	99	8.2	6.2	0.49	51	70
8.0	12.0	27.0	50	12.8	99	9.0	6.5	0.54	60	84
9.0	13.0	22.0	50	12.7	88	4.6	4.3	0.28	19	25
9.0	13.0	23.0	50	12.9	90	5.3	4.7	0.31	24	32
9.0	13.0	24.0	50	13.0	93	6.0	5.1	0.36	29	39
9.0	13.0	25.0	50	13.2	95	6.7	5.5	0.40	36	48
9.0	13.0	26.0	50	13.3	97	7.4	5.8	0.44	43	59
9.0	13.0	27.0	50	13.5	98	8.3	6.2	0.49	52	71
10.0	14.0	22.0	50	13.6	84	4.1	3.9	0.24	15	20
10.0	14.0	23.0	50	13.7	87	4.7	4.3	0.28	19	26
10.0	14.0	24.0	50	13.8	90	5.3	4.7	0.32	24	32
10.0	14.0	25.0	50	14.0	92	6.0	5.1	0.36	30	40
10.0	14.0	26.0	50	14.1	94	6.8	5.5	0.40	36	50
10.0	14.0	27.0	50	14.3	96	7.6	5.8	0.45	44	60
11.0	15.0	22.0	50	14.6	80	3.5	3.5	0.21	12	15
11.0	15.0	23.0	50	14.6	84	4.1	3.9	0.24	15	20
11.0	15.0	24.0	50	14.7	87	4.7	4.3	0.28	19	26
11.0	15.0	25.0	50	14.8	90	5.4	4.7	0.32	24	33
11.0	15.0	26.0	50	14.9	92	6.1	5.1	0.36	30	41
11.0	15.0	27.0	50	15.1	94	6.8	5.5	0.41	37	50
12.0	16.0	22.0	50	15.4	75	3.1	3.1	0.18	9	12
12.0	16.0	23.0	50	15.5	80	3.5	3.5	0.21	12	15
12.0	16.0	24.0	50	15.6	84	4.1	3.9	0.24	15	20
12.0	16.0	25.0	50	15.7	87	4.7	4.3	0.28	19	26
12.0	16.0	26.0	50	15.8	89	5.4	4.7	0.32	24	33
12.0	16.0	27.0	50	15.9	92	6.1	5.1	0.36	30	41

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M75C

AIR FLOWRATE 0.389 m3/s, GLYCOL CONCENTRATION 20.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	11.0	22.0	50	11.5	98	4.9	4.9	0.25	18	24
6.0	11.0	23.0	50	11.4	99	6.0	5.4	0.30	25	33
6.0	11.0	24.0	50	11.5	99	6.9	5.8	0.35	32	44
6.0	11.0	25.0	50	11.7	99	7.9	6.2	0.40	41	55
6.0	11.0	26.0	50	11.9	99	8.8	6.5	0.44	49	68
6.0	11.0	27.0	50	12.1	99	9.8	6.9	0.49	59	82
7.0	12.0	22.0	50	12.3	92	4.5	4.5	0.23	16	20
7.0	12.0	23.0	50	12.3	95	5.4	5.0	0.27	21	28
7.0	12.0	24.0	50	12.3	98	6.2	5.4	0.31	27	36
7.0	12.0	25.0	50	12.4	99	7.0	5.8	0.35	33	45
7.0	12.0	26.0	50	12.7	99	7.9	6.2	0.40	41	55
7.0	12.0	27.0	50	12.9	99	8.9	6.5	0.45	50	68
8.0	13.0	22.0	50	13.2	87	4.1	4.1	0.21	13	17
8.0	13.0	23.0	50	13.1	91	5.0	4.6	0.25	18	24
8.0	13.0	24.0	50	13.2	93	5.7	5.0	0.29	23	31
8.0	13.0	25.0	50	13.3	95	6.5	5.4	0.33	29	38
8.0	13.0	26.0	50	13.4	96	7.3	5.8	0.37	35	48
8.0	13.0	27.0	50	13.6	97	8.2	6.1	0.41	43	58
9.0	14.0	22.0	50	14.1	82	3.7	3.7	0.18	11	14
9.0	14.0	23.0	50	14.0	86	4.5	4.2	0.23	15	20
9.0	14.0	24.0	50	14.1	88	5.2	4.6	0.26	20	26
9.0	14.0	25.0	50	14.2	91	6.0	5.0	0.30	25	33
9.0	14.0	26.0	50	14.3	92	6.8	5.4	0.34	31	41
9.0	14.0	27.0	50	14.4	94	7.6	5.8	0.38	38	51
10.0	15.0	22.0	50	15.1	77	3.2	3.2	0.16	9	11
10.0	15.0	23.0	50	14.9	81	4.0	3.8	0.20	13	16
10.0	15.0	24.0	50	14.9	84	4.8	4.2	0.24	17	22
10.0	15.0	25.0	50	15.0	87	5.5	4.6	0.28	21	28
10.0	15.0	26.0	50	15.2	88	6.3	5.0	0.31	27	36
10.0	15.0	27.0	50	15.3	90	7.0	5.4	0.35	33	44
11.0	16.0	22.0	50	16.0	73	2.8	2.8	0.14	7	9
11.0	16.0	23.0	50	15.8	77	3.5	3.3	0.18	10	13
11.0	16.0	24.0	50	15.9	80	4.2	3.8	0.21	14	18
11.0	16.0	25.0	50	15.9	83	5.0	4.2	0.25	18	24
11.0	16.0	26.0	50	16.0	85	5.7	4.6	0.29	23	30
11.0	16.0	27.0	50	16.2	87	6.5	5.0	0.33	28	38
12.0	17.0	22.0	50	17.1	68	2.3	2.3	0.11	5	6
12.0	17.0	23.0	50	16.9	73	3.0	2.9	0.15	8	10
12.0	17.0	24.0	50	16.8	76	3.7	3.3	0.19	11	14
12.0	17.0	25.0	50	16.8	79	4.5	3.8	0.22	15	19
12.0	17.0	26.0	50	16.9	81	5.2	4.2	0.26	19	25
12.0	17.0	27.0	50	17.0	83	5.9	4.6	0.30	24	32

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M75C

AIR FLOWRATE 0.389 m3/s, GLYCOL CONCENTRATION 20.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	10.0	22.0	50	10.6	99	5.8	5.3	0.36	35	47
6.0	10.0	23.0	50	10.8	99	6.7	5.7	0.42	45	61
6.0	10.0	24.0	50	10.9	99	7.6	6.1	0.48	56	78
6.0	10.0	25.0	50	11.1	99	8.6	6.4	0.54	69	96
6.0	10.0	26.0	50	11.3	99	9.5	6.8	0.60	83	116
6.0	10.0	27.0	50	11.5	99	10.4	7.1	0.65	98	137
7.0	11.0	22.0	50	11.5	95	5.2	4.9	0.33	29	39
7.0	11.0	23.0	50	11.5	98	6.0	5.4	0.37	37	50
7.0	11.0	24.0	50	11.7	99	6.8	5.7	0.42	46	62
7.0	11.0	25.0	50	11.9	99	7.7	6.1	0.48	56	78
7.0	11.0	26.0	50	12.1	99	8.6	6.4	0.54	69	96
7.0	11.0	27.0	50	12.3	99	9.6	6.8	0.60	83	117
8.0	12.0	22.0	50	12.3	90	4.8	4.5	0.30	25	34
8.0	12.0	23.0	50	12.4	93	5.5	4.9	0.35	32	43
8.0	12.0	24.0	50	12.5	95	6.3	5.3	0.39	40	54
8.0	12.0	25.0	50	12.7	96	7.1	5.7	0.44	49	67
8.0	12.0	26.0	50	12.9	97	7.9	6.1	0.49	59	82
8.0	12.0	27.0	50	13.1	99	8.8	6.4	0.55	71	99
9.0	13.0	22.0	50	13.2	85	4.4	4.1	0.28	21	28
9.0	13.0	23.0	50	13.3	88	5.1	4.5	0.32	27	37
9.0	13.0	24.0	50	13.4	90	5.8	4.9	0.36	34	47
9.0	13.0	25.0	50	13.5	92	6.5	5.3	0.41	42	58
9.0	13.0	26.0	50	13.7	94	7.4	5.7	0.46	52	72
9.0	13.0	27.0	50	13.9	95	8.2	6.0	0.51	63	87
10.0	14.0	22.0	50	14.0	81	4.0	3.7	0.25	18	24
10.0	14.0	23.0	50	14.1	84	4.6	4.1	0.29	23	31
10.0	14.0	24.0	50	14.2	86	5.3	4.5	0.33	30	40
10.0	14.0	25.0	50	14.4	88	6.0	4.9	0.38	37	50
10.0	14.0	26.0	50	14.5	90	6.8	5.3	0.43	45	62
10.0	14.0	27.0	50	14.7	92	7.6	5.7	0.48	55	76
11.0	15.0	22.0	50	15.0	76	3.5	3.3	0.22	14	19
11.0	15.0	23.0	50	15.0	79	4.2	3.7	0.26	19	26
11.0	15.0	24.0	50	15.1	82	4.8	4.1	0.30	25	33
11.0	15.0	25.0	50	15.2	84	5.5	4.5	0.35	31	43
11.0	15.0	26.0	50	15.4	86	6.3	4.9	0.39	39	53
11.0	15.0	27.0	50	15.6	88	7.0	5.3	0.44	48	66
12.0	16.0	22.0	50	15.9	72	3.0	2.9	0.19	11	15
12.0	16.0	23.0	50	15.9	75	3.7	3.3	0.23	16	21
12.0	16.0	24.0	50	16.0	78	4.3	3.7	0.27	21	27
12.0	16.0	25.0	50	16.1	81	5.0	4.1	0.31	26	35
12.0	16.0	26.0	50	16.2	83	5.7	4.5	0.36	33	45
12.0	16.0	27.0	50	16.4	85	6.5	4.9	0.41	41	56

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M75C

AIR FLOWRATE 0.389 m3/s, GLYCOL CONCENTRATION 30.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	11.0	22.0	50	12.1	93	4.7	4.6	0.25	19	25
6.0	11.0	23.0	50	11.8	97	5.7	5.2	0.30	26	35
6.0	11.0	24.0	50	11.9	99	6.5	5.6	0.34	33	44
6.0	11.0	25.0	50	12.0	99	7.5	6.0	0.39	42	57
6.0	11.0	26.0	50	12.2	99	8.5	6.4	0.44	52	72
6.0	11.0	27.0	50	12.4	99	9.5	6.7	0.49	63	87
7.0	12.0	22.0	50	12.8	88	4.5	4.3	0.24	18	23
7.0	12.0	23.0	50	12.7	91	5.3	4.8	0.28	23	31
7.0	12.0	24.0	50	12.7	94	6.1	5.2	0.32	29	39
7.0	12.0	25.0	50	12.9	96	6.9	5.6	0.36	36	49
7.0	12.0	26.0	50	13.0	98	7.7	6.0	0.40	44	60
7.0	12.0	27.0	50	13.2	99	8.6	6.4	0.45	53	73
8.0	13.0	22.0	50	13.6	83	4.2	3.9	0.22	15	20
8.0	13.0	23.0	50	13.6	86	4.9	4.4	0.26	20	27
8.0	13.0	24.0	50	13.6	89	5.7	4.8	0.29	26	34
8.0	13.0	25.0	50	13.7	91	6.4	5.2	0.34	32	43
8.0	13.0	26.0	50	13.9	93	7.2	5.6	0.38	39	53
8.0	13.0	27.0	50	14.0	95	8.1	6.0	0.42	47	65
9.0	14.0	22.0	50	14.6	78	3.7	3.4	0.19	12	16
9.0	14.0	23.0	50	14.5	81	4.5	3.9	0.23	17	23
9.0	14.0	24.0	50	14.5	84	5.2	4.4	0.27	22	30
9.0	14.0	25.0	50	14.6	87	6.0	4.8	0.31	28	38
9.0	14.0	26.0	50	14.7	89	6.8	5.2	0.35	34	47
9.0	14.0	27.0	50	14.9	91	7.5	5.6	0.39	42	57
10.0	15.0	22.0	50	15.7	73	3.2	3.0	0.17	10	12
10.0	15.0	23.0	50	15.5	77	4.0	3.5	0.21	14	18
10.0	15.0	24.0	50	15.4	80	4.8	4.0	0.25	19	25
10.0	15.0	25.0	50	15.5	82	5.5	4.4	0.29	24	33
10.0	15.0	26.0	50	15.6	84	6.2	4.8	0.32	30	41
10.0	15.0	27.0	50	15.7	87	7.0	5.2	0.37	37	50
11.0	16.0	22.0	50	16.5	70	2.6	2.6	0.13	7	8
11.0	16.0	23.0	50	16.5	72	3.5	3.1	0.18	11	14
11.0	16.0	24.0	50	16.4	75	4.3	3.5	0.22	16	20
11.0	16.0	25.0	50	16.4	78	5.0	4.0	0.26	20	27
11.0	16.0	26.0	50	16.5	81	5.8	4.4	0.30	26	35
11.0	16.0	27.0	50	16.5	83	6.5	4.8	0.34	32	44
12.0	17.0	22.0	50	17.2	67	2.2	2.2	0.12	5	7
12.0	17.0	23.0	50	17.5	68	2.9	2.5	0.13	8	10
12.0	17.0	24.0	50	17.4	71	3.7	3.1	0.19	12	16
12.0	17.0	25.0	50	17.3	74	4.5	3.6	0.23	17	22
12.0	17.0	26.0	50	17.3	77	5.3	4.0	0.27	22	30
12.0	17.0	27.0	50	17.4	79	6.0	4.4	0.31	28	37

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

UNIT M75C

AIR FLOWRATE 0.389 m3/s, GLYCOL CONCENTRATION 30.0% WEIGHT

WATER TEMP.		INDOOR AIR				COOL. CAPACITY		WATER	COIL	TOTAL
inlet	outlet	Tin	RHin	Tout	RHout	TOTAL	SENS.	FLOW RATE	PRESS.DROP	PRESS.DROP
[°C]	[°C]	[°C]	[%]	[°C]	[%]	[kW]	[kW]	[l/s]	[kPa]	[kPa]
6.0	10.0	22.0	50	10.9	97	5.7	5.2	0.37	39	52
6.0	10.0	23.0	50	11.0	99	6.4	5.6	0.42	47	65
6.0	10.0	24.0	50	11.2	99	7.3	6.0	0.48	60	83
6.0	10.0	25.0	50	11.3	99	8.3	6.3	0.54	74	103
6.0	10.0	26.0	50	11.5	99	9.2	6.7	0.60	89	125
6.0	10.0	27.0	50	11.8	99	10.2	7.0	0.66	106	150
7.0	11.0	22.0	50	11.8	91	5.3	4.8	0.35	34	46
7.0	11.0	23.0	50	11.9	94	6.0	5.2	0.39	42	57
7.0	11.0	24.0	50	12.0	96	6.8	5.6	0.44	52	71
7.0	11.0	25.0	50	12.1	98	7.5	6.0	0.49	63	87
7.0	11.0	26.0	50	12.3	99	8.3	6.3	0.54	74	104
7.0	11.0	27.0	50	12.5	99	9.3	6.6	0.60	90	126
8.0	12.0	22.0	50	12.7	86	4.9	4.4	0.32	30	40
8.0	12.0	23.0	50	12.8	88	5.6	4.8	0.36	37	50
8.0	12.0	24.0	50	12.8	91	6.3	5.2	0.41	46	63
8.0	12.0	25.0	50	13.0	93	7.1	5.6	0.46	56	77
8.0	12.0	26.0	50	13.1	95	7.9	5.9	0.51	67	93
8.0	12.0	27.0	50	13.3	96	8.7	6.3	0.57	80	112
9.0	13.0	22.0	50	13.5	81	4.5	4.0	0.29	26	34
9.0	13.0	23.0	50	13.6	84	5.2	4.4	0.34	32	44
9.0	13.0	24.0	50	13.7	86	5.9	4.8	0.38	40	55
9.0	13.0	25.0	50	13.8	89	6.6	5.2	0.43	49	68
9.0	13.0	26.0	50	14.0	90	7.4	5.5	0.48	60	83
9.0	13.0	27.0	50	14.2	92	8.2	5.9	0.53	71	99
10.0	14.0	22.0	50	14.4	76	4.1	3.5	0.27	21	28
10.0	14.0	23.0	50	14.4	79	4.8	4.0	0.31	28	37
10.0	14.0	24.0	50	14.6	82	5.5	4.4	0.35	35	47
10.0	14.0	25.0	50	14.7	84	6.1	4.8	0.40	43	59
10.0	14.0	26.0	50	14.8	86	6.9	5.2	0.45	53	73
10.0	14.0	27.0	50	15.0	88	7.7	5.5	0.50	63	88
11.0	15.0	22.0	50	15.3	72	3.7	3.1	0.24	18	23
11.0	15.0	23.0	50	15.4	75	4.3	3.6	0.28	23	31
11.0	15.0	24.0	50	15.4	78	5.0	4.0	0.32	30	40
11.0	15.0	25.0	50	15.6	80	5.7	4.4	0.37	37	51
11.0	15.0	26.0	50	15.7	83	6.4	4.7	0.41	46	63
11.0	15.0	27.0	50	15.8	85	7.2	5.1	0.46	56	77
12.0	16.0	22.0	50	16.3	68	3.1	2.7	0.20	13	18
12.0	16.0	23.0	50	16.3	71	3.8	3.1	0.25	19	25
12.0	16.0	24.0	50	16.4	74	4.5	3.5	0.29	25	33
12.0	16.0	25.0	50	16.4	77	5.2	4.0	0.33	31	43
12.0	16.0	26.0	50	16.6	79	5.9	4.4	0.38	39	54
12.0	16.0	27.0	50	16.7	81	6.6	4.7	0.43	48	67

Cooling capacities and air outlet temperatures do not consider the heat removed from fan motors that must be added to the systems load.

NOISE
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The MINIFLEX units have been conceived from the beginning whith the maximum care to the acoustic and vibrational aspects.
The complete anti-vibration of the fan section and the oversizing of the air crossing components, ensure the maximum ventilation and performance efficiency with the minimum noise emission.

Test conditions

All the measurements have been carried out at steady conditions. The background noise level was at least 10 dB lower than the machine level at any frequency. The instrument was positioned one meter above the ground level in front of the machine at a distance of two meters. The noise are referred to free field conditions.
Discharge head pressure: 0 Pa. Air volume flowrate standard with EU2 filter. Clean filter. Room ambient temperature of 24°C, relative humidity 50%. Condensing temperature of 45°C in the MxxA/W units.

Noise characteristics

unit		M50A/W	M50C	M75A/W	M75C
with the compressor running SPL at 2 m in front of the unit, free field	dB(A)	49.5		51.0	
ventilation only SPL at 2 m in front of the unit, free field	dB(A)	47.7	47.7	48.0	48.0

In the following tables the noise levels are detailed with relevant values for every frequency octave band.

Sound levels table

M50A/W

Mode		Level	Position	Reference	Unit and tolerance	frequency octave band (Hz)									GLOBAL (dB(A))
						31	63	125	250	500	1000	2000	4000	8000	
Ventilation only	free discharge	SPL	2 m in front 1 m in height	free field	dB (-0 +2)	45.6	46.8	50.0	49.9	46.2	42.2	35.3	29.2	18.7	47.7
Compressor running	free discharge	SPL	2 m in front 1 m in height	free field	dB (-0 +2)	45.6	46.8	50.9	53.6	47.8	43.1	35.6	29.8	24.0	49.5

M50C

Mode		Level	Position	Reference	Unit and tolerance	frequency octave band (Hz)									GLOBAL (dB(A))
						31	63	125	250	500	1000	2000	4000	8000	
Ventilation	free discharge	SPL	2 m in front 1 m in height	free field	dB (-0 +2)	45.6	46.8	50.0	49.9	46.2	42.2	35.3	29.2	18.7	47.7

Sound levels table

M75A/W

Mode		Level	Position	Reference	Unit and tolerance	frequency octave band (Hz)									GLOBAL (dB(A))
						31	63	125	250	500	1000	2000	4000	8000	
Ventilation only	free discharge	SPL	2 m in front 1 m in height	free field	dB (-0 +2)	48.5	47.4	45.3	46.5	45.4	44.3	39.5	29.3	16.4	48.0
Compressor running	free discharge	SPL	2 m in front 1 m in height	free field	dB (-0 +2)	55.8	58.3	57.3	55.8	46.3	44.3	39.8	29.3	18.3	51.0

M75C

Mode		Level	Position	Reference	Unit and tolerance	frequency octave band (Hz)									GLOBAL (dB(A))
						31	63	125	250	500	1000	2000	4000	8000	
Ventilation	free discharge	SPL	2 m in front 1 m in height	free field	dB (-0 +2)	48.5	47.4	45.3	46.5	45.4	44.3	39.5	29.3	16.4	48.0

AVAILABLE ACCESSORIES AND SPECIAL FEATURES

****

ACCESSORIES INSTALLED ON-BOARD ON REQUEST
****

ELECTRIC REHEAT (AND DEHUMIDIFICATION SYSTEM)

Electric reheat coil with low watt density. Ionisation effects are eliminated thanks to the low surface temperature of the element. Single stage, one contactor, temperature on-off electronic control, safety thermostat with manual reset, magnetothermic switch against short circuits, electric wiring protection against possible casual contacts.
When the electric reheat is installed, also the dehumidification system is operating and relative humidity sensor and indication are provided (see "Humidification and dehumidification systems" for dehumidification operation).

Heating capacities

		M50	M75
Total capacity	(kW)	1.95	3.90
Power supply		220V-1Ph	380V-3Ph

With the 415V voltage, multiply all the capacities by 1.193.

HUMIDIFICATION AND DEHUMIDIFICATION SYSTEM

The humidification system compells the installation of the electronic humidifier HUMIDAIR.
The dehumidification function, automatically supplied when the Humidification option is installed, is made by switching on the compressor; there is no air flow reduction in the dehumidification mode.

Electronic humidity control

The Hiromatic microprocessor control include the algorythm that drives the modulating electronic humidifier HUMIDAIR and provides the dehumidification function.
A special control algorithm is provided to automatically exclude the dehumidification function if the temperature goes under desired values; when the temperature reaches correct values, the dehumidification function will be automatically fully re-activated.

The humidifier control can be switched to the modulating or to the on-off way, depending from the exigences of each installation: the on-off mode is factory standard set, as default.

Electronic steam humidifier HUMIDAIR (1.1 kg/h)

The HUMIDAIR provides an electrode boiler that generates the useful steam quantity.
It can use virtually any type of hard or soft water, provided it is not treated or demineralized water.
The HUMIDAIR is provided with the steam cylinder, the inlet and outlet water valves, the max level sensor: the operation algorythm is

included in the microprocessor control software. The steam production capacity is manually in a range and it is factory set on the 70% of the max capacity (see relevant characteristics).

Electronic steam humidifier characteristics

The steam cylinder is located outside the airstream, avoiding heat losses, and the steam is added to the air, downstream the cooling coil.
The Hiromatic control advises when the cylinder must be replaced. Replacement is absolutely easy and quick.
An autoadaptive flush control system is standard and regulates the conductivity of the water in the cylinder.
The HUMIDAIR HAK21L is emploied for 220/240 V applications.

HUMIDAIR	STEAM CYLINDER MODEL	MAINS VOLTAGE	FACTORY SET STEAM PRODUCTION (kg/h)	MANUALLY ADJUST. RANGE (kg/h)	NOMINAL CURRENT (A)	NOM. POWER (kW)
HAK21L	21L	220-240/1/50	1.4	0.6-2.0	6.2	1.5

ACCESSORIES SUPPLIED AS SEPARATED KIT (NOT INSTALLED)

****

PRECHARGED REFRIGERATING LINES (MxxA units)

The outdoor condenser can be easily coupled with the room unit by means of precharged lines with quick connections. 5, 10, 15 m long as standard option, protective caps and insulated gas line.
The condenser must be installed not more than 2m down the room unit and if it is positioned more than 6 m above the room unit then install a syphon trap in the gas line. The bend radii of the refrigerant lines should be not less than 0.1 m. (see the Service Manual).

MODEL conditioner and condenser	TUBING	
	length	diameter
M50A + UCAM50	5, 10, 15 m	gas 9.5 mm liquid 8.0 mm
M75A + UCAM75	5, 10, 15 m	gas 12.7 mm liquid 9.5 mm

As special feature it is possible to couple MxxA units with remote condensers in reduced noise version, equipped with Variex, or in silenced version, bigger size than standard one.
Available diameters and legths for each version are :

MODEL conditioner and condenser	PRECHARGED TUBING		
	length	diameter	version
M50A + UCAM51	5, 10, 15 m	gas 9.5 mm liquid 8.0 mm	reduced noise
M50A + UCAM76	15 m	gas 9.5 mm liquid 8.0 mm	silenced
M75A + UCAM76	5, 10, 15 m	gas 12.7 mm liquid 9.5 mm	reduced noise
M75A + ACL103	at customer care (*)	gas 12.7 mm liquid 9.5 mm	silenced

(*) not precharged lines; avoid pipe lengths over 15 m. Variex and set of quick connectors to be ordered a part.

LIQUISTAT

The "Liquistat" senses the presence of water or any other conductive liquid and, by opening a circuit, operates an alarm.
There are no moving parts and it is not affected by dirt or vibration. Several sensors can be connected to the same Liquistat device to check more points in the room. The Liquistat is supplied with one water sensor. Additional sensor can be ordered separately.

SMOKESTAT

A "Smokestat" can be fitted to shut down the air conditioning system upon sensing the presence of smoke in the return air.
This is a smoke detector, optycal type (Tyndall effect), very low current absorbtion (100 μA), absolutely not influenced by the light or wind.

FIRESTAT

In certain areas, fire regulations require a "Firestat" to be fitted to shut down the air conditioning system in the event of abnormally high return air temperature.
This is a fire detector, with NTC thermistor, very low current absorbtion (25-55 μA).

NEW AIR SUPPLY DEVICE

External air intake, with proper fan and EU3 air filter, installed in the air suction side of the fan and provided with a connection for a plastic air hose diameter mm 70. The hose connection is placed in the rear panel of the unit.

New air supply device characteristics

Suction duct (ϕ 70 mm) equivalent lenght * (m)	New air flow with clean filter (l/s)	
	M50	M75
6	10	10
12	8	8
* A 90° bend equal approx 2 meters of linear duct		

EXTENSION HOOD

The MINIFLEX can be supplied with an extension hood on the top for horizontal discharge, made in the same colour of the unit and using the same grille.

AUTOMATIC CONDENSATE PUMP

The MINIFLEX unit drain piping shall be connected with a condensate pump. The pump is complete with a float switch to start and stop automatically.

Automatic condensate pump characteristics

water flow rate, l/s	0.083	0.167	0.250	0.333
available static pressure, kPa	20	19	18	14
nominal absorbed power, W		95		

ADDITIONAL TEMPERATURE AND HUMIDITY SENSOR (EEAP)

The "EEAP" is an additional temperature plus relative humidity sensor with the same shape as the humitemp sensor. EEAP stands for Electronic Environmental Alarm Package.
The sensor can be installed in a rappresentative place up to 20 meters from the conditioner and generates an alarm if temperature or relative humidity exceeds any of the four user selectable threshold levels:

high temperature	(from 10°C to 50°C)
low temperature	(from 0°C to 30°C)
high relative humidity	(from 30% to 99%)
low relative humidity	(from 10% to 70%)

RS422 BUS CARD for bus communication in 422 or 485 standard

The controller is prearranged to be interfaced to BMS systems, by installing the optional RS422 BUS CARD. The card features an RS422 output or an RS485 output depending from the wiring connections on a female 9-pin corrosion D-sub connector.

RS232 BUS CARD for bus communication in 232 standard

The controller is prearranged to be interfaced to BMS system, by installing the optional RS232 BUS CARD. The card features on RS232 output on a female 9-pin cannon D-sub connector.

SPECIAL FEATURES
****

GRAPHIC DISPLAY MICROPROCESSOR CONTROL HIROMATIC G

This controller offers several additional features in comparison to the controller with custom display. The graphic display is backlit and has very good readability with all types of ambient light. Like the custom display it offer a contrast ratio of 20 to 1 and wide viewing angles. All messages are extensive as each message can contain up to 48 characters.
The big dimensions (100x30 mm) of the display permit visualization of up to 8 lines of 40 characters, and thus the number of windows is greatly reduced from 61 to 18 grouping together all similar parameters in one window.

The user can select one out of the four languages available: English, French, German or Italian.
Other additional features:
- CLOCK CALENDAR: date time and day of the week are continueously visualized on the main window.
- GRAPHIC DATA RECORD: gives a graphic representation of the behaviour of the minimum and maximum values of temperature and humidity during the last 24 hours thus giving the possibility to verify the correct operation of the conditioner.
- WORKING HOURS COUNTER: counts the number of conditioner working hours (and humidifier if installed). Thereshold levels can be set to generate a warning for preventive maintenance.
- STATUS REPORT: contains the history of the unit, including unit switched ON or OFF, warnings, alarms and even power interruptions. Each message is memorized complete with date, time and alarm severity.
- SLEEP MODE CONTROL: permits the conditioner to work in a energy saving mode or to switch it OFF at programmable timer intervals.
- MONITORING OF INPUTS AND OUTPUTS: on the service menu all inputs and outputs, analog or digital, are monitored.
- Restaurant card like organization of the menus:
  - WORKING HOURS
  - SETUP
  - CONTROL PARAMETERS
  - ALARM THRESHOLD LEVELS
  - INSTALLATION OF OPTIONAL DEVICES
  - SERVICE

All the below mentioned features are the same as for the custom control.
- HUMITEMP microprocessor controlled sensor and other sensors
- Continueous visualization of:
- return air temperature in degrees Celsius or Fahrenheit
- return air humidity (optional)
- system status e.g. UNIT ON, ALARM, MANUAL OPERATION ETC.
- status (ON/OFF) of each single component of the conditioner using graphic symbols
- Three coloured LEDs
- Pushbuttons
- ALARMS

380/3/50 AND 220/3/50 SUPPLY VOLTAGES

On request the M50 unit may be fitted for 380-415/3/50+N+E power supply.
And on request the unit M75 may be fitted for 220-240V/3/50+E power supply.
The cooling capacity characteristics of this special units are the same of the std types.
The electric features are shown in the "Electrical characteristics resume" section.

SPECIAL PACKING

On request, cardboard box with additional wood crate or wood case for sea transportation can be supplied.

ELECTRICAL CHARACTERISTICS RESUME
****

OA : Operating Amperes
FLA: Full Load Amperes
LRA: Locked Rotor Amperes

MODEL	COMPONENT	OA	FLA	LRA
M50A/W	compressor 220V-1Ph compressor 380V-3Ph	10.3 3.5	11.0 3.9	54.0 22.0
	fan motor 220V-1Ph	0.8	0.8	1.0
M50C	fan motor 220V-1Ph	0.8	0.8	1.0
M75A/W	compressor 380V-3Ph compressor 220V-3Ph	4.1 7.1	5.0 8.7	19.5 56.0
	fan motor 220V-1Ph	1.6	1.6	2.0
M75C	fan motor 220V-1Ph	1.6	1.6	2.0

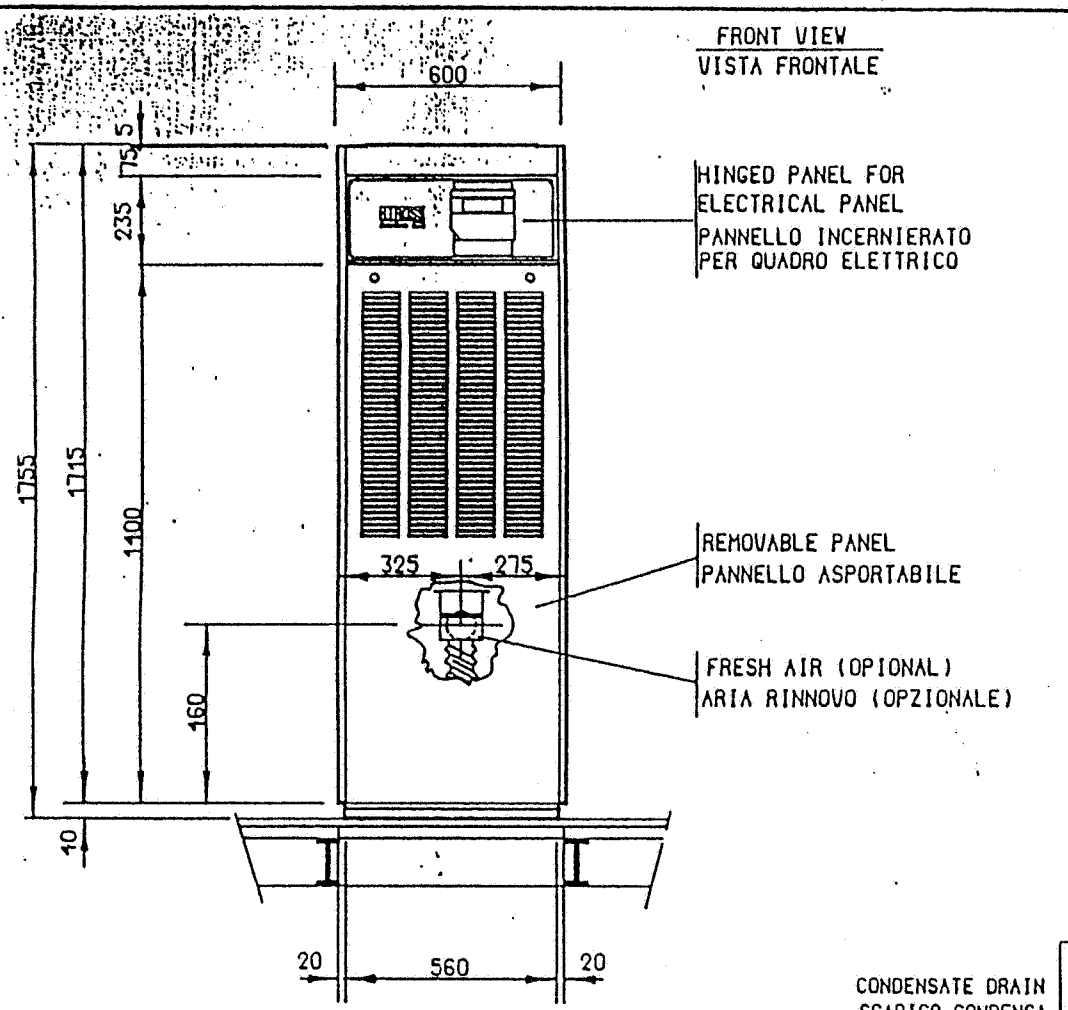
Compressor OA based on ARI standard conditions.

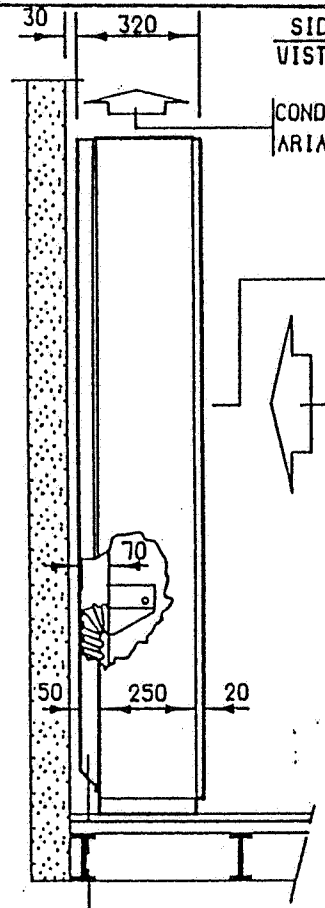
MODEL	OPTIONAL COMPONENT	FLA
M50A/W/C	humidifier 220V-1Ph	6.2
	el. heater 220V-1Ph	8.8
	new air fan 220V-1Ph	0.1
M75A/W/C	humidifier 220V-1Ph	6.2
	el. heater 380V-3Ph el. heater 220V-3Ph	5.9 10.2
	new air fan 220V-1Ph	0.1

ENCLOSURES

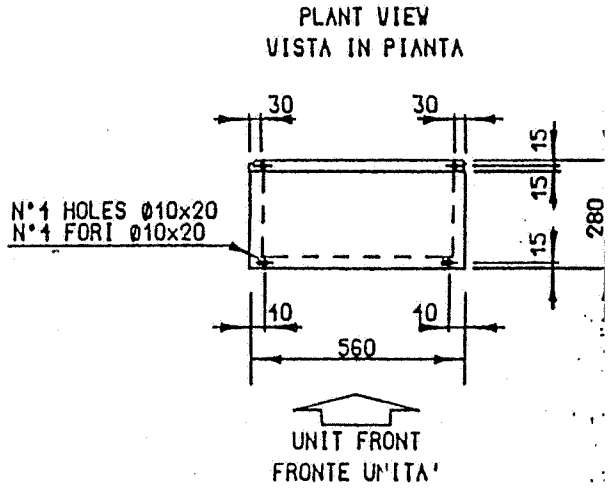
Overall dimensions	M50A/W/C M75A/W/C
Overall dimensions with horizontal discharge air plenum	M50A/W/C M75A/W/C
Refrigerant connections	MxxA
Water connections	MxxA/W MxxC
Electrical connections	MxxA/W MxxC
Instruments installation	MxxA/W/C
Refrigeration circuit	MxxA MxxW
Hydraulic circuit	MxxC
Wiring diagram	MxxA/W

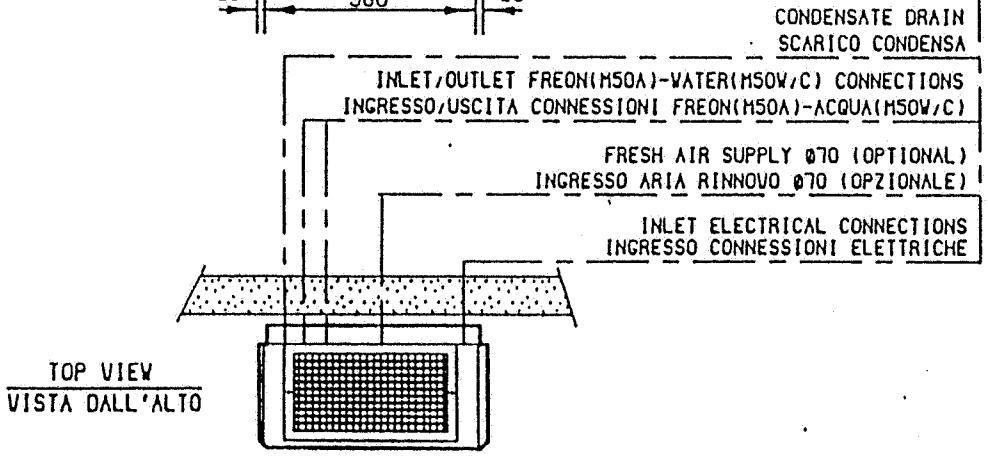
HIROSS reserves the right to change technical data and construction features without notice.





	M50A	M50W	M50C
WEIGHT PESO	kg 98	kg 103	kg 81





REV.	B	AGGIORNATO DISEGNO E DESTINAZIONE	Firma Sign.	S.P.	Data Date	30.07.

HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione · Denomination · Bezeichnung · Denomination
OVERALL DIMENSIONS
DIMENSIONI INGOMBRO

Destinazione · Destination · Bestimmung
MINIFLEX 50
A/W/C

Sostituisce il disegno / Replaced drawing / Ersetzt durch / Remplace le dessin	Visto · Checked by / Geprüft von · Vérifié par	Disegno · Drawing · Zeichnung · Dessin N.	RE
	G.G.	AC 1000 M01	B

Scala · Scale / Maßstab · Echelle	Data / Date · Datum	Dis. · Draftsman / Zeichner · Dessin.
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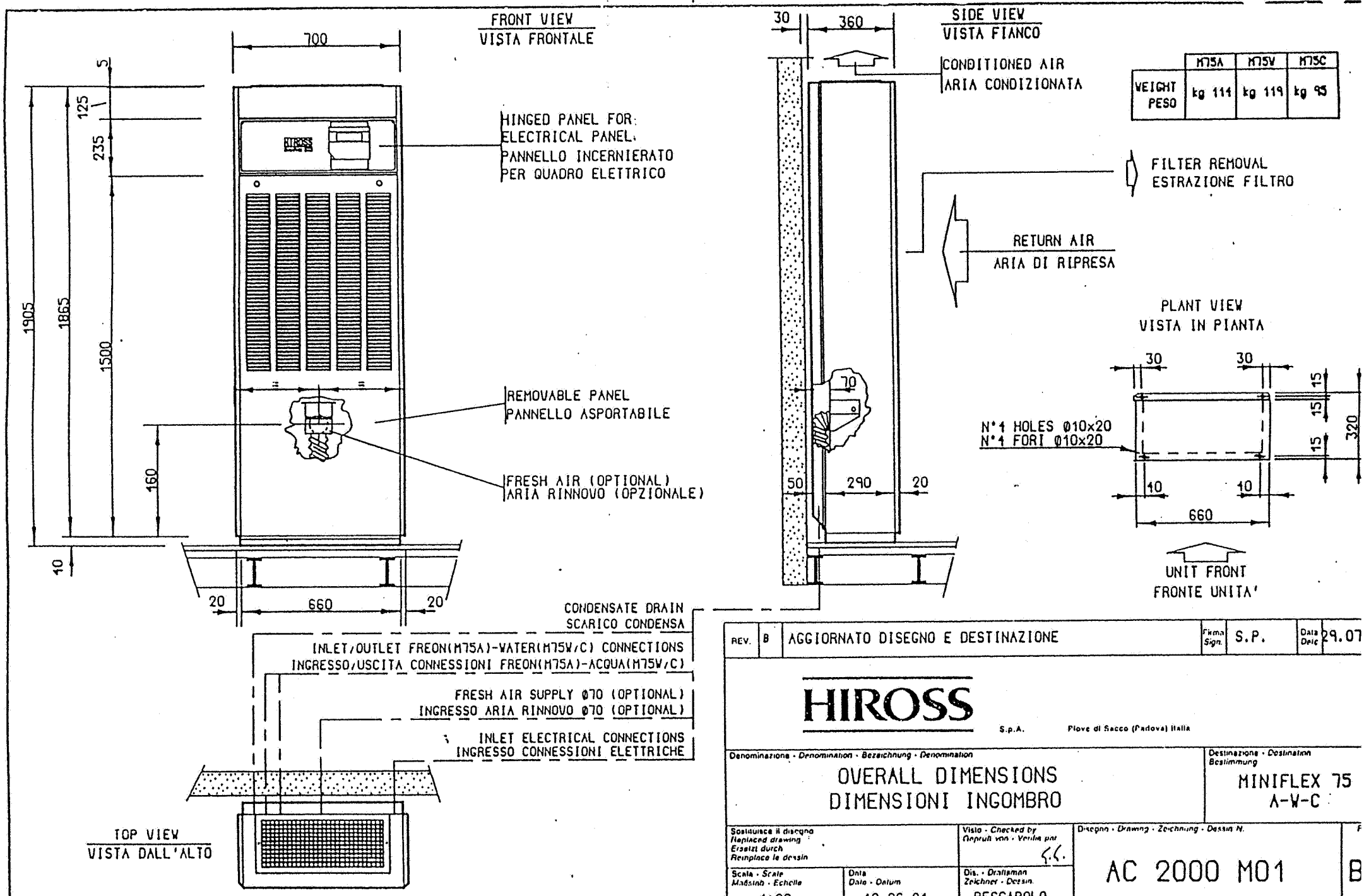


	M75A	M75W	M75C
WEIGHT PESO	kg 114	kg 119	kg 95

REV.			Firma Sign.		Data Date
B	AGGIORNATO DISEGNO E DESTINAZIONE		S.P.		29.07

HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione · Denomination · Bezeichnung · Denomination

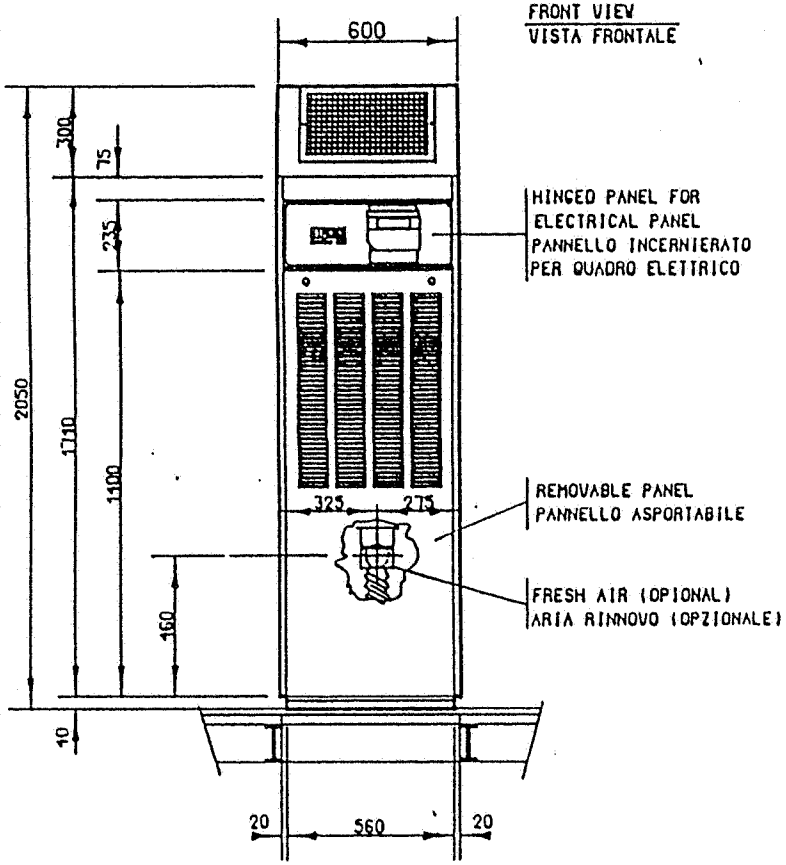
OVERALL DIMENSIONS
DIMENSIONI INGOMBRO

Destinazione · Destination · Bestimmung

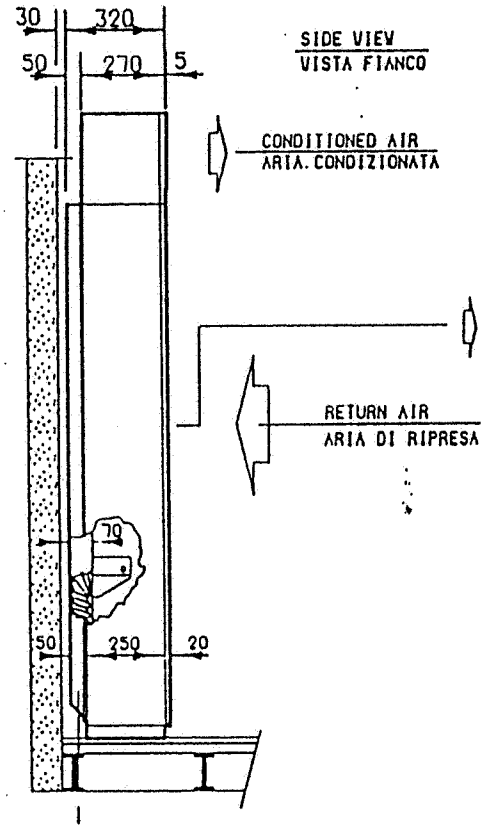
MINIFLEX 75
A-W-C

Sostituisce il disegno / Replaced drawing / Ersetzt durch / Remplace le dessin		Visto · Checked by / Geprüft von · Verifié par	Disegno · Drawing · Zeichnung · Dessin N.	
		G.C.	AC 2000 M01	B
Scala · Scale / Maßstab · Echelle	Data / Date · Datum	Dis. · Draftsman / Zeichner · Dessin.		
1:20	18.06.91	PESCAROLO		

FRONT VIEW
VISTA FRONTALE

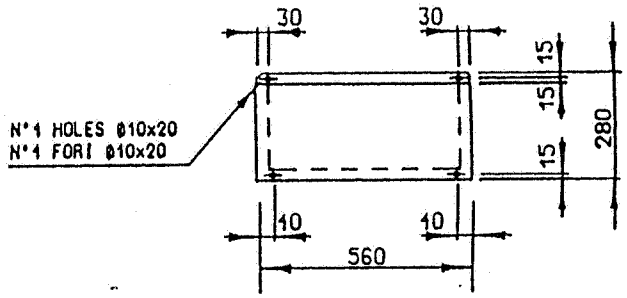


SIDE VIEW
VISTA FIANCO

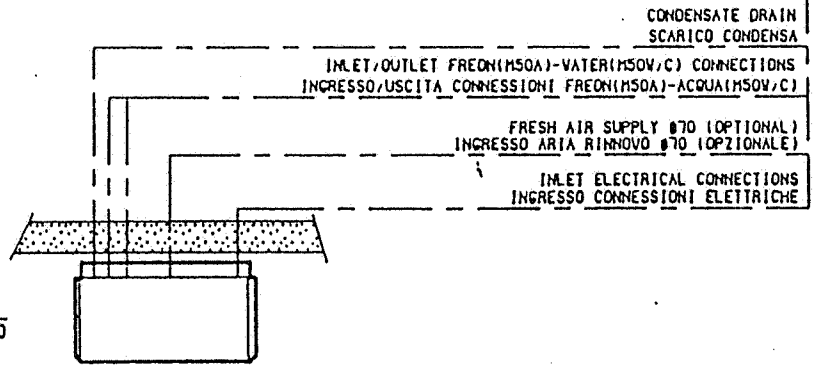


	M50A	M50V	M50C
WEIGHT PESO	kg 103	kg 108	kg 86

PLANT VIEW
VISTA IN PIANTA



UNIT FRONT
FRONTE UNITA'



TOP VIEW
VISTA DALL'ALTO

REV.	B	AGGIORNATO DISEGNO E DESTINAZIONE	Firma Sign	S.P.	Data Date	25.0

HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione - Denomination - Bezeichnung - Denomination
OVERALL DIMENSIONS WITH PLENUM
DIMENSIONI INGOMBRO CON PLENUM

Destinazione - Destination Bestimmung
MINIFLEX 50
A/W/C

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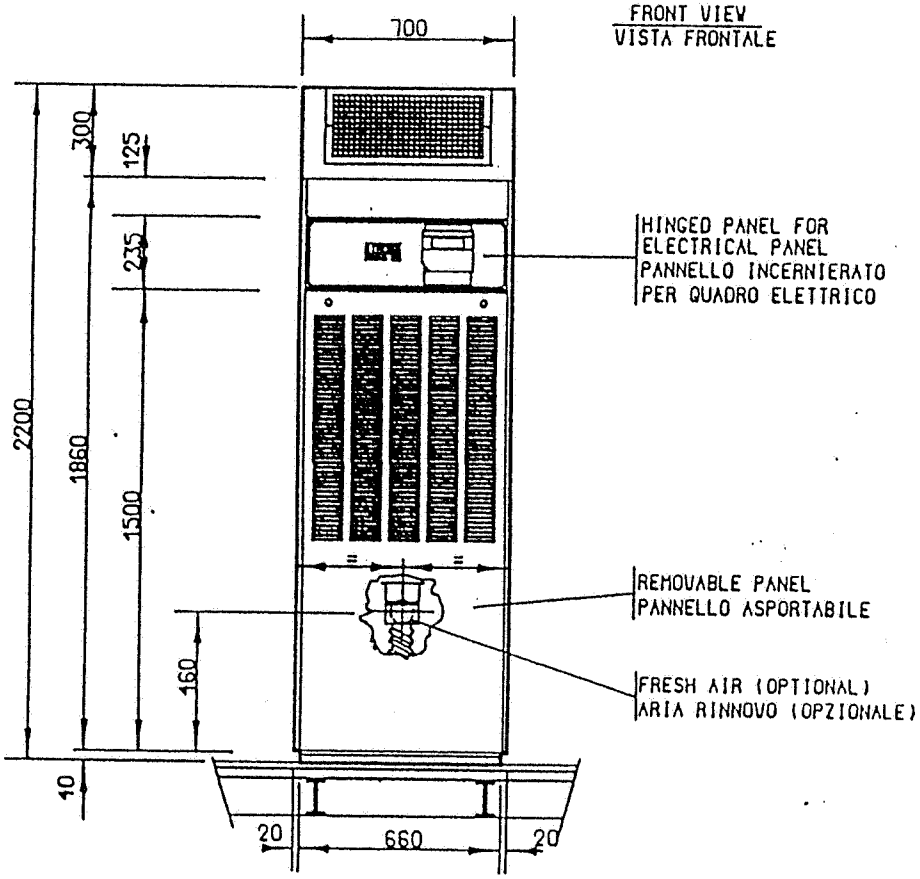
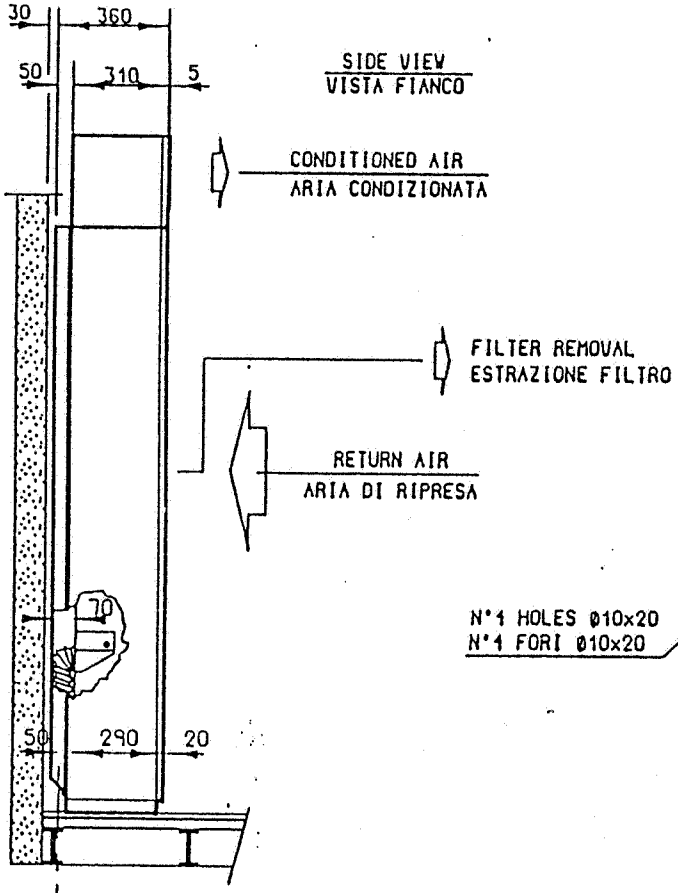
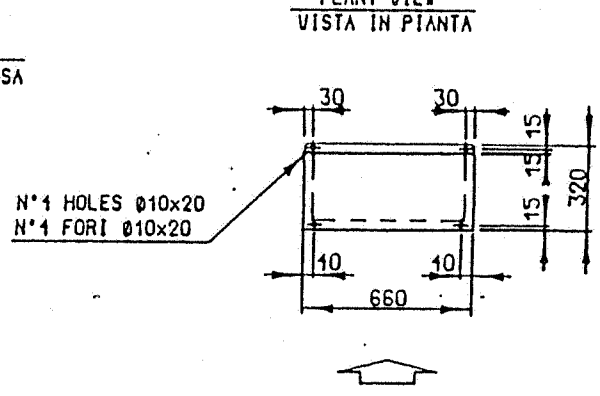
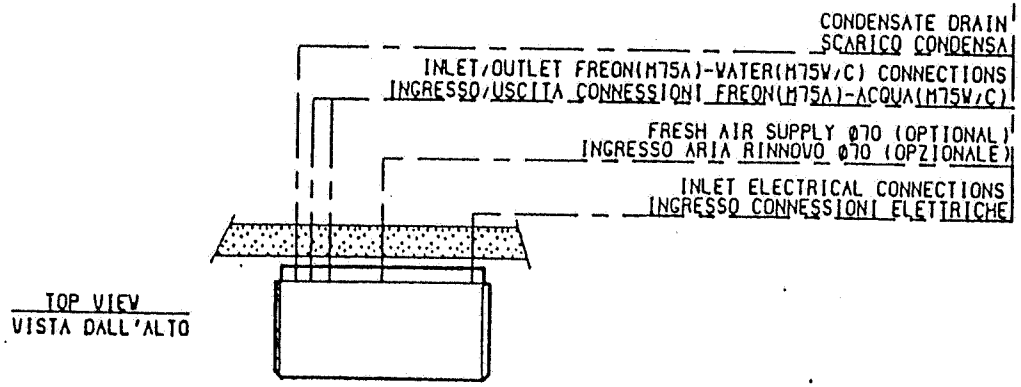
Scala - Scale Maßstab - Echelle 1:25	Data Date - Datum 18.06.91	Dis. - Draftsman Zeichner - Dessin. PESCAROLO	





	M75A	M75W	M75C
WEIGHT PESO	kg 120	kg 125	kg 101





REV.			Firma Sign.		Data Date
	B	AGGIORNATO DISEGNO E DESTINAZIONE		S.P.	25.0

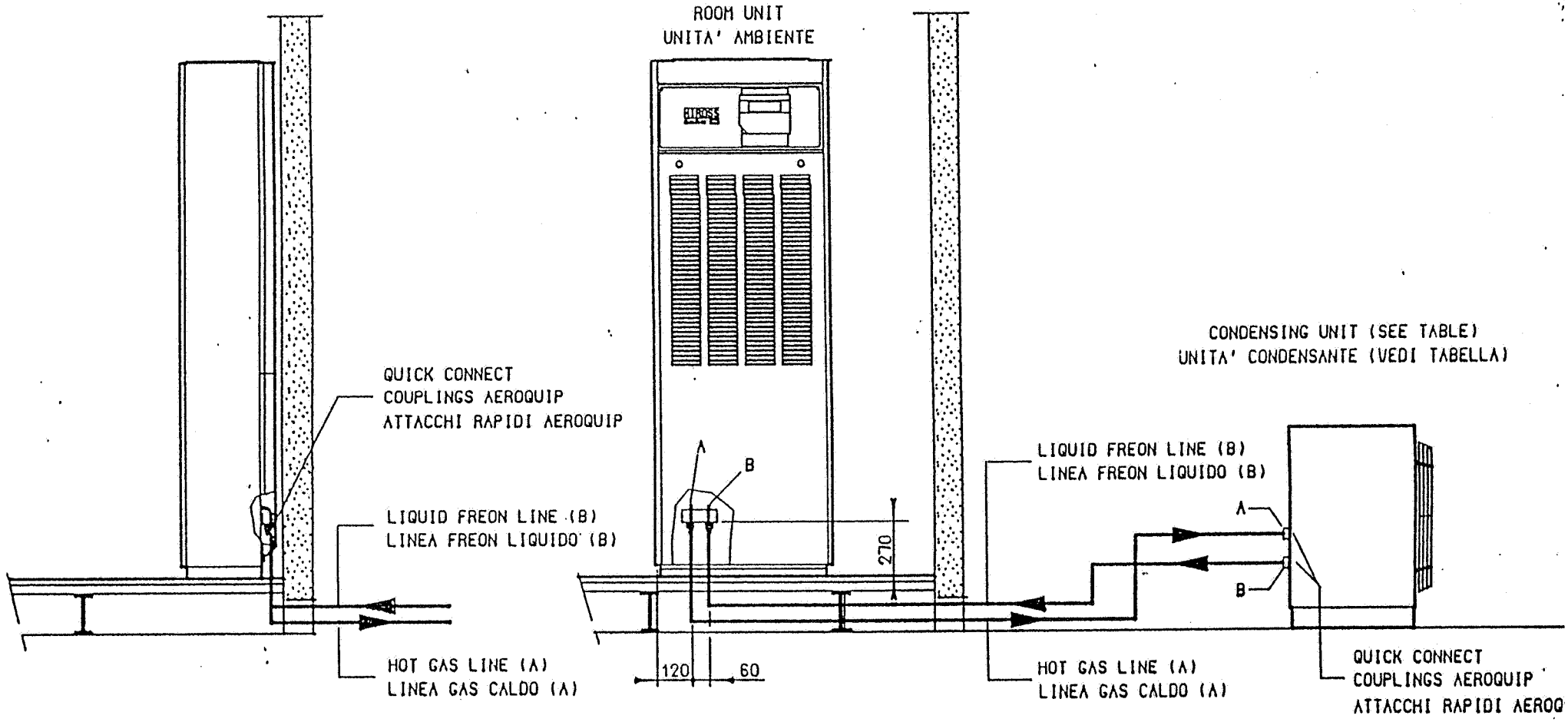
HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione · Denomination · Bezeichnung · Dénomination

OVERALL DIMENSIONS WITH PLENUM
DIMENSIONI INGOMBRO CON PLENUM

Destinazione · Destination · Bestimmung
MINIFLEX 75
A-W-C

Sostituisce il disegno / Replaced drawing / Ersetzt durch / Remplace le dessin		Visto · Checked by / Geprüft von · Verifié par: G.C.	Disegno · Drawing · Zeichnung · Dessin N.: AC 2000 M02
Scala · Scale / Maßstab · Echelle: 1:25	Data / Date · Datum: 19.06.91	Dis. · Draftsman / Zeichner · Dessin.: PESCAROLO	



NOTE: NON ACCOSTARE LE LINEE DEL FREON LIQUIDO A FONTI DI CALORE, ALTRIMENTI COIBENTARLE.

ATTENTION: DO NOT LOCATE LIQUID FREON LINES NEAR TO HEAT SOURCES (IF UNAVOIDABLE INSULATE THEM).

MODEL MODELLO	CONDENSING UNIT UNITA' CONDENSANTE	COPPER PIPE HOT GAS TUBO RAME GAS CALDO	COPPER PIPE LIQUID FREON TUBO RAME FREON LIQUIDO	TOTAL FREON CHARGE CARICA FREON TOTALE LINE LENGTH - LUNGHEZZA LINEA		
				5 m	10 m	15 m
M 50A	UCAM50	Ø 9.5	Ø 8	g1460	g1600	g1745
M 75A	UCAM75	Ø 12.7	Ø 9.5	g2420	g2665	g2900

REV.			Firma Sign		Data Date	

HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione - Denomination - Bezeichnung - Dénomination

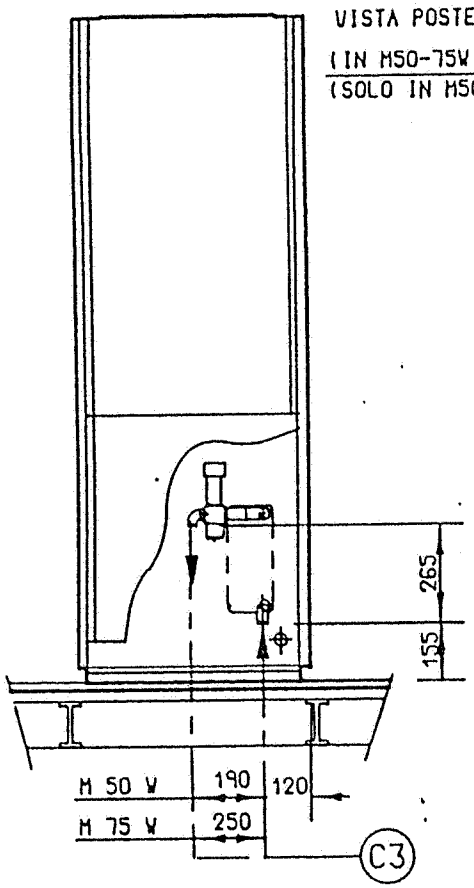
REFRIGERANT CONNECTIONS
COLLEGAMENTI FRIGORIFERI

Destinazione - Destination Bestimmung
MINIFLEX 50-75

Sostituisce il disegno Replaced drawing Ersetzt durch Remplace le dessin		Visto Checked by Geprüft von - Vérifié par C.C.	Disegno - Drawing - Zeichnung - Dessin N. AC 1000 M04
Scala - Scale Maßstab - Echelle	Data Data - Datum 18.06.91	Dis - Draftsman Zeichner - Dessin. PESCAROLO	

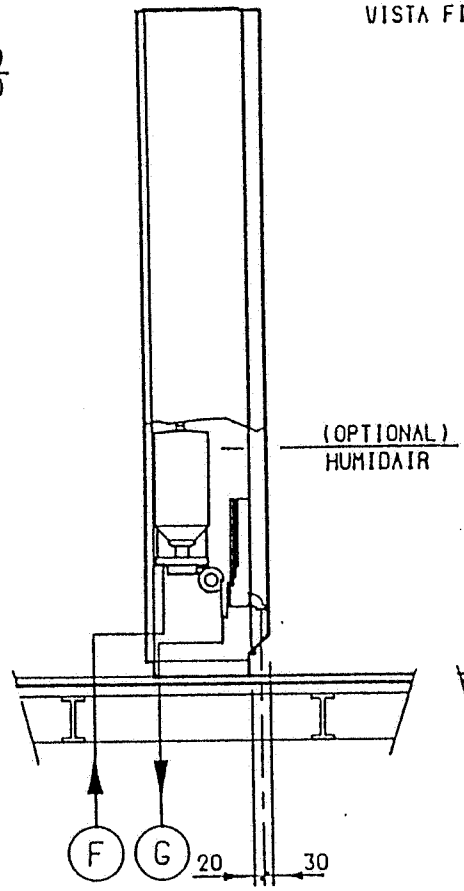
REAR VIEW
VISTA POSTERIORE

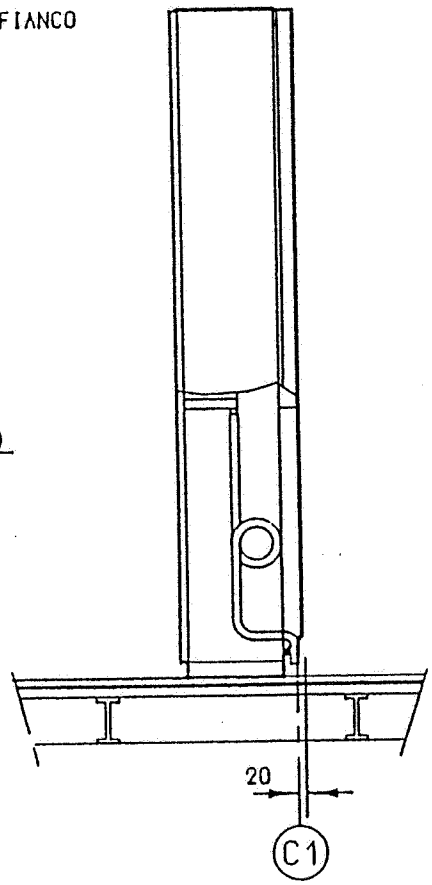
(IN M50-75W ONLY)
(SOLO IN M50-75W)



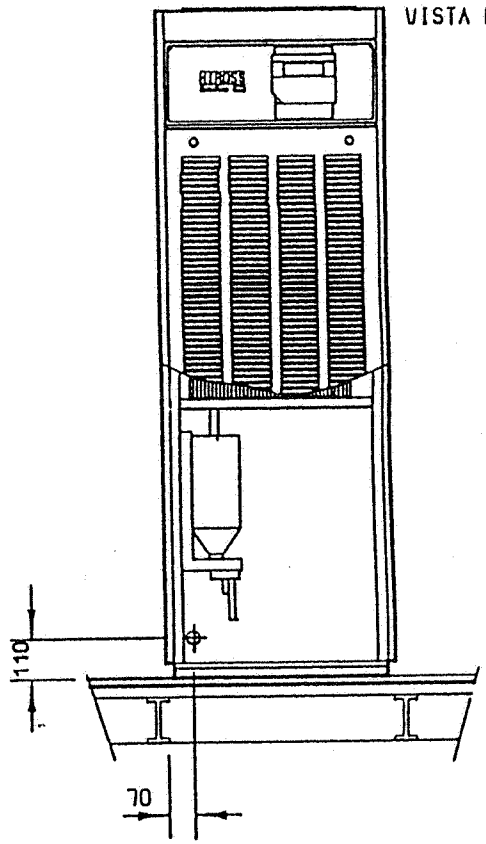
SIDE VIEW
VISTA FIANCO

(OPTIONAL)
HUMIDAIR





FRONT VIEW
VISTA FRONTALE



KEY LEGENDA				NOTES NOTE
C1	CONDENSATE DRAIN SCARICO CONDENSA	FEMALE FEMMINA	D.20mm	STANDARD
C3	INLET/OUTLET WATER CONNECTIONS CONNESSIONI INGRESSO/USCITA ACQUA	FEMALE FEMMINA	1/2" G.	MINIFLEX 50 W
C3	INLET/OUTLET WATER CONNECTIONS CONNESSIONI INGRESSO/USCITA ACQUA	FEMALE FEMMINA	3/4" G.	MINIFLEX 75 W
F	HUMIDAIR SUPPLY ALIMENTAZIONE HUMIDAIR	MALE MASCHIO	3/8" G.	OPTIONAL
G	HUMIDAIR DRAIN SCARICO HUMIDAIR	MALE MASCHIO	D.22mm	OPTIONAL

REV.	B	VARIATA VALVOLA PRESSOSTATICA PER M75W	Firma Sign.	B.S.	Data Date	20.02

HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione - Denomination - Bezeichnung - Denomination
WATER CONNECTIONS
COLLEGAMENTI IDRAULICI

Destinazione - Destination Bestimmung
MINIFLEX 50-75
A/W

Sostituisce il disegno
Replaced drawing
Ersetzt durch
Remplace le dessin

Visto - Checked by
Gepruft von - Verifié par
G.C.

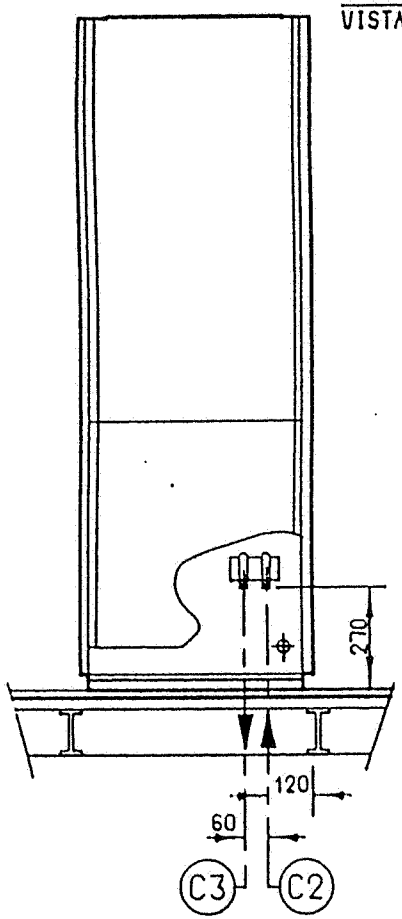
Disegno - Drawing - Zeichnung - Dessin N.
AC 1000 M02

Scala - Scale
Maßstab - Echelle
1:20

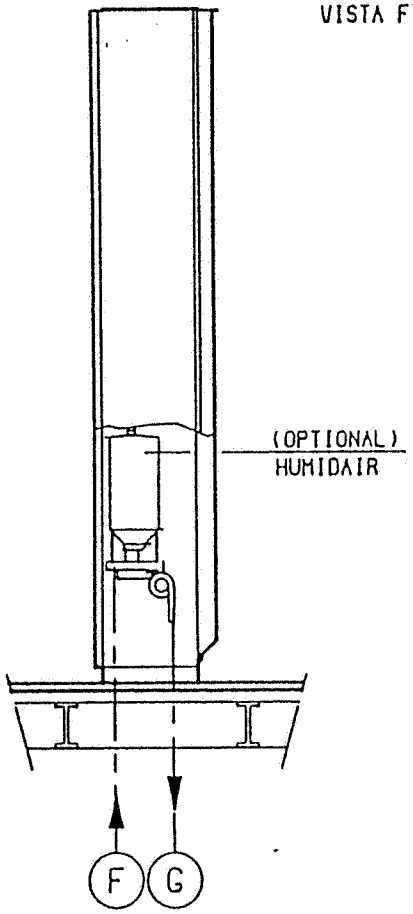
Data
Date - Datum
18.06.91

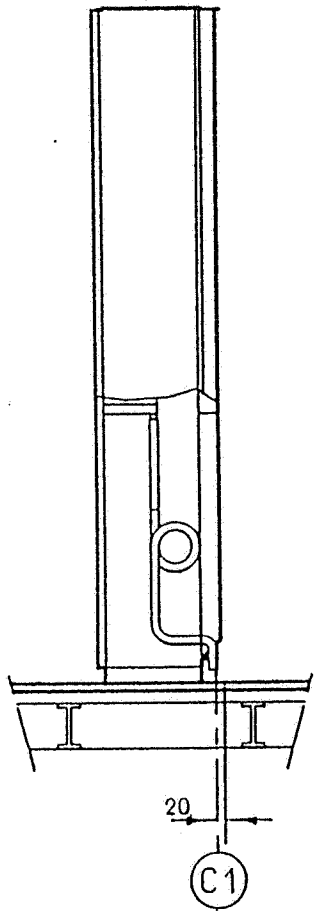
Dis. - Draftsman
Zeichner - Dessin.
PESCAROLO

REAR VIEW
VISTA POSTERIORE

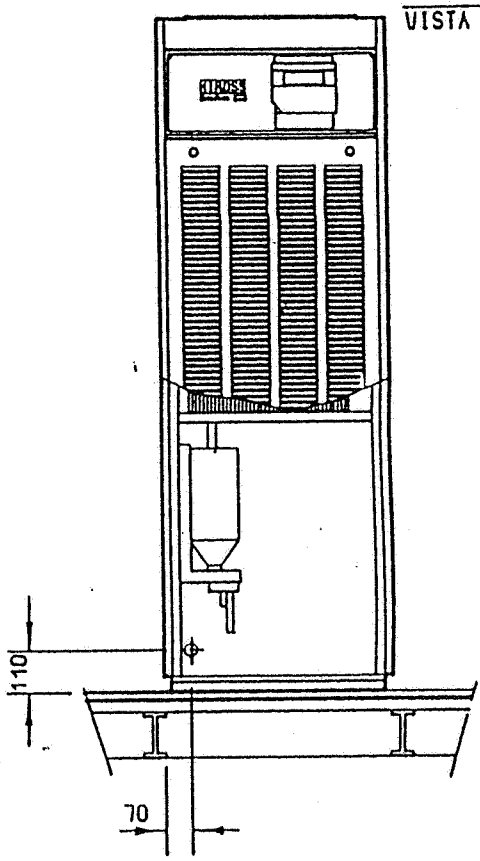


SIDE VIEW
VISTA FIANCO





FRONT VIEW
VISTA FRONTALE



KEY LEGENDA				NOTES NOTE
C1	CONDENSATE DRAIN SCARICO CONDENSA	FEMALE FEMMINA	D.20mm	STANDARD
C2	INLET CHILLED WATER INGRESSO ACQUA REFRIGERATA	MALE MASCHIO	1/2" G.	STANDARD
C3	OUTLET CHILLED WATER USCITA ACQUA REFRIGERATA	MALE MASCHIO	1/2" G.	STANDARD
F	HUMIDAIR SUPPLY ALIMENTAZIONE HUMIDAIR	MALE MASCHIO	3/8" G.	OPTIONAL
G	HUMIDAIR DRAIN SCARICO HUMIDAIR	MALE MASCHIO	D.22mm	OPTIONAL

REV.		Firma *Sign.*		Data *Date*	

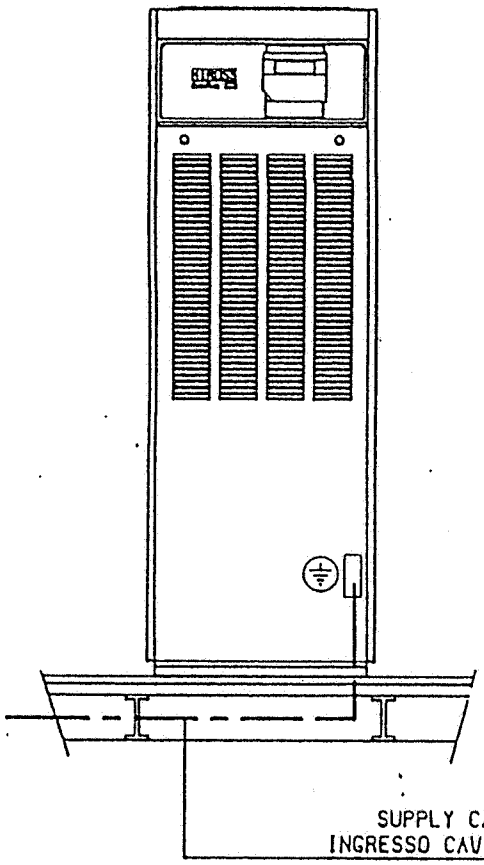
HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione · *Denomination* · *Bezeichnung* · *Denomination*
WATER CONNECTIONS
COLLEGAMENTI IDRAULICI

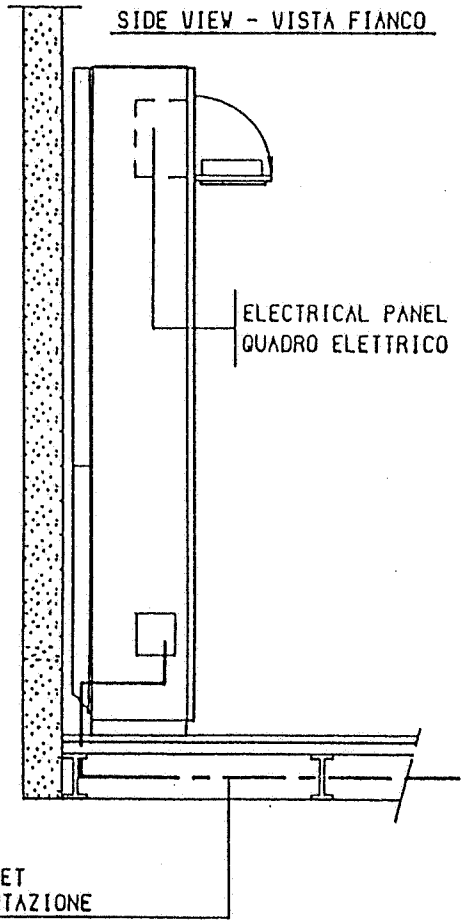
Destinazione · *Destination* *Bestimmung*
MINIFLEX 50-7

Sostituisce il disegno *Replaced drawing* *Ersetzt durch* *Remplace le dessin*		Visto · *Checked by* *Geprüft von* · *Vérifié par* G.C	Disegno · *Drawing* · *Zeichnung* · *Dessin N.* AC 1000 M07	Fl A
Scala · *Scale* *Maßstab* · *Echelle* 1:20	Data *Date* · *Datum* 30.07.92	Dis. · *Draftsman* *Zeichner* · *Dessin.* PESCAROLO		

FRONT VIEW - VISTA FRONTALE



SIDE VIEW - VISTA FIANCO



SUPPLY CABLE INLET
INGRESSO CAVI ALIMENTAZIONE

380V 220V	NOMINAL POWER (kW) - MAX INPUT (AMPS) POTENZE NOMINALI (kW) - (A) MAX ASSORBITI					
STAGES STADI			(kW) NOMINAL-NOMINALI			(A) INPUT-ASSORBITI	
			M50A/W 220V/1~	M50A/W 380V/3~	M75A/W 380V/3~	380V/3~	220V/1~
1	FAN VENTILATORE		0.05	0.05			0.8
					0.105		1.6
2	COMPRESSOR COMPRESSORE	ASPERA	2.1	2		3.9	11
		ASPERA			2.86	5.1	
		MANEUROP			2.55	5	
3	OPT. ELECTRICAL HEATERS RESISTENZE ELETTRICHE		1.95	1.95			8.8
					3.9	5.9	
4	OPT. HUMIDIFICATION UMIDIFICAZIONE	HUMIDAIR	1.5	1.5	1.5		6.2

ONLY FOR CABLE SIZE SOLO PER DIMENSIONAMENTO CAVO		TOTAL MAX INPUT (AMPS) TOTALE (A) MAX ASSORBITI		
VOLTAGE TENSIONE	MODEL MODELLO	M50A/W (ASPERA)	M75A/W (ASPERA)	M75A/W (MANEUROP)
380V	STANDARD 1+2	4.7	6.7	6.6
	OPTIONAL 1+2+3	13.5	12.6	12.5
220V	STANDARD 1+2	11.8	/	/
	OPTIONAL 1+2+3	20.6	/	/

REV	B	INSERITO ASSORBIMENTI PER M75 MANEUROP	Firma Sign	S.P.	Data Date	21.01.

HIROSS S.p.A. Piove di Sacco (Padova) Italia

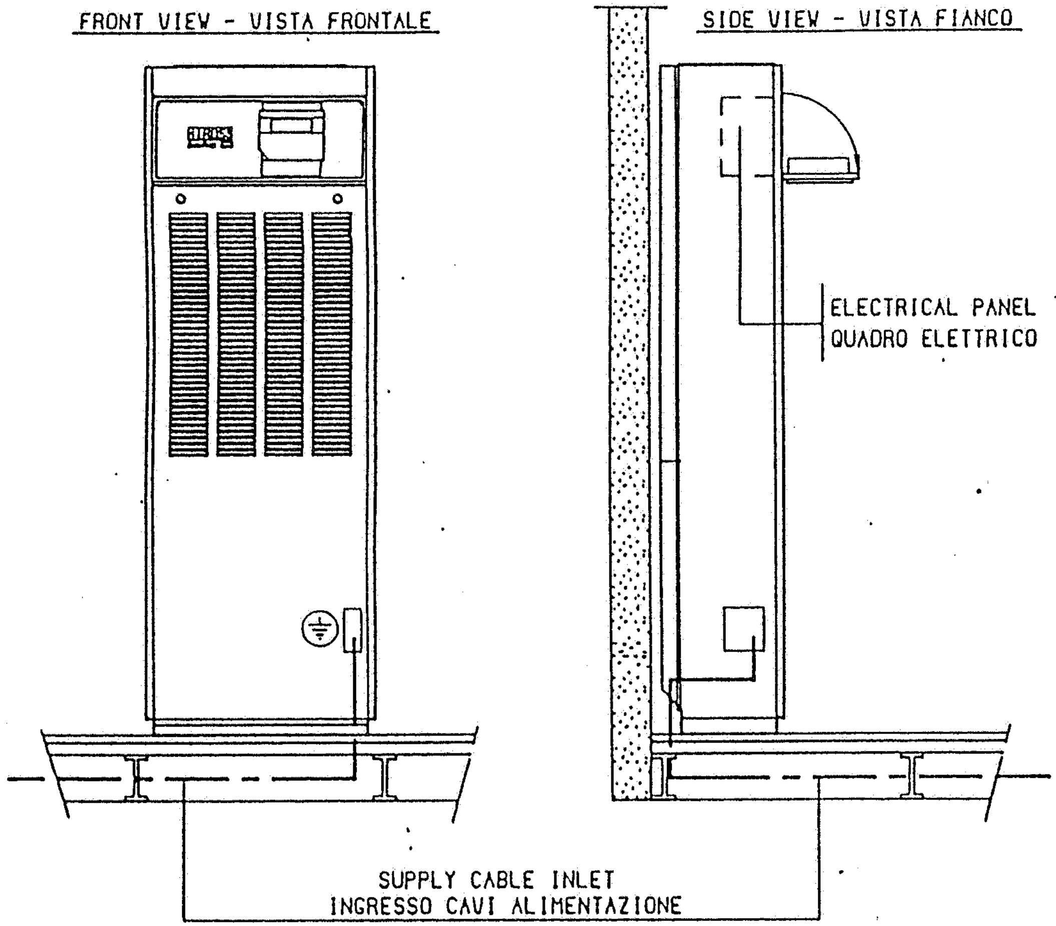
Denominazione - Denomination - Bezeichnung - Dénomination

ELECTRICAL CONNECTIONS
COLLEGAMENTI ELETTRICI

Destinazione - Destination Bestimmung

MINIFLEX 50-75 A/W

Sostituisce il disegno Replaced drawing Ersetzt durch Remplace le dessin		Visto - Checked by Geprüft von - Vérifié par	Disegno - Drawing - Zeichnung - Dessin N.	RE
Scala - Scale Maßstab - Echelle	Data Date - Datum 18.06.91	Dis. - Draftsman Zeichner - Dessin. PESCAROLO	AC 1000 M03	B



380V 220V	NOMINAL POWER (kW) - MAX INPUT (AMPS) POTENZE NOMINALI (kW) - (A) MAX ASSORBITI					
STAGES STADI		(kW) NOMINAL-NOMINALI			(A) INPUT-ASSORBITI	
		M50 C 220V/1~	M50 C 380V/3~	M75 C 380V/3~	380V/3~	220V/1~
1	FAN VENTILATORE M50	0.05	0.05			0.8
	M75			0.105		1.6
2						
3	OPT. ELECTRICAL HEATERS RESISTENZE ELETTRICHE M50	1.95	1.95			8.8
	M75			3.9	5.9	
4	OPT. HUMIDIFICATION UMIDIFICAZIONE HUMIDAIR	1.5	1.5	1.5		6.2

ONLY FOR CABLE SIZE SOLO PER DIMENSIONAMENTO CAVO		TOTAL MAX INPUT (AMPS) TOTALE (A) MAX ASSORBITI	
VOLTAGE TENSIONE	MODEL MODELLO	M50 C	M75 C
380V	STANDARD 1	0.8	1.6
	OPTIONAL 1+3	9.6	7.5
220V	STANDARD 1	0.8	/
	OPTIONAL 1+3	9.6	/

REV. | Firma Sign. | Data Date

HIROSS S.p.A. Piove di Sacco (Padova) Italia

Denominazione · Denomination · Bezeichnung · Denomination
ELECTRICAL CONNECTIONS
COLLEGAMENTI ELETTRICI

Destinazione · Destination Bestimmung: MINIFLEX 50-75

Sostituisce il disegno / Replaced drawing / Ersetzt durch / Remplace le dessin

Visto · Checked by / Geprüft von · Verifie par: G.C.

Disegno · Drawing · Zeichnung · Dessin N.: AC 1000 M08

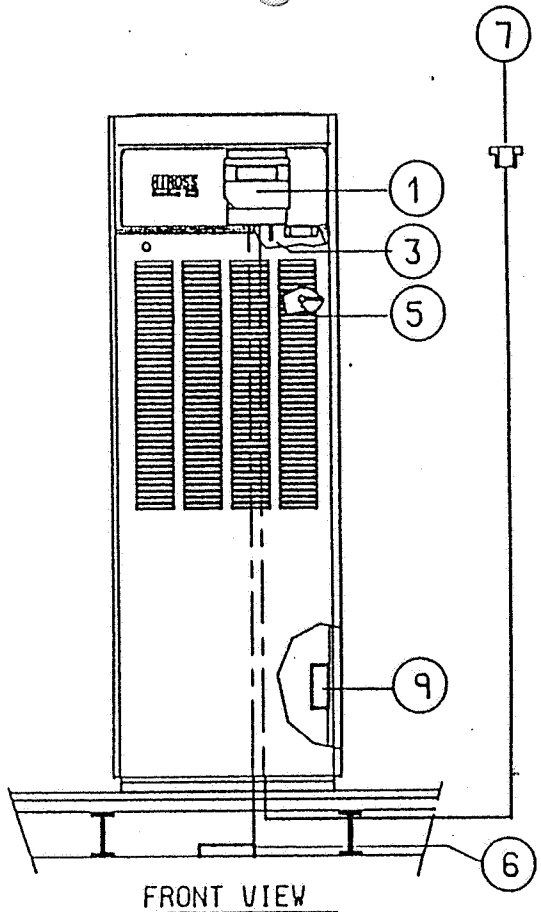
REV: A

Scala · Scale / Maßstab · Echelle

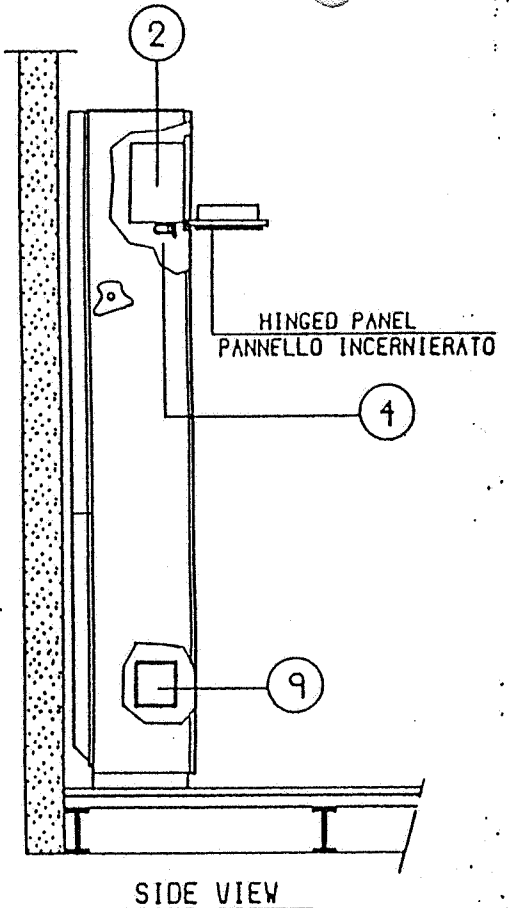
Data · Date · Datum: 30.07.92

Dis. · Draftsman / Zeichner · Dessin.: PESCAROLO

POS.	DESCRIPTION DESCRIZIONE	INSTALLATION INSTALLAZIONE	NOTES NOTE
1	HIROMATIC CONTROL CONTROLLO HIROMATIC	UNIT FRONT FRONTE UNITA'	STANDARD
2	ELECTRICAL PANEL QUADRO ELETTRICO	INSIDE THE UNIT INTERNO UNITA'	STANDARD
3	TEMPERATURE SENSOR SONDA TEMPERATURA	INSIDE THE UNIT INTERNO UNITA'	STANDARD
4	TEMPERATURE + HUMIDITY SENSOR SONDA TEMPERATURA + UMIDITA'	INSIDE THE UNIT INTERNO UNITA'	OPTIONAL
5	FLOW SWITCH SENSORE DI FLUSSO	INSIDE THE UNIT INTERNO UNITA'	STANDARD
6	SENSOR FOR LIQUISTAT SENSORE DI ALLAGAMENTO	OUTSIDE THE UNIT ESTERNO UNITA'	OPTIONAL
7	ELECTRONIC ENVIROMENTAL ALARM PACKAGE PANNELLO ALLARMI PER AMBIENTI	OUTSIDE THE UNIT ESTERNO UNITA'	OPTIONAL
8			
9	TERMINAL BLOCK SUPPLY AND ALARM MORSETTIERA DI ALIMENTAZIONE E ALLARMI	INSIDE THE UNIT INTERNO UNITA'	STANDARD



FRONT VIEW
VISTA FRONTALE



SIDE VIEW
VISTA FIANCO

REV.	B	AGGIORNATO DESTINAZIONE	Firma Sign	S.P.	Data Date	30.07.

HIROSS S.p.A. Piove di Sacco (Padova) Italia

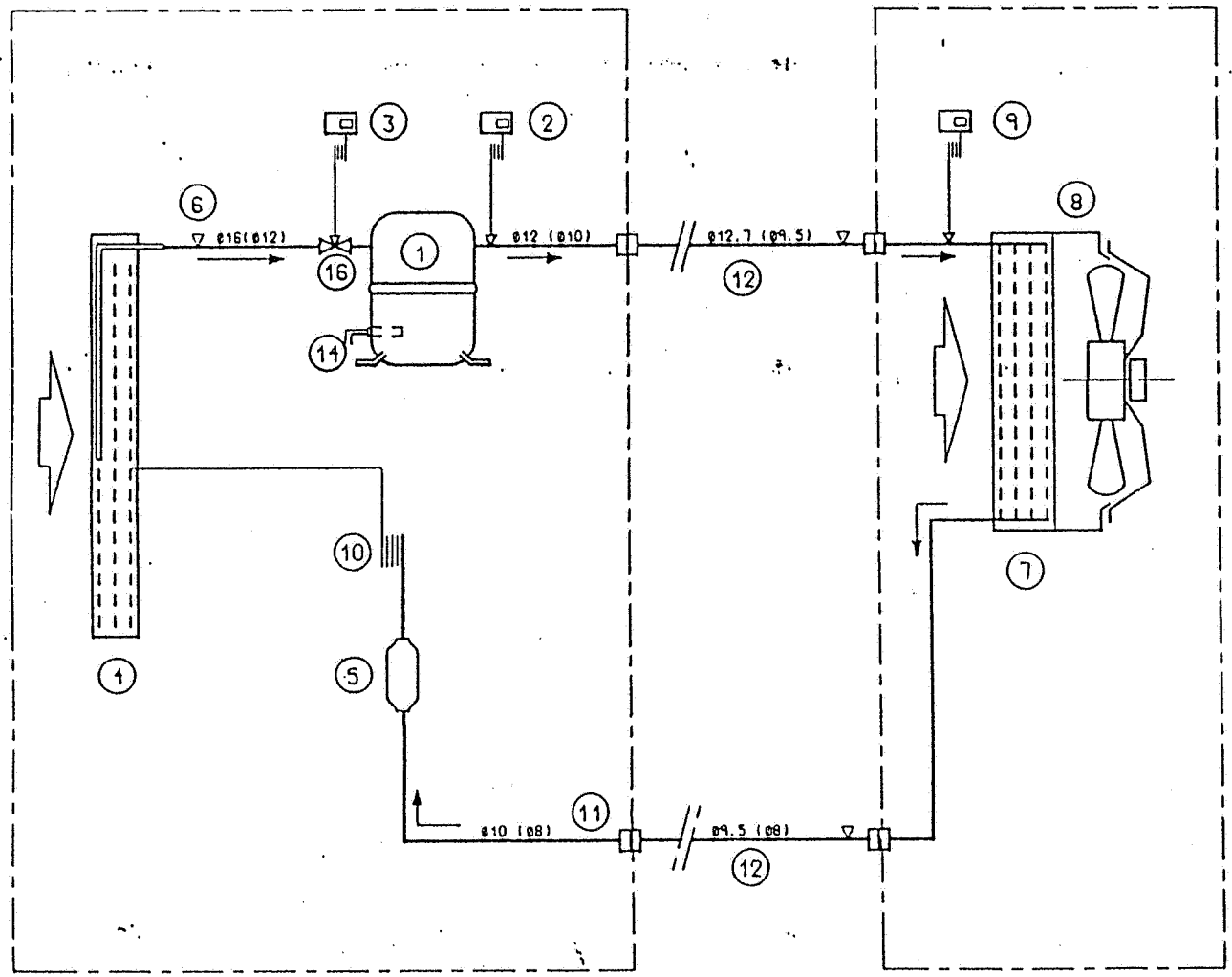
Denominazione · Denomination · Bezeichnung · Denomination

INSTRUMENTS INSTALLATION
INSTALLAZIONE STRUMENTI

Destinazione · Destination Bestimmung
MINIFLEX 50-75
A/W/C

Sostituisce il disegno Replaced drawing Ersetzt durch Remplace le dessin		Visto · Checked by Geprüft von · Vérifié par G.C.	Disegno · Drawing · Zeichnung · Dessin N.	REV
Scala · Scale Maßstab · Echelle	Data Date · Datum 19.06.91	Dis. · Draftsman Zeichner · Dessin. PESCAROLO	AC 1000 M05	B

(..) M50A



N.	DESCRIPTION	DENOMINAZIONE
25		
24		
23		
22		
21		
20		
19		
18		
17		
16	VALVE (ONLY FOR M7S WITH MANEUROP)	RUBINETTO (SOLO PER M7S CON MANEURO
15		
14	CRANKCASE HEATER	RESISTENZA CARTER
13		
12	PRECHARGED LINES	LINEE PRECARICATE
11	QUICK CONNECT COUPLINGS	GIUNTI RAPIDI AEROQUIP
10	EXPANSION CAPILLARY	CAPILLARE DI ESPANSION
9	FAN PRESSURE SWITC	PRESSOSTATO VENTILATOR
8	FAN MOTOR	MOTOVENTILATORE
7	CONDENSER	CONDENSATORE
6	CHARGE CONNECTION	ATTACCO DI CARICA
5	FILTER DRIER	FILTRO DEIDRATORE
4	EVAPORATOR	EVAPORATORE
3	LOW PRESSURE SWITCH	PRESSOSTATO BASSA PRES
2	HIGH PRESSURE SWITCH	PRESSOSTATO ALTA PRESS
1	COMPRESSOR	COMPRESSORE

rev.			
B	INSERITO RUBINETTO N° 16	S.P.	17.0

HIROSS S.p.A.

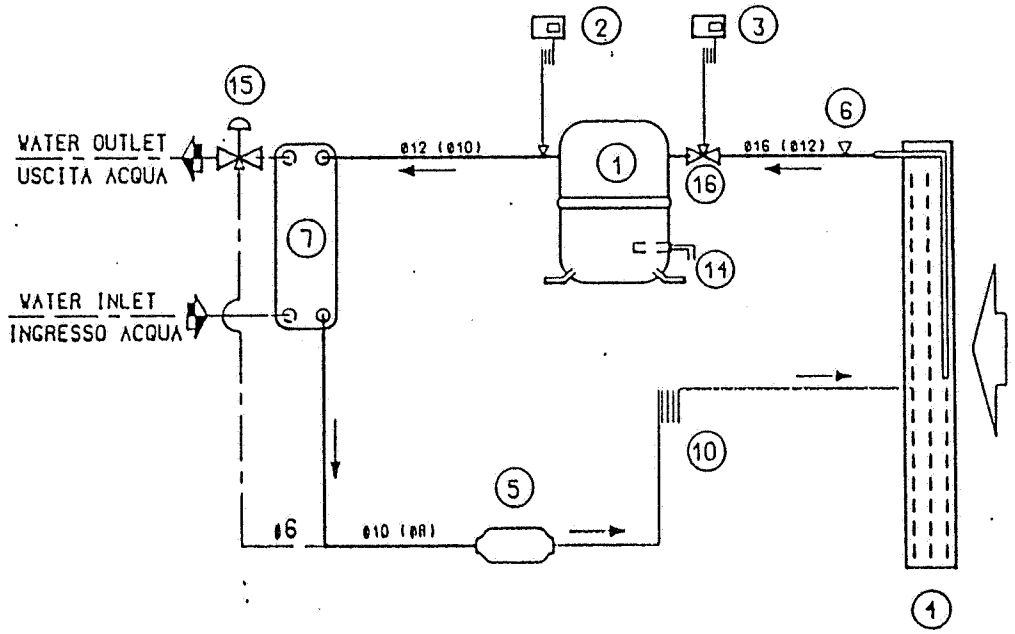
REFRIGERATION CIRCUIT
SCHEMA FRIGORIFERO

M 50A - M 75A

C.C.

AC1000 F01 B

(..) M50A



N.	DESCRIPTION	DENOMINAZIONE
25		
24		
23		
22		
21		
20		
19		
18		
17		
16	VALVE (ONLY FOR M75 WITH MANEUROP)	RUBINETTO (SOLO PER M75 CON MANEUR
15	PRESSOSTATIC WATER VALVE	VALVOLA PRESSOST. ACQU
11	CRANKCASE HEATER	RESISTENZA CARTER
13		
12		
11		
10	EXPANSION CAPILLARY	CAPILLARE DI ESPANSION
9		
8		
7	CONDENSER	CONDENSATORE
6	CHARGE CONNECTION	ATTACCO DI CARICA
5	FILTER DRIER	FILTRO DEIDRATORE
4	EVAPORATOR	EVAPORATORE
3	LOW PRESSURE SWITCH	PRESSOSTATO BASSA PRES
2	HIGH PRESSURE SWITCH	PRESSOSTATO ALTA PRESS
1	COMPRESSOR	COMPRESSORE

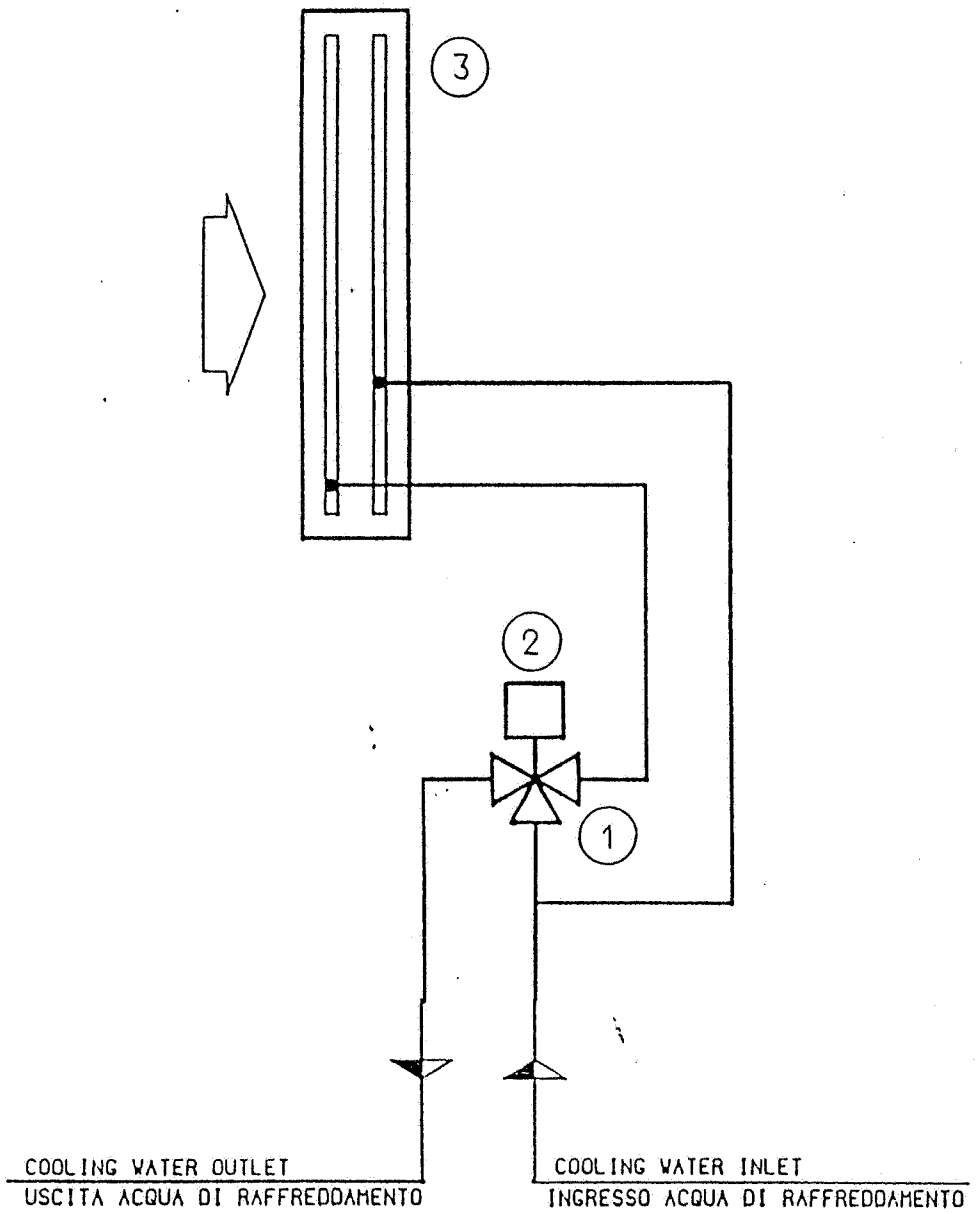
REV.				
B	INSERITO RUBINETTO N° 16	S.P.	17.01

HIROSS S.p.A.

REFRIGERATION CIRCUIT
SCHEMA FRIGORIFERO

M 50V - M 75V

Disegnato - Drawing - Gezeichnet - Dessiné N.	Visto - Checked by - Geprüft von - Vérifié par	Data - Date	Dis. - Draftsman - Zeichner - Dessin.
AC1000 F02	C.C.	12.12.89	MANTOAN



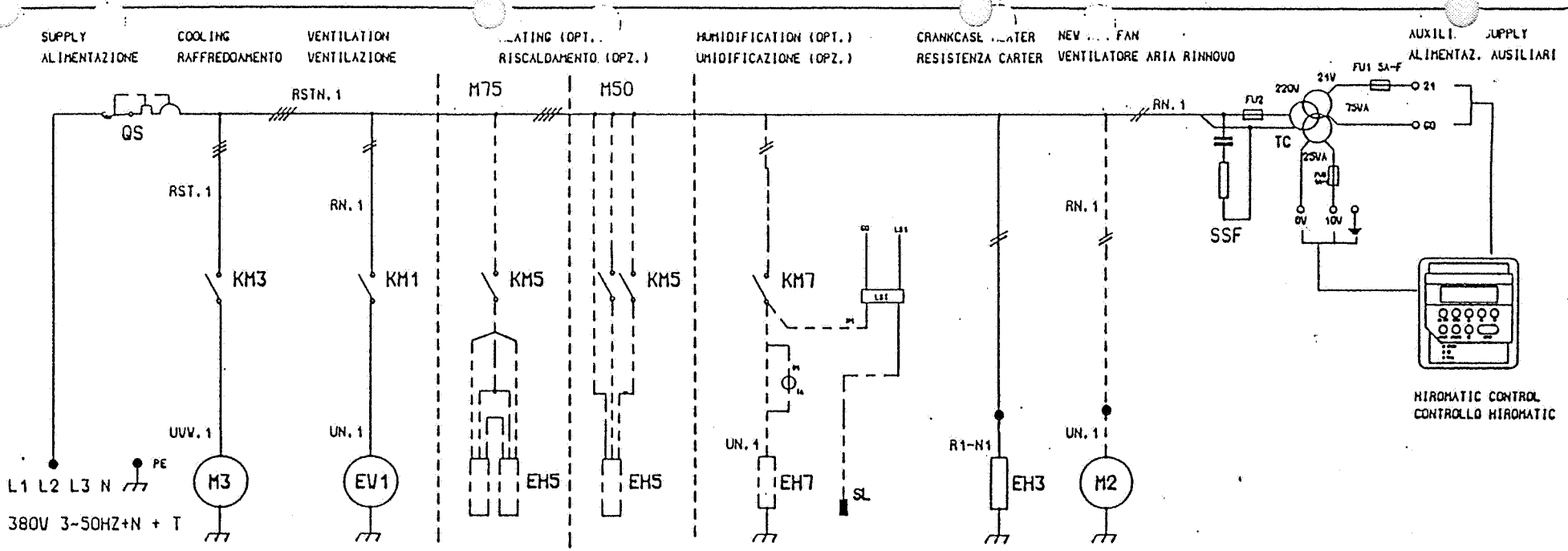
N°	DESCRIPTION	DENOMINAZIONE
3	CHILLED WATER COIL	BATTERIA DI RAFFREDDAMENTO
2	SERVOMOTOR	SERVOMOTORE
1	CHILLED WATER 3-WAY VALVE	VALVOLA A 3 VIE ACQUA FREDDA

REV.			Firma Sign.		Data Date	

HIROSS S.p.A. Piove di Sacco (Padova) Italia

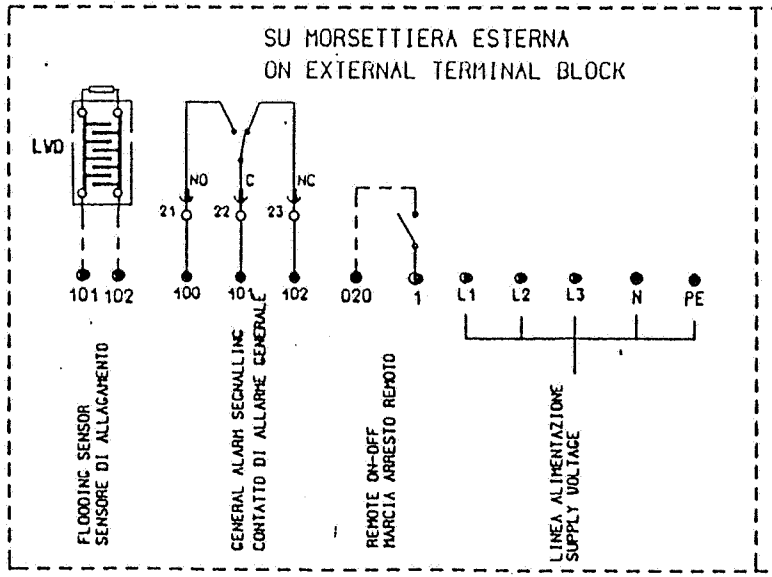
Denominazione - Denomination - Bezeichnung - Dénomination	Destinazione - Destination Bestimmung
HYDRAULIC CIRCUIT SCHEMA IDRAULICO	MINIFLEX 50-75 C

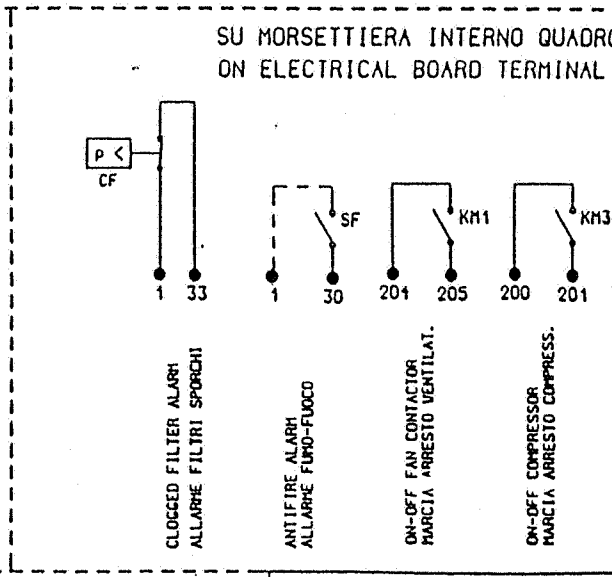
Sostituisce il disegno Replaced drawing Ersetzt durch Remplace le dessin		Visto - Checked by Geprüft von - Vérifié par G.C.	Disegno - Drawing - Zeichnung - Dessin N.	REV.
Scala - Scale Maßstab - Echelle	Data Date - Datum 30.06.92	Dis. - Draftsman Zeichner - Dessin PESCAROLO	AC1200F01	A



ALLARMI E CONTROLLI A DISPOSIZIONE - AVAILABLE ALARMS AND CONTROLS

M3 COMPRESSORE	COMPRESSOR
KM3 CONTATTORE COMPRESSORE	COMPRESSOR CONTACTOR
CH3 RESISTENZA CARTER	CRANKCASE HEATER
CF PRESSOSTATO FILTRI SPORCHI	CLOGGED FILTER
DFC CONTATTORE DEUMIDIFICAZIONE	DEHUMIDIFICATION FAN CONTACTOR
LVD SENSORE ALLAGAMENTO	FLOODING SENSOR
KM7 CONTATTORE UMIDIFICAZIONE	HUMIDIFICATION CONTACTOR
EH7 UMIDIFICATORE	HUMIDIFIER
QS INTERRUTTORE GENERALE	MAIN GENERAL SWITCH
LC CONTROLLO ALLAGAMENTO	LIQUISTAT
EV1 MOTORE VENTILATORE	FAN MOTOR
KM1 CONTATTORE VENTILATORI	FAN MOTOR CONTACTOR
KM5 CONTATTORE RISCALDAMENTO	REHEATING CONTACTOR
CH5 RESISTENZA ELETTRICA	ELECTRICAL HEATER
SF SENSORE FUMO FUOCO	SMOKE - FIRE DETECTOR
TC TRASFORMATORE	TRANSFORMER
FU2 FUSIBILE PRIMARIO TRSFORM.	TRANSFORMER FUSE
FU1 FUSIBILE AUSILIARI 24V	AUXILIARY 24V TRANSFORMERFUSE
FU5 FUSIBILE AUSILIARI 10V	AUXILIARY 10V TRANSFORMER FUSE
SL SENSORE DI LIVELLO	LEVEL SENSOR
LSI ISOLATORE SENSORE DI LIVELLO	LEVEL SENSOR ISOLATOR

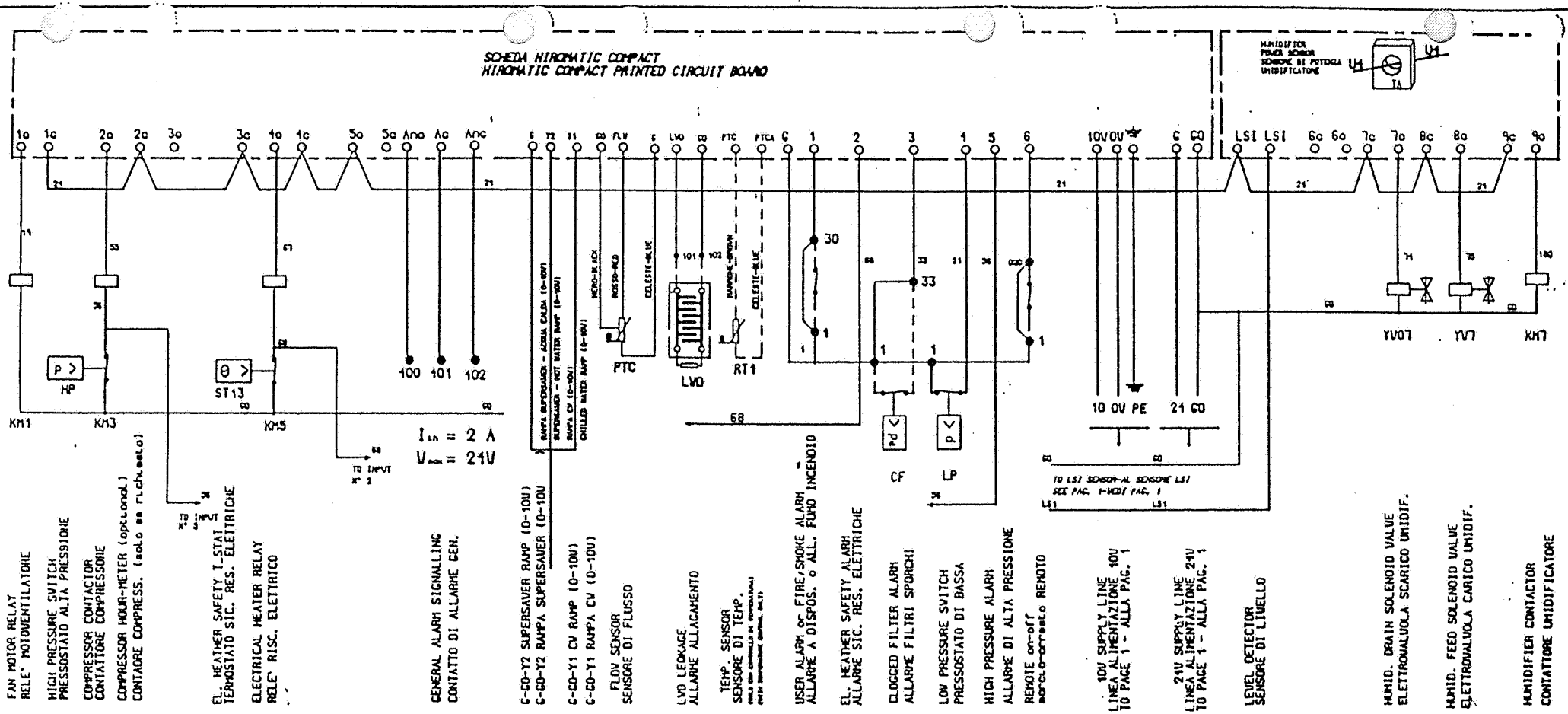




N.B. SCHEMA ELETTRICO STD SEMPLIFICATO
N.B. STD SEMPLIFIED ELECTRICAL DIAGRAM

HIROSS

M50-75 WITH HIROMATIC COMPA
DRAW. No AC0132E2/A PAG. 1 of



MINIFLEX 50-75 Hydromatic C

3N 50Hz 380V

REF. -RIF.	MAKER-MARCA	F+C+H
QS	AEG	ELFA 1-Pole In=20A -U- Ik=6KA -IP 20-
KM3	AEG	LS 1.10 21V 50-60Hz
KM1	FINDER	6013 3SPDT 24Vac
KM5	AEG	LS07.10 24Vac 50-60Hz
KM7	FINDER	6013 3SPDT 24Vac
TC		1.50Hz Prim. 220-240V Sec. 24V 75VA + AVVOLG. SEPARATO 10V 25VA- CON PORTAFUSIBILI E FUSIBILI
FU1-2		FUSIBILI 1 A - T 5X20
FU1		FUSIBILE 5 A - F 5X20
FU5		FUSIBILI 1 A - F 5X20

COMPONENTS DESCRIPTIONE
DESCRIZIONE COMPONENTI

POWER CIRCUIT	CIRCUITO DI POTENZA
QS MAIN AUTOMATIC SWITCH	INTERRUTTORE AUTOMATICO GENERALE
KM1 FAN MOTOR RELAY	RELE' MOTOVENTILATORE
KM3 COMPRESSOR CONTACTOR	CONTATTORE COMPRESSORE
KM7 HUMIDIFIER RELAY	RELE' UMIDIFICATORE
KM5 ELECTRICAL HEATER RELAY	RELE' RISCALDAMENTO ELETTRICO
FU1-2 TRANSFORMER FUSE	FUSIBILE TRASFORMATORE
TC AUXILIARY CIRCUIT TRANSFORMER	TRASFORMATORE ALIMENT. CIRCUITI AUSILIARI
EV1 FAN MOTOR	MOTOVENTILATORE
KC COMPRESSOR	COMPRESSORE
EH ELECTRICAL HEATER	RISCALDAMENTO ELETTRICO
EH1 HUMIDIFIER	UMIDIFICATORE
EH2 CRANKCASE HEATERS	RESISTENZE CARTER
M2 NEW AIR FAN -OPTIONAL-	ARIA RINNOVO

AUXILIARY CIRCUIT
CIRCUITI AUSILIARI

YV1 FILL SOLENOID VALVE	ELETTROVALVOLA CARICO UMIDIF.
YV07 DRAIN SOLENOID VALVE	ELETTROVALVOLA SCARICO UMIDIF.
HP HIGH PRESSURE P_STAT	PRESSOSTATO DI ALTA COMPRESSORE
LP LOW PRESSURE P_STAT	PRESSOSTATO DI BASSA COMPRESSORE
ST13 ELECTRICAL HEATER SAFETY T_STAT	TERMOSTATO RESISTENZE ELETTRICHE
LSI LEVEL SENSOR ISOLATOR	ISOLATORE SONSORE DI LIVELLO
LVD FLOODING CONTROL	CONTROLLO DI ALLAGAMENTO
FU1 AUXILIARY FUSE	FUSIBILE PROTEZIONE AUSILIARI
TA HUMIDIFIER POWER SENSOR	SENSORE DI POTENZA UMIDIFICATORE
FUS AUXILIARY 10V FUSE	FUSIBILI AUSILIARI 10V
SL LEVEL DETECTOR	SENSORE DI LIVELLO
SSF SPIKE SUPPRESSION FILTER	FILTRO ANTIDISTURBO
PTC FLOW SENSOR	SENSORE DI FLUSSO
RT1 TEMPERATURE SENSOR	SENSORE DI TEMPERATURA

HIROSS

M50-75 WITH HIROMATIC COMPAC

DRAW. No AC0132E2/A PAG. 1