



IDRA - RWS

Water cooled chillers, heat pumps and motoevaporating units
Capacities from 5 kW to 17 kW



USE, INSTALLATION AND MAINTENANCE MANUAL



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GENERALITIES

The IDRA-RWS series is made of 6 sizes of water cooled chillers covering a range of capacities from 5 to 17 kW. Single phase electrical feeding is provided for the first 3 sizes (from 5 to 9 kW), 3-phase for the remaining ones; the size 9 is available both the two version.

They have been designed to operate at extremely low noise levels and to offer high reliability, efficiency and easy maintenance. All the units undergo a very strict and detailed factory test before delivery. The structure of the units allows for both an outdoor and indoor installation. The refrigeration circuit is charged with R407C refrigerant.

The high reliability of the components employed, as well as the strict tests which all units must undergo, grant a very high quality standard.

AVAILABLE VERSIONS:

- F:** water cooled chillers.
- H:** water cooled heat pumps.
- HW:** water cooled heat pumps with inversion on the hydraulic circuit.
- ME:** motoevaporating units.

STANDARD VERSIONS AND ACCESSORIES

IDRA-RWS F- H - HW - ME	5	7	9m	9	14	17
Main switch	S	S	S	S	S	S
Flow switch	S	S	S	S	S	S
On/off free contact	S	S	S	S	S	S
General alarm free contact	S	S	S	S	S	S
Antivibration dampers	O	O	O	O	O	O
Evap. electric heater	O	O	O	O	O	O
Pressure gauges	O	O	O	O	O	O
Pressostatic valve (no ME)	O	O	O	O	O	O
Remote control	O	O	O	O	O	O

S: standard - O: optional

COMPONENTS DESCRIPTION

COMPRESSORS

Reciprocating hermetic compressors for sizes 5 and 7, hermetic scroll compressors provided with internal thermal protection for the remaining sizes. Direct starting. The compressors are located in a soundproof technical room.

EVAPORATORS

Stainless steel plate heat exchanger with closed cells polyurethane thermal insulation. In order to protect the exchanger a differential pressure switch is provided as a standard on all the units.

CONDENSER COILS

Stainless steel plate heat exchanger. The HW is provided with a flow switch.

CONTROL AND SAFETY DEVICES

Microprocessor with the following main functions: cooling capacity control based on the inlet water temperature; setting of all the operating parameters; display of chilled water inlet and outlet temperature; display of the alarms; compressor timer setting; alarms reset; automatic starting after power failure.

ELECTRICAL PANEL

Double door casing including: main switch, thermal protection on auxiliary circuits and fans, compressors contactors.

REFRIGERATION CIRCUIT

The refrigeration circuit includes: expansion valve, drier-filter, high pressure switch with manual reset, low pressure switch with automatic reset.

FRAME

Robust galvanized steel base and frame, epoxy painted and external panels in aluminium/magnesium alloy. Stainless steel screws.

STANDARD HYDRAULIC KIT

Standard hydraulic kit including: expansion tank, buffer tank, pump, air release valve, water discharge shut-off valve, flow switch.

IDRA RWS F-H-HW-ME 5 - 9 m

Size		5	7	9 m
Cooling capacity (1) F-H-ME-HW	[kW]	5,6	7,4	9,3
Input power (1) F-H-ME -HW	[kW]	1,8	2,3	2,2
Heating capacity (2) HW-H	[kW]	7,5	9,9	12,1
Compressors type		Reciprocating hermetic		Scroll
Compressors / circuits		1/1	1/1	1/1
Max. input power (each)	[kW]	4,2	3,4	4,58
Max. input power (each)	[A]	22	17,8	24
Start-up current	[A]	55	91	85
Capacity steps		1	1	1
Evaporator / number		Plate heat exchanger/1		
Liquid flow	[m ³ /h]	1,0	1,3	1,6
Pressure drop	[kPa]	10	10	10
Condenser / number (F-H-HW)		Plate heat exchanger/1		
Liquid flow	[m ³ /h]	1,3	1,7	2,0
Pressure drop	[kPa]	17	17	15
Sound pressure level [dB(A)]				
At 1 m in free field	[dB(A)]	49	49	51
Dimensions and weights				
Length	[mm]	423	423	423
Width	[mm]	408	408	408
Height	[mm]	866	866	866
Weight	[kg]	66	71	81
Refrigerant charge (F-H-HW)	[kg]	0,7	0,9	1

(1) Cond. in/out temp.30/35°C, evap. in/out temp. 12/7°C - For ME version, cond. temp. 40°C, evap. in/out temp. 12/7°C

(2) Evap. in/out temp.15 / 10°C,cond. in/out temp. 40/45°C

Size		5	7	9m
TOTAL ELECTRICAL DATA		(230 V - 1 ph - 50 Hz)		
Nominal input power	[kW]	1,8	2,3	2,2
Max. input power	[kW]	4,2	3,4	4,58
Nominal input current	[A]	5,5	7,0	6,7
Max. input power	[A]	22	17,8	24
Max. start-up current	[A]	55,0	91,0	85,0

IDRA RWS F-H-HW-ME 9 - 17

Size		9	14	17
Cooling capacity (1) F-H-ME -HW	[kW]	9,3	14	17,6
Input power (1) F-H-ME-HW	[kW]	2,2	3,3	4
Heating capacity (2) HW-H	[kW]	12,1	18,1	22,8
Compressors type		Hermetic scroll		
Compressors / circuits		1/1	1/1	1/1
Max. input power (each)	[kW]	5,57	7,18	8,5
Max. input power (each)	[A]	9,7	12,5	14,8
Start-up current	[A]	45	67	76
Capacity steps		1	1	1
Evaporator / number		Plate heat exchanger/1		
Liquid flow	[m ³ /h]	1,6	2,4	3,0
Pressure drop	[kPa]	10	40	32
Condenser / number (F-H-HW)		Plate heat exchanger/1		
Liquid flow	[m ³ /h]	2,0	3,0	3,7
Pressure drop	[kPa]	15	61	48
Sound pressure level [dB(A)]				
At 1 m in free field	[dB(A)]	51	52	52
Dimensions and weights				
Length	[mm]	423	423	423
Width	[mm]	408	408	408
Height	[mm]	866	866	866
Weight	[kg]	81	108	124
Refrigerant charge (F-H-HW)	[kg]	1	1,2	1,4

(1) Cond. in/out temp.30/35°C, evap. in/out temp. 12/7°C - For ME version, cond. temp. 40°C, evap. in/out temp. 12/7°C

(2) evap. in/out temp.15 / 10°C,cond. in/out temp. 40/45

Size		9	14	17
TOTAL ELECTRICAL DATA		(400 V - 3 ph - 50 Hz)		
Nominal input power	[kW]	2,2	3,3	4,0
Max. input power	[kW]	5,57	7,18	8,5
Nominal input current	[A]	3,7	5,5	6,7
Max. input power	[A]	9,7	12,5	14,8
Max. start-up current	[A]	45,0	67,0	76,0

IDRA RWS F-H-HW-ME 5 - 17

 twc: cond. in/out temp. [°C] Pf: cooling capacity [kW]
 twe: evap. in/out temp. [°C] Pt: heating capacity [kW]
 *: cond. temp. [°C] Pa: input power [kW]

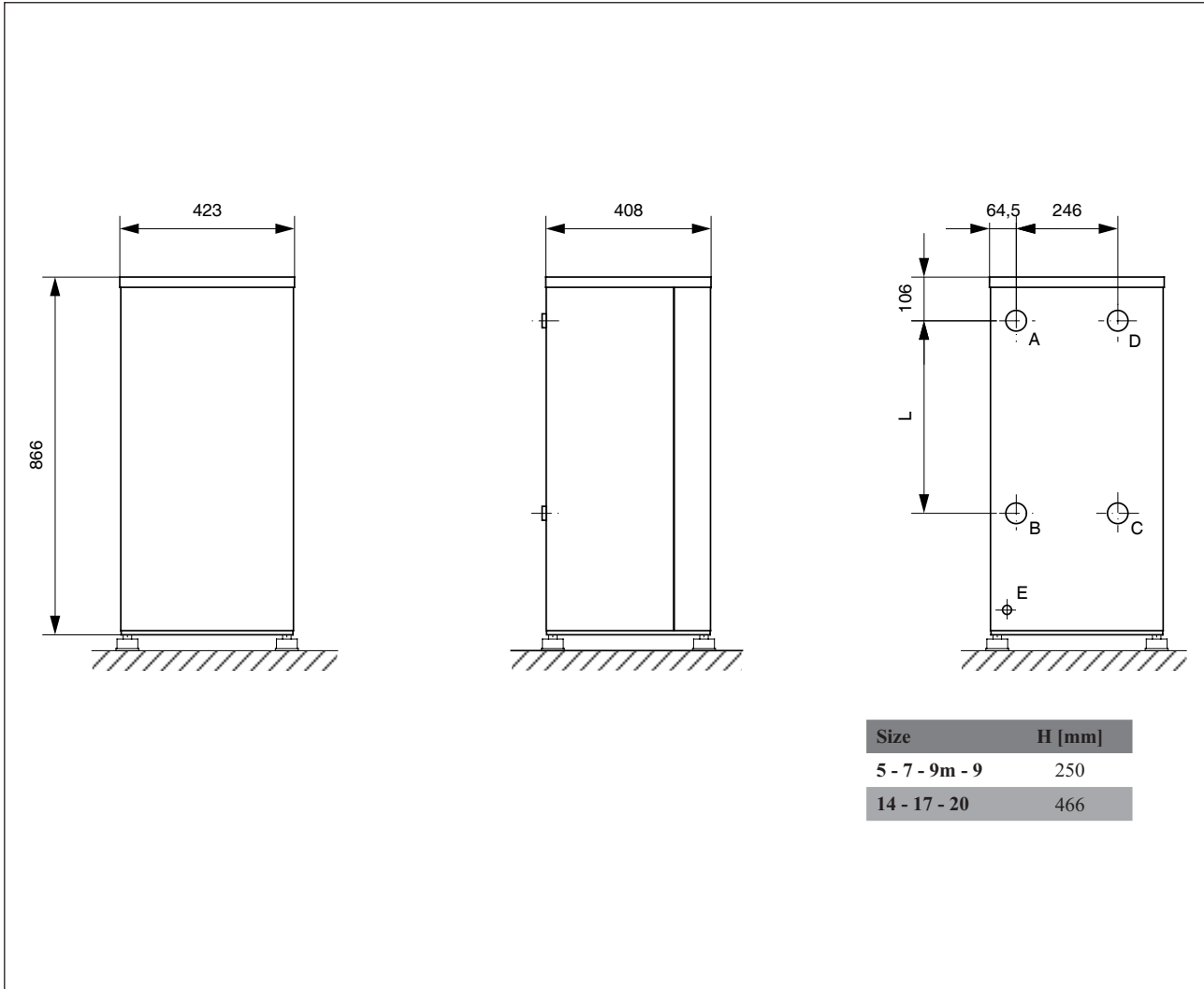
Size	twc*	15/30 (35*)			30/35 (40*)			35/40 (45*)			40/45 (50*)			45/50 (55*)		
	twe	Pf	Pt	Pa	Pf	Pt	Pa	Pf	Pt	Pa	Pf	Pt	Pa	Pf	Pt	Pa
5	5	5,6	7,2	1,6	5,2	6,9	1,7	4,9	6,7	1,8	4,6	6,5	1,9	4,2	6,2	2,0
	6	5,8	7,4	1,6	5,4	7,1	1,7	5,1	6,9	1,8	4,7	6,6	1,9	4,4	6,4	2,0
	7	6,0	7,7	1,7	5,6	7,4	1,8	5,3	7,2	1,9	4,9	6,8	1,9	4,6	6,6	2,0
	8	6,2	7,9	1,7	5,8	7,6	1,8	5,5	7,4	1,9	5,1	7,0	1,9	4,8	6,9	2,1
	9	6,4	8,1	1,7	6,0	7,8	1,8	5,7	7,6	1,9	5,3	7,3	2,0	4,9	7,0	2,1
	10	6,6	8,3	1,7	6,2	8,0	1,8	5,9	7,8	1,9	5,5	7,5	2,0	5,1	7,2	2,1
7	5	7,3	9,4	2,1	6,9	9,1	2,2	6,5	8,8	2,3	6,1	8,5	2,4	5,6	8,1	2,5
	6	7,6	9,8	2,2	7,1	9,4	2,3	6,7	9,1	2,4	6,3	8,8	2,5	5,9	8,5	2,6
	7	7,8	10,0	2,2	7,4	9,7	2,3	7,0	9,4	2,4	6,5	9,0	2,5	6,1	8,7	2,6
	8	8,1	10,3	2,2	7,7	10,0	2,3	7,4	9,9	2,5	6,7	9,3	2,6	6,4	9,1	2,7
	9	8,4	10,6	2,2	7,9	10,3	2,4	7,5	10,0	2,5	7,0	9,6	2,6	6,6	9,3	2,7
	10	8,7	11,0	2,3	8,2	10,6	2,4	7,7	10,2	2,5	7,3	9,9	2,6	6,8	9,6	2,8
9/9m	5	9,1	11,1	2,0	8,7	10,9	2,2	8,4	10,9	2,5	8,0	10,7	2,7	7,6	10,5	3,0
	6	9,4	11,4	2,0	9,0	11,2	2,2	8,6	11,1	2,5	8,2	11,0	2,7	7,8	10,8	3,0
	7	9,6	11,6	2,0	9,3	11,5	2,2	8,9	11,4	2,5	8,5	11,2	2,7	8,1	11,1	3,0
	8	9,9	11,9	2,0	9,6	11,8	2,2	9,2	11,7	2,5	8,8	11,5	2,7	8,3	11,4	3,1
	9	10,2	12,2	2,0	9,9	12,1	2,2	9,5	12,0	2,5	9,1	11,9	2,8	8,6	11,7	3,1
	10	10,5	12,5	2,0	10,2	12,4	2,2	9,8	12,3	2,5	9,3	12,1	2,8	8,9	12,0	3,1
14	5	13,7	16,7	3,0	13,2	16,5	3,3	12,7	16,3	3,6	12,1	16,1	4,0	11,5	15,9	4,4
	6	14,1	17,1	3,0	13,6	16,9	3,3	13,1	16,7	3,6	12,5	16,5	4,0	11,8	16,2	4,4
	7	14,5	17,5	3,0	14,0	17,3	3,3	13,5	17,1	3,6	12,9	16,9	4,0	12,2	16,6	4,4
	8	15,0	18,0	3,0	14,5	17,8	3,3	13,9	17,5	3,6	13,3	17,3	4,0	12,6	17,0	4,4
	9	15,4	18,4	3,0	14,9	18,2	3,3	14,3	17,9	3,6	13,8	17,8	4,0	13,0	17,4	4,4
	10	15,9	18,9	3,0	15,3	18,6	3,3	14,8	18,4	3,6	14,1	18,1	4,0	13,5	17,9	4,4
17	5	17,1	20,7	3,6	16,5	20,4	3,9	15,9	20,3	4,4	15,3	20,2	4,9	14,6	20,0	5,4
	6	17,7	21,3	3,6	17,0	21,0	4,0	16,4	20,8	4,4	15,8	20,7	4,9	15,1	20,5	5,4
	7	18,2	21,8	3,6	17,6	21,6	4,0	16,9	21,3	4,4	16,2	21,1	4,9	15,5	21,0	5,5
	8	18,8	22,4	3,6	18,2	22,2	4,0	17,4	21,8	4,4	16,7	21,7	4,9	16,0	21,5	5,5
	9	19,3	23,0	3,7	18,7	22,7	4,0	17,9	22,4	4,5	17,3	22,2	5,0	16,5	22,0	5,5
	10	19,9	23,6	3,7	19,3	23,4	4,1	18,5	23,0	4,5	17,8	22,8	5,0	17,0	22,5	5,5

APPLICATION LIMITS IDRA RWS F-H-HW-ME

Max./Min. cond. inlet temp.(1)	[°C]	50/15
Max./Min. cond. outlet temp.	[°C]	55 / 30
ΔT cond. in/out temp.	[°C]	4 / 15
Max./Min. evap. inlet temp.	[°C]	18 / 8
Max./Min. evap. outlet temp.	[°C]	4/15
ΔT evap. in/out temp.	[°C]	4 / 8

(1) chilled water temp. 12/7°C

IDRA RWS F-H-HW-ME 5 - 17



- A: water outlet
- B: water inlet
- C: condenser water inlet (for F - H - HW)
- D: condenser water outlet (per F - H - HW)
- E: liquid refrigerant pipe, to be welded on site (for ME)
- F: compressor discharge pipe, to be welded on site (for ME)

Size		5	7	9/9m	14	17
F	A - B	1" GAS	1" GAS	1" GAS	1" GAS	1" GAS
HW	C - D	1" GAS	1" GAS	1" GAS	1" GAS	1" GAS
ME	A - B	1" GAS	1" GAS	1" GAS	1" GAS	1" GAS
ME	C	10 mm	10 mm	10 mm	12 mm	12 mm
ME	D	12 mm	12 mm	12 mm	16 mm	16 mm

SAFETY

The FAST chiller IDRA-RWS series have been designed in order to minimize all the possible risks for the operators safety. Please, read carefully the following instruction in order to be aware of the possible dangerous situations while operating with the unit.

ACCESS TO THE UNIT

Only authorized personnel are entitled to access to unit. The operators must operate with the unit using adequate safety devices and gear.

RESIDUAL RISKS

The unit installation, start-up, switch-off, maintenance must respect the indications given in the product technical documentation and, in any case, preventing any possible dangerous situation. Please, consider the following possibly hazardous situations.

Component	Residual risk	possible cause	precautions
heat exchange coil	small cuts	touch	avoid touch, use protective gloves
fan grille and fan	injuries	insertion of objects through the grille while the fan is operating	do not insert any object through the fan grille or lay anything upon it
inside the unit: compressor and supply pipe	burns	touch	avoid touch, use protective gloves
inside the unit: metal components and electrical cables	intoxications, electrocutions, serious burns	defect of insulation of supply cables upstream the electrical panel; metal components under tension	adequate insulation for the for the supply cables; pay extreme attention when putting all the metal components to earth
around the unit	intoxications, serious burns	fire caused by short circuit or overheating of the supply cables upstream the electrical panel	cables section and protection devices of the supply cables as per law in force

RECEIPT AND STORAGE

On receipt of the goods, verify they have not been damaged and they conform to what indicated in the transport documents. Damages or incomplete supplies must be immediately notified.

Store the units in suitable warehouses (temperatures from -20°C to max. +55°C).

HANDLING

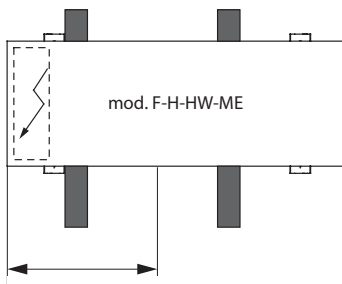
The units can be handled both with fork lifters or cranes. When handling the unit, pay special attention not to damage the condensing coil. Before moving the units, check their dimensions reported in the present manual. It is recommended to handle the units still packaged.

Lifting with fork lifter

Lift the unit with a fork lifter of adequate loading capacity, verify that the forks length is at least 1200 mm.

Place the forks following the instructions shown in the figure below. **Be sure the unit is in perfect stable balance.**

The forks must protrude 50 mm at least



weight centre point = 570 mm approx.

POSITIONING

Install the unit respecting the clearances indicated in the dimensional drawings. Lay the unit on an even surface, robust enough to bear its weight.

Antivibrations dampers

Rubber antivibration dampers are supplied as an option. Fitted to the holes in the basement, they prevent vibrations transmission.

INSTALLATION

Hydraulic connections: We suggest to make the hydraulic connections with extreme care.

A water filter, to be installed on the inlet pipe, is to be considered as mandatory. The warranty will no longer be valid if no filter is installed on the inlet pipe.

WIRING CONNECTIONS

The inlet for the electrical feeding cables is shown in the dimensional drawings. Remove the front panel in the upper part of the unit to access the electric board; refer to the power and current values indicated in the present manual to size the electrical feeding cables. The electrical wiring drawings, with all the remaining documentation present in the compressor cabinet, are supplied with the unit.

Pay special attention to the following:

- only qualified personnel are entitled to access and operate with the wiring connections;
- protect the electrical feeding cables against short-circuit and overload with protection devices as per law in force;
- choose a cable section conforming the protection device and considering all the possible influencing factors (temperature, insulation, length ect.);
- Perform all the operations to put the unit to earth with the utmost care;
- check if the electrical feeding system is **3-phases** or **3-phases with neutral wire**.

A couple of terminals (free-contacts), one for the remote general alarm and one for the remote ON-OFF, are present in the terminal plate of the electric board.

Pay particular attention to the electrical wirings drawings, supplied with the units, when connecting a condensing unit to the internal unit and to the room thermostat

START UP

Before starting the unit check the electric, hydraulic and cooling circuits.

Preliminary checks - electric circuit

Before proceeding with the checklist reported below, be sure that the electric feeding line is disconnected and the disconnection switch is locked. Proceed as follows:

- remove the front panel in the upper part of the unit;
- turn the main switch to "0" (OFF);
- open the door of the electrical board;
- verify that the feeding cables have been correctly sized;
- verify that the unit has been correctly put to earth;
- verify the tightening of the bolts that fix the wires to the electrical components present in the electric board.
- close the door of the electric board.

It is possible now to feed the unit connecting the feeding line through the disconnection switch and turning the main switch to "1" (ON). Using a voltmeter check the values of the phase tension; the value must be $400\text{ V} \pm 10\%$.

Calculate the mean value of the phase tension $(RS+ST+RT)/3$ and the proportional difference between each of the phase tensions and the calculated mean value. The maximum difference must not exceed 3%. **The warranty will no longer be valid with higher values.**

EXAMPLE:

R-S = 397 V ; S-T = 406 V ; R-T = 395 V

mean value: $(397+406+395)/3 = 399,3\text{ V}$

proportional difference: $(406 - 397) / 399,3 \times 100 = 2,25\%$

$(406 - 395) / 399,3 \times 100 = 2,75\%$

$(397 - 395) / 399,3 \times 100 = 0,5\%$

Preliminary checks - hydraulic circuit

- verify the correct connection between the unit and the plant pipes;
- verify that the hydraulic shut-off valves are open;
- verify that the plant is charged;
- release all the air from the plant;
- verify that the circulation pump is working and the rotation direction is clockwise;
- verify that the water flow conform to the design one; **be sure the water flow is always steady.**

Preliminary checks - cooling circuit

Check the components of the cooling circuit. Verify that the compressors lubricant is at the correct level at the half of the sight glass.

Start-up

Turn the main switch on the electric board to "ON". Push the "on/off" button on the keyboard (downwards arrow for 2÷3 sec.); verify there are no alarms on the display.

- The units start to operate 3 minutes after the signal given on the inlet water temperature.

WARNING! The rotation direction of the scroll compressors is very important; if the phase sequence is uncorrect they rotate on the wrong side becoming loud and risking serious damages. In this case change immediately the phase sequence. To verify the correct rotation direction, connect the pressure switches to the pressure gauges, correct evaporation and condensing pressure values should be read.

Running condition

The microprocessor controls the cooling capacity depending on the plant thermal load. Verify the water inlet and outlet temperatures: the difference between those two values should not exceed 7°C. Low water flow or air through the plant may cause a higher temperature difference.

An external signal (room thermostat) controls the compressor switch on and off for the motoevaporating units (ME).

Unit switch on and switch off

Push "on/off" button on the microprocessor board (downwards arrow for 2-3 sec.) or open the remote on/off contacts. During long stop periods disconnect the unit by switching off the main switch on the electric board.

WINTER STOP

If the hydraulic circuit has been charged with water, it is mandatory to blow it out at the end of summer to prevent it from freezing during winter. If the circuit has been charged with glycol-water mixture, the operation is not necessary. Before winter begins, verify the glycol concentration with a densimeter; if necessary, refill the circuit.

Maintenance

We suggest a monthly maintenance procedure to be carried out as follows:

- verify the tightening of the bolts fixing the fans to the grilles and the grilles to the unit structure;
- verify the condensing coils are clean to guarantee an efficient heat exchange. Remove all the dirt on their surface with a jet of air. The aluminium fins are 0,12 mm thin, throw the jet of air perperndicularly to the coils surface to prevent damages to them and, in any case, pay particular attention to all the cleaning procedure.

If the fins are damaged, line them up with a suitable tool (metal comb).

Before operating on the coils, wear protective gloves; the accidental contact with the fins may cause small cuts.

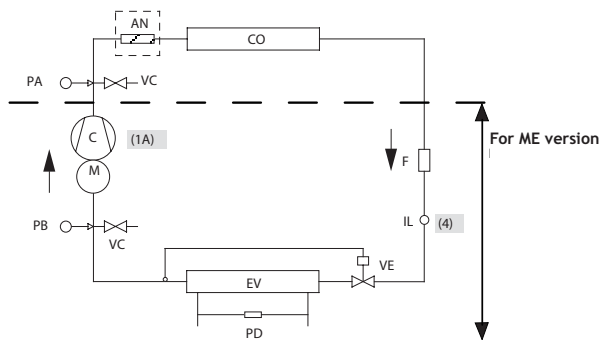
- verify the insulation of the electrical feeding cables is not damaged;
- verify the tightening of the bolts that fix the wires to the electrical components present in the electrical board.
- verify the hydraulic circuit has no leakages;
- check, while the compressors are operating, the supply and suction pressures. Remove the panels of the compressors cabinet and connect the pressure switches to the pressure gauges in the cooling circuit. Only qualified operators are entitled to operate with the cooling circuit.
- check the oil level of the compressors through the sight glass.

UNIT DISMANTLING

Only qualified operators are entitled to dismantle the unit; recover the refrigerant and the compressors lubricant as per law in force.

REFRIGERATION CIRCUITS DIAGRAMS

Refrigeration circuit



KEY

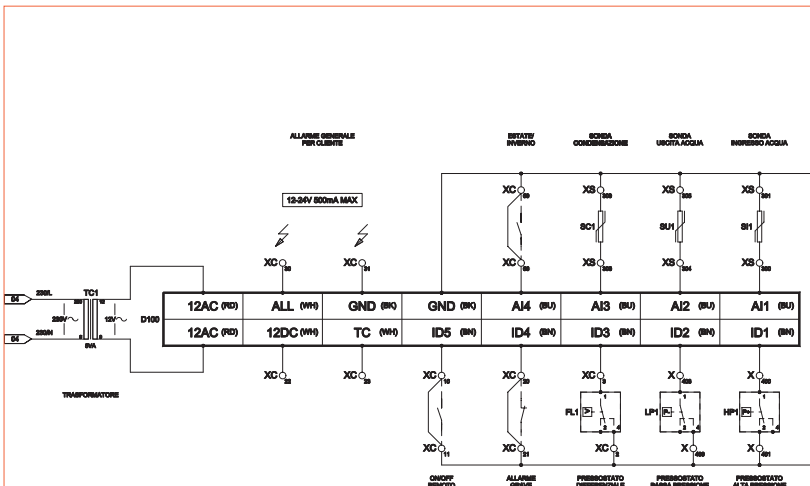
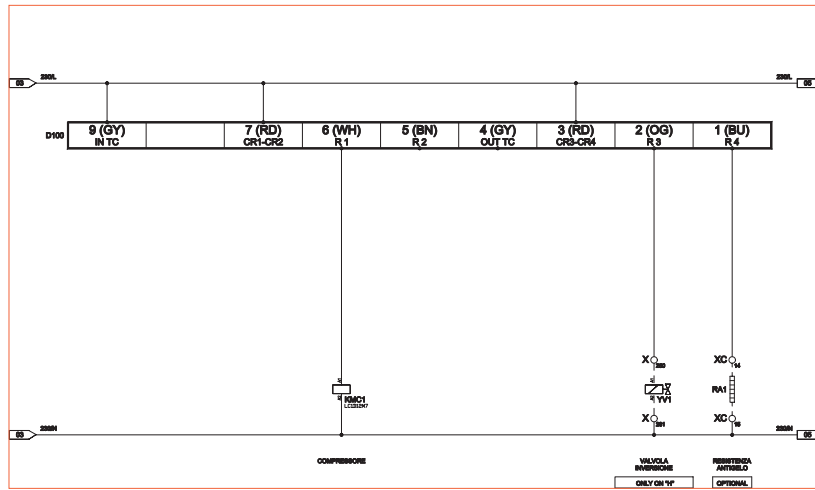
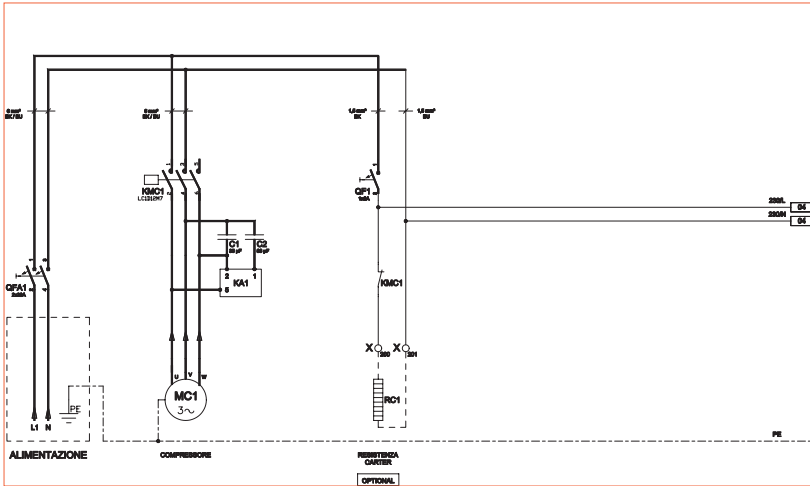
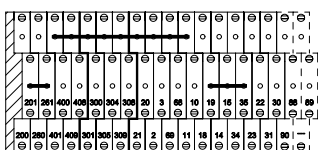
C = compressor	F = drier-filter	VC = refrigerant service connections
PA = high pressure switch	IL = sight glass	AN = antivibration pipe
PB = low pressure switch	VE = expansion valve	EV = evaporator
CO = condenser	PD = flow switch	

ELECTRICAL DATA

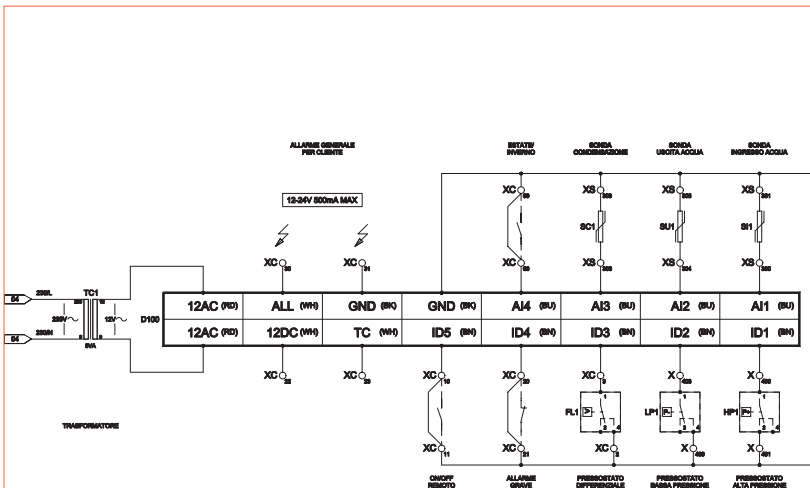
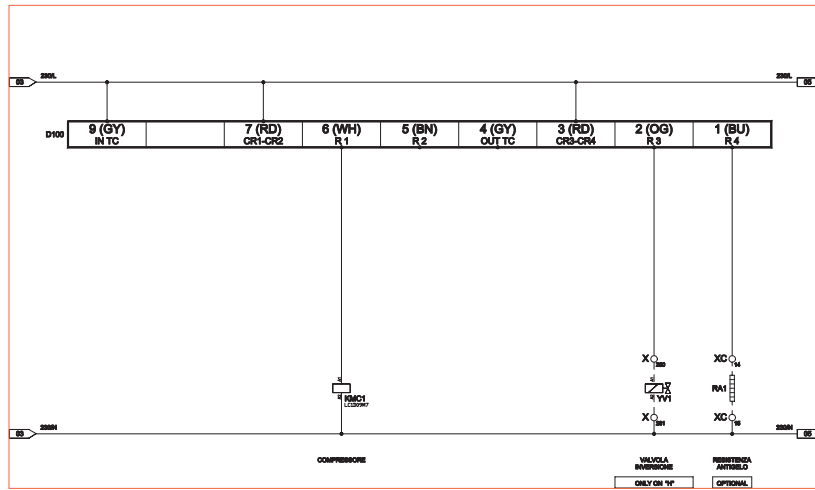
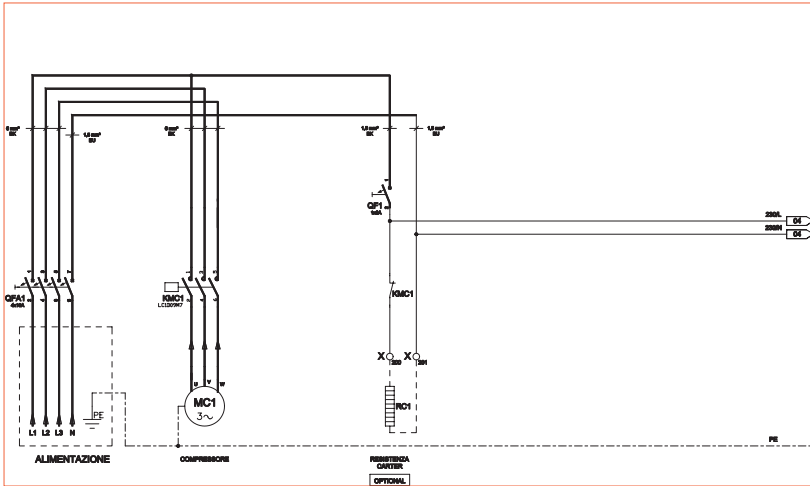
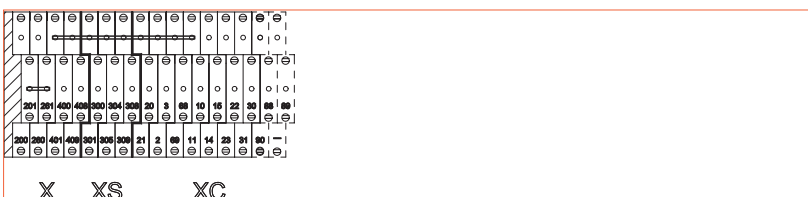
The electrical cables and the protections of the units must conform with the electrical data reported in the table below.

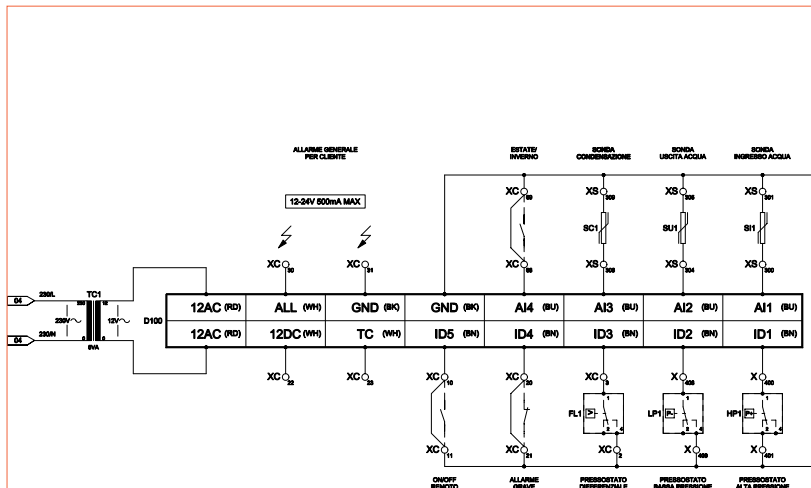
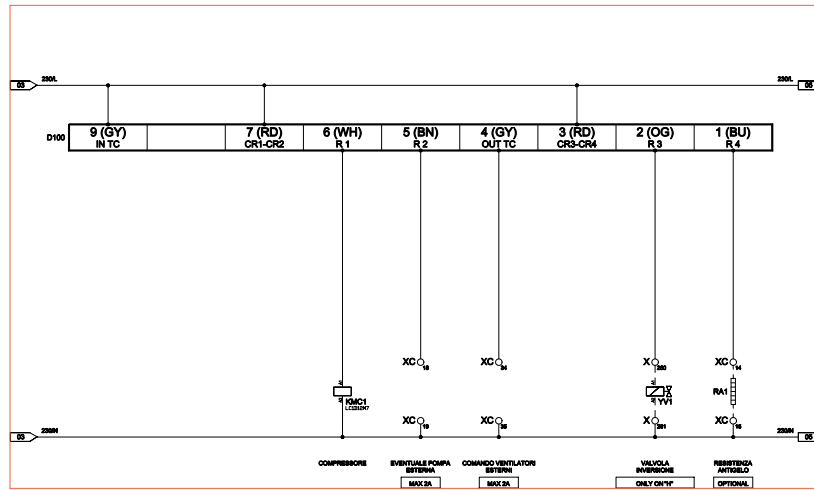
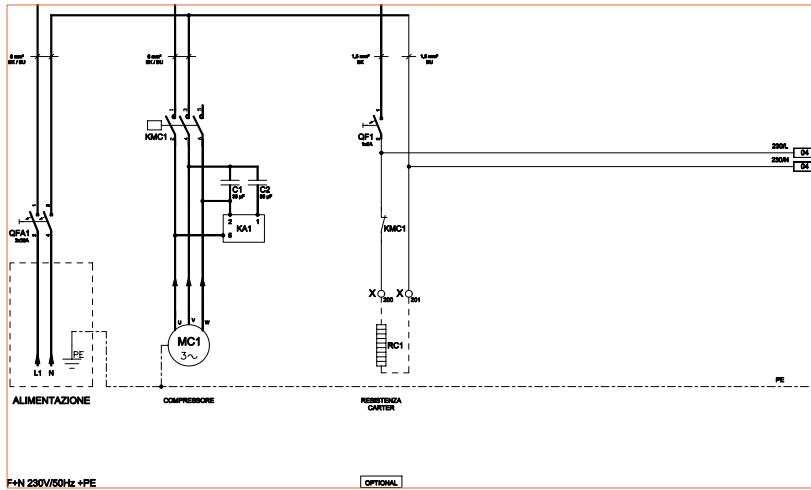
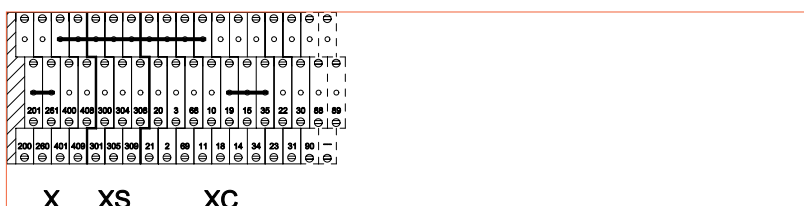
model	Max. input current	Power	compressor	total
F-H HW 5	I_{MAX} [A]		22	22
	Power [kW]	4,2		4,2
F-H HW 7	I_{MAX} [A]		17,8	17,8
	Power [kW]	3,4		3,4
F-H HW 9m	I_{MAX} [A]		24	24
	Power [kW]	4,58		4,58
F-H HW 9	I_{MAX} [A]		9,7	9,7
	Power [kW]	5,57		5,57
F-H HW 14	I_{MAX} [A]		12,5	12,5
	Power [kW]	7,18		7,18
F-H HW 17	I_{MAX} [A]		14,8	14,8
	Power [kW]	8,5		8,5

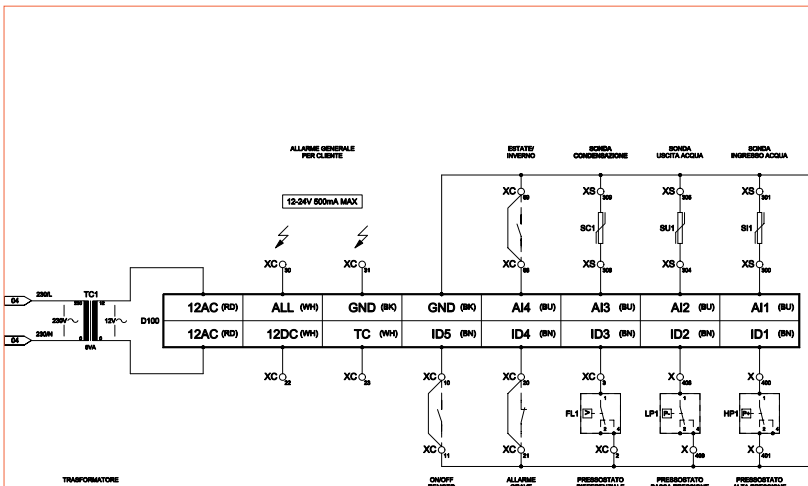
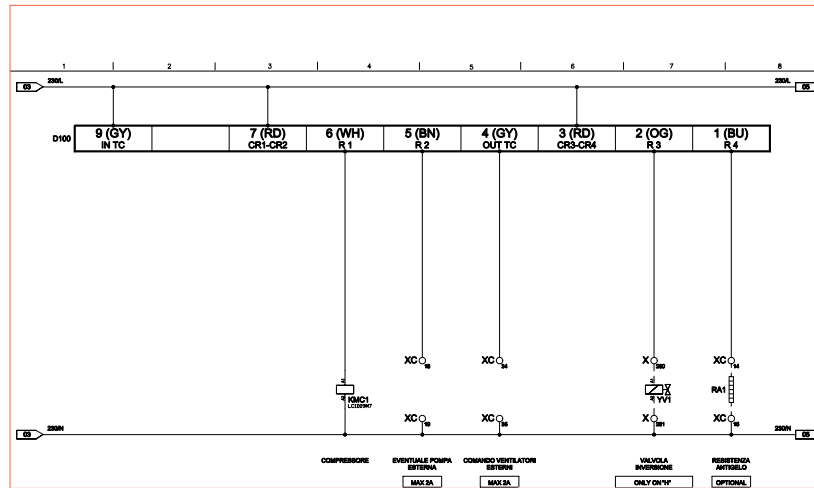
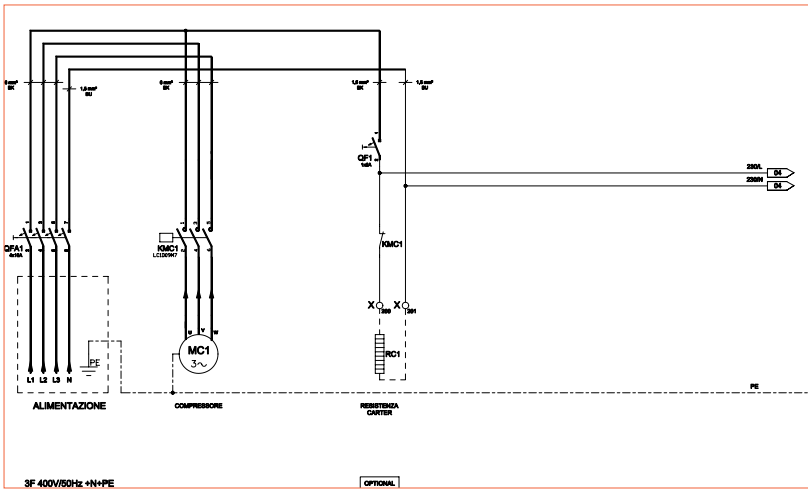
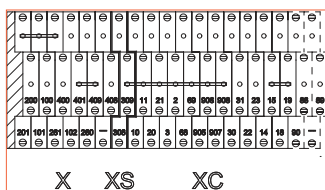
model	Max. input current	Power	compressor	total
ME 5	I_{MAX} [A]		22	22
	Power [kW]	4,2		4,2
ME 7	I_{MAX} [A]		17,8	17,8
	Power [kW]	3,4		3,4
ME 9m	I_{MAX} [A]		24	24
	Power [kW]	4,58		4,58
ME 9	I_{MAX} [A]		9,7	9,7
	Power [kW]	5,57		5,57
ME 14	I_{MAX} [A]		12,5	12,5
	Power [kW]	7,18		7,18
ME 17	I_{MAX} [A]		14,8	14,8
	Power [kW]	8,5		8,5

ELECTRICAL WIRINGS IDRA RWS F-H-HW 5-7-9m

TERMINAL PLATE


X XS XC

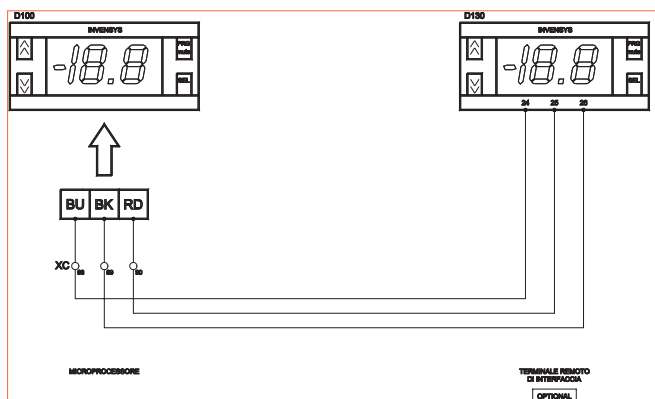
ELECTRICAL WIRINGS IDRA RWS F-H-HW 9-14-17

TERMINAL PLATE


ELECTRICAL WIRINGS IDRA RWS ME 5-7-9m

TERMINAL PLATE


ELECTRICAL WIRINGS IDRA RWS ME 9-14-17

TERMINAL PLATE


REMOTE PANEL

(for all models)


KEY

LABEL	DESCRIPTION
C1	CONDENSER
C2	CONDENSER
D100	MICROPROCESSOR
D130	REMOTE TERMINAL
FL1	FLOW SWITCH
HP1	HIGH PRESSURE SWITCH
KA1	STARTING RELAY
KMC1	CONTACTOR
LP1	LOW PRESSURE SWITCH
MC1	COMPRESSOR

LABEL	DESCRIPTION
QF1	AUTOMATIC SWITCH
QFA1	AUTOMATIC SWITCH
RA1	ANTIFREEZE HEATER
RC1	CRANKCASE HEATER
SC1	CONDENSING PROBE
SI1	WATER INLET PROBE
SU1	WATER OUTLET PROBE
TC1	TRANSFORMER
YV1	4-WAY VALVE



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I dati tecnici riportati sulla seguente documentazione non sono impegnativi. FAST si riserva la facoltà di apportare in qualsiasi momento tutte le modifiche ritenute necessarie per il miglioramento del prodotto

Technical data shown in this booklet are not binding.
FAST S.p.A. shall have the right to introduce at any time whatever modifications deemed necessary to the improvement of the product.



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