AIR-COOLED
WATER CHILLER

WSAT-2 2.230-2.260-2.280-2.300 2.360-2.400-2.440-3.450-3.540-3.580-3.620-3.660-4.720

ELECTRICAL CONNECTIONS

CONTENTS:

GENERAL

IMPORTANT
- BEFORE PERFORMING ANY OPERATIONS ON THE ELECTRICAL SYSTEM, MAKE SURE THAT THE POWER SUPPLY TO THE UNIT IS ISOLATED AT THE SOURCE.
- FOR ALL OPERATIONS DESCRIBED IN THIS MANUAL, OR IN ANY CASE INVOLVING THE ELECTRICAL SYSTEM, REFER TO THE WIRING DIAGRAM ENCLOSED WITH THE UNIT; THE CODE OF THE WIRING DIAGRAM IS SHOWN ON THE RATING PLATE LOCATED IN OR NEXT TO THE ELECTRICAL PANEL.
- THE WIRING DIAGRAM, TOGETHER WITH THIS MANUAL, MUST BE KEPT WITH CARE AND MUST BE MADE AVAILABLE FOR FUTURE OPERATIONS ON THE UNIT.
- ALL ELECTRICAL CONNECTIONS MUST BE PERFORMED BY PERSONNEL WITH THE NECESSARY LEGAL REQUISITES.

PRELIMINARY OPERATIONS

- Open the main isolator switch.
- If no main isolator switch is present, check that the isolator device at the origin of the unit's power supply line is open, padlocked and fitted with a special sign.
- Check that the characteristics of the mains power conform to the data shown on the rating plate located inside the electrical panel.

CONNECTING THE MACHINE TO THE MAINS POWER SUPPLY

Identify, with the help of the machine's wiring diagram, the power cable connection terminals L1 - L2 - L3 (N, where present) and the earth cable connection terminal. (L-N in units with single-phase power supply).
Rate the electrical cut-out devices according to the rules of good practice prescriptions, based on the machine's electrical data contained in the technical bulletin, in this manual, and on the machine's rating plate*.
Size the cross-section of the power cables and earth cable, according to the rules of good practice and the standards in force, based on the characteristics of the cut-out devices used.

CAUTION:
-.The correct sequence of the phases L1, L2, L3 must be followed. Failure to follow the correct sequence may lead, when the machine is started, to serious malfunctions.
- Before powering the unit, check that all the cut-out devices removed during the electrical connection work have been replaced.

***** The presence of any accessories not envisaged on the standard units may change, even slightly, the machine's electrical data as shown in the technical bulletin (this in fact refers to the standard unit). For this reason, in the event of discrepancies between the data on the rating plate and the data provided in this manual or in the technical bulletin, the data on the rating plate must be considered.

The unit's supply line protection device must be able to cut-off power in the event of an assumed short-circuit, the value of which must be determined by personnel authorised for design of electrical systems, in accordance with the characteristics of the system.

CE

FUNCTIONAL CONNECTIONS

IMPORTANT
Refer to the machine's wiring diagram to identify the terminals and the function of the various connections.

REMOTE ON/OFF CONTROL
The unit is fitted for connection to a remote device for switching the machine on or off, such as a switch, timer or the contact of a device in a centralised supervisory system. The contact must be suitable for the switching of low power loads and voltage free (free contact).

EVAPORATOR WATER FLOW SWITCHES
This is contact-closure safety input that is be connected to the water flow control devices.
In addition, these devices should be connected in series to an NO contact of the remote control switch for the water circulation pump. The voltage free contacts of the various devices must be suitable for the switching of low power loads.
IMPORTANT: The installation and correct connection of the water flow control devices is of fundamental importance for the safe operation of the machine. This is valid even if the unit is already internally fitted with a water differential pressure switch.

REMOTE MACHINE ALARM SIGNAL
The unit is fitted with a relay that is activated whenever a machine alarm condition arises. The contact of this relay, which is normally open when no alarm is present, is connected to the two terminals for the remote signal.

SECOND SET POINT ENABLING DEVICE
The unit is fitted for connection to a remote device enabling a Double Set Point, such as a switch, timer or the contact of a device in a centralised supervisory system. The contact must be suitable for the switching of low power loads and voltage free (free contact).

EVAPORATOR PUMP
The unit is equipped with a relay that control a contactor for the circulating pump of the evaporator hydraulic circuit.
Moreover it is available a digital input to which the customer must connect a free contact for the evaporator pump protections.

ELECTRICAL DATA
ACOUSTIC CONFIGURATION: STANDARD (ST) / COMPRESSORS INSULATION (SC)

Size		**2.230**	**2.260**	**2.280**	**2.300**	**2.360**	**2.400**	**2.440**	**3.450**	**3.540**	**3.580**	**3.620**	**3.660**	**4.720**
F.L.A. Full load current at max admissible conditions														
Compressor 1	A	139,8	186,4	186,4	236,7	269,1	269,1	342,2	236,7	269,1	342,2	342,2	342,2	269,1
Compressor 2	A	186,4	186,4	236,7	236,7	269,1	342,2	342,2	236,7	269,1	269,1	269,1	342,2	269,1
Compressor 3	A	-	-	-	-	-	-	-	236,7	269,1	269,1	342,2	342,2	269,1
Compressor 4	A	-	-	-	-	-	-	-	-	-	-	-	-	269,1
Fan total	A	36	40	44	48	48	60	70	72	72	80	94	102	-
Single fan	A	4	4	4	4	4	5	5	4	4	4	4 - 5	4 - 5	20x14
F.L.A. Total	A	362,7	413,3	467,6	522	586,6	671,7	754,8	783	879,9	961	1048,1	1129,2	1173,5
L.R.A. Starting current														
Compressor 1	A	325	394	394	469	538	538	641	469	538	641	641	641	538
Compressor 2	A	394	394	469	469	538	641	641	469	538	538	538	641	538
Compressor 3	A	-	-	-	-	-	-	-	469	538	538	641	641	538
Compressor 4	A	-	-	-	-	-	-	-	-	-	-	-	-	538
Fan total	A	14	14	14	14	14	16	16	14	14	14	14;16	14;16	24x14
F.L.I. Full load power input at (max admissible conditions)														
Compressor 1	A	86,2	112,8	112,8	145,5	166	166	210	145,5	166	210	210	210	166
Compressor 2	A	112,8	112,8	145,5	145,5	166	210	210	145,5	166	166	166	210	166
Compressor 3	A	-	-	-	-	-	-	-	145,5	166	166	210	210	166
Compressor 4	A	-	-	-	-	-	-	-	-	-	-	-	-	166
Fan total	A	17,6	19,5	21,5	23,4	23,4	24,4	28,4	35,1	35,1	39	40,1	44	-
Single fan	A	1,95	1,95	1,95	1,95	1,95	2	2	1,95	1,95	1,95	1,95 ; 2,032	1,95 ; 2,032	24 x 1,95
F.L.I. Total	kW	216,7	245,3	279,9	314,6	355,5	400,5	448,7	472,0	533,3	581,3	626,5	674,5	711,1
M.I.C. Max starting current														
M.I.C. Value	A	620	671	760	814	916	1037	1131	1074	1208	1339	1406	1493	1502

ACOUSTIC CONFIGURATION: LOW NOISE (LN)

Size		2.230	2.260	2.280	2.300	2.360	2.400	2.440	3.450	3.540	3.580	3.620	3.660
F.L.A. Full load current at max admissible conditions													
Compressor 1	A	139,8	186,4	186,4	236,7	269,1	269,1	342,2	236,7	269,1	342,2	342,2	342,2
Compressor 2	A	186,4	186,4	236,7	236,7	269,1	342,2	342,2	236,7	269,1	269,1	269,1	342,2
Compressor 3	A	-	-	-	-	-	-	-	236,7	269,1	269,1	342,2	342,2
Fan total	A	20,7	23	25,3	27,6	36	39	42	41,4	49,8	54,4	60,4	60,4
Single fan	A	2,3	2,3	2,3	2,3	3	3	3	2,3	2,3 - 3	2,3 - 3	2,3 - 3	2,3 - 3
F.L.A. Total	A	347.4	396.3	448.9	501.6	574,6	650,7	726,8	752,4	857,7	935,4	1014,5	1087,6
L.R.A. Starting current													
Compressor 1	A	325	394	394	469	538	538	641	469	538	641	641	641
Compressor 2	A	394	394	469	469	538	641	641	469	538	538	538	641
Compressor 3	A	-	-	-	-	-	-	-	469	538	538	641	641
Single fan	A	4,7	4,7	4,7	4,7	10	10	10	4,7	4,7 - 10	4,7 - 10	4,7 - 10	4,7 - 10
F.L.I. Full load power input at (max admissible conditions)													
Compressor 1	kW	86,2	112,8	112,8	145,5	166	166	210	145,5	166	210	210	210
Compressor 2	kW	112,8	112,8	145,5	145,5	166	210	210	145,5	166	166	166	210
Compressor 3	kW	-	-	-	-	-	-	-	145,5	166	166	210	210
Fan total	kW	10,8	12	13,2	14,4	16	17,3	18,6	21,6	23,2	25,6	28,2	28,2
Single fan	kW	1,2	1,2	1,2	1,2	1,3	1,3	1,3	1,20	1,2 ; 1,33	1,2 ; 1,33	1,2 ; 1,33	1,2 ; 1,33
F.L.I. Total	kW	210	237.8	271.7	305.6	348	393.4	438.9	458.5	521.3	567.8	614.6	658.7
M.I.C. Max starting current													
M.I.C. Value	A	567	616	696	748	886	999	1075	998	1140	1253	1332	1405

ACOUSTIC CONFIGURATION: EXTREMELY LOW NOISE (EN)

Size		2.230	2.260	2.280	2.300	2.360	2.400	2.440	3.450	3.540	3.580	3.620	3.660
F.L.A. Full load current at max admissible conditions													
Compressor 1	A	139,8	186,4	186,4	236,7	269,1	269,1	342,2	236,7	269,1	342,2	342,2	342,2
Compressor 2	A	186,4	186,4	236,7	236,7	269,1	342,2	342,2	236,7	269,1	269,1	269,1	342,2
Compressor 3	A	-	-	-	-	-	-	-	236,7	269,1	269,1	342,2	342,2
Fan total	A	23	27,6	30	36	42	42	42	49,8	55,8	60,4	55,8	60,4
Single fan	A	2,3	2,3	3	3	3	3	3	2,3 - 3	2,3 - 3	2,3 - 3	2,3 - 3	2,3 - 3
F.L.A. Total	A	349,7	400,9	453,6	510,0	580,6	653,7	726,8	760,8	863,7	941,4	1009,9	1087,6
L.R.A. Starting current													
Compressor 1	A	325	394	394	469	538	538	641	469	538	641	641	641
Compressor 2	A	394	394	469	469	538	641	641	469	538	538	538	641
Compressor 3	A	-	-	-	-	-	-	-	469	538	538	641	641
Single fan	A	4,7	4,7	10	10	10	10	10	4,7 ; 10	4,7 ; 10	4,7 ; 10	4,7 - 10	4,7 - 10
F.L.I. Full load power input at (max admissible conditions)													
Compressor 1	kW	86,2	112,8	112,8	145,5	166	166	210	145,5	166	210	210	210
Compressor 2	kW	112,8	112,8	145,5	145,5	166	210	210	145,5	166	166	166	210
Compressor 3	kW	-	-	-	-	-	-	-	145,5	166	166	210	210
Fan total	kW	12,0	14,4	13,3	16,0	18,6	18,6	18,6	23,2	25,8	28,2	25,8	28,2
Single fan	kW	1,2	1,2	1,3	1,3	1,3	1,3	1,3	1,2 ; 1,33	1,2 ; 1,33	1,2 ; 1,33	1,2 ; 1,33	1,2 ; 1,33
F.L.I. Total	kW	211,2	240,2	271,8	307,2	350,7	394,8	438,9	460,1	524,0	570,5	612,2	658,7
M.I.C. Max starting current													
M.I.C. Value	A	569	623	721	784	899	1002	1075	998	1137	1249	1322	1405