



WATER CHILLER CONDENSERLESS  
IT CAN BE COUPLED WITH REMOTE  
CONDENSER CLIVET SERIES CEM

**MSE-2** 2.200-2.230-2.260-2.280-2.300-2.360-  
2.400-2.440-3.450-3.540-3.580-3.620-3.660

## MAINTENANCE

### CONTENTS:

ROUTINE MAINTENANCE  
SUPPLEMENTARY MAINTENANCE

### ROUTINE MAINTENANCE

This section is intended for the end user and contains information that is extremely important to ensure the unit has a long, trouble free service life. The operations that need to be carried out do not require any special technical

knowledge, involving the following simple checks on the components of the unit.

The following table shows the routine controls to carry out and the frequency of these controls.

Description	Weekly	Monthly	Six-monthly	Annual
Reading and recording of the suction pressure	X			
Reading and recording of the discharge pressure	X			
Structure control			X	
Power cable control		X		
Water system control		X		
Heat exchanger control		X		

### STRUCTURE

While checking the condition of the parts forming the structure, pay particular attention to the components that are subject to oxidation process. Treat these points with paints designed to eliminate or reduce this problem.

### PARTE ELETTRICA

Periodically have the tightness of the electrical contacts checked by a qualified technician and make sure there are no cuts, cracks or other signs of deterioration indicating a possible loss of insulating capacity in the power cable that connects the unit to the distribution board.

### CONDENSER AND EVAPORATOR WATER SYSTEM

Carefully inspect the water circuit for any signs of leaks. Call only authorised service centres if any maintenance operation is required.

**If temperatures below zero can invest the unit and no systems preventing freezing are available it is essential to empty both evaporator and condenser before the unit seasonal stop.**

In order to empty the exchangers: the evaporator is provided with a valve on the bottom of the exchanger head on the opposite side of the expansion valve. The condenser is provided with a socket head screw which is to be removed.

## SUPPLEMENTARY MAINTENANCE

The maintenance operations listed in this section must be performed by authorised service centres or qualified authorised personnel. The following table shows the routine controls to carry out and the frequency of these checks.

The readings must be carried out with the unit working at full capacity.

Description	Weekly	Monthly	Six-monthly	Annual
Read the suction pressure	X			
Read the discharge pressure	X			
Verify the mains supply	X			
Read the current intensity	X			
Check the tightening of the electrical connections		X		
Check the refrigerant charge through the sight glass		X		
Check the suction and superheating temperature.		X		
Check the gate valves		X		
Check the calibration of the safety devices and their effectiveness			X	
Check the condenser state				X
Check the evaporator state				X

## COMPRESSOR PERIODICAL VERIFICATION

N°	TYPE OF VERIFICATION	FREQUENCY
1	Measure of the resistance of the electric motor isolation	Annual
2	Oil check	7.500 hours or 4 Years
4	Suction filter check	20.000 hours or 4 Years

As regarding the points 2 and 4 the service centre will be provided with the suitable documentation.

## IMPORTANT

MAKE SURE THE UNIT IS NOT CONNECTED TO THE POWER SUPPLY BEFORE STARTING ANY MAINTENANCE OR CLEANING OPERATIONS.

### ELECTRICAL SYSTEM

After the first period of start up of the unit and on every seasonal stop/start up, control carefully the tightening of the screws of the electrical connections. As a matter of fact, they tend to loosen because of the warming/cooling of the electric cables.

### SIGHT GLASS

The colour of the sight glass indicates the drying degree in the installation. It is extremely important to control it after any maintenance operation. During these operation the indicator can turn to yellow, because moisture has possibly entered the installation. Anyhow, before changing the filter drier cartridge, the unit must operate for about 3 hours with the purpose of stabilising the installation.

In order to ascertain if there is moisture in the installation, keep in mind the following:

Colour **GREEN (BLUE)** means **DRY**  
 Colour **YELLOW (ROSE)** means **MOISTURE**

### EXPANSION VALVE

There is one expansion valve for each refrigerant circuit. It controls the liquid refrigerant flow rate to the evaporator. These valves are calibrated in the factory so to have a superheating value between 4°C and 7°C.

**Only if it is necessary** to control the superheating, remove the cap at the bottom of the valve in order to have access to the adjust screw (one complete clockwise turn implies a rise in the superheating of 0,5°C). Wait some time before proceeding to another adjustment in order to let the installation to stabilise.

### FILTER DRIER

The filter drier keeps the circuit dry and clean. A filter with replaceable cartridge is installed. The sight glass indicates the necessity to substitute the cartridge (see above). Install only brand new sealed cartridges. Remove the seal only immediately before the replacement of the cartridge.



**WARNING: Before carrying out the following steps, make sure that the electrical panel is NOT under tension. For this reason open the mains isolator switch by turning the handle to its OPEN position.**



**WARNING: The steps 2 and 3 which follow are referred to different units and are mutually exclusive. The instructions reported there must be followed in accordance with the unit actually purchased.**

In order to substitute the cartridge, it is fundamental to switch off the unit and check that the complete pump-down cycle has been done correctly.

Once the cartridge has been substituted, produce the vacuum from the valve placed on the filter's flange, open the valves and start-up the compressor again.

#### Types of cartridge

Size	Circuit 1	Circuit 2	Circuit 3	Type of cartridge
2.200	2	2	-	S48
2.230	2	2	-	S48
2.260	2	2	-	S48
2.280	2	2	-	S48
2.300	2	2	-	S48
2.360	2	2	-	S48
2.400	2	4	-	S48
2.440	4	4	-	S48
3.450	2	2	2	S48
3.540	2	2	2	S48
3.580	2	2	4	S48
3.620	2	4	4	S48
3.660	4	4	4	S48

#### SOLENOID VALVE

There is one solenoid valve in each circuit. It is closed when the compressor is stopped, for the intervention of the control thermostat, and for the tripping of any cut-outs, with the exception of the LP switch.

#### CONTROL OF THE OIL LEVEL

The oil level must be carefully controlled on the first start-up, and for sometime afterwards.

When the compressor is operating, the oil level must reach the half of the glass indicator on the compressor casing.

#### OIL HEATER

Every compressor is supplied with a crankcase electric heater in order to prevent the mixing of refrigerant with the oil in the crankcase when the system is not operating. The excessive quantity of refrigerant in the crankcase dilutes the oil causing excessive scum and pump pressure drop. As a consequence, the oil flow would be reduced. The electric heater will switch on any time the unit stops. The electric heater of the crankcase can be substituted without emptying the oil.

## WARNING

IF THE UNIT IS LEFT UNUSED FOR A PROLONGED TIME, THE OPERATIONS LISTED BELOW MUST BE CARRIED OUT

- Close the manual valves on the liquid line
- Once the pump-down has been carried out, shut down the water pump.
- Disconnect the electrical supply.
- Label all the open switches notifying not to operate before having opened the compressor suction and discharge valves.
- Drain all the water from the evaporator and from the chilled water piping if the unit is left unused in the winter time and left exposed to temperatures below zero.
- **Drain all the water from the condenser if the unit is to be stopped during winter months and exposed to sub-zero temperatures** (if anti-freeze solutions are not in use).