KAUKAN

AIR-CONDITION

空調冷卻機

INSTRUCTION HANDBOOK

操作手冊

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# OIL COOLER INSTRUCTION HANDBOOK

## INDEX

1. **GENERALITY**  
   1.1 APPLICATION  
   1.2 IMPORTANT WARNING  
2. **INSTALLATION**  
   2.1 ON DELIVERY  
   2.2 INSTALLATION SITE  
   2.3 ELECTRIC CONNECTIONS (see the electrical diagram on the specification manual)  
3. **START-UP PRODUCEDURE**  
   3.1 PRELIMINARY INSPECTION  
   3.2 STARTING  
   3.3 STOPPING  
4. **NAME, FUNCTION AND OPERATION OF PANEL**  
   4.1 NAME, FUNCTION ON THE PANEL  
   4.2 SETTING  
5. **GENERAL INFORMATION**  
   5.1 COOLING EFFICIENCY  
   5.2 AIR FILTERS  
6. **NORMAL SERVICE MAINTENANCE**  
   6.1 WEEKLY SERVICE  
   6.2 MONTHLY SERVICE  
   6.3 REFRIGERANT CIRCUIT REPAIR [ONLY BY A REFRIGERATOR ENGINEER]  
   6.4 REFRIGERANT LEAKAGE CHECK  
   6.5 FILL UP THE GAS INTO REFRIGERANT CIRCUIT  
   6.6 ENVIRONMENT PROTECTION  
7. **PUTTING THE OIL COOLER OUT OF SERVICE**
Read the instructions manual careful before proceeding with start-up operations, use, maintenance, Routine maintenance or any other jobs on the machine

1. GENERALITY

KAC type industrial air condition are available in various size with cooling capacities rang up to 1.6 kcal, computed in the Following operating standard conditions: - outlet air temperature: +25~35°C.
- air ambient temperature: under +55°C.

| WARNING | As the exchanged thermal power at the utilities changes, so the temperature or the return air from the cold process does. Consequently the air temperature in the evaporator changes. This implies a variable cooling power of the refrigerant circuit. It is advisable that the fluid coming back from the process isn’t higher than +45°C. |

1.1 Application field

These oil cooler have been designed to get cooled oil that is generally used in industries field applications. Their recommended operation rang is the following:

   Outlet air temperature: min. +25°C max. +35°C
   Air ambient temperature: min. –10°C max. +55°C

| WARNING | For any other condition out of the above ranges, contact us. |

1.2 Important warning

| WARNING | Scrupulously respect all the advice give in the manual [especially those concerning danger and special attention], and the safety plates applied directly on the machine. The manufacturer declines all responsibility for damage to persons or things resulting from failure to respect the safety indications. |

1. The machine may only be used by trained a personnel that has demonstrated its own capacity and that has been explicit assigned to the use of it.
2. When installing or servicing the unit, it is necessary to strictly follow the rules reported on this manual, to conform to all the specifications of the labels on the unit, and to take any possible precautions of the cover.
3. Never block the ventilation and heat dispersion openings. Do not remove, modify or avoid the devices.
4. Temperature in hydraulic circuit and electrical equipment present in the unit can be hazardous when installing or servicing the unit.
5. Before connecting up the machine to the power outlet, ensure that the values stated on the identity machine’s plate correspond to those of the power distribution system.
6. Every action on the unit must be done by trained people only.
7. This machine has been projected and constructed for a service length of three years from the date of manufacture stamped on the data plate; at the end of this period, the machine has to be destroyed or go through a complete revision by the Manufacturer. We also recommend you to destroy those parts which can be of danger.
8. Not observing the rules reported on this manual, and every modification to the unit done without explicit previous authorization, will cause the immediate termination of the warranty.

| DANGER | Before every operation of servicing on the unit, be sure that the power supply is Disabled. |
2. INSTALLATION

2.1 On delivery

**WARNING**

Be sure that the method of lifting shall consider the air condition weight that will show on the name panel, and does not allow the oil cooler to slip from chains and slings and does not allow the oil cooler to turn over or slide from lifting devices.

When you receive the air condition, check the state of the cover and internal parts for any damages due to transport, unload and handle the air condition, an elevator truck of suitable loading capacity and equipped with forks longer than air condition themselves should be used. Do not tilt the oil cooler more than 30 degrees, so as to prevent subjecting the oil cooler to sudden jolts that would damage the internal parts. Avoid using as lifting points any unit component.

2.2 Installation site

For the operation and maintenance of the KAC type air condition, it is necessary to prepare more space than the air condition dimension specified above in order to ensure an adequate air supply to the condenser. The air condition is supported by means of swiveling wheels or lacked on the machine. Please make sure that the installation place is perfection that it can withstand the weight of the oil cooler. It is recommended that the oil cooler be installed inside building or inside a room.

In winter it is best to provide some form of protection against possible damage to the internal components due freezing while the air condition is inoperative.

2.3 Electric connections (see the electrical diagram on the specification manual)

**WARNING**

Before every operation of servicing on the air condition, be sure that the main power supply is disconnected.

The main power supply to the chiller is achieved by means of a 3-wire cable {1 phase (R, S) + ground wire (E)}, passing through cable clamp and connected the terminal block. It is recommended that a circuit breaker valve or automatic cut-off switch, rated according to the values show the table below, be installed on the main power supply line to the air condition. This safety device should be calibrated relation to the short circuit current rating in the area of installation of the air condition.

The table that follows lists the recommended wire cross-section for the main power supply line, referring to the different Voltage (the cable maximum length of 15 Meters). For greater lengths, the wire cross-section of the main power cable will have to be increased in order to prevent excessive voltage drop.

The air condition will be supplied alarm NC connector to show air condition in normal condition. The mark for alarm connector are 93, 94.

```
R S E 93 94
```
3 PHASE AC220V

<table>
<thead>
<tr>
<th>MODEL</th>
<th>WIRE CROSS SECTION (mm²)</th>
<th>AUTOMATIC BREAKEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAC-1.5</td>
<td>0.75</td>
<td>3</td>
</tr>
<tr>
<td>KAC-2</td>
<td>1.25</td>
<td>4</td>
</tr>
<tr>
<td>KAC-3</td>
<td>1.25</td>
<td>6</td>
</tr>
<tr>
<td>KAC-4</td>
<td>1.25</td>
<td>8</td>
</tr>
<tr>
<td>KAC-6</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>

**WARNING**
For lists on the top are only for our standard air condition. Please used the correct power line and automatic breaker by the air condition running current which is on the testing report.

3. START-UP PRODUCEDURE

3.1 Preliminary inspection

Check that:
- The main power voltage and frequency correspond to the values stamped on the chiller’s name panel.
- The drain water pipes are rightly connected.
- The on-off valves (if installed) are opened.

3.2 Starting

1. Turn on the main power to the air condition
2. Set the desired temperature on the panel.

**WARNING**
The temperature indicated on the panel is the inside box temperature to the process, measured by sensor probe.

1. The temperature setting:
After manual air temperature setting, there will be an eight-second delay in operation to accommodate internal control board re-alignment.

a.) Turn on the electrical power that will be supplied by extra machine and after the display will show”PON” and flash 3 times, the air condition is working.
b.) By pressing and holding (SET) for 3 Sec. the display will show”888” and flash 3 times.
c.) Then pressing (▲) or (▼), the display will show”ts”
d.) After the display show “888”, please by pressing (SET) button once more in order to go into the setting function.
e.) By pressing (▲) or (▼) buttons to find out the value (setting air of inside electrical box temperature) that you want.
f.) After you setting the desired temperature value, press the (SET) button to store the modified temperature and return to the normal operation of instruction.
3.4 Stopping
To stop the air condition, please turn off the main power which was came from the out-side machine.

INFORMATION
The warranty on the compressor will be invalidated if these instructions are not complied to.

4. NAME, FUNCTION AND OPERATION OF PANEl

4.1 Name, function on the panel

1.) (DISPLAY):
   a. To show the value of electrical box temperature or setting temperature.
   b. To show the value or item of parameter.

2.) (▲) button:
   a. It can be increased the value by pressing it.
   b. It can be gone into the temperature setting function by pressing it when the display show “888”.

3.) (▼) button:
   a. It can be decreased the value by pressing it.
   b. It can be gone into the temperature setting function by pressing it when the display show “888”.

4.) (SET) button:
   a. It can be gone into the temperature setting function by pressing and hold for 3 Sec.
   b. It can be stored the modified temperature or the value of parameter.

5.) (運轉) indicator lamp (orange):
   The compressor operating normally lighted the indicator lamp.

4.2 Setting temperature
Setting temperature is performed following these operations:
a.) Turn on the electrical power that will be supplied by extra machine and after the display will show “PON” and flash 3 times, the air condition is working.

b.) By pressing and holding (SET) for 3 Sec. the display will show”888” and flash 3 times.

c.) Then pressing (▲) or (▼), the display will show”ts”

d.) After the display show “888”, please by pressing (SET) button once more in order to go into the setting function.

e.) By pressing (▲) or (▼) buttons to find out the value (setting air of inside electrical box temperature) that you want.

f.) After you setting the desired temperature value, press the (SET) button to store the modified temperature and return to the normal operation of instruction.

### WARNING

*Make sure to change the parameter before, checking with the engineer who has enough ability.*

For the mean of parameter, please read the enclosed instruction manual of the instrument.

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5. **GENERAL INFORMATION**

5.1 **Cooling efficiency**

High cooling efficiency can be achieved if:

a) The air is cool.

b) Air flowing is satisfactory.

5.2 **Air filters**

The air filters keep the inside of the chiller and the condenser fins clean, ensuring maximum efficiency and much longer life.

It is recommended that the filters be cleaned regularly or substituted if damaged. It is absolutely necessary to have them installed at all items during air condition operation.

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6. **NORMAL SERVICE MAINTENANCE**

### DANGER

*Before every operation of servicing on the air condition, be sure that the main power supply is disconnected.*

Compressor discharge pipe [copper tube with heat insulation] can be at high temperature level. Be very careful when operating in its surrounding.

### WARNING

*All this operation described in this chapter MUST BE DONE BY TRAINED PEOPLE ONLY: wrong exercises or setting values of control and safety devices could cause serious damage to the air condition and injuries to the people.*

After servicing operation close the unit with cover, fixing them with the screwdriver.

6.1 **Weekly service**

Check how dirty the air filter and condenser are.

6.2 **Monthly service**
1. Check how dirty the air filter and condenser are.

2. Check the electric wiring: verify the current absorption of all the electric motors; check the tightening of all screws.

3. Check the mechanical parts: clean the inside of the air condition and check that the screws and bolts fastening the various components are tightened properly. Eliminate any condensation.

4. Check the refrigerant circuit: in the event of any gas leakage or breakage, traces of oil will be present.

   **6.3 Refrigerant circuit repair [only by a refrigerator engineer]**

   In the case that refrigerant circuit has been repaired, following operations must be executed:

   - Refrigerant leakage check.
   - Vacuum and drying of refrigerant circuit.
   - Refrigerant filling.

   **WARNING** If the system should be discharged, the entire refrigerant must be recovered with proper machines.

   **6.4 Refrigerant leakage check**

   The system must be filled with anhydrous nitrogen, using a gas bottle with a pressure reducing valve until 15 bar pressure is reached. Any eventual leakage must be searched with a bubble leak finder. If bubbles or foam should appear, leakage is detected. In this case, discharge the circuit before welding with proper alloys.

   **DANGER** NEVER use oxygen. EXPLOSIONS MAY OCCUR.

   **6.5 Fill up the gas into refrigerant circuit**

   - Connect refrigerant bottle to 1/4 SAE male charge valve of the rotate lock shut-off on the compressor discharge piping, discharge a few refrigerant gas in order to evacuate the air on the connecting piping.
   - Please supply 220 VAC to the electromagnetic valve that installed in the refrigerant circuit [if installed], when you filled the refrigerant gas into the system.
   - Reverse the refrigerant bottle and fill up the circuit with liquid refrigerant until 75% of total filling [indicated on the identity label] is reached.
   - At this point connect the refrigerant bottle to the compressor suction line charging valve and, with machine in operating mode, complete the filling by keeping the refrigerant bottle in normal vertical position, until no bubbles appear on the liquid line sight glass.

   **6.6 Environment protection**

   Even if the refrigerant [R-134a or R407C, depending on the compressor] is not a CFC but a HCFC, it is mentioned among controlled substances and it is forbidden to release it in the atmosphere. For this reason it must be redelivered to the seller or to proper gathering points at the end of their operating life.

   **WARNING** A particular care is recommend during service operations in order to reduce as much as possible any refrigerant loss.

7. **PUTTING THE AIR CONDITION OUT OF SERVICE**

   Once the air condition is arrived at the end of its life and needs to be removed or replaced, the following operations are
recommended.

- The refrigerant has to be recovered by trained people and sent to proper collecting center.
- Compressor lubricating oil and the cooling oil have to be recovered and sent to proper collecting center.
- The frame and various components, if not usable any longer, have to be dismantled and subdivided according their nature; particularly copper and aluminum, which are present in conspicuous quantity in the unit.

These operations allow easy material recover and recycling process, reducing environmental impact.