Service manual

for Haier Cold/Freezer rooms only

Sincere Forever

Haier Group

Haier Medical and Laboratory Products Co., Ltd

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①Please read this manual carefully before use.

②Please keep this manual properly for future reference.

Haier Cold/Freezer Room Technical Handbook

With Monoblock Unit

Table of Contents

Haier Medical and Laboratory Products Co., Ltd

Part I

Haier monoblock unit introduction

The Haier monoblock units are composed of a condenser unit, an evaporator and a control panel, together in a single compact pack. This configuration allows the highest simplicity on the hand of installation, turning monoblock the most versatile, handy solution for all kind of cold / freezer room projects. The monoblock refrigeration unit can meet the freezing demand in the hotel, restaurant, hospital, agriculture, biology and chemical industry, the temperature of which can be kept with in0 - 8℃, -15- -25℃：

Monoblock units are equipped with:

Famous compressor brand: Maneurop, Danfoss, Copeland or Tecumseh.

Reliable performance and long life-span with well known brand refrigeration parts. EBM fan motor, Castel Solenoid valve.

Danfoss high/ low pressure controller, Danfoss filter direr, Eliwell thermostat.

Self-supporting housing of galvanized plate

Easily detachable front panels

Hermetic compressors with engine thermal insulation

Electronic control panel with 52 programmable parameters

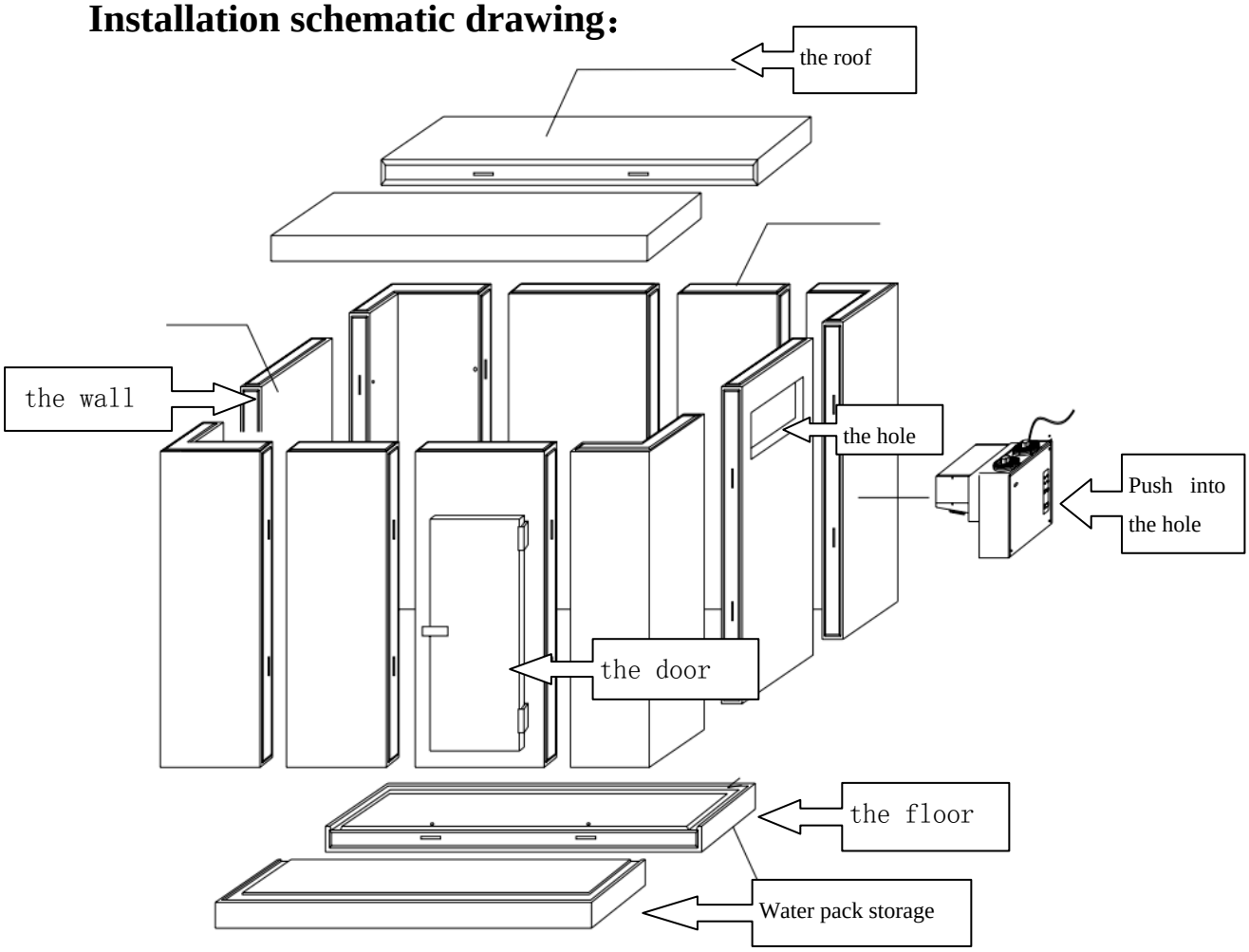
Condensation by air.

Part II

INSTALLATION

NOTE: Installation and maintenance are to be performed only by qualified personnel who are familiar with local codes and regulations, and experienced with this type of equipment. CAUTION: Sharp edges and coil surfaces are a potential injury hazard. Avoid contact with them.

Installation schematic drawing:



Installation schematic drawing

1.Monoblock Cooling/freezing Units, Panels, Doors, Service tools, Ice

pack and Shelves are packed separately in wooden cartons.

wooden cartons

corner panel

2.Installation normally starts with the back wall panels or corner panel.

IOCKS

3.Wall panels and floor lock together with cam locks. Haier cold/freezer rooms are erected from inside, so installation in confined areas is simple.

Monoblock Units

roof

4.Monoblock Cooling/freezing Units are lifted into position and locked to wall panels by pop rivets or self-tapping screws.

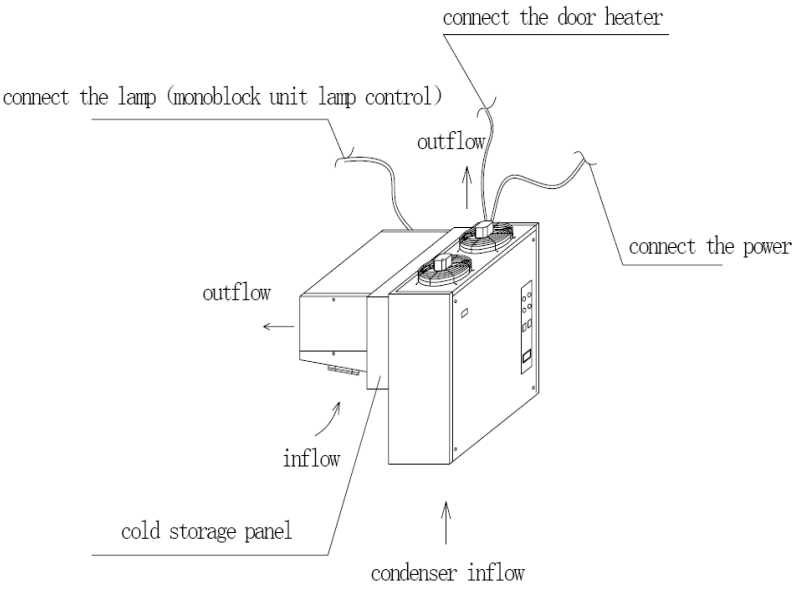
Note: Remove power cable from casing to ensure it is on the outside

before setting roof.

5.Roof Panels installed last.

6.Affix Door handle and emergency release, 793 silicon joints between panels. Clean panels with cleaner and cloth provided.

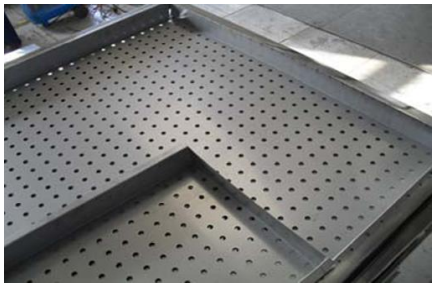
7.Connect monoblock unit wire. Plug into duty sharing power source and allow to pull down to temperature in line with normal good refrigeration practice.



monoblock unit connecting wire

8.Put up the shelves to either two or three walls.

9.Place the Ice pack on the shelves with holes.



Part III

Servicing Manual

Troubles	Possible Cause	Corrective Action
Compressor fails to start(no hum)	1. Power failure 2. Disconnect switch open 3. Burned-out compressor motor 4. Control circuit open a. Overload protector tripped b. Thermostat setting too high c. Low-pressure control open d. High-pressure control open e. Loose wiring	1. Contact power company 2. Close switch and check circuits 3. Replace 4. Locate cause and repair a. Check overload b. Set to lower temperature c. Reset and check pressures d. Reset and check pressures 5. Repair wiring
Compressor will not start (hums and trips overload protector)	1. Improperly wired 2. Low voltage to unit 3. Burned-out compressor motor 4. Mechanical problems in compressor 5. Liquid refrigerant in compressor crankcase	1.Rewire unit 2.Determine reason and correct 3.Replace compressor motor 4. Replace compressor 5.Install crankcase heater
Compressor starts and runs, but short cycles	1. Defective overload protector 2. Low voltage to unit 3. Defective run capacitor 4. High discharge pressure 5. Suction pressure too low 6. Suction pressure too high 7. Compressor too hot 8. Shorted motor winding 9. Dirty or iced evaporator 10. Low-pressure control differential set too close 11. High pressure control differential set too close 12. Erratic thermostat	1. Replace overload protector 2. Determine reason and correct 3. Determine reason and replace 4. Open compressor discharge service valve. Purge possible overcharge of refrigerant. Provide sufficient condenser cooling air to unit 6. Properly charge system with refrigerant. Increase load on evaporator. 7. Reduce air flow over evaporator. Purge overcharge of refrigerant. Replace compressor valves 8. Properly charge system with refrigerant. 9. Replace compressor 10. Increase air flow over evaporator. Replace broken belt. Replace defective fan motor. 11. Readjust differential. 12. Readjust or replace control 13. Relocate or replace thermostat
	1. Short of refrigerant	1. Repair leak and recharge unit

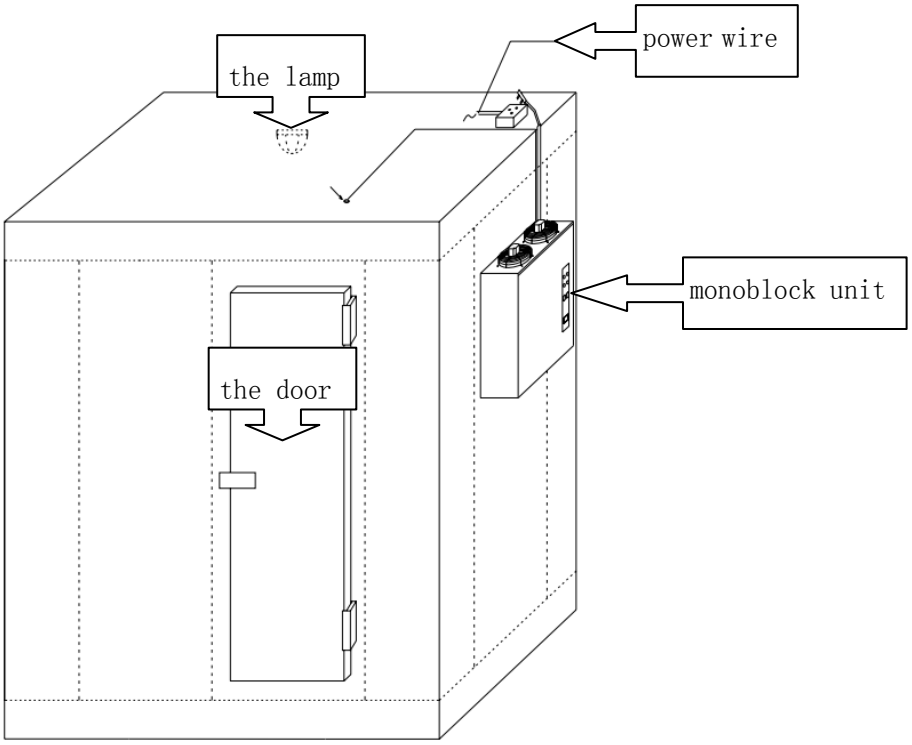
Unit operates excessively	2. Thermostat contacts stuck closed 3. Excessive load 4. Evaporator coil iced 5. Restriction in refrigerant system 6. Dirty condenser 7. Restricted air over evaporator 8. Inefficient compressor	2. Clean contacts or replace thermostat. 3. Check heaters, load and replace unit accordingly; replace insulation 4. Defrost unit and check operation 5. Locate and remove 6. Clean condenser 7. Determine cause and correct 8. Check compressor valves and repair
Compressor loses oil	1. Traps in hot gas and/or suction lines 2. Refrigerant velocity too low in risers 3. Shortage of refrigerant 4. Liquid refrigerant flooding back to compressor 5. Gas-oil ratio low 6. Plugged expansion valve or strainer 7. Compressor short cycling 8. Superheat too high at compressor suction	1. Reroute lines to provide proper pitch 2. Resize risers or install oil return traps 3. Repair leak and recharge 4. Adjust expansion valve; alter refrigerant charge on capillary tube system 5. Add 1 pt of oil for each 10 1b of refrigerant added to the factory charge 6. Clean or replace 7. See items under entry “Compressor starts and runs, but short cycles” 8. Change location of TXV bulb or adjust superheat to return wet refrigerant to the compressor
Compressor noisy	1. Lack of compressor oil 2. Tubing rattle 3. Mounting loose 4. Oil slugging 5. Refrigerant flooding compressor 6. Dry or scored shaft seal 7. Internal parts of compressor broken or worn 8. Compressor drive coupling loose	1. Add oil to correct level 2. Reroute tubing 3. Repair mounting 4. Adjust oil level or refrigerant charge 5. Check expansion valve for leak or oversized orifice 6. Check oil level 7. Overhaul compressor 8. Tighten coupling and check alignment
Unit low on capacity	1. Ice or dirt on evaporator 2. Expansion valve stuck or dirty 3. Improper TXV superheat adjustment 4. Wrong size expansion valve 5. Excessive pressure drop in evaporator 6. Clogged strainer	1. Clean coil or defrost 2. Clean or replace expansion valve 3. Adjust expansion valve 4. Replace valve 5. Adjust expansion valve 6. Clean or replace strainer. 7.Subcool liquid or add refrigerant

	7. Liquid flashing in liquid line	
Space temperature To high	1. Control setting too high 2. Expansion valve too small 3. Evaporator too small 4. Insufficient air circulation 5. Shortage of refrigerant 6. Expansion valve plugged 7. Inefficient compressor 8. Restricted or undersized refrigerant Lines 9. Evaporator iced or dirty	1. Adjust control 2. Replace valve 3. Replace coil 4. Correct circulation 5. Repair leak and recharge 6. Clean or replace 7. Check efficiency 8. Clear restriction or resize lines 9. Clean and defrost evaporator
Suction line frosted or sweating	1. Superheat setting too low 2. Expansion valve stuck open 3. Evaporator fan not running 4. Overcharge of refrigerant	1. Adjust superheat setting 2. Clean or replace valve 3. Correct problem 4. Correct charge
Liquid line frosted or sweating	1. Restricted drier or strainer 2. Liquid line shut-off valve Partially closed	1. Replace drier or strainer 2. Open valve
Hot liquid line	1. Expansion valve open too wide 2. Refrigerant shortage	1. Adjust expansion valve 2. Repair leak and recharge
Top of condenser Coils cool when unit is operating	1. Refrigerant shortage 2. Refrigerant overcharge 3. Inefficient compressor	1. Repair leak and recharge 2. Remove part of charge 3. Check efficiency and correct
Unit in vacuum-frost on expansion valve only	1. Ice plugging expansion valve orifice 2. Expansion valve strainer plugged	1. Apply hot wet cloth to expansion valve body; an increase in suction pressure indicates moisture; install a new drier 2. Clean strainer or replace valve
High head pressure	1. Overcharge of refrigerant 2. Air in system 3. Dirty condenser 4. Unit in too hot location 5. Water-cooled condenser plugged	1. Purge overcharge 2. Purge air 3. Clean condenser 4. Relocate unit 5. Clean or replace condense
Low head pressure	1. Shortage of refrigerant 2. Cold unit location 3. Inefficient compressor valves 4. Leaky oil return valve in oil separator	1. Repair leak and recharge 2. Provide warm condenser air 3. Replace leaky valves 4. Repair or replace
High suction pressure	1. Evaporator overloaded 2. Expansion valve stuck open 3. Expansion valve too large 4. Leaking compressor suction valves 5. Evaporator too large	1. See previous entry ″Unit operates excessively” 2. Repair or replace valve 3. Replace valve 4. Replace suction valves or compressor

		5. Resize evaporator
Low suction pressure	1. Shortage of refrigerant 2. Evaporator underloaded 3. Liquid line strainer clogged 4. Plugged expansion valve 5. Last charge on TXV power assembly 6. Space temperature too low 7. Expansion valve too small 8. Excessive pressure drop through Evaporator 9. Oversized compressor	1.Repair leak and recharge 2.Clean or defrost evaporator 3. Clean or replace strainer 4. Clean or replace valve 5. Replace power assembly 6. Adjust or replace thermostat 7. Replace valve 8. Check for plugged external equalizer 9. Resize compressor
Evaporator coil iced over	1. Automatic defrost control erratic or inoperative 2. Automatic defrost control improperly wired 3. Defective defrost control thermal element 4. Improperly installed control thermal element 5. Defrost control termination point too low	1. Replace control 2. Rewire control 3. Replace control 4. Relocate element 5. Replace or adjust control
Cold room remains in defrost cycle	1. Defrost control incorrectly wired 2. Automatic defrost control inoperative 3. Defrost control termination point too high 4. Defrost solenoid valve stuck open 5. Room temperature too low(below 55 ℉ or 12.8 ℃)	1. Rewire defrost control 2. Replace defrost control 3. Replace or adjust control 4. Clean or replace solenoid valve 5. Relocate unit or provide heat
Water collects in bottom of EMC cooler	1. Drain tube plugged 2. Drain tube frozen 3. Split drain trough 4. Evaporator baffle not properly installed 5. Humidiplate not adjusted properly 6. Door gasket not sealing properly	1. Clean tube 2. Check drain heater element and repair or replace 3. Replace trough 4. Install baffle properly 5. Adjust humidiplate 6. Adjust door or replace gasket

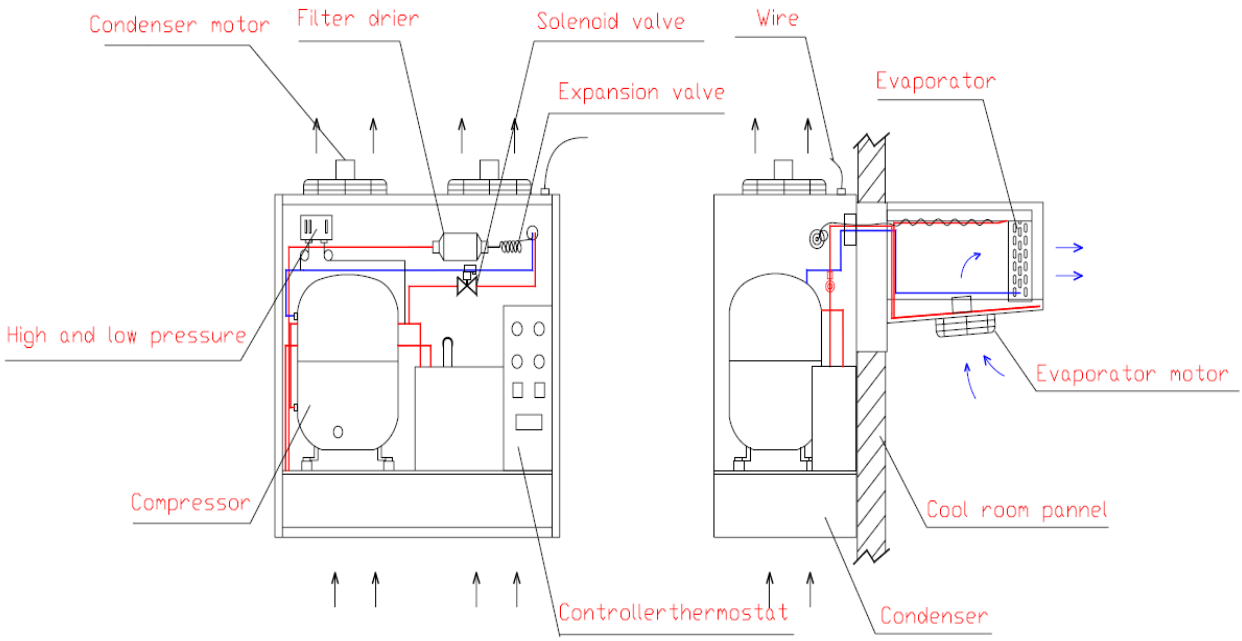
Part IV

Technical Drawings



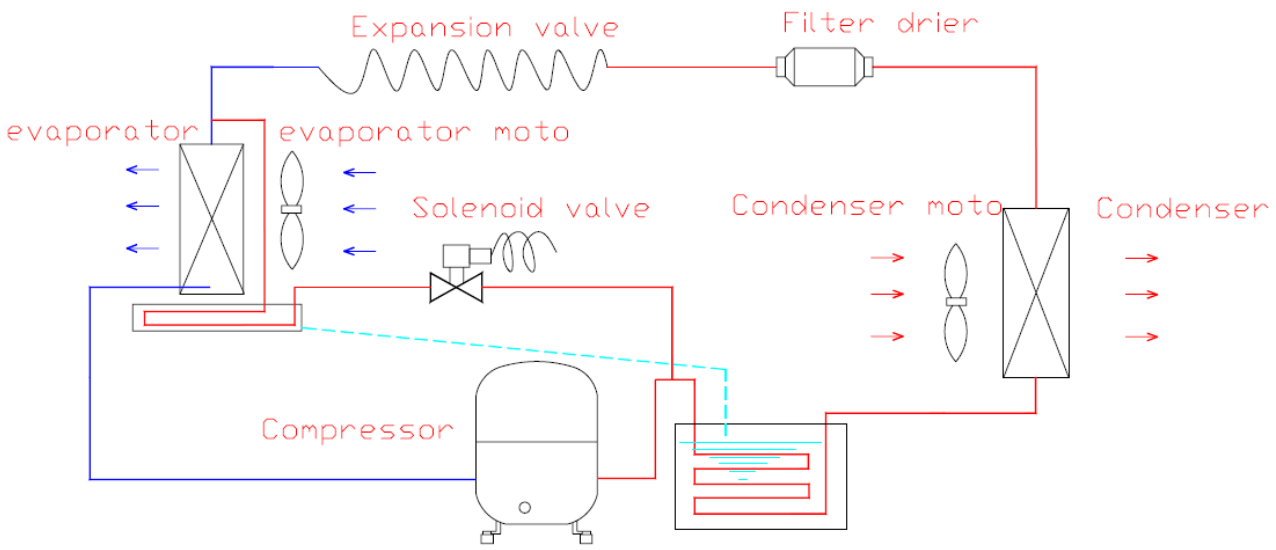
installation schematic drawing

The monoblock unit structure：

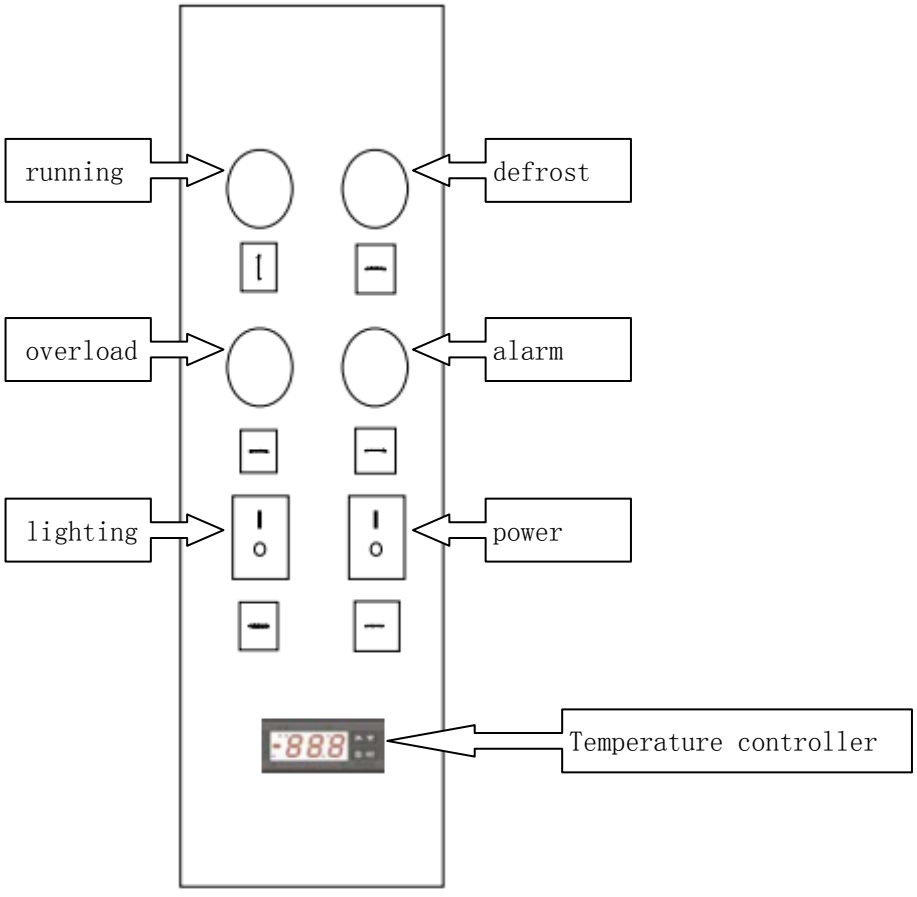


monoblock unit structure

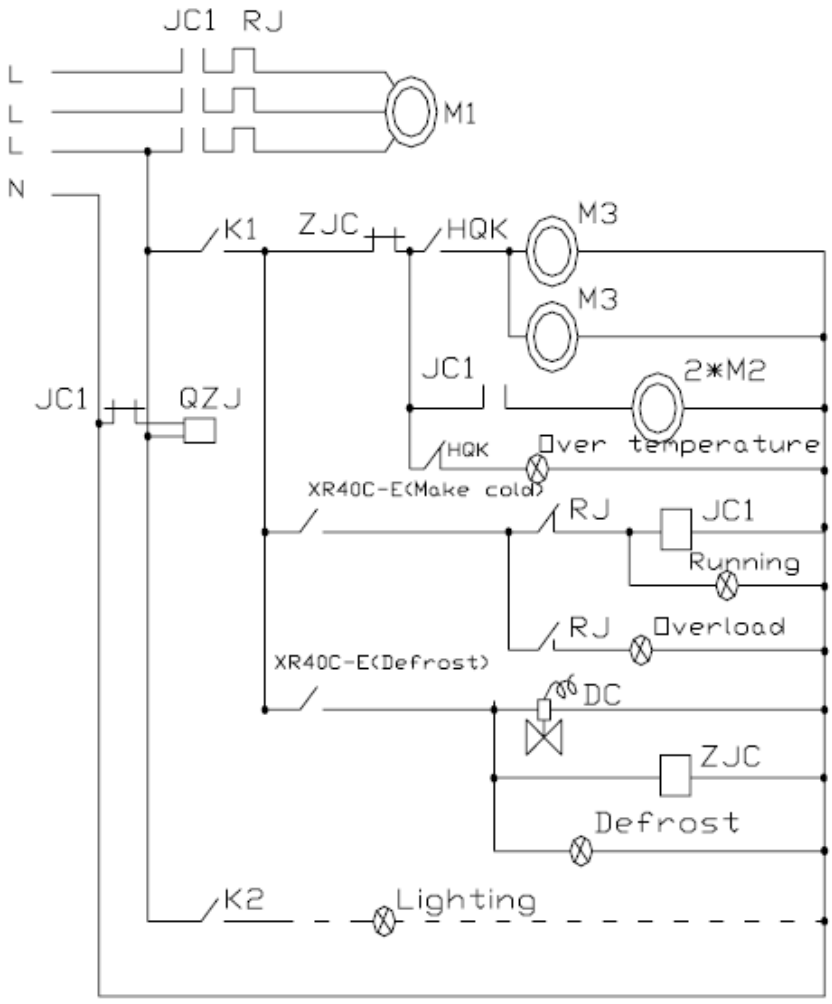
Cooling principle chart:



Cooling principle chart



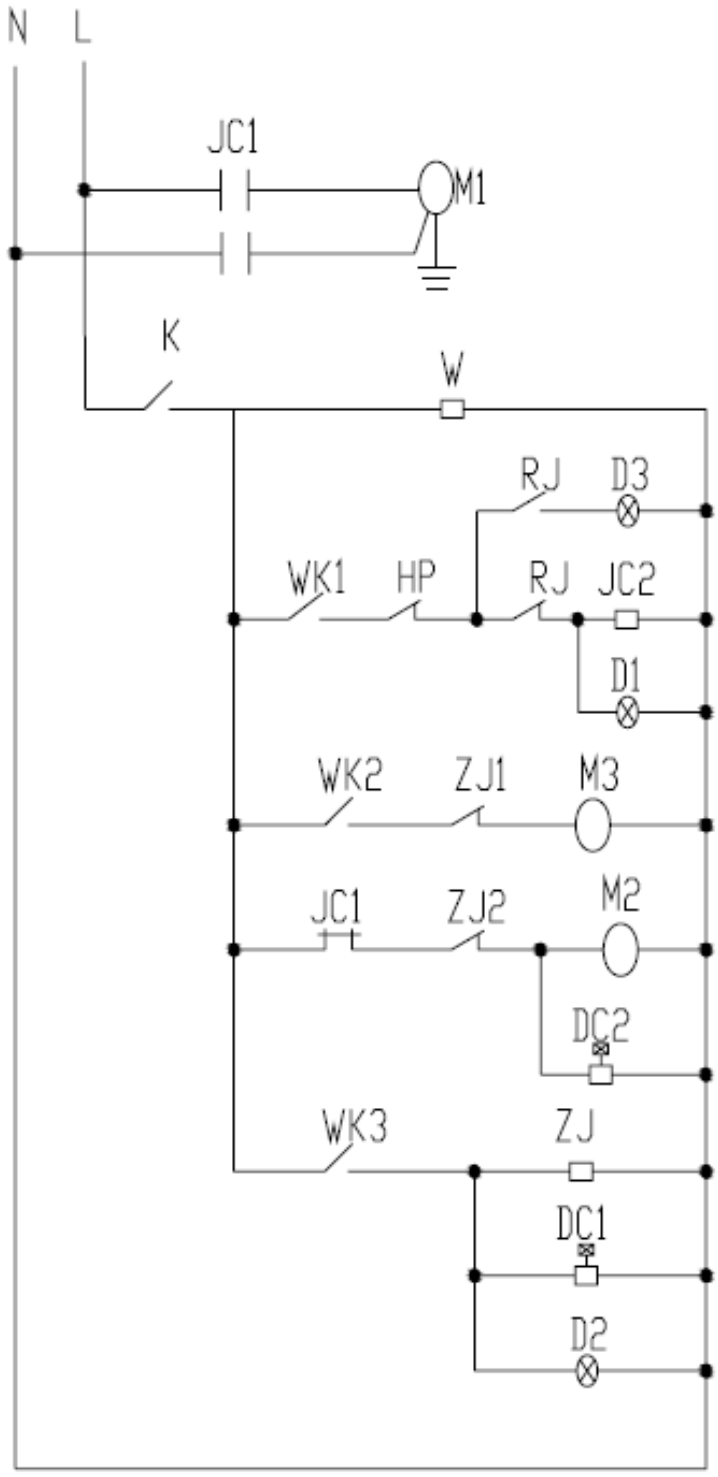
Controlling panel



Electrical circuit diagram

L — Voltage connection	K2 — Lighting	RJ — Themo relay
N — Neutral connection	K1 —Control connection	
M1 —Compressor	JC — Contactor	DC —ELECTROMAGNETISM
M2 — Condenser motor	QJZ — Crankcase heater	
M3 — Evaporator motor	ZJC — Relay	XR40C—E— Tempreture thermostat

Electrical principle chart



JC1--Comp.contactor
K--Start switch
W--Temp.control.power supply
WK1--Comp.
WK2--Evap.fans
WK3--Defrost
HP--High ang low pressure switch
RJ--Overload relay
ZJ--Intermediate relay
ZJ1--Evap.fans intermediate relay
ZJ2--Condensing fans
intermediate relay
DC1--Defrosting solenoid valve
DC2--Refrigerating solenoid
valve
M1--Compressor(Comp.)
M2--Condensing fans
M3--Evaporating fans
D1--Run light
D2--Defrosting light
D3--Overload light