Johnson Controls	YEWS Water Cooled Screw Chiller (Water Source Heat Pump)	
Installation, Operation and Maintenance	Supersedes:AP1105 -IOM01(0316) EN	Form No:AP1105-IOM01(1216) EN

YEWS High Efficiency Chiller With Single Compressor

STYLE E

Warning

The System is charged with refrigerant with a certain pressure

Improper operation during maintenance may cause serious damage to the system. All maintenance shall be done by **York** authorized technician, following the guide in York installation, operation and maintenance manual.

IMPORTANT!

READ BEFORE PROCEEDING!
GENERAL SAFETY GUIDELINES

This equipment is a relatively complicated apparatus. During installation, operation, maintenance or service, individuals may be exposed to certain components or conditions including, but not limited to: refrigerants, oils, materials under pressure, rotating components , and both high and low voltage. Each of these items has the potential, if misused or handled improperly, to cause bodily injury or death. It is the obligation and responsibilities of operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment and the property in which it is situated, as well as severe personal injury or death to themselves and people at the site.

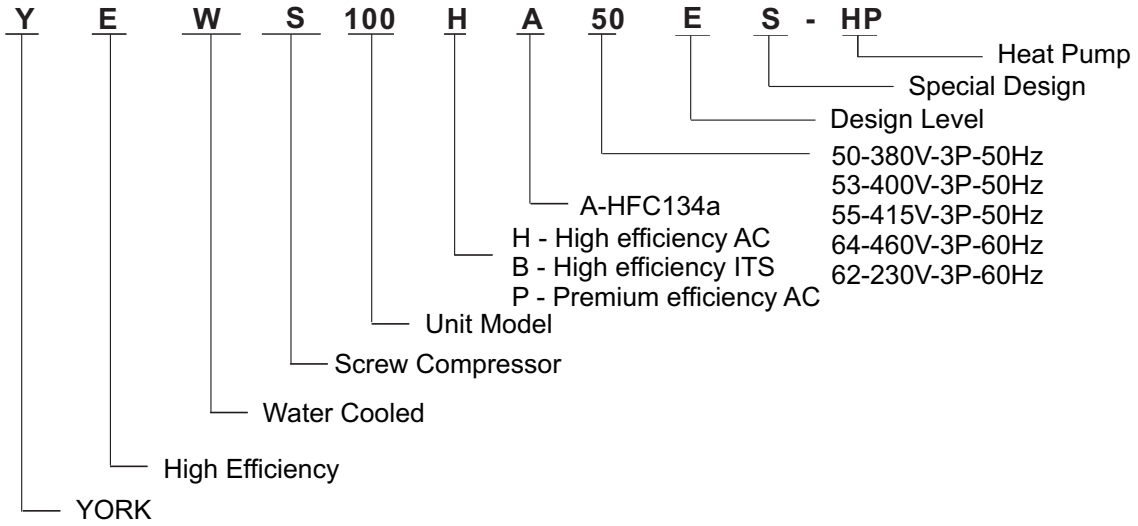
This document is intended for use by owner-authorized operating/service personnel. It is expected that this individual posseses independent training that will enable them to perform their assigned tasks properly and safely. It is essential that, prior to performing any task on this equipment, this individual shall have read and understood this document and any referenced materials. This individual shall also be familiar with and comply with all applicable governmental standards and regulations pertaining to the task in question.

CHANGEABILITY OF THIS DOCUMENT

In complying with YORK’ s policy for continuous product improvement, the information contained in this document is subject to change without notice. While YORK makes no commitment to update or provide current information automatically to the manual owner, that information, if applicable, can be obtained by contacting the nearest YORK Applied Systems Service office.

It is the responsibility of operating/service personnel to verify the applicability of these documents to the equipment in question. If there is any question in the mind of operating/service personnel as to the applicability of these documents, then prior to working on the equipment, they should verify with the owner whether the equipment has been modified and if current literature is available.

Nomenclature



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1 GENERAL MANUFACTURER INFORMATION

1.1 INTRODUCTION

YORK YEWS chillers (heat-pumps) are manufactured to the highest design and construction standards to ensure high performance, reliability and adaptability for all types of air conditioning installations. The unit is intended for cooling (hot) water solution and is not suitable for purposes other than those specified in this manual.

This manual contains all the information required for correct installation and commissioning of the unit, together with operating and maintenance instructions.

The manuals should be read thoroughly before attempting to operate or service the unit. All procedures detailed in the manuals, including installation, commissioning and maintenance tasks must only be performed by suitably trained and qualified personnel.

The manufacturer will not be liable for any injury or damage caused by incorrect installation, commissioning, operation or maintenance resulting from a failure to follow the procedures and instructions detailed in the manuals.

1.2 WARRANTY

YORK warrants all equipment and materials against defects in workmanship and materials for a period of eighteen (18) months from date of shipment, or twelve (12) months from commissioning, whichever occurs first, unless labor or extended warranty has been purchased as part of the contract.

The warranty is limited to parts only replacement and shipping of any faulty part, or sub-assembly, which has failed due to poor quality or manufacturing errors. All claims must be supported by evidence that the failure has occurred within the warranty period, and that the unit has been operated within the designed parameters specified.

All warranty claims must specify the unit model, serial number, order number and run hours/starts. Model and serial number information is printed on the unit identification plate.

The unit warranty will be void if any modification to the unit is carried out without prior written approval from YORK.

For warranty purposes, the following conditions must be satisfied:

· The initial start of the unit must be carried out by trained personnel from an Authorized YORK Service Centre.

· Only genuine YORK approved spare parts, oils, coolants, and refrigerants must be used. All the scheduled maintenance operations detailed in this manual must be performed at the specified times by suitably trained and qualified personnel.

· Failure to satisfy any of these conditions will automatically void the warranty. See Warranty Policy.

1.3 SAFETY

YEWS chillers are designed and manufactured by the factory within ISO 9000 , Chillers satisfied all the running limits required by the manual and conform to the following Directives GB25131《Safety requirements of Positive displacement and Centrifugal Water— chilling Packages》

1.4 RESPONSIBILITY FOR SAFETY

Every care has been taken in the design and manufacture of the unit to ensure compliance with the safety requirements listed above. However, the individual operating or working on any machinery is primarily responsible for:

· Personal safety, safety of other personnel, and the machinery.

· Correct utilization of the machinery in accordance with the procedures detailed in the manual.

1.5 ABOUT THIS MANUAL

The following terms are used in this document to alert the reader to areas of potential hazard.

A WARNING is given in this document to identify a hazard, which could lead to personal injury. Usually an instruction will be given, together with a brief explanation and the possible result of ignoring the instruction.

A CAUTION identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution. Usually an instruction will be given, together with a brief explanation and the possible result of ignoring the instruction.

A NOTICE is used to highlight additional information, which may be helpful to you but where there are no special safety implications.

The contents of this manual include suggested best working practices and procedures. These are issued for guidance only, and they do not take precedence over the above stated individual responsibility and/or local safety regulations.

This manual and any other document supplied with the unit are the property of YORK which reserves all rights. They may not be reproduced, in whole or in part, without prior written authorization from an authorized YORK representative.

1.6 MISUSE OF EQUIPMENT

Suitability for Application

The unit is intended for cooling water and is not suitable for purposes other than those specified in these instructions. Any use of the equipment other than its intended use, or operation of the equipment contrary to the relevant procedures may result in injury to the operator, or damage to the equipment. The unit must not be operated outside the design parameters specified in this manual.

Structural Support

Structural support of the unit must be provided as indicated in these instructions. Failure to provide proper support may result in injury to the operator, or damage to the equipment and/or building.

Mechanical Strength

The unit is not designed to withstand loads or stresses from adjacent equipment, pipework or structures. Additional components must not be mounted on the unit. Any such extraneous loads may cause structural failure and may result in injury to the operator, or damage to the equipment. The unit should only be lifted in accordance with the instructions given in Section3 of this manual.

General Access

There are a number of areas and features, which may be a hazard and potentially cause injury when working on the unit unless suitable safety precautions are taken. (It is important to ensure access to the unit is restricted to suitably qualified persons who are familiar with the potential hazards and precautions necessary for safe operation and maintenance of equipment containing high temperatures, pressures and voltages.)

Pressure Systems

The unit contains refrigerant vapor and liquid under pressure, release of which can be a danger and cause injury.

The user should ensure that care is taken during installation, operation and maintenance to avoid damage to the pressure system. No attempt should be made to gain access to the component parts of the pressure system other than by suitably trained and qualified personnel.

Electrical

The unit must be earthed. No installation or maintenance work should be attempted on the electrical equipment without first switching power OFF, isolating and locking-off the power supply. Servicing and maintenance on live equipment must only be performed by suitably trained and qualified personnel. No attempt should be made to

gain access to the control panel or electrical enclosures during normal operation of the unit.

Refrigerants and Oils

Refrigerants and oils used in the unit are generally non-toxic, nonflammable and noncorrosive, and pose no special safety hazards. Use of gloves and safety glasses is, however, recommended when working on the unit. The build up of refrigerant vapor, from a leak for example, does pose a risk of asphyxiation in confined or enclosed spaces and attention should be given to good ventilation.

High Temperature and Pressure Cleaning

High temperature and pressure cleaning methods (e.g. steam cleaning) should not be used on any part of the pressure system as this may cause operation of the pressure relief device(s). Detergents and solvents, which may cause corrosion, should also be avoided.

1.7 Emergency Shutdown

In case of emergency, the control panel is fitted with an emergency stop switch (red)which, when operated by pressing the emergency stop switch removes the electrical supply the control system and the microprocessor controller, thus shutting down the unit.

1.8 Safety Labels

The following labels are fixed to each unit to give instruction, or to indicate potential hazards which may exist.

White symbol on blue background For safe operation, read the Instructions firstly.

Black symbol on yellow background Warning: Hot surface

Black symbol on yellow background Warning: Isolate all electrical sources of supply before opening or removing the cover, as lethal voltages may exist

Black symbol on yellow background General attention symbol

2 PRODUCT DESCRIPTION

2.1 INTRODUCTION

YORK YEWS series chillers (Heat pumps) are designed for water cooling (heating) and to be located inside building (Equipment room).

2.2 COMPRESSOR

A semi-hermetic screw compressor is provided to ensure high operational efficiency and reliable performance. Capacity control is achieved through slide valve. The compressor is a positive displacement type characterized by two helically grooved rotors, which are manufactured from forged steel. The motor operator operates at 50Hz or 60Hz to directly drive the male rotor, which in turn drives the female rotor on the light film of oil.

Each compressor is direct drive, semi-hermetic, rotary twin screw type and includes the following items:
Two screw rotors, manufactured from forged steel.

A cast iron compressor housing precisely machined.

A built-in high efficient oil separator

An internal discharge check valve can prevent rotor backspin during shutdown.

A suction vapor cooled, high efficient and reliable semi-hermetic motor has overload protection: thermistor and current overload protection.

A suction vapor screen and a serviceable oil filter are installed in the compressor housing. For YEWS P serie units, the oil filter is placed on the oil supply line.

Refrigerant vapor is sucked into the void created by the unmeshing of the five lobed male and six lobed female rotors. Further meshing of the rotors closes the rotor threads to the suction port and progressively compresses the vapor in an axial direction to the discharge port. The vapor is compressed in volume and increased in pressure before exiting at a designed volume at the discharge end of the rotor casing. Since the intake and discharge cycles overlap, a resulting smooth flow of vapor is maintained.

The rotors are housed in a cast iron compressor housing precision machined to minimize the void between the housing and the rotors. Contact between the male and female rotor is primarily rolling on a contact band on each of the rotor's pitch circle. It result in virtually no rotor wear and increased reliability.

The compressor incorporates a complete antifriction bearing design for reduced power input and increased reliability. Four separated, cylindrical, roller bearings handle radial loads. Angular-contact ball bearings handle axial loads. Together they maintain accurate rotor positioning at all pressure ratios, thereby minimizing leakage and maintaining efficiency.

Motor cooling is provided by refrigerant vapor from the evaporator flowing across the motor. Over load protection includes overheat and current overload protections.

For YEWS H serie units, oil is removed from the refrigerant using a built-in oil separator, and then returned back to the compressor for lubrication. A plug-in heater and a float ball type oil level swithch are located in the compressor.

Motor Starting

Star/Delta (S/D) open transition starter is used for compressor motor starting. The S/D starter utilizes 3 motor contactors and a starting relay. The starter allows inrush current to be limited to approximately 33%LRA for the first 4~10 seconds, with current changing to normal running current when the Delta connection is established.

When the microprocessor initiates a start signal to run a compressor, the applicable relays are energized. The transition of the relay contacts enables the 'Star' connection of the motor start. The 'Star' connection of the motor start is enabled for 4~10 seconds, then motor switchs to the 'Delta' connection.

Capacity Control

The compressors should start at the minimum load

position and provide a capacity control within 25%~100% by using one continuous function slide valves.

The capacity control valve at the minimum load position when it starts up will ensure compressor starting at the minimum motor load.

2.3 Oil separator and oil sump

YEWS system uses two stage oil separation designs, the first stage is the compressor built-in oil separator, and the second stage is the condenser internal oil separator. For YEWS H serie units, all models has the oil sump located in the first stage oil separator, the oil level should be visible in the sight glass on compressor; but for YEWS P serie units, the oil sump is located in the second stage oil separator, there should be no visible oil level in the compressor sight glass (the oil will be piped to the oil sump inside the condenser).

All lubricant must flow through a renewable filter before it is supplied to compressor to lubricate the bearings and the rotors.

After lubricating the bearings, the oil is injected through an orifice loacted in the closed thread near the suction end of the rotors. The oil is automatically injected because of the pressure difference between the discharge pressure and the pressure at the suction end of the rotors. This lubricates the rotors as well as provides an oil seal against leakage around the rotors to assure refrigerant compression (volumetric efficiency).

For YEWS P serie units, a photoelectric type oil level switch is used， and an oil heater are locaded on the oil sump.

2.4 Refrigerant Circuits

The refrigerant circuit has a compressor, oil separator, evaporator, condenser and a liquid line. Liquid line components include: a manual shut-off valve, throttle device , liquid injection piping (just for HP and ITS).

2.5 Condenser

The water-cooled condenser is a cleanable shell and tube type, with 19mm thermally enhanced seamless copper tubes and a builtin subcooler.

The design working pressure is 1.0MPa (gauge) on the waterside. Flange connection HG20615 is provided for water piping. The condenser shell is equipped with a relief valve whose active pressure is 20.7 Bar. The condenser is manufactured and tested according to China National Standard GB151.

For HP unit, the external surface of the condenser shell should be covered with 19mm-thick flexible closed-cell foam for heat insulation purpose.

2.6 Evaporator

The evaporator is a shell and tube, falling film type heat exchanger equipped with a relief valve whose active pressure is 20.7 Bar.

The evaporator is manufactured and tested according to China National Standard GB151.

The external surface of the evaporator shell is covered with 19mm-thick flexible closed-cell foam for AC&HP unit and 38mm us used for ITS unit. The water box connection is equipped with HG20615 flanges for easier connecting.

2.7 Power and Control Panel

All controls are factory-wired and function tested. The panel enclosures are designed according to IP22 and are manufactured from powder-painted steel.

The panel is divided into power supply section, control section and start section. Power supply section and control section have separated hinged, latched, and gasket sealed doors.

The power panel contains: compressor starting contactor, control wiring, compressor contacting solenoid and

compressor overload protection module.

Compressor overload protection is achieved as following: Motor protector sense the current of each phase of motor current and the temperature of motor, and send corresponding signals to the I/O Board.Then compare the values with MLA setpoints and active to protect the motor once the the values is higher than MLA setpoints.It protects the compressor motors from damage due to: Current overload, current imbalance (the error of the current of each phase), miswire, motor over temperature, uncalibrated, supply power phase loss.

The control panel include: Microcomputer keyboard, HMI and microprocessor board.

2.8 Control panel

The HMI consists of a liquid crystal display, with light emitting diode backlighting for outdoor viewing of operating parameters and program points. It can display 8 rows and 120 characters in 2 languages (English or Chinese). The keyboard has 20 keys, which is divided into two kinds: Funtion keys and Programme keys.

The standard control function of microprocessor board includes: chiller alarm contactor controlling, chilled water pump controlling, chiller auto resetting when it is repower on after a period of power off, optimizing the system automaticly according to the running conditions

Unit operating firmware is stored in non-volatile memory (Flash Memory) to protect chiller from failture for power off. All field programmed setpoints are retained in the EPROM register. A lithium battery backed real time clock (RTC) supply the clock for the system control, and the battery has 3 years memory.

2.9 Motor protection

The microprocessor provides the overcurrent protection to ensure that the motor is free from the damages due to excessive voltage and other overcurrent problems.

After the Star/Delta starter started for more than 10 seconds, the microprocessor will shut down and lock the chiller for fault if the current exceeds the current setpoints. It is required to reset the system switch manually to eliminate the fault before restart the system. And prior to start the chiller which stopped due to overcurrent, chec-king should be done on the motor, wiring and refrigerant system.

When it is found that the current is lower than 10% of MLA (Max Loading Amps), the low current protection will be initiated and the unit should be stopped. In that case, prior to restart the system, unit resetting should be done manually.

Motor protector

Motor protector is used to protect motor from overheat, There are three PTC (Positive Temperature Coefficient) thermistor installed in each phase of motor winding. The resistance of thermistor will keep in 1K when the temperature is lower than 125℃, however, the resistance of thermistor will increase as its temperature rise. When the resistance value of sensor reach upto 13K, the motor protector will be active and cut off the power supply of motor. The chiller is not allowed to restart until the motor is cooled down and the resistance value of sensor drop down to 3.25K.

2.10 Keyboard control

Display

The parameters of each refrigerant circuit can be displayed in 2 languages (English or Chinese),

All the displayed parameters are listed as follows:

Entering/Leaving chilled water temperature

Entering/Leaving cooling water temperature(Entering/leaving hot water temperature are diaplayed in heatpump mode).

Time and date, start and stop time at ordinary days, arrangement on holidays and status of manual setting.

Compressor running hours and starting times.

Compressor running status.
System Suction/Discharge pressure, oil pressure, discharge temerature.

Percentage of compressor current to Full Load Amps.

Cutout value and setpoints: Leaving Chilled (Hot) Water Temperature, Low Evaporator Pressure , High Discharge Temperature/Pressure , High/Low Amps , Low Chilled Water Temperature , High Diacharge Pressure Unload, High Compressor Amps unload.

Input
Setting the chilled (hot) water temperature.

Clock
Setting time, daily and holiday start/stop schedule.

Programming
Cutout setpoints: Low Evaporator pressure, High Discharge Pressure, Low Evaporator temperature, High Discharge Temperature, High Discharge pressure unloading, OCC.

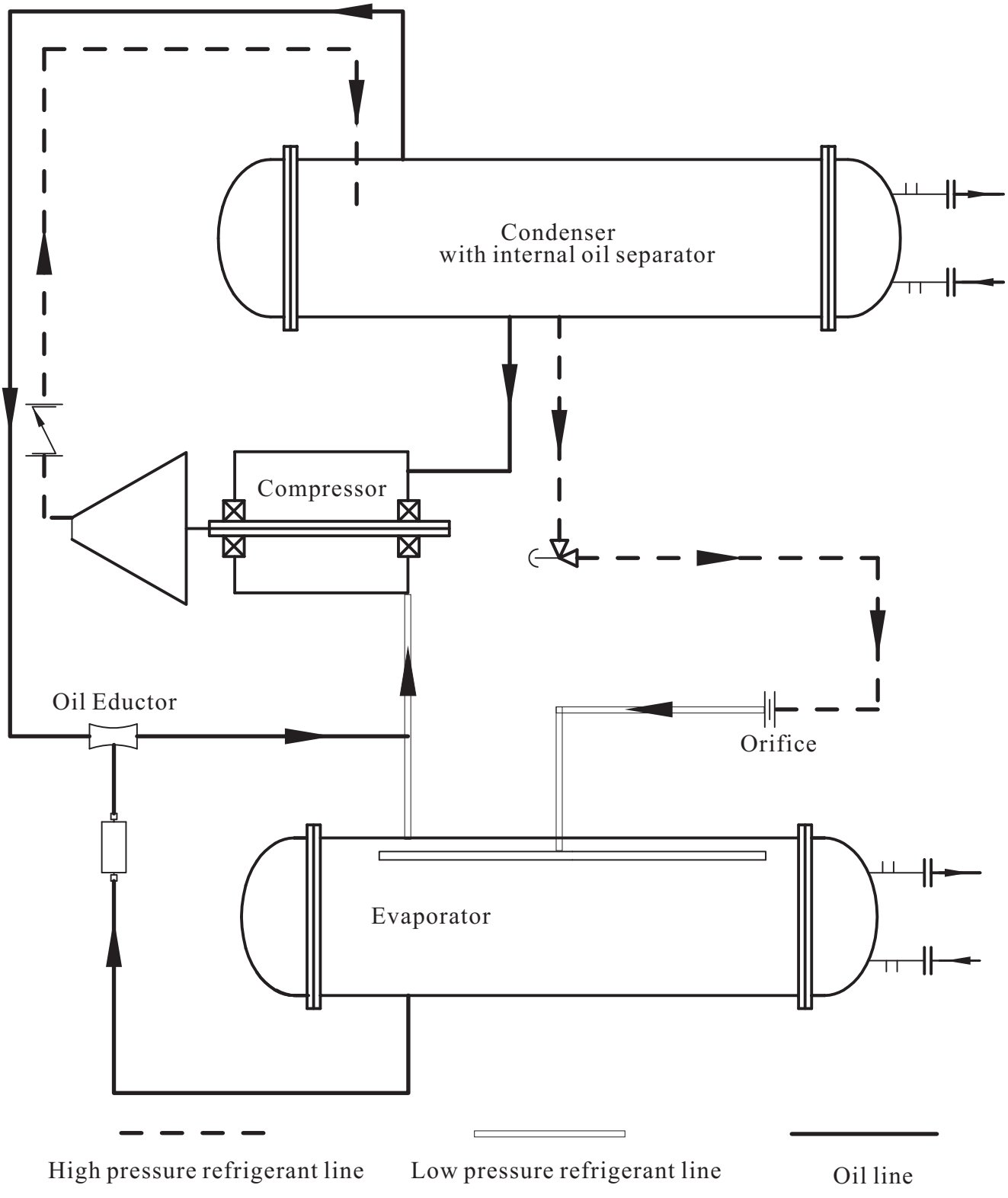
2.11 OPTIONS
YORK ISN building automation system can directly send the communication signal to the standard control panel through the standard RS485 connection.

Flow Switch
The gate type water flow switch has 10.3 bar DWP, which is applicable to chilled water and cooling water lines.

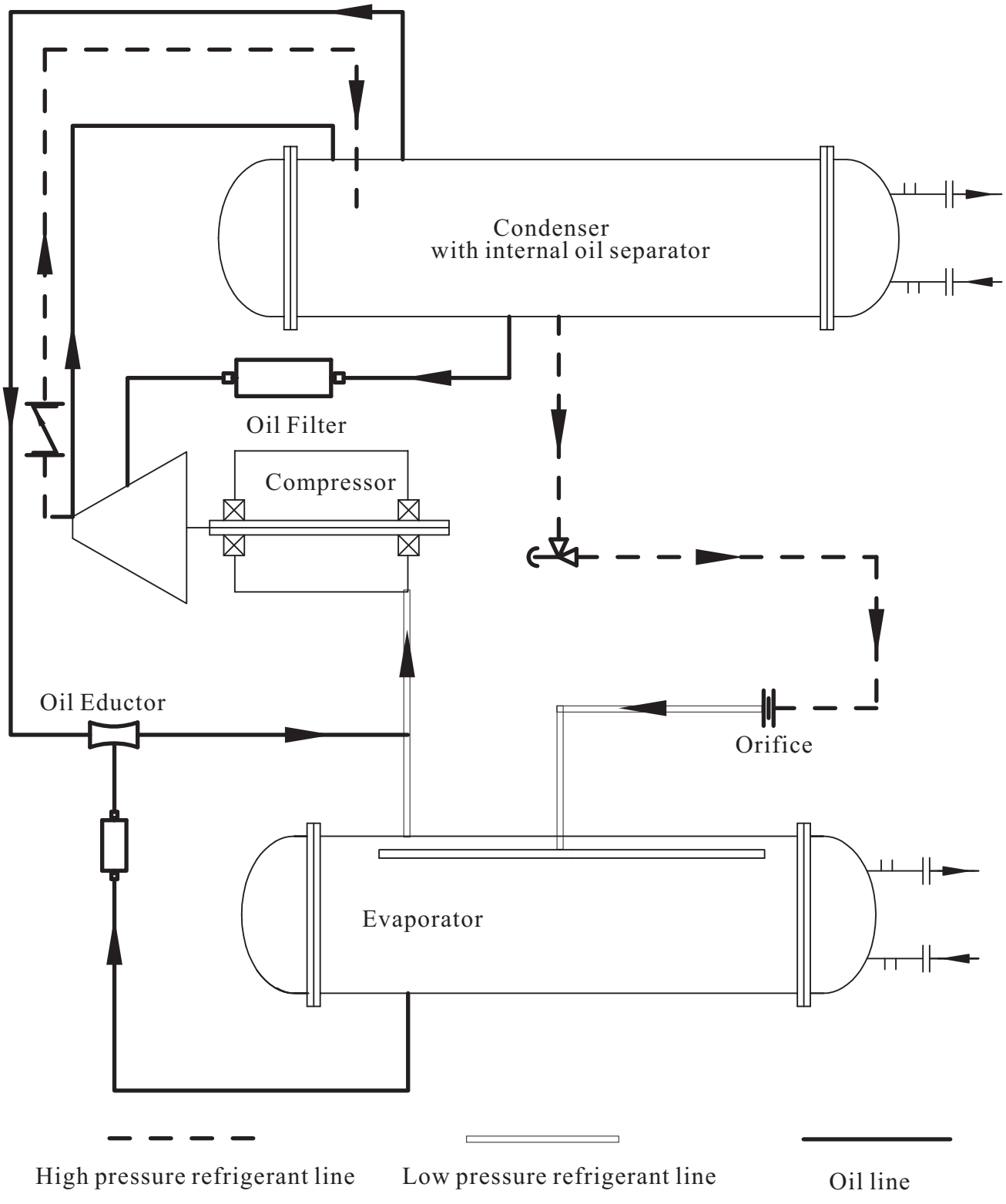
25mm Spring Isolators
Level adjustable, spring and cage type isolators for mounting under the unit base rails (Field mounted).

2.12 Functional Description
Low pressure liquid refrigerant enters the cooler and is evaporated and superheated by the heat energy absorbed from the chilled water passing through the cooler tube. These low pressure vapor is sucked by the compressor where the pressure and temperature are increased. The high pressure and temperature refrigerant vapor combined with oil is discharged into the oil separator, there, most of the oil is separted and remaind in the oil reservoir. The oil free vapor then enter the condenser and is condensed. The fully condensed and subcooled liquid refrigerant then enters the expansion valve where pressure reduction and further cooling takes place before returning to the cooler.

YEWS-E SYSTEM FLOW CHART-1（for YEWS100H/130H/170H/200H/210H）



YEWS-E SYSTEM FLOW CHART-2（for YEWS100P/130P/170P/200P/215P）



3 TRANSPRORTATION, HANDLING AND STORAGE

3.1 DELIVERY AND STORAGE

To ensure consistent quality and maximum reliability, all units are tested and inspected before leaving the factory. The chiller may be ordered and shipped in any of the following forms:

Form 1 (shipped complete)

Form 2 (shipped without refrigerant charge)

Units are containing nitrogen or refrigerant and YORK “L” oil （YORK “W” oil in HP units）under pressure. Units are shipped without export crating unless crating has been specified on the Sales Order.

If the unit is to be put into storage, prior to installation, the following precautions should be observed:

Ensure that the unit is not exposed to rain.

Ensure that all openings, such as water connections, are securely capped.

The unit should be stored in a location where there is minimal activity to limit the risk of accidental physical damage.

To prevent inadvertent operation of the pressure relief devices the unit must NOT be hot water or steam cleaned.

It is recommended to let the functionary on the storage site keep the key of the control board.

It is recommended that the unit be periodically inspected during storage.

If the unit is stored longer than six months, the relative requirements for Long-Term Storage (50.20-NM9 /50.20-CL9 / 50.20-NM1) must be followed.

3.2 INSPECTION

The unit shipment should be checked on arrival to see that all major pieces, boxes and crates are received. Each unit should be checked on the trailer or rail car when received, before unloading, for any visible signs of damage. Any damage of signs of possible damage must be reported to the transportation company immediately for their inspection.

When received at the job site,all containers should be opened and the contents checked against the packing list. Any material shortage should be reported to YORK immediately.

3.3 RIGGING

Each unit has four lifting holes(two on each end) in the end sheets which should be used to lift the unit. Care should be taken at all times during rigging and handling to avoid damage to the unit and its external connections. Lift only using holes shown in Figure 3-1.

If optional shipping skids are used, remove them before lowering the unit to its mounting position. Rig the uni to its final location on the floor or mounting pad by lifting the unit (or shell assembly) with an overhead lift and lower the unit to its mounting position.

Don't move the unit on rollers, nor lift it by forklift.

RIGGING INSTRUCTION

For liftin unit use spreader bar with 4 separate slings length of lifting elements must be adequate to clear all projections, the strength of liting elements must be suitable for lifing weight.

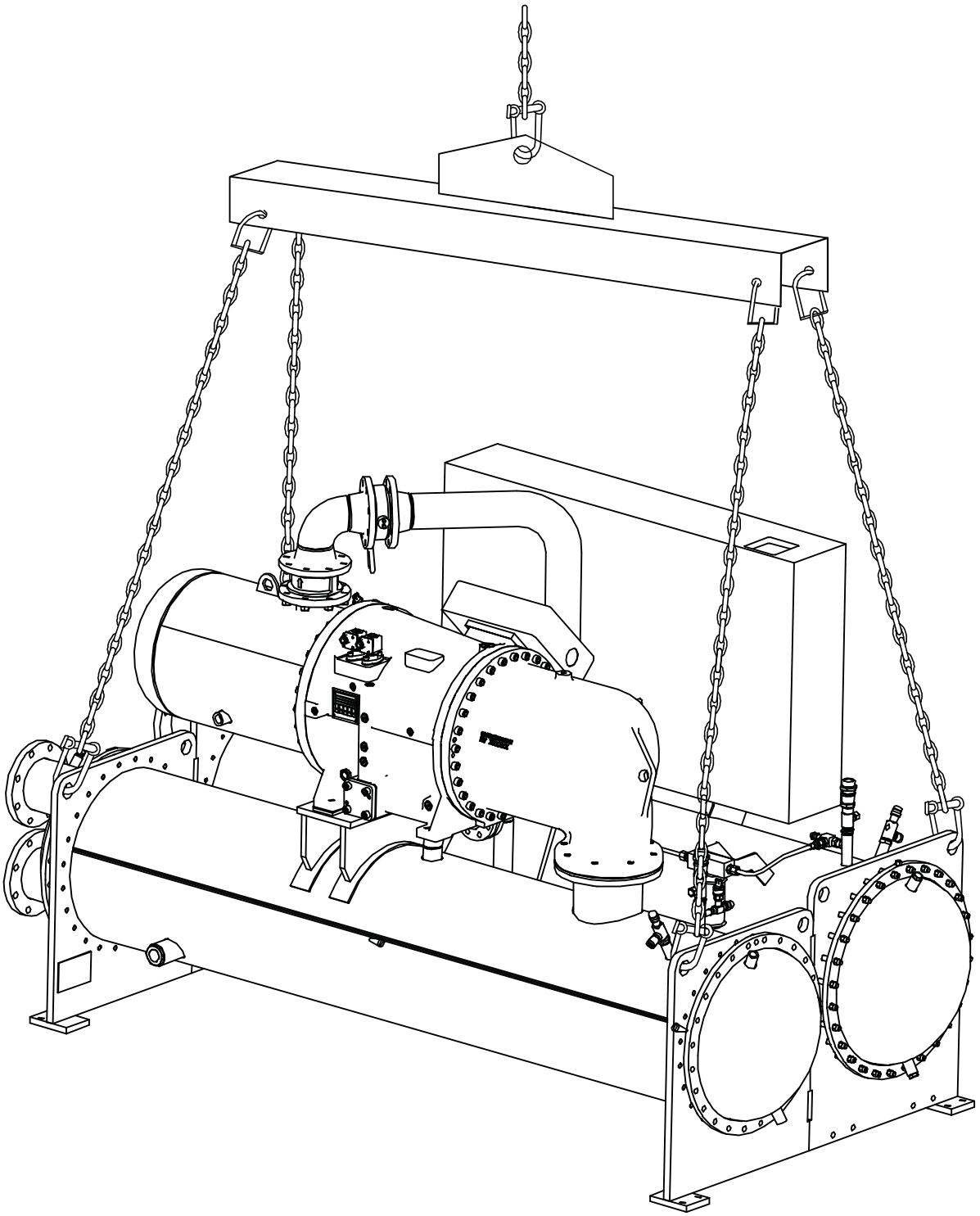


Figure 3-1 Rigging

4 INSTALLATION

4.1 General description

This instruction describes the installation of a model YEWS Rotory Scew Liquid Chiller/Heatpump. The unit is shipped as a single factory assembled, piped, wired and nitrogen or refrigerant charged package, requiring a minimum of field labor to make chilled water connections, condenser water connections, refrigerant atmospheric relief connections, and electrical power connections.

Acording the requirement of bargain, YORK representat-ive should provide the following service: Installation checking and, Initial starting and so on.

The YORK Warranty will be voided if the following restrictions are not adhered to:

1. No valves or connections should be opened under any circumstances because such action will result in loss of the factory charged refrigerant or nitrogen.

2. Do not dismantle or open the Unit for any reason except under the supervision of a YORK representative.

3. Do not make final power supply connections to the compressor motor or control panel.

4. Do not charge the compressor with oil.

5. Do not attempt to start the system.

6. Do not supply the evaporator with hot water(The temperature Limit is 100 F,38℃)or steam.

4.2 Location Requirements

The unit should be located in an indoor location where temperature ranges from 4℃~43℃.The altitude shoude be less than 2000 meter.

The units are furnished with neoprene vibration isolator mounts for basement or ground level installations. Unit may by located on upper floor levels providing the floor is capable of supporting the total unit operating weight (in this application, the spring isolator is prefered).

A level floor, mounting pad or foundation must be pro-vided by others, capable of supporting the operating wei-ght of the unit

Clearances should be adhered to as follows:

Rear, Ends and Above Unit - 610mm
Front of Unit - 914mm
Tube Removal - See following table

Model	Tube removal space
YEWS100	2100mm
YEWS130/170/200/210	2650mm
YEWS215	3800mm

4.3 Installation of Vibration Isolators

The optional vibration isolators can be loose shipped with the chiller.

Please refer to the foundation figures in Section 10 to decide proper installation position for the units.

Fixation-Installation

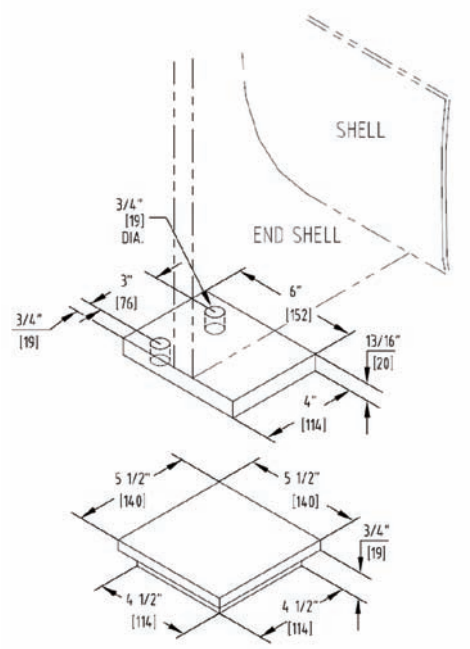
There are two methods: rubber pad and spring isolator.

Locating and installing isolator pads

The isolator pads should be located in accordance with the floor layout of the dimensional product drawing. After the isolator pads have been placed into position on the floor, lower the unit onto the pads. Make sure the pads are even with the edges of the mounting feet. When the unit is in place, remove the rigging equipment and check that the chiller is level, both longitudinally and transversely. See the following Fig.

The longitudinal alignment of the unit should be checked by placing a level on the top center of the evaporator shell under the compressor. Transverse alignment should be checked by placing a level on top of the shell end sheets at each end of the unit.

The unit should be level within 6.4mm from one end to the other end and from front to rear. If the chiller is not level within the amount specified, lift it and place shims between the isolation pad and the tube sheets.



SYSTEM OPERATING WEIGHT		PART NUMBER
Kg	Lbs.	
UP TO 7423	UP TO 16365	028W14462-000

Checking the Isolator Pads Deflection

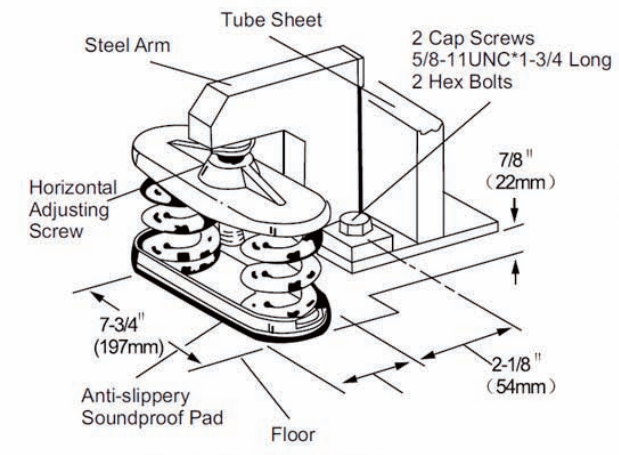
All isolator pads should be checked for the proper deflection while checking the level of the unit. Each pad should be deflected approximately 4 mm (0.15"). If an isolator pad is under deflected, shim should be placed between the unit tube sheet and the top of the pad to equally deflect all pads.

Installing Option Spring Isolators

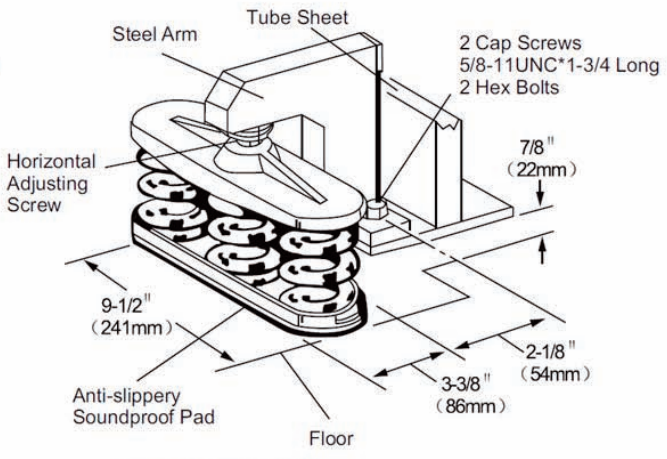
In order to mount spring isolators, first remove the nuts and screws on the spring isolator supports. Before the unit is positioned, the isolator supports should be bolted to the unit support. Position the 4 spring isolators, screw out the adjusting screws on each isolator until they reach out to match the isolator support holes. Then lower down the unit on the adjusting screws. See the following Fig.

The leveling bolts should now be rotated one (1) turn at a time, in sequence, until the unit end sheets are clear of the floor or foundation by 22 mm (7/8") and the unit is level. Check that the unit is level, both longitudinally and transversely. If the leveling bolts are not long enough to level unit due to an uneven or sloping floor or foundation, steel shims (ground, if necessary) must be added beneath the isolator assemblies as necessary.

After the unit is leveled, wedge and shim under each corner to solidly support the unit in this position while piping connections are being made, pipe hangers adjusted and connections checked for alignment. Then the unit is filled with water and checked for leaks. The leveling bolts should now be finally adjusted until the wedges and shims can be removed the unit should now be in correct level position, clear of the floor or foundation and without any effect from the weight of the piping.



Part N0: 029-18479



Part N0: 029-18480

ISOLATORS SPRING		
SYSTEM OPERATING WEIGHT		PART NO
Kg	Lbs.	
UP TO 3114	UP TO 6865	029W18479-001
3115 TO 4453	6866 TO 9818	029W18479-002
4454 TO 5526	9819 TO 12182	029W18479-003
5527 TO 6927	12183 TO 15272	029W18479-004
6928 TO 8288	15273 TO 18272	029W18480-001

4.4 Piping Connections

General Requirements

The following piping recommendations are intended to ensure satisfactory operation of the unit. Failure to follow these recommendations could cause damage to the unit, or loss of performance, and may invalidate the warranty.

CAUTION

The maximum flow rate and pressure drop for the evaporator and condenser must not be exceeded at any time. Refer to Section 10 for details.

A flow switch must be directly in series with the evaporator/ condenser and wired back to the control panel using screened cable. For details refer to Electrical Connection .This is to prevent damage to the evaporator/ condenser caused by inadequate liquid flow. A paddle type flow switches are suitable for 10 bar working pressure.

The chilled water pump should be installed in the entering water pipe. Pipework and fittings must be separately supported to prevent any loading on the unit. Flexible connections are recommended which will also minimize transmission of vibrations to the building. Flexible connections must be used if the unit is mounted on antivibration mounts as some movement of the unit can be expected in normal operation.

Pipework and fittings immediately next to the evaporator should be readily dismantled to enable cleaning prior to operation, and to facilitate visual inspection of the heat exchanger nozzles.

A strainer must be mounted on the waterside of the evaporator and condenser respectively, preferably of 40 meshes, fitted as close as possible to the liquid inlet connection, and provided with a local water cut-off switch.

The evaporator must not be exposed to too high flushing velocities or debris deposited during flushing. It is recommended that a suitably sized by-pass and valve arrang-ement be installed to allow flushing of the pipework sys-tem. The by-pass can be used during maintenance to isol-ate the evaporator without disrupting flow to other units.

Thermometer and pressure gauge connections should be provided on the inlet and outlet connections of the evaporator and condenser.

Drain and vent valves (by others) should be installed in the connections provided in the cooler and condenser liquid heads. These connections may be piped to drain if desired.

CAUTION

Any debris left in the water piping between the strainer and cooler could cause serious damage to the tubes in the cooler and must be avoided. The installer/user must also ensure that the quality of the water in circulation is adequate, without any dissolved gases, which can cause oxidation of steel parts within the cooler.

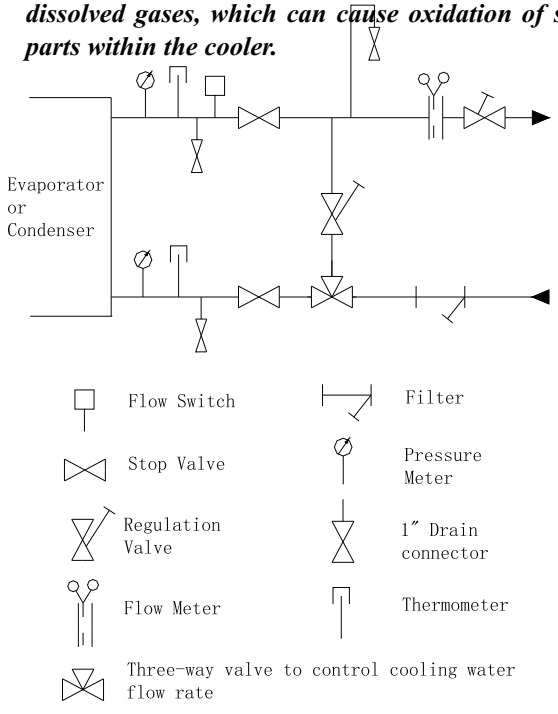


Fig 4-1 Diagram of cooling water and chilled water pipe connection

4.5 Water Treatment

The unit performance provided in the Design Guide is based on a fouling factor of (0.044m^2.℃ /KW for condenser and 0.0176m^2.℃ /KW for evaporator). Dirt, scale, grease and certain types of water treatment will adversely affect the heat exchanger surfaces and therefore the unit performance. Foreign matter in the water system(s) can increase the heat exchanger pressure drop, reducing the flow rate and causing potential damage to the heat exchanger tubes. YORK recommends that a water treatment specialist should be consulted to determine whether the proposed water composition will adversely affect the evaporator materials of carbon steel and copper. The pH value of the water flowing through the evaporator must be kept in a range between 6.5 and 8.0. The water quality of chiller should be in accordance with local code.

Quality requirement of water used in chiller

Target		Allowable value	Corrosion	Fouling
Name	Unit			
PH value(25℃)	-	6.5～8.0	X	
Conductivity(25℃)	μs/cm	＜800	X	
Chloridion	mg/L	＜200	X	
Sulphate ion	mg/L	＜200	X	
Acid wastage	mg/L	＜100		X
Total Hardness	mg/L	＜200		X
Calcium Hardness	mg/L	＜150		X
SiO_2	mg/L	＜50		X

Notes:

1. The user should make regular inspections on the water quality before installation and in the process of using. If the water quality does not meet the demands of using, the heat-exchange tubes will be in the danger of fouling ,corrupting and even leakage when using the “Defective” water for long term.

2. Corrupting testing about the influence of using “Defective” water whose qulity exeed the limits for long term shows that, the chiller will fail to run normally due to the heat-exchange tubes corrupting and leakage.

3. Fouling testing about the influence of using “Defective” water whose qulity exeed the limits for long term shows that, the chiller will has a decreaing on capacity due to the heat-exchange tubes fouling.

4. The water should be drained out if the unit will stop for a long time, it is suggested that the heat exchanging pipe should be cleaned after each long-term stop.

5. User should be responsibility for the loss caused by the poor water quality.

4.6 Pipework Arrangement

The following are suggested pi4pework arrangements for single unit installations. For multiple unit installations, each unit should be piped as per relative drawings.

4.7 Connection Types &Sizes

Please refer to Section 10 for connection sizes of each model.

The piping connections of evaporator and condenser are HG20615 welded flanges.

4.8 Refrigerant Relief Valve Piping

The evaporator and condenser are each protected against internal refrigerant overpressure by refrigerant relief valves. It is recommended that each valve should be piped to the exterior of the building so that when the valve is activated the release of high pressure gas and liquid cannot be a danger or cause injury.

The size of any pipework attached to a relief valve must be of sufficient diameter so as not to cause resistance to the operation of the valve. Unless otherwise specified by local regulations, the internal diameter depends on the length of pipe required and is given by the following formula:

$D^5 = 1.447 \times L$

Where:
D =minimum pipe internal diameter in centimeters (cm)

L =length of pipe in meters (m)

If relief pipework is common to more than one valve, its cross sectional area must be at least the total required by each valve. Valve types should not be mixed on a common pipe. Precautions should be taken to ensure that the exit of relief valves/vent pipe remain clear of obstructions at all times.

4.9 Electrical Connection

YEWS product is suitable for 60Hz application, but the compressor can only be applied to 460V/60Hz, when the field power supply is 230V/60Hz, the transformer is necessary to make the chiller operation (the transformer will be shipped along with the chiller). And YEWS product control panel can only provide 220VAC power, please check if the equipment connected to the control panel is suitable for 220VAC voltage.

Please refer electrical drawingsfor 60Hz powerto find the details for field power connection.

The following connection recommendations are intended to ensure safe and satisfactory operation of the unit. Failure to follow these recommendations could cause harm to persons, or damage to the unit, and may invalidate the warranty.

No additional controls (relays, etc.) should be mounted in the control panel. Power and control wiring not connected to the York control panel should not be run through the control panel. If these precautions are not followed it could lead to a risk of electric shock. In addition, electrical noise could cause malfunctions or damage the unit and its controls.

Since some internal components are live when main power is switched on, the unit should not be switched on to the main power until it has been commissioned by York authorized personnel after connection.

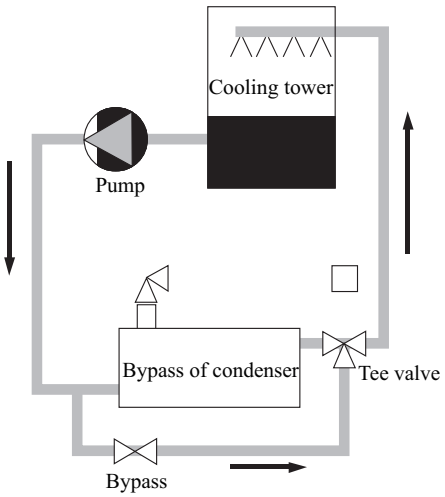
WARNING

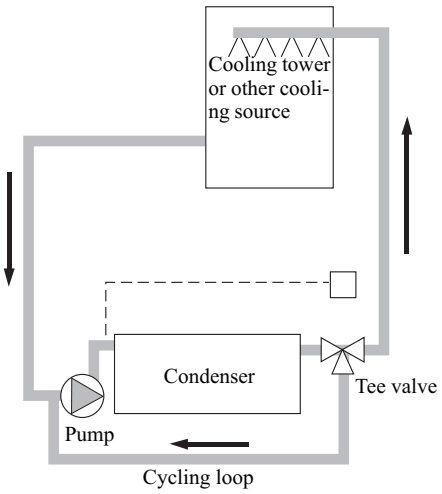
All customer wiring at the jobsite must be routed to avoid high temperature areas (compressor shells, discharge piping, ambient coils and other hot surfaces) and sharp edges on the unit, to prevent damage to the wiring and possible short circuits. If these precautions are not followed it could lead to a risk of electrocution or damage to the unit and its controls.

4.10 Condenser Cooling Water System

For YEWS-E units, condensers are usually piped in conjunction with a cooling tower.

With water cooled units it is necessary to control the condenser water flow and/or temperature into the condenser to maintain refrigerant pressure as constant as possible to ensure satisfactory operation of the unit.





Direct Pressure Control

With YEWS-E units it is possible, if desired, to control the condenser cooling liquid inlet temperature/flow directly from the unit refrigerant pressure. The refrigerant pressure can either be used to control cooling tower effectiveness by controlling fans or dampers on the tower, or to control condenser water flow using a three way bypass valve.The purpose of this method is to keep a low and steady discharge pressure .But with the units using R134

refrigerant, it is essential that the discharge pressure should be higher than suction pressure for more than 3Bar.In that case, units should be controlled by a certain setpoint higher than suction pressure or be controlled by the suction pressure and a pressure difference.However, the temperature and flow rate of cooling water should not exceeds the allowable range.

Inlet Temperature Control
For a cooling tower system the simplest forms of control is to use fan cycling, fan speed control, or air damper control, with the tower having a thermostat in its sump. This will ensure stable condenser cooling liquid temperature and should be adjusted to ensure a condenser cooling liquid entering temperature of not lower than 21℃to 24℃ at lower ambient conditions.

If these methods are not available, or a cooling tower is not the source of cooling water, then a three way valve recirculation system can be used with control based on condenser inlet liquid temperature as shown in the upward diagram. In this case the objective is to maintain the inlet cooling liquid temperature as low as possible, although still observing the minimum limit of 21℃to 24℃.

4.11 Variable Primary Flow
Johnson Controls recommends a maximum 10% per minute flow rate change, based on design flow, for variable primary applications. Provide 8-10 gallons per chiller ton (8.6-10.8 liter per cooling KW) system water volume. Insufficient system volume and rapid flow changes can cause control problems or chiller shutdowns. There are many other design issues to evaluate with variable primary flow systems. Consult the Johnson Controls Sales Office for more information about successfully applying YEWS chillers.

4.12 Power Wiring
The allowable variation range of power supply voltage equal to the rated voltage value ±10%.

All electrical wiring should be carried out in accordance with local regulations.

In accordance with China National Standard it is the responsibility of the user to install current overload protection for input power supplies of York units.

All sources of supply to the unit must be taken via a common point of isolation (not supplied by York).

Single Point Power Supply Wiring
Models require field provided 380V(400V/415V)/3P / 50Hz power supply to the unit with circuit protection. Connecting power supply to the terminal block located in the power panel on site.

4.13 Control panel Wiring
The power connect to the I/O switch input terminal is 12VDC while the power connect to the I/O switch output terminal is 220VAC.

The wiring with 220VAC power must use the dry-contact (It is suggested to use the golden contact).If the dry-contact is part of a relay or a contactor, a capacitance-resistance suppresser winding must be used to restrain the Electromagnetic Interference.Make sure that the above precautions are followed to avoid the Electromagnetic Interference, which may result in the fault or damages on the unit or the controller.

The length of cable connected to these terminals should not exceed 7.5 meters.

4.14 220VAC Output
Water pump starter
When the terminal 21 send out a 220VAC power, the water pump should be started.So the opening and stopping control of pump can be achieved by contactor and start/stop program.

Note: Power load should not exeed 5w.

Alarming contract
When the terminal 26 send out a 220VAC signal, the unit should be in the alarming status.

Note: Power load should not exeed 5w.

4.15 System input
Flow switch
A suitable water flow switch must be connected to terminals 1 and 13 to provide adequate protection against loss of liquid flow.

Note: Contact Resistance <5Ω.

Remote Run/Stop
Connect a remote switch between 8 and 13 to provide remote start/stop if required.

Note: Contact Resistance <5w.

5 CONTROL CENTER

5.1 Safety notice for the operation of the controller

(1) "Safety Notice" contains all important matters related with safety. Please strictly follow.

Signals used in this manual:

A WARNING is given in this document to identify a hazard, which could lead to personal injury.

A CAUTION identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution.

A NOTE is used to highlight additional information, which may be helpful to you but where there are no special safety implications.

(2) Installation

Please keep this technical manual well for reference at any time. Please also give this to other people operating this machine for reference.

Only the appointed accessory by YORK can be used, and please ask manufacturer or authorized dealer to provide the corresponding technical installation and technical service. Malfunction of controller or electric shock may be caused from improper installation of the controlling accessory. The user is prohibited to maintain the machine by itself, because electric shock or controller damage may be caused due to improper repair of the controller. Please consult the manufacturer for any repair demand.

(3) YORK-003 Control Board

YORK-003 control board must be installed on one stable panel without the accumulative rain or snow, leaf or other wastes in the host. The intensive circuit generally passes through the installation center; also AC220V passes the control panel. As for the installation location of outdoor control panel, the principle of power and signal wires connected separately should be followed to keep the distance between the control panel and contactor is above 100mm.

(4) XS08 HMI

XS08 HMI should be installed stably, otherwise, it may fall down to cause body injury or damage on controller.

It is required to adopt the specified cable for power supply. Please do not share the power with other electric appliance to avoid the danger due to overloading. It is required to use the fuse or breaker suited with the working pressure of controller. Please do not use the wire or fuse beyond the specified grade.

(5) Earthing

YORK-003 control board and shell of transformer must be connected with the ground wire. Please do not connect the ground wire with the fuel gas pipe, water pipe, or lightning protection conductor. Electric shock may be caused if it is improperly earthed. Please inspect regularly whether the connection between the earthing wire of controller and earth terminal and earthing electrode of unit is firm or not.

(6) Operation

Do not press the keypad with the sharper to avoid damaging the controller. Do not twist or drag the wire of the controller to avoid damaging the controller to further malfunction. Do not wipe the controller with the benzene, thinner or chemical cloth, otherwise, the component should be in malfunction. Do not use much strength on the screen or connection part to avoid the color variation.

5.2 Initialization Operations

After completing the installation and connection of YEWS-E HMI, it is required to perform the initialization operation before putting into running.

(1) Situations for Initialization

When the HMI and the control board are interconnected to form the control system for the first time, it is required to be initialized.

If the HMI in the interconnected running control system is damaged, it must be replaced with the new centralized controller, it is required to be initialized, and it is the same case for control main board.

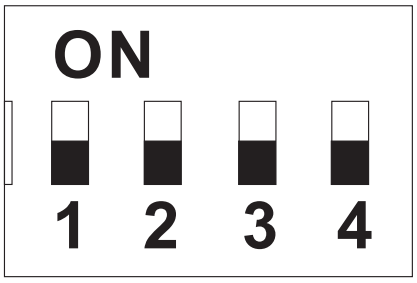
If the controller or main board in one control system

network needs to run upon exchanging with another control system network, it is required to be initialized.

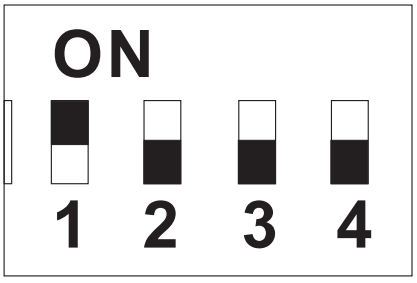
(2) Process for Initialization Operation

Power off the control system.

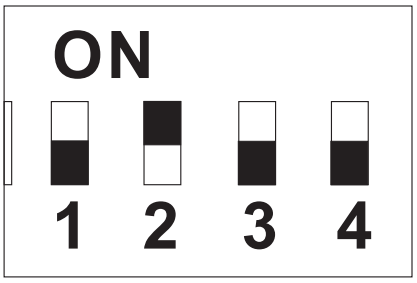
If firmware of YORK-003 is 1.06 and previous versions(Suitable for YEWS100/130/170/200/210), detailed setting methods are shown in following figure:



AC Units



ITS Units



HP Units

DIP switch can not be set by anyone except manufacture.

The measuring range of pressure sensor used in AC/ITS units: 0.41~5.1 Kg/cm2

The measuring range of pressure sensor used in HP units: 0~20.69 Kg/cm2.

If firmware of YORK-003 is 1.07 and last versions,DIP does not need to set in single system unit(Suitable for YEWS/100/130/170/200/210/215).

Control system power on.

Press F2 in the main interface of centralized controller to enter into the **parameter setting interface-1**, turn to the next upon inputting the password.

Turn to the **parameter setting interface**-16. Please select the correct **Model** before doing the next operation.

Turn to the **parameter setting interface-17**, and move the cursor on the line of **CLEAR RECORD** to set all parameters as **SYS1** or **SYS2** by pressing **8**, and press √ to confirm. Move the cursor on the line **CLEAR FAULT RECORD** to set all parameters as **YES** by pressing **8**, and press √ to confirm. Move the cursor on the line of **DEFAULT DATA** to set the parameters as **YES**, press confirmation key to confirm.

Turn to the **parameter setting interface**-16, and move the cursor to the line of **SYS1 FLA** and **SYS2 FLA** (only set SYS1 on the single system) to select the correct **FLA** value via number "0" to "9". After correct setting, move the cursor on the line **SYS1 CUR.OFFSET** and **SYS2 CUR. OFFSET** (only set SYS1 on the single system) of **parameter setting interface**-3 to set the correct value. The default is 100, which can be set before the unit leaves the factory. The user and service personnel shall not attempt to modify the parameter; otherwise the unit may fail to be run properly.

Control system power off.

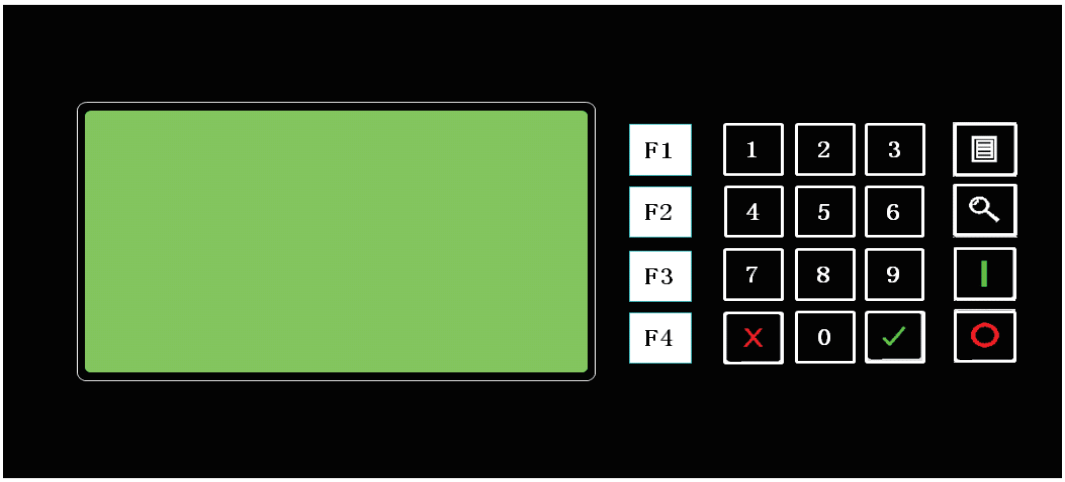
Power on again after powering off HMI and control board.

Return to the main interface by pressing **F1**, then press **F1** to enter into **Status display interface** to view the communication of HMI and control board. The communication status of centralized controller and control board will be displayed in **Status display interface**. If it is displayed in normal, please check the input status of AI and DI for each module via the display interface, then the startup can be done after confirmation.

Note: Only select the unit style "E" on unit Model setting, example YEWS100HA50E or YEWS100HA50E-HP.

5.3 Instructions on the operation

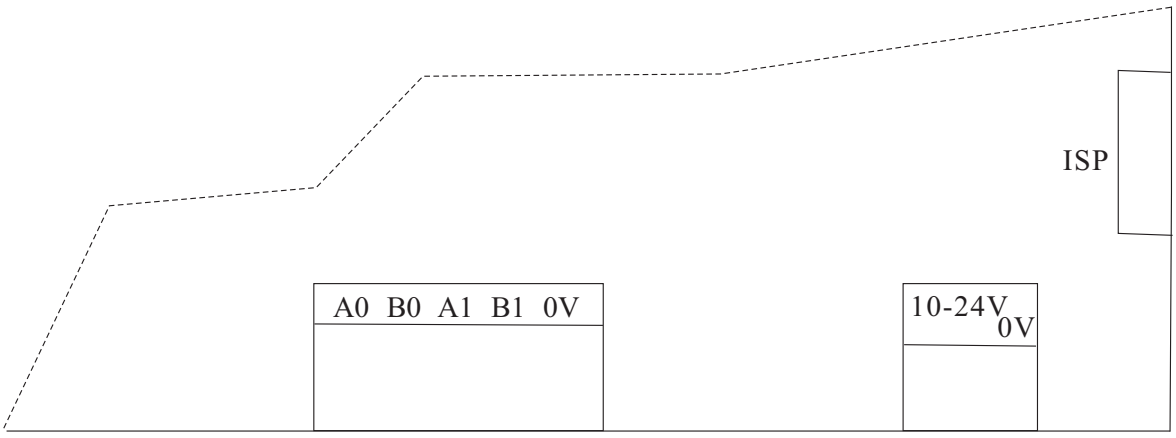
(1) Instruction of HMI Keypad



○	The unit will shut down when pressing this key.	|	The unit will start up when pressing this key.
▤	It will return to the main interface upon pressing this key in any interface.	🔍	The fault happened can be inquired upon pressing this key.
✓	Function 1: Confirm the modified parameter. Function 2: Select the next modifying parameter in the parameter set interface.	✗	Function 1: Press this key to cancel the input value for the parameter modified before pressing the confirmation key. Function 2: Select the last modified parameter in the parameter set interface.
F1	Function 1: Press this key in the main interface to check the unit status, AI, DI and DO status. Function 2: Return to the main interface.	F2	Enter into the system set interface upon pressing this key in the main interface; modify the corresponding parameters according to the different password access.
F3	Function 1: Enter into the clock set interface by pressing this key in the main interface. Function 2: Turn to the previous page by pressing this key in the information inquiry, parameter set and fault inquiry interfaces.	F4	Function 1: Enter into the fault inquiry interface upon pressing this key in the main interface. Function 2: Turn to next page by pressing this key in the information inquiry, parameter set and fault inquiry interfaces.
0 ~ 9		Function 1: Modifying the setting parameter. Function 2: “0” and “8” have the direction function when setting parameters, just as “△” and “▽”.	

(2) Instruction of HMI Interface

Symbol	Description	Note
CN5(KEY BUS)	Keyboard interface	
CN6(ISP)	Download interface of ISP program	
CN2	485 communication port	A0 B0 : Communication interface with control board. A1 B1 : Communication interface with upper computer V0 : Common ground end
CN3	Input power	Input the DC power of 10-24V, the end marked with 0V is low, while the other end is positive
RST_SW	Reset key	Press for 1 minute, then loosen, the centralized controller will be reset.



Wiring diagram of HMI

Instruction:

A0, B0: Communication interface of HMI and mainbord

A1, B1: Communication interface of HMI and upward computer

0-24V: Pwer connction of HMI, among which 0V means the ground.

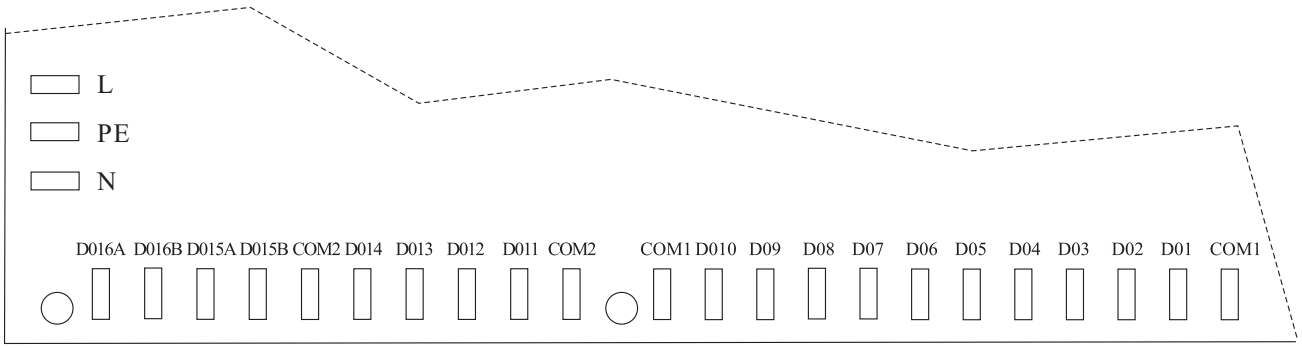
ISP: Interface for downloading mainbord programs

(3) Instruction of Control board Interface

Symbol	Description	Note
CON2(COMU)	485 communication port	Connect according to the marked A, B, positive and negative terminal of power
COM	Common port of DI switch input	The two COM ports are jointed together
DI1 - DI12	DI switch input	12 DI switch inputs in all
CON3	Blower speed adjusting interface.	PG motor speed adjustment
VCC	+5V power with analog quantity input	VCC of all 6 circuit is connected
0V	Ground end of analog quantity input	Ground end of AI13 to AI16,All connected together
AI13 - AI16	Analog input	4-20ma 1-5V or NTC signal input
+12V	+12V power output	
AI1 - AI12	Analog input	Ordinary NTC signal input
CN5，CN6	Expansion output	2*4 ways TTL level output
COM1	Output common port of relay	Common port of DO1 - DO10
COM2	Output common port of relay	Common port of DO11 -Do14
DO15A，DO15B	Thyristor output	
DO16A，DO16B	Thyristor output	
L，N	AC power input	220VAC/50Hz
PE	Safety ground end	
JP1	485 resistance control of communication load	Connect or break the load resistance, operate according to the above diagram
AI13 - AI16（Alignment needle）	Selection of divided resistance	Selection of AI13-AI16 analog quantity divided resistance, the operating method refers to the panel
TEST	Test	For downloading programs
SW1	Dial switch	Setting the main board address
POWER(LED)	Power indicating lamp	Red, the light will be on if the power of main board is in normal situation
COM(LED)	Communication indicating lamp	Green, communication success for one time, turning over
RUN(LED)	Running indicating lamp	Yellow, flash in 0.5Hz frequency

(4)Wiring diagram of control board

(a) Power and DO output interface diagram

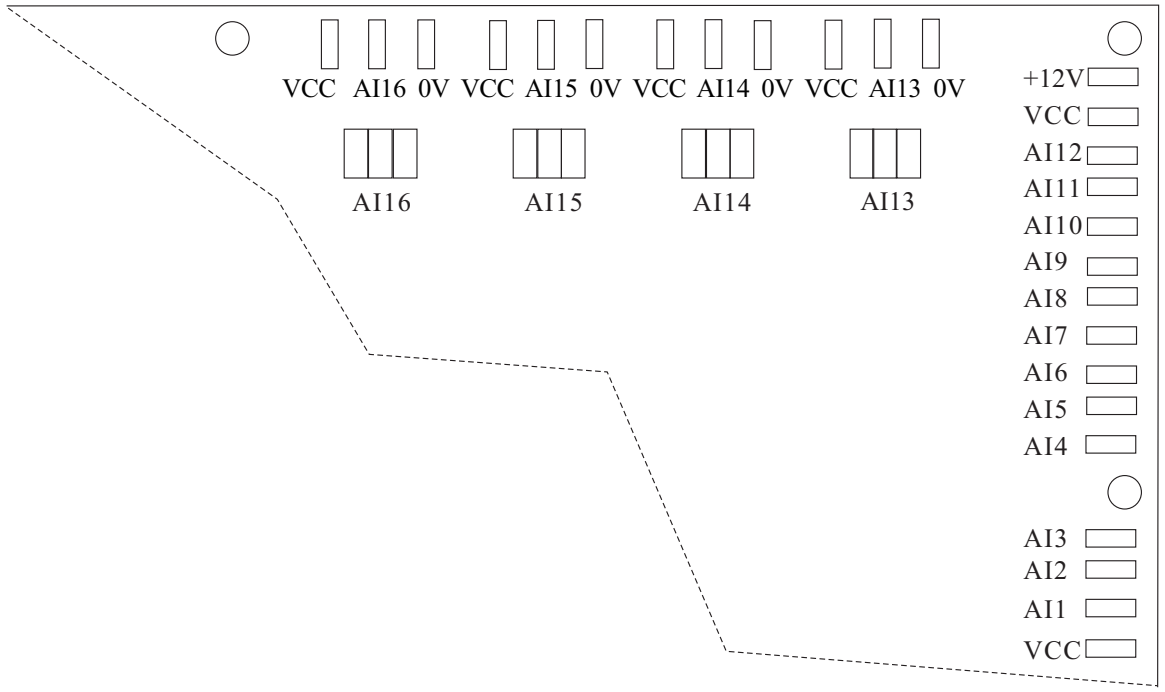


Instruction

DO1-DO10 : Relay output
DO11-DO14 : Relay output
DO15A,DO15B : Bi-directional Thyristor output
L : AC220V live wire
N : Zero line

COM1 : Common port of DO1-DO10 output
COM2 : Common port of DO11-DO14 output
DO16A,DO16B : Bi-directional Thyristor output
PE : Earthing

(b) Diagram of AI Analog signal input port

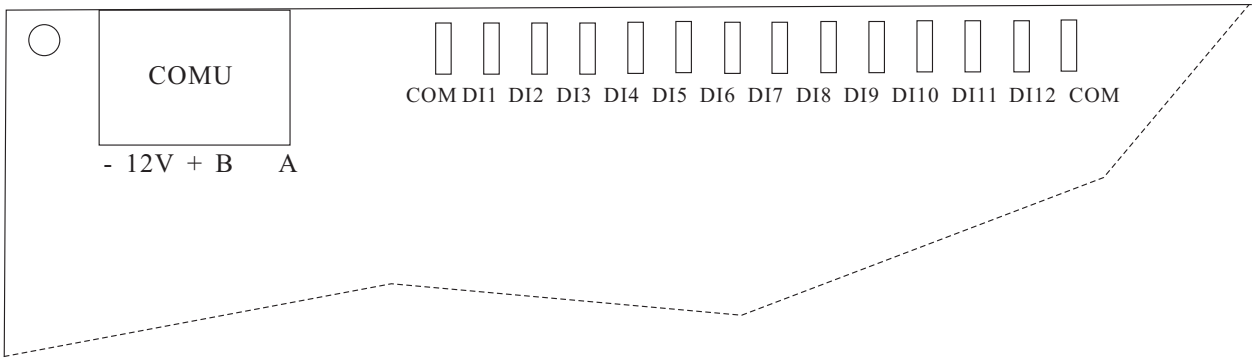


Instruction:

VCC : +5V power supply
0V : +5V power ground
+12V : +12V power supply
AI1-AI12 : Analog signal input, each port in grounded via 10K reisitance

AI13-AI16 : Analog signal input, reisitance of each port in grounded can be selected by jumper wire(maked on the control screen).
AI13-AI16(PIN) : Selection of divider resistance of analog quantity, the detail operation methods related to the diagram on the board.

(c) Connection port diagram of DI open/close quantity and analog signal input



Instruction:

COM : Common port of DI switch input
DI1-DI12 : DI switch input

A,B : Communication interface
12V : Power supply interface from control panel to outside power

(5) Analog, digital, input/ouput definition

(a) Definition of analog input/ouput

NO.	Analog input	Measuring scope and status description
AI1	Leaving condenser liquid Leaving heat liquid(heat pump)	-19~99℃, fault once exceeding the scope
AI2	Enter condenser liquid Enter heat liquid(heat pump)	-19~99℃, fault once exceeding the scope
AI3	Leaving evaporator liquid	-19~99℃, fault once exceeding the scope
AI4	Enter evaporator liquid	-19~99℃, fault once exceeding the scope
AI5	Discharge temperature	-29~149℃, fault once exceeding the scope
AI13	Evaporat pressure	0.41~5.1 kg/cm2 Air conditioning/ice storage 0~20.69kg/cm2 water source heat pump
AI14	Discharge pressure	0~28kg/cm2, fault once exceeding the scope
AI15	Oil pressure	0~28kg/cm2, fault once exceeding the scope
AI16	Compressor motor current	Fault of rated currency, disconnecting or short circuit

Instructions: Pressure units relation ships: 1 Kg/cm^2=98.07Kpa; All the pressure in this file means gauge pressure except it is explained specially.

(b) Definition of digital input

NO	Switch input	Status description
DI1	Flow switch	Normal in close, disconnecting means fault
DI2	AC/ITS switch	Open means air-conditioning/Close means ice storage
	AC/HP switch	Open means air-conditioning /Close means heat pump
DI3	Discharge pressure switch	Normal in close, disconnecting means fault
DI4	Oil level switch	Normal in close, disconnecting means fault
DI5	Motor protection	Normal in close, disconnecting means fault
DI6	Ext.interlock	Normal in close, disconnecting means fault
DI7	Start fault	Normal in close, disconnecting means fault
DI8	Remote	Open means shutdown, close means startup

Remark: When the manual control passage is set as remote in the centralized controller, the unit will startup and stop according to the status of DI8 (remote switch), and DI8 open means shutdown, while startup in close.

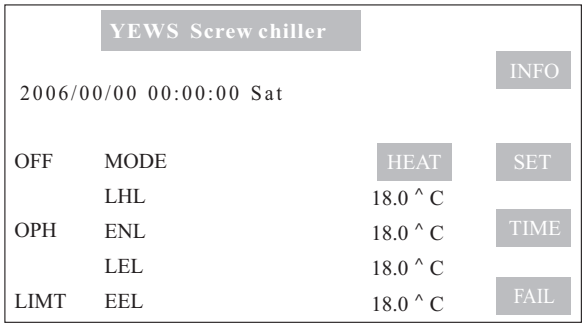
(c) Definition of digital output

No.	Output	Status description
DO1	Pump	Always opened, close in output
DO2	Motor Y contact	Always opened, close in output
DO3	Motor △ contact	Always opened, close in output
DO4	Oil heater	Always opened, close in output
DO5	Bypass valve1	Always closed, open in output
DO6	Alarm	Always opened, close in output
DO7	Valve liquid injection	Always closed, open in output
DO8	Bypass vaive2	Always closed, open in output
DO9	Run status	Always closed, open in output
DO15	Cr4	Always closed, open in output
DO16	Cr3	Always opened, close in output

5.4 Instructions of Display Interface

5.4.1 Initialization Interface

5.4.2 Home Interface



On the home interface:

Pressing the **F1** to **F4** key will enter into 4 sub-interfaces **of "INFO" "SET" "TIME" and "FAIL"** separately.

The first line of the main interface will display the current date and time.

LCL/LHL: In AC and ITS mode, it's the leaving condenser cooling liquid temperature. In heap-pump mode, it's the leaving condenser hot water temperature is displayed, which should be regarded as the control reference in HP mode..

ECL/EHL: In AC and ITS mode, it's the enter condenser cooling liquid temperature. In heap-pump mode, it's the enter condenser hot water temperature is displayed.

LEL: Leaving evaporator liquid temperature, which should be regarded as the control reference in AC&ITS mode.

EEL:Entering evaporator liquid temperature.

MODE: Current operation mode of the unit

ON/OFF: Display the startup and stop status, which should be displayed as ON when unit is running, and be displayed as OFF while unit is standby.

OPH&LIMT: Flash display the unit status, no display if there is no relevant operation status.

FAIL: Flash diaplay if there is fault, no display if without fault.

The start and stop operation can only be done on the home interface.

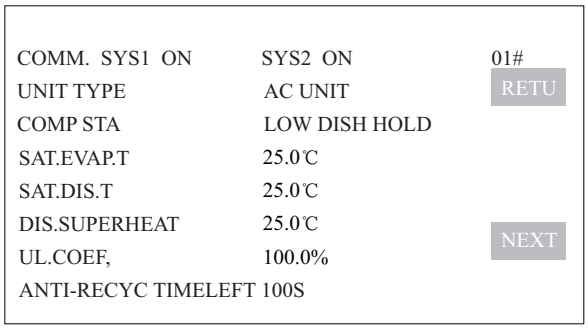
5.4.3 Status Display

In the home interface, enter into the display interface upon pressing **F1 key**, while in the display interface, the operation instructions for the keys are as follows:

(1) Status display interface-1

Press F1 to return to the main interface.

Press F4 to enter into the next display interface.



COMM.STATUS: If the communication between the centralized controller and 1# main board is normal, **SYS1 ON** will be displayed, otherwise, **SYS1 OFF** will be displayed. If the communication between the centralized controller and 2# main board is normal, **SYS2 ON** will be displayed,otherwise, **SYS2 OFF** will be displayed.In single compressor unit,**SYS2 OFF** always be displayed.**In single compressor unit,SYS1 ON only be used**.

UNIT TYPE: AC/ITS/HP

COMP STA: Compressor status,the displayed information is as follows:
COMP OFF- The compressor is off.

STOPPING- The compressor is stopping

STARTING- The compressor is starting

HIGH DP UNLOAD- Discharge pressure is too high and the compressor executes to unload

LOW EVAP UNLOAD- Evaporating pressure is too low and the compressor executes to unload.

HIGH CUR UNLOAD- Current of compressor motor is too high and the compressor executes to unload.

LOW DISH UNLOAD- Discharge Superheat is too low and the compressor executes to unload

LOW DISH HOLD- Discharge Superheat is too low and the compressor executes to hold.

HIGH CUR HOLD - Current of compressor motor is too high and compressor executes to hold.

HIGH DP HOLD- Discharge pressure is too high and the compressor executes to hold.

HIGH DP UNLOAD- Discharge pressure is too high and the compressor executes to unload.

MANUAL LOAD- Make the compressor executes to load by manual control

MANUAL UNLOAD- Make the compressor executes to unload by manual control

CAP HOLD- The compressor is holding

CAP LOAD- The compressor is loading

CAP UNLOAD- The compressor is unloading

HIGH DIST LOAD- Discharge temperature is too high and the compressor executes to load.
MINIMUM LOAD- Current of compressor motor is below minimum load setting, compressor executes to load.

SAT.EVAP.T: Saturation temperature of the refrigerant in Evaporator.

SAT.DIS.T: Saturation temperature of the discharge refrigerant.

DIS,SUPERHEAT: Discharge superheat equals to the diacharge temperature minus the saturation temperature of the discharge refrigerant.

ULCOEF: The value of compressor running current to the unit FLA.

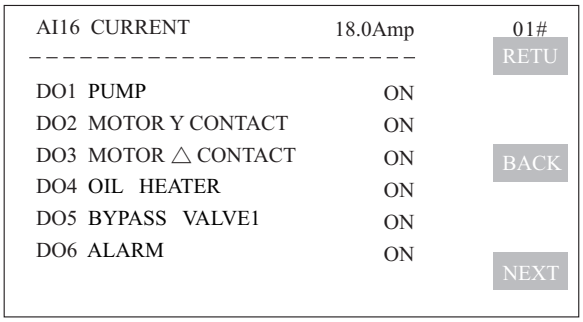
Note: In top right corner, the digital box can be entered with setting values. This setting is for switching display information of different system. Enter 01 for displaying information of system1 and 02 for displaying information of system2, and the same case for others. System 2 is only used in the system with dual compressor (YEWS250).

(2) Status display interface-2
Press F1 to return to the main interface.
Press F3 to return to the previous display interface.
Press F4 to enter into the next display interface.

AI1	LHL	18.0℃	01#
AI2	EHL	18.0℃	RETU
AI3	LEL	18.0℃	
AI4	EEL	18.0℃	
AI5	DIS.T	18.0℃	BACK
AI13	EVAP.P	180KPa	
AI14	DIS.P	180KPa	
AI15	OIL P	180KPa	NEXT

This interface displays the sampling value of AI analog channel of the main board.

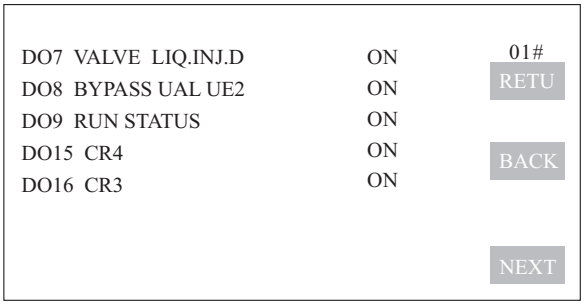
(3)Status Display Interface-3
Press F1 to return to the main interface.
Press F3 to return to the previous display interface.
Press F4 to enter into the next display interface.



This interface displays the input status of DO relay of the main board.

ON indicate the digital output is closed.

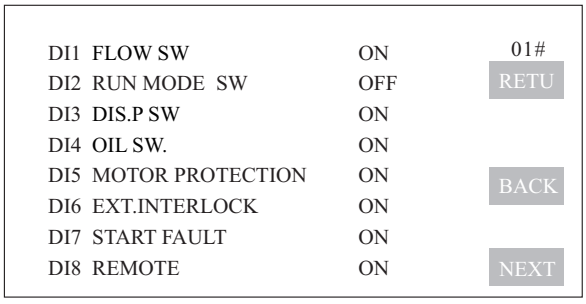
(4)Status Display Interface-4
Press F1 to return to the main interface.
Press F3 to return to the previous display interface.
Press F4 to enter into the next display interface.



This interface displays the output status of DO relay of the main board.

ON indicate the digital output is closed.

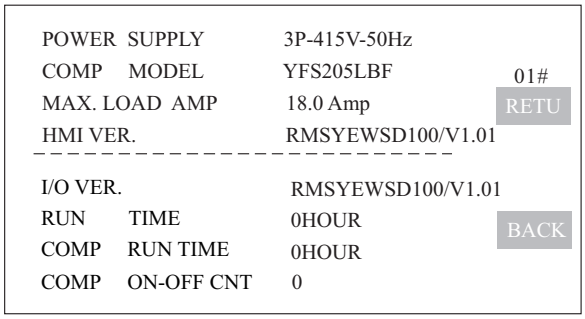
(5)Status Display Interface-5
Press F1 to return to the main interface.
Press F3 to return to the previous display interface.
Press F4 to enter into the next display interface.



This interface displays the input status of DI switch of the main board.

ON indicate the digital output is closed.

(6)Status Display Interface-6
Press F1 to return to the main interface.
Press F3 to return to the previous display interface.



POWER SUPPLY：Power supply of unit.

COMP MODEL：Model of compressor in this unit.

MAX.LOAD AMP：Maximal load amp of motor.

HMI VER.：Firmware version of XS08.

I/O VER.：Firmware version of YORK003.

RUN TIME：Accumulated running time of the pump

COMP RUN TIME：Accumulated running time of the compressor

COMP ON-OFF CNT：Startup times of the compressor

Note: In top right corner, the digital box can be entered with setting values. This setting is for switching display information of different system. Enter 01 for displaying information of system1 and 02 for displaying information of system2, and the same case for others. System 2 is only used in the system with dual compressor(YEWS250).

5.4.4 Parameter setting

In the main interface, press F2 to enter into the parameter setting interface, the operation instructions for the keys are as follows:

Press 0~ 9 to input the values for the digital type parameters.

For non-digital type parameters, press 0 or 8 to select (same as “▽” and “△”) Press √ to confirm, and press X to cancel.

Press √ to confirm the input parameter, or select the previous parameter input interface.

Press X to cancel the input parameters and input new parameters again, or select the previous parameter input interface.

Press F1 , different functions with the different interface

Press F2 , different functions with the different interface

Press F3 , different functions with the different interface

Press F4 , different functions with the different interface

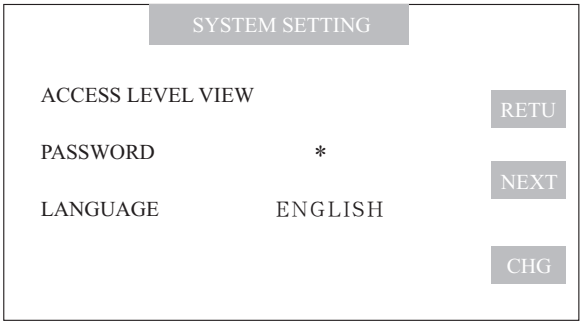
The input parameters will be invalid if they are exceeds the setting ranges.

(1)Parameter Setting Interface-1-a

Press F2 in the main interface to enter into this interface

If the password is not input in this interface, press F2 to enter into the parameter setting interface, but it can be only viewed, not set.

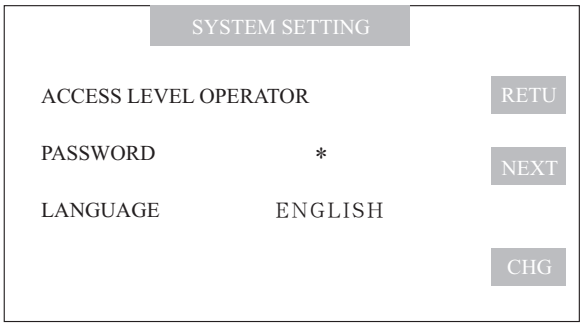
Press F1 to enter into the main interface
Press F4 to enter into the password modifying interface



Parameter Setting Interface-1-b
Input the operator password **9675** in the **parameter setting interface-1-a**, and press the key to confirm.

The appeared interface is as the **parameter setting interface-1-b**, then press F2 to enter into the setting interface. The parameter setting is limited to the operator access level.

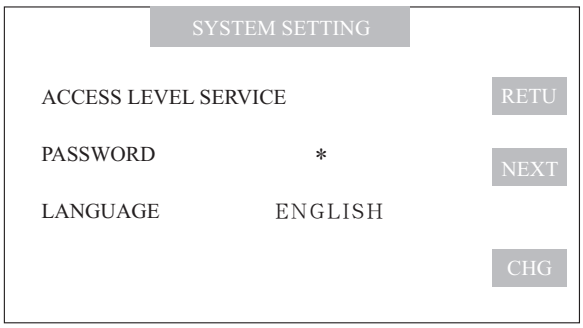
Press F1 to return to the main interface.
Press F4 to enter into the password modifying interface.



Parameter Setting Interface-1-c
Input the service password **** in the **parameter setting interface-1-b**, and then press the key to confirm.

The appeared interface is as the **parameter setting interface-1-c**, then press F1 to enter into the setting interface. The parameter setting is limited to the maintenance people.

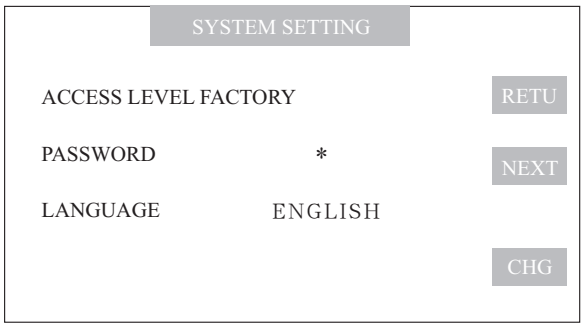
Press F1 to return to the main interface.
Press F4 to enter into the password modifying interface



Parameter Setting Interface-1-d
Input the factory password **** in the **parameter setting interface-1-c**, and then press √ key to confirm.

The following interface is the **parameter setting interface-1-d**, press F1 to enter into the setting interface, then the handlers will have the higher access level to set all the parameters.

Press F1 to return to the main interface.
Press F4 to enter into the password changing interface

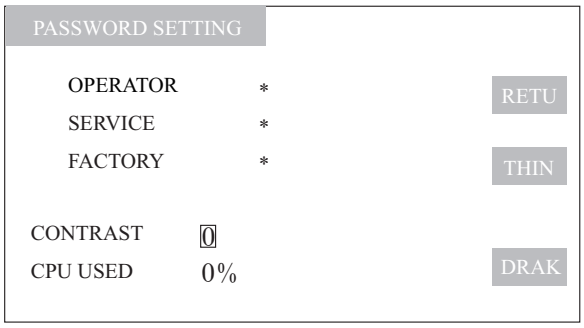


Parameter Setting Interface-1-e
The changing of each access level password can be done in the parameter setting interface-1-e.

The contrast of screen will become weak when pressing F3.

The contrast of screen will become dark when pressing F4.

The CPU running efficiency is also displayed in this interface, which will be used by the Designing And Deploitation person. Press F1 to return to the main



Password validation interface, there are two status display areas, **ACCESS LEVEL** and **PASSWORD**, **ACCESS LEVEL** displays the setting access level of the current parameter, the different parameters can be set by input the corresponding access password. There is four access level: **"VIEW" "OPERATOR" "SERVICE"** and **"FACTORY"**. Input the password in the PASSWORD area by pressing the via the figure key, however, all the password in the **PASSWORD** area is displayed as *. The numbers of Parameters which can be set is decided by the acess level of input password. The parameters setting interface can also be entered into by pressing F1 without inputting the password, then the default level is VIEW.

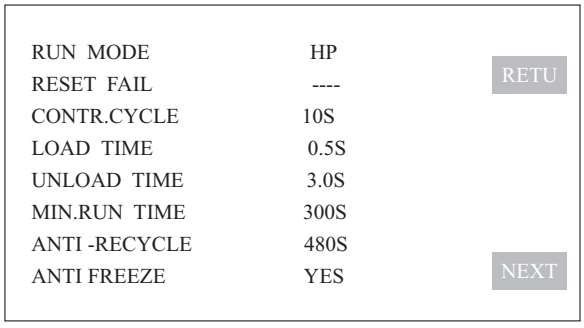
Press √ after inputting the password, the corresponding access level can be displayed, then the parameter set interface can be entered into upon pressing F2. If the password is inputting correctly, the parameters setting of the corresponding access level can be done, otherwise all the parameters can only be observed.

Move the cursor on the line of language set via pressing √ and X, 中文or ENGLISH can be selected by pressing 0 or 8 keys,press √ to confirm, or press X to cancel. If 中文 is selected, all the language on the display interface will be Chinese, otherwise in English.

CONTRAST:This parameter is used to adjust the contrast of the LCD, the brightness of displayed information will change obviously after the CONTRAST adjusting. This parameter is set in factory before Shipment, the user and service person should not attempt to change this parameter in case damages the LCD.

CPU USED: Just a displayed value, none of business with user.

(2) Parameter Set Interface-2
Press F1 to return to the main interface
Press F4 to enter into the next setting interface



Setting scope and default value of the parameters:

RUN MODE: AC/ITS/HP/REMOTE	Default: AC
RESET FAIL: ----/SYS1/SYS2	Default: ----
CONTR.CYCLE: 5 ~ 60 s	Default: 10s
MIN.RUN TIME: 120 ~ 600s	Default: 300s
ANTI-RECYCLE: 120 ~ 600s	Default: 480s
LOAD TIME: 0.5 ~ 20.0s	Default: 2.0s
UNLOAD TIME: 0.5 ~ 20.0s	Default: 4.5s
ANTIFREEZE： YES/NO	Default: YES

Parameters setting instructions:

RUN MODE： The working mode can be selected via 0 and 8 keys, press X to cancel and √ to confirm.

RESET FAIL： Select via 0 and8, press X to cancel, and √ to confirm. If you choose SYS1 and confirmed, it will reset system1 failure. If you choose SYS2 and confirmed, it will reset system2 failure.

CONTR.CYCLE: The time period for unit capacity regulation, default is 10s

MIN.RUN TIME: The minimum operation time once the compressor is started, default is 300s.

ANTI-RECYCLE: The minimum stand-by time of the unit after the compressor is stopped. This function is provided to protect the compressor motor from burn out due to frequent starting, the default setting is 480s.

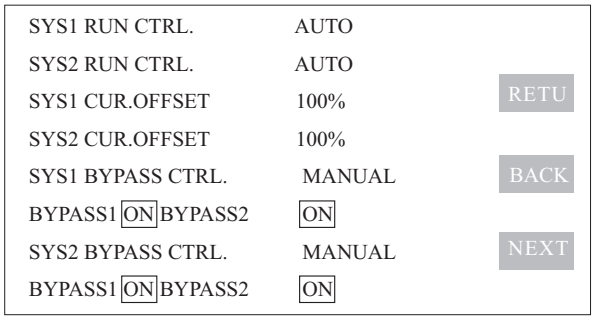
LOAD TIME: Time of CR4 solenoid of compressor is energized.

UNLOAD TIME: Time of CR3 solenoid of compressor is de-energized.

ANTIFREEZE: Select whether activate anti-freeze operation protection in standby state via this unit setting parameter. If **YES**, the unit has anti-freeze protection function in standby state, otherwise, no such function.

(3) Parameter Setting Interface-3

Press F1 to return to the parameter setting interface-1
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



Setting scope and default of the parameter:

SYS1 RUN CTRL.	AUTO/LOAD/UNLOAD	Default：AUTO
SYS2 RUN CTRL.	AUTO/LOAD/UNLOAD	Default：AUTO
SYS1 CUR.OFFSET	50~150%	Default：100%
SYS2 CUR.OFFSET	50~150%	Default：100%
SYS1 BYPASS CTRL.	AUTO/MANUAL	Default：AUTO
SYS2 BYPASS CTRL.	AUTO/MANUAL	Default：AUTO

Parameter setting instruction:

SYS1 RUN CTRL.: For system1,Select via 0 and8, press Xto cancel, or √ to confirm. If select **AUTO**, the unit will automatically carry out load/unload control according to water temperature conditions; if select **LOAD**, the unit will carry out compulsive load (CR3 and CR4 solenoid of compressor is energized); if select **UNLOAD** (CR3 and CR4 solenoid of compressor is de-energized), the unit will carry out compulsive unload.

SYS2 RUN CTRL.: For system2,With the same **SYS1 RUN CTRL**..

SYS1 CUR.OFFSET: Minor error between current value displayed on centralized controller and actual measured current value may be adjusted with this parameter, i.e. active displayed current value multiplies adjustment coefficient to make the final displayed cur-rent value be equal or close to actual measured current value. Setting method is as follows: if current of compressor displayed on centralized controller is 100A and actual measured current is 105A, **SYS1 CUR.OFFSET** may be set as 105, after that, current of compressor displayed on centralized controller will also be 105A which is equal to actual measured value.

SYS2 CUR.OFFSET: With the same **SYS1 CUR.OFFSET**.

SYS1 BYPASS CTRL. ： If **SYS1 BYPASS CTRL**. is set as **AUT**O, which should be controlled according to the specific logic; while if **SYS1 BYPASS CTRL**. is set as **MANUAL**, it should be operated in accordance with the **BYPASS1** or **BYPASS1**.

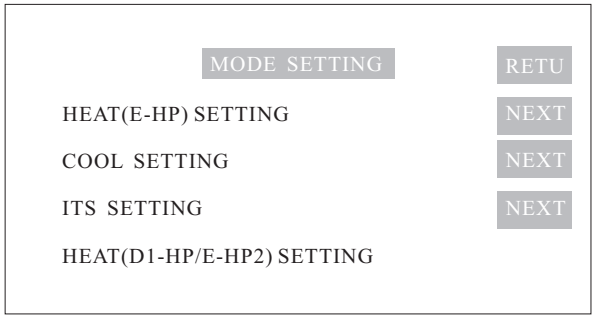
(BYPASS just suit for the style before D1)

SYS2 BYPASS CTRL. ： For system2,With the same SYS1 BYPASS CTRL.

Single-system units, Settings of related to the system2 don’ t use.

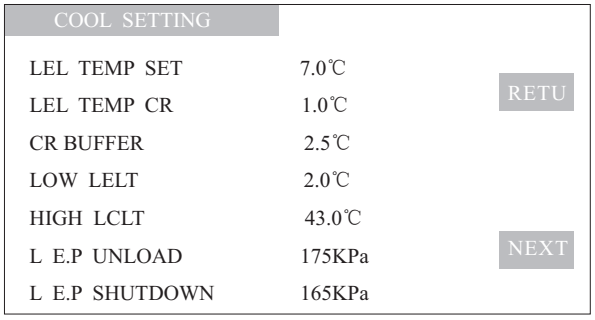
(4)Parameter Setting Interface-4

Press F1 to return to the parameter setting interface-1.
Press F2 to enter into the parameter setting interface of AC mo de.
Press F3 to enter into the parameter setting interface of ITS mode.
Press F4 to enter into the parameter setting interface of HP mode.



(5)Parameter Setting Interface-5

Press F1 to return to the parameter setting interface-3.
Press F4 to enter into the next parameter setting interface.



Setting scope and default value of the parameter

LEL TEMP SET:	4.0℃~15.0℃	Default: 7.0℃
LEL TEMP CR:	0.5℃~2.0℃	Default: 1.0℃
HIGH LCLT :	30.0℃~60.0℃	Default: 43.0℃
L E.P UNLOAD:	150~300kPa	Default: 175kPa
L E.P SHUTDOWN:	150~300kPa	Default: 165kPa
CR BUFFER：	1.0 － 2.5℃	Default: 2.5℃
LOW LELT：	1.0 － 7.0℃	Default: 2.0℃

Parameter setting instructions:

LEL TEMP SET: Set the desired leaving evaporator fluid temperature, the default is 7.0℃

LEL TEMP CR: Used to decide the desired fluid temperature control range, the default is 1.0℃

LOW LELT: If the leaving evaporator liquid temperature≤ LOW LELT setpoint, fault alarm will be displayed and the compressor will be shut off, but the water pump is still on runing. The Cycling Startup Logic will be actived when the leaving chilled liquid temperature≥ (LOW LCLT setpoint +10.0℃).

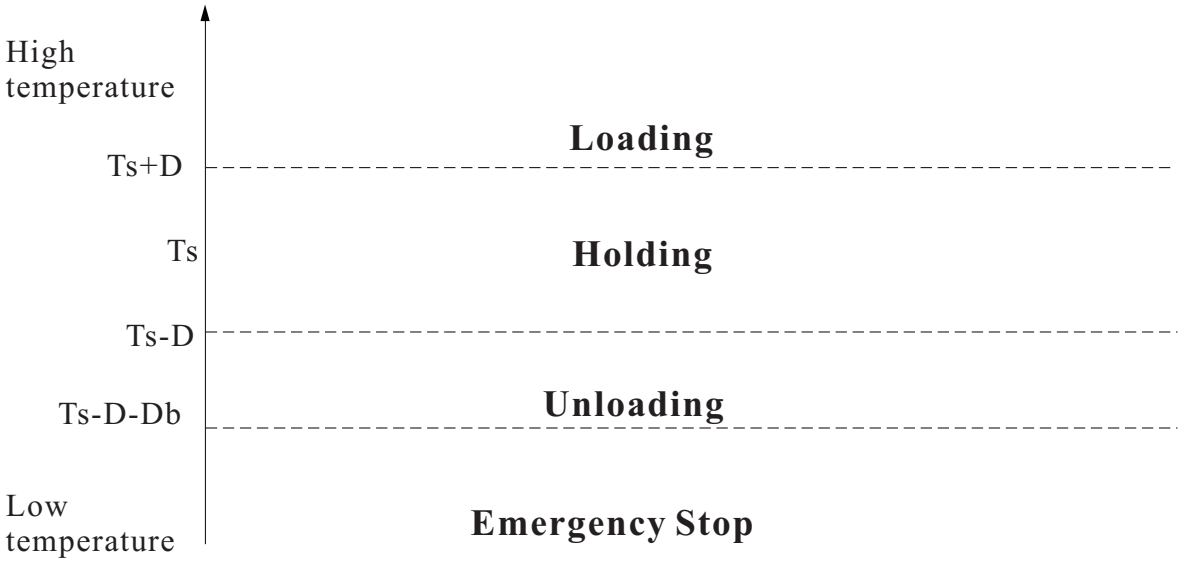
HIGH LCLT ： If the leaving condenser liquid temperature ≥ HIGH LCLT setpoint, fault alarm will be displayed and the compressor will be shut off, but the water pump is still on runing. The Cycling Startup Logic will be actived when the leaving cooling liquid temperature≤ (HIGH LCLT temperature setpoint - 10.0℃).

L E.P UNLOAD: If the evaporator pressure≤ L E.P UNLOAD setpoint, the compressor will unload compulsively,the unit will come back to normal capacity control when the evaporator pressure≥(L E.P UNLOAD setpoint+25Kpa). Default L E.P UNLOAD setpoint is 175kPa.

L E.P SHUTDOWN: If the evaporator pressure≤ L E.P SHUTDOWN setpoint, the unit will stop immediately. Default L E.P SHUTDOWN setponit is 165 kPa.

The control method of units in ITS/HP mode is the same as those in AC mode, but the setpoints are different with different working mode.

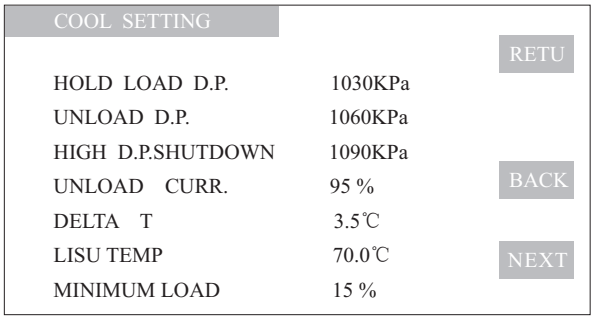
Instructions for capacity control (AC mode for example)



- **Ts： Leaving chilled water temperature setpoint (LEL TEMP SET)**
- **D： Differential of Leaving chilled water temperature (LEL TEMP CR)**
- **Db：Differential buffering value**
- **When leaving chilled water temperature ≥(Ts + D), the compressor will load. when leaving chilled water temperature ≥(Ts - D) and≤(Ts + D) , the comrepssor will operate fuzzy control logic. when leaving chilled water temperature ≥(Ts － D- Db) and≤(Ts - D) , the comrepssor will unload. When leaving chilled water temperature ≤(Ts － D- Db) , the compressor will be cycling shut down.**
- **By setting the value of Ts, D and Db, the temperature range of different running mode(Hold/Unload/Load/Stop) of compressor can be adjusted.**

(6) Parameter Setting Interface-6

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



Setting scope and default value of the parameter:

HOLD LOAD D.P:	100～1300KPa	Defoult:1030KPa
UNLOAD D.P:	100～1300KPa	Defoult:1060KPa
HIGH D.P.SHUTDOWN:	100～1350KPa	Defoult:1090KPa
UNLOAD CURR:	10～98 %	Defoult:95%
DELTA T:	2.0～6.0℃	Defoult:3.5℃
LISV TEMP:	50.0～80.0℃	Default: 70.0 ℃
MINIMUM LOAD:	15~75%	Default: 15%

If you select the different MODE,the setting of D.P is different.
If you want to know the exact parametere,please see 5.5

Parameter setting instructions:

HOLD LOAD D.P: If the discharge pressure ≥ HOLD LOAD D.P setpoint, the compressor will stop loading . (Default value is 1030 kPa under AC/ITS mode, and 1581kPa under HP mode); If the discharge pressure ≤ (HOLD LOAD D.P-50 kPa), the unit will turn back to normal capacity control logic.

UNLOAD D.P.: If the discharge pressure ≥ UNLOAD D.P setpont (Default value is 1060 kPa under AC/ITS mode, and 1700kPa under HP mode), the compressor will unload rapidly.If the discharge pressure ≤ (UNLOAD D.P.-100 kPa) , the unit will turn back to normal capacity control logic.

HIGH D.P.SHUTDOWN: If the discharge pressure ≥ HIGH D.P.SHUTDOWN setpont (Default value is 1090 kPa under AC/ITS mode, and 1790kPa under HP mode), the compressor will stop running .

Hold		Compressor current ≥ (OCC-5%) *MLA
Unload	Medium speed	Compressor current ≥ (OCC-4%) *MLA
	Compulsory	Compressor current ≥ (OCC-3%) *MLA
shut down		Compressor current ≥MLA，delay 5s

UNLOAD CURR:
OCC- Percentage of the compressor running amps to MLA(maximum load amps)

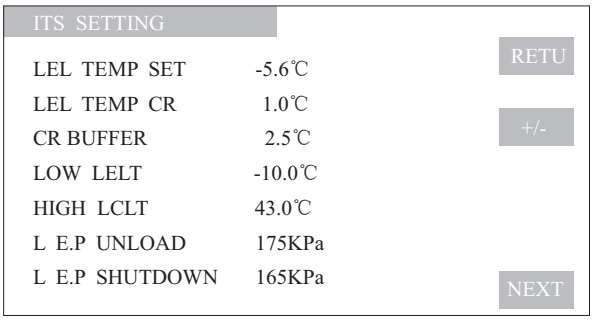
MLA-Maximum Load Amps, corresponding with the maximum compressor input power.

DELTA T: The difference between leaving evaporator fluid temperature and evaporator refrigerant temperature. Relate to liquid line bypass valve controlling; refer to the instructions of control system.

The control method of units in ITS/HP mode is the same as those in AC mode, but the setpoints are different with different working mode.

(7) Parameter Setting Interface-7

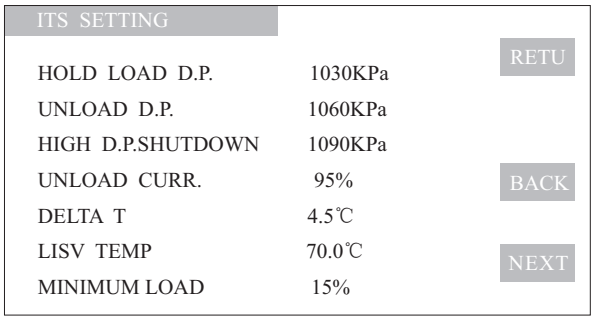
Press F1 to return to the parameter setting interface-3
Press F2 to modify the signs of parameter set
Press F4 to enter into the next parameter set interface



LEL TEMP SET:	-8.0℃～+5.0℃	Default: -5.6℃
LEL TEMP CR:	0.5℃～2.0℃	Default: 1.0℃
CR BUFFER:	1.0 － 2.5℃	Default: 2.5℃
LOW LELT:	-15.0℃～+5.0℃	Default: -10.0℃
HIGH LCLT:	30.0℃～60.0℃	Default: 43.0℃
L E.P UNLOAD:	80～300kPa	Default: 175kPa .
L E.P SHUTDOWN:	80～300kPa	Default: 165kPa

(8) Parameter Setting Interface-8

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface

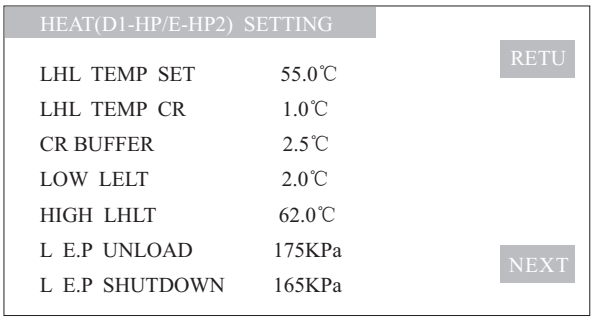


Setting scope and default value of the parameter:

HOLD LOAD D.P:	100 ～ 1300kPa	Default: 1030kPa
UNLOAD D.P:	100 ～1300kPa	Default: 1060kPa
HIGH D.P.SHUTDOWN :	100～ 1350kPa	Default: 1090kPa
UNLOAD CURR:	10 ～98 %	Default: 95 %
DELTA T:	2.0 ～6.0℃	Default: 4.5 ℃
LISV TEMP:	50.0 ～80.0℃	Default: 70.0 ℃
MINIMUM LOAD:	15~75%	Default: 35%

(9) Parameter Setting Interface-9

Press F1 to return to the parameter setting interface-3
Press F4 to enter into the next parameter set interface

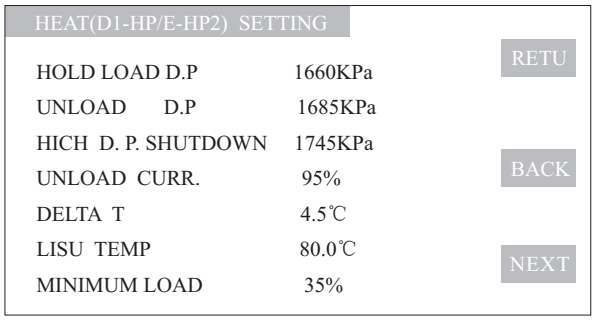


Setting scope and default value of the parameter:

LHL TEMP SET:	30.0～60.0℃	Default: 55.0℃
LHL TEMP CR:	0.5～2.0℃	Default: 1.0 ℃
LOW LELT:	1.0～7.0℃	Default: 2.0℃
HIGH LCLT:	30.0～62.0℃	Default: 62.0℃
L E.P UNLOAD:	150～300kPa	Default: 175kPa
L E.P SHUTDOWN:	150～300kPa	Default: 165kPa
CR BUFFER:	1.0 － 2.5℃	Default: 2.5℃

(10) Parameter Setting Interface-10

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface

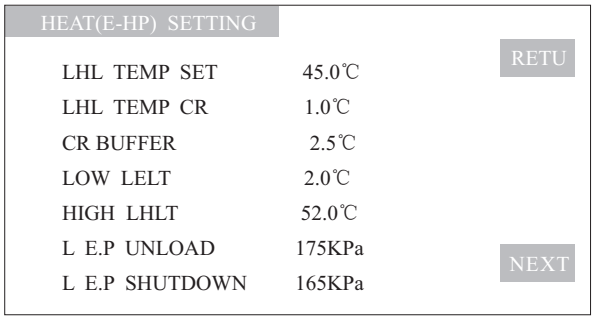


Setting scope and default value of the parameter:

HOLD LOAD D.P. :	1000～1600kPa	Default: 1581kPa
UNLOAD D.P.:	1000～1700kPa	Default: 1700kPa
HIGH D.P.SHUTDOWN:	1000～1800kPa	Default: 1790kPa
UNLOAD CURR. :	10～98 %	Default: 95%
DELTA T:	2.0～ 6.0℃	Default: 4.5℃
LISV TEMP:	50.0～80.0℃	Default: 80.0 ℃
MINIMUM LOAD:	15~75%	Default: 35%

(11) Parameter Setting Interface-11

Press F1 to return to the parameter setting interface-3
Press F4 to enter into the next parameter set interface

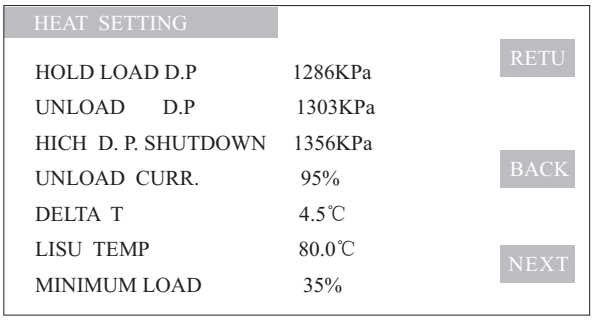


Setting scope and default value of the parameter:

LHL TEMP SET:	30.0～50.0℃	Default: 45.0℃
LHL TEMP CR:	0.5～2.0℃	Default: 1.0 ℃
LOW LELT:	1.0～7.0℃	Default: 2.0℃
HIGH LCLT:	30.0～52.0℃	Default: 52.0℃
L E.P UNLOAD:	150～300kPa	Default: 175kPa
L E.P SHUTDOWN:	150～300kPa	Default: 165kPa
CR BUFFER:	1.0 － 2.5℃	Default: 2.5℃

(12)Parameter Setting Interface-12

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface

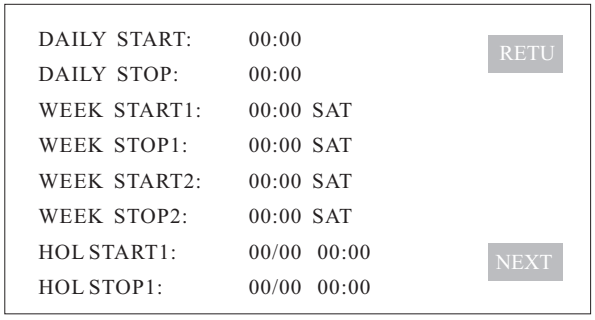


Setting scope and default value of the parameter:

HOLD LOAD D.P. :	1000～1400kPa	Default: 1286kPa
UNLOAD D.P.:	1000～1400kPa	Default: 1303kPa
HIGH D.P.SHUTDOWN:	1000～1400kPa	Default: 1356kPa
UNLOAD CURR. :	10～98 %	Default: 95%
DELTA T:	2.0～ 6.0℃	Default: 4.5℃
LISV TEMP:	50.0～80.0℃	Default: 80.0 ℃
MINIMUM LOAD:	15~75%	Default: 35%

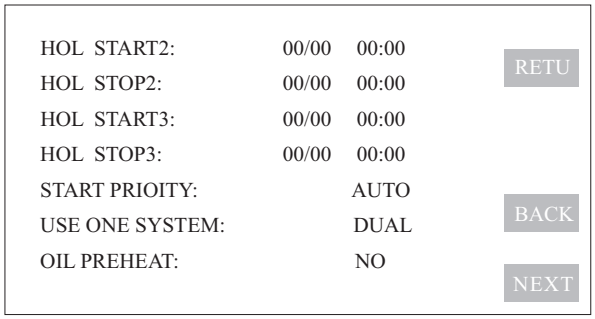
(13) Parameter Setting Interface-13

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



(14) Parameter Setting Interface-14

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



The starting and stoping time on daily, weekends and holidays can be set on this interface.

At most 3 holidays can be set;

The incorrect input of date is not effective, for example, 00 means that the holiday is invalid.

If the START/STOP MODE is set as AUTO, the unit can automatically perform the startup and stop actions according to the set DAILY START/DAILY STOP, HOL START/HOL STOP/START or WEEK START/WEEK STOP.

If the START/STOP MODE is set as MANUAL, the automatic switch is invalid; it is required to perform the startup and stop action by the operations on HMI (Human-machine Interface) manually.

The Priority level of the automatic start/stop action is: holidays >weekend >ordinary days. The startup and stop time at ordinary days, weekends and holidays can be set in the setting interface.

Setting scope and default of the parameter

OIL PREHEAT YES/NO Default: YES

The following words are used for YEWS250 only.

START PRIORITY AUTO/SYS1/SYS2 Default: AUTO
USE ONE SYSTEM DUAL/SYS1/SYS2 Default: DUAL

Parameter setting instruction

START PRIORITY: Dual-system units, you can manual setting the priority to start the system, the case of default in accordance with the automatic selection of the

priority system to start, if the start priority is set to System1, the system1 is always a priority in the system2 to start . Only in the **USE ONE SYSTEM** set up for **DUAL**, this setting be useful.

USE ONE SYSTEM: Dual-system units, in some cases wish to start a system, another system is not running. The default case, the two systems can be running. If the **USE ONE SYSTEM** is set to **SYS1**, then only system 1 is running, the system2 does not run; if the **USE ONE SYSTEM** is set to **SYS2**, then only the System2 is running, the system1 does not run; if the

USE ONE SYSTEM is set to **DUAL**, the system1 and system2 can be running. Only by

USE ONE SYSTEM set up for **DUAL**, **START PRIORITY** is used, otherwise non-functional.

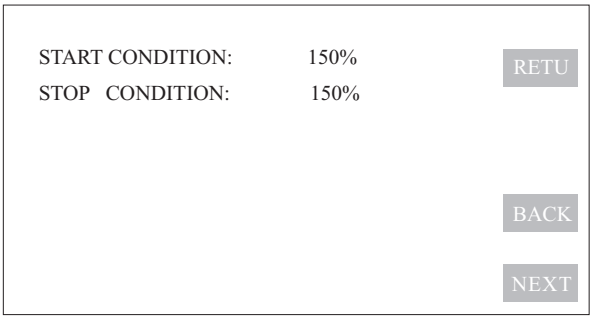
OIL PREHEAT: In some cases the need for debugging start unit, if the use of oil pre-heating will affect the debugging process. Therefore, through the **OIL PREHEAT** will be set to **NO**, temporarily masked the oil preheating function.When the debugger has finished,the

OIL PREHEAT must be set to **YES**.

START PRIORITY and **USE ONE SYSTEM**, Only in the use of dual-system units, units in a single system does not use. These parameters should be setting in the two systems are in the case of stop.

(15) Parameter Setting Interface-15

Press F1 to return to the parameter setting interface-3
Press F2 to modify the signs of parameter setting
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



Setting scope and default of the parameter

START CONDITION	100~300%	Default：120%
STOP CONDITION	100~300%	Default：150%

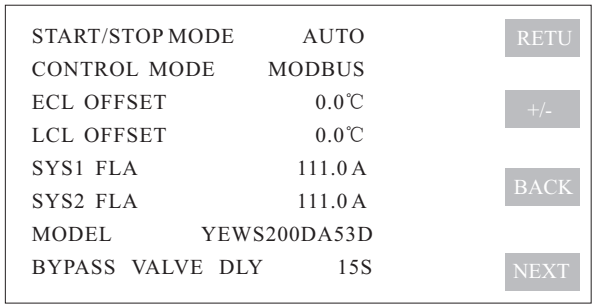
Parameter setting instruction:

START CONDITION：When a system is running, the conditions to start another system.

STOP CONDITION：When the two systems running at the same time, the conditions for the turn off a system.

(16) Parameter Setting Interface-16

Press F1 to return to the parameter setting interface-3
Press F2 to modify the signs of parameter setting
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



Setting scope and default of the parameter

START/STOP MODE	MANUAL/AUTO	Default:MANUAL
CONTROL MODE	LOCAL/REMOTE/MODBUS	Default: LOCAL
ECL OFFSET	-5.0 ~ +5.0℃	Default: 0.0℃
LCL OFFSET	-5.0 ~ +5.0℃	Default: 0.0℃
SYS1 FLA	60.0 ~ 400.0 A	Default: 111.0 A
SYS2 FLA	60.0 ~ 400.0 A	Default: 111.0 A
BYPASS VALVE DLY:	5~60 sec	Default: 15sec

Parameter setting instruction:

START/STOP MODE: When set as **MANUAL**, the unit will operate according to the keys on the control panel or remote switch, or perform the switch control in Modbus protocol. If set as **AUTO** switch, the set time for startup and stop of the unit will control the startup and stop operations.

CONTROL MODE: If set as **LOCAL**, the startup and stop will be completed by the operation panel, if set as **REMOTE**, the startup and stop will be realized by DI

switch on the control panel, while if set **MODBUS**, its startup and stop will be finished by the upper computer.

ECL OFFSET，LCL OFFSET： For compensating the loss of signal in the transportation wire to ensure that the unit can run normally.

SYS1 FLA,SYS2 FLA： FLA of System1 and System2 FLA,Factory settings.

BYPASS VALVE DLY： Bypass valve action interval. That is time period from open to close or from close to open.

MODEL:Set the real mode.

(17) Parameter Setting Interface-17

Press F1 to return to the parameter setting interface-3
Press F3 to return to the previous setting interface

MODBUS ADDRESS	001	RETU
CLEAR RECORD	YES	
CLEAR FAULT RECORD	YES	
DEFAULT DATA	YES	
BATTERY BACKUP	YES	BACK
PASSWORD	YES	
TIME LIMIT	YES	
LIMITED HOURS	2100H	NEXT

Setting scope and default value of the parameter:

MODBUS ADDRESS: 001 ~ 255	Default: 001
CLEAR RECORD ----/ SYS1/SYS2	Default: ----
CLEAR FAULT RECORD: ----/ Yes	Default: ---
DEFAULT DATA: ----/ Yes	Default: ---
BATTERY BACKUP: No/Yes	Default: NO
PASSWORD: No/Yes	Default: NO
TIME LIMIT: No/Yes	Default: NO
LIMITED HOURS: 0 ~ 9998 H	Default: 2100 H

Parameter settinig instruction:

MODBUS ADDRESS：Setting the parameter to connect with the upper computer so as to realize the remote control of multiple units.

CLEAR RECORD：Select whether carrying out YES operation or not by pressing 0 or 8, press √ key to confirm after selecting YES. By doning this, all adjustable counters resetting is achived, for example, unit’ s accumulated operation hours and compressor’ s accumulated operation hours.

CLEAR FAULT RECORD.：Select whether carrying out YES operation or not by pressing 0 or 8, press √ key to confirm after selecting YES, then all historical fault information will be deleted.

DEFAULT DATA: Select whether carrying out reset operation or not by pressing 0 or 8, press √ key to confirm after selecting YES. By these operations, all setting parameters will be reset as default value.

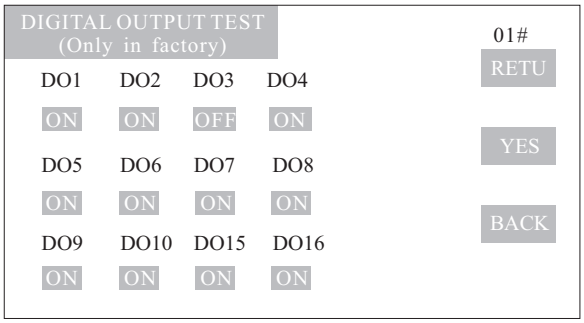
BATTERY BACKUP: Select whether carrying out this operation or not by pressing 0 or 8, press √ key to confirm after selecting YES. From this, the chiller will have a backup function when power off suddently. When no person is on duty of monitoring the chiller, the controller will automaticly manage the running status. If BATTERY BACKUP is selected as YES, the controller will back up all the running status datas when the unit is power off, with which the unit can automaticly following this running status once it is repowered on .If the BATTERY BACKUP is selected as NO, this function is invalidation.

PASSWORD: Select whether carrying out this operation or not by pressing 0 or 8, press √ key to confirm after selecting YES. From this, the chiller will have a PASSWORD protection, with which no one is allowed to set the parameters except having the PASSWORD. Those who do not know the PASSWORD only have the observing permission.

RUN TIME LIMIT： If RUN TIME LIMIT is set as YES by pressing 0 or 8, the control panel will limit operation time of unit according to the setpoint of run time limit protection. Once accumulating time reaching or exceeding to run time limit, the unit will be automatically shut down, then the RUN TIME LIMIT will be flash displayed in display screen and the unit can only be unlocked by personnel with relative authority. If RUN TIME LIMIT is set asNO, the unit has no run time limit protection function.

(18) Parameter Setting Interface-18

Press F1 to return to the parameter setting interface-3
Press F2 to select whether it is allowed to be test or not.
Press F3 to return to the previous setting interface



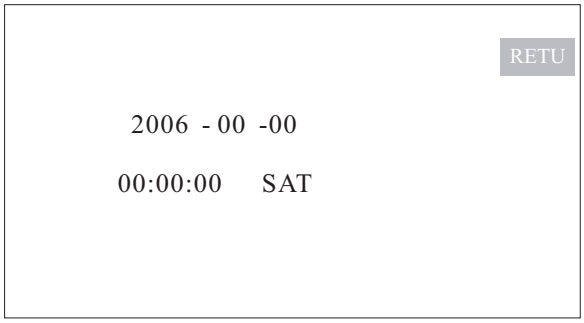
On the cursor location, select ON/OFF by pressing 0 and 8, if the output operation for DO test has been set as YES, the DO1 on YORK003 panel should be changed simultaneously with the status of DO1 on this page. It means that the DO1 in mainboard will open once it is set as ON in this interface. Setting of the other DO outputs is the same as DO1.

Since it is not facility for the electrical testing for control panel when the unit is on running, The operation of DO output testing should be done after the unit stops. Output function of DO test is just valid in this interface and it will automatically be invalid once turn into other interface. Disconnect the main circuit power of compressor before performing DO test output.

After the DO output test, the HMI and YORK0003 mainbord should be power off and reset so as to turn the unit into normal mode running mode.

Note:Testing operation is only used for cortrol panel testing, so main power supply should be power off in the testing period. Such function is not prohibited to use on other occasions. Otherwise it will result in damages to unit and YORK will not be responsible for such damages.

5.4.5 Clock Setting
Press F1 to return to the main interface
Clock setting interface-1



Input the parameter via pressing 0-9 according to the figure type;

Adding the address number one per time pressing 8 while minusing it one per time pressing 0.

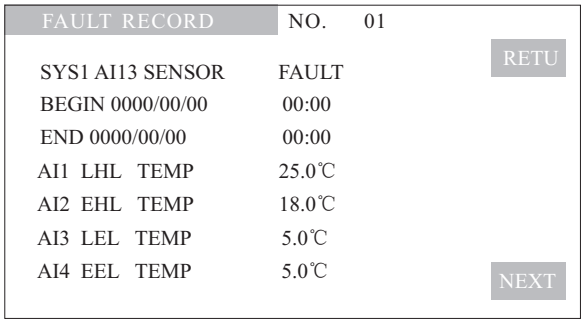
Press √ to confirm the input parameter or select the next parameter input area.

Press X to input the parameter again or select the last parameter input area;

Days of the week can be adjusted by pressing 8 or 0 and press √ t to confirm.

Year, Month and Day can be input via the figure keys 0-9, and then press √ to confirm. If X is pressed before confirmation, the current input operation will be cancelled, and can return to the previous setting interface.
If the input parameter exceeds the scope, the setting will be invalid.

5.4.6 Fault Inquiry
(1) Fault inquiry 1
Press F1 to return to the main interface
Press F4 to enter into the next parameter setting interface



Select the difference series number by pressing the figure keys 0-9 so as to display the faults happened in the different time. The number 0-9 means the orders of faults happened in the different time, the bigger numer means the earlier the faults happened.

Press F4 on the main interface of HMI, the alarming information can be displayed, which can also be realized by pressing keys when on othe interface.

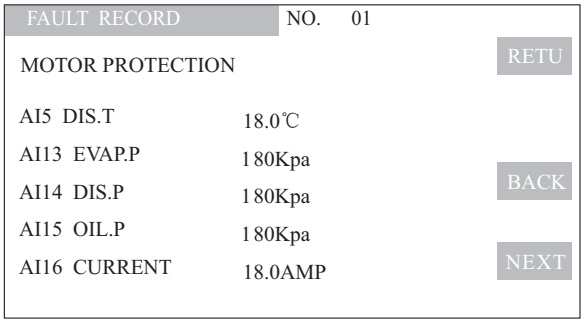
The second line of the display panel shows the detail alarming content.

The third line of the display panel shows the begin and stop time of alarming.

The temperature, status of DI, DO, which shown in the following lines shows the status of chiller when the alarming happens.

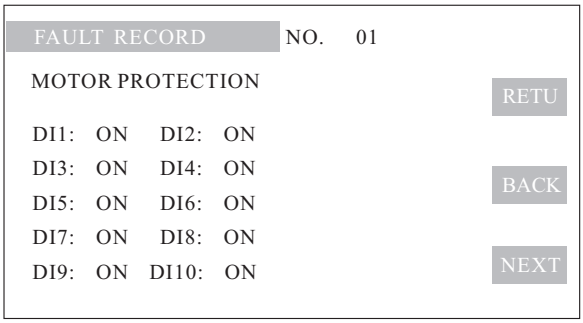
(2) Fault Inquiry 2

Press F1 to return to the main interface
Press F3 to return to the previous setting interface
Press F4 to enter into the next parameter setting interface



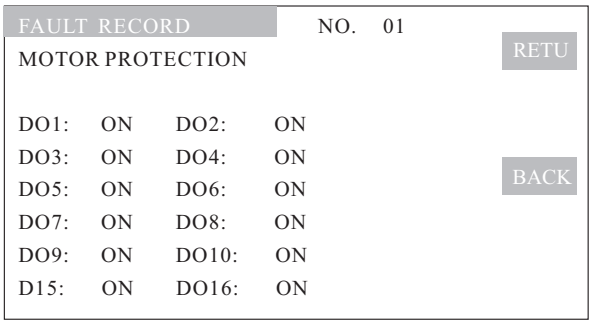
(3) Fault Inquiry 3

Press F1 to return to the main interface;
Press F3 to return to the previous setting interface;
Press F4 to enter into the next parameter setting



(4) Fault Inquiry 4

Press F1 to return to the main interface
Press F3 to return to the previous setting interface



(5) Fault reset method

Fault information of single system mainly generates from system1. After disapperance of fault, shift the cursor on **RESET FAIL** on **parameter setting interface 2**. Select by 0 and 8, press Xto cancel and press √ to confirm. If select **SYS1** and confirm, all faults will be reset.

※ Caution: After finding faults, check carefully the whole system. After eliminating relative fault, reset the unit on premise that there is no security hidden trouble. Otherwise, unit will be destroyed from compulsory reset.

5.5 General parameters setting and defult values

(1) Sharing parameters setting and defult values

ECL OFFSET	0℃	-5.0 – +5.0℃	Service password
LCL OFFSET	0℃	-5.0 – +5.0℃	Service password
MODBUS ADDRESS	1	1 – 255	Service password
BATTERY BACKUP	NO	YES/NO	User password
PASSWORD	YES	YES/NO	Ex-factory password
TIME LIMIT	NO	YES/NO	Service password
LIMITED HOURS	2100 H	0 – 9998H	Service password
START/STOP MODE	MANUAL	MANUAL/AUTO	User password
RUN MODE	AC	AC/ITS/HP	User password
CONTROL MODE	LOCAL	LOCAL/REMOTE/MODBUS	User password
LOAD TIME	2.0s	0.5-20.0s	Service password
UNLOAD TIME	4.5s	0.5-20.0s	Service password
CONTR.CYCLE	10s	5-60s	Service password
MIN.RUN TIME	300s	120-600s	Service password
ANTI-RECYCLE	480s	120-600s	Service password
SYS1 FLA	111.0	60.0 ~ 400.0 A	Service password
SYS2 FLA	111.0	60.0 ~ 400.0 A	Service password
BYPASS VALVE DLY	15s	5 – 90 s	Ex-factory password
START PRIORITY	AUTO	AUTO/SYS1/SYS2	Service password
USE ONE SYSTEM	DUAL	DUAL/SYS1/SYS2	Service password
OIL PREHEAT	YES	YES/NO	Service password
SYS 1 RUN CTRL.	AUTO	AUTO/LOAD/UNLOAD	Service password
SYS 2 RUN CTRL.	AUTO	AUTO/LOAD/UNLOAD	Service password
SYS1 CUR.OFFSET	100%	50 – 150 %	Service password
SYS2 CUR.OFFSET	100%	50 – 150 %	Service password
CLEAR FAULT RECORD	----	----/YES	Ex-factory password
RESET FAIL.	----	----/SYS1/SYS2	User password
ANTIFREEZE	YES	YES/NO	Service password
CLEAR RECORD	----	----/SYS1/SYS2	Service password
DEFAULT DATA	----	----/YES	Service password

(2) Assignable parameters setting and defult values (AC mode)

Items	Defult values	Setting range	Access level
LEL TEMP SET	7.0℃	4.0~15.0℃	User password
LEL TEMP CE	1.0℃	0.5~2.0℃	User password
LOW LELT	2.0℃	1.0~7.0℃	Service password
HIGH LCLT	43.0℃	30.0~60.0℃	Service password
LEP UNLOAD	175KPa	150.0~300.0 KPa	Service password
LEP SHUT DOWN	165KPa	150.0~300.0 KPa	Service password
HOLD LOAD D.P	1030KPa	100.0~1300.0 KPa	Service password
UNLOAD D.P	1060KPa	100.0~1300.0 KPa	Service password
HIGH D.P.SHUTDOWN	1090KPa	100.0~1350.0 KPa	Service password
UNLOAD CURR.	95%	10~98%	Service password
DELTA T	3.5℃	2.0~6.0℃	Service password

(3) Assignable parameters setting and defult values (ITS mode)

Items	Defult values	Setting range	Access level
LEL TEMP SET	-5.6℃	-8.0~+5.0℃	User password
LEL TEMP CE	1.0℃	0.5~2.0℃	User password
LOW LELT	2.0℃	-15.0~+5.0℃	Service password
CR BUFFER	2.5℃	1.0 - 2.5℃	User password
HIGH LCLT	43.0℃	30.0~60.0℃	Service password
LEP UNLOAD	175KPa	80.0~300.0 KPa	Service password
LEP SHUT DOWN	165KPa	80.0~300.0 KPa	Service password
HOLD LOAD D.P	1030KPa	100.0~1300.0 KPa	Service password
UNLOAD D.P	1060KPa	100.0~1300.0 KPa	Service password
HIGH D.P.SHUTDOWN	1090KPa	100.0~1350.0 KPa	Service password
UNLOAD CURR.	95%	10~98%	Service password
DELTA T	4.5℃	2.0~6.0℃	Service password
LISV TEMP	70.0℃	50.0~80.0℃	Service password

(4) Assignable parameters setting and defult values (HP mode)

Items	Defult values	Setting range	Access level
LCL TEMP SET	45.0℃	30.0~50.0℃	User password
CR BUFFER	2.5℃	1.0~2.5℃	User password
LCL TEMP CE	1.0℃	0.5~2.0℃	User password
LOW LELT	2.0℃	1.0~7.0℃	Service password
HIGH LCLT	52.0℃	30.0~52.0℃	Service password
LEP UNLOAD	175KPa	150.0~300.0 KPa	Service password
LEP SHUT DOWN	165KPa	150.0~300.0 KPa	Service password
HOLD LOAD D.P	1286KPa	100.0~1400.0 KPa	Service password
UNLOAD D.P	1303KPa	100.0~1400.0 KPa	Service password
HIGH D.P.SHUTDOWN	1356KPa	100.0~1400.0 KPa	Service password
UNLOAD CURR.	95%	10~98%	Service password
DELTA T	4.5℃	2.0~6.0℃	Service password
LISV TEMP	80.0℃	50.0~80.0℃	Service password

(5) Assignable parameters setting and defult values (D1-HP/E-HP2 mode)

Items	Defult values	Setting range	Access level
LCL TEMP SET	55.0℃	30.0~60.0℃	User password
CR BUFFER	2.5℃	1.0 － 2.5℃	User password
LCL TEMP CE	1.0℃	0.5~2.0℃	User password
LOW LELT	2.0℃	1.0~7.0℃	Service password
HIGH LCLT	62.0℃	30.0~62.0℃	Service password
LEP UNLOAD	175KPa	150.0~300.0 KPa	Service password
LEP SHUT DOWN	165KPa	150.0~300.0 KPa	Service password
HOLD LOAD D.P	1660KPa	100.0~1700.0 KPa	Service password
UNLOAD D.P	1680KPa	100.0~1700.0 Kpa	Service password
HIGH D.P.SHUTDOWN	1745KPa	100.0~1800.0 KPa	Service password
UNLOAD CURR.	95%	10~98%	Service password
DELTA T	4.5℃	2.0~6.0℃	Service password
LISV TEMP	80.0℃	50.0~80.0℃	Service password

5.6 Fault imformation

No.	Fault information	Fault reason	Reset method
1	SYS1 COMM.FAULT	Communication disconnection between the centralized controller and 1# main board	Manual
2	SYS1 FLS OPEN	Flow switch open	Auto
3	SYS1 DIS.PRESSURE SW.OPEN	System1 discharge pressure switch open	Manual
4	SYS1 OIL SW.OPEN	System1 oil level switch open	Manual
5	SYS1 MOTOR PROTECTION	System1 motor protection switch open	Manual
6	SYS1 EXT.INTERLOCK OPEN	Interlock switch open	Manual
7	SYS1 Y-△ TRANSITION FAULT	S ystem1 Star-Delta transformation failed	Manual
8	SYS1 AI1 SENSOR FAULT	T he leaving cooling water temperature sensor is short circuit or break	Manual
9	SYS1 AI2 SENSOR FAULT	The entering cooling water temperature is short circuit or break	Manual
10	SYS1 AI3 SENSOR FAULT	The leaving chilled water temperature sensor is short circuit or break	Manual
11	SYS1 AI4 SENSOR FAULT	The entering chilled water temperature sensor is short circuit or break	Manual
12	SYS1 AI5 SENSOR FAULT	System1 The discharge temperature sensor is short circuit or break	Manual
13	SYS1 AI13 SENSOR FAULT	System1 The evaporating pressure sensor is short circuit or break	Manual
14	SYS1 AI14 SENSOR FAULT	System1 The discharge pressure sensor is short circuit or break	Manual
15	SYS1 AI15 SENSOR FAULT	System1 The oil pressure sensor is short circuit or break	Manual
16	SYS1 HIGH DIS.PRESSURE	System1 The discharge pressure exceeds the set value of alarming	Manual
17	SYS1 LOW EVAP.PRESSURE	Systeml the evaporator pressure is lower than the alarming value	Manual
18	SYS1 HIGH DIS.T	Systeml the discharge temperature is higher than the alarming value	Auto
19	SYS1 HIGH CURRENT	System1 Compressor current is higher than MLA	Manual
20	SYS1 LOW CURRENT	System1 Compressor current is lower than MLA *5%	Manual
21	SYS1 HIGH LCLT	The leaving cooling liquid temperature is higher than the setting value	Auto
22	SYS1 LOW LELT	The leaving chilled water temperature is lower than the setting value	Auto
23	SYS1 LOW DIFF OIL P	System1 (Oil pressure - evaporating pressure)<100kPa	Manual
24	SYS1 CLOGGED FILTER	System1 (Discharge pressure - oil pressure)>245kPa	Manual
25	SYS1 CMPS HF START-STOP	System1 compressor High-Frequency start-stop	Auto
26	SYS1 HIGH LHLT	output heat water temperature exceeds setting value	Auto

5.7 Modbus protocol

(1) Modbus protocol instructions

Baud rate	9600
Word length	8
Parity	None
Stop bits	1
Data mode	RTU
verify	CRC

(2) ModBus node list

Address	Functions	Description	Word length	note
201	3,6	Start/stop	word	Command 1:start, 2:stop Status 0:stop,1:start
202	3,6	Mode select	word	0:AC 1:ITS 2:HP 3:REMOTE
203	3,6	AC: LEL setting	word	Range： 4.0 － 15.0℃
204	3,6	ITS: LEL setting	word	Range： -8.0 － +5.0℃
205	3,6	Heat pump: LHL setting	word	YEWS-D1 HP Range: 30.0 - 60.0℃ YEWS-E HP2 Range: 30.0 - 60.0℃
206	3	Alarm	word	1: yes 0: no
207	3	Runtime limit	word	1: yes 0: no
208	3	Oil Pre-heating	word	1: yes 0: no
209	3	CONTROL MODEL	word	0 LOCAL 1 REMOTE 2 MODBUS
210	3,6	Heat pump: LHL setting	word	YEWS-E HP Range: 30.0 - 50.0℃
System1				
101	3	Digital output	word	See table 4/table 5
102	3	Digital input	word	
121	3	Zleaving condenser Liquid	word	Signed binary，the value is multiplied per 10
103	3	Enter condenser Liquid	word	Signed binary，the value is multiplied per 10
122	3	Leaving evaporator Liquid	word	Signed binary，the value is multiplied per 10
104	3	Enter evaporator Liquid	word	Signed binary，the value is multiplied per 10
105	3	Discharge Temperature	word	unsigned binary，the value is multiplied per 10
106	3	Evaporator pressure	word	unsigned binary
107	3	Discharge pressure	word	unsigned binary
108	3	Oil pressure	word	unsigned binary
109	3	Motor current	word	unsigned binary，the value is multiplied per 10
115	3	DI fault	word	See table 1/ table 2/ table 3
116	3	AI fault	word	
117	3	RUN fault	word	
112	3	Water pump operation time	word	accumulative total
111	3	Compressor operation time	word	accumulative total

(3) Definition of fault information in ModBus protocol
AI Sensor input fault

Bit	Fault
bit0	Leaving Cooling Liquid Temperature Sensor Failure
bit1	Entering Cooling Liquid Temperature Sensor Failure
bit2	Leaving Chilled Liquid Temperature Sensor Failure
bit3	Entering Chilled Liquid Temperature Sensor Failure
bit4	Discharge Temperature Sensor Failure
bit5	
bit6	
bit7	
bit8	
bit9	
bit10	Leaving Hot Liquid Temperature Sensor Failure
bit11	Entering Hot Liquid Temperature Sensor Failure
bit12	Evaporating Pressure Transducer Failure
bit13	Discharge Pressure Transducer Failure
bit14	Oil Pressure Transducer Failure
bit15	

DI switch input fault

Bit	Fault
bit0	Flow Switch Open
bit1	-
bit2	High pressure Switch Open
bit3	Oil level switch open
bit4	Motor Protection Switch Open
bit5	External Interlock Switch Open
bit6	Start-up Failure
bit7	-
bit8	-
bit9	-
bit10	-
bit11	-
bit12	-
bit13	-
bit14	-
bit15	-

Run fault

Bit	Fault
bit0	High discharge pressure cut out
bit1	Low Evaporating Pressure Cutout
bit2	High Discharge Temperature Cutout
bit3	High Compressor Motor Current Cutout
bit4	Low Compressor Motor Current Cutout
bit5	High leaving cooling water cutout
bit6	Low leaving chilled water cutout
bit7	Low Differential Oil Pressure Cutout
bit8	Oil filter jam
bit9	High leaving hot water cutout
bit10	High heat outlet temp
bit11	
bit12	-
bit13	-
bit14	-
bit15	-

(4) Definition of digital input in ModBus protocol

Bit	Switch Input	Status
bit0	FLOW SWITCH	0=open 1=close
bit1	DISCHAGE PRESSURE SWITCH	0=open 1=close
bit2	HIGH PRESSURE SWITCH	0=open 1=close
bit3	OIL LEVEL SWITCH	0=open 1=close
bit4	MOTOR PROTECTION	0=open 1=close
bit5	EXT.INTERLOCK	0=open 1=close
bit6	START FAILURE	0=open 1=close
bit7	REMOTE SWITCH	0=open 1=close
Bit8-15	RESERVED	0=open 1=close

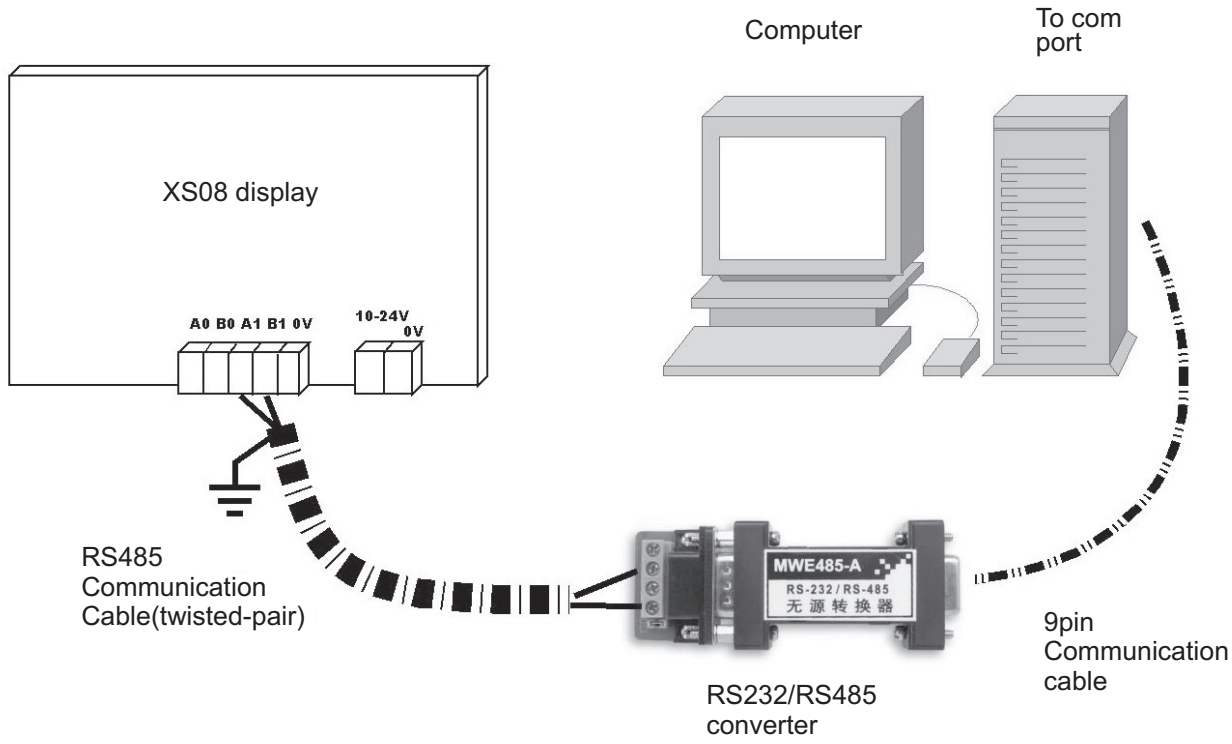
(5) Definition of digital output in ModBus protocol

Bit	Digital output	Status
bit0	CHILLED LIQUID PUMP	0=open 1=close
bit1	COMPRESSOR WYE CONTACTOR	0=open 1=close
bit2	COMPRESSOR DELTA CONTACTOR	0=open 1=close
bit3	COMPRESSOR OIL HEATER	0=open 1=close
bit4	LIQUID LINE BYPASS SOLENOID1	0=open 1=close
bit5	ALARM	0=open 1=close
bit6	LIQUID INJECTING	0=open 1=close
bit7	LIQUID LINE BYPASS SOLENOID2	0=open 1=close
bit8	RUNNING STATUS	0=open 1=close
Bit14	CR4 LOAD SOLENOID	0=open 1=close
bit15	CR3 UNLOAD SOLENOID	0=open 1=close

(6) How to monitor it remotely

YEWS centralized controller XS08 supply a RS485 communicaiton port for users, hence, users are able to monitor the operation of chillers conveniently with it, and connect easily it to external integration system when connecting cable according to the MODBUS protocol.

Wiring sketch



MODBUS address of centralized controller has to be set and PC can read the data of chillers or operate the chillers conveniently affer connnecting cables according to the figure above. These paratmeters must be input in parameter setting interface-10, as follows.

MODBUS ADDRESS	001	RETU
CLEAR RECORD	YES	
CLEAR FAULT RECORD	YES	
DEFAULT DATA	YES	
BATTERY BACKUP	YES	
PASSWORD	YES	BACK
TIME LIMIT	YES	
LIMITED HOURS	2100H	NEXT

Notes:

1. The cable connecting RS232/RS485 converter to XS08 must be the same one.
2. Communication Cable must be a shield Twisted-pair with character resistance 120±20%Ω, 0.5mm2 cross-section.
3. Communication Cable must be shorter than 1000m.
4. Port A1 and B1 of XS08 should be connected to the communication port of PC, and RS232/RS485 converter must be used to connect them. It’s certain to connect communication cable properly, which is polar, avoiding to communicaiton fault.

6 COMMISSIONING

6.1 PREPARATION

Commissioning of this unit should only be carried out by YORK Authorized personnel.

Especially, this section must be read in conjunction with the control system operation onstruction in section 5.

Power Off

The following basic checks should be made with the customer power supply to the unit switched off.

Ensure all sources of supply to the unit are padlocked in the OFF position.

Inspection

Inspect unit for installation damage. If found, take action or repair as appropriate.

Refrigerant Charge

Packaged units are normally shipped as standard with a full refrigerant operating charge. Check that refrigerant pressure is present in the system and that no leaks are apparent. If no pressure is present, a leak test must be undertaken, located and repaired the leak(s). These systems must be evacuated with a suitable vacuum pump/recovery unit as appropriate to below 500 μ mHg.

Valves

Open diacharge valve on compressor and liquid line angle valve under condenser fully (counterclockwise) then close one turn of the stem to ensure operating pressure is fed to pressure transducers. Open all angle valves on the oil return line and eductor line.

Isolation / Protection

Verify all sources of electrical supply to the unit are taken from a single point of isolation.

Control Panel

Make sure the control panle is free of foreign materials (wire, metal chips, etc.) and clean out foreign materials if it is found.

Power Connections

Check that the customer power cables are connected correctly to the circuit breaker. Ensure that connections of power cables within the panels to the circuit breaker are tight.

Earthing

Make sure all the protective conductor is properly and tightly connected to the ground.

Oil heater

Verify that the oil heater is powe on. If the chiller repowered after it have been power off for more than 15 days, the compressor are not allowed to run unless the oil heater has been work for more than 5 hours.

Water System

Verify the chilled liquid system has been installed correctly, and has been commissioned with the correct direction of water flow through the cooler. The inlet should be connected to the bottom nozzle of water box of the cooler and the outlet to the top one. Purge air using the plugged air vent mounted on the top of water box.

Flow rates and pressure drops must be within the limits given in the Section 10. Out of these limits is undesirable and could cause damage.

Low temperature brine chiller

Confirm the freezing point of the evaporator brine fluid. Using a hydrometer or an optical refractometer to test the concentration of the birne and figure out the freezing point. When working on the ITS mode, the LOW LELT/ LEP UNLOAD/LEP SHUT DOWN should be reset.

Make sure the temperature corresponding to the LEP SHUT DOWN and the LOW LELT setpoint are higher than the freezing point of brine, and any of these two temperature should be at least 3℃ higher than the brine freezing point.

The corresponding of concentrations and freezing points of glycol solution

E.G wt%	Freezing point℃	E.G wt%	Freezing piont℃
5	-1.4	20	-7.8
10	-3.28	26	-11.38
15	-5.31	30	-14.04

The saturated temperature of R134a in difference pressure

Pressure kpa	Saturated temperature ℃	Pressure kpa	Saturated temperature ℃	Pressure kpa	Saturated temperature ℃
164	-15	217	-8	282	-1
171	-14	225	-7	293	0
178	-13	234	-6	304	1
185	-12	243	-5	315	2
193	-11	253	-4	326	3
201	-10	262	-3	338	4
209	-9	272	-2	350	5

Flow Switch

Verify a chilled water flow switch is correctly fitted in the customer's piping on the cooler outlet, and wired into the control panel correctly using shielded cable.

Control panel pwer supply

Make sure that the control panel is power on and the display screen can display normarly.

Programmed Options

Make sure all the options factory-programmed into the Microprocessor Panel are in accordance with the customer's order requirements by pressing relevant Keys on the keypad (Refer to instructions on the operation of control System on section 5).

Programmed Settings

Make sure all the setpoints are in accordance with the operating requirements by operating keypad (Refer to instructions on the operation of control System on section 5).The setpoints of the chilled water temperature or hot water temperature should be set according to the Unit model and working conditions.

Time and Date

Setting the time/date by pressing relevant function Keys on the keypad (Refer to instructions on the operation of control System on section 5).

Startup/Stop arrangement

Setting the Startup/Stop arrangement in ordianary days and holidays via the corresponding function keys.
(Refer to instructions on the operation of control System on section 5).

Setpoints

Setting the setpoints and control range of the chilled/hot water temperature(Refer to instructions on the operation of control System on section 5).
Now the chiller is ready to work.

6.2 FIRST TIME START-UP

During the commissioning period there should be sufficient heat load to run the unit under stable full load operation to enable the unit controls, and system operation to be set up correctly, and a commissioning log taken. Be sure that the control center operatin instructions on section 5 have been fully understand and the System Start-up Checklist is completed, Finished the following operations step by step.

Start-up

Press the "I" Key on the keypad and there may be a few seconds delay before the ompressor starts because of the anti-recycle timer. Be ready to push the Emergency Switch immediately if any unusual noises or other adverse conditions appeared during the compressor starting. Refer to instructions on the operation of control System on section 5 for the normal operation process.

Oil Pressure

When a compressor starts, inspect the running information from the Display Panel, and verify that oil differential pressure (oil pressure-suction pressure) develops immediately. If oil pressure does not develop, the automatic controls will shut down the compressor (Refer to the oil pressure automatic control process on the operation of control System on section 5). Under no circumstances should a restart attempt be made on a compressor, which can't develop oil pressure immediately.

7 Operation

7.1 General Description

The units are designed to work independently, or in conjunction with other equipment via a 485 communication devices.During operation, the unit controller monitor the chilled or hot liquid system temperature leaving the unit and take the appropriate action to maintain this temperature within desired limits.The compressor will automatically regulate the slide valve position to match the cooling or heating load of the system.The heat removed from the chilled liquid is then rejected via the water cooled condenser.

The following sections give an overview of the operation of the unit.For detailed information, Refer to detail instructions on the operation of control System on section 5.

7.2 Start-up

Check the main power supplies to the unit are 'ON', all refrigerant service valves are open (anti-clockwise one turn short of fully open) and both chilled and cooling liquid have a regular flow rate, then press the 'START' key on the keypad.

The controller will perform a pre-check to ensure that if there is any the daily/holiday schedule or remote interlocks to prohibit the unit to run, and all safety cut-outs are satisfied and the cooling or heating load is required (i.e.that the chilled liquid temperature is outside the set limits).Any problems found by the pre-check will be displayed.If no problems are found and cooling/heating load is required, the compressor will start.

7.3 Normal Running and Cycling

Once the unit has been started, all operations are fully automatic.After an initial period at minimum capacity on the compressor, the control system will adjust the unit load depending on the chilled liquid temperature and rate of temperature change. If very little heat load is present,the compressor will continue at minimum capacity or performe cycling shutdown to avoid overcooling the liquid. In that case,the compressor will restart automatically when the liquid temperature rise again.

Once the compressor is running, the evaporated refrigerant vapor is pumped into the water cooled condenser, which results in the rise of discharge pressure.

Once the compressor is running the controller monitors oil pressure, motor current, and various other system parameters such as discharge pressure, chilled liquid temperature, etc. Should any problems occurs, the control system will immediately take appropriate action and display the nature of the fault (Refer to instructions on the operation of control System on section 5).

After the chiller stop, the check valve of compressor may send out some noises, which is caused by the internal refrigerant equalizing due to the pressure differential.It is a normal phenomenon and has no influence on the performance and reliability of chiller.

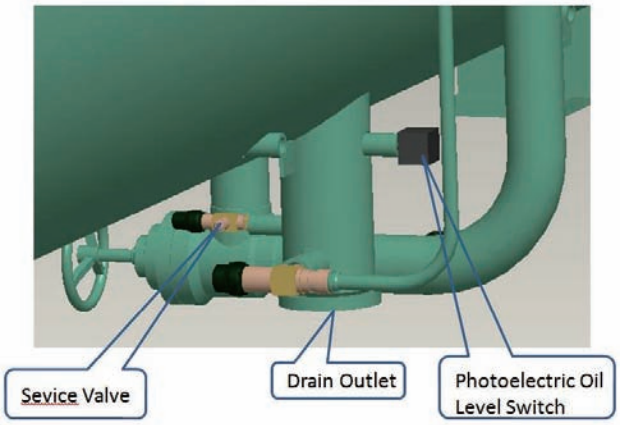
Oil and Refrigerant

The lubricant should be replaced periodically according to the advice of York to ensure that the unit can be in normal running.

The moisture indicating sight glass located in the liquid line under the condesner should be inspected periodically, please contact York in time once any moisture is found in the system.It should be handled by the YORK service personnel otherwise the compressor will possibly be damaged.

For YEWS100H/130H/170H/200H/210H, the oil sump is located inside the compressor built-in oil separator, are an oil drain hole and an oil charge valve at the bottom of the compressor. In purpose of drain the oil as quickly as possible, movable joint is used for easier connection to flexible conduit.

For YEWS100P/130P/170P/200P/215P, the oil sump is located at the bottom of the oil separator inside of the condenser. Following picture shows the details for service of the oil sump external connection. It’ s easy to connect with hose and add lubrica-ting oil quickly. There is no continuous oil level will exist in the sight glass of the compressor and the oil filter is on the oil supply line.



If the unit is running with a load lower than 20% rated load, it may caused the depressing of the oil level due to the low condensing temperature. In that case, the oil does not leak out, it is carried out to the condenser by the refrigerant flow and finally the oil will enter the evaporator and accumated. However, if the oil in the evaporator accumulate to a certain amount , it may cause operation problems.

If the discharge superheat is lower than 5℃, it may cause some trouble to the oil system. Discharge superheat temperature is equal to disharge temperature minus to the condensing temperature.The most suitable refrigerant charge is decided by the diacharge superheat and the evaporator approach.

If the unit can not be loaded normally, it is possible that the lubricant in the evaporator is excessive. Where there is too much oil in the refrigerant, the liquid level will blister and the mixture of oil and liquid refrigerant will be carried to the compressor, which decreases the discharge superheat.If the discharge superheat decreases to a value lower than 5℃, the compressor will compulsily unload and decrease the cooling capacity unless the discharge superheat rise up to 5℃ and keep higher than 5℃ for more than 60 seconds.

The excessive charge amount of refrigerant will also decrease the discharge superheat temperature, and cause the the unit fail to load normarly. So refrigerant should be adjusted to a suitable amount(Ensure the discharge superheat temperature in the range of 6-10 ℃ in rating conditions)

Fault treatment

If the unit stop for fault, the operator should handle the fault in time, if it can not be solved, please contact the YORK service personnel immediately. No attempt should be done to start the chiller continuously when it is stop due to fault otherwise it would cause damage to the chiller.

Running log

The running situation should be permanently recorded according to the regulated time interval in each 24 hour running cycle.

The following table is the duty record table of WORK for unit examination.

Please record every data correctly, because it is reference for engineer to judge the running conditions.The record values by testing a new unit can be set as the normal situation, which can be compared with the later record value.

For example, if the difference between the leaving cooling water temperature and condensing temperature is higher than the normal value, it shows that the water side of condenser may be too dirty.

Running detection

By performing the periodical detection and maintenance according to the value displayed in the display interface of control center, the operator can avoid the serious running fault. The following is the guide for detection content and method.

7.4 Other notes

At any times, the unit will stop once the OFF key in the keyboard is pressed, then the oil heater will be Powered on and keep a high oil temperature to prevent refrigerant dissolving into the oil.

In order to prevent the damage to chiller, the chiller should

be power on when it is not running for a long period of time (The compressor oil heat is also powered on).

If the main power has to be cutout in a long period of service, the discharge service valve must be turn off, and the oil heater has to run for more than 5 hours(24 hours suggested) before the chiller starting.

If the chiller is required to close for a long time (such as a whole winter), the following sections introduce the steps need to be carried out:

1. It is required to inspect the sealing situation of the system periodically in the period of long-term stop.

2. If the temperature in standby period is lower than the water freezing temperature, it is required to drain out all the water in the cooling tower, condenser, condenser pump, chilled water system and chilled water pump.

Open the drain pipe in the evaporator and condenser to ensure the complete drain.

Performing the periodical inspection and maintenance according to the value displayed in the display panel, the operator can avoid the serious operating default. The following is the instructions of inspection content and operation process.

7.5 Running detection

Performing the periodical detection and maintenance according to the value displayed in the microcomputer control center, the operator can avoid the serious running default. The following detection content and method is a good guide for user.

Daily

1. Inspect the displayed content of the display screen.

2. If the compressor is in running status, the bearing oil pressure is required to be inspected.

3. Inspect the inlet and outlet water pressure and temperature of the condenser so as to compare with those in the design situation.

4. Inspect the leaving and entering temperature of the chilled water and evaporator pressure o as to compare with those in the design situation.

5. Inspect the condenser saturation temperature (confirmed according to the condenser pressure detected by the condenser sensor).

6. Inspect the discharge temperature of the compressor. The discharge temperature should be lower than 75℃ in usual.

7. Check that whether the condenser pipe is fouling or blocking (the difference between the current condenser approach temperature and the one measured in the new chiller can not exceed 3℃)

8. Confirm whether the water has acceptable quality level.

9. Press Status key for displaying the alarming information once there is a display requirement.

Weekly

Inspect the refrigerant charged record.

Quarterly

Performing the chemical analysis of the lubricant each 6 months (or perform the frequent inspection according to the requirement)

Biannually

1. Inspect and replace the cartridge of compressor oil filter.

2. Oil return system

a. Clean the oil filter

b. Inspect the operational situation of ejector for finding the impurity granule

3. Inspect the controller and safety protection device .

Yearly (or perform a more frequent inspection according to the requirement)

1. Clearly drain out and replace the oil in oil separator tank.

2. Evaporator and condenser

a. Inspect and clean the water drainage valve

b. Inspect and clean the pipes according to the requirements.

3. Inspect and maintain the electrical parts according to the requirements.

4. Perform the chemical analysis to the system.

Screw Chiller/Heat-pump Unit Record Table **chiller situation:**

100 ~ 215 TON **model:**

Date									
Time									
Runing hours									
Ambient Tempearature	Dry-bulb/ Wet -bul								
Compressor	Oil pressure kPa								
	Evaporator pressure kPa								
	Discharge pressure kPa								
	Oil level (Seperator/compressor)	○○	○○	○○	○○	○○	○○	○○	○○
Motor	Current(A)								
Evaporator	Entering Liquid temperature ℃								
	Leaving Liquid temperature ℃								
	Flow rate L/S								
	Liqudi level in sight galss	○	○	○	○	○	○	○	○
Condenser	Entering Liquid temperature ℃								
	Leaving Liquid temperature ℃								
	Flow rate L/S								

8 MAINTENANCE

8.1 GENERAL REQUIREMENTS

The units have been designed to operate continuously, provided they are regularly maintained and operated within the limitations given in this manual. Each unit should be included in a routine schedule of daily maintenance checks by the operator/customer, backed up by regular service inspection and maintenance visits by a suitably qualified Service Engineer.

It is entirely the responsibility of the owner to provide for these regular maintenance requirements and/or enter into a maintenance agreement with a YORK service organization to protect the operation of the unit. If damage or a system failure occurs due to improper maintenance during the warranty period, YORK shall not be liable for costs incurred to return the unit to satisfactory condition.

This maintenance section applies to the basic unit only and may, on individual contracts, be supplemented by additional requirements to cover any modifications or ancillary equipment as applicable.

The Safety Section of this manual should be read carefully before attempting any maintenance operations on the unit.

8.2 Daily Maintenance

The following maintenance checks should be carried out on a daily basis by the operator/customer. Please note that the units are not generally user serviceable and no attempt should be made to rectify faults or problems found during daily checks unless competent and equipped to do so. If in any doubt, contact your local YORK Service Agent.

Unit Status

Press the 'STATUS ' key on the keypad and ensure no fault messages are displayed (refer to the control center operation instructions for explanation of messages and the Trouble shooting section for courses of action).

Refrigerant charging and leaks checking

Refrigerant leaks checking

Periodic refrigerant leak checking must be part of a comprehensive maintenance program. Leak check the entire chiller using a calibrated electronic leak detector.

Confirm leaks with soap bubbles that are found using the electronic leak detector.

Check refrigerant relief valve piping and tube rolled joints as part of the comprehensive refrigerant leak checking program.

Repair leaks before adding refrigerant.Visually check the heat exchangers, compressors and pipework for damage and gas leaks.

Determining correct refrigerant charge level

The refrigerant charge level is correct when the measured evaapraror approach and discharge superheat are within the values listed in Table 8-1.

Liquid refrigerant will be visible in the evaporator sight glass.The refrigerant level can not be properly determined by viewing the liquid refrigerant level in the evaporator sight glass.

All YEWS-E units shipped From1 are charged with the correct amount of refrigerant.Under some operating conditions the chiller may appear to be overcharged or undercharged with refrigerant. Consult with YORK Factory prior to removing or adding refrigerant.

Definitions

Evaporator approach= (S.E.T)-(L.E.L.T)

Discharge superheat= (C.D.G.T)-(S.C.T)

When:

S.E.T = Saturated Evaporator Temperature

L.E.L.T =Leaving Evaporator Liquid Temperature

C.D.G.T =Compressor Dischrge Gas Temperature

S.C.T = Saturated Condensing Temperature

Refrigerant Charge

Should it become necessary to add refrigerant charge to a YORK YEWS-E Chiller; add charge until the evaporator

approach and refrigerant gas discharge superheat are at within the values listed in Table 8-1.

A charging valve is located in the liquid line below the evaporator. The size of the charging connection is 1/4 inch male flare. Purge air and non-condensables from the charging hose. Only add new refrigerant, or refrigerant that has been tested and certified to meet American Refrigeration Institute Standard (ARI-700).（suitable for model D）

TABLE 8-1 REFRIGERANT CHARGE LEVEL

CONDITION	R134a REFRIGERANT
COMFORT COOING APPLICATIONS	
EVAPORATOR APPROACH	1℃~3.5℃
DISCHRGE SUPERHEAT	5℃~15℃
BRINE(ICE MAKING) APPLICATIONS	
EVAPORATOR APPROACH	1℃~4.5℃
DISCHRGE SUPERHEAT	6℃~20℃

8.3 Compressor oil

Yearly oil analysis is recommended to verify the continued use of the compressor oil.

It is very important to take the oil sample after the oil filter. The oil sample should not be left open to the atmosphere for more than 15 minutes since it will absorb moisture from the atmosphere and may yield erroneous results.

Compressor oil should be changed when the oil analysis indicates the oil has moisture and acid numbers are in excess of the limits set in Table 8.2.

TABLE 8.2 – COMPRESSOR OIL LIMITS

YORK OIL TYPE	MOISTURE CONTENT ppm	Total Acid Number mgKOH/ml
L(W)	< 300ppm	< 0.5

The YORK YEWS-E Chiller Compressors use rolling element bearings (ball and roller bearings); no sleeve bearings are used. Oil analysis that include metals may cause confusion when the results are compared to other equipment that utilize different bearing types. Iron and copper are examples of metals, which will appear in oil analysis that include metals. Other metals that may appear are Titanium, Zinc, Lead, Tin and Silicon. These metals should be ignored and are acceptable in quantities of less than 100 ppm. If an oil analysis should indicate high levels of Iron (more than 300 ppm) combined with Chromium and Nickel (more than 50 ppm), consult your local YORK Service Office – this could indicate bearing damage and wear.

Changing Compressor Oil

Compressor oil is changed by draining oil from the oil sump into a refrigerant recovery container. The oil sump is under positive pressure at ambient temperatures. Connect one end of a refrigeration charging hose to the service valve located at the bottom of the oil sump; connect the other end to an approved refrigerant recovery cylinder. Open the valve and drain the oil from the oil sump.

Charging units with Oil

The Oil Charge

YORK oil types approved for YEWS-E Units and the quality of oil required is listed in Table 8-3.

UNIT TYPE	OIL TYPE	SYSTEM QUANLITY(L)
YEWS100	L*	17
YEWS130	L*	25
YEWS170	L*	30
YEWS200	L*	33
YEWS210	L*	33
YEWS215	L*	33

* : HP unit use YORK “W” oil

Oil Charging Procedure

The oil should be charged into the oil separator using the YORK Oil Charging Pump. To charge oil, proceed as follows:

1. The unit should be shut down.

2. Immerse the suction connection of the oil charging pump in a clean container of new oil and connect the discharge conncetion to the compressor oil charging valve.Do not tighten the connection at the charging valve unless the air is forced out by pumping a few strokes of the oil pump. Filling the lines with oil to prevent air from being pumped into the system.

3. Open the oil charging valve and pump appropriate oil (according the data in oil charge table) into the system. Then close the charging valve and disconnect the hand oil pump.

4. As soon as oil charging is completed, closed the power supply to the starter to energize the oil heater. This will keep the concentration of regrigerant in the oil to a minimum.

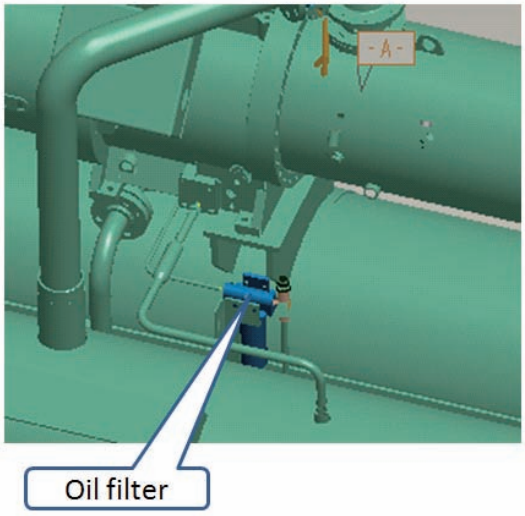
Oil temperature control

Automatic oil temperature control is accomplished by liquid injection into compressor/motor assembly. A solenoid valve will be opened when the discharge temperature increased to setpoints (only ITS&HP unit need this function).

8.4 Oil filter

For YEWS100H/130H/170H/200H/210H , a single oil filter is prov-ided as an standard equipment. Detail operations refer to the compressor operation and service manual.

For YEWS100P/130P/170P/200P/215P，a replaceable oil filter is equipped in the external oil supply line(as below picture) . Please make sure all the valves are in open status after the replacement of oil filter.



8.5 Condenser and Evaporator

General

Maintenance of condenser and evaporator shells is impotant to provide trouble free operation of the unit. The water side of the tubes in the shell must be kept clean and free from scale.Proper maintenance such as tube cleaning, and testing for leaks, is covered on the following pages.

Chemical water treatment

Since the mineral content of the water circulated through evaprators and condensers varies with almost every source of supply, it is possible that the water being used may corrode the tubes or deposit heat resistant scale in them.

Reliable water treatment companies are available in most large cities to supply a water treating process which will greatly reduce the corrosive and scale forming properties of almost any type of water.

As a preventive measure against scale and corrosion and prolong the life of evaporator and condenser tubes, a chemical analysis of water should be made, preferably before the system is installed. A reliable water treatment company can be consulted to determine whether water treatment is necessary, and if so, to finish the proper treatment for particular water condition.

Condenser and evaporator water side tube cleaning procedure

The standard condenser tubes used in YORK YEWS-E Chiller/Heat-Pump are internally enhanced copper tubes.

If the equipment is located in an unheated area that is susceptible to freezing, the water must be drained from the condenser to prevent tube failure from freezing.

Proper condenser water treatment can eliminate or significantly reduce the formation of scale on the waterside of the condenser tubes.

Maintain a minimum condenser water flow rate through the tubes of at least 3.33 ft/sec. (1 meter/sec.). Through tube water velocity should not exceed 12 ft/sec. (3.6 meter/sec.).

Condenser tubes must be maintained to provide proper chiller operation. Condenser Approach Temperature is a useful tool to monitor the performance of the condenser. By recording and logging the Condenser Approach Temperature as part of the chiller maintenance program, this will provide a warning that the waterside condenser tubes are fouled and require cleaning.Condenser Approach Temperature is the difference between the Condenser Leaving Water Temperature and the Saturated Condensing Temperature.

If the approach increases above 5.0℃ , or during the annual condenser inspection and the tubes are observed to be fouled, the tubes will require cleaning. For cond-enser fluids other than water consult with the local YORK Field Service Office for the correct condenser approach temperature.

Condenser water side tube cleaning procedure

Two methods are used for waterside tube cleaning to remove the scale; chemical and mechanical cleaning procedures. The composition of the scale will determine which method will be most effective to remove the scale and dirt.

Consult with the local YORK Field Service Office for a recommendation of the method(s) used in the local area.

Chemical Cleaning Procedure

Chemical cleaning is an effective method to remove scale from internally enhanced copper tubes. However, a company knowledgeable with the chemical cleaning procedure should be contracted or consulted. Follow the chemical cleaning company recommendations concerning solution cleaning strength and time duration of the cleaning process.

Serious damage to thecondenser tubes will result if the chemical cleaning procedure is improperly applied.

Mechanical tube cleaning must always follow a chemical cleaning procedure.

When chemical cleaning of the condenser tubes is required, it may be necessary to calculate the internal volume of the waterside condenser tubes. This information is necessary to properly mix the correct concentration of cleaning solution.

Standard materials of construction for YORK YEWS-E Chiller condensers is copper tubes and mild carbon steel water boxes.

Mechanical Cleaning Procedure

1. Drain the water from the condenser.

2. Remove the water boxes from both ends of the condenser. Use proper lifting equipment when removing the water boxes. Use caution not to damage the threads on the mounting studs that are welded to the tube sheet.

3. Select a tube cleaning brush for 3/4 inch I.D copper condenser tubes. If tubes other than 3/4 inch copper are used, select a tube cleaning brush that is made for the tube size. Generally, brushes made of hard plastic or brass bristled wires are preferred for cleaning copper tubes.

4. Attach the tube cleaning brush to the end of a cleaning machine or cleaning rod.

5. Flush the condenser with clean water to remove the debris.

6. Replace the water box gasket with a new gasket and reassemble the water boxes onto the condenser.

Evaporator tubes

The standard evaporator tubes used in YORK YEWS-E Chillers are internally enhanced copper tubes.

If the equipment is located in an unheated area that is susceptible to freezing, the water must be drained from the evaporator to prevent tube damage from freezing.

Maintain evaporator water or brine flow rates through the evaporator tubes that the chiller was designed for. Refer to the engineering data on the sales order form for the correct flow rates. Generally, the water or brine that is circulated through the evaporator is part of closed loop circuit that is treated with chemicals to prevent the formation of scale and debris.

Evaporator

It is difficult to determine by a particular test whether possible lack of performance of water evaporator is due to fouled tubes alone or due to a combination of troubles. Trouble which may be due to fouled tubes is indicated when, over a period time, the cooling capacity decreases and the split (temperature difference between the water leaving the evaporator and the refrigerant temperature in the evaporator) increases. A gradual drop off in cooling capacity can also be caused by a gradual leak of refrigerant from the system or by a combination of fouled tubes and shortage of refrigerant charge. An excessive quantity of oil in the evaporator can also contribute to erractic performance.

If cleaning of the evaporator tubes is required, follow the condenser cleaning procedure.

8.6 Checking System For Leaks

Leak Testing During Operation

The refrigerant side of evaporator is carefully pressure test and evacuated at factory.

After system is operated under load, the high pressure components should be carefully leak test with a leak detector to be sure all joins are tight.

If a leak exits, frequent purging will be required or refrigerant will be lost.

If any leaks are indicated, they must be repaired immediately. Usually, leak can be stopped by tightening flare nuts or flange bolts. However, if it is necessary to repaired a weld joins, the refrigerant charged muse be removed. (See the “Handling Refrigerant for Disma-ntling and Repair” Section of the Maintenance Section in this manual).

Conducting R-134a Pressure Test

With the R-134a charge removed and all known leaks repaired, the system should be charge with a small amount of R-134a mixed with dry nitrogen so that a halide torch or electronic leak detector can be used to detect any leaks too small to be found by soap test.

To test with R-134a, proceed as follows:

1. With no pressure in the system, Charge R-134a gas and dry nitrogen into the system through charge valve to a pressure of 150PSI..

2. To be sure that the concentration of refrigerant has reached all parts of the system, slightly open the oil charging valve and test the presence of refrigerant with a leak detector.

3. Test around each join and factory weld. It is important that this test is thoroughly and carefully done, spending as much time as necessary and using a good leak detector.

4. To check for refrigerant leaks in evaporator and condenser, open the vents in the condenser and evaporator heads and test for presence of refrigerant. If no refrigerant is present, the tubes and tube sheets can be considered tight. If refrigerant is detected at the vents, the head must be removed, the located (by means of soap test or leak detector)and repaired.

5. When absolute tightness of the system has been established, blow the mixture of refrigerant and nitrogen through the charging valves

8.7 Evacuation And Dehydration Of Unit

Vacuum Dehydration

Should the chiller be opened to the atmosphere for lengthy repair or service, follow the Vacuum Dehydration Guidelines to ensure that all air, moisture and non-condensable gases are removed prior to placing the chiller into service.

Vacuum Testing

The vacuum test should be conducted as follows:

1. Connect a high capacity vacuum pump, with indicator, to the system charging valve.

2. Open wide all system valves, including the purge and gauge valves. Be sure all valves to atmosphere are closed.

3. Operate the vacuum pump until a wet bulb temperature of 0℃ or a pressure of 5mm Hg is reached.

4. To improve evacuation circulate hot water(not to exc-eed 52℃) through the evaporator and condenser tubes to thoroughly dehydrate the shells. If a source of hot water is not readily available, a portable water heater should be employed. DO NOT USE STEAM.A suggested method is to connect a hose between the source of hot water under pressure and evaporator heat drain connec-tion, out the evaporator vent connection, into the conde-nser heat drain and out the condenser vent. To avoid the possibility of causing leaks, the temperature should be br-ought up slowly so that the tubes an shell are heated evenly.

5. Close the system charging valve and stop valve bet-ween the vacuum indicator and the vacuum pump. then disconnected the vacuum pump leaving the vacuum ind-icator in place.

6. Hold the vacuum obtained in step3 in the system for 8 hours; the slighter rise in pressure indicates a leak or the pressure of moisture, or both. If, after 8hours the wet bulb temperature in the vacuum indicator has not risen above 5℃ or a pressure of 6.3mm Hg, the system may be cons-idered tight.

Be sure the vacuum indicator is valved off while holding the system vacuum and be sure to open the valve between the vacuum indicator and the system when checking the vacuum for the 8 hours period.

7. If the vacuum does not hold for 8 hours with the limits specified in step 6 above, the leak must be found and repaired.

8.8 working conditions

Reading the working pressure and temperature from the display panel by pressing the “display” key. Comfirm that whether these value is within the working limits.

8.9 Scheduled Maintenance

The maintenance operations detailed in the following table should be carried out on aregular basis by a suitably qualified Service Engineer, It should be noted that the interval necessary between each 'minor' and 'major' service can vary depending on, for instance, application, site conditions and expected operating schedule. Normally a minor 'service' should be carried out every three to six months and a 'major' service once a year.It is recommended that your local York Service Centre is contacted for recommendations for individual sites.

9 TROUBLE SHOOTING

9.1 System Trouble Shooting Analysis

Successful problem solving requires an organized approach to define the problem, indentify the cause,and make the proper correction. Sometimes it is possible that two relatively obvious problems combine to provide a set of symptoms that can mislead the troubleshooter. Be aware of this possibility and avoid solving the "Wrong problem"

When an operating problem develops, compare all operating information on the OPERATING DISPLAY with normal operating conditions. If an Operating Log has been maintained, the log can help determine what constitutes normal operation for the compressor unit in that particular system.

Possible Cause	Identification	Remedy
1. Symptom: Low suction pressure		
Faulty the pressure sensor	Abnormal pressure value observed in panel	Change pressure sensor
Faulty the chilled water temperature sensor	Abnormal temperature difference between leaving chilled water and evaporation temperature	Change chilled water temperature sensor
Evaporator tubes dirty or scaled	Temperature difference between leaving chilled water and evaporation temperature greater than normal with normal discharge temperature	Clean evaporator tubes, Check water conditioning
Insufficient evaporator water flow	Temperature difference between evaporator water on and water off higher than nomal	Increase the quantity of water through the evaporator to proper value
Improper value set of “LOW LELT” or "LEP SHUN DOWN"	“LOW LELT” set should be greater than the saturation temperature calculated according to"LEP SHUN DOWN" set	Reset the new “LOW LELT” or "LEP SHUN DOWN" to proper value
Compressor not start from min load	Motor current greater normal after the Star-Delta transfer	Check compressor slide valve and slide valve solenoid valve
Slide valve out of control	No unloading action while there is unloading demand	"Check compressor slide valve and slide valve solenoid valve;Set the compressor unloading time to proper value"
Low suction pressure	Temperature between leaving chiller water and cooling water is small and suction pressure drop with the loading of compressor	Increase the condesner water temperature
Insufficient refrigerant charge	Temperature difference between leaving chilled water and evaporation temperature greater than normal with high discharge temperature	Check for leaks and charge refrigerant into system
Insufficient load for system capacity	Temperature of chilled water too low with low motor amperes	Check slide valve operation and setting of low water temperature cutout
2. Symptom: Oil level switch trip		
Refrigerant overcharged	Chiller tripped in high frequency with low discharge superheat	Recover refrigerant to make the discharge superheat and the subcooling to proper value
Faulty oil level switch	The oil is full in the bottom sightglass but the oil level switch is open	Change oil level switch
Faulty oil heater	No oil superheat in the oil sink	Change oil heater
Oil filter(outside the compressor) clogged	Notable temperature difference observed before and after the oil filter	Clean the oil filter
Compressor not start from min load	Motor current greater than normal after the chiller started with low discharge superheat	Check compressor slide valve and slide valve solenoid valve;Set the compressor unloading time to proper value
Insufficient load for system capacity	Temperature difference evaporator water on and water off very small	Increase compressor min operation current set

Cooling water temperature too low	Low discharge superheat with low leaving cooling water temperature	Increase condenser water temperature
Jet or orifice of oil eductor clogged	No notable temperature difference on the oil eductor	Change oil filter and oil eductor
Insufficient oil charge	Oil level is low while the chiller operating in nomal condition	Charge oil into compressor
Overcharged oil	High oil level with evaporator foaming	Recover some oil from compressor
3.Symptom: High discharge pressure		
Cooling water temperature too high	High condenser water temperature	Reduce condenser water inlet temperature.(Check cooling tower and water circulation)
Condenser tubes dirty or scaled	Temperature difference between refrigerant and water off of condenser greater than normal	Clean condenser tubes.Check water conditioning
Insufficient condenser water flow	Temperature difference between condesner water on and water off higher than nomal,with nomal evaporator pressure	Increase the quantity of water through the condenser to proper value
Faulty compressor discharge valve	High discharge pressure or the High discharge pressure switch tripped	Check the compressor discharge valve
Faulty discharge pressure sensor	Abnormal discharge pressure observed in the panel	Change pressure sensor
Air in condenser	Temperature difference between liquid refrigerant temperature and water off condenser higher than normal	Purge unit
4. Symptom: Insufficient oil supply pressure		
Cooling water temperature too low	Pressure difference between oil pressure and discharge pressure too small	Increase condenser water temperature
Faulty oil pressure or evaporation pressure sensor	Abnormal oil or discharge pressure observed in the panel	Change pressure sensor
5. Symptom: The difference of discharge pressure and oil pressure is too high		
Oil filter(inside the compressor) clogged	Pressure difference between oil pressure and discharge pressure greater than 200 kPa	Change oil filter
Faulty discharge pressure or oil pressure sensor	Abnormal oil or discharge pressure observed in the panel	Change pressure sensor
6. Symptom: High discharge temperature		
Cooling water temperature too high	High condenser water temperature	Reduce condenser water inlet temperature.(Check cooling towen and water circulation)
Condenser tubes dirty or scaled	Temperature difference between liquid refrigerant temperature and water off condenser higher than normal	Clean condenser tubes
Insufficient load for system capacity	High discharge superheat with low motor amperes	Increase compressor min operation current set
7. Symptom: Low discharge superheat		
Over charged with refrigerant	Low discharge superheat with foaming in oil separator	Adjust charge
Refrigerant saturated with oil	Evaporator foaming and low discharge superheat	Perform oil recovery and check oil levels
Over charged with oil	High oil level with evaporator foaming	Adjust oil charge
8.Symptom: Low chilled water temperature		
Slide valve fail to unload	Motor current greater than normal when the chiller stop	"Check compressor slide valve and slide valve solenoid valve;Set the compressor unloading time to proper value"
Wrong value of LOW LELT	" LOW LELT" set falling within chiller cycling region	Adjust water temperature set value
9. Symptom: Motor over current		
Compressor load too speedy	Unloading time set too big	Adjust compressor loading time set
Wrong value of CUR.OFFSET	Current showed in panel greater than the lab test	Adjust current offset to proper value

9.2 Sensor Calibration Charts

Chilled leaving liquid temperature, chilled return liquid temperature, leaving cooling liquid temperature, returning cooling liquid temperature sensors:

Temperature℃	-5	-3	-1	1	3	5	7	9	11	13	15
Resistance K Ω	42.82	38.53	34.57	31.32	28.29	25.59	23.17	21.01	19.07	17.33	15.77
Temperature℃	17	19	21	23	25	27	29	31	33	35	37
Resistance K Ω	14.3	13.1	11.96	10.93	10	9.16	8.4	7.71	7.085	6.517	6

Discharge temperature sensor

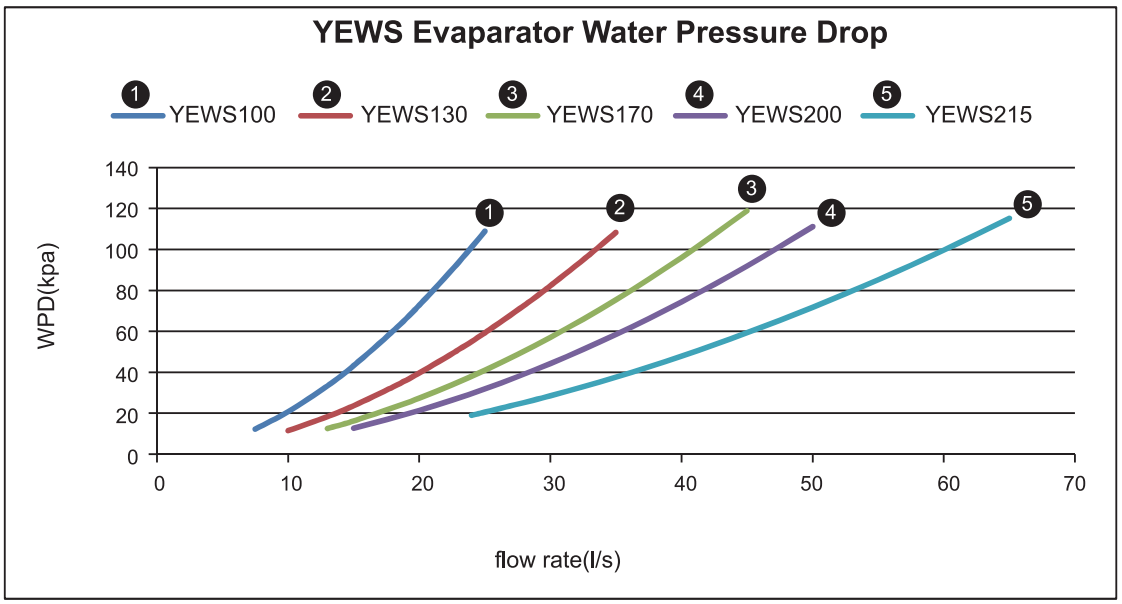
Temperature℃	0	3	6	9	12	15	18	21	24	27	30
Resistance K Ω	166.75	142.9	122.81	105.83	91.443	79.219	68.804	59.908	52.291	45.752	40.125
Temperature℃	33	36	39	42	45	48	51	54	57	60	63
Resistance K Ω	35.272	31.076	27.44	24.283	21.535	19.137	17.042	15.206	13.595	12.178	10.929

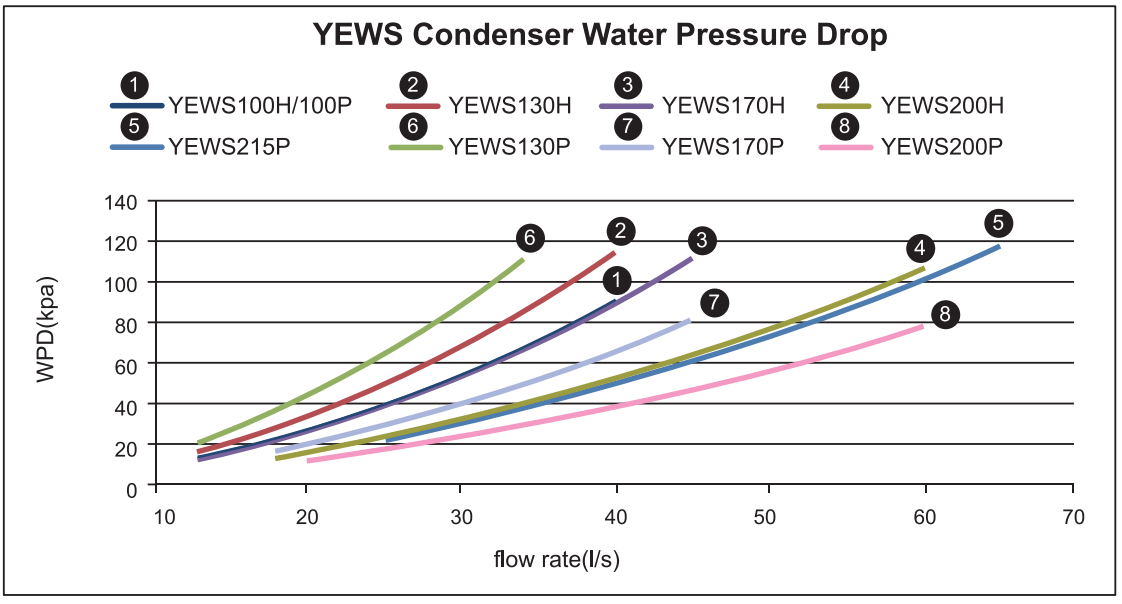
10 TECHNICAL DATA

10.1 Unit physical parameters

Unit Model	Connection Flange mm		Unit Size mm		
	EVAP	COND	Length	Width	Height
YEWS100	100	100	2595	1280	1820
YEWS130	125	100	3030	1280	1865
YEWS170	125	125	3055	1350	1865
YEWS200	150	150	3080	1430	1885
YEWS215	150	150	4215	1620	2085

10.2 Water pressure drop

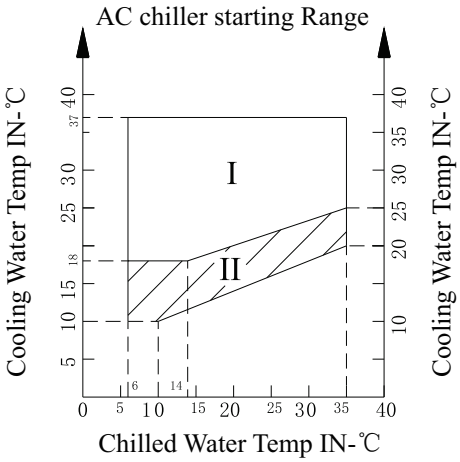




10.3 Physical datas

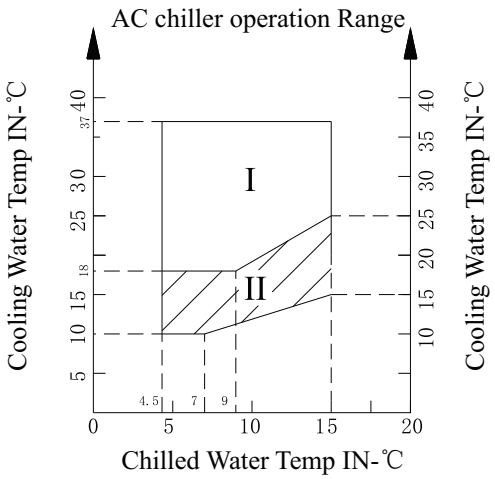
Model	Refrigerant Circuit NO.	Refrigerant Charge(kg)	Lubrication Charge (L)	Compressor		Water Volume per Evaporator L	Water volume per condenser L	Weight	
				Qty	Unit Capacity Control %100			Shipping Weight kg	Operating Weight kg
YEWS100	1	100	17	1	25~100	126	129	2800	3200
YEWS130	1	120	25	1	25~100	135	146	3450	3950
YEWS170	1	130	30	1	25~100	156	187	3650	4150
YEWS200/210	1	150	33	1	25~100	196	236	3980	4480
YEWS215	1	220	33	1	25~100	530	520	5700	6750

10.4 Starting/Operation limits of unit



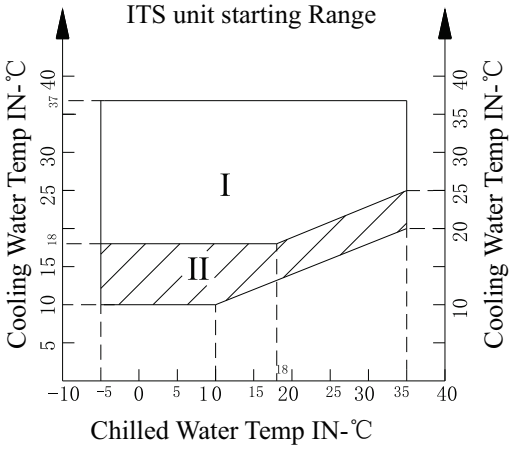
I ----AC unit strating range
II ----Extra starting range for AC unit after equiped with three-way valve to maintain the required condenser pressure

**:The unit should be used within the allowed scope of atmoshpere temperater: 4.3~43.3° C



Operation Range I based on 5℃ water temperature approach for both chilled and cooling water.
I ----AC unit standard full load operation
II ----Extra full load operation range after equiped with three-way valve to maintain the required condenser pressure

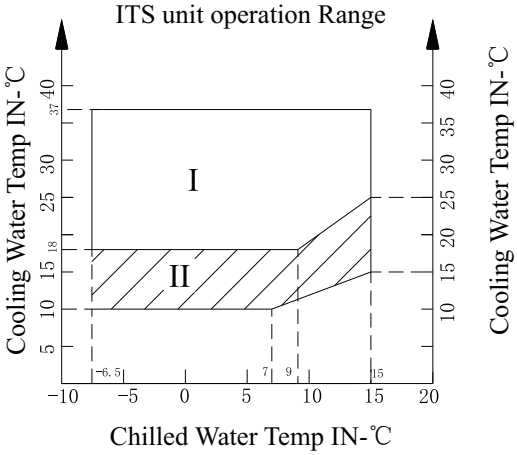
ITS unit starting Range



I ----ITS unit strating range
II ----Extra starting range for ITS after equiped with three-way valve to maintain the required condenser pressure

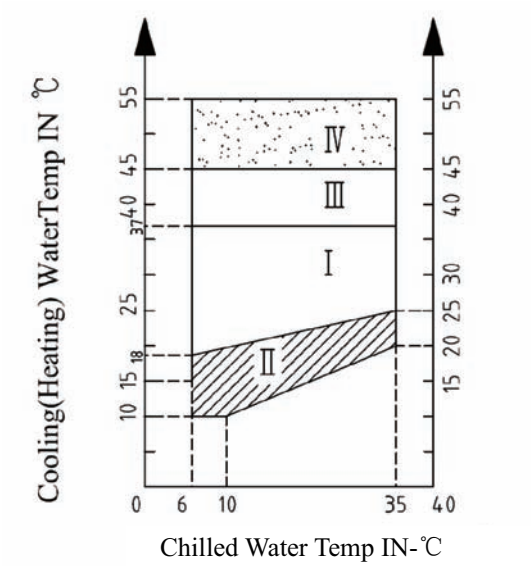
**:The unit should be used within the allowed scope of atmoshpere temperater: 4.3~43.3° C

ITS unit operation Range



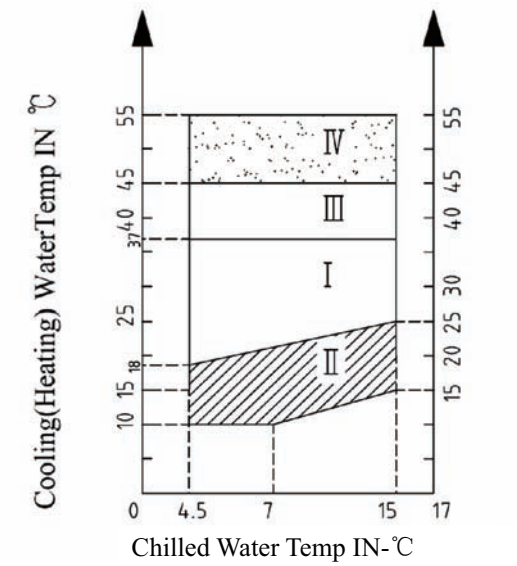
Operation Range I based on 5℃ water temperature approach for both chilled and cooling water under AC mode.
I ----ITS unit standard full load operation
II ----Extra full load operation range after equiped with three-way valve to maintain the required condenser pressure

HP unit staring Range



Unit Starting Range
Ⅰ Staring range under cooling mode
Ⅰ+Ⅲ Starting range under HP mode
Ⅰ+Ⅲ+Ⅳ Starting range under HP2 mode
Ⅱ Extra starting range after equipped with three-way valve to maintain the required condenser pressure.

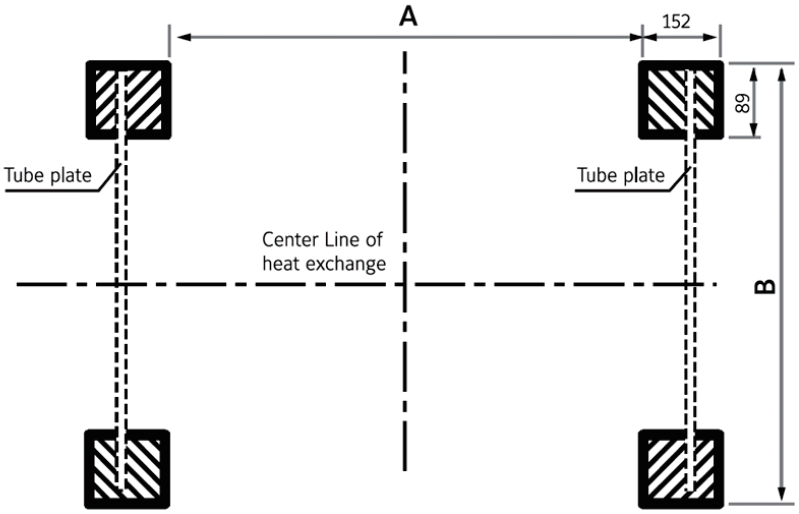
HP unit operation Range



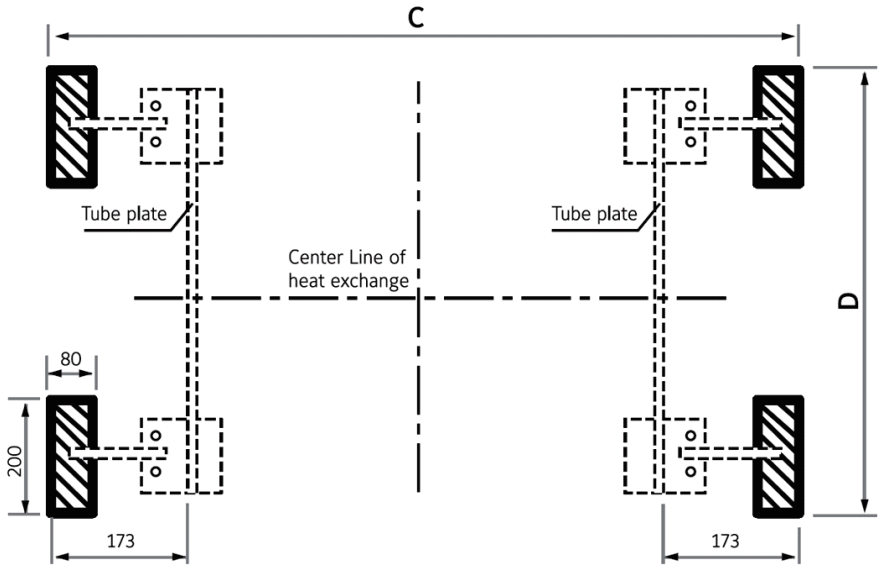
Unit operating range
Ⅰ/Ⅲ/Ⅳ Operating range based on 5℃ water temperature approach for both evaporator and condenser.
Ⅰ Full load operation range under cooling mode
Ⅰ+Ⅲ Full load operation range under HP mode
Ⅰ+Ⅲ+Ⅳ Full load operation range under HP2 mode
Ⅱ Extra full load operation after equipped with three-way valve to maintain the required condenser pressure.
Note: HP unit can meet the highest 50 ℃ hot water needs.
HP2 unit can meet the highest 60 ℃ hot water needs.

10.5 Foundation Diagram

Rubber Isolator Pad Layout



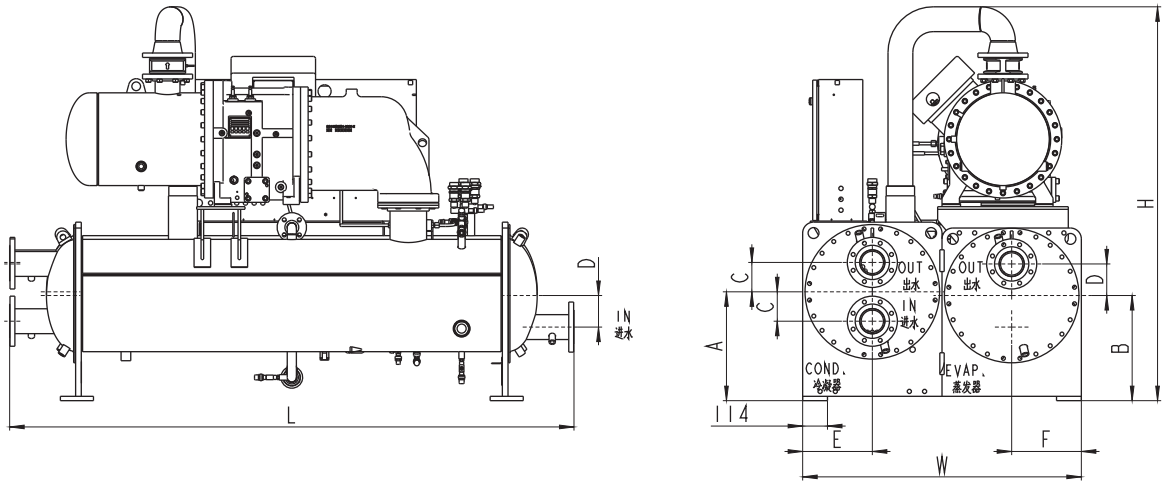
Spring Isolator Layout



Model	A(mm)	B(mm)	C(mm)	D(mm)
YEWS100	1822	1280	2332	1368
YEWS130	2427	1280	2937	1368
YEWS170	2427	1350	2937	1438
YEWS200	2427	1430	2937	1518
YEWS215	3494	1620	4004	1708

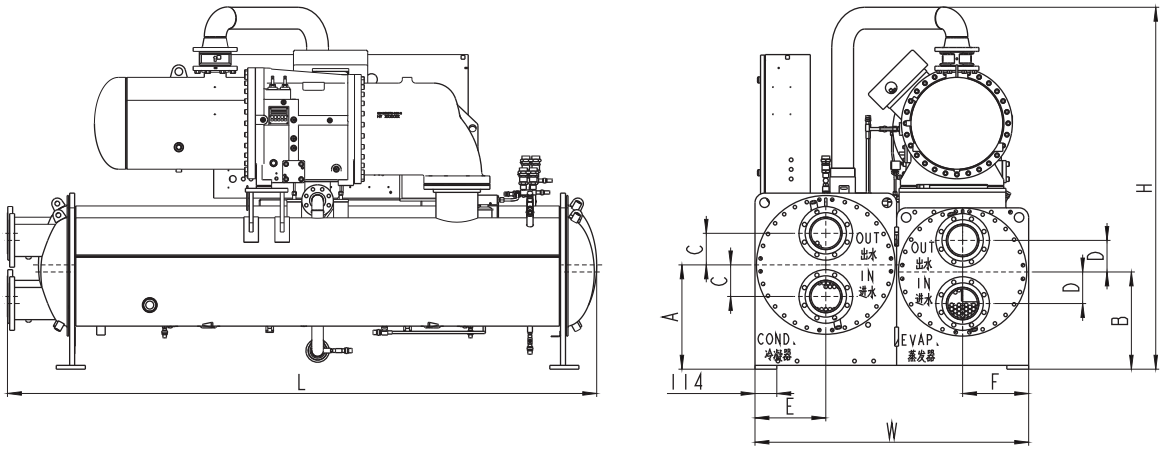
10.6 Dimensions

YEWS100



Model	L(mm)	W(mm)	H(mm)	A(mm)	B(mm)	C(mm)	D1/D2(mm)	E(mm)	F(mm)
YEWS100	2595	1280	1820	500	483	135	145	320	320

YEWS130/170/200/215



Model	L(mm)	W(mm)	H(mm)	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)
YEWS130	3030	1280	1865	500	483	135	145	320	320
YEWS170	3055	1350	1865	540	483	155	145	345	330
YEWS200	3080	1430	1885	545	508	165	165	370	345
YEWS215	4215	1620	2035	605	545	180	180	405	405

11 SPARE PARTS

11.1 Recommended Spares

It is recommended that the following common spare parts are held for preventative of corrective maintenance operations.

Other spare parts vary depending on the unit model. Contact your local York Sales and Service Centre for information and please quote the unit model number and serial number.

When ordering spare parts, we will require the following information to ensure the correct parts are supplied:

Full unit model number, serial number, application and details of the parts required.

All requests for parts should he made to your local York Sales and Service Centre.

11.2 Recommended Compressor Oils

The correct type of oil must be used in the unit as shown on the unit data plate and labels. Standard units use the following oil and refrigerant:

Oil: YORK ”L” lubricating oil is used in the AC/ITS units while YORK ”W” lubricating oil is used in the HP units.

Refrigerant: Only the R134a refrigerant can be used.

12 DECOMMISSIONING,DISMANTLING AND DISPOSAL

12.1 General description

Never release refrigerant to the atmosphere when emptying the refrigerating circuits. Suitable retrieval equipment must be used. If reclaimed refrigerant cannot be reused. It must be Enteringed to the manufacturer.

Never discard used compressor oil, as it contains refrigerant in solution. Entering used oil to the oil manufacturer.

Unless otherwise indicated, the operations described below can be performed by any properly trained maintenance technician.

Isolate all sources of electrical supply to the unit including any control system supplies switched by the unit. Ensure that all points of isolation are secured in the 'OFF' position. The supply cables may then be disconnected and removed. For connection points refer to Section 4.

Remove all refrigerant from each system of the unit into a suitable container using a refrigerant reclaim or recovery unit.This refrigenmt may then be re-used, if appropriate, or Enteringed to the manufacturer for disposal. Under NO circumstances should refrigerant be vented to atmosphere. Drain the oil from each system into a suitable container and dispose of according to local laws and regulations governing the disposal of oily wastes. Any spill oil should be mopped up and similarly disposed of.

Isolate the unit heat exchangers from the external water systems and drain the heat exchanger section of the systems. If no isolation valves are installed it may be necessary to drain the complete system.

After draining, the water pipework can be disconnected and removed.

Units can generally be removed in one piece after disconnection as above. Any mounting bolts should be removed and then the unit should be lifted from position using the points provided and equipment of adequate lifting capacity.

Reference should be made to Section 4 for unit installation instructions, Section 9 for unit weights and Section 3 for handling.

Units which cannot be removed in one piece after disconnection as above must be dismantled in position. Special care should be taken regarding the weight and handling of each component.Where possible units should be dismantled in the reverse order of installation.

Residual refrigerant oil and glycol or similar solutions may remain in some parts of the system. These should be mopped up and disposed of as described above.

It is important to ensure that whilst components are being removed the remaining parts are supported in a safe manner.

Only use lifting equipment of a dequate capacity.

After removal from position the unit parts may be disposed of according to local laws and regulations.

13 INSTALLATION INSTRUCTIONS FOR THE HF68 FLOW SWITCHES

13.1 Application

This switch, a SPDI type flow switch, is a kind of relay used for inspecting and observing liquid flow. Normally, it is applied to air flow adjustment and water supply equipments and induction flow channels where there is flow variation such as water, ethane, ethanediol and other non-hazardous liquids. Its typical application is where linkage or cut-out protection is needed.

13.2 Parameters

Maximum working pressure: 1.6MPA, connector size: 1” NPT, 3/4 ” NPT and 1/2 ” NPT With three-way pipe connector.

13.3 Flow adjustment range and media temperature range

18L/min-2000L/min (standard)
5L/min-3000L/min (non-standard)
-45℃-120℃

This switch shall not be used in pipes where freezing is possible. The flow switch is designed to be used as a controller. Failure of its controlling function may result in personal injury and/or property damages. The managerial personnel shall be responsible for installing protection devices (safety device and restriction controller), or adding alarm and monitor systems to guard against its failure.

The controller shall not be used for load in excess of the ratings as shown in the controller label.

13.4 Installation

In order to sense the flow variation, its flap shall not be in contact with the pipe wall, neither with any throttle devices in the pipe.

Danger of incorrect operation.

The switch has been set to the minimum flow at the plant, which shall not be exceeded during adjustment as it may result in the switch's failure to reset to no flow position. The HF68 flow switch MUST be installed in a linear pipe at both sides of which there MUST be a linear length with at least five times of the pipe diameter. When a switch is installed, its wiring terminals must be accessible.

The switch should be installed in a position easy for wiring, normally within the outlet stop valve for the convenience of maintenance.

It is suggested to install the flow switch in the following steps:

1. Drill the water pipe with the hole size 3-4mm larger than the outer diameter of the steel connector.

2. Weld the steel connector to the hole of the water pipe.

3. Tighten the switch on the steel connector with a flat wrench. Note: DO NOT tighten it with the switch housing.

4. Ensure that no part is in contact with the pipe wall or its activity is not obstructed.

5. Adjust the water flow to the minimum design flow with an adjusting screw. The on/off action and the arrow on the housing MUST point at the flow direction.

The steel connector MUST be welded directly on the water pipe. The steel pipe shall not be welded to the water pipe to connect the steel connector. The steel connector MUST be the one provided by YORK which is included in the water flow switch packaging box. No use of this connector may result in flow switch explosion.

The flow switch shall not be subject to water hammer. If a snap cut-off valve is installed on the downstream of the flow switch, appropriate water hammer proofing devices MUST be used.

13.5 Wiring

All wiring can adopt only copper conductors and NEC or local regulations MUST be observed. HF68 has color

leads with the red one as the center line. When the flow increases, the red line contacts the yellow line; when the flow decreases, the red line contacts the blue line. Use supplied terminal screws for wiring. Use of other screws may result in improper wiring.

CAUTION

No power shall be supplied during wiring to guard against electric shocks or damages to the equipment.

13.6 Steps to adjust the flow switch settings

1. Remove the HF68 housing.

2. Turn the adjusting screw clockwise to increase the flow. If the flow needs to be decreased, turn the adjusting screw anticlockwise.

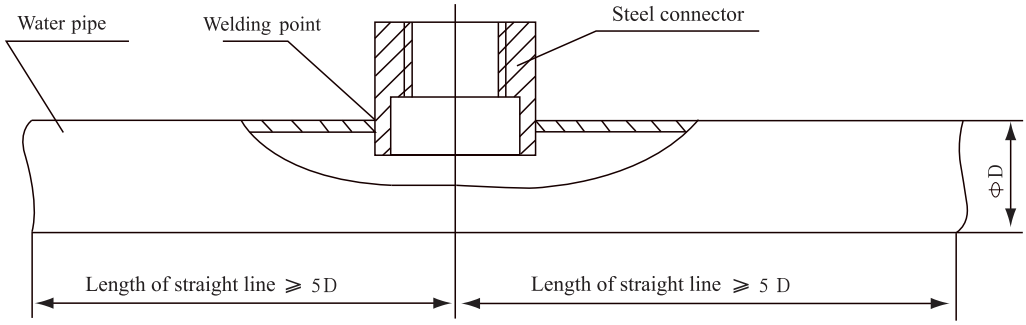
3. Press the main lever for a few times to ensure the flow switch setting is no less than the EXW setting. If there is no click sound when the lever is Enteringed, turn the adjusting screw clockwise until click sound appears.

CAUTION

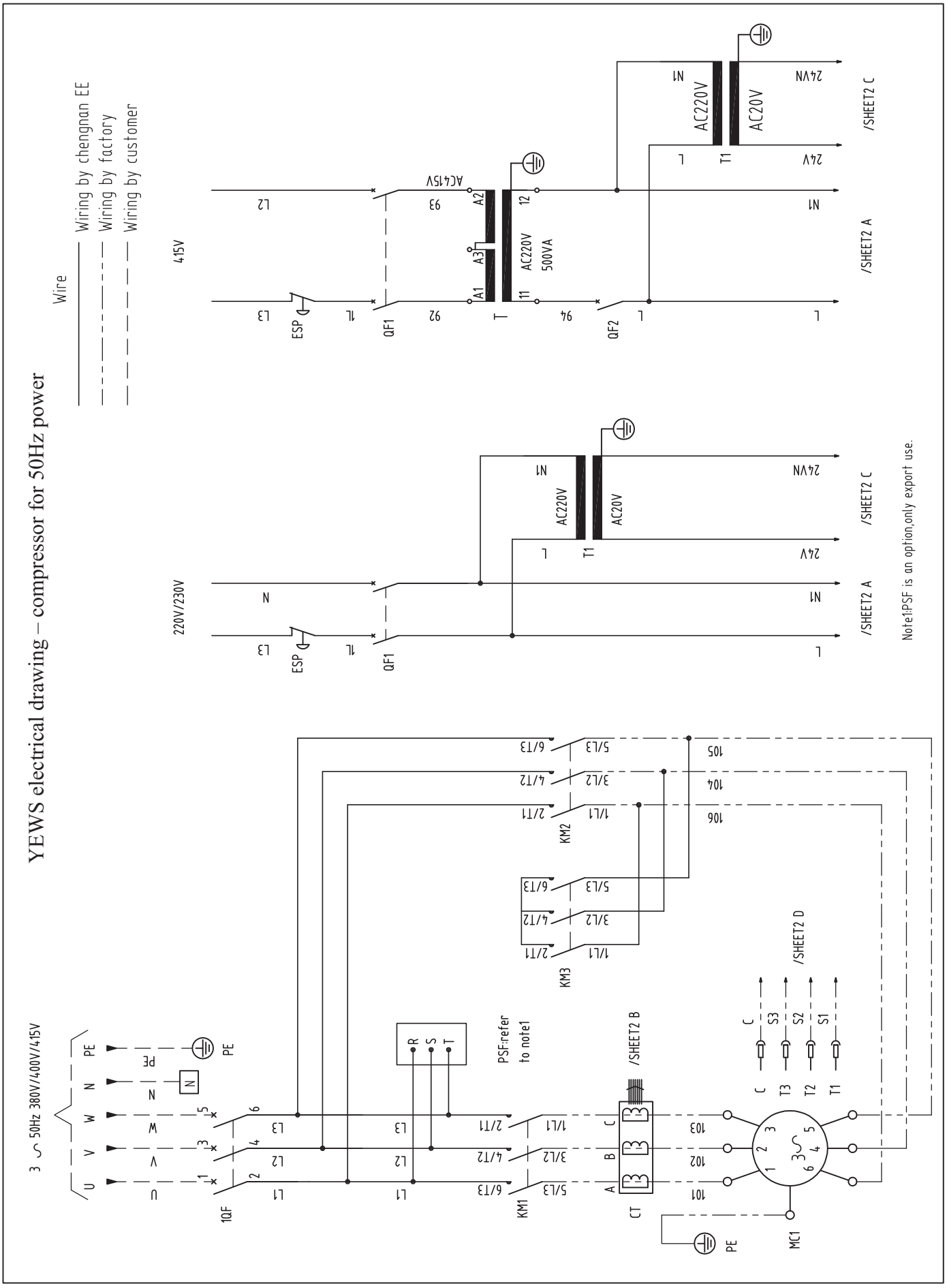
If the water flow switch is used in chilled water pipes, ensure its insulation as described in Water Flow Switch Manual.

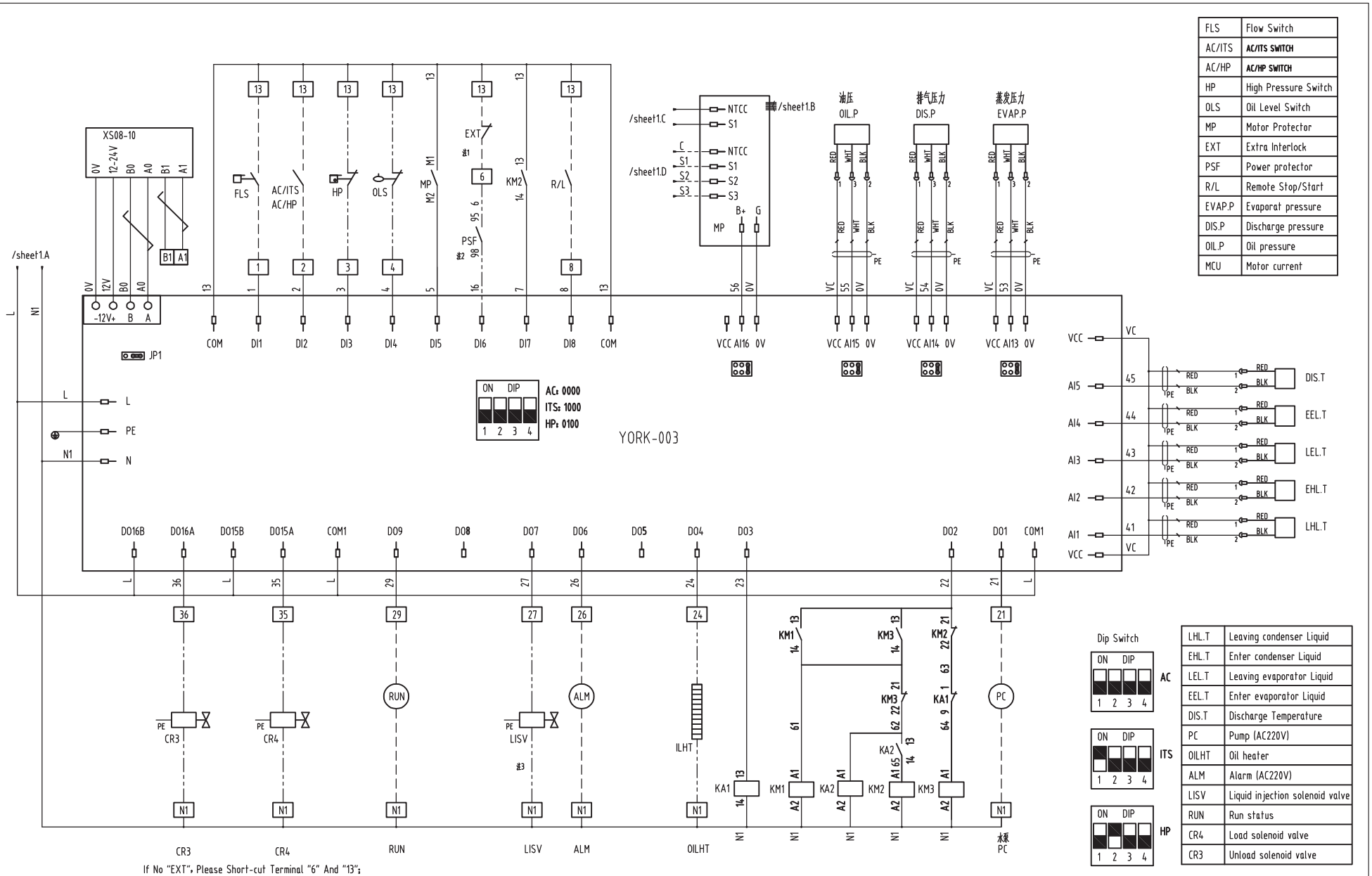
WARNING

The water flow switch is set to the minimum at the plant. It is forbidden to set it below the EXW setting. Otherwise, it may cause that the flow switch cannot reset during water cut-out.

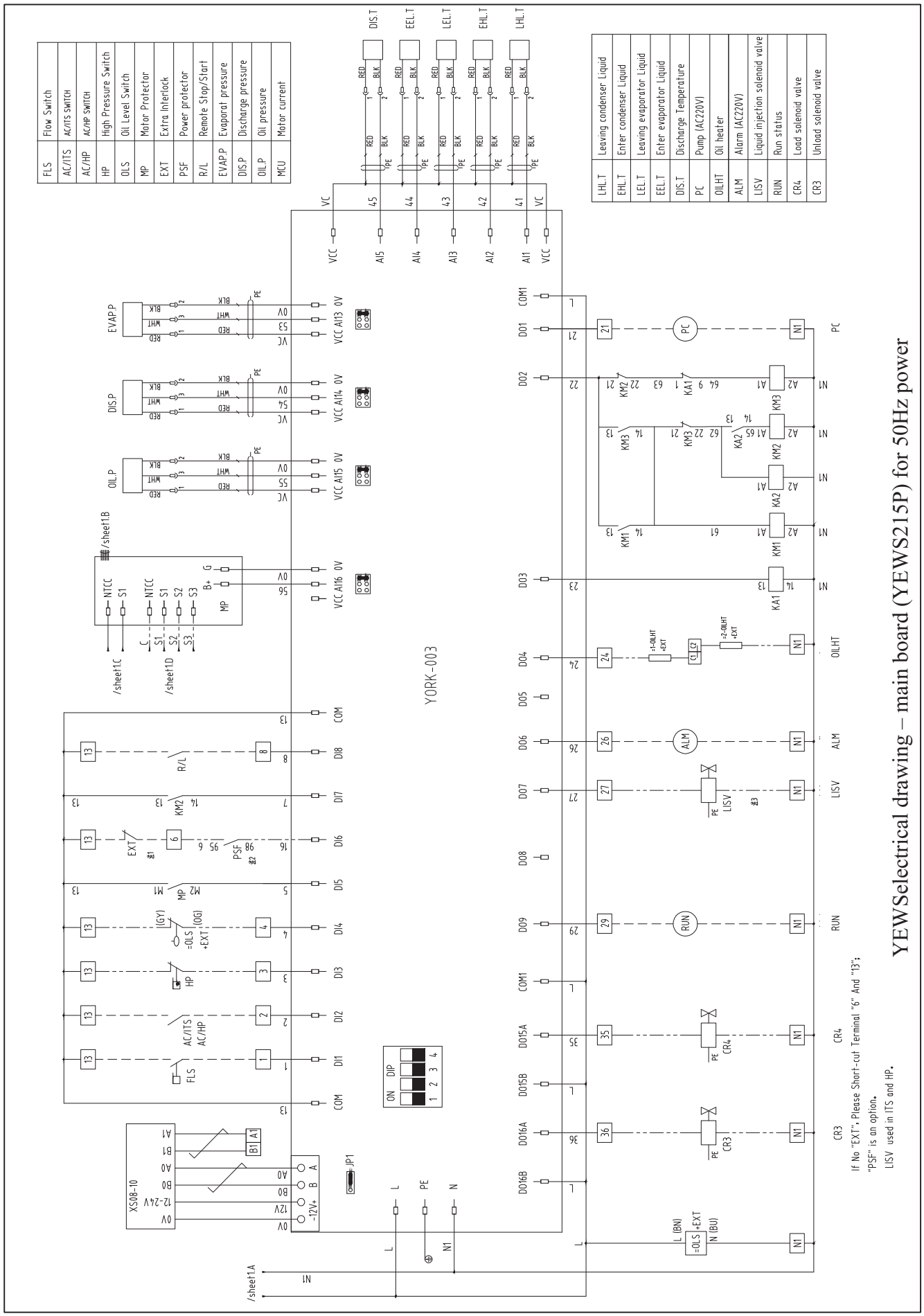


You MUST carefully read HF68 Flow Switch Manual before installing the flow switch and follow the instruction strictly. If you have any question, please contact the nearest YORK Maintenance Center.

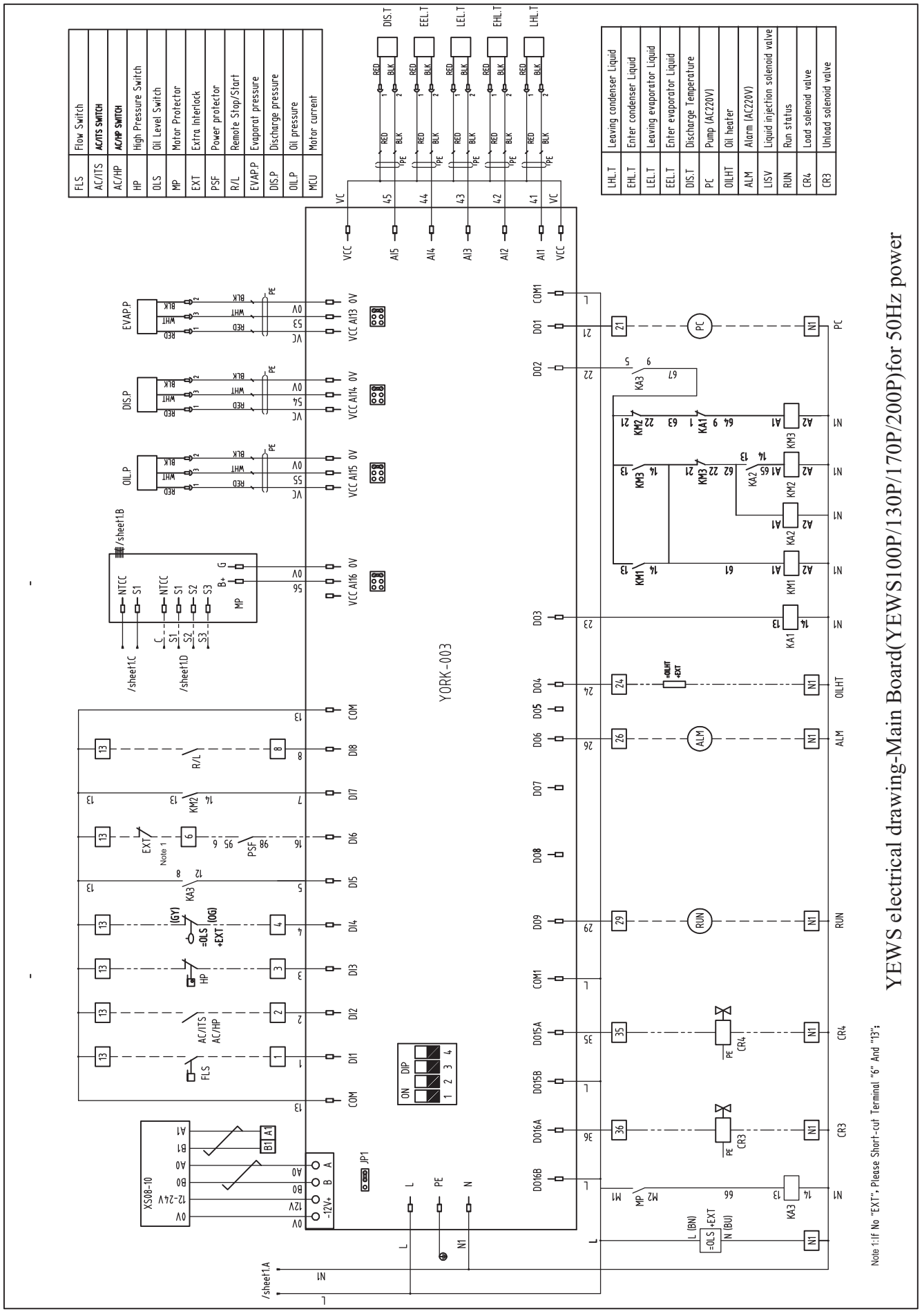

YEWS electrical drawing – compressor for 50Hz power
Wire
Wiring by chengnan EE
Wiring by factory
Wiring by customer
3 ∽ 50Hz 380V/400V/415V
U V W N PE
PE
N
1QF
KM1
KM2
KM3
CT
MC1
PSF:refer to note1
/SHEET2 B
/SHEET2 D
C S3 S2 S1
C T3 T2 T1
R S T
415V
AC415V
ESP
QF1
QF2
AC220V 500VA
AC220V
AC20V
24VN
24V
/SHEET2 A
/SHEET2 C
220V/230V
Note1:PSF is an option,only export use.



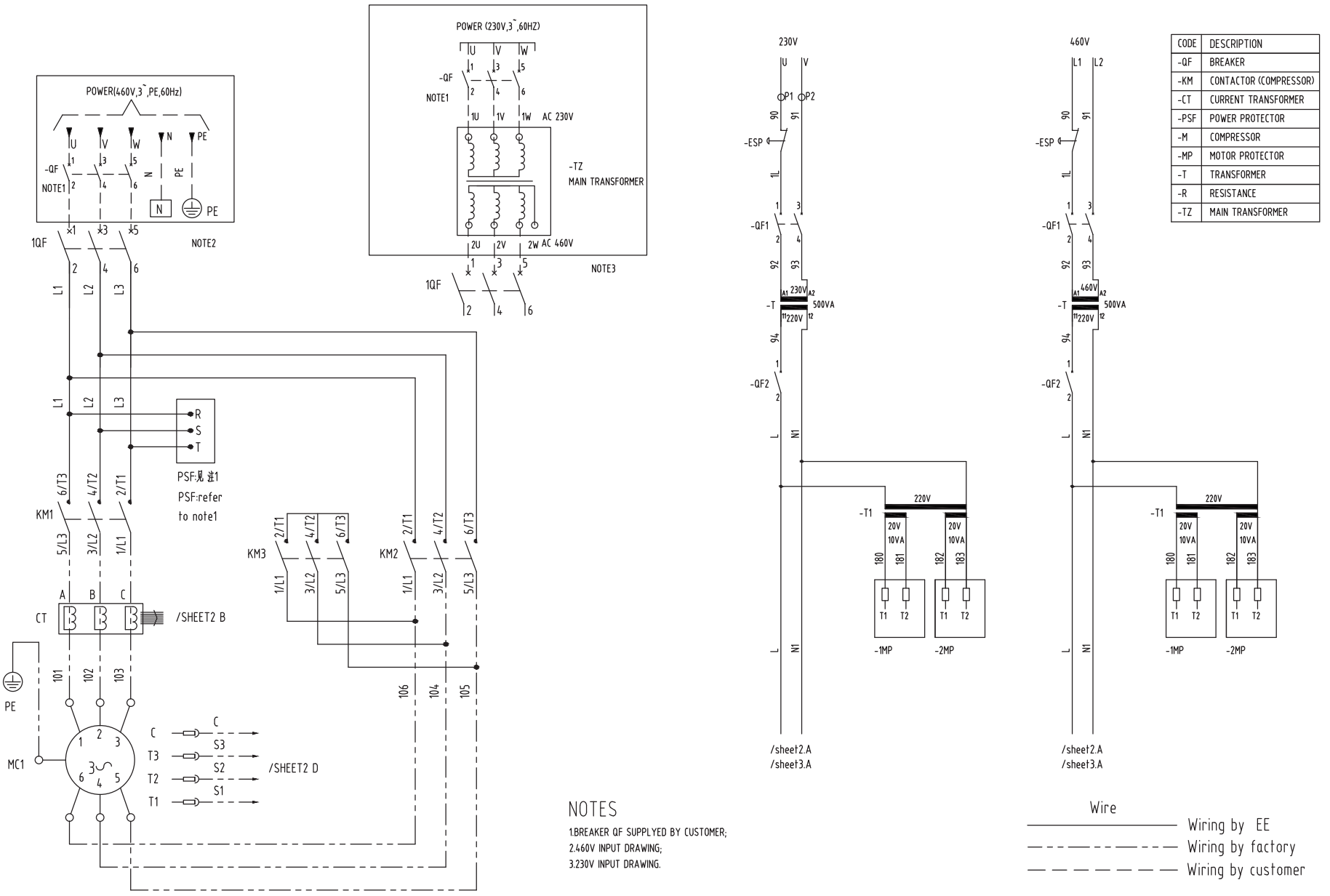
YEWS electrical drawing – main board (YEWS100H/130H/170H/200H/210H) for 50Hz power



YEWSelectrical drawing – main board (YEWS215P) for 50Hz power



YEWS electrical drawing-Main Board(YEWS100P/130P/170P/200P)for 50Hz power



CODE	DESCRIPTION
-QF	BREAKER
-KM	CONTACTOR (COMPRESSOR)
-CT	CURRENT TRANSFORMER
-PSF	POWER PROTECTOR
-M	COMPRESSOR
-MP	MOTOR PROTECTOR
-T	TRANSFORMER
-R	RESISTANCE
-TZ	MAIN TRANSFORMER

NOTES

1.BREAKER QF SUPPLYED BY CUSTOMER;
2.460V INPUT DRAWING;
3.230V INPUT DRAWING.

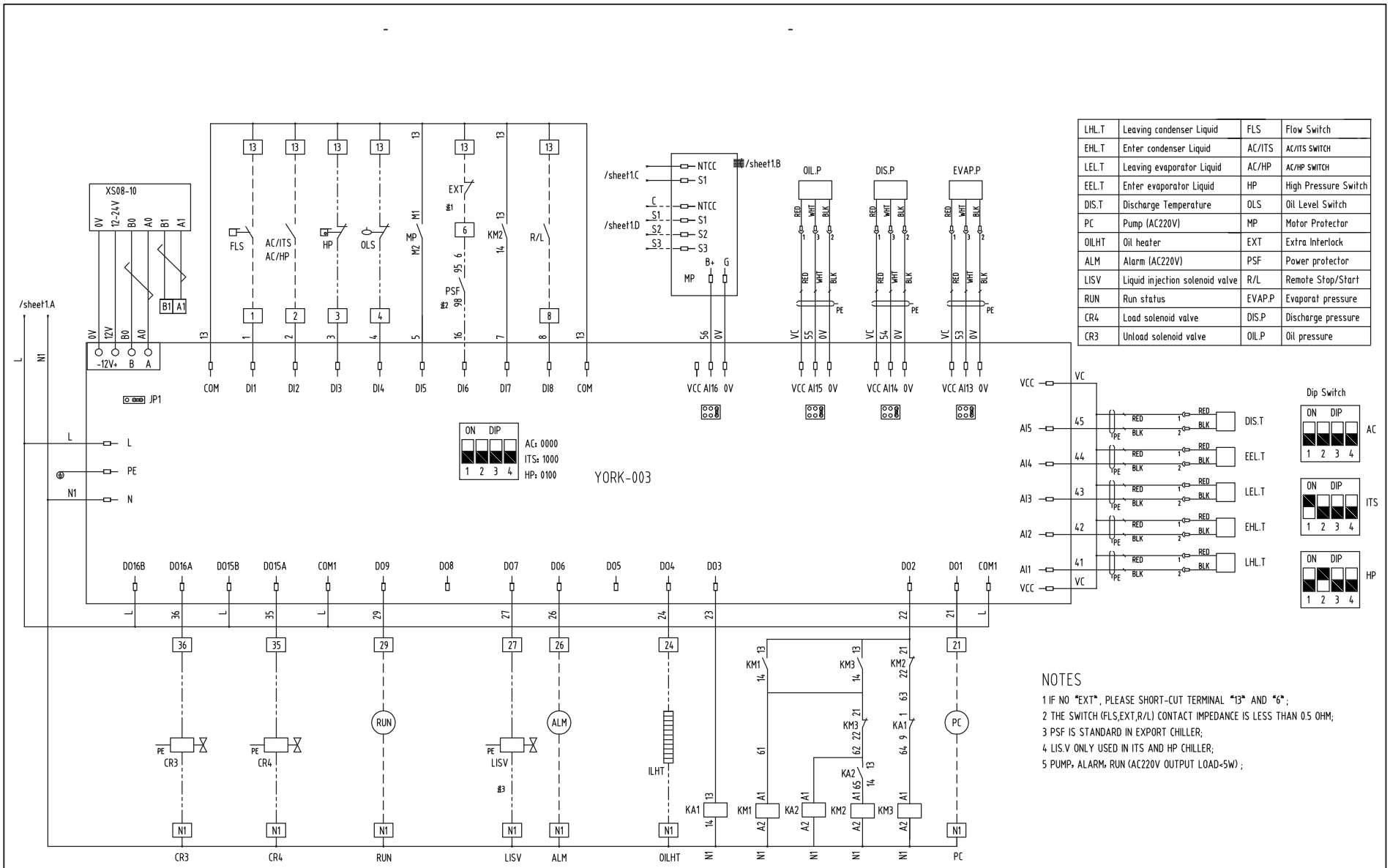
Wire

Wiring by EE

Wiring by factory

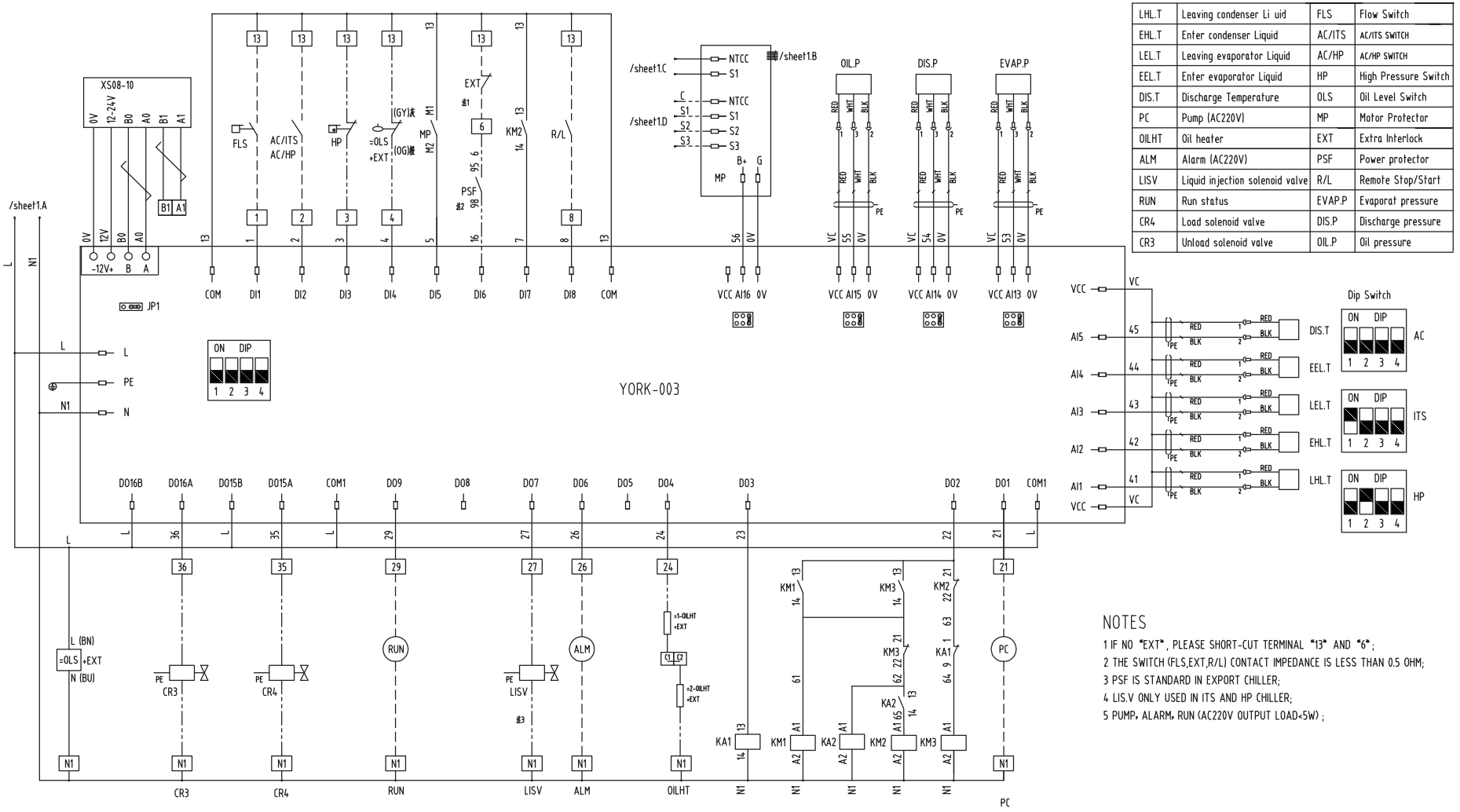
Wiring by customer

YEWS electrical drawing – compressor for 60Hz power



LHL.T	Leaving condenser Liquid	FLS	Flow Switch
EHL.T	Enter condenser Liquid	AC/ITS	AC/ITS SWITCH
LEL.T	Leaving evaporator Liquid	AC/HP	AC/HP SWITCH
EEL.T	Enter evaporator Liquid	HP	High Pressure Switch
DIS.T	Discharge Temperature	OLS	Oil Level Switch
PC	Pump (AC220V)	MP	Motor Protector
OILHT	Oil heater	EXT	Extra Interlock
ALM	Alarm (AC220V)	PSF	Power protector
LISV	Liquid injection solenoid valve	R/L	Remote Stop/Start
RUN	Run status	EVAP.P	Evaporat pressure
CR4	Load solenoid valve	DIS.P	Discharge pressure
CR3	Unload solenoid valve	OIL.P	Oil pressure

YEWS electrical drawing – main board (YEWS100H/130H/170H/200H) for 60Hz power

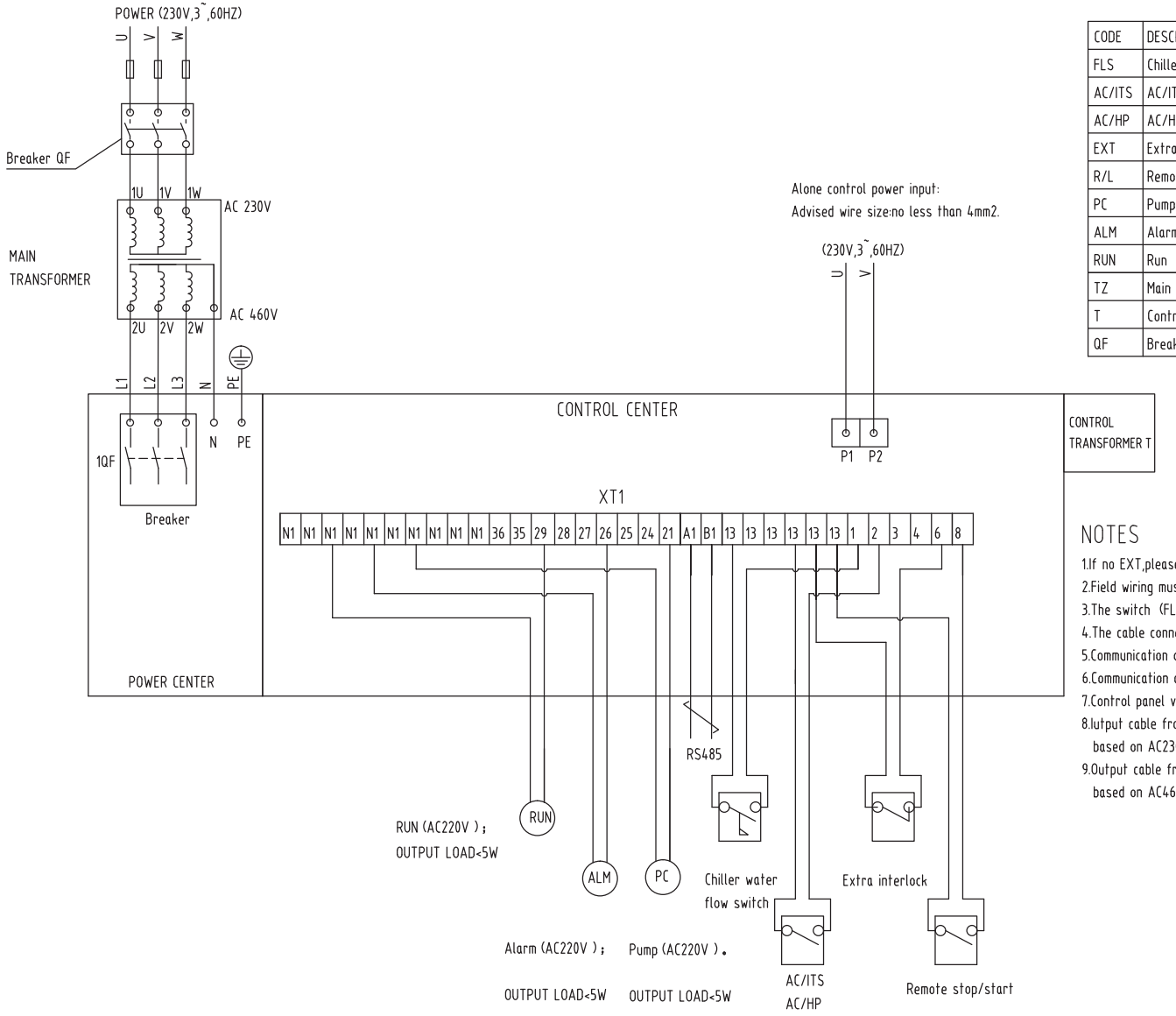


LHL.T	Leaving condenser Li uid	FLS	Flow Switch
EHL.T	Enter condenser Liquid	AC/ITS	AC/ITS SWITCH
LEL.T	Leaving evaporator Liquid	AC/HP	AC/HP SWITCH
EEL.T	Enter evaporator Liquid	HP	High Pressure Switch
DIS.T	Discharge Temperature	OLS	Oil Level Switch
PC	Pump (AC220V)	MP	Motor Protector
OILHT	Oil heater	EXT	Extra Interlock
ALM	Alarm (AC220V)	PSF	Power protector
LISV	Liquid injection solenoid valve	R/L	Remote Stop/Start
RUN	Run status	EVAP.P	Evaporat pressure
CR4	Load solenoid valve	DIS.P	Discharge pressure
CR3	Unload solenoid valve	OIL.P	Oil pressure

NOTES

1 IF NO "EXT", PLEASE SHORT-CUT TERMINAL "13" AND "6";
2 THE SWITCH (FLS,EXT,R/L) CONTACT IMPEDANCE IS LESS THAN 0.5 OHM;
3 PSF IS STANDARD IN EXPORT CHILLER;
4 LIS.V ONLY USED IN ITS AND HP CHILLER;
5 PUMP, ALARM, RUN (AC220V OUTPUT LOAD<5W) ;

YEWS electrical drawing – main board (YEWS215P) for 60Hz power

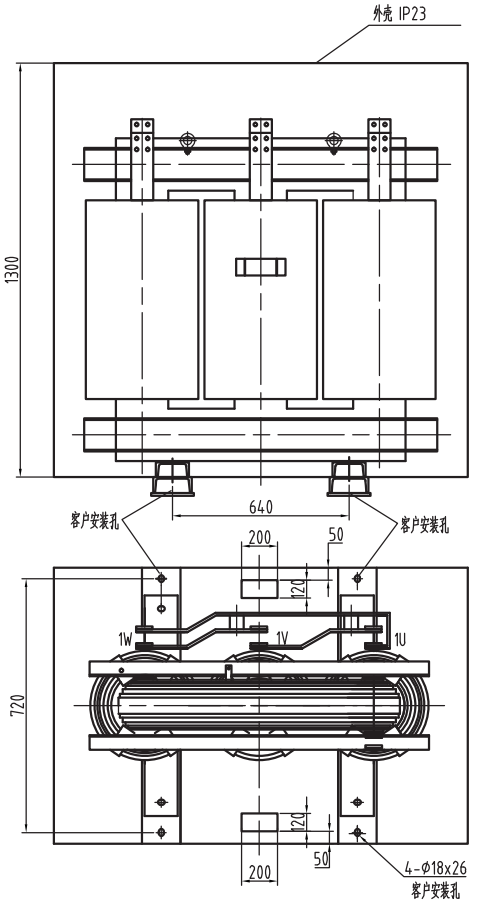


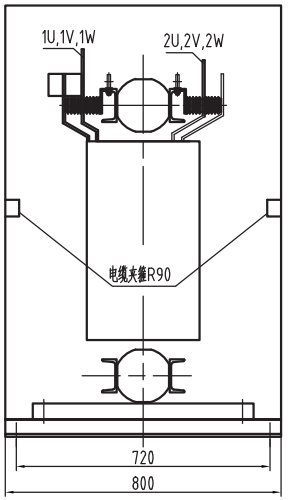
CODE	DESCRIPTION	REMARK
FLS	Chiller water flow switch	The switch contact impedance is less than 0.5 Ohm
AC/ITS	AC/ITS switch	
AC/HP	AC/HP switch	
EXT	Extra interlock	
R/L	Remote Switch	
PC	Pump	AC220V, OUTPUT LOAD<5W.
ALM	Alarm	
RUN	Run	
TZ	Main Transformer	
T	Control Transformer	
QF	Breaker	CUSTOMER SUPPLY

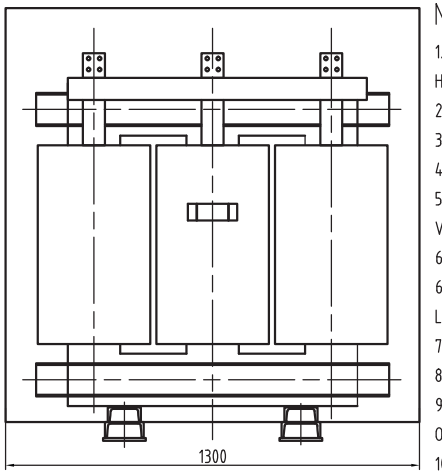
NOTES

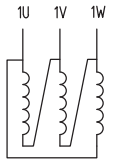
1.If no EXT,please short-cut terminal "6" and "13".
2.Field wiring must also comply with local codes.
3.The switch (FLS,AC/ITS,AC/HP,EXT,R/L)contact impedance is less than 0.5 Ohm.
4.The cable connecting RS232/RS485 converter to terminal must be the same one.
5.Communication cable must be a Twisted-pair with character resistance 120±20%Ω.
6.Communication cable must be shorter than 1000m.
7.Control panel voltage is AC220V,if customer's equipment isn't AC220V, then cannot direct use.
8.Iutput cable from breaker QF to main thansformer TZ calculate and select:
based on AC230V, advise based on TZ and unit power load.
9.Output cable from main thansformer TZ to control panel calculate and select:
based on AC460V, advise based on unit MLA load (motor rated current).

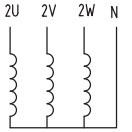
YEWS field connection for 60Hz power

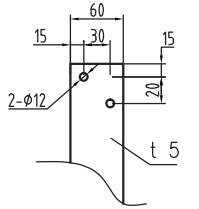












1U-1V-1W	230V
2U-2V-2W	460V

NOTES

1.OPERATING TEMPERATURE: -25℃~70℃; ALTITUDE: ≤1000m; NO CONDENSATION AT HUMIDITY 95%(ENVIRONMENT TEMPERATURE≤25℃).
2.THE CORE IS MADE IN GOES 30Q120,THE COIL ARE MADE IN ALUMINIUM FOIL.
3.TEMPERATURE CLASS: H CLASS,TEMPERATURE RISE: ≤90K.
4.INSULATION LEVEL: LI-AC3/AC3.
5.TRANSFORMER CAPACITY 250KVA,3-PHASE,DRY TYPE TRANSFORMER,NOMINAL VOLTAGE,PRIMARY:230V±10%,NOMINAL VOLTAGE,SECONDARY:460V±10%,FREQUENCY 60Hz,CONNECTION:Dyn11,IMPEDANCE:4% (±20%) ,NO VOLTAGE TAPS.
6.TRANSFORMER WITH ENCLOSURE,STEEL PLATE/RAL7032 WITH YORK BLUE,PROTECTION LEVEL IP23.
7.OVERLOADING CAPACITY:AT LEAST 110% FOR 1 MINUTE AND 150% FOR SHORT PERIOD.
8.NO-LOAD LOSS:0.8KW±10%,LOAD LOSS:3.5KW±10%.
9.TERMINAL MARKINGS:PRIMARY SIDE 1U,1V,1W;SECONDARY SIDE 2U,2V,2W,N;INLET AND OUTLET:WIRE IN AND OUT FROM BELOW;COOLING:AIR-COOLED.
10.TOLERANCE FOR NO SPECIAL REQUIREMENT PER GB/T1804-C.
11.WEIGHT:ABOUT 1200Kg.

Transformer for230V/3P/60Hz Application

Johnson Controls

Form No:AP1105-IOM01(1216) EN
Supersedes:AP1105-IOM01(0316) EN