WCCP and CCAC

Product Catalog

WCCP: Water-Cooled Chiller Packaged

CCAC: Compressor Chiller Air-Cooled

Jetson by MODINE

JET17-104

Contents

Features and Benefits

Flexibility of Design

Jetson provides cutting-edge water-cooled and remote condenser scroll chillers designed for a broad spectrum of comfort and process-cooling applications. **The WCCP is a packaged scroll water-cooled chiller** ranging from 20 to 75 tons and the **CCAC is an air-cooled scroll compressor chiller** ranging from 20 to 75 tons, that can be easily paired with Jetson ACCR line (remote air-cooled condensers).

These fully factory-assembled chillers ensure seamless installation, equipped with advanced microprocessor controllers that optimize operational efficiency. Their compact design facilitates effortless and swift integration into most building layouts, making them the perfect choice for both retrofit and new construction projects.

Water-cooled chillers are complete, factory-assembled chillers for comfort or process-cooling applications. They have multiple scroll compressors.

- All WCCP products are ASHRAE Standard 90.1 at full and part load efficiencies.
- Available in six sizes ranging from 20 to 75 nominal tons.
- Compressor chiller version (CCAC 20 to 75 tons) available for use with remote condensers.
- Factory assembled and charged, complete with oil, all refrigerant piping and electrical wiring. WCCP models are charged with refrigerant, CCAC models with dry nitrogen.
- WCCP products ship ready to install, need only electrical and water connections.
- WCCP 20 and 30 have a single refrigerant circuit with a single circuit shell-and-tube condenser and brazed plate evaporator. WCCP 40, 50, 65 and 75 have dual refrigerant circuits with dual circuit shell-and-tube condenser and brazed plate evaporator.
- Robust cleanable shell-and-tube condensers, equipped on the WCCP, are uniquely suited for open loop cooling tower applications.

Convenience

The WCCP and CCAC Series chiller were designed with convenient installation and servicing in mind. The WCCP and CCAC Series chiller are delivered to the jobsite ready for installation and startup. Jetson offers a wide variety of standard and optional features, including single or dual circuit refrigeration systems. All these components are piped, wired, and run tested before they are shipped from the factory. All models feature lockable, hinged access doors to the electrical components.

Reliability

The active freeze protection system on WCCP and CCAC chillers continuously monitors the suction temperature to prevent evaporator operation in freezing conditions. When suction pressure approaches freezing conditions the active freeze protection reacts to warm the evaporator. If the active freeze protection system can prevent a freezing condition the chiller will continue normal operation. If a freeze condition is imminent, the machine will lock out and provide an alarm. This system helps enhance the longevity of chiller operation and is included on all Jetson water-cooled chillers. Core temperature sensors are installed in every WCCP and CCAC brazed-plate evaporator as a redundant low water temperature safety.

Jetson integrates the latest in scroll compressor technology into all its products for improved operational reliability. Each chiller is factory inspected and checked for leaks before leaving

the factory. Current transducer continuously monitors compressor amp draw and stop operation if excessive amps occur.

Every WCCP chiller is run tested at full load conditions (water only) before shipment, minimizing startup delay. A data log is retained at the factory for each unit shipped.

Quiet Operation

The hermetic scroll compressors in WCCP and CCAC Series chillers deliver reliable performance with quieter operation than comparable reciprocating compressors. To minimize vibration, each compressor is mounted on rubber isolators.

For enhanced refrigerant leak detection accuracy, all WCCP and CCAC chillers feature fully enclosed compressor compartments. Optional sound-dampening material can be added to further reduce noise, offering superior performance compared to sound blankets or non-isolated compressors. Additionally, sound blankets are available for added noise reduction, either alone or in combination with a sound enclosure.

Efficiency

The use of scroll compressors, while being both reliable and quiet, also boasts reduced frictional losses and improved efficiency over comparable reciprocating compressors. The WCCP and CCAC Series chiller maintains control on the leaving water temperature by cycling compressors on and off at part load conditions, maintaining efficient operation across the entire range of operation. All chillers meet or exceed ASHRAE 90.1 – 2022.

Serviceability

Jetson 20 to 75 ton scroll chillers are designed with service personnel in mind. Unit design allows replacement of all major components without complete unit teardown. All WCCP units have mechanically cleanable shell-and-tube condensers. The unit controller provides diagnostic capability and remote factory diagnostics to aid local and factory service personnel in analyzing problems quickly. Unanticipated down time is minimized

Smart Controls

Every model is furnished with a microprocessor controller that cycles the compressors to maintain the leaving water temperature over a wide range of operating conditions. A convenient alphanumeric LCD display or 15.4-inch color touch screen (optional) is updated once per second. Inputs are made using large function keys with menu driven prompts. Schedules are available with a seven-day built-in time clock. Terminals are provided for remote stop-start and for remote reset of the leaving water temperature setpoint. The controller features 12 analog and 4 digital inputs as well as 4 analog outputs. Nonvolatile memory is used for all control functions. Additional optional features include diagnostic sensors for pressure and temperature on each refrigerant circuit, current sensors for each compressor, and a RS-485 port allowing communication with other manufacturer's control systems.

Figure 1 -Keypad Controller Display

Building Communications

When the WCCP and CCAC Series chiller is used in conjunction with a building management system (BMS), the chiller can be monitored and given input from a remote location. The chiller can be set up to fit into the overall building control strategy by using remote run/stop input, remote demand limit reset and/or remote chilled water reset functions.

BACnet® IP , Modbus™ TCP/IP (Modbus RTU uses the RS485 network port), BACnet® MS/TP, Johnson N2 and LonTalk® are optional protocols that can be factory-installed. The unit controller can facilitate hundreds of control points, including the following popular BMS communications:

- Remote Off/Auto signal (input from BMS)
- Demand Limit Reset signal (input from BMS)
- Chilled Water Temperature Reset signal (input from BMS)
- Customer Alarm relay (view only)
- Chiller Run Indication (view only)
- Entering Chilled Water Temperature (view only)
- Leaving Chilled Water Temperature (view only)
- Chilled Water Flow Switch input (view only)
- Condenser Pump relay (view only)
- Chilled Water Pump relay (view only)

System Protection

A complete safety lockout system with alarms protects the WCCP and CCAC Series chiller operation to potentially avoid compressor and evaporator failures. The unit controller directly senses pressures, temperatures, amperage, motor faults, etc. All control variables that govern the operation of the chiller are evaluated every second for exact control and protection. The following is an abbreviated list of safeties that are incorporated into the standard chiller algorithm control.

- **No Flow Protection** – To protect the chiller from no water flow to the evaporator, the chiller is enabled to run only if the required flow proving device indicates there is flow present. If the chiller is active and flow is lost; the chiller will lock out and an alarm is generated.

- **Low Suction Pressure** – To protect the compressors and evaporator, if the refrigerant suction pressure drops below the set point value for a specified period of time, a safety trip occurs. This safety is bypassed when the compressor is in a Pump Down state.

- **Unsafe Suction Pressure –** To protect the compressors and evaporator, if the refrigerant suction pressure drops below the set point value for a specified period of time, the chiller will immediately lock out, and an alarm is generated.

- **Heat Exchanger Freeze Protection** – To protect the evaporator from low water temperatures, the chilled water temperature is monitored inside the core of the evaporator and leaving the evaporator. If these temperatures fall below their set point temperatures for the set period of time, the entire system will lock out and an alarm is generated.

- **Active Freeze Protection System** – Working in conjunction with the low suction pressure and freeze protection safeties to avoid nuisance safety trips, the active freeze protection valve is opened when the suction pressure goes below the lower set point value and warms the evaporator until the freeze conditions are abated. The valve will stay open until the suction pressure rises safely above the upper set point level.

- **High and Low Discharge Pressure, High and Low Superheat, High and Low Compressor Amps** – The compressors will be locked out if any one of these control variables rises above the upper set point value or falls below the lower set point value for the set amount of time for each, and an alarm is generated.

- **Optional Phase/Power Monitor** – The factory-installed phase/power monitor continuously monitors the incoming power supply to the chiller for low voltage, phase rotation reversal, loss of phase and phase imbalance. Should one of these parameters be incorrect, the phase/power monitor relay will lock out (de-energize) and the fault LED on the monitor will blink. The unit controller will indicate the lockout, and an alarm is generated.

As an additional layer of system protection, mechanical high- and low-pressure switches are used in conjunction with the refrigerant circuit high- and low-pressure transducers and unit controller.

Standard Peripheral Control Features

The following peripheral control features and program logic come standard on all WCCP and CCAC Series chillers. Designated terminals on the field connection terminal strip in the control panel are provided for field connection of:

- **Remote Off/Auto** (dry contact closure from a remote device - input)
- **Required Chilled Water Flow Proving Device** (dry contact closure from a remote device - input)
- **Remote Alarm** (dry contact closure to a remote device - output)
- **Required Chilled Water Pump Enable** (dry contact closure for 1 chilled water pump - output)
- **Condenser Water Pump Enable** (dry contact closure for 1 condenser water pump - output)

Standard Capacity Control

Standard capacity control on the WCCP and CCAC Series chillers is accomplished by staging the scroll compressors on and off. The unit controller will maintain a set point leaving chilled water temperature within a control zone using proportional, integral derivative (PID) logic. If the leaving chilled water temperature starts to decrease and falls below the set point, the unit controller will turn one stage off. A further reduction in temperature will result in a second stage being turned off. The reverse is true as the leaving chilled water temperature increases. Lead/lag logic is used to even the run time on the individual compressors.

Application Information

All R-454B WCCP and CCAC chillers come standard with an enclosure designed to enhance the refrigerant detection system. In addition, ventilation for machinery rooms shall comply with applicable sections of ANSI/ASHRAE 15 or CSA B52

Evaporator Design Data

The system can start and pull down with up to 90°F entering fluid temperature. For continuous operation, it is recommended that the entering fluid temperature not exceed 75°F. The maximum sustained leaving chilled-fluid temperature is 65°F. The chiller with *standard* evaporator must not be operated with a leaving water temperature of less than 42°F for a plain water application. For evaporator loops containing the appropriate amount of glycol, the chilled water leaving temperature range can be shifted to 15°F to 65°F. When lower leaving fluid temperatures are required, an appropriate glycol solution must be used. The solution must have a freezing point at least 15°F lower than the design leaving fluid temperature. The brine solution must also be properly inhibited to provide suitable corrosion protection.

The evaporator minimum and maximum flow rates are listed in Table 3 – General Unit. In general, the listed flow rate ranges will develop temperature differentials across the evaporator between 7°F to 20°F. If your application conditions do not fit these requirements, please contact Jetson by Modine.

For all WCCP Series chiller applications, the flow to the evaporator must be proven using a chilled water flow-proving device. A factory-provided paddle style liquid flow switch is provided with a NEMA Type 4X enclosure for field-installation.

Condenser Design Data

WCCP units start and operate satisfactorily over a wide range of load conditions. Reducing the condenser water temperature below 85°F is an effective method of lowering the power input required. Beyond certain limits, however, the effect of further reducing condenser water temperature causes a reduction in the pressure drop across the expansion valve to a point where system instability may occur.

WCCP products are designed for optimum performance with refrigerant saturated discharge pressures between 75°F and 145°F. As a result, a means of discharge pressure control must be considered when entering condenser water temperature falls below 70°F. The exact point at which discharge pressure control is required depends on other system parameters such as leaving chilled. water temperature and flow rate, and condenser water flow rate. Contact the factory engineering department for assistance when application requires condenser water temperature less than 70°F or greater than 95°F.

The condenser minimum and maximum flow rates are listed in Table 3- General Unit.

Condenser Heat Recovery Operation

At a time when energy costs are high and continue to rise, reducing energy usage has become increasingly important. By using a WCCP Series chiller with heat recovery, utilization of energy can be improved by using heat from the condenser that would otherwise be wasted.

The use of heat recovery should be considered in any building with simultaneous heating and cooling requirements or in facilities where heat can be stored and used at a later time. Buildings with high year-round internal cooling loads are excellent opportunities for heat recovery. Heat recovery can be accomplished with the WCCP Series by recovering heat from the water leaving the standard condenser and using it in conjunction with a third party heat exchanger as shown in Figure 2 - Heat Recovery.

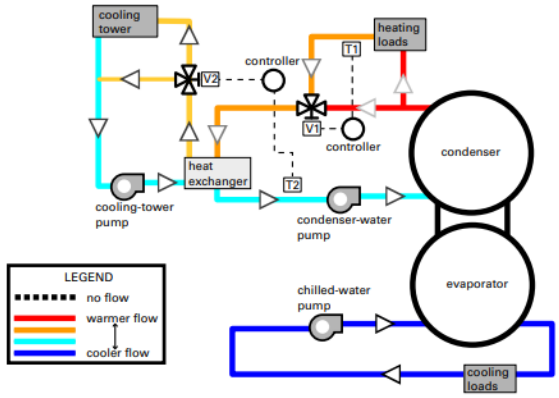


Figure 2 - Heat Recovery

Heat recovery is designed to capture a portion of the heat that is normally rejected to the cooling tower and put it to beneficial use. With the addition of a heat recovery cycle, heat removed from the building cooling load can be transferred to any heating application. The heat recovery cycle is only possible if a cooling load exists to act as a heat source.

The WCCP Series chiller uses smart control logic to switch the control point between the cooling set point and heating set point, based on the smaller of the loads. This allows the machine to operate in heat recovery mode longer - maximizing the energy saved. In the heat recovery cycle, the unit can control to a hot water set point. During the heat recovery cycle, the unit operates just as it does in the cooling-only mode except that the leaving hot water is the control point instead of the leaving chilled water. Water circulated through the heat recovery heat exchanger (condenser) absorbs cooling load heat from the compressed refrigerant gas discharged by the compressors. The heated water is then used to satisfy heating requirements.

Hospitals, dormitories, computer centers, and hotels are opportunities for economical heat recovery due to their needs for hot water for reheat and domestic use, coupled with air-side economizer operation, or in some cases, winter operation of chillers. Heat recovery provides hot water and tight control that minimizes operating costs for the chilled water plant and boiler/hot water heater, while also providing consistent dehumidification. The heat recovery heat exchanger cannot operate alone without a load on the chiller.

Units paired with a third-party brazed plate heat exchanger can reach 140°F, while those with a shell and tube heat exchanger can reach 125°F.

Water Circuit Requirements

WCCP and CCAC Series chillers are equipped with brazed plate evaporators. The water/fluid circuits to be used with these chillers should be designed and installed following sound engineering practices and procedures as well as any applicable local and industry standards. For the brazed plate heat exchanger circuits, focus on proper filtration and water quality is necessary. Prior to connecting these chillers into a newly installed or existing water piping system, it is required to flush the system with a detergent and hot water mixture to remove previously accumulated dirt and other organics. In old piping systems with heavy encrustation of inorganic materials, a water treatment specialist should be consulted for proper passivation and/or removal of these contaminants.

Filtration

Particulate fouling is caused by suspended solids (foulants) such as mud, silt, sand or other

particles in the heat transfer medium. The best way to avoid particulate fouling is to have good water treatment and keep all system water clean and with open loop system water, maintain proper bleed rates and make up water. A strainer with a 20-mesh screen (or screen with 0.5 mm sized openings or less) is required to be installed at the individual compact chiller (or compact chiller array) inlet to protect the brazed plate heat exchangers. Wye-strainers are available as a factory-provided, field-installed option. If an application is highly susceptible to foulant contamination, additional filtration methods should be investigated.

Water Pumps

Avoid specifying or using 3600 rpm condenser water and chilled water pumps. Such pumps may operate with objectionable noise and vibration. In addition, a low frequency beat may occur due to the slight difference in operating rpm between water pumps and the scroll compressors.

Water quality

Poor water quality can cause another type of fouling called scaling. Scaling is caused by inorganic salts in the water circuit of the heat exchangers. Scaling increases pressure drop and reduces heat transfer efficiency. The likelihood of scaling increases with increased temperature, concentration and pH. In addition to scaling, poor water quality can cause other issues like biological growths and corrosion. Therefore, water quality and water quality control needs to be an application consideration. Please review the water quality requirements for use with the brazed plate heat exchangers on the WCCP and CCAC Series chiller.

Table 1 -Water Property Limits

Water Property	Concentration Limits
Alkalinity (HCO3-)	70-300 ppm
Sulfate (SO42-)	Less than 70 ppm
HCO3- / SO42-	Greater than 1.0
Electrical Conductivity	10 - 500 µS/cm
pH	7.5 – 9.0
Ammonia (NH3)	Less than 2 ppm
Chlorides (Cl-)	Less than 300 ppm
Free Chlorine (Cl2)	Less than 1 ppm
Hydrogen Sulfide (H2S)	Less than 0.05 ppm
Free (aggressive) Carbon Dioxide (CO2)	Less than 5 ppm
Total Hardness (°dH)	4.0 - 8.5
Nitrate (NO3)	Less than 100 ppm
Iron (Fe)	Less than 0.2 ppm
Aluminum (Al)	Less than 0.2 ppm
Manganese (Mn)	Less than 0.1 ppm

Chiller Placement

The WCCP and CCAC Series water-cooled chillers are designed for indoor installations that remain above 32°F and below 125°F at all times. Locate the chiller away from sound-sensitive areas on a level foundation or flooring strong enough to support 150 percent of the operating weight and large enough to keep with service clearances. Also, the chiller foundation or flooring must be rigid enough to minimize vibration transmission. Please see Table 3 and 4-General Data for compressor sound data and Table 7 and 8 for Dimension and Weights information for unit operating weights and clearances. If necessary, options are available for sound attenuation and vibration reduction.

Provide enough space around the unit to allow the installation and maintenance personnel unrestricted access to all service points.

There should be adequate clearance for condenser and compressor service. A minimum of three feet is recommended for effective compressor service. A minimum clearance of 3 ft.-6 inches is required to open the control panel doors.

A minimum clearance of 42 in (2067 mm) is required to other electrically grounded parts.

A minimum clearance of48 in (1220 mm) is required between two units opposite each other (front-to-front or back-to-back) or to other electrically live parts. See Section 110.26 of

National Electrical Code (NEC).

Mounting Isolation
Anytime vibration transmission may be a factor, vibration isolators may be considered. Rubber isolators are available as factory provided options.

Electrical Power Supply
A disconnect switch that is accessible from the outside of the cabinet is an available option factory installed. The microprocessor controller furnished with the unit is supplied with its own power supply factory wired to the main power of the chiller. The voltage to the chiller must be within plus or minus 10% of the nameplate rating value on the unit.

Air-Cooled Condenser Applications
The CCAC Series chillers can be paired with Jetson remote air-cooled condensers (ACCR). The minimum outdoor ambient temperature for operation of a CCAC Series compressor chiller in combination with an outdoor condenser is 20°F. This minimum is driven by compressor chiller starting considerations and not by effectiveness of condenser ambient controls once the system is up and running. Fan cycling and optional low ambient dampers do *not* mitigate the low ambient starting problem. On a cold day with outdoor ambient temperature below 20°F the liquid line pressure at the expansion valve inlet is extremely low. On start, the suction pressure may plunge into the freezing range causing a nuisance fault.

Line Sizing Guidelines

Liquid Lines
Pressure drop should not be so large as to cause gas formation in the liquid line, insufficient liquid pressure and the liquid feed device, or both. Systems are normally designed so that pressure drop in the liquid line from friction is not greater than that corresponding to 1 to 2°F change in saturation temperature.

Sufficient sub-cooling must be maintained at the expansion valve. To provide proper operation throughout the range of operating conditions, the liquid-line pressure drop should not exceed the unit's minimum sub-cooling value less 5°F. To achieve this objective, keep these liquid line considerations in mind:

1) Select the smallest, practical line size for the application. Limiting the refrigerant charge improves compressor reliability.
2) When designing the liquid line for a typical air conditioning application (i.e., one with an operating range of 40°F to 110°F), remember that every 10 feet of vertical rise will reduce sub-cooling by 2.8°F, while every 10 feet of vertical drop will add 1.1°F of subcooling.

3) Provide a 1-inch pitch toward the evaporator for every 10 feet of run.
4) If the liquid line must be routed through an area warmer than outdoor air temperature, insulate the line to prevent the refrigerant from flashing. A liquid line filter drier must be installed as close as possible to the compressor chiller. The filter drier should be changed whenever the system is opened for service. CCAC chillers do not include a filter-drier as standard, but one may be ordered if the installing contractor desires a factory type.
5) A moisture-indicating sight glass permits a visual check of the liquid column for bubbles. Sight glasses are included on the CCAC compressor chillers. Never use the sight glass to determine whether the system is properly charged! Instead, either charge the system based on the required sub-cooling or calculate the amount of refrigerant needed and add it based on weight.

Discharge (Hot Gas) Line

Limit the pressure drop in the discharge line to 6 psig whenever possible to minimize the adverse effect on unit capacity and efficiency. While a pressure drop of as much as 10 psig is usually permissible, note that a 6-psig pressure drop reduces unit capacity by 0.9 percent and efficiency by 3.0 percent.

Pitch discharge lines in the direction of hot gas flow at the rate of 1/2-inch per each 10 feet of horizontal run. Discharge line sizing is based on required velocity to provide good oil movement. Basic discharge line parameters are:

- Maximum allowable pressure drop 6 psig (°F)
- Maximum Velocity 3500 fpm
- Minimum Velocity (at minimum load)
  - Horizontal lines 500 fpm
  - Vertical lines (up flow) 1000 fpm

To design the discharge line properly, follow the recommended guidelines:

1) Choose the shortest route from the compressor to the condenser.
2) Use different pipe sizes for horizontal and vertical lines to make it easier to match line pressure drop and refrigerant velocity to discharge-line requirements.
3) To assure proper oil entrainment and avoid annoying sound levels, size the discharge line so refrigerant velocity equals or exceeds the Table 6 minimum velocity of 1000 fpm in vertical (up flow) lines and 500 fpm in horizontal (or drop) line and remains below 3500 fpm.
4) Prevent oil and condensed refrigerant from flowing back into the compressor during "off" cycles by:
   - pitching the discharge line toward the condenser, and
   - routing the discharge line so that it rises to the top of the level of the condenser inlet, creating an inverted trap.
5) Double risers are generally unnecessary. The scroll compressors in CCAC Series chillers unload to the extent that a single, properly sized riser can transport oil at any load condition.
6) Riser traps are also unnecessary. Avoid using riser traps. If the discharge riser is sized to maintain the proper refrigerant velocity, adding a trap will only increase the pressure drop.

Table 2 – Minimum discharge line velocities for oil entrainment

Nominal Pipe Size (in.)	Riser Refrigerant Velocity (fpm)	Horizontal Refrigerant Velocity (fpm)
7/8	375	285
1-1/8	430	325
1-3/8	480	360
1-5/8	520	390
2-1/8	600	450

Model Number Descriptions

Digits 1, 2, 3, 4 — Unit Type

WCCP= Water-Cooled Chiller Packaged

CCAC= Compressor Chiller Air-Cooled

Digit 5, 6, 7 — Unit Nominal Tonnage

020 =20 Nominal Tons
030 =30 Nominal Tons
040 =40 Nominal Tons
050 =50 Nominal Tons
065 =65 Nominal Tons
075= 75 Nominal Tons

Digit 8 — Unit Voltage

A =208V/60/3
B =230V/60/3
F =460V/60/3
G =575V/60/3

Digit 9, 10 — Design Sequence

A0 =Factory Assigned

Digit 11 — Agency Listing

N =None
E = ETL/ETL-C Listed to meet U.S. and Canadian Safety Standards

Digit 12 — Condenser Water Regulating Valve

0 =None
1 =With

Digit 13 — Evaporator Wye Strainer

0=None

1=Nominal Flow Wye Strainer

2=Nominal Flow Wye Strainer with installation kit

Digit 14 — Evaporator Temp Range

0=Standard Cooling42 to 60°F [4.4 to 5.5°C]
1=Standard Cooling/Ice Making 20 to 60°F [-6.7 to 15.6°C]

Digit 15 — Power Connection

T=Terminal Block
D=Non-Fused Disconnect Switch
F=Fused Disconnect Switch

Digit 16 — Short Circuit Rating (SCCR)

0= Standard 5 kA Rating
1= Optional 100 kA Rating

Digit 17 — Sound Attenuator

0= No Sound Attenuation
3= Compressor Sound Blanket(s)
9= Factory Sound Enclosure Cabinet(s)

Digit 18 — Local Unit Controller Interface

0= Keypad with Dot Pixel Display
1=Color Touchscreen

Digit 19 — Remote BMS Interface (Digital Comm)
0=None
2=Lon Talk®
4=BACnet® Ms/TP
5=BACnet IP
6=MODBUS®
8=Johnson N2

Digit 20 — Power Monitor
0 = None
1 = With

Digit 21 — Neoprene Isolator Pads
0=None
1=With

Digit 22 — Flow Switch
0=None
1=With

Digit 23 — Evaporator Fluid Type
0=Water
2=Ethylene Glycol
3=Propylene Glycol
4=Methanol

Digit 24 — Condenser Fluid Type
0=Water
2=Ethylene Glycol
3=Propylene Glycol
4=Methanol
9= Not Applicable — Compressor-Chiller

Digit 25 — Special Options
0=None
1=With

Digits 1 to 4 — Unit Type

WCCP= Water-Cooled Chiller Packaged

CCAC= Compressor Chiller Air-Cooled

Digits 5 to 7 — Nominal Capacity

Digits of the model string designate nominal tons cooling.

020 =20 Nominal Tons
030 =30 Nominal Tons
040 =40 Nominal Tons
050 =50 Nominal Tons
065 =65 Nominal Tons
075= 75 Nominal Tons

Digit 8 — Unit Voltage

All units have single point power blocks with grounding lugs and 12V control circuits.

A = *208 V/60 Hz/3 Phase*
B = *230 V/60 Hz/3 Phase*
F = *460 V/60 Hz/3 Phase*
G = *575 V/60 Hz/3 Phase*

Digit 9,10 — Design Sequence

Digit 11 — Agency Listing

N = None ETL Certification

E= ETL/ETL-C Listed to meet U.S. and Canadian Safety Standards. All units with ETL certification will ship with an enclosure as per UL 60335 for R-454B refrigerant

Digit 12 — Condenser Water Regulating Valve

1 = None

2 = With = Condenser water regulating valve option is available to stabilize and maintain the refrigerant condensing pressure within the operating limits of the WCCP Series chiller.

Digit 13 — Evaporator Wye Strainer

0 = None

A = Chilled Water Flow Wye Strainer – Factory provided, field installed wye strainer can be placed in a horizontal or vertical pipeline as long as the screen is in a downward position. Straining is accomplished via a 20-mesh lined straining element.

B = Chilled Water Wye Strainer with Installation Kit - Wye strainer installation kits provide piping transitions need to easily attach the wye strainer to the chiller.

Digit 14 — Evaporator Temp Range

0 = Standard Cooling 40 to 65°F [5.5 to 18.3°C] – The chiller with *standard* evaporator must not be operated with a leaving water temperature of less than 42°F for a plain water application.

1 = Standard Cooling/Ice Making 20 to 65°F [-6.7 to 18.3°C] - The dual roles of an ice-making chiller can substantially reduce the installed cost of the system. An ice-making chiller is NOT a conventional chiller with two different leaving-fluid temperature setpoints. An ice-making chiller operates at maximum capacity when in ice-making mode. It continues to operate at maximum capacity until the leaving-fluid temperature reaches the target setpoint. At a 10°F delta across the evaporator, this limit indicates that all of the water inside the ice storage tanks has been frozen. An external signal can be sent to the chiller to reset the chilled water setpoint back to conventional chilled water leaving fluid temperature and the chiller will return to traditional chiller operation.

Digit 15 — Power Connection

T = Terminal Block - Terminal Block to land incoming power wiring.
D = Non-Fused Disconnect Switch - Non-fusible disconnect switches do not incorporate fuses into their enclosure and provide no circuit protection capability. The purpose of a non-fusible safety switch is to provide an easy means to open and close a circuit.
F = Fused Disconnect Switch - Fusible disconnect switches combine fuses with the switch in a single enclosure, providing an easy means to manually open and close the circuit while the fuses protect against overcurrent.

Digit 16 — Short Circuit Rating (SCCR)

0 = 5 kA Rating - Power is field provided to each chiller.
1 = 100 kA Rating - Short-circuit current ratings provide the level of fault current that a component or piece of equipment can safely withstand (based on a fire and shock hazard external to the enclosure). A 100kA SCCR can have significant impact in meeting safety and insurance requirements.

Digit 17 — Sound Attenuator

0 = None
3 = Compressor Sound Blankets - Factory installed Compressor Sound Blankets provide insulated sound covers on each compressor. These blankets dampen compressor generated sound. The blankets can be used alone or in combination with a sound cabinet.
9 = Factory Sound Enclosure Cabinet - The sound enclosure is a factory installed option. The panels completely encase the chiller. The panels, lined with sound absorbing insulation, can be removed for access in case of service and provide a streamlined appearance to the product while in place.

Digit 18 — Local Unit Controller Interface

0 = Keypad with Dot Pixel Display - keypad, 128 x 64 dot pixel STN monochrome graphics LCD with 2.8" diagonal viewing area
1 = 15.4-in. Color Touchscreen - Information and graphics are shown on high resolution (1280x800) LCD display with LED back lighting. The high-resolution screen makes it easy for the user to manage complex installations without losing the overall view or requiring a separate laptop. Pages can be navigated in a fast and straightforward manner.

Digit 19 — Remote BMS Interface

0 = None

2 = Lon Talk®
4 = BACnet® MS/TP
5 = BACnet® IP
6 = MODBUS®
8 = Johnson N2

Digit 20 — Power Monitor

0 = None
1 = With

Digit 21 — Neoprene Isolators Pad

0 = None
1 = Neoprene Pads - In applications that are sensitive to noise and vibration, optional neoprene isolator pads can be provided for load bearing points on a WCCP Series chiller

Digit 22— Flow Switch

0= None
1= Chilled Water Flow Switch - An evaporator flow-proving device is required for all WCCP and CCAC Series chiller applications. A paddle style liquid flow switch is available with a NEMA Type 4X enclosure for field-installation.

Digit 23 — Evaporator Fluid Type

0=Water
2=Ethylene Glycol
3=Propylene Glycol
4=Methanol

Digit 24 — Condenser Fluid Type

0=Water
2=Ethylene Glycol
3=Propylene Glycol
4=Methanol
9= Not Applicable — Compressor-Chiller

Digit 25 — Special Options

0=None
1=With

General Data

Table 3 - General Unit WCCP

	Unit Size (Nominal Tons)					
	20	30	40	50	65	75
Compressors						
Refrigerant	R-454B					
Compressor - Quantity	2	2	3	3	3	3
Compressor-Nominal Size (Tons)	10/10	15/15	10/10 , 20	12/12, 25	15/15, 30	15/15, 40
Steps of unloading %	100-50	100-50	100-75-50-25	100-75-50-25	100-75-50-25	100-75-50-25
Compressor Sound Data (dbA)	81	84	87.2	87.5	90.2	91.8
Compressor Sound Data with Sound Blankets Only (dbA)	75	78	82.8	83	85.8	87.5
Number of Circuits	1	1	2	2	2	2
Refrigerant Charge per circuit (approximately) lbs	25	37	24,24	26,26	31,31	33,33
Evaporator						
Standard – Brazed Plate: Quantity	1					
Water Storage (gal)	2.1	3	3.1	3.7	4.6	6.6
Max GPM	104	151	207	237	295	264
Min GPM	30	45	66	82	104	75
Condenser						
Shell & Tube: Quantity	1					
Water Storage (gal)	3	4.5	5.5	7.4	9.2	9.2
Max GPM	119	167	207	271	341	342
Min GPM	28	39	49	65	84	84

Table 4 - General Unit CCAC

	Unit Size (Nominal Tons)					
	20	30	40	50	65	75
Compressors						
Refrigerant	R-454B					
Compressor - Quantity	2	2	3	3	3	3
Compressor-Nominal Size (Tons)	10/10	15/15	10/10 , 20	12/12, 25	15/15, 30	15/15, 40
Steps of unloading %	100-50	100-50	100-75-50-25	100-75-50-25	100-75-50-25	100-75-50-25
Compressor Sound Data (dbA)	81	84	87.2	87.5	90.2	91.8
Compressor Sound Data with Sound Blankets Only (dbA)	75	78	82.8	83	85.8	87.5
Number of Circuits	1	1	2	2	2	2
Refrigerant Charge per circuit (approximately) lbs – Units ship with dry nitrogen hold	25	37	24,24	26,26	31,31	33,33
Evaporator						
Standard – Brazed Plate: Quantity	1					
Water Storage (gal)	2.1	3	3.1	3.7	4.6	6.6
Max GPM	104	151	207	237	295	264
Min GPM	30	45	66	82	104	75

Electrical Service Sizing Data

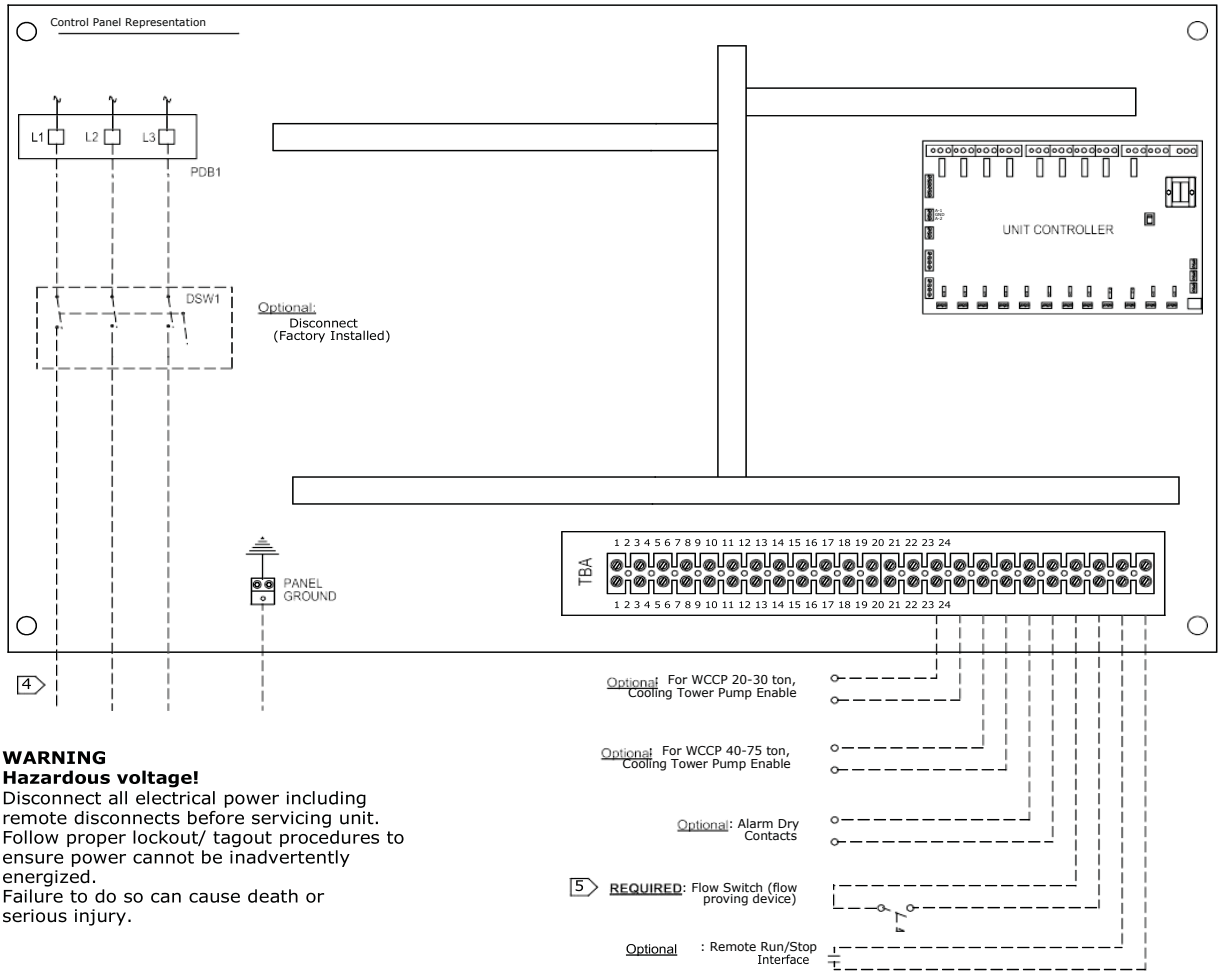
Table 5- WCCP and CCAC unit shipping and operating weights

Unit Size	Compressors						Unit Wiring Data		
	Rated Voltage	Quantity	Number of Refrigerant Circuits	Nominal Tons	RLA (each)	LRA (each)	Minimum Circuit Ampacity	Maximum Fuse Size	Recommended Dual Element Fuse Size
20	208-230/60/3	2	1	10/10	39/39	267/267	88	125	100
	460/60/3				19/19	142/142	42	60	50
	575/60/3				15/15	103/103	35	50	40
30	208-230/60/3	2	1	15/15	48/48	351/351	108	150	125
	460/60/3				25/25	197/197	56	80	60
	575/60/3				22/22	135/135	50	70	60
40	208-230/60/3	3	2	10/10, 20	39/39, 67	267/267, 485	162	225	175
	460/60/3				19/19, 33	142/142, 215	78	110	90
	575/60/3				15/15, 26	103/103, 175	64	80	70
50	208-230/60/3	3	2	12/12, 25	41/41, 82	304/304, 560	185	250	225
	460/60/3				19/19, 40	147/147, 260	88	125	100
	575/60/3				17/17, 29	122/122, 210	69	90	80
65	208-230/60/3	3	2	15/15, 30	48/48, 109	351/351, 717	232	300	250
	460/60/3				25/25, 51	197/197, 320	113	150	125
	575/60/3				22/22, 38	135/135, 235	93	125	110
75	208-230/60/3	3	2	15/15, 40	48/48, 122	351/351, 1010	248	350	300
	460/60/3				25/25, 68	197/197, 344	134	200	150
	575/60/3				22/22, 46	135/135, 327	102	125	110

1. Notes:
2. Use copper conductors only. Use copper conductors only.
3. Local codes may take precedence.
4. Data containing information on two circuits formatted as follows: Circuit 1, Circuit 2.
5. Voltage Utilization Range: ± 10% of rated voltage. Rated voltage (use range): 208-230/60/3 (187-253), 460/60/3 (414-506), 575/60/3 (518-632).

Figure 3- WCCP wiring diagram

Field Wiring - WCCP Chillers



WARNING
Hazardous voltage!
Disconnect all electrical power including remote disconnects before servicing unit. Follow proper lockout/ tagout procedures to ensure power cannot be inadvertently energized.
Failure to do so can cause death or serious injury.

CAUTION
Use copper conductors only!
Unit terminals are not designed to accept other type conductors. Failure to use copper conductors may cause equipment damage.

CAUTION
Do not energize the unit until check- out and start-up procedures have been completed.

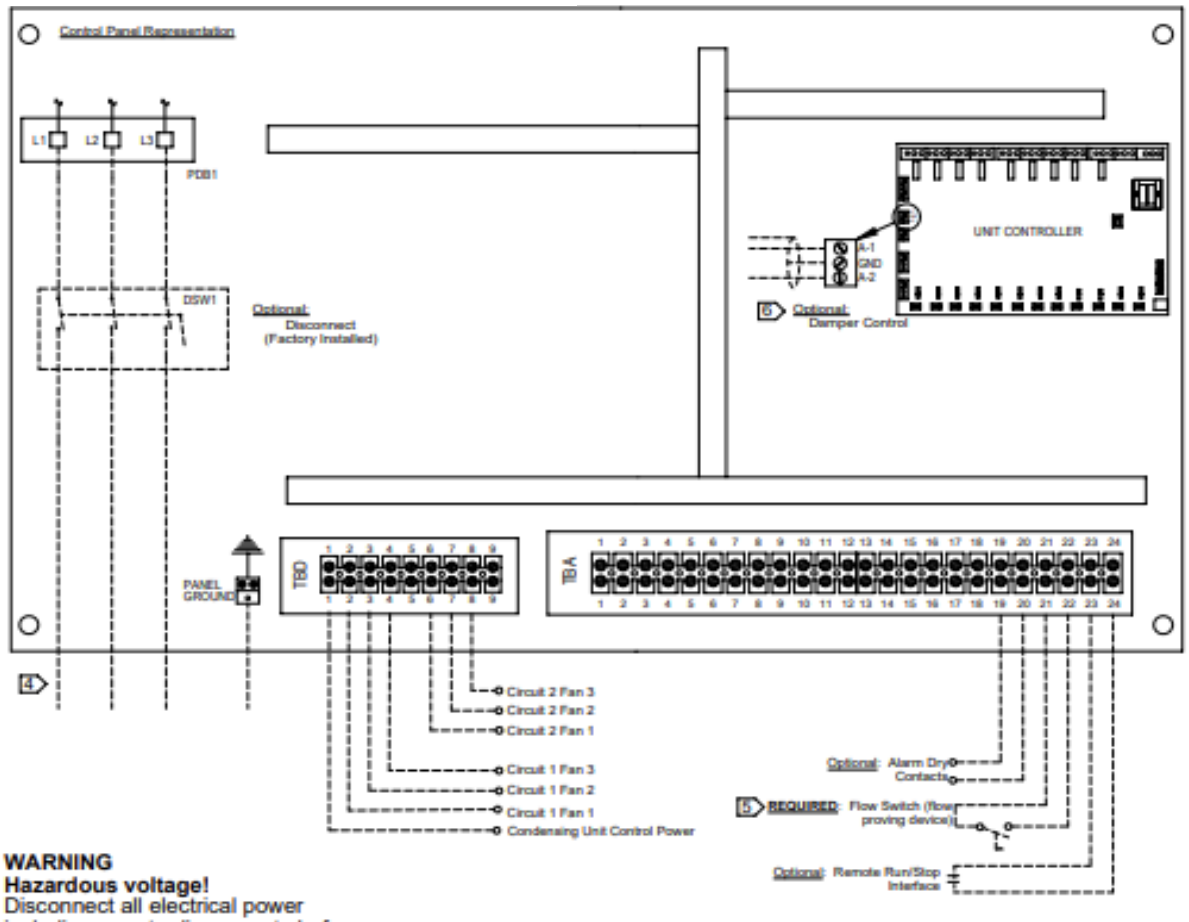
Notes

1. All three-phase motors supplied with the unit are protected under primary single-phase failure conditions.
2. All customer control-circuit wiring must have a minimum rating of 150V.
3. All field wiring must be in accordance with applicable local codes. Line voltage options. Single or dual source power may be specified. Drawing covers single source power only. All field wiring must be in accordance with National Electric Code and State & Local requirements.
4. (Required) Factory supplied or approved alternate field installed flow proving device connection.
5.

WCCP
Wiring Diagram

Figure 4- CCAC wiring diagram (40-75 tons)

Field Wiring – CCAC 40-75 Ton Compressor Chillers



WARNING
Hazardous voltage!
Disconnect all electrical power including remote disconnects before servicing unit. Follow proper lockout/ tagout procedures to ensure power cannot be inadvertently energized. Failure to do so can cause death or serious injury.

CAUTION
Use copper conductors only!
Unit terminals are not designed to accept other type conductors. Failure to use copper conductors may cause equipment damage.

CAUTION
Do not energize the unit until check-out and start-up procedures have been completed.

Notes:

1. All three-phase motors supplied with the unit are protected under primary single-phase failure conditions.
2. All customer control-circuit wiring must have a minimum rating of 150V.
3. All field wiring must be in accordance with applicable local codes.
4. Line voltage options. Single or dual source power may be specified. Drawing covers single source power only. All field wiring must be in accordance with National Electric Code and State & Local requirements.
5. (Required) Factory supplied or approved alternate field installed flow proving device connection.
6. (Optional) Damper control option. Refer to operation and maintenance manual for additional information.

CCAC 40-75 Ton Field Wiring Diagram

Weights and Dimensions

Table 6- WCCP and CCAC unit shipping and operating with enclosure

Unit	Size	Shipping		Operating	
		lbs	kg	lbs	kg
WCCP	20	1675	760	1316	597
	30	1945	882	1452	659
	40	2350	1066	1859	843
	50	2536	1150	2047	929
	65	2754	1249	2239	1016
	75	3088	1401	2526	1146
CCAC	20	1277	579	1046	474
	30	1405	637	1109	503
	40	1826	828	1465	665
	50	1978	897	1504	682
	65	2098	952	1684	764
	75	2387	1083	1872	849

Table 7- WCCP dimensions without enclosure

WCCP Dimensions						
Unit Size	**20**	**30**	**40**	**50**	**65**	**75**
Length	67.75''	65.50''	83.60''	85.37''	83.75''	83.75''
Max Length **	78.50''	79.20''	89.50''	93.00''	93.00''	92.25''
Width	28.75''	28.75''	29.70''	30.75''	29.30''	29.20''
Height	59.50''	59.50''	59.50''	59.50''	59.50''	59.50''

** Max length when motorized water-regulating valve is added
For dimensions of the unit with enclosure, please contact sales@jetsonhvac.com.

Table 8- CCAC dimensions without enclosure

CCAC Dimensions						
Unit Size	**20**	**30**	**40**	**50**	**65**	**75**
Length	67.75''	65.50''	87.12''	87.70''	88.37''	96.43''
Width	28.75''	28.75''	29.70''	29.70''	29.70''	29.70''
Height	45.75	45.75	45.75	45.75	45.75	45.75

For dimensions of the unit with enclosure, please contact sales@jetsonhvac.com.

LITERATURE CHANGE HISTORY

02/25/2025: WCCP and CCAC literature created (JET17-104)

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Product Catalog WCCP and CCAC Series
Revision 030525
JET17-104

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