Catalog

CAT WGZC

Water-Cooled Scroll Compressor Chillers

WGZ 030CW to WGZ 200CW, Packaged Water-Cooled

WGZ 030CA to WGZ 200CA, Less Condenser

30 to 200 Tons, 105 to 700 kW

60 Hz, R-410A

McQuay Air Conditioning

Engineered for flexibility and performance. ™

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Cover Picture: Model WGZ 200C, nominal 200-ton chiller. WGZ 060C picture on page 29.

Manufactured in an ISO certified facility

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Introduction

McQuay International offers a complete line of water-cooled chillers from 30 to 2500 tons (105 to 8800 kW) utilizing scroll, rotary screw and centrifugal compressors.

The 30 to 200 ton, WGZ packaged, scroll compressor chillers are a product of the McQuay commitment to offer energy-efficient equipment design. It is a design approach that carefully combines high quality compressors, efficient shell-and-tube condensers, low pressure drop brazed plate evaporators and state-of-the-art controls into a unit of uncompromised operating efficiency and reliability.

Models WGZ-CW are equipped with factory-mounted water-cooled condensers.

Models WGZ-CA have no condensers mounted and are intended for use with remote evaporative or air-cooled condensers. See McQuay Catalog *CAT A-C Cond* for a complete line of matching air-cooled condensers. Selections for WGZ-CA chillers with selected McQuay air-cooled condensers are included in this catalog.

ARI Standard 550/590-2003 Certified

The ARI Certification Program does not include chillers with remote condensers.
Therefore, Model WGZ-CA, Remote Condenser Chillers ratings are not ARI certified.
Model WGZ-CW, Water-Cooled Chillers are ARI certified.

Efficiency

- WGZ IPLVs are in compliance with ASHRAE 90.1
- Liquid subcooling
- Copeland Compliant Scroll® compressors
- Maximum capacity reduction

Reliability

- Rugged compressor design
- Factory installed operating and equipment protection controls

Flexibility

- Complete factory assembly
- 16 available sizes
- Factory-installed options
- Water or air-cooled condensers

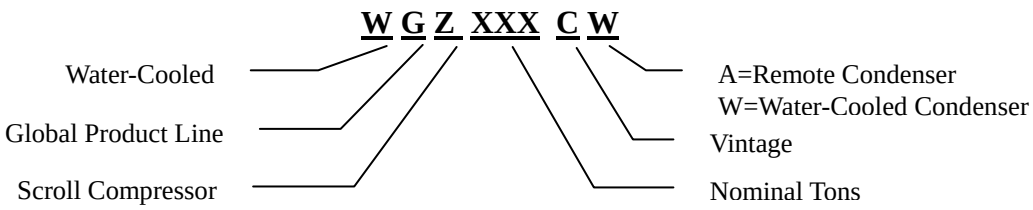
Serviceability

- Dual refrigerant circuits on all sizes
- All components easily accessible

Full Factory Testing

- Helps provide trouble-free start-up and operation

Model Code



Features and Benefits

Efficiency

All WGZ-CW Water-Cooled and WGZ-CA Air-Cooled chillers (depending on remote condenser selection) meet the important ASHRAE 90-1 2004 IPLV efficiency levels. All models except the WGZ 200 meet the full load efficiency levels.

The "C" vintage, R-410A WGZ scroll compressor chillers offer some of the highest operating efficiencies available today through the use of highly efficient components and efficiency oriented-packaging.

Operating economy at part load is increased by operating one compressor on a tandem compressor circuit. At unloaded conditions each compressor will operate at lower compression ratios with substantial power savings.

To McQuay, operating economy means more than just energy efficiency. The WGZ chillers reduce operating costs not only through energy efficiency, but also by offering high unit reliability, easy serviceability, full factory testing and the backing of a factory-trained sales, service and parts organization.

Flexibility

The WGZ chillers come in 16 sizes between 30 and 200 nominal tons (105 and 700 kW). This small capacity increment allows a selection that can closely match the required job capacity.

The WGZ-CW water chillers are completely factory assembled, piped, wired, and shipped in one piece, ready for water piping and wiring connections. The WGZ-CA remote condenser models are ready for field piping to a remote condenser.

A single main supply power terminal block is supplied as standard. Options include multiple circuit power connection and disconnect switches.

Many optional features can be added to fit job requirements. A unit-mounted non-fused disconnect switch eliminates the need for a field installed disconnect. Phase failure/reversal protection and acoustical sound blankets around each compressor are among the many optional features that can be factory installed.

Reliability

The McQuay WGZ chillers use the most advanced and efficient scroll compressors in the industry, the Copeland Compliant Scroll® compressors. All WGZ chillers are connected to water circuits and factory tested to check unit functionality. All equipment protection and operating controls are checked and calibrated. This extensive testing contributes to trouble-free start-ups.

To protect the unit from abnormal operating conditions, an advanced MicroTech II® microprocessor controller is installed as standard on every unit. In addition, the controller takes preemptive action when certain operating limits are approached, keeping the unit on line and sending an alarm signal. Intelligent sequencing of compressors and fan motors (on cooling towers or remote condenser models) as well as responding to external reset and load limit instructions optimize everyday efficiencies.

Serviceability

All WGZ units utilize two independent refrigerant circuits. Dual refrigerant circuits permit shutdown and routine maintenance and service of one circuit while the second circuit maintains system operation but at reduced unit capacity.

Full factory testing

Extensive quality control checks and functional tests are performed on every unit to check that each control is properly adjusted and operates correctly. Each unit is pressure tested, evacuated and charged with refrigerant prior to testing. Each unit is then rechecked for refrigerant leakage after operation.

WGZ CA remote condenser models are shipped with a holding charge of refrigerant; WGZ CW water-cooled units are shipped with a complete operating charge.

Code Approvals

All WGZ units are constructed and/or rated with the latest ANSI/ASHRAE 15 Safety Code, National Electrical Code and ASME Boiler and Pressure Vessel Code. All models are ETL or cETL listed.

Unit Description

Refrigerant

WGZC units utilize R-410A refrigerant-environmentally friendly with no phase-out date.

Unit Arrangements

The McQuay WGZ water chillers are completely factory assembled, piped, wired and shipped in one piece, ready for field connection of power, water piping, and refrigerant piping on remote condenser models. Each chiller consists of compressors, insulated brazed plate evaporator and centralized electrical control panel containing all necessary equipment protection and operating controls. Arrangement “CW” units come complete with mounted, water-cooled condensers with integral subcooler circuits. Arrangement “CA” units are provided without condensers to allow for remote installation of air-cooled or evaporative condensing equipment.

Models 030 to 130 have two refrigerant circuits, each circuit with tandem scroll compressors for a total of four compressors per unit. Models 150 to 200 have two circuits, each with three compressors.

Compressors

Copeland’s Compliant Scroll® tandem or trio compressors are used. These rugged hermetic compressors are constructed with an integral cast iron frame, cast iron scrolls, three Teflon® impregnated bearings, and three oil filtration devices for each compressor.

Using Copeland's Compliant Scroll tandems provides four steps of capacity modulation. One through four compressors can run, depending on the load of the system, resulting in excellent part-load efficiency. Each refrigerant circuit has specially designed oil and gas equalization lines to control oil migration.

The design also offers radial and axial compliance (no tip seals), a large internal volume for liquid handling, a removable suction screen, and a rotary dirt trap and oil screen. In addition, the compressor is self-compensating for wear, handles liquid and debris, and inherently yields the highest efficiency for its class.

This well protected compressor includes a solid-state motor protection module, 4 individual motor-winding sensors, a patented internal discharge temperature probe, and a patented shutdown feature that prevents reverse rotation. An internal discharge check valve helps prevent shutdown noise and comes standard with high and low pressure taps with Schrader valves, a sight glass, an oil level adjustment valve, and an off cycle crankcase heater.

Units are available in 60-hertz with voltages from 208 to 575 volt, operating at 3500 RPM.

Evaporator

Models 030 to 130 evaporators are a compact, high efficiency, two-circuit, brazed-plate type heat exchanger consisting of parallel stainless steel plates, with a design water-side pressure of 653 psi.

Evaporators are designed and constructed according to, and listed by, Underwriters Laboratories (UL). The evaporators do not have vent or drain connections and they must be supplied in the field piping.

Models 150 to 200 have shell-and-tube evaporators with 150 psig (1033 kPa) water-side working pressure. Drain and vent connections are provided on the vessel.

Water-Cooled Condensers

The WGZ-CW water-cooled condensers are cleanable shell and tube type with water in the tubes and two refrigerant circuits in the shell side, divided by a vertical, midpoint partition. Each condenser circuit is capable of holding the circuit's refrigerant charge and each circuit has its own charging and relief valves.

The condenser is constructed with a carbon steel shell and seamless integrally finned high efficiency copper tubes roller expanded into steel tubesheets. The water heads at each end have vent and drain connections and are removable. Also included is a liquid shutoff valve, purge valve, and relief valve per ANSI/ASHRAE Pressure Vessel Code, Section VIII. Water-side working pressure is 500 psi (3100 kPa). Standard condenser connections are located on the right end looking at the control panel. Left hand connections are available as an option

Air-Cooled Condensers

The WGZ-CA chillers are designed for use with properly sized and configured remote air-cooled or evaporative condensers.

The McQuay ACH, ACL, and ACX air-cooled condensers were designed with these units in mind and are available with single- or double-row, vertical discharge fans. They are fully described and rated in Catalog A-C Cond. Double-row (double-circuit) are usually used with McQuay chillers. Two single row (single circuit) can be used where space restrictions dictate.

They are packed with features offering tangible benefits to owners:

- Complete range of capacities from 10 to 210 tons
- Circuits matched to WGZ chillers
- Direct drive fan motors at 1140 or 830 RPM for lower sound levels
- Patented floating tube design to eliminate tube sheet leaks
- High efficiency coil and fan motor design
- Internal baffles between all fan cells
- Weatherproof control panel with door mounted disconnect switch
- G90 painted galvanized steel cabinets
- Single-point power connection
- Independent fusing and contactors for each fan motor
- Integral pre-piped subcooler circuit

Factory Installed Refrigerant Line Components

Each chiller’s refrigerant circuit has manual liquid line shutoff valve, one or two replaceable-core filter-driers (depending on size), solenoid valve, liquid line sight glass/moisture indicator, thermal expansion valve and discharge line shutoff valve. Filter-driers are replaceable-core type on all remote condenser model sizes.

The CA models for remote condenser are similarly equipped. Since there is no water-cooled condenser, a high-side pressure relief valve must be field installed in the discharge line.

Part Load Efficiencies

Part load efficiencies and Integrated Part Load Values (IPLV) for CW units are calculated according to the requirements of the latest ARI Standard 550/590-2003 and meet or exceed ASHRAE Efficiency Standard 90.1. Since most air conditioning systems operate at less than design full load a majority of the time, IPLV is an excellent method for comparing the efficiencies of chillers.

Noise

All McQuay WGZ chillers are equipped with hermetic scroll compressors with inherently low sound levels. Optional insulated acoustical compressor blankets will further reduce sound levels.

Electrical Panel

The electrical panel contains a MicroTech II® microprocessor controller providing operating and equipment protection controls plus motor starting equipment, factory wired, operationally tested, and ready for operation. Standard components include control transformer with primary and secondary fusing, microprocessor transformers with integral fusing, compressor contactors, circuit breakers on the standard single-point wiring arrangement and switches for each circuit pumpdown and unit control power. The control panel has a hinged tool-locked door.

Unit Controller

The chiller controller surpasses all other microprocessor-based chiller control systems available today on this class of equipment. This powerful, user-friendly control system provides the flexibility and performance needed for a stand-alone unit as well as multiple units tied into a network system.

The MicroTech II controller's state-of-the-art design will not only permit the chiller to run more efficiently, but will also simplify troubleshooting if a system failure occurs. Every MicroTech II controller is programmed and tested prior to shipment to provide a trouble-free start-up.

Operator-friendly

The MicroTech II controller menu structure is separated into four distinct categories, which provide the operator or service technician with a full description of current unit status, control parameters, and alarms. Security protection reduces the risk of unauthorized changing of the setpoints and control parameters.

The MicroTech II controller continuously performs self-diagnostic checks, monitoring system temperatures, pressures and protection devices, and will automatically shutdown a compressor, a refrigerant circuit or the entire unit if a fault occurs. The cause of the shutdown will be retained in memory and can be easily displayed in plain English for operator review. The MicroTech II chiller controller will also retain and display the time the fault occurred and the operating conditions that were present at the time of the fault, which is an extremely useful feature for troubleshooting. In addition to displaying alarm diagnostics, the MicroTech II chiller controller also provides the operator with a warning of pre-alarm conditions.

Staging

The four scroll compressors on models WGZ 030 to 130 are staged on and off as a function of leaving chilled water temperature, providing 4 steps of unloading. Models WGZ 150 to 200 have six capacity steps. Lead/lag is automatic and switched every ten starts.

Equipment Protection

The unit is protected by alarms that shut it down and require manual reset. It's also guarded by limit alarms that limit unit operation in response to some out-of-limit condition. Shut down alarms activate an alarm signal.

Shutdown Alarms

- No evaporator water flow
- No condenser flow
- Low evaporator pressure
- High condenser pressure
- Motor protection system
  - Phase voltage protection (Optional)

- Outside ambient temperature (For remote condenser models, field wired sensor)
- Evaporator freeze protection
- Sensor failures

Limit Alarms

- Condenser pressure stage down, unloads unit at high discharge pressures
- Low ambient lockout, shuts off unit at low ambient temperatures
- Low evaporator pressure hold, holds stage #1 until circuit pressure rises
- Low evaporator pressure unload, shuts off stage #2 per circuit

Unit Enable Selection

Enables unit operation from either local keypad, digital input, or BAS.

Unit Mode Selection

Selects standard cooling, ice, glycol, or test operation mode to correctly control staging and other functions.

Digital Inputs

- Unit off switch
- Remote start/stop
- Flow switch
- Ice mode switch, converts control operation and setpoints for ice production
- Motor protection

Digital Outputs

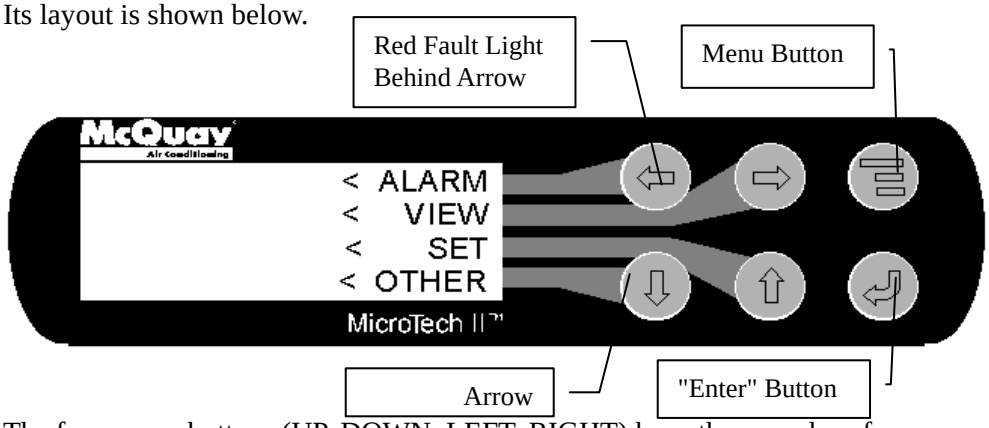
- Shutdown alarm; field wired, activates on an alarm condition and is off when alarm is cleared
- Evaporator pump; field wired, starts pump when unit is set to start
- Twelve outputs for fan control on remote condenser applications

Condenser fan control

On remote condenser units, the MicroTech II controller provides control of up to four condenser fans for each of the two circuits. The control sequences condenser fans based on discharge pressure. This function may also be furnished as part of the condenser control.

Keypad/Display

A 4-line by-20 character/line liquid crystal display and 6-button keypad is mounted on the unit controller. Its layout is shown below.



The four arrow buttons (UP, DOWN, LEFT, RIGHT) have three modes of use.

1. Scroll between data screens as indicated by the arrows (default mode).
2. Select a specific data screen in a hierarchical fashion using dynamic labels on the right side of the display (this mode is entered by pressing the MENU button).
3. Change field values in edit mode.

Building Automation System (BAS) Interface

All MicroTech II controllers are capable of BAS communications, providing seamless integration and comprehensive monitoring, control, and two-way data exchange with industry standard protocols such as LONMARK®, Modbus® or BACnet®.

Open Choice™ Benefits

- Easy to integrate into your building automation system of choice
- Factory-installed and tested communication module
- Comprehensive point list for system integration, equipment monitoring and alarm notification
- Provides efficient equipment operation
- Owner/designer can select the BAS that best meets building requirements
- Comprehensive data exchange

Integration Made Easy

McQuay unit controllers strictly conform to the interoperability guidelines of the LONMARK® Interoperability Association and the BACnet Manufacturers Association. The control system has received:

- LONMARK certification with optional LONMARK communication module
- BACnet certification pending

Protocol Options

BACnet MS/TP
BACnet IP
BACnet Ethernet
LONMARK ® (FTT-10A)
Modbus RTU

The BAS communication module can be ordered with a chiller and factory-mounted or can be field-mounted at any time after the chiller unit is installed.

Table 1, Available BAS Parameters

Types: A = Analog, I= Integer, D= Digital
I/O: I = Input only, O = Output only, I/O = Input/Output
Bold points are setpoints that can be changed from the BAS.

Type	Index	I/O	Description	LONWORKS	BACnet	Modbus
ANALOG						
A	1	I/O	**Network Cool LWT set point**	x	x	x
A	2	O	Active LWT(Leaving Water Temp) set point	x	x	x
A	3	I	**Network Capacity Limit**	x	x	x
A	4	O	Evap EWT (Entering Water Temp)	x	x	x
A	5	I/O	**Network Heat set point**	x	x	x
A	6	O	Evap LWT	x	x	x
A	7	O	Cond EWT	x	x	x
A	8	O	Cond LWT	x	x	x
A	10	O	Unit capacity (%)	x	x	x
A	11	I	**Network Cool LWT set point default**	x		
A	12	I	**Network Heat set point default**	x		
A	15	O	**Suction Temp**	x	x	x
A	16	O	**Evap sat temp**	x	x	x
A	17	O	**Evap pressure**	x	x	x
A	19	O	Discharge Temp	x	x	x

Continued on next page

Available BAS Parameters, Continued

Type	Index	I/O	Description	LONWORKS	BACnet	Modbus
A	19	O	Discharge Temp	x	x	x
A	20	O	Cond sat temp	x	x	x
A	21	O	Cond pressure	x	x	x
A	37	O	Liquid line saturated temp	x	x	x
A	38	O	Liquid line pressure	x	x	x
A	39	O	OAT (Outside Air Temp)	x	x	x
A	42	O	Active Capacity Limit	x	x	x
A	50	I/O	**Network Ice LWT set point**	x	x	x
INTEGER						
I	1	O	Active alarms 1	x	x	x
I	2	O	Active alarms 2	x	x	x
I	3	O	Active alarms 3	x	x	x
I	4	O	Active alarms 4	x	x	x
I	5	O	Active alarms 5	x	x	x
I	6	O	Active alarms 6	x	x	x
I	7	O	Active alarms 7	x	x	x
I	8	O	Active alarms 8	x	x	x
I	9	O	Active alarms 9	x	x	x
I	10	O	Active alarms 10	x	x	x
I	11	O	Active alarms 11	x	x	x
I	12	O	Active alarms 12	x	x	x
I	13	O	Active alarms 13	x	x	x
I	14	O	Active alarms 14	x	x	x
I	15	O	Active alarms 15	x	x	x
I	16	O	Active alarms 16	x	x	x
I	17	I	**Network chiller mode set point**	x	x	x
I	18	O	LON Chiller run mode	x	x	x
I	19	O	Active unit mode	x	x	x
I	20	I	**Network Capacity Limit default set point**	x		
I	21	I	**Network chiller mode default set point**	x		
I	28	O	Unit model type, refrigerant	x	x	x
I	29	O	Unit language	x	x	x
I	30	O	Unit software version	x	x	x
I	32	I	**Compressor select**	x	x	x
I	35	I/O	**Clock year**		x	x
I	36	I/O	**Clock month**		x	x
I	37	I/O	**Clock day of month**		x	x
I	38	I/O	**Clock day of week**		x	x
I	39	I/O	**Clock hours**		x	x
I	40	I/O	**Clock minutes**		x	x
I	45	O	Compressor starts	x	x	x
I	46	O	Compressor run hours	x	x	x
DIGITAL						
D	1	I/O	**Network chiller enable set point**	x	x	x
D	2	O	Chiller enable status	x	x	x
D	3	O	Active alarm indicator	x	x	x
D	4	O	Chiller run enabled	x	x	x
D	5	O	Chiller local control	x	x	x
D	6	O	Chiller capacity limited	x	x	x
D	7	O	Evaporator Water Flow	x	x	x
D	8	O	Condenser Water Flow	x	x	x
D	9	I	**Network chiller enable default set point**	x		
D	10	I	**Ignore network defaults**	x		
D	12	I	**Set clock command**		x	x
D	24	I	**Network clear alarm signal**	x	x	x
D	29	O	Evaporator pump	x	x	x
D	31	O	Condenser pump	x	x	x

Optional Remote Interface Panel

In addition to the unit-mounted LCD user interface provided with MicroTech II controller, the WGZ chiller can be individually equipped with a remote user interface, hard-wired to the chiller. It provides convenient access to unit diagnostics and control adjustments, without having to access your mechanical rooms. A separate remote panel is required for each chiller on a job site. Each remote user interface is similar to its unit-mounted counterpart and offers the same functionality, including:

- Touch sensitive keypad with a 4 line by 20-character display format.
- Digital display of messages in English language.
- All operating conditions, system alarms, control parameters and schedules are monitored.

Features

- Can be wired up to 1,640 feet (500 meters) from the unit for flexibility in placing each remote user interface within your building.
- The main control is isolated from the remote user interface wiring so that wiring problems are less likely to damage the unit user interface.

Benefits

- Allows you to access the user interface for each unit from one location, inside the building.
- Users learn one format because the remote user interface is identical to the unit-mounted version.
- No additional field commissioning is required for the remote user interface.
- Can be retrofit after unit installation.
- All the BAS interface options are still available with the remote interface panel.

Cable and Wiring Recommendations

- No more than 1,640 feet (500 meters) of wiring can be used to connect the remote user interface to the unit.
- Power: AWG 22 twisted pair cable.
- Communications: Belden 9841 or equal AWG 22 twisted pair.

Figure 1, Remote Interface Panel Dimensions

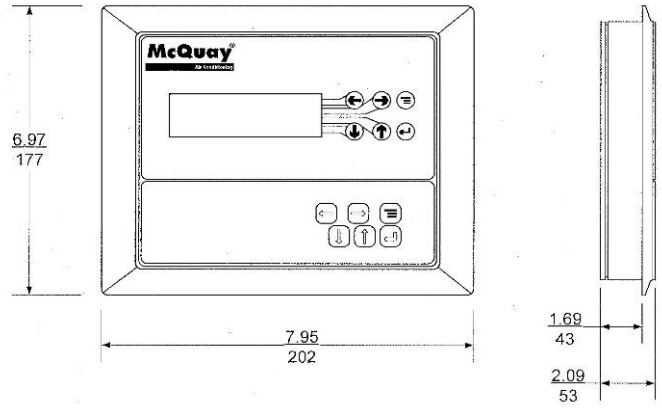
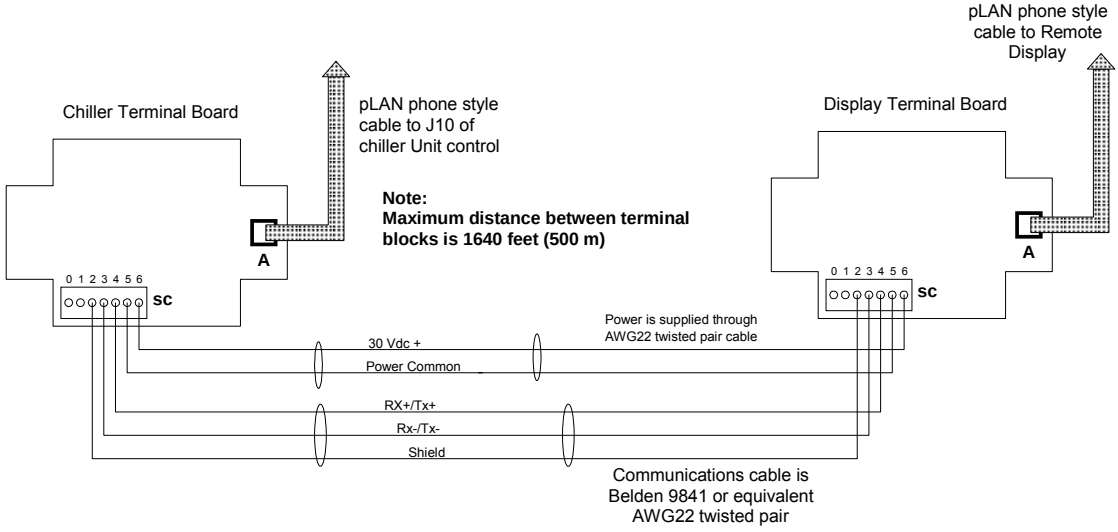


Figure 2, Remote User Interface Wiring Diagram



Selection Procedure

CW Water-Cooled

1. Ratings are based and certified in accordance with ARI Standard 550/590-2003.
2. Ratings in Table 7 and Table 8 can be interpolated for any chiller water temperature between 40°F and 50°F (4.4°C and 10.0°C) but cannot be extrapolated.
3. Chilled water quantities: ratings are based on a 10 degree F (5.6 degree C) chilled water range (2.4 gpm/ton) and can be used for a Delta-T range of 6 to 16 degrees F (3.3 to 8.8 degrees C) by applying performance adjustments from Table 5.
4. The maximum/nominal/minimum evaporator flow rates and pressure drops shown on Figure 4 on page 31. The maximum flow rate and pressure drop are based on a 6-degree chilled water temperature drop. Avoid higher flow rates with resulting lower temperature drops to prevent potential control problems resulting from very small control bands and limited start up/shut off temperature changes. The minimum flow and pressure drop is based on a full load evaporator temperature drop of 16-degrees required to maintain turbulent flow.

   These minimum flow rates assume that flow will be reduced proportionally to the cooling load.
5. Ratings are based on 0.0001 fouling factor for the evaporator. For other fouling factors, multiply ratings by evaporator factors from Table 5. For applications using a glycol solution, see Table 3 or Table 4.
6. Ratings are based on condenser flow of 3 gpm/ton (10 degree F, 5.6 degree C) delta-T and 0.00025 fouling factor. Corrections for other conditions are in Table 6.

Performance Adjustment Factors

Table 2, Altitude Correction Factors

	1000 ft.	2000 ft.	3000 ft.	4000 ft.	5000 ft.	6000 ft.
Capacity	0.997	0.994	0.991	0.988	0.983	0.978
Power	1.0063	1.0126	1.0196	1.0266	1.0336	1.0406

Ethylene and Propylene Glycol Factors

WGZ units are designed to operate with a leaving chilled fluid temperature from 21°F (-6.1°C) to 60°F (16°C). Leaving chilled fluid temperatures below 40°F (4.6°C) result in suction temperatures at or below the freezing point of water and a glycol anti-freeze solution is required. The use of glycol in the evaporator will reduce the performance of the unit. The reduction in performance depends upon the glycol concentration and temperature. This should be taken into consideration during initial system design.

McQuay encourages a minimum concentration of 25% be provided on all glycol applications. Glycol concentrations below 25% are too diluted for long-term corrosion protection of ferrous metals and corrosion inhibitors need to be recalculated and possibly added to the system. Glycol in the condenser will have a negligible effect on performance because glycol at these higher temperatures will perform with characteristics similar to water.

Table 3, Adjustment Factors for Ethylene Glycol

Percent E.G	Freeze Point		Cap.	Power	Flow	PD
	°F	°C				
10	26	-3	0.991	0.996	1.013	1.070
20	18	-8	0.982	0.992	1.040	1.129
30	7	-14	0.972	0.986	1.074	1.181
40	-7	-22	0.961	0.976	1.121	1.263
50	-28	-33	0.946	0.966	1.178	1.308

Table 4, Adjustment Factors for Propylene Glycol

Percent P.G	Freeze Point		Cap.	Power	GPM	PD
	°F	°C				
10	26	-3	0.987	0.992	1.010	1.068
20	19	-7	0.975	0.985	1.028	1.147
30	9	-13	0.962	0.978	1.050	1.248
40	-5	-21	0.946	0.971	1.078	1.366

NOTE: Glycol applications are not included in the ARI certification program.

Evaporator and Condenser Delta-T Factors

Performance tables are based on a 10°F (5°C) temperature difference through the evaporator and condenser. A temperature difference other than 10°F (5°C) will result in unit performance being different from what is shown. Adjustment factors for applications having temperature drops between 6°F and 16°F (3.3°C to 8.9°C) can be found in Table 5 and Table 6.

Fouling Factor

Performance tables are based on water with a fouling factor of 0.0001 ft^2 x hr x °F/BTU (0.0176 m^2 x °C/kW) in the evaporator and 0.00025 ft^2 x hr x °F/BTU (0.044 m^2 x °C/kW) in water-cooled condensers according to ARI 550/590-98. As fouling is increased, performance decreases. See Table 5 and Table 6 for performance with other 4

For optimum unit operation, proper water treatment must be maintained. Scaling and dirt in a system will vary significantly depending on local water conditions. Water treatment should be based on characteristics of the area's water. Improper or untreated water can lead to scale buildup, erosion and corrosion in both the condenser and evaporator.

Table 5, Evaporator Adjustment Factors

Chilled Water Delta-T		Fouling Factor					
		0.0001 (0.0176)		0.00025 (0.044)		0.00075 (0.132)	
°F	°C	Cap.	Power	Cap.	Power	Cap.	Power
6	3.3	0.992	0.995	0.985	0.993	0.962	0.986
8	4.4	0.995	0.997	0.988	0.995	0.965	0.988
10	5.6	1.000	1.000	0.993	0.998	0.970	0.991
12	6.7	1.005	1.002	0.998	1.000	0.975	0.993
14	6.8	1.010	1.005	1.003	1.003	0.980	0.996
16	8.9	1.014	1.007	1.007	1.005	0.984	0.998

Table 6, Condenser Adjustment Factors

Condenser Water Delta-T		Fouling Factor			
		0.00025 (0.044		0.00075 (0.132)	
°F	°C	Cap.	Power	Cap.	Power
6	3.3	1.003	0.999	0.984	1.035
8	4.4	1.002	1.000	0.982	1.037
10	5.5	1.000	1.000	0.980	1.038
12	6.6	0.984	0.973	0.977	1.042
14	7.7	0.976	0.960	0.963	1.067
16	8.8	0.968	0.946	0.948	1.092

Selection Procedure

Knowing the required chiller capacity in tons, the leaving water temperature and either the chilled water temperature range (Delta T) or the flow, determine the unknown quantity using the formula:

Tons= GPM x Delta T/24 (water only)

Knowing the required chiller capacity (tons), the entering condenser water temperature, and either the condenser water temperature range-delta T, or the GPM, determine the unknown quantity using the formula:

$$\text{Condenser GPM} = \frac{\text{THR}}{500 \times \text{Delta T Cond.}} = \frac{\text{Nominal Tons Cooling Capacity} \times 30}{\text{CondenserWaterRange}}$$

With the previous data, the appropriate unit can be selected from Table 7 and Table 8. Correct the capacity and power if conditions are other than standard as described above. Pressure drop for evaporators and condensers can be found in Figure 4 and Figure 5.

Sample Selection

Given: Cool 115 GPM of water from 58°F to 44°F with condenser water available at 85°F. Condenser water temperature rise to be 10 degrees. Fouling factor of 0.0001 in the evaporator and 0.00025 in the condenser.

Find:

A. WGZ packaged water chiller selection
B. Compressor power input
C. Condenser water flow rate
D. Corrected EER
E. Evaporator and condenser water pressure drop

Solution:

1. Chilled water range: 58°F - 44°F = 14°F (Nonstandard Temperature Difference).
2. From Table 7, a model WGZ-070CW has the capacity to meet the job requirement. For an evaporator leaving water temperature of 44°F and condenser water entering temperature of 85°F with a 10 degree rise, the unit capacity rating table indicates:

   Capacity: 68.0 Tons Power: 53.1 kW
3. Correct for 14 degree Delta-T in the evaporator with factors from Table 5

   Capacity: 68.0 x 1.01 = 68.7 Tons Power: 53.1 x 1.005 = 53.4 kW
4. Calculate new EER: (68.7 Tons x 12000) / (53.4 kW x 1000) = 15.4
5. Determine condenser water from the following:

$$\text{Condenser GPM} = \frac{\text{Tons Cooling Capacity} \times 30}{\text{Nominal Condenser Water Range}} = \frac{68.7 \text{ tons} \times 30}{10 \text{ degrees}} = 206 \text{ GPM}$$

6. For the WGZ-070CW, evaporator pressure drop at 115 GPM is 2.2 feet

   From Figure 5, the condenser pressure drop at 206 GPM is 10.4 feet water.

WGZ-CA Remote Condenser

Selection Method

There are four ways to determine the capacity of a WGZ chiller matched to a McQuay condenser:

1. Use the matched chiller/condenser rating tables in this catalog.
2. Contact the McQuay sales office for a computerized selection
3. Calculate the performance interpolating chiller and condenser capacities.
4. Plot the chiller heat rejection and condenser to find the balance point.

Methods one and two are the most commonly used.

The performance of the WGZ-CA chillers is listed by LWT (leaving chilled water temperature*)* and by Discharge Temperature. Tons, Power, and THR (Total Heat Rejection) are given. This data can then be used to select any condenser. Use *Catalog A-C Cond* for McQuay ACL, ACX, ACH air-cooled condensers. It is important to note that most condensers are rated on saturated *condensing* temperature and McQuay chillers rated on saturated *discharge* temperature. Therefore it is necessary to account for the discharge piping line loss. Most piping designs are based on a pressure drop equivalent to two degrees F. Unless otherwise stated, the condenser should therefore be selected with a condensing temperature two degrees less than the compressor discharge temperature.

NOTE: Depending on condenser selection, McQuay WGZ-CA units meet or exceed the ASHRAE 90.1 efficiency requirements of 10.6 full load EER and 11.8 IPLV based on standard rating conditions (full load at 44°F leaving chilled water temperature, 2.4 gpm/ton and 125°F saturated discharge temperature with 10 degrees of subcooling).

1. Ratings can be interpolated for any chiller water temperature between 40°F and 50°F (4.4°C and 10°C) but cannot be extrapolated (contact McQuay Sales Office for ratings outside this range).
2. Chilled water quantities. Ratings are based on a 10-degree F chilled water range and are applicable from a minimum of 6 degrees F to a maximum of 16 degrees F differential between entering and leaving chilled water temperatures.
3. Ratings are based on 0.0001 fouling factor for the evaporator. For other fouling factors, multiply ratings by cooler factors from Table 5 and Table 6. For applications using a glycol solution, see Table 3 or Table 4.
4. Ratings are based on sea level altitude (with a correction table) and 5 psi discharge and liquid line pressure drop. Consult the McQuay sales office for other conditions.

EFFICIENCY NOTE: Generally**,** larger condensers will provide better system efficiency. However, a point of diminishing return can often be reached where the added condenser fans consume more power than is saved by the chiller operating at a lower discharge pressure. The system EER may actually go down.

Selection Procedure

The following selection procedure can be used or selections can be picked from matched WGZ and condenser selections (see page 28).

Normally, the required chiller capacity in tons, the entering and leaving chilled water temperature, flow, and the design outdoor air temperature are known. Determine any unknown quantity using the formula:

Tons = gpm x Delta-T / 24 (water only)

Capacity data is based on:

- Leaving chilled water temperatures from 40ºF to 50ºF (4.4ºC to 10ºC) with a 10 degree Delta-T. Selections can be interpolated between these leaving temperatures but not extrapolated. Correction factors for Delta-Ts other than 10 degrees are in Table 5. Exceeding the Delta-T range of 6 to 16 degrees will cause problems controlling unit unloading.
- Condensing temperatures (CT) from 105ºF to 125ºF (40ºC to 55ºC).
- Total Heat Rejection (THR) is used to select the condenser, whether it is a dry, air-cooled or evaporative-condenser type.

Several different size condensers can usually be matched to any given WGZ-CA unit depending on the condensing temperature that typically ranges from 20 to 30 degrees F above the outdoor temperature. Increasing condensing temperatures will reduce the chiller capacity, increase its power and result in a smaller condenser being required.

Normally a WGZ-CA is selected to meet or exceed the required cooling capacity at some discharge temperature, and a condenser then selected with sufficient capacity to handle the heat rejection with the selected temperature difference (TD, difference between design outdoor dry bulb temperature and condensing temperature).

A more accurate solution can be achieved by plotting the capacity of the chiller and the condenser as a function of the TD and observing the curves intersection that is the system balance point. An example is shown in the following "Selection Example" section.

Sample Selections

Given: Required capacity of 50 tons, cooling 120 gpm of water from 54ºF to 44ºF with 95°F design dry bulb temperature, sea level altitude, 5 psi (2 degrees F) discharge and liquid line pressure drop. and evaporator fouling factor of 0.0001.

Find:

1) WGZ water chiller and a model ACH condenser selection
2) Compressor power input, chilled water pressure drop

Solution:

1) From Table 10, two WGZ selections are possible:
    a) WGZ 050C at 105°F CT; 50.6 tons, 42.4 kW, 752 mbh THR, 0.84 kW/ton
    b) WGZ 055C at 125°F CT; 50.3 tons, 57.0 kW, 798 mbh THR, 1.1 kW/ton

    Note that the condensing temperature has significant influence on the chiller efficiency. Progressing from a) to b) above will require smaller condensers, offset by larger, more expensive chillers and lower efficiency. The WGZ 050 selection with a 10-degree approach (disregarding line loss) will result in a large jump of more four condenser sizes.
2) For this example, a McQuay Model ACH air-cooled condenser will be selected using selection procedures and data contained in *Catalog A-C Cond*. A model ACH AD (double circuit, two rows of fans, 1140 rpm fan speed) will be used.

    For the WGZ 055C at a TD of 30 degrees F, (125°F - 95°F) a Model ACH 050AD with 14 fpi will do the service with a capacity of 978.000 mbh. If a high efficiency selection is desired, it usually most productive to select (when possible) a WGZ with a low condensing temperature as the power savings on the chiller will exceed the additional fan horsepower required for the larger condenser.

An economic decision must often be made between low first cost and low operating cost.

Graphical solutions can also be used as shown in the following typical example:

a) Take the WGZ heat rejection values at two temperatures differences and connecting them, drawing a heat rejection curve.
b) Plot and connect the air-cooled condenser capacity at two different temperature differences.
c) The intersection of the curves is the full load balance point for the chiller/condenser combination.
d) Add 2 degrees (estimated) to chiller discharge temperature to account for line loss and extrapolate the WGZ chiller capacity at that point. This will give accurate performance data for the combination.

Published Ratings for WGZ-CA with Matching Air-Cooled Condensers

Table 12 gives performance data for WGZ models matched with several sizes of McQuay air-cooled condensers (1140 rpm fans). The ratings points are condensed due to the large number of chiller/condenser combinations. If particular job conditions do not match the table rating points, do not extrapolate. Use the table selections as a guide to make specific selections at the job conditions.

The performance shown is based on a 5 psi discharge line pressure drop. In many cases there are one or more larger condensers that will also match the chiller. They are usually in the realm of diminishing return on investment but can be selected manually if desired.

Dual row condensers are used since they can match up with the two circuits on the WGZ units. Splitting the coil of a single row unit results in an uncontrollable head pressure situation.

Two single row condenser can be used and placed end-to-end when a long narrow site exists.

The power (PWR) and efficiency (EER) shown include the condenser fan power. Selections are at sea level altitude, 14 fpi, 10-degree F delta-T and 0.0001 fouling factor. See Table 2 for altitude correction. Contact the local McQuay sales office for other non-standard selections.

Performance Data

WGZ-CW, Water-Cooled

Table 7, Performance, I-P Units

WGZ-CW Unit Size	LWT (°F)	Entering Condenser Water Temperature (°F)														
		75			80			85			90			95		
		Unit	PWR	Unit	Unit	PWR	Unit	Unit	PWR	Unit	Unit	PWR	Unit	Unit	PWR	Unit
		Tons	kWi	EER	Tons	kWi	EER	Tons	kWi	EER	Tons	kWi	EER	Tons	kWi	EER
030	40	29.3	20.9	16.8	28.7	22.1	15.5	28.0	23.4	14.4	27.3	24.7	13.3	26.7	26.2	12.2
	42	30.4	20.9	17.4	29.7	22.1	16.1	29.0	23.4	14.9	28.3	24.7	13.7	27.6	26.2	12.6
	44	31.5	21.0	18.0	30.8	22.1	16.7	**30.0**	**23.4**	**15.4**	29.3	24.8	14.2	28.7	26.2	13.1
	46	32.6	21.0	18.6	31.8	22.1	17.2	31.1	23.5	15.9	30.4	24.8	14.7	29.6	26.2	13.5
	48	33.7	21.1	19.2	32.9	22.2	17.8	32.2	23.5	16.5	31.4	24.8	15.2	30.7	26.2	14.0
	50	34.8	21.1	19.8	34.1	22.2	18.4	33.3	23.5	17.0	32.6	24.8	15.8	31.8	26.3	14.5
035	40	33.6	22.9	17.6	32.9	24.2	16.3	32.2	25.7	15.0	31.5	27.2	13.9	30.7	28.9	12.8
	42	34.9	23.0	18.2	34.1	24.3	16.8	33.4	25.7	15.6	32.6	27.2	14.4	31.8	29.0	13.2
	44	36.1	23.0	18.8	35.4	24.3	17.4	**34.6**	**25.8**	**16.1**	33.8	27.3	14.8	33.0	29.0	13.7
	46	37.3	23.0	19.5	36.6	24.3	18.0	35.8	25.8	16.7	35.0	27.3	15.4	34.2	29.0	14.2
	48	38.6	23.1	20.1	37.8	24.4	18.6	37.0	25.8	17.3	36.3	27.3	15.9	35.4	29.0	14.7
	50	40.0	23.2	20.7	39.1	24.4	19.2	38.3	25.9	17.8	37.4	27.3	16.5	36.6	29.0	15.1
040	40	39.6	26.7	17.8	38.8	28.3	16.5	38.0	30.0	15.2	37.1	31.8	14.0	36.2	33.7	12.9
	42	41.0	26.8	18.4	40.2	28.4	17.0	39.3	30.1	15.7	38.4	31.8	14.5	37.5	33.7	13.4
	44	42.6	26.8	19.0	41.7	28.4	17.6	**40.7**	**30.1**	**16.3**	39.8	31.8	15.0	38.9	33.7	13.9
	46	44.1	26.9	19.6	43.2	28.4	18.2	42.3	30.1	16.9	41.3	31.8	15.6	40.3	33.8	14.3
	48	45.6	26.9	20.3	44.7	28.5	18.8	43.7	30.2	17.4	42.8	31.9	16.1	41.8	33.8	14.8
	50	47.2	27.0	21.0	46.2	28.6	19.4	45.2	30.2	18.0	44.2	31.9	16.6	43.2	33.8	15.3
045	40	44.0	30.3	17.4	43.2	32.0	16.2	42.3	33.7	15.0	41.3	35.6	13.9	40.4	37.7	12.9
	42	45.7	30.4	18.0	44.8	32.1	16.8	43.9	33.8	15.6	42.9	35.7	14.4	41.9	37.8	13.3
	44	47.4	30.6	18.6	46.5	32.2	17.3	**45.5**	**33.8**	**16.1**	44.5	35.7	15.0	43.5	37.8	13.8
	46	49.2	30.7	19.2	48.1	32.3	17.9	47.2	33.9	16.7	46.2	35.8	15.5	45.0	37.9	14.3
	48	50.9	30.8	19.8	49.9	32.4	18.5	48.9	34.0	17.2	47.8	35.9	16.0	46.7	37.9	14.8
	50	52.8	30.9	20.5	51.7	32.5	19.1	50.6	34.1	17.8	49.5	36.0	16.5	48.3	38.0	15.3
050	40	49.8	36.0	16.6	48.7	37.3	15.6	47.6	38.9	14.7	46.4	40.7	13.7	45.4	42.6	12.8
	42	51.8	36.2	17.2	50.7	37.7	16.1	49.5	39.2	15.1	48.3	40.9	14.2	47.2	42.9	13.2
	44	53.8	36.5	17.7	52.6	38.0	16.6	**51.4**	**39.5**	**15.6**	50.1	41.3	14.6	49.1	43.3	13.6
	46	55.8	36.8	18.2	54.6	38.3	17.1	53.3	39.9	16.1	52.0	41.6	15.0	50.9	43.6	14.0
	48	58.0	37.1	18.7	56.6	38.6	17.6	55.3	40.2	16.5	54.0	41.9	15.5	52.8	43.9	14.4
	50	60.1	37.5	19.2	58.7	38.9	18.1	57.4	40.6	17.0	56.1	42.4	15.9	54.8	44.3	14.8
055	40	54.6	38.6	17.0	53.6	40.7	15.8	52.5	42.9	14.7	51.3	45.2	13.6	50.1	47.8	12.6
	42	56.7	38.8	17.5	55.6	40.8	16.4	54.4	43.0	15.2	53.2	45.3	14.1	52.0	47.9	13.0
	44	58.8	38.9	18.1	57.6	41.0	16.9	**56.4**	**43.1**	**15.7**	55.2	45.4	14.6	53.9	48.0	13.5
	46	60.9	39.1	18.7	59.7	41.1	17.4	58.5	43.2	16.2	57.2	45.5	15.1	55.9	48.1	13.9
	48	63.0	39.3	19.2	61.9	41.3	18.0	60.6	43.4	16.7	59.3	45.8	15.6	58.0	48.2	14.4
	50	65.3	39.7	19.8	64.1	41.5	18.5	62.7	43.6	17.3	61.4	45.9	16.1	60.0	48.4	14.9

Continued on next page

Table 7, Performance, I-P Units, Continued

WGZ-CW Unit Size	LWT (°F)	Entering Condenser Water Temperature (°F)														
		75			80			85			90			95		
		Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER
060	40	58.7	42.3	16.6	57.4	43.9	15.7	56.0	45.8	14.7	54.7	47.9	13.7	53.5	50.1	12.8
	42	61.0	42.6	17.2	59.6	44.3	16.1	58.3	46.1	15.2	56.8	48.2	14.2	55.6	50.5	13.2
	44	63.3	43.0	17.7	61.9	44.7	16.6	**60.5**	**46.5**	**15.6**	59.1	48.7	14.6	57.8	50.9	13.6
	46	65.7	43.3	18.2	64.3	45.0	17.1	62.7	46.9	16.0	61.2	49.1	15.0	59.9	51.3	14.0
	48	68.2	43.7	18.7	66.6	45.4	17.6	65.2	47.2	16.6	63.5	49.4	15.4	62.1	51.7	14.4
	50	70.8	44.1	19.2	69.1	45.8	18.1	67.6	47.7	17.0	66.0	49.9	15.9	64.5	52.2	14.8
070	40	68.5	46.9	17.5	67.2	49.4	16.3	65.7	52.1	15.1	64.3	54.9	14.0	62.8	58.0	13.0
	42	71.2	47.1	18.1	69.7	49.6	16.9	68.2	52.2	15.7	66.8	55.0	14.6	65.2	58.1	13.5
	44	73.9	47.3	18.7	72.3	49.8	17.4	**70.8**	**52.4**	**16.2**	69.3	55.2	15.1	67.7	58.2	14.0
	46	76.6	47.6	19.3	75.0	50.0	18.0	73.4	52.6	16.8	71.8	55.3	15.6	70.2	58.4	14.4
	48	79.3	47.9	19.8	77.7	50.2	18.6	76.1	52.8	17.3	74.5	55.5	16.1	72.7	58.6	14.9
	50	82.2	48.2	20.5	80.5	50.5	19.1	78.9	53.0	17.9	77.1	55.7	16.6	75.4	58.8	15.4
080	40	75.9	54.1	16.8	74.2	56.1	15.9	72.5	58.5	14.9	70.8	61.1	13.9	69.2	64.1	13.0
	42	78.9	54.5	17.4	77.1	56.5	16.4	75.4	59.0	15.3	73.6	61.6	14.3	72.0	64.5	13.4
	44	82.0	55.0	17.9	80.1	57.1	16.8	**78.3**	**59.5**	**15.8**	15.8	62.1	3.1	74.7	65.0	13.8
	46	85.0	55.4	18.4	83.1	57.5	17.3	81.2	60.0	16.3	79.3	62.6	15.2	77.5	65.5	14.2
	48	88.2	55.8	19.0	86.3	58.0	17.8	84.3	60.4	16.7	82.3	63.2	15.6	80.4	66.1	14.6
	50	91.6	56.3	19.5	89.5	58.6	18.3	87.4	61.0	17.2	85.3	63.8	16.1	83.4	66.7	15.0
090	40	85.3	59.9	17.1	83.5	62.6	16.0	81.6	65.6	14.9	79.9	68.8	13.9	78.0	72.4	12.9
	42	88.6	60.4	17.6	86.6	63.0	16.5	84.8	66.0	15.4	82.9	69.2	14.4	81.0	72.7	13.4
	44	92.0	60.8	18.2	90.0	63.5	17.0	**88.0**	**66.4**	**15.9**	86.0	69.6	14.8	84.0	73.1	13.8
	46	95.4	61.3	18.7	93.3	63.9	17.5	91.3	66.8	16.4	89.3	69.9	15.3	87.3	73.4	14.3
	48	98.9	61.9	19.2	96.9	64.4	18.0	94.7	67.2	16.9	92.6	70.4	15.8	90.5	73.8	14.7
	50	102.6	62.4	19.7	100.4	64.9	18.6	98.2	67.7	17.4	96.0	70.8	16.3	93.8	74.2	15.2
100	40	94.8	66.7	17.0	92.7	69.3	16.0	90.6	72.1	15.1	88.4	75.5	14.1	86.4	79.0	13.1
	42	98.6	67.1	17.6	96.3	69.7	16.6	94.1	72.6	15.6	92.0	76.0	14.5	89.9	79.5	13.6
	44	102.4	67.8	18.1	100.1	70.4	17.1	**97.8**	**73.4**	**16.0**	95.5	76.7	14.9	93.3	80.3	13.9
	46	106.3	68.3	18.7	103.7	70.9	17.6	101.5	74.0	16.5	99.1	77.3	15.4	96.8	80.9	14.4
	48	110.2	68.9	19.2	107.7	71.5	18.1	105.3	74.6	17.0	102.8	77.9	15.8	100.5	81.5	14.8
	50	114.4	69.5	19.7	111.8	72.2	18.6	109.3	75.3	17.4	106.7	78.7	16.3	104.2	82.3	15.2
115	40	109.5	77.4	17.0	106.9	80.5	15.9	104.5	83.9	15.0	102.1	87.7	14.0	99.7	91.8	13.0
	42	113.9	78.0	17.5	111.2	81.0	16.5	108.8	84.5	15.4	106.1	88.3	14.4	103.8	92.4	13.5
	44	118.2	78.7	18.0	115.5	81.8	16.9	**112.9**	**85.2**	**15.9**	110.2	89.0	14.9	107.7	93.2	13.9
	46	122.6	79.4	18.5	119.8	82.4	17.4	117.2	85.9	16.4	114.3	89.7	15.3	111.7	94.0	14.3
	48	127.3	80.0	19.1	124.4	83.1	18.0	121.6	86.5	16.9	118.6	90.4	15.7	116.0	94.7	14.7
	50	132.0	80.8	19.6	129.1	83.9	18.5	126.1	87.5	17.3	123.1	91.3	16.2	120.3	95.6	15.1
130	40	121.5	88.8	16.4	118.8	92.3	15.4	116.1	96.1	14.5	113.3	100.5	13.5	110.7	105.2	12.6
	42	126.5	89.5	17.0	123.6	93.0	16.0	120.8	96.9	15.0	117.9	101.2	14.0	115.2	106.0	13.1
	44	131.3	90.3	17.4	128.3	93.8	16.4	**125.4**	**97.7**	**15.4**	122.4	102.2	14.4	119.6	106.9	13.4
	46	136.2	91.0	18.0	133.1	94.5	16.9	130.1	98.5	15.9	127.0	102.9	14.8	124.1	107.7	13.8
	48	141.3	91.7	18.5	138.1	95.3	17.4	135.0	99.3	16.3	131.8	103.7	15.2	128.8	108.6	14.2
	50	146.7	92.6	19.0	143.3	96.2	17.9	140.1	100.2	16.8	136.7	104.8	15.7	133.6	109.7	14.6

Continued on next page

Table 7, Performance, I-P Units, Continued

WGZ-CW Unit Size	LWT (°F)	Entering Condenser Water Temperature (°F)														
		75			80			85			90			95		
		Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER	Unit Tons	PWR kWi	Unit EER
150	40	142.1	100.0	17.1	138.8	103.9	16.0	135.7	108.2	15.1	132.5	113.0	14.1	129.5	118.4	13.1
	42	147.9	100.7	17.6	144.5	104.6	16.6	141.2	109.0	15.5	137.8	113.9	14.5	134.7	119.2	13.6
	44	153.5	101.6	18.1	150.0	105.6	17.1	**146.6**	**110.0**	**16.0**	143.1	114.9	14.9	139.8	120.3	14.0
	46	159.2	102.4	18.7	155.6	106.4	17.6	152.1	110.8	16.5	148.5	115.8	15.4	145.1	121.2	14.4
	48	165.2	103.2	19.2	161.5	107.2	18.1	157.9	111.7	17.0	154.1	116.7	15.8	150.6	122.2	14.8
	50	171.5	104.2	19.7	167.5	108.3	18.6	163.7	112.8	17.4	159.9	117.9	16.3	156.2	123.4	15.2
170	40	164.1	110.6	17.8	160.3	114.9	16.7	156.7	119.7	15.7	153.0	125.1	14.7	149.5	131.0	13.7
	42	170.7	111.4	18.4	166.8	115.7	17.3	163.1	120.6	16.2	159.2	126.0	15.2	155.6	131.9	14.2
	44	177.2	112.4	18.9	173.2	116.8	17.8	**169.3**	**121.7**	**16.7**	165.3	127.2	15.6	161.5	133.1	14.6
	46	183.9	113.3	19.5	179.7	117.7	18.3	175.7	122.6	17.2	171.5	128.1	16.1	167.6	134.1	15.0
	48	190.8	114.2	20.0	186.5	118.6	18.9	182.3	123.6	17.7	178.0	129.1	16.5	173.9	135.2	15.4
	50	198.0	115.3	20.6	193.4	119.8	19.4	189.1	124.8	18.2	184.6	130.5	17.0	180.4	136.5	15.9
200	40	182.3	122.9	17.8	178.1	127.7	16.7	174.1	133.0	15.7	170.0	139.0	14.7	166.1	145.5	13.7
	42	189.7	123.8	18.4	185.4	128.6	17.3	181.2	134.0	16.2	176.9	140.0	15.2	172.9	146.6	14.2
	44	196.9	124.9	18.9	192.4	129.8	17.8	**188.1**	**135.2**	**16.7**	183.6	141.3	15.6	179.4	147.9	14.6
	46	204.3	125.9	19.5	199.7	130.8	18.3	195.2	136.2	17.2	190.5	142.3	16.1	186.2	149.0	15.0
	48	212.0	126.9	20.0	207.2	131.8	18.9	202.5	137.4	17.7	197.7	143.5	16.5	193.2	150.2	15.4
	50	220.0	128.1	20.6	214.9	133.1	19.4	210.1	138.7	18.2	205.1	145.0	17.0	200.5	151.7	15.9

NOTES:

1. Ratings in accordance with ARI Standard 550/590-2003. Shaded and bold ratings are at ARI standard conditions.
2. Ratings based on R-410A, evaporator fouling factor of 0.0001 and condenser fouling factor of 0.00025, evaporator water flow of 2.4 gpm/ton and condenser water flow of 3.0 gpm/ton.
3. Interpolation is allowed; extrapolation is not permitted. Consult McQuay for performance outside the ratings shown.
4. KW input is for compressor only; EER is for the entire unit.

Table 8, Performance, SI Units

WGZ-CW Unit Size	LWT (°C)	Entering Condenser Water Temperature (°C)														
		24			27			30			32			35		
		Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP
030	5.0	104.3	20.7	5.0	101.6	22.0	4.6	99.0	23.4	4.2	97.3	24.3	4.0	94.9	25.9	3.7
	6.0	107.6	20.7	5.2	104.8	22.1	4.8	102.2	23.4	4.4	100.5	24.3	4.1	97.9	25.9	3.8
	7.0	111.0	20.7	5.3	108.2	22.1	4.9	105.5	23.4	4.5	103.7	24.4	4.3	101.1	25.9	3.9
	8.0	114.6	20.8	5.5	111.6	22.1	5.1	108.9	23.5	4.7	107.1	24.4	4.4	104.3	25.9	4.0
	9.0	118.1	20.8	5.6	115.2	22.1	5.2	112.3	23.5	4.8	110.4	24.4	4.5	107.7	25.9	4.2
	10.0	121.7	20.9	5.8	118.7	22.2	5.4	115.8	23.5	4.9	113.9	24.4	4.7	111.0	26.0	4.3
035	5.0	119.5	22.7	5.3	116.9	24.1	4.8	114.1	25.8	4.4	112.1	26.8	4.2	109.2	28.5	3.8
	6.0	123.4	22.7	5.4	120.6	24.1	5.0	117.7	25.8	4.6	115.8	26.8	4.3	112.8	28.6	4.0
	7.0	127.4	22.8	5.6	124.5	24.2	5.1	121.6	25.8	4.7	119.5	26.8	4.5	116.5	28.6	4.1
	8.0	131.4	22.8	5.7	128.5	24.2	5.3	125.4	25.8	4.9	123.4	26.9	4.6	120.2	28.6	4.2
	9.0	135.5	22.9	5.9	132.5	24.2	5.5	129.4	25.9	5.0	127.2	26.9	4.7	123.9	28.6	4.3
	10.0	139.7	22.9	6.1	136.5	24.3	5.6	133.4	25.9	5.2	131.2	26.9	4.9	127.8	28.6	4.5

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Table 8, Performance, SI Units, Continued

WGZ-CW Unit Size	LWT (°C)	Entering Condenser Water Temperature (°C)														
		24			27			30			32			35		
		Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP	Unit kW	PWR kWi	Unit COP
040	5.0	140.9	26.5	5.3	137.7	28.1	4.9	134.4	30.0	4.5	132.2	31.2	4.2	128.7	33.3	3.9
	6.0	145.5	26.5	5.5	142.2	28.2	5.0	138.9	30.0	4.6	136.5	31.2	4.4	132.9	33.3	4.0
	7.0	150.2	26.6	5.6	146.8	28.2	5.2	143.3	30.1	4.8	141.0	31.3	4.5	137.2	33.3	4.1
	8.0	155.0	26.7	5.8	151.5	28.3	5.3	147.9	30.1	4.9	145.5	31.3	4.6	141.7	33.4	4.3
	9.0	159.8	26.7	6.0	156.3	28.3	5.5	152.6	30.1	5.1	150.1	31.3	4.8	146.2	33.4	4.4
	10.0	164.8	26.8	6.1	161.2	28.4	5.7	157.4	30.2	5.2	154.8	31.4	4.9	150.9	33.4	4.5
045	5.0	156.5	30.1	5.2	153.2	31.9	4.8	149.8	33.7	4.4	147.3	35.1	4.2	143.7	37.2	3.9
	6.0	161.8	30.2	5.4	158.4	31.9	5.0	154.8	33.8	4.6	152.3	35.2	4.3	148.4	37.3	4.0
	7.0	167.1	30.3	5.5	163.6	32.0	5.1	159.9	33.8	4.7	157.3	35.2	4.5	153.5	37.3	4.1
	8.0	172.6	30.4	5.7	169.0	32.1	5.3	165.2	33.9	4.9	162.5	35.3	4.6	158.5	37.4	4.2
	9.0	178.3	30.5	5.8	174.4	32.2	5.4	170.5	34.0	5.0	167.7	35.4	4.8	163.7	37.4	4.4
	10.0	184.0	30.6	6.0	180.0	32.3	5.6	175.9	34.1	5.2	173.2	35.4	4.9	168.9	37.5	4.5
050	5.0	177.4	35.7	5.0	173.1	37.2	4.7	168.8	38.9	4.3	166.0	40.2	4.1	161.9	42.3	3.8
	6.0	183.7	36.1	5.1	179.2	37.5	4.8	174.8	39.2	4.5	171.9	40.6	4.2	167.7	42.6	3.9
	7.0	190.0	36.3	5.2	185.4	37.8	4.9	180.8	39.5	4.6	177.8	40.8	4.4	173.3	42.9	4.0
	8.0	196.6	36.6	5.4	191.8	38.1	5.0	186.9	39.8	4.7	183.9	41.2	4.5	179.3	43.2	4.2
	9.0	203.2	36.9	5.5	198.3	38.3	5.2	193.3	40.2	4.8	190.2	41.4	4.6	185.4	43.5	4.3
	10.0	210.0	37.1	5.7	204.8	38.6	5.3	199.7	40.5	4.9	196.5	41.8	4.7	191.6	43.8	4.4
055	5.0	194.3	38.4	5.1	190.1	40.5	4.7	185.8	42.9	4.3	182.9	44.6	4.1	178.3	47.3	3.8
	6.0	200.7	38.5	5.2	196.5	40.6	4.8	192.1	43.0	4.5	189.0	44.7	4.2	184.3	47.4	3.9
	7.0	207.3	38.7	5.4	202.9	40.8	5.0	198.4	43.1	4.6	195.3	44.8	4.4	190.4	47.5	4.0
	8.0	214.1	38.8	5.5	209.5	40.9	5.1	204.9	43.2	4.7	201.7	44.9	4.5	196.7	47.6	4.1
	9.0	220.9	39.0	5.7	216.3	41.1	5.3	211.5	43.4	4.9	208.2	45.0	4.6	203.1	47.7	4.3
	10.0	228.0	39.2	5.8	223.1	41.3	5.4	218.2	43.5	5.0	214.8	45.1	4.8	209.6	47.8	4.4
060	5.0	208.8	42.1	5.0	203.8	43.8	4.7	198.8	45.8	4.3	195.4	47.3	4.1	190.6	49.7	3.8
	6.0	216.2	42.5	5.1	211.0	44.2	4.8	205.7	46.2	4.4	202.4	47.7	4.2	197.3	50.1	3.9
	7.0	223.7	42.8	5.2	218.1	44.5	4.9	212.8	46.5	4.6	209.2	48.0	4.4	204.1	50.5	4.0
	8.0	231.3	43.1	5.4	225.7	44.8	5.0	220.1	46.9	4.7	216.5	48.4	4.5	211.1	50.9	4.1
	9.0	239.2	43.4	5.5	233.4	45.1	5.2	227.6	47.2	4.8	223.8	48.7	4.6	218.2	51.2	4.3
	10.0	247.1	43.7	5.6	241.0	45.4	5.3	235.1	47.6	4.9	231.2	49.1	4.7	225.5	51.7	4.4
070	5.0	244.1	46.6	5.2	238.7	49.2	4.8	233.2	52.1	4.5	229.6	54.1	4.2	223.9	57.3	3.9
	6.0	252.3	46.8	5.4	246.8	49.4	5.0	241.1	52.3	4.6	237.3	54.2	4.4	231.4	57.5	4.0
	7.0	260.6	47.0	5.5	254.9	49.5	5.1	249.1	52.4	4.8	245.2	54.4	4.5	239.2	57.6	4.2
	8.0	269.2	47.3	5.7	263.3	49.7	5.3	257.4	52.6	4.9	253.4	54.5	4.6	247.2	57.7	4.3
	9.0	278.0	47.5	5.8	271.9	50.0	5.4	265.8	52.8	5.0	261.7	54.7	4.8	255.3	57.9	4.4
	10.0	286.9	47.8	6.0	280.7	50.2	5.6	274.4	53.0	5.2	270.1	54.9	4.9	263.5	58.1	4.5
080	5.0	270.3	53.8	5.0	263.7	55.9	4.7	257.2	58.6	4.4	252.9	60.4	4.2	246.6	63.6	3.9
	6.0	279.9	54.2	5.2	273.0	56.4	4.8	266.3	59.1	4.5	261.9	60.9	4.3	255.3	64.1	4.0
	7.0	289.4	54.6	5.3	282.4	56.8	5.0	275.4	59.5	4.6	270.8	61.4	4.4	264.1	64.6	4.1
	8.0	299.4	55.0	5.4	292.0	57.3	5.1	284.9	59.9	4.8	280.2	61.9	4.5	273.2	65.0	4.2
	9.0	309.5	55.4	5.6	302.0	57.6	5.2	294.5	60.3	4.9	289.6	62.3	4.7	282.5	65.5	4.3
	10.0	319.8	55.8	5.7	312.0	58.1	5.4	304.3	60.8	5.0	299.2	62.8	4.8	291.8	66.0	4.4

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Table 8, Performance, SI Units, Continued

WGZ-CW Unit Size	LWT (°C)	Entering Condenser Water Temperature (°C)														
		24			27			30			32			35		
		Unit	PWR	Unit	Unit	PWR	Unit	Unit	PWR	Unit	Unit	PWR	Unit	Unit	PWR	Unit
		kW	kWi	COP	kW	kWi	COP	kW	kWi	COP	kW	kWi	COP	kW	kWi	COP
090	5.0	303.5	59.6	5.1	296.4	62.5	4.7	289.5	65.7	4.4	284.8	68.1	4.2	277.8	71.8	3.9
	6.0	313.9	60.1	5.2	306.6	62.8	4.9	299.3	66.1	4.5	294.6	68.4	4.3	287.3	72.1	4.0
	7.0	324.6	60.5	5.4	317.1	63.2	5.0	309.5	66.4	4.7	304.5	68.7	4.4	297.1	72.5	4.1
	8.0	335.5	61.0	5.5	327.7	63.7	5.1	320.0	66.8	4.8	314.8	69.1	4.6	307.0	72.8	4.2
	9.0	346.7	61.4	5.6	338.6	64.1	5.3	330.5	67.2	4.9	325.2	69.4	4.7	317.3	73.1	4.3
	10.0	358.2	61.8	5.8	349.8	64.5	5.4	341.4	67.6	5.1	335.9	69.8	4.8	327.7	73.5	4.5
100	5.0	337.6	66.3	5.1	329.4	69.0	4.8	321.2	72.3	4.4	316.0	74.5	4.2	308.1	78.4	3.9
	6.0	349.6	66.8	5.2	341.1	69.6	4.9	332.7	72.9	4.6	327.2	75.1	4.4	319.0	79.1	4.0
	7.0	361.5	67.3	5.4	352.7	70.1	5.0	344.0	73.4	4.7	338.3	75.7	4.5	329.9	79.6	4.1
	8.0	373.9	67.9	5.5	364.8	70.6	5.2	355.8	73.9	4.8	349.9	76.3	4.6	341.2	80.3	4.3
	9.0	386.6	68.3	5.7	377.2	71.1	5.3	367.8	74.4	4.9	361.8	76.8	4.7	352.8	80.8	4.4
	10.0	399.5	68.9	5.8	389.7	71.7	5.4	380.1	75.0	5.1	373.8	77.4	4.8	364.5	81.4	4.5
115	5.0	389.8	77.1	5.1	380.3	80.2	4.7	370.9	83.9	4.4	364.7	86.6	4.2	355.7	91.0	3.9
	6.0	403.5	77.7	5.2	393.7	80.8	4.9	384.0	84.6	4.5	377.6	87.3	4.3	368.2	91.8	4.0
	7.0	417.4	78.2	5.3	407.1	81.4	5.0	397.1	85.2	4.7	390.5	87.9	4.4	380.8	92.4	4.1
	8.0	431.7	78.9	5.5	421.2	82.0	5.1	410.7	85.9	4.8	403.9	88.6	4.6	393.9	93.1	4.2
	9.0	446.3	79.4	5.6	435.4	82.6	5.3	424.6	86.5	4.9	417.7	89.2	4.7	407.2	93.8	4.3
	10.0	461.1	80.0	5.8	449.9	83.2	5.4	438.8	87.2	5.0	431.5	89.9	4.8	420.7	94.6	4.4
130	5.0	433.0	88.4	4.9	422.3	91.9	4.6	411.9	96.3	4.3	405.1	99.4	4.1	395.0	104.5	3.8
	6.0	448.3	89.1	5.0	437.3	92.6	4.7	426.5	97.0	4.4	419.4	100.1	4.2	409.0	105.3	3.9
	7.0	463.6	89.7	5.2	452.2	93.4	4.9	441.0	97.7	4.5	433.8	100.8	4.3	423.0	106.0	4.0
	8.0	479.5	90.5	5.3	467.7	94.1	5.0	456.2	98.5	4.6	448.7	101.7	4.4	437.5	106.8	4.1
	9.0	495.8	91.1	5.4	483.7	94.7	5.1	471.7	99.2	4.8	463.9	102.4	4.5	452.3	107.6	4.2
	10.0	512.2	91.8	5.6	499.7	95.4	5.2	487.4	100.0	4.9	479.3	103.2	4.6	467.4	108.5	4.3
150	5	506.1	99.4	5.1	493.7	103.4	4.8	481.5	108.3	4.5	473.6	111.8	4.2	461.8	117.5	3.9
	6	524.0	100.3	5.2	511.2	104.2	4.9	498.6	109.1	4.6	490.4	112.6	4.4	478.2	118.5	4.0
	7	541.9	101.0	5.4	528.6	105.0	5.0	515.6	110.0	4.7	507.1	113.5	4.5	494.5	119.3	4.1
	8	560.6	101.8	5.5	546.8	105.9	5.2	533.4	110.9	4.8	524.5	114.4	4.6	511.5	120.2	4.3
	9	579.6	102.5	5.7	565.4	106.6	5.3	551.4	111.6	4.9	542.3	115.2	4.7	528.8	121.0	4.4
	10	598.7	103.3	5.8	584.2	107.4	5.4	569.8	112.5	5.1	560.3	116.1	4.8	546.4	122.1	4.5
170	5	584.5	110.0	5.3	570.2	114.4	5.0	556.1	119.8	4.6	546.9	123.7	4.4	533.3	130.0	4.1
	6	605.2	110.9	5.5	590.4	115.3	5.1	575.8	120.7	4.8	566.3	124.6	4.5	552.2	131.1	4.2
	7	625.9	111.7	5.6	610.5	116.2	5.3	595.4	121.7	4.9	585.7	125.5	4.7	571.0	132.0	4.3
	8	647.4	112.6	5.7	631.5	117.1	5.4	616.0	122.7	5.0	605.8	126.6	4.8	590.7	133.0	4.4
	9	669.4	113.4	5.9	653.0	117.9	5.5	636.8	123.5	5.2	626.3	127.5	4.9	610.6	133.9	4.6
	10	691.5	114.3	6.1	674.7	118.8	5.7	658.0	124.5	5.3	647.1	128.5	5.0	631.0	135.1	4.7
200	5	649.4	122.2	5.3	633.5	127.1	5.0	617.8	133.2	4.6	607.6	137.5	4.4	592.5	144.5	4.1
	6	672.4	123.3	5.5	656.0	128.1	5.1	639.7	134.2	4.8	629.2	138.5	4.5	613.5	145.6	4.2
	7	695.4	124.1	5.6	678.3	129.1	5.3	661.5	135.2	4.9	650.7	139.5	4.7	634.4	146.6	4.3
	8	719.3	125.1	5.7	701.6	130.1	5.4	684.4	136.3	5.0	673.0	140.6	4.8	656.3	147.8	4.4
	9	743.7	126.0	5.9	725.5	131.0	5.5	707.5	137.2	5.2	695.8	141.6	4.9	678.5	148.8	4.6

Notes:

1. Based on R-410A, evaporator fouling factor of 0.0176 and condenser fouling factor of 0.044, evaporator water flow of 0.043 L/s-kW and condenser water flow of 0.054 L/s-kW. Power is for compressor only, COP is for the entire unit.
2. Interpolation is allowed; extrapolation is not permitted. Consult McQuay for performance outside the ratings shown.

WGZ-CW Part Load Data

Table 9, Part Load Performance

WGZ-CW Unit Size	Percent Load	Capacity Tons	Power KW	Unit EER	IPLV
030	100%	30.0	23.4	15.4	19.4
	75%	22.4	15.0	18.0	
	50%	15.0	8.8	20.5	
	25%	7.5	4.4	20.2	
035	100%	34.6	25.8	16.1	19.8
	75%	26.0	16.9	18.4	
	50%	17.3	9.9	20.9	
	25%	8.7	5.0	20.8	
040	100%	40.7	30.1	16.3	20.0
	75%	30.5	19.8	18.5	
	50%	20.4	11.5	21.2	
	25%	10.2	5.8	21.1	
045	100%	45.5	33.8	16.1	19.9
	75%	34.1	22.5	18.2	
	50%	22.8	12.9	21.2	
	25%	11.4	6.5	21.0	
050	100%	51.4	39.5	15.6	19.4
	75%	38.6	25.7	18.0	
	50%	25.7	15.0	20.6	
	25%	12.9	7.6	20.4	
055	100%	56.4	43.1	15.7	19.8
	75%	42.3	27.6	18.4	
	50%	28.2	16.2	20.9	
	25%	14.1	8.2	20.6	
060	100%	60.5	46.5	15.6	19.7
	75%	45.4	29.6	18.4	
	50%	30.3	17.5	20.8	
	25%	15.1	8.8	20.6	
070	100%	70.8	52.4	16.2	20.0
	75%	53.1	34.3	18.6	
	50%	35.4	20.1	21.1	
	25%	17.7	10.1	21.0	

WGZ-CW Unit Size	Percent Load	Capacity Tons	Power KW	Unit EER	IPLV
080	100%	78.3	59.5	15.8	19.9
	75%	58.7	39.4	17.9	
	50%	39.2	21.9	21.5	
	25%	19.6	11.1	21.2	
090	100%	88.0	66.4	15.9	19.5
	75%	66.0	44.2	17.9	
	50%	44.0	25.4	20.8	
	25%	22.0	12.8	20.7	
100	100%	97.8	73.4	16.0	19.9
	75%	73.4	47.6	18.5	
	50%	48.9	27.9	21	
	25%	24.5	14.0	20.9	
115	100%	112.9	85.2	15.9	20.0
	75%	84.7	55.8	18.2	
	50%	56.5	31.7	21.4	
	25%	28.2	16.1	21.0	
130	100%	125.4	97.7	15.4	20.0
	75%	94.1	62.7	18.0	
	50%	62.7	35.0	21.5	
	25%	31.4	17.6	21.4	
150	100%	146.6	110.0	16.0	20.0
	75%	110.0	72.5	18.2	
	50%	73.3	40.9	21.5	
	25%	36.7	20.6	21.4	
170	100%	169.3	121.7	16.7	20.1
	75%	127.0	81.0	18.8	
	50%	84.7	48.4	21.0	
	25%	42.3	23.6	21.5	
200	100%	188.1	135.2	16.7	19.5
	75%	141.1	93.0	18.2	
	50%	94.1	55.1	20.5	
	25%	47.0	26.9	21.0	

WGZ-CA Remote Condenser

Table 10, Performance Data, Remote Condenser, IP Units

WGZ-CA Unit Size	LWT (°F)	Discharge Temperature (°F)														
		105			110			115			120			125		
		Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh
030	40	27.2	25.1	412.7	26.6	26.6	409.9	26.0	28.2	407.5	25.3	29.8	405.5	24.7	31.5	403.7
	42	28.2	25.1	424.8	27.6	26.6	422.0	27.0	28.2	419.6	26.3	29.8	417.6	25.6	31.5	414.7
	44	29.3	25.1	436.9	28.6	26.6	434.1	28.0	28.2	431.7	27.2	29.8	428.6	26.6	31.5	426.8
	46	30.3	25.1	449.0	29.6	26.6	446.3	29.0	28.2	443.9	28.2	29.8	440.7	27.5	31.5	437.8
	48	31.4	25.1	462.2	30.7	26.6	459.5	30.0	28.2	456.0	29.3	29.8	452.8	28.5	31.5	449.9
	50	32.5	25.1	475.4	31.8	26.6	472.7	31.1	28.2	469.2	30.4	29.8	466.0	29.5	31.5	462.0
035	40	31.6	28.5	476.2	30.8	30.3	472.8	30.0	32.0	469.4	29.2	33.9	465.5	28.4	35.8	462.8
	42	32.7	28.5	490.1	32.0	30.3	486.7	31.2	32.0	483.3	30.4	33.9	480.6	29.4	35.9	475.9
	44	33.9	28.5	504.0	33.1	30.3	500.6	32.3	32.0	497.2	31.5	33.9	493.3	30.5	35.9	488.6
	46	35.1	28.5	519.0	34.4	30.3	515.6	33.5	32.0	511.1	32.6	33.9	507.2	31.8	35.9	503.7
	48	36.4	28.5	534.1	35.5	30.3	529.5	34.8	32.1	526.5	33.9	33.9	522.3	32.9	35.9	517.6
	50	37.6	28.5	549.1	36.8	30.3	544.6	35.9	32.1	540.4	35.0	33.9	536.2	34.2	35.9	532.7
040	40	36.2	33.2	547.3	35.3	35.2	543.5	34.4	37.2	540.1	33.6	39.4	537.1	32.6	41.6	533.2
	42	37.6	33.2	564.6	36.6	35.2	559.7	35.8	37.2	556.3	34.8	39.4	552.1	33.9	41.6	548.2
	44	39.0	33.2	580.8	38.1	35.2	577.0	37.1	37.2	572.5	36.2	39.4	568.2	35.2	41.6	564.4
	46	40.4	33.2	598.1	39.4	35.2	593.2	38.5	37.2	588.6	37.5	39.4	584.4	36.5	41.7	580.9
	48	41.8	33.2	615.4	40.9	35.2	610.5	40.0	37.2	607.1	38.9	39.4	600.6	37.9	41.7	597.0
	50	43.4	33.2	633.9	42.4	35.2	629.0	41.4	37.2	623.2	40.5	39.4	620.2	39.2	41.7	613.2
045	40	40.7	37.0	615.2	39.8	39.0	610.4	38.8	41.2	606.3	37.8	43.6	602.5	36.7	46.1	598.2
	42	42.3	37.0	634.0	41.3	39.1	629.5	40.4	41.3	625.4	39.3	43.7	620.4	38.2	46.1	615.8
	44	44.0	37.1	654.2	42.9	39.1	648.3	41.9	41.3	644.1	40.8	43.7	639.2	39.8	46.2	634.9
	46	45.6	37.1	674.2	44.6	39.1	668.2	43.5	41.3	662.9	42.4	43.7	658.0	41.2	46.2	652.5
	48	47.3	37.2	694.5	46.2	39.2	688.5	45.1	41.4	683.2	44.0	43.8	677.1	42.8	46.2	671.3
	50	49.1	37.2	715.6	48.0	39.2	709.6	46.8	41.4	703.1	45.6	43.8	697.0	44.5	46.3	691.6
050	40	46.9	42.3	707.4	45.8	44.5	701.4	44.8	47.0	697.7	43.5	49.7	691.9	42.3	52.5	686.8
	42	48.7	42.3	728.3	47.6	44.6	723.9	46.5	47.0	718.6	45.3	49.7	712.8	44.0	52.5	707.7
	44	50.6	42.4	752.0	49.5	44.7	746.3	48.2	47.2	739.8	47.0	49.8	734.0	45.8	52.6	728.9
	46	52.4	42.5	774.5	51.3	44.7	768.5	50.1	47.2	761.9	48.9	49.8	756.1	47.5	52.6	749.8
	48	54.5	42.5	799.1	53.3	44.8	792.2	52.0	47.3	785.7	50.7	49.9	778.6	49.4	52.6	771.9
	50	56.4	42.6	822.8	55.2	45.0	815.9	54.0	47.4	809.4	52.6	49.9	802.0	51.2	52.7	794.4
055	40	51.4	45.7	772.6	50.3	48.2	768.0	49.1	50.9	762.5	47.8	53.7	756.5	46.5	56.8	752.5
	42	53.4	45.7	796.8	52.2	48.2	791.0	51.0	51.0	785.9	49.7	53.9	779.9	48.4	56.9	774.6
	44	55.4	45.8	821.4	54.2	48.3	815.6	52.9	51.1	809.2	51.6	54.0	803.3	50.3	57.0	798.0
	46	57.6	45.9	847.2	56.2	48.4	840.1	54.9	51.1	833.5	53.6	54.0	827.5	52.2	57.0	821.0
	48	59.7	46.0	873.0	58.4	48.5	865.9	56.9	51.2	858.1	55.6	54.1	852.1	54.1	57.1	844.4
	50	61.8	46.1	898.7	60.5	48.5	891.4	59.1	51.3	883.9	57.7	54.2	876.7	56.2	57.2	870.2
060	40	55.1	48.9	827.6	53.8	51.7	822.0	52.5	54.7	816.6	51.2	57.9	812.3	50.0	61.2	808.3
	42	57.1	49.0	852.7	55.8	51.8	847.0	54.6	54.8	841.7	53.2	58.0	836.2	51.8	61.3	831.0
	44	59.3	49.0	878.6	58.0	51.8	872.9	56.6	54.9	866.8	55.3	58.0	860.9	53.9	61.4	856.1
	46	61.5	49.1	906.1	60.2	51.9	899.2	58.8	55.0	893.0	57.4	58.1	887.2	55.9	61.4	880.8
	48	63.8	49.3	933.8	62.4	52.0	926.6	61.0	55.1	920.4	59.6	58.2	913.4	58.0	61.5	905.9
	50	66.1	49.4	962.4	64.7	52.1	954.1	63.2	55.2	946.7	61.7	58.3	939.7	60.2	61.6	932.2

Continued on next page

Table 10, Performance Data, Remote Condenser, IP Units, Continued

WGZ-CA Unit Size	LWT (°F)	Discharge Temperature (°F)														
		105			110			115			120			125		
		Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh	Unit Tons	PWR kWi	THR mbh
070	40	62.7	56.4	945.1	61.3	59.5	939.3	59.9	62.8	932.6	58.4	66.3	926.7	56.8	69.9	920.2
	42	65.1	56.5	973.9	63.7	59.6	968.1	62.2	62.9	961.4	60.6	66.4	954.3	59.1	70.0	947.8
	44	67.7	56.6	1005.1	66.2	59.7	998.1	64.6	63.0	990.2	63.0	66.5	983.1	61.3	70.1	975.4
	46	70.2	56.8	1036.6	68.7	59.8	1028.1	67.1	63.1	1020.2	65.5	66.6	1013.1	63.7	70.2	1004.2
	48	72.8	56.9	1067.8	71.2	59.9	1059.2	69.6	63.2	1051.4	68.0	66.7	1043.0	66.2	70.4	1034.6
	50	75.6	57.0	1101.3	73.9	60.0	1091.6	72.2	63.3	1082.5	70.5	66.9	1074.5	68.7	70.5	1064.5
080	40	70.0	64.0	1058.6	68.5	67.1	1051.2	66.9	70.6	1044.0	65.2	74.3	1036.1	63.7	77.6	1029.3
	42	72.9	64.4	1093.9	71.3	67.5	1085.4	69.5	70.9	1075.6	67.9	74.6	1069.1	66.3	78.2	1061.9
	44	75.6	64.8	1128.4	74.0	67.9	1119.5	72.3	71.3	1110.9	70.5	75.0	1102.1	68.8	78.9	1094.8
	46	78.5	65.2	1164.8	76.7	68.4	1154.0	74.9	71.7	1143.9	73.2	75.3	1135.9	71.4	79.1	1127.4
	48	81.5	65.4	1201.6	79.7	68.8	1191.5	78.0	72.0	1182.2	76.2	75.6	1171.9	74.3	79.5	1162.7
	50	84.7	66.5	1243.8	82.9	69.2	1231.3	81.0	72.4	1218.6	79.1	76.0	1208.3	77.2	80.0	1199.4
090	40	79.1	71.6	1193.0	77.3	75.1	1184.1	75.6	79.1	1176.6	73.7	83.1	1168.2	72.0	86.8	1160.0
	42	82.3	72.0	1232.9	80.4	75.5	1222.8	78.4	79.4	1211.4	76.6	83.6	1204.9	74.8	87.4	1195.8
	44	85.4	72.5	1271.9	83.5	76.0	1261.8	81.6	79.8	1251.2	79.5	83.9	1240.9	77.7	88.3	1233.6
	46	88.7	73.0	1313.2	86.6	76.5	1300.8	84.6	80.3	1289.1	82.7	84.3	1280.7	80.7	88.6	1270.7
	48	92.1	73.3	1355.0	90.0	76.9	1343.0	88.1	80.6	1332.1	86.0	84.7	1321.7	83.9	89.1	1310.9
	50	95.8	74.4	1403.1	93.6	77.3	1387.5	91.5	81.1	1374.6	89.4	85.1	1362.7	87.2	89.6	1352.3
100	40	88.1	79.3	1327.4	86.2	83.2	1318.2	84.2	87.5	1309.1	82.1	91.9	1299.3	80.2	96.1	1289.9
	42	91.6	79.7	1371.5	89.7	83.6	1361.1	87.4	87.9	1348.5	85.4	92.5	1340.6	83.4	96.7	1331.2
	44	95.2	80.3	1416.4	93.1	84.1	1404.4	90.9	88.3	1392.7	88.7	92.8	1380.8	86.6	97.7	1372.4
	46	98.8	80.8	1460.9	96.6	84.7	1448.1	94.3	88.8	1434.8	92.2	93.3	1425.3	90.0	98.1	1414.2
	48	102.6	81.1	1508.3	100.3	85.2	1495.0	98.2	89.1	1482.2	95.9	93.7	1470.7	93.5	98.6	1458.7
	50	106.7	82.3	1561.2	104.3	85.6	1543.9	101.9	89.7	1529.4	99.6	94.2	1516.0	97.2	99.1	1504.4
115	40	102.0	92.3	1538.7	99.6	96.9	1526.4	97.4	101.9	1516.8	95.0	107.1	1505.5	92.8	112.0	1495.5
	42	106.0	92.8	1588.9	103.7	97.4	1576.7	101.1	102.3	1561.9	98.7	107.7	1552.5	96.4	112.7	1541.7
	44	110.1	93.6	1639.9	107.6	97.9	1625.8	105.2	102.8	1613.4	102.6	108.1	1600.0	100.1	113.8	1590.1
	46	114.2	94.1	1691.4	111.7	98.7	1676.8	109.0	103.5	1661.6	106.6	108.8	1650.6	104.1	114.2	1638.8
	48	118.6	94.5	1746.2	116.0	99.2	1730.7	113.6	103.9	1717.6	110.9	109.2	1703.0	108.1	114.8	1689.4
	50	123.4	96.0	1808.2	120.7	99.7	1788.2	117.8	104.5	1770.6	115.2	109.7	1756.9	112.4	115.4	1742.5
130	40	113.3	105.4	1719.5	110.9	110.6	1708.1	108.3	116.3	1696.9	105.6	122.3	1684.3	103.1	127.8	1673.6
	42	117.9	106.0	1776.8	115.3	111.2	1762.5	112.4	116.9	1747.7	109.9	123.1	1738.2	107.3	128.7	1727.0
	44	122.4	106.8	1833.1	119.7	111.8	1818.6	117.0	117.4	1804.5	114.0	123.5	1789.9	111.4	129.9	1779.9
	46	127.1	107.5	1892.0	124.2	112.6	1875.3	121.3	118.1	1858.5	118.6	124.1	1847.1	115.8	130.4	1834.4
	48	132.0	107.8	1951.8	129.0	113.3	1935.0	126.3	118.6	1920.2	123.3	124.6	1905.2	120.3	131.0	1890.4
	50	137.2	109.6	2020.3	134.2	113.8	1999.2	131.1	119.3	1979.9	128.1	125.3	1964.9	125.0	131.9	1949.5
150	40	132.1	118.8	1991.4	129.3	124.8	1977.3	126.3	131.2	1963.5	123.1	137.9	1948.1	120.3	144.1	1934.9
	42	137.5	119.6	2058.0	134.4	125.4	2040.7	131.1	131.8	2022.6	128.1	138.8	2010.8	125.1	145.2	1997.0
	44	142.7	120.4	2123.7	139.6	126.1	2106.0	136.4	132.4	2088.9	133.0	139.2	2071.0	129.9	146.5	2058.6
	46	148.2	121.2	2192.1	144.9	127.0	2172.0	141.4	133.2	2151.7	138.3	140.0	2137.6	135.0	147.1	2122.0
	48	153.9	121.6	2261.9	150.5	127.7	2241.5	147.3	133.8	2223.6	143.8	140.5	2205.3	140.2	147.8	2187.2
	50	160.0	123.6	2341.6	156.5	128.3	2316.3	152.8	134.5	2293.2	149.4	141.3	2274.8	145.7	148.7	2256.1

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Table 10, Performance Data, Remote Condenser, IP Units, Continued

WGZ-CA Unit Size	LWT (°F)	Discharge Temperature (°F)														
		105			110			115			120			125		
		Unit	PWR	THR	Unit	PWR	THR	Unit	PWR	THR	Unit	PWR	THR	Unit	PWR	THR
		Tons	kWi	mbh	Tons	kWi	mbh	Tons	kWi	mbh	Tons	kWi	mbh	Tons	kWi	mbh
170	40	152.8	138.5	2306.6	149.5	145.4	2290.6	146.1	152.8	2274.8	142.4	160.7	2257.1	139.1	167.9	2242.0
	42	159.0	139.3	2383.7	155.4	146.1	2363.9	151.6	153.5	2343.1	148.2	161.7	2329.7	144.7	169.1	2313.9
	44	165.1	140.3	2459.6	161.5	146.9	2439.4	157.8	154.2	2419.8	153.8	162.2	2399.3	150.2	170.7	2385.1
	46	171.4	141.2	2538.9	167.6	148.0	2515.8	163.6	155.2	2492.4	160.0	163.1	2476.4	156.1	171.3	2458.5
	48	178.0	141.6	2619.5	174.0	148.8	2596.2	170.3	155.9	2575.7	166.3	163.7	2554.7	162.2	172.2	2533.9
	50	185.0	144.0	2711.7	181.0	149.5	2682.7	176.8	156.7	2656.1	172.8	164.6	2635.1	168.5	173.3	2613.6
200	40	173.5	158.1	2621.8	169.8	166.0	2603.8	165.9	174.5	2586.0	161.7	183.5	2566.1	157.9	191.7	2549.1
	42	180.6	159.0	2709.4	176.5	166.8	2687.0	172.1	175.3	2663.6	168.2	184.6	2648.6	164.3	193.1	2630.8
	44	187.4	160.1	2795.6	183.4	167.7	2772.7	179.1	176.1	2750.7	174.6	185.2	2727.5	170.6	194.8	2711.7
	46	194.6	161.2	2885.6	190.2	169.0	2859.5	185.7	177.2	2833.2	181.6	186.2	2815.1	177.3	195.6	2794.9
	48	202.1	161.7	2977.2	197.6	169.9	2950.8	193.4	178.0	2927.7	188.8	186.9	2904.0	184.1	196.6	2880.6
	50	210.1	164.4	3081.9	205.5	170.7	3049.1	200.7	178.9	3019.0	196.2	187.9	2995.3	191.3	197.8	2971.2

Notes:
1. Ratings based on R-410A, evaporator fouling of 0.0001, evaporator flow of 2.4 gpm/ton.
2. Interpolation is allowed; extrapolation is not permitted. Consult McQuay for performance outside the cataloged ratings.
3. KW input is for compressor only.
4. EER = (Cooling Tons x 12000) / (kW Input x 1000)

Table 11, Performance Data, Remote Condenser, S.I. Units

WGZ-CA Unit Size	LWT (°C)	Discharge Temperature (°C)														
		41			43			46			49			52		
		Unit	PWR	THR	Unit	PWR	THR	Unit	PWR	THR	Unit	PWR	THR	Unit	PWR	THR
		kW	kWi	kW	kW	kWi	kW	kW	kWi	kW	kW	kWi	kW	kW	kWi	kW
030	5.0	96.5	25.2	121.6	94.9	26.2	121.1	92.5	27.9	120.4	90.1	29.6	119.7	87.5	31.5	119.1
	6.0	99.6	25.2	124.8	98.0	26.2	124.2	95.5	27.9	123.4	93.1	29.6	122.7	90.5	31.5	122.1
	7.0	102.9	25.2	128.1	101.3	26.2	127.5	98.7	27.9	126.6	96.2	29.6	125.8	93.5	31.5	125.1
	8.0	106.2	25.2	131.4	104.6	26.2	130.8	101.9	27.9	129.8	99.3	29.6	128.9	96.6	31.5	128.2
	9.0	109.7	25.2	134.8	107.9	26.2	134.2	105.2	27.9	133.1	102.6	29.6	132.2	99.7	31.5	131.3
	10.0	113.1	25.2	138.3	111.3	26.2	137.5	108.6	27.9	136.5	105.8	29.6	135.5	103.0	31.5	134.6
035	5.0	111.5	28.7	140.2	109.7	29.9	139.6	106.8	31.8	138.6	103.6	33.8	137.4	100.3	35.9	136.2
	6.0	115.2	28.7	143.9	113.3	29.9	143.2	110.3	31.8	142.1	107.3	33.8	141.1	103.7	35.9	139.6
	7.0	118.9	28.7	147.6	117.0	29.9	146.9	114.0	31.8	145.8	110.8	33.8	144.6	107.3	35.9	143.2
	8.0	122.8	28.7	151.4	120.8	29.9	150.6	117.7	31.8	149.5	114.5	33.8	148.3	111.2	35.9	147.1
	9.0	126.7	28.7	155.4	124.7	29.9	154.6	121.4	31.8	153.2	118.2	33.8	152.0	114.8	35.9	150.8
	10.0	130.7	28.7	159.4	128.6	29.9	158.5	125.4	31.8	157.1	121.9	33.8	155.7	118.6	35.9	154.5
040	5.0	128.2	33.3	161.5	126.1	34.6	160.7	122.7	36.8	159.5	119.2	39.2	158.4	115.7	41.6	157.3
	6.0	132.6	33.3	165.9	130.3	34.6	164.9	126.9	36.8	163.7	123.3	39.2	162.5	119.7	41.6	161.3
	7.0	137.0	33.3	170.2	134.7	34.6	169.3	131.1	36.8	168.0	127.5	39.2	166.7	123.8	41.6	165.4
	8.0	141.5	33.3	174.7	139.1	34.6	173.7	135.5	36.8	172.4	131.7	39.2	170.9	127.9	41.6	169.5
	9.0	146.1	33.3	179.4	143.6	34.7	178.3	140.4	36.8	177.2	136.1	39.2	175.3	132.2	41.6	173.8
	10.0	150.8	33.3	184.1	148.3	34.7	183.0	144.4	36.8	181.2	141.1	39.2	180.2	136.5	41.7	178.2

Continued on next page

Table 11, Performance Data, Remote Condenser, S.I. Units, Continued

WGZ-CA Unit Size	LWT (°C)	Discharge Temperature (°C)														
		41			43			46			49			52		
		Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW
045	5.0	144.4	37.0	181.5	142.0	38.6	180.6	138.3	40.9	179.2	134.4	43.5	177.9	130.5	46.1	176.6
	6.0	149.4	37.1	186.5	147.0	38.6	185.5	143.2	41.0	184.1	139.2	43.5	182.7	135.1	46.1	181.2
	7.0	154.5	37.1	191.7	152.0	38.7	190.7	148.1	41.0	189.1	144.0	43.5	187.5	139.9	46.2	186.1
	8.0	159.8	37.2	197.0	157.2	38.7	195.9	153.2	41.0	194.1	149.0	43.5	192.5	144.7	46.2	190.9
	9.0	165.1	37.2	202.3	162.5	38.7	201.1	158.3	41.1	199.4	154.0	43.6	197.6	149.7	46.2	195.9
	10.0	170.6	37.2	207.9	167.9	38.8	206.7	163.6	41.1	204.7	159.3	43.6	202.9	154.7	46.2	200.9
050	5.0	166.2	42.4	208.6	163.6	44.1	207.6	159.3	46.7	206.0	154.9	49.5	204.4	150.1	52.5	202.6
	6.0	172.0	42.5	214.5	169.3	44.1	213.3	164.9	46.8	211.6	160.3	49.6	209.9	155.5	52.5	208.0
	7.0	177.9	42.6	220.5	175.0	44.2	219.2	170.6	46.8	217.3	165.9	49.6	215.5	161.0	52.6	213.6
	8.0	183.9	42.6	226.5	181.0	44.3	225.3	176.5	46.9	223.3	171.7	49.6	221.3	166.7	52.6	219.3
	9.0	190.1	42.7	232.8	187.1	44.3	231.4	182.4	46.9	229.2	177.5	49.7	227.2	172.4	52.7	225.1
	10.0	196.4	42.8	239.2	193.3	44.4	237.7	188.5	47.0	235.4	183.5	49.7	233.2	178.3	52.7	231.0
055	5.0	182.2	45.7	227.9	179.2	47.6	226.8	174.6	50.4	225.1	169.9	53.6	223.5	165.0	56.8	221.8
	6.0	188.5	45.8	234.3	185.5	47.6	233.0	180.7	50.5	231.3	175.8	53.6	229.4	170.8	56.9	227.8
	7.0	194.9	45.8	240.7	191.8	47.7	239.4	187.0	50.6	237.6	182.0	53.7	235.6	176.8	57.0	233.9
	8.0	201.5	45.9	247.4	198.3	47.8	246.1	193.4	50.6	244.0	188.2	53.8	241.9	183.0	57.0	240.0
	9.0	208.2	46.0	254.3	204.9	47.8	252.7	199.8	50.7	250.5	194.6	53.8	248.3	189.2	57.1	246.3
	10.0	215.0	46.1	261.2	211.7	47.9	259.6	206.5	50.8	257.3	201.1	53.9	255.0	195.5	57.1	252.6
060	5.0	195.0	49.1	244.1	191.9	51.1	243.0	187.1	54.3	241.4	182.1	57.6	239.7	177.0	61.2	238.2
	6.0	201.8	49.1	250.9	198.6	51.1	249.7	193.5	54.3	247.8	188.4	57.7	246.1	183.2	61.3	244.5
	7.0	208.6	49.2	257.8	205.3	51.2	256.5	200.1	54.4	254.5	195.0	57.8	252.7	189.5	61.4	250.9
	8.0	215.6	49.3	264.9	212.2	51.3	263.5	206.9	54.5	261.4	201.6	57.9	259.5	196.0	61.5	257.5
	9.0	222.7	49.4	272.1	219.2	51.4	270.6	213.8	54.6	268.4	208.3	57.9	266.2	202.6	61.5	264.1
	10.0	230.0	49.5	279.5	226.4	51.5	277.9	221.0	54.6	275.5	215.2	58.0	273.2	209.4	61.6	271.0
070	5.0	222.0	56.6	278.6	218.5	58.7	277.2	213.0	62.2	275.2	207.2	66.0	273.2	201.2	69.9	271.2
	6.0	229.7	56.7	286.4	226.1	58.8	284.9	220.4	62.3	282.8	214.6	66.1	280.6	208.4	70.0	278.4
	7.0	237.7	56.8	294.5	233.9	58.9	292.8	228.1	62.4	290.5	222.0	66.2	288.2	215.7	70.1	285.9
	8.0	245.7	56.9	302.6	241.9	59.0	300.9	235.9	62.5	298.5	229.6	66.3	295.9	223.2	70.2	293.4
	9.0	254.0	57.0	311.0	250.0	59.1	309.1	243.9	62.6	306.6	237.5	66.4	303.9	230.9	70.3	301.2
	10.0	262.4	57.1	319.5	258.4	59.3	317.7	252.1	62.7	314.8	245.5	66.5	312.0	238.7	70.4	309.2
080	5.0	247.6	64.3	311.9	243.5	66.5	310.0	237.6	70.0	307.6	231.6	73.9	305.5	225.4	78.1	303.5
	6.0	256.6	64.8	321.4	252.3	67.0	319.3	246.2	70.5	316.7	240.1	74.5	314.6	233.7	78.6	312.2
	7.0	265.8	65.0	330.8	261.4	67.2	328.6	255.0	70.7	325.7	248.6	74.7	323.3	242.0	78.9	320.8
	8.0	275.3	65.2	340.6	270.8	67.5	338.2	264.1	71.0	335.1	257.6	75.0	332.5	250.7	79.1	329.8
	9.0	285.0	65.5	350.5	280.3	67.7	348.0	273.5	71.3	344.7	266.6	75.3	341.9	259.5	79.4	339.0
	10.0	294.9	65.7	360.6	290.0	68.0	358.0	282.9	71.6	354.5	275.9	75.6	351.5	268.5	79.8	348.3
090	5.0	279.5	72.0	351.5	274.9	74.5	349.4	268.3	78.4	346.7	261.5	82.7	344.2	254.6	87.5	342.0
	6.0	289.7	72.5	362.2	284.9	75.0	359.9	278.0	78.9	356.9	271.0	83.3	354.4	263.8	88.1	351.9
	7.0	300.0	72.7	372.7	295.1	75.2	370.3	287.9	79.2	367.1	280.7	83.6	364.3	273.3	88.3	361.5
	8.0	310.8	73.0	383.8	305.6	75.5	381.1	298.2	79.5	377.7	290.8	83.9	374.7	283.0	88.7	371.6
	9.0	321.8	73.3	395.1	316.4	75.8	392.2	308.7	79.8	388.5	301.0	84.2	385.2	293.0	89.0	382.0
	10.0	333.0	73.6	406.6	327.4	76.1	403.5	319.5	80.1	399.6	311.5	84.6	396.1	303.1	89.4	392.5

Continued on next page

Table 11, Performance Data, Remote Condenser, S.I. Units, Continued

WGZ-CA Unit Size	LWT (°C)	Discharge Temperature (°C)														
		41			43			46			49			52		
		Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW	Unit kW	PWR kWi	THR kW
100	5.0	311.5	79.7	391.2	306.4	82.3	388.8	298.9	86.7	385.7	291.5	91.5	383.0	283.6	96.6	380.3
	6.0	322.9	80.2	403.1	317.5	83.0	400.4	309.8	87.3	397.2	302.1	92.1	394.2	294.0	97.3	391.4
	7.0	334.5	80.5	415.0	328.9	83.2	412.0	320.8	87.6	408.4	312.9	92.4	405.3	304.5	97.7	402.2
	8.0	346.4	80.8	427.2	340.6	83.6	424.2	332.4	88.0	420.4	324.1	92.9	416.9	315.4	98.1	413.5
	9.0	358.6	81.1	439.7	352.6	83.9	436.5	344.1	88.3	432.3	335.4	93.2	428.6	326.5	98.5	425.0
	10.0	371.1	81.4	452.5	364.9	84.2	449.1	356.0	88.7	444.7	347.1	93.6	440.7	337.9	98.8	436.7
115	5.0	360.3	92.8	453.1	354.4	96.0	450.4	345.8	101.1	446.9	337.2	106.6	443.8	328.2	112.6	440.8
	6.0	373.5	93.5	467.0	367.3	96.6	463.9	358.3	101.8	460.1	349.4	107.5	456.9	340.1	113.5	453.6
	7.0	386.8	93.7	480.5	380.4	96.9	477.3	371.2	102.1	473.2	361.9	107.8	469.7	352.2	113.8	466.0
	8.0	400.7	94.1	494.8	394.0	97.3	491.3	384.5	102.5	487.0	374.9	108.2	483.1	364.8	114.2	479.0
	9.0	414.8	94.5	509.4	407.9	97.7	505.7	398.0	102.9	500.9	388.1	108.6	496.7	377.7	114.7	492.4
	10.0	429.2	94.8	524.0	422.1	98.1	520.1	411.8	103.3	515.2	401.5	109.0	510.5	390.8	115.1	505.9
130	5.0	400.8	106.0	506.8	394.2	109.5	503.7	384.6	115.4	499.9	374.9	121.7	496.7	365.0	128.6	493.7
	6.0	415.4	106.7	522.1	408.5	110.4	518.9	398.6	116.2	514.8	388.6	122.7	511.3	378.3	129.5	507.8
	7.0	430.3	107.0	537.3	423.1	110.7	533.8	412.8	116.5	529.3	402.6	123.0	525.6	391.7	129.9	521.6
	8.0	445.6	107.4	553.1	438.3	111.1	549.4	427.6	116.9	544.6	416.9	123.5	540.4	405.8	130.4	536.2
	9.0	461.3	107.9	569.2	453.7	111.5	565.3	442.7	117.5	560.2	431.6	124.0	555.6	420.2	130.9	551.1
	10.0	477.4	108.3	585.7	469.4	112.0	581.5	458.0	117.9	575.9	446.6	124.5	571.0	434.7	131.5	566.2
150	5.0	467.4	119.5	586.9	459.6	123.5	583.2	448.4	130.1	578.5	437.2	137.3	574.5	425.7	145.1	570.7
	6.0	484.4	120.3	604.7	476.4	124.5	600.8	464.8	131.1	595.9	453.2	138.4	591.5	441.1	146.0	587.1
	7.0	501.7	120.7	622.4	493.4	124.8	618.2	481.3	131.4	612.7	469.4	138.7	608.1	456.8	146.5	603.3
	8.0	519.7	121.2	640.8	511.1	125.3	636.3	498.7	131.9	630.6	486.2	139.3	625.5	473.2	147.1	620.3
	9.0	538.0	121.6	659.6	529.1	125.8	654.9	516.3	132.5	648.7	503.3	139.9	643.2	490.0	147.7	637.6
	10.0	556.7	122.1	678.8	547.4	126.3	673.7	534.1	132.9	667.0	520.7	140.4	661.1	506.9	148.2	655.2
170	5.0	540.6	139.2	679.8	531.6	143.9	675.5	518.6	151.6	670.2	505.7	160.0	665.6	492.3	169.0	661.3
	6.0	560.2	140.2	700.5	551.0	145.0	696.0	537.6	152.7	690.3	524.1	161.2	685.3	510.2	170.1	680.3
	7.0	580.3	140.6	720.9	570.6	145.4	716.0	556.7	153.1	709.8	542.9	161.6	704.5	528.3	170.7	699.0
	8.0	601.0	141.2	742.2	591.1	146.0	737.0	576.8	153.6	730.4	562.3	162.3	724.6	547.3	171.3	718.6
	9.0	622.2	141.7	763.9	612.0	146.5	758.5	597.1	154.3	751.4	582.1	163.0	745.1	566.7	172.0	738.7
	10.0	643.9	142.3	786.1	633.1	147.2	780.3	617.7	154.9	772.6	602.3	163.5	765.8	586.3	172.7	759.0
200	5.0	613.8	159.0	772.8	603.6	164.3	767.9	588.9	173.1	761.9	574.1	182.6	756.8	559.0	193.0	751.9
	6.0	636.1	160.1	796.2	625.6	165.5	791.1	610.4	174.3	784.7	595.0	184.0	779.1	579.2	194.2	773.5
	7.0	658.9	160.5	819.4	647.9	166.0	813.9	632.1	174.8	806.9	616.4	184.5	800.9	599.8	194.8	794.7
	8.0	682.4	161.2	843.6	671.1	166.6	837.7	654.8	175.4	830.2	638.4	185.3	823.7	621.4	195.6	817.0
	9.0	706.4	161.8	868.2	694.8	167.3	862.1	677.9	176.2	854.1	660.9	186.1	846.9	643.4	196.4	839.8
	10.0	731.0	162.4	893.4	718.8	168.1	886.9	701.3	176.8	878.1	683.8	186.7	870.5	665.7	197.2	862.9

Notes:

1. Ratings based on R-410A, evaporator fouling of 0.0176, evaporator flow of 0.043 L/s-kW.
2. Remote condenser units are not included in the ARI Certification Program.
3. Interpolation is allowed; extrapolation is not permitted. Consult McQuay for performance outside the cataloged ratings.
4. KW input is for compressor only, EER is for the entire unit.
5. COP = Cooling kW/Input kW

WGZ-CA with Matching Condenser

The following table gives WGZ-CA performance with selected McQuay ACH air-cooled condensers. As many as eight different condensers can be matched to a specific WGZ unit. The table has four condensers per WGZ, generally ranging from the smallest to the largest with two intermediate selections. Selections are based on a temperature difference (condensing temperature minus ambient temperature) from 15 to 35 degrees F. with a maximum condensing temperature of 135°F. Complete selections can be obtained from the local McQuay sales office. Additional notes are on page 16.

Table 12, WGZ-CA Chillers Matched with ACH, 1140 RPM, Air-Cooled Condensers

WGZ Model	Match With	LWT (°F)	Ambient Air Temperature (°F) 95 Tons	95 PWR	95 EER	105 Tons	105 PWR	105 EER	Match With	LWT (°F)	95 Tons	95 PWR	95 EER	105 Tons	105 PWR	105 EER
030A	ACH 040 AD	42	27.3	35.1	9.3	26.1	38.1	8.2	ACH 060 AD	42	28.0	33.3	10.1	26.8	36.4	8.8
		44	28.2	35.3	9.6	27.0	38.2	8.5		44	29.0	33.4	10.4	27.7	36.5	9.1
	ACH 050 AD	42	27.8	33.9	9.8	26.5	36.9	8.6	--	42	-	-	-	-	-	-
		44	28.7	34.0	10.1	27.4	37.1	8.9		44	-	-	-	-	-	-
035A	ACH 040 AD	42	31.2	39.7	9.4	29.7	43.1	8.3	ACH 060 AD	42	32.2	37.4	10.3	30.7	40.9	9.0
		44	32.2	39.9	9.7	30.7	43.2	8.5		44	33.3	37.5	10.7	31.7	41.0	9.3
	ACH 050 AD	42	31.9	38.2	10.0	30.4	41.6	8.8	--	42	-	-	-	-	-	-
		44	33.0	38.3	10.3	31.4	41.7	9.0		44	-	-	-	-	-	-
040A	ACH 040 AD	42	35.2	46.2	9.2	33.7	49.7	8.1	ACH 060 AD	42	36.6	43.0	10.2	34.9	46.9	8.9
		44	36.4	46.4	9.4	34.9	49.9	8.4		44	37.9	43.2	10.6	36.1	47.1	9.2
	ACH 050 AD	42	36.2	44.0	9.9	34.5	47.9	8.6	--	42	-	-	-	-	-	-
		44	37.5	44.2	10.2	35.7	48.0	8.9		44	-	-	-	-	-	-
045A	ACH 040 AD	42	39.2	51.6	9.1	37.6	55.1	8.2	ACH 060 AD	42	40.9	47.7	10.3	39.0	52.0	9.0
		44	40.6	52.0	9.4	39.1	55.5	8.4		44	42.4	47.9	10.6	40.5	52.2	9.3
	ACH 050 AD	42	40.4	49.0	9.9	38.5	53.0	8.7	ACH 080 AD	42	41.6	50.0	10.0	39.7	54.3	8.8
		44	41.8	49.2	10.2	40.0	53.3	9.0		44	43.1	50.2	10.3	41.2	54.5	9.1
050A	ACH 040 AD	42	44.3	59.6	8.9	42.8	63.1	8.1	ACH 080 AD	42	47.5	56.4	10.1	45.3	61.1	8.9
		44	45.9	60.1	9.2	44.4	63.5	8.4		44	49.2	56.7	10.4	47.0	61.4	9.2
	ACH 060 AD	42	46.6	54.5	10.3	44.5	59.1	9.0	ACH 100 AD	42	48.1	55.1	10.5	45.9	59.9	9.2
		44	48.2	54.8	10.6	46.1	59.5	9.3		44	49.9	55.4	10.8	47.5	60.2	9.5
055A	ACH 040 AD	42	48.0	65.4	8.8	46.6	68.8	8.1	ACH 080 AD	42	51.8	60.7	10.2	49.4	66.0	9.0
		44	49.7	66.0	9.0	48.3	69.2	8.4		44	53.6	61.1	10.5	51.2	66.3	9.3
	ACH 060 AD	42	50.7	59.3	10.3	48.5	64.3	9.1	ACH 100 AD	42	52.5	59.2	10.6	50.1	64.5	9.3
		44	52.5	49.8	10.5	50.3	64.7	9.3		44	54.4	59.5	11.0	51.9	64.8	9.6
060A	ACH 060 AD	42	53.9	64.1	10.1	51.7	69.4	8.9	ACH 100 AD	42	55.9	63.2	10.6	53.4	69.1	9.3
		44	55.8	64.5	10.4	53.6	69.8	9.2		44	57.9	63.5	10.9	55.3	69.3	9.6
	ACH 080 AD	42	55.1	65.0	10.2	52.7	70.8	8.9	ACH 110 AD	42	56.2	66.5	10.1	53.6	72.3	8.9
		44	57.1	65.4	10.5	54.6	71.1	9.2		44	58.2	66.7	10.5	55.6	72.5	9.2
070	ACH 060 AD	42	60.5	74.3	9.8	58.2	79.7	8.8	ACH 110 AD	42	63.6	75.4	10.1	60.7	81.7	8.9
		44	62.7	74.9	10.1	60.3	80.1	9.0		44	65.9	75.8	10.4	62.9	82.1	9.2
	ACH 080 AD	42	62.1	74.6	10.0	59.4	80.7	8.8	ACH 130 AD	42	64.2	74.0	10.4	61.3	80.4	9.1
		44	64.3	75.1	10.3	61.6	81.1	9.1		44	66.6	74.3	10.7	63.5	80.7	9.4
080	ACH 080 AD	42	68.6	82.5	10.0	66.0	88.2	9.0	ACH 110 AD	42	70.4	84.4	10.0	67.4	91.0	8.9
		44	71.1	83.4	10.2	68.4	89.3	9.2		44	73.0	85.2	10.3	69.9	91.8	9.1
	ACH 100 AD	42	69.9	81.5	10.3	67.0	87.9	9.1	ACH 130 AD	42	71.3	82.8	10.3	68.1	89.5	9.1
		44	72.5	82.3	10.6	69.5	88.8	9.4		44	73.9	83.5	10.6	70.6	90.2	9.4
090	ACH 080 AD	42	76.6	95.2	9.7	73.9	100.9	8.8	ACH 110 AD	42	78.7	94.2	10.0	75.5	101.3	8.9
		44	79.2	96.1	9.9	76.6	102.4	9.0		44	81.6	95.0	10.3	78.3	102.3	9.2
	ACH 100 AD	42	78.1	91.6	10.2	75.0	98.4	9.2	ACH 140 AD	42	80.2	95.1	10.1	76.7	102.7	9.0
		44	81.0	92.5	10.5	77.8	99.5	9.4		44	83.2	95.9	10.4	79.4	103.3	9.2
100	ACH 080-AD	42	81.7	108.1	9.1	79.9	111.9	8.6	ACH 110-AD	42	86.9	104.5	10.0	83.6	111.8	9.0
		44	84.4	110.4	9.2	82.7	114.5	8.7		44	90.1	105.4	10.3	86.6	113.1	9.2
	ACH 100-AD	42	84.3	104.5	9.7	81.7	110.1	8.9	ACH 140-AD	42	88.7	104.6	10.2	84.9	112.8	9.0
		44	87.2	105.9	9.9	84.5	112.0	9.1		44	92.0	105.5	10.5	88.0	113.6	9.3
115	ACH 100-AD	42	95.6	124.0	9.3	93.1	129.4	8.6	ACH 130-AD	42	100.6	118.8	10.2	96.7	127.5	9.1
		44	98.9	126.2	9.4	96.4	132.0	8.8		44	104.4	119.9	10.4	100.2	129.0	9.3
	ACH 110-AD	42	99.0	122.4	9.7	95.5	130.0	8.8	ACH 140-AD	42	102.7	118.4	10.4	98.3	128.0	9.2
		44	102.6	123.6	10.0	99.0	131.9	9.0		44	106.5	119.4	10.7	101.9	129.0	9.5

Continued on next page

WGZ Model	Match With	LWT (°F)	Ambient Air Temperature (°F)						Match With	LWT (°F)	Ambient Air Temperature (°F)					
			95			105					95			105		
			Tons	PWR	EER	Tons	PWR	EER			Tons	PWR	EER	Tons	PWR	EER
120	ACH 100-AD	42	104.7	144.0	8.7	102.6	148.9	8.3	ACH 130-AD	42	111.5	138.2	9.7	107.3	147.9	8.7
		44	108.2	147.1	8.8	106.2	152.1	8.4		44	115.6	139.5	9.9	111.2	149.6	8.9
	ACH 110-AD	42	108.9	140.7	9.3	105.4	148.5	8.5	ACH 140-AD	42	114.8	135.2	10.2	109.8	146.3	9.0
		44	112.6	142.3	9.5	109.1	150.9	8.7		44	119.1	136.3	10.5	113.8	147.3	9.3
150	ACH 100 AD	42	123.3	160.7	9.2	120.3	167.0	8.6	ACH 160 AD	42	130.2	153.0	10.2	125.3	164.0	9.2
		44	127.4	163.8	9.3	124.5	170.5	8.8		44	135.0	154.4	10.5	129.8	165.9	9.4
	ACH 130 AD	42	127.2	156.2	9.8	123.0	165.1	8.9	ACH 225 AD	42	133.9	153.3	10.5	128.0	165.8	9.3
		44	131.5	158.0	10.0	127.4	167.8	9.1		44	138.8	154.6	10.8	132.7	166.9	9.5
170	ACH 110 AD	42	141.3	191.9	8.8	138.4	198.3	8.4	ACH 225 AD	42	153.1	177.6	10.3	146.7	191.7	9.2
		44	146.1	195.9	8.9	143.2	202.6	8.5		44	158.8	179.1	10.6	152.0	193.3	9.4
	ACH 160 AD	42	148.5	180.1	9.9	143.3	191.4	9.0	(2) ACH 130 AD	42	154.6	163.1	11.4	147.9	177.6	10.0
		44	153.7	181.8	10.1	148.4	194.1	9.2		44	160.4	164.6	11.7	153.2	178.9	10.3
200	ACH 130 AD	42	161.2	215.2	9.0	157.6	233.1	8.5	ACH 225 AD	42	171.8	202.9	10.2	165.2	218.1	9.1
		44	166.6	219.5	9.1	163.1	227.9	8.6		44	178.3	204.8	10.4	171.1	220.5	9.3
	ACH 160 AD	42	166.2	208.1	9.6	161.0	219.5	8.8	(2) ACH 140 AD	42	174.8	189.2	11.1	167.4	205.6	9.8
		44	172.0	210.7	9.8	166.7	223.2	9.0		44	181.3	190.9	11.4	173.4	207.3	10.0

Figure 3, Model WGZ 060C, Nominal 60 Ton Chiller

Pressure Drops

The evaporator flow rates and pressure drops are shown on the following page (Figure 4). The maximum flow rate and pressure drop are based on a 6-degree temperature drop. Avoid higher flow rates, with resulting lower temperature drops, to prevent potential control problems resulting from very small control bands and limited start up/shut off temperature changes.

The minimum flow and pressure drop is based on a full load evaporator temperature drop of 16-degrees. Condenser pressure drops are shown on page 31.

WGZ-C Model	Ref #	Minimum Flow & PD				Nominal Flow & PD				Maximum Flow & PD			
		Inch-Pound		S.I.		Inch-Pound		S.I.		Inch-Pound		S.I.	
		GPM	Ft.	L/S	kPa	GPM	Ft.	L/S	kPa	GPM	Ft.	L/S	kPa
WGZ030C	**A**	45	4.7	2.8	14.1	72	11	4.5	32.9	120	27.6	7.6	82.4
WGZ035C	**B**	51.9	4.9	3.3	14.6	83	11.4	5.2	34	138.3	28.5	8.7	85.4
WGZ040C	**C**	61.1	5.1	3.9	15.2	97.8	11.8	6.2	35.4	163	29.7	10.3	88.8
WGZ045C	**D**	68.2	5.2	4.3	15.5	109.1	12.1	6.9	36.1	181.8	30.2	11.5	90.4
WGZ050C	**E**	76.7	5.8	4.8	17.2	122.6	13.4	7.7	40.1	204.4	33.6	12.9	100.6
WGZ055C	**F**	84.6	6.1	5.3	18.1	135.4	14.1	8.5	42.2	225.6	35.4	14.2	105.9
WGZ060C	**G**	90.8	6.6	5.7	19.7	145.2	15.6	9.2	46.5	242	39.2	15.3	117.1
WGZ070C	**H**	106.3	3.7	6.7	10.9	170	8.6	10.7	25.6	283.4	21.2	17.9	63.3
WGZ080C	**I**	117.5	4.3	7.4	12.8	187.9	10	11.9	29.9	313.2	25	19.8	74.9
WGZ090C	**J**	132.1	4.5	8.3	13.3	211.3	10.5	13.3	31.3	352.1	26.1	22.2	78.1
WGZ100C	**K**	146.6	4.9	9.3	14.6	234.6	11.4	14.8	34.1	391.1	28.7	24.7	85.8
WGZ115C	**L**	169.3	4.5	10.7	13.5	270.9	10.5	17.1	31.4	451.5	26.4	28.5	78.9
WGZ130C	**M**	188.1	4.2	11.9	12.6	301	9.8	19	29.5	501.6	24.7	31.6	73.9
WGZ150C	**N**	219.9	5.5	13.9		351.8	12.8	22.2	38.3	586.4	32.0	37	
WGZ170C	**O**	254	7.9	16		406.3	18.5	25.6	55.3	677.2	46.4	42.7	
WGZ200C	**P**	282.2	9.5	17.8		451.4	22	28.5	65.8	752.4	55.1	47.5	

Notes: Minimum, nominal, and maximum flows are at a 16º F, 10º F, and 6º F chilled water temperature range respectively at ARI tons.

Figure 4, Evaporator Pressure Drop, WGZ 030C – WGZ 200C

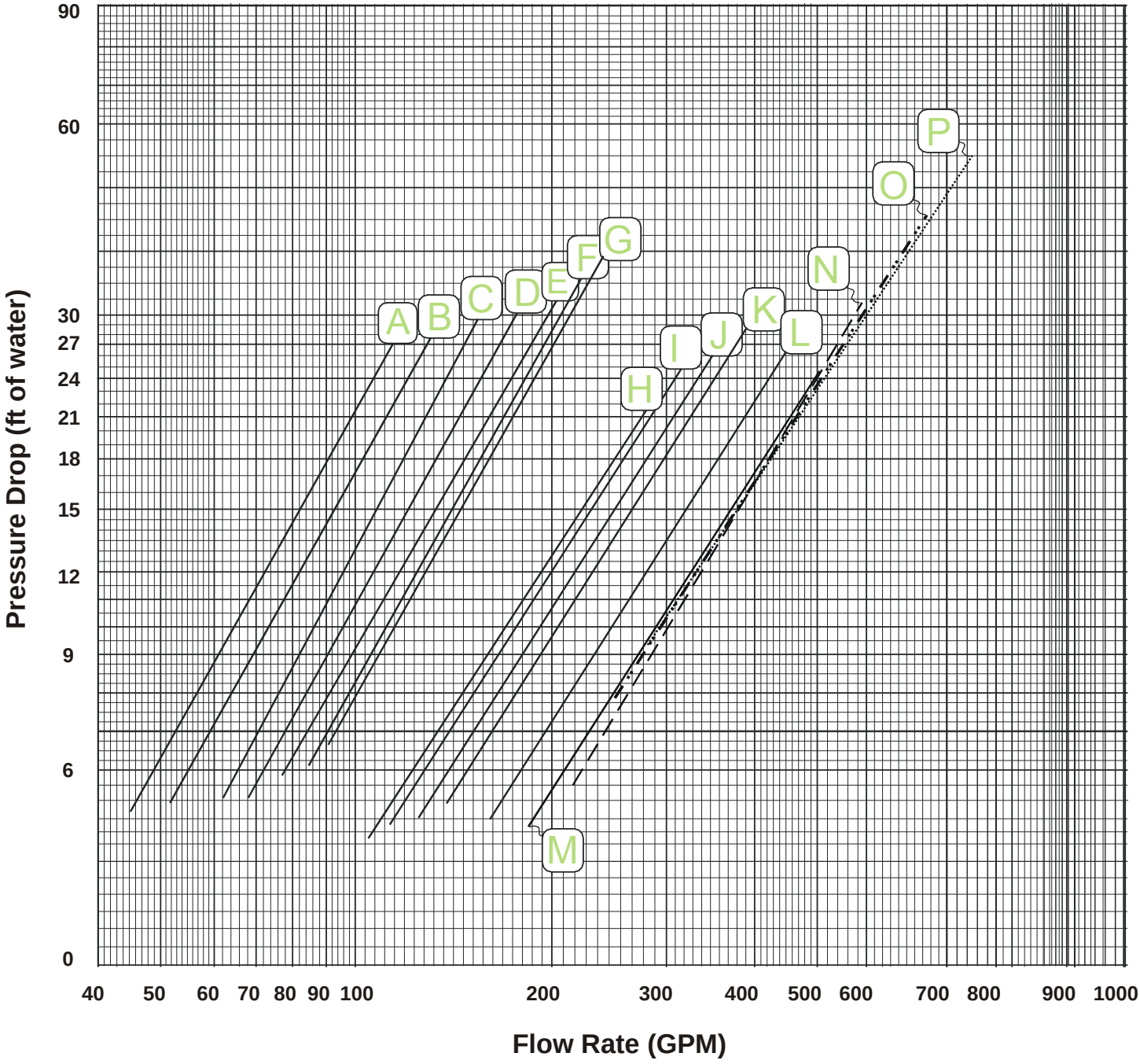
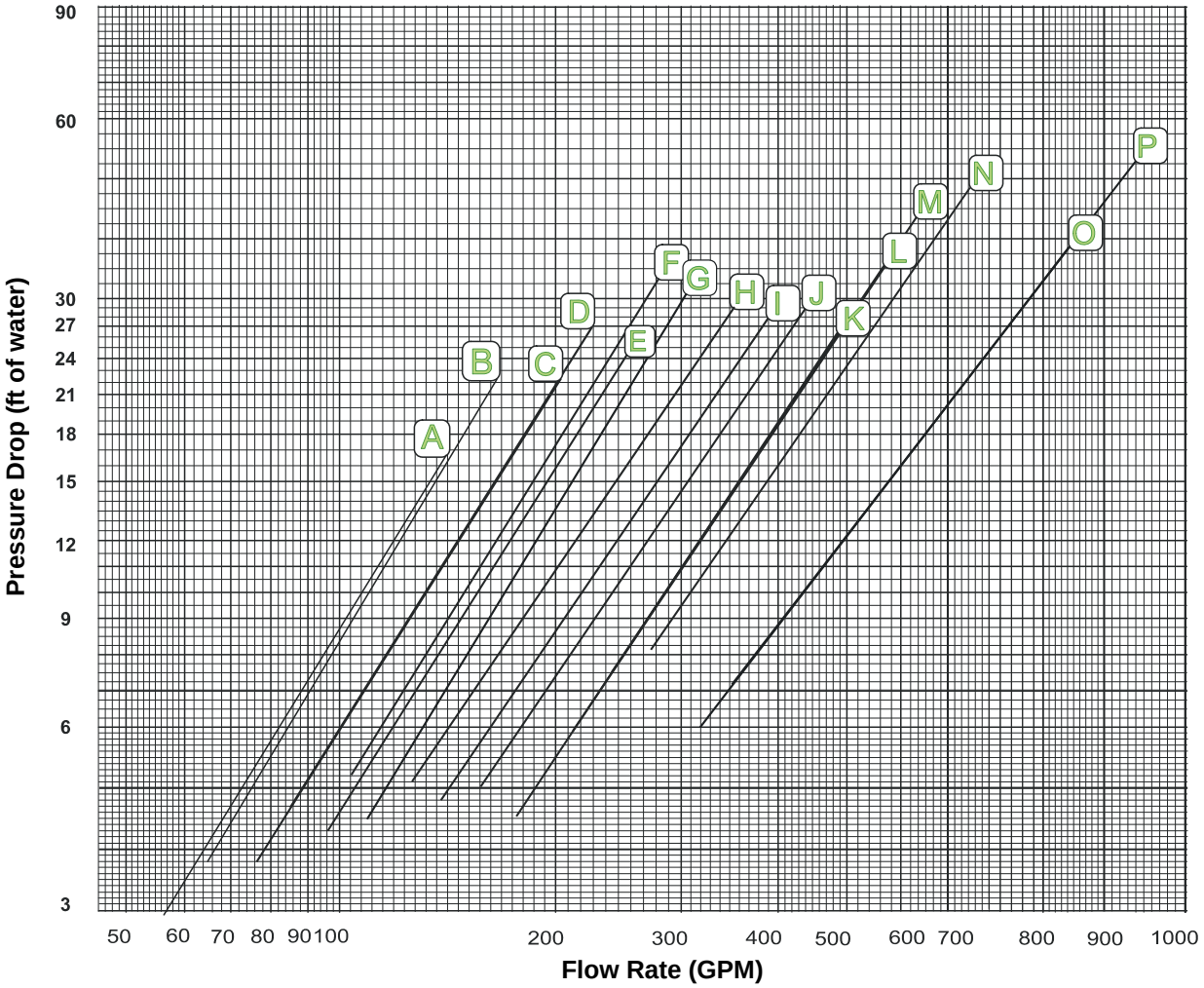


Figure 5, Condenser Pressure Drop, WGZ 030C – WGZ 200C



Unit Model	Ref #	Minimum Flow & PD				Nominal Flow & PD				Maximum Flow & PD			
		Inch-Pound		SI		Inch-Pound		SI		Inch-Pound		SI	
		GPM	Ft.	L/S	kPa	GPM	Ft.	L/S	kPa	GPM	Ft.	L/S	kPa
WGZ030C	**A**	56.1	2.4	3.5	7.2	89.7	6.3	5.7	18.8	149.5	17.4	9.4	52.0
WGZ035C	**B**	64.9	3.4	4.1	10.2	103.8	8.6	6.5	25.7	173.0	23.9	10.9	71.4
WGZ040C	**C**	76.3	2.7	4.8	8.1	122.1	6.9	7.7	20.6	203.5	19.3	12.8	57.7
WGZ045C	**D**	85.3	3.6	5.4	10.8	136.5	9.2	8.6	27.5	227.5	25.7	14.4	76.8
WGZ050C	**E**	96.4	2.9	6.1	8.7	154.2	7.5	9.7	22.4	257.0	20.7	16.2	61.9
WGZ055C	**F**	105.8	3.8	6.7	11.4	169.2	9.7	10.7	29.0	282.0	26.8	17.8	80.1
WGZ060C	**G**	113.4	4.5	7.2	13.5	181.5	11.6	11.5	34.7	302.5	32.3	19.1	96.5
WGZ070C	**H**	132.8	4.1	8.4	12.3	212.4	10.4	13.4	31.1	354.0	29.0	22.3	86.7
WGZ080C	**I**	146.8	3.7	9.3	11.1	234.9	9.5	14.8	28.4	391.5	26.5	24.7	79.2
WGZ090C	**J**	165.0	3.4	10.4	10.2	264	8.8	16.7	26.3	440.0	24.5	27.8	73.2
WGZ100C	**K**	183.4	3.4	11.6	10.2	293.4	8.8	18.5	26.3	489.0	24.4	30.9	72.9
WGZ115C	**L**	211.7	4.8	13.4	14.3	338.7	12.3	21.4	36.8	564.5	34.1	35.6	101.9
WGZ130C	**M**	235.1	6.1	14.8	18.2	376.2	15.5	23.7	46.3	627.0	43.1	39.6	128.8
WGZ150C	**N**	274.9	6.2	17.3	18.5	439.8	15.8	27.7	47.2	733.0	43.8	46.2	130.9
WGZ170C	**O**	317.4	5.5	20.0	16.4	507.9	14.0	32.0	41.8	846.5	38.9	53.4	116.3
WGZ200C	**P**	352.7	7.4	22.3	22.1	564.3	18.8	35.6	56.2	940.5	52.3	59.3	156.3

Electrical Data

Table 13, Compressor Amp Draw

WGZ Unit Size	Volts	Rated Load Amps Per Compressor Standard Unit w/o Ext. OL's						Rated Load Amps Per Compressor Optional Unit with Ext. OL's						Locked Rotor Amps Across-The-Line Starting					
		Circuit 1			Circuit 2			Circuit 1			Circuit 2			Circuit 1			Circuit 2		
		No.1	No.3	No.5	No.2	No.4	No.6	No.1	No.3	No.5	No.2	No.4	No.6	No.1	No.3	No.5	No.2	No.4	No.6
030	208	29.5	29.5	-	29.5	29.5	-	22.4	22.4	-	22.4	22.4	-	195	195	-	195	195	-
	230	29.5	29.5	-	29.5	29.5	-	20.0	20.0	-	20.0	20.0	-	195	195	-	195	195	-
	460	14.7	14.7	-	14.7	14.7	-	12.0	12.0	-	12.0	12.0	-	95	95	-	95	95	-
	575	12.2	12.2	-	12.2	12.2	-	n/a	n/a	-	n/a	n/a	-	80	80	-	80	80	-
035	208	30.1	30.1	-	30.1	30.1	-	25.0	25.0	-	25.0	25.0	-	225	225	-	225	225	-
	230	30.1	30.1	-	30.1	30.1	-	23.2	23.2	-	23.2	23.2	-	225	225	-	225	225	-
	460	16.7	16.7	-	16.7	16.7	-	12.0	12.0	-	12.0	12.0	-	114	114	-	114	114	-
	575	12.2	12.2	-	12.2	12.2	-	n/a	n/a	-	n/a	n/a	-	80	80	-	80	80	-
040	208	33.3	33.3	-	33.3	33.3	-	28.6	28.6	-	28.6	28.6	-	239	239	-	239	239	-
	230	33.3	33.3	-	33.3	33.3	-	25.6	25.6	-	25.6	25.6	-	239	239	-	239	239	-
	460	17.9	17.9	-	17.9	17.9	-	12.8	12.8	-	12.8	12.8	-	125	125	-	125	125	-
	575	12.8	12.8	-	12.8	12.8	-	n/a	n/a	-	n/a	n/a	-	80	80	-	80	80	-
045	208	48.1	48.1	-	48.1	48.1	-	30.5	30.5	-	30.5	30.5	-	245	245	-	245	245	-
	230	48.1	48.1	-	48.1	48.1	-	28.0	28.0	-	28.0	28.0	-	245	245	-	245	245	-
	460	18.6	18.6	-	18.6	18.6	-	14.4	14.4	-	14.4	14.4	-	125	125	-	125	125	-
	575	14.7	14.7	-	14.7	14.7	-	12.0	12.0	-	12.0	12.0	-	100	100	-	100	100	-
050	208	51.3	51.3	-	51.3	51.3	-	36.0	36.0	-	36.0	36.0	-	300	300	-	300	300	-
	230	51.3	51.3	-	51.3	51.3	-	32.8	32.8	-	32.8	32.8	-	300	300	-	300	300	-
	460	23.1	23.1	-	23.1	23.1	-	16.8	16.8	-	16.8	16.8	-	150	150	-	150	150	-
	575	19.9	19.9	-	19.9	19.9	-	13.6	13.6	-	13.6	13.6	-	109	109	-	109	109	-
055	208	51.3	51.3	-	55.8	55.8	-	36.0	36.0	-	44.0	44.0	-	300	300	-	340	340	-
	230	51.3	51.3	-	55.8	55.8	-	32.8	32.8	-	40.0	40.0	-	300	300	-	340	340	-
	460	23.1	23.1	-	26.9	26.9	-	16.8	16.8	-	20.0	20.0	-	150	150	-	173	173	-
	575	19.9	19.9	-	23.7	23.7	-	13.6	13.6	-	16.0	16.0	-	109	109	-	26.9	26.9	-
060	208	55.8	55.8	-	55.8	55.8	-	44.0	44.0	-	44.0	44.0	-	340	340	-	340	340	-
	230	55.8	55.8	-	55.8	55.8	-	40.0	40.0	-	40.0	40.0	-	340	340	-	340	340	-
	460	26.9	26.9	-	26.9	26.9	-	20.0	20.0	-	20.0	20.0	-	173	173	-	173	173	-
	575	23.7	23.7	-	23.7	23.7	-	16.0	16.0	-	16.0	16.0	-	132	132	-	132	132	-
070	208	55.8	73.9	-	55.8	73.9	-	44.0	54.4	-	44.0	54.4	-	340	505	-	340	505	-
	230	55.8	73.9	-	55.8	73.9	-	40.0	49.6	-	40.0	49.6	-	340	505	-	340	505	-
	460	26.9	30.4	-	26.9	30.4	-	20.0	24.8	-	20.0	24.8	-	173	225	-	173	225	-
	575	23.7	24.6	-	23.7	24.6	-	16.0	20.0	-	16.0	20.0	-	132	180	-	132	180	-
080	208	73.9	73.9	-	73.9	73.9	-	54.4	54.4	-	54.4	54.4	-	505	505	-	505	505	-
	230	73.9	73.9	-	73.9	73.9	-	49.6	49.6	-	49.6	49.6	-	505	505	-	505	505	-
	460	30.4	30.4	-	30.4	30.4	-	24.8	24.8	-	24.8	24.8	-	225	225	-	225	225	-
	575	24.6	24.6	-	24.6	24.6	-	20.0	20.0	-	20.0	20.0	-	180	180	-	180	180	-
090	208	73.9	73.9	-	89.1	89.1	-	54.4	54.4	-	64.8	64.8	-	505	505	-	544	544	-
	230	73.9	73.9	-	89.1	89.1	-	49.6	49.6	-	58.4	58.4	-	505	505	-	544	544	-
	460	30.4	30.4	-	41.9	41.9	-	24.8	24.8	-	29.6	29.6	-	225	225	-	272	272	-
	575	24.6	24.6	-	32.1	32.1	-	20.0	20.0	-	23.2	23.2	-	180	180	-	218	218	-
100	208	89.1	89.1	-	89.1	89.1	-	64.8	64.8	-	64.8	64.8	-	544	544	-	544	544	-
	230	89.1	89.1	-	89.1	89.1	-	58.4	58.4	-	58.4	58.4	-	544	544	-	544	544	-
	460	41.9	41.9	-	41.9	41.9	-	29.6	29.6	-	29.6	29.6	-	272	272	-	272	272	-
	575	32.1	32.1	-	32.1	32.1	-	23.2	23.2	-	23.2	23.2	-	218	218	-	218	218	-

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Compressor Amp Draw, Continued

WGZ Unit Size	Volts	Rated Load Amps Per Compressor Standard Unit w/o Ext. OL's						Rated Load Amps Per Compressor Optional Unit with Ext. OL's						Locked Rotor Amps Across-The-Line Starting					
		Circuit 1			Circuit 2			Circuit 1			Circuit 2			Circuit 1			Circuit 2		
		No.1	No.3	No.5	No.2	No.4	No.6	No.1	No.3	No.5	No.2	No.4	No.6	No.1	No.3	No.5	No.2	No.4	No.6
115	208	89.1	109.6	-	89.1	109.6	-	64.8	86.3	-	64.8	86.3	-	544	599	-	544	599	-
	230	89.1	109.6	-	89.1	109.6	-	58.4	78.0	-	58.4	78.0	-	544	599	-	544	599	-
	460	41.9	54.5	-	41.9	54.5	-	29.6	39.0	-	29.6	39.0	-	272	310	-	272	310	-
	575	32.1	49.4	-	32.1	49.4	-	23.2	31.2	-	23.2	31.2	-	218	239	-	218	239	-
130	208	109.6	109.6	-	109.6	109.6	-	83.2	86.3	-	83.2	86.3	-	599	599	-	599	599	-
	230	109.6	109.6	-	109.6	109.6	-	75.2	78.0	-	75.2	78.0	-	599	599	-	599	599	-
	460	54.5	54.5	-	54.5	54.5	-	37.6	39.0	-	37.6	39.0	-	310	310	-	310	310	-
	575	49.4	49.4	-	49.4	49.4	-	30.4	31.2	-	30.4	31.2	-	239	239	-	239	239	-
150	208	89.1	89.1	89.1	89.1	89.1	89.1	64.8	64.8	64.8	64.8	64.8	64.8	544	544	544	544	544	544
	230	89.1	89.1	89.1	89.1	89.1	89.1	58.4	58.4	58.4	58.4	58.4	58.4	544	544	544	544	544	544
	460	41.9	41.9	41.9	41.9	41.9	41.9	29.6	29.6	29.6	29.6	29.6	29.6	272	272	272	272	272	272
	575	32.1	32.1	32.1	32.1	32.1	32.1	23.2	23.2	23.2	23.2	23.2	23.2	218	544	218	218	218	218
170	208	89.1	89.1	89.1	109.6	109.6	109.6	64.8	64.8	64.8	86.3	86.3	86.3	544	544	544	599	599	599
	230	89.1	89.1	89.1	109.6	109.6	109.6	58.4	58.4	58.4	78.0	78.0	78.0	544	544	544	599	599	599
	460	41.9	41.9	41.9	54.5	54.5	54.5	29.6	29.6	29.6	39.0	39.0	39.0	272	272	272	310	310	310
	575	32.1	32.1	32.1	49.4	49.4	49.4	23.2	23.2	23.2	31.2	31.2	31.2	218	544	218	239	239	239
200	208	109.6	109.6	109.6	109.6	109.6	109.6	86.3	86.3	86.3	86.3	86.3	86.3	599	599	599	599	599	599
	230	109.6	109.6	109.6	109.6	109.6	109.6	78.0	78.0	78.0	78.0	78.0	78.0	599	599	599	599	599	599
	460	54.5	54.5	54.5	54.5	54.5	54.5	39.0	39.0	39.0	39.0	39.0	39.0	310	310	310	310	310	310
	575	49.4	49.4	49.4	49.4	49.4	49.4	31.2	31.2	31.2	31.2	31.2	31.2	239	239	239	239	239	239

NOTES:
1. Compressor RLA values are for wire sizing purposes only and do not reflect normal operating current draw.
2. External overloads only available on units with single power supply and water-cooled condensers

Table 14, Maximum Fuse Size

WGZ Unit Size	Voltage 3-Phase	Maximum Fuse Size					
		Single Point		Multiple Point			
		Power Supply without Ext. OL's	Power Supply with Ext. OL's	Power Supply Without Ext. OL's		Power Supply With External OL's	
		Total Unit	Total Unit	Circ.#1	Circ.#2	Circ.#1	Circ.#2
030	208	150	110	90	90	70	70
	230	150	100	90	90	60	60
	460	70	60	45	45	35	35
	575	60	N/A	35	35	N/A	N/A
035	208	150	125	90	90	80	80
	230	150	110	90	90	70	70
	460	80	60	50	50	35	35
	575	60	N/A	35	35	N/A	N/A
040	208	175	150	100	100	90	90
	230	175	125	100	100	80	80
	460	90	60	50	50	40	40
	575	60	N/A	40	40	N/A	N/A
045	208	250	150	150	150	90	90
	230	250	125	150	150	90	90
	460	90	70	60	60	45	45
	575	70	60	45	45	35	35

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Maximum Fuse Size, Continued

WGZ Unit Size	Voltage 3-Pha	Single Point		Multiple Point			
		Power Supply without Ext. OL's	Power Supply with Ext. OL's	Power Supply Without Ext. OL's		Power Supply With External OL's	
		Total Unit	Total Unit	Circ.#1	Circ.#2	Circ.#1	Circ.#2
050	208	250	175	150	150	110	110
	230	250	150	150	150	100	100
	460	110	80	70	70	50	50
	575	100	70	60	60	40	40
055	208	250	200	150	175	115	125
	230	250	175	150	175	100	125
	460	125	90	70	80	50	60
	575	110	70	60	70	40	50
060	208	250	225	175	175	125	125
	230	250	200	175	175	125	125
	460	125	100	80	80	60	60
	575	110	80	70	70	50	50
070	208	350	250	200	200	150	150
	230	350	225	200	200	150	150
	460	150	110	90	90	70	70
	575	125	90	70	70	60	60
080	208	350	250	225	225	175	175
	230	350	250	225	225	150	150
	460	150	125	90	90	80	80
	575	125	100	80	80	60	60
090	208	400	300	225	250	175	200
	230	400	250	225	250	150	175
	460	175	125	90	125	80	90
	575	150	110	80	100	60	70
100	208	450	300	250	250	200	200
	230	450	300	250	250	175	175
	460	200	150	125	125	90	90
	575	150	110	100	100	70	70
115	208	500	400	300	300	250	250
	230	500	350	300	300	225	225
	460	250	175	150	150	110	110
	575	200	125	125	125	90	90
130	208	500	400	350	350	250	250
	230	500	350	350	350	250	250
	460	250	175	175	175	125	125
	575	250	150	150	150	100	90
150	208	600	450	350	350	250	250
	230	600	400	350	350	225	225
	460	300	200	175	175	125	125
	575	225	150	125	125	90	90
170	208	700	500	350	450	250	350
	230	700	450	350	450	225	300
	460	350	225	175	225	125	150
	575	300	175	125	200	90	125
200	208	700	600	450	450	350	350
	230	700	500	450	450	300	300
	460	350	250	225	225	150	150
	575	350	200	200	200	125	125

NOTE: "Maximum Fuse Sizes" selected at approximately 225% of the largest compressor RLA, plus 100% of all other loads.

Table 15, Wire Sizing Amps, Single Point Power

WGZ Unit Size	Volts	Minimum Circuit Ampacity (MCA)		Power Supply		Power Supply	
		Single Point Power Supply (2) Without Ext OL's	Single Point Power Supply (2) With Ext OL's	Field Wire Quantity	Wire Gauge 75C	Field Wire Quantity	Wire Gauge 75C
				Without External OL's		With External Overloads	
030	208	126	95	3	#1	3	#3
	230	126	85	3	#1	3	#4
	460	63	51	3	#6	3	#6
	575	52	N/A	3	#6	--	--
035	208	128	106	3	#1	3	#2
	230	128	99	3	#1	3	#3
	460	71	51	3	#4	3	#6
	575	52	N/A	3	#6	--	--
040	208	142	120	3	1/0	3	#1
	230	142	109	3	1/0	3	#2
	460	76	55	3	#4	3	#6
	575	55	N/A	3	#6	--	--
045	208	205	130	3	4/0	3	#1
	230	205	118	3	4/0	3	#1
	460	79	62	3	#4	3	#6
	575	63	51	3	#6	3	#6
050	208	218	153	3	4/0	3	2/0
	230	218	140	3	4/0	3	1/0
	460	98	72	3	#3	3	#4
	575	85	58	3	#4	3	#6
055	208	228	171	3	4/0	3	2/0
	230	228	156	3	4/0	3	2/0
	460	107	79	3	#2	3	#4
	575	93	63	3	#3	3	#6
060	208	237	187	3	250	3	3/0
	230	237	170	3	250	3	2/0
	460	114	85	3	#2	3	#4
	575	101	68	3	#2	3	#4
070	208	278	211	3	300	3	4/0
	230	278	192	3	300	3	3/0
	460	122	96	3	#1	3	#3
	575	103	77	3	#2	3	#4
080	208	314	232	3	400	3	250
	230	314	211	3	400	3	4/0
	460	129	106	3	#1	3	#2
	575	105	85	3	#2	3	#4
090	208	348	255	3	500	3	250
	230	348	231	3	500	3	250
	460	155	116	3	2/0	3	#1
	575	122	92	3	#1	3	#3

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Wire Sizing Amps, Single Point Power, Continued

WGZ Unit Size	Volts	Minimum Circuit Ampacity (MCA)		Power Supply		Power Supply	
		Single Point Power Supply (2) Without Ext OL's	Single Point Power Supply (2) With Ext OL's	Field Wire Quantity	Wire Gauge 75C	Field Wire Quantity	Wire Gauge 75C
				Without External OL's		With External Overloads	
100	208	379	276	3	500	3	300
	230	379	248	3	500	3	250
	460	178	126	3	3/0	3	#1
	575	136	99	3	1/0	3	#3
115	208	427	324	6 (2)	4/0	3	400
	230	427	292	6 (2)	4/0	3	400
	460	208	147	3	4/0	3	1/0
	575	176	117	3	3/0	3	#1
130	208	467	367	6 (2)	250	3	500
	230	467	332	6 (2)	250	3	400
	460	233	166	3	250	3	2/0
	575	210	133	3	4/0	3	1/0
150	208	557	405	6 (2)	300	6 (2)	4/0
	230	557	365	6 (2)	300	3	500
	460	262	185	3	300	3	3/0
	575	201	145	3	4/0	3	1/0
170	208	624	475	6 (2)	400	6 (2)	250
	230	624	429	6 (2)	400	6 (2)	4/0
	460	303	216	3	350	3	4/0
	575	257	171	3	300	3	2/0
200	208	685	540	6 (2)	500	6 (2)	300
	230	685	486	6 (2)	500	6 (2)	250
	460	341	244	3	500	3	250
	575	309	195	3	350	3	3/0

NOTES:

1. Unit wire sizing amps are equal to 125% of the largest compressor-motor RLA plus 100% of RLA of all other loads in the circuit including control transformer.
2. Single point power supply requires a single fused disconnect to supply electrical power to the unit.
3. Multiple point power supply requires two independent power circuits with separate fused disconnects. (Two compressor circuits, control circuit will be wired to Circuit #1 from the factory).

Table 16, Wire Sizing, Multi-point Power

WGZ Unit Size	Volts	Minimum Circuit Ampacity (MCA)				Power Supply Without External OL's			Power Supply With External OL's		
		Without Ext OL's		With External OL's		Field Wire Quantity	Wire Gauge, 75C		Field Wire Quantity	Wire Gauge,75C	
		Circuit No.1	Circuit No.2	Circuit No.1	Circuit No.2		Circuit No.1	Circuit No.2		Circuit No.1	Circuit No.2
030	208	67	67	51	51	3	#4	#4	3	#6	#6
	230	67	67	45	45	3	#4	#4	3	#8	#8
	460	33	33	27	27	3	#10	#10	3	#10	#10
	575	28	28	N/A	N/A	3	#10	#10	3	--	--
035	208	68	68	57	57	3	#4	#4	3	#6	#6
	230	68	68	53	53	3	#4	#4	3	#6	#6
	460	38	38	27	27	3	#8	#8	3	#10	#10
	575	28	28	N/A	N/A	3	#10	#10	3	--	--
040	208	75	75	65	65	3	#4	#4	3	#6	#6
	230	75	75	58	58	3	#4	#4	3	#6	#6
	460	41	41	29	29	3	#8	#8	3	#10	#10
	575	29	29	N/A	N/A	3	#10	#10	3	--	--
045	208	109	109	69	69	3	#2	#2	3	#4	#4
	230	109	109	63	63	3	#2	#2	3	#6	#6
	460	42	42	33	33	3	#8	#8	3	#10	#10
	575	33	33	27	27	3	#10	#10	3	#10	#10
050	208	116	116	81	81	3	#1	#1	3	#4	#4
	230	116	116	74	74	3	#1	#1	3	#4	#4
	460	52	52	38	38	3	#6	#6	3	#8	#8
	575	45	45	31	31	3	#8	#8	3	#10	#10
055	208	116	126	81	99	3	#1	#1	3	#4	#3
	230	116	126	74	90	3	#1	#1	3	#4	#3
	460	52	61	38	45	3	#6	#6	3	#8	#8
	575	45	54	31	36	3	#8	#6	3	#10	#8
060	208	126	126	99	99	3	#1	#1	3	#3	#3
	230	126	126	90	90	3	#1	#1	3	#3	#3
	460	61	61	45	45	3	#6	#6	3	#8	#8
	575	54	54	36	36	3	#6	#6	3	#8	#8
070	208	149	149	112	112	3	1/0	1/0	3	#2	#2
	230	149	149	102	102	3	1/0	1/0	3	#2	#2
	460	65	65	51	51	3	#6	#6	3	#6	#6
	575	55	55	41	41	3	#6	#6	3	#8	#8
080	208	167	167	123	123	3	2/0	2/0	3	#1	#1
	230	167	167	112	112	3	2/0	2/0	3	#2	#2
	460	69	69	56	56	3	#4	#4	3	#6	#6
	575	56	56	45	45	3	#6	#6	3	#8	#8
090	208	167	201	123	146	3	2/0	4/0	3	#1	1/0
	230	167	201	112	132	3	2/0	4/0	3	#2	1/0
	460	69	95	56	67	3	#4	#3	3	#6	#4
	575	56	73	45	53	3	#6	#4	3	#8	#6
100	208	201	201	146	146	3	4/0	4/0	3	1/0	1/0
	230	201	201	132	132	3	4/0	4/0	3	1/0	1/0
	460	95	95	67	67	3	#3	#3	3	#4	#4
	575	73	73	53	53	3	#4	#4	3	#6	#6
115	208	227	227	173	173	3	4/0	4/0	3	2/0	2/0
	230	227	227	156	156	3	4/0	4/0	3	2/0	2/0
	460	111	111	79	79	3	#2	#2	3	#4	#4
	575	94	94	63	63	3	#3	#3	3	#6	#6

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Wire Sizing, Multi-point Power, Continued

WGZ Unit Size	Volts	Minimum Circuit Ampacity (MCA)				Power Supply Without External OL's			Power Supply With External OL's		
		Without Ext OL's		With External OL's		Field Wire Quantity	Wire Gauge, 75C		Field Wire Quantity	Wire Gauge,75C	
		Circuit No.1	Circuit No.2	Circuit No.1	Circuit No.2		Circuit No.1	Circuit No.2		Circuit No.1	Circuit No.2
130	208	247	247	194	194	3	250	250	3	3/0	3/0
	230	247	247	176	176	3	250	250	3	3/0	3/0
	460	123	123	88	88	3	#1	#1	3	#3	#3
	575	112	112	71	71	3	#2	#2	3	#4	#4
150	208	290	290	211	211	3	350	350	3	4/0	4/0
	230	290	290	190	190	3	350	350	3	3/0	3/0
	460	137	137	97	97	3	1/0	1/0	3	#3	#3
	575	105	105	76	76	3	#2	#2	3	#4	#4
170	208	290	357	211	284	3	350	500	3	4/0	300
	230	290	357	190	257	3	350	500	3	3/0	300
	460	137	178	97	128	3	1/0	3/0	3	#3	#1
	575	105	161	76	103	3	#2	2/0	3	#4	#2
200	208	357	357	281	284	3	500	500	3	300	300
	230	357	357	254	254	3	500	500	3	250	250
	460	178	178	127	128	3	3/0	3/0	3	#1	#1
	575	161	161	102	103	3	2/0	2/0	3	#2	#2

NOTES:

1. Unit wire sizing amps equal to 125% of the largest compressor-motor RLA plus 100% of the other compressor RLA's.
2. Multi-point power supply requires separate fused disconnect for each circuit to supply electrical power to unit.
3. External Compressor Overload option is only available with packaged units with water-cooled condenser.

Table 17, Single Point Connection Sizing, Without External Overloads

NOTE: [Note number in brackets; see table notes on the following page.]

WGZ Unit Size	Volts	Factory-Installed Power Block		Factory-Installed HSCCR Disconnect Switch (Circuit Breaker)		Factory-Installed, Molded Case Disconnect Switch	
		Power Block or Bus Bar Lugs Size [2]	Connection Wire Range – CU [3]	Switch Size [2]	Connection [3] Wire Range - CU	Switch Size [2]	Connection [3] Wire Range - CU
030	208	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
035	208	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
040	208	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
045	208	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	230	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
050	208	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	230	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
055	208	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	230	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
060	208	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
070	208	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
080	208	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
090	208	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	400	(2) 500- 3/0	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
100	208	380	(1) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	230	380	(1) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
115	208	760	(2) 500 - #4	800	(2) 500- #1 [1]	600	(2) 500- 3/0
	230	760	(2) 500 - #4	800	(2) 500- #1 [1]	600	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	575	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
130	208	760	(2) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	230	760	(2) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	575	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4

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Single Point Connection Sizing, Without External Overloads, Continued

WGZ Unit Size	Volts	Factory-Installed Power Block		Factory-Installed HSCCR Disconnect Switch Circuit Breaker		Factory-Installed Disconnect Switch Molded Case	
		Power Block or Bus Bar Lugs Size [2] See Note below	Connection Wire Range – CU [3]	Switch Size [2]	Connection [3] Wire Range - CU	Switch Size [2]	Connection [3] Wire Range - CU
150	208	760	(2) 500 - #4	n/a	--	800	(4) 500- 250
	230	760	(2) 500 - #4	n/a	--	800	(4) 500- 250
	460	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	575	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
170	208	760	(2) 500 - #4	n/a	--	800	(4) 500- 250
	230	760	(2) 500 - #4	n/a	--	800	(4) 500- 250
	460	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	575	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
200	208	760	(2) 500 - #4	n/a	--	800	(4) 500- 250
	230	760	(2) 500 - #4	n/a	--	800	(4) 500- 250
	460	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	575	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0

NOTES:

1. Field Wire size must be 4 AWG if High Interrupt or HSCCR is ordered
2. Unit wire sizing amps are equal to 125% of the largest compressor-motor RLA plus 100% of the other compressor RLA's.
3. Single-point power supply requires a single fused disconnect to supply electrical electrical power to the unit
4. External compressor overload option is only available with packaged units with water-cooled condenser.
5. Size" is the maximum amperage rating for the terminals or the main electrical device.
6. "Connection" is the range of wire sizes that the terminals on the electrical device will accept.

Table 18, Single Point Connection Sizing, With External Overloads

NOTE: [Note number in brackets; see table notes on the following page.]

WGZ Unit Size	Volts	Factory Installed Power Block		Factory Installed HSCCR Disconnect Switch Circuit Breaker		Factory Installed Disconnect Switch Molded Case	
		Power Block or Bus Bar Lugs Size [2,5])	Connection Wire Range CU [6]	Switch Size [2,5]	Connection Wire Range CU [6]	Switch Size [2,5]	Connection Wire Range – CU [6]
030	208	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	230	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	n/a	-	n/a	-	n/a	-
035	208	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	230	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	n/a	-	n/a	-	n/a	-
040	208	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	n/a	-	n/a	-	n/a	-
045	208	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
050	208	380	(1) 500 - #4	400	(2) 500- #4 [1]	250	(1) 350 - #4
	230	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10

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Single Point Connection Sizing, With External Overloads-Continued

WGZ Unit Size	Volts	Factory Installed Power Block		Factory Installed HSCCR Disconnect Switch (Circuit Breaker)		Factory Installed, Molded Case Disconnect Switch	
		Power Block or Bus Bar Lugs Size [2,5])	Connection Wire Range CU [6]	Switch Size [2,5]	Connection Wire Range CU [6]	Switch Size [2,5]	Connection Wire Range CU [6]
055	208	380	(1) 500 - #4	400	(2) 500- #4 [1]	250	(1) 350 - #4
	230	380	(1) 500 - #4	400	(2) 500- #4 [1]	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
060	208	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	230	380	(1) 500 - #4	400	(2) 500- #4 [1]	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
070	208	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	230	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
080	208	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	150	(1) 350 - #4	100	(1) 1/0 - #10
090	208	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	100	(1) 1/0 - #10
100	208	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	460	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	250	(1) 350 - #4	125	(1) 3/0- #3
115	208	760	(2) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	760	(2) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	460	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	575	380	(1) 500 - #4	250	(1) 350 - #4	125	(1) 3/0- #3
130	208	760	(2) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	230	760	(2) 500 - #4	600	(2) 500- 3/0	400	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	575	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
150	208	760	(2) 500 - #4	800	(2) 500- #1 [1]	600	(2) 500- 3/0
	230	760	(2) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	575	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
170	208	760	(2) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	230	760	(2) 500 - #4	800	(2) 500- #1 [1]	600	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4
	575	380	(1) 500 - #4	400	(2) 500- #4 [1]	250	(1) 350 - #4
200	208	760	(2) 500 - #4	n/a	--	600	(2) 500- 3/0
	230	760	(2) 500 - #4	800	(4) 500- 250	600	(2) 500- 3/0
	460	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	575	380	(1) 500 - #4	400	(2) 500- 3/0	250	(1) 350 - #4

NOTES:

1. Field Wire size must be 4 AWG if High Interrupt or HSCCR is ordered
2. Unit wire sizing amps are equal to 125% of the largest compressor-motor RLA plus 100% of the other compressor RLA's.
3. Single Point power supply requires a single fused disconnect to supply electrical power to the unit
4. External compressor overload option is only available with packaged units with water-cooled condenser.
5. Size" is the maximum amperage rating for the terminals or the main electrical device.
6. "Connection" is the range of wire sizes that the terminals on the electrical device will accept.

Table 19, Multi- Point Connection Sizing, Without External Overloads

NOTE: [Note number in brackets; see table notes on the following page.]

WGZ Unit Size	Volts	Power Terminal Block				Factory Installed Disconnect			
		Circuit #1		Circuit #2		Circuit #1		Circuit #2	
		Power Block or Bus Bar Lugs		Power Block or Bus Bar Lugs		Molded Case		Molded Case	
		Size [4]	Connection [5] Wire Range	Size [4]	Connection [5] Wire Range	Switch Size [4]	Connection [5] Wire Range - Copper	Switch Size [4]	Connection [5] Wire Range - Copper
030	208	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
035	208	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
040	208	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
045	208	175	#14 - 2/0	175	#14 - 2/0	125	(1) 3/0- #3	125	(1) 3/0- #3
	230	175	#14 - 2/0	175	#14 - 2/0	125	(1) 3/0- #3	125	(1) 3/0- #3
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
050	208	175	#14 - 2/0	175	#14 - 2/0	125	(1) 3/0- #3	125	(1) 3/0- #3
	230	175	#14 - 2/0	175	#14 - 2/0	125	(1) 3/0- #3	125	(1) 3/0- #3
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
055	208	175	#14 - 2/0	175	#14 - 2/0	125	(1) 3/0- #3	250	(1) 350 - #4
	230	175	#14 - 2/0	175	#14 - 2/0	125	(1) 3/0- #3	250	(1) 350 - #4
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
060	208	175	#14 - 2/0	175	#14 - 2/0	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	#14 - 2/0	175	#14 - 2/0	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
070	208	175	#14 - 2/0	175	#14 - 2/0	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	#14 - 2/0	175	#14 - 2/0	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	#14 - 2/0	175	#14 - 2/0	100	(1) 1/0 - #10	100	(1) 1/0 - #10
080	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
090	208	175	(1) 2/0 - #14	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10

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Multi-Point Connection Sizing, Without External Overloads, Continued

WGZ Unit Size	Volts	Power Terminal Block				Factory Installed Disconnect			
		Circuit #1 Power Block or Bus Bar Lugs		Circuit #2 Power Block or Bus Bar Lugs		Circuit #1		Circuit #2	
						Molded Case		Molded Case	
		Size [4]	Connection [5] Wire Range	Size [4]	Connection [5] Wire Range	Switch Size [4]	Connection [5] Wire Range - Copper	Switch Size [4]	Connection [5] Wire Range - Copper
100	208	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
115	208	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
130	208	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
150	208	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
170	208	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	250	(1) 350 - #4
200	208	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	460	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4

NOTES:

1. Unit wire sizing amps are 125% of the largest compressor-motor RLA plus 100% of the other compressor RLA's.
2. Multi-point power supply requires a separate fused disconnect for each circuit to supply electrical power to the unit.
3. External compressor overload option is only available with packaged units with water-cooled condenser.
4. "Size" is the maximum amperage rating for the terminals or the main electrical device.
5. "Connection" is the range of wire sizes that the terminals on the electrical device will accept.

Table 20, Multi- Point Connection Sizing, With External Overloads

NOTE: [Note number in brackets; see table notes on the following page.].

WGZ Unit Size	Volts	Power Terminal Block				Factory Installed Disconnect Switch			
		Circuit #1		Circuit #2		Circuit.#1		Circuit.#2	
		Power Block or Bus Bar Lug Size [1]	Connection [2] Wire Range	Power Block or Bus Bar Lugs Size [1]	Connection [2] Wire Range	Molded Case		Molded Case	
						Switch Size [1]	Connection [2] Wire Range - Copper	Switch Size [1]	Connection [2] Wire Range - Copper
030	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	n/a	-	n/a	-	n/a	-	n/a	-
035	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	n/a	-	n/a	-	n/a	-	n/a	-
040	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	n/a	-	n/a	-	n/a	-	n/a	-
045	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
050	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
055	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	125	(1) 3/0- #3
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
060	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
070	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
080	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
090	208	175	(1) 2/0 - #14	175	(1) 2/0 - #14	250	(1) 350 - #4	250	(1) 350 - #4
	230	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10

Continued on next page

Multi- Point Connection Sizing, With External Overloads, Continued

WGZ Unit Size	Volts	Power Terminal Block				Factory Installed Disconnect Switch			
		Circuit #1		Circuit #2		Circuit #1		Circuit #2	
		Power Block or Bus Bar Lugs Size [1]	Connection [2] Wire Range	Power Block or Bus Bar Lugs Size [1]	Connection [2] Wire Range	Molded Case		Molded Case	
						Switch Size [1]	Connection [2] Wire Range - Copper	Switch Size [1]	Connection [2] Wire Range - Copper
100	208	380	(1) 500 - #4	380 (4)	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	380 (4)	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
115	208	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
130	208	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
150	208	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	230	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	100	(1) 1/0 - #10
170	208	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	400	(2) 500- 3/0
	230	380	(1) 500 - #4	380	(1) 500 - #4	250	(1) 350 - #4	400	(2) 500- 3/0
	460	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	100	(1) 1/0 - #10	125	(1) 3/0- #3
200	208	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	230	380	(1) 500 - #4	380	(1) 500 - #4	400	(2) 500- 3/0	400	(2) 500- 3/0
	460	380	(1) 500 - #4	380 (4)	(1) 500 - #4	250	(1) 350 - #4	250	(1) 350 - #4
	575	175	(1) 2/0 - #14	175	(1) 2/0 - #14	125	(1) 3/0- #3	125	(1) 3/0- #3

NOTES:

1. Unit wire sizing amps are 125% of the largest compressor-motor RLA plus 100% of the other compressor RLA's.
2. Multi-point power supply requires a separate fused disconnect for each circuit to supply electrical power to the unit.
3. External compressor overload option is only available with packaged units with water-cooled condenser.

Field Wiring Diagram

Figure 6, WGZ 030CW – 200CW Field Wiring Diagram

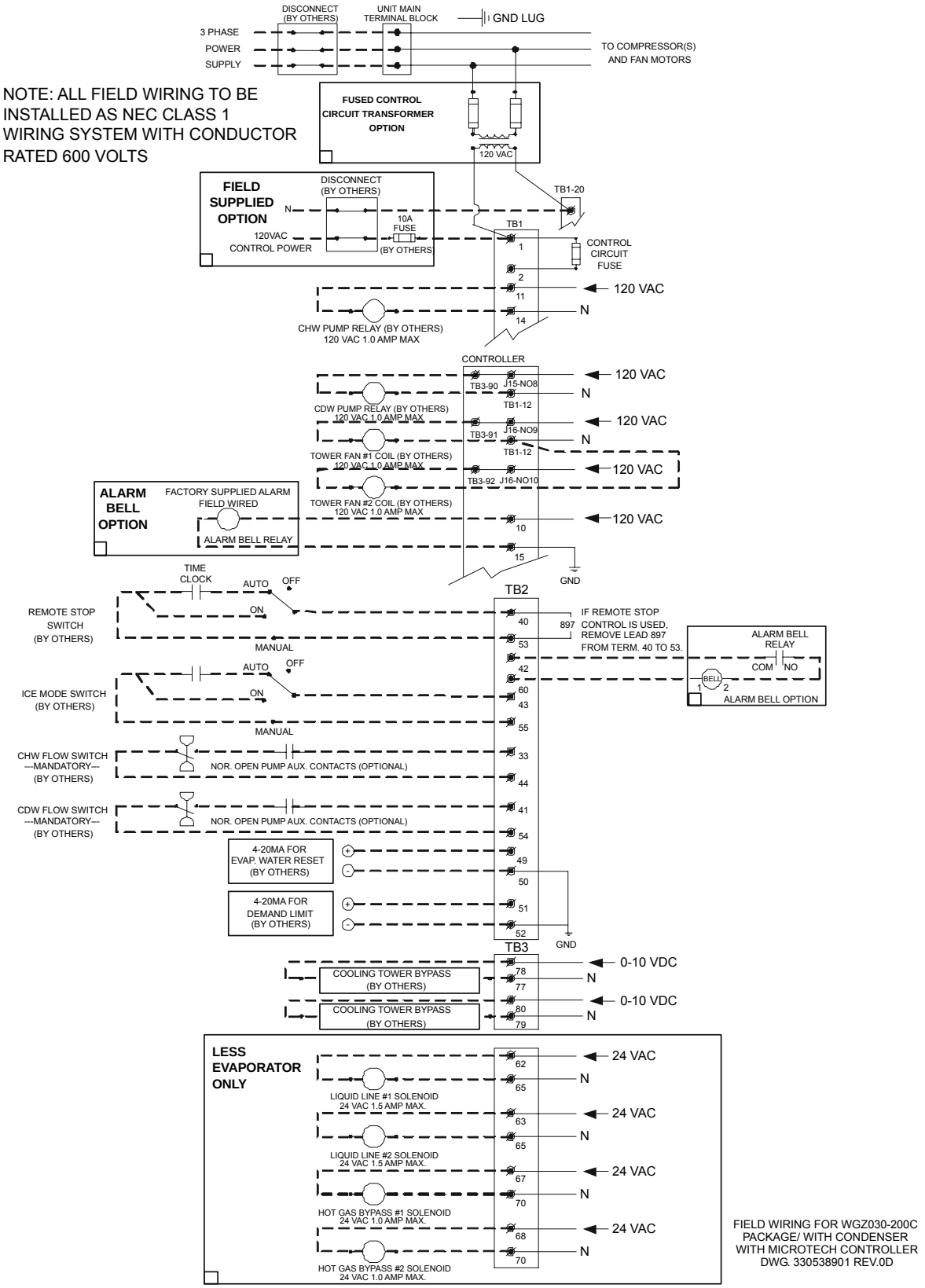
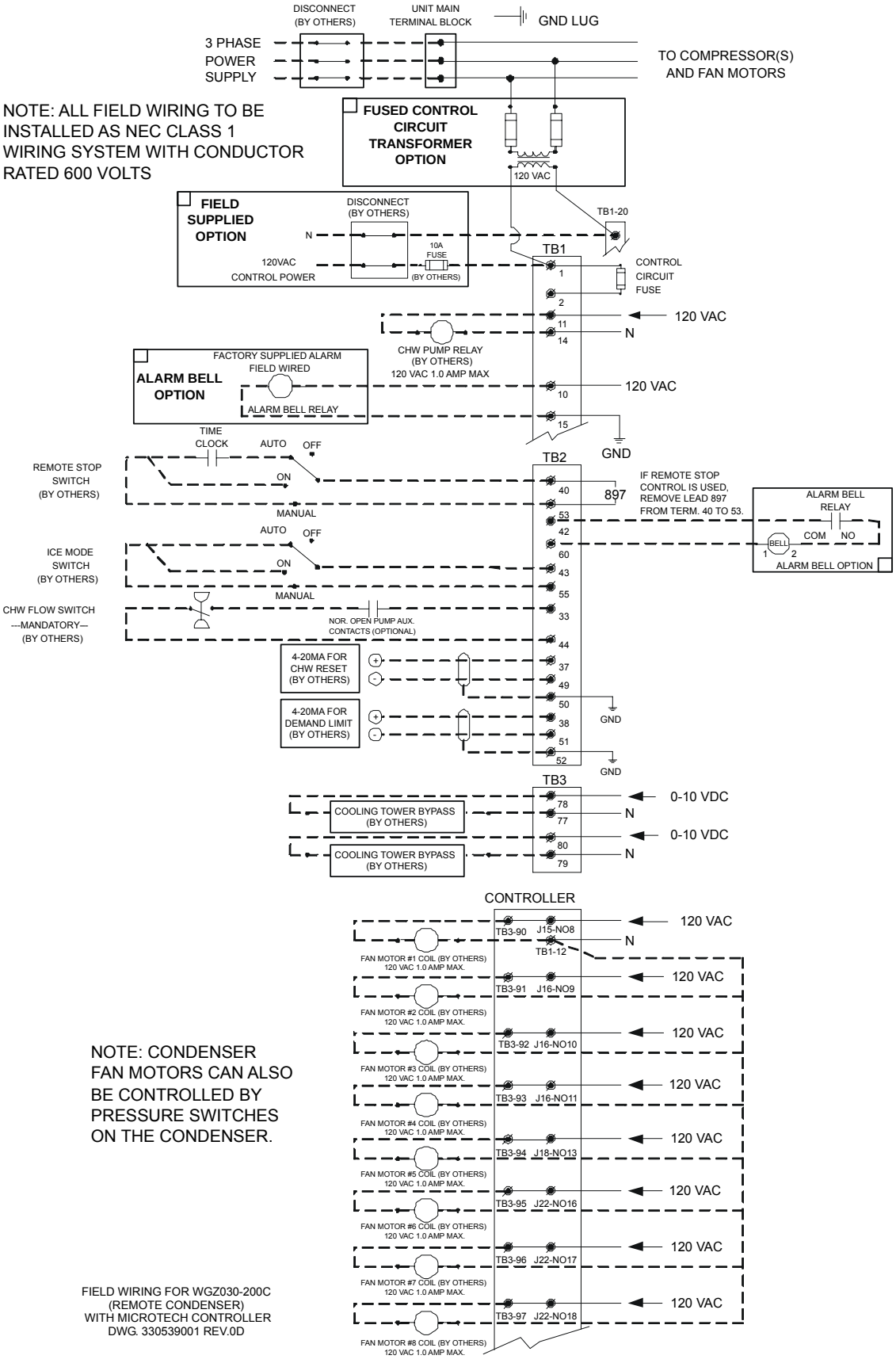


Figure 7, WGZ 030CA – 200CA Field Wiring Diagram (Remote Condenser)



Electrical Notes

Notes for "Electrical Data Single Point" Power:

1. If a separate 115V power supply is used for the control circuit, then the wire sizing amps is 10 amps for all unit sizes.
2. Recommended power lead wire sizes for 3 conductors per conduit are based on 100% conductor ampacity in accordance with NEC. Voltage drop has not been included. Therefore, it is recommended that power leads be kept short. All terminal block connections must be made with copper (type THW) wire.
3. The recommended power lead wire sizes are based on an ambient temperature of 86°F (30°C). Ampacity correction factors must be applied for other ambient temperatures. Refer to the National Electrical Code Handbook.
4. Must be electrically grounded according to national and local electrical codes.

Voltage Limitations:

1. Within ± 10 percent of nameplate rating
2. Voltage unbalance not to exceed 2% with a resultant current unbalance of 6 to 10 times the voltage unbalance per NEMA MG-1, 1998 Standard. This is an important restriction that must be adhered to.

Notes for "Field Wiring Data"

1. Requires a single disconnect to supply electrical power to the unit. This power supply must either be fused or use an HACR type circuit breaker.
2. All field wiring to unit power block or optional non-fused disconnect switch must be copper.
3. All field wire size values given in table apply to 75°C rated wire per NEC.

Supplemental Overloads Option

Supplemental overloads option is used to reduce the required electrical service size and wire sizing to the water cooled version of WGZ chillers. The overloads reduce the electrical ratings for the compressor because water-cooled duty requires less power than air-cooled duty. The overload option is only available for WGZ-CW models with water-cooled condensers (not WGZ-CA models with air-cooled condensers) and having single point electrical power connections. Refer to the electrical data on pages 33, 37, and 38 for the reduced electrical requirements.

Standard Panel Ratings (kA)

Voltage	WGZ-C Model Size		
	WGZ 030-035	WGZ 040-090	WGZ 100-200
208-230	5	10	10
460	5	5	10
575	5	5	10

Optional Panel Ratings (kA)

Voltage	Options, Single-Point Power Connection Only	
	High Short Circuit Current Rating	High Interrupt Disconnect Switch
208-230	100	100
460	65	65
575	25	25

NOTE: High Short Circuit Current Rating (HSCCR) provides all panel components rated per above table and is so labeled. High Interrupt Disconnect Switch provides for only a disconnect switch with the rating, and the panel has no special labeling. Not available on WGZ 200 at 208/230V with supplementary overloads or WGZ 150 to 200 at 208/230V without supplementary overloads.

Physical Data

CW Water-Cooled

Table 21, WGZ 030CW –055CW

WGZ UNIT SIZE	30		35		40		45		50		55	
Unit capacity @ ARI tons, (kW)	30.0 (105.5)		34.6 (121.7)		40.7 (143.1)		45.5 (160.0)		51.4 (180.8)		56.4 (198.4)	
No. Circuits	2		2		2		2		2		2	
COMPRESSORS												
Nominal Tons	7.5	7.5	9	9	10	10	12	12	13	13	13	15
Number Per Circuit	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT												
Staging, Circuit #1 in Lead	25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		23 / 50 / 73 / 100	
Staging, Circuit #2 in Lead	25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		27 / 50 / 77 / 100	
Oil Charge per Compressor oz., (l)	85 (2.5)		110 (3.3)		110 (3.3)		110 (3.3)		110 (3.3)		110 (3.3)	
CONDENSER												
Number	1		1		1		1		1		1	
No. Refrigerant Circuits	2		2		2		2		2		2	
Diameter, in., (mm)	10 (254)		10 (254)		10 (254)		10 (254)		10 (254)		10 (254)	
Tube Length, in., (mm)	120 (3048)		120 (3048)		120 (3048)		120 (3048)		120 (3048)		120 (3048)	
Design Working Pressure .PSIG, (kPa):												
Refrigerant Side	500 (3447)		500 (3447)		500 (3447)		500 (3447)		500 (3447)		500 (3447)	
Water Side	232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)	
Pump-Out Capacity, lb., (kg) (3)	245.8 (111.7)		245.8 (111.7)		228.2 (103.7)		228.2 (103.7)		205.4 (93.4)		205.4 (93.4)	
Conn.In & Out, in, (mm) Victaulic	4 (102)		4 (102)		4 (102)		4 (102)		4 (102)		4 (102)	
Relief Valve, Flare In., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Purge Valve, Flare In., (mm)	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Vent & Drain, in. (mm) FPT	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Liquid Subcooling	Integral		Integral		Integral		Integral		Integral		Integral	
EVAPORATOR, BRAZED-PLATE												
Number	1		1		1		1		1		1	
No. Refrigerant Circuits	2		2		2		2		2		2	
Water Volume, gallons, (l)	1.9 (7.1)		2.2 (8.3)		2.4 (9.1)		2.9 (11.0)		3.4 (12.8)		3.7 (14.0)	
Design Working Pressure .PSIG, (kPa):												
Refrig. Side)	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water Side	653 (4500)		653 (4500)		653 (4500)		653 (4500)		653 (4500)		653 (4500)	
Conn. In & Out, in. (mm) Victaulic	2.5 (65)		2.5 (65)		2.5 (65)		2.5 (65)		2.5 (65)		2.5 (65)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Vent & Drain	Field		Field		Field		Field		Field		Field	
UNIT DIMENSIONS												
Length In., (mm)	136.0 (3455)		136.0 (3455)		136.0 (3455)		136.0 (3455)		136.0 (3455)		136.0 (3455)	
Width In., (mm)	32.8 (832)		32.8 (832)		32.8 (832)		32.8 (832)		32.8 (832)		32.8 (832)	
Height In., (mm)	63.4 (1609)		63.4 (1609)		63.4 (1609)		63.4 (1609)		63.4 (1609)		63.4 (1609)	
UNIT WEIGHTS												
Operating Weight, lb., (kg)	2486 (1128)		2572 (1167)		2631 (1193)		2650 (1202)		2752 (1248)		2771 (1257)	
Shipping Weight, lb., (kg)	2410 (1093)		2496 (1132)		2539 (1152)		2558 (1160)		2639 (1197)		2658 (1206)	
Cir # 1,Opn. Charge, lb.,(kg) R410A	45 (20.5)		45 (20.5)		47 (21.4)		47 (21.4)		47 (21.4)		50 (22.7)	
Cir # 2,Opn. Charge, lb.,(kg) R410A	45 (20.5)		45 (20.5)		47 (21.4)		47 (21.4)		47 (21.4)		50 (22.7)	

Notes:
1. Certified in accordance with ARI Standard 550/590-2003.
2. 90% Full R-410A at 90°F (32°C) per unit.

Table 22, WGZ 060CW - 100CW

WGZ UNIT SIZE	60		70		80		90		100	
Unit capacity @ ARI tons, (kW) (1)	60.5 (212.8)		70.8 (249.0)		78.3 (275.4)		88.0 (309.5)		97.8 (344.0)	
No. Circuits	2		2		2		2		2	
COMPRESSORS										
Nominal Tons	15	15	15/20	15/20	20	20	20	26	26	26
Number per Circuit4	2	2	2	2	2	2	2	2	2	2
CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT										
Staging, 4 Stages, Circuit #1 in Lead	25 / 50 / 75 / 100		22 / 50 / 72 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100	
Staging, 4 Stages, Circuit #2 in Lead	25 / 50 / 75 / 100		22 / 50 / 72 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100	
Oil Charge, per compressor oz. (l)	110 (3.3)		110 (3.3) 158 (4.7)	110 (3.3) 158 (4.7)	158 (4.7)		158 (4.7)	230 (6.8)	230 (6.8)	
CONDENSER										
Number	1		1		1		1		1	
No. Refrigerant Circuits	2		2		2		2		2	
Diameter, in. (mm)	10 (254)		14 (356)		14 (356)		14 (356)		14 (356)	
Tube Length, in. (mm)	120 (3048)		120 (3048)		120 (3048)		120 (3048)		120 (3048)	
Design Working Pressure, psig (kPa):										
Refrigerant Side	500 (3447)		500 (3447)		500 (3447)		500 (3447)		500 (3447)	
Water Side	232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)	
No. of Passes	2		2		2		2		2	
Pump-Out Capacity lb., (kg) (3)	205.4 (93.4)		415.1 (188.7)		397.5 (180.7)		371.1 (168.7)		344.7 (156.7)	
Conn. In & Out, in., (mm) Victaulic	4 (102)		4 (102)		4 (102)		4 (102)		4 (102)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Purge Valve, Flare in. (mm)	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Vent & Drain, in. (mm) FPT	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Liquid Subcooling	Integral		Integral		Integral		Integral		Integral	
EVAPORATOR, BRAZED-PLATE										
Number	1		1		1		1		1	
No. Refrigerant Circuits	2		2		2		2		2	
Water Volume, gallons (l)	4.2 (15.9)		6.4 (24.3)		6.6 (24.9)		7.5 (28.4)		8.0 (30.2)	
Design Working Pressure, psig (kPa):										
Refrigerant Side	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water Side	653 (4500)		653 (4500)		653 (4500)		653 (4500)		653 (4500)	
Conn. In & Out, in. (mm) Victaulic	2.5 (65)		3 (76)		3 (76)		3 (76)		3 (76)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Vent & Drain	Field		Field		Field		Field		Field	
UNIT DIMENSIONS										
Length, in. (mm)	136.0 (3455)		143.3 (3639)		149.6 (3799)		149.4 (3795)		149.4 (3795)	
Width, in. (mm)	32.8 (832)		35.0 (889)		35.0 (889)		35.0 (889)		35.0 (889)	
Height, in. (mm)	63.4 (1609)		65.5 (1664)		65.5 (1664)		65.5 (1664)		65.5 (1664)	
UNIT WEIGHTS										
Operating Wt, lb., (kg)	2801 (1271)		3887 (1763)		4302 (1951)		4507 (2044)		4678 (2122)	
Shipping Wt, lb. (kg)	2688 (1219)		3746 (1699)		4145 (1880)		4327 (1963)		4474 (2029)	
Cir # 1, Op. Charge, lb, (kg) R410A	50 (22.7)		74 (33.6)		80 (36.4)		80 (36.4)		90 (40.9)	
Cir # 2, Op. Charge, lb, (kg) R410A	50 (22.7)		74 (33.6)		80 (36.4)		80 (36.4)		90 (40.9)	

Notes:

1. Certified in accordance with ARI Standard 550/590-2003.
2. WGZ 030 to 130 have two parallel compressors per circuit. WGZ 150 to 200 have three parallel compressors per circuit.
3. 90% Full R-410A at 90°F (32°C) per unit.

Table 23, WGZ 115 CW - 200 CW

WGZ UNIT SIZE	115		130		150		170		200	
Unit capacity @ ARI tons, (kW) (1)	112.9 (397.1)		125.4 (441.0)		146.6 (515.6)		169.3 (595.4)		188.1 (661.5)	
No. Circuits	2		2		2		2		2	
COMPRESSORS										
Nominal Tons	26/30	26/30	30	30	26	26	26	30	30	30
Number Per Circuit	2	2	2	2	3	3	3	3	3	3
CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT										
Staging, 4 Stages, Circuit #1 in Lead	22 / 50 / 72 / 100		25 / 50 / 75 / 100		17 / 33 / 50 / 67 / 83 / 100		15 / 33 / 48 / 67 / 81 / 100		17 / 33 / 50 / 67 / 83 / 100	
Staging, 4 Stages, Circuit #2 in Lead	22 / 50 / 72 / 100		25 / 50 / 75 / 100		17 / 33 / 50 / 67 83 / 100		19 / 33 / 52 / 67 86 /100		17 / 33 / 50 / 67 / 83 / 100	
Oil Charge, per compressor oz. (l)	230 (6.8)/ 213 (6.3)	230 (6.8)/ 213 (6.3)	213 (6.3)		230 (6.8)		230 (6.8)	213 (6.3)	213 (6.3)	
CONDENSER										
Number	1		1		1		1		1	
No. Refrigerant Circuits	2		2		2		2		2	
Diameter, in. (mm)	14 (356)		14 (356)		16 (406.4)		16 (406.4)		16 (406.4)	
Tube Length, in. (mm)	120 (3048)		120 (3048)		144 (3658)		144 (3658)		144 (3658)	
Design Working Pressure., psig (kPa):										
Refrigerant Side	500 (3447)		500 (3447)		500 (3447)		500 (3447)		500 (3447)	
Water Side	232 (1599)		232 (1599)		232 (1599)		232 (1599)		232 (1599)	
Pump-Out Capacity lb., (kg) (3)	344.7 (156.7)		344.7 (156.7)		572.3 (260.1)		508.9 (231.3)		508.9 (231.3)	
Water Conn In & Out, in., (mm) (4)	4 (102)		4 (102)		5 (127)		5 (127)		5 (127)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Purge Valve, Flare in. (mm)	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Vent & Drain, in. (mm) FPT	½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)		½ (12.7)	
Liquid Subcooling	Integral		Integral		Integral		Integral		Integral	
EVAPORATOR, BRAZED-PLATE				⇒	**SHELL-AND-TUBE**					
Number	1		1		1		1		1	
No. Refrigerant Circuits	2		2		2		2		2	
Water Volume, gallons (l)	8.5 (32.1)		10.5 (39.7)		57.6 (218.0)		56.9 (215.4)		56.9 (215.4)	
Design Working Pressure										
Refrigerant Side	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water Side	653 (4500)		653 (4500)		150 (1034)		150 (1034)		150 (1034)	
Water Conn.In & Out, in. (mm) Victaulic	3 (76)		3 (76)		8 (203)		8 (203)		8 (203)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)							
Drain & Vent size, in. (mm)	Field		Field		½ (12.7)		½ (12.7)		½ (12.7)	
UNIT DIMENSIONS										
Length, in. (mm)	149.4 (3795)		149.4 (3795)		170.2 (4322)		170.2 (4322)		170.2 (4322)	
Width, in. (mm)	35.0 (889)		35.0 (889)		36.5 (927)		36.5 (927)		36.5 (927)	
Height, in. (mm)	65.5 (1664)		65.5 (1664)		77.7 (1973)		77.7 (1973)		77.7 (1973)	
UNIT WEIGHTS										
Operating Wt, lb., (kg)	4712 (2137)		4772 (2165)		7370 (3343)		7758 (3519)		7873 (3571)	
Shipping Wt, lb. (kg)	4508 (2045)		4568 (2072)		6581 (2985)		6921 (3139)		7036 (3192)	
Cir #1, Opn. Charge, lb., (kg) R-410A	100 (45.5)		100 (45.5)		150 (68.2)		150 (68.2)		150 (68.2)	
Cir #2, Opn. Charge, lb., (kg) R-410A	100 (45.5)		100 (45.5)		150 (68.2)		150 (68.2)		150 (68.2)	

Notes:

1. Certified in accordance with ARI Standard 550/590-2003.
2. WGZ 030 to 130 have two parallel compressors per circuit. WGZ 150 to 200 have three parallel compressors per circuit.
3. 90% Full R-410A at 90°F (32°C) per unit.

CA Remote Condenser

Table 24, WGZ-030CA - WGZ-055CA

WGZ UNIT SIZE	30		35		40		45		50		55	
Tons, (kW), 44°F LWT, 125°F SDT	26.6 (93.5)		30.5 (107.3)		35.2 (123.8)		39.8 (139.9)		45.8 (161.0)		50.3 (176.8)	
No. Circuits	2		2		2		2		2		2	
COMPRESSORS												
Nominal Tons	7.5	7.5	9	9	10	10	12	12	13	13	13	15
Number per Circuit	2	2	2	2	2	2	2	2	2	2	2	2
Staging, Circuit #1 in Lead	25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		23 / 50 / 73 / 100	
Staging, Circuit #2 in Lead	25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		27 / 50 / 77 / 100	
Oil Charge, per comp. oz, (l)	85 (2.5)		110 (3.3)		110 (3.3)		110 (3.3)		110 (3.3)		110 (3.3)	
EVAPORATOR, BRAZED PLATE												
No. Refrigerant Circuits	2		2		2		2		2		2	
Water Volume, gallons, (l)	1.9 (7.1)		2.2 (8.3)		2.4 (9.1)		2.9 (11.0)		3.4 (12.8)		3.7 (14.0)	
Refrig. Side D.W.P. Psig, (kPa)	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water Side D.W.P. Psig, (kPa)	653 (4500)		653 (4500)		653 (4500))		653 (4500)		653 (4500)		653 (4500)	
Inlet & Outlet, in., (mm) (1)	2.5 (65)		2.5 (65)		2.5 (65)		2.5 (65)		2.5 (65)		2.5 (65)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Drain & Vent	Field		Field		Field		Field		Field		Field	
UNIT DIMENSIONS												
Length In., (mm)	137.0 (3480)		137.0 (3480)		137.0 (3480)		137.0 (3480)		137.0 (3480)		137.0 (3480)	
Width In., (mm)	34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)	
Height In., (mm)	60.0 (1524)		60.0 (1524)		60.0 (1524)		60.0 (1524)		60.0 (1524)		60.0 (1524)	
UNIT WEIGHTS												
Operating Weight, lb., (kg)	1606 (728)		1698 (770)		1715 (778)		1738 (788)		1773 (804)		1795 (814)	
Shipping Weight, lb., (kg)	1580 (717)		1670 (758)		1685 (764)		1704 (773)		1735 (787)		1754 (796)	
Holding charge/ circuit, lb. (kg)	10.0 (4.5)		10.0 (4.5)		10.0 (4.5)		10.0 (4.5)		10.0 (4.5)		10.0 (4.5)	

Table 25, WGZ-060CA - WGZ-100CA

WGZ UNIT SIZE	60		70		80		90		100	
Tons, (kW) 44°F LWT, 125°F SDT	53.9 (189.5)		61.3 (215.7)		68.6 (242.0)		77.7 (273.3)		86.6 (304.5)	
No. Circuits	2		2		2		2		2	
COMPRESSORS										
Nominal Tons	15	15	15/20	15/20	20	20	20	26	26	26
Number Per Circuit	2	2	2	2	2	2	2	2	2	2
Staging, Circuit #1 in Lead	25 / 50 / 75 / 100		22 / 50 / 72 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100	
Staging, Circuit #2 in Lead	25 / 50 / 75 / 100		22 / 50 / 72 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100		25 / 50 / 75 / 100	
Oil Charge, per compressor oz. (l)	110 (3.3)		110 (3.3)		158 (4.7)		158 (4.7)	230	230 (6.8)	
EVAPORATOR, BRAZED PLATE										
No. Refrigerant Circuits	2		2		2		2		2	
Water Volume, gallons (l)	4.2 (15.9)		6.4 (24.3)		6.6 (24.9)		7.5 (28.4)		8.0 (30.2)	
Refrigerant Side D.W.P., psig, (kPa)	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water Side D.W.P., psig, (kPa)	653 (4500)		653 (4500)		653 (4500)		653 (4500)		653 (4500)	
Inlet & Outlet, in. (mm) (2)	2.5 (63)		3 (76)		3 (76)		3 (76)		3 (76)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Drain & Vent	Field		Field		Field		Field		Field	
UNIT DIMENSIONS										
Length, in. (mm)	137.0 (3480)		137.0 (3480)		137.0 (3480)		137.0 (3480)		137.0 (3480)	
Width, in. (mm)	34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)	
Height, in. (mm)	60.0 (1524)		60.0 (1524)		60.0 (1524)		60.0 (1524)		60.0 (1524)	
UNIT WEIGHTS										
Operating Wt, lb., (kg)	1816 (824)		2474 (1122)		2787 (1264)		2928 (1328)		3050 (1383)	
Shipping Wt, lb. (kg)	1771 (803)		2406 (1091)		2717 (1232)		2851 (1293)		2968 (1346)	
Holding charge/ circuit, lb. (kg)	10.0 (4.5)		15 (6.8)		15 (6.8)		15 (6.8)		15 (6.8)	

Note:

1. Condenser and field piping not included.

Table 26, WGZ-115CA – WGZ-200CA

WGZ UNIT SIZE	115		130		150		170		200	
Tons, (kW)44°F LWT, 125°F SDT	100.1 (352.2)		111.4 (391.7)		129.9 (456.8)		150.2 (528.3)		170.6 (599.8)	
No. Circuits	2		2		2		2		2	
COMPRESSORS										
Nominal Tons	26/30	26/30	30	30	26	26	26	30	30	30
Number Per Circuit	2	2	2	2	3	3	3	3	3	3
Staging, Circuit #1 in Lead	22 / 50 / 72 / 100		25 / 50 / 75 / 100		17 / 33 / 50 / 67 / 83 / 100		15 / 33 / 48 / 67 / 81 / 100		17 / 33 / 50 / 67 / 83 / 100	
Staging, Circuit #2 in Lead	22 / 50 / 72 / 100		25 / 50 / 75 / 100		17 / 33 / 50 / 67 / 83 / 100		19 / 33 / 52 / 67 / 86 / 100		17 / 33 / 50 / 67 / 83 / 100	
Oil Charge, per compressor oz. (l)	230 (6.8) 213 (6.3)		213 (6.3)		230 (6.8)		230 (6.8)	213 (6.3)	213 (6.3)	
EVAPORATOR, BRAZED PLATE----------⇒					**SHELL-AND-TUBE**					
No. Refrigerant Circuits	2		2		2		2		2	
Water Volume, gallons (l)	8.5 (32.1)		10.5 (39.7)		57.6 (218.0)		56.9 (215.4)		56.9 (215.4)	
Refrigerant Side D.W.P., psig,	450 (3102)		450 (3102)		450 (3102)		450 (3102)		450 (3102)	
Water Side D.W.P., psig, (kPa)	653 (4500)		653 (4500)		150 (1034)		150 (1034)		150 (1034)	
Water Connections:										
In & Out, in. (mm), victaulic	3 (76)		3 (76)		8 (203)		8 (203)		8 (203)	
Relief Valve, Flare in., (mm)	⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)		⅝ (15.9)	
Drain & Vent	Field		Field		½ (12.7)		½ (12.7)		½ (12.7)	
UNIT DIMENSIONS										
Length, in. (mm)	137.0 (3480)		137.0 (3480)		154.0 (3912)		154.0 (3912)		154.0 (3912)	
Width, in. (mm)	34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)		34.0 (864)	
Height, in. (mm)	60.0 (1524)		60.0 (1524)		75.0 (1905)		75.0 (1905)		75.0 (1905)	
UNIT WEIGHTS										
Operating Wt, lb., (kg)	3120 (1415)		3194 (1449)		5279 (2395)		5385 (2443)		5498 (2494)	
Shipping Wt, lb. (kg)	3035 (1377)		3091 (1402)		4779 (2168)		4891 (2219)		5004 (2270)	
Holding charge/ circuit, lb. (kg)	15 (6.8)		15 (6.8)		20 (9.1)		20 (9.1)		20 (9.1)	

Note:

1. Condenser and field piping not included

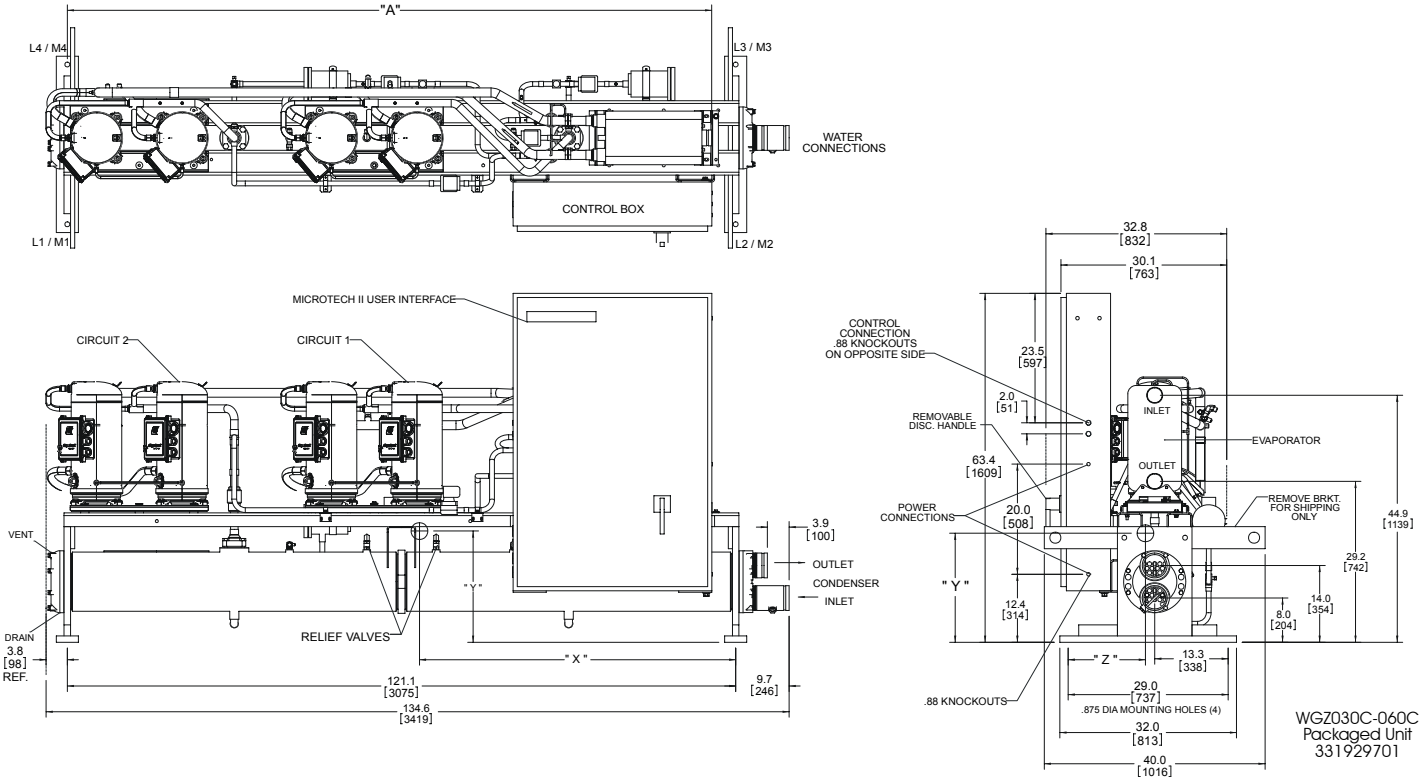
Operating Limits

- Equipment room temperature limits, operating or standby: 32°F to 104°F (0°C to 104°C)
- Maximum allowable condenser water pressure is 232 psig (1599 kPa).
- Maximum design saturated discharge temperature is 140°F (60°C).
- Maximum allowable water temperature to cooler in a non-operating cycle is 100°F (37.8°C). Maximum entering water temperature for operating cycle is 90°F (32.2°C) (during system changeover from heating to cooling cycle).
- Maximum allowable water temperature to the condenser is 110°F (43.3°C).
- Minimum leaving water temperature from the cooler without freeze protection is 40°F (4.4°C).
- Minimum entering tower condenser water temperature is 60°F (15.6°C).
- For remote air-cooled condensers, the temperature difference between the saturated discharge temperature and the outside air temperature (TD) must be between 15 and 35 degrees F and the saturated discharge temperature cannot exceed 135°F.

Dimensions

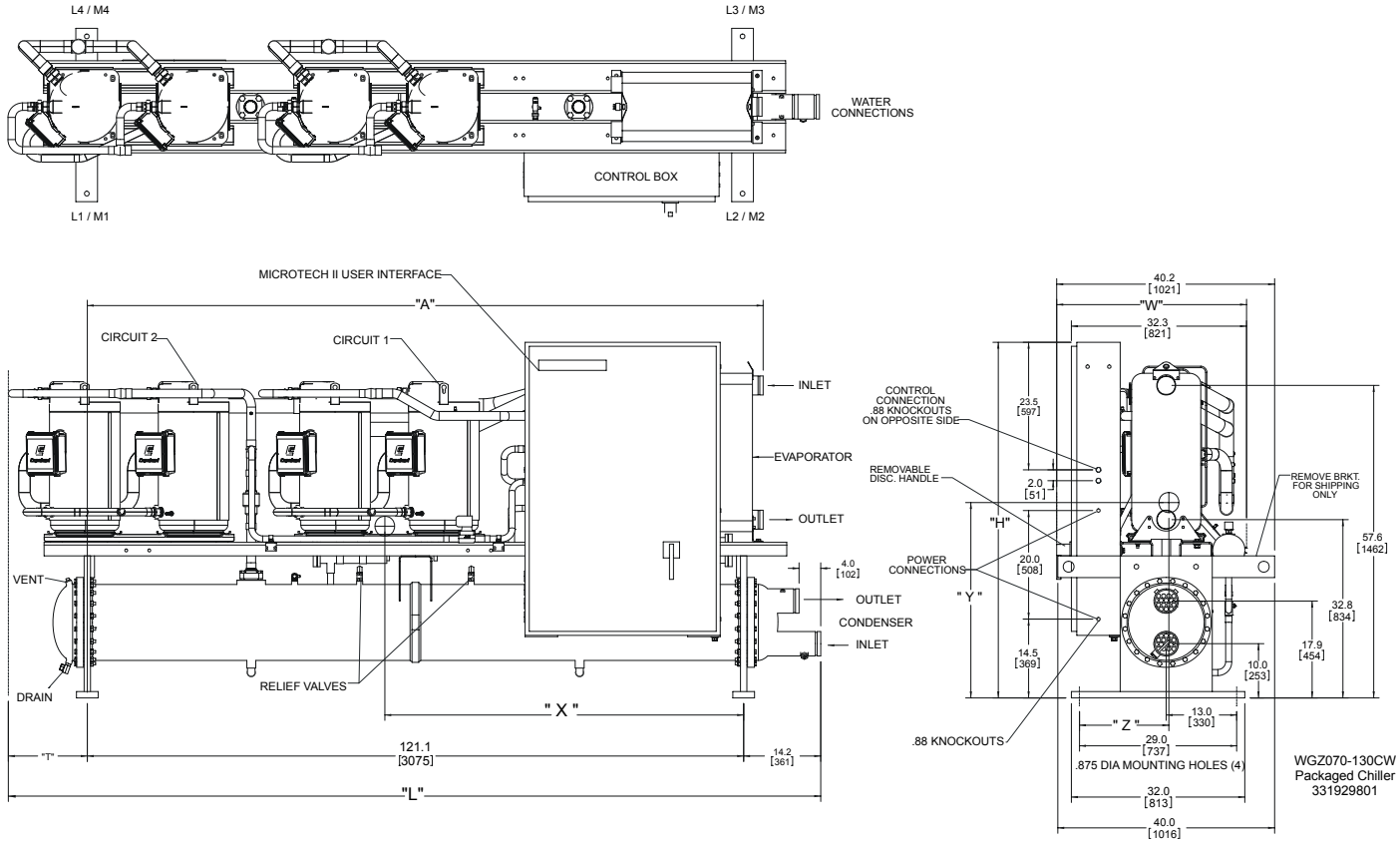
Packaged Chillers

Figure 8, WGZ 030CW through WGZ 060CW



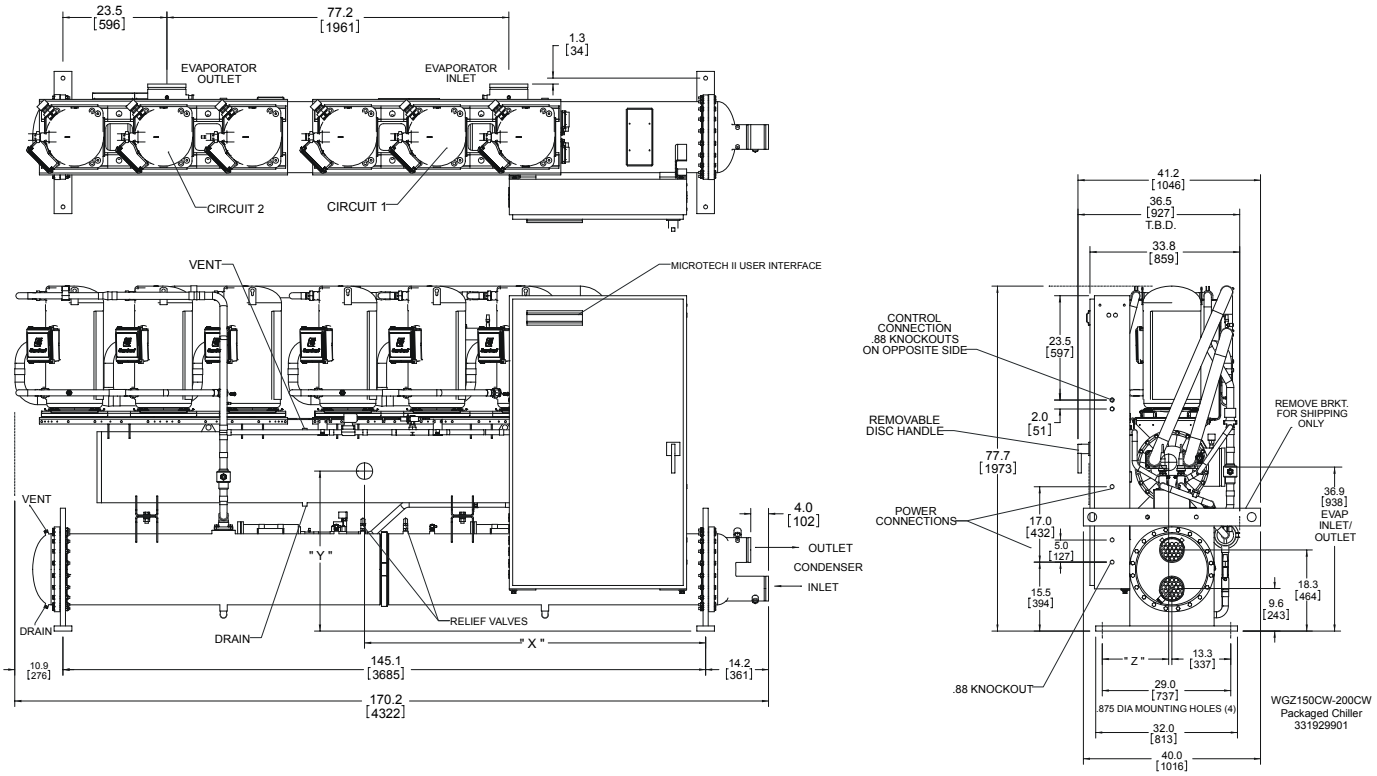
WGZ MODEL NUMBER	CHILLER WATER CONNECTION SIZE (NOM) VICTAULIC		CONDENSER WATER CONNECTION SIZE (NOM) VICTAULIC	CENTER OF GRAVITY		
	IN (MM)	A	IN (MM)	X	Y	Z
WGZ030C	2.5 (64)	107.4 (2728)	4 (102)	59.2	22.4	14.1
WGZ035C	2.5 (64)	108.4 (2753)	4 (102)	59.9	22.8	14.2
WGZ040C	2.5 (64)	109.8 (2789)	4 (102)	59.6	22.8	14.2
WGZ045C	2.5 (64)	111.5 (2832	4 (102)	59.2	22.9	14.2
WGZ050C	2.5 (64)	113.3 (2878)	4 (102)	59.0	23.3	14.2
WGZ055C	2.5 (64)	115.0 (2921)	4 (102)	58.7	23.4	14.2
WGZ060C	2.5 (64)	116.7 (2965)	4 (102)	58.0	23.6	14.3

Figure 9, WGZ 070CW through WGZ 130CW



WGZ MODEL NUMBER	MAXIMUM OVERALL DIMENSIONS IN (MM)			CHILLER WATER CONNECTION VICTAULIC SIZE (NOM)		CONDENSER WATER CONNECTION) VICTAULIC SIZE (NOM)	"T"	CENTER OF GRAVITY		
	"L"	"W"	"H"	IN. (MM)	"A"	IN. (MM)		"X"	"Y"	"Z"
WGZ070C	143.3 (3639)	35.0 (889)	65.5 (1664)	3 (76)	114.9 (2918)	4 (102)	8.0 (203)	62.4	28.6	15.0
WGZ080C	149.6 (3799)	35.0 (889)	65.5 (1664)	3 (76)	115.3 (2930)	4 (102)	14.3 (363)	64.8	29.3	15.1
WGZ090C	149.4 (3795)	35.0 (889)	65.5 (1664)	3 (76)	117.1 (2975)	4 (102)	14.1 (359)	67.7	29.6	16.1
WGZ100C	149.4 (3795)	35.0 (889)	65.5 (1664)	3 (76)	118.0 (2997)	4 (102)	14.1 (359)	69.7	29.9	17.1
WGZ115C	149.4 (3795)	35.0 (889)	65.5 (1664)	3 (76)	121.6 (3088)	4 (102)	14.1 (359)	68.8	30.2	17.1
WGZ130C	149.4 (3795)	35.0 (889)	65.5 (1664)	3 (76)	124.7 (3167)	4 (102)	14.1 (359)	67.8	30.4	17.1

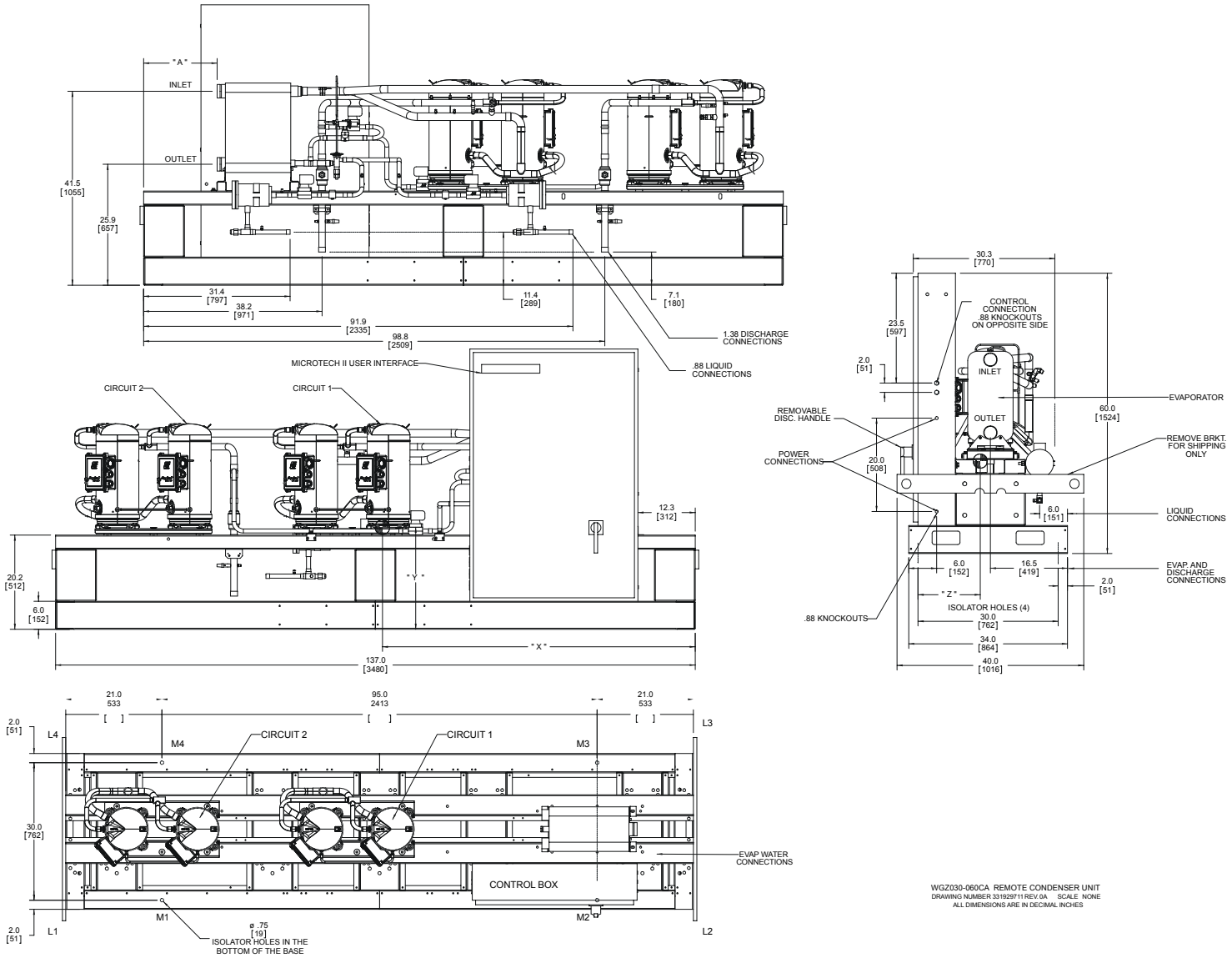
Figure 10, WGZ 150CW through WGZ 200CW



WGZ MODEL NUMBER	CHILLER WATER CONNECTION SIZE (NOM) VICTAULIC	CONDENSER WATER CONNECTION SIZE (NOM) VICTAULIC	CENTER OF GRAVITY		
	IN (MM)	IN (MM)	X	Y	Z
WGZ150C	8 (203)	5 (127)	68.7	38.6	14.9
WGZ170C	8 (203)	5 (127)	66.3	38.3	15.0
WGZ200C	8 (203)	5 (127)	66.6	38.7	15.1

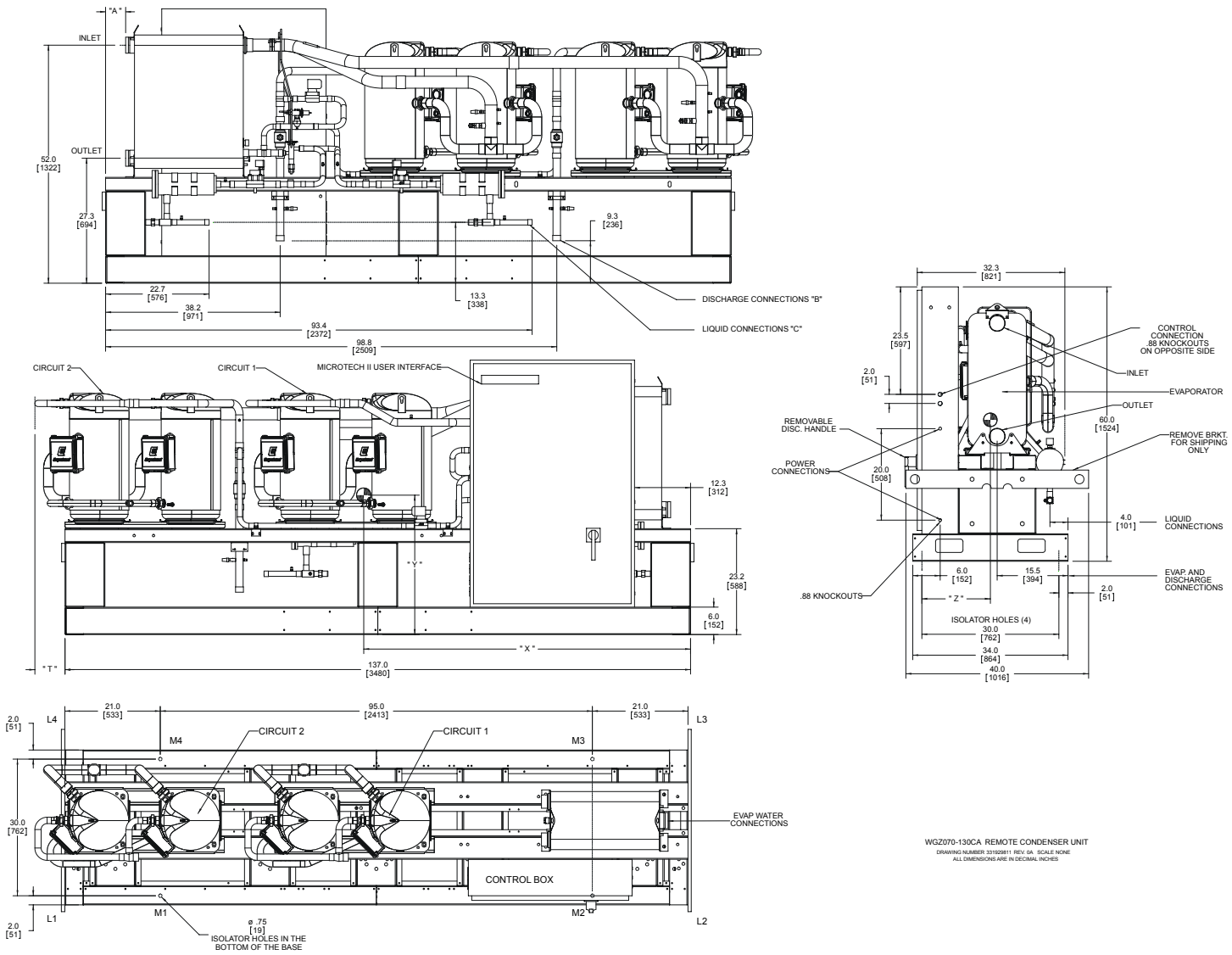
Chillers with Remote Condenser

Figure 11, WGZ 030CA through WGZ 060CA



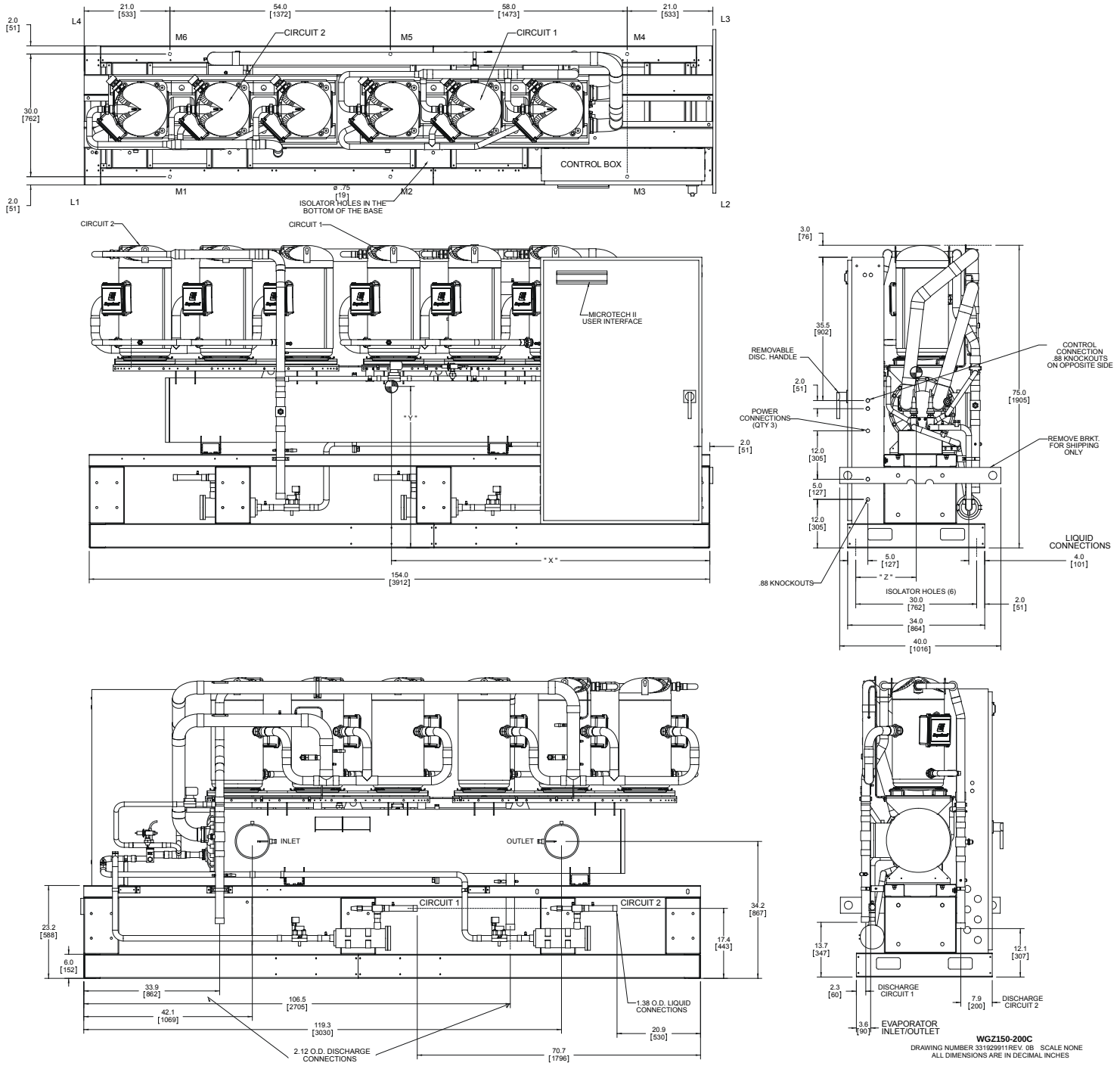
WGZ MODEL NUMBER	CHILLER WATER CONNECTION SIZE (NOM) VICTAULIC		REFRIGERANT PIPING CONNECTION SIZE		CENTER OF GRAVITY		
	IN (MM)	A	B DISCH.	C LIQ.	X	Y	Z
WGZ030CA	2.5 (64)	21.6 (550)	1.38	0.88	67.3	22.8	13.3
WGZ035CA	2.5 (64)	20.6 (523)	1.38	0.88	68.3	23.8	13.4
WGZ040CA	2.5 (64)	19.2 (488)	1.38	0.88	67.9	23.9	13.5
WGZ045CA	2.5 (64)	17.5 (444)	1.38	0.88	67.3	24.0	13.5
WGZ050CA	2.5 (64)	15.8 (400)	1.38	0.88	67.2	24.5	13.5
WGZ055CA	2.5 (64)	14.0 (356)	1.38	0.88	66.6	24.6	13.5
WGZ060CA	2.5 (64)	12.3 (312)	1.38	0.88	66.1	24.7	13.6

Figure 12, WGZ 070CA through WGZ 130CA



WGZ MODEL NUMBER	CHILLER WATER CONNECTION SIZE (NOM) VICTAULIC		COND. WATER CONN. SIZE VICTAULIC	REFRIGERANT PIPING CONNECTION SIZE		T LEFT OVERHANG	CENTER OF GRAVITY (IN.)		
	IN (MM)	A	IN (MM)	B DISCH.	C LIQ.		X	Y	Z
WGZ070C	3 (76)	14.1 (359)	4 (102)	1.38 OD	1.13 OD	N/A	71.5	29.3	14.9
WGZ080C	3 (76)	13.7 (348)	4 (102)	1.62 OD	1.13 OD	6.3 (161)	74.9	30.1	15.0
WGZ090C	3 (76)	11.9 (303)	4 (102)	1.62 OD	1.13 OD	6.6 (167)	75.7	30.4	15.1
WGZ100C	3 (76)	11.0 (280)	4 (102)	1.62 OD	1.13 OD	6.6 (167)	75.2	30.6	15.2
WGZ115C	3 (76)	7.5 (190)	4 (102)	1.62 OD	1.13 OD	6.6 (167)	73.8	30.8	15.2
WGZ130C	3 (76)	4.4 (111)	4 (102)	1.62 OD	1.13 OD	6.6 (167)	72.6	30.9	15.3

Figure 13, WGZ 150CA through WGZ 200CA



WGZ MODEL NUMBER	CHILLER WATER CONNECTION SIZE (NOM) VICTAULIC	REFRIGERANT PIPING CONNECTION SIZE		CENTER OF GRAVITY		
	IN (MM)	B DISCH.	C LIQ.	X	Y	Z
WGZ150C	8 (203)	2.12	1.38	79.1	43.2	15.3
WGZ170C	8 (203)	2.12	1.38	80.1	43.6	15.4
WGZ200C	8 (203)	2.12	1.38	79.7	44.0	15.4

Weights

WGZ-CW, Packaged

Table 27, WGZ-CW, Inch-Pounds Units

WGZ-C W MODEL	LIFTING WEIGHT FOR EACH POINT (lbs)				MOUNTING LOADS FOR EACH POINT (lbs)				SHIPPING WEIGHT (lbs)	OPERATING WEIGHT (lbs)
	L1	L2	L3	L4	M1	M2	M3	M4		
030C	606	633	599	573	625	653	618	591	2410	2486
035C	632	646	616	603	651	665	635	621	2496	2572
040C	639	659	630	611	662	683	653	633	2539	2631
045C	639	667	639	612	662	691	662	634	2558	2650
050C	655	689	664	631	683	718	692	659	2639	2752
055C	655	698	673	632	683	727	702	659	2658	2771
060C	655	712	688	633	682	742	717	660	2688	2801
070C	929	874	942	1001	964	907	978	1038	3746	3887
080C	1066	927	1001	1151	1106	962	1039	1195	4145	4302
090C	1076	849	1059	1343	1121	884	1103	1399	4327	4507
100C	1059	781	1118	1515	1108	817	1169	1585	4474	4678
115C	1054	802	1146	1506	1102	839	1198	1574	4508	4712
130C	1055	828	1181	1505	1102	865	1234	1572	4568	4772
150C	1684	1516	1602	1780	1886	1697	1794	1993	6581	7370
170C	1814	1528	1637	1943	2033	1712	1835	2178	6921	7758
200C	1829	1550	1677	1979	2047	1735	1877	2215	7036	7873

NOTE: Refer to unit dimension drawing for lifting and mounting locations.

Table 28, WGZ-CW, S.I. Units

WGZ-CW MODEL	LIFTING WEIGHT FOR EACH POINT (kg)				MOUNTING LOADS FOR EACH POINT (kg)				SHIPPING WEIGHT (kg)	OPERATING WEIGHT (kg)
	L1	L2	L3	L4	M1	M2	M3	M4		
030C	275	287	272	260	283	296	280	268	1093	1128
035C	287	293	279	274	295	302	288	282	1132	1167
040C	290	299	286	277	300	310	296	287	1152	1193
045C	290	303	290	278	300	313	300	288	1160	1202
050C	297	313	301	286	310	326	314	299	1197	1248
055C	297	317	305	287	310	330	318	299	1206	1257
060C	297	323	312	287	309	337	325	299	1219	1271
070C	421	396	427	454	437	411	444	471	1699	1763
080C	484	420	454	522	502	436	471	542	1880	1951
090C	488	385	480	609	508	401	500	635	1963	2044
100C	480	354	507	687	503	371	530	719	2029	2122
115C	478	364	520	683	500	381	543	714	2045	2137
130C	479	376	536	683	500	392	560	713	2072	2165
150C	764	688	727	807	855	770	814	904	2985	3343
170C	823	693	743	881	922	777	832	988	3139	3519
200C	830	703	761	898	929	787	851	1005	3192	3571

NOTE: Refer to unit dimension drawing for lifting and mounting locations.

WGZ-CA, Remote Condenser

Table 29, WGZ-CA, Inch-Pounds Units

WGZ-CA MODEL	LIFTING WEIGHT FOR EACH POINT (lbs)				MOUNTING LOADS FOR EACH POINT (lbs)						SHIPPING WEIGHT (lbs)	OPERATING WEIGHT (lbs)
	L1	L2	L3	L4	M1	M2	M3	M4	M5	M6		
030C	415	430	374	361	476	501	322	307	-	-	1580	1606
035C	442	445	392	390	511	516	337	334	-	-	1670	1698
040C	443	451	399	392	511	525	344	335	-	-	1685	1715
045C	444	460	407	393	512	538	353	336	-	-	1704	1738
050C	451	468	416	400	520	549	362	342	-	-	1735	1773
055C	451	476	425	402	519	561	371	343	-	-	1754	1795
060C	451	484	433	404	519	574	380	344	-	-	1771	1816
070C	649	595	556	606	738	651	509	577	-	-	2406	2474
080C	765	635	598	720	884	675	532	697	-	-	2717	2787
090C	806	653	623	770	937	690	552	749	-	-	2851	2928
100C	829	681	657	801	963	724	585	778	-	-	2968	3050
115C	830	710	689	805	957	764	621	778	-	-	3035	3120
130C	831	737	716	807	956	804	655	779	-	-	3091	3194
150C	1204	1142	1184	1249	821	793	763	931	968	1003	4779	5279
170C	1245	1149	1198	1299	863	812	758	919	986	1047	4891	5385
200C	1265	1178	1235	1326	875	831	784	947	1004	1057	5004	5498

NOTE: Refer to unit dimension drawing for lifting and mounting locations.

Table 30, WGZ-CA, S.I. Units

WGZ-CA MODEL	LIFTING WEIGHT FOR EACH POINT (kg)				MOUNTING LOADS FOR EACH POINT (kg)						SHIPPING WEIGHT (kg)	OPERATING WEIGHT (kg)
	L1	L2	L3	L4	M1	M2	M3	M4	M5	M6		
030C	188	195	170	164	216	227	146	139	-	-	717	728
035C	200	202	178	177	232	234	153	152	-	-	758	770
040C	201	205	181	178	232	238	156	152	-	-	764	778
045C	201	209	185	178	232	244	160	152	-	-	773	788
050C	205	212	189	181	236	249	164	155	-	-	787	804
055C	205	216	193	182	235	254	168	156	-	-	796	814
060C	205	220	196	183	235	260	172	156	-	-	803	824
070C	294	270	252	275	335	295	231	262	-	-	1091	1122
080C	347	288	271	327	401	306	241	316	-	-	1232	1264
090C	366	296	283	349	425	313	250	340	-	-	1293	1328
100C	376	309	298	363	437	328	265	353	-	-	1346	1383
115C	376	322	313	365	434	347	282	353	-	-	1377	1415
130C	377	334	325	366	434	365	297	353	-	-	1402	1449
150C	546	518	537	567	372	360	346	422	439	455	2168	2395
170C	565	521	543	589	391	368	344	417	447	475	2219	2443
200C	574	534	560	601	397	377	356	430	455	479	2270	2494

NOTE: Refer to unit dimension drawing for lifting and mounting locations.

Sound Data

Table 31, WGZ Sound Power

WGZ Unit Size	Octave Band Sound Power Levels per ARI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
030	46	48	61	77	70	76	70	55	80
035	46	50	62	76	71	80	71	55	82
040	46	50	61	83	75	80	75	63	86
045	46	50	61	83	75	80	75	63	86
050	46	49	61	80	73	78	75	63	83
055	46	49	61	80	73	78	75	63	83
060	46	49	61	80	73	78	75	63	83
070	46	50	61	83	75	80	75	63	86
080	57	61	72	83	86	85	82	70	90
090	57	61	72	83	86	85	82	70	90
100	58	62	74	84	88	86	83	72	92
115	58	62	74	84	89	88	83	72	93
130	58	62	75	86	91	90	84	75	95
150	58	62	74	84	88	86	83	72	92
170	58	62	75	85	90	88	84	73	94
200	60	63	75	86	92	91	85	75	96

Note: Sound Power per ARI Standard 575.

Table 32, WGZ Sound Power with Sound Blankets

WGZ Unit Size	Octave Band Sound Power Levels per ARI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
030	46	48	58	73	63	70	62	49	75
035	46	50	58	72	64	73	64	49	76
040	46	50	58	75	65	73	64	50	78
045	46	50	58	75	66	73	69	56	78
050	46	49	58	72	64	73	64	49	76
055	46	49	58	72	64	73	64	49	76
060	46	49	58	72	64	73	64	49	76
070	46	50	58	75	66	73	69	56	78
080	57	61	68	79	78	77	74	63	84
090	57	61	68	79	78	77	74	63	84
100	58	62	70	80	81	80	75	65	86
115	58	62	71	82	82	81	75	67	87
130	58	62	72	83	83	84	77	68	89
150	58	62	70	80	81	80	75	65	86
170	58	62	72	81	83	83	77	67	88
200	60	63	74	83	86	86	80	70	91

Table 33, WGZ Sound Pressure

WGZ Unit Size	Octave Band Sound Pressure Levels per ARI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
030	38	40	53	68	62	68	62	47	72
035	38	42	54	68	63	72	63	47	74
040	38	42	53	75	67	72	67	55	78
045	38	42	53	75	67	72	67	55	78
050	38	41	53	72	65	70	66	55	75
055	38	41	53	72	65	70	66	55	75
060	38	41	53	72	65	70	66	55	75
070	38	42	53	75	67	72	67	55	78
080	49	53	64	75	78	77	73	62	82
090	49	53	64	75	78	77	73	62	82
100	50	54	66	76	80	78	75	64	84
115	50	54	66	76	81	80	75	64	85
130	50	54	67	78	83	82	76	67	87
150	50	54	66	76	80	78	75	64	84
170	50	54	67	77	82	80	76	65	86
200	52	55	67	78	84	83	77	67	88

Note: Distance from the unit is one meter.

Table 34, WGZ Sound Pressure with Sound Blankets

WGZ Unit Size	Octave Band Sound Pressure Levels per ARI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
030	38	40	50	65	55	62	54	41	68
035	38	42	50	64	56	65	56	41	68
040	38	42	50	67	57	65	56	42	70
045	38	42	50	67	58	65	61	48	70
050	38	41	50	64	56	65	56	41	68
055	38	41	50	64	56	65	56	41	68
060	38	41	50	64	56	65	56	41	68
070	38	42	50	67	58	65	61	48	70
080	49	53	60	71	70	69	66	55	76
090	49	53	60	71	70	69	66	55	76
100	50	54	62	72	73	72	67	57	78
115	50	54	63	74	74	73	67	59	79
130	50	54	64	75	75	76	69	60	81
150	50	54	62	72	73	72	67	57	78
170	50	54	64	73	75	75	69	59	80
200	52	55	66	75	78	78	72	62	83

Note: Distance from the unit is one meter.

Test Data

Sound testing is performed in accordance with ARI Standard 575. Values are taken at one meter from the unit and with the units fully loaded. Values are mid-band. Octave band readings are flat dBa, overall are “A” weighted.

Sound Reduction

Sound blankets are available as an option on all size WGZ units. One blanket is supplied for each compressor. The blankets are secured with Velcro straps for a tight fit. They can be ordered with the unit and factory installed or ordered after shipment for field installation. They are easily removed for service and inspection purposes.

Application Information

Location and Space Requirements

The units are designed for indoor application and must be located in a space where the temperature is 40°F (4.4°C) or above. Provide clearance of 3 ft. (914 mm) on each side and end for piping and to provide space for servicing the unit.

Provide clearance at either end of the unit to permit cleaning or removal of condenser tubes (see dimensional data). If a properly located door or window is provided in the wall at one end of the unit, the tubes may be able to be replaced through the opening provided.

The skid option is strongly recommended for ease of handling and to help prevent damage if a crane is not available for rigging at site.

Foundation

Mount the unit on a level concrete foundation. Floors must be strong enough to support the unit operating weight. If necessary, use structural supports to transfer the weight of the unit to the nearest beams.

Vibration Isolation

Vibration mounts are recommended for upper floor installations or where compressor noises might be objectionable (next to occupied spaces such as offices, meeting rooms, etc.).

Pipe vibration eliminators may be required for water piping connected to the unit to minimize transmission of water or pump noise into occupied spaces.

System Water Volume

It is important to have adequate water volume in the system to provide an opportunity for the chiller to sense a load change, adjust to the change and stabilize. As the expected load change becomes more rapid, a greater water volume is needed. The system water volume is the total amount of water in the evaporator, air handling products and associated piping. If the water volume is too low, operational problems can occur, including rapid compressor cycling, rapid loading and unloading of compressors, erratic refrigerant flow in the chiller, improper motor cooling, shortened equipment life and other undesirable occurrences.

For normal comfort cooling applications where the cooling load changes relatively slowly, we recommend a minimum system volume of two to three times the flow rate (GPM). For example, if the design chiller flow rate is 120 GPM, we recommend a minimum system volume of 240 to 360 gallons.

For process applications where the cooling load can change rapidly, additional system water volume is needed. A process example would be the cooling of hot metal objects. The load would be very stable until the hot metal is dipped into the water tank. Then, the load would increase drastically.

Since there are many other factors that can influence performance, systems can successfully operate below these suggestions. However, as the water volume decreases below these values, the possibility of problems increases.

Evaporator Variable Flow

Reducing evaporator flow in proportion to load can reduce system power consumption. Certain restrictions apply to the amount and rate of flow change. The rate of flow change should be a maximum of 10 percent of the change per minute. Do not reduce flow lower than the minimum flows listed in the evaporator pressure drop section, page 30.

Chilled Water Piping

If factory-installed flow switches are not ordered, install a flow switch in the horizontal piping of the system supply (evaporator outlet) water line.

Provide drain connections at low points in the system to permit complete drainage of the system. Locate air vents at the high points in the system to purge air out of the system. There are no vent or drain connections on the evaporator for models 030 to 130. Purge air from the water system before unit start-up to ensure adequate flow through the evaporator.

NOTE: Install a strainer (40-mesh for models WGZ 030 through 130, and 20-mesh for WGZ 150 through 200) in the return chilled water line before the inlet to the evaporator

Flush the system water piping thoroughly before making connections to the unit evaporator. Design the water piping so the chilled water circulating pump discharges into the evaporator inlet.

Install pressure gauges in the inlet and outlet water lines to the evaporator. Measure pressure drop through the evaporator to calculate proper flow. Vibration eliminators are recommended in both the supply and return water lines.

Insulate chilled water piping to reduce heat loss and prevent condensation.

Figure 14, Typical Chilled Water Piping, Models WGZ 030 to 130

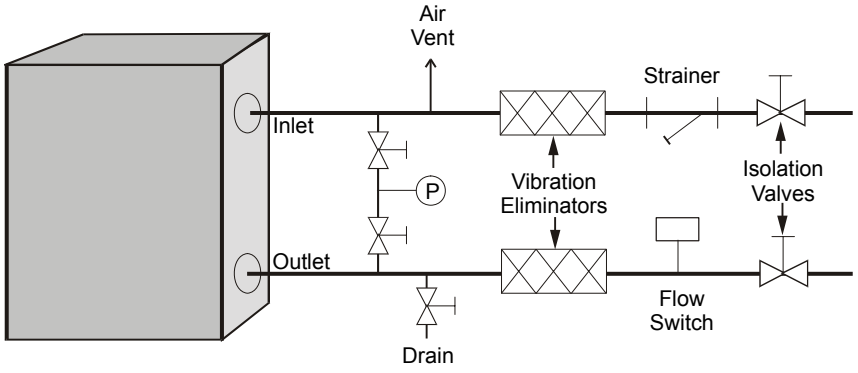
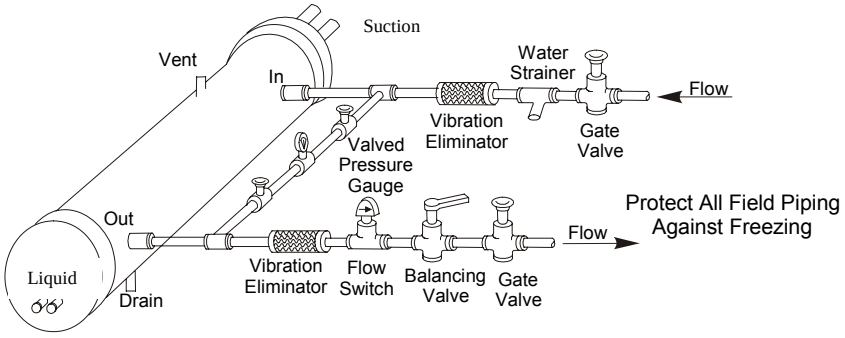


Figure 15, Typical Field Evaporator Water Piping, WGZ 150 to 200



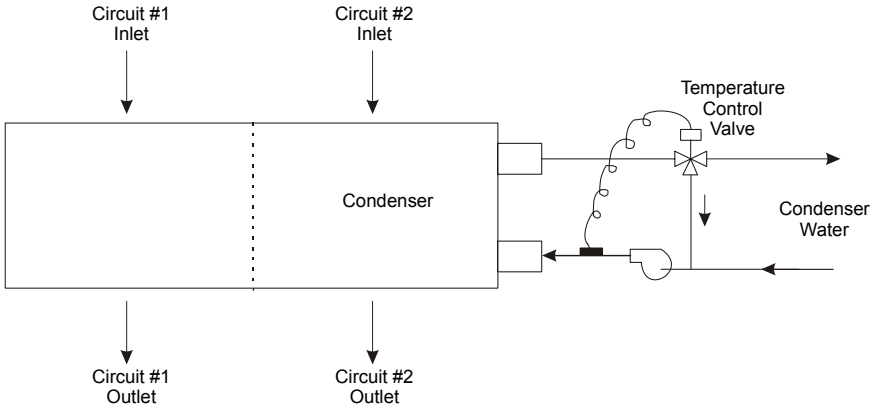
NOTE: Inlet and outlet connections may be reversed on some units. Check unit dimension drawing.

Condenser Water (CW Units)

Be certain the condenser water enters the bottom connection of the condenser and exits the condenser from the top connection. Head pressure control must be provided if the entering condenser water can fall below 60°F. Install a 20-mesh strainer in the condenser inlet line. The WGZ condenser has two refrigerant circuits with a common condenser water circuit. This arrangement makes head pressure control with discharge pressure actuated control valves difficult.

If for some reason the tower water temperature cannot be maintained at a 60°F (15°C) minimum, or when pond, lake, or well water that can fall below 60°F (15°C) is used as the condensing medium, special discharge pressure control must be used. A water recirculating system with recirculating pump as shown in Figure 16 is recommended. This system also has the advantage of maintaining tube velocity to help prevent tube fouling. The pump should cycle with the chiller.

Figure 16, Recirculating Discharge Pressure Control System



Ice Storage Applications

The MicroTech II controller has logic to change setpoints from the low ice-making mode to higher normal comfort cooling setpoints. It is important that the MicroTech II controller receive a 0 VAC (normal operation) to 24 VAC (ice mode) signal to convert from ice mode to normal operating mode. MicroTech II includes the logic to keep compressors fully loaded when operating in the ice mode. The double insulation thickness option is recommend to prevent sweating.

Two Pipe Systems

When the same two pipes are used for both heating and cooling water, several limitations should be observed. The maximum allowable temperature that the evaporator should experience in a non-operating mode is 100 degrees Fahrenheit. For unit operation and system changeover from heating to cooling, the maximum allowable temperature entering the evaporator is 90 degrees Fahrenheit. System controls, provided by others, must prevent chiller operation until the loop temperature drops to 90 degrees.

Series or Parallel Operation

Consider system pressure drop when designing the water piping. Parallel piped systems have half of the total system flow going through the evaporator of each chiller, reducing the individual unit and total system pressure drop for a two chiller installation.

Series piped evaporators require that the total system water flows through both evaporators. Not only is the pressure drop through each evaporator increased but the pressure drops must be added together to obtain the total evaporator pressure drop. Series piped evaporators normally require larger circulating pumps for the chilled water system.

Electrical Connection

Every WGZ chiller requires field installation of the main supply power plus mandatory flow switch interlock and optional pump starter auxiliary contact interlock. A control circuit transformer installed at the factory eliminates the need for field installation of a separate 115V supply to the control circuit. However, if desired, a separate 115V field connection to the control circuit can be substituted. A system time clock and remote on-off switch can also be field installed.

See Figure 6 or Figure 7 on pages 47 and 48 for field electrical hookups. The diagram shown represents all WGZ units; however, individual terminal numbers can vary between unit sizes. Each unit is provided with its specific wiring diagram in the control panel. All wiring must be done according to local and national codes.

Main Power Supply Disconnect Switch

Every WGZ unit with the standard single-point power supply is equipped with compressor circuit breakers as standard. Multiple-point power connection is available as an option using two power blocks. Circuit breakers are not available with the multiple-point option.

A factory-installed, non-fused disconnect switch (required to meet NEC Code for disconnects) with a through-the-door handle is available as an option with single or multiple-point power supply. The disconnect switch(s) is properly sized for the model and voltage supplied.

A field-supplied and installed remote disconnect switch can also be used.

Control Circuit

A control power transformer is standard equipment on WGZ units. Terminals are provided in the unit control center (terminals TB1 and TB1-20) for field connection to a remote 115V power supply if desired.

Terminals are also provided for field connection of the chilled water flow switch, unit time clock, ambient thermostat and/or remote on/off switch.

Condenser Pump Interlock

The condenser water pump should be interlocked to cycle with the compressor(s). This will prevent the refrigerant pressure from being overly depressed during the off cycle and allows the energy savings of pump shutdown. Interlock terminals are provided in the unit control panel.

Application Limitations

1. Maximum allowable condenser water pressure is 232 psig (1599 kPa).
2. Maximum design saturated discharge temperature (SDT) is 140°F (60°C). SDT=Condensing temperature + discharge line loss.
3. Maximum allowable water temperature to evaporator when not operating is 100°F (37.8°C). Maximum entering water temperature for operating cycle is 90°F (32.2°C) (during system changeover from heating to cooling cycle).
4. Minimum design leaving water temperature from the evaporator without anti-freeze protection is 40°F (4.4°C).
5. Contact your McQuay representative for operation with tower condenser water entering the chiller below 60°F (15.6°C).
6. The maximum altitude for air-cooled condensers is 8,000 feet.
7. Consult factory for ambient operation below 0°F (-17.8°C) for air-cooled applications.

Remote Condenser Refrigerant Piping

General

Careful design of refrigerant piping is necessary for proper system operation. The refrigerant piping should be designed to accomplish the following:

1. Assure proper refrigerant feed to the evaporator.
2. Provide practical and economical refrigerant line sizes without excess pressure drop.
3. Maintain uniform oil return to the compressor under all load conditions.
4. Refer to the latest version of the ASHRAE Handbook for recommended piping practice.

Limit the length of refrigerant piping by locating the condenser as close to the chiller as possible. Avoid all unnecessary changes in direction or elevation. Two separate condensers (one for each circuit) can be selected or a single two-row condenser with the standard two-circuit manifold. The circuits must not be combined and precautions must be taken during installation to avoid cross-connecting the circuits.

NOTE: Do not run refrigerant piping underground.

Liquid Line

Where there is a vertical *lift* from the condenser to the chiller, adequate subcooling must be provided to prevent liquid flashing before the expansion valve. A shutoff valve should be installed in the liquid line to allow isolation of the remote condenser.

Discharge line

The discharge line should be trapped at the compressor and looped at the condenser (inverted trap) to prevent liquid refrigerant from draining back to the compressor. Pressure drop should be held at a minimum. Install a discharge check valve in the discharge piping in a horizontal run, close to the condenser.

Recommended Line Sizing

The following tables provide recommended line sizing for the field piping. Final design should be based on ASHRAE design practice.

Table 35, Equivalent Feet for Fittings

Fitting Type	7/8-in.	1 1/8-in.	1 3/8-in.	1 5/8-in.	2 1/8-in.	2 5/8-in.	3 1/8-in.
Elbows							
90º Standard	2.0	2.6	3.3	4.0	5.0	6.0	7.5
90º Long Radius	1.4	1.7	2.3	2.6	3.3	4.1	5.0
90º Street	3.2	4.1	5.6	6.3	8.2	10	12
45º Standard	0.9	1.3	1.7	2.1	2.6	3.2	4.0
45º Street	1.5	2.1	3.0	3.4	4.5	5.2	6.4
180º Bend	3.2	4.1	5.6	6.3	8.2	10	12
Tees							
Full Size	1.4	1.7	2.3	2.6	3.3	4.1	5.0
Reducing	2.0	2.6	3.3	4.0	5.0	6.0	7.5
Valves							
Globe Valve, Open	22	29	38	43	55	69	84
Gate Valve, Open	0.9	1.0	1.5	1.8	2.3	2.8	3.2
Angle Valve, Open	9.0	12	15	18	24	29	35

Table 36, Maximum Line Size for Oil Carry Up a Discharge Riser, R-410A

Unit Size	WGZ 030	WGZ 035	WGZ 040	WGZ 045	WGZ 050	WGZ 055	WGZ 060	WGZ 070	WGZ 080	WGZ 090
Line Size (in.)	1 5/8	1 5/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 5/8	2 5/8

Unit Size	WGZ 100	WGZ 115	WGZ 130	WGZ 150	WGZ 170	WGZ 200
Line Size (in.)	2 5/8	3 1/8	3 1/8	2 5/8	3 1/8	3 1/8

Table 37, Recommended Liquid Line Size, R-410A

Unit Model WGZ-CB	Connection Size at Unit (in.)	Recommended Liquid Line Size (in.)				
		Up to 50 Equiv. Ft	Up to 75 Equiv. Ft	Up to 100 Equiv. Ft	Up to 125 Equiv. Ft	Up to 150 Equiv. Ft
WGZ 030	7/8"	7/8 "	7/8 "	7/8 "	7/8 "	7/8 "
WGZ 035	7/8"	7/8 "	7/8 "	7/8 "	7/8 "	1 1/8 "
WGZ 040	7/8"	7/8 "	7/8 "	7/8 "	1 1/8 "	1 1/8 "
WGZ 045	7/8"	7/8 "	7/8 "	7/8 "	1 1/8 "	1 1/8 "
WGZ 050	7/8"	7/8 "	7/8 "	7/8 "	1 1/8 "	1 1/8 "
WGZ 055	7/8"	7/8 "	7/8 "	1 1/8"	1 1/8 "	1 1/8 "
WGZ 060	7/8"	7/8 "	7/8 "	1 1/8 "	1 1/8 "	1 1/8 "
WGZ 070	1 1/8"	1 1/8"	1 1/8 "	1 1/8 "	1 1/8 "	1 1/8"
WGZ 080	1 1/8"	1 1/8 "	1 1/8 "	1 1/8"	1 1/8"	1 1/8"
WGZ 090	1 1/8"	1 1/8 "	1 1/8 "	1 1/8"	1 1/8"	1 1/8"
WGZ 100	1 1/8"	1 1/8 "	1 1/8 "	1 1/8"	1 1/8"	1 1/8"
WGZ 115	1 1/8"	1 1/8 "	1 1/8 "	1 1/8"	1 3/8"	1 3/8"
WGZ 130	1 1/8"	1 1/8 "	1 3/8"	1 1/8"	1 3/8"	1 3/8"
WGZ 150	1 3/8"	1 3/8"	1 1/8 "	1 3/8"	1 3/8"	1 3/8"
WGZ 170	1 3/8"	1 3/8"	1 1/8 "	1 3/8"	1 3/8"	1 3/8"
WGZ-200	1 3/8"	1 3/8"	1 1/8 "	1 3/8"	1 3/8"	1 3/8"

Optional Features

Controls/Instrumentation

Water Flow Switch

Factory-installed evaporator and condenser water flow switches in the water piping to safeguard the unit from flow interruptions. Installation of water flow switches is mandatory and they must be installed in the field if the factory option is not ordered.

Remote Interface Panel

A remote interface panel, field wired to the unit, providing all the data viewable on the unit's controller, including alarm clearing and setpoint change capability. See page 11 for details.

BAS Interface

McQuay's Open Choice feature consists of a factory-installed communication module for LONMARK®, Modbus®, or BACnet® with MSTP or Ethernet.

Dual Pump Control

Standard control for remote evaporator and condensers pumps is a single output for each. For two pumps in a primary/secondary arrangement, a field-supplied alternating device must be installed. Optionally, the unit can be equipped with programmable, dual outputs for the evaporator pumps and condenser pumps.

Electrical

Power Connections

The WGZ "C" vintage chillers are supplied as standard with compressor contractors and power block, designed for multi-point power supply to the unit, no compressor circuit breakers. Available options are:

- Single-point power connection to power block with compressor circuit breakers
- Single-point power connection to disconnect switch with compressor circuit breakers
- Multi-point power connection to disconnect switches, no compressor circuit breakers
- High interrupt single-point disconnect switch with compressor circuit breakers. Ratings on page 49.
- High short circuit current rating with single-point disconnect switch. See page 49 for ratings. Not available on WGZ 200 at 208/230V with supplementary overloads or WGZ 150 to 200 at 208/230V without supplementary overloads.

Phase and Under/Over Voltage Protection

Factory-installed option- phase loss with under/over voltage protection with LED indication of fault type.

Ground Fault Protection

Protects equipment from damage from low level line-to-ground fault currents, less than those required for conductor protection and quickly shuts off power.

Supplementary Overloads

The supplemental overloads option is used to reduce the required electrical service size and wire sizing to the water-cooled version of WGZ chillers. The overload option is only available for models with water cooled condensers (CW) and single-point electrical power connections.

Unit

Hot Gas Bypass

Factory mounted hot gas bypass permits unit operation down to 10% of full load capacity and includes a hot gas bypass valve, solenoid valve and manual shutoff valve. Hot gas bypass is provided on both refrigerant circuits.

Vibration Isolators

Spring or rubber-in-shear vibration isolators are available as a kit for field installation to reduce vibration transmission through the unit base.

Acoustical Compressor Wraps

Factory-installed acoustical compressor wraps are available for all units when ultra low sound levels are required. There is one wrap for each compressor and they are easily removed.

Condenser Connections

Left-hand condenser water connections (as viewed looking at the control panel) are optional.

Double Insulation

The evaporator is available with an additional layer of 3/4-inch insulation. This option is recommended for ice or low temperature applications or for high ambient humidity.

Skid

The unit is equipped with a disposable wooden skid to assist in some rigging situations. The skid option is strongly recommended for ease of handling and to help prevent damage if a crane is not available for rigging at site.

Paint

As standard, the compressors have the manufacturer's black paint and insulation and piping is unpainted. As an option, the entire unit can be painted with McQuay beige paint.

Scroll Compressor, Packaged Water-Cooled Chiller

WGZ 030CW through WGZ 200CW

PART 1 - GENERAL

1.01 SUMMARY

Section includes design, performance criteria, refrigerants, controls, and installation requirements for water-cooled scroll compressor packaged chillers.

1.02 REFERENCES

Comply with applicable Standards/Codes of ARI 550/590-98, ANSI/ASHRAE 15, ASME Section VIII, NEC, and OSHA as adopted by the State.

Equipment shall meet efficiency standards of ASHRAE Standard 90.1.

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with contract specifications.

B. Submittals shall include the following:

1. Dimensioned plan and elevation view drawings, required clearances, and location of all field connections.

2. Summary of all auxiliary utility requirements such as: electricity, water, etc. Summary shall indicate quality and quantity of each required utility.

3. Single-line schematic drawing of the power field hookup requirements, indicating all items that are furnished.

4. Schematic diagram of control system indicating points for field connection. Diagram shall fully delineate field and factory wiring.

5. Installation manual.

1.04 QUALITY ASSURANCE

A. Qualifications: Equipment manufacturer must specialize in the manufacture of the products specified and have five years experience with similar equipment and the refrigerant offered.

B Regulatory Requirements: Comply with the codes and standards specified.

C Chiller manufacturer’s facility must be ISO registered.

1.05 DELIVERY AND HANDLING

A. Chillers shall be delivered to the job site completely assembled and charged with refrigerant and oil by the manufacturer.

B. Comply with the manufacturer's instructions for rigging and handling equipment.

1.06 WARRANTY

The equipment manufacturer's warranty shall be for a period of one year from date of equipment start-up but not more than 18 months from shipment. The warranty shall cover defective material and workmanship within the above period, excluding refrigerant.

PART 2--PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. McQuay International

B. (Approved Equal)

2.02 UNIT DESCRIPTION

Provide and install as shown on the plans factory assembled, factory charged, and factory run tested water-cooled scroll compressor packaged chillers in the quantity specified. Each chiller shall consist of multiple hermetic scroll compressors, multi-circuit brazed plate or shell-and –tube evaporator, shell-and-tube water-cooled condensers, control system and all components necessary for controlled unit operation. Refrigerant shall be R-410A.

2.03 DESIGN REQUIREMENTS

A. General: Provide a complete scroll packaged chiller as specified herein and as shown on the drawings. The unit shall be in accordance with the standards referenced in section 1.02 and any local codes in effect.

B. Performance: Refer to the schedule of performance on the drawings. Performance shall be in accordance with applicable ARI Standard.

C. Acoustics: Sound pressure levels for the unit shall not exceed the following specified levels. The manufacturer shall provide the necessary sound treatment to meet these levels if required. Sound data shall be provided with the quotation. Test shall be in accordance with ARI Standard 575.

	Octave Band							
63	125	250	500	1000	2000	4000	8000	dBA
____	____	____	____	____	____	____	____	____

2.04 CHILLER COMPONENTS

A. Compressors: The compressors shall be sealed hermetic scroll type with crankcase oil heater and suction strainer. The compressor motor shall be refrigerant gas cooled, high torque, hermetic induction type, two-pole, with inherent thermal protection on all three phases and shall be mounted on RIS vibration isolator pads.

B. Evaporator: On units 30 tons to 130 tons, the evaporator shall be direct expansion type with stainless steel plates brazed together. It shall be insulated with 3/4 inch (19mm) closed cell polyurethane insulation and have 653 psi (4500 kPa) water side working pressure.

Units from 135 to 200 tons, the evaporator shall be shell-and-tube construction, insulated with 3/4 inch (19mm) closed cell polyurethane insulation, and with 150 psi (1033kPa) water-side working pressure.

C. Condenser: Horizontal shell and finned tube type with steel shell and integral finned copper tubes rolled into steel tube sheets. Construct condenser in accordance with the requirements of ASME Section VIII Unfired Pressure Vessel Code and ANSI B9.1 Safety Code. It shall be designed for 232 psi (1599 kPa) water side working pressure and 500 psig (3445 kPa) refrigerant side pressure and be provided with 500 psig (3445 kPa) ASME, ANSI B9.1 pressure relief valves.

D. Refrigerant Circuit: Each refrigerant circuit shall include a liquid line shutoff valve, replaceable core or sealed filter-drier, sight glass with moisture indicator, liquid line solenoid valve, thermal expansion valve, and insulated suction line.

E. Control Panel: The control panel shall contain a microprocessor controller providing operating and equipment protection controls plus motor starting equipment, factory wired, operationally tested, and ready for operation. Standard components shall include a control transformer with primary and secondary fusing, microprocessor transformers with integral fusing, compressor contactors, circuit breakers, single-point wiring arrangement and switches for each circuit pumpdown and unit control power. The control panel shall have a hinged tool-locked door.

The control system shall stage the compressors based on the leaving water temperature. Equipment protection devices controlled by the microprocessor include motor protection, high pressure, loss of refrigerant, loss of water flow, freeze protection, and low refrigerant pressure. Controls shall include auto/stop switch, chilled water setpoint adjustment, anti-recycle timer, and digital display with water temperature and setpoint, operating temperatures and pressures, and diagnostic messages. The following features and functions shall be included:

1. The LCD-type display shall have a minimum of 20 characters with all messages in plain English. Coded messages are not acceptable.

2. Critical parameters shall have their own section of control and shall be password protected.

3. Resetting chilled water temperature by a remote 4-20mA DC signal.

4. A soft load function to prevent the system from operating at full load during the chilled water pulldown period.

5. An electronic time clock to allow programming of a yearly schedule accommodating weekends and holidays.

6. Auto restart after a power failure, not requiring external battery backup or auxiliary power for maintaining program memory.

7. Shutdowns shall be date and time stamped with system temperatures and pressures recorded. A minimum of six previous occurrences shall be kept in a revolving memory.

8. Start-to-start and stop-to-start timers to provide minimum compressor off-time with maximum motor protection.

9. Capability of communication with a PC or remote monitoring through a twisted pair RS-232 interface.

10. Lead/lag manually or automatically by compressor number of starts.

11. Continuous diagnostic checks of unit to provide a pre-alarm signal in advance of a shutdown allowing time for remedial action to be taken.

12. The controller shall contain the following features as a minimum:

Equipment Protection

The unit shall be protected in two ways: (1) by alarms that shut the unit down and require manual reset to restore unit operation and (2) by limit alarms that reduce unit operation in response to some out-of-limit condition. Shut down alarms shall activate an alarm signal.

Shutdown Alarms

- No evaporator water flow
- Low evaporator pressure
- High condenser pressure
- Motor protection system
- Phase voltage protection (Optional)
- Outside ambient temperature
- Evaporator freeze protection
- Sensor failures

Limit Alarms

- Condenser pressure stage down, unloads unit at high discharge pressures
- Low ambient lockout, shuts off unit at low ambient temperatures
- Low evaporator pressure hold, holds stage #1 until pressure rises
- Low evaporator pressure unload, shuts off one compressor

Unit Enable Selection

Enables unit operation from local keypad, digital input, or BAS

Unit Mode Selection

Selects standard cooling, ice, glycol, or test operation mode

Analog Inputs

Reset of leaving water temperature, 4-20 mA

Digital Inputs

- Unit off switch
- Remote start/stop
- Flow switch
- Ice mode, converts operation and setpoints for ice production
- Motor protection

Digital Outputs

- Shutdown alarm; field wired, activates on an alarm condition, off when alarm is cleared
- Evaporator pump; field wired, starts pump when unit is set to start

Optional Building Automation System (BAS) Interface

The unit shall be equipped with an optional factory-installed BAS communication module
Factory mounted DDC controller(s) shall support operation on a BACnet®, Modbus® or LONMARKS ® network via one of the data link / physical layers listed below as specified by the successful Building Automation System (BAS) supplier.

- BACnet MS/TP master (Clause 9)
- BACnet IP, (Annex J)
- BACnet ISO 8802-3, (Ethernet)
- LONMARKS FTT-10A. The unit controller shall be LONMARKS® certified.

The information communicated between the BAS and the factory mounted unit controllers shall include the reading and writing of data to allow unit monitoring, control and alarm notification as specified in the unit sequence of operation and the unit points list.

For chillers communicating over a LONMARK network, the corresponding LONMARK eXternal Interface File (XIF) shall be provided with the chiller submittal data.

All communication from the chiller unit controller as specified in the points list shall be via standard BACnet objects. Proprietary BACnet objects shall not be allowed. BACnet communications shall conform to the BACnet protocol (ANSI/ASHRAE135-2001). A BACnet Protocol Implementation Conformance Statement (PICS) shall be provided along with the unit submittal.

F. The following options are to be included:

- Hot gas bypass on all circuits.
- Chilled water flow switch to be field mounted in the chilled water line and field wired to terminals in the control panel.
- R-I-S or spring vibration isolators for field installation per plans.
- Disconnect switch, single or multi-point
- High interrupt single-point disconnect switch
- High short circuit current rating with single-point disconnect switch
- Single point power connection
- Phase and under/over voltage protection
- Ground fault protection

- BAS interface module for LONMARK, Modbus, or BACnet with MSTP or Ethernet
- Double evaporator insulation
- Acoustical compressor blankets
- Supplemental overloads
- Entire unit painted with beige paint
- Shipping skid

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in strict accordance with manufacturer's requirements, shop drawings, and Contract Documents.

B. Adjust and level chiller in alignment on supports.

C. Coordinate electrical installation with electrical contractor.

D. Coordinate controls with control contractor.

E. Provide all appurtenances required to ensure a fully operational and functional chiller.

3.02 START-UP

A. Ensure proper charge of refrigerant and oil.

B. Provide testing, and starting of machine, and instruct the Owner in its proper operation and maintenance.

Scroll Compressor Chiller, Less Condenser

WGZ 030CA - WGZ 200CA

PART 1 - GENERAL

1.01 SUMMARY

Section includes design, performance criteria, refrigerants, controls, and installation requirements for water-cooled scroll compressor packaged chillers.

1.02 REFERENCES

Comply with applicable Standards/Codes of ANSI/ASHRAE 15, NEC, and OSHA as adopted by the State.

Equipment shall meet efficiency standards of ASHRAE Standard 90.1.

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with contract specifications.

B. Submittals shall include the following:

1. Dimensioned plan and elevation view drawings, required clearances, and location of all field connections.

2. Summary of all auxiliary utility requirements such as: electricity, water, etc. Summary shall indicate quality and quantity of each required utility.

3. Single-line schematic drawing of the power field hookup requirements, indicating all items that are furnished.

4. Schematic diagram of control system indicating points for field connection. Diagram shall fully delineate field and factory wiring.

5. Installation manual.

1.04 QUALITY ASSURANCE

A. Qualifications: Equipment manufacturer must specialize in the manufacture of the products specified and have five years experience with similar equipment and the refrigerant offered.

B Regulatory Requirements: Comply with the codes and standards specified.

C Chiller manufacturer must be ISO registered.

1.05 DELIVERY AND HANDLING

A. Chillers shall be delivered to the job site completely assembled and ready for connection to a remote condenser. It shall have a holding charge of refrigerant.

B. Comply with the manufacturer's instructions for rigging and handling equipment.

1.04 WARRANTY

The equipment manufacturer's warranty shall be for a period of one year from date of equipment start-up but not more than 18 months from shipment. The warranty shall provide for repair or replacement due to failures caused by defective material and workmanship within the above period, excluding refrigerant.

PART 2--PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. McQuay International

B. (Approved Equal)

2.02 UNIT DESCRIPTION

Provide and install as shown on the plans, factory assembled, and factory run-tested, remote condenser, scroll compressor packaged chiller(s) in the quantity specified. Each chiller shall consist of multiple hermetic scroll compressors, multi-circuit direct expansion evaporator, control system and, when completely installed with the remote condenser, constitute all components necessary for controlled unit operation. Refrigerant shall be R-410A.

2.03 DESIGN REQUIREMENTS

A. General: Provide a complete scroll compressor packaged chiller as specified herein and as shown on the drawings. The unit shall be in accordance with the standards referenced in section 1.02 and any local codes in effect.

B. Performance: Refer to the schedule of performance on the drawings. Performance shall be in accordance with applicable ARI Standard.

C. Acoustics: Sound pressure levels for the unit shall not exceed the following specified levels. The manufacturer shall provide the necessary sound treatment to meet these levels if required. Sound data shall be provided with the quotation. Test shall be in accordance with ARI Standard 575.

	Octave Band							
63	125	250	500	1000	2000	4000	8000	dBA
____	____	____	____	____	____	____	____	____

2.04 CHILLER COMPONENTS

A. Compressors: The compressors shall be sealed hermetic scroll type with crankcase oil heater and suction strainer. The compressor motor shall be refrigerant gas cooled, high torque, hermetic induction type, two-pole, with inherent thermal protection on all three phases and shall be mounted on RIS vibration isolator pads.

B. Evaporator: On units 30 tons to 130 tons, the evaporator shall be direct expansion type with stainless steel plates brazed together. It shall be insulated with 3/4 inch (19mm) closed cell polyurethane insulation. It shall be designed for 653 psi (4500 kPa) water side working pressure.

Units from 135 to 200 tons, the evaporator shall be shell-and-tube construction, designed for 150 psig (1033 kPa) water side pressure, and insulated with 3/4 inch (19mm) closed cell polyurethane insulation..

C. Refrigerant Circuit: Each refrigerant circuit shall include a liquid line shutoff valve, replaceable core or sealed filter-drier, sight glass with moisture indicator, liquid line solenoid valve (no exceptions), thermal expansion valve, and insulated suction line.

D. Control Panel: The control panel shall contain a microprocessor controller providing operating and equipment protection controls plus motor starting equipment, factory wired, operationally tested, and ready for operation. Standard components shall include a control transformer with primary and secondary fusing, microprocessor transformers with integral fusing, compressor contactors, circuit breakers, single-point wiring arrangement and switches for each circuit pumpdown and unit control power. The control panel shall have a hinged tool-locked door.

The control system shall stage the compressors based on the leaving water temperature. Equipment protection devices controlled by the microprocessor include motor protection, high pressure, loss of refrigerant, loss of water flow, freeze protection, and low refrigerant pressure. Controls shall include auto/stop switch, chilled water setpoint adjustment, anti-recycle timer, and digital display with water temperature and setpoint, operating temperatures and pressures, and diagnostic messages. The following features and functions shall be included:

1. The LCD type display shall have a minimum of 20 characters with all messages in plain English. Coded messages are not acceptable.
2. Critical parameters shall have their own section of control and shall be password protected.
3. Resetting chilled water temperature by a remote 4-20mA DC signal.
4. A soft load function to prevent the system from operating at full load during the chilled water pulldown period.
5. An electronic time clock to allow programming of a yearly schedule accommodating weekends and holidays.
6. Auto restart after a power failure, not requiring external battery back-up or auxiliary power for maintaining program memory.
7. Shutdowns shall be date and time stamped with system temperatures and pressures recorded. A minimum of six previous occurrences shall be kept in a revolving memory.
8. Start-to-start and stop-to-start timers to provide minimum compressor off-time with maximum motor protection.

9. Capability of communication with a PC or remote monitoring through a twisted pair RS-232 interface.

10. Lead/lag by manually or automatically by compressor number of starts.

11. Continuous diagnostic checks of unit operation to provide a pre-alarm signal in advance of a shutdown allowing time for remedial action to be taken.

12. Contacts for control of up to 8 remote condenser fans

E. An advanced DDC microprocessor unit controller with a 4-line by 20-character liquid crystal display provides the operating and protection functions.. The controller shall take pre-emptive limiting action in case of high discharge pressure or low evaporator pressure.

The controller shall contain the following features as a minimum:

Equipment Protection

The unit shall be protected in two ways: (1) by alarms that shut the unit down and require manual reset to restore unit operation and (2) by limit alarms that reduce unit operation in response to some out-of-limit condition. Shut down alarms shall activate an alarm signal.

Shutdown Alarms

- No evaporator water flow
- Low evaporator pressure
- High condenser pressure
- Motor protection system
- Phase voltage protection (Optional)
- Outside ambient temperature
- Evaporator freeze protection
- Sensor failures

Limit Alarms

- Condenser pressure stage down, unloads unit at high discharge pressures
- Low ambient lockout, shuts off unit at low ambient temperatures
- Low evaporator pressure hold, holds stage #1 until pressure rises
- Low evaporator pressure unload, shuts off one compressor

Unit Enable Selection

Enables unit operation from local keypad, digital input, or BAS

Unit Mode Selection

Selects standard cooling, ice, glycol, or test operation mode

Analog Inputs

- Reset of leaving water temperature, 4-20 mA

Digital Inputs

- Unit off switch
- Remote start/stop

- Flow switch
- Ice mode, converts operation and setpoints for ice production
- Motor protection

Digital Outputs

- Shutdown alarm; field wired, activates on an alarm condition, off when alarm is cleared
- Evaporator pump; field wired, starts pump when unit is set to start

Condenser fan control

The unit controller shall be able to provide control of the remote condenser fans. The controller shall sequence condenser fans based on compressor discharge pressure.

Building Automation System (BAS) Interface

The unit shall be equipped with an optional factory-installed BAS communication module
Factory mounted DDC controller(s) shall support operation on a BACnet®, Modbus® or LONMARKS ® network via one of the data link / physical layers listed below as specified by the successful Building Automation System (BAS) supplier.

- BACnet MS/TP master (Clause 9)
- BACnet IP, (Annex J)
- BACnet ISO 8802-3, (Ethernet)
- LONMARKS FTT-10A. The unit controller shall be LONMARKS ® certified.

The information communicated between the BAS and the factory mounted unit controllers shall include the reading and writing of data to allow unit monitoring, control and alarm notification as specified in the unit sequence of operation and the unit points list.

For chillers communicating over a LONMARKS network, the corresponding LONMARKS eXternal Interface File (XIF) shall be provided with the chiller submittal data.

All communication from the chiller unit controller as specified in the points list shall be via standard BACnet objects. Proprietary BACnet objects shall not be allowed. BACnet communications shall conform to the BACnet protocol (ANSI/ASHRAE135-2001). A BACnet Protocol Implementation Conformance Statement (PICS) shall be provided along with the unit submittal.

F. The following options are to be included:

- Hot gas bypass on all circuits.
- Chilled water flow switch to be field mounted in the chilled water line and field wired to terminals in the control panel.
- R-I-S or spring vibration isolators for field installation per plans.
- Disconnect switch, single or multi-point
- Acoustical compressor blankets
- Single point power connection
- Remote interface panel
- Double evaporator insulation
- Supplemental overloads

- Shipping skid

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install chiller and remote condenser with interconnecting piping in strict accordance with manufacturer's requirements, shop drawings, and Contract Documents. Chiller manufacturer must approve the refrigerant piping design.

B. Adjust and level chiller in alignment on supports.

C. Coordinate electrical installation with electrical contractor.

D. Coordinate controls with control contractor.

E. Install, pressure test, and evacuate field refrigerant piping.

F. Provide all appurtenances required to insure a fully operational and functional chiller.

3.02 START-UP

A. Ensure proper charge of refrigerant and oil.

B. Provide testing, and starting of machine, and instruct the Owner in its proper operation and maintenance.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to **www.mcquay.com.**

All McQuay equipment is sold pursuant to McQuay's Standard Terms and Conditions of Sale and Limited Product Warranty.