



Catalog 613-6

## Water-Cooled Scroll Compressor Chillers

Model WGZ, D Vintage  
30 to 200 Tons (100 to 700 kW)  
HFC-410A Refrigerant  
60/50 Hz

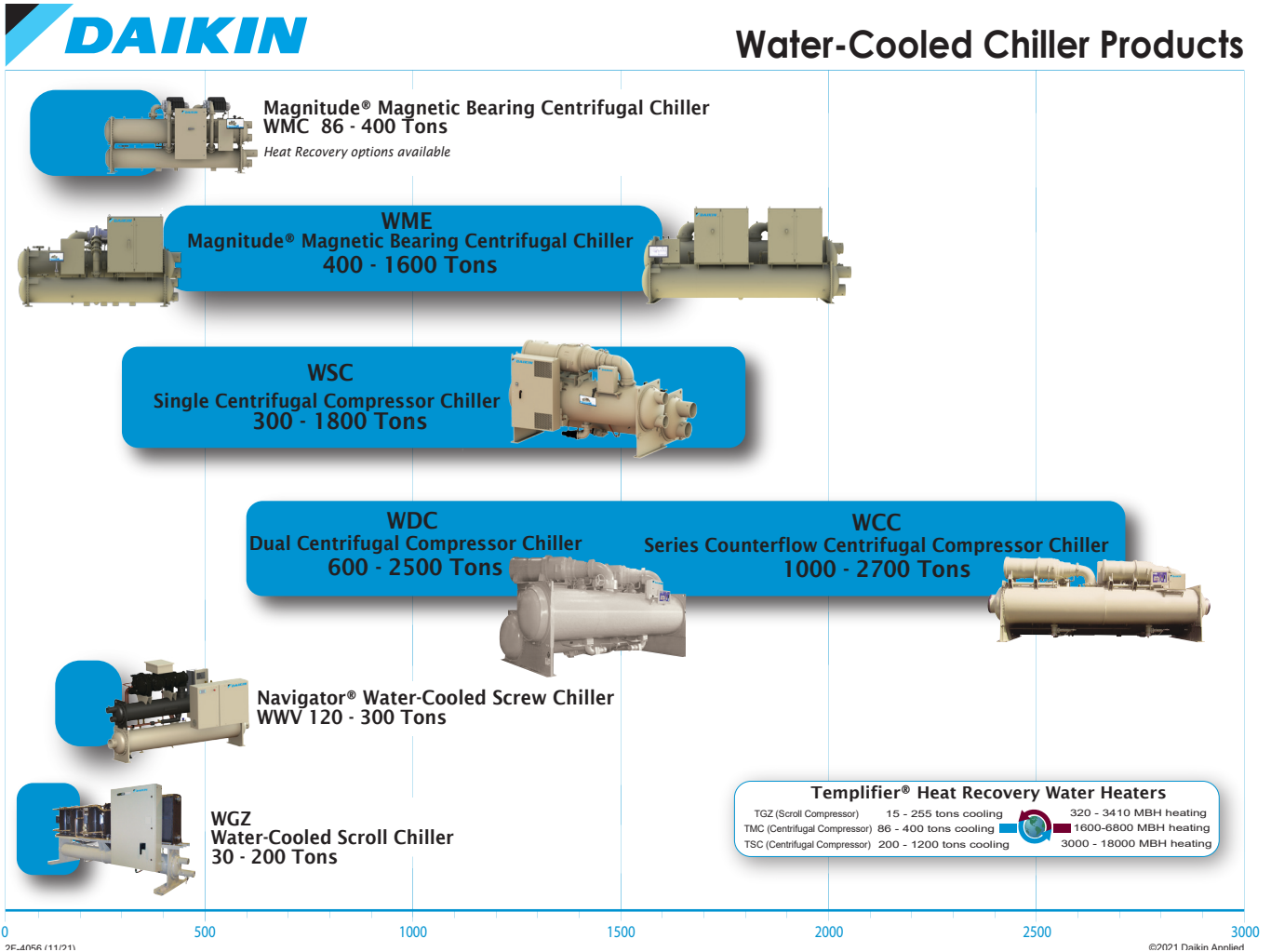


<b>Introduction</b> .....	<b>3</b>	<b>Sound Data</b> .....	<b>11</b>
<b>Features and Benefits</b> .....	<b>4</b>	<b>Pressure Drop Data</b> .....	<b>15</b>
<b>Application Considerations</b> .....	<b>6</b>	<b>Physical Data - Packaged Units</b> .....	<b>17</b>
Unit Placement .....	6	<b>Dimensions - Packaged Units</b> .....	<b>23</b>
Chilled Water Systems .....	6	<b>Options and Accessories</b> .....	<b>24</b>
Condenser Water .....	8	<b>Engineering Guide Specifications</b> .....	<b>25</b>
Electrical Connection .....	8		

**Manufactured in an ISO 9001 & ISO 14001 certified facility**



©2022 Daikin Applied. Illustrations and data cover the Daikin Applied product at the time of publication and we reserve the right to make changes in design and construction at any time without notice.



## Technology That Just Makes Sense

The 30 to 200-ton WGZ scroll compressor chillers are a product of Daikin Applied’s ongoing 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 or shell-and-tube evaporators and dependable controls into a unit of uncompromised operating efficiency and reliability. Model WGZ chillers have many important features:

- Easy serviceability
- Hermetic scroll compressors
- User-friendly MicroTech® controls
- Open Choices™ feature for BAS of your choice
- HFC-410A refrigerant  
(Zero ozone depletion and no refrigerant phase out)

## Features and Benefits Summary

### Flexible Design

- WGZ chillers can be selected and customized to meet specific job requirements.

### The Compressor Technology

- Excellent part-load efficiency is achieved due to the selective cycling of hermetic scroll compressors.

### The Control Technology

- Onboard digital electronics provide smart controls, self-diagnostic checks, and troubleshooting to ensure that the chiller runs smoothly and efficiently. Includes Open Choices™ BAS flexibility.

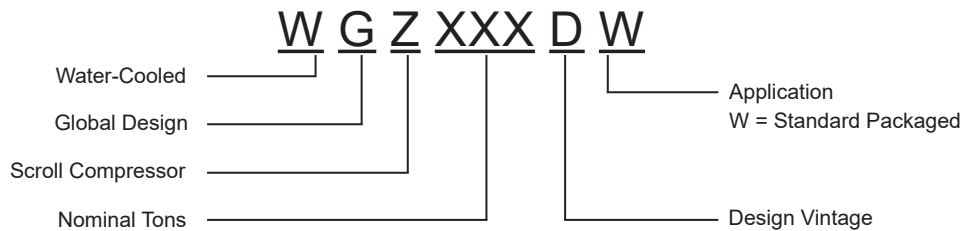
### Certifications and Standards

- Certified to AHRI Standard 550/590, and contributes to LEED® credits.

### Factory Testing

- Ensures trouble free startup and reliable operation.

## CHILLER NOMENCLATURE



### Flexible Design

The Daikin WGZ water chillers are completely factory assembled, piped, wired and shipped in one piece, ready for field connection of power, and water piping. Each chiller consists of compressors, insulated brazed plate or shell-and-tube evaporator and centralized electrical control panel containing all necessary equipment protection and operating controls. Packaged units (“DW”) come complete with mounted, water-cooled condensers with integral subcooler circuits.

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.

Many optional features can be added to fit job requirements. Several options for power connections can match field requirements. Phase failure/reversal protection and acoustical sound blankets around each compressor are a factory-installed option.

### The Compressor Technology

WGZ chillers use rugged hermetic scroll compressors constructed with an integral cast iron frame, cast iron scrolls, coated bearings, and three oil filtration devices for each compressor. Model WGZ units use environmentally acceptable R-410A refrigerant. 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 high efficiency.

Units are available in 60-hertz with voltages from 208 to 575 volt and in 50-hertz, 400 volt.

### Reduced Noise

The hermetic scroll compressors equipped on WGZ chillers are inherently quiet. Optional insulated acoustical compressor blankets will further reduce sound levels.

### Efficient Operation

Compressors are placed in tandem or trio arrangements to allow for optimized capacity modulation. Excellent part-load efficiency is obtained by operating one compressor on a tandem compressor circuit and one or two on three-compressor circuits. Each running compressor discharges to the full-sized condenser and operates at lower compression ratios with substantial power savings.

### Evaporators

Different evaporators are used depending on chiller model.

#### Models WGZ030D through WGZ130D:

Evaporators are a compact, high efficiency, two-circuit, brazed-plate type heat exchanger consisting of parallel type 304 stainless steel plates, with a design water-side pressure of 653 psi. Each evaporator is designed and constructed according to, and listed by, Underwriters Laboratories (UL).

#### Models WGZ150D through WGZ200D:

Evaporators are a direct-expansion, shell-and-tube type with water flowing in the baffled shell side and refrigerant flowing through the tubes. The water side working pressure is 152 psig (1048 kPa). Each evaporator is designed, constructed, inspected, and stamped according to the requirements of the ASME Boiler and Pressure Vessel Code. Double thickness insulation is available as an option.

### Condensers

The WGZ-DW 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 232 psi (1599 kPa). Standard condenser connections are located on the right end looking at the control panel. Optional left hand connections available.

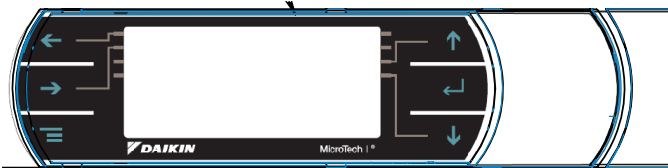
## The Control Technology

The model WGZ chiller utilizes MicroTech® II digital control electronics to proactively manage unit operation. This 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.

### MicroTech® II Controller

The MicroTech® II controller's design will not only permit the chiller to run more efficiently, but will also simplify troubleshooting if a system failure occurs. 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 language 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.

**Figure 1: MicroTech II Controller**



### Open Choices™ BAS Flexibility

The exclusive Open Choices™ feature provides seamless integration and comprehensive monitoring, control, and two-way data exchange using industry standard protocols such as LonTalk®, BACnet® or Modbus®. Open Choices™ offers simple and inexpensive flexibility to use the Building Automation System of your choice without an expensive gateway panel. Open Choices™ benefits include:

- Easy to integrate into your BAS of choice
- Factory- or field-installed communications module
- Integrated control logic for factory options
- Easy-to-use local user interface
- Comprehensive data exchange

## Certifications and Standards

As with many other Daikin Applied chiller products, model WGZ meets the necessary certifications and standards.

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.

### AHRI Certification

Part load performance can be presented in terms of Integrated Part Load Value (IPLV), which is defined by AHRI Standard 550/590. Based on AHRI Standard 550/590, a typical chiller can operate up to 99% of the time at off-peak conditions and usually spends most of this time at less than 60% of design capacity. The ability of WGZ chillers to achieve excellent part load efficiencies, as evidenced by their IPLV ratings, is achieved by selectively cycling four or six scroll compressors.

Performance on all 60Hz standard packaged models is certified per AHRI standard 550/590.

### LEED®

For building owners who wish to pursue Leadership in Energy and Environmental Design (LEED®) Green Building Certification, the performance of the WGZ may contribute points towards Energy and Atmosphere (EA) Credits.

Points earned for Optimize Energy Performance (formerly EA Credit 1) are awarded based on overall building efficiency. The efficiency of the WGZ may contribute to the total points earned for this credit. Enhanced Refrigerant Management (formerly EA Credit 4) qualification is partially determined by tonnage and refrigerant quantity. Consult with your Daikin Applied sales representative for more information.

### Factory Testing

Extensive quality control checks and functional tests are performed on every unit to check that each control is properly calibrated 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. This factory testing helps to ensure trouble-free start-ups.

### 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, expansion valve (thermal on WGZ 030-130, electronic on WGZ 150-200) and discharge line shutoff valve.



## Unit Placement

WGZ-D units are designed for indoor application and must be located in a space where the operating and standby conditions are 40°F to 122°F (4.4°C to 50°C).

Provide clearance of 3 ft. (914 mm) on each side and end for piping and to provide space for servicing the unit. Provide sufficient clearance above the unit for component removal.

Provide clearance at either end of the unit to permit cleaning or removal of condenser tubes (see Dimensional Data beginning on page 23). 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.

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.

Optional rubber-in-shear or spring 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.

## Chilled Water Systems

Start-up procedures should confirm that the chilled water piping system had been properly flushed out before being connected to the chiller vessel. Design the water piping so the chilled water circulating pump discharges into the evaporator inlet.

### CAUTION

To prevent damage to the evaporator and potential chiller failure, a supply strainer is required in the inlet water piping which connects to this evaporator. This strainer must be installed prior to operation of the chilled liquid pumps.

### WARNING

Polyolester Oil, commonly known as POE oil is a synthetic oil used in many refrigeration systems, and is present in this Daikin product. POE oil, if ever in contact with PVC/CPVC, will coat the inside wall of PVC/CPVC pipe causing environmental stress fractures. Although there is no PVC/CPVC piping in this product, please keep this in mind when selecting piping materials for your application, as system failure and property damage could result. Refer to the pipe manufacturer's recommendations to determine suitable applications of piping.

Field installed water piping to the chiller **must** include:

- A cleanable strainer installed at the water inlet to the evaporator to remove debris and impurities before they reach the evaporator, causing damage. See "Inlet Strainer Guidelines" and the current version of the product installation, operation and maintenance manual on [www.DaikinApplied.com](http://www.DaikinApplied.com) for additional details.
- A water flow switch must be installed in the horizontal piping of the supply (evaporator outlet) water line to avoid

evaporator freeze-up under low or no flow conditions. A flow switch proves that there is adequate water flow to the evaporator before the unit can start or to shut down the unit if water flow is interrupted. The flow switch may be ordered as a factory-installed option, a field-installed kit, or may be supplied and installed in the field.

- 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. For WGZ models 030 to 130, the brazed-plate evaporators do not have drain or vent connections and they must be supplied in the field piping in the bottom of the lower connection pipe and to the top of the upper connection pipe respectively. For WGZ models 150 to 200, drain and vent connections are provided on the evaporator. Purge air from the water system before unit start-up to provide adequate flow through the evaporator with an air vent located at high point of piping.
- Adequate piping support, independent from the unit, to eliminate weight/strain on the fittings and connections.

It is **recommended** that the field installed water piping to the chiller include:

- Thermometers at inlet/outlet connections of evaporator.
- Water pressure gauge connection taps and gauges at the inlet and outlet connections of the evaporator for measuring water pressure drop. Measure pressure drop through the evaporator to calculate proper flow.
- An expansion tank or regulating valve to maintain adequate water pressure
- Vibration eliminators in both the supply and return water lines to reduce transmissions to the building.
- Insulate chilled water piping to reduce heat loss and prevent condensation.
- Regular water analysis and chemical water treatment for the evaporator loop is recommended immediately at equipment start-up. 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.

## Inlet Strainer Guidelines

An inlet water strainer kit must be installed in the chilled water piping before the evaporator inlet. Several paths are available to meet this requirement:

1. A factory installed option.
2. A field-installed kit shipped-loose with the unit consisting:
  - Y-type area strainer with 304 stainless steel perforated basket, Victaulic pipe connections and strainer cap
    - a strainer with perforations no larger than 0.063" (1/16", 1.6 mm) diameter for braze plate evaporators
    - a strainer with perforations no larger than 0.125" (1/8", 3.2 mm) diameter for shell and tube evaporators

Figure 2: Typical Chilled Water Piping, Models WGZ030-130D (Brazed Plate Evaporator)

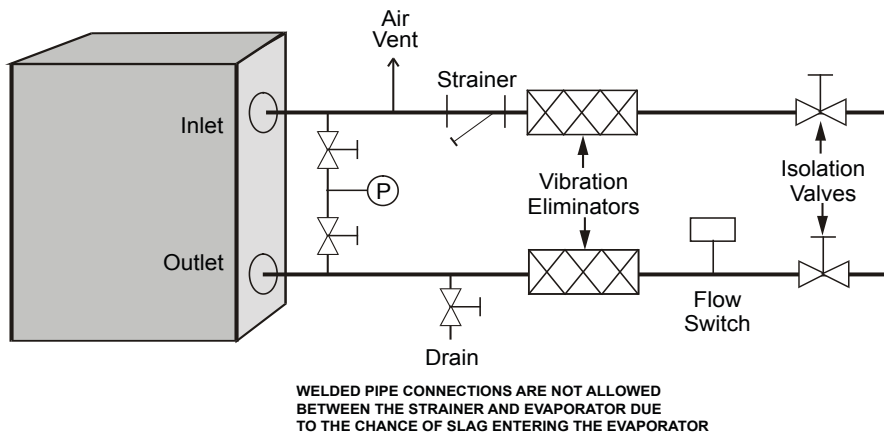
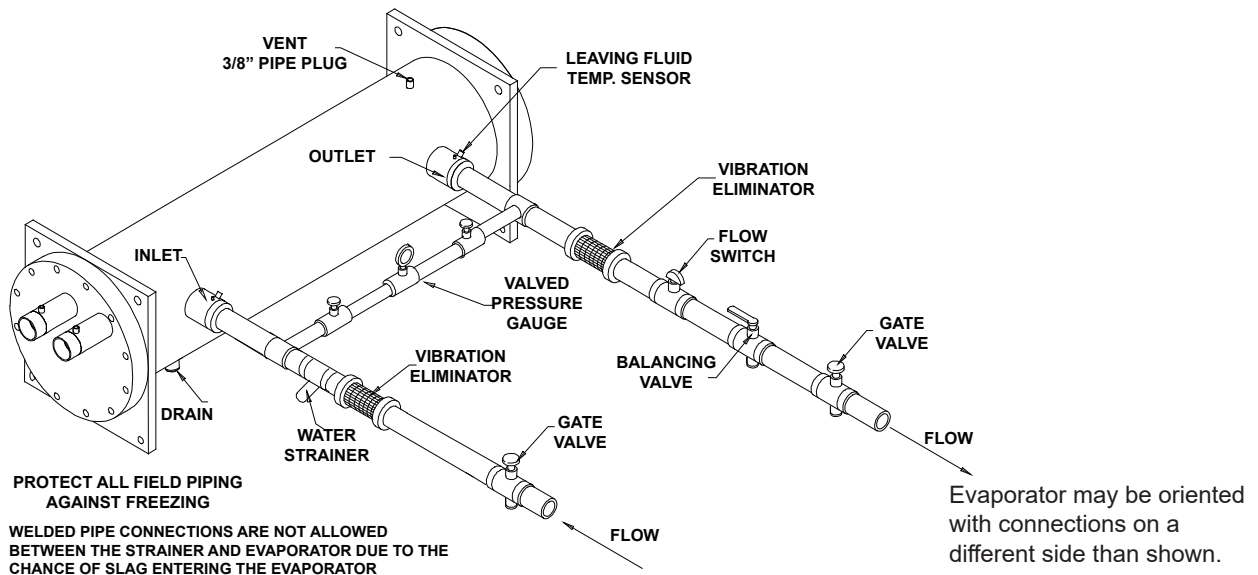


Figure 3: Typical Chilled Water Piping, Models WGZ150-200D (Shell & Tube Type Evaporator)



- Extension pipe with two Schrader fittings that can be used for a pressure gauge. The pipe provides sufficient clearance from the evaporator for strainer basket removal.
- 1/2-inch blowdown valve
- Two grooved clamps

Connection sizes are listed on installation specific drawings available from a Daikin Applied sales representative.

3. A field-supplied strainer that meets specification and installation requirements of the product installation, operation, and maintenance manual on [www.DaikinApplied.com](http://www.DaikinApplied.com).

### System Water Volume

All chilled water systems need adequate time to recognize a load change to avoid short cycling of the compressors or loss of control. The potential for short cycling usually exists when the building load falls below the minimum chiller plant capacity

or on close-coupled systems with very small water volumes. The minimum cooling load, the minimum chiller plant capacity during the low load period and the desired cycle time for the compressors should be considered when evaluating water volume. Assuming that there are no sudden load changes and that the chiller plant has reasonable turndown, a rule of thumb of “gallons of water volume equal to two to three times the chilled water gpm flow rate” is often used. A properly designed storage tank should be added if the system components do not provide sufficient water volume.

### 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 table: [Table 14 on page 15](#).

## Glycol

WGZ units are designed to operate with a leaving chilled fluid temperature from 15°F (-9.4°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.

Daikin Applied 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.

## 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°F (38°C). For unit operation and system changeover from heating to cooling, the maximum allowable temperature entering the evaporator is 90°F. System controls, provided by others, must prevent chiller operation until the loop temperature drops to 90°F (32°C).

## 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.

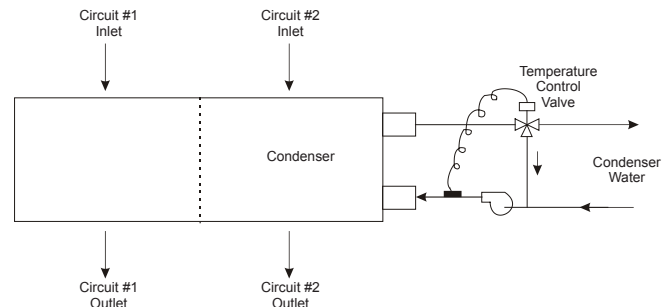
## Condenser Water

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 (15°C). Install a strainer with perforations no larger than 0.125" (1/8", 3.2 mm) diameter 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 4, 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 4: Recirculating Discharge Pressure Control



## Electrical Connection

Every WGZ chiller requires field installation of the main supply power plus mandatory flow switch interlock, optional pump starter auxiliary contact interlock or other field-installed devices. Terminals are also provided for field connection of the chilled water flow switch, unit time clock, ambient thermostat and/or remote on/off switch. See Figure 5 on page 10 for field control wiring diagrams. The diagrams 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. 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. Multiple-point power connection is available as an option using two power blocks. Circuit breakers are not available with the multiple-point option.

## Control Circuit

A control circuit transformer installed, as standard, 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 with wire sizing amps of 10 amps for all unit sizes. Terminals are provided in the unit control center (terminals TB1 and TB1-20) for field connection to a remote 115V power supply if desired.

### 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.

### Electrical Notes

**DANGER**

**LOCKOUT/TAGOUT** all power sources prior to starting, pressurizing, de-pressuring, or powering down the Chiller. Failure to follow this warning exactly can result in serious injury or death. More than one disconnect may be required to de-energize the unit. Be sure to read and understand the installation, operation, and service instructions within the product manual.

1. All field wire size values and electrical ratings are given on the unit nameplate and the unit selection report.
2. Recommended power lead wire sizes for 3 conductors per conduit are based on 100% conductor ampacity in accordance with NEC and based on ambient temperature of 86°F (30°C). Ampacity correction factors must be applied for other ambient temperatures. Voltage drop has not been included. Refer to the National Electrical Code Handbook. It is recommended that power leads be kept short. All field wiring to power block or optional non-fused disconnect switch must be copper (type THW).
3. Unit 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.
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 Standard.

### Supplemental Overloads Option

The supplemental overloads option is used to reduce the required electrical service size and wire sizing (cost) to the packaged version of WGZ chillers (WGZ-DW models). This option is available for units with single point or multiple point electrical power connections.

### Circuit Breakers

The circuit breaker used in the High Short Circuit panel option may have a higher trip rating than the unit Maximum Overload

Protection (MOP) value shown on the unit name plate. The circuit breaker is installed as a service disconnect switch and does not function as branch circuit protection, mainly that the protection device must be installed at the point of origin of the power wiring. The breaker (disconnect switch) is oversized to avoid nuisance trips at high ambient temperature conditions.

### Panel Ratings

**Table 1: Multi-point Power Standard Panel Ratings**

Voltage	Hz	WGZ-D Model Size		
		WGZ 030-040		WGZ 045-200
		With Overloads	Without Overloads	
208-230	60	5 kA		5 kA
380	60	5 kA		5 kA
400	50	5 kA		5 kA
460	60	5 kA		5 kA
575	60	N/A	5 kA	5 kA

**Table 2: Single Point Power Standard Panel Ratings - Units without Overloads**

Voltage	Hz	WGZ-D Model Size	
		WGZ 030-070	WGZ 080-200
208-230	60	10 kA	10 kA
380	60	10 kA	10 kA
400	50	10 kA	10 kA
460	60	10 kA	10 kA
575	60	5 kA	10 kA

**Table 3: Single Point Power Standard Panel Ratings - Units with Overloads**

Voltage	Hz	WGZ-D Model Size		
		WGZ 030-040	WGZ 045-070	WGZ 080-200
208-230	60	10 kA	10 kA	10 kA
380	60	10 kA	10 kA	10 kA
400	50	10 kA	10 kA	10 kA
460	60	10 kA	10 kA	10 kA
575	60	N/A	5 kA	10 kA

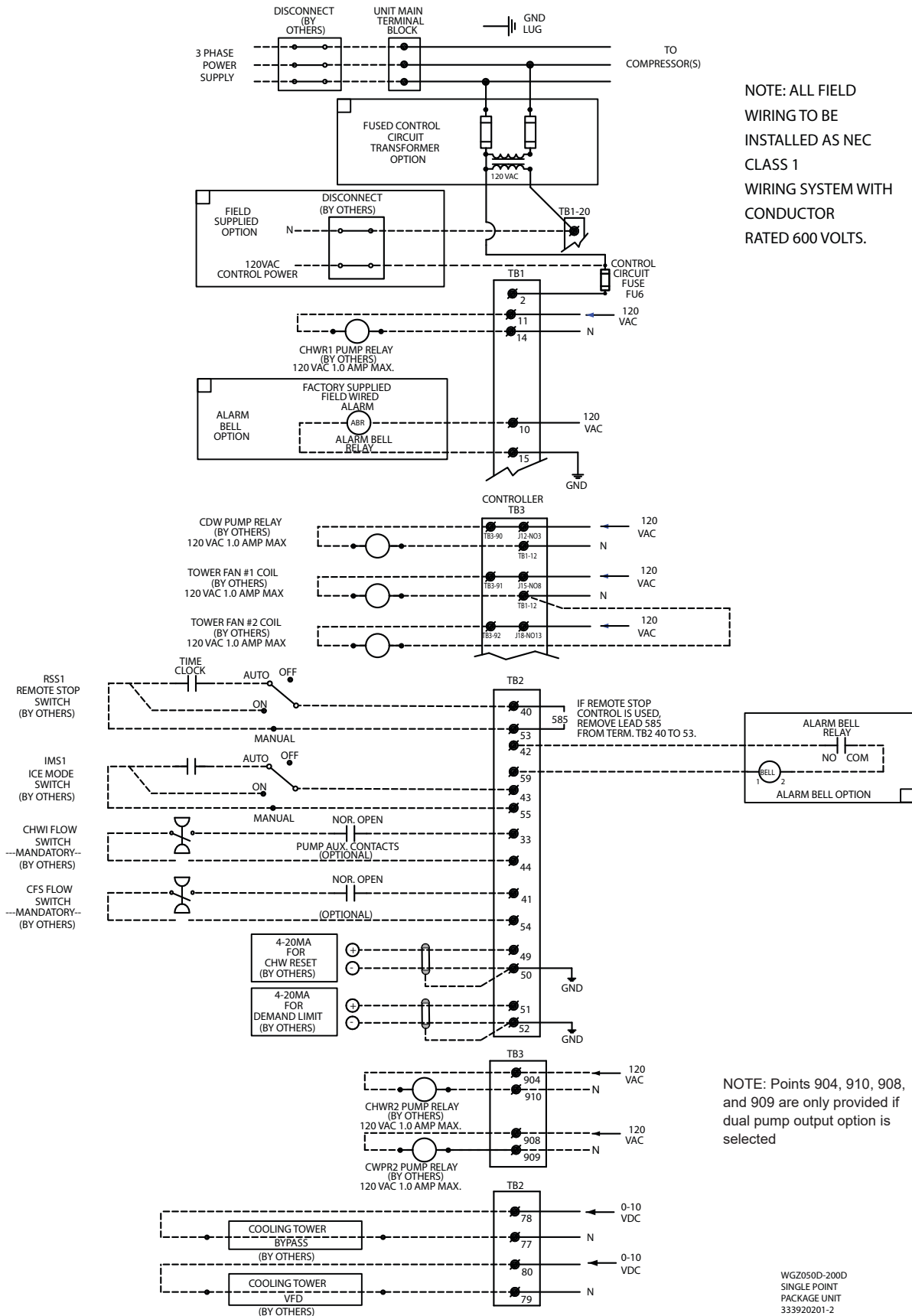
**Table 4: Single Point Power Optional HSCCR Ratings - Units without Overloads**

Voltage	Hz	WGZ-D Model Size			
		WGZ 030-045	WGZ 050-090	WGZ 100-150	WGZ 170-200
208-230	60	100 kA	100 kA	100 kA	N/A
380	60	65 kA	65 kA	65 kA	65 kA
400	50	65 kA	65 kA	65 kA	65 kA
460	60	65 kA	65 kA	65 kA	65 kA
575	60	25 kA	18 kA	25 kA	30 kA

**Table 5: Single Point Power Optional HSCCR Ratings\* - Units with Overloads**

Voltage	Hz	WGZ-D Model Size		
		WGZ 030-040	WGZ 045-060	WGZ 070-200
208-230	60	100 kA	100 kA	100 kA
380	60	65 kA	65 kA	65 kA
400	50	65 kA	65 kA	65 kA
460	60	65 kA	65 kA	65 kA
575	60	N/A	25 kA	18 kA

Figure 5: Field Wiring Diagram (Packaged Units)



NOTE: ALL FIELD WIRING TO BE INSTALLED AS NEC CLASS 1 WIRING SYSTEM WITH CONDUCTOR RATED 600 VOLTS.

NOTE: Points 904, 910, 908, and 909 are only provided if dual pump output option is selected

WGZ050D-200D  
SINGLE POINT  
PACKAGE UNIT  
333920201-2

## Test Data

Sound testing is performed in accordance with AHRI Standards 575 and 1280. Values are taken at one meter from the unit and with the units fully loaded. Values are mid-band. Octave band readings are non-"A" weighted; however, 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.

**Table 6: 60 Hz Sound Power without Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Power Levels per AHRI Standard 1280 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	72	64	70	80	70	75	69	56	80
35	72	66	71	79	71	79	70	56	82
40	72	66	70	86	75	79	74	64	86
45	72	66	70	86	75	79	74	64	86
50	72	65	70	83	73	77	74	64	83
55	72	65	70	83	73	77	74	64	83
60	72	65	70	83	73	77	74	64	83
70	72	66	70	86	75	79	74	64	86
80	83	77	81	86	86	84	81	71	90
90	83	77	81	86	86	84	81	71	90
100	84	78	83	87	88	85	82	73	92
115	84	78	83	87	89	87	82	73	93
130	84	78	84	89	91	89	83	76	95
150	84	78	83	87	88	85	82	73	92
170	84	78	84	88	90	87	83	74	94
200	86	79	84	89	92	90	84	76	96

**Table 7: 60 Hz Sound Pressure without Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Pressure Levels per AHRI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	64	56	62	71	62	67	61	48	72
35	64	58	63	71	63	71	62	48	74
40	64	58	62	78	67	71	66	56	78
45	64	58	62	78	67	71	66	56	78
50	64	57	62	75	65	69	65	56	75
55	64	57	62	75	65	69	65	56	75
60	64	57	62	75	65	69	65	56	75
70	64	58	62	78	67	71	66	56	78
80	75	69	73	78	78	76	72	63	82
90	75	69	73	78	78	76	72	63	82
100	76	70	75	79	80	77	74	65	84
115	76	70	75	79	81	79	74	65	85
130	76	70	76	81	83	81	75	68	87
150	76	70	75	79	80	77	74	65	84
170	76	70	76	80	82	79	75	66	86
200	78	71	76	81	84	82	76	68	88

**Table 8: 60 Hz Sound Power with Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Power Levels per AHRI Standard 1280 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	72	64	67	76	63	69	61	50	75
35	72	66	67	75	64	72	63	50	76
40	72	66	67	78	65	72	63	51	78
45	72	66	67	78	66	72	68	57	78
50	72	65	67	75	64	72	63	50	76
55	72	65	67	75	64	72	63	50	76
60	72	65	67	75	64	72	63	50	76
70	72	66	67	78	66	72	68	57	78
80	83	77	77	82	78	76	73	64	84
90	83	77	77	82	78	76	73	64	84
100	84	78	79	83	81	79	74	66	86
115	84	78	80	85	82	80	74	68	87
130	84	78	81	86	83	83	76	69	89
150	84	78	79	83	81	79	74	66	86
170	84	78	81	84	83	82	76	68	88
200	86	79	83	86	86	85	79	71	91

**Table 9: 60 Hz Sound Pressure with Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Pressure Levels per AHRI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	64	56	59	68	55	61	53	42	68
35	64	58	59	67	56	64	55	42	68
40	64	58	59	70	57	64	55	43	70
45	64	58	59	70	58	64	60	49	70
50	64	57	59	67	56	64	55	42	68
55	64	57	59	67	56	64	55	42	68
60	64	57	59	67	56	64	55	42	68
70	64	58	59	70	58	64	60	49	70
80	75	69	69	74	70	68	65	56	76
90	75	69	69	74	70	68	65	56	76
100	76	70	71	75	73	71	66	58	78
115	76	70	72	77	74	72	66	60	79
130	76	70	73	78	75	75	68	61	81
150	76	70	71	75	73	71	66	58	78
170	76	70	73	76	75	74	68	60	80
200	78	71	75	78	78	77	71	63	83

**Table 10: 50 Hz Sound Power without Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Power Levels per AHRI Standard 1280 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	96	77	75	80	67	71	65	54	77
35	96	79	76	79	68	7	66	54	79
40	96	79	75	86	72	75	70	62	83
45	96	79	75	86	72	75	70	62	83
50	96	78	75	83	70	73	70	62	80
55	96	78	75	83	70	73	70	62	80
60	96	78	75	83	70	73	70	62	80
70	96	79	75	86	72	75	70	62	83
80	107	90	86	86	83	80	77	69	87
90	107	90	86	86	83	80	77	69	87
100	108	91	88	87	85	81	78	71	89
115	108	91	88	87	86	83	78	71	90
130	108	91	89	89	88	85	79	74	92
150	108	91	88	87	85	81	78	71	89
170	108	91	89	88	87	83	79	72	91
200	110	92	89	89	89	86	80	74	93

**Table 11: 50 Hz Sound Pressure without Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Pressure Levels per AHRI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	88	69	67	71	59	63	57	46	69
35	88	71	68	71	60	67	58	46	71
40	88	71	67	78	64	67	62	54	75
45	88	71	67	78	64	67	62	54	75
50	88	70	67	75	62	65	61	54	72
55	88	70	67	75	62	65	61	54	72
60	88	70	67	75	62	65	61	54	72
70	88	71	67	78	64	67	62	54	75
80	99	82	78	78	75	72	68	61	79
90	99	82	78	78	75	72	68	61	79
100	100	83	80	79	77	73	70	63	81
115	100	83	80	79	78	75	70	63	82
130	100	83	81	81	80	77	71	66	84
150	100	83	80	79	77	73	70	63	81
170	100	83	81	80	79	75	71	64	83
200	102	84	81	81	81	78	72	66	85



**Table 12: 50 Hz Sound Power with Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Power Levels per AHRI Standard 1280 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	97	78	73	77	61	66	58	49	73
35	97	80	73	76	62	69	60	49	74
40	97	80	73	79	63	69	60	50	76
45	97	80	73	79	64	69	65	56	76
50	97	79	73	76	62	69	60	49	74
55	97	79	73	76	62	69	60	49	74
60	97	79	73	76	62	69	60	49	74
70	97	80	73	79	64	69	65	56	76
80	108	91	83	83	76	73	70	63	82
90	108	91	83	83	76	73	70	63	82
100	109	92	85	84	79	76	71	65	84
115	109	92	86	86	80	77	71	67	85
130	109	92	87	87	81	80	73	68	87
150	109	92	85	84	79	76	71	65	84
170	109	92	87	85	81	79	73	67	86
200	111	93	89	87	84	82	76	70	89

**Table 13: 50 Hz Sound Pressure with Sound Insulation**

WGZ-D Unit Size	Octave Band Sound Pressure Levels per AHRI Standard 575 (dB)								Overall "A" Weighted
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
30	89	70	65	69	53	58	50	41	66
35	89	72	65	68	54	61	52	41	66
40	89	72	65	71	55	61	52	42	68
45	89	72	65	71	56	61	57	48	68
50	89	71	65	68	54	61	52	41	66
55	89	71	65	68	54	61	52	41	66
60	89	71	65	68	54	61	52	41	66
70	89	72	65	71	56	61	57	48	68
80	100	83	75	75	68	65	62	55	74
90	100	83	75	75	68	65	62	55	74
100	101	84	77	76	71	68	63	57	76
115	101	84	78	78	72	69	63	59	77
130	101	84	79	79	73	72	65	60	79
150	101	84	77	76	71	68	63	57	76
170	101	84	79	77	73	71	65	59	78
200	103	85	81	79	76	74	68	62	81

Figure 6: WGZ-D Condenser Pressure Drop Curves

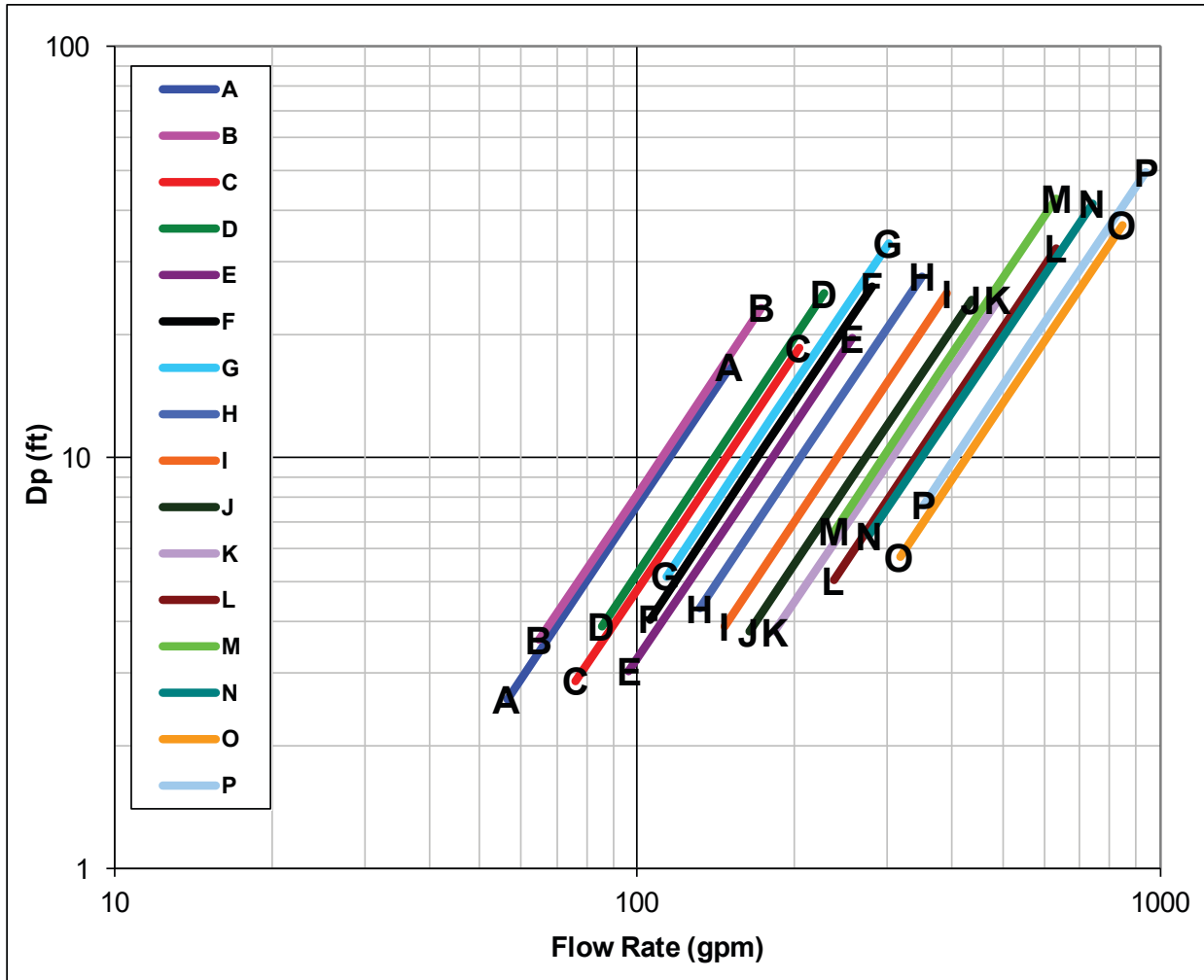


Table 14: WGZ-D Condenser Pressure Drop Data

Model	Curve Ref	Minimum Flow & Pressure Drop				Nominal Flow & Pressure Drop				Maximum Flow & Pressure Drop			
		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
WGZ030D	A	56.3	2.6	3.5	7.7	90.0	6.3	5.6	18.8	150.0	16.6	9.4	49.7
WGZ035D	B	64.9	3.6	4.1	10.8	103.8	8.8	6.5	26.3	173.0	23.2	10.8	69.4
WGZ040D	C	76.3	2.9	4.8	8.6	122.1	7.0	7.6	20.9	203.5	18.5	12.7	55.2
WGZ045D	D	85.3	3.9	5.3	11.6	136.5	9.5	8.5	28.4	227.5	25.1	14.2	74.9
WGZ050D	E	96.4	3.0	6.0	9.1	154.2	7.4	9.6	22.1	257.0	19.5	16.1	58.4
WGZ055D	F	105.8	4.1	6.6	12.1	169.2	9.9	10.6	29.6	282.0	26.1	17.6	78.1
WGZ060D	G	113.4	5.2	7.1	15.4	181.5	12.6	11.3	37.7	302.5	33.3	18.9	99.4
WGZ070D	H	131.6	4.3	8.2	12.8	210.6	10.5	13.2	31.4	351.0	27.7	21.9	82.8
WGZ080D	I	146.8	3.9	9.2	11.6	234.9	9.5	14.7	28.4	391.5	25.1	24.5	74.9
WGZ090D	J	163.3	3.8	10.2	11.3	261.3	9.2	16.3	27.5	435.5	24.3	27.2	72.6
WGZ100D	K	183.4	3.8	11.5	11.3	293.4	9.2	18.3	27.5	489.0	24.3	30.6	72.6
WGZ115D	L	237.6	5.0	14.8	15.1	380.1	12.3	23.8	36.8	633.5	32.5	39.6	97.0
WGZ130D	M	237.6	6.6	14.8	19.8	380.1	16.2	23.8	48.4	633.5	42.8	39.6	127.8
WGZ150D	N	277.9	6.5	17.4	19.3	444.6	15.8	27.8	47.2	741.0	41.7	46.3	124.7
WGZ170D	O	317.4	5.7	19.8	17.1	507.9	14.0	31.7	41.8	846.5	37.0	52.9	110.5
WGZ200D	P	352.7	7.7	22.0	23.0	564.3	18.8	35.3	56.2	940.5	49.6	58.8	148.3

Figure 7: WGZ-D Evaporator Pressure Drop Curves

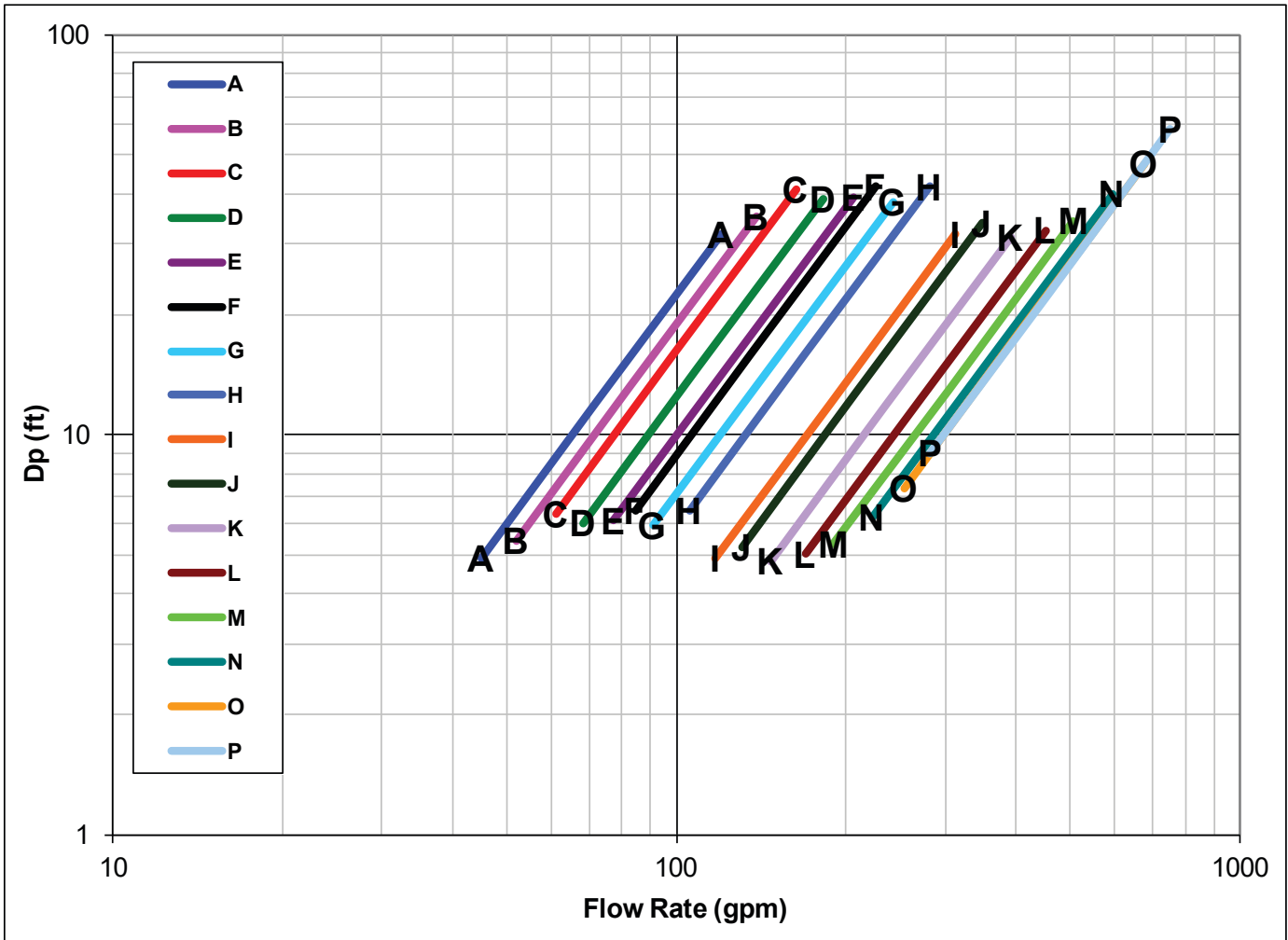


Table 15: WGZ-D Evaporator Pressure Drop Data

Model	Curve Ref	Minimum Flow & Pressure Drop				Nominal Flow & Pressure Drop				Maximum Flow & Pressure Drop			
		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
WGZ030D	A	45.0	4.9	2.8	14.7	72.0	12.0	4.5	35.9	120.0	31.7	7.5	94.7
WGZ035D	B	51.9	5.4	3.2	16.3	83.0	13.3	5.2	39.8	138.3	35.1	8.6	104.9
WGZ040D	C	61.1	6.3	3.8	19.0	97.7	15.5	6.1	46.3	162.8	40.9	10.2	122.3
WGZ045D	D	68.3	6.0	4.3	18.0	109.2	14.7	6.8	43.9	182.0	38.8	11.4	116.0
WGZ050D	E	77.1	6.1	4.8	18.2	123.4	14.9	7.7	44.5	205.7	39.3	12.9	117.6
WGZ055D	F	84.6	6.5	5.3	19.3	135.4	15.8	8.5	47.2	225.7	41.7	14.1	124.7
WGZ060D	G	90.8	5.9	5.7	17.7	145.2	14.5	9.1	43.3	242.0	38.3	15.1	114.4
WGZ070D	H	105.3	6.5	6.6	19.3	168.5	15.8	10.5	47.2	280.8	41.7	17.6	124.7
WGZ080D	I	117.4	4.9	7.3	14.7	187.9	12.0	11.7	35.9	313.2	31.7	19.6	94.7
WGZ090D	J	130.6	5.2	8.2	15.7	209.0	12.8	13.1	38.3	348.3	33.8	21.8	101.0
WGZ100D	K	146.7	4.8	9.2	14.4	234.7	11.8	14.7	35.3	391.2	31.1	24.4	93.1
WGZ115D	L	169.4	5.0	10.6	15.1	271.0	12.3	16.9	36.8	451.7	32.5	28.2	97.0
WGZ130D	M	190.1	5.3	11.9	15.9	304.1	13.0	19.0	38.9	506.8	34.3	31.7	102.6
WGZ150D	N	222.3	6.2	13.9	18.6	355.7	15.2	22.2	45.4	592.8	40.1	37.1	119.9
WGZ170D	O	253.9	7.4	15.9	22.0	406.3	18.0	25.4	53.8	677.2	47.5	42.3	142.0
WGZ200D	P	282.1	9.0	17.6	26.9	451.4	22.0	28.2	65.8	752.3	58.1	47.0	173.6

**Table 16: Physical Data - WGZ030D - WGZ040D**

Physical Data (Packaged Chillers)	WGZ030D		WGZ035D		WGZ040D	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Operating Weight- lb (kg)	2484 (1127)		2564 (1163)		2615 (1186)	
Shipping Weight- lb (kg)	2408 (1092)		2488 (1129)		2523 (1144)	
R410A Operating Charge- lb (kg)	43 (19.5)	43 (19.5)	43 (19.5)	43 (19.5)	43 (19.5)	43 (19.5)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	7.5 / 7.5	7.5 / 7.5	9 / 9	9 / 9	10 / 10	10 / 10
Oil Charge, per Tandem Compressor Set - oz. (L)	170 (5.0)	170 (5.0)	220 (6.6)	220 (6.6)	220 (6.6)	220 (6.6)
4 Stages (Dependent on Lead Compressor)	25-50-75-100	25-50-75-100	25-50-75-100	25-50-75-100	25-50-75-100	25-50-75-100
<b>CONDENSER</b>						
Diameter- in. (mm)	10 (254)		10 (254)		10 (254)	
Tube Length- in. (mm)	120 (3048)		120 (3048)		120 (3048)	
Refrigerant Side Working Pressure- psig (kPa)	500 (3447)		500 (3447)		500 (3447)	
Water Side Working Pressure- psig (kPa)	232 (1599)		232 (1599)		232 (1599)	
Pump-Out Capacity- lb (kg) [90% Full at 90°F]	245.8 (111.7)		245.8 (111.7)		228.2 (103.7)	
Grooved Conn. In & Out- in. (mm)	4 (102)		4 (102)		4 (102)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Service Valve, Flare- in. (mm)	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)	
Vent & Drain- in. (mm) NPT	1/4 (6.4)		1/4 (6.4)		1/4 (6.4)	
<b>EVAPORATOR, BRAZED-PLATE</b>						
Water Volume- gal (L)	1.6 (6.1)		1.8 (6.8)		2.0 (7.6)	
Refrigerant Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)		653 (4500)	
Water Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)		653 (4500)	
Grooved Conn. In & Out- in. (mm)	2.5 (65)		2.5 (65)		2.5 (65)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Vent & Drain	Field		Field		Field	

**Table 17: Physical Data - WGZ045D - WGZ055D**

Physical Data (Packaged Chillers)	WGZ045D		WGZ050D		WGZ055D	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Operating Weight- lb (kg)	2631 (1193)		2719 (1233)		2731 (1239)	
Shipping Weight- lb (kg)	2539 (1152)		2606 (1182)		2618 (1188)	
R410A Operating Charge- lb (kg)	47 (21.4)	47 (21.4)	47 (21.4)	47 (21.4)	50 (22.7)	50 (22.7)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	12 / 12	12 / 12	13 / 13	13 / 13	13 / 13	15 / 15
Oil Charge, per Tandem Compressor Set - oz. (L)	220 (6.6)	220 (6.6)	220 (6.6)	220 (6.6)	220 (6.6)	220 (6.6)
4 Stages (Dependent on Lead Compressor)	25-50-75-100	25-50-75-100	25-50-75-100	25-50-75-100	23-50-73-100	27-50-77-100
<b>CONDENSER</b>						
Diameter- in. (mm)	10 (254)		10 (254)		10 (254)	
Tube Length- in. (mm)	120 (3048)		120 (3048)		120 (3048)	
Refrigerant Side Working Pressure- psig (kPa)	500 (3447)		500 (3447)		500 (3447)	
Water Side Working Pressure- psig (kPa)	232 (1599)		232 (1599)		232 (1599)	
Pump-Out Capacity- lb (kg) [90% Full at 90°F]	228.2 (103.7)		205.4 (93.4)		205.4 (93.4)	
Grooved Conn. In & Out- in. (mm)	4 (102)		4 (102)		4 (102)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Service Valve, Flare- in. (mm)	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)	
Vent & Drain- in. (mm) NPT	1/4 (6.4)		1/4 (6.4)		1/4 (6.4)	
<b>EVAPORATOR, BRAZED-PLATE</b>						
Water Volume- gal (L)	2.3 (8.7)		2.6 (9.8)		2.8 (10.6)	
Refrigerant Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)		653 (4500)	
Water Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)		653 (4500)	
Grooved Conn. In & Out- in. (mm)	2.5 (65)		2.5 (65)		2.5 (65)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Vent & Drain	Field		Field		Field	

**Table 18: Physical Data - WGZ060D - WGZ070D**

Physical Data (Packaged Chillers)	WGZ060D		WGZ070D	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>				
Operating Weight- lb (kg)	2771 (1257)		3696 (1676)	
Shipping Weight- lb (kg)	2658 (1206)		3555 (1613)	
R410A Operating Charge- lb (kg)	50 (22.7)	50 (22.7)	74 (33.6)	74 (33.6)
<b>COMPRESSORS, SCROLL, HERMETIC</b>				
Nominal HP	15 / 15	15 / 15	15 / 20	15 / 20
Oil Charge, per Tandem Compressor Set - oz. (L)	220 (6.6)	220 (6.6)	255 (7.6)	255 (7.6)
4 Stages (Dependent on Lead Compressor)	25-50-75-100	25-50-75-100	22-44-72-100	22-44-72-100
<b>CONDENSER</b>				
Diameter- in. (mm)	10 (254)		14 (356)	
Tube Length- in. (mm)	120 (3048)		120 (3048)	
Refrigerant Side Working Pressure- psig (kPa)	500 (3447)		500 (3447)	
Water Side Working Pressure- psig (kPa)	232 (1599)		232 (1599)	
Pump-Out Capacity- lb (kg) [90% Full at 90°F]	205.4 (93.4)		415.1 (188.7)	
Grooved Conn. In & Out- in. (mm)	4 (102)		4 (102)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)	
Service Valve, Flare- in. (mm)	1/2 (12.7)		1/2 (12.7)	
Vent & Drain- in. (mm) NPT	1/4 (6.4)		1/4 (6.4)	
<b>EVAPORATOR, BRAZED-PLATE</b>				
Water Volume- gal (L)	3.2 (12.0)		5.6 (21.2)	
Refrigerant Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)	
Water Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)	
Grooved Conn. In & Out- in. (mm)	2.5 (65)		3 (76)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)	
Vent & Drain	Field		Field	

**Table 19: Physical Data - WGZ080D - WGZ090D**

Physical Data (Packaged Chillers)	WGZ080D		WGZ090D	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>				
Operating Weight- lb (kg)	4128 (1872)		4320 (1960)	
Shipping Weight- lb (kg)	3971 (1801)		4140 (1878)	
R410A Operating Charge- lb (kg)	80 (36.4)	80 (36.4)	80 (36.4)	80 (36.4)
<b>COMPRESSORS, SCROLL, HERMETIC</b>				
Nominal HP	20 / 20	20 / 20	20 / 26	20 / 26
Oil Charge, per Tandem Compressor Set - oz. (L)	290 (8.7)	290 (8.7)	290 (8.7)	290 (8.7)
4 Stages (Dependent on Lead Compressor)	25-50-75-100	25-50-75-100	22-44-72-100	22-44-72-100
<b>CONDENSER</b>				
Diameter- in. (mm)	14 (356)		14 (356)	
Tube Length- in. (mm)	120 (3048)		120 (3048)	
Refrigerant Side Working Pressure- psig (kPa)	500 (3447)		500 (3447)	
Water Side Working Pressure- psig (kPa)	232 (1599)		232 (1599)	
Pump-Out Capacity- lb (kg) [90% Full at 90°F]	397.5 (180.7)		371.1 (168.7)	
Grooved Conn. In & Out- in. (mm)	4 (102)		4 (102)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)	
Service Valve, Flare- in. (mm)	1/2 (12.7)		1/2 (12.7)	
Vent & Drain- in. (mm) NPT	1/4 (6.4)		1/4 (6.4)	
<b>EVAPORATOR, BRAZED-PLATE</b>				
Water Volume- gal (L)	6.3 (23.8)		6.8 (25.7)	
Refrigerant Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)	
Water Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)	
Grooved Conn. In & Out- in. (mm)	3 (76)		3 (76)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)	
Vent & Drain	Field		Field	



**Table 20: Physical Data - WGZ100D - WGZ130D**

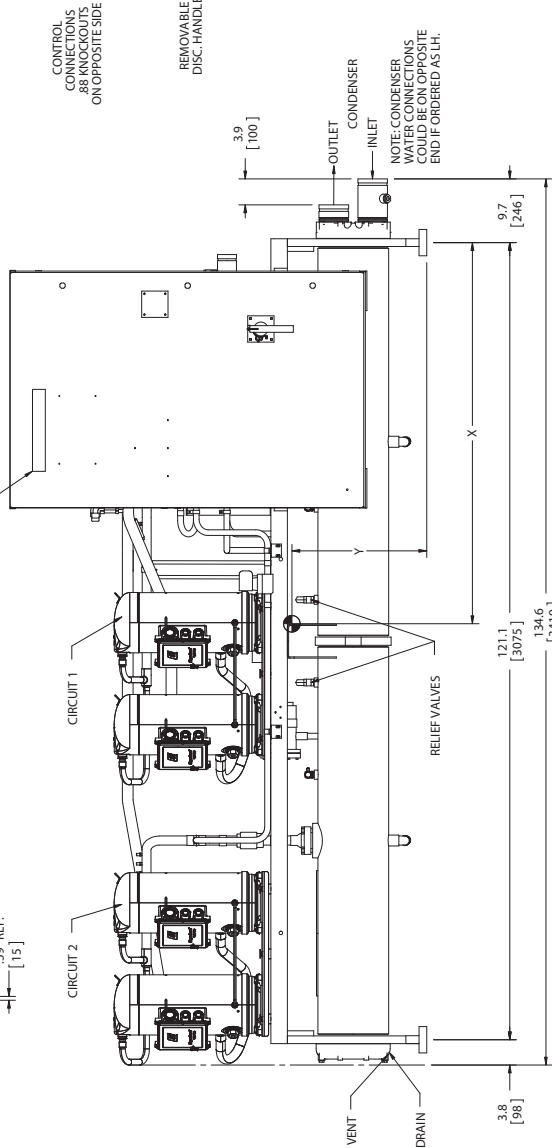
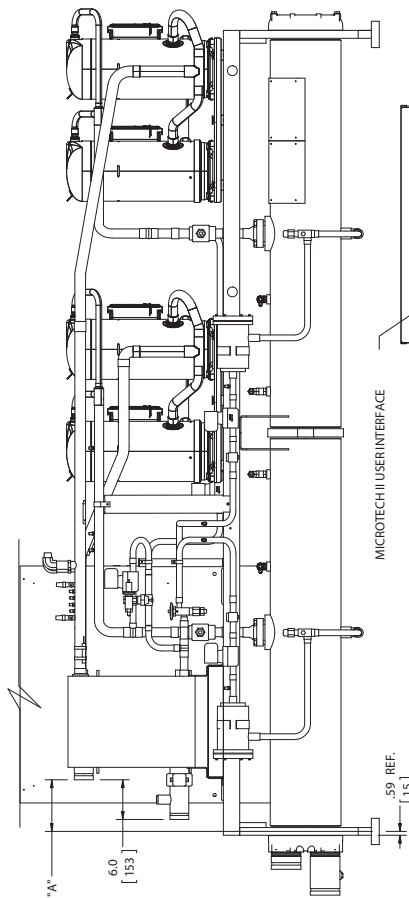
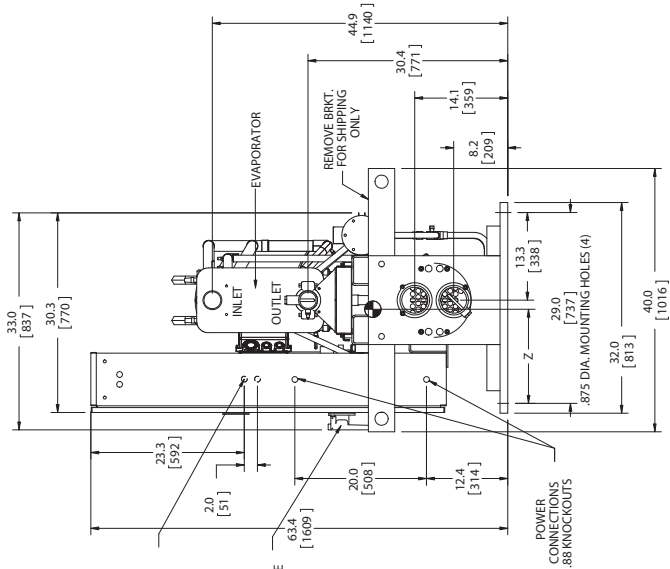
Physical Data (Packaged Chillers)	WGZ100D		WGZ115D		WGZ130D	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Operating Weight- lb (kg)	4515 (2048)		4434 (2011)		4737 (2149)	
Shipping Weight- lb (kg)	4311 (1955)		4230 (1919)		4533 (2056)	
R410A Operating Charge- lb (kg)	90 (40.9)	90 (40.9)	100 (45.5)	100 (45.5)	100 (45.5)	100 (45.5)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	26 / 26	26 / 26	26 / 30	26 / 30	30 / 30	30 / 30
Oil Charge, per Tandem Compressor Set - oz. (L)	290 (8.7)	290 (8.7)	358 (10.8)	358 (10.8)	426 (12.6)	426 (12.6)
4 Stages (Dependent on Lead Compressor)	25-50-75-100	25-50-75-100	22-44-72-100	22-44-72-100	25-50-75-100	25-50-75-100
<b>CONDENSER</b>						
Diameter- in. (mm)	14 (356)		14 (356)		14 (356)	
Tube Length- in. (mm)	120 (3048)		120 (3048)		120 (3048)	
Refrigerant Side Working Pressure- psig (kPa)	500 (3447)		500 (3447)		500 (3447)	
Water Side Working Pressure- psig (kPa)	232 (1599)		232 (1599)		232 (1599)	
Pump-Out Capacity- lb (kg) [90% Full at 90°F]	344.7 (156.7)		344.7 (156.7)		344.7 (156.7)	
Grooved Conn. In & Out- in. (mm)	4 (102)		4 (102)		4 (102)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Service Valve, Flare- in. (mm)	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)	
Vent & Drain- in. (mm) NPT	1/4 (6.4)		1/4 (6.4)		1/4 (6.4)	
<b>EVAPORATOR, BRAZED-PLATE</b>						
Water Volume- gal (L)	8.0 (30.2)		9.6 (36.3)		10.8 (40.9)	
Refrigerant Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)		653 (4500)	
Water Side Working Pressure- psig (kPa)	653 (4500)		653 (4500)		653 (4500)	
Grooved Conn. In & Out- in. (mm)	3 (76)		3 (76)		3 (76)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Vent & Drain	Field		Field		Field	

**Table 21: Physical Data - WGZ150D - WGZ200D**

Physical Data (Packaged Chillers)	WGZ150D		WGZ170D		WGZ200D	
	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2	CIRCUIT 1	CIRCUIT 2
<b>BASIC DATA</b>						
Operating Weight- lb (kg)	6662 (3022)		7214 (3272)		7509 (3406)	
Shipping Weight- lb (kg)	5873 (2664)		6377 (2893)		6672 (3026)	
R410A Operating Charge- lb (kg)	150 (68.2)	150 (68.2)	150 (68.2)	150 (68.2)	150 (68.2)	150 (68.2)
<b>COMPRESSORS, SCROLL, HERMETIC</b>						
Nominal HP	26 / 26 / 26	26 / 26 / 26	26 / 26 / 26	30 / 30 / 30	30 / 30 / 30	30 / 30 / 30
Oil Charge, per Trio Compressor Set - oz (L)	456 (13.7)	456 (13.7)	456 (13.7)	639 (19.2)	639 (19.2)	639 (19.2)
6 Stages (Dependent on Lead Compressor)	17-33-50-67-83-100	17-33-50-67-83-100	15-33-48-67-81-100	19-33-52-67-86-100	17-33-50-67-83-100	17-33-50-67-83-100
<b>CONDENSER</b>						
Diameter- in. (mm)	16 (406.4)		16 (406.4)		16 (406.4)	
Tube Length- in. (mm)	144 (3658)		144 (3658)		144 (3658)	
Refrigerant Side Working Pressure- psig (kPa)	500 (3447)		500 (3447)		500 (3447)	
Water Side Working Pressure- psig (kPa)	232 (1599)		232 (1599)		232 (1599)	
Pump-Out Capacity- lb (kg) [90% Full at 90°F]	572.3 (260.1)		508.9 (231.3)		508.9 (231.3)	
Grooved Conn. In & Out- in. (mm)	5 (127)		5 (127)		5 (127)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Service Valve, Flare- in. (mm)	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)	
Vent & Drain- in. (mm) NPT	1/4 (6.4)		1/4 (6.4)		1/4 (6.4)	
<b>EVAPORATOR, SHELL-AND-TUBE</b>						
Water Volume- gal (L)	57.6 (218.0)		56.9 (215.4)		56.9 (215.4)	
Refrigerant Side Working Pressure- psig (kPa)	450 (3102)		450 (3102)		450 (3102)	
Water Side Working Pressure- psig (kPa)	150 (1034)		150 (1034)		150 (1034)	
Grooved Conn. In & Out- in. (mm)	8 (203)		8 (203)		8 (203)	
Relief Valve, Flare- in. (mm)	5/8 (15.9)		5/8 (15.9)		5/8 (15.9)	
Vent & Drain	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)	

Figure 8: WGZ030DW - 060DW (Packaged)

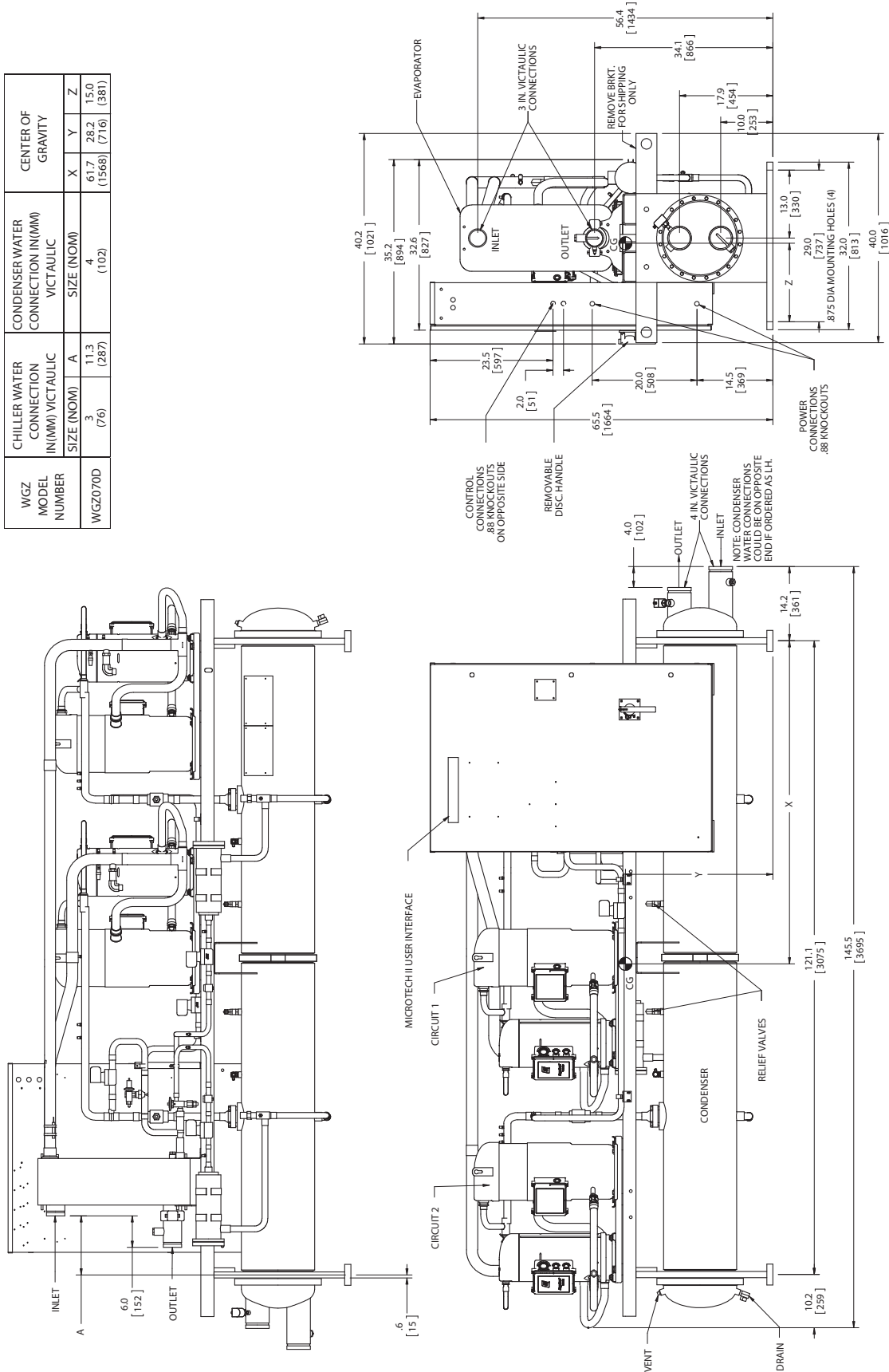
WGZ MODEL NUMBER	CHILLER WATER CONNECTION IN(MM) VICTAULIC		CONDENSER WATER CONNECTION IN(MM) VICTAULIC		CENTER OF GRAVITY		
	SIZE (NOM)	A	SIZE (NOM)	A	X	Y	Z
WGZ030D	2.5 (64)	14.4 (366)	4 (102)	4 (102)	59.2 (1504)	22.4 (569)	14.1 (358)
WGZ035D	2.5 (64)	13.7 (348)	4 (102)	4 (102)	59.9 (1522)	23.3 (592)	14.2 (361)
WGZ040D	2.5 (64)	13.0 (331)	4 (102)	4 (102)	59.5 (1511)	23.2 (592)	14.2 (361)
WGZ045D	2.5 (64)	11.7 (296)	4 (102)	4 (102)	59.1 (1501)	23.3 (592)	14.2 (361)
WGZ050D	2.5 (64)	10.3 (260)	4 (102)	4 (102)	58.9 (1496)	20.2 (513)	14.2 (361)
WGZ055D	2.5 (64)	9.6 (243)	4 (102)	4 (102)	58.5 (1486)	20.3 (516)	14.2 (361)
WGZ060D	2.5 (64)	7.8 (199)	4 (102)	4 (102)	57.9 (1471)	20.5 (521)	14.3 (363)



\*333611521\*\* p. 1 of 2  
 CERTIFIED: WGZ030-060D PACKAGE  
 REV. 00

Figure 9: WGZ070DW (Packaged)

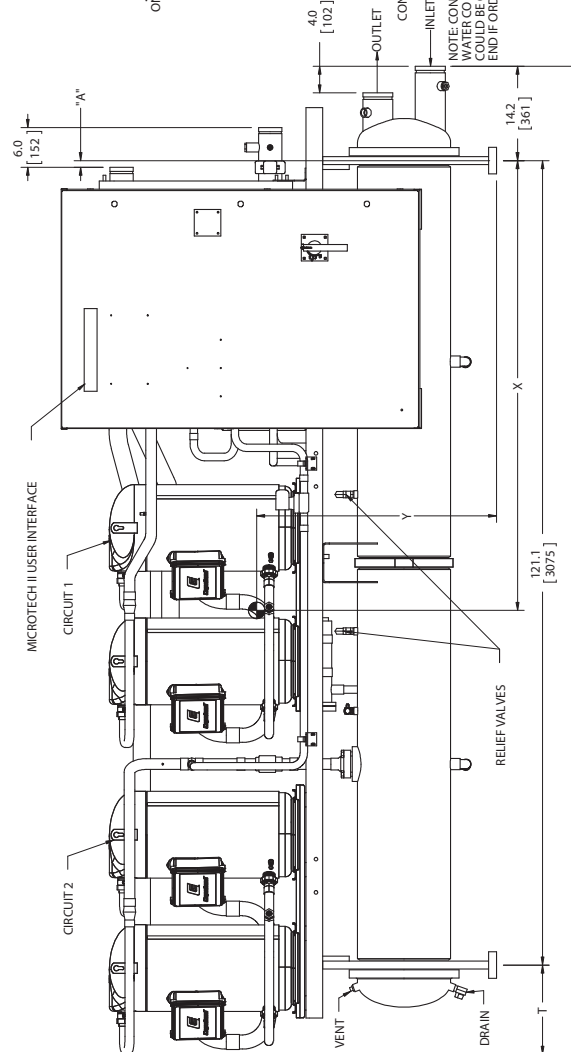
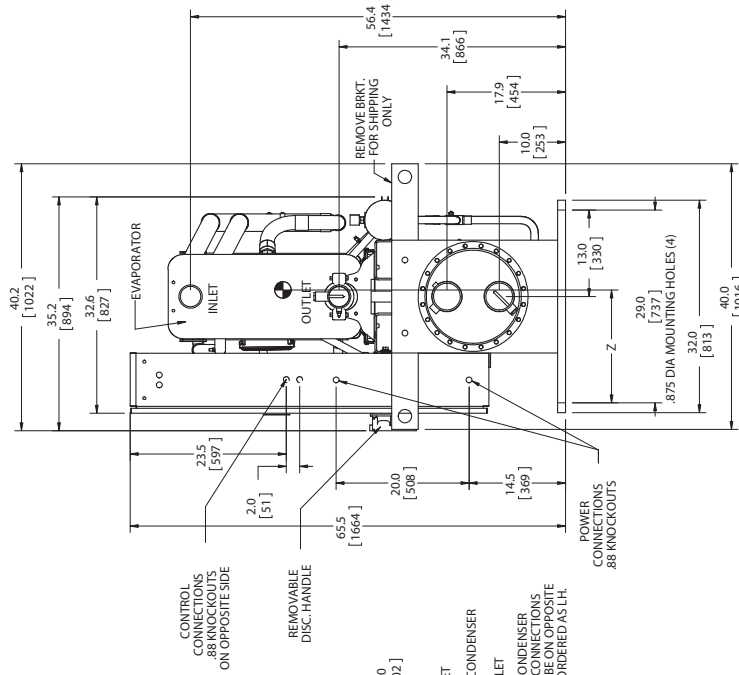
WGZ MODEL NUMBER	CHILLER WATER CONNECTION IN (MM) VICTAULIC		CONDENSER WATER CONNECTION IN (MM) VICTAULIC		CENTER OF GRAVITY		
	SIZE (NOM)	A	SIZE (NOM)		X	Y	Z
WGZ070D	3 (76)	11.3 (287)	4 (102)		61.7 (1568)	28.2 (716)	15.0 (381)



\*333611621\* p. 1&2 of 3  
 CERTIFIED WGZ070+300D PACKAGE  
 REV 0/A

Figure 10: WGZ080DW - 130DW (Packaged)

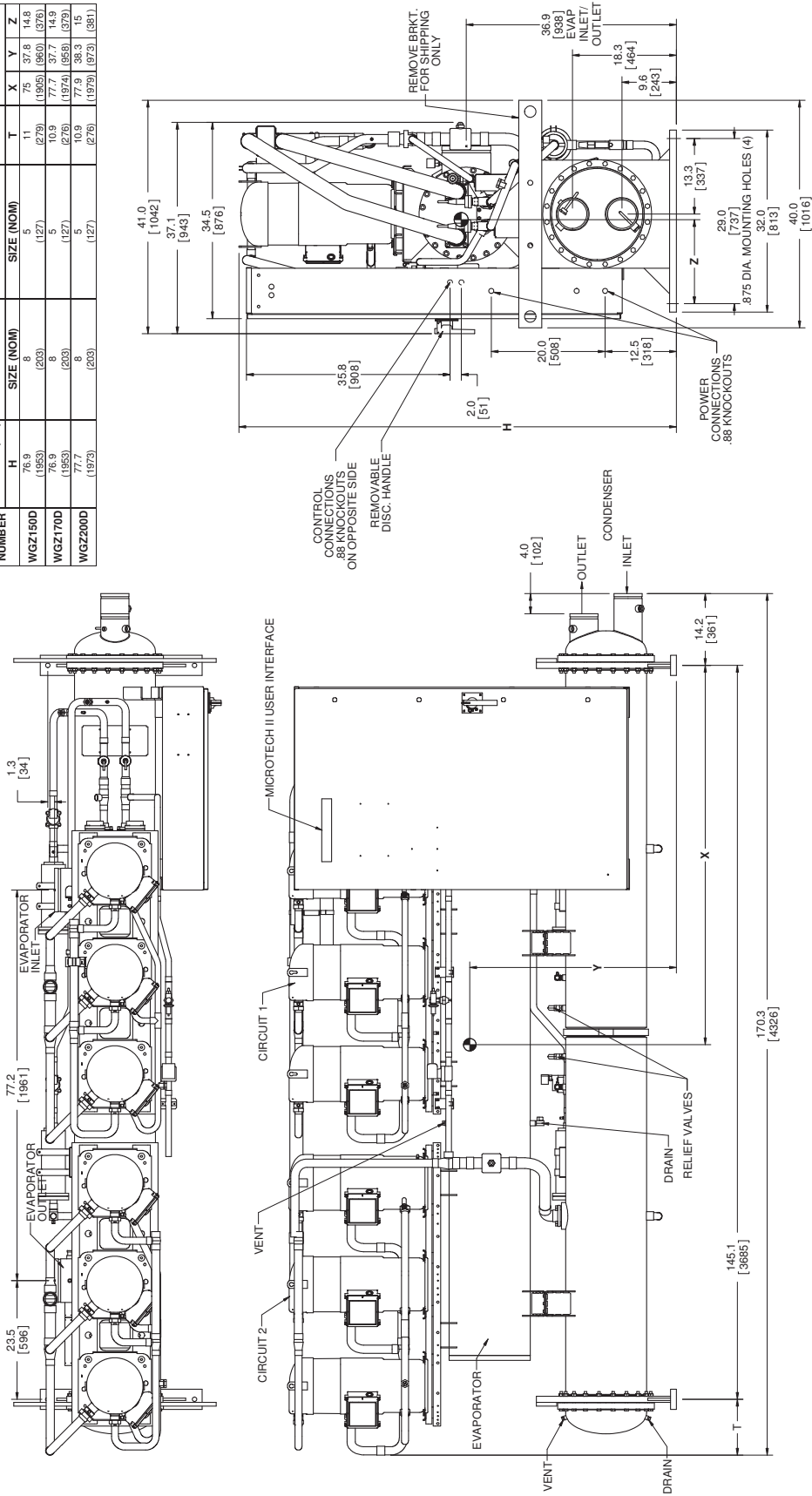
WGZ MODEL NUMBER	MAXIMUM OVERALL LENGTH IN (MM)	CHILLER WATER CONNECTION IN (MM) VICTAULIC		CONDENSER WATER CONNECTION IN (MM) VICTAULIC		CENTER OF GRAVITY		
		SIZE (NOM)	A	SIZE (NOM)	T	X	Y	Z
WGZ080D	149 (3785)	3 (76)	8.8 (224)	4 (102)	13.8 (351)	64.2 (1631)	29.5 (749)	15 (381)
WGZ090D	149 (3785)	3 (76)	8.0 (203)	4 (102)	13.8 (351)	67.2 (1707)	32.6 (828)	16 (406)
WGZ100D	149 (3785)	3 (76)	6.0 (152)	4 (102)	13.8 (351)	69.2 (1758)	35.4 (899)	17 (432)
WGZ115D	148 (3759)	3 (76)	3.1 (79)	4 (102)	12.9 (328)	68 (1727)	35.6 (904)	17 (432)
WGZ130D	149 (3785)	3 (76)	1.0 (25)	4 (102)	13.7 (348)	67.7 (1720)	36.1 (917)	17 (432)



\*333611621\* p. 3 of 4  
 CERTIFIED, WGZ079-130D, PACKAGE  
 REV. 0A

Figure 11: WGZ150DW - 200DW (Packaged)

WGZ MODEL NUMBER	MAXIMUM OVERALL HEIGHT IN (MM)	CHILLER WATER CONNECTION IN (MM)	CONDENSER WATER CONNECTION IN (MM)	CENTER OF GRAVITY			
				T	X	Y	Z
WGZ150D	76.9 [3023]	8 [203]	5 [127]	11 [279]	75 [1905]	37.8 [950]	14.8 [376]
WGZ170D	106.9 [4208]	8 [203]	5 [127]	15 [381]	103 [2617]	49.9 [1267]	14.9 [379]
WGZ200D	177.7 [7033]	8 [203]	5 [127]	19.9 [506]	177.3 [4481]	98.3 [2500]	15 [381]



\*333611701\* p. 1 of 2  
 CERT., WGZ150-200D, PACKAGE  
 REV 00



## Unit Options

### 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 is easily removed for servicing.

### 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 included as standard for ELWT below 34° (1.1°F) and optional for other special applications such as a high ambient humidity location.

### Skid

The packaged 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.

## Electrical Options

### Power Connections

The WGZ chillers are supplied as standard for multi-point (2) connection to unit power blocks and compressor contractors. Compressor circuit breakers are not required on multi-point units. Available options are:

- Multi-point power connection to disconnect switches in lieu of power blocks, no compressor circuit breakers
- Single-point power connection to power block with compressor circuit breakers, contactors and internal compressor protection
- Single-point power connection to disconnect switch with compressor circuit breakers, contactors and internal compressor protection
- High short circuit current rating with single-point disconnect switch and compressor circuit breakers and contactors.
- Panel ratings are given on [page 9](#).

### 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.

## Controls/Instrumentation Options

### 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.

### BAS Interface

The Daikin Open Choice's feature consists of a factory-installed communication module for LonMark®, Modbus®, or BACnet® MSTP or BACnet® Ethernet or IP.

### 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.

# Scroll Compressor, Packaged Water-Cooled Chiller (WGZ030DW - WGZ200DW)

## PART 1 - GENERAL

### 1.01 SUMMARY

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

### 1.02 REFERENCES

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

### 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 chiller manufacturer's warranty shall cover parts and labor costs for the repair or replacement of defects in material

or workmanship [OPTION] including refrigerant for the entire unit, for a period of one year from equipment startup or 18 months from shipment, whichever occurs first, [OPTION] and also include an additional extended warranty for (one OR two OR three OR four) years on (the entire unit) OR (on entire unit including refrigerant coverage) OR (compressor and drive train only). Warranty support shall be provided by company direct or factory authorized service permanently located near the job site.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Daikin Applied
- B. (Approved Equal)

### 2.02 UNIT DESCRIPTION

- A. Provide and install as shown on the plans factory assembled, factory charged, water-cooled scroll compressor packaged chillers in the quantity specified. Each chiller shall consist of multiple hermetic scroll compressors, dual-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.
- B. Each chiller shall be factory run-tested with water to verify full load operation. Operating controls and refrigerant charge shall be verified for proper operation and optimum performance. Any deviation shall be remedied prior to shipment and the unit retested if necessary to confirm repairs or adjustments.

### 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 AHRI 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 AHRI 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.

[OPTION] The compressors shall be covered with factory-installed acoustical sound reduction blankets.

- B. Evaporator: On units 30 tons to 130 tons, the evaporator shall be direct expansion type with stainless steel brazed plates. It shall be insulated with ¾ inch (19mm), 0.28 k value, closed cell polyurethane insulation and have 653 psi (4500 kPa) water side working pressure.

On units from 150 to 200 tons, the evaporator shall be shell-and-tube construction with 150 psi (1033kPa) water-side working pressure and insulated with ¾" thick CFC and HCFC-free closed-cell flexible elastomeric foam insulation material with 100% adhesive coverage. The insulation shall have an additional outer protective layer of 3mm thick PE embossed film to provide superior damage resistance. Insulation without the protective outer film shall not be acceptable. UV resistance level shall meet or exceed a rating of 'Good' in accordance with the UNI ISO 4892 - 2/94 testing method.

[OPTION] The evaporator shall have an additional layer of ¾-inch insulation

- C. Condenser: Horizontal shell and finned tube type with steel shell and integral finned copper tubes rolled into steel tube sheets. The chiller shall be equipped with intermediate tube supports. 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 450 psig (3104 kPa) refrigerant side pressure and be provided with 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.

[OPTION] The unit shall include hot gas bypass on all circuits.

- E. Control/Power 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 and switches for each circuit pumpdown and unit control power. Power connection shall be multi-point (2) to power block. The control panel shall have a hinged tool-locked door.

[OPTION] Multi-point power connection to disconnect switches

[OPTION] Single point power connection to a power block with compressor circuit breakers

[OPTION] Single point power connection to a disconnect switch with compressor circuit breakers

[OPTION] High short circuit current rating (HSCCR) single point power connection to a disconnect switch with compressor circuit breakers

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 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. Demand limiting via a 4-20ma remote signal
11. Lead/lag manually or automatically by compressor number of starts.
12. Continuous diagnostic checks of unit to provide a pre-alarm signal in advance of a shutdown allowing time for remedial action to be taken.
13. The controller shall contain the following features as a minimum:

- a. 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.
  - b. 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
  - c. 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
  - d. Unit Enable Selection
    - Enables unit operation from local keypad, digital input, or BAS
  - e. Unit Mode Selection
    - Selects cooling, ice, glycol, or test operation mode
  - f. Analog Inputs
    - Reset of leaving water temperature, 4-20 mA
  - g. Digital Inputs
    - Unit off switch
    - Remote start/stop
    - Flow switch
    - Ice mode, converts operation and setpoints for ice production
    - Motor protection
  - h. 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
14. Optional Building Automation System (BAS) Interface
- a. 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 LonMark® 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)
- LonMark® FTT-10A. The unit controller shall be LonMark® 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.

The following options are to be included:

[OPTION] The unit shall be shipped with R-I-S vibration isolators for field installation per plans.

[OPTION] The unit shall be shipped with spring vibration isolators for field installation per plans.

[OPTION] The unit shall be shipped on a 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.



### ***Daikin Applied Training and Development***

Now that you have made an investment in modern, efficient Daikin Applied equipment, its care should be a high priority. For training information on all Daikin Applied HVAC products, please visit us at [www.DaikinApplied.com](http://www.DaikinApplied.com) and click on Training, or call 540-248-9646 and ask for the Training Department.

### ***Warranty***

All Daikin Applied equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied representative for warranty details. To find your local Daikin Applied representative, go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

### ***Aftermarket Services***

To find your local parts office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-37PARTS (800-377-2787). To find your local service office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-432-1342.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

Products manufactured in an ISO Certified Facility.