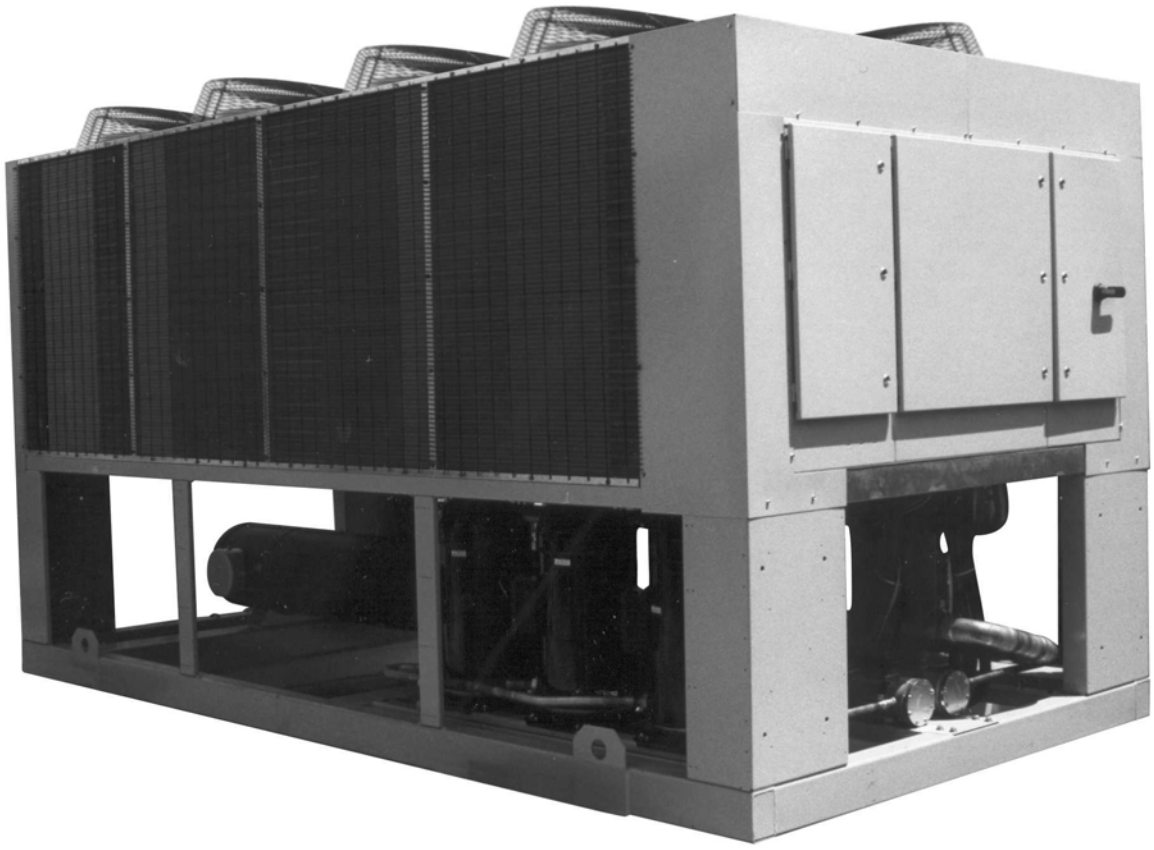
| Installation and Maintenance Manual | IMM AGZ-7 |
|---|---|
| | Group: **Chiller** |
| | Part Number: **331374001** |
| | Effective: **February 2005** |
| | Supercedes: **IOMM AGZ-6** |

# Air-Cooled Scroll Compressor Chiller

**AGZ 026BS/BH through 130BS/BH, Packaged**

**AGZ 026BB/BM through 130BB/BM, Remote Evaporator**

**60 Hertz, R-22, R-407c**



McQuay® Air Conditioning

# Table of Contents



Manufactured in an **ISO Certified** facility

# Introduction

## General Description

McQuay Air-Cooled Global Water Chillers are complete, self-contained automatic refrigerating units. Every unit is completely assembled, factory wired, charged, and tested. Each unit consists of twin air-cooled condensers with integral subcooler sections, two tandem or triple scroll compressors, brazed-plate or replaceable tube, dual circuit shell-and-tube evaporator, and complete refrigerant piping. Liquid line components include manual liquid line shutoff valves, sight-glass/moisture indicators, solenoid valves, and thermal expansion valves. Other features include compressor crankcase heaters, an evaporator heater for chilled water freeze protection, limited pumpdown during "on" or "off" periods, automatic compressor lead-lag to alternate the compressor starting sequence, and sequenced starting of compressors.

The electrical control center includes all equipment protection and operating controls necessary for dependable automatic operation. Condenser fan motors are protected in all three phases and started by their own three-pole contactors.

### Manuals

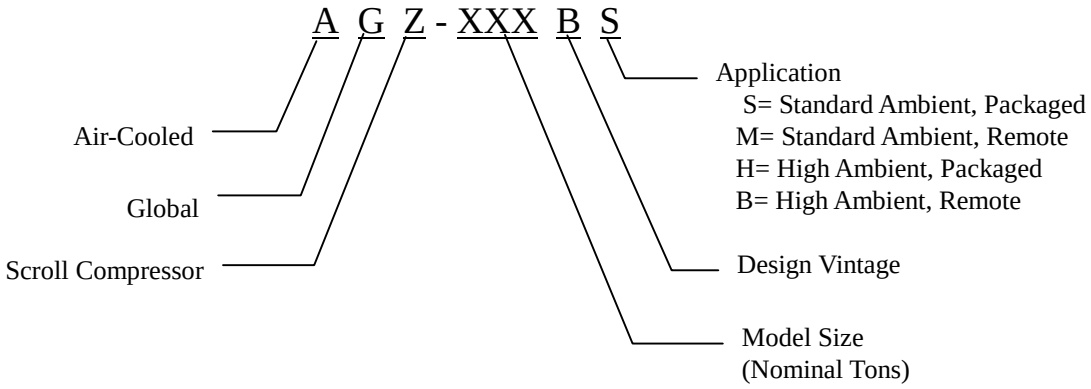
This manual covers the installation, maintenance and service for dual circuit, AGZ, scroll compressor chillers. Operating information is contained in the operating manual OM AGZ-1.

## Inspection

Check all items carefully against the bill of lading. Inspect all units for damage upon arrival. Report shipping damage and file a claim with the carrier. Check the unit nameplate before unloading, making certain it agrees with the power supply available. McQuay is not responsible for physical damage after the unit leaves the factory.

**Note:** Unit shipping and operating weights are available in the Physical Data tables beginning on page 31.

## Nomenclature



**Note:** Installation is to be performed by qualified personnel who are familiar with local codes and regulations.

**WARNING**
**Sharp edges on unit and coil surfaces are a potential hazard to personal safety. Avoid contact with them.**

## Handling

Be careful to avoid rough handling of the unit. Do not push or pull the unit from anything other than the base. Block the pushing vehicle away from the unit to prevent damage to the sheet metal cabinet and end frame (see Figure 1).

To lift the unit, 2 1/2" (64mm) diameter lifting tabs are provided on the base of the unit. Arrange spreader bars and cables to prevent damage to the condenser coils or cabinet (see Figure 2).

***Figure 1, Suggested Pushing Arrangement***

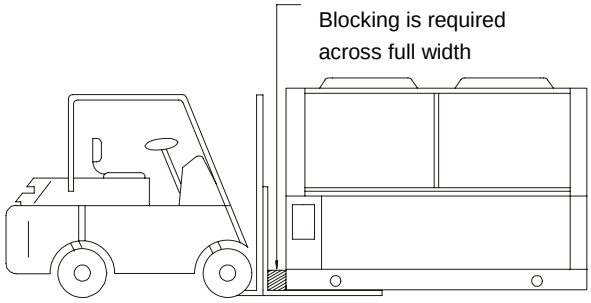
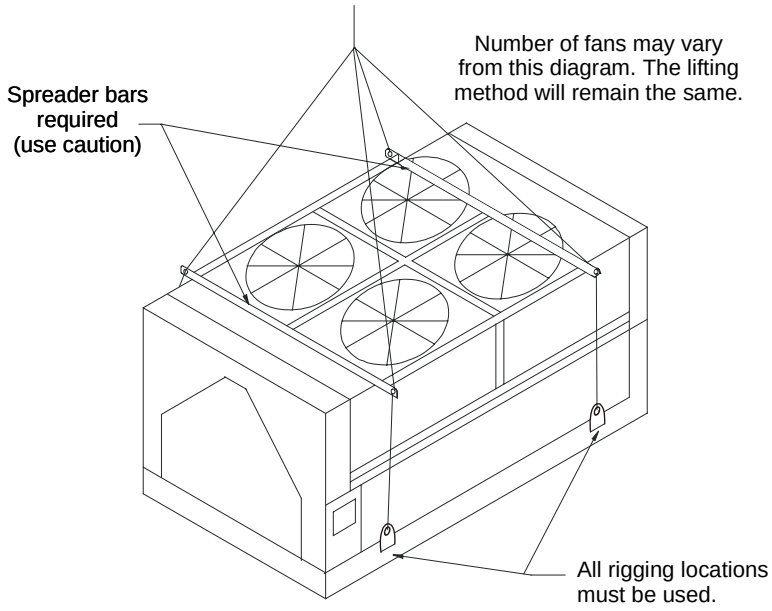



***Figure 2, Suggested Lifting Arrangement***



# Location

## Unit Placement

AGZ units are for outdoor applications and can be mounted either on a roof or at ground level. For roof mounted applications, install the unit on a steel channel or I-beam frame to support the unit above the roof. For ground level applications, install the unit on a substantial base that will not settle. A one-piece concrete slab with footings extended below the frost line is recommended. Be sure the foundation is level within 1/2" (13mm) over its length and width. The foundation must be strong enough to support the weights listed in the Physical Data Tables beginning on page 31.

***Figure 3, Clearances***

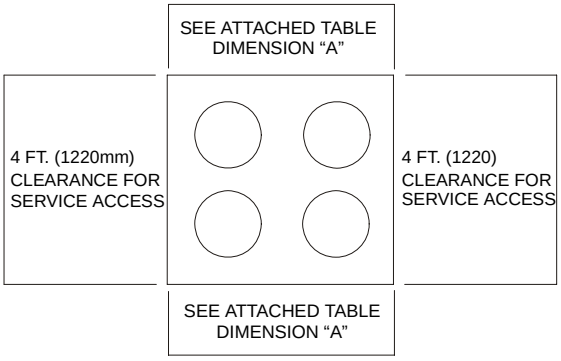



***Table 1, Recommended Minimum Clearances***

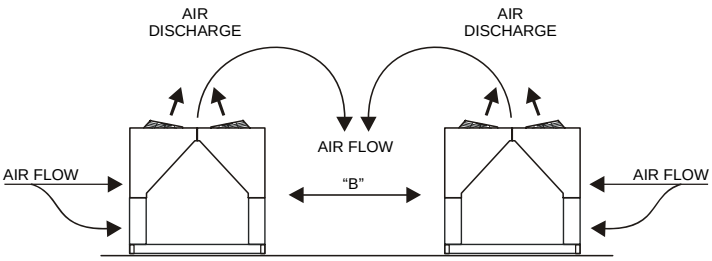
| Model Size | Coil Side "A" ft (m) | "B" ft (m) | "C" ft (m) | End Opposite Controls ft (m) | Control Panel End ft. (m) |
|---|---|---|---|---|---|
| **026B – 070B** | 4 (1.2) | 8 (2.4) | 6 (1.8) | 4 (1.2) | 4 (1.2) |
| **075B – 130B** | 6 (1.8) | 12 (3.6) | 8 (2.4) | 4 (1.2) | 4 (1.2) |

## Clearances

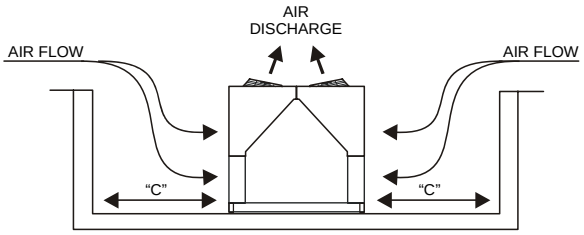
Do not block the flow of air to and from the condenser coil. Restricting airflow or allowing air recirculation will result in a decrease in unit performance and efficiency because discharge pressures are increased. There must be no obstruction above the unit that would deflect discharge air downward where it could be recirculated back to the inlet of the condenser coil. The condenser fans are propeller type and will not operate with ductwork.

Install the unit with enough side clearance for air to enter the coil and for servicing. Provide service access to the evaporator, compressors, electrical control panel and piping components.

Do not allow debris to accumulate near the unit where it could be drawn into the condenser coil. Keep condenser coils and fan discharge free of snow or other obstructions to permit adequate airflow for proper operation.




The recommended minimum side clearance between two units is dimension "B' in table on this page.




The unit must not be installed in a pit or enclosure that is deeper or taller than the height of the unit unless extra space is provided. The minimum clearance on each side of the unit is dimension "C" in table on this page.

## Restricted Air Flow

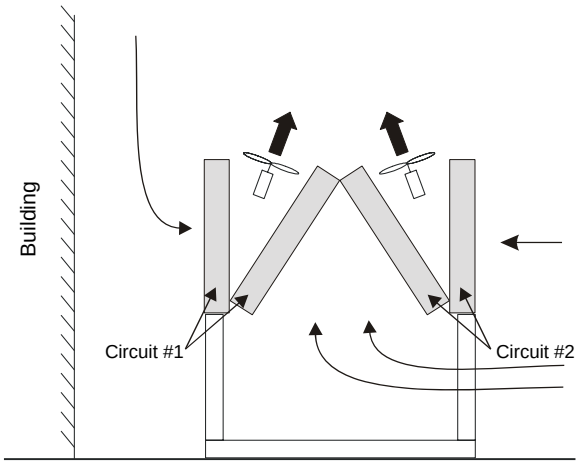
### General

The clearances required for design-life operation of AGZ air-cooled condensers are described in the previous section. Occasionally, these clearances cannot be maintained due to site restrictions such as units being too close together or a fence or wall restricting airflow, or both.

Fortunately, the McQuay AGZ chillers have several features that can mitigate the problems attributable to restricted airflow.

- The condenser section is shaped as shown Figure 4. This allows inlet air for these coils to come in from either side. A vertical coil and its adjacent angled coil are manifolded together to serve one refrigerant circuit.
- The MicroTech II™ control is proactive in response to "off-design conditions". In the case of single or compounded influences restricting airflow to the unit, the microprocessor will act to keep the compressor(s) running (possibly at reduced capacity) rather than allowing a shut-off on high discharge pressure.
- The MicroTech II™ control can be programmed to sequence the compressors in the most advantageous way. For example, in the diagram shown below, it might be desirable to program circuit #1 to be the lag circuit (last circuit to reach full load) during periods of high ambient temperatures.

***Figure 4, Coil and Fan Arrangement***




NOTE: Models AGZ 026 to 035 do not have an interior slanted coil.

The following sections discuss the most common situations of condenser air restriction and give capacity and power adjustment factors for each. Note that in unusually severe conditions, the MicroTech II™ controller would adjust the unit operation to remain online until a less severe condition is reached.

## Case 1, Building or Wall on One Side of One Unit

The existence of a screening wall or the wall of a building in close proximity to an air-cooled chiller is common in both rooftop and ground level applications. Hot air recirculation on the coils adjoining the wall will increase compressor discharge pressure, decreasing capacity and increasing power consumption. Only the compressor(s) connected to these coils will be affected. Circuits opposite the wall are unaffected.

When close to a wall, it is desirable to place chillers on the north or east side of them. It is also desirable to have prevailing winds blowing parallel to the unit's long axis. The worst case is to have wind blowing hot discharge air into the wall.

***Figure 5, Unit Adjacent to Wall***

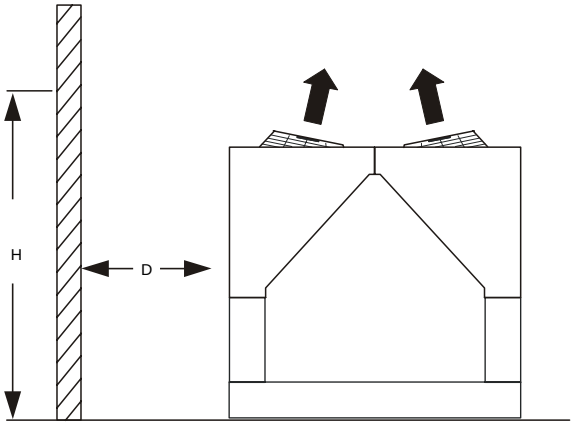
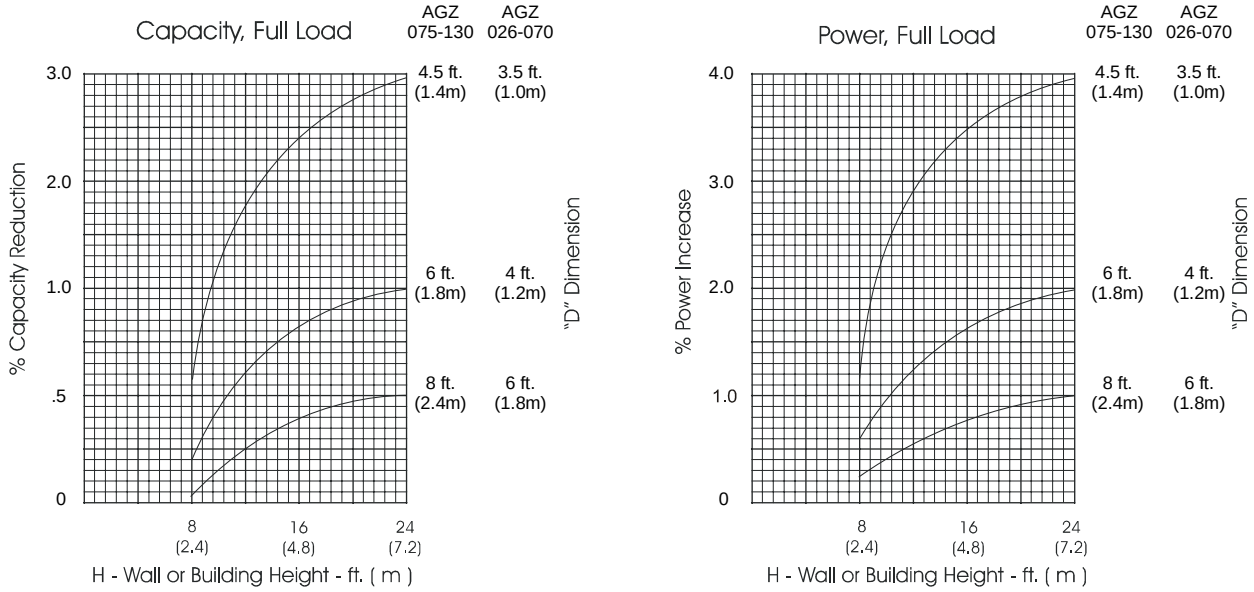



***Figure 6, Adjustment Factors***



## Case 2, Two Units Side By Side

Two or more units sited side by side are common. If spaced closer than 12 feet (3.7 meters) or 8 feet (2.5meters) depending on size, it is necessary to adjust the performance of each unit; circuits adjoining each other are affected. **NOTE:** This case applies only to *two* units side by side. See Case 3 for three or more parallel units. If one of the two units also has a wall adjoining it, see Case 1. Add the two adjustment factors together and apply to the unit located between the wall and the other unit.

Mounting units end to end will not necessitate adjusting performance. Depending on the actual arrangement, sufficient space must be left between the units for access to the control panel door opening and/or evaporator tube removal. See "Clearance" section of this guide for requirements for specific units.

***Figure 7, Two Units Side by Side***

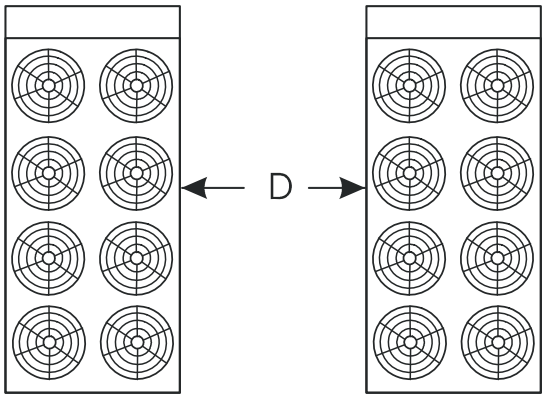
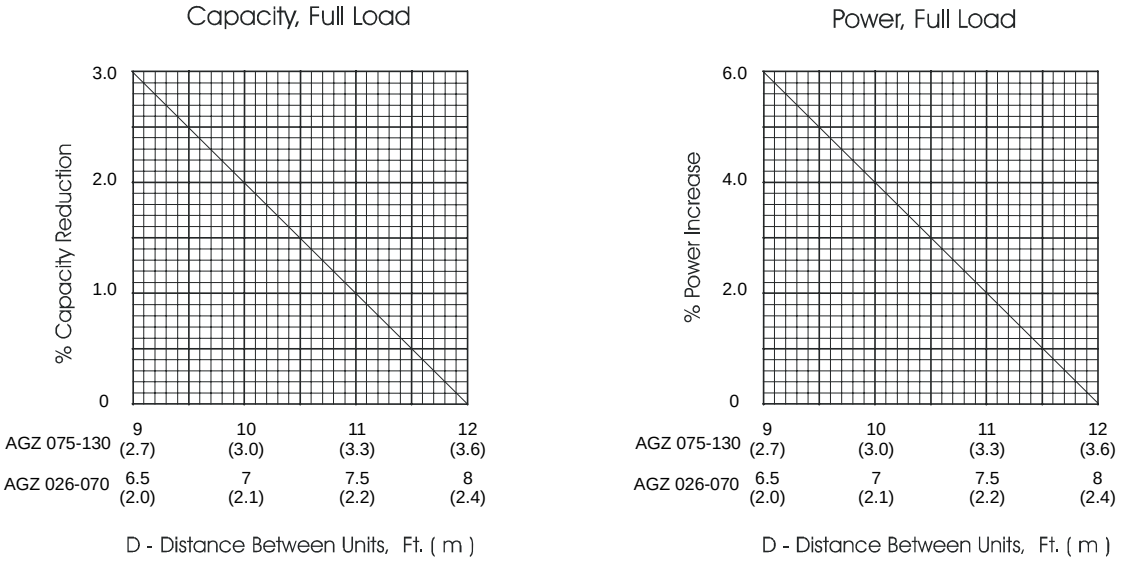



***Figure 8, Adjustment Factor***



## Case 3, Three or More Units Side By Side

When three or more units are side by side, the outside chillers (1 and 3 in this case) are influenced by the middle unit only on their inside circuits. Their adjustment factors will be the same as Case 2. All inside units (only number 2 in this case) are influenced on both sides and must be adjusted by the factors shown below.

***Figure 9, Three or More Units***

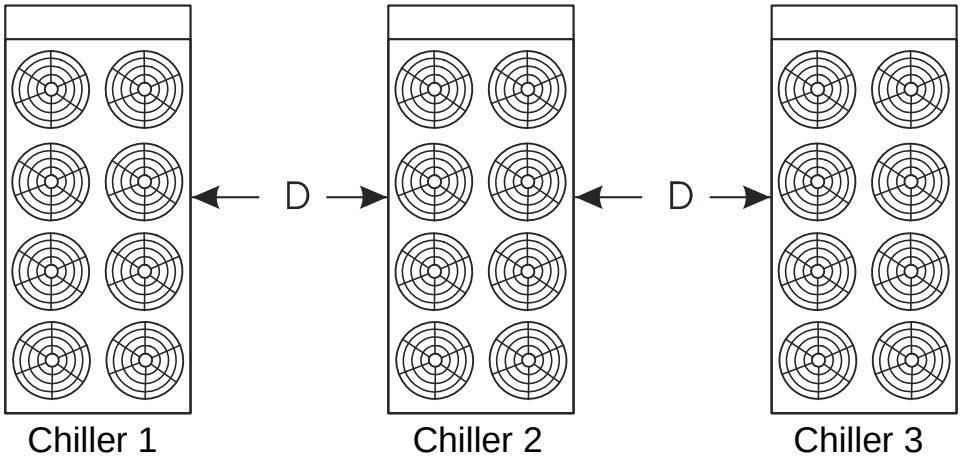
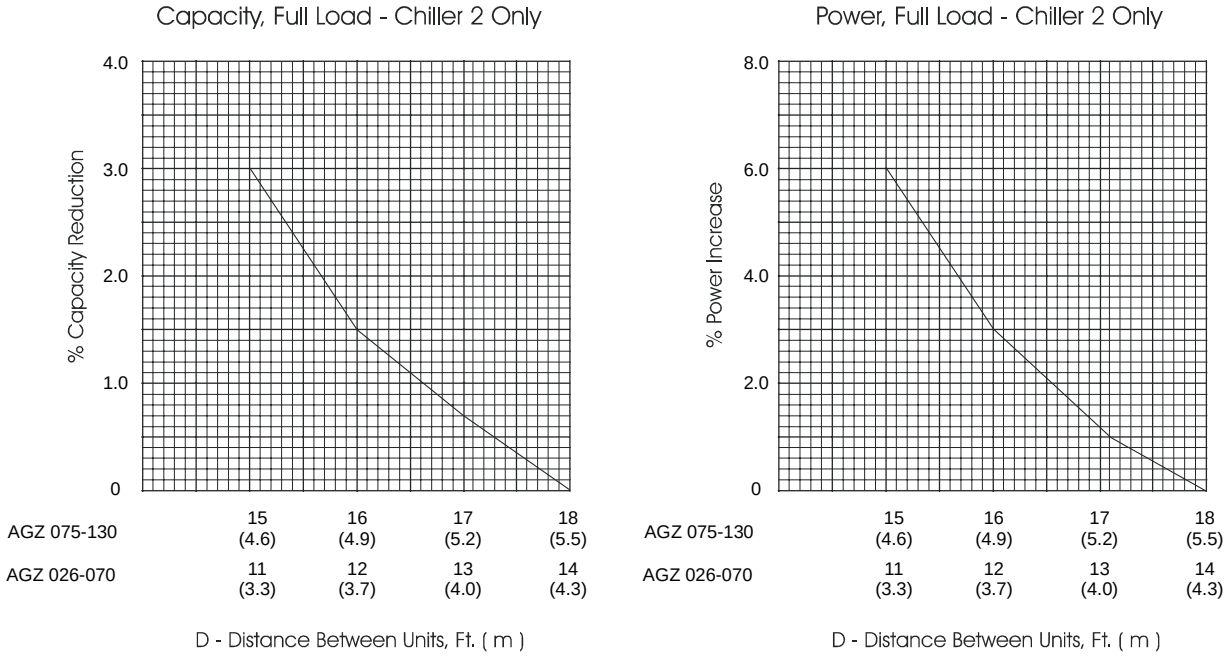



***Figure 10, Adjustment Factor***



## Case 4, Open Screening Walls

Decorative screening walls are often used to help conceal a unit either on grade or on a rooftop. These walls should be designed such that the combination of their open area and distance from the unit do not require performance adjustment. It is assumed that the wall height is equal to or less than the unit height when mounted on its base support. This is usually satisfactory for concealment. If the wall height is greater than the unit height, see Case 5, Pit Installation.

The distance from the ends of the unit to the end walls should be sufficient for service, opening control panel doors, and pulling evaporator tubes, as applicable.

If each side wall is a different distance from the unit, the distances can be averaged providing either wall is not less than 8 feet (2.4 meters) from the unit. For example, do not average 4 feet and 20 feet to equal 12 feet.

***Figure 11, Open Screening Walls***

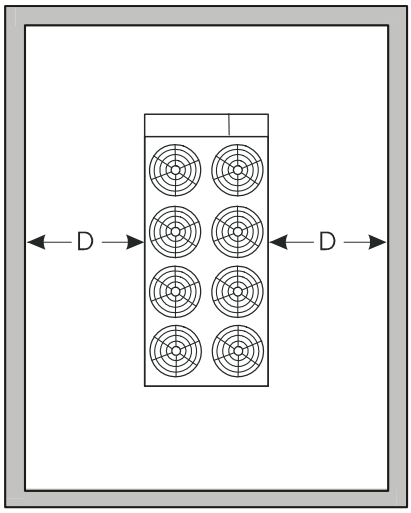
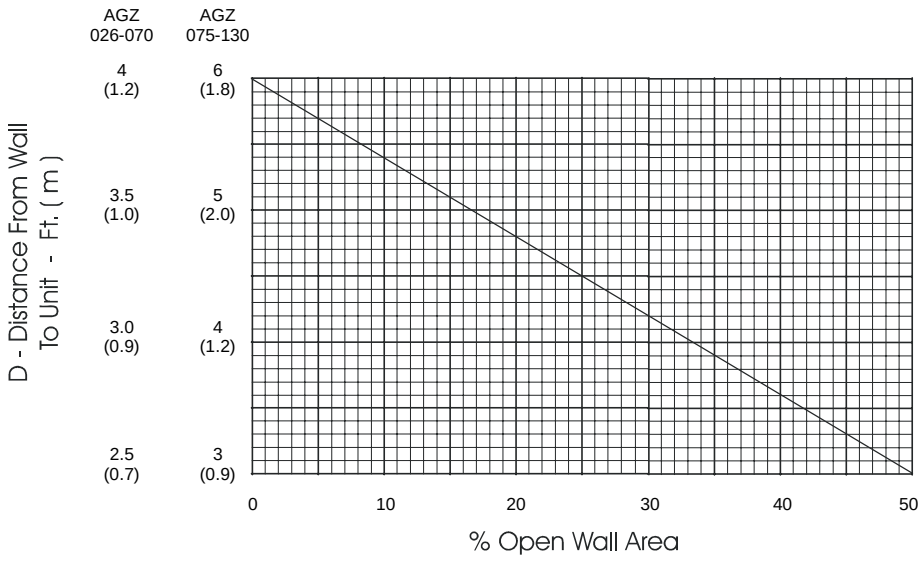



***Figure 12, Wall Free Area vs Distance***



## Case 5, Pit/Solid Wall Installation

Pit installations can cause operating problems and great care should be exercised if they are to be used on an installation. Recirculation and restriction can both occur. A solid wall surrounding a unit is substantially the same as a pit and the data presented here should be used.

Steel grating is sometimes used to cover a pit to prevent accidental falls or trips into the pit. The grating material and installation design must be strong enough to prevent such accidents, yet provide abundant open area or serious recirculation problems will occur. Have any pit installation reviewed by McQuay application engineers prior to installation to make sure it has sufficient air-flow characteristics. The installation design engineer must approve the work to avoid the risk of accident.

***Figure 13, Pit Installation***

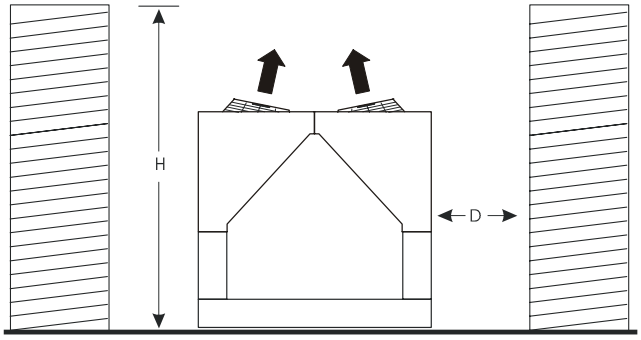
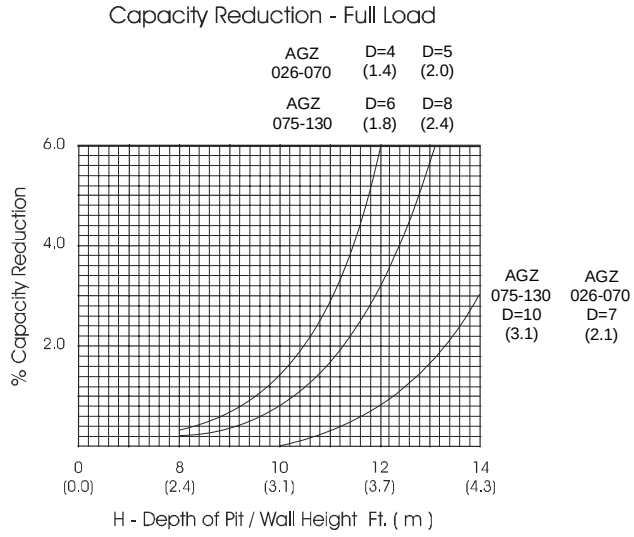
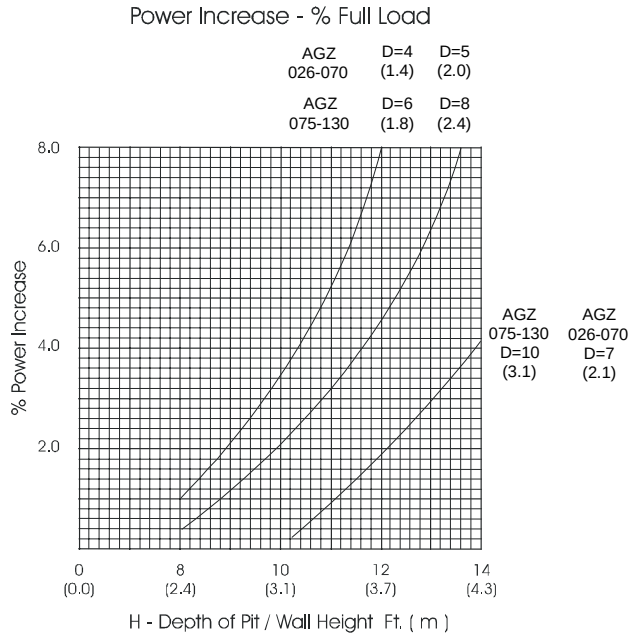



***Figure 14, Adjustment Factor***



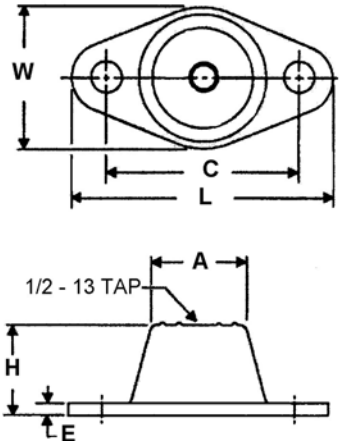
### Sound Isolation

The low sound level of the AGZ chiller is suitable for most applications. When additional sound reduction is necessary, locate the unit away from sound sensitive areas. Avoid locations beneath windows or between structures where normal operating sounds may be objectionable. Reduce structurally transmitted sound by isolating water lines, electrical conduit and the unit itself. Use wall sleeves and rubber isolated piping hangers to reduce transmission of water or pump noise into occupied spaces. Use flexible electrical conduit to isolate sound transmission through electrical conduit. Spring isolators are effective in reducing the low amplitude sound generated by scroll compressors and for unit isolation in sound sensitive areas.

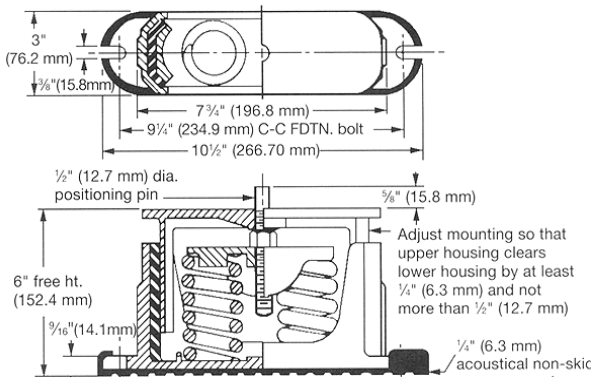
## Vibration Isolators

Vibration isolators are recommended for all roof-mounted installations or wherever vibration transmission is a consideration. Table 2 lists isolator loads for all unit sizes.

***Neoprene-in-Shear Dimensions***




***Spring Isolator Dimensions***




| Color Code | L | W | H | B | C | D |
|---|---|---|---|---|---|---|
| Gray | 5.5 | 3.37 | 1.75 | 0.5 | 4.12 | 0.56 |
| Black, Red | 6.25 | 4.62 | 1.62 | 0.5 | 5.0 | 0.56 |

Figure 15 shows isolator locations. See Dimensional Data starting on page 36 for detailed mounting hole locations.

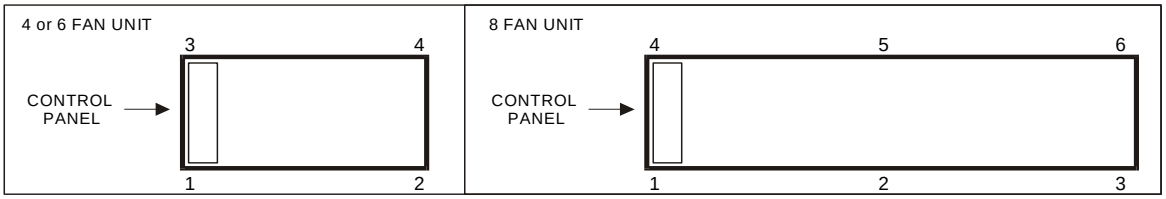
Isolators are also recommended for slab installations, primarily to keep the unit base from resting its entire length directly on the slab.

### Isolator Installation

The unit should be initially installed on shims or blocks at the listed free height. When all piping, wiring, flushing, charging, etc. is completed, adjust the springs upward to load them and to provide clearance to remove the shims or blocks.

Installation of spring isolators requires flexible piping connections and at least three feet of conduit flex tie-ins. Piping and conduit must be supported independently of the unit.

***Figure 15, Isolator Locations***



## *Table 2, AGZ-BS/BH, Isolator Loads At Each Mounting Location (With Aluminum Fins)*

| Unit Size | No. of Fans | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | Total Unit | | (1) Copper Fin Add | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | lb | kg | lb | kg | lb | kg | lb | kg | lb | kg | lb | kg | lb | kg | lb. | kg |
| **026B** | 4 | 1281 | 580 | 941 | 426 | 1020 | 462 | 748 | 339 | - | - | - | - | 3990 | 1807 | 72 | 32 |
| **030B** | 4 | 1297 | 588 | 952 | 431 | 1032 | 467 | 759 | 344 | - | - | - | - | 4040 | 1830 | 72 | 32 |
| **035B** | 4 | 1283 | 581 | 942 | 427 | 1069 | 484 | 786 | 356 | - | - | - | - | 4080 | 1848 | 72 | 32 |
| **040B** | 4 | 1360 | 616 | 940 | 426 | 1082 | 490 | 748 | 339 | - | - | - | - | 4130 | 1871 | 72 | 32 |
| **045B** | 4 | 1377 | 624 | 952 | 431 | 1148 | 520 | 793 | 359 | - | - | - | - | 4270 | 1934 | 72 | 32 |
| **050B** | 4 | 1384 | 627 | 1016 | 460 | 1153 | 522 | 847 | 384 | - | - | - | - | 4400 | 1993 | 119 | 54 |
| **055B** | 4 | 1391 | 630 | 1085 | 492 | 1159 | 525 | 905 | 410 | - | - | - | - | 4540 | 2057 | 119 | 54 |
| **060B** | 4 | 1410 | 639 | 1099 | 498 | 1175 | 532 | 916 | 415 | - | - | - | - | 4600 | 2084 | 142 | 65 |
| **065B** | 4 | 1382 | 626 | 1214 | 550 | 1205 | 546 | 1059 | 480 | - | - | - | - | 4860 | 2202 | 142 | 65 |
| **070B** | 4 | 1419 | 643 | 1246 | 564 | 1238 | 561 | 1087 | 492 | - | - | - | - | 4990 | 2260 | 217 | 99 |
| **075B** | 6 | 1854 | 840 | 1411 | 639 | 1854 | 840 | 1411 | 639 | - | - | - | - | 6530 | 2958 | 217 | 99 |
| **085B** | 6 | 1942 | 880 | 1479 | 670 | 1856 | 841 | 1413 | 640 | - | - | - | - | 6690 | 3031 | 217 | 99 |
| **090B** | 6 | 1975 | 895 | 1450 | 657 | 1975 | 895 | 1450 | 657 | - | - | - | - | 6850 | 3103 | 217 | 99 |
| **100B** | 8 | 1464 | 663 | 1341 | 607 | 1219 | 552 | 1400 | 634 | 1282 | 581 | 1164 | 527 | 7870 | 3565 | 289 | 131 |
| **110B** | 8 | 1513 | 685 | 1358 | 615 | 1204 | 545 | 1513 | 685 | 1358 | 615 | 1204 | 545 | 8150 | 3692 | 289 | 131 |
| **120B** | 8 | 1656 | 750 | 1486 | 673 | 1317 | 597 | 1582 | 717 | 1420 | 643 | 1259 | 570 | 8720 | 3950 | 289 | 131 |
| **130B** | 8 | 1714 | 776 | 1508 | 683 | 1303 | 590 | 1714 | 776 | 1508 | 683 | 1303 | 590 | 9050 | 4100 | 289 | 131 |

**NOTE** (1): Additional weight for copper coils is per mounting location.

## *Table 3, Isolator Kit Numbers*

| AGZ Model | 026, 030 035 | 040, 045 050 | 055 | 060 | 065, 070 | 075, 085 090 | 100 | 110 | 120,130 |
|---|---|---|---|---|---|---|---|---|---|
| **Spring Kit Part No.** | 330349603 | 330349603 | 330349605 | 330349606 | 330349607 | 330349609 | 330349612 | 330349613 | 330349614 |
| **R-I-S Kit Part No.** | 330349702 | 330349703 | 330349704 | 330349704 | 330349705 | 330349706 | 330349707 | 330349708 | 330349709 |

## *Table 4, Isolator Locations*

| AGZ-B, Chillers | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit Size | Operating Weight. | | Neoprene-In-Shear Mountings | | | | | | Spring-Flex Mountings | | | | | |
| | lbs | kg | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
| **026B** | 3990 | 1807 | Black | Gray | Gray | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **030B** | 4040 | 1830 | Black | Gray | Gray | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **035B** | 4080 | 1848 | Black | Gray | Gray | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **040B** | 4130 | 1871 | Black | Gray | Black | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **045B** | 4270 | 1934 | Black | Gray | Black | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **050B** | 4400 | 1993 | Black | Gray | Black | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **055B** | 4540 | 2057 | Black | Black | Black | Gray | - | - | Orange | Purple | Purple | Purple | - | - |
| **060B** | 4600 | 2084 | Black | Black | Black | Gray | - | - | Orange | Purple | Orange | Purple | - | - |
| **065B** | 4860 | 2202 | Black | Black | Black | Black | - | - | Orange | Orange | Orange | Purple | - | - |
| **070B** | 4990 | 2260 | Black | Black | Black | Black | - | - | Orange | Orange | Orange | Purple | - | - |
| **075B** | 6530 | 2958 | Red | Black | Red | Black | - | - | Gray | Orange | Gray | Orange | - | - |
| **085B** | 6690 | 3031 | Red | Black | Red | Black | - | - | Gray | Orange | Gray | Orange | - | - |
| **090B** | 6850 | 3103 | Red | Black | Red | Black | - | - | Gray | Orange | Gray | Orange | - | - |
| **100B** | 7870 | 3565 | Black | Black | Black | Black | Black | Black | Orange | Orange | Orange | Orange | Orange | Orange |
| **110B** | 8150 | 3692 | Red | Black | Black | Red | Black | Black | Green | Orange | Orange | Green | Orange | Orange |
| **120B** | 8720 | 3950 | Red | Red | Black | Red | Red | Black | Green | Green | Orange | Green | Green | Orange |
| **130B** | 9050 | 4100 | Red | Red | Black | Red | Red | Black | Green | Green | Orange | Green | Green | Orange |

**NOTES:**

1. Neoprene-in-shear isolators: Gray=RP-3 Gray, Black=RP-4 Black, Red=RP-4 Red.

### *Table 5, AGZ BM/BB, Isolator Loads At Each Mounting Location (With Aluminum Fins)*

| AGZ-BM/BB Model | | Shipping Wt | Operating. Wt | Loc. 1 | Loc. 2 | Loc. 3 | Loc. 4 | Total | (1) Add'l for Copper Fins |
|---|---|---|---|---|---|---|---|---|---|
| AGZ 026 | lbs | 3550 | 3600 | 1227 | 901 | 849 | 623 | 3600 | 72 |
| | kg | 1608 | 1631 | 556 | 408 | 385 | 282 | 1631 | 32 |
| AGZ 030 | lbs | 3550 | 3600 | 1227 | 901 | 849 | 623 | 3600 | 72 |
| | kg | 1608 | 1631 | 556 | 408 | 385 | 282 | 1631 | 32 |
| AGZ 035 | lbs | 3550 | 3600 | 1227 | 901 | 849 | 623 | 3600 | 72 |
| | kg | 1608 | 1631 | 556 | 408 | 385 | 282 | 1631 | 32 |
| AGZ 040 | lbs | 3550 | 3610 | 1261 | 872 | 873 | 604 | 3610 | 72 |
| | kg | 1608 | 1635 | 571 | 395 | 395 | 274 | 1635 | 32 |
| AGZ 045 | lbs | 3590 | 3650 | 1275 | 881 | 883 | 611 | 3650 | 72 |
| | kg | 1626 | 1653 | 578 | 399 | 400 | 277 | 1653 | 32 |
| AGZ 050 | lbs | 3730 | 3800 | 1295 | 951 | 896 | 658 | 3800 | 119 |
| | kg | 1690 | 1721 | 587 | 431 | 406 | 298 | 1721 | 54 |
| AGZ 055 | lbs | 3780 | 3850 | 1303 | 1016 | 860 | 671 | 3850 | 119 |
| | kg | 1712 | 1744 | 590 | 460 | 390 | 304 | 1744 | 54 |
| AGZ 060 | lbs | 3820 | 4040 | 1367 | 1066 | 903 | 704 | 4040 | 142 |
| | kg | 1730 | 1830 | 619 | 483 | 409 | 319 | 1830 | 65 |
| AGZ 065 | lbs | 3970 | 4070 | 1305 | 1146 | 862 | 757 | 4070 | 142 |
| | kg | 1798 | 1844 | 591 | 519 | 390 | 343 | 1844 | 65 |
| AGZ 070 | lbs | 4080 | 4180 | 1278 | 1192 | 885 | 825 | 4180 | 217 |
| | kg | 1848 | 1894 | 579 | 540 | 401 | 374 | 1894 | 99 |

NOTE (1): Additional weight for copper coils is per mounting location.

### *Table 6, Isolator Loads At Each Mounting Location (With Aluminum Fins)*

| AGZ-BM/BB Model | | Shipping Wt. | Operating Wt. | Loc 1 | Loc 2 | Loc 3 | Loc 4 | Loc 5 | Loc 6 | TOTAL | (1) Add'l for Copper Fins |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AGZ 075 | lbs | 5510 | 5630 | 1649 | 1166 | 1649 | 1166 | - | - | 5630 | 217 |
| | kg | 2496 | 2550 | 747 | 528 | 747 | 528 | - | - | 2550 | 99 |
| AGZ 085 | lbs | 5670 | 5790 | 1734 | 1227 | 1657 | 1172 | - | - | 5790 | 217 |
| | kg | 2569 | 2623 | 786 | 556 | 751 | 531 | - | - | 2623 | 99 |
| AGZ 090 | lbs | 5830 | 5950 | 1770 | 1205 | 1770 | 1205 | - | - | 5950 | 217 |
| | kg | 2641 | 2695 | 802 | 546 | 802 | 546 | - | - | 2695 | 99 |
| AGZ 100 | lbs | 6820 | 6970 | 1323 | 1188 | 1053 | 1265 | 1135 | 1006 | 6970 | 289 |
| | kg | 3089 | 3157 | 599 | 538 | 477 | 573 | 514 | 456 | 3157 | 131 |
| AGZ 110 | lbs | 7080 | 7230 | 1396 | 1205 | 1014 | 1396 | 1205 | 1014 | 7230 | 289 |
| | kg | 3207 | 3275 | 632 | 546 | 459 | 632 | 546 | 459 | 3275 | 131 |
| AGZ 120 | lbs | 7360 | 7480 | 1477 | 1275 | 1073 | 1411 | 1218 | 1026 | 7480 | 289 |
| | kg | 3334 | 3388 | 669 | 578 | 486 | 639 | 552 | 465 | 3388 | 131 |
| AGZ 130 | lbs | 7640 | 7760 | 1555 | 1293 | 1032 | 1555 | 1293 | 1032 | 7760 | 289 |
| | kg | 3461 | 3515 | 704 | 586 | 467 | 704 | 586 | 467 | 3515 | 131 |

NOTE (1): Additional weight for copper coils is per mounting location.

### *Table 7, Isolator Kit Part Numbers*

| AGZ-BM Model | 026 - 035 | 040 - 060 | 065 | 070 | 075 - 090 | 100, 110 | 120, 130 |
|---|---|---|---|---|---|---|---|
| Spring Kit Part No. | 330349601 | 330349602 | 330349603 | 330349604 | 330349608 | 330349610 | 330349611 |
| R-I-S Kit Part No. | 330349701 | 330349701 | 330349703 | 330349703 | 330349706 | 330349707 | 330349708 |

***Table 8,AGZ BM/BB, Isolator Locations***

| ACZ-BS, AGZ-BM Less Evaporator Units | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AGZ-BM/BB Model | Operating Weight | | Neoprene-In-Shear Mountings | | | | | | Spring-Flex Mountings | | | | | |
| | lbs | kg | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 (1) | 5 | 6 |
| **026** | 3600 | 1631 | Black | Gray | Gray | Green | - | - | Orange | Purple | Red | Orange | | |
| **030** | 3600 | 1631 | Black | Gray | Gray | Green | - | - | Orange | Purple | Red | Orange | - | - |
| **035** | 3600 | 1631 | Black | Gray | Gray | Green | - | - | Orange | Purple | Red | Orange | - | - |
| **040** | 3610 | 1635 | Black | Gray | Gray | Green | - | - | Orange | Purple | Purple | Orange | - | - |
| **045** | 3650 | 1653 | Black | Gray | Gray | Green | - | - | Orange | Purple | Purple | Orange | - | - |
| **050** | 3800 | 1721 | Black | Gray | Gray | Green | - | - | Orange | Purple | Purple | Orange | - | - |
| **055** | 3850 | 1744 | Black | Gray | Gray | Green | - | - | Orange | Purple | Purple | Orange | - | - |
| **060** | 4040 | 1830 | Black | Gray | Gray | Green | - | - | Orange | Purple | Purple | Orange | - | - |
| **065** | 4070 | 1844 | Black | Black | Gray | Gray | - | - | Orange | Purple | Purple | Red | - | - |
| **070** | 4180 | 1894 | Black | Black | Gray | Gray | - | - | Orange | Orange | Purple | Red | - | - |
| **075** | 5630 | 2550 | Red | Black | Red | Black | - | - | Green | Orange | Green | Orange | - | - |
| **085** | 5790 | 2623 | Red | Black | Red | Black | - | - | Green | Orange | Green | Orange | - | - |
| **090** | 5950 | 2695 | Red | Black | Red | Black | - | - | Green | Orange | Green | Orange | - | - |
| **100** | 6970 | 3157 | Black | Black | Black | Black | Black | Black | Orange | Orange | Purple | Orange | Orange | Purple |
| **110** | 7230 | 3275 | Black | Black | Black | Black | Black | Black | Orange | Orange | Purple | Orange | Orange | Purple |
| **120** | 7480 | 3388 | Red | Black | Black | Red | Black | Black | Green | Orange | Purple | Green | Orange | Purple |
| **130** | 7760 | 3515 | Red | Black | Black | Red | Black | Black | Green | Orange | Purple | Green | Orange | Purple |

**NOTE (1):** Position #4 is a CP-1, single spring isolator for ACZ 030 to 065 and AGZ 026 to 060. All others are CP-2, two spring.

# Ambient Air Temperature Limitations

## Standard/High Ambient Panels

Models AGZ-B (26 to 130 tons, two circuit) have electrical data and subsequent field wiring requirements that are tailored to individual applications.

There are many installations where the expected summer ambient air temperatures will be at 105°F (40.1°C) or less, resulting in smaller unit electrical requirements compared to operation at 106°F (41.1) and above. In these lower temperature cases, there can be considerable installation cost savings by using smaller and more appropriate electrical service.

Therefore, the AGZ electrical data is divided into two classifications based on the design ambient temperature where the unit will operate. Standard Ambient unit electrical data (BS and BM models) is for operation in ambient temperatures of 105°F (40.1°C) or less. Units with the High Ambient designation (BH and BB models) are for use above 105°F (40.1°C) to 125°F (51.7°C).

The AGZ-B units for high ambient operation require the addition of the High Ambient Control Panel Option, which includes the addition of a small fan with a filter in the air intake to cool the control panel, and a unit nameplate that lists the larger electrical requirements.

All units with the optional VFD low ambient fan control automatically include the High Ambient Control Panel Option. Operation of the VFD generates a quantity of panel heat best removed by use of a control panel fan.

| Winter Operation Temperatures | 0°F to 34°F | | 35°F and Above | |
|---|---|---|---|---|
| Fan Control | Optional VFD (1) | | Standard FanTrol (2) | |
| Design Ambient Air Temperature | ≤105°F | >106°F | ≤105°F | >106°F |
| Electrical Data (3) | Standard Ambient | High Ambient | Standard Ambient | High Ambient |
| Panel Fan Required (4) | Yes | Yes | No | Yes |
| Model Designator (5) | | | | |
| Packaged | BS | BH | BS | BH |
| Remote Evaporator | BM | BB | BM | BB |

NOTES
1. VFD is variable speed, fan control through the MicroTech Ii controller.
2. FanTrol is fan cycling off discharge pressure.
3. Standard Ambient electrical data begins on page 36, High Ambient data begins on page 46.
4. The VFD option automatically includes the factory-installed panel fan and filter set
5. The designator is the last two characters in the model number, i.e. AGZ 100**BS.**

## Panel Ratings

| Voltage | Standard | | Options | |
|---|---|---|---|---|
| | **Standard Panel** | **Optional VFD** | **High Short Circuit Panel (kA)** | **High Interrupt Panel w/ Disconnect Swt. (kA)** |
| **208-230** | 35 | 5 | 120 | 120 |
| **240** | 35 | 5 | 100 | 100 |
| **380-460** | 35 | 5 | 65 | 65 |
| **575** | 5 | 5 | 25 | 25 |

### Water Flow Limitations, Constant Flow

The evaporator flow rates and pressure drops shown on page 25 are for full load design purposes. 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.

Evaporator flow rates below the minimum values can result in laminar flow causing freeze-up problems, scaling and poor control. Flow rates above the maximum values will result in unacceptable pressure drops and can cause excessive erosion, potentially leading to failure.

### Water Flow Limitations, Variable Flow

The full load, minimum flow limitation for constant flow is not to be confused with the part load minimum flow rate that must be maintained for chillers operating in primary *variable* flow pumping systems. As chiller capacity drops, the flow rate for this pumping system will reduce proportionally. See the following table for the *part load* minimum flow rates.

Other design practices for variable flow systems requiring a range of evaporator flow rates can be found below.

These minimum flow rates assume that flow will be reduced proportionally to the cooling load.

***Table 9, Minimum Part Load Flow Rates***

| AGZ Model | 010 | 013 | 017 | 020 | 025 | 029 | 034 | 026 | 030 | 035 | 040 | 045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minimum Part Load Flow (GPM) | 10 | 13 | 15 | 20 | 22 | 27 | 33 | 26 | 29 | 32 | 37 | 41 |
| **AGZ Model** | **050** | **055** | **060** | **065** | **070** | **075** | **085** | **090** | **100** | **110** | **120** | **130** |
| Minimum Part Load Flow (GPM) | 45 | 50 | 55 | 59 | 63 | 71 | 119 | 128 | 146 | 161 | 180 | 194 |

### Variable Speed Pumping

Variable water flow involves changing the water flow through the evaporator as the load changes. McQuay chillers are designed for this duty provided that the rate of change in water flow is slow and the minimum and maximum flow rates for the vessel are not exceeded.

The recommended maximum change in water flow is 10 percent of the change per minute.

The water flow through the vessel must remain above the values listed on Table 9. If flow drops below the minimum allowable, large reductions in heat transfer can occur.

## Water Piping

Local authorities can supply the installer with the proper building and safety codes required for safe and proper installation.

Install piping with minimum bends and changes in elevation to minimize pressure drop. The following issues must be considered when designing and installing water piping:

1. Vibration eliminators to reduce vibration and noise transmission to the building.
2. Shutoff valves are required to isolate the unit from the piping during unit servicing.
3. Manual or automatic air vent valves at the high points of the system. Drains must be installed at the lowest points in the system.
4. Adequate water pressure must be maintained (expansion tank or regulating valve).
5. Temperature and pressure indicators located at the unit are required to aid in unit servicing.
6. A strainer or other means of removing foreign matter from the water before it enters the pump must be installed. Place the strainer far enough upstream to prevent cavitation at the pump inlet (consult pump manufacturer for recommendations). The use of a strainer will prolong pump life and keep system performance up.
7. Flush the system water piping thoroughly before making connections to the unit evaporator. Be sure to install a strainer (40-mesh for models AGZ 010 through 070 and 20-mesh for AGZ 075 through 130) in the return water line before the inlet to the chiller. Design the water piping so the chilled water circulating pump discharges into the evaporator inlet.
8. The unit's evaporator has a thermostat and heater to prevent freeze-up down to -20°F (-29°C). The heating cable can be wired to a separate 115V supply circuit. As shipped from the factory, the heating cable is wired to the control circuit. All water piping to the unit must also be protected to prevent freezing.

**CAUTION**

**If separate disconnect is used for the 115V supply to the evaporator heating cable, mark the disconnect clearly to ensure the disconnect is not accidentally shut off during cold seasons causing a possible damaging evaporator freeze-up.**

9. If the unit is used as a replacement chiller, flush the system thoroughly before unit installation. Regular water analysis and chemical water treatment for the evaporator loop is recommended immediately at equipment start-up.
10. The total water volume in the system should be sufficient to prevent frequent "on-off" cycling. Turnover rate should not be less than 4 minutes for normal variable cooling loads.
11. When glycol is added to the water system for freeze protection, the refrigerant suction pressure will be lower, cooling performance less, and water side pressure drop greater. If the percentage of glycol is high, or if propylene is used instead of ethylene glycol, the added pressure drop and loss of performance could be substantial. When Glycol or Ice are selected as Unit Mode, the MicroTech II will automatically reset the available range for the Leaving Water Temperature, Freezestat and Evaporator Pressure settings.
12. Reset the freezestat setting to approximately 4 to 5 degrees F (2.3 to 2.8 degrees C) below the leaving chilled water setpoint temperature. See the section titled "Glycol Solutions" for additional information concerning glycol.
13. Perform a preliminary leak check before insulating the piping and filling the system.
14. Piping insulation should include a vapor barrier to prevent condensation and possible damage to the building structure.

***Figure 16, AGZ 075 – AGZ 130, Typical Field Evaporator Water Piping***

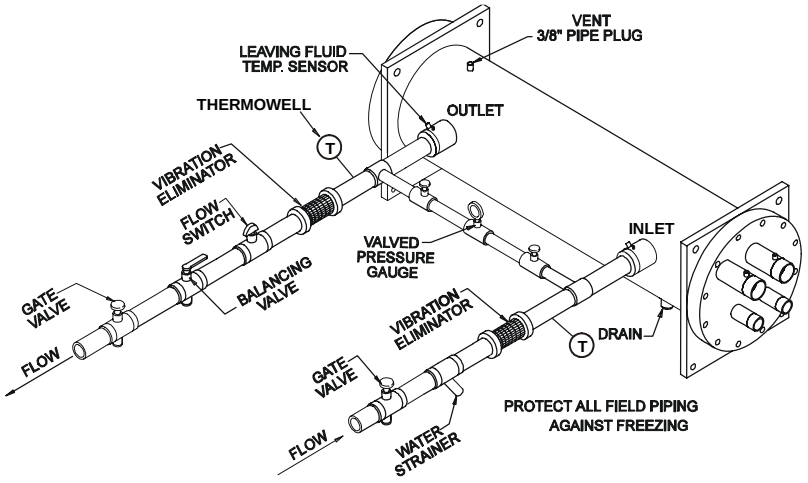
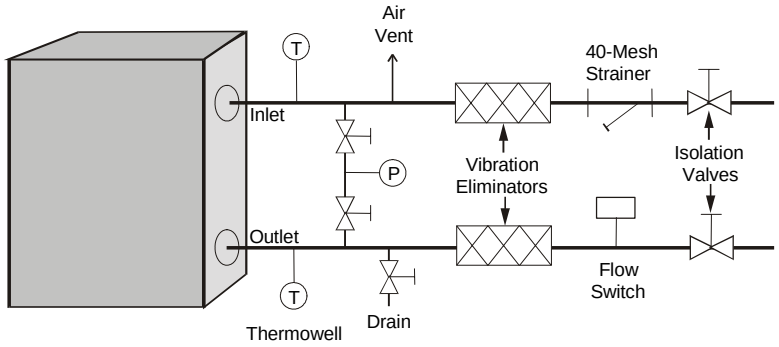


***Figure 17, AGZ 026 - AGZ 070, Typical Field Evaporator Water Piping***




**NOTE**: Outdoor piping must be protected if freezing temperatures are a possibility.

# Flow Switch

Mount a water flow switch in the leaving water line to shut down the unit when water flow is interrupted. A flow switch is an equipment protection control and should never be used to cycle a unit.

A "paddle" type flow switch is available from McQuay (part number 017503300). Certain minimum flow rates are required to close the switch and are listed in Table 10 on page 19.

Installation should be as shown in Figure 18. Connect the normally open contacts of the flow switch in the unit control center at terminals 44 and 61. There is also a set of normally closed contacts on the switch that can be used for an indicator light or an alarm to indicate when a "no flow" condition exists. Freeze protect any flow switch that is installed outdoors. Manufacturer's instructions included with the switch should be followed.

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**NOTE:** Differential pressure switches are not recommended for outdoor installation. They can freeze and not indicate a no-flow condition.

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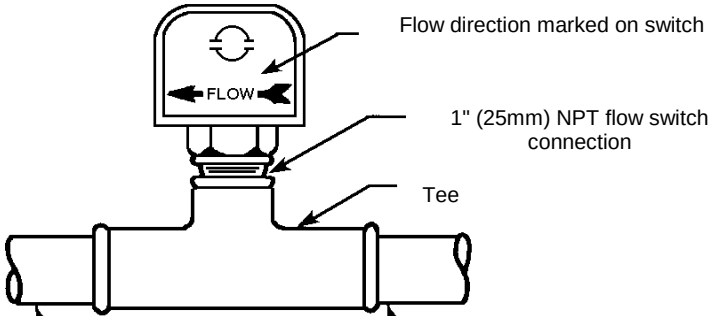
***Table 10, Flow Switch Minimum/Maximum Flow Rates***

| Nominal Pipe Size Inches (mm) | Minimum Required Flow To Activate Switch - gpm (l/m) | Maximum Safe Flow Rate gpm (l/m) |
|---|---|---|
| 2 (50.8) | 13.7 (51.8) | 105 (397.4) |
| 2 1/2 (63.50 | 17.9 (67.8) | 149 (564.0) |
| 3 (76.20 | 24.2 (91.6) | 230 (870.6) |
| 4 (101.6) | 35.3 (134.0) | 397 (1502.7) |
| 5 (127.0) | 48.6 (184.0) | 654 (2475.4) |
| 6 (152.4) | 60.3 (228.0) | 900 (3406.5) |

**Note:** See pressure drop table on page 21 for minimum and maximum flow through the evaporator.

***Figure 18, Flow Switch Installation***



## Water Connections

Bring water piping to the evaporator through the side between the vertical supports. Provide taps for the connection of pressure gauges and thermometers in the inlet and outlet lines. Check the inlet and outlet labels on the unit against the certified drawings supplied on the job and be sure the water piping is hooked up correctly. Contact the McQuay sales office if any discrepancies exist.

## System Water Volume Considerations

All chillers need adequate time to recognize a load change, respond to the change and stabilize without short cycling the compressor. The water volume in the system and the size of the piping loop is a critical consideration. Good engineering practice is to have a minimum water volume of four times the flow rate (GPM) for comfort cooling applications. For process applications where the load can change quickly, contact the local McQuay sales office for recommendations. A water storage tank (provided by others) may be required to increase the system water volume in some systems.

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 suggestions, the possibility of problems increases. We believe that these guidelines should be an industry standard and not just recommendations from McQuay.

## Variable Speed Pumping

Variable water flow involves reducing the water flow through the evaporator as the load decreases. McQuay chillers are designed for this duty provided that the rate of change in water flow is not greater than 10 percent of the change per minute.

The water flow through the vessel must remain above the values shown on Table 9 on page 17. If flow drops below the minimum allowable, large reductions in heat transfer can occur.

## Glycol Solutions

The use of a glycol/water mixture in the evaporator to prevent freezing will reduce system capacity and efficiency, as well as increase pressure drop. The system capacity, required glycol solution flow rate, and pressure drop with glycol may be calculated using the following formulas and tables.

1. **Capacity** – Multiply the capacity based on water by the *Capacity* correction factor from Table 11 through Table 14.
2. **Flow** – Multiply the water evaporator flow by the *Flow* correction factor from Table 11 through Table 14 to determine the increased evaporator flow due to glycol.

   If the flow is unknown, it can be calculated from the following equation:

   $$\text{Glycol Flow (gpm)} = \frac{24 \times \textit{Tons Capacity (glycol)}}{\textit{Delta} - T} \times \textit{Flow Correction Factor})$$

   For Metric Applications – Use the following equation for metric applications:

   $$\text{Glycol Flow (l/s)} = \frac{\textit{kW Capacity}}{4.18 \times \textit{Delta} - T} \times \textit{Flow Correction Factor}$$

3. **Pressure drop** -- Multiply the water pressure drop from page 25 by *Pressure Drop* correction factor from Table 11 through Table 14. High concentrations of propylene glycol at low temperatures may cause unacceptably high pressure drops.
4. **Power** -- Multiply the water system power by *Power* correction factor from Table 11 through Table 14.

Test coolant with a clean, accurate glycol solution hydrometer (similar to that found in service stations) to determine the freezing point. Obtain percent glycol from the freezing point table below. It is recommended that a minimum of 25% solution by weight be used for protection against corrosion or that additional compatible inhibitors be added.

Concentrations above 35 percent do not provide any additional burst protection and should be carefully considered before using.

**⚠ CAUTION**

**Do not use an automotive grade antifreeze. Industrial grade glycols must be used. Automotive antifreeze contains inhibitors which will cause plating on the copper tubes within the chiller evaporator. The type and handling of glycol used must be consistent with local codes.**

***Table 11, Ethylene Glycol Factors for Models AGZ 026B to 070B***

| % E.G. | Freeze Point | | Capacity | Power | Flow | PD |
|---|---|---|---|---|---|---|
| | °F | °C | | | | |
| **10** | 26 | -3.3 | 0.998 | 0.998 | 1.036 | 1.097 |
| **20** | 18 | -7.8 | 0.993 | 0.997 | 1.060 | 1.226 |
| **30** | 7 | -13.9 | 0.987 | 0.995 | 1.092 | 1.369 |
| **40** | -7 | -21.7 | 0.980 | 0.992 | 1.132 | 1.557 |
| **50** | -28 | -33.3 | 0.973 | 0.991 | 1.182 | 1.791 |

***Table 12, Propylene Glycol Factors for Models AGZ 026B to 070B***

| % P.G. | Freeze Point | | Capacity | Power | Flow | PD |
|---|---|---|---|---|---|---|
| | °F | °C | | | | |
| **10** | 26 | -3.3 | 0.995 | 0.997 | 1.016 | 1.100 |
| **20** | 19 | -7.2 | 0.987 | 0.995 | 1.032 | 1.211 |
| **30** | 9 | -12.8 | 0.978 | 0.992 | 1.057 | 1.380 |
| **40** | -5 | -20.6 | 0.964 | 0.987 | 1.092 | 1.703 |
| **50** | -27 | -32.8 | 0.952 | 0.983 | 1.140 | 2.251 |

***Table 13, Ethylene Glycol Factors for Models AGZ 075B to 130B***

| % E.G. | Freeze Point | | Capacity | Power | Flow | PD |
|---|---|---|---|---|---|---|
| | °F | °C | | | | |
| **10** | 26 | -3.3 | 0.994 | 0.998 | 1.038 | 1.101 |
| **20** | 18 | -7.8 | 0.982 | 0.995 | 1.063 | 1.224 |
| **30** | 7 | -13.9 | 0.970 | 0.992 | 1.095 | 1.358 |
| **40** | -7 | -21.7 | 0.955 | 0.987 | 1.134 | 1.536 |
| **50** | -28 | -33.3 | 0.939 | 0.983 | 1.184 | 1.755 |

***Table 14, Propylene Glycol Factors for Models AGZ 075B to 130B***

| % P.G. | Freeze Point | | Capacity | Power | Flow | PD |
|---|---|---|---|---|---|---|
| | °F | °C | | | | |
| **10** | 26 | -3.3 | 0.988 | 0.996 | 1.019 | 1.097 |
| **20** | 19 | -7.2 | 0.972 | 0.992 | 1.035 | 1.201 |
| **30** | 9 | -12.8 | 0.951 | 0.987 | 1.059 | 1.351 |
| **40** | -5 | -20.6 | 0.926 | 0.979 | 1.095 | 1.598 |
| **50** | -27 | -32.8 | 0.906 | 0.974 | 1.142 | 2.039 |

## Altitude Correction Factors

Performance tables are based at sea level. Elevations other than sea level affect the performance of the unit. The decreased air density will reduce condenser capacity consequently reducing the unit's performance. For performance at elevations other than sea level, refer to Table 15 or Table 16.

## Evaporator Temperature Drop Factors

Performance tables are based on a 10-degree F (5-degree C) temperature drop through the evaporator. Adjustment factors for applications with temperature ranges from 6 to 16-degree F (3.3 to 8.9-degree C) are in Table 15 or Table 16.

Temperature drops outside this 6 to 16-degree F (3.3 to 8.9-degree C) range can affect the control system's capability to maintain acceptable control and are not recommended.

The maximum water temperature that can be circulated through the evaporator in a non-operating mode is 100°F (37.8°C).

## Fouling Factor

Performance tables are based on water with a fouling factor of

$0.0001\,ft^2 \times hr \times °F / BTU$ *or* $(0.0176 m^2 \times °C / kW)$ per ARI 550/590-98.

As fouling is increased, performance decreases. For performance at other than 0.0001 (0.0176) fouling factor, refer to Table 15 or Table 16.

Foreign matter in the chilled water system will adversely affect the heat transfer capability of the evaporator and could increase the pressure drop and reduce the water flow. Maintain proper water treatment to provide optimum unit operation.

***Table 15, Capacity and Power Derates, Models AGZ 026B to 070B***

| Altitude | Chilled Water Delta T | | Fouling Factor | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0001 (0.0176) | | 0.00025 (0.044) | | 0.00075 (0.132) | | 0.00175 (0.308) | |
| | °F | °C | Cap. | Power | Cap. | Power | Cap. | Power | Cap. | Power |
| Sea Level | 6 | 3.3 | 0.978 | 0.993 | 0.975 | 0.991 | 0.963 | 0.987 | 0.940 | 0.980 |
| | 8 | 4.4 | 0.989 | 0.996 | 0.986 | 0.994 | 0.973 | 0.990 | 0.950 | 0.983 |
| | 10 | 5.6 | 1.000 | 1.000 | 0.996 | 0.999 | 0.984 | 0.994 | 0.961 | 0.987 |
| | 12 | 6.7 | 1.009 | 1.003 | 1.005 | 1.001 | 0.993 | 0.997 | 0.969 | 0.990 |
| | 14 | 7.7 | 1.018 | 1.004 | 1.014 | 1.003 | 1.002 | 0.999 | 0.978 | 0.991 |
| | 16 | 8.9 | 1.025 | 1.007 | 1.021 | 1.006 | 1.009 | 1.001 | 0.985 | 0.994 |
| 2000 feet 610 meters | 6 | 3.3 | 0.977 | 1.001 | 0.973 | 1.000 | 0.961 | 0.996 | 0.938 | 0.989 |
| | 8 | 4.4 | 0.987 | 1.006 | 0.984 | 1.004 | 0.971 | 1.000 | 0.948 | 0.993 |
| | 10 | 5.6 | 0.998 | 1.009 | 0.995 | 1.007 | 0.982 | 1.003 | 0.959 | 0.996 |
| | 12 | 6.7 | 1.007 | 1.011 | 1.004 | 1.010 | 0.991 | 1.006 | 0.967 | 0.998 |
| | 14 | 7.7 | 1.014 | 1.014 | 1.011 | 1.013 | 0.998 | 1.009 | 0.974 | 1.001 |
| | 16 | 8.9 | 1.022 | 1.016 | 1.018 | 1.014 | 1.005 | 1.010 | 0.981 | 1.003 |
| 4000 feet 1220 meters | 6 | 3.3 | 0.973 | 1.011 | 0.970 | 1.010 | 0.957 | 1.006 | 0.935 | 0.998 |
| | 8 | 4.4 | 0.984 | 1.014 | 0.980 | 1.013 | 0.968 | 1.009 | 0.945 | 1.001 |
| | 10 | 5.6 | 0.995 | 1.019 | 0.991 | 1.017 | 0.979 | 1.013 | 0.955 | 1.005 |
| | 12 | 6.7 | 1.004 | 1.021 | 1.000 | 1.020 | 0.987 | 1.016 | 0.964 | 1.008 |
| | 14 | 7.7 | 1.011 | 1.024 | 1.007 | 1.023 | 0.994 | 1.018 | 0.971 | 1.011 |
| | 16 | 8.9 | 1.018 | 1.027 | 1.014 | 1.026 | 1.002 | 1.021 | 0.978 | 1.014 |
| 6000 feet 1830 meters | 6 | 3.3 | 0.969 | 1.021 | 0.966 | 1.020 | 0.954 | 1.016 | 0.931 | 1.008 |
| | 8 | 4.4 | 0.980 | 1.026 | 0.977 | 1.024 | 0.964 | 1.020 | 0.942 | 1.013 |
| | 10 | 5.6 | 0.989 | 1.029 | 0.986 | 1.027 | 0.973 | 1.023 | 0.950 | 1.015 |
| | 12 | 6.7 | 0.998 | 1.033 | 0.995 | 1.031 | 0.982 | 1.027 | 0.959 | 1.020 |
| | 14 | 7.7 | 1.007 | 1.036 | 1.004 | 1.034 | 0.991 | 1.030 | 0.967 | 1.022 |
| | 16 | 8.9 | 1.014 | 1.037 | 1.011 | 1.036 | 0.998 | 1.031 | 0.974 | 1.024 |

***Table 16, Capacity and Power Derates, Models AGZ 075B to 130B***

| Altitude | Chilled Water Delta T | | Fouling Factor | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.0001 (0.0176) | | 0.00025 (0.044) | | 0.00075 (0.132) | | 0.00175 (0.308) | |
| | °F | °C | Cap. | Power | Cap. | Power | Cap. | Power | Cap. | Power |
| Sea Level | 6 | 3.3 | 0.990 | 0.997 | 0.976 | 0.994 | 0.937 | 0.983 | 0.868 | 0.964 |
| | 8 | 4.4 | 0.994 | 0.998 | 0.981 | 0.995 | 0.942 | 0.984 | 0.872 | 0.965 |
| | 10 | 5.6 | 1.000 | 1.000 | 0.987 | 0.996 | 0.947 | 0.986 | 0.877 | 0.967 |
| | 12 | 6.7 | 1.005 | 1.001 | 0.991 | 0.997 | 0.951 | 0.986 | 0.881 | 0.968 |
| | 14 | 7.7 | 1.009 | 1.002 | 0.995 | 0.998 | 0.955 | 0.987 | 0.884 | 0.968 |
| | 16 | 8.9 | 1.013 | 1.004 | 1.000 | 1.000 | 0.960 | 0.989 | 0.889 | 0.970 |
| 2000 feet 610 meters | 6 | 3.3 | 0.987 | 1.005 | 0.974 | 1.002 | 0.934 | 0.991 | 0.865 | 0.972 |
| | 8 | 4.4 | 0.992 | 1.006 | 0.979 | 1.003 | 0.940 | 0.992 | 0.870 | 0.973 |
| | 10 | 5.6 | 0.997 | 1.008 | 0.984 | 1.004 | 0.944 | 0.994 | 0.875 | 0.975 |
| | 12 | 6.7 | 1.002 | 1.009 | 0.989 | 1.005 | 0.949 | 0.994 | 0.879 | 0.975 |
| | 14 | 7.7 | 1.007 | 1.011 | 0.993 | 1.007 | 0.953 | 0.996 | 0.883 | 0.977 |
| | 16 | 8.9 | 1.011 | 1.012 | 0.998 | 1.008 | 0.958 | 0.997 | 0.887 | 0.978 |
| 4000 feet 1220 meters | 6 | 3.3 | 0.985 | 1.014 | 0.972 | 1.010 | 0.933 | 0.999 | 0.864 | 0.980 |
| | 8 | 4.4 | 0.991 | 1.015 | 0.977 | 1.012 | 0.938 | 1.001 | 0.869 | 0.981 |
| | 10 | 5.6 | 0.995 | 1.016 | 0.982 | 1.013 | 0.943 | 1.002 | 0.873 | 0.982 |
| | 12 | 6.7 | 1.000 | 1.018 | 0.987 | 1.014 | 0.947 | 1.003 | 0.877 | 0.984 |
| | 14 | 6.8 | 1.005 | 1.019 | 0.991 | 1.015 | 0.951 | 1.004 | 0.881 | 0.985 |
| | 16 | 8.9 | 1.009 | 1.021 | 0.995 | 1.017 | 0.955 | 1.006 | 0.884 | 0.987 |
| 6000 feet 1830 meters | 6 | 3.3 | 0.982 | 1.023 | 0.969 | 1.020 | 0.930 | 1.009 | 0.861 | 0.989 |
| | 8 | 4.4 | 0.988 | 1.025 | 0.975 | 1.022 | 0.935 | 1.010 | 0.866 | 0.991 |
| | 10 | 5.6 | 0.992 | 1.026 | 0.979 | 1.022 | 0.940 | 1.011 | 0.870 | 0.992 |
| | 12 | 6.7 | 0.997 | 1.028 | 0.984 | 1.024 | 0.944 | 1.013 | 0.875 | 0.994 |
| | 14 | 7.7 | 1.002 | 1.029 | 0.989 | 1.025 | 0.949 | 1.014 | 0.879 | 0.995 |
| | 16 | 8.9 | 1.006 | 1.031 | 0.992 | 1.027 | 0.952 | 1.016 | 0.882 | 0.996 |

## Evaporator Freeze Protection

Evaporator freeze-up can be a concern in the application of air-cooled water chillers. To protect against freeze-up, insulation and an electric heater cable are furnished with the unit. This protects the evaporator down to -20°F (-29°C) ambient air temperature. Although the evaporator is equipped with freeze protection, it does not protect water piping external to the unit or the evaporator itself if there is a power failure or heater cable burnout. Consider the following recommendations for additional protection.

1. If the unit will not be operated during the winter, drain evaporator and chilled water piping and flush with glycol. Drain and vent connections are provided on the evaporator to ease draining.
2. Add a glycol solution to the chilled water system to provide freeze protection. Freeze point should be approximately ten degrees below minimum design ambient temperature.
3. The addition of thermostatically controlled heat and insulation to exposed piping.
4. Continuous circulation of water through the chilled water piping and evaporator.

   The evaporator heater cable is factory wired to the 115-volt circuit in the control box. This power should be supplied from a separate source, but it can be supplied from the control circuit. Operation of the heater cable is automatic through the ambient sensing thermostat that energizes the evaporator heater cable for protection against freeze-up. Unless the evaporator is drained in the winter, the disconnect switch to the evaporator heater must not be open.

## Operating/Standby Limits

Maximum standby ambient air temperature, 130°F (55°C)

Maximum operating ambient air temperature

Standard Ambient Unit, 105°F (40.6°C) and below, Models BS and BM

High Ambient Unit, above 105°F (40.6°C) to 125°F 51.7°C), Models BH and BB

Minimum operating ambient temperature (standard), 35°F (2°C)

Minimum operating temperature (with optional low-ambient control), 0°F (-18°C)

Leaving chilled water temperature, 40°F to 60°F (4.4°C to 15.6°C)

Leaving chilled fluid temperatures (with anti-freeze), 20°F to 60°F (-7°C to 16°C)

Design chilled water Delta-T range, 6 degrees F to 16 degrees F (3.3 degrees C to 8.9 degrees C)

Part load minimum flow for variable flow systems; varies with unit size, see below

Maximum operating inlet fluid temperature, 76°F (24°C)

Maximum non-operating inlet fluid temperature, 100°F (38°C)

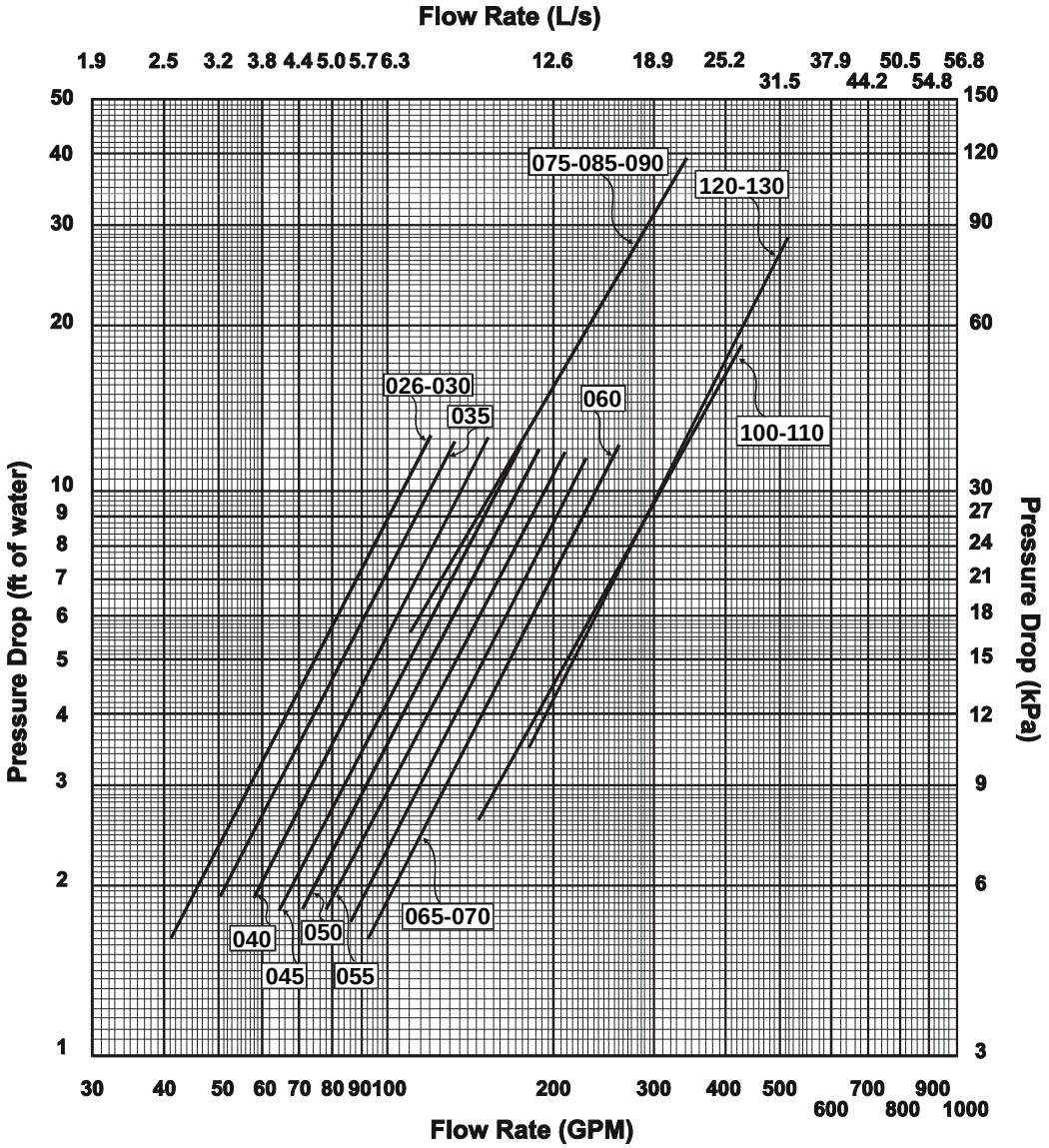
Electric power supply, see page 52

## Evaporator Flow and Pressure Drop Water Flow Limitations

The evaporator flow rates and pressure drops shown on page 25 are for full load, constant flow design purposes.

See the page 16 for the *part load* minimum flow rates. Other design practices for variable flow systems requiring a range of evaporator flow rates can be found on page 20.

***Figure 19, AGZ 026B – 130B, Evaporator Pressure Drop***




| AGZ Unit Model | Minimum | | | | Nominal | | | | Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Inch-Pound | | S.I. | | Inch-Pound | | S.I. | | Inch-Pound | | S.I. | |
| | gpm | DP ft. | lps | DP kpa | gpm | DP ft. | lps | DP kpa | gpm | DP ft. | lps | DP kpa |
| **026B** | 41 | 1.6 | 2.6 | 4.7 | 65 | 3.9 | 4.1 | 11.6 | 109 | 10.4 | 6.9 | 30.9 |
| **030B** | 45 | 1.9 | 2.9 | 5.7 | 72 | 4.7 | 4.6 | 14.1 | 121 | 12.7 | 7.6 | 37.8 |
| **035B** | 50 | 1.9 | 3.1 | 5.6 | 80 | 4.6 | 5.0 | 13.8 | 133 | 12.4 | 8.4 | 36.9 |
| **040B** | 58 | 1.9 | 3.6 | 5.7 | 92 | 4.7 | 5.8 | 14.0 | 154 | 12.6 | 9.7 | 37.5 |
| **045B** | 64 | 1.8 | 4.0 | 5.4 | 102 | 4.5 | 6.4 | 13.4 | 170 | 12.1 | 10.7 | 35.9 |
| **050B** | 71 | 1.8 | 4.4 | 5.4 | 113 | 4.5 | 7.1 | 13.3 | 188 | 12.0 | 11.9 | 35.7 |
| **055B** | 78 | 1.8 | 4.9 | 5.3 | 125 | 4.4 | 7.9 | 13.0 | 209 | 11.7 | 13.2 | 34.8 |
| **060B** | 86 | 1.7 | 5.4 | 5.2 | 137 | 4.3 | 8.6 | 12.8 | 228 | 11.5 | 14.4 | 34.2 |
| **065B** | 92 | 1.6 | 5.8 | 4.9 | 147 | 4.1 | 9.3 | 12.1 | 246 | 10.9 | 15.5 | 32.5 |
| **070B** | 98 | 1.9 | 6.2 | 5.6 | 157 | 4.6 | 9.9 | 13.7 | 262 | 12.3 | 16.5 | 36.8 |
| **075B** | 111 | 5.6 | 7.0 | 16.5 | 177 | 12.5 | 11.2 | 37.4 | 295 | 30.4 | 18.6 | 90.7 |
| **085B** | 119 | 6.3 | 7.5 | 18.9 | 191 | 14.3 | 12.1 | 42.7 | 318 | 34.8 | 20.1 | 103.6 |
| **090B** | 128 | 7.2 | 8.1 | 21.4 | 205 | 16.2 | 12.9 | 48.4 | 342 | 39.4 | 21.6 | 117.3 |
| **100B** | 146 | 2.6 | 9.2 | 7.7 | 234 | 6.1 | 14.8 | 18.2 | 390 | 15.5 | 24.6 | 46.2 |
| **110B** | 161 | 3.1 | 10.2 | 9.2 | 258 | 7.3 | 16.3 | 21.7 | 430 | 18.5 | 27.1 | 55.1 |
| **120B** | 180 | 3.5 | 11.3 | 10.4 | 288 | 8.9 | 18.1 | 26.5 | 479 | 24.6 | 30.2 | 73.4 |
| **130B** | 194 | 4.1 | 12.2 | 12.1 | 311 | 10.4 | 19.6 | 30.9 | 518 | 28.7 | 32.7 | 85.6 |

**NOTE**: Minimum and maximum flows provide a Delta-T for each unit size within a 6 - 16°F range for proper control.

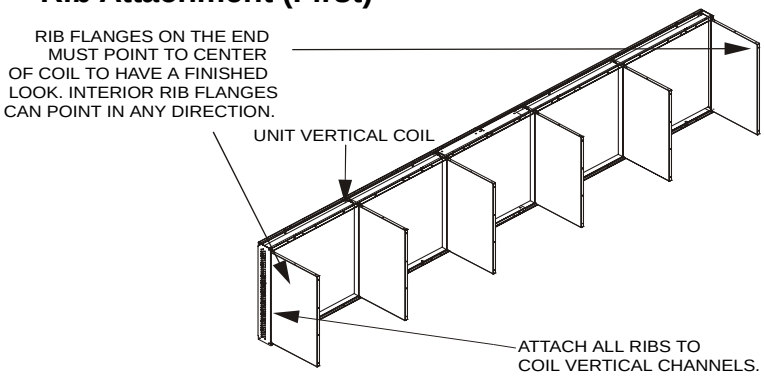
# Wind Baffles and Hail Guards

Protection against negative effects from wind and protection against fin damage from hail can be achieved from two separate options from McQuay. Factory or field installed louvers are available as well as the box-type enclosures described below.

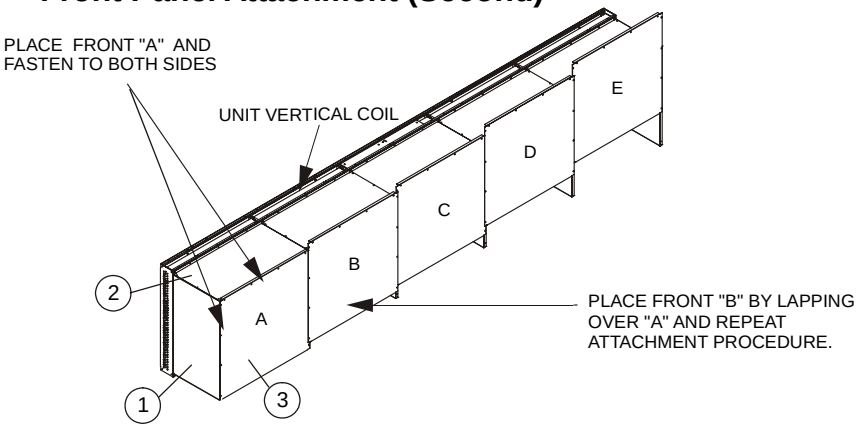
Wind Baffles/Hail Guards are a field installed option that are used to stabilize unit operation in high wind areas and to assist in operation at low ambient temperatures. Figure 20 is a sketch of a typical panel assembly on an AGZ unit. The actual number of panels and parts will vary by model size. The parts are shown in the table below and referenced by balloon numbers.

***Figure 20, Installation Sequence***

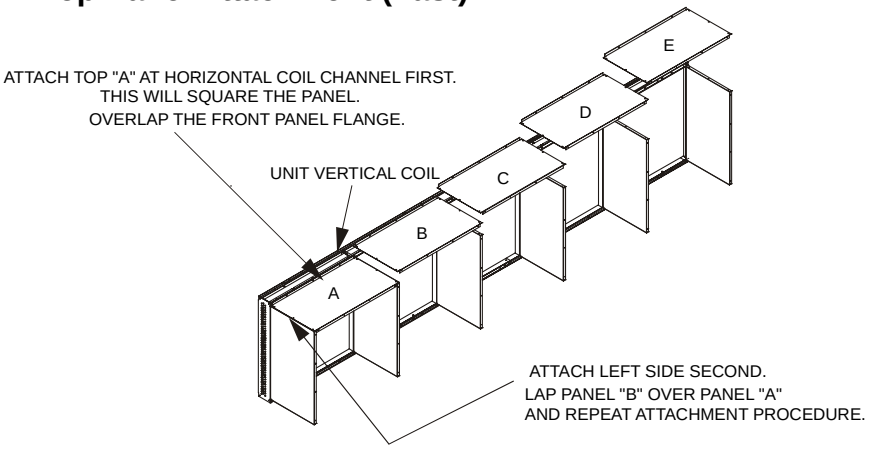
## Rib Attachment (First)




## Front Panel Attachment (Second)



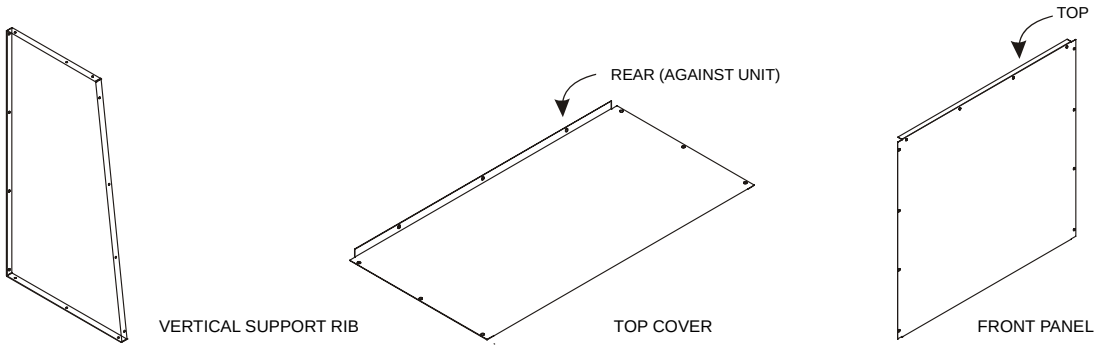

## Top Panel Attachment (Last)

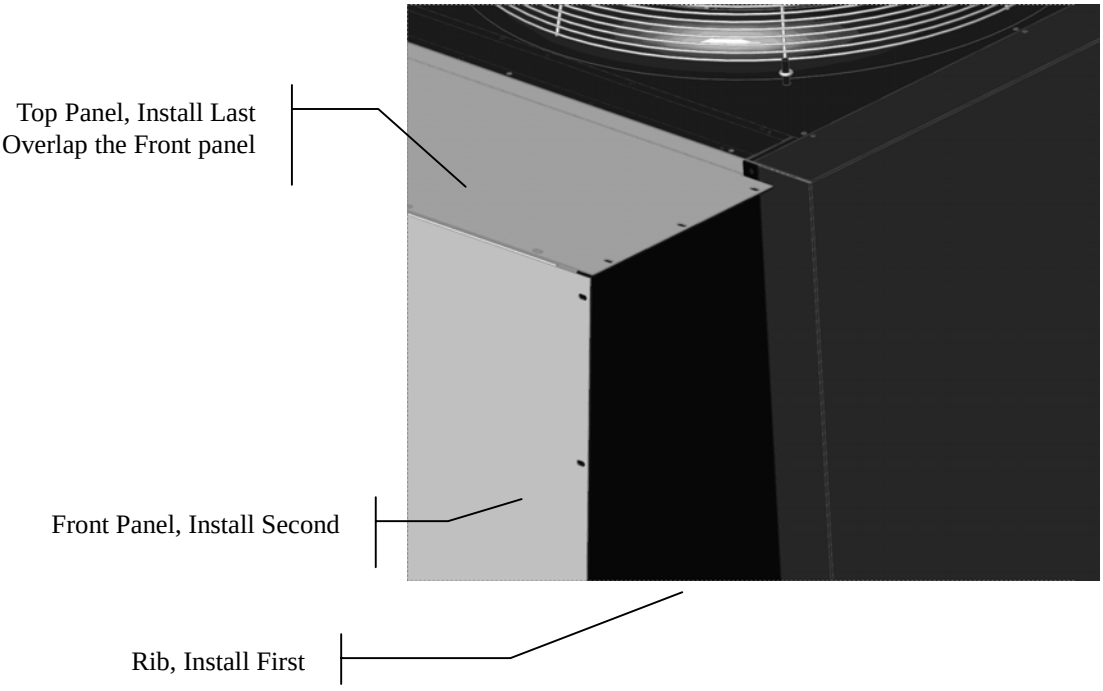


### *Table 17, Packing List*

| Description | Part Number | Bubble Number |
|---|---|---|
| Vertical Support Rib | 074758501 | 1 |
| Top Cover | 330409401 | 2 |
| Front Panel | 330409501 | 3 |
| ¼ - 20 x ½" Screw (Place in Poly Bag) | 046093807 | |

### *Figure 21, Components*



# Optional Features

## Controls

### Hot Gas Bypass

Hot gas bypass permits unit operation down to 10% of full load capacity. This option includes a factory-mounted hot gas bypass valve, solenoid valve, and manual shutoff valve for each circuit. See page 61 for further information.

### Head Pressure Control

Optional fan VFD control allows unit operation down to 0°F (-18°C). (Not available on 380 volt, 60 Hertz units.)

### Water Flow Switch

(P/N 017503300) A water flow switch is available for field installation in the chilled water piping to avoid evaporator freeze-up under low or no flow conditions. Terminals are provided in the unit control center for field hook-up of the water flow switch. If this option is not ordered with the unit, then a field supplied water flow switch must be installed.

### Alarm Bell

Bell for field installation and wiring to the control panel to provide remote indication of unit alarm condition. See Field Wiring Diagram for connection locations.

## BAS Interface

Optional Protocol Selectability™, connection to the chiller for all building automation systems (BAS) protocols will be at the unit controller. An interface module, depending on the protocol being used, may have been factory-installed in the unit controller (or it can be field installed).

### Protocols Supported

***Table 18, Standard Protocol Data***

| Protocol | Physical Layer | Data Rate | Controller | Other |
|---|---|---|---|---|
| BACnet®/IP or BACnet/Ethernet | Ethernet 10 Base-T | 10 Megabits/sec | MicroTech II | Reference ED 15062 |
| BACnet MSTP | RS-485 | 9600, 19200 or 38400 bits/sec | MicroTech II | Reference ED 15062 |
| LONWORKS® | FTT-10A | 78kbits/sec | MicroTech II | Reference ED 15062 |
| Modbus RTU | RS-485 or RS-232 | 9600 or 19200 bits/sec | MicroTech II | Reference ED 15063 |

The interface kits on the MicroTech II controller are as follows:

- BACnet Kit P/N 350147404: BACnet/IP, BACnet MS/TP, or BACnet Ethernet
- LONWORKS Kit P/N 350147401: LonTalk (FTT-10A)
- Modbus: Modbus RTU

Optional Protocol Selectability BAS interfaces. The locations and interconnection requirements for the various standard protocols are found in their respective installation manuals.

Modbus IM 743 LONWORKS IM 735 BACnet IM 736

Referenced documents may be obtained from the local McQuay sales office, from the local McQuayService office, or from the McQuay Technical Response Center, located in Staunton, Virginia (540-248-0711).

These documents can also be found on www.mcquay.com under Product Information > (chiller type) > Control Integration.

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# Remote Operator Interface Panel

The box containing the optional remote interface panel will have installation instructions, IOM- MT II Remote, in it. The manual is also available for downloading from www.mcquay.com.

## Unit

### Vibration Isolators

Spring or rubber-in-shear vibration isolators are available for field installation to reduce vibration transmission through the unit base. See page 12 for detailed information on their installation.

### Protective Base Guards

Optional factory-installed, vinyl-coated welded wire base guards provide all-around lower unit protection on ground level installations. Coil guards are standard.

### Copper Fin Condenser Coils

Copper fin condenser coils are available as an option on all models.

### Black Fin Coils

Aluminum fin stock precoated with a phenolic coating with 1000 hour salt spray resistance (ASTM B117-90).

### Coated Fins

Copper or aluminum fins coated with *ElectroFin*® baked epoxy protective coating with 3000+ hour salt spray resistance (ASTM B117-90).

### Evaporator Insulation

Double insulation thickness (total of 1½ inches) for high humidity areas or low fluid temperatures.

### Sound Reduction

Acoustical blankets are factory-installed on each compressor.

### Hail and Wind Guards

A field-mounted option that is shipped as a kit including panels, fasteners, and instructions. See page 26 for further information.

### Louvers

Upper and/or lower, factory mounted or field installed louver panels that protect from hail damage, help stabilize operation in high wind conditions and provide a uniform, enhanced appearance.

### Shut-off Valves

Factory-mounted suction and discharge shut-off valves, liquid line shutoff valve is standard.

# Electrical

## Multi-Point Electrical Connection

Provides a power connection to each of the unit's two electrical circuits.

## Disconnect Switch with Through-the-Door Handle

A factory or field-installed option for service use, nonfused disconnect switch (mounted inside the power section of the control box) with a through-the-door handle is available with single and multi-point power supply.

## Phase Loss/Voltage Protection

Phase loss with under/over voltage protection and multiple LED indication of fault type is available as a factory-installed option to guard against compressor motor burnout.

## Convenience Outlet

10.0 amp, 115-volt outlet located in control panel to provide power for servicing unit.

## Ground Fault Protection

Protects equipment from damage from line-to-ground fault currents less than those required for conductor protection.

## High Short Circuit Current Protection

Provides control panel protection against short circuit currents per the following table:

| Voltage | 208 | 240 | 460 | 600 |
|---|---|---|---|---|
| Current (kA) | 120 | 100 | 65 | 25 |

## High Ambient Control Panel

Consists of exhaust fan with rain hood, two inlet screens with filters, necessary controls and wiring to allow operation to 125°F. The option can be factory or field installed as a kit.:

- It is automatically included on any unit with the fan VFD (low ambient option)
- It is required on any unit operating above 105°F (40.1°C).

# Physical Data

## AGZ-BS/BH

### *Table 19, AGZ 026BS/BH through 035BS/BH*

| PHYSICAL DATA | AGZ MODEL NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | 026B | | 030B | | 035B | |
| **BASIC DATA** | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 |
| Unit Capacity @ ARI (1), Tons (kW) | 27.2 (95.4) | | 30.2 (106.3) | | 33.2 (117.2) | |
| Number Of Refrigerant Circuits | 2 | | 2 | | 2 | |
| Unit Operating Charge, R-22, Lbs. | 22 | 22 | 22 | 27 | 27 | 27 |
| Unit Operating Charge, R-22, (kg) | 10 | 10 | 10 | 12 | 12 | 12 |
| Cabinet Dimensions, LxWxH, In. | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | |
| Cabinet Dimensions, LxWxH, (mm) | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | |
| Unit Operating Weight, Lb (kg) | 3990 (1811) | | 4040 (1834) | | 4080 (1852) | |
| Unit Shipping Weight, Lb (kg) | 39501793) | | 3990 (1811) | | 4030 (1830) | |
| Add'l Weight If Copper Finned Coils, Lb (kg) | 284 (129) | | 284 (129) | | 284 (129) | |
| **COMPRESSORS** | | | | | | |
| Type | Tandem Scrolls | | Tandem Scrolls | | Tandem Scrolls | |
| Nominal tonnage of each Compressor | 7.5 | 7.5 | 7.5 | 9.0 | 9.0 | 9.0 |
| Number Of Compressors per Circuit | 2 | 2 | 2 | 2 | 2 | 2 |
| Oil Charge Per Compressor, Oz. | 140 | 140 | 140 | 140 | 140 | 140 |
| Oil Charge Per Compressor, (g) | (496) | (496) | (496) | (496) | (496) | (496) |
| **CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT** | | | | | | |
| Staging, 4 Stages, Circuit #1 in Lead | 0-25-50-75-100 | | 0-23-50-73-100 | | 0-25-50-75-100 | |
| Staging, 4 Stages, Circuit #2 in Lead | 0-25-50-75-100 | | 0-27-50-77-100 | | 0-25-50-75-100 | |
| **CONDENSERS - HIGH EFFICIENCY FIN AND TUBE TYPE WITH INTEGRAL SUBCOOLING** | | | | | | |
| Coil Face Area Sq. Ft. | 26.3 | 26.3 | 26.3 | 26.3 | 26.3 | 26.3 |
| Coil Face Area, ($M^2$) | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 |
| Finned Height x Finned Length, In. | 50x75.6 | 50x75.6 | 50x75.6 | 50x75.6 | 50x75.6 | 50x75.6 |
| Finned Height x Finned Length, (mm) | 1270 x 1920 | 1270 x 1920 | 1270 x 1920 | 1270 x 1920 | 1270 x 1920 | 1270 x 1920 |
| Fins Per Inch x Rows Deep | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 |
| Pumpdown Capacity, 90% Full Lbs. (kg) | 49 (22) | 49 (22) | 49 (22) | 49 (22) | 49 (22) | 49 (22) |
| Maximum Relief Valve Pressure Setting, psig (kPa) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) |
| **CONDENSER FANS - DIRECT DRIVE PROPELLER TYPE** | | | | | | |
| Number Of Fans - Fan Diameter, In. (mm) | 4 – 30 (762) | | 4 – 30 (762) | | 4 – 30 (762) | |
| Number Of Motors - HP (kW) (2) | 4 – 1.5 | | 4 – 1.5 | | 4 – 1.5 | |
| Fan And Motor RPM, 60Hz | 1140 | | 1140 | | 1140 | |
| 60 Hz Fan Tip Speed, FPM (M/Sec) | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | |
| 60 Hz Total Unit Airflow, CFM ($M^3$/sec) | 24,316 (11,478) | | 24,316 (11,478) | | 24,316 (11,478) | |
| **EVAPORATOR - BRAZED PLATE-TO-PLATE** | | | | | | |
| Number of Evaporators | 1 | | 1 | | 1 | |
| Number of Refrigerant Circuits | 2 | | 2 | | 2 | |
| Water Volume, Gallons, (L) | 4.3 (16.4) | | 5.0 (18.9) | | 5.7 (21.4) | |
| Maximum Water Pressure, psig (kPa) | 363 (2503) | | 363 (2503) | | 363 (2503) | |
| Max. Refrig. Working Pressure, psig (kPa) | 450 (3102) | | 450 (3102) | | 450 (3102) | |
| Water Inlet / Outlet Victaulic Conn. In. (mm) | 3 (76) | | 3 (76) | | 3 (76) | |
| Drain - NPT int, In. (mm) | Field | | Field | | Field | |
| Vent - NPT int, In. (mm) | Field | | Field | | Field | |

**NOTES:**
1. Nominal capacity based on 95°F ambient air and 54°F/44°F water range.
2. Except for 380V/60 & 575V/60, HP = 2.0

## *Table 20, AGZ 040BS/BH through 055BS/BH*

| PHYSICAL DATA | AGZ MODEL NUMBER | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 040B | | 045B | | 050B | | 055B | |
| **BASIC DATA** | Ckt.1 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.2 |
| Unit Capacity @ ARI Conditions (1), Tons (kW) | 38.5 (135.5) | | 42.5 (149.6) | | 47.0 (165.4) | | 52.2 (183.7) | |
| Number Of Refrigerant Circuits | 2 | | 2 | | 2 | | 2 | |
| Unit Operating Charge, R-22, lbs. | 31 | 31 | 38 | 38 | 38 | 38 | 46 | 46 |
| Unit Operating Charge, R-22, (kg) | (14) | (14) | (17) | (17) | (17) | (17) | (21) | (21) |
| Cabinet Dimensions, LxWxH, in. | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | |
| Cabinet Dimensions, LxWxH, (mm) | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | |
| Unit Operating Weight, Lbs. (kg) | 4130 (1875) | | 4270 (1939) | | 4400 (1998) | | 4540 (2061) | |
| Unit Shipping Weight, Lbs. (kg) | 4070 (1848) | | 4210 (1911) | | 4330 (1966) | | 4460 (2025) | |
| Add'l Weight If Copper Finned Coils, lbs. (kg) | 288 (130) | | 288 (130) | | 476 (216) | | 476 (216) | |
| **COMPRESSORS** | | | | | | | | |
| Type | Tandem Scrolls | | Tandem Scrolls | | Tandem Scrolls | | Tandem Scrolls | |
| Nominal tonnage of each Compressor | 10.0 | 10.0 | 10.0 | 13.0 | 13.0 | 13.0 | 13.0 | 15.0 |
| Number Of Compressors per Circuit | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Oil Charge Per Compressor, oz. | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| Oil Charge Per Compressor, (g) | (496) | (496) | (496) | (496) | (496) | (496) | (496) | (496) |
| **CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT** | | | | | | | | |
| Staging, 4 Stages, Circuit #1 in Lead | 0-25-50-75-100 | | 0-22-50-46-100 | | 0-25-50-75-100 | | 0-25-50-75-100 | |
| Staging, 4 Stages, Circuit #2 in Lead | 0-25-50-75-100 | | 0-28-50-85-100 | | 0-25-50-75-100 | | 0-25-50-75-100 | |
| **CONDENSERS - HIGH EFFICIENCY FIN AND TUBE TYPE WITH INTEGRAL SUBCOOLING** | | | | | | | | |
| Coil Face Area, sq. ft. | 44.1 | 44.1 | 44.1 | 44.1 | 44.1 | 44.1 | 44.1 | 44.1 |
| Coil Face Area , sq. m | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 | 4.1 |
| Finned Height x Finned Length, in. | 42x75.6 | 42x75.6 | 42x75.6 | 42x75.6 | 42x75.6 | 42x75.6 | 42x75.6 | 42x75.6 |
| Finned Height x Finned Length, (mm) | 1067 x 1920 | 1067 x 1920 | 1067 x 1920 | 1067 x 1920 | 1067 x 1920 | 1067 x 1920 | 1067 x 1920 | 1067 x 1920 |
| Fins Per Inch x Rows Deep | 16 x 2 | 16 x 2 | 16 x 2 | 16 x 2 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 |
| Pumpdown Capacity, 90% Full Lbs. (kg) | 60 (27) | 60 (27) | 60(27) | 60(27) | 82 (37) | 82 (37) | 82 (37) | 82 (37) |
| Maximum Relief Valve Pressure Setting, psig (kPa) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) |
| **CONDENSER FANS - DIRECT DRIVE PROPELLER TYPE** | | | | | | | | |
| Number Of Fans - Fan Diameter, in. (mm) | 4 – 30 (762) | | 4 – 30 (762) | | 4 – 30 (762) | | 4 – 30 (762) | |
| Number Of Motors - HP (kW) (2) | 4 – 1.5 | | 4 – 1.5 | | 4 – 1.5 | | 4 – 1.5 | |
| Fan And Motor RPM, 60Hz | 1140 | | 1140 | | 1140 | | 1140 | |
| 60 Hz Fan Tip Speed, FPM (m/sec) | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | |
| 60 Hz Total Unit Airflow, CFM ($m^3$/sec) | 39,600 (18,692) | | 39,600 (18,692) | | 39,600 (18,692) | | 39,600 (18,692) | |
| **EVAPORATOR - BRAZED PLATE-TO-PLATE** | | | | | | | | |
| Number of Evaporators | 1 | | 1 | | 1 | | 1 | |
| Number of Refrigerant Circuits | 2 | | 2 | | 2 | | 2 | |
| Water Volume, Gallons, (L) | 6.3 (23.9) | | 7.2 (27.3) | | 8.1 (30.7) | | 9.2 (34.9) | |
| Maximum Water Pressure, psig (kPa) | 363 (2503) | | 363 (2503) | | 363 (2503) | | 363 (2503) | |
| Maximum Refrigerant Working Pressure, psig (kPa) | 450 (3102) | | 450 (3102) | | 450 (3102) | | 450 (3102) | |
| Water Inlet / Outlet Victaulic Connections, in. (mm) | 3 (76) | | 3 (76) | | 3 (76) | | 3 (76) | |
| Drain - NPT int, in. (mm) | Field | | Field | | Field | | Field | |
| Vent - NPT int, in. (mm) | Field | | Field | | Field | | Field | |

**NOTES**

1. Nominal capacity based on 95°F ambient air and 54°F/44°F water range.
2. Except for 380V/60 & 575V/60, HP = 2.0

## *Table 21, AGZ 060BS/BH through 070BS/BH*

| PHYSICAL DATA | AGZ MODEL NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | 060B | | 065B | | 070B | |
| **BASIC DATA** | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 |
| Unit Capacity @ ARI Conditions (1), Tons (kW) | 57.1 (201.0) | | 61.4 (215.5) | | 65.5 (230.0) | |
| Number Of Refrigerant Circuits | 2 | | 2 | | 2 | |
| Unit Operating Charge, R-22, lbs. | 46 | 46 | 52 | 59 | 59 | 59 |
| Unit Operating Charge, R-22, (kg) | (21) | (21) | (24) | (27) | (27) | (27) |
| Cabinet Dimensions, LxWxH, in. | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | | 94.4 x 88.0 x 100.4 | |
| Cabinet Dimensions, LxWxH, (mm) | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | | 2398 x 2235 x 2550 | |
| Unit Operating Weight, Lbs. (kg) | 4600 | | 4860 | | 4990 | |
| Unit Shipping Weight, Lbs. (kg) | 4520 | | 4760 | | 4890 | |
| Add'l Weight If Copper Finned Coils, lbs. (kg) | 476 (216) | | 568 (258) | | 568 (258) | |
| **COMPRESSORS** | | | | | | |
| Type | Tandem Scrolls | | Tandem Scrolls | | Tandem Scrolls | |
| Nominal tonnage of each Compressor | 15.0 | 15.0 | 15.0 | 15 / 20 | 15 / 20 | 15 / 20 |
| Number Of Compressors per Circuit | 2 | 2 | 2 | 2 | 2 | 2 |
| Oil Charge Per Compressor, oz. | 140 | 140 | 140 | 140 /148 | 140 /148 | 140 /148 |
| Oil Charge Per Compressor, (g) | (496) | (496) | (496) | 496/ 525 | 496/ 525 | 496/ 525 |
| **CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT** | | | | | | |
| Staging, 4 Stages, Circuit #1 in Lead | 0-25-50-75-100 | | 0-23-46-77-100 | | 0-25-50-75-100 | |
| Staging, 4 Stages, Circuit #2 in Lead | 0-25-50-75-100 | | 0-31-46-69-100 | | 0-25-50-75-100 | |
| **CONDENSERS - HIGH EFFICIENCY FIN AND TUBE TYPE WITH INTEGRAL SUBCOOLING** | | | | | | |
| Coil Face Area, sq. ft. | 44.1 | 44.1 | 52.6 | 52.6 | 52.6 | 52.6 |
| Coil Face Area, ($m^2$) | 4.1 | 4.1 | 4.9 | 4.9 | 4.9 | 4.9 |
| Finned Height x Finned Length, in. | 42x75.6 | 42x75.6 | 50x75.6 | 50x75.6 | 50x75.6 | 50x75.6 |
| Finned Height x Finned Length, (mm) | 1067 x 1920 | 1067 x 1920 | 1270 x 1920 | 1270 x 1920 | 1270 x 1920 | 1270 x 1920 |
| Fins Per Inch x Rows Deep | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 |
| Pumpdown Capacity, 90% Full Lbs. (kg) | 82 (37) | 82 (37) | 98 (44) | 98 (44) | 98 (44) | 98 (44) |
| Maximum Relief Valve Pressure Setting, psig (kPa) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) |
| **CONDENSER FANS - DIRECT DRIVE PROPELLER TYPE** | | | | | | |
| Number Of Fans - Fan Diameter, in. (mm) | 4 – 30 (762) | | 4 – 30 (762) | | 4 – 30 (762) | |
| Number Of Motors - HP (kW) (2) | 4 – 1.5 | | 4 – 2.0 | | 4 – 2.0 | |
| Fan And Motor RPM, 60Hz | 1140 | | 1140 | | 1140 | |
| 60 Hz Fan Tip Speed, FPM (m/sec) | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | |
| 60 Hz Total Unit Airflow, CFM ($m^3$/sec) | 37,228 (17,572 | | 43,452 (20,510) | | 43,452 (20,510) | |
| **EVAPORATOR - BRAZED PLATE-TO-PLATE** | | | | | | |
| Number of Evaporators | 1 | | 1 | | 1 | |
| Number of Refrigerant Circuits | 2 | | 2 | | 2 | |
| Water Volume, Gallons, (L) | 9.2 (34.9) | | 11.2 (42.5) | | 11.2 (42.5) | |
| Maximum Water Pressure, psig (kPa) | 363 (2503) | | 363 (2503) | | 363 (2503) | |
| Maximum Refrigerant Working Pressure, psig (kPa) | 450 (3102) | | 450 (3102) | | 450 (3102) | |
| Water Inlet / Outlet Victaulic Connections, in. (mm) | 3 (76) | | 3 (76) | | 3 (76) | |
| Drain - NPT int, in. (mm) | Field | | Field | | Field | |
| Vent - NPT int, in. (mm) | Field | | Field | | Field | |

**NOTES**

1. Nominal capacity based on 95°F ambient air and 54°F/44°F water range.
2. Except for 380V/60 & 575V/60 for AGZ 060, HP = 2.0

## *Table 22, AGZ 075BS/BH through 090BS/BH*

| PHYSICAL DATA | AGZ MODEL NUMBER | | | | | |
|---|---|---|---|---|---|---|
| | 075B | | 085B | | 090B | |
| **BASIC DATA** | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 |
| Unit Capacity @ ARI Conditions (1), Tons (kW) | 73.7 (259.4) | | 79.6 (280.2) | | 85.5 (301.0) | |
| Number Of Refrigerant Circuits | 2 | | 2 | | 2 | |
| Unit Operating Charge, R-22, lbs. | 59 | 59 | 59 | 69 | 69 | 69 |
| Unit Operating Charge, R-22, (kg) | (27) | (27) | (27 | (31) | (31) | (31) |
| Cabinet Dimensions, LxWxH, in. | 134.9 x 88.0 x 100.4 | | 134.9 x 88.0 x 100.4 | | 134.9 x 88.0 x 100.4 | |
| Cabinet Dimensions, LxWxH, (mm) | 3426 x 2235 x 2550 | | 3426 x 2235 x 2550 | | 3426 x 2235 x 2550 | |
| Unit Operating Weight, Lbs. (kg) | 6530 (2958) | | 6690 (3031) | | 6850 (3103) | |
| Unit Shipping Weight, Lbs. (kg) | 6320 (2863) | | 6480 (2935) | | 6640 (3008) | |
| Add'l Weight If Copper Finned Coils, lbs. (kg) | 870 (395) | | 870 (395) | | 870 (395) | |
| **COMPRESSORS** | | | | | | |
| Type | Tandem Scrolls | | Tandem Scrolls | | Tandem Scrolls | |
| Nominal tonnage of each Compressor | 20.0 | 20.0 | 20.0 | 25.0 | 25.0 | 25.0 |
| Number Of Compressors per Circuit | 2 | 2 | 2 | 2 | 2 | 2 |
| Oil Charge Per Compressor, oz. | 148 | 148 | 148 | 200 | 200 | 200 |
| Oil Charge Per Compressor, (g) | (525) | (525) | (525) | (709) | (709) | (709) |
| **CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT** | | | | | | |
| Staging, 4 Stages, Circuit #1 in Lead | 0-25-50-75-100 | | 0-22-50-72-100 | | 0-25-50-75-100 | |
| Staging, 4 Stages, Circuit #2 in Lead | 0-25-50-75-100 | | 0-28-50-78-100 | | 0-25-50-75-100 | |
| **CONDENSERS - HIGH EFFICIENCY FIN AND TUBE TYPE WITH INTEGRAL SUBCOOLING** | | | | | | |
| Coil Face Area, sq. ft. | 78.8 | 78.8 | 78.8 | 78.8 | 78.8 | 78.8 |
| Coil Face Area, ($m^2$) | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 | 7.3 |
| Finned Height x Finned Length, in. | 50 x113.4 | 50 x113.4 | 50 x113.4 | 50 x113.4 | 50 x113.4 | 50 x113.4 |
| Finned Height x Finned Length, (mm) | 1270 x 2880 | 1270 x 2880 | 1270 x 2880 | 1270 x 2880 | 1270 x 2880 | 1270 x 2880 |
| Fins Per Inch x Rows Deep | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 |
| Pumpdown Capacity, 90% Full Lbs. (kg) | 147 (67) | 147 (67) | 147 (67) | 147 (67) | 147 (67) | 147 (67) |
| Maximum Relief Valve Pressure Setting, psig (kPa) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) |
| **CONDENSER FANS - DIRECT DRIVE PROPELLER TYPE** | | | | | | |
| Number Of Fans - Fan Diameter, in. (mm) | 6 – 30 (762) | | 6 – 30 (762) | | 6 – 30 (762) | |
| Number Of Motors - HP (kW) | 6 – 2.0 | | 6 – 2.0 | | 6 – 2.0 | |
| Fan And Motor RPM, 60Hz | 1140 | | 1140 | | 1140 | |
| 60 Hz Fan Tip Speed, FPM (m/sec) | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | |
| 60 Hz Total Unit Airflow, CFM ($m^3$/sec) | 65,178 (30,765) | | 65,178 (30,765) | | 65,178 (30,765) | |
| **EVAPORATOR - SHELL AND TUBE** | | | | | | |
| Number of Evaporators | 1 | | 1 | | 1 | |
| Number of Refrigerant Circuits | 2 | | 2 | | 2 | |
| Diameter, in. - Length, ft. | 14.0 x 5.2 | | 14.0 x 5.2 | | 14.0 x 5.2 | |
| Diameter, (mm) – Length, (mm) | 356 x 1585 | | 356 x 1585 | | 356 x 1585 | |
| Water Volume, Gallons, (L) | 25 (95) | | 25 (95) | | 25 (95) | |
| Maximum Water Pressure, psig (kPa) | 152 (1047) | | 152 (1047) | | 152 (1047) | |
| Maximum Refrigerant Working Pressure, psig (kPa) | 300 (2066) | | 300 (2066) | | 300 (2066) | |
| Water Inlet / Outlet Victaulic Connections, in. (mm) | 5 (127) | | 5 (127) | | 5 (127) | |
| Drain - NPT int, in. (mm) | 0.5 (12.7) | | 0.5 (12.7) | | 0.5 (12.7) | |
| Vent - NPT int, in. (mm) | 0.5 (12.7) | | 0.5 (12.7) | | 0.5 (12.7) | |

**NOTE:**

1. Nominal capacity based on 95°F ambient air and 54°F/44°F water range.

## *Table 5, AGZ 100BS/BH through 130BS/BH*

| PHYSICAL DATA | AGZ MODEL NUMBER | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 100B | | 110B | | 120B | | 130B | |
| **BASIC DATA** | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 | Ckt.1 | Ckt.2 |
| Unit Capacity @ ARI Conditions (1), Tons (kW) | 97.6 (342.6) | | 107.5 (378.4) | | 119.8 (421.7) | | 129.4 (455.5) | |
| Number Of Refrigerant Circuits | 2 | | 2 | | 2 | | 2 | |
| Unit Operating Charge, R-22, lbs. | 76 | 86 | 86 | 86 | 86 | 104 | 104 | 104 |
| Unit Operating Charge, R-22, (kg) | (35) | (39) | (39) | (39) | (39) | (47) | (47) | (47) |
| Cabinet Dimensions, LxWxH, in. | 173.1 x 88.0 x 100.4 | | 173.1 x 88.0 x 100.4 | | 173.1 x 88.0 x 100.4 | | 173.1 x 88.0 x 100.4 | |
| Cabinet Dimensions, LxWxH, (mm) | 4397 x 2235 x 2550 | | 4397 x 2235 x 2550 | | 4397 x 2235 x 2550 | | 4397 x 2235 x 2550 | |
| Unit Operating Weight, Lbs. (kg) | 7870 (3565) | | 8150 (3692) | | 8720 (3950) | | 9050 (4100) | |
| Unit Shipping Weight, Lbs. (kg) | 7580 (3434) | | 7860 (3561) | | 8380 (3796) | | 8710 (3946) | |
| Add'l Weight If Copper Finned Coils, lbs. (kg) | 1155 (524) | | 1155 (524) | | 1155 (524) | | 1155 (524) | |
| **COMPRESSORS** | | | | | | | | |
| Type | Trio Scrolls | | Trio Scrolls | | Trio Scrolls | | Trio Scrolls | |
| Nominal tonnage of each Compressor | 15.0 | 20.0 | 20.0 | 20.0 | 20.0 | 25.0 | 25.0 | 25.0 |
| Number Of Compressors per Circuit | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Oil Charge Per Compressor, oz. | 140 | 148 | 148 | 148 | 148 | 200 | 200 | 200 |
| Oil Charge Per Compressor, (g) | (496) | (525) | (525) | (525) | (525) | (709) | (709) | (709) |
| **CAPACITY REDUCTION STEPS - PERCENT OF COMPRESSOR DISPLACEMENT** | | | | | | | | |
| Staging, 6 Stages, Circuit #1 in Lead | 0-14-33-48-67-81-100 | | 0-17-33-50-67-83-100 | | 0-15-33-48-67-81-100 | | 0-17-33-50-67-83-100 | |
| Staging, 6 Stages, Circuit #2 in Lead | 0-19-33-52-67-86-100 | | 0-17-33-50-67-83-100 | | 0-19-33-52-67-86-100 | | 0-17-33-50-67-83-100 | |
| **CONDENSERS - HIGH EFFICIENCY FIN AND TUBE TYPE WITH INTEGRAL SUBCOOLING** | | | | | | | | |
| Coil Face Area, sq. ft. | 105.3 | 105.3 | 105.3 | 105.3 | 105.3 | 105.3 | 105.3 | 105.3 |
| Coil Face Area, ($m^2$) | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 |
| Finned Height x Finned Length, in. | 50 x151.6 | 50 x151.6 | 50 x151.6 | 50 x151.6 | 50 x151.6 | 50 x151.6 | 50 x151.6 | 50 x151.6 |
| Finned Height x Finned Length, (mm) | 1270 x 3851 | 1270 x 3851 | 1270 x 3851 | 1270 x 3851 | 1270 x 3851 | 1270 x 3851 | 1270 x 3851 | 1270 x 3851 |
| Fins Per Inch x Rows Deep | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 | 16 x 3 |
| Pumpdown Capacity, 90% Full Lbs. (kg) | 196 (89) | 196 (89) | 196 (89) | 196 (89) | 196 (89) | 196 (89) | 196 (89) | 196 (89) |
| Maximum Relief Valve Pressure Setting, psig (kPa) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) | 450 (3103) |
| **CONDENSER FANS - DIRECT DRIVE PROPELLER TYPE** | | | | | | | | |
| Number Of Fans - Fan Diameter, in. (mm) | 8 – 30 (762) | | 8 – 30 (762) | | 8 – 30 (762) | | 8 – 30 (762) | |
| Number Of Motors - HP (kW) | 8 – 2.0 | | 8 – 2.0 | | 8 – 2.0 | | 8 – 2.0 | |
| Fan And Motor RPM, 60Hz | 1140 | | 1140 | | 1140 | | 1140 | |
| 60 Hz Fan Tip Speed, FPM (m/sec) | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | | 8950 (4224) | |
| 60 Hz Total Unit Airflow, CFM ($m^3$/sec) | 86,904 (41,020) | | 86,904 (41,020) | | 86,904 (41,020) | | 86,904 (41,020) | |
| **EVAPORATOR - SHELL AND TUBE** | | | | | | | | |
| Number of Evaporators | 1 | | 1 | | 1 | | 1, | |
| Number of Refrigerant Circuits | 2 | | 2 | | 2 | | 2 | |
| Diameter, in. - Length, ft. | 12.8 x 7.9 | | 12.8 x 7.9 | | 14.0 x 8.0 | | 14.0 x 8.0 | |
| Diameter, (mm) – Length, (mm) | 324 x 2408 | | 324 x 2408 | | 356 x 2438 | | 356 x 2438 | |
| Water Volume, Gallons, (L) | 34 (127) | | 34 (127) | | 40 (150) | | 40 (150) | |
| Maximum Water Pressure, psig (kPa) | 152 (1047) | | 152 (1047) | | 152 (1047) | | 152 (1047) | |
| Maximum Refrigerant Working Pressure, psig (kPa) | 300 (2066) | | 300 (2066) | | 300 (2066) | | 300 (2066) | |
| Water Inlet / Outlet Victaulic Connections, in. (mm) | 5 (127) | | 5 (127) | | 5 (127) | | 5 (127) | |
| Drain - NPT int, in. (mm) | 0.5 (12.7) | | 0.5 (12.7) | | 0.5 (12.7) | | 0.5 (12.7) | |
| Vent - NPT int, in. (mm) | 0.5 (12.7) | | 0.5 (12.7) | | 0.5 (12.7) | | 0.5 (12.7) | |

**NOTE:**
1. Nominal capacity based on 95°F ambient air and 54°F/44°F water range.

# Electrical Data, Standard Ambient

***Table 23, AGZ 026BM/BS – 070BM/BS, Electrical Data, Single Point (105°F and below)***

| AGZ Unit Size | Volts | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire | | Recomm'd. Fuse Or HACR Breaker Size | Max. Fuse Or HACR Breaker Size |
|---|---|---|---|---|---|---|
| | | | Quantity | Wire Gauge 75C | | |
| **026B** | 208 | 133 | 3 | 1/0 | 150 | 150 |
| | 230 | 126 | 3 | #1 | 150 | 150 |
| | 380 | 80 | 3 | #4 | 90 | 90 |
| | 460 | 68 | 3 | #4 | 80 | 80 |
| | 575 | 52 | 3 | #6 | 60 | 60 |
| **030B** | 208 | 146 | 3 | 1/0 | 175 | 175 |
| | 230 | 143 | 3 | 1/0 | 175 | 175 |
| | 380 | 88 | 3 | #3 | 100 | 100 |
| | 460 | 74 | 3 | #4 | 80 | 90 |
| | 575 | 58 | 3 | #6 | 70 | 70 |
| **035B** | 208 | 158 | 3 | 2/0 | 175 | 175 |
| | 230 | 150 | 3 | 1/0 | 175 | 175 |
| | 380 | 96 | 3 | #3 | 110 | 110 |
| | 460 | 79 | 3 | #4 | 90 | 90 |
| | 575 | 64 | 3 | #6 | 70 | 70 |
| **040B** | 208 | 167 | 3 | 2/0 | 200 | 200 |
| | 230 | 167 | 3 | 2/0 | 200 | 200 |
| | 380 | 113 | 3 | #2 | 125 | 125 |
| | 460 | 81 | 3 | #4 | 90 | 90 |
| | 575 | 70 | 3 | #4 | 80 | 80 |
| **045B** | 208 | 184 | 3 | 3/0 | 225 | 225 |
| | 230 | 184 | 3 | 3/0 | 225 | 225 |
| | 380 | 121 | 3 | #1 | 125 | 125 |
| | 460 | 94 | 3 | #3 | 110 | 110 |
| | 575 | 78 | 3 | #4 | 90 | 90 |
| **050B** | 208 | 199 | 3 | 3/0 | 225 | 225 |
| | 230 | 199 | 3 | 3/0 | 225 | 225 |
| | 380 | 127 | 3 | #1 | 150 | 150 |
| | 460 | 104 | 3 | #2 | 125 | 125 |
| | 575 | 86 | 3 | #3 | 100 | 100 |
| **055B** | 208 | 221 | 3 | 4/0 | 250 | 250 |
| | 230 | 214 | 3 | 4/0 | 250 | 250 |
| | 380 | 145 | 3 | 1/0 | 175 | 175 |
| | 460 | 108 | 3 | #2 | 125 | 125 |
| | 575 | 96 | 3 | #3 | 110 | 110 |
| **060B** | 208 | 248 | 3 | 250 | 300 | 300 |
| | 230 | 228 | 3 | 4/0 | 250 | 250 |
| | 380 | 156 | 3 | 2/0 | 175 | 175 |
| | 460 | 112 | 3 | #2 | 150 | 150 |
| | 575 | 105 | 3 | #2 | 125 | 125 |
| **065B** | 208 | 281 | 3 | 300 | 350 | 350 |
| | 230 | 281 | 3 | 300 | 350 | 350 |
| | 380 | 162 | 3 | 2/0 | 200 | 200 |
| | 460 | 124 | 3 | #1 | 150 | 150 |
| | 575 | 109 | 3 | #2 | 125 | 125 |
| **070B** | 208 | 301 | 3 | 350 | 350 | 350 |
| | 230 | 301 | 3 | 350 | 350 | 350 |
| | 380 | 168 | 3 | 2/0 | 200 | 200 |
| | 460 | 130 | 3 | #1 | 150 | 150 |
| | 575 | 112 | 3 | #2 | 125 | 125 |

**NOTES:**

1. Units operating in ambient temperatures of 95°F (35°C) and above must use the Maximum Fuse or HACR Breaker size.
2. All Electrical Data notes are on page 52.
3. Conduit hubs are not provided.

### *Table 24, AGZ 026BM/BS – 070BM/BS, Compressor and Fan Motor Amps, Single and Multi-Point (105°F and below))*

| AGZ Unit Size | Volts | Rated Load Amps | | | | | | | No. Of Fan Motors | Locked Rotor Amps | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Compressors | | | | | | F.L.Amps Fan Motors (Each) | | Fan Motors (Each) | Compressors | | | | | | |
| | | | | | | | | | | | Across-The-Line | | | | | | |
| | | No. 1 | No. 3 | No. 5 | No. 2 | No. 4 | No. 6 | | | | No.1 | No. 3 | No. 5 | No.2 | No.4 | No. 6 |
| 026B | 208 | 25.7 | 25.7 | - | 25.7 | 25.7 | - | 5.8 | 4 | 23.3 | 189 | 189 | - | 189 | 189 | - |
| | 230 | 24.2 | 24.2 | - | 24.2 | 24.2 | - | 5.8 | 4 | 26.1 | 189 | 189 | - | 189 | 189 | - |
| | 380 | 14.9 | 14.9 | - | 14.9 | 14.9 | - | 4.1 | 4 | 20.0 | 112 | 112 | - | 112 | 112 | - |
| | 460 | 13.4 | 13.4 | - | 13.4 | 13.4 | - | 2.8 | 4 | 13.0 | 99 | 99 | - | 99 | 99 | - |
| | 575 | 9.3 | 9.3 | - | 9.3 | 9.3 | - | 3.0 | 4 | 14.0 | 74 | 74 | - | 74 | 74 | - |
| 030B | 208 | 25.7 | 25.7 | - | 31.8 | 31.8 | - | 5.8 | 4 | 23.3 | 189 | 189 | - | 232 | 232 | - |
| | 230 | 24.2 | 24.2 | - | 31.8 | 31.8 | - | 5.8 | 4 | 26.1 | 189 | 189 | - | 232 | 232 | - |
| | 380 | 14.9 | 14.9 | - | 18.6 | 18.6 | - | 4.1 | 4 | 20.0 | 112 | 112 | - | 144 | 144 | - |
| | 460 | 13.4 | 13.4 | - | 16.0 | 16.0 | - | 2.8 | 4 | 13.0 | 99 | 99 | - | 125 | 125 | - |
| | 575 | 9.3 | 9.3 | - | 12.2 | 12.2 | - | 3.0 | 4 | 14.0 | 74 | 74 | - | 100 | 100 | - |
| 035B | 208 | 31.8 | 31.8 | - | 31.8 | 31.8 | - | 5.8 | 4 | 23.3 | 232 | 232 | - | 232 | 232 | - |
| | 230 | 29.9 | 29.9 | - | 29.9 | 29.9 | - | 5.8 | 4 | 26.1 | 232 | 232 | - | 232 | 232 | - |
| | 380 | 18.6 | 18.6 | - | 18.6 | 18.6 | - | 4.1 | 4 | 20.0 | 144 | 144 | - | 144 | 144 | - |
| | 460 | 16.0 | 16.0 | - | 16.0 | 16.0 | - | 2.8 | 4 | 13.0 | 125 | 125 | - | 125 | 125 | - |
| | 575 | 12.2 | 12.2 | - | 12.2 | 12.2 | - | 3.0 | 4 | 14.0 | 100 | 100 | - | 100 | 100 | - |
| 040B | 208 | 33.8 | 33.8 | - | 33.8 | 33.8 | - | 5.8 | 4 | 23.3 | 278 | 278 | - | 278 | 278 | - |
| | 230 | 33.8 | 33.8 | - | 33.8 | 33.8 | - | 5.8 | 4 | 26.1 | 278 | 278 | - | 278 | 278 | - |
| | 380 | 22.8 | 22.8 | - | 22.8 | 22.8 | - | 4.1 | 4 | 20.0 | 151 | 151 | - | 151 | 151 | - |
| | 460 | 16.5 | 16.5 | - | 16.5 | 16.5 | - | 2.8 | 4 | 13.0 | 127 | 127 | - | 127 | 127 | - |
| | 575 | 13.7 | 13.7 | - | 13.7 | 13.7 | - | 3.0 | 4 | 14.0 | 100 | 100 | - | 100 | 100 | - |
| 045B | 208 | 33.8 | 33.8 | - | 41.4 | 41.4 | - | 5.8 | 4 | 23.3 | 278 | 278 | - | 350 | 350 | - |
| | 230 | 33.8 | 33.8 | - | 41.4 | 41.4 | - | 5.8 | 4 | 26.1 | 278 | 278 | - | 350 | 350 | - |
| | 380 | 22.8 | 22.8 | - | 26.0 | 26.0 | - | 4.1 | 4 | 20.0 | 151 | 151 | - | 195 | 195 | - |
| | 460 | 16.5 | 16.5 | - | 21.8 | 21.8 | - | 2.8 | 4 | 13.0 | 127 | 127 | - | 158 | 158 | - |
| | 575 | 13.7 | 13.7 | - | 17.3 | 17.3 | - | 3.0 | 4 | 14.0 | 100 | 100 | - | 125 | 125 | - |
| 050B | 208 | 41.4 | 41.4 | - | 41.4 | 41.4 | - | 5.8 | 4 | 23.3 | 350 | 350 | - | 350 | 350 | - |
| | 230 | 41.4 | 41.4 | - | 41.4 | 41.4 | - | 5.8 | 4 | 26.1 | 350 | 350 | - | 350 | 350 | - |
| | 380 | 26.0 | 26.0 | - | 26.0 | 26.0 | - | 4.1 | 4 | 20.0 | 195 | 195 | - | 195 | 195 | - |
| | 460 | 21.8 | 21.8 | - | 21.8 | 21.8 | - | 2.8 | 4 | 13.0 | 158 | 158 | - | 158 | 158 | - |
| | 575 | 17.3 | 17.3 | - | 17.3 | 17.3 | - | 3.0 | 4 | 14.0 | 125 | 125 | - | 125 | 125 | - |
| 055B | 208 | 41.0 | 41.0 | - | 51.3 | 51.3 | - | 5.8 | 4 | 23.3 | 350 | 350 | - | 425 | 425 | - |
| | 230 | 41.0 | 41.0 | - | 48.1 | 48.1 | - | 5.8 | 4 | 26.1 | 350 | 350 | - | 425 | 425 | - |
| | 380 | 26.0 | 26.0 | - | 33.8 | 33.8 | - | 4.1 | 4 | 20.0 | 195 | 195 | - | 239 | 239 | - |
| | 460 | 21.8 | 21.8 | - | 23.7 | 23.7 | - | 2.8 | 4 | 13.0 | 158 | 158 | - | 187 | 187 | - |
| | 575 | 17.3 | 17.3 | - | 21.8 | 21.8 | - | 3.0 | 4 | 14.0 | 125 | 125 | - | 148 | 148 | - |
| 060B | 208 | 52.8 | 52.8 | - | 52.8 | 52.8 | - | 5.8 | 4 | 23.3 | 425 | 425 | - | 425 | 425 | - |
| | 230 | 48.1 | 48.1 | - | 48.1 | 48.1 | - | 5.8 | 4 | 26.1 | 425 | 425 | - | 425 | 425 | - |
| | 380 | 32.7 | 32.7 | - | 32.7 | 32.7 | - | 4.1 | 4 | 20.0 | 239 | 239 | - | 239 | 239 | - |
| | 460 | 23.7 | 23.7 | - | 23.7 | 23.7 | - | 2.8 | 4 | 13.0 | 187 | 187 | - | 187 | 187 | - |
| | 575 | 21.8 | 21.8 | - | 21.8 | 21.8 | - | 3.0 | 4 | 14.0 | 148 | 148 | - | 148 | 148 | - |
| 065B | 208 | 52.8 | 52.8 | - | 52.8 | 73.1 | - | 7.8 | 4 | 31.7 | 425 | 425 | - | 425 | 505 | - |
| | 230 | 52.8 | 52.8 | - | 52.8 | 73.1 | - | 7.8 | 4 | 35.6 | 425 | 425 | - | 425 | 505 | - |
| | 380 | 32.7 | 32.7 | - | 32.7 | 38.2 | - | 4.1 | 4 | 20.0 | 239 | 239 | - | 239 | 280 | - |
| | 460 | 23.7 | 23.7 | - | 23.7 | 30.1 | - | 3.6 | 4 | 17.8 | 187 | 187 | - | 187 | 225 | - |
| | 575 | 21.8 | 21.8 | - | 21.8 | 25.2 | - | 3.0 | 4 | 14.0 | 148 | 148 | - | 148 | 180 | - |
| 070B | 208 | 52.8 | 73.1 | - | 52.8 | 73.1 | - | 7.8 | 4 | 31.7 | 425 | 505 | - | 425 | 505 | - |
| | 230 | 52.8 | 73.1 | - | 52.8 | 73.1 | - | 7.8 | 4 | 35.6 | 425 | 505 | - | 425 | 505 | - |
| | 380 | 32.7 | 38.2 | - | 32.7 | 38.2 | - | 4.1 | 4 | 20.0 | 239 | 280 | - | 239 | 280 | - |
| | 460 | 23.7 | 30.1 | - | 23.7 | 30.1 | - | 3.6 | 4 | 17.8 | 187 | 225 | - | 187 | 225 | - |
| | 575 | 21.8 | 25.2 | - | 21.8 | 25.2 | - | 3.0 | 4 | 14.0 | 148 | 180 | - | 148 | 180 | - |

All Electrical Data notes are on page 52.

## *Table 25, AGZ 026 BM/BS – 070BM/BS, Field Wiring, Single Point (105°F and below)*

| AGZ Unit Size | Volts | Wiring to Standard Power Block | | Wiring to Optional Non-Fused Disconnect Switch | |
|---|---|---|---|---|---|
| | | Terminal Amps | Connector Wire Range (Copper Wire Only) | Disconnect Size | Connector Wire Range (Copper Wire Only) |
| **026B** | 208 | 175 | 14 GA – 2/0 | 225 | # 4 - 300 kcmil |
| | 230 | 175 | 14 GA – 2/0 | 225 | # 4 - 300 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **030B** | 208 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 230 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **035B** | 208 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 230 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **040B** | 208 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 230 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **045B** | 208 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 230 | 380 | #4 – 500kcmil | 225 | # 4 - 300 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **050B** | 208 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 230 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **055B** | 208 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 230 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 380 | 175 | 14 GA – 2/0 | 250 | #6 - 350 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **060B** | 208 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 230 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **065B** | 208 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 230 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 460 | 175 | 14 GA – 2/0 | 250 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |
| **070B** | 208 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 230 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 460 | 380 | #4 – 500kcmil | 250 | # 4 - 300 kcmil |
| | 575 | 175 | 14 GA – 2/0 | 150 | # 4 - 300 kcmil |

All Electrical Data notes are on page 52.

## *Table 26, AGZ 075BM/BS – 130BM/BS, Electrical Wiring, Single Point (105°F and below)*

| AGZ Unit Size | Volts | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire | | Recomm'd. Fuse Or HACR Breaker Size | Max. Fuse Or HACR Breaker Size |
|---|---|---|---|---|---|---|
| | | | Quantity | Wire Gauge 75C | | |
| **075B** | 208 | 358 | 6 | 4/0 | 400 | 400 |
| | 230 | 358 | 6 | 4/0 | 400 | 400 |
| | 380 | 187 | 3 | 3/0 | 225 | 225 |
| | 460 | 150 | 3 | 1/0 | 175 | 175 |
| | 575 | 125 | 3 | #1 | 150 | 150 |
| **085B** | 208 | 380 | 6 | 250 | 450 | 450 |
| | 230 | 380 | 6 | 250 | 450 | 450 |
| | 380 | 219 | 3 | 250 | 250 | 250 |
| | 460 | 171 | 3 | 2/0 | 200 | 200 |
| | 575 | 136 | 3 | 1/0 | 150 | 150 |
| **090B** | 208 | 414 | 6 | 300 | 500 | 500 |
| | 230 | 414 | 6 | 300 | 500 | 500 |
| | 380 | 248 | 3 | 250 | 300 | 300 |
| | 460 | 188 | 3 | 3/0 | 225 | 225 |
| | 575 | 146 | 3 | 1/0 | 175 | 175 |
| **100B** | 208 | 463 | 6 | 350 | 500 | 500 |
| | 230 | 463 | 6 | 300 | 500 | 500 |
| | 380 | 260 | 3 | 300 | 300 | 300 |
| | 460 | 199 | 3 | 3/0 | 225 | 225 |
| | 575 | 171 | 3 | 2/0 | 175 | 175 |
| **110B** | 208 | 528 | 6 - (2) | 300 | 600 | 600 |
| | 230 | 528 | 6 - (2) | 300 | 600 | 600 |
| | 380 | 282 | 3 | 300 | 300 | 300 |
| | 460 | 220 | 3 | 4/0 | 250 | 250 |
| | 575 | 182 | 3 | 3/0 | 200 | 200 |
| **120B** | 208 | 613 | 6 - (2) | 350 | 700 | 700 |
| | 230 | 613 | 6 - (2) | 350 | 700 | 700 |
| | 380 | 323 | 3 | 400 | 350 | 350 |
| | 460 | 248 | 3 | 250 | 250 | 250 |
| | 575 | 198 | 3 | 3/0 | 225 | 225 |
| **130B** | 208 | 613 | 6 - (2) | 350 | 700 | 700 |
| | 230 | 613 | 6 - (2) | 350 | 700 | 700 |
| | 380 | 361 | 6 | 4/0 | 400 | 400 |
| | 460 | 273 | 3 | 300 | 300 | 300 |
| | 575 | 212 | 3 | 4/0 | 225 | 225 |

**NOTES:**

1. Units operating in ambient temperatures of 95°F (35°C) and above must use the Maximum Fuse or HACR Breaker size.
2. All Electrical Data notes are on page 52.
3. (2) indicates that two conduits are required.
4. Conduit hubs are not supplied.

## *Table 27, AGZ 075BM/BS – 130BM/BS, Compressor and Fan Motor Amps, Single and Multi-Point (105°F and below)*

| AGZ Unit Size | Volts | Rated Load Amps | | | | | | | No. Of Fan Motors | Locked Rotor Amps | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Compressors | | | | | | F.L. Amps Fan Motors (Each) | | Fan Motors (Each) | Compressors Across-The-Line | | | | | | |
| | | No. 1 | No. 3 | No. 5 | No. 2 | No. 4 | No. 6 | | | | No.1 | No. 3 | No. 5 | No.2 | No.4 | No. 6 |
| 075B | 208 | 73.1 | 73.1 | - | 73.1 | 73.1 | - | 7.8 | 6 | 31.7 | 505 | 505 | - | 505 | 505 | - |
| | 230 | 73.1 | 73.1 | - | 73.1 | 73.1 | - | 7.8 | 6 | 35.6 | 505 | 505 | - | 505 | 505 | - |
| | 380 | 38.2 | 38.2 | - | 38.2 | 38.2 | - | 4.1 | 6 | 20.0 | 280 | 280 | - | 280 | 280 | - |
| | 460 | 30.1 | 30.1 | - | 30.1 | 30.1 | - | 3.6 | 6 | 17.8 | 225 | 225 | - | 225 | 225 | - |
| | 575 | 25.2 | 25.2 | - | 25.2 | 25.2 | - | 3.0 | 6 | 14.0 | 180 | 180 | - | 180 | 180 | - |
| 085B | 208 | 73.1 | 73.1 | - | 83.3 | 83.3 | - | 7.8 | 6 | 31.7 | 505 | 505 | - | 500 | 500 | - |
| | 230 | 73.1 | 73.1 | - | 83.3 | 83.3 | - | 7.8 | 6 | 35.6 | 505 | 505 | - | 500 | 500 | - |
| | 380 | 38.2 | 38.2 | - | 52.5 | 52.5 | - | 4.1 | 6 | 20.0 | 280 | 280 | - | 305 | 305 | - |
| | 460 | 30.1 | 30.1 | - | 39.0 | 39.0 | - | 3.6 | 6 | 17.8 | 225 | 225 | - | 250 | 250 | - |
| | 575 | 25.2 | 25.2 | - | 30.0 | 30.0 | - | 3.0 | 6 | 14.0 | 180 | 180 | - | 198 | 198 | - |
| 090B | 208 | 86.4 | 86.4 | - | 86.4 | 86.4 | - | 7.8 | 6 | 31.7 | 500 | 500 | - | 500 | 500 | - |
| | 230 | 86.4 | 86.4 | - | 86.4 | 86.4 | - | 7.8 | 6 | 35.6 | 500 | 500 | - | 500 | 500 | - |
| | 380 | 52.5 | 52.5 | - | 52.5 | 52.5 | - | 4.1 | 6 | 20.0 | 305 | 305 | - | 305 | 305 | - |
| | 460 | 39.0 | 39.0 | - | 39.0 | 39.0 | - | 3.6 | 6 | 17.8 | 250 | 250 | - | 250 | 250 | - |
| | 575 | 30.0 | 30.0 | - | 30.0 | 30.0 | - | 3.0 | 6 | 14.0 | 198 | 198 | - | 198 | 198 | - |
| 100B | 208 | 52.8 | 52.8 | 52.8 | 74.5 | 74.5 | 74.5 | 7.8 | 8 | 31.7 | 425 | 425 | 425 | 505 | 505 | 505 |
| | 230 | 52.8 | 52.8 | 52.8 | 74.5 | 74.5 | 74.5 | 7.8 | 8 | 35.6 | 425 | 425 | 425 | 505 | 505 | 505 |
| | 380 | 32.7 | 32.7 | 32.7 | 39.8 | 39.8 | 39.8 | 4.1 | 8 | 20.0 | 239 | 239 | 239 | 280 | 280 | 280 |
| | 460 | 23.7 | 23.7 | 23.7 | 30.6 | 30.6 | 30.6 | 3.6 | 8 | 17.8 | 187 | 187 | 187 | 225 | 225 | 225 |
| | 575 | 21.8 | 21.8 | 21.8 | 25.2 | 25.2 | 25.2 | 3.0 | 8 | 14.0 | 148 | 148 | 148 | 180 | 180 | 180 |
| 110B | 208 | 74.5 | 74.5 | 74.5 | 74.5 | 74.5 | 74.5 | 7.8 | 8 | 31.7 | 505 | 505 | 505 | 505 | 505 | 505 |
| | 230 | 74.5 | 74.5 | 74.5 | 74.5 | 74.5 | 74.5 | 7.8 | 8 | 35.6 | 505 | 505 | 505 | 505 | 505 | 505 |
| | 380 | 39.8 | 39.8 | 39.8 | 39.8 | 39.8 | 39.8 | 4.1 | 8 | 20.0 | 280 | 280 | 280 | 280 | 280 | 280 |
| | 460 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 3.6 | 8 | 17.8 | 225 | 225 | 225 | 225 | 225 | 225 |
| | 575 | 25.2 | 25.2 | 25.2 | 25.2 | 25.2 | 25.2 | 3.0 | 8 | 14.0 | 180 | 180 | 180 | 180 | 180 | 180 |
| 120B | 208 | 87.9 | 87.9 | 87.9 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 31.7 | 505 | 505 | 505 | 500 | 500 | 500 |
| | 230 | 87.9 | 87.9 | 87.9 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 35.6 | 505 | 505 | 505 | 500 | 500 | 500 |
| | 380 | 39.8 | 39.8 | 39.8 | 52.5 | 52.5 | 52.5 | 4.1 | 8 | 20.0 | 280 | 280 | 280 | 305 | 305 | 305 |
| | 460 | 30.6 | 30.6 | 30.6 | 39.0 | 39.0 | 39.0 | 3.6 | 8 | 17.8 | 225 | 225 | 225 | 250 | 250 | 250 |
| | 575 | 25.2 | 25.2 | 25.2 | 30.0 | 30.0 | 30.0 | 3.0 | 8 | 14.0 | 180 | 180 | 180 | 198 | 198 | 198 |
| 130B | 208 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 31.7 | 500 | 500 | 500 | 500 | 500 | 500 |
| | 230 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 35.6 | 500 | 500 | 500 | 500 | 500 | 500 |
| | 380 | 52.5 | 52.5 | 52.5 | 52.5 | 52.5 | 52.5 | 4.1 | 8 | 20.0 | 305 | 305 | 305 | 305 | 305 | 305 |
| | 460 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 39.0 | 3.6 | 8 | 17.8 | 250 | 250 | 250 | 250 | 250 | 250 |
| | 575 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | 3.0 | 8 | 14.0 | 198 | 198 | 198 | 198 | 198 | 198 |

All Electrical Data notes are on page 52.

### *Table 28, AGZ 075BM/BS - 130BM/BS, Field Wiring, Single Point (105°F and below)*

| AGZ Unit Size | Volts | Wiring to Standard Power Block | | Wiring to Optional Non-Fused Disconnect Switch | |
|---|---|---|---|---|---|
| | | Terminal Amps | Connector Wire Range (Copper Wire Only) | Disconnect Size | Connector Wire Range (Copper Wire Only) |
| **075B** | 208 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 460 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 575 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| **085B** | 208 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 460 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 575 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| **090B** | 208 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 460 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| | 575 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| **100B** | 208 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 600 | (2) 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 460 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 575 | 380 | #4 – 500kcmil | 250 | #6 - 350 kcmil |
| **110B** | 208 | 760 | 2 GA – 500kcmil | 800 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 800 | (2) 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 460 | 380 | #4 – 500kcmil | 400 | (2) 3/0-250 kcmil |
| | 575 | 380 | #4 – 500kcmil | 400 | (2) 3/0-250 kcmil |
| **120B** | 208 | 760 | 2 GA – 500kcmil | 800 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 800 | (2) 250 kcmil -500 kcmil |
| | 380 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 460 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 575 | 380 | #4 – 500kcmil | 400 | (2) 3/0-250 kcmil |
| **130B** | 208 | 760 | 2 GA – 500kcmil | 800 | (2) 250 kcmil -500 kcmil |
| | 230 | 760 | 2 GA – 500kcmil | 800 | (2) 250 kcmil -500 kcmil |
| | 380 | 760 | 2 GA – 500kcmil | 600 | (2) 3/0-250 kcmil |
| | 460 | 380 | #4 – 500kcmil | 400 | 250 kcmil -500 kcmil |
| | 575 | 380 | #4 – 500kcmil | 400 | (2) 3/0-250 kcmil |

All Electrical Data notes are on page 52.

## *Table 29, AGZ 026BM/BS – 070BM/BS, Electrical Data, Multi-Point (105°F and below)*

| AGZ Unit Size | Volts | Electrical Circuit #1 | | | | | Electrical Circuit #2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire | | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire | | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size |
| | | | Qty | Wire Gauge | | | | Qty | Wire Gauge | | |
| **026B** | 208 | 70 | 3 | #4 | 80 | 90 | 70 | 3 | #4 | 80 | 90 |
| | 230 | 66 | 3 | #4 | 80 | 90 | 66 | 3 | #4 | 80 | 90 |
| | 380 | 42 | 3 | #8 | 50 | 50 | 42 | 3 | #8 | 50 | 50 |
| | 460 | 36 | 3 | #8 | 45 | 45 | 36 | 3 | #8 | 45 | 45 |
| | 575 | 27 | 3 | #10 | 35 | 35 | 27 | 3 | #10 | 35 | 35 |
| **030B** | 208 | 70 | 3 | #4 | 80 | 90 | 83 | 3 | #4 | 100 | 110 |
| | 230 | 66 | 3 | #4 | 80 | 90 | 83 | 3 | #4 | 100 | 100 |
| | 380 | 42 | 3 | #8 | 50 | 50 | 50 | 3 | #8 | 60 | 60 |
| | 460 | 36 | 3 | #8 | 45 | 45 | 42 | 3 | #8 | 50 | 50 |
| | 575 | 27 | 3 | #10 | 35 | 35 | 34 | 3 | #10 | 40 | 45 |
| **035B** | 208 | 83 | 3 | #4 | 100 | 110 | 83 | 3 | #4 | 100 | 110 |
| | 230 | 79 | 3 | #4 | 100 | 100 | 79 | 3 | #4 | 100 | 100 |
| | 380 | 50 | 3 | #8 | 60 | 60 | 50 | 3 | #8 | 60 | 60 |
| | 460 | 42 | 3 | #8 | 50 | 50 | 42 | 3 | #8 | 50 | 50 |
| | 575 | 34 | 3 | #10 | 40 | 45 | 34 | 3 | #10 | 40 | 45 |
| **040B** | 208 | 88 | 3 | #3 | 110 | 110 | 88 | 3 | #3 | 110 | 110 |
| | 230 | 88 | 3 | #3 | 110 | 100 | 88 | 3 | #3 | 110 | 100 |
| | 380 | 60 | 3 | #6 | 70 | 80 | 60 | 3 | #6 | 70 | 80 |
| | 460 | 43 | 3 | #8 | 50 | 50 | 43 | 3 | #8 | 50 | 50 |
| | 575 | 37 | 3 | #8 | 45 | 50 | 37 | 3 | #8 | 45 | 50 |
| **045B** | 208 | 88 | 3 | #3 | 110 | 110 | 105 | 3 | #2 | 125 | 125 |
| | 230 | 88 | 3 | #3 | 110 | 110 | 105 | 3 | #2 | 125 | 125 |
| | 380 | 60 | 3 | #6 | 70 | 80 | 67 | 3 | #4 | 80 | 80 |
| | 460 | 43 | 3 | #8 | 50 | 50 | 55 | 3 | #6 | 70 | 70 |
| | 575 | 37 | 3 | #8 | 45 | 50 | 45 | 3 | #8 | 50 | 60 |
| **050B** | 208 | 105 | 3 | #2 | 125 | 125 | 105 | 3 | #2 | 125 | 125 |
| | 230 | 105 | 3 | #2 | 125 | 125 | 105 | 3 | #2 | 125 | 125 |
| | 380 | 67 | 3 | #4 | 80 | 80 | 67 | 3 | #4 | 80 | 80 |
| | 460 | 55 | 3 | #6 | 70 | 70 | 55 | 3 | #6 | 70 | 70 |
| | 575 | 45 | 3 | #8 | 50 | 60 | 45 | 3 | #8 | 50 | 60 |
| **055B** | 208 | 105 | 3 | #2 | 125 | 125 | 120 | 3 | #1 | 150 | 150 |
| | 230 | 105 | 3 | #2 | 125 | 125 | 120 | 3 | #1 | 150 | 150 |
| | 380 | 67 | 3 | #4 | 80 | 80 | 82 | 3 | #3 | 100 | 110 |
| | 460 | 55 | 3 | #6 | 70 | 70 | 59 | 3 | #6 | 70 | 80 |
| | 575 | 45 | 3 | #8 | 50 | 60 | 55 | 3 | #6 | 70 | 70 |
| **060B** | 208 | 120 | 3 | #1 | 150 | 150 | 120 | 3 | #1 | 150 | 150 |
| | 230 | 120 | 3 | #1 | 150 | 150 | 120 | 3 | #1 | 150 | 150 |
| | 380 | 82 | 3 | #3 | 100 | 110 | 82 | 3 | #3 | 100 | 110 |
| | 460 | 59 | 3 | #6 | 70 | 80 | 59 | 3 | #6 | 70 | 80 |
| | 575 | 55 | 3 | #6 | 70 | 70 | 55 | 3 | #6 | 70 | 70 |
| **065B** | 208 | 135 | 3 | 1/0 | 175 | 175 | 160 | 3 | 2/0 | 200 | 225 |
| | 230 | 135 | 3 | 1/0 | 175 | 175 | 160 | 3 | 2/0 | 200 | 225 |
| | 380 | 82 | 3 | #4 | 100 | 110 | 89 | 3 | #3 | 110 | 125 |
| | 460 | 61 | 3 | #6 | 70 | 80 | 69 | 3 | #4 | 90 | 100 |
| | 575 | 55 | 3 | #6 | 70 | 70 | 59 | 3 | #6 | 70 | 80 |
| **070B** | 208 | 160 | 3 | 2/0 | 200 | 225 | 160 | 3 | 2/0 | 200 | 225 |
| | 230 | 160 | 3 | 2/0 | 200 | 225 | 160 | 3 | 2/0 | 200 | 225 |
| | 380 | 89 | 3 | #3 | 110 | 125 | 89 | 3 | #3 | 110 | 125 |
| | 460 | 69 | 3 | #4 | 90 | 100 | 69 | 3 | #4 | 90 | 100 |
| | 575 | 59 | 3 | #6 | 70 | 80 | 59 | 3 | #6 | 70 | 80 |

**NOTES:**

1. All Electrical Data notes are on page 52.
2. Conduit hubs are not supplied.

## *Table 30, AGZ 026BM/BS - 070BM/BS, Field Wiring, Multi-Point (105°F and below)*

| AGZ Unit Size | Volts | Wiring to Standard Power Block | | | | Wiring to Optional Non-Fused Disconnect Switch | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Terminal Amps | | Connector Wire Range (Copper Wire Only) | | Disconnect Size | | Connector Wire Range (Copper Wire Only) | |
| | | Cir #1 | Cir #2 | Cir #1 | Cir #2 | Cir #1 | Cir #2 | Cir #1 | Cir #2 |
| **026B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **030B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **035B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **040B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **045B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **050B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **055B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **060B** | 208 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 230 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **065B** | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 225 | 225 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 225 | 225 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| **070B** | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 225 | 225 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 225 | 225 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |

All Electrical Data notes are on page 52.

## *Table 31, AGZ 075BM/BS - 130BM/BS, Field Wiring Data (105°F and below)*

| AGZ Unit Size | Volts | Wiring to Standard Power Block | | | | Wiring to Optional Non-Fused Disconnect Switch | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Terminal Amps | | Connector Wire Range (Copper Wire Only) | | Disconnect Size | | Connector Wire Range (Copper Wire Only) | |
| | | Cir #1 | Cir #2 | Cir #1 | Cir #2 | Cir #1 | Cir #2 | Cir #1 | Cir #2 |
| 075B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| 085B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| 090B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| 100B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 400 | #4 – 300 kcmil | 250 – 500 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 400 | #4 – 300 kcmil | 250 – 500 kcmil |
| | 380 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 250 | #14 - 1/0 | #4 – 300 kcmil |
| | 460 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 250 | #14 - 1/0 | #4 – 300 kcmil |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| 110B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 400 | 400 | 250 – 500 kcmil | 250 – 500 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 400 | 400 | 250 – 500 kcmil | 250 – 500 kcmil |
| | 380 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 460 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| 120B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 400 | 400 | 250 – 500 kcmil | 250 – 500 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 400 | 400 | 250 – 500 kcmil | 250 – 500 kcmil |
| | 380 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 460 | 380 | 380 | #4 – 500 kcmil14 | #4 – 500 kcmil14 | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |
| 130B | 208 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 400 | 400 | 250 – 500 kcmil | 250 – 500 kcmil |
| | 230 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 400 | 400 | 250 – 500 kcmil | 250 – 500 kcmil |
| | 380 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 460 | 380 | 380 | #4 – 500 kcmil | #4 – 500 kcmil | 250 | 250 | #4 – 300 kcmil | #4 – 300 kcmil |
| | 575 | 175 | 175 | 14 GA – 2/0 | 14 GA – 2/0 | 150 | 150 | #14 - 1/0 | #14 - 1/0 |

All Electrical Data notes are on page 52.

## *Table 32, AGZ 065BM/BS - 130BM/BS, Electrical Data, Multi-Point (105°F and below)*

| AGZ Unit Size | Volts | Electrical Circuit #1 | | | | | Electrical Circuit #2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire Qty | Power Supply Field Wire Wire Gauge 75C | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire Qty | Power Supply Field Wire Wire Gauge 75C | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size |
| **075B** | 208 | 188 | 3 | 3/0 | 225 | 250 | 188 | 3 | 3/0 | 225 | 250 |
| | 230 | 188 | 3 | 3/0 | 225 | 250 | 188 | 3 | 3/0 | 225 | 250 |
| | 380 | 98 | 3 | #3 | 110 | 125 | 98 | 3 | #3 | 110 | 125 |
| | 460 | 79 | 3 | #4 | 90 | 110 | 79 | 3 | #4 | 90 | 110 |
| | 575 | 66 | 3 | #4 | 80 | 90 | 66 | 3 | #4 | 80 | 90 |
| **085B** | 208 | 188 | 3 | 3/0 | 225 | 250 | 218 | 3 | 4/0 | 250 | 300 |
| | 230 | 188 | 3 | 3/0 | 225 | 250 | 218 | 3 | 4/0 | 250 | 250 |
| | 380 | 98 | 3 | #3 | 110 | 125 | 130 | 3 | #1 | 150 | 175 |
| | 460 | 79 | 3 | #4 | 90 | 110 | 99 | 3 | #3 | 125 | 125 |
| | 575 | 66 | 3 | #4 | 80 | 90 | 77 | 3 | #4 | 90 | 100 |
| **090B** | 208 | 218 | 3 | 4/0 | 250 | 300 | 218 | 3 | 4/0 | 250 | 300 |
| | 230 | 218 | 3 | 4/0 | 250 | 250 | 218 | 3 | 4/0 | 250 | 250 |
| | 380 | 130 | 3 | #1 | 150 | 175 | 130 | 3 | #1 | 150 | 175 |
| | 460 | 99 | 3 | #3 | 125 | 125 | 99 | 3 | #3 | 125 | 125 |
| | 575 | 77 | 3 | #4 | 90 | 100 | 77 | 3 | #4 | 90 | 100 |
| **100B** | 208 | 203 | 3 | 4/0 | 250 | 250 | 273 | 3 | 300 | 300 | 300 |
| | 230 | 203 | 3 | 3/0 | 225 | 225 | 273 | 3 | 300 | 300 | 300 |
| | 380 | 123 | 3 | #1 | 150 | 150 | 146 | 3 | 1/0 | 175 | 200 |
| | 460 | 92 | 3 | #3 | 110 | 110 | 114 | 3 | #1 | 150 | 175 |
| | 575 | 83 | 3 | #4 | 100 | 100 | 94 | 3 | #3 | 110 | 125 |
| **110B** | 208 | 273 | 3 | 300 | 300 | 300 | 273 | 3 | 300 | 300 | 300 |
| | 230 | 273 | 3 | 300 | 300 | 300 | 273 | 3 | 300 | 300 | 300 |
| | 380 | 146 | 3 | 1/0 | 175 | 175 | 146 | 3 | 1/0 | 175 | 175 |
| | 460 | 114 | 3 | #1 | 125 | 125 | 114 | 3 | #1 | 125 | 125 |
| | 575 | 94 | 3 | #3 | 110 | 110 | 94 | 3 | #3 | 110 | 110 |
| **120B** | 208 | 317 | 3 | 300 | 400 | 400 | 317 | 3 | 400 | 400 | 400 |
| | 230 | 317 | 3 | 300 | 400 | 400 | 318 | 3 | 400 | 400 | 400 |
| | 380 | 146 | 3 | 1/0 | 175 | 175 | 187 | 3 | 2/0 | 225 | 225 |
| | 460 | 114 | 3 | #1 | 125 | 125 | 141 | 3 | 1/0 | 175 | 175 |
| | 575 | 94 | 3 | #3 | 110 | 110 | 110 | 3 | #2 | 125 | 125 |
| **130B** | 208 | 317 | 3 | 400 | 400 | 400 | 317 | 3 | 400 | 400 | 400 |
| | 230 | 318 | 3 | 400 | 400 | 400 | 318 | 3 | 400 | 400 | 400 |
| | 380 | 187 | 3 | 2/0 | 225 | 225 | 187 | 3 | 2/0 | 225 | 225 |
| | 460 | 141 | 3 | 1/0 | 175 | 175 | 141 | 3 | 1/0 | 175 | 175 |
| | 575 | 110 | 3 | #2 | 125 | 125 | 110 | 3 | #2 | 125 | 125 |

**NOTES:**

1. All Electrical Data notes are on page 52.
2. Conduit hubs are not supplied.

# Electrical Data High Ambient

***Table 33, AGZ 026BB/BH – 070BB/BH, Electrical Data, Single Point (Above 105°F to 125°F)***

| AGZ Unit Size | Volts | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire | | Recomm'd. Fuse Or HACR Breaker Size | Max. Fuse Or HACR Breaker Size |
|---|---|---|---|---|---|---|
| | | | Quantity | Wire Gauge 75C | | |
| **026B** | 208 | 147 | 3 | 1/0 | 175 | 175 |
| | 230 | 133 | 3 | 1/0 | 150 | 150 |
| | 380 | 80 | 3 | #4 | 90 | 90 |
| | 460 | 68 | 3 | #4 | 80 | 80 |
| | 575 | 53 | 3 | #6 | 60 | 60 |
| **030B** | 208 | 158 | 3 | 2/0 | 175 | 175 |
| | 230 | 144 | 3 | 1/0 | 175 | 175 |
| | 380 | 88 | 3 | #3 | 100 | 100 |
| | 460 | 74 | 3 | #4 | 90 | 90 |
| | 575 | 59 | 3 | #6 | 70 | 70 |
| **035B** | 208 | 168 | 3 | 2/0 | 200 | 200 |
| | 230 | 155 | 3 | 2/0 | 175 | 175 |
| | 380 | 96 | 3 | #3 | 110 | 110 |
| | 460 | 80 | 3 | #4 | 90 | 90 |
| | 575 | 64 | 3 | #6 | 70 | 70 |
| **040B** | 208 | 187 | 3 | 3/0 | 200 | 200 |
| | 230 | 167 | 3 | 2/0 | 200 | 200 |
| | 380 | 113 | 3 | #2 | 125 | 125 |
| | 460 | 84 | 3 | #4 | 90 | 90 |
| | 575 | 70 | 3 | #4 | 80 | 80 |
| **045B** | 208 | 207 | 3 | 4/0 | 225 | 225 |
| | 230 | 188 | 3 | 3/0 | 225 | 225 |
| | 380 | 123 | 3 | #1 | 125 | 125 |
| | 460 | 94 | 3 | #3 | 110 | 110 |
| | 575 | 78 | 3 | #4 | 90 | 90 |
| **050B** | 208 | 226 | 3 | 4/0 | 225 | 225 |
| | 230 | 207 | 3 | 3/0 | 225 | 225 |
| | 380 | 132 | 3 | 1/0 | 150 | 150 |
| | 460 | 104 | 3 | #2 | 125 | 125 |
| | 575 | 86 | 3 | #3 | 100 | 100 |
| **055B** | 208 | 249 | 3 | 250 | 250 | 250 |
| | 230 | 229 | 3 | 4/0 | 250 | 250 |
| | 380 | 147 | 3 | 1/0 | 175 | 175 |
| | 460 | 115 | 3 | #2 | 125 | 125 |
| | 575 | 96 | 3 | #3 | 110 | 110 |
| **060B** | 208 | 270 | 3 | 300 | 300 | 300 |
| | 230 | 248 | 3 | 250 | 250 | 250 |
| | 380 | 160 | 3 | 2/0 | 175 | 175 |
| | 460 | 124 | 3 | #1 | 150 | 150 |
| | 575 | 105 | 3 | #2 | 125 | 125 |
| **065B** | 208 | 303 | 3 | 350 | 350 | 350 |
| | 230 | 282 | 3 | 300 | 350 | 350 |
| | 380 | 164 | 3 | 2/0 | 200 | 200 |
| | 460 | 138 | 3 | 1/0 | 175 | 175 |
| | 575 | 115 | 3 | #2 | 125 | 125 |
| **070B** | 208 | 323 | 3 | 400 | 400 | 400 |
| | 230 | 304 | 3 | 350 | 350 | 350 |
| | 380 | 172 | 3 | 2/0 | 200 | 200 |
| | 460 | 150 | 3 | 1/0 | 175 | 175 |
| | 575 | 123 | 3 | #1 | 150 | 150 |

**NOTES:**

1. Units operating in ambient temperatures above 95°F (35°C) must use the Maximum Fuse or HACR Breaker size.
2. All Electrical Data notes are on page 52.
3. Conduit hubs are not provided.

## *Table 34, AGZ 026BB/BH – 070BB/BH, Compressor and Fan Motor Amps, Single and Multi-Point (Above 105°F to 125°F))*

| AGZ Unit Size | Volts | Rated Load Amps | | | | | | | No. of Fan Motors | Locked Rotor Amps | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Compressors | | | | | | F.L.Amps Fan Motors (Each) | | R.L.Amps Fan Motors (Each) | Compressors | | | | | |
| | | | | | | | | | | | Across-The-Line | | | | | |
| | | No. 1 | No. 3 | No. 5 | No. 2 | No. 4 | No. 6 | | | | No.1 | No. 3 | No. 5 | No.2 | No.4 | No. 6 |
| **026B** | 208 | 29.0 | 29.0 | - | 29.0 | 29.0 | - | 5.8 | 4 | 23.3 | 189 | 189 | - | 189 | 189 | - |
| | 230 | 25.7 | 25.7 | - | 25.7 | 25.7 | - | 5.8 | 4 | 26.1 | 189 | 189 | - | 189 | 189 | - |
| | 380 | 14.9 | 14.9 | - | 14.9 | 14.9 | - | 4.1 | 4 | 20.0 | 112 | 112 | - | 112 | 112 | - |
| | 460 | 13.4 | 13.4 | - | 13.4 | 13.4 | - | 2.8 | 4 | 13.0 | 99 | 99 | - | 99 | 99 | - |
| | 575 | 9.5 | 9.5 | - | 9.5 | 9.5 | - | 3.0 | 4 | 14.0 | 74 | 74 | - | 74 | 74 | - |
| **030B** | 208 | 29.0 | 29.0 | - | 34.0 | 34.0 | - | 5.8 | 4 | 23.3 | 189 | 189 | - | 232 | 232 | - |
| | 230 | 25.7 | 25.7 | - | 30.9 | 30.9 | - | 5.8 | 4 | 26.1 | 189 | 189 | - | 232 | 232 | - |
| | 380 | 14.9 | 14.9 | - | 18.6 | 18.6 | - | 4.1 | 4 | 20.0 | 112 | 112 | - | 144 | 144 | - |
| | 460 | 13.4 | 13.4 | - | 16.2 | 16.2 | - | 2.8 | 4 | 13.0 | 99 | 99 | - | 125 | 125 | - |
| | 575 | 9.5 | 9.5 | - | 12.2 | 12.2 | - | 3.0 | 4 | 14.0 | 74 | 74 | - | 100 | 100 | - |
| **035B** | 208 | 34.0 | 34.0 | - | 34.0 | 34.0 | - | 5.8 | 4 | 23.3 | 232 | 232 | - | 232 | 232 | - |
| | 230 | 30.9 | 30.9 | - | 30.9 | 30.9 | - | 5.8 | 4 | 26.1 | 232 | 232 | - | 232 | 232 | - |
| | 380 | 18.6 | 18.6 | - | 18.6 | 18.6 | - | 4.1 | 4 | 20.0 | 144 | 144 | - | 144 | 144 | - |
| | 460 | 16.2 | 16.2 | - | 16.2 | 16.2 | - | 2.8 | 4 | 13.0 | 125 | 125 | - | 125 | 125 | - |
| | 575 | 12.2 | 12.2 | - | 12.2 | 12.2 | - | 3.0 | 4 | 14.0 | 100 | 100 | - | 100 | 100 | - |
| **040B** | 208 | 38.5 | 38.5 | - | 38.5 | 38.5 | - | 5.8 | 4 | 23.3 | 278 | 278 | - | 278 | 278 | - |
| | 230 | 33.8 | 33.8 | - | 33.8 | 33.8 | - | 5.8 | 4 | 26.1 | 278 | 278 | - | 278 | 278 | - |
| | 380 | 22.8 | 22.8 | - | 22.8 | 22.8 | - | 4.1 | 4 | 20.0 | 151 | 151 | - | 151 | 151 | - |
| | 460 | 17.0 | 17.0 | - | 17.0 | 17.0 | - | 2.8 | 4 | 13.0 | 127 | 127 | - | 127 | 127 | - |
| | 575 | 13.7 | 13.7 | - | 13.7 | 13.7 | - | 3.0 | 4 | 14.0 | 100 | 100 | - | 100 | 100 | - |
| **045B** | 208 | 38.5 | 38.5 | - | 47.6 | 47.6 | - | 5.8 | 4 | 23.3 | 278 | 278 | - | 350 | 350 | - |
| | 230 | 33.8 | 33.8 | - | 43.3 | 43.3 | - | 5.8 | 4 | 26.1 | 278 | 278 | - | 350 | 350 | - |
| | 380 | 22.8 | 22.8 | - | 27.2 | 27.2 | - | 4.1 | 4 | 20.0 | 151 | 151 | - | 195 | 195 | - |
| | 460 | 17.0 | 17.0 | - | 21.8 | 21.8 | - | 2.8 | 4 | 13.0 | 127 | 127 | - | 158 | 158 | - |
| | 575 | 13.7 | 13.7 | - | 17.3 | 17.3 | - | 3.0 | 4 | 14.0 | 100 | 100 | - | 125 | 125 | - |
| **050B** | 208 | 47.6 | 47.6 | - | 47.6 | 47.6 | - | 5.8 | 4 | 23.3 | 350 | 350 | - | 350 | 350 | - |
| | 230 | 43.3 | 43.3 | - | 43.3 | 43.3 | - | 5.8 | 4 | 26.1 | 350 | 350 | - | 350 | 350 | - |
| | 380 | 27.2 | 27.2 | - | 27.2 | 27.2 | - | 4.1 | 4 | 20.0 | 195 | 195 | - | 195 | 195 | - |
| | 460 | 21.8 | 21.8 | - | 21.8 | 21.8 | - | 2.8 | 4 | 13.0 | 158 | 158 | - | 158 | 158 | - |
| | 575 | 17.3 | 17.3 | - | 17.3 | 17.3 | - | 3.0 | 4 | 14.0 | 125 | 125 | - | 125 | 125 | - |
| **055B** | 208 | 47.6 | 47.6 | - | 58.1 | 58.1 | - | 5.8 | 4 | 23.3 | 350 | 350 | - | 425 | 425 | - |
| | 230 | 43.3 | 43.3 | - | 52.8 | 52.8 | - | 5.8 | 4 | 26.1 | 350 | 350 | - | 425 | 425 | - |
| | 380 | 27.2 | 27.2 | - | 33.8 | 33.8 | - | 4.1 | 4 | 20.0 | 195 | 195 | - | 239 | 239 | - |
| | 460 | 21.8 | 21.8 | - | 26.5 | 26.5 | - | 2.8 | 4 | 13.0 | 158 | 158 | - | 187 | 187 | - |
| | 575 | 17.3 | 17.3 | - | 21.8 | 21.8 | - | 3.0 | 4 | 14.0 | 125 | 125 | - | 148 | 148 | - |
| **060B** | 208 | 58.1 | 58.1 | - | 58.1 | 58.1 | - | 5.8 | 4 | 23.3 | 425 | 425 | - | 425 | 425 | - |
| | 230 | 52.8 | 52.8 | - | 52.8 | 52.8 | - | 5.8 | 4 | 26.1 | 425 | 425 | - | 425 | 425 | - |
| | 380 | 33.8 | 33.8 | - | 33.8 | 33.8 | - | 4.1 | 4 | 20.0 | 239 | 239 | - | 239 | 239 | - |
| | 460 | 26.5 | 26.5 | - | 26.5 | 26.5 | - | 2.8 | 4 | 13.0 | 187 | 187 | - | 187 | 187 | - |
| | 575 | 21.8 | 21.8 | - | 21.8 | 21.8 | - | 3.0 | 4 | 14.0 | 148 | 148 | - | 148 | 148 | - |
| **065B** | 208 | 58.1 | 58.1 | - | 58.1 | 78.0 | - | 7.8 | 4 | 31.7 | 425 | 425 | - | 425 | 505 | - |
| | 230 | 52.8 | 52.8 | - | 52.8 | 74.1 | - | 7.8 | 4 | 35.6 | 425 | 425 | - | 425 | 505 | - |
| | 380 | 32.7 | 32.7 | - | 32.7 | 39.8 | - | 4.1 | 4 | 20.0 | 239 | 239 | - | 239 | 280 | - |
| | 460 | 25.5 | 25.5 | | 25.5 | 37.5 | - | 3.6 | 4 | 17.8 | 187 | 187 | - | 187 | 225 | - |
| | 575 | 21.8 | 21.8 | - | 21.8 | 29.9 | - | 3.0 | 4 | 14.0 | 148 | 148 | - | 148 | 180 | - |
| **070B** | 208 | 58.1 | 78.0 | - | 58.1 | 78.0 | - | 7.8 | 4 | 31.7 | 425 | 505 | - | 425 | 505 | - |
| | 230 | 52.8 | 74.1 | - | 52.8 | 74.1 | - | 7.8 | 4 | 35.6 | 425 | 505 | - | 425 | 505 | - |
| | 380 | 32.7 | 39.8 | - | 32.7 | 39.8 | - | 4.1 | 4 | 20.0 | 239 | 280 | - | 239 | 280 | - |
| | 460 | 25.5 | 37.5 | - | 25.5 | 37.5 | - | 3.6 | 4 | 17.8 | 187 | 225 | - | 187 | 225 | - |
| | 575 | 21.8 | 29.9 | - | 21.8 | 29.9 | - | 3.0 | 4 | 14.0 | 148 | 180 | - | 148 | 180 | - |

All Electrical Data notes are on page 52.

### *Table 35, AGZ 026BB/BH - 070BB/BH, Electrical Data, Multi-Point (Above 105°F to 125°F)*

| AGZ Unit Size | Volts | Electrical Circuit #1 | | | | | Electrical Circuit #2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire Qty | Power Supply Field Wire Wire Gauge 75C | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire Qty | Power Supply Field Wire Wire Gauge 75C | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size |
| **026B** | 208 | 77 | 3 | #4 | 90 | 100 | 77 | 3 | #4 | 90 | 100 |
| | 230 | 70 | 3 | #4 | 80 | 90 | 70 | 3 | #4 | 80 | 90 |
| | 380 | 42 | 3 | #8 | 50 | 50 | 40 | 3 | #8 | 50 | 50 |
| | 460 | 36 | 3 | #8 | 45 | 45 | 36 | 3 | #8 | 45 | 45 |
| | 575 | 27 | 3 | #10 | 35 | 35 | 27 | 3 | #10 | 35 | 35 |
| **030B** | 208 | 77 | 3 | #4 | 90 | 100 | 88 | 3 | #3 | 100 | 110 |
| | 230 | 70 | 3 | #4 | 80 | 90 | 81 | 3 | #4 | 100 | 110 |
| | 380 | 42 | 3 | #8 | 50 | 50 | 50 | 3 | #8 | 60 | 60 |
| | 460 | 36 | 3 | #8 | 45 | 45 | 42 | 3 | #8 | 50 | 50 |
| | 575 | 27 | 3 | #10 | 35 | 35 | 34 | 3 | #10 | 45 | 45 |
| **035B** | 208 | 88 | 3 | #3 | 100 | 110 | 88 | 3 | #3 | 100 | 110 |
| | 230 | 81 | 3 | #4 | 100 | 110 | 81 | 3 | #4 | 100 | 110 |
| | 380 | 50 | 3 | #8 | 60 | 60 | 50 | 3 | #8 | 60 | 60 |
| | 460 | 42 | 3 | #8 | 50 | 50 | 42 | 3 | #8 | 50 | 50 |
| | 575 | 34 | 3 | #10 | 45 | 45 | 34 | 3 | #10 | 45 | 45 |
| **040B** | 208 | 98 | 3 | #3 | 125 | 125 | 98 | 3 | #3 | 125 | 125 |
| | 230 | 88 | 3 | #3 | 110 | 110 | 88 | 3 | #3 | 110 | 110 |
| | 380 | 60 | 3 | #6 | 70 | 80 | 60 | 3 | #6 | 70 | 80 |
| | 460 | 44 | 3 | #8 | 50 | 60 | 44 | 3 | #8 | 50 | 60 |
| | 575 | 37 | 3 | #8 | 45 | 50 | 37 | 3 | #8 | 45 | 50 |
| **045B** | 208 | 98 | 3 | #3 | 125 | 125 | 119 | 3 | #1 | 150 | 150 |
| | 230 | 88 | 3 | #3 | 110 | 110 | 109 | 3 | #2 | 125 | 150 |
| | 380 | 60 | 3 | #6 | 70 | 80 | 70 | 3 | #4 | 80 | 90 |
| | 460 | 44 | 3 | #8 | 50 | 60 | 55 | 3 | #6 | 70 | 70 |
| | 575 | 37 | 3 | #8 | 45 | 50 | 45 | 3 | #8 | 60 | 60 |
| **050B** | 208 | 119 | 3 | #1 | 150 | 150 | 119 | 3 | #1 | 150 | 150 |
| | 230 | 109 | 3 | #2 | 125 | 150 | 109 | 3 | #2 | 125 | 150 |
| | 380 | 70 | 3 | #4 | 80 | 90 | 70 | 3 | #4 | 80 | 90 |
| | 460 | 55 | 3 | #6 | 70 | 70 | 55 | 3 | #6 | 70 | 70 |
| | 575 | 45 | 3 | #8 | 60 | 60 | 45 | 3 | #8 | 60 | 60 |
| **055B** | 208 | 119 | 3 | #1 | 150 | 150 | 142 | 3 | 1/0 | 175 | 200 |
| | 230 | 109 | 3 | #2 | 125 | 150 | 130 | 3 | #1 | 175 | 175 |
| | 380 | 70 | 3 | #4 | 80 | 90 | 84 | 3 | #4 | 100 | 110 |
| | 460 | 55 | 3 | #6 | 70 | 70 | 65 | 3 | #4 | 80 | 90 |
| | 575 | 45 | 3 | #8 | 60 | 60 | 55 | 3 | #6 | 70 | 70 |
| **060B** | 208 | 142 | 3 | 1/0 | 175 | 200 | 142 | 3 | 1/0 | 175 | 200 |
| | 230 | 130 | 3 | #1 | 175 | 175 | 130 | 3 | #1 | 175 | 175 |
| | 380 | 84 | 3 | #4 | 100 | 110 | 84 | 3 | #4 | 100 | 110 |
| | 460 | 65 | 3 | #4 | 80 | 90 | 65 | 3 | #4 | 80 | 90 |
| | 575 | 55 | 3 | #6 | 70 | 70 | 55 | 3 | #6 | 70 | 70 |
| **070B** | 208 | 146 | 3 | 1/0 | 175 | 200 | 171 | 3 | 2/0 | 225 | 225 |
| | 230 | 134 | 3 | 1/0 | 175 | 175 | 161 | 3 | 2/0 | 200 | 225 |
| | 380 | 82 | 3 | #4 | 100 | 110 | 91 | 3 | #3 | 110 | 125 |
| | 460 | 67 | 3 | #6 | 80 | 90 | 80 | 3 | #4 | 100 | 110 |
| | 575 | 55 | 3 | #6 | 70 | 70 | 65 | 3 | #6 | 90 | 90 |

**NOTES**:
1. All Electrical Data notes are on page 52.
2. Conduit hubs are not supplied.

### *Table 36, AGZ 075BB/BH – 130BB/BH, Electrical Data, Single Point (Above 105°F to 125°F)*

| AGZ Unit Size | Volts | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire | | Recomm'd. Fuse Or HACR Breaker Size | Max. Fuse Or HACR Breaker Size |
|---|---|---|---|---|---|---|
| | | | Quantity | Wire Gauge 75C | | |
| **075B** | 208 | 378 | 6 | 250 | 450 | 450 |
| | 230 | 362 | 6 | 4/0 | 400 | 400 |
| | 380 | 194 | 3 | 3/0 | 225 | 225 |
| | 460 | 187 | 3 | 3/0 | 225 | 225 |
| | 575 | 145 | 3 | 1/0 | 175 | 175 |
| **085B** | 208 | 398 | 6 | 250 | 450 | 450 |
| | 230 | 382 | 6 | 250 | 450 | 450 |
| | 380 | 234 | 3 | 250 | 250 | 250 |
| | 460 | 200 | 3 | 4/0 | 225 | 225 |
| | 575 | 151 | 3 | 1/0 | 175 | 175 |
| **090B** | 208 | 416 | 6 | 300 | 500 | 500 |
| | 230 | 401 | 6 | 350 | 450 | 450 |
| | 380 | 270 | 3 | 300 | 300 | 300 |
| | 460 | 211 | 3 | 4/0 | 250 | 250 |
| | 575 | 157 | 3 | 2/0 | 175 | 175 |
| **100B** | 208 | 522 | 6 | 400 | 600 | 600 |
| | 230 | 462 | 6 | 350 | 500 | 500 |
| | 380 | 273 | 3 | 300 | 300 | 300 |
| | 460 | 230 | 3 | 4/0 | 250 | 250 |
| | 575 | 187 | 3 | 3/0 | 200 | 200 |
| **110B** | 208 | 612 | 6 - (2) | 350 | 700 | 700 |
| | 230 | 526 | 6 - (2) | 300 | 600 | 600 |
| | 380 | 307 | 3 | 350 | 350 | 350 |
| | 460 | 263 | 3 | 300 | 300 | 300 |
| | 575 | 211 | 3 | 4/0 | 225 | 225 |
| **120B** | 208 | 612 | 6 - (2) | 350 | 700 | 700 |
| | 230 | 571 | 6 - (2) | 350 | 600 | 600 |
| | 380 | 352 | 6 - (2) | 4/0 | 400 | 400 |
| | 460 | 286 | 3 | 350 | 300 | 300 |
| | 575 | 219 | 3 | 4/0 | 250 | 250 |
| **130B** | 208 | 613 | 6 - (2) | 350 | 700 | 700 |
| | 230 | 613 | 6 - (2) | 350 | 700 | 700 |
| | 380 | 393 | 6 | 250 | 450 | 450 |
| | 460 | 307 | 3 | 350 | 350 | 350 |
| | 575 | 228 | 3 | 250 | 250 | 250 |

**NOTES:**

1. Units operating in ambient temperatures of 95°F (35°C) and above must use the Maximum Fuse or HACR Breaker size.
2. All Electrical Data notes are on page 52.
3. (2) in column with wire qty. indicates that two conduits are required.
4. Conduit hubs are not supplied.

## *Table 37, AGZ 075BB/BH – 130BB/BH, Compressor and Fan Motor Amps, Single and Multi-Point (Above 105°F to 125°F)*

| AGZ Unit Size | Volts | Rated Load Amps | | | | | | | No. of Fan Motors | Locked Rotor Amps | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Compressors | | | | | | F.L.Amps Fan Motors (Each) | | R.L.Amps Fan Motors (Each) | Compressors | | | | | |
| | | | | | | | | | | | Across-The-Line | | | | | |
| | | No. 1 | No. 3 | No. 5 | No. 2 | No. 4 | No. 6 | | | | No.1 | No. 3 | No. 5 | No.2 | No.4 | No. 6 |
| 075B | 208 | 78.0 | 78.0 | | 78.0 | 78.0 | - | 7.8 | 6 | 31.7 | 505 | 505 | - | 505 | 505 | - |
| | 230 | 74.1 | 74.1 | - | 74.1 | 74.1 | - | 7.8 | 6 | 35.6 | 505 | 505 | - | 505 | 505 | - |
| | 380 | 39.8 | 39.8 | - | 39.8 | 39.8 | - | 4.1 | 6 | 20.0 | 280 | 280 | - | 280 | 280 | - |
| | 460 | 38.8 | 38.8 | - | 38.8 | 38.8 | - | 3.6 | 6 | 17.8 | 225 | 225 | - | 225 | 225 | - |
| | 575 | 29.9 | 29.9 | - | 29.9 | 29.9 | - | 3.0 | 6 | 14.0 | 180 | 180 | - | 180 | 180 | - |
| 085B | 208 | 78.0 | 78.0 | - | 86.9 | 86.9 | - | 7.8 | 6 | 31.7 | 505 | 505 | - | 500 | 500 | - |
| | 230 | 74.1 | 74.1 | - | 83.3 | 83.3 | - | 7.8 | 6 | 35.6 | 505 | 505 | - | 500 | 500 | - |
| | 380 | 39.8 | 39.8 | - | 57.6 | 57.6 | - | 4.1 | 6 | 20.0 | 280 | 280 | - | 305 | 305 | - |
| | 460 | 38.8 | 38.8 | - | 44.5 | 44.5 | - | 3.6 | 6 | 17.8 | 225 | 225 | - | 250 | 250 | - |
| | 575 | 29.9 | 29.9 | - | 32.5 | 32.5 | - | 3.0 | 6 | 14.0 | 180 | 180 | - | 198 | 198 | - |
| 090B | 208 | 86.9 | 86.9 | - | 86.9 | 86.9 | - | 7.8 | 6 | 31.7 | 500 | 500 | - | 500 | 500 | - |
| | 230 | 83.3 | 83.3 | - | 83.3 | 83.3 | - | 7.8 | 6 | 35.6 | 500 | 500 | - | 500 | 500 | - |
| | 380 | 57.6 | 57.6 | - | 57.6 | 57.6 | - | 4.1 | 6 | 20.0 | 305 | 305 | - | 305 | 305 | - |
| | 460 | 44.5 | 44.5 | | 44.5 | 44.5 | - | 3.6 | 6 | 17.8 | 250 | 250 | - | 250 | 250 | - |
| | 575 | 32.5 | 32.5 | - | 32.5 | 32.5 | - | 3.0 | 6 | 14.0 | 198 | 198 | - | 198 | 198 | - |
| 100B | 208 | 58.1 | 58.1 | 58.1 | 87.9 | 87.9 | 87.9 | 7.8 | 8 | 31.7 | 425 | 425 | 425 | 505 | 505 | 505 |
| | 230 | 52.8 | 52.8 | 52.8 | 74.2 | 74.2 | 74.2 | 7.8 | 8 | 35.6 | 425 | 425 | 425 | 505 | 505 | 505 |
| | 380 | 32.7 | 32.7 | 32.7 | 43.8 | 43.8 | 43.8 | 4.1 | 8 | 20.0 | 239 | 239 | 239 | 280 | 280 | 280 |
| | 460 | 25.5 | 25.5 | 25.5 | 37.5 | 37.5 | 37.5 | 3.6 | 8 | 17.8 | 187 | 187 | 187 | 225 | 225 | 225 |
| | 575 | 21.8 | 21.8 | 21.8 | 29.9 | 29.9 | 29.9 | 3.0 | 8 | 14.0 | 148 | 148 | 148 | 180 | 180 | 180 |
| 110B | 208 | 87.9 | 87.9 | 87.9 | 87.9 | 87.9 | 87.9 | 7.8 | 8 | 31.7 | 505 | 505 | 505 | 505 | 505 | 505 |
| | 230 | 74.2 | 74.2 | 74.2 | 74.2 | 74.2 | 74.2 | 7.8 | 8 | 35.6 | 505 | 505 | 505 | 505 | 505 | 505 |
| | 380 | 43.8 | 43.8 | 43.8 | 43.8 | 43.8 | 43.8 | 4.1 | 8 | 20.0 | 280 | 280 | 280 | 280 | 280 | 280 |
| | 460 | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | 3.6 | 8 | 17.8 | 225 | 225 | 225 | 225 | 225 | 225 |
| | 575 | 29.9 | 29.9 | 29.9 | 29.9 | 29.9 | 29.9 | 3.0 | 8 | 14.0 | 180 | 180 | 180 | 180 | 180 | 180 |
| 120B | 208 | 87.9 | 87.9 | 87.9 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 31.7 | 505 | 505 | 505 | 500 | 500 | 500 |
| | 230 | 74.2 | 74.2 | 74.2 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 35.6 | 505 | 505 | 505 | 500 | 500 | 500 |
| | 380 | 43.8 | 43.8 | 43.8 | 57.6 | 57.6 | 57.6 | 4.1 | 8 | 20.0 | 280 | 280 | 280 | 305 | 305 | 305 |
| | 460 | 37.5 | 37.5 | 37.5 | 44.5 | 44.5 | 44.5 | 3.6 | 8 | 17.8 | 225 | 225 | 225 | 250 | 250 | 250 |
| | 575 | 29.9 | 29.9 | 29.9 | 32.5 | 32.5 | 32.5 | 3.0 | 8 | 14.0 | 180 | 180 | 180 | 198 | 198 | 198 |
| 130B | 208 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 31.7 | 500 | 500 | 500 | 500 | 500 | 500 |
| | 230 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 88.0 | 7.8 | 8 | 35.6 | 500 | 500 | 500 | 500 | 500 | 500 |
| | 380 | 57.6 | 57.6 | 57.6 | 57.6 | 57.6 | 57.6 | 4.1 | 8 | 20.0 | 305 | 305 | 305 | 305 | 305 | 305 |
| | 460 | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 | 44.5 | 3.6 | 8 | 17.8 | 250 | 250 | 250 | 250 | 250 | 250 |
| | 575 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 32.5 | 3.0 | 8 | 14.0 | 198 | 198 | 198 | 198 | 198 | 198 |

All Electrical Data notes are on page 52.

## *Table 38, AGZ 075BB/BH – 130BB/BH, Electrical Data, Multi-Point (Above 105°F to 125°F)*

| AGZ Unit Size | Volts | Electrical Circuit #1 | | | | | Electrical Circuit #2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire Qty | Power Supply Field Wire Wire Gauge 75C | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size | Minimum Circuit Ampacity (MCA) | Power Supply Field Wire Qty | Power Supply Field Wire Wire Gauge 75C | Recomm'd Fuse or HACR Breaker Size | Max. Fuse or HACR Breaker Size |
| **075B** | 208 | 199 | 3 | 3/0 | 225 | 250 | 199 | 3 | 3/0 | 225 | 250 |
| | 230 | 190 | 3 | 3/0 | 225 | 250 | 190 | 3 | 3/0 | 225 | 250 |
| | 380 | 102 | 3 | #2 | 125 | 125 | 102 | 3 | #2 | 125 | 125 |
| | 460 | 99 | 3 | #3 | 110 | 125 | 99 | 3 | #3 | 110 | 125 |
| | 575 | 76 | 3 | #4 | 90 | 100 | 76 | 3 | #4 | 90 | 100 |
| **085B** | 208 | 199 | 3 | 3/0 | 225 | 250 | 219 | 3 | 4/0 | 250 | 300 |
| | 230 | 190 | 3 | 3/0 | 225 | 250 | 211 | 3 | 4/0 | 250 | 250 |
| | 380 | 102 | 3 | #2 | 125 | 125 | 142 | 3 | 1/0 | 175 | 175 |
| | 460 | 99 | 3 | #3 | 110 | 125 | 111 | 3 | #2 | 125 | 150 |
| | 575 | 76 | 3 | #4 | 90 | 100 | 83 | 3 | #3 | 100 | 110 |
| **090B** | 208 | 219 | 3 | 4/0 | 250 | 300 | 219 | 3 | 4/0 | 250 | 300 |
| | 230 | 211 | 3 | 4/0 | 250 | 250 | 211 | 3 | 4/0 | 250 | 250 |
| | 380 | 142 | 3 | 1/0 | 175 | 175 | 142 | 3 | 1/0 | 175 | 175 |
| | 460 | 111 | 3 | #2 | 125 | 150 | 111 | 3 | #2 | 125 | 150 |
| | 575 | 83 | 3 | #3 | 100 | 110 | 83 | 3 | #3 | 100 | 110 |
| **100B** | 208 | 220 | 3 | 4/0 | 250 | 250 | 317 | 3 | 400 | 350 | 400 |
| | 230 | 203 | 3 | 4/0 | 225 | 250 | 272 | 3 | 300 | 300 | 300 |
| | 380 | 123 | 3 | #1 | 150 | 150 | 159 | 3 | 2/0 | 175 | 200 |
| | 460 | 101 | 3 | #2 | 110 | 125 | 136 | 3 | 1/0 | 150 | 175 |
| | 575 | 83 | 3 | #4 | 100 | 100 | 109 | 3 | #2 | 125 | 125 |
| **110B** | 208 | 317 | 3 | 400 | 350 | 400 | 317 | 3 | 400 | 350 | 400 |
| | 230 | 272 | 3 | 300 | 300 | 300 | 272 | 3 | 300 | 300 | 300 |
| | 380 | 159 | 3 | 2/0 | 175 | 200 | 159 | 3 | 2/0 | 175 | 200 |
| | 460 | 136 | 3 | 1/0 | 150 | 175 | 136 | 3 | 1/0 | 150 | 175 |
| | 575 | 109 | 3 | #2 | 125 | 125 | 109 | 3 | #2 | 125 | 125 |
| **120B** | 208 | 317 | 3 | 400 | 400 | 400 | 317 | 3 | 400 | 400 | 400 |
| | 230 | 272 | 3 | 300 | 300 | 300 | 317 | 3 | 400 | 400 | 400 |
| | 380 | 159 | 3 | 2/0 | 200 | 200 | 204 | 3 | 4/0 | 250 | 250 |
| | 460 | 136 | 3 | 1/0 | 175 | 175 | 159 | 3 | 2/0 | 200 | 200 |
| | 575 | 109 | 3 | #2 | 125 | 125 | 118 | 3 | #1 | 150 | 150 |
| **130B** | 208 | 317 | 3 | 400 | 400 | 400 | 317 | 3 | 400 | 400 | 400 |
| | 230 | 317 | 3 | 400 | 400 | 400 | 317 | 3 | 400 | 400 | 400 |
| | 380 | 204 | 3 | 4/0 | 250 | 250 | 204 | 3 | 4/0 | 250 | 250 |
| | 460 | 159 | 3 | 2/0 | 200 | 200 | 159 | 3 | 2/0 | 200 | 200 |
| | 575 | 118 | 3 | #1 | 150 | 150 | 118 | 3 | #1 | 150 | 150 |

**NOTES**:
1. All Electrical Data notes are on page 52.
2. Conduit hubs are not supplied.

## Notes for "Electrical Data Single- and Multi-Point" Power:

1. Unit wire size ampacity (MCA) is equal to 125% of the largest compressor-motor RLA plus 100% of RLA of all other loads in the circuit including the control transformer.
2. The control transformer is furnished and no separate 115V power is required. For both single- and multi-point power connections, the control transformer is in circuit #1 with control power wired from there to circuit #2. In multi-point power, disconnecting power to circuit will disconnect all control power to the unit.
3. If a separate 115V power supply is used for the control circuit, then the wire sizing amps is 10 amps for all unit sizes.
4. 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.
5. "Recommended Fuse Sizes" are selected at approximately 150% to 175% of the largest compressor RLA, plus 100% of all other loads in the circuit.
6. "Maximum Fuse or HACR breaker size" is selected at approximately 225% of the largest compressor RLA, plus 100% of all other loads in the circuit.
7. 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.
8. Must be electrically grounded according to national and local electrical codes.

## Voltage Limitations:

1. Within ± 10 percent of nameplate rating
2. Voltage phase unbalance not to exceed 2% with a resultant current unbalance of 6 to 10 times the voltage unbalance per NEMA MG-1, 1998 Standard.

## Notes for "Compressor and Condenser Fan Amp Draw":

1. Compressor RLA values are for wiring sizing purposes only but do not reflect normal operating current draw at rated capacity.

## Notes for "Field Wiring Data"

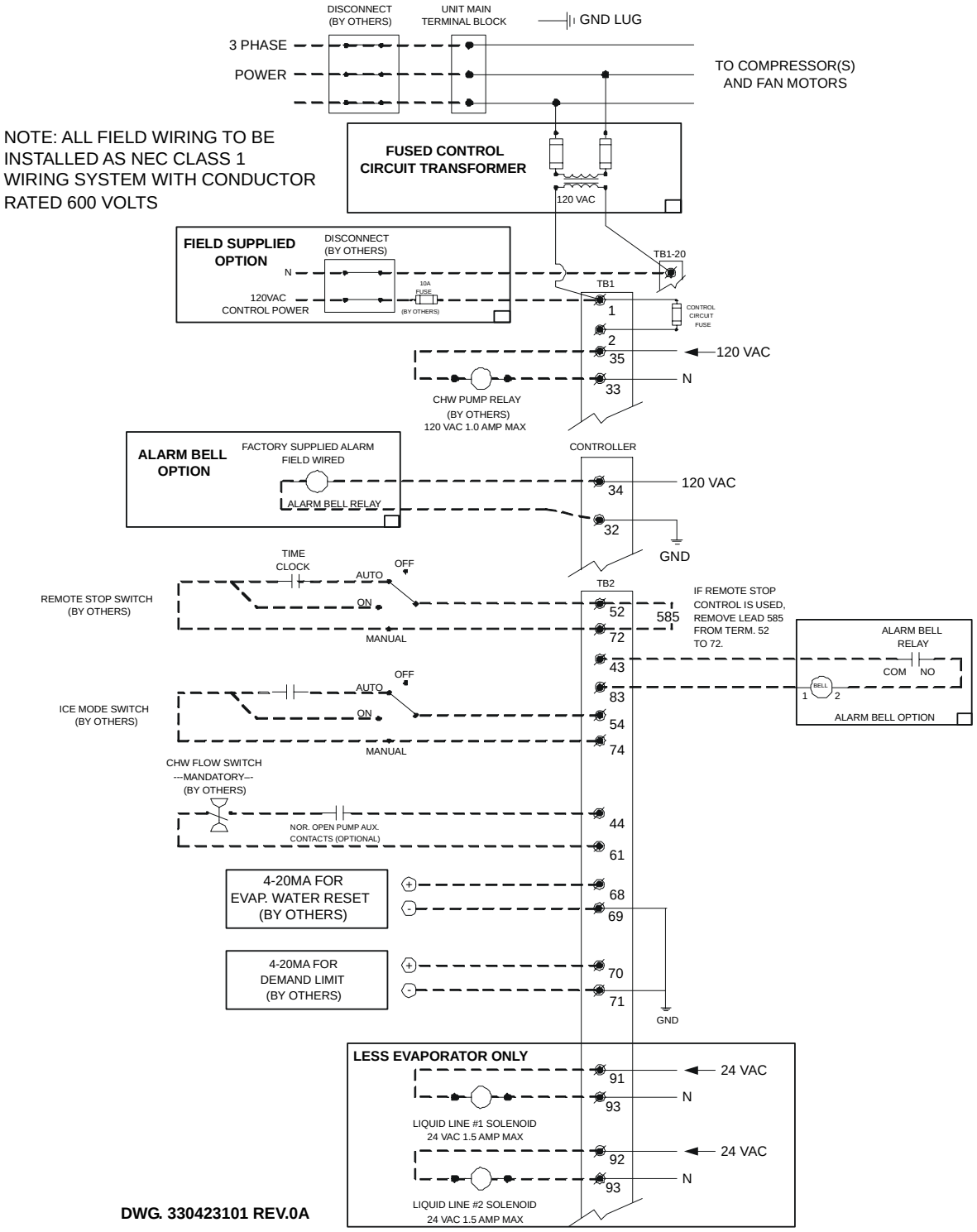
1. Requires a single disconnect to supply electrical power to the unit. This power supply must either be fused or use an HACR type circuit breaker.
2. All field wiring to unit power block or optional non-fused disconnect switch must be copper.
3. All field wire size values given in table apply to 75°C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

## Circuit Breakers (AGZ 026 to 130)

Factory installed circuit breakers are standard on units with single point power supply only. This option provides unit installed compressor short circuit protection and makes servicing easier.

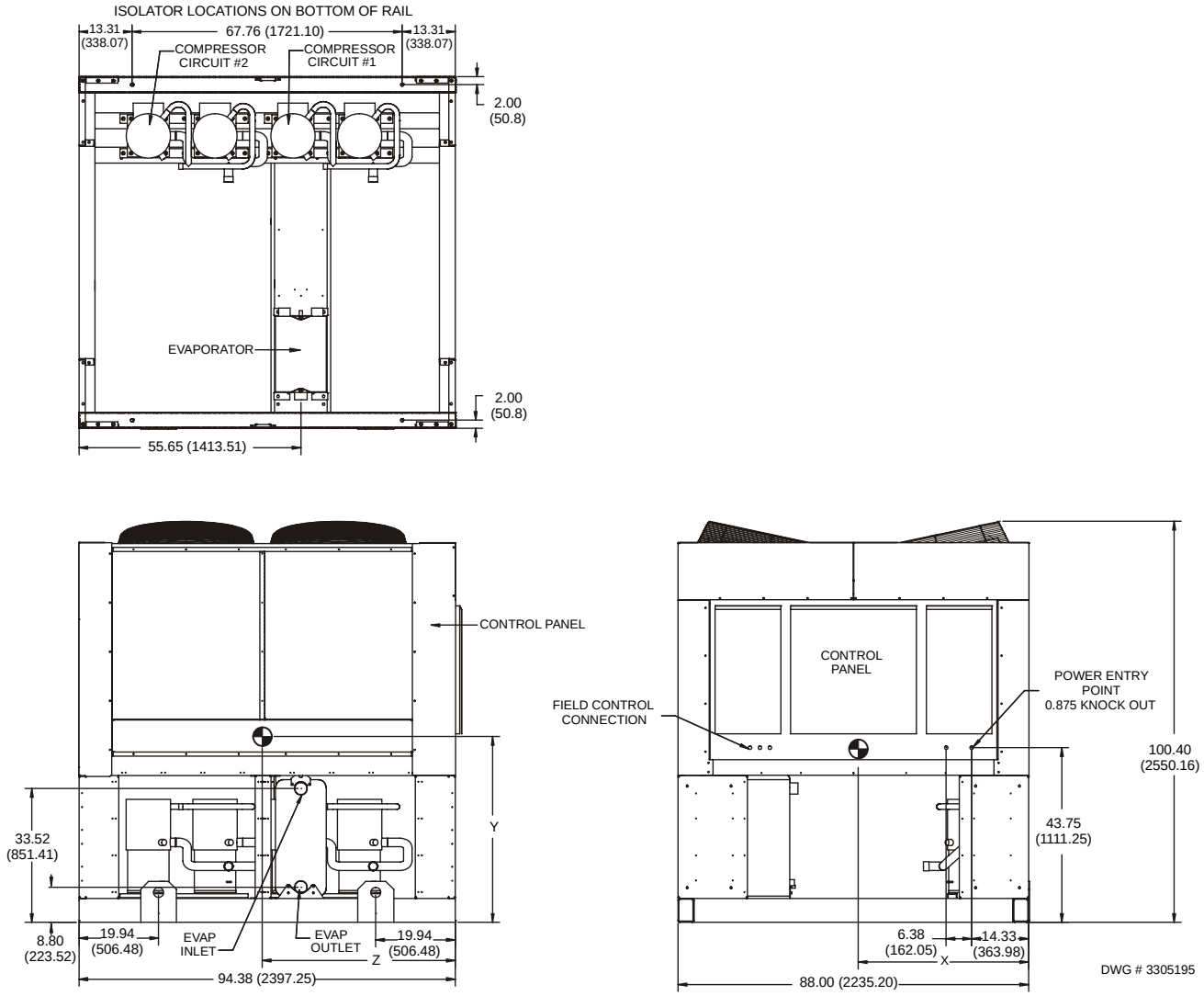
| Connection Type | Power Block | Disconnect Swt. | Circuit Breakers | High Short Circuit Current |
|---|---|---|---|---|
| Single Point (Standard) | Std | Opt. | Std | Opt |
| Multi-Point (Optional) | Std | Opt. | Not Avail. | Opt. |

## *Figure 22, AGZ 026B – AGZ 130B, Typical Field Wiring*



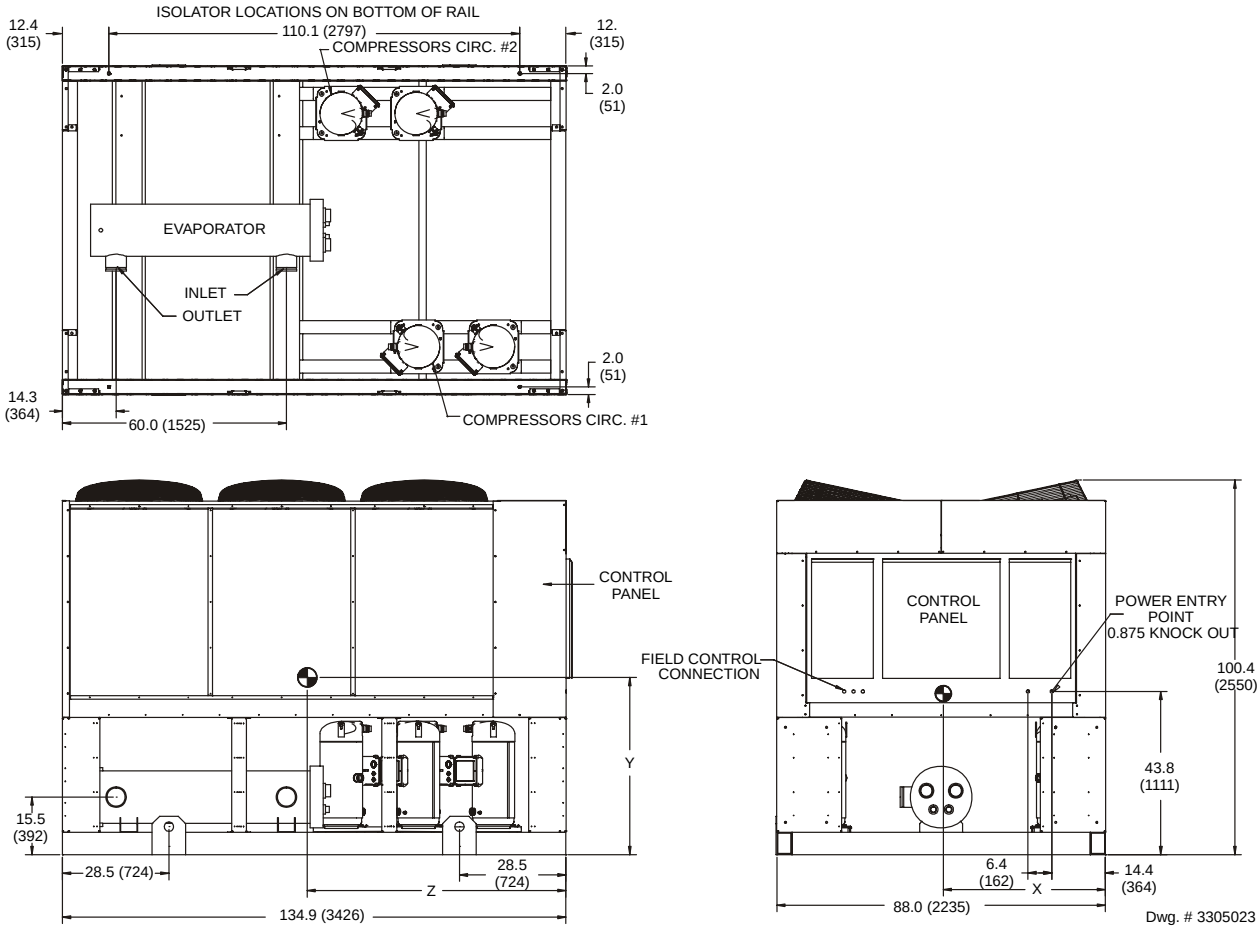
# Dimensional Data

***Figure 23, Dimensions, AGZ 026BS – 070BS Packaged Chiller***



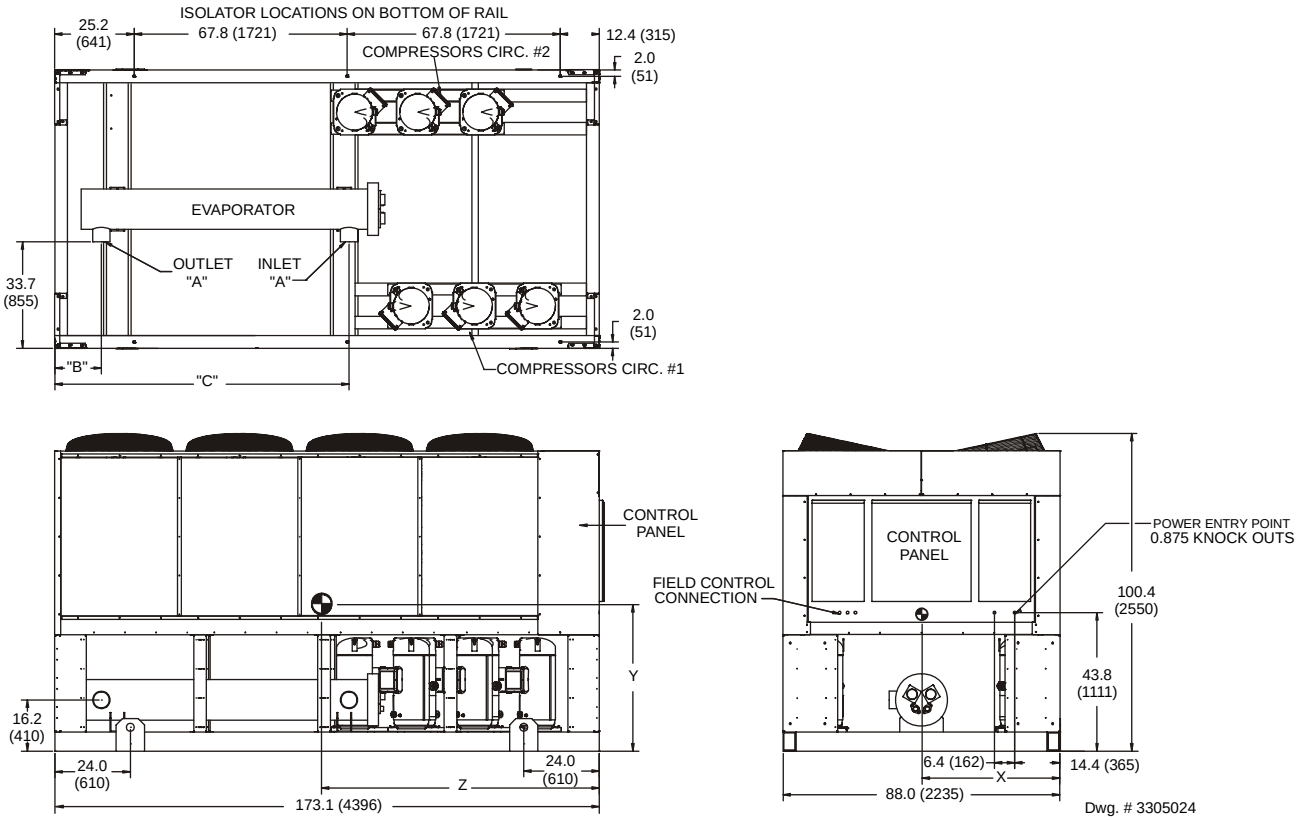

| Unit Size | Center of Gravity - Inches (mm) | | | Evap Inlet & Outlet Victaulic in. | Weights – Lbs (kg) | |
|---|---|---|---|---|---|---|
| | X | Y | Z | | Shipping Weight | Operating Weight |
| **AGZ 026BS** | 39 (991) | 40 (1016) | 42 (1067) | 3 | 3950 (1792) | 3990 (1810) |
| **AGZ 030BS** | 39 (991) | 40 (1016) | 42 (1067) | 3 | 3990 (1810) | 4040 (1833) |
| **AGZ 035BS** | 40 (1016) | 40 (1016) | 42 (1067) | 3 | 4030 (1828) | 4080 (1851) |
| **AGZ 040BS** | 39 (991) | 39 (991) | 41 (1041) | 3 | 4070 (1846) | 4130 (1873) |
| **AGZ 045BS** | 40 (1016) | 38 (965) | 41 (1041) | 3 | 4210 (1910) | 4270 (1937) |
| **AGZ 050BS** | 40 (1016) | 39 (991) | 42 (1067) | 3 | 4330 (1964) | 4400 (1996) |
| **AGZ 055BS** | 40 (1016) | 39 (991) | 43 (1092) | 3 | 4460 (2023) | 4540 (2059) |
| **AGZ 060BS** | 40 (1016) | 39 (991) | 43 (1092) | 3 | 4520 (2050) | 4600 (2087) |
| **AGZ 065BS** | 41 (1041) | 40 (1016) | 45 (1143) | 3 | 4760 (2159) | 4860 (2204) |
| **AGZ 070BS** | 41 (1041) | 41 (1041) | 45 (1143) | 3 | 4890 (2218) | 4990 (2263) |

### *Figure 24, AGZ 075BS - 090BS Packaged Chiller*




| Unit Size | Center of Gravity Inches (mm) | | | Evap Inlet & Outlet Victaulic in. | Weights Lbs. (kg) | |
|---|---|---|---|---|---|---|
| | X | Y | Z | | Shipping Weight | Operating Weight |
| **AGZ 075BS** | 44 (1118) | 42 (1067) | 60 (1524) | 5 | 6320 (2867) | 6530 (2962) |
| **AGZ 085BS** | 43 (1092) | 40 (1016) | 60 (1524) | 5 | 6480 (2939) | 6690 (3035) |
| **AGZ 090BS** | 44 (1118) | 39 (991) | 59 (1499) | 5 | 6640 (3012) | 6850 (3107) |

## *Figure 25, AGZ 100BS - 130BS Packaged Chiller*




| Unit Size | Evap Inlet & Outlet Victaulic "A" in. | Evaporator Water Connections Inches (mm) | | Center of Gravity Inches (mm) | | | Weights Lbs. (kg) | |
|---|---|---|---|---|---|---|---|---|
| | | B | C | X | Y | Z | Shipping Weight | Operating Weight |
| **AGZ 100BS** | 5 | 14.8 (375.9) | 93.5 (2374.9) | 43 (1092) | 43 (1092) | 76 (1930) | 7580 (3438) | 7870 (3570) |
| **AGZ 110BS** | 5 | 14. 8 (375.9) | 93.5 (2374.9) | 44 (1118) | 43 (1092) | 75 (1905) | 7860 (3565) | 8150 (3697) |
| **AGZ 120BS** | 8 | 15.3 (388.6) | 92.4 (2346.9) | 43 (1092) | 40 (1016) | 75 (1905) | 8380 (3801) | 8720 (3955) |
| **AGZ 130BS** | 8 | 15.3 (388.6) | 92.4 (2346.9) | 44 (1118) | 38 (965) | 74 (1880) | 8710 (3951) | 9050 (4105) |

# R-407C Units

AGZ chillers are available with R-407C refrigerant as non-ARI certified units. R-407C is a zeotropic blend of three compounds, and as such exhibits the characteristic of glide. It does not behave as one substance like R-22 does. Glide is the difference (in degrees F) between the beginning and end phase-change process in either the evaporator or condenser. During these processes, different ratios of the refrigerant's components change phase from the beginning to the end of the process. The following functions, conditions and settings will differ from units charged with R-22.

1. Polyolester lubricants are used instead of mineral oil.
2. The saturated pressure/temperature relationship
3. Control and alarm settings
4. Charging procedures

**1. Lubrication**. The units are factory-charged with polyoester (POE) lubricant and one of the following lubricants must be used if lubricant is to be added to the system:

Copeland Ultra 22 CC
Mobil EAL™ Arctic 22 CC
ICI EMKARATE RL RL™ 32CF

POEs are very hygroscopic and will quickly absorb moisture if exposed to air. Pump the lubricant into the unit through a closed transfer system. Avoid overcharging the unit.

**2. Pressure/temperature relationship.** See Figure 26 on page 58 for the saturated pressure-temperature chart. Due to refrigerant glide, use the following procedures for superheat and subcooling measurement.

To determine superheat, only vapor must be present at the point of measurement, no liquid. Use the temperature reading, the pressure reading and the Saturated P/T Chart. If the pressure is measured at 78 psig, the chart shows the saturated vapor temperature to be 50.6°F. If the temperature is measured at 60°F, the superheat is 9.4 degrees F.

To determine subcooling, only liquid must be present, no vapor. Use the temperature reading, the pressure reading and the Saturated P/T Chart. If the pressure is measured at 250 psig, the chart shows the saturated liquid temperature to be 108.2°F. If the temperature is measured at 98°F, the subcooling is 10.2 degrees F.

The P/T relationship between R-407C and R-22 is similar enough to allow the use of R-22 expansion valves. The valves may be marked as "R-22' or "R-22/R-407C".

**3. Control and alarm settings.** The software that controls the operation of the unit is factory-set for operation with R-407C, taking into account that the pressure/temperature relationship differs from R-22. The software functionality is the same for either refrigerant.

**4. Charging procedure.** The units are factory-charged with R-407C. Use the following procedure if recharging in the field is necessary:

Whether topping off a charge or replacing the circuit's entire charge, always remove the refrigerant from the charging vessel as a liquid. Many of the cylinders for the newer refrigerants have a dip tube so that liquid is drawn off when the cylinder is in the upright position. Do not vapor charge out of a cylinder unless the entire contents will be charged into the system.

With the system in a 250-micron or lower vacuum, liquid can be charged into the high side. Initially charge about 80 percent of the system total charge.

Start the system and observe operation. Use standard charging procedures (liquid only) to top off the charge.

It may be necessary to add refrigerant through the compressor suction. Because the refrigerant leaving the cylinder must be a liquid, exercise care to avoid damage to the compressor. A sight glass can be connected between the charging hose and the compressor. It can be adjusted to have liquid leave the cylinder and vapor enter the compressor.

***Figure 26, R-407C Saturated Pressure/Temperature Chart***

| Pressure (PSIG) | Liquid Temp (°F) | Vapor Temp (°F) | Pressure (PSIG) | Liquid Temp (°F) | Vapor Temp (°F) |
|---|---|---|---|---|---|
| 20 | -10.7 | 1.5 | 150 | 74.8 | 84.9 |
| 22 | -8.2 | 4.0 | 155 | 76.8 | 86.8 |
| 24 | -5.7 | 6.4 | 160 | 78.7 | 88.7 |
| 26 | -3.4 | 8.7 | 165 | 80.6 | 90.5 |
| 28 | -1.1 | 11.0 | 170 | 82.5 | 92.3 |
| 30 | 1.1 | 13.1 | 175 | 84.3 | 94.0 |
| 32 | 3.2 | 15.2 | 180 | 86.1 | 95.8 |
| 34 | 5.3 | 17.2 | 185 | 87.8 | 97.5 |
| 36 | 7.3 | 19.2 | 190 | 89.6 | 99.1 |
| 38 | 9.2 | 21.0 | 195 | 91.3 | 100.7 |
| 40 | 11.1 | 22.9 | 200 | 92.9 | 102.3 |
| 42 | 12.9 | 24.7 | 205 | 94.6 | 103.9 |
| 44 | 14.7 | 26.4 | 210 | 96.2 | 105.4 |
| 46 | 16.4 | 28.1 | 215 | 97.7 | 107.0 |
| 48 | 18.1 | 29.7 | 220 | 99.3 | 108.4 |
| 50 | 19.7 | 31.3 | 225 | 100.8 | 109.9 |
| 52 | 21.3 | 32.9 | 230 | 102.3 | 111.4 |
| 54 | 22.9 | 34.4 | 235 | 103.8 | 112.8 |
| 56 | 24.4 | 35.9 | 240 | 105.3 | 114.2 |
| 58 | 25.9 | 37.4 | 245 | 106.7 | 115.6 |
| 60 | 27.4 | 38.8 | 250 | 108.2 | 116.9 |
| 62 | 28.8 | 40.2 | 255 | 109.6 | 118.2 |
| 64 | 30.2 | 41.6 | 260 | 111.0 | 119.6 |
| 66 | 31.6 | 43.0 | 265 | 112.3 | 120.9 |
| 68 | 33.0 | 44.3 | 270 | 113.7 | 122.1 |
| 70 | 34.3 | 45.6 | 275 | 115.0 | 123.4 |
| 72 | 35.6 | 46.9 | 280 | 116.3 | 124.7 |
| 74 | 36.9 | 48.1 | 285 | 117.6 | 125.9 |
| 76 | 38.2 | 49.3 | 290 | 118.9 | 127.1 |
| 78 | 39.4 | 50.6 | 295 | 120.2 | 128.3 |
| 80 | 40.6 | 51.8 | 300 | 121.4 | 129.5 |
| 82 | 41.9 | 52.9 | 305 | 122.7 | 130.7 |
| 84 | 43.0 | 54.1 | 310 | 123.9 | 131.8 |
| 86 | 44.2 | 55.2 | 315 | 125.1 | 133.0 |
| 88 | 45.4 | 56.3 | 320 | 126.3 | 134.1 |
| 90 | 46.5 | 57.4 | 325 | 127.5 | 135.2 |
| 92 | 47.6 | 58.5 | 330 | 128.7 | 136.3 |
| 94 | 48.7 | 59.6 | 335 | 129.8 | 137.4 |
| 96 | 49.8 | 60.7 | 340 | 131.0 | 138.5 |
| 98 | 50.9 | 61.7 | 345 | 132.1 | 139.6 |
| 100 | 51.9 | 62.7 | 350 | 133.2 | 140.6 |
| 105 | 54.5 | 65.2 | 355 | 134.3 | 141.7 |
| 110 | 57.0 | 67.7 | 360 | 135.4 | 142.7 |
| 115 | 59.5 | 70.0 | 365 | 136.5 | 143.7 |
| 120 | 61.8 | 72.3 | 370 | 137.6 | 144.7 |
| 125 | 64.1 | 74.6 | 375 | 138.7 | 145.7 |
| 130 | 66.4 | 76.7 | 380 | 139.8 | 146.7 |
| 135 | 68.5 | 78.8 | 385 | 140.8 | 147.7 |
| 140 | 70.7 | 80.9 | 390 | 141.8 | 148.7 |
| 145 | 72.8 | 82.9 | 395 | 142.9 | 149.6 |

## Pre Start-up

The chiller must be inspected to ensure no components became loose or damaged during shipping or installation.

## Start-Up

Refer to the MicroTech II Controller information in the operating manual OM AGZ-1 to become familiar with unit operation before starting the chiller.

There should be adequate building load (at least 50 percent of the unit full load capacity) to properly check the operation of the chiller refrigerant circuits.

Be prepared to record all operating parameters required by the "Compressorized Equipment Warranty Form". Return this information within 10 working days to McQuay International as instructed on the form to obtain full warranty benefits.

1. Verify chilled water flow.
2. Verify remote start / stop or time clock (if installed) has requested the chiller to start.
3. Set the chilled water setpoint to the required temperature. (The system water temperature must be greater than the total of the leaving water temperature setpoint plus one-half the control band before the MicroTech II controller will stage on cooling.)
4. Set the Evap Delta T and the Start Delta T as a starting point.
5. Put both pumpdown switches (PS1 and PS2) to the ON position.
6. Put system switch (S1) to ON position.

| Switch | Switch Position | |
|---|---|---|
| | ON | OFF |
| PS1, PS2, Pumpdown Switches | Circuits will operate in the normal automatic mode | Circuit will go through the normal pumpdown cycle and shut off. |
| S1, System Switch | Unit will operate in the normal automatic mode | Unit will shut off immediately without pumping down (emergency stop) |

7. There may be a delay of 2 minutes after closing S1. The time delay is due to the compressor inherent motor protection or the Stage Up Timer counting. This should only occur on initial start-up or when power to the chiller has been turned off and back on. More than one compressor will not start at the same time.
8. After the chiller has been operating for a period of time and has become stable, check the following:
   - Compressor oil level. (Some scroll compressors do not have oil sight glasses.)
   - Refrigerant sight glass for flashing
   - Rotation of condenser fans
9. Complete the "Compressorized Equipment Warranty Form".

# Shutdown

## Temporary

1. Put both circuit switches to the OFF position (Pumpdown and Stop).
2. After compressors have stopped, put System Switch (S1) to OFF (emergency stop).
3. Turn off chilled water pump. Chilled water pump to operate while compressors are pumping down.

To start the chiller after a temporary shutdown, follow the start-up instructions.

## Extended

1. Front seat both condenser liquid line service valves.
2. Put both circuit switches to the OFF position (Pumpdown and Stop position).
3. After the compressors have stopped, put System Switch (S1) to the OFF position (emergency stop).
4. Front seat both refrigerant circuit discharge valves (if applicable).
5. If chilled water system is not drained, maintain power to the evaporator heater to prevent freezing. Maintain heat tracing on the chilled water lines.
6. Drain evaporator and water piping to prevent freezing.
7. If electrical power to the unit is on, the compressor crankcase heaters will keep the liquid refrigerant out of the compressor oil. This will minimize start-up time when putting the unit back into service. The evaporator heater will be able to function.
8. If electrical power is off, make provisions to power the evaporator heater (if chilled water system is not drained). Tag all opened electrical disconnect switches to warn against start-up before the refrigerant valves are in the correct operating position. At start-up, electrical power must be on for 24 hours before starting the chiller.

To start the chiller after an extended shutdown, follow the prestart-up and start-up instructions.

# Water Piping Checkout

1. Check the pump operation and vent all air from the system.
2. Circulate evaporator water, checking for proper system pressure and evaporator pressure drop. Compare the pressure drop to the evaporator water pressure drop curve.
3. Clean all water strainers before placing the chiller into service.

# Refrigerant Piping Checkout

1. Check all exposed brazed joints for evidence of leaks. Joints may have been damaged during shipping or when the unit was installed.
2. Check that all refrigerant valves are either opened or closed as required for proper operation of the chiller.
3. A thorough leak test must be done using an approved electronic leak detector. Check all valve stem packing for leaks. Replace all refrigerant valve caps and tighten.
4. Check all refrigerant lines to insure that they will not vibrate against each other or against other chiller components and are properly supported.
5. Check all flare connections and all refrigerant threaded connectors.
6. Look for any signs of refrigerant leaks around the condenser coils and for damage during shipping or installation.
7. Leak detector is applied externally to refrigerant joints at the factory. Do not confuse this residue with an oil leak.
8. Connect refrigerant service gauges to each refrigerant circuit before starting unit.

## Electrical Check Out

**CAUTION**

**Electrical power must be applied to the compressor crankcase heaters 24 hours before starting unit to drive off refrigerant from the oil.**

1. Open all electrical disconnects and check all power wiring connections. Start at the power block and check all connections through all components to and including the compressor terminals. These should be checked again after 3 months of operation and at least yearly thereafter.
2. Check all control wiring by pulling on the wire at the spade connections and tighten all screw connections. Check plug-in relays for proper seating and to insure retaining clips are installed.
3. Put System Switch (S1) to the Emergency Stop position.
4. Put both circuit #1 & #2 switches to the Pumpdown and Stop position.
5. Apply power to the unit. The panel Alarm Light will stay on until S1 is closed. Ignore the Alarm Light for the check out period. If you have the optional Alarm Bell, you may wish to disconnect it.
6. Check at the power block or disconnect for the proper voltage and proper voltage between phases. Check power for proper phasing using a phase sequence meter before starting unit.
7. Check for 120Vac at the optional control transformer and at TB-2 terminal #1 and the neutral block (NB).
8. Check between TB-2 terminal #7 and NB for 120Vac supply for transformer #2.
9. Check between TB-2 terminal #2 and NB for 120Vac control voltage. This supplies the compressor crank case heaters.
10. Check between TB-3 terminal #17 and #27 for 24Vac control voltage.

# Component Operation

## Hot Gas Bypass (Optional)

This option allows the system to operate at lower loads without excessive on/off compressor cycling. The hot gas bypass option is required to be on both refrigerant circuits because of the lead / lag feature of the controller.

This option allows passage of discharge gas into the evaporator inlet (between the TX valve and the evaporator) which generates a false load to supplement the actual chilled water or air handler load.

**Note:** The hot gas bypass valve cannot generate a 100% false load.

The pressure regulating valve is a Sporlan SHGBE-8 and factory set to begin opening at 69 psig and can be changed by changing the pressure setting. The adjustment range is 0 to 100 psig. To raise the pressure setting, remove the cap on the bulb and turn the adjustment screw clockwise. To lower the setting, turn the screw counterclockwise. Do not force the adjustment beyond the range it is designed for, as this will damage the adjustment assembly. The regulating valve opening point can be determined by slowly reducing the system load while observing the suction pressure. When the bypass valve starts to open, the refrigerant line on the evaporator side of the valve will begin to feel warm to the touch.

The bypass valve includes a solenoid valve that is controlled by the MicroTech II controller. It is active when the first stage of cooling on a circuit is active.

**⚠ WARNING**

**The hot gas line may become hot enough to cause injury. Be careful during valve checkout.**

## VFD Low Ambient Control (Optional)

The optional VFD fan control is used for unit operation below 35°F (2°C) down to a minimum of 0°F (-17°C). The control looks at the saturated discharge temperature and varies the fan speed to hold the temperature (pressure) at the "target" temperature. This temperature is established as an input to a setpoint screen labeled "Sat Condenser Temp Target".

## Filter-Driers

Each refrigerant circuit is furnished with a full flow filter drier (AGZ 026 – 070) or a replaceable core type filter-drier (AGZ 075 – 130). The core assembly of the replaceable core drier consists of a filter core held tightly in the shell in a manner that allows full flow without bypass.

Pressure drop across the filter drier at full load conditions must not exceed 10 psig at full load. See page 66 for maximum pressure drop at other load points. Replace the filter drier if the pressure drop exceeds maximum.

**⚠ WARNING**

**Pump out refrigerant before removing end flange for replacement of core(s) to remove liquid refrigerant and lower pressure to prevent accidental blow off of cover. EPA recovery regulations apply to this procedure.**

A condenser liquid line service valve is provided for isolating the charge in the condenser, but also serves as the point from which the liquid line can be pumped out. With the line free of refrigerant, the filter-drier core(s) can be easily replaced.

## System Adjustment

To maintain peak performance at full load operation, the system superheat and liquid subcooling may require adjustment. Read the following subsections closely to determine if adjustment is required.

## Liquid Line Sight Glass

The color of the moisture indicator is an indication of the dryness of the system and is extremely important when the system has been serviced. Immediately after the system has been opened for service, the element may indicate a wet condition. It is recommended that the equipment operate for about 12 hours to allow the system to reach equilibrium before deciding if the system requires a change of drier cores.

Bubbles in the sight glass at constant full load indicates a shortage of refrigerant, a plugged filter-drier, or a restriction in the liquid line. However, it is not unusual to see bubbles in the sight glass during changing load conditions.

## Refrigerant Charging

Liquid line subcooling at the liquid shut-off valve should be between 15 and 20 degrees F at full load. If the unit is at steady full load operation and bubbles are visible in the sight glass, then check liquid subcooling.

## Thermostatic Expansion Valve

The expansion valve performs one specific function. It keeps the evaporator supplied with the proper amount of refrigerant to satisfy the load conditions.

The sensing bulb of the expansion valve is installed in the closest straight run of suction line from the evaporator. The bulb is held on by clamps around the suction line and is insulated to reduce the effect of surrounding ambient temperatures. In case the bulb must be removed, simply slit the insulation on each side of the bulb, remove the clamps and then remove the capillary tubing that runs along the suction line from the valve. The power element is removable from the valve body.

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**NOTE**: Before adjusting superheat, check that unit charge is correct and liquid line sight glass is full with no bubbles and that the circuit is operating under stable, full load conditions.

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The suction superheat for the suction leaving the evaporator is set at the factory for 8 to 12 degrees F at full load. To have full rated unit performance, the superheat must be about 8 degrees F at 95°F outdoor ambient temperature.

## Crankcase Heaters

The scroll compressors are equipped with externally mounted band heaters located at the oil sump level. The function of the heater is to keep the temperature in the crankcase high enough to prevent refrigerant from migrating to the crankcase and condensing in the oil during off-cycle.

Power must be supplied to the heaters 24 hours before starting the compressors.

## Evaporator

### Models AGZ 026 through 070

The evaporator is a compact, high efficiency, single or dual circuit, brazed plate-to-plate type heat exchanger consisting of parallel stainless steel plates.

The evaporator is protected with an electric resistance heater and insulated with 3/4" (19mm) thick closed-cell polyurethane insulation. This combination provides freeze protection down to -20°F (-29°C) ambient air temperature.

The water side working pressure is 363 psig (2503 kPa). Evaporators are designed and constructed according to, and listed by, Underwriters Laboratories (UL).

### Models AGZ 075 through 130

The evaporator is direct expansion, shell-and-tube type with water flowing in the baffled shell side and refrigerant flowing through the tubes. Two independent refrigerant circuits within the evaporator serve the unit's dual refrigerant circuits.

The evaporator is wrapped with an electric resistance heater cable and insulated with 3/4" (19mm) thick vinyl nitrate polymer sheet insulation, protecting against water freeze-up at ambient air temperatures to -20°F (-29°C). An ambient air thermostat controls the heater cable. The fitted and glued-in-place insulation has a K factor of 0.28 Btu in/hr $ft^2$ °F at 75°F.

The refrigerant (tube) side maximum working pressure is 300 psig (2068 kPa). 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.

## Phase Voltage Monitor (Optional)

Factory settings are as follows:
Voltage Setting, set at nameplate voltage.
Trip Delay Time, 2 seconds
Restart Delay Time, 60 seconds

# Unit Maintenance

## General

On initial start-up and periodically during operation, it will be necessary to perform certain routine service checks. Among these are checking the liquid line sight glasses, taking condensing and suction pressure readings, and checking to see that the unit has normal superheat and subcooling readings. A recommended maintenance schedule is located at the end of this section.

## Compressor Maintenance

The scroll compressors are fully hermetic and require no maintenance other than checking oil level.

## Lubrication

No routine lubrication is required on AGZ units. The fan motor bearings are permanently lubricated and no further lubrication is required. Excessive fan motor bearing noise is an indication of a potential bearing failure.

Compressor oil should be standard refrigeration mineral oil such as Suniso 3GS.

## Electrical Terminals

**⚠ WARNING**

**Electric shock hazard. Turn off all power before continuing with following service.**

## Condensers

The condensers are air-cooled and constructed of 3/8" (9.5mm) O.D. internally finned copper tubes bonded in a staggered pattern into louvered aluminum fins. Maintenance consists primarily of the routine removal of dirt and debris from the outside surface of the fins and repairing any fin damage. McQuay recommends the use of foaming coil cleaners available at most air conditioning supply outlets. Use caution when applying such cleaners as they can contain potentially harmful chemicals. Care should be taken not to damage the fins during cleaning. The coils should be thoroughly rinsed to remove any cleaner residue.

If the service technician determines that the refrigerant circuit contains noncondensables, recovery can be required, strictly following Clean Air Act regulations governing refrigerant discharge to the atmosphere. The Schrader purge valve is located on the vertical coil headers on both sides of the unit at the end opposite the control box. Decorative panels cover the condenser coils and must be removed for servicing. Recover with the unit off, after a shutdown of 15 minutes or longer, to allow air to collect at the top of the coil. Restart and run the unit for a brief period. If necessary, shut the unit off and repeat the procedure. Follow accepted environmentally sound practices when removing refrigerant from the unit.

## Optional High Ambient Control Panel

Consists of exhaust fan with rain hood, two inlet screens with filters, necessary controls and wiring to allow operation to 125°F (52°C). The option can be factory or field installed as a kit. Must be used for:

- It must be supplied on units operating at ambient temperatures above 105°F (40°C).
- It is automatically included on units with fan VFD (low ambient option).
- Check inlet filters periodically and clean as required. Verify that the fan is operational.

### Liquid Line Sight Glass

The refrigerant sight glasses should be observed periodically. (A weekly observation should be adequate.) A clear glass of liquid indicates that there is subcooled refrigerant charge in the system. Bubbling refrigerant in the sight glass, during stable run conditions, indicates that the system can be short of refrigerant charge. Refrigerant gas flashing in the sight glass could also indicate an excessive pressure drop in the liquid line, possibly due to a clogged filter-drier or a restriction elsewhere in the liquid line. See Table 39 for maximum allowable pressure drops. If subcooling is low, add charge to clear the sight glass. If subcooling is normal (15 to 20 degrees F) and flashing is visible in the sight glass, check the pressure drop across the filter-drier. Subcooling should be checked at full load with 70°F (21.1°C) outdoor air temperature, stable conditions, and all fans running.

An element inside the sight glass indicates the moisture condition corresponding to a given element color. If the sight glass does not indicate a dry condition after about 12 hours of operation, the circuit should be pumped down and the filter-drier changed or verify moisture content by performing an acid test on the compressor oil.

## Preventive Maintenance Schedule

| OPERATION | WEEKLY | MONTHLY (Note 1) | ANNUAL (Note 2) |
|---|---|---|---|
| General | | | |
| Complete unit log and review (Note 3) | X | | |
| Visually inspect unit for loose or damaged components | | X | |
| Inspect thermal insulation for integrity | | | X |
| Clean and paint as required | | | X |
| | | | |
| Electrical | | | |
| Check terminals for tightness, tighten as necessary | | | X |
| Clean control panel interior | | | X |
| Visually inspect components for signs of overheating | | X | |
| Verify compressor heater operation | | X | |
| Test and calibrate equipment protection and operating controls | | | X |
| Megger compressor motor ***** | | | X |
| | | | |
| Refrigeration | | | |
| Leak test | | X | |
| Check sight glasses for clear flow | X | | |
| Check filter-drier pressure drop (see manual for spec) | | X | |
| Perform compressor vibration test | | | X |
| Acid test oil sample | | | X |
| | | | |
| Condenser (air-cooled) | | | |
| Clean condenser coils (Note 4) | | | X |
| Check fan blades for tightness on shaft (Note 5) | | | X |
| Check fans for loose rivets and cracks | | | X |
| Check coil fins for damage | | | X |

**Notes:**

1. Monthly operations include all weekly operations.
2. Annual (or spring start-up) operations includes all weekly and monthly operations.
3. Log readings can be taken daily for a higher level of unit observation.
4. Coil cleaning can be required more frequently in areas with a high level of airborne particles.
5. Be sure fan motors are electrically locked out.

* Never Megger motors while they are in a vacuum.

**WARNING**

**Service on this equipment is to be performed by qualified refrigeration personnel familiar with equipment operation, maintenance, correct servicing procedures, and the safety hazards inherent in this work. Causes for repeated tripping of equipment protection controls must be investigated and corrected. Disconnect all power before doing any service inside the unit. Anyone servicing this equipment must comply with the requirements set forth by the EPA in regards to refrigerant reclamation and venting.**

### Filter-Driers

A replacement of the filter-drier is recommended any time excessive pressure drop is read across the filter-drier and/or when bubbles occur in the sight glass with normal subcooling. The maximum recommended pressure drops across the filter-drier are as follows:

***Table 39, Filter-Drier Pressure Drop***

| PERCENT CIRCUIT LOADING (%) | MAXIMUM RECOMMENDED PRESSURE DROP ACROSS FILTER DRIER PSIG (KPA) |
|---|---|
| 100% | 10 (69) |
| 75% | 8 (55.2) |
| 50% | 5 (34.5) |
| 25% | 4 (27.6) |

The filter-drier should also be changed if the moisture indicating liquid line sight glass indicates excess moisture in the system.

During the first few months of operation the filter-drier replacement can be necessary if the pressure drop across the filter-drier exceeds the values listed in the paragraph above. Any residual particles from the condenser tubing, compressor and miscellaneous components are swept by the refrigerant into the liquid line and are caught by the filter-drier.

## Liquid Line Solenoid Valve

The liquid line solenoid valves that shut off refrigerant flow in the event of a power failure do not normally require any maintenance. The solenoids can, however, require replacement of the solenoid coil or of the entire valve assembly.

The solenoid coil can be checked to see that the stem is magnetized when energized by touching a screwdriver to the top of the stem. If there is no magnetization, either the coil is bad or there is no power to the coil.

The solenoid coil can be removed from the valve body without opening the refrigerant piping after pumpdown. For personal safety, shut off and lock out the unit power.

The coil can then be removed from the valve body by simply removing a nut or snap-ring located at the top of the coil. The coil can then be slipped off its mounting stud for replacement.

To replace the entire solenoid valve follow the steps involved when changing a filter-drier.

## Evaporator

The evaporators are the direct expansion, shell-and-tube type with refrigerant flowing through the tubes and water flowing through the shell over the tubes or stainless steel brazed-plate type. The tubes are internally finned to provide extended surface as well as turbulent flow of refrigeration through the tubes. Other than cleaning and testing, no service work should be required on the evaporator.

## Refrigerant Charging

AGZ air-cooled chillers are shipped factory charged with a full operating charge of refrigerant but there can be times that a unit must be recharged at the job site. Follow these recommendations when field charging. Refer to the unit operating charge found in the Physical Data Tables.

Unit charging can be done at any steady load condition (preferably at 75 to 100% load) and at any outdoor temperature (preferably higher than 70°F (21.1°C). Unit must be allowed to run 5 minutes or longer so that the condenser fan staging is stabilized at normal operating discharge pressure. For best results, charge with two or more condenser fans operating on each refrigerant circuit.

The AGZ units have a condenser coil design with approximately 15% of the coil tubes located in a subcooler section of the coil to achieve liquid cooling to within 5°F (3°C) of the outdoor air temperature when all condenser fans are operating. This is equal to 15°F to 20°F (8.3°C to 11.1°C) subcooling below the saturated condensing temperature when the pressure is read at the liquid valve between the condenser coil and the liquid line filter-drier. Once the subcooler is filled, extra charge will not lower the liquid temperature and does not help system capacity or efficiency.

**One of the following three scenarios will be experienced with an undercharged unit:**

1. If the unit is slightly undercharged, the unit will show bubbles in the sight glass. Recharge the unit as described in the charging procedure below.
2. If the unit is moderately undercharged, it will normally trip on freeze protection. Recharge the unit as described in the charging procedure below. However, freezestat trips can also be an indication of low flow or poor heat transfer due to tube fouling. Anti-freeze solutions can also cause freezestat trips.
3. If the unit is severely undercharged, the unit will trip due to lack of liquid flow to the expansion valve. In this case either remove the remaining charge by means of a proper reclamation system and recharge the unit with the proper amount of refrigerant as stamped on the unit nameplate, or add refrigerant through the suction valve on the compressor. If the unit is severely undercharged, the unit can nuisance trip during this charging procedure. If this happens, operate the unit at minimum load, adding charge until the sight glass is clear. Once the unit has enough charge so that it does not trip out, continue with step 2 of the charging procedure below.

**Procedure to charge a moderately undercharged AGZ unit:**

1. If a unit is low on refrigerant, you must first determine the cause before attempting to recharge the unit. Locate and repair any refrigerant leak. Evidence of oil is a good indicator of leakage, however, oil may not be visible at all leaks. Liquid leak detector fluids work well to show bubbles at medium size leaks but electronic leak detectors can be needed to locate small leaks.
2. Add the charge to the system through the suction shutoff valve or through the Schrader fitting on the tube entering the evaporator between the compressor and the evaporator head.
3. The charge can be added at any load condition between 25-100% load per circuit but at least two fans should be operating per refrigerant circuit, if possible. The suction superheat should be in the 8 to 12 degree F (4.4°C-6.6°C) range.
4. Add sufficient charge to clear the liquid line sight glass and until all flashing stops in the sight glass.
5. Check the unit subcooling value by reading the liquid line pressure and temperature at the liquid line near the filter-drier. The subcooling values should be between 15 and 20 degrees F (8.3 and 11.1 degrees C).
6. With outdoor temperatures above 60°F (15.6°C), all condenser fans should be operating and the liquid line temperature should be within 5°F to 10°F (2.8°C to 5.6°C) of the outdoor air temperature. At 25-50% load, the liquid line temperature should be within 5°F (2.8°C) of outdoor air temperature with all fans on. At 75-100% load the liquid line temperature should be within 10°F (5.6°C) of outdoor air temperature with all fans on.
7. Overcharging of refrigerant will raise the compressor discharge pressure due to filling of the condenser tubes with excess refrigerant.

# Warranty Statement

## Limited Warranty

Consult your local McQuay Representative for warranty details. Refer to Form 933-43285Y. To find your local McQuay Representative, go to www.mcquay.com.

# AGZ Troubleshooting Chart

| PROBLEM | POSSIBLE CAUSES | POSSIBLE CORRECTIVE STEPS |
|---|---|---|
| **Compressor Will Not Run** | 1. Main switch. | 1. Close switch. |
| | 2. Fuse blown. circuit breakers open | 2. Check electrical circuits and motor windings for shorts or grounds. Investigate for possible overloading. Replace fuse or reset breakers after fault is corrected. Check for loose or corroded connections. |
| | 3. Thermal overloads tripped | 3. Overloads are auto-reset. Check unit closely when unit comes back on line. Allow time for auto-reset. |
| | 4. Defective contactor or coil. | 4. Repair or replace |
| | 5. System shutdown by equipment protection devices | 5. Determine type and cause of shutdown and correct it before resetting equipment protection switch. |
| | 6. No cooling required | 6. None. Wait until unit calls for cooling. |
| | 7. Liquid line solenoid will not open | 7. Repair or replace solenoid coil. Check wiring. |
| | 8. Motor electrical trouble | 8. Check motor for opens, shorts, or burnout. |
| | 9. Loose wiring | 9. Check all wire junctions. Tighten all terminal screws. |
| **Compressor Noisy Or Vibrating** | 1. Low or no refrigerant charge | 1. Repair and recharge |
| | 2. Compressor running in reverse | 2. Check unit and compressor for correct phasing |
| | 3. Improper piping support on suction or discharge | 3. Relocate, add, or remove hangers |
| | 4. Worn compressor isolator bushing | 4. Replace |
| | 5. Worn Compressor | 5. Replace |
| **High Discharge Pressure** | 1. Noncondensables in system | 1. Extract the noncondensables with approved procedures. |
| | 2. System overcharged with refrigerant | 2. Remove excess, check liquid subcooling. |
| | 3. Optional discharge shutoff valve partially closed | 3. Open valve. |
| | 4. FanTrol wiring not correct | 4. Check FanTrol wiring. |
| | 5. Fan not running | 5. Check electrical circuit, Check fan motor. |
| | 6. Dirty condenser coil | 6. Clean coil. |
| | 7. Air recirculation | 7. Correct. |
| **Low Discharge Pressure** | 1. Refrigerant flood back | 1. Correct. |
| | 2. Wind blowing into coil at low ambient | 2. Shield coil from direct wind, Wind guards are available. |
| | 3. Faulty condenser temperature regulation | 3. Check condenser control operation. |
| | 4. Insufficient refrigerant in system | 4. Check for leaks. Repair and add charge. |
| | 5. Low suction pressure | 5. See corrective steps for Low Suction Pressure. |
| | 6. Only one compressor operating | 6. See corrective steps for Compressor Will Not Stage Up. |
| **High Suction Pressure** | 1. Excessive water temperature | 1. Check control settings. |
| | 2. Excessive load | 2. Reduce load or add additional equipment. |
| | 3. Expansion valve overfeeding | 3. Check remote bulb. Regulate superheat. |
| | 4. Compressors running in reverse | 4. Check for proper phasing. |
| **Low Suction Pressure** | 1. Rapid load swings | 1. Stabilize load. |
| | 2. Lack of refrigerant | 2. Check for leaks, repair, add charge. Check liquid sight glass. |
| | 3. Clogged liquid line filter drier | 3. Check pressure drop across filter drier. Replace. |
| | 4. Expansion valve malfunctioning | 4. Check and reset for proper superheat. |
| | 5. Condensing temperature too low | 5. Check means for regulating condenser temperature. |
| | 6. Compressor will not unload | 6. See corrective steps for Compressor Staging Intervals Too Low. |
| | 7. Insufficient water flow | 7. Adjust flow. |
| | 8. Evaporator head ring gasket slippage | 8. Take pressure drop across vessel and contact factory to obtain design pressure drop for that vessel. |
| | 9. Evaporator dirty | 9. Clean chemically. |
| | 10. Rapid load swings | 10. Stabilize load. |
| **Compressor Will Not Stage Up** | 1. Defective capacity control | 1. Replace. |
| | 2. Faulty thermostat stage or broken wire | 2. Replace. |
| | 3. Stages not set for application | 3. Reset thermostat setting for application. |
| **Compressor Staging Intervals Too Short** | 1. Thermostat control band not set properly | 1. Set control band wider. |
| | 2. Faulty water temperature sensor | 2. Replace. |
| | 3. Insufficient water flow | 3. Adjust flow. |
| | 4. Rapid load swings | 4. Stabilize load. |

| PROBLEM | POSSIBLE CAUSES | POSSIBLE CORRECTIVE STEPS |
|---|---|---|
| **Compressor Oil Level Too High Or Too Low** | 1. Oil hang-up in piping<br>2. Low oil level<br>3. Loose fitting on oil line<br>4. Level too high<br>5. Insufficient water flow - Level too high<br>6. Excessive liquid in crankcase - Level too high<br>7. Short cycling | 1. Review refrigerant piping and correct.<br>2. Check and add oil.<br>3. Check and tighten system.<br>4. Adjust thermal expansion valve.<br>5. Adjust flow.<br>6. Check crankcase heater. Reset expansion valve for higher superheat. Check liquid line solenoid valve operation.<br>7. Stabilize load or increase staging interval. |
| **Compressor Loses Oil** | 1. Lack of refrigerant<br>2. Suction superheat too high<br>3. Crankcase heater burnout | 1. Check for leaks and repair. Add refrigerant<br>2. Adjust superheat.<br>3. Replace crankcase heater. |
| **Motor Overload Relays or Circuit Breakers Open** | 1. Low voltage during high load conditions<br>2. Defective or grounded wiring in motor<br>3. Loose power wiring or burnt contactors<br>4. High condenser temperature<br>5. Power line fault causing unbalanced voltage | 1. Check supply voltage for excessive line drop.<br>2. Replace compressor motor.<br>3. Check all connections and tighten.<br>4. See corrective steps for High Discharge Pressure.<br>5. Check supply voltage. Notify power company. Do not start until fault is corrected.. |
| **Compressor Thermal Protection Switch Open** | 1. Operating beyond design conditions<br>2. Discharge valve partially shut<br>3. Blown compressor internal gasket<br>4. Voltage range or imbalance<br>5. High superheat<br>6. Compressor bearing failure | 1. Add facilities so conditions are within allowable limits.<br>2. Open valve.<br>3. Replace gasket.<br>4. Check and correct.<br>5. Adjust to correct superheat.<br>6. Replace compressor . |

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.**