



**AQUAEDGE** greenspeed  
**PUREtec**

# Carrier AquaEdge® 19DV Centrifugal Chiller

**EquiDrive™**  
Back-to-Back Compressor

**PUREtec™**  
Low GWP Refrigerant

**Greenspeed™**  
Intelligence

Cooling Capacity: 300 - 800Ton  
(Air-conditioning Low Voltage VFD)





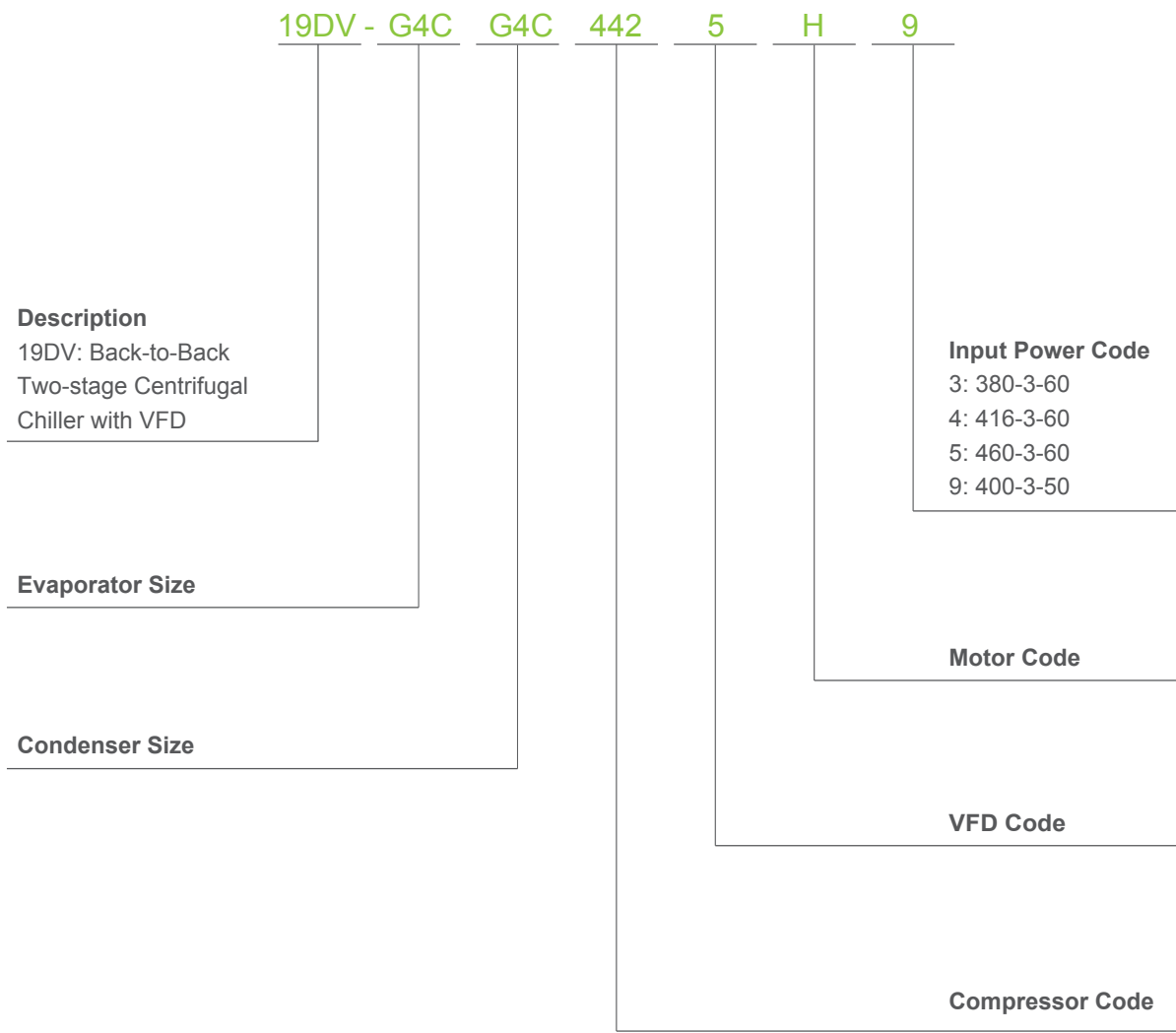
Carrier is a leading global provider of innovative HVAC, refrigeration, fire, security and building automation technologies. Supported by the iconic Carrier name, the company's portfolio includes industry-leading brands such as Carrier, Kidde, Edwards, LenelS2 and Automated Logic. Carrier's businesses enable modern life, delivering efficiency, safety, security, comfort, productivity and sustainability across a wide

range of residential, commercial and industrial applications.

In 1998, Time magazine named Dr. Carrier one of its 20 most influential builders and titans of the 20th century.



Model Number Nomenclature



Cooling Capacity

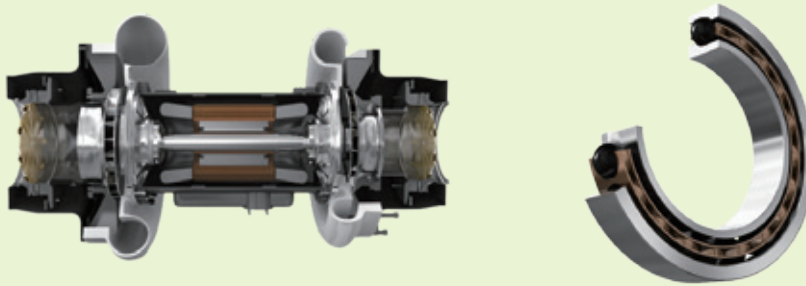
300 - 800Ton (Air-conditioning Low Voltage VFD)





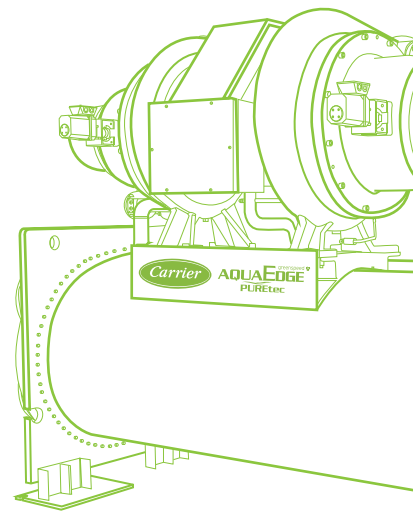
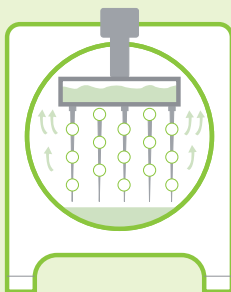
## Reliable

- ✔ Simple and robust refrigerant lubricated ceramic bearing system without the limitations of conventional oil lubricated chillers. Customers won't be troubled by oil related failures as well as maintenance cost.
- ✔ Advanced back-to-back two-stage compressor naturally balances both radial and axial thrust on shaft.
- ✔ 19DV is equipped with latest generation of Carrier's Variable-Frequency Drive along with IP54 cabinet, which provides high level protection to the electrical components inside from dirt and water outside.
- ✔ High tier variable speed starter equipped with harmonic filter(optional), total harmonic distortion (THD)  $\leq 5\%$  and fully complies with IEEE519 standard.
- ✔ Swift restart - 19DV can restart within 30 seconds (with UPS) after power recovery (There would be around 5-seconds tolerance due to different site conditions.) and quickly regain capacity, providing added reliability for mission critical facilities such as data center applications.



## Efficient

- ✔ 19DV chillers can achieve up to 7.3 full load COP<sub>R</sub> and 12.3 IPLV/IP at AHRI conditions.
- ✔ Carrier back-to-back two-stage compressor integrated with inter-stage economizer which improves both cooling capacity and efficiency.
- ✔ High speed direct drive motor reduces mechanical loss by 75% resulting from the removal of gear driven system.
- ✔ With the application of refrigerant lubricated bearings, potential efficiency drop through oil logging of the heat exchangers is eliminated in 19DV.
- ✔ Pioneer falling film evaporator is designed for low pressure refrigerant, which brings significantly enhanced heat transfer efficiency by mitigating submergence effect especially at part load conditions.
- ✔ High performance tubing with internally and externally enhanced fins improves chiller efficiency by reducing overall heat transfer resistance.
- ✔ Greenspeed™ variable speed control gives a instantaneous control of compressor speed to adapt building load changes perfectly, which ensures that the chiller is always operating efficiently at both full load and part load.



## Sustainable



- ✓ R-1233zd(E) is new non-Ozone Depletion Substances, the low Global Warming Potential of ~1, non-flammability and non-toxic refrigerant that provides a safe and environmental solution to centrifugal chillers.
- ✓ Carrier pioneer falling film evaporator design helps reduce the refrigerant charge significantly.
- ✓ The industry leading energy efficiency of 19DV chiller leads to lower electrical power consumption and significant reduction of related CO<sub>2</sub> emissions.

**PUREtec**

**R-1233zd(E)**

## Quiet

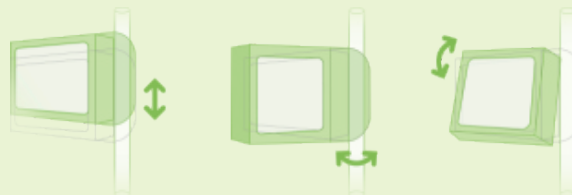


- ✓ Refrigerant-cooled hermetic motor, direct drive, optimized flow channel and 60% impeller speed of legacy design, all these features contribute to the overall compressor sound reduction.
- ✓ Greenspeed™ variable speed control adaptively turns down impeller speed at part load for better acoustic performance.
- ✓ 19DV chillers can meet 18001 standard recommended by Occupational Health and Safety Advisory Services (OHSAS).

## Flexible



- ✓ System layout of 19DV chillers is well optimized and specific crescent shape economizer is designed to best leverage the space between evaporator and condenser that delivers up to -15% smaller footprint versus legacy R-123 unit.
- ✓ Patented re-locatable control panel could be installed at any of the four corners of the chiller, which makes the layout of chillers more flexible to fit the site conditions.
- ✓ Bolt connection modular design is ideal for retrofit project or installation in limited place.
- ✓ Miscellaneous optional offerings (such as marine water box) help to facilitate daily maintenance on jobsite.



## Smart



- ✓ Carrier SmartView™ control - color touch screen, intuitive menu, animated component level interface, graphic trending, auto pushed alarm mail, smart password and up to 10 languages for choice.
- ✓ Multiple remote access methods present the users a flexible way to monitor and control the chillers.
- ✓ Carrier Smart Service supports online data management and analysis, daily and key performance reports, prognostics and preventative maintenance, which will help the users continuously optimize the chiller and system operation.



**CERTIFIED®**  
www.ahridirectory.org

and 551/591

# Carrier SmartView™ Control

## User-friendly Interface

AquaEdge® 19DV centrifugal chiller equips with the latest Carrier SmartView™ control system which provides powerful control and monitoring functions for smart chiller operation. The control system applies a 10 inch high resolution colorful touch screen, which supports up to 10 languages, and real time display of operation parameters with pictures makes it more user-friendly.

## Smart Operation

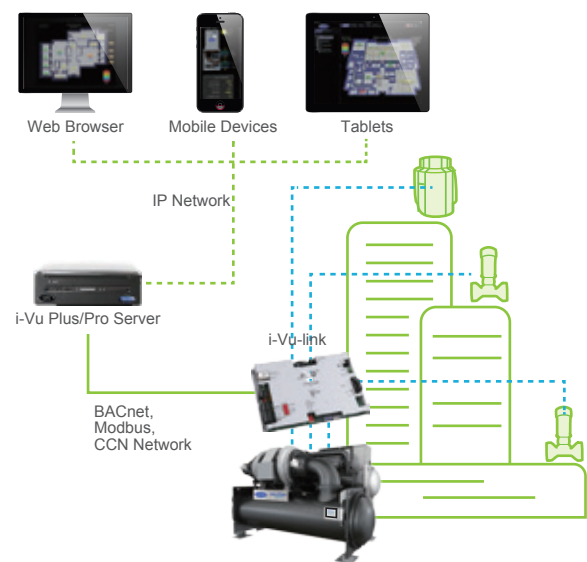
- Carrier SmartView™ control system provides customer the smart password function to avoid any setting change without authorization.
- When the chiller receives a start-up command, the controller will conduct following pre-start safety checking, to ensure parameters like condensing pressure, bearing temperature, motor winding temperature, discharge temperature, evaporator saturated temperature and average line voltage, etc. are in normal condition.
- Optimized intelligent and dynamic control algorithm ensures effective and reliable operation. Carrier SmartView™ control system can not only monitor and display main operation parameters with real-time trend, but also record the history data of each key component.
- Carrier SmartView™ control system provides comprehensive protections for long-term stable operation, such as surge protection, overvoltage and overcurrent protection, discharge temperature overheat protection, bearing temperature overheat protection, evaporator and condenser anti-freeze protection, low discharge superheat protection etc..
- The optional Envelope Stability Control is an advanced solution to balance the chiller efficiency and reliability at very low load. The controller optimizes compressor speed, inlet guide vane position and stabilizer valve position to find the most efficient operating point throughout the operating range without compromising the chiller stability in real time.
- Optional Master-Slave function enables two chillers work in Master-Slave mode with CCN communication. Two chillers can be in series or parallel connection. Carrier patent control algorithm can make two chillers achieve a good balance between efficiency and stability.

## Intelligent Diagnosis

- Carrier SmartView™ control system integrates with effective failure diagnostic functions. Once control system detects failure, the alarm will be initiated and related codes will be recorded in alarm menu and it will be saved by control system automatically. Only Carrier certified service technician can read or deleted it by Carrier Service Tool.
- Additional pre-diagnostic function is specialized for maintenance purpose, which could help guide customer replace the parts periodically for safety operation.
- Email alarm function is standard integrated in Carrier SmartView™ control system, which can automatically send out an email with one or more alarm information to specified email address once system goes wrong if Carrier SmartView™ controller is connected to the Internet.

## Easy Connection with Building Automation System

- Carrier SmartView™ control panel supports BACnet or Modbus protocol, with which chiller can seamlessly connect with the Building Automation System or the i-Vu™/WebCTRL Control network.
- With the powerful i-Vu™ Link (optional), user can integrate all plant equipment into i-Vu™ Building Automation System. The i-Vu™ Building Automation System provides everything user needs to access, manage, and control your building, including the powerful i-Vu™ user interface, plug-and-play BACnet or Modbus controllers and state-of-the-art Carrier equipment.
- Carrier provides WebCTRL as an additional option to provide similar function like i-Vu™ Link. If you have any questions, please contact with Carrier local agents.



The i-Vu™ Building Automation System

## Smart Chiller

Using wireless cellular communications technologies, Carrier® SMART Service continuously streams operating data to the cloud in real time directly from your chiller's Carrier SmartView™ controller. The data is then captured within our IoT platform for ongoing insight into your chiller's health.

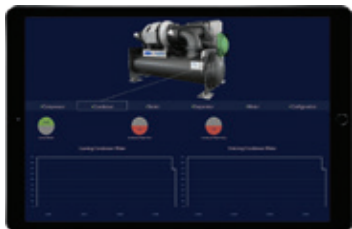
### Features:

- ✔ Integrated equipment sensors that capture key operating data
- ✔ Secure wireless connectivity to Carrier's cloud-based IoT platform
- ✔ Persistent and reliable data transmission



## Smart Cloud

Carrier® SMART Service continuously stores and assesses equipment operating data and service history, comparing it to established values for analytics and data validation. It compares this data to design specifications and matches it against allowable ranges, allowing Carrier to deliver pre-emptive service solutions as needed.



An added benefit, by phases and ultimately, all Carrier service agreement customers will have access to the Carrier® SMART Service Community – a home page that helps you manage your HVAC system assets, such as initiating a service or maintenance request, monitoring work progress, planning for upcoming tasks or reviewing prior work orders. Combined with the information provided by the equipment dashboard, the Community ensures every Carrier service agreement customer has the ultimate in asset management capability.

### Features:

- ✔ Complete visibility into your system's performance, energy usage and service history
- ✔ Advanced diagnostics and analytics providing actionable insights

## Smart Technician



Carrier® SMART Service changes how equipment is serviced and maintained. Carrier service technicians now utilize mobile devices with remote access to put real-time chiller data and service history in the palm of their hands. With advance notification of problems, technicians arrive at the jobsite more informed, which leads to faster problem resolution and reduced mean time to repair.

### Features:

- ✔ Advance notification
- ✔ Remote detection and diagnosis

## Air-conditioning (400V-3ph-50Hz)

| Model             | Chiller          |      |             |                            |                    |                   | Evaporator |               |                  | Condenser |               |                  | Unit Dimensions |       |        | Weight    |                           |                    |
|-------------------|------------------|------|-------------|----------------------------|--------------------|-------------------|------------|---------------|------------------|-----------|---------------|------------------|-----------------|-------|--------|-----------|---------------------------|--------------------|
|                   | Cooling Capacity |      | Input Power | Full load COP <sub>R</sub> | IPLV <sub>IP</sub> | Chiller Line Amps | Flow Rate  | Pressure Drop | Water Connection | Flow Rate | Pressure Drop | Water Connection | Length          | Width | Height | Operating | Rigging (w/o Refrigerant) | Refrigerant Charge |
|                   | kW               | Tons | kW          | W/W                        | W/W                | A                 | l/s        | kPa           | mm               | l/s       | kPa           | mm               | mm              | mm    | mm     | kg        | kg                        | kg                 |
| 19DV-F20F223345B9 | 1055             | 300  | 151.5       | 6.966                      | 10.91              | 247               | 45.36      | 29.6          | DN300            | 56.15     | 19.7          | DN250            | 4596            | 2469  | 2852   | 13799     | 12379                     | 343                |
| 19DV-F21F223345B9 | 1231             | 350  | 174.9       | 7.036                      | 11.40              | 285               | 52.92      | 33.9          | DN300            | 65.42     | 27.1          | DN250            | 4596            | 2469  | 2852   | 13874     | 12429                     | 345                |
| 19DV-F40F423345B9 | 1407             | 400  | 201.0       | 7.000                      | 11.78              | 327               | 60.49      | 59.2          | DN300            | 74.82     | 40.1          | DN250            | 5116            | 2469  | 2852   | 14450     | 12919                     | 374                |
| 19DV-F42F423545B9 | 1583             | 450  | 224.4       | 7.054                      | 11.73              | 365               | 68.05      | 50.6          | DN300            | 84.09     | 50.7          | DN250            | 5116            | 2469  | 2852   | 14686     | 13066                     | 401                |
| 19DV-F43F423645D9 | 1758             | 500  | 250.3       | 7.025                      | 11.40              | 406               | 75.61      | 50.5          | DN300            | 93.48     | 62.6          | DN250            | 5116            | 2469  | 2852   | 14836     | 13154                     | 425                |
| 19DV-F43F433645D9 | 1934             | 550  | 279.9       | 6.911                      | 11.57              | 442               | 83.17      | 60.9          | DN300            | 103.0     | 61.2          | DN250            | 5116            | 2469  | 2852   | 15033     | 13279                     | 449                |
| 19DV-G43G424425B9 | 2110             | 600  | 291.7       | 7.235                      | 12.05              | 456               | 90.73      | 53.5          | DN350            | 111.8     | 65.9          | DN250            | 5201            | 2629  | 3058   | 17290     | 15101                     | 561                |
| 19DV-G44G444525B9 | 2286             | 650  | 318.1       | 7.186                      | 12.06              | 514               | 98.29      | 50.1          | DN350            | 121.2     | 52.9          | DN250            | 5201            | 2629  | 3058   | 17889     | 15505                     | 596                |
| 19DV-H43H424625B9 | 2462             | 700  | 344.7       | 7.142                      | 12.06              | 546               | 105.8      | 46.0          | DN350            | 130.6     | 53.6          | DN300            | 5206            | 2832  | 3229   | 19819     | 17302                     | 625                |
| 19DV-H44H434625B9 | 2638             | 750  | 372.6       | 7.080                      | 12.19              | 579               | 113.4      | 43.4          | DN350            | 140.1     | 50.4          | DN300            | 5206            | 2832  | 3229   | 20286     | 17611                     | 657                |
| 19DV-H43H444625D9 | 2813             | 800  | 405.8       | 6.932                      | 12.16              | 652               | 121.0      | 59.8          | DN350            | 149.8     | 47.6          | DN300            | 5206            | 2832  | 3229   | 20708     | 17999                     | 677                |

## Air-conditioning (380V-3ph-60Hz)

| Model             | Chiller          |      |             |                            |                    |                   | Evaporator |               |                  | Condenser |               |                  | Unit Dimensions |       |        | Weight    |                           |                    |
|-------------------|------------------|------|-------------|----------------------------|--------------------|-------------------|------------|---------------|------------------|-----------|---------------|------------------|-----------------|-------|--------|-----------|---------------------------|--------------------|
|                   | Cooling Capacity |      | Input Power | Full load COP <sub>R</sub> | IPLV <sub>IP</sub> | Chiller Line Amps | Flow Rate  | Pressure Drop | Water Connection | Flow Rate | Pressure Drop | Water Connection | Length          | Width | Height | Operating | Rigging (w/o Refrigerant) | Refrigerant Charge |
|                   | kW               | Tons | kW          | W/W                        | W/W                | A                 | l/s        | kPa           | mm               | l/s       | kPa           | mm               | mm              | mm    | mm     | kg        | kg                        | kg                 |
| 19DV-F20F223345B3 | 1055             | 300  | 151.4       | 6.969                      | 10.91              | 259               | 45.36      | 29.6          | DN300            | 56.14     | 19.7          | DN250            | 4596            | 2469  | 2852   | 13799     | 12379                     | 343                |
| 19DV-F21F223345B3 | 1231             | 350  | 174.9       | 7.038                      | 11.40              | 300               | 52.92      | 33.9          | DN300            | 65.42     | 27.1          | DN250            | 4596            | 2469  | 2852   | 13874     | 12429                     | 345                |
| 19DV-F40F423345B3 | 1407             | 400  | 200.9       | 7.003                      | 11.78              | 344               | 60.48      | 59.2          | DN300            | 74.81     | 40.1          | DN250            | 5116            | 2469  | 2852   | 14450     | 12919                     | 374                |
| 19DV-F42F423545B3 | 1583             | 450  | 224.3       | 7.058                      | 11.73              | 384               | 68.05      | 50.6          | DN300            | 84.08     | 50.7          | DN250            | 5116            | 2469  | 2852   | 14686     | 13066                     | 401                |
| 19DV-F43F423645D3 | 1758             | 500  | 250.3       | 7.025                      | 11.40              | 422               | 75.61      | 50.5          | DN300            | 93.48     | 62.6          | DN250            | 5116            | 2469  | 2852   | 14836     | 13154                     | 425                |
| 19DV-F43F433645D3 | 1934             | 550  | 279.7       | 6.915                      | 11.57              | 459               | 83.17      | 60.9          | DN300            | 103.0     | 61.2          | DN250            | 5116            | 2469  | 2852   | 15033     | 13279                     | 449                |
| 19DV-G43G424425B3 | 2110             | 600  | 293.3       | 7.194                      | 12.00              | 502               | 90.73      | 53.5          | DN350            | 111.8     | 66.0          | DN250            | 5201            | 2629  | 3058   | 17301     | 15111                     | 561                |
| 19DV-G44G444525B3 | 2286             | 650  | 317.8       | 7.193                      | 12.06              | 534               | 98.29      | 50.1          | DN350            | 121.2     | 52.9          | DN250            | 5201            | 2629  | 3058   | 17889     | 15505                     | 596                |
| 19DV-H43H424625B3 | 2462             | 700  | 344.4       | 7.149                      | 12.06              | 567               | 105.8      | 46.0          | DN350            | 130.6     | 53.6          | DN300            | 5206            | 2832  | 3229   | 19819     | 17302                     | 625                |
| 19DV-H44H434625B3 | 2638             | 750  | 373.4       | 7.063                      | 12.15              | 637               | 113.4      | 43.4          | DN350            | 140.1     | 50.4          | DN300            | 5206            | 2832  | 3229   | 20590     | 17915                     | 657                |
| 19DV-H43H444625D3 | 2813             | 800  | 405.4       | 6.941                      | 12.16              | 678               | 121.0      | 59.8          | DN350            | 149.8     | 47.6          | DN300            | 5206            | 2832  | 3229   | 20708     | 17999                     | 677                |

### Notes:

- The above selections are based on standard AHRI condition.  
Leaving evaporator water temperature 44°F (6.7°C), entering evaporator water temperature 54°F (12.2°C).  
Entering condenser water temperature 85°F (29.4°C), leaving condenser water temperature 94.3°F (34.6°C).  
Evaporator water fouling factor: 0.000100 h·ft<sup>2</sup>·°F/Btu (0.0180 m<sup>2</sup>·K/kW), condenser water fouling factor: 0.000250 h·ft<sup>2</sup>·°F/Btu (0.0440 m<sup>2</sup>·K/kW).  
Evaporator and condenser are with 2 passes and 1.0MPa design water-side pressure.
- Carrier will select specific models using E-Cat on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
- Standard evaporator and condenser water-side pressure is 1.0MPa. For more requirements, please contact local agencies.
- For more details or customized selections, please contact local agencies.

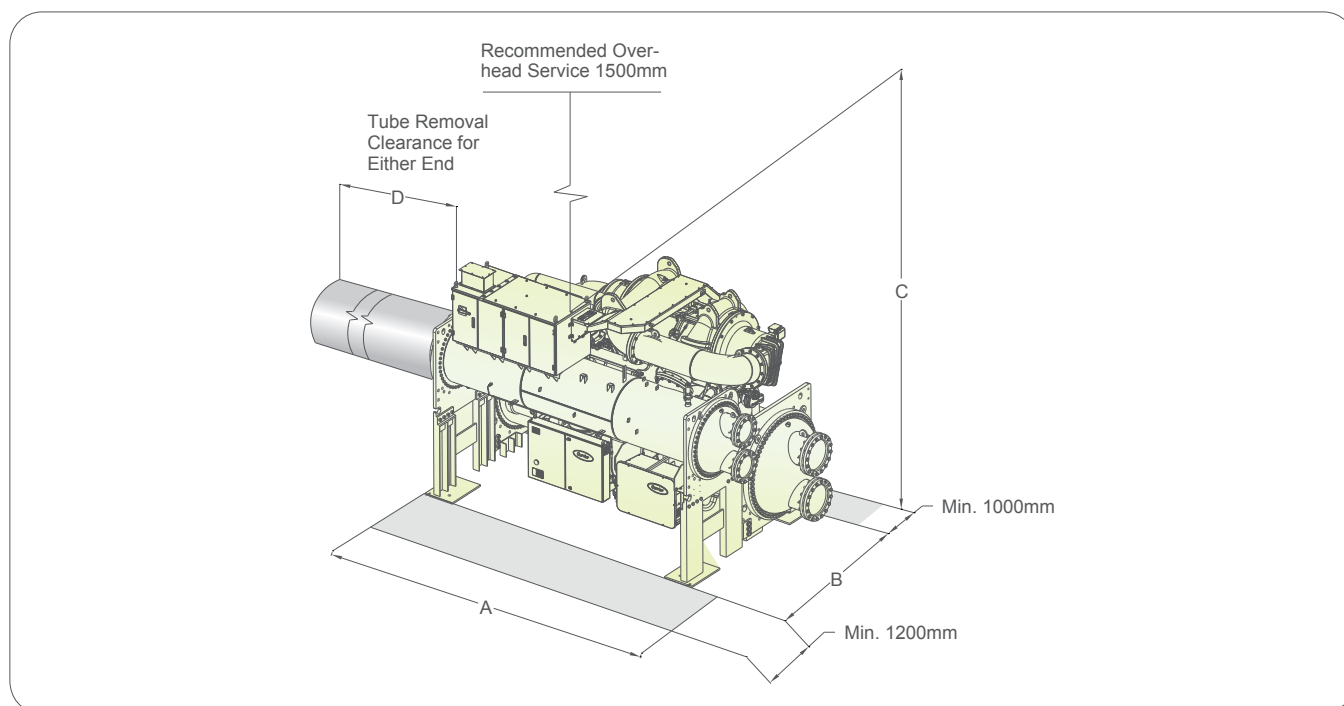


Certified in accordance with the AHRI Water-Cooled Water-Chilling and Heat Pump Water-Heating Packages. Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at [www.ahridirectory.org](http://www.ahridirectory.org)

<http://www.ahridirectory.org>



## 19DV Chiller Dimensions



| Evaporator Size | Condenser Size | A-Length with NIH waterbox (2-Pass) mm | B-Width mm | C-Height mm | D-Tube Removal Space for Either End mm |
|-----------------|----------------|----------------------------------------|------------|-------------|----------------------------------------|
| F2A-F29         | F2C-F29        | 4596                                   | 2469       | 2852        | 4267                                   |
| F4A-F49         | F4C-F49        | 5116                                   | 2469       | 2852        | 4877                                   |
| G2A-G29         | G2C-G29        | 4680                                   | 2629       | 3058        | 4267                                   |
| G4A-G49         | G4C-G49        | 5201                                   | 2629       | 3058        | 4877                                   |
| H2A-H29         | H2C-H29        | 4686                                   | 2832       | 3229        | 4267                                   |
| H4A-H49         | H4C-H49        | 5206                                   | 2832       | 3229        | 4877                                   |

## Field Wiring Specifications (with VFD)

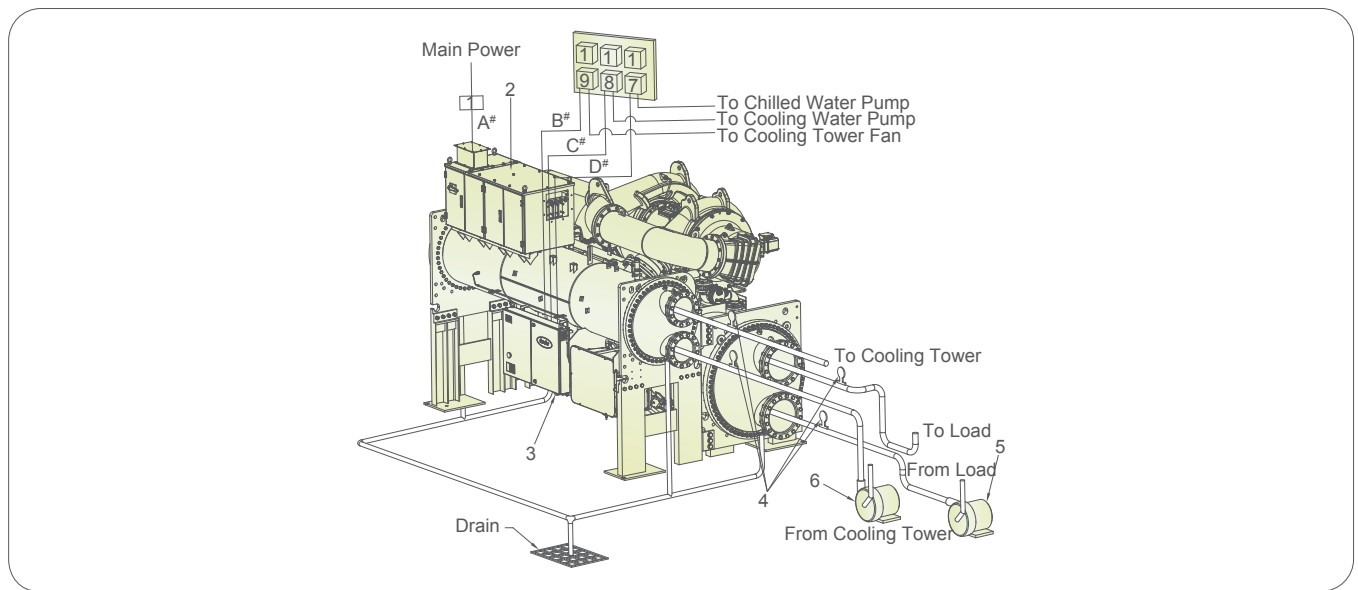
### I. General

- 1.0 All field-supplied conductors, devices and the field-installation wiring, termination of conductors and devices must be in compliance with all applicable codes and job specifications.
- 1.1 The routing of field-installed conduit and conductors and location of field-installed devices must not interfere with equipment access or the reading, adjusting or servicing of any component.
- 1.2 Equipment installation and all starting and control devices must comply with details in equipment submittal drawings and literature.
- 1.3 Contacts and switches are shown in the position, which would de-energize the circuit and cause chiller shut down.
- 1.4 **WARNING-**Do not use aluminum conductors.

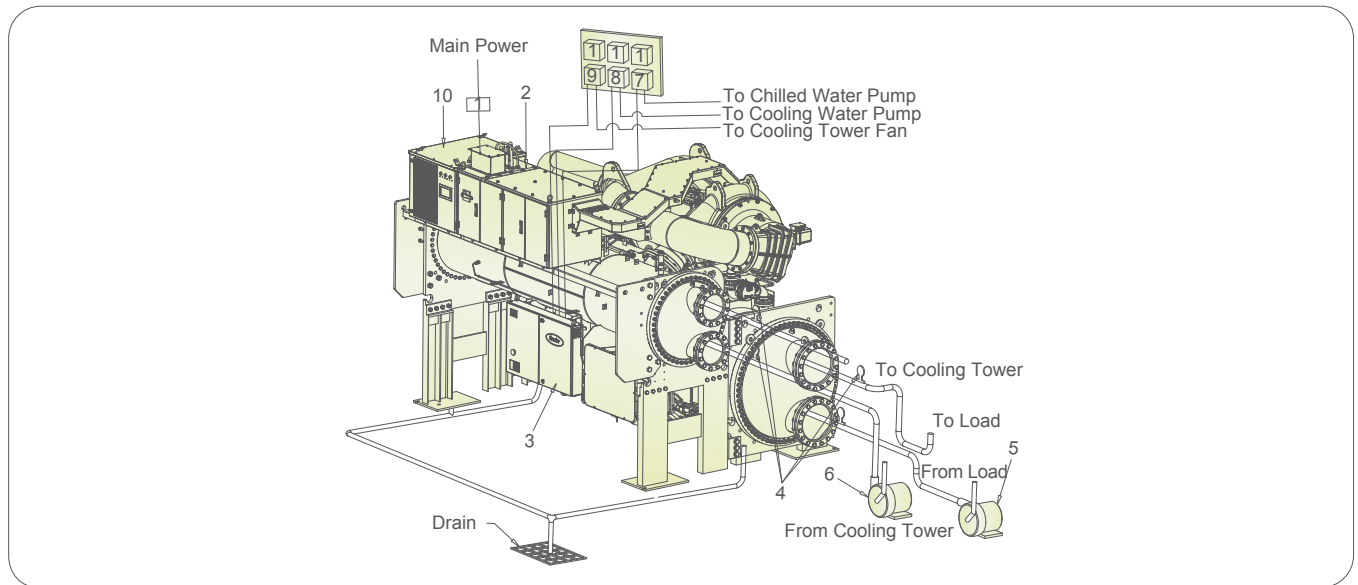
### II. Power Wiring to VFD Starter

- 2.0 Provide a means of disconnecting power to starter. Fused disconnect is required on VFD.
- 2.1 Incoming power wire must be protected with metal jacket.
- 2.2 Line side power conductor rating must meet VFD nameplate voltage and chiller full load amps (minimum circuit ampacity).
- 2.3 VFD and controls must be grounded by using equipment grounding lugs provided inside unit mounted starter enclosure.

## Typical Piping and Wiring Unit Mounted VFD (Standard Tier)



## Typical Piping and Wiring Unit Mounted VFD (High Tier)



- |                                               |                                              |                                               |                   |
|-----------------------------------------------|----------------------------------------------|-----------------------------------------------|-------------------|
| ① Air switch (NOT by Carrier)                 | ② VFD                                        | ③ Control box                                 | ④ Pressure gauges |
| ⑤ Chilled water pump                          | ⑥ Cooling water pump                         | ⑦ Chilled water pump starter (NOT by Carrier) |                   |
| ⑧ Cooling water pump starter (NOT by Carrier) | ⑨ Cooling tower fan starter (NOT by Carrier) | ⑩ AHF                                         |                   |

### Line Purpose

- A# Main power to VFD  
B# To cooling tower fan starter (option)  
C# To cooling water pump starter (option)  
D# To chilled water pump starter (option)

## Specification

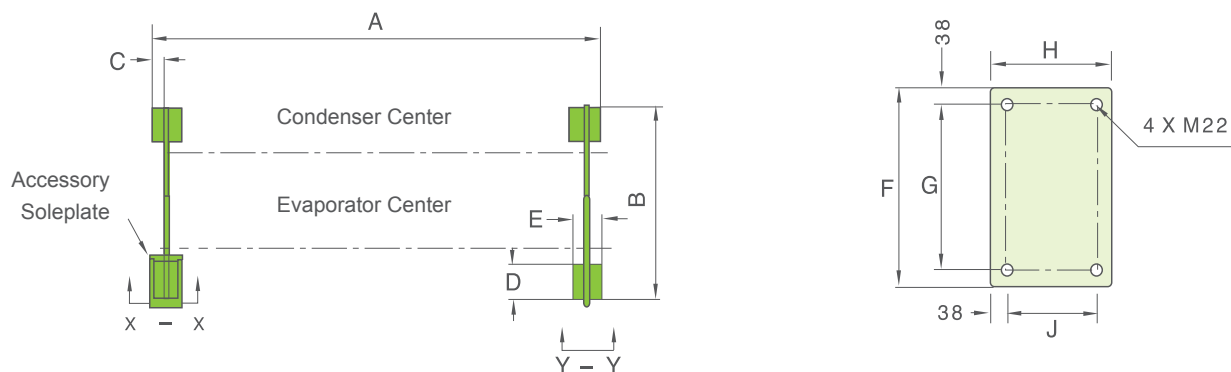
50Hz or 60Hz low voltage AC power source: 3 phase, 1 grounding  
4 control lines (option)  
2 control lines (option)  
2 control lines (option)

### Piping and Wiring Requirements:

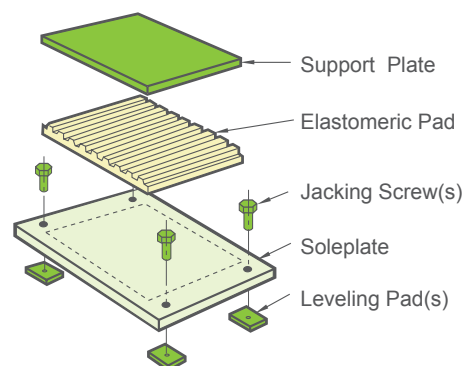
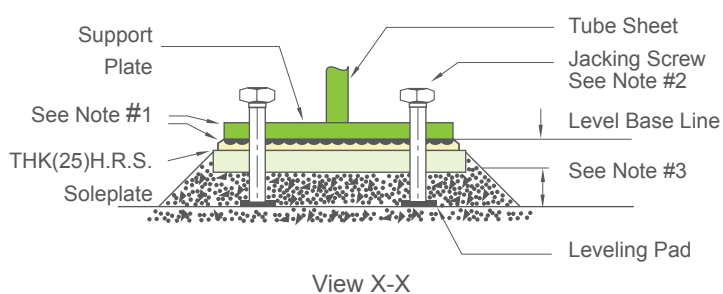
1. The installer must get all pipes and wires in place and mark the ends.
2. Filters must be installed in cooling water and chilled water pipes.
3. Thermometer (0-50°C) and pressure gauge (0~1Mpa or 2MPa) must be installed at inlet and outlet of the pipes.
4. The installer must install the relief valve vent to outdoors with a steel pipe(outer diameter 48mm, thickness 4mm).
5. It is suggested that an oxygen content monitor be installed in the machine room for safety, which will give an alarm when the oxygen content is less than 19.5%.
6. Input power shall be in compliance with Carrier applicable codes and job specifications. For more details or customized conditions, please contact local agencies.

## Types of Base Isolation

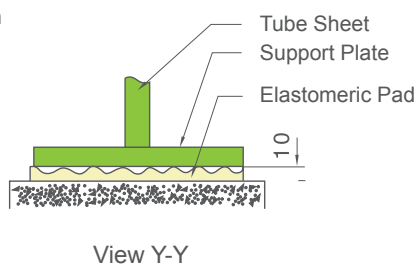
Location of Isolator



Standard Isolation



Simplified Isolation



### Notes:

1. Accessory soleplate package includes 4 soleplates, 16 jacking screws, and 16 leveling pads.
2. Jacking Screws should be removed after the grout has set.
3. Thickness of grout varies, depending on the amount necessary to level chiller.

| Evaporator/Condenser Size | A mm | B mm | C mm | D mm | E mm | F mm | G mm | H mm | J mm |
|---------------------------|------|------|------|------|------|------|------|------|------|
| F2A-F29/F2C-F29           | 3951 | 2260 | 102  | 559  | 406  | 711  | 635  | 432  | 356  |
| F4A-F49/F4C-F49           | 4472 | 2260 | 102  | 559  | 406  | 711  | 635  | 432  | 356  |
| G2A-G29/G2C-G29           | 3951 | 2508 | 102  | 559  | 406  | 711  | 635  | 432  | 356  |
| G4A-G49/G4C-G49           | 4472 | 2508 | 102  | 559  | 406  | 711  | 635  | 432  | 356  |
| H2A-H29/H2C-H29           | 3951 | 2612 | 102  | 559  | 406  | 711  | 635  | 432  | 356  |
| H4A-H49/H4C-H49           | 4472 | 2612 | 102  | 559  | 406  | 711  | 635  | 432  | 356  |



Carrier improves the world around us; Carrier improves people's lives; our products and services improve building performance; our culture of improvement will not allow us to rest when it comes to the environment.



[www.carrier.com](http://www.carrier.com)

The Manufacturer reserves the right to change any product specifications without prior notices  
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|                 |                             |
|-----------------|-----------------------------|
| Version:        | CAT-AQUAEDGE-19DV_202006_05 |
| Supersede:      | CAT-AQUAEDGE19DV_1910_04    |
| Effective Date: | June, 2020                  |