# LV Split Systems

## Water Source Heat Pump

1½ to 6 ton

The option-rich LV Split Systems offer lower operating costs, space-saving flexibility and quiet comfort, making it a great choice for replacement and new construction projects

**LV** Split Systems — UP TO **15.9** EER — UP TO **4.4** COP

**Made in the U.S.A.**


Commercial Sales Catalog
boschheatingandcooling.com

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## Condensing Section Model Nomenclature

LV 024 - 1 CS C - F

**MODEL:**
LV

**NOMINAL CAPACITY:**
018, 024, 030, 036,
042, 048, 060, 070

**VOLTAGE DESIGNATION:**
1 - 208-230/1/60
2 - 265/1/60
3 - 208-230/3/60
4 - 460/3/60

**CABINET CONFIGURATION:**
CS - Condensing Section

**COAX OPTIONS:**
C - Copper
N - Cupro-Nickel

**WATER CONNECTIONS:**
F - Front

## Air Handler Model Nomenclature

LV 024 - 1 AV X - X L T A U

**MODEL:**
LV

**NOMINAL CAPACITY:**
018, 024, 030, 036,
042, 048, 060, 070

**VOLTAGE DESIGNATION:**
1 - 208-230/1/60
2 - 265/1/60
4 - 460/3/60

**CABINET CONFIGURATION:**
AH - Air Handler Horizontal
AV - Air Handler Vertical

Not used for Air Handlers

**RETURN AIR CONFIGURATION:**
L - Left
R - Right
X - None

**DISCHARGE AIR CONFIGURATION:**
T - Top (AV only)
S - Straight (AH only)
E - End (AH only)

**FAN MOTOR OPTIONS:**
T - Constant Torque ECM
A - Constant Airflow ECM

**AIR COIL OPTIONS:**
U - Uncoated Air Coil
D - DuoGuard™ Air Coil

## Equipment Pairing

| Model | Pair Handler | |
|---|---|---|
| | Unit 1 | Unit 2 |
| **LV018-1CS** | LV018-1AV | LV018-1AH |
| **LV018-2CS** | LV018-2AV | LV018-2AH |
| **LV024-1CS** | LV024-1AV | LV024-1AH |
| **LV024-2CS** | LV024-2AV | LV024-2AH |
| **LV024-3CS** | LV024-1AV | LV024-1AH |
| **LV024-4CS** | LV024-4AV | LV024-4AH |
| **LV030-1CS** | LV030-1AV | LV030-1AH |
| **LV030-2CS** | LV030-2AV | LV030-2AH |
| **LV030-3CS** | LV030-1AV | LV030-1AH |
| **LV030-4CS** | LV030-4AV | LV030-4AH |
| **LV036-1CS** | LV036-1AV | LV036-1AH |
| **LV036-2CS** | LV036-2AV | LV036-2AH |
| **LV036-3CS** | LV036-1AV | LV036-1AH |

| Model | Pair Handler | |
|---|---|---|
| | Unit 1 | Unit 2 |
| **LV036-4CS** | LV036-4AV | LV036-4AH |
| **LV042-1CS** | LV042-1AV | LV042-1AH |
| **LV042-3CS** | LV042-1AV | LV042-1AH |
| **LV042-4CS** | LV042-4AV | LV042-4AH |
| **LV048-1CS** | LV048-1AV | LV048-1AH |
| **LV048-3CS** | LV048-1AV | LV048-1AH |
| **LV048-4CS** | LV048-4AV | LV048-4AH |
| **LV060-1CS** | LV060-1AV | LV060-1AH |
| **LV060-3CS** | LV060-1AV | LV060-1AH |
| **LV060-4CS** | LV060-4AV | LV060-4AH |
| **LV070-1CS** | LV070-1AV | LV070-1AH |
| **LV070-3CS** | LV070-1AV | LV070-1AH |
| **LV070-4CS** | LV070-4AV | LV070-4AH |

NOTES: 1. Liquid and suction line sizes should be sized according to the tables in the IOM, not according to the king valve connection size.
2. Refrigerant line sizes shall not exceed 75ft in length (equivalent).
3. All units require a BiFlow filter drier. Filter drier must be UL listed for R410A with a minimum rated working pressure of 680 psi.

# Certified Performance Data

| AHRI/ANSI 13256-1 Performance Data | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | Water Loop Heat Pump | | | | Ground Loop Heat Pump | | | |
| | Cooling 86˚F | | Heating 68˚F | | Cooling 77˚F | | Heating 32˚F | |
| | Capacity Btuh | EER Btuh/W | Capacity Btuh | COP | Capacity Btuh | EER Btuh/W | Capacity Btuh | COP |
| **LV018** | 18,900 | 13.3 | 21,100 | 4.4 | 20,400 | 15.7 | 13,800 | 3.5 |
| **LV024** | 22,600 | 13.1 | 24,900 | 4.3 | 23,900 | 15.0 | 16,200 | 3.3 |
| **LV030** | 26,400 | 13.0 | 29,600 | 4.3 | 27,900 | 14.3 | 19,500 | 3.2 |
| **LV036** | 35,000 | 13.8 | 37,000 | 4.3 | 37,300 | 15.9 | 24,900 | 3.5 |
| **LV042** | 38,600 | 13.0 | 41,600 | 4.3 | 40,900 | 14.8 | 27,300 | 3.2 |
| **LV048** | 43,300 | 13.6 | 51,800 | 4.3 | 45,100 | 15.4 | 33,500 | 3.5 |
| **LV060** | 54,300 | 13.0 | 64,000 | 4.3 | 57,400 | 14.9 | 44,400 | 3.2 |
| **LV070** | 62,100 | 13.6 | 70,400 | 4.3 | 64,200 | 15.6 | 47,900 | 3.3 |

Ratings based upon AHRI/ANSI 13256-1 with 1“ disposable filter


## FHP Equipment

Specializing in efficient green technology for commercial heating and cooling products, FHP products are one of the leading Geothermal and Water Source heat pumps in the market, which assures that you are buying a unit that you can trust. Bosch Thermotechnology Corp (BTC), a Robert Bosch Group, is dedicated to providing highly efficient heating and cooling solutions to the private and public sectors.

BTC is always on the forefront of product development and innovative design to optimize the performance of FHP units. Our products are designed and manufactured to the highest quality, reflecting the no-compromise standards for which FHP and Bosch are renowned in order to provide our customers with the highest level of satisfaction and comfort. The variety of options, energy efficiency and uncompromising quality of all FHP products makes them the ideal choice for the commercial new construction market and the ease of designing into tight retrofit spaces of buildings.

FHP's engineering efforts have been focused on providing a greener world for future generations. Faced with today's tough environmental challenges and with global warming, BTC is more committed than ever to develop solutions which utilize sustainable energy sources in order to conserve our planet's resources. With our heat pumps, you not only will save money on energy bills but also help create a better world.

The LV Split System water to air heat pump is the result of our almost 40 years of research and development experience in the US heat pump market. It is the most flexible geothermal technology available today, designed to improve reliability, reduce installation costs and provide your building with the cost savings and comfort you expect from FHP.

### Quality

The LV Split System features DuoGuard™ coated evaporator coils as an option, stainless steel drain pans to ensure a long and life and a galvanized steel cabinet which provides an anti-corrosive finish as standard. Rigorous factory testing helps to ensure no hassles from the start while FHP's 40 years of experience in designing heat pumps is your assurance of the highest quality product.

### Advantages of FHP Technology

- Low installation costs
- Lower operating costs
- Flexibility and comfort
- Energy efficiency
- Space savings
- Superior quality
- Quiet operation

**Compressors**

**Closed Cell Foam Insulation (Optional)**

## Increased Flexibility in Installation

The LV Split condensing section can be placed remotely from the air handler section which allows for the unit installation to be in locations where space is limited. Additionally, this orientation allows installing the condensing section, which is the major contributor to noise and vibration, to be away from occupied areas. Multiple condensing units may be centrally located to facilitate servicing.

The location of the LV Split air handlers can be concealed within a variety of areas inside the building where it will connect to air and ventilation ducts to deliver comfortable air. Air handling sections are available in vertical or horizontal configurations from 1.5 through 6 tons so there is a unit to meet your every need.

## Quiet Operation

The ECM (Electronically Commutated Motor) motors on this unit are extremely quiet. The air flow can be adjusted to suit a specific installation and ensure your highest level of comfort.

Noise reduction is a critical consideration of the unit design. All LV Split condensing sections have a unique floating base compressor that is mounted on a heavy steel plate which rests on a high density rubber pad on the base of the unit. In addition, compressors are mounted on rubber grommets. This double isolation, unique to FHP equipment and standard in all LV Split Systems, prevents vibration and noise transmission from the compressor to the unit structure resulting in exceptionally quiet operation. The condensing section will have an extra quiet option—this may include a compressor blanket, fiberglass insulation or 1/2" thick, closed cell foam insulation which aids in noise attenuation.

The LV Split air handler section offers the ½" thick, closed cell foam insulation as an option on all unit sizes and will also aid the indoor air quality (IAQ) of commercial buildings by improving moisture management and sound control.

## Serviceability

All units are designed to be serviced from the front of the unit. Schrader valves for high and low pressure gauges and the electrical box components are easily accessible for diagnosing and servicing the unit.

Large removable panels aid in servicing the unit, when necessary. Separate electrical knockouts in the unit corner post allow for easy and safe routing of high and low voltage lines to the inside of the cabinet.

**Standard**

**Optional**

**MERV-8 or MERV-13 Filter Option**

**2” 4-Sided Filter Rack Option**

**ECM Constant Torque (Standard)**

## LV Split System Models 018 - 070

The LV Split System is a cost-effective, single stage water source heat pump designed for commercial retrofit and new construction applications.

- 8 split systems from 1½ through 6 tons

## Features, Functions and Benefits

### Cabinet

The LV cabinetry is constructed using heavy-gauge, galvanized steel. This type of steel provides superior corrosion protection for units installed indoors.

All interior surfaces are lined with ½" thick, 1.5 lb./cu.ft. density micromat multi-density, coated fiberglass insulation for thermal insulation and acoustical attenuation. This insulation is non-combustible, non-hydroscopic and does not support fungal growth. Insulation meets NFPA 90A and 90B for fire protection, UL 181 erosion requirements, and is certified to meet the GREENGUARD Indoor Air Quality Standard for Low Emitting Products.

Protection against corrosion is a feature in the LV Split System. The stainless steel drain pan will last the lifetime of the unit while helping to resist corrosion and will avoid cracking that may occur with steel or plastic materials.

### Unit Configurations

All air handler sections are available in horizontal and vertical configurations. Additionally, several options of return air and supply air are offered as standard, providing configuration flexibility.

### Filter Racks and Unit Options

Units come standard with a 1” filter rack and construction filter. The 2” four-sided filter rack and pleated filter is optional and greatly improves air filtration. Filter doors allow for easy routine maintenance and changing of the air filter. A 1” return duct collar is integral to the filter rack eliminating the need for field mounted duct collars.

### Optional MERV-8 and MERV-13 Filters

The optional MERV-8 or 13 filter is the optimal choice for premium air filtration on commercial HVAC projects. The MERV rated filter is a cost effective way of upgrading air quality while maintaining low pressure drop and sustaining long service life. This filter effectively removes 96% of airborne matter, such as fine particulates, bacteria, smoke, gases and odors, and allergens including dust mites, pollen, mold spores, dust and smog. MERV-13 rated filters are a minimum requirement on LEED projects. The optional ECM constant CFM motor is recommended to handle higher external pressure drops when utilizing the higher efficiency MERV-13 filters.

## Blower Fan Motor

### ECM Constant Torque

The standard motor for all LV Split Systems is a constant torque blower motor which improves efficiency (up to 33%) over a standard PSC motor. This motor is similar in function to a PSC, but can handle up to 1 in.w.g. external static pressure making it a wise choice for high filtration applications. This ECM motor is an excellent choice for retrofit applications and the constant-torque motors do not require a neutral wire.

**ECM**
**Constant Airflow**
**Option**

**Blower Housing**
**(with Removable Inlet Ring)**

**TXV Valve**

## ECM Constant Airflow

The LV Split System's high efficiency ECM motor option, available in 1/3hp to 1hp, provides constant airflow in a wide static pressure range up to 1 in.w.g. Available in all unit sizes, this motor is a great choice in high filtration applications, such as with a MERV-13 pleated filter. The motor has a soft start/stop feature, keeping noise to a minimum.

Passive dehumidification can be achieved with the constant airflow ECM by reducing nominal airflow as much as 15%. This control feature lowers air coil temperature and prevents over-cooling of the space when in dehumidification mode. The constant airflow ECM requires a neutral wire in a 460V application.

## Blower Housing

A removable inlet ring is a standard feature of the blower housing on all unit sizes. The removable inlet ring helps facilitate motor removal without having to remove the fan housing from the cabinet.

## Refrigerant Circuit

Units are designed using the optimum combination of compressor, water and air coils to provide peak performance. Units are rated to withstand 600 PSIG working refrigerant pressure and 400 PSIG working water pressure. Heavy duty heat pump compressors are used in all units. Reciprocating and scroll compressors offer optimum performance for each unit size.

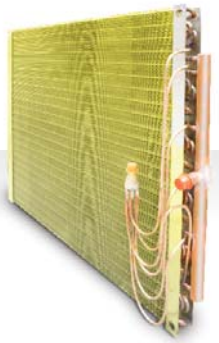
Refrigerant to water heat exchangers are coaxial tube-in-tube type providing a robust construction, ensuring years of trouble free operation. Coaxial coils are selected and designed for peak performance, offering the best combination of low water pressure drop and maximum heat transfer in both the cooling and heating modes. Standard coaxial coils have a copper interior water tube and a steel outer shell. Offered as an option is our cupro-nickel coils for when an application may have water quality that is of lower quality.

In geothermal applications where fluid temperatures can drop below the dew point of the surrounding air, optional insulation is available to prevent water coils and refrigerant piping from sweating.

Air side refrigerant coils have copper tubes, aluminum fins and side plates to prevent corrosion. The air coils are state-of-the-art, employing lanced fin and rifled tubing for maximum heat transfer.

Large face areas result in lower face velocity reducing sound while ensuring high latent heat removal for maximum dehumidification in the cooling mode. A pilot operated four-way reversing valve in the refrigeration circuit allows the unit to operate in either the heating or cooling mode. All FHP units have the reversing valve energized in cooling mode. This will ensure you are not left without heat in the middle of winter, should the reversing valve coil fail.

A thermal expansion valve (TXV) is a key element to a heat pump; it is a component in the air conditioning system that controls the amount of refrigerant flow in the system. LV Split Systems have one TXV located in the condensing section and another TXV in the air handling section ensuring optimal refrigerant flow and performance.



DuoGuard™ Evaporator Coil Protection (Optional)

UPM Control Board

## Evaporator Coil and DuoGuard™ (Option)

Air handling sections come standard with a copper coil aluminum fin evaporator coil. Available as an option is the DuoGuard™ evaporator coil protection. DuoGuard™ Protection® - Tin Electro-Plated Copper Tubing with High-Tech Polymer Coated Aluminum Fins will aid in protecting the evaporator coil from all forms of corrosive elements in the airstream. The tin plating provides a best-in-class protection of the copper tubing from formicary corrosion while the fin coating provides protection against salt spray and other corrosive elements. DuoGuard™ protected coils can exceed 1000 hours salt spray per ASTM standard B-117.

## Unit Protection Module (UPM)

Each LV Split System is factory provided with a Unit Protection Module (UPM) that controls the unit operation and monitors the safety controls that protect the unit. The UPM interfaces with the thermostat or HMI. The main purpose of the UPM is to protect the compressors by monitoring the different states of switches and sensors. This module provides time delays and protects the unit against freezing of the water to refrigerant and air to refrigerant heat exchangers as well as condensate overflow when the appropriate sensors are installed.

### UPM Control Board Features

- **Anti-Short Cycle Timer** — 5 minute delay on break timer to prevent compressor short cycling.
- **Random Start** — Each controller has a unique random start delay ranging from 270 to 300 seconds after power is applied to the board. This will prevent the simultaneous start of multiple units after a power outage.
- **Low Pressure Bypass Timer** — The low pressure switch is bypassed for 120 seconds after a call for compressor operation to prevent nuisance low pressure lockouts during cold start-up in the heating mode.
- **Brownout/Surge/Power Interruption Protection**— Prevents compressor operation should the voltage drop below 10% of unit rated value. The unit will restart once the voltage is within tolerance and the random start has timed out.
- **Malfunction (Alarm) Output** — The controller has a set of contacts for remote fault indication. This can be either a steady output or can be set to pulse with the fault code. Two connections are available – one to provide a 24 volt output, the other to provide a dry contact.
- **Test Service Mode** — A dip switch setting is provided to reduce all time delay settings to 10 seconds maximum during troubleshooting for verification of unit operation.
- **LED Fault Indication** — Two LED indicators are provided as follows:
  - **Green**: Power LED indicates 18 – 30 VAC present at the board.
  - **Red**: Fault indicator with blink codes identifying the particular fault. This information is available via the malfunction (alarm) output contacts.

**1 Blink** - High Pressure
**2 Blinks** - Low Pressure
**3 Blinks** - Low Fluid Temperature
**4 Blinks** - Condensate Overflow
**5 Blinks** - Brownout condition

Schrader Valves

2-Way Valve with Actuator

Coax Coil

- **Intelligent Reset**—If a fault condition is initiated, the 5 minute delay on break time period is initiated and the unit will restart after this delay expires. The UPM is configurable for either 2 or 4 fault occurrences before going into a hard lockout. The selection is made through a dip switch setting on the board. If the fault condition still exists or reoccurs twice or four times within one hour, the unit will go into a hard lockout and requires a manual lockout reset. A condensate overflow fault will, however, put the unit into a hard lockout immediately.
- **Lockout Reset**—A hard lockout can be reset by turning the unit thermostat off and then back on or by shutting off unit power at the circuit breaker. The method of reset is selectable by the dip switch on the board.

# Additional Features

## Hanging Brackets

All horizontal units come standard with hanging bracket kits for suspending the unit from field supplied hanger rods. These kits include heavy duty steel brackets and rubber grommets for sound and vibration isolation from the building structure.

## Water Connections

All water connections are heavy duty bronze FPT fittings securely fastened to the unit corner post. This allows connecting to a flexible hose kit without the use of a backup wrench making for easier, faster installation.

# Additional Options

- Compressor Monitor Relay
- Phase Monitor
- Pump Relay
- Fault LED Light
- 50, 75 or 100 VA Transformer option
- 40 Amp Disconnect Switch

## Air Side Pressure Drop

Refer to Bosch Select Tools selection software for blower performance and to determine if the unit requires an optional fan upgrade.*

*See fhp-mfg.com for BST Software.

## Flow Proving Switch

The function of the differential pressure switch is to prevent or stop compressor operation should the water supply fail. This will prevent the unit from locking out on a safety requiring a manual reset to restart. This optional control is internally mounted and factory installed.

The switch is piped between the water entering and leaving connections. Should the pressure drop across the water to refrigerant heat exchanger fall below set value, the switch will open de-energizing the compressor. The blower operation will not be affected by this option.

## Energy Management Switch (EMS) (Option)

This switch allows you to connect to an energy management system that can turn the unit off and on.

## Two-Position Water Valve

The two-position motorized water valve is optional on all unit sizes and is a great energy savings option. The valve opens to allow 100% fluid flow through the coaxial heat exchanger only when there is a call for cooling or heating. When utilizing variable speed pumping, closing off fluid flow to the unit when there is no call for cooling or heating reduces system operating costs by reducing the speed of the primary loop pumps.

Thermostats

Hose Kit

# Accessories

## Thermostats

The unit control may be as simple as a single stage thermostat. All external low voltage control wiring is made to the thermostat terminal located in the unit electrical box. Thermostats may be manual change over, auto change over or non programmable depending on the requirements of the project. A full line of thermostats are available at FHP Bosch as an accessory.

## Hose Kits

Hose kits are recommended between the unit and system loop piping. This will help eliminate the transmission of vibration and noise from the unit to the space. Hoses are fire rated fiber reinforced EPDM Stainless Steel braid hoses with swivel connections. Maximum working pressure 400 PSI for sizes ½" – 1" and 300 PSI for sizes 1 1/4" – 2". A variety of hose kits are available depending on the job requirement.

Kit 1 - Hose only either 24" or 36" long.

Kit 2 - Hose kit 1 with ball valves on the supply and return hoses. Valves have P/T (pressure/temperature) ports to facilitate pressure and temperature readings.

Kit 3 - Hose kit 2 with an automatic flow control valve. The design flow rate is preset at the factory per the design conditions and will automatically limit the flow to this value. This will greatly facilitate balancing of the fluid loop and ensuring each unit gets the required flow.

Kit 4 - Hose kit 3 with a Y-strainer and blow down valve on the supply side. The filter screen is 20 mesh, 304 stainless steel to help prevent dirt and debris from entering the water coil.

Kit 5 - Hose kit 3 with a 24 v 2 position solenoid valve. This could be used to shut off flow to the unit when there is not a call for heating or cooling. A typical application would be with VFD pumping.

Kit 6 - Hose kit 4 with a 24 v 2 position solenoid valve. Hose kit options are available in the accessories section of the BST selection software.

# Systems

LV Split Systems may be used in a variety of different applications depending on the system design. An overview of tower/boiler and geothermal systems is given below. There could be several variations and combinations of these systems.

## Cooling Tower/Boiler Systems

Water source heat pumps with cooling tower/boiler systems have been used for many years and are recognized as having a low installation cost and providing more energy efficient operation than most other systems on the market.

In a typical building, each office or space would receive its own heat pump. This ensures that the unit will independently satisfy the heating or cooling requirements for that space irrespective of the requirements of any other space. Unlike some other systems, this offers individual control and enhanced comfort in all areas.

All the units are connected to a common water loop containing, in addition to the heat pumps, a cooling tower, boiler, a primary and standby pump and a loop water temperature controller. In the summer cooling mode, the units are cooling and rejecting heat to the water loop. This heat is then rejected to the atmosphere through a cooling tower. In winter, heat is taken from the loop and, together with the compressor's heat of compression, used to heat the space. The heat removed from the loop is then replenished by the boiler. The loop water temperature controller will keep the fluid within certain temperature limits typically 70°F in winter and 85°F in summer by cycling either the cooling tower or boiler operation.

In today's modern buildings the interior core usually has a net cooling requirement year round irrespective of the outside temperature. This is due to the internal heat gains from people, office equipment and lighting. The heat from heat pumps operating in cooling is rejected to the common water loop and is absorbed by heat pumps on the building's perimeter that are in the heating mode. In effect the system is transferring energy around the building areas from where it is in excess to those areas where it is needed. In many instances we find a balanced system where the heat generated in the interior space is sufficient to heat the perimeter, resulting in neither the cooling tower nor boiler operating. This concept, unique to a water source system, provides the most energy efficient system on the market.

## Geothermal Systems

The earth has a tremendous capacity of storing thermal energy, which can be utilized to heat or cool a building.

A geothermal system offers all the benefits of a cooling tower and boiler system with the additional advantage of having overall greater energy efficiency. As the cost of energy increases, geothermal installations are becoming the system of choice by developers and design engineers.

There are several alternative methods of utilizing the energy contained in a geothermal system, giving the design engineer several options for selecting the one that is right for a particular application.

# Earth Coupling Options

## Ground Loop Systems (Closed Loop)

Lengths of high density polyethylene piping are buried in the earth either in vertical bore holes or horizontal trenches depending on the space available.

Fluid from the loop inside the building circulates through these pipes either rejecting heat to the ground when there is a net cooling requirement or absorbing heat from the ground when heating is the dominant requirement.

The temperature of the earth below 6 feet is relatively constant and is not affected by the ambient temperature. For this reason, the ground temperature is cooler than the summer ambient and warmer than the winter ambient in most regions. Geothermal systems are able to operate effectively in extreme ambient conditions exceeding 100°F in summer and -30°F in winter. This is one of the reasons why geothermal systems have such an advantage over other systems. An additional advantage is that no fossil fuels are used, reducing the carbon emission of the building.

Even in areas which are cooling or heating dominant a hybrid system can be used with a downsized cooling tower or boiler. This system will reduce the installed cost significantly with only a modest impact on overall operating efficiency.

Geothermal systems may cost more to install but the savings in energy and low maintenance costs more than off set this with payback times typically five years or even less.

## Vertical Ground Loop System

This method is used mainly in commercial buildings or where space for a loop field is limited. Vertical holes 100 to 400 feet deep are drilled in the ground, and a single loop of high density polyethylene pipe with a U-tube at the bottom is installed. The bore hole is then sealed with grout to ensure good contact for heat transfer with the soil. The size of the project will determine how many bore holes are required. The vertical ground loops are then connected to a horizontal header pipe that carries fluid to the building and circulated to each heat pump. The Earth's temperature is stable below the surface which is an advantage for this system and provides for the greater efficiency. Vertical ground loop fields may be located under buildings or parking lots. The life expectancy is in excess of 50 years.

## Horizontal Ground Loop System

This type is cost effective on smaller projects or where there is sufficient space for the loop field. Trenches, three to six feet deep are dug in which a series of high density polyethylene pipes are laid. These loops are manifolded and connected to the loop inside the building which feeds the heat pumps. The fluid is then circulated, absorbing or rejecting heat to the earth depending on the requirement for heating or cooling.

# Typical Heat Pump System

## Surface Water, Lake or Pond System

This type of design is economical when a project is located near a body of water. Fluid circulates through polyethylene piping in a closed system, just as it does through ground loops, but in this case, underwater. The pipes may be coiled in a slinky to fit more surface into a given amount of space. The lake needs to be a minimum size and depth depending on the building load. Lake loops have no adverse impact on the aquatic system. Specialized lake heat exchangers are also available for this application. New technology is emerging for stainless steel and titanium heat exchangers.

## Well Water System

This type of installation is only possible if there is sufficient ground water available in a well. The water must be of good quality. Local codes may limit the use of this system in certain areas. The arrangement is referred to as an open system which means that water is pumped directly from the source into the geothermal unit and then discharged either into a return well or a body of water. The water quality is unaffected other than a change in the temperature. Refer to the installation manuals for water quality guidelines.

# Typical Heat Pump Operation

## Cooling Mode

In the cooling mode, hot high pressure refrigerant gas is pumped from the compressor to the water-to-refrigerant heat exchanger via the reversing valve.

Water, or an anti-freeze solution, flowing through the water-to-refrigerant heat exchanger transfers heat from the refrigerant to the fluid raising the fluid temperature while condensing the hot gas into a liquid. This liquid refrigerant then flows through a metering device, where the refrigerant is expanded to a cold liquid, to the air-to-refrigerant heat exchanger coil.

The air-to-refrigerant heat exchanger cools and de-humidifies air by evaporating the liquid refrigerant. The cooling cycle is completed when the refrigerant flows as a low pressure gas through the reversing valve and back to the suction side of the compressor.

Cool dehumidified air is circulated to the space maintaining comfort conditions.

## Heating Mode

During the heating mode, the high pressure refrigerant gas is pumped from the compressor to the air-to-refrigerant heat exchanger coil via the reversing valve.

In the air-to-refrigerant heat exchanger coil, the heat is removed by the air that passes over the coil surface, and the hot gas condenses into a liquid.

The heated air is ducted to the space and provides heating for the building.

The refrigerant liquid then flows through a metering device to the water-to-refrigerant heat exchanger.

# Typical Unit Installation

Water, or an anti-freeze solution, circulates through this heat exchanger and is cooled by the evaporating refrigerant which evaporates into a gas. The heating cycle is completed when the refrigerant flows as a low pressure gas through the reversing valve and back to the suction side of the compressor.

## Unit Location

Any mechanical device will, at some point in time require servicing and repair.With this in mind sufficient space must be provided around the unit for service personnel to perform maintenance or repair.

Units are not designed for outdoor installation. Avoid locations where the unit may be exposed to freezing conditions or where the humidity levels could cause condensation on the unit panels, for example, when exposed to outdoor ambient conditions.

## Vertical Unit Installation

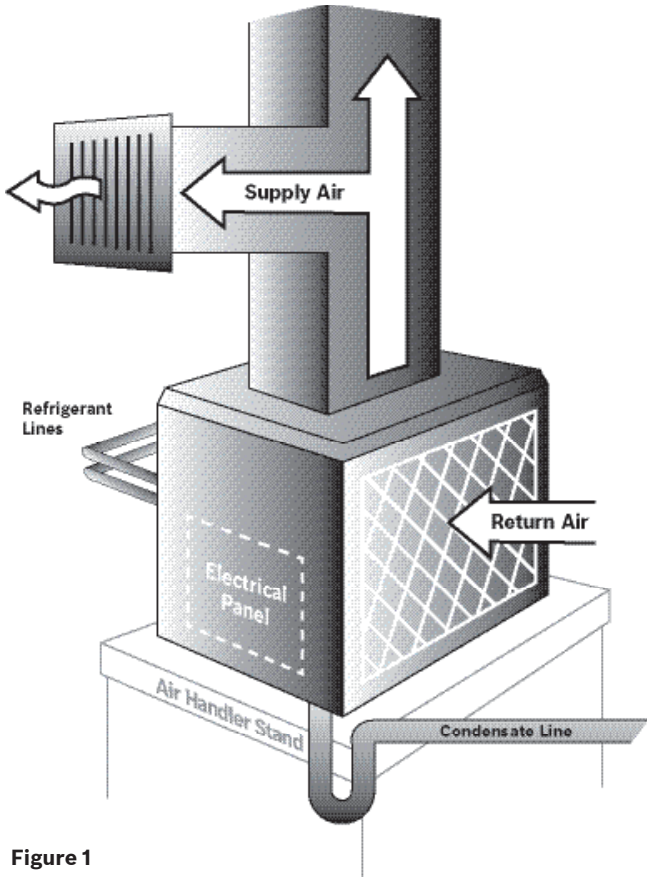



**Figure 1**

Vertical units are normally installed in a closet or mechanical plant room.

If installed in a closet or other confined space, ensure adequate space for return air to the unit.

Sufficient space must be provided for filter replacement and access to the compressor and blower for service.

Units should be set on a piece of rubber, neoprene or other vibration absorbing material at least ⅓" to ½" thick. The pad should extend 3/4” over the entire base of the unit.

Avoid direct line of sight to the unit. Install a sound baffle over any door that has a return air grille.

## Horizontal Unit Installation

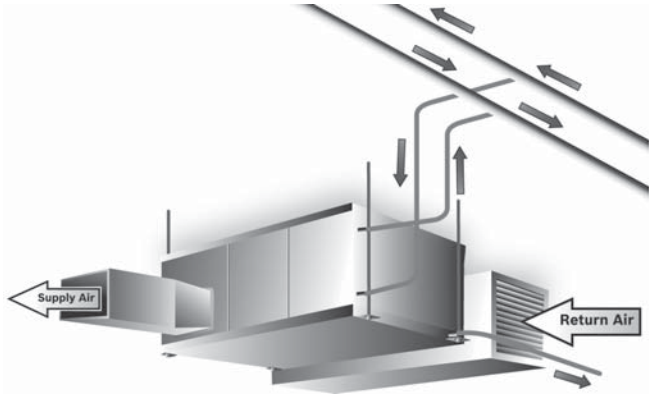



**Figure 2**

Horizontal units are typically suspended above the ceiling by four (field supplied) 3/8” threaded rods fastened to the unit by the factory supplied hanger bracket kits. The kits include rubber isolators to help prevent transmission of vibration and noise to the building structure. Units should be located directly below a structural member, so that it is securely anchored.

A horizontal unit should be positioned to allow for removal of the filters and access panels. Allow at least 18” clearance on each side of the unit for service and 36” in front of the unit for maintenance access. The filter needs to be slid out and sufficient space must be provided to allow this.

Do not install the unit above any piping or electrical raceways. The unit should be able to be removed to the floor without major rearrangement of other mechanical or ceiling components.

Consideration needs to be made as to the location of the units. Avoid installing units directly above occupied spaces (e.g. above office desks or classrooms). This will minimize possible disruption to the occupants if maintenance or service is required as well as keeping a potential source of noise out of the area. If possible, units should be installed above the hallway drop ceiling in schools, and the supply and return air is routed directly into classrooms. Local code may require fire dampers to be used in this application.

## Ductwork and Sound Attenuation Considerations

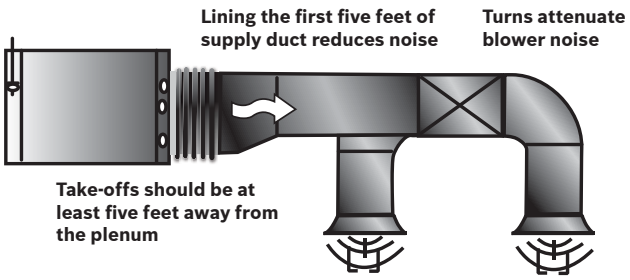



**Figure 3** **Supply Air Ducting**

Sound is becoming an increasingly important factor in all HVAC installations. The LV Split System has been designed to minimize sound, but sound acoustical design plays an important part of the sound level in the space.

Most of the problems associated with HVAC generated sound can be avoided by paying close attention to duct design and equipment placement.

A discharge flange is provided on all horizontal unit models for fastening of ductwork. We recommend using a flexible collar between the discharge flange and the duct transformation to reduce vibration transmission from the cabinet and to simplify disconnection of the unit from the ceiling ductwork.

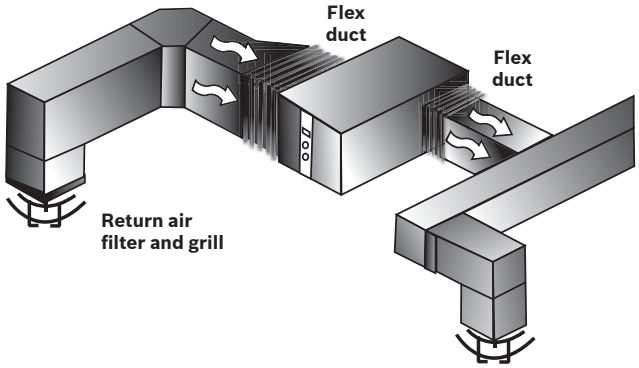



**Figure 4** **Return Air Ducting**

Return air to the unit could be either free return or ducted. The filter rack is provided with a 1” flange should a ducted return be used. We recommend using a flexible collar between the return flange and the duct transformation to reduce vibration transmission from the cabinet and to simplify disconnection of the unit from the ductwork.

Sound is transmitted down the ductwork and it is important to avoid direct line of sight between the unit and the space, both on the return or supply side. To accomplish this, design the duct runs with two 90° turns.

As a general recommendation, duct interiors should have an acoustic / thermal lining of least ½" thick over the entire duct run or a minimum of the first 5 feet of the supply trunk.

Line the last five diameters of duct before each outlet with a one-inch thick sound blanket. Line elbows and transition pieces, as well as a short distance upstream and downstream of the fittings.

Elbows, tees and dampers can create turbulence or distortion in the airflow. Using aerodynamic fittings will help in reducing this effect. Place a straight length of duct, 5 to 10 times the duct width, before the next fitting to smooth out airflow.

Diffusers that are located in the bottom of a trunk duct can also produce noise.

Balancing dampers should be located several duct widths upstream from an air outlet.

Ductwork should be mounted and supported using isolation devices that absorb vibration.

Applications such as Hotel, Motel, Dormitory or Nursing Home that use a single duct discharge are susceptible to noise. These applications typically have low static pressures and short duct lengths. In these applications the discharge duct must be fully lined and have a square elbow without turning vanes. A velocity not exceeding 500 to 600 fpm is recommended. Return air for these applications should enter through a sidewall grille and route up the stud space to a ceiling plenum.

For horizontal heat pumps mounted in the ceiling plenum, an insulated return plenum is sometimes placed at the return air opening to further attenuate line-of-sight sound transmission through return openings.

## Piping

The water loop system is typically designed using a "reverse return" piping system which includes a flow control device so that flow requirements are met for each zone.

A high pressure stainless steel flexible hose kit is recommended to connect the unit to the building's hard piping and acts as a sound attenuator for both the unit operating noise and hydraulic pumping noise. One end of the hose has a swivel fitting to facilitate removal of the unit for replacement or service.

Hose kits come in several configurations, but in all cases should include supply and return shutoff ball valves to allow removal of a unit without the need to shut down the entire heat pump system. The hose kit may contain either a manual or automatic flow control that may be preset to ensure correct water flow to the unit.

Pressure / Temperature ports should be included in these fittings to allow the service technician to measure water flow and temperatures when checking unit operation.

## Condensate Drain Piping

Condensate piping can be made of steel, copper or PVC pipe. In most cases, PVC pipe eliminates the need to wrap insulation around the pipe to prevent sweating.

A 3/4" FPT condensate drain connection is installed in the unit. The condensate piping must be trapped at the unit and pitched away from the unit not less than 1/4" per foot. A vent is required after the trap so that the condensate will drain away from the unit. The vent can also act as a cleanout if the trap becomes clogged. As a precaution, a secondary drain pan shall be installed below the unit to capture any condensate overflow should the trap become clogged. The condensate drain should not be directly piped to a drain/waste/vent stack. See local codes for the correct application of condensate piping to drains.

## Operating Limits

The LV Split Systems are capable of operating over a wide range of conditions. For operation in a geothermal application or any other installation where the loop fluid temperature may drop below the ambient dew point, the extended range option is recommended. This consists of additional insulation on the piping to prevent condensation.

- Maximum and minimum fluid conditions are at unit rated flow rate.
- Maximum and minimum operating limits may not be combined. If one value is at either maximum or minimum, the other two should be at normal operating range.
- Entering fluid temperatures below 45 °F in the heating mode require antifreeze.

## Typical Unit Application

To ensure that you get the optimal performance from your FHP heat pump it is important that they be selected accurately to match your design conditions.

Prior to making equipment selections the zone conditions need to be determined. BTC recommends using a building load program to determine the heating and cooling loads.

The catalog provides a wide range of entering air and water conditions that will meet most applications. The unit performance can be determined by referring to the data tables from page 19 to 26.

Our Bosch Select Tools Selection Software (BST) is designed to provide you with a fast and accurate selection based on your specific conditions. This software is available through the commercial website. You may click on the BST link and request an account.

The following is a typical example for a unit selection. Design conditions are given as follows:

| | |
|---|---|
| Total Cooling Load | = 37.8 MBTUH |
| Sensible Cooling Load | = 29.5 MBTUH |
| Total Heating Load | = 41.4 MBTUH |
| Air Flow Required | = 1140 CFM |
| Entering Air Temp Cooling (db/wb) | = 75°F / 63°F |
| Entering Air Temp Heating | = 60°F |
| Entering Water Temp Cooling | = 80°F |
| Entering Water Temp Heating | = 70°F |
| Fluid Flow Required | = 9 GPM |

The FHP Split System LV036 would not be sufficient given these conditions as it provides a total cooling capacity of 35.9 MBTUH and a sensible capacity of 27.9 MBTUH.

The next size unit, the LV042 has a total cooling capacity of 38.9 MBTUH and a sensible capacity of 30.9 MBTUH. This meets the design conditions as closely as possible.

Please be aware that interpolation between ratings within a table is allowed, but extrapolation is a method of estimating new data by expanding outside a known range of data points and should not be considered accurate.

## Unit Operating Limits—LV Split Systems

| Operating Limits – Cooling & Heating | Extended Range Option |
|---|---|
| **Cooling** | |
| Minimum ambient air temperature °F | 50 |
| Maximum ambient air temperature °F | 100 |
| Minimum evaporator entering air db/wb °F | 68/57 |
| Rated air coil entering air db/wb °F | 80/67 |
| Maximum evaporator entering air db/wb °F | 95/85 |
| Minimum water coil entering fluid temperature °F | 40 |
| Water loop typical coil entering fluid range temperature °F | 70/90 |
| Maximum water coil entering fluid temperature °F | 110 |
| **Heating** | |
| Minimum ambient air temperature °F | 40 |
| Maximum ambient air temperature °F | 85 |
| Minimum evaporator entering air db °F | 50 |
| Rated air coil entering air °F | 68 |
| Maximum evaporator entering air db °F | 80 |
| Normal water coil entering fluid range °F | 25-80* |
| Minimum water coil entering Fluid °F | 20* |

* = antifreeze solution is required at these fluid temperatures.

# Antifreeze Correction Data

| Antifreeze Correction | | | | | | | |
|---|---|---|---|---|---|---|---|
| Antifreeze Type | Antifreeze % | Cooling | | | Heating | | WPD Correction Factor EWT 30 °F |
| | | EWT 90 °F | | | EWT 30 °F | | |
| | | Total Cap. | Sens. Cap | Power | Htg. Cap | Power | |
| Water | 0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Propylene Glycol | 5 | 0.997 | 0.997 | 1.004 | 0.989 | 0.997 | 1.060 |
| | 10 | 0.994 | 0.994 | 1.006 | 0.986 | 0.995 | 1.125 |
| | 15 | 0.990 | 0.990 | 1.009 | 0.978 | 0.988 | 1.190 |
| | 25 | 0.983 | 0.983 | 1.016 | 0.960 | 0.979 | 1.300 |
| Methanol | 5 | 0.997 | 0.997 | 1.003 | 0.990 | 0.997 | 1.060 |
| | 10 | 0.996 | 0.996 | 1.005 | 0.979 | 0.993 | 1.100 |
| | 15 | 0.994 | 0.994 | 1.008 | 0.970 | 0.990 | 1.140 |
| Ethanol | 5 | 0.998 | 0.998 | 1.002 | 0.981 | 0.994 | 1.160 |
| | 10 | 0.996 | 0.996 | 1.004 | 0.960 | 0.988 | 1.230 |
| | 15 | 0.992 | 0.992 | 1.006 | 0.944 | 0.983 | 1.280 |
| | 25 | 0.986 | 0.986 | 1.009 | 0.917 | 0.974 | 1.400 |
| Ethylene Glycol | 5 | 0.997 | 0.997 | 1.003 | 0.993 | 0.998 | 1.060 |
| | 10 | 0.995 | 0.995 | 1.004 | 0.986 | 0.996 | 1.120 |
| | 15 | 0.992 | 0.992 | 1.005 | 0.980 | 0.993 | 1.190 |
| | 25 | 0.988 | 0.988 | 1.009 | 0.970 | 0.990 | 1.330 |
| | 30 | 0.985 | 0.985 | 1.012 | 0.965 | 0.987 | 1.400 |

# Waterside Pressure Drop

Mixture of 15% methanol / water solution.

| Model | Wtr. Flow Rate (GPM) | Wtr. PD w/o Int. Valve (PSI) | Wtr. PD w/ Int. Valve (PSI) |
|---|---|---|---|
| **LV018** | 2.5 | 1.1 | 2.1 |
| | 4 | 2.7 | 5.2 |
| | 5 | 4.0 | 8.0 |
| **LV024** | 3 | 1.7 | 2.0 |
| | 4 | 2.8 | 3.4 |
| | 6 | 5.8 | 7.2 |
| **LV030** | 4 | 2.0 | 2.6 |
| | 6 | 4.2 | 5.6 |
| | 8 | 7.0 | 9.6 |
| **LV036** | 4.5 | 1.6 | 2.4 |
| | 6 | 2.6 | 4.0 |
| | 9 | 5.4 | 8.6 |
| **LV042** | 5 | 2.0 | 3.0 |
| | 8 | 4.6 | 7.2 |
| | 11 | 8.2 | 13.0 |
| **LV048** | 6 | 0.8 | 1.4 |
| | 8 | 1.4 | 2.5 |
| | 12 | 2.8 | 5.4 |
| **LV060** | 7.5 | 1.4 | 2.4 |
| | 10 | 2.3 | 4.1 |
| | 15 | 4.8 | 8.8 |
| **LV070** | 9 | 2.0 | 3.4 |
| | 12 | 3.4 | 5.9 |
| | 18 | 7.0 | 12.7 |

Equation: PD (PSI) = (Wtr Flow (gpm)^1.8) * k const
NOTE: Based on 70°F

# Capacity Data

## LV018 (650 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 2.5 | 1.2 (2.8) | 75/63 | 21.3 | 15.9 | 24.6 | 1.1 | 18.6 | 30 | 1.4 (3.2) | 60 | 11.0 | 8.2 | 1.0 | 3.2 |
| | | | 80/67 | 22.9 | 16.6 | 26.4 | 1.2 | 19.9 | | | 70 | 10.4 | 7.5 | 1.0 | 2.9 |
| | | | 85/71 | 24.7 | 17.2 | 28.2 | 1.2 | 21.4 | | | 80 | 9.7 | 6.8 | 1.1 | 2.7 |
| | 4 | 2.9 (6.6) | 75/63 | 22.3 | 16.4 | 25.4 | 1.1 | 20.9 | | 3.3 (7.6) | 60 | 11.8 | 8.9 | 1.0 | 3.4 |
| | | | 80/67 | 24.1 | 17.1 | 27.3 | 1.1 | 22.7 | | | 70 | 11.2 | 8.1 | 1.1 | 3.1 |
| | | | 85/71 | 26.0 | 17.7 | 29.2 | 1.1 | 24.7 | | | 80 | 10.5 | 7.4 | 1.1 | 2.8 |
| | 5 | 4.3 (9.9) | 75/63 | 22.6 | 16.5 | 25.7 | 1.0 | 21.8 | | 4.9 (11.3) | 60 | 12.2 | 9.2 | 1.0 | 3.4 |
| | | | 80/67 | 24.5 | 17.2 | 27.6 | 1.0 | 23.8 | | | 70 | 11.5 | 8.4 | 1.1 | 3.1 |
| | | | 85/71 | 26.4 | 17.9 | 29.6 | 1.0 | 26.0 | | | 80 | 10.7 | 7.6 | 1.1 | 2.9 |
| 60 | 2.5 | 1.2 (2.7) | 75/63 | 20.1 | 15.4 | 23.7 | 1.2 | 16.3 | 40 | 1.4 (3.1) | 60 | 13.3 | 10.2 | 1.1 | 3.6 |
| | | | 80/67 | 21.7 | 16.1 | 25.4 | 1.2 | 17.4 | | | 70 | 12.7 | 9.5 | 1.1 | 3.3 |
| | | | 85/71 | 23.4 | 16.7 | 27.1 | 1.3 | 18.7 | | | 80 | 12.0 | 8.8 | 1.2 | 3.1 |
| | 4 | 2.8 (6.4) | 75/63 | 21.0 | 15.8 | 24.4 | 1.2 | 18.1 | | 3.2 (7.3) | 60 | 14.4 | 11.2 | 1.1 | 3.8 |
| | | | 80/67 | 22.8 | 16.5 | 26.3 | 1.2 | 19.6 | | | 70 | 13.7 | 10.4 | 1.1 | 3.5 |
| | | | 85/71 | 24.6 | 17.1 | 28.2 | 1.2 | 21.2 | | | 80 | 12.9 | 9.6 | 1.2 | 3.2 |
| | 5 | 4.1 (9.6) | 75/63 | 21.4 | 16.0 | 24.7 | 1.1 | 18.8 | | 4.7 (10.9) | 60 | 14.8 | 11.6 | 1.1 | 3.9 |
| | | | 80/67 | 23.2 | 16.7 | 26.6 | 1.1 | 20.4 | | | 70 | 14.1 | 10.7 | 1.2 | 3.6 |
| | | | 85/71 | 25.1 | 17.3 | 28.5 | 1.1 | 22.2 | | | 80 | 13.2 | 9.9 | 1.2 | 3.2 |
| 70 | 2.5 | 1.1 (2.7) | 75/63 | 18.9 | 14.9 | 22.6 | 1.3 | 14.3 | 50 | 1.2 (2.8) | 60 | 16.3 | 12.9 | 1.1 | 4.2 |
| | | | 80/67 | 20.4 | 15.5 | 24.3 | 1.3 | 15.3 | | | 70 | 15.6 | 12.1 | 1.2 | 3.8 |
| | | | 85/71 | 22.1 | 16.2 | 26.1 | 1.4 | 16.3 | | | 80 | 14.9 | 11.2 | 1.3 | 3.5 |
| | 4 | 2.7 (6.2) | 75/63 | 19.7 | 15.3 | 23.4 | 1.3 | 15.7 | | 2.9 (6.6) | 60 | 17.6 | 14.2 | 1.2 | 4.4 |
| | | | 80/67 | 21.4 | 16.0 | 25.2 | 1.3 | 17.0 | | | 70 | 16.8 | 13.2 | 1.2 | 4.0 |
| | | | 85/71 | 23.2 | 16.6 | 27.0 | 1.3 | 18.3 | | | 80 | 16.0 | 12.2 | 1.3 | 3.6 |
| | 5 | 4.0 (9.2) | 75/63 | 20.1 | 15.4 | 23.7 | 1.2 | 16.3 | | 4.3 (9.9) | 60 | 18.1 | 14.6 | 1.2 | 4.4 |
| | | | 80/67 | 21.8 | 16.1 | 25.5 | 1.2 | 17.6 | | | 70 | 17.2 | 13.6 | 1.2 | 4.1 |
| | | | 85/71 | 23.6 | 16.7 | 27.3 | 1.2 | 19.1 | | | 80 | 16.4 | 12.5 | 1.3 | 3.7 |
| 80 | 2.5 | 1.1 (2.6) | 75/63 | 17.7 | 14.3 | 21.6 | 1.4 | 12.6 | 60 | 1.2 (2.7) | 60 | 19.0 | 15.6 | 1.2 | 4.6 |
| | | | 80/67 | 19.1 | 15.1 | 23.2 | 1.4 | 13.4 | | | 70 | 18.2 | 14.5 | 1.3 | 4.2 |
| | | | 85/71 | 20.7 | 15.7 | 24.9 | 1.4 | 14.3 | | | 80 | 17.5 | 13.5 | 1.3 | 3.8 |
| | 4 | 2.6 (6.0) | 75/63 | 18.5 | 14.6 | 22.3 | 1.3 | 13.7 | | 2.8 (6.4) | 60 | 20.6 | 17.0 | 1.2 | 4.9 |
| | | | 80/67 | 20.1 | 15.4 | 24.0 | 1.4 | 14.8 | | | 70 | 19.7 | 15.9 | 1.3 | 4.4 |
| | | | 85/71 | 21.8 | 16.1 | 25.8 | 1.4 | 15.8 | | | 80 | 18.8 | 14.8 | 1.4 | 4.0 |
| | 5 | 3.9 (8.9) | 75/63 | 18.7 | 14.8 | 22.5 | 1.3 | 14.1 | | 4.1 (9.6) | 60 | 21.3 | 17.5 | 1.3 | 5.0 |
| | | | 80/67 | 20.4 | 15.5 | 24.2 | 1.3 | 15.2 | | | 70 | 20.3 | 16.4 | 1.3 | 4.5 |
| | | | 85/71 | 22.2 | 16.3 | 26.1 | 1.3 | 16.5 | | | 80 | 19.4 | 15.2 | 1.4 | 4.1 |
| 85 | 2.5 | 1.1 (2.5) | 75/63 | 16.9 | 14.1 | 20.9 | 1.4 | 11.8 | 70 | 1.1 (2.7) | 60 | 21.8 | 18.2 | 1.3 | 5.0 |
| | | | 80/67 | 18.4 | 14.8 | 22.6 | 1.5 | 12.6 | | | 70 | 21.0 | 17.1 | 1.3 | 4.6 |
| | | | 85/71 | 19.9 | 15.5 | 24.2 | 1.5 | 13.3 | | | 80 | 20.2 | 16.0 | 1.4 | 4.2 |
| | 4 | 2.6 (5.9) | 75/63 | 17.8 | 14.5 | 21.7 | 1.4 | 12.8 | | 2.7 (6.2) | 60 | 23.7 | 20.0 | 1.3 | 5.3 |
| | | | 80/67 | 19.3 | 15.2 | 23.4 | 1.4 | 13.7 | | | 70 | 22.7 | 18.7 | 1.4 | 4.8 |
| | | | 85/71 | 20.9 | 15.9 | 25.1 | 1.4 | 14.7 | | | 80 | 21.8 | 17.5 | 1.5 | 4.4 |
| | 5 | 3.8 (8.8) | 75/63 | 18.1 | 14.5 | 22.0 | 1.4 | 13.2 | | 4.0 (9.2) | 60 | 24.4 | 20.7 | 1.3 | 5.4 |
| | | | 80/67 | 19.7 | 15.3 | 23.7 | 1.4 | 14.2 | | | 70 | 23.4 | 19.3 | 1.4 | 4.9 |
| | | | 85/71 | 21.4 | 16.0 | 25.5 | 1.4 | 15.3 | | | 80 | 22.4 | 18.0 | 1.5 | 4.5 |
| 90 | 2.5 | 1.1 (2.5) | 75/63 | 16.3 | 13.8 | 20.4 | 1.5 | 11.0 | 80 | 1.1 (2.6) | 60 | 24.8 | 20.9 | 1.3 | 5.5 |
| | | | 80/67 | 17.7 | 14.5 | 22.0 | 1.5 | 11.7 | | | 70 | 24.0 | 19.7 | 1.4 | 5.0 |
| | | | 85/71 | 19.2 | 15.1 | 23.6 | 1.5 | 12.5 | | | 80 | 23.1 | 18.5 | 1.5 | 4.6 |
| | 4 | 2.5 (5.8) | 75/63 | 17.1 | 14.0 | 21.1 | 1.4 | 11.9 | | 2.6 (6.0) | 60 | 26.9 | 23.1 | 1.4 | 5.8 |
| | | | 80/67 | 18.6 | 14.8 | 22.8 | 1.5 | 12.8 | | | 70 | 25.8 | 21.6 | 1.4 | 5.2 |
| | | | 85/71 | 20.2 | 15.6 | 24.5 | 1.5 | 13.7 | | | 80 | 24.9 | 20.3 | 1.5 | 4.8 |
| | 5 | 3.8 (8.7) | 75/63 | 17.3 | 14.2 | 21.3 | 1.4 | 12.2 | | 3.9 (8.9) | 60 | 27.7 | 23.9 | 1.4 | 5.9 |
| | | | 80/67 | 19.0 | 14.9 | 23.1 | 1.4 | 13.2 | | | 70 | 26.6 | 22.3 | 1.5 | 5.3 |
| | | | 85/71 | 20.6 | 15.7 | 24.8 | 1.5 | 14.2 | | | 80 | 25.6 | 21.0 | 1.5 | 4.8 |
| 100 | 2.5 | 1.0 (2.4) | 75/63 | 14.9 | 13.1 | 19.2 | 1.5 | 9.6 | | | | | | | |
| | | | 80/67 | 16.2 | 14.0 | 20.6 | 1.6 | 10.2 | | | | | | | |
| | | | 85/71 | 17.6 | 14.6 | 22.2 | 1.6 | 10.9 | | | | | | | |
| | 4 | 2.4 (5.6) | 75/63 | 15.7 | 13.4 | 19.8 | 1.5 | 10.3 | | | | | | | |
| | | | 80/67 | 17.1 | 14.2 | 21.4 | 1.5 | 11.1 | | | | | | | |
| | | | 85/71 | 18.5 | 14.9 | 23.0 | 1.6 | 11.8 | | | | | | | |
| | 5 | 3.6 (8.4) | 75/63 | 15.9 | 13.6 | 20.0 | 1.5 | 10.6 | | | | | | | |
| | | | 80/67 | 17.3 | 14.3 | 21.6 | 1.5 | 11.4 | | | | | | | |
| | | | 85/71 | 18.8 | 15.3 | 23.2 | 1.6 | 12.1 | | | | | | | |
| 110 | 2.5 | 1.0 (2.3) | 75/63 | 13.5 | 12.6 | 17.9 | 1.6 | 8.4 | | | | | | | |
| | | | 80/67 | 14.8 | 13.2 | 19.3 | 1.7 | 8.9 | | | | | | | |
| | | | 85/71 | 16.0 | 13.9 | 20.8 | 1.7 | 9.4 | | | | | | | |
| | 4 | 2.4 (5.5) | 75/63 | 14.2 | 12.8 | 18.5 | 1.6 | 9.0 | | | | | | | |
| | | | 80/67 | 15.5 | 13.6 | 20.0 | 1.6 | 9.5 | | | | | | | |
| | | | 85/71 | 16.9 | 14.3 | 21.6 | 1.7 | 10.2 | | | | | | | |
| | 5 | 3.5 (8.2) | 75/63 | 14.4 | 12.9 | 18.7 | 1.6 | 9.1 | | | | | | | |
| | | | 80/67 | 15.8 | 13.6 | 20.2 | 1.6 | 9.8 | | | | | | | |
| | | | 85/71 | 17.2 | 14.4 | 21.8 | 1.6 | 10.5 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Capacity Data

## LV024 (850 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 3 | 1.8 (4.1) | 75/63 | 25.8 | 19.2 | 29.9 | 1.4 | 18.8 | 30 | 2.0 (4.7) | 60 | 14.2 | 10.5 | 1.2 | 3.3 |
| | | | 80/67 | 27.8 | 19.9 | 32.0 | 1.4 | 20.1 | | | 70 | 13.2 | 9.5 | 1.3 | 3.0 |
| | | | 85/71 | 29.9 | 20.6 | 34.2 | 1.4 | 21.4 | | | 80 | 12.6 | 8.7 | 1.3 | 2.8 |
| | 4 | 3.0 (6.9) | 75/63 | 26.6 | 19.5 | 30.5 | 1.3 | 20.3 | | 3.4 (7.9) | 60 | 14.8 | 11.0 | 1.3 | 3.4 |
| | | | 80/67 | 28.6 | 20.3 | 32.6 | 1.3 | 21.9 | | | 70 | 13.9 | 10.1 | 1.3 | 3.1 |
| | | | 85/71 | 30.8 | 21.1 | 34.9 | 1.3 | 23.6 | | | 80 | 13.1 | 9.1 | 1.3 | 2.9 |
| | 6 | 6.2 (14.3) | 75/63 | 27.4 | 19.8 | 31.1 | 1.2 | 22.2 | | 7.1 (16.4) | 60 | 15.6 | 11.7 | 1.3 | 3.5 |
| | | | 80/67 | 29.6 | 20.7 | 33.3 | 1.2 | 24.2 | | | 70 | 14.7 | 10.7 | 1.3 | 3.2 |
| | | | 85/71 | 31.9 | 21.5 | 35.6 | 1.2 | 26.4 | | | 80 | 13.7 | 9.7 | 1.4 | 2.9 |
| 60 | 3 | 1.7 (4.0) | 75/63 | 24.5 | 18.5 | 28.9 | 1.5 | 16.4 | 40 | 2.0 (4.5) | 60 | 16.6 | 12.7 | 1.3 | 3.7 |
| | | | 80/67 | 26.3 | 19.4 | 30.8 | 1.5 | 17.5 | | | 70 | 15.9 | 11.8 | 1.4 | 3.4 |
| | | | 85/71 | 28.3 | 20.1 | 32.9 | 1.5 | 18.6 | | | 80 | 15.1 | 10.8 | 1.4 | 3.1 |
| | 4 | 2.9 (6.7) | 75/63 | 25.2 | 18.8 | 29.4 | 1.4 | 17.6 | | 3.3 (7.6) | 60 | 17.4 | 13.4 | 1.4 | 3.8 |
| | | | 80/67 | 27.1 | 19.7 | 31.5 | 1.4 | 18.9 | | | 70 | 16.6 | 12.4 | 1.4 | 3.5 |
| | | | 85/71 | 29.2 | 20.5 | 33.7 | 1.4 | 20.3 | | | 80 | 15.8 | 11.4 | 1.5 | 3.2 |
| | 6 | 6.0 (13.9) | 75/63 | 25.9 | 19.2 | 30.0 | 1.4 | 19.1 | | 6.9 (15.8) | 60 | 18.3 | 14.2 | 1.4 | 3.9 |
| | | | 80/67 | 28.0 | 20.1 | 32.2 | 1.4 | 20.7 | | | 70 | 17.4 | 13.2 | 1.4 | 3.6 |
| | | | 85/71 | 30.3 | 20.9 | 34.4 | 1.4 | 22.3 | | | 80 | 16.6 | 12.1 | 1.5 | 3.3 |
| 70 | 3 | 1.7 (3.8) | 75/63 | 23.0 | 17.9 | 27.7 | 1.6 | 14.4 | 50 | 1.8 (4.1) | 60 | 19.9 | 15.7 | 1.4 | 4.1 |
| | | | 80/67 | 24.8 | 18.7 | 29.7 | 1.6 | 15.3 | | | 70 | 19.1 | 14.7 | 1.5 | 3.8 |
| | | | 85/71 | 26.7 | 19.5 | 31.6 | 1.7 | 16.1 | | | 80 | 18.4 | 13.7 | 1.6 | 3.5 |
| | 4 | 2.8 (6.5) | 75/63 | 23.7 | 18.2 | 28.3 | 1.5 | 15.3 | | 3.0 (6.9) | 60 | 20.8 | 16.6 | 1.5 | 4.2 |
| | | | 80/67 | 25.6 | 19.1 | 30.3 | 1.6 | 16.4 | | | 70 | 20.0 | 15.5 | 1.5 | 3.9 |
| | | | 85/71 | 27.6 | 19.8 | 32.4 | 1.6 | 17.5 | | | 80 | 19.2 | 14.4 | 1.6 | 3.6 |
| | 6 | 5.8 (13.4) | 75/63 | 24.4 | 18.6 | 28.9 | 1.5 | 16.4 | | 6.2 (14.3) | 60 | 22.0 | 17.6 | 1.5 | 4.4 |
| | | | 80/67 | 26.5 | 19.4 | 30.9 | 1.5 | 17.7 | | | 70 | 21.1 | 16.4 | 1.6 | 4.0 |
| | | | 85/71 | 28.6 | 20.2 | 33.1 | 1.5 | 19.1 | | | 80 | 20.1 | 15.3 | 1.6 | 3.7 |
| 80 | 3 | 1.6 (3.7) | 75/63 | 21.6 | 17.1 | 26.6 | 1.7 | 12.6 | 60 | 1.7 (4.0) | 60 | 23.0 | 18.5 | 1.5 | 4.5 |
| | | | 80/67 | 23.3 | 18.1 | 28.4 | 1.7 | 13.3 | | | 70 | 22.2 | 17.6 | 1.6 | 4.1 |
| | | | 85/71 | 25.0 | 18.9 | 30.3 | 1.8 | 14.1 | | | 80 | 21.4 | 16.4 | 1.7 | 3.8 |
| | 4 | 2.7 (6.3) | 75/63 | 22.2 | 17.6 | 27.0 | 1.7 | 13.3 | | 2.9 (6.7) | 60 | 24.2 | 19.6 | 1.5 | 4.6 |
| | | | 80/67 | 24.0 | 18.4 | 29.0 | 1.7 | 14.2 | | | 70 | 23.3 | 18.5 | 1.6 | 4.2 |
| | | | 85/71 | 26.0 | 19.0 | 31.1 | 1.7 | 15.1 | | | 80 | 22.4 | 17.4 | 1.7 | 3.9 |
| | 6 | 5.6 (13.0) | 75/63 | 22.9 | 17.9 | 27.6 | 1.6 | 14.2 | | 6.0 (13.9) | 60 | 25.5 | 20.9 | 1.6 | 4.8 |
| | | | 80/67 | 24.8 | 18.7 | 29.6 | 1.6 | 15.2 | | | 70 | 24.6 | 19.6 | 1.7 | 4.4 |
| | | | 85/71 | 26.8 | 19.4 | 31.8 | 1.6 | 16.3 | | | 80 | 23.5 | 18.3 | 1.7 | 4.0 |
| 85 | 3 | 1.6 (3.7) | 75/63 | 20.8 | 16.8 | 25.9 | 1.8 | 11.8 | 70 | 1.7 (3.8) | 60 | 26.2 | 21.6 | 1.6 | 4.9 |
| | | | 80/67 | 22.4 | 17.7 | 27.7 | 1.8 | 12.5 | | | 70 | 25.4 | 20.4 | 1.7 | 4.5 |
| | | | 85/71 | 24.2 | 18.5 | 29.6 | 1.8 | 13.1 | | | 80 | 24.6 | 19.2 | 1.8 | 4.1 |
| | 4 | 2.7 (6.2) | 75/63 | 21.4 | 17.2 | 26.4 | 1.7 | 12.5 | | 2.8 (6.5) | 60 | 27.6 | 22.9 | 1.6 | 5.0 |
| | | | 80/67 | 23.2 | 18.0 | 28.3 | 1.8 | 13.2 | | | 70 | 26.7 | 21.6 | 1.7 | 4.6 |
| | | | 85/71 | 25.0 | 18.8 | 30.3 | 1.8 | 14.1 | | | 80 | 25.7 | 20.4 | 1.8 | 4.2 |
| | 6 | 5.5 (12.8) | 75/63 | 22.1 | 17.5 | 26.9 | 1.7 | 13.2 | | 5.8 (13.4) | 60 | 29.2 | 24.4 | 1.6 | 5.2 |
| | | | 80/67 | 24.0 | 18.3 | 29.0 | 1.7 | 14.1 | | | 70 | 28.2 | 22.9 | 1.7 | 4.7 |
| | | | 85/71 | 25.9 | 19.1 | 31.1 | 1.7 | 15.1 | | | 80 | 27.1 | 21.5 | 1.8 | 4.3 |
| 90 | 3 | 1.6 (3.6) | 75/63 | 20.0 | 16.5 | 25.2 | 1.8 | 11.0 | 80 | 1.6 (3.7) | 60 | 29.6 | 24.7 | 1.7 | 5.3 |
| | | | 80/67 | 21.6 | 17.4 | 27.0 | 1.9 | 11.6 | | | 70 | 28.7 | 23.4 | 1.8 | 4.8 |
| | | | 85/71 | 23.3 | 18.2 | 28.9 | 1.9 | 12.3 | | | 80 | 27.8 | 22.1 | 1.9 | 4.4 |
| | 4 | 2.6 (6.1) | 75/63 | 20.6 | 16.8 | 25.7 | 1.8 | 11.6 | | 2.7 (6.3) | 60 | 31.2 | 26.2 | 1.7 | 5.4 |
| | | | 80/67 | 22.3 | 17.7 | 27.6 | 1.8 | 12.3 | | | 70 | 30.2 | 24.8 | 1.8 | 4.9 |
| | | | 85/71 | 24.1 | 18.4 | 29.6 | 1.8 | 13.1 | | | 80 | 29.1 | 23.3 | 1.9 | 4.5 |
| | 6 | 5.4 (12.6) | 75/63 | 21.3 | 17.1 | 26.3 | 1.7 | 12.3 | | 5.6 (13.0) | 60 | 33.3 | 27.8 | 1.7 | 5.7 |
| | | | 80/67 | 23.1 | 18.0 | 28.2 | 1.8 | 13.1 | | | 70 | 31.9 | 26.4 | 1.8 | 5.1 |
| | | | 85/71 | 25.0 | 18.7 | 30.3 | 1.8 | 14.0 | | | 80 | 30.7 | 24.7 | 2.0 | 4.6 |
| 100 | 3 | 1.5 (3.5) | 75/63 | 18.4 | 15.7 | 23.9 | 1.9 | 9.6 | | | | | | | |
| | | | 80/67 | 19.9 | 16.6 | 25.6 | 2.0 | 10.1 | | | | | | | |
| | | | 85/71 | 21.5 | 17.3 | 27.4 | 2.0 | 10.7 | | | | | | | |
| | 4 | 2.5 (5.9) | 75/63 | 18.9 | 16.1 | 24.3 | 1.9 | 10.1 | | | | | | | |
| | | | 80/67 | 20.5 | 16.9 | 26.1 | 1.9 | 10.7 | | | | | | | |
| | | | 85/71 | 22.3 | 17.6 | 28.1 | 2.0 | 11.3 | | | | | | | |
| | 6 | 5.3 (12.2) | 75/63 | 19.5 | 16.3 | 24.8 | 1.8 | 10.6 | | | | | | | |
| | | | 80/67 | 21.3 | 17.1 | 26.8 | 1.9 | 11.3 | | | | | | | |
| | | | 85/71 | 23.0 | 18.1 | 28.7 | 1.9 | 12.0 | | | | | | | |
| 110 | 3 | 1.5 (3.4) | 75/63 | 16.7 | 14.9 | 22.3 | 2.0 | 8.3 | | | | | | | |
| | | | 80/67 | 18.2 | 15.7 | 24.1 | 2.1 | 8.8 | | | | | | | |
| | | | 85/71 | 19.5 | 16.7 | 25.7 | 2.1 | 9.2 | | | | | | | |
| | 4 | 2.5 (5.7) | 75/63 | 17.2 | 15.2 | 22.8 | 2.0 | 8.7 | | | | | | | |
| | | | 80/67 | 18.7 | 16.1 | 24.5 | 2.0 | 9.2 | | | | | | | |
| | | | 85/71 | 20.2 | 17.0 | 26.3 | 2.1 | 9.7 | | | | | | | |
| | 6 | 5.1 (11.8) | 75/63 | 17.8 | 15.5 | 23.3 | 1.9 | 9.1 | | | | | | | |
| | | | 80/67 | 19.4 | 16.4 | 25.1 | 2.0 | 9.7 | | | | | | | |
| | | | 85/71 | 21.1 | 17.1 | 27.0 | 2.0 | 10.3 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Capacity Data

## LV030 (950 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 4 | 2.2 (5.0) | 75/63 | 32.3 | 23.7 | 37.4 | 1.7 | 19.4 | 30 | 2.5 (5.7) | 60 | 18.0 | 13.5 | 1.5 | 3.4 |
| | | | 80/67 | 34.8 | 24.5 | 40.0 | 1.7 | 20.9 | | | 70 | 17.2 | 12.4 | 1.6 | 3.2 |
| | | | 85/71 | 37.4 | 25.4 | 42.6 | 1.7 | 22.6 | | | 80 | 16.4 | 11.3 | 1.7 | 2.9 |
| | 6 | 4.5 (10.3) | 75/63 | 33.3 | 24.2 | 38.3 | 1.6 | 21.3 | | 5.1 (11.8) | 60 | 19.1 | 14.5 | 1.6 | 3.6 |
| | | | 80/67 | 36.0 | 25.2 | 40.9 | 1.6 | 23.2 | | | 70 | 18.2 | 13.3 | 1.6 | 3.3 |
| | | | 85/71 | 38.8 | 26.0 | 43.7 | 1.5 | 25.4 | | | 80 | 17.2 | 12.1 | 1.7 | 3.0 |
| | 8 | 7.5 (17.3) | 75/63 | 33.9 | 24.4 | 38.7 | 1.5 | 22.3 | | 8.6 (19.8 | 60 | 20.0 | 15.1 | 1.6 | 3.7 |
| | | | 80/67 | 36.6 | 25.4 | 41.4 | 1.5 | 24.5 | | | 70 | 18.8 | 13.8 | 1.7 | 3.3 |
| | | | 85/71 | 39.5 | 26.3 | 44.2 | 1.5 | 27.0 | | | 80 | 17.7 | 12.6 | 1.7 | 3.0 |
| 60 | 4 | 2.1 (4.8) | 75/63 | 30.6 | 22.9 | 36.1 | 1.8 | 16.9 | 40 | 2.4 (5.5) | 60 | 21.5 | 16.4 | 1.6 | 3.8 |
| | | | 80/67 | 32.9 | 24.0 | 38.5 | 1.8 | 18.1 | | | 70 | 20.6 | 15.2 | 1.7 | 3.5 |
| | | | 85/71 | 35.4 | 24.9 | 41.1 | 1.8 | 19.5 | | | 80 | 19.7 | 14.1 | 1.8 | 3.2 |
| | 6 | 4.3 (10.0) | 75/63 | 31.6 | 23.4 | 36.9 | 1.7 | 18.4 | | 4.9 (11.4) | 60 | 22.9 | 17.6 | 1.7 | 4.0 |
| | | | 80/67 | 34.2 | 24.3 | 39.5 | 1.7 | 19.9 | | | 70 | 21.9 | 16.4 | 1.8 | 3.6 |
| | | | 85/71 | 36.8 | 25.2 | 42.2 | 1.7 | 21.7 | | | 80 | 20.9 | 15.1 | 1.8 | 3.3 |
| | 8 | 7.2 (16.7) | 75/63 | 32.1 | 23.6 | 37.3 | 1.7 | 19.2 | | 8.3 (19.1) | 60 | 23.7 | 18.4 | 1.7 | 4.1 |
| | | | 80/67 | 34.7 | 24.6 | 40.0 | 1.7 | 20.9 | | | 70 | 22.7 | 17.0 | 1.8 | 3.7 |
| | | | 85/71 | 37.5 | 25.5 | 42.7 | 1.6 | 22.9 | | | 80 | 21.6 | 15.7 | 1.9 | 3.4 |
| 70 | 4 | 2.0 (4.6) | 75/63 | 28.8 | 22.0 | 34.8 | 2.0 | 14.8 | 50 | 2.2 (5.0) | 60 | 25.7 | 20.2 | 1.8 | 4.2 |
| | | | 80/67 | 31.1 | 23.2 | 37.1 | 2.0 | 15.8 | | | 70 | 24.6 | 18.9 | 1.9 | 3.9 |
| | | | 85/71 | 33.4 | 24.1 | 39.5 | 2.0 | 16.9 | | | 80 | 23.7 | 17.6 | 2.0 | 3.5 |
| | 6 | 4.2 (9.6) | 75/63 | 29.7 | 22.6 | 35.4 | 1.9 | 15.9 | | 4.5 (10.3) | 60 | 27.4 | 21.7 | 1.8 | 4.4 |
| | | | 80/67 | 32.2 | 23.6 | 38.0 | 1.9 | 17.1 | | | 70 | 26.1 | 20.2 | 1.9 | 4.0 |
| | | | 85/71 | 34.7 | 24.6 | 40.5 | 1.9 | 18.5 | | | 80 | 25.0 | 18.7 | 2.0 | 3.6 |
| | 8 | 7.0 (16.2) | 75/63 | 30.3 | 22.8 | 35.9 | 1.8 | 16.5 | | 7.5 (17.3) | 60 | 28.3 | 22.6 | 1.9 | 4.5 |
| | | | 80/67 | 32.7 | 23.9 | 38.4 | 1.8 | 17.9 | | | 70 | 27.1 | 21.1 | 1.9 | 4.1 |
| | | | 85/71 | 35.4 | 24.9 | 41.1 | 1.8 | 19.5 | | | 80 | 25.9 | 19.4 | 2.0 | 3.7 |
| 80 | 4 | 1.9 (4.5) | 75/63 | 27.0 | 21.2 | 33.3 | 2.1 | 12.9 | 60 | 2.1 (4.8) | 60 | 29.7 | 23.8 | 1.9 | 4.6 |
| | | | 80/67 | 29.1 | 22.4 | 35.5 | 2.1 | 13.7 | | | 70 | 28.6 | 22.5 | 2.0 | 4.2 |
| | | | 85/71 | 31.4 | 23.3 | 37.9 | 2.1 | 14.6 | | | 80 | 27.5 | 21.0 | 2.1 | 3.8 |
| | 6 | 4.0 (9.3) | 75/63 | 27.8 | 21.8 | 33.9 | 2.0 | 13.7 | | 4.3 (10.0) | 60 | 31.7 | 25.6 | 1.9 | 4.8 |
| | | | 80/67 | 30.1 | 22.8 | 36.4 | 2.0 | 14.8 | | | 70 | 30.4 | 24.1 | 2.0 | 4.4 |
| | | | 85/71 | 32.6 | 23.8 | 38.9 | 2.1 | 15.9 | | | 80 | 29.3 | 22.5 | 2.1 | 4.0 |
| | 8 | 6.8 (15.6) | 75/63 | 28.3 | 22.0 | 34.3 | 2.0 | 14.2 | | 7.2 (16.7) | 60 | 32.8 | 26.6 | 2.0 | 4.9 |
| | | | 80/67 | 30.7 | 23.0 | 36.8 | 2.0 | 15.4 | | | 70 | 31.5 | 25.0 | 2.1 | 4.5 |
| | | | 85/71 | 33.2 | 24.0 | 39.4 | 2.0 | 16.6 | | | 80 | 30.1 | 23.4 | 2.2 | 4.1 |
| 85 | 4 | 1.9 (4.5) | 75/63 | 26.0 | 20.8 | 32.5 | 2.2 | 12.0 | 70 | 2.0 (4.6) | 60 | 33.8 | 27.6 | 2.0 | 5.0 |
| | | | 80/67 | 28.1 | 21.9 | 34.7 | 2.2 | 12.8 | | | 70 | 32.7 | 26.1 | 2.1 | 4.6 |
| | | | 85/71 | 30.3 | 22.9 | 37.1 | 2.2 | 13.6 | | | 80 | 31.6 | 24.6 | 2.2 | 4.2 |
| | 6 | 4.0 (9.3) | 75/63 | 26.8 | 21.3 | 33.1 | 2.1 | 12.8 | | 4.2 (9.6) | 60 | 36.1 | 29.7 | 2.0 | 5.2 |
| | | | 80/67 | 29.1 | 22.4 | 35.5 | 2.1 | 13.7 | | | 70 | 34.8 | 28.0 | 2.2 | 4.7 |
| | | | 85/71 | 31.5 | 23.3 | 38.0 | 2.1 | 14.7 | | | 80 | 33.5 | 26.3 | 2.3 | 4.3 |
| | 8 | 6.7 (15.4) | 75/63 | 27.3 | 21.5 | 33.5 | 2.1 | 13.2 | | 7.0 (16.2) | 60 | 37.4 | 30.9 | 2.0 | 5.4 |
| | | | 80/67 | 29.6 | 22.6 | 35.9 | 2.1 | 14.2 | | | 70 | 36.0 | 29.1 | 2.2 | 4.8 |
| | | | 85/71 | 32.1 | 23.3 | 38.6 | 2.1 | 15.3 | | | 80 | 34.7 | 27.3 | 2.3 | 4.4 |
| 90 | 4 | 1.9 (4.4) | 75/63 | 25.0 | 20.3 | 31.7 | 2.2 | 11.2 | 80 | 1.9 (4.5) | 60 | 38.0 | 31.5 | 2.1 | 5.4 |
| | | | 80/67 | 27.1 | 21.5 | 33.9 | 2.3 | 11.9 | | | 70 | 36.8 | 29.9 | 2.2 | 4.9 |
| | | | 85/71 | 29.3 | 22.2 | 36.3 | 2.3 | 12.7 | | | 80 | 35.6 | 28.2 | 2.3 | 4.5 |
| | 6 | 3.9 (9.0) | 75/63 | 25.8 | 20.9 | 32.3 | 2.2 | 11.9 | | 4.0 (9.3) | 60 | 40.6 | 33.9 | 2.1 | 5.7 |
| | | | 80/67 | 28.1 | 21.8 | 34.7 | 2.2 | 12.8 | | | 70 | 39.2 | 32.1 | 2.2 | 5.1 |
| | | | 85/71 | 30.4 | 22.8 | 37.2 | 2.2 | 13.6 | | | 80 | 37.9 | 30.2 | 2.4 | 4.6 |
| | 8 | 6.6 (15.2) | 75/63 | 26.3 | 21.1 | 32.7 | 2.1 | 12.3 | | 6.8 (15.6) | 60 | 42.0 | 35.3 | 2.1 | 5.8 |
| | | | 80/67 | 28.6 | 21.9 | 35.2 | 2.2 | 13.2 | | | 70 | 40.6 | 33.3 | 2.3 | 5.2 |
| | | | 85/71 | 30.9 | 23.0 | 37.6 | 2.2 | 14.2 | | | 80 | 39.2 | 31.2 | 2.4 | 4.7 |
| 100 | 4 | 1.8 (4.2) | 75/63 | 23.1 | 19.5 | 30.1 | 2.4 | 9.8 | | | | | | | |
| | | | 80/67 | 25.0 | 20.4 | 32.3 | 2.4 | 10.4 | | | | | | | |
| | | | 85/71 | 27.0 | 21.6 | 34.4 | 2.5 | 11.0 | | | | | | | |
| | 6 | 3.8 (8.8) | 75/63 | 23.8 | 19.8 | 30.7 | 2.3 | 10.3 | | | | | | | |
| | | | 80/67 | 25.9 | 20.8 | 33.0 | 2.4 | 11.0 | | | | | | | |
| | | | 85/71 | 28.0 | 22.0 | 35.2 | 2.4 | 11.7 | | | | | | | |
| | 8 | 6.4 (14.7) | 75/63 | 24.2 | 19.9 | 31.0 | 2.3 | 10.6 | | | | | | | |
| | | | 80/67 | 26.3 | 21.0 | 33.4 | 2.3 | 11.3 | | | | | | | |
| | | | 85/71 | 28.6 | 22.0 | 35.8 | 2.4 | 12.1 | | | | | | | |
| 110 | 4 | 1.8 (4.1) | 75/63 | 21.2 | 18.5 | 28.5 | 2.5 | 8.5 | | | | | | | |
| | | | 80/67 | 23.0 | 19.5 | 30.6 | 2.6 | 9.0 | | | | | | | |
| | | | 85/71 | 24.8 | 20.5 | 32.7 | 2.6 | 9.5 | | | | | | | |
| | 6 | 3.7 (8.5) | 75/63 | 21.8 | 18.9 | 29.0 | 2.4 | 8.9 | | | | | | | |
| | | | 80/67 | 23.7 | 19.9 | 31.1 | 2.5 | 9.5 | | | | | | | |
| | | | 85/71 | 25.7 | 20.8 | 33.4 | 2.6 | 10.0 | | | | | | | |
| | 8 | 6.2 (14.3) | 75/63 | 22.1 | 19.1 | 29.2 | 2.4 | 9.1 | | | | | | | |
| | | | 80/67 | 24.1 | 20.0 | 31.5 | 2.5 | 9.7 | | | | | | | |
| | | | 85/71 | 26.1 | 21.2 | 33.7 | 2.5 | 10.3 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Capacity Data

## LV036 (1200 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 4.5 | 1.7 (3.8) | 75/63 | 40.3 | 29.9 | 46.8 | 2.0 | 19.7 | 30 | 1.9 (4.4) | 60 | 22.6 | 16.9 | 1.8 | 3.6 |
| | | | 80/67 | 43.3 | 31.0 | 49.8 | 2.1 | 21.1 | | | 70 | 21.6 | 15.6 | 1.9 | 3.3 |
| | | | 85/71 | 46.4 | 32.1 | 53.0 | 2.1 | 22.6 | | | 80 | 20.6 | 14.4 | 2.0 | 3.1 |
| | 6 | 2.8 (6.4) | 75/63 | 41.4 | 30.3 | 47.6 | 2.0 | 21.2 | | 3.2 (7.4) | 60 | 23.6 | 17.8 | 1.9 | 3.7 |
| | | | 80/67 | 44.6 | 31.4 | 50.9 | 2.0 | 22.8 | | | 70 | 22.5 | 16.4 | 1.9 | 3.4 |
| | | | 85/71 | 47.9 | 32.5 | 54.2 | 1.9 | 24.6 | | | 80 | 21.5 | 15.1 | 2.0 | 3.1 |
| | 9 | 5.8 (13.3) | 75/63 | 42.6 | 30.8 | 48.6 | 1.9 | 22.8 | | 6.6 (15.3) | 60 | 24.8 | 18.7 | 1.9 | 3.8 |
| | | | 80/67 | 46.0 | 31.9 | 51.9 | 1.9 | 24.8 | | | 70 | 23.5 | 17.2 | 2.0 | 3.5 |
| | | | 85/71 | 49.4 | 33.0 | 55.3 | 1.8 | 26.9 | | | 80 | 22.4 | 16.0 | 2.1 | 3.2 |
| 60 | 4.5 | 1.6 (3.7) | 75/63 | 38.4 | 28.9 | 45.3 | 2.2 | 17.4 | 40 | 1.8 (4.2) | 60 | 26.4 | 20.3 | 2.0 | 4.0 |
| | | | 80/67 | 41.1 | 30.2 | 48.2 | 2.2 | 18.5 | | | 70 | 25.4 | 18.9 | 2.1 | 3.6 |
| | | | 85/71 | 44.1 | 31.2 | 51.2 | 2.2 | 19.7 | | | 80 | 24.5 | 17.6 | 2.1 | 3.3 |
| | 6 | 2.7 (6.2) | 75/63 | 39.3 | 29.5 | 46.0 | 2.1 | 18.5 | | 3.1 (7.1) | 60 | 27.7 | 21.4 | 2.0 | 4.1 |
| | | | 80/67 | 42.4 | 30.7 | 49.1 | 2.1 | 19.9 | | | 70 | 26.5 | 20.0 | 2.1 | 3.7 |
| | | | 85/71 | 45.5 | 31.7 | 52.3 | 2.1 | 21.4 | | | 80 | 25.6 | 18.6 | 2.2 | 3.4 |
| | 9 | 5.6 (12.9) | 75/63 | 40.5 | 29.8 | 46.9 | 2.0 | 19.9 | | 6.4 (14.7) | 60 | 29.6 | 23.2 | 2.1 | 4.2 |
| | | | 80/67 | 43.7 | 31.0 | 50.2 | 2.0 | 21.5 | | | 70 | 27.9 | 21.2 | 2.1 | 3.8 |
| | | | 85/71 | 47.0 | 32.2 | 53.4 | 2.0 | 23.3 | | | 80 | 26.9 | 19.7 | 2.2 | 3.5 |
| 70 | 4.5 | 1.6 (3.6) | 75/63 | 36.1 | 28.1 | 43.5 | 2.4 | 15.2 | 50 | 1.7 (3.8) | 60 | 31.7 | 25.0 | 2.1 | 4.4 |
| | | | 80/67 | 39.0 | 29.1 | 46.5 | 2.4 | 16.2 | | | 70 | 30.6 | 23.5 | 2.2 | 4.0 |
| | | | 85/71 | 41.8 | 30.3 | 49.4 | 2.4 | 17.2 | | | 80 | 29.5 | 22.0 | 2.3 | 3.7 |
| | 6 | 2.6 (6.0) | 75/63 | 37.1 | 28.5 | 44.3 | 2.3 | 16.2 | | 2.8 (6.4) | 60 | 33.2 | 26.4 | 2.2 | 4.5 |
| | | | 80/67 | 40.1 | 29.7 | 47.3 | 2.3 | 17.3 | | | 70 | 32.1 | 24.8 | 2.3 | 4.1 |
| | | | 85/71 | 43.0 | 30.8 | 50.4 | 2.3 | 18.5 | | | 80 | 30.8 | 23.1 | 2.4 | 3.8 |
| | 9 | 5.4 (12.5) | 75/63 | 38.2 | 29.0 | 45.1 | 2.2 | 17.2 | | 5.8 (13.3) | 60 | 35.0 | 28.1 | 2.2 | 4.7 |
| | | | 80/67 | 41.3 | 30.1 | 48.3 | 2.2 | 18.6 | | | 70 | 33.7 | 26.3 | 2.3 | 4.3 |
| | | | 85/71 | 44.4 | 31.3 | 51.5 | 2.2 | 20.1 | | | 80 | 32.3 | 24.5 | 2.4 | 3.9 |
| 80 | 4.5 | 1.5 (3.5) | 75/63 | 33.9 | 27.2 | 41.7 | 2.5 | 13.3 | 60 | 1.6 (3.7) | 60 | 36.4 | 29.3 | 2.2 | 4.8 |
| | | | 80/67 | 36.5 | 28.4 | 44.6 | 2.6 | 14.1 | | | 70 | 35.2 | 27.7 | 2.4 | 4.4 |
| | | | 85/71 | 39.3 | 29.5 | 47.4 | 2.6 | 15.0 | | | 80 | 34.1 | 26.1 | 2.5 | 4.0 |
| | 6 | 2.5 (5.8) | 75/63 | 34.9 | 27.5 | 42.5 | 2.5 | 14.1 | | 2.7 (6.2) | 60 | 38.2 | 31.0 | 2.3 | 4.9 |
| | | | 80/67 | 37.7 | 28.6 | 45.5 | 2.5 | 15.1 | | | 70 | 37.0 | 29.3 | 2.4 | 4.5 |
| | | | 85/71 | 40.6 | 29.7 | 48.5 | 2.5 | 16.1 | | | 80 | 35.7 | 27.5 | 2.5 | 4.1 |
| | 9 | 5.2 (12.1) | 75/63 | 35.9 | 27.9 | 43.3 | 2.4 | 15.0 | | 5.6 (12.9) | 60 | 40.3 | 33.0 | 2.3 | 5.1 |
| | | | 80/67 | 38.9 | 29.0 | 46.4 | 2.4 | 16.1 | | | 70 | 38.9 | 31.1 | 2.5 | 4.6 |
| | | | 85/71 | 41.9 | 30.2 | 49.5 | 2.4 | 17.3 | | | 80 | 37.5 | 29.1 | 2.6 | 4.2 |
| 85 | 4.5 | 1.5 (3.4) | 75/63 | 32.8 | 26.6 | 40.9 | 2.6 | 12.5 | 70 | 1.6 (3.6) | 60 | 41.3 | 33.9 | 2.3 | 5.2 |
| | | | 80/67 | 35.3 | 27.9 | 43.6 | 2.7 | 13.2 | | | 70 | 40.1 | 32.1 | 2.5 | 4.7 |
| | | | 85/71 | 38.0 | 29.1 | 46.4 | 2.7 | 14.0 | | | 80 | 38.8 | 30.3 | 2.6 | 4.3 |
| | 6 | 2.5 (5.7) | 75/63 | 33.7 | 27.0 | 41.6 | 2.6 | 13.2 | | 2.6 (6.0) | 60 | 43.4 | 35.9 | 2.4 | 5.3 |
| | | | 80/67 | 36.4 | 28.3 | 44.5 | 2.6 | 14.0 | | | 70 | 42.1 | 34.0 | 2.5 | 4.9 |
| | | | 85/71 | 39.2 | 29.4 | 47.4 | 2.6 | 15.0 | | | 80 | 40.7 | 32.0 | 2.7 | 4.4 |
| | 9 | 5.1 (11.9) | 75/63 | 34.7 | 27.3 | 42.4 | 2.5 | 13.9 | | 5.4 (12.5) | 60 | 45.9 | 38.2 | 2.4 | 5.5 |
| | | | 80/67 | 37.6 | 28.5 | 45.4 | 2.5 | 15.0 | | | 70 | 44.4 | 36.1 | 2.6 | 5.0 |
| | | | 85/71 | 40.5 | 29.9 | 48.4 | 2.5 | 16.0 | | | 80 | 42.8 | 33.9 | 2.7 | 4.6 |
| 90 | 4.5 | 1.5 (3.4) | 75/63 | 31.6 | 26.2 | 39.9 | 2.7 | 11.7 | 80 | 1.5 (3.5) | 60 | 46.3 | 38.6 | 2.4 | 5.6 |
| | | | 80/67 | 34.2 | 27.2 | 42.7 | 2.8 | 12.4 | | | 70 | 45.0 | 36.7 | 2.6 | 5.1 |
| | | | 85/71 | 36.7 | 28.5 | 45.4 | 2.8 | 13.1 | | | 80 | 43.7 | 34.7 | 2.8 | 4.6 |
| | 6 | 2.4 (5.6) | 75/63 | 32.5 | 26.6 | 40.7 | 2.7 | 12.3 | | 2.5 (5.8) | 60 | 48.8 | 40.9 | 2.5 | 5.8 |
| | | | 80/67 | 35.2 | 27.6 | 43.5 | 2.7 | 13.1 | | | 70 | 47.3 | 38.8 | 2.6 | 5.2 |
| | | | 85/71 | 37.9 | 28.8 | 46.4 | 2.7 | 13.9 | | | 80 | 45.8 | 36.7 | 2.8 | 4.8 |
| | 9 | 5.1 (11.7) | 75/63 | 33.5 | 26.8 | 41.5 | 2.6 | 13.0 | | 5.2 (12.1) | 60 | 51.6 | 43.7 | 2.5 | 6.0 |
| | | | 80/67 | 36.2 | 28.2 | 44.3 | 2.6 | 13.9 | | | 70 | 49.9 | 41.3 | 2.7 | 5.4 |
| | | | 85/71 | 39.0 | 29.4 | 47.3 | 2.6 | 14.9 | | | 80 | 48.2 | 38.9 | 2.9 | 4.9 |
| 100 | 4.5 | 1.4 (3.3) | 75/63 | 29.3 | 25.0 | 38.1 | 2.9 | 10.2 | | | | | | | |
| | | | 80/67 | 31.6 | 26.5 | 40.6 | 2.9 | 10.8 | | | | | | | |
| | | | 85/71 | 34.0 | 27.7 | 43.3 | 3.0 | 11.4 | | | | | | | |
| | 6 | 2.4 (5.5) | 75/63 | 30.1 | 25.5 | 38.7 | 2.8 | 10.7 | | | | | | | |
| | | | 80/67 | 32.6 | 26.8 | 41.4 | 2.9 | 11.3 | | | | | | | |
| | | | 85/71 | 35.1 | 28.0 | 44.1 | 2.9 | 12.0 | | | | | | | |
| | 9 | 4.9 (11.4) | 75/63 | 30.9 | 25.9 | 39.4 | 2.8 | 11.2 | | | | | | | |
| | | | 80/67 | 33.6 | 27.0 | 42.3 | 2.8 | 12.0 | | | | | | | |
| | | | 85/71 | 36.2 | 28.4 | 45.0 | 2.8 | 12.8 | | | | | | | |
| 110 | 4.5 | 1.4 (3.2) | 75/63 | 26.9 | 24.0 | 36.1 | 3.0 | 8.9 | | | | | | | |
| | | | 80/67 | 29.0 | 25.4 | 38.5 | 3.1 | 9.3 | | | | | | | |
| | | | 85/71 | 31.2 | 26.9 | 40.9 | 3.2 | 9.8 | | | | | | | |
| | 6 | 2.3 (5.3) | 75/63 | 27.6 | 24.5 | 36.6 | 3.0 | 9.2 | | | | | | | |
| | | | 80/67 | 29.9 | 25.8 | 39.2 | 3.1 | 9.8 | | | | | | | |
| | | | 85/71 | 32.2 | 27.1 | 41.8 | 3.1 | 10.4 | | | | | | | |
| | 9 | 4.8 (11.0) | 75/63 | 28.3 | 24.8 | 37.3 | 2.9 | 9.6 | | | | | | | |
| | | | 80/67 | 30.9 | 25.9 | 40.0 | 3.0 | 10.3 | | | | | | | |
| | | | 85/71 | 33.3 | 27.4 | 42.7 | 3.0 | 11.0 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Capacity Data

## LV042 (1400 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 5 | 2.1 (4.9) | 75/63 | 44.0 | 33.2 | 51.5 | 2.4 | 18.6 | 30 | 2.4 (5.6) | 60 | 25.2 | 18.0 | 2.3 | 3.3 |
| | | | 80/67 | 47.4 | 34.5 | 55.0 | 2.4 | 20.0 | | | 70 | 24.4 | 17.0 | 2.3 | 3.1 |
| | | | 85/71 | 50.9 | 35.6 | 58.6 | 2.4 | 21.4 | | | 80 | 23.5 | 15.8 | 2.4 | 2.9 |
| | 8 | 4.9 (11.4) | 75/63 | 45.8 | 34.0 | 52.8 | 2.2 | 21.0 | | 5.6 (13.0) | 60 | 26.9 | 19.8 | 2.3 | 3.4 |
| | | | 80/67 | 49.5 | 35.2 | 56.5 | 2.2 | 22.9 | | | 70 | 25.9 | 18.5 | 2.4 | 3.2 |
| | | | 85/71 | 53.3 | 36.4 | 60.3 | 2.1 | 24.9 | | | 80 | 25.0 | 17.1 | 2.5 | 3.0 |
| | 11 | 8.8 (20.2) | 75/63 | 46.7 | 34.3 | 53.4 | 2.1 | 22.3 | | 10.0 (23.1) | 60 | 28.1 | 20.6 | 2.3 | 3.5 |
| | | | 80/67 | 50.5 | 35.6 | 57.3 | 2.1 | 24.5 | | | 70 | 26.9 | 19.4 | 2.4 | 3.3 |
| | | | 85/71 | 54.5 | 36.8 | 61.2 | 2.0 | 26.9 | | | 80 | 25.9 | 17.8 | 2.5 | 3.0 |
| 60 | 5 | 2.0 (4.7) | 75/63 | 41.7 | 32.2 | 49.9 | 2.6 | 16.3 | 40 | 2.3 (5.4) | 60 | 29.5 | 22.2 | 2.4 | 3.7 |
| | | | 80/67 | 45.0 | 33.4 | 53.3 | 2.6 | 17.4 | | | 70 | 28.9 | 20.9 | 2.5 | 3.4 |
| | | | 85/71 | 48.4 | 34.6 | 56.8 | 2.6 | 18.5 | | | 80 | 27.9 | 19.6 | 2.6 | 3.2 |
| | 8 | 4.8 (11.0) | 75/63 | 43.6 | 32.8 | 51.2 | 2.4 | 18.1 | | 5.5 (12.6) | 60 | 32.0 | 24.2 | 2.4 | 3.9 |
| | | | 80/67 | 47.1 | 34.1 | 54.8 | 2.4 | 19.6 | | | 70 | 30.9 | 22.8 | 2.5 | 3.6 |
| | | | 85/71 | 50.7 | 35.4 | 58.5 | 2.4 | 21.2 | | | 80 | 29.9 | 21.3 | 2.6 | 3.3 |
| | 11 | 8.5 (19.6) | 75/63 | 44.4 | 33.2 | 51.9 | 2.3 | 19.1 | | 9.7 (22.3) | 60 | 33.3 | 25.4 | 2.5 | 4.0 |
| | | | 80/67 | 48.1 | 34.5 | 55.5 | 2.3 | 20.8 | | | 70 | 32.1 | 23.8 | 2.6 | 3.7 |
| | | | 85/71 | 51.8 | 35.8 | 59.3 | 2.3 | 22.6 | | | 80 | 31.0 | 22.3 | 2.7 | 3.4 |
| 70 | 5 | 2.0 (4.6) | 75/63 | 39.5 | 31.1 | 48.2 | 2.8 | 14.2 | 50 | 2.1 (4.9) | 60 | 35.4 | 27.5 | 2.5 | 4.1 |
| | | | 80/67 | 42.6 | 32.3 | 51.5 | 2.8 | 15.1 | | | 70 | 34.4 | 26.0 | 2.6 | 3.8 |
| | | | 85/71 | 45.7 | 33.6 | 54.8 | 2.9 | 16.0 | | | 80 | 33.5 | 24.5 | 2.8 | 3.5 |
| | 8 | 4.6 (10.7) | 75/63 | 41.2 | 31.8 | 49.5 | 2.6 | 15.7 | | 4.9 (11.4) | 60 | 38.2 | 30.0 | 2.6 | 4.4 |
| | | | 80/67 | 44.4 | 33.3 | 52.9 | 2.6 | 16.8 | | | 70 | 37.1 | 28.3 | 2.7 | 4.0 |
| | | | 85/71 | 47.9 | 34.4 | 56.5 | 2.7 | 18.1 | | | 80 | 35.8 | 26.8 | 2.8 | 3.7 |
| | 11 | 8.2 (18.9) | 75/63 | 42.0 | 32.0 | 50.1 | 2.6 | 16.4 | | 8.8 (20.2) | 60 | 39.7 | 31.3 | 2.6 | 4.5 |
| | | | 80/67 | 45.4 | 33.5 | 53.6 | 2.6 | 17.7 | | | 70 | 38.4 | 29.5 | 2.7 | 4.1 |
| | | | 85/71 | 48.9 | 35.0 | 57.2 | 2.6 | 19.2 | | | 80 | 37.0 | 27.9 | 2.9 | 3.8 |
| 80 | 5 | 1.9 (4.4) | 75/63 | 37.0 | 30.1 | 46.4 | 3.0 | 12.4 | 60 | 2.0 (4.7) | 60 | 40.9 | 32.5 | 2.6 | 4.6 |
| | | | 80/67 | 40.0 | 31.3 | 49.6 | 3.0 | 13.2 | | | 70 | 39.8 | 30.9 | 2.8 | 4.2 |
| | | | 85/71 | 42.8 | 32.9 | 52.6 | 3.1 | 13.9 | | | 80 | 38.4 | 29.1 | 2.9 | 3.8 |
| | 8 | 4.5 (10.3) | 75/63 | 38.6 | 30.8 | 47.6 | 2.9 | 13.5 | | 4.8 (11.0) | 60 | 44.1 | 35.5 | 2.7 | 4.8 |
| | | | 80/67 | 41.8 | 32.1 | 50.9 | 2.9 | 14.5 | | | 70 | 42.8 | 33.5 | 2.9 | 4.4 |
| | | | 85/71 | 45.1 | 33.3 | 54.3 | 2.9 | 15.5 | | | 80 | 41.4 | 31.5 | 3.0 | 4.0 |
| | 11 | 7.9 (18.3) | 75/63 | 39.4 | 31.0 | 48.2 | 2.8 | 14.1 | | 8.5 (19.6) | 60 | 45.8 | 37.1 | 2.7 | 4.9 |
| | | | 80/67 | 42.6 | 32.6 | 51.5 | 2.8 | 15.2 | | | 70 | 44.3 | 35.0 | 2.9 | 4.5 |
| | | | 85/71 | 46.1 | 33.7 | 55.1 | 2.8 | 16.3 | | | 80 | 42.8 | 32.8 | 3.1 | 4.1 |
| 85 | 5 | 1.9 (4.4) | 75/63 | 35.8 | 29.5 | 45.5 | 3.1 | 11.6 | 70 | 2.0 (4.6) | 60 | 46.4 | 37.6 | 2.7 | 5.0 |
| | | | 80/67 | 38.6 | 31.0 | 48.5 | 3.1 | 12.3 | | | 70 | 45.2 | 35.7 | 2.9 | 4.5 |
| | | | 85/71 | 41.4 | 32.3 | 51.5 | 3.2 | 13.0 | | | 80 | 43.9 | 33.8 | 3.1 | 4.2 |
| | 8 | 4.4 (10.2) | 75/63 | 37.3 | 30.2 | 46.6 | 3.0 | 12.6 | | 4.6 (10.7) | 60 | 50.2 | 41.1 | 2.8 | 5.2 |
| | | | 80/67 | 40.4 | 31.7 | 49.8 | 3.0 | 13.5 | | | 70 | 48.7 | 38.9 | 3.0 | 4.8 |
| | | | 85/71 | 43.5 | 33.0 | 53.1 | 3.0 | 14.4 | | | 80 | 47.0 | 36.7 | 3.2 | 4.3 |
| | 11 | 7.8 (18.0) | 75/63 | 38.0 | 30.5 | 47.1 | 2.9 | 13.1 | | 8.2 (18.9) | 60 | 52.2 | 43.0 | 2.8 | 5.4 |
| | | | 80/67 | 41.2 | 32.0 | 50.5 | 2.9 | 14.1 | | | 70 | 50.5 | 40.6 | 3.0 | 4.9 |
| | | | 85/71 | 44.5 | 33.2 | 53.9 | 3.0 | 15.1 | | | 80 | 48.8 | 38.2 | 3.2 | 4.4 |
| 90 | 5 | 1.9 (4.3) | 75/63 | 34.5 | 29.1 | 44.5 | 3.2 | 10.8 | 80 | 1.9 (4.4) | 60 | 52.2 | 42.9 | 2.8 | 5.4 |
| | | | 80/67 | 37.3 | 30.5 | 47.4 | 3.2 | 11.5 | | | 70 | 50.9 | 40.8 | 3.1 | 4.9 |
| | | | 85/71 | 40.0 | 31.9 | 50.4 | 3.3 | 12.1 | | | 80 | 49.4 | 38.7 | 3.3 | 4.4 |
| | 8 | 4.3 (10.0) | 75/63 | 36.0 | 29.7 | 45.6 | 3.1 | 11.7 | | 4.5 (10.3) | 60 | 56.5 | 47.0 | 2.9 | 5.7 |
| | | | 80/67 | 39.0 | 31.0 | 48.8 | 3.1 | 12.5 | | | 70 | 54.7 | 44.5 | 3.1 | 5.1 |
| | | | 85/71 | 42.0 | 32.5 | 51.9 | 3.2 | 13.3 | | | 80 | 53.1 | 42.0 | 3.4 | 4.6 |
| | 11 | 7.7 (17.7) | 75/63 | 36.7 | 30.0 | 46.1 | 3.0 | 12.2 | | 7.9 (18.3) | 60 | 58.8 | 49.1 | 3.0 | 5.8 |
| | | | 80/67 | 39.8 | 31.3 | 49.4 | 3.0 | 13.1 | | | 70 | 56.8 | 46.5 | 3.2 | 5.2 |
| | | | 85/71 | 42.9 | 32.9 | 52.7 | 3.1 | 14.0 | | | 80 | 54.9 | 43.7 | 3.4 | 4.7 |
| 100 | 5 | 1.8 (4.2) | 75/63 | 31.9 | 28.0 | 42.4 | 3.4 | 9.4 | | | | | | | |
| | | | 80/67 | 34.5 | 29.4 | 45.3 | 3.5 | 10.0 | | | | | | | |
| | | | 85/71 | 37.1 | 30.7 | 48.1 | 3.5 | 10.5 | | | | | | | |
| | 8 | 4.2 (9.7) | 75/63 | 33.3 | 28.6 | 43.5 | 3.3 | 10.2 | | | | | | | |
| | | | 80/67 | 36.1 | 29.9 | 46.6 | 3.3 | 10.8 | | | | | | | |
| | | | 85/71 | 38.9 | 31.4 | 49.5 | 3.4 | 11.5 | | | | | | | |
| | 11 | 7.5 (17.2) | 75/63 | 34.0 | 28.7 | 44.1 | 3.2 | 10.5 | | | | | | | |
| | | | 80/67 | 36.9 | 30.2 | 47.2 | 3.3 | 11.2 | | | | | | | |
| | | | 85/71 | 39.7 | 31.7 | 50.2 | 3.3 | 11.9 | | | | | | | |
| 110 | 5 | 1.8 (4.0) | 75/63 | 29.3 | 26.7 | 40.3 | 3.6 | 8.2 | | | | | | | |
| | | | 80/67 | 31.5 | 28.4 | 42.8 | 3.7 | 8.6 | | | | | | | |
| | | | 85/71 | 33.9 | 29.8 | 45.6 | 3.7 | 9.1 | | | | | | | |
| | 8 | 4.1 (9.4) | 75/63 | 30.5 | 27.4 | 41.3 | 3.5 | 8.8 | | | | | | | |
| | | | 80/67 | 33.0 | 29.0 | 44.0 | 3.6 | 9.3 | | | | | | | |
| | | | 85/71 | 35.6 | 30.4 | 47.0 | 3.6 | 9.8 | | | | | | | |
| | 11 | 7.2 (16.7) | 75/63 | 31.1 | 27.5 | 41.8 | 3.4 | 9.0 | | | | | | | |
| | | | 80/67 | 33.8 | 28.9 | 44.7 | 3.5 | 9.6 | | | | | | | |
| | | | 85/71 | 36.4 | 30.6 | 47.6 | 3.6 | 10.2 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Capacity Data

## LV048 (1600 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 6 | 0.9 (2.0) | 75/63 | 51.3 | 37.7 | 60.3 | 2.8 | 18.3 | 30 | 1.0 (2.3) | 60 | 33.2 | 25.2 | 2.5 | 3.9 |
| | | | 80/67 | 54.7 | 39.1 | 63.9 | 2.8 | 19.4 | | | 70 | 30.9 | 22.3 | 2.6 | 3.5 |
| | | | 85/71 | 58.3 | 40.3 | 67.6 | 2.8 | 20.6 | | | 80 | 28.6 | 19.6 | 2.7 | 3.1 |
| | 8 | 1.4 (3.3) | 75/63 | 52.9 | 38.4 | 61.5 | 2.7 | 19.9 | | 1.7 (3.8) | 60 | 34.4 | 26.2 | 2.6 | 3.9 |
| | | | 80/67 | 56.5 | 39.7 | 65.2 | 2.7 | 21.2 | | | 70 | 32.0 | 23.3 | 2.7 | 3.5 |
| | | | 85/71 | 60.3 | 40.8 | 69.1 | 2.7 | 22.6 | | | 80 | 29.7 | 20.6 | 2.8 | 3.1 |
| | 12 | 3.0 (6.9) | 75/63 | 54.7 | 39.1 | 62.9 | 2.5 | 21.7 | | 3.4 (7.9) | 60 | 35.9 | 27.5 | 2.6 | 4.0 |
| | | | 80/67 | 58.4 | 40.4 | 66.6 | 2.5 | 23.4 | | | 70 | 33.4 | 24.7 | 2.8 | 3.6 |
| | | | 85/71 | 62.4 | 41.5 | 70.6 | 2.5 | 25.2 | | | 80 | 30.9 | 21.9 | 2.9 | 3.2 |
| 60 | 6 | 0.8 (1.9) | 75/63 | 48.6 | 36.2 | 58.3 | 3.0 | 16.0 | 40 | 1.0 (2.2) | 60 | 37.0 | 28.4 | 2.7 | 4.0 |
| | | | 80/67 | 51.9 | 37.9 | 61.7 | 3.1 | 16.9 | | | 70 | 35.1 | 25.8 | 2.8 | 3.6 |
| | | | 85/71 | 55.4 | 39.2 | 65.4 | 3.1 | 17.9 | | | 80 | 33.1 | 23.4 | 2.9 | 3.3 |
| | 8 | 1.4 (3.2) | 75/63 | 50.0 | 37.2 | 59.3 | 2.9 | 17.2 | | 1.6 (3.7) | 60 | 38.6 | 29.9 | 2.8 | 4.1 |
| | | | 80/67 | 53.5 | 38.6 | 63.0 | 2.9 | 18.3 | | | 70 | 36.7 | 27.2 | 2.9 | 3.7 |
| | | | 85/71 | 57.2 | 39.9 | 66.7 | 2.9 | 19.5 | | | 80 | 34.6 | 24.7 | 3.0 | 3.4 |
| | 12 | 2.9 (6.7) | 75/63 | 51.6 | 37.9 | 60.5 | 2.8 | 18.6 | | 3.3 (7.7) | 60 | 40.6 | 31.6 | 2.8 | 4.2 |
| | | | 80/67 | 55.3 | 39.3 | 64.3 | 2.8 | 19.9 | | | 70 | 38.6 | 28.8 | 3.0 | 3.8 |
| | | | 85/71 | 59.2 | 40.4 | 68.2 | 2.8 | 21.4 | | | 80 | 36.4 | 26.2 | 3.1 | 3.5 |
| 70 | 6 | 0.8 (1.9) | 75/63 | 45.7 | 35.1 | 56.1 | 3.3 | 14.0 | 50 | 0.9 (2.0) | 60 | 43.1 | 33.5 | 2.9 | 4.3 |
| | | | 80/67 | 48.9 | 36.7 | 59.5 | 3.3 | 14.8 | | | 70 | 41.1 | 31.3 | 3.1 | 3.9 |
| | | | 85/71 | 52.5 | 37.7 | 63.3 | 3.3 | 15.7 | | | 80 | 39.2 | 28.7 | 3.2 | 3.6 |
| | 8 | 1.4 (3.1) | 75/63 | 47.0 | 35.9 | 57.1 | 3.1 | 14.9 | | 1.4 (3.3) | 60 | 45.1 | 35.4 | 3.0 | 4.4 |
| | | | 80/67 | 50.4 | 37.3 | 60.7 | 3.2 | 15.9 | | | 70 | 43.1 | 32.8 | 3.1 | 4.0 |
| | | | 85/71 | 54.1 | 38.5 | 64.5 | 3.2 | 16.9 | | | 80 | 40.9 | 30.2 | 3.3 | 3.7 |
| | 12 | 2.8 (6.5) | 75/63 | 48.5 | 36.5 | 58.2 | 3.0 | 16.0 | | 3.0 (6.9) | 60 | 47.4 | 37.4 | 3.1 | 4.5 |
| | | | 80/67 | 52.1 | 38.0 | 61.9 | 3.0 | 17.1 | | | 70 | 45.2 | 34.9 | 3.2 | 4.1 |
| | | | 85/71 | 55.9 | 39.1 | 65.8 | 3.1 | 18.3 | | | 80 | 43.1 | 32.0 | 3.4 | 3.8 |
| 80 | 6 | 0.8 (1.8) | 75/63 | 42.8 | 33.7 | 53.8 | 3.5 | 12.3 | 60 | 0.8 (1.9) | 60 | 48.6 | 38.6 | 3.1 | 4.6 |
| | | | 80/67 | 45.9 | 35.4 | 57.2 | 3.5 | 13.0 | | | 70 | 46.7 | 36.3 | 3.3 | 4.2 |
| | | | 85/71 | 49.1 | 37.0 | 60.7 | 3.6 | 13.7 | | | 80 | 45.2 | 33.8 | 3.4 | 3.8 |
| | 8 | 1.3 (3.0) | 75/63 | 43.9 | 34.6 | 54.7 | 3.4 | 13.0 | | 1.4 (3.2) | 60 | 51.0 | 40.7 | 3.2 | 4.7 |
| | | | 80/67 | 47.4 | 35.9 | 58.3 | 3.4 | 13.8 | | | 70 | 49.1 | 38.1 | 3.3 | 4.3 |
| | | | 85/71 | 50.9 | 37.1 | 62.1 | 3.5 | 14.7 | | | 80 | 47.3 | 35.6 | 3.5 | 3.9 |
| | 12 | 2.7 (6.3) | 75/63 | 45.3 | 35.0 | 55.8 | 3.3 | 13.8 | | 2.9 (6.7) | 60 | 53.8 | 43.2 | 3.2 | 4.9 |
| | | | 80/67 | 48.9 | 36.4 | 59.5 | 3.3 | 14.8 | | | 70 | 51.7 | 40.4 | 3.4 | 4.4 |
| | | | 85/71 | 52.6 | 37.7 | 63.3 | 3.3 | 15.8 | | | 80 | 49.7 | 37.8 | 3.6 | 4.0 |
| 85 | 6 | 0.8 (1.8) | 75/63 | 41.2 | 33.2 | 52.5 | 3.6 | 11.5 | 70 | 0.8 (1.9) | 60 | 54.5 | 44.0 | 3.3 | 4.9 |
| | | | 80/67 | 44.4 | 34.6 | 56.1 | 3.7 | 12.1 | | | 70 | 53.0 | 41.5 | 3.5 | 4.5 |
| | | | 85/71 | 47.7 | 36.0 | 59.6 | 3.7 | 12.8 | | | 80 | 51.1 | 39.2 | 3.7 | 4.1 |
| | 8 | 1.3 (3.0) | 75/63 | 42.4 | 33.7 | 53.5 | 3.5 | 12.1 | | 1.4 (3.1) | 60 | 57.3 | 46.5 | 3.3 | 5.0 |
| | | | 80/67 | 45.8 | 35.1 | 57.2 | 3.6 | 12.9 | | | 70 | 55.5 | 43.9 | 3.5 | 4.6 |
| | | | 85/71 | 49.2 | 36.5 | 60.8 | 3.6 | 13.7 | | | 80 | 53.8 | 41.3 | 3.7 | 4.2 |
| | 12 | 2.7 (6.2) | 75/63 | 43.7 | 34.2 | 54.6 | 3.4 | 12.9 | | 2.8 (6.5) | 60 | 60.6 | 49.4 | 3.4 | 5.2 |
| | | | 80/67 | 47.3 | 35.6 | 58.3 | 3.4 | 13.7 | | | 70 | 58.5 | 46.6 | 3.6 | 4.7 |
| | | | 85/71 | 50.8 | 37.1 | 62.0 | 3.5 | 14.6 | | | 80 | 56.5 | 43.8 | 3.8 | 4.3 |
| 90 | 6 | 0.8 (1.7) | 75/63 | 39.6 | 32.6 | 51.3 | 3.7 | 10.7 | 80 | 0.8 (1.8) | 60 | 60.7 | 49.8 | 3.4 | 5.2 |
| | | | 80/67 | 42.8 | 34.0 | 54.8 | 3.8 | 11.4 | | | 70 | 59.0 | 47.3 | 3.6 | 4.7 |
| | | | 85/71 | 46.0 | 35.6 | 58.3 | 3.8 | 12.0 | | | 80 | 57.5 | 44.7 | 3.9 | 4.4 |
| | 8 | 1.3 (2.9) | 75/63 | 40.8 | 33.1 | 52.3 | 3.6 | 11.3 | | 1.3 (3.0) | 60 | 64.0 | 52.7 | 3.5 | 5.4 |
| | | | 80/67 | 44.1 | 34.6 | 55.8 | 3.7 | 12.0 | | | 70 | 61.9 | 49.9 | 3.7 | 4.9 |
| | | | 85/71 | 47.5 | 36.1 | 59.4 | 3.7 | 12.7 | | | 80 | 60.4 | 47.2 | 4.0 | 4.5 |
| | 12 | 2.6 (6.1) | 75/63 | 42.1 | 33.5 | 53.3 | 3.5 | 11.9 | | 2.7 (6.3) | 60 | 67.8 | 56.0 | 3.6 | 5.6 |
| | | | 80/67 | 45.5 | 35.0 | 57.0 | 3.6 | 12.7 | | | 70 | 65.7 | 53.1 | 3.8 | 5.1 |
| | | | 85/71 | 49.0 | 36.7 | 60.6 | 3.6 | 13.6 | | | 80 | 63.6 | 50.1 | 4.0 | 4.6 |
| 100 | 6 | 0.7 (1.7) | 75/63 | 36.5 | 31.5 | 48.8 | 3.9 | 9.3 | | | | | | | |
| | | | 80/67 | 39.5 | 33.1 | 52.1 | 4.0 | 9.9 | | | | | | | |
| | | | 85/71 | 42.5 | 34.7 | 55.5 | 4.1 | 10.4 | | | | | | | |
| | 8 | 1.3 (2.9) | 75/63 | 37.6 | 31.6 | 49.7 | 3.8 | 9.8 | | | | | | | |
| | | | 80/67 | 40.8 | 33.4 | 53.2 | 3.9 | 10.4 | | | | | | | |
| | | | 85/71 | 44.1 | 34.7 | 56.8 | 4.0 | 11.0 | | | | | | | |
| | 12 | 2.6 (5.9) | 75/63 | 38.7 | 32.1 | 50.6 | 3.8 | 10.3 | | | | | | | |
| | | | 80/67 | 42.0 | 33.9 | 54.2 | 3.8 | 11.0 | | | | | | | |
| | | | 85/71 | 45.4 | 35.4 | 57.8 | 3.9 | 11.7 | | | | | | | |
| 110 | 6 | 0.7 (1.6) | 75/63 | 33.6 | 30.0 | 46.6 | 4.1 | 8.2 | | | | | | | |
| | | | 80/67 | 36.5 | 31.6 | 49.8 | 4.2 | 8.6 | | | | | | | |
| | | | 85/71 | 39.2 | 33.4 | 53.0 | 4.3 | 9.1 | | | | | | | |
| | 8 | 1.2 (2.8) | 75/63 | 34.5 | 30.4 | 47.3 | 4.1 | 8.5 | | | | | | | |
| | | | 80/67 | 37.4 | 32.3 | 50.5 | 4.2 | 9.0 | | | | | | | |
| | | | 85/71 | 40.5 | 33.5 | 54.0 | 4.3 | 9.5 | | | | | | | |
| | 12 | 2.5 (5.7) | 75/63 | 35.4 | 30.8 | 48.0 | 4.0 | 8.9 | | | | | | | |
| | | | 80/67 | 38.4 | 32.6 | 51.3 | 4.1 | 9.4 | | | | | | | |
| | | | 85/71 | 41.8 | 33.8 | 55.0 | 4.2 | 10.0 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

The results reported herein are estimates based on testing by FHP. Variations in the installation and operational environment may alter performance. Bosch disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. In addition, continuous research and development may result in a change to an appliances design and specifications, which Bosch may change without notice. Before purchase, confirm the design specifications of the appliance.

# Capacity Data

## LV060 (2000 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 7.5 | 1.5 (3.4) | 75/63 | 61.4 | 45.7 | 72.3 | 3.3 | 18.6 | 30 | 1.7 (3.9) | 60 | 41.6 | 29.4 | 3.6 | 3.4 |
| | | | 80/67 | 65.6 | 47.3 | 76.6 | 3.4 | 19.6 | | | 70 | 41.0 | 27.7 | 4.0 | 3.0 |
| | | | 85/71 | 69.9 | 48.8 | 81.2 | 3.4 | 20.6 | | | 80 | 41.1 | 26.4 | 4.4 | 2.8 |
| | 10 | 2.5 (5.7) | 75/63 | 62.7 | 45.9 | 73.2 | 3.2 | 19.8 | | 2.8 (6.6) | 60 | 43.5 | 31.1 | 3.7 | 3.5 |
| | | | 80/67 | 66.9 | 47.8 | 77.5 | 3.2 | 20.9 | | | 70 | 42.9 | 29.2 | 4.0 | 3.1 |
| | | | 85/71 | 71.6 | 49.0 | 82.3 | 3.2 | 22.1 | | | 80 | 42.4 | 27.5 | 4.4 | 2.8 |
| | 15 | 5.1 (11.9) | 75/63 | 63.9 | 46.5 | 73.9 | 3.0 | 21.2 | | 5.9 (13.6) | 60 | 44.9 | 32.5 | 3.7 | 3.6 |
| | | | 80/67 | 68.4 | 48.1 | 78.5 | 3.0 | 22.5 | | | 70 | 44.2 | 30.6 | 4.0 | 3.2 |
| | | | 85/71 | 73.1 | 49.6 | 83.3 | 3.1 | 23.9 | | | 80 | 43.7 | 28.8 | 4.4 | 2.9 |
| 60 | 7.5 | 1.4 (3.3) | 75/63 | 59.0 | 44.3 | 70.9 | 3.6 | 16.3 | 40 | 1.6 (3.8) | 60 | 46.7 | 34.2 | 3.7 | 3.7 |
| | | | 80/67 | 63.0 | 46.3 | 75.0 | 3.7 | 17.2 | | | 70 | 46.5 | 32.8 | 4.1 | 3.3 |
| | | | 85/71 | 67.2 | 47.8 | 79.4 | 3.7 | 18.1 | | | 80 | 46.2 | 31.1 | 4.5 | 3.0 |
| | 10 | 2.4 (5.5) | 75/63 | 60.1 | 45.1 | 71.5 | 3.5 | 17.3 | | 2.7 (6.3) | 60 | 48.8 | 36.2 | 3.8 | 3.8 |
| | | | 80/67 | 64.3 | 46.8 | 75.8 | 3.5 | 18.3 | | | 70 | 48.4 | 34.4 | 4.1 | 3.4 |
| | | | 85/71 | 68.7 | 48.2 | 80.4 | 3.5 | 19.4 | | | 80 | 47.8 | 32.6 | 4.5 | 3.1 |
| | 15 | 5.0 (11.5) | 75/63 | 61.3 | 45.6 | 72.2 | 3.3 | 18.4 | | 5.7 (13.1) | 60 | 50.9 | 38.2 | 3.8 | 3.9 |
| | | | 80/67 | 65.7 | 47.0 | 76.8 | 3.4 | 19.6 | | | 70 | 50.2 | 36.2 | 4.2 | 3.5 |
| | | | 85/71 | 70.2 | 48.7 | 81.4 | 3.4 | 20.8 | | | 80 | 49.6 | 34.3 | 4.6 | 3.2 |
| 70 | 7.5 | 1.4 (3.2) | 75/63 | 56.5 | 43.2 | 69.5 | 4.0 | 14.3 | 50 | 1.5 (3.4) | 60 | 54.2 | 41.2 | 3.9 | 4.1 |
| | | | 80/67 | 60.3 | 45.2 | 73.4 | 4.0 | 15.1 | | | 70 | 53.6 | 39.4 | 4.2 | 3.7 |
| | | | 85/71 | 64.4 | 46.5 | 77.8 | 4.1 | 15.9 | | | 80 | 53.1 | 37.4 | 4.6 | 3.4 |
| | 10 | 2.3 (5.4) | 75/63 | 57.5 | 44.0 | 70.0 | 3.8 | 15.1 | | 2.5 (5.7) | 60 | 56.3 | 43.2 | 3.9 | 4.2 |
| | | | 80/67 | 61.6 | 45.6 | 74.2 | 3.8 | 16.0 | | | 70 | 55.5 | 41.2 | 4.3 | 3.8 |
| | | | 85/71 | 65.9 | 46.9 | 78.7 | 3.9 | 17.0 | | | 80 | 54.9 | 39.2 | 4.7 | 3.4 |
| | 15 | 4.8 (11.1) | 75/63 | 58.6 | 44.5 | 70.6 | 3.7 | 16.0 | | 5.1 (11.9) | 60 | 59.1 | 45.3 | 4.0 | 4.4 |
| | | | 80/67 | 62.9 | 46.0 | 75.0 | 3.7 | 17.1 | | | 70 | 57.9 | 43.2 | 4.3 | 3.9 |
| | | | 85/71 | 67.3 | 47.4 | 79.6 | 3.7 | 18.1 | | | 80 | 57.0 | 41.1 | 4.7 | 3.5 |
| 80 | 7.5 | 1.3 (3.1) | 75/63 | 53.7 | 42.4 | 67.8 | 4.3 | 12.4 | 60 | 1.4 (3.3) | 60 | 60.9 | 47.5 | 4.0 | 4.5 |
| | | | 80/67 | 57.6 | 43.9 | 71.9 | 4.4 | 13.2 | | | 70 | 60.1 | 45.5 | 4.4 | 4.0 |
| | | | 85/71 | 61.5 | 45.3 | 76.0 | 4.4 | 13.9 | | | 80 | 59.6 | 43.4 | 4.8 | 3.7 |
| | 10 | 2.2 (5.2) | 75/63 | 54.8 | 42.9 | 68.4 | 4.2 | 13.2 | | 2.4 (5.5) | 60 | 63.4 | 49.9 | 4.1 | 4.6 |
| | | | 80/67 | 58.8 | 44.3 | 72.6 | 4.2 | 14.0 | | | 70 | 62.5 | 47.7 | 4.4 | 4.1 |
| | | | 85/71 | 62.9 | 45.8 | 76.9 | 4.3 | 14.8 | | | 80 | 61.7 | 45.5 | 4.8 | 3.7 |
| | 15 | 4.6 (10.6) | 75/63 | 55.9 | 43.2 | 69.1 | 4.0 | 13.9 | | 5.0 (11.5) | 60 | 66.7 | 52.4 | 4.1 | 4.7 |
| | | | 80/67 | 60.0 | 44.7 | 73.3 | 4.0 | 14.8 | | | 70 | 65.6 | 49.9 | 4.5 | 4.3 |
| | | | 85/71 | 64.3 | 46.3 | 77.7 | 4.1 | 15.8 | | | 80 | 64.2 | 47.8 | 4.9 | 3.8 |
| 85 | 7.5 | 1.3 (3.00 | 75/63 | 52.4 | 41.9 | 67.1 | 4.5 | 11.6 | 70 | 1.4 (3.2) | 60 | 68.0 | 54.2 | 4.2 | 4.8 |
| | | | 80/67 | 56.2 | 43.3 | 71.1 | 4.6 | 12.3 | | | 70 | 66.9 | 52.1 | 4.5 | 4.3 |
| | | | 85/71 | 60.0 | 44.8 | 75.2 | 4.6 | 13.0 | | | 80 | 66.3 | 49.9 | 5.0 | 3.9 |
| | 10 | 2.2 (5.1) | 75/63 | 53.5 | 42.1 | 67.7 | 4.4 | 12.2 | | 2.3 (5.4) | 60 | 71.0 | 57.0 | 4.2 | 4.9 |
| | | | 80/67 | 57.4 | 43.7 | 71.8 | 4.4 | 13.0 | | | 70 | 69.9 | 54.5 | 4.6 | 4.5 |
| | | | 85/71 | 61.2 | 45.5 | 75.8 | 4.4 | 13.8 | | | 80 | 68.9 | 52.1 | 5.0 | 4.0 |
| | 15 | 4.6 (10.6) | 75/63 | 54.5 | 42.5 | 68.3 | 4.2 | 12.9 | | 4.8 (11.1) | 60 | 74.8 | 59.9 | 4.3 | 5.1 |
| | | | 80/67 | 58.6 | 44.1 | 72.5 | 4.2 | 13.8 | | | 70 | 73.5 | 57.1 | 4.7 | 4.6 |
| | | | 85/71 | 62.6 | 46.0 | 76.6 | 4.3 | 14.7 | | | 80 | 71.9 | 54.8 | 5.1 | 4.1 |
| 90 | 7.5 | 1.3 (3.0) | 75/63 | 51.0 | 41.3 | 66.4 | 4.7 | 10.7 | 80 | 1.3 (3.1) | 60 | 75.5 | 61.1 | 4.3 | 5.1 |
| | | | 80/67 | 54.7 | 42.8 | 70.3 | 4.8 | 11.4 | | | 70 | 74.2 | 58.8 | 4.7 | 4.6 |
| | | | 85/71 | 58.5 | 44.2 | 74.3 | 4.8 | 12.1 | | | 80 | 73.2 | 56.4 | 5.1 | 4.2 |
| | 10 | 2.2 (5.0) | 75/63 | 52.1 | 41.5 | 67.0 | 4.6 | 11.4 | | 2.2 (5.2) | 60 | 79.0 | 64.3 | 4.4 | 5.3 |
| | | | 80/67 | 55.8 | 43.3 | 70.9 | 4.6 | 12.1 | | | 70 | 77.7 | 61.6 | 4.8 | 4.8 |
| | | | 85/71 | 59.7 | 44.9 | 74.9 | 4.7 | 12.8 | | | 80 | 76.4 | 58.9 | 5.2 | 4.3 |
| | 15 | 4.5 (10.4) | 75/63 | 53.1 | 41.9 | 67.6 | 4.4 | 12.0 | | 4.7 (10.8) | 60 | 82.9 | 68.0 | 4.5 | 5.4 |
| | | | 80/67 | 57.0 | 43.8 | 71.5 | 4.5 | 12.8 | | | 70 | 81.3 | 65.0 | 4.9 | 4.9 |
| | | | 85/71 | 61.1 | 45.1 | 75.8 | 4.5 | 13.6 | | | 80 | 79.8 | 62.0 | 5.3 | 4.4 |
| 100 | 7.5 | 1.3 (2.9) | 75/63 | 48.3 | 39.8 | 65.3 | 5.2 | 9.2 | | | | | | | |
| | | | 80/67 | 51.7 | 41.7 | 68.9 | 5.3 | 9.8 | | | | | | | |
| | | | 85/71 | 55.3 | 43.1 | 72.7 | 5.3 | 10.4 | | | | | | | |
| | 10 | 2.1 (4.9) | 75/63 | 49.3 | 40.2 | 65.8 | 5.1 | 9.7 | | | | | | | |
| | | | 80/67 | 52.9 | 41.9 | 69.5 | 5.1 | 10.4 | | | | | | | |
| | | | 85/71 | 56.5 | 43.5 | 73.3 | 5.1 | 11.0 | | | | | | | |
| | 15 | 4.4 (10.1) | 75/63 | 50.1 | 40.8 | 66.1 | 4.9 | 10.2 | | | | | | | |
| | | | 80/67 | 53.9 | 42.3 | 70.0 | 4.9 | 11.0 | | | | | | | |
| | | | 85/71 | 57.7 | 44.2 | 73.9 | 4.9 | 11.7 | | | | | | | |
| 110 | 7.5 | 1.2 (2.8) | 75/63 | 45.4 | 38.8 | 64.2 | 5.8 | 7.8 | | | | | | | |
| | | | 80/67 | 48.6 | 40.6 | 67.6 | 5.8 | 8.3 | | | | | | | |
| | | | 85/71 | 51.9 | 42.2 | 71.1 | 5.9 | 8.8 | | | | | | | |
| | 10 | 2.0 (4.7) | 75/63 | 46.2 | 39.2 | 64.4 | 5.6 | 8.2 | | | | | | | |
| | | | 80/67 | 49.6 | 40.9 | 68.0 | 5.6 | 8.8 | | | | | | | |
| | | | 85/71 | 53.1 | 42.4 | 71.7 | 5.7 | 9.3 | | | | | | | |
| | 15 | 4.3 (9.8) | 75/63 | 47.1 | 39.3 | 64.9 | 5.5 | 8.6 | | | | | | | |
| | | | 80/67 | 50.7 | 41.0 | 68.5 | 5.5 | 9.3 | | | | | | | |
| | | | 85/71 | 54.3 | 42.7 | 72.2 | 5.5 | 9.9 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Capacity Data

## LV070 (2100 CFM)

| Cooling | | | | | | | | | Heating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Entering Fluid Temp (°F) | Water Flow (GPM) | Pressure Drop PSI (FOH) | Entering Air Temp (db/wb) °F | Total Capacity (MBTUH) | Sensible Capacity (MBTUH) | Heat of Rejection (MBTUH) | Power Input (kW) | EER | Entering Fluid Temp (°F) | Pressure Drop PSI (FOH) | Entering Air Temp (°F) | Total Capacity (MBTUH) | Heat of Absorption (MBTUH) | Power Input (kW) | COP |
| 50 | 9 | 2.1 (5.5) | 75/63 | 69.5 | 51.5 | 81.2 | 3.5 | 19.6 | 30 | 2.5 (5.7) | 60 | 46.4 | 33.6 | 3.8 | 3.6 |
| | | | 80/67 | 74.3 | 53.3 | 86.2 | 3.6 | 20.7 | | | 70 | 45.8 | 31.8 | 4.2 | 3.2 |
| | | | 85/71 | 79.1 | 55.1 | 91.3 | 3.6 | 21.7 | | | 80 | 45.3 | 30.0 | 4.6 | 2.9 |
| | 12 | 3.6 (8.3) | 75/63 | 70.8 | 52.1 | 82.1 | 3.4 | 20.8 | | 4.1 (9.5) | 60 | 48.0 | 35.1 | 3.8 | 3.7 |
| | | | 80/67 | 75.8 | 53.8 | 87.2 | 3.4 | 22.1 | | | 70 | 47.0 | 33.1 | 4.2 | 3.3 |
| | | | 85/71 | 80.9 | 55.4 | 92.5 | 3.5 | 23.2 | | | 80 | 46.8 | 31.2 | 4.6 | 3.0 |
| | 18 | 7.5 (17.3) | 75/63 | 72.2 | 52.4 | 83.0 | 3.3 | 22.2 | | 8.5 (19.7) | 60 | 49.7 | 36.7 | 3.9 | 3.8 |
| | | | 80/67 | 77.3 | 54.3 | 88.2 | 3.3 | 23.6 | | | 70 | 48.9 | 34.7 | 4.2 | 3.4 |
| | | | 85/71 | 82.6 | 55.9 | 93.7 | 3.3 | 25.0 | | | 80 | 48.3 | 32.6 | 4.7 | 3.0 |
| 60 | 9 | 2.1 (4.8) | 75/63 | 66.7 | 50.3 | 79.5 | 3.9 | 17.2 | 40 | 2.4 (5.5) | 60 | 51.9 | 38.9 | 3.9 | 3.9 |
| | | | 80/67 | 71.4 | 51.9 | 84.4 | 3.9 | 18.2 | | | 70 | 51.4 | 37.2 | 4.3 | 3.5 |
| | | | 85/71 | 76.0 | 53.9 | 89.2 | 4.0 | 19.1 | | | 80 | 50.9 | 35.3 | 4.7 | 3.2 |
| | 12 | 3.5 (8.0) | 75/63 | 68.0 | 50.8 | 80.3 | 3.7 | 18.2 | | 4.0 (9.2) | 60 | 54.1 | 40.9 | 4.0 | 4.0 |
| | | | 80/67 | 72.7 | 52.7 | 85.2 | 3.8 | 19.3 | | | 70 | 53.1 | 38.9 | 4.3 | 3.6 |
| | | | 85/71 | 77.7 | 54.1 | 90.4 | 3.8 | 20.4 | | | 80 | 52.6 | 36.9 | 4.7 | 3.3 |
| | 18 | 7.2 (16.7) | 75/63 | 69.2 | 51.3 | 81.1 | 3.6 | 19.3 | | 8.3 (19.1) | 60 | 56.4 | 43.1 | 4.0 | 4.1 |
| | | | 80/67 | 74.1 | 53.3 | 86.1 | 3.6 | 20.5 | | | 70 | 55.5 | 40.9 | 4.4 | 3.7 |
| | | | 85/71 | 79.3 | 54.7 | 91.5 | 3.6 | 21.8 | | | 80 | 54.8 | 38.7 | 4.8 | 3.4 |
| 70 | 9 | 2.0 (4.6) | 75/63 | 63.9 | 48.9 | 77.8 | 4.2 | 15.1 | 50 | 2.1 (5.0) | 60 | 60.4 | 47.0 | 4.1 | 4.4 |
| | | | 80/67 | 68.3 | 50.7 | 82.4 | 4.3 | 16.0 | | | 70 | 59.3 | 44.7 | 4.4 | 3.9 |
| | | | 85/71 | 72.9 | 52.4 | 87.2 | 4.3 | 16.8 | | | 80 | 58.6 | 42.6 | 4.9 | 3.5 |
| | 12 | 3.4 (7.8) | 75/63 | 65.1 | 49.4 | 78.5 | 4.1 | 15.9 | | 3.6 (8.3) | 60 | 62.6 | 49.2 | 4.1 | 4.5 |
| | | | 80/67 | 69.7 | 51.2 | 83.3 | 4.1 | 16.9 | | | 70 | 61.7 | 47.0 | 4.5 | 4.0 |
| | | | 85/71 | 74.3 | 53.2 | 88.1 | 4.2 | 17.8 | | | 80 | 60.9 | 44.7 | 4.9 | 3.6 |
| | 18 | 7.0 (16.1) | 75/63 | 66.1 | 50.1 | 79.1 | 3.9 | 16.8 | | 7.5 (17.3) | 60 | 65.1 | 51.3 | 4.1 | 4.6 |
| | | | 80/67 | 71.0 | 51.7 | 84.1 | 4.0 | 17.9 | | | 70 | 64.0 | 48.9 | 4.5 | 4.1 |
| | | | 85/71 | 76.0 | 53.5 | 89.2 | 4.0 | 19.0 | | | 80 | 63.0 | 46.4 | 5.0 | 3.7 |
| 80 | 9 | 1.9 (4.5) | 75/63 | 60.8 | 47.8 | 75.9 | 4.6 | 13.1 | 60 | 2.1 (4.8) | 60 | 67.9 | 54.2 | 4.2 | 4.7 |
| | | | 80/67 | 65.1 | 49.4 | 80.5 | 4.7 | 13.9 | | | 70 | 67.0 | 51.6 | 4.6 | 4.3 |
| | | | 85/71 | 69.4 | 51.5 | 85.0 | 4.7 | 14.7 | | | 80 | 66.2 | 49.3 | 5.0 | 3.9 |
| | 12 | 3.3 (7.5) | 75/63 | 61.9 | 48.3 | 76.6 | 4.5 | 13.8 | | 3.5 (8.0) | 60 | 70.7 | 56.8 | 4.2 | 4.9 |
| | | | 80/67 | 66.3 | 50.2 | 81.1 | 4.5 | 14.7 | | | 70 | 69.5 | 54.3 | 4.6 | 4.4 |
| | | | 85/71 | 70.8 | 52.0 | 85.9 | 4.6 | 15.5 | | | 80 | 68.5 | 51.8 | 5.1 | 4.0 |
| | 18 | 6.8 (15.6) | 75/63 | 63.0 | 48.8 | 77.2 | 4.3 | 14.5 | | 7.2 (16.7) | 60 | 73.6 | 59.4 | 4.3 | 5.0 |
| | | | 80/67 | 67.5 | 50.7 | 81.9 | 4.4 | 15.5 | | | 70 | 72.3 | 56.6 | 4.7 | 4.5 |
| | | | 85/71 | 72.3 | 52.5 | 86.8 | 4.4 | 16.5 | | | 80 | 71.1 | 53.9 | 5.1 | 4.1 |
| 85 | 9 | 1.9 (4.4) | 75/63 | 59.2 | 47.1 | 75.1 | 4.8 | 12.2 | 70 | 2.0 (4.6) | 60 | 76.0 | 61.8 | 4.3 | 5.1 |
| | | | 80/67 | 63.4 | 49.0 | 79.5 | 4.9 | 13.0 | | | 70 | 74.9 | 59.0 | 4.7 | 4.6 |
| | | | 85/71 | 67.7 | 50.8 | 84.0 | 5.0 | 13.7 | | | 80 | 73.9 | 56.4 | 5.2 | 4.2 |
| | 12 | 3.2 (7.4) | 75/63 | 60.4 | 47.3 | 75.8 | 4.7 | 12.9 | | 3.4 (7.8) | 60 | 79.2 | 64.8 | 4.4 | 5.3 |
| | | | 80/67 | 64.6 | 49.5 | 80.2 | 4.7 | 13.7 | | | 70 | 77.9 | 62.1 | 4.8 | 4.7 |
| | | | 85/71 | 69.1 | 51.3 | 84.8 | 4.8 | 14.5 | | | 80 | 76.6 | 59.4 | 5.3 | 4.3 |
| | 18 | 6.7 (15.4) | 75/63 | 61.4 | 48.1 | 76.3 | 4.5 | 13.5 | | 7.0 (16.1) | 60 | 82.8 | 67.9 | 4.5 | 5.4 |
| | | | 80/67 | 65.8 | 50.0 | 80.8 | 4.6 | 14.4 | | | 70 | 81.2 | 64.9 | 4.9 | 4.9 |
| | | | 85/71 | 70.4 | 51.9 | 85.6 | 4.6 | 15.3 | | | 80 | 79.7 | 61.8 | 5.3 | 4.4 |
| 90 | 9 | 1.9 (4.4) | 75/63 | 57.7 | 46.5 | 74.3 | 5.1 | 11.4 | 80 | 1.9 (4.5) | 60 | 84.5 | 69.7 | 4.5 | 5.5 |
| | | | 80/67 | 61.7 | 48.4 | 78.5 | 5.1 | 12.0 | | | 70 | 83.1 | 67.0 | 4.9 | 4.9 |
| | | | 85/71 | 65.9 | 50.0 | 83.0 | 5.2 | 12.7 | | | 80 | 81.8 | 64.3 | 5.4 | 4.4 |
| | 12 | 3.2 (7.3) | 75/63 | 58.7 | 46.9 | 74.8 | 4.9 | 11.9 | | 3.3 (7.5) | 60 | 88.2 | 72.9 | 4.6 | 5.6 |
| | | | 80/67 | 62.9 | 48.9 | 79.2 | 5.0 | 12.7 | | | 70 | 86.6 | 69.8 | 5.0 | 5.1 |
| | | | 85/71 | 67.3 | 50.6 | 83.8 | 5.0 | 13.5 | | | 80 | 85.1 | 66.8 | 5.5 | 4.6 |
| | 18 | 6.6 (15.1) | 75/63 | 59.7 | 47.4 | 75.3 | 4.8 | 12.5 | | 6.8 (15.6) | 60 | 92.3 | 76.7 | 4.7 | 5.8 |
| | | | 80/67 | 64.1 | 49.3 | 79.8 | 4.8 | 13.3 | | | 70 | 90.5 | 74.1 | 5.1 | 5.2 |
| | | | 85/71 | 68.6 | 51.0 | 84.6 | 4.8 | 14.2 | | | 80 | 88.7 | 70.1 | 5.6 | 4.7 |
| 100 | 9 | 1.8 (4.2) | 75/63 | 54.4 | 45.2 | 72.7 | 5.6 | 9.7 | | | | | | | |
| | | | 80/67 | 58.2 | 47.2 | 76.7 | 5.6 | 10.3 | | | | | | | |
| | | | 85/71 | 62.1 | 49.3 | 80.8 | 5.7 | 10.9 | | | | | | | |
| | 12 | 3.1 (7.1) | 75/63 | 55.4 | 45.6 | 73.2 | 5.4 | 10.2 | | | | | | | |
| | | | 80/67 | 59.4 | 47.5 | 77.3 | 5.5 | 10.9 | | | | | | | |
| | | | 85/71 | 63.4 | 49.8 | 81.4 | 5.5 | 11.5 | | | | | | | |
| | 18 | 6.4 (14.7) | 75/63 | 56.3 | 46.0 | 73.6 | 5.3 | 10.6 | | | | | | | |
| | | | 80/67 | 60.5 | 48.1 | 77.8 | 5.3 | 11.4 | | | | | | | |
| | | | 85/71 | 64.7 | 50.2 | 82.2 | 5.3 | 12.1 | | | | | | | |
| 110 | 9 | 1.8 (4.1) | 75/63 | 51.2 | 43.6 | 71.5 | 6.2 | 8.2 | | | | | | | |
| | | | 80/67 | 54.7 | 45.8 | 75.2 | 6.3 | 8.8 | | | | | | | |
| | | | 85/71 | 58.5 | 47.5 | 79.2 | 6.3 | 9.3 | | | | | | | |
| | 12 | 3.0 (6.9) | 75/63 | 52.0 | 44.2 | 71.7 | 6.0 | 8.6 | | | | | | | |
| | | | 80/67 | 55.8 | 46.0 | 75.7 | 6.1 | 9.2 | | | | | | | |
| | | | 85/71 | 59.7 | 47.9 | 79.7 | 6.1 | 9.8 | | | | | | | |
| | 18 | 6.2 (14.3) | 75/63 | 52.8 | 44.3 | 72.1 | 5.9 | 8.9 | | | | | | | |
| | | | 80/67 | 56.8 | 46.2 | 76.2 | 5.9 | 9.6 | | | | | | | |
| | | | 85/71 | 60.8 | 48.3 | 80.2 | 5.9 | 10.2 | | | | | | | |

Extended Range - Anti-freeze required

AHRI/ISO13256-1 certified performance is rated at entering air conditions of 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Tabulated unit performance does not include fan or pump power corrections required for AHRI/ISO standard performance ratings.

Unit performance may be interpolated. Extrapolation is not allowed.

For conditions other than rating conditions provided, consult the FHP BST selection software.

Ratings below 40°F are with a methanol solution.

Due to variations in installation, actual performance may vary from the tabulated data. Performance contained herein are as a result of extensive testing by FHP and are not express warranties between the parties and may be changed at any time.

Continuous research and development to improve our products may result in a change to the current design and specifications without notice.

# Electrical Data

## Condensing Section

| Model | Voltage Code | Voltage/ Phase/Hz | Voltage Min/ Max | Compressor | | | Min. Circuit Amps | HARC Breaker |
|---|---|---|---|---|---|---|---|---|
| | | | | Quantity | RLA | LRA | | |
| **LV018** | 1 | 208-230/1/60 | 197/253 | 1 | 6.5 | 43.0 | 8.1 | 15 |
| | 2 | 265/1/60 | 238/292 | 1 | 5.8 | 46.0 | 7.3 | 15 |
| **LV024** | 1 | 208-230/1/60 | 197/253 | 1 | 7.4 | 43.0 | 9.3 | 15 |
| | 2 | 265/1/60 | 238/292 | 1 | 6.7 | 46.0 | 8.4 | 15 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 5.9 | 63.0 | 7.4 | 15 |
| | 4 | 460/3/60 | 414/506 | 1 | 2.9 | 30.0 | 3.6 | 15 |
| **LV030** | 1 | 208-230/1/60 | 197/253 | 1 | 9.9 | 54.0 | 12.4 | 20 |
| | 2 | 265/1/60 | 238/292 | 1 | 8.5 | 46.0 | 10.6 | 15 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 6.9 | 63.0 | 8.6 | 15 |
| | 4 | 460/3/60 | 414/506 | 1 | 5.4 | 30.0 | 6.8 | 15 |
| **LV036** | 1 | 208-230/1/60 | 197/253 | 1 | 13 | 74.0 | 16.3 | 25 |
| | 2 | 265/1/60 | 238/292 | 1 | 11.3 | 67.0 | 14.1 | 25 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 7.8 | 68.0 | 9.8 | 15 |
| | 4 | 460/3/60 | 414/506 | 1 | 3.9 | 34.0 | 4.9 | 15 |
| **LV042** | 1 | 208-230/1/60 | 197/253 | 1 | 13.6 | 88.0 | 17.0 | 30 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 8.8 | 68.0 | 11.0 | 15 |
| | 4 | 460/3/60 | 414/506 | 1 | 4.4 | 34.0 | 5.5 | 15 |
| **LV048** | 1 | 208-230/1/60 | 197/253 | 1 | 15.7 | 84.0 | 19.6 | 35 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 11 | 88.0 | 13.8 | 20 |
| | 4 | 460/3/60 | 414/506 | 1 | 5.4 | 44.0 | 6.8 | 15 |
| **LV060** | 1 | 208-230/1/60 | 197/253 | 1 | 26.3 | 134.0 | 32.9 | 50 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 15.6 | 110.0 | 19.5 | 35 |
| | 4 | 460/3/60 | 414/506 | 1 | 7.8 | 52.0 | 9.8 | 15 |
| **LV070** | 1 | 208-230/1/60 | 197/253 | 1 | 28.3 | 178.0 | 35.4 | 60 |
| | 3 | 208-230/3/60 | 197/253 | 1 | 19.2 | 136.0 | 24.0 | 40 |
| | 4 | 460/3/60 | 414/506 | 1 | 8.7 | 66.1 | 10.9 | 15 |

UNIT POWER SUPPLY: A voltage variation of +/- 10% of nameplate rating is acceptable. Phase imbalance shall not exceed 2%.

# Electrical Data

## Air Handler Section – with Constant Torque Motor

| Model | Voltage Code | Voltage/ Phase/Hz | Voltage Min/Max | Blower Motor | | Min. Circuit Amps | HARC Breaker |
|---|---|---|---|---|---|---|---|
| | | | | FLA | HP | | |
| **LV018** | 1 | 208-230/1/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 2 | 265/1/60 | 238/292 | 2.6 | 0.30 | 3.3 | 15 |
| **LV024** | 1 | 208-230/1/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 2 | 265/1/60 | 238/292 | 2.6 | 0.30 | 3.3 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 2.1 | 0.50 | 2.6 | 15 |
| **LV030** | 1 | 208-230/1/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 2 | 265/1/60 | 238/292 | 2.6 | 0.30 | 3.3 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 2.1 | 0.50 | 2.6 | 15 |
| **LV036** | 1 | 208-230/1/60 | 187/253 | 4.1 | 0.5 | 5.1 | 15 |
| | 2 | 265/1/60 | 238/292 | 3.9 | 0.5 | 4.9 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 4.1 | 0.5 | 5.1 | 15 |
| | 4 | 460/3/60 | 414/506 | 2.1 | 0.5 | 2.6 | 15 |
| **LV042** | 1 | 208-230/1/60 | 187/253 | 6.0 | 0.8 | 7.5 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 6.0 | 0.8 | 7.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 4.6 | 0.8 | 5.8 | 15 |
| **LV048** | 1 | 208-230/1/60 | 187/253 | 6.0 | 0.80 | 7.5 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 6.0 | 0.80 | 7.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 4.6 | 0.80 | 5.8 | 15 |
| **LV060** | 1 | 208-230/1/60 | 187/253 | 7.6 | 1.00 | 9.5 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 7.6 | 1.00 | 9.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 4.0 | 1.00 | 5.0 | 15 |
| **LV070** | 1 | 208-230/1/60 | 187/253 | 7.6 | 1.00 | 9.5 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 7.6 | 1.00 | 9.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 4.0 | 1.00 | 5.0 | 15 |

NOTES: 208/230V units shipped with transformer wired for 230V–for 208V remove orange tranformer primary lead and replace with red lead. All blower motors are single phase. 430/3/60 unit with the constant torque motor has a 460 volt single phase motor and only requires 2 line wires and a ground.

UNIT POWER SUPPLY: A voltage variation of +/- 10% of nameplate rating is acceptable. Phase imbalance shall not exceed 2%.

# Electrical Data

## Air Handler Section – with Constant Airflow Motor

| Model | Voltage Code | Voltage/ Phase/Hz | Voltage Min/Max | Blower Motor | | Min. Circuit Amps | HARC Breaker |
|---|---|---|---|---|---|---|---|
| | | | | FLA | HP | | |
| **LV018** | 1 | 208-230/1/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 2 | 265/1/60 | 238/292 | 2.6 | 0.30 | 3.3 | 15 |
| **LV024** | 1 | 208-230/1/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 2 | 265/1/60 | 238/292 | 2.6 | 0.30 | 3.3 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 2.6 | 0.30 | 3.3 | 15 |
| **LV030** | 1 | 208-230/1/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 2 | 265/1/60 | 238/292 | 2.6 | 0.30 | 3.3 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 2.8 | 0.30 | 3.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 2.6 | 0.30 | 3.3 | 15 |
| **LV036** | 1 | 208-230/1/60 | 187/253 | 4.3 | 0.5 | 5.4 | 15 |
| | 2 | 265/1/60 | 238/292 | 4.1 | 0.5 | 5.1 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 4.3 | 0.5 | 5.4 | 15 |
| | 4 | 460/3/60 | 414/506 | 4.1 | 0.5 | 5.1 | 15 |
| **LV042** | 1 | 208-230/1/60 | 187/253 | 6.8 | 0.8 | 8.5 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 6.8 | 0.8 | 8.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 5.5 | 0.8 | 6.9 | 15 |
| **LV048** | 1 | 208-230/1/60 | 187/253 | 6.8 | 0.80 | 8.5 | 15 |
| | 3 | 208-230/3/60 | 187/253 | 6.8 | 0.80 | 8.5 | 15 |
| | 4 | 460/3/60 | 414/506 | 5.5 | 0.80 | 6.9 | 15 |
| **LV060** | 1 | 208-230/1/60 | 187/253 | 9.1 | 1.00 | 11.4 | 20 |
| | 3 | 208-230/3/60 | 187/253 | 9.1 | 1.00 | 11.4 | 20 |
| | 4 | 460/3/60 | 414/506 | 6.9 | 1.00 | 8.6 | 15 |
| **LV070** | 1 | 208-230/1/60 | 187/253 | 9.1 | 1.00 | 11.4 | 20 |
| | 3 | 208-230/3/60 | 187/253 | 9.1 | 1.00 | 11.4 | 20 |
| | 4 | 460/3/60 | 414/506 | 6.9 | 1.00 | 8.6 | 15 |

NOTES: 208/230V units shipped with transformer wired for 230V—for 208V remove orange tranformer primary lead and replace with red lead. All blower motors are single phase. 430/3/60 unit with the constant airflow motor has a 277 volt single phase motor and will require one line, one neutral and a gound wire.

UNIT POWER SUPPLY: A voltage variation of +/- 10% of nameplate rating is acceptable. Phase imbalance shall not exceed 2%.

# Blower Motor Performance

## ECM Constant Torque

| Model | Available External Static Pressure (in. wc. Wet coil and filter included) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tap # | Rated Airflow | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 | 1.10 | 1.20 |
| LV018 | 1 | | 630 | 590 | 560 | 530 | 490 | - | - | - | - | - | - | - |
| | 2 | 650 | 720 | 700 | 670 | 630 | 600 | 560 | - | - | - | - | - | - |
| | 3 | | 790 | 770 | 750 | 710 | 670 | 620 | 560 | - | - | - | - | - |
| | 4 | | 910 | 890 | 850 | 810 | 740 | 670 | 590 | 520 | - | - | - | - |
| | 5 | | 1010 | 970 | 920 | 860 | 810 | 750 | 660 | 530 | - | - | - | - |
| LV024 | 1 | | 650 | 610 | 580 | 560 | 520 | - | - | - | - | - | - | - |
| | 2 | | 740 | 720 | 690 | 660 | 620 | 570 | - | - | - | - | - | - |
| | 3 | | 850 | 830 | 800 | 770 | 730 | 690 | 630 | - | - | - | - | - |
| | 4 | 850 | 950 | 920 | 890 | 870 | 840 | 820 | 770 | 650 | - | - | - | - |
| | 5 | | 1160 | 1110 | 1050 | 990 | 920 | 800 | 670 | 560 | - | - | - | - |
| LV030 | 1 | | 620 | 600 | 570 | 540 | 490 | - | - | - | - | - | - | - |
| | 2 | | 730 | 710 | 670 | 640 | 610 | 550 | - | - | - | - | - | - |
| | 3 | | 820 | 790 | 760 | 740 | 710 | 670 | 630 | - | - | - | - | - |
| | 4 | | 940 | 910 | 880 | 850 | 800 | 740 | 660 | - | - | - | - | - |
| | 5 | 950 | 1070 | 1010 | 950 | 900 | 840 | 760 | 670 | - | - | - | - | - |
| LV036 | 1 | | 1120 | 1090 | 1055 | 1030 | 1000 | - | - | - | - | - | - | - |
| | 2 | | 1260 | 1230 | 1200 | 1170 | 1140 | 1080 | - | - | - | - | - | - |
| | 3 | 1200 | 1330 | 1290 | 1250 | 1210 | 1170 | 1100 | 1030 | - | - | - | - | - |
| | 4 | | 1400 | 1360 | 1310 | 1250 | 1190 | 1120 | 1040 | 960 | - | - | - | - |
| | 5 | | 1470 | 1420 | 1360 | 1290 | 1220 | 1140 | 1050 | 970 | 890 | - | - | - |
| LV042 | 1 | | 1270 | 1250 | 1230 | 1210 | - | - | - | - | - | - | - | - |
| | 2 | 1400 | 1440 | 1420 | 1410 | 1410 | 1400 | 1380 | 1340 | - | - | - | - | - |
| | 3 | | 1540 | 1530 | 1510 | 1500 | 1490 | 1470 | 1430 | 1350 | - | - | - | - |
| | 4 | | 1650 | 1630 | 1610 | 1600 | 1580 | 1530 | 1460 | 1360 | 1240 | - | - | - |
| | 5 | | 1730 | 1720 | 1700 | 1670 | 1620 | 1570 | 1490 | 1380 | 1260 | 1100 | - | - |
| LV048 | 1 | | 1390 | 1370 | 1350 | 1320 | - | - | - | - | - | - | - | - |
| | 2 | | 1600 | 1580 | 1550 | 1530 | 1510 | - | - | - | - | - | - | - |
| | 3 | 1600 | 1730 | 1700 | 1670 | 1650 | 1630 | 1600 | 1580 | 1540 | - | - | - | - |
| | 4 | | 1830 | 1810 | 1780 | 1760 | 1740 | 1710 | 1670 | 1600 | 1520 | - | - | - |
| | 5 | | 1930 | 1910 | 1880 | 1860 | 1830 | 1780 | 1720 | 1640 | 1540 | 1420 | - | - |
| LV060 | 1 | | 1900 | 1880 | 1860 | 1820 | - | - | - | - | - | - | - | - |
| | 2 | | 2000 | 1970 | 1950 | 1920 | 1890 | 1860 | - | - | - | - | - | - |
| | 3 | 2000 | 2110 | 2090 | 2060 | 2030 | 2010 | 1970 | 1940 | 1910 | 1880 | - | - | - |
| | 4 | | 2220 | 2200 | 2170 | 2140 | 2110 | 2080 | 2050 | 2060 | 2050 | 2000 | 1920 | - |
| | 5 | | 2340 | 2320 | 2290 | 2260 | 2230 | 2210 | 2180 | 2150 | 2110 | 2070 | 2000 | 1930 |
| LV070 | 1 | | 2050 | 2010 | 1970 | 1930 | - | - | - | - | - | - | - | - |
| | 2 | | 2150 | 2120 | 2080 | 2030 | 1990 | 1960 | - | - | - | - | - | - |
| | 3 | 2100 | 2270 | 2230 | 2200 | 2160 | 2120 | 2080 | 2040 | 2010 | 1980 | - | - | - |
| | 4 | | 2390 | 2350 | 2320 | 2280 | 2250 | 2200 | 2160 | 2130 | 2100 | 2070 | 2030 | - |
| | 5 | | 2520 | 2480 | 2450 | 2420 | 2380 | 2330 | 2290 | 2260 | 2220 | 2170 | 2100 | 2020 |

# Blower Motor Performance

## ECM Constant CFM (Variable Speed)

| Model | Available External Static Pressure (in. wc. Wet coil and filter included) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fan Speed | Rated Airflow | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 | 1.10 | 1.20 |
| **LV018** | B - Low | | 550 | 540 | 540 | 540 | 540 | 540 | 540 | 530 | 520 | 500 | - | - |
| | B - Normal | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 640 | 630 | 610 | 590 | - | - |
| | B - Hi | | 750 | 750 | 750 | 750 | 750 | 750 | 740 | 730 | 710 | 690 | - | - |
| **LV024** | C - Low | | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 700 | 650 | 560 | - | - |
| | C - Normal | 850 | 850 | 850 | 850 | 850 | 850 | 850 | 850 | 850 | 800 | 700 | - | - |
| | C - Hi | | 960 | 960 | 960 | 960 | 960 | 960 | 960 | 960 | 880 | 790 | - | - |
| **LV030** | D - Low | | 810 | 810 | 810 | 810 | 810 | 810 | 810 | 770 | 720 | 650 | - | - |
| | D - Normal | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 950 | 900 | 850 | 780 | - | - |
| | D - Hi | | 980 | 980 | 980 | 980 | 980 | 980 | 980 | 950 | 900 | 820 | - | - |
| **LV036** | A - Low | | 1020 | 1020 | 1020 | 1020 | 1020 | 1020 | 1000 | 990 | 960 | 930 | - | - |
| | A - Normal | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1180 | 1160 | 1130 | 1090 | - | - |
| | A - Hi | | 1380 | 1380 | 1380 | 1380 | 1380 | 1380 | 1360 | 1330 | 1300 | 1250 | - | - |
| **LV042** | B - Low | | 1190 | 1190 | 1190 | 1190 | 1190 | 1190 | 1190 | 1190 | 1190 | 1190 | 1190 | - |
| | B - Normal | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | - |
| | B - Hi | | 1630 | 1630 | 1630 | 1630 | 1630 | 1630 | 1630 | 1630 | 1630 | 1630 | 1630 | - |
| **LV048** | A - Low | | 1340 | 1340 | 1340 | 1340 | 1340 | 1340 | 1340 | 1340 | 1340 | 1340 | 1340 | - |
| | A - Normal | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | - |
| | A - Hi | | 1810 | 1810 | 1810 | 1810 | 1810 | 1810 | 1810 | 1810 | 1810 | 1810 | 1810 | - |
| **LV060** | A - Low | | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1690 | 1690 | 1680 |
| | A - Normal | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 1980 | 1980 | 1980 |
| | A - Hi | | 2220 | 2220 | 2220 | 2220 | 2220 | 2220 | 2220 | 2220 | 2220 | 2130 | 2100 | 2070 |
| **LV070** | B - Low | | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| | B - Normal | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 |
| | B - Hi | | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 | 2330 |

NOTE: Air flow is 70% of tabulated values during fan only operation. Air flow is 85% of tabulated value during passive dehumidfication mode when enabled.

# Physical Data

| LV Split Systems | LV018 | LV024 | LV030 | LV036 | LV042 | LV048 | LV060 | LV070 |
|---|---|---|---|---|---|---|---|---|
| **Condensing Section** | | | | | | | | |
| Compressor Type (Qty 1) | Reciprocating | Reciprocating | Reciprocating | Reciprocating | Reciprocating | Scroll | Scroll | Scroll |
| Factory Charge, R410A (oz)** | 40 | 44 | 52 | 61 | 58 | 59 | 93 | 90 |
| Liquid Line Sweat Connection (in) | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Suction Line Sweat Connection (in) | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 7/8 | 7/8 |
| **Water Connection Size** | | | | | | | | |
| Water Connection Size, FPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 | 1 | 1 |
| Coaxial Coil Volume (gal) | 0.14 | 0.14 | 0.24 | 0.27 | 0.27 | 0.49 | 0.62 | 0.62 |
| Max Water Working Pressure (PSIG) | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Cabinet** | | | | | | | | |
| Weight - Operating (lbs) | 99 | 102 | 110 | 125 | 130 | 167 | 171 | 178 |
| Weight - Shipping (lbs) | 127 | 130 | 137 | 151 | 156 | 192 | 195 | 202 |
| **Air Handler** | | | | | | | | |
| Condensate Connection Size, FPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| **ECM Fan Motor & Blower** | | | | | | | | |
| Fan Motor Type | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow | ECM Constant Torque / Constant Air Flow |
| Fan Motor (HP) | 1/3 | 1/3 / 1/2* | 1/3 / 1/2* | 1/2 | 3/4 | 3/4 | 1 | 1 |
| Blower Wheel Size (Dia. x W) | 9x7 | 9x7 | 9x7 | 9x7 | 10x8 | 10x8 | 11x9 | 11x9 |
| **Vertical Cabinet (AV)** | | | | | | | | |
| Air Coil Dimensions (H x W) | 16x16.5 | 20x16.5 | 20x16.5 | 24x20.2 | 24x20.2 | 24x26.75 | 24x26.75 | 32x26.2 |
| Standard Filter - 1" Throwaway (L x H) | 16x20 | 20x20 | 20x20 | 24x24 | 24x24 | 24x30 | 24x30 | 16x30 @2 |
| Optional Filter - 2" MERV-8 or 13 Throwaway (L x H) | 16x20 | 20x20 | 20x20 | 24x24 | 24x24 | 24x30 | 24x30 | 16x30 @2 |
| Weight - Operating (lbs) | 70 | 72 | 76 | 96 | 107 | 123 | 140 | 158 |
| Weight - Shipping (lbs) | 98 | 100 | 103 | 122 | 134 | 148 | 164 | 182 |
| **Horizontal Air Handler** | | | | | | | | |
| Air Coil Dimensions (H x W) | 16x16.5 | 16x20.5 | 16x20.5 | 18x27.5 | 18x27.5 | 20x32 | 20x32 | 20x42 |
| Standard Filter - 1" Throwaway (L x H) | 16x20 | 16x25 | 16x25 | 18x30 | 18x30 | 20x34.5 | 20x34.5 | 20x24 @2 |
| Optional Filter - 2" MERV-8 or 13 Throwaway (L x H) | 16x20 | 16x25 | 16x25 | 18x30 | 18x30 | 20x34.5 | 20x34.5 | 20x24 @2 |
| Weight - Operating (lbs) | 71 | 76 | 76 | 93 | 100 | 110 | 121 | 138 |
| Weight - Shipping (lbs) | 105 | 107 | 110 | 138 | 133 | 135 | 151 | 187 |

NOTE: *On these select units (024 & 030) with -4 voltage (460/60/1), the Constant Torque motor will be 1/2 HP rather than 1/3 HP.

**Factory Charge is based on 25 ft of lineset with linset diameter according to line sizing table. Charge adjustments will need to be made for linesets of differing length and/or diameters. Additional charge must also be added for factory supplied filter drier. All charge rates MUST ALWAYS to be confirmed and adjusted if necessary by subcooling and superheat measurements (even with a 25 ft lineset and default factory charge). See section on charging according to subcooling and superheat.

# Horizontal Air Handler Corner Weights

| Configuration | | | Left Hand Evaporator | | | | Right Hand Evaporator | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | | Total | Left Front* | Right Front* | Left Back | Right Back | Left Front* | Right Front* | Left Back | Right Back |
| LV018 | lbs | 71 | 14 | 12 | 20 | 25 | 12 | 14 | 25 | 20 |
| | kg | 32 | 6 | 5 | 9 | 11 | 5 | 6 | 11 | 9 |
| LV024 | lbs | 76 | 16 | 13 | 21 | 27 | 13 | 16 | 27 | 21 |
| | kg | 34 | 7 | 6 | 10 | 12 | 6 | 7 | 12 | 10 |
| LV030 | lbs | 76 | 16 | 12 | 21 | 28 | 12 | 16 | 28 | 21 |
| | kg | 34 | 7 | 5 | 10 | 13 | 5 | 7 | 13 | 10 |
| LV036 | lbs | 93 | 19 | 14 | 25 | 35 | 14 | 19 | 35 | 25 |
| | kg | 42 | 9 | 6 | 11 | 16 | 6 | 9 | 16 | 11 |
| LV042 | lbs | 0 | 21 | 15 | 27 | 37 | 15 | 21 | 37 | 27 |
| | kg | 0 | 10 | 7 | 12 | 17 | 7 | 10 | 17 | 12 |
| LV048 | lbs | 110 | 22 | 18 | 33 | 36 | 18 | 22 | 36 | 33 |
| | kg | 50 | 10 | 8 | 15 | 16 | 8 | 10 | 16 | 15 |
| LV060 | lbs | 121 | 26 | 19 | 34 | 42 | 19 | 26 | 42 | 34 |
| | kg | 55 | 12 | 9 | 15 | 19 | 9 | 12 | 19 | 15 |
| LV070 | lbs | 138 | 30 | 22 | 38 | 48 | 22 | 30 | 48 | 38 |
| | kg | 63 | 14 | 10 | 17 | 22 | 10 | 14 | 22 | 17 |

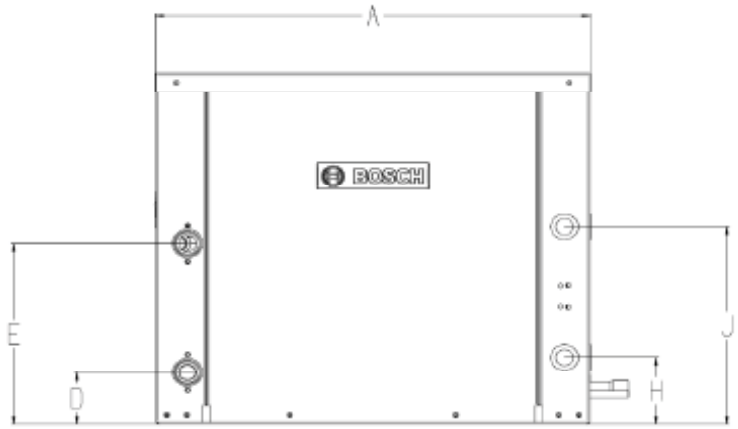
NOTE: * Front is control box end.

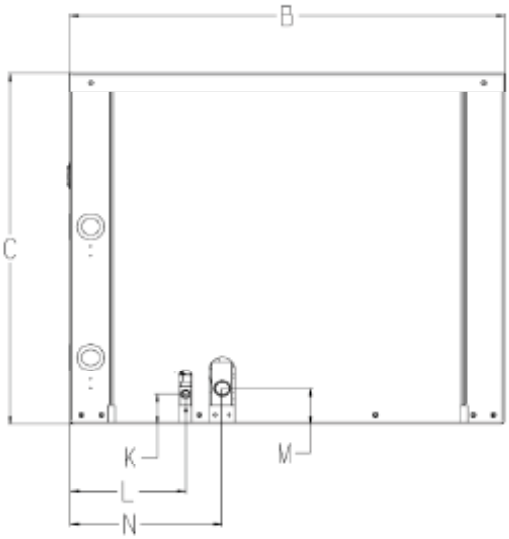
# Condensing Section

Overall unit dimensions do not include filter rack or duct flanges.

| Model | A | B | C | D | E | F | G | H | J | Water Connections | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Width | Depth | Height | Water In | Water Out | Liquid Connection | Suction Connection | Electrical Knockout | | | Service Valve Gas | |
| **LV018, 024-CS** | 21.5 | 21.5 | 19.00 | 2.8 | 8.5 | 0.375 | 0.75 | 3.6 | 10.7 | 3/4" F.P.T. | 1.6 | 5.7 |
| **LV030-CS** | 21.5 | 21.5 | 19.00 | 2.8 | 9.8 | 0.375 | 0.75 | 3.6 | 10.7 | 3/4" F.P.T. | 1.6 | 5.7 |
| **LV036, 042-CS** | 21.5 | 26.0 | 19.00 | 2.8 | 10.8 | 0.375 | 0.75 | 3.6 | 10.7 | 3/4" F.P.T. | 1.6 | 7.0 |
| **LV048-CS** | 24.0 | 32.5 | 21.00 | 3.3 | 13.2 | 0.375 | 0.75 | 3.6 | 10.7 | 1" F.P.T. | 1.6 | 5.2 |
| **LV060-CS** | 24.0 | 32.5 | 21.00 | 3.3 | 13.2 | 0.375 | 1..0 | 3.6 | 10.7 | 1" F.P.T. | 1.6 | 5.2 |
| **LV070-CS** | 26.0 | 33.3 | 21.00 | 2.9 | 13.4 | 0.375 | 1.0 | 3.6 | 10.7 | 1" F.P.T. | 1.6 | 8.4 |

NOTES: All dimensions within +/- 0.125
All dimensions in Inches
Specifications subject to change without notice.



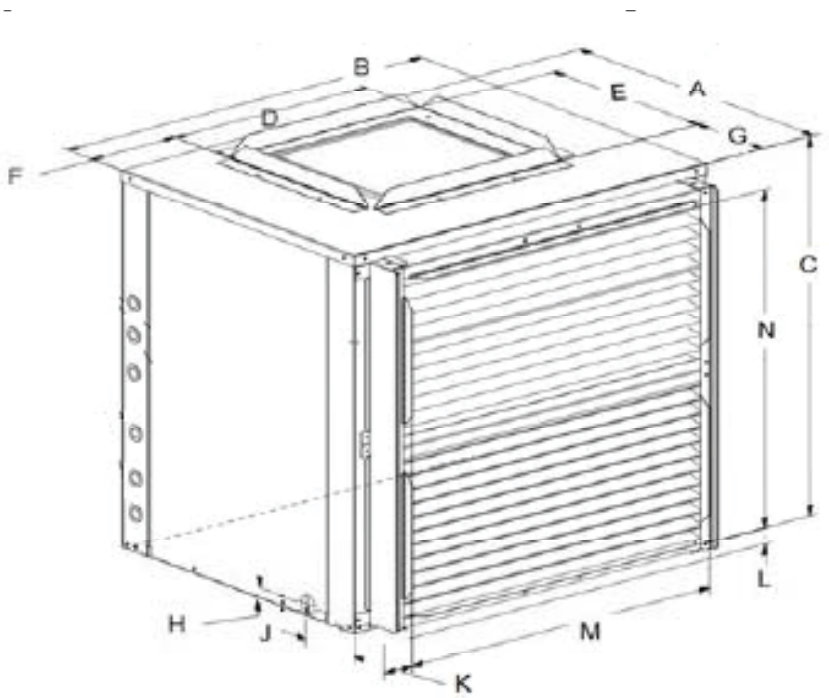



# Vertical Air Handler Dimensions

Overall unit dimensions do not include filter rack or duct flanges.

| Model | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Condensate Drain Connection | Recommended Replacement Nominal Filter Size |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Width | Depth | Height | Discharge Depth | Discharge Width | Cabinet Front to Discharge | Side to Discharge | Bottom to Condensor Drain | Side to Con-densor | Front to R/A | Bottom to Discharge | R/A Duct Width | R/A Duct Flange Height | Filter Rack Height | | |
| **LV018** | 21.5 | 21.5 | 21.62 | 14.0 | 14.0 | 4.5 | 5.2 | 1.0 | 4.4 | 1.8 | 1.6 | 18.0 | 18.0 | 16.0 | 3/4" F.P.T. | 20x20x1 |
| **LV024** | 21.5 | 21.5 | 21.62 | 14.0 | 14.0 | 4.5 | 5.2 | 1.0 | 4.4 | 1.8 | 1.6 | 18.0 | 18.0 | 20.0 | 3/4" F.P.T. | 20x20x1 |
| **LV030** | 21.5 | 21.5 | 21.62 | 14.0 | 14.0 | 4.5 | 5.2 | 1.0 | 4.4 | 1.8 | 1.6 | 18.0 | 18.0 | 20.0 | 3/4" F.P.T. | 20x20x1 |
| **LV036** | 21.5 | 26.0 | 25.62 | 16.0 | 14.0 | 6.2 | 5.0 | 1.0 | 4.4 | 2.0 | 1.6 | 22.0 | 22.0 | 24.0 | 3/4" F.P.T. | 24x24x1 |
| **LV042** | 21.5 | 26.0 | 25.62 | 16.0 | 14.0 | 6.2 | 5.0 | 1.0 | 4.4 | 2.0 | 1.6 | 22.0 | 22.0 | 24.0 | 3/4" F.P.T. | 24x24x1 |
| **LV048** | 24.0 | 32.5 | 25.62 | 18.0 | 14.0 | 7.5 | 6.2 | 1.0 | 4.4 | 2.3 | 1.6 | 28.0 | 22.0 | 24.0 | 3/4" F.P.T. | 24x30x1 |
| **LV060** | 24.0 | 32.5 | 25.62 | 18.0 | 14.0 | 7.5 | 6.2 | 1.0 | 4.4 | 2.3 | 1.6 | 28.0 | 22.0 | 24.0 | 3/4" F.P.T. | 24x30x1 |
| **LV070** | 33.3 | 26.00 | 33.62 | 18.0 | 16.0 | 7.5 | 7.2 | 1.0 | 4.4 | 2.6 | 1.6 | 28.0 | 30.0 | 32.0 | 3/4" F.P.T. | 16x30x1 (2) |

NOTES: All dimensions in inches unless otherwise noted. All dimensions within +– 0.125". Specifications subject to change without notice.
1" filter rack extends 1.23" beyond the side of the unit. 2" filter rack extends 2.89" beyond the side of the unit.
The 2" filter rack is 4 sided with a filter access door on each end and can accept either a 1" or 2" filter.

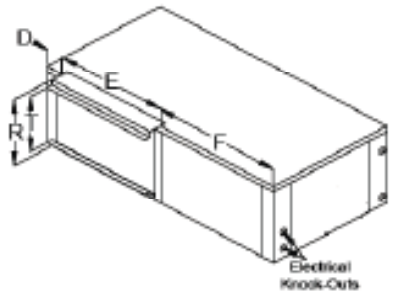


# Horizontal Air Handler Dimensions

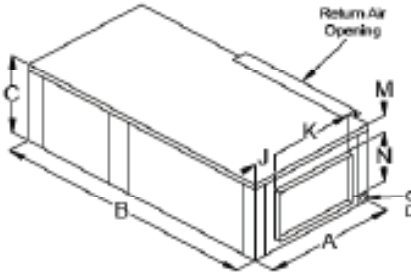
Overall unit dimensions do not include filter rack or duct flanges.

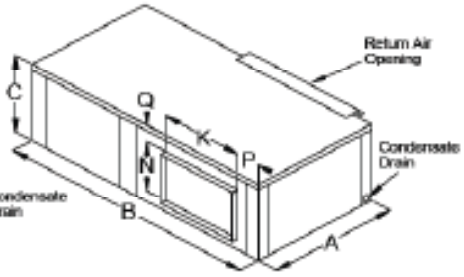
| Model | A | B | C | D | E | F | J | K | M | N | P | Q | R | T | Condensate Drain Connection | Recommended Replacement Nominal Filter Size |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Width | Depth | Height | Cabinet End to Filter Rack | R/A Duct Width | Cab Front to Filter Rack | Side to Discharge (End) | Discharge Width | Top to Discharge (FLE&FRS) | Discharge Height | End to Discharge (Straight) | Top to Discharge (FRE&FLS) | Filter Rack Height | R/A Duct Flange Height | | |
| **LV018** | 22.0 | 43.0 | 17.0 | 1.5 | 20.15 | 21.35 | 5.42 | 9.13 | 6.11 | 9.65 | 4.92 | 1.23 | 16.3 | 14.5 | 3/4" FPT | 16 x 20 x 1 |
| **LV024** | 22.0 | 43.0 | 17.0 | 1.5 | 25.0 | 16.5 | 5.42 | 9.13 | 6.11 | 9.65 | 4.92 | 1.23 | 16.3 | 14.5 | 3/4" FPT | 16 x 25 x 1 |
| **LV030** | 22.0 | 43.0 | 17.0 | 1.5 | 25.0 | 16.5 | 5.42 | 9.13 | 6.11 | 9.65 | 4.92 | 1.23 | 16.3 | 14.5 | 3/4" FPT | 16x 25 x 1 |
| **LV036** | 22.0 | 54.5 | 19.0 | 1.5 | 30.15 | 22.85 | 6.47 | 9.13 | 7.5 | 10.28 | 5.97 | 1.21 | 18.3 | 16.5 | 3/4" FPT | 18 x 30 x 1 |
| **LV042** | 22.0 | 54.5 | 19.0 | 1.5 | 30.15 | 22.85 | 5.27 | 10.45 | 6.46 | 11.3 | 4.77 | 1.22 | 18.3 | 16.5 | 3/4" FPT | 18 x 30 x 1 |
| **LV048** | 25.0 | 54.5 | 21.0 | 1.5 | 34.6 | 18.4 | 7.25 | 10.45 | 7.46 | 11.36 | 6.75 | 2.16 | 20.3 | 18.5 | 3/4" FPT | 20 x 34.5 x 1 |
| **LV060** | 25.0 | 54.5 | 21.0 | 1.5 | 34.6 | 18.4 | 6.32 | 11.76 | 6.81 | 12.5 | 5.82 | 1.68 | 20.3 | 18.5 | 3/4" FPT | 20 x 34.5 x 1 |
| **LV070** | 25.0 | 65.0 | 21.0 | 1.5 | 48.1 | 15.4 | 6.32 | 11.76 | 6.81 | 12.5 | 5.82 | 1.68 | 20.3 | 18.5 | 3/4" FPT | 20 x 24 x 1 (2) |

NOTES: All dimensions within +– 0.125“. All condensate drain connections are 3/4“ FPT. Horizontal units can be field converted between end blow and straight through supply air configurations. Specifications subject to change without notice.
1“ filter rack extends 1.23“ beyond the side of the unit. 2“ filter rack extends 2.89“ beyond the side of the unit.
The 2“ filter rack is 4 sided with a filter access door on each end and can accept either a 1“ or 2“ filter.
Refrigerant line connections are located directly behind refrigerant line knockouts.

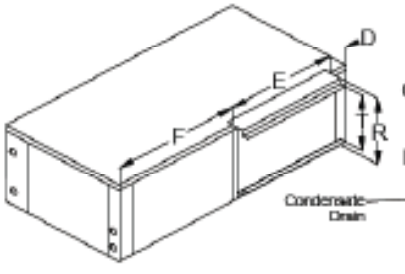


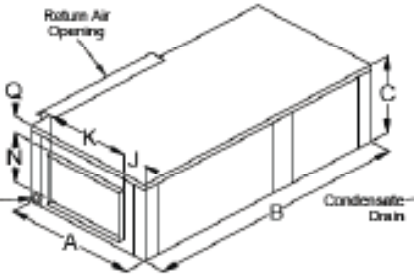

**Left Hand Return End Blow (FLE)**



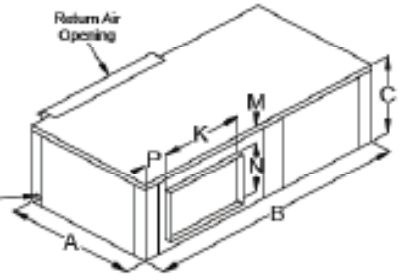




**Left Hand Return Straight Through (FLS)**




**Right Hand Return End Blow (FRE)**




**Right Hand Return Straight Through (FRS)**

NOTE: The local electric codes may require 36" or more clearance at the electrical control box.

# Guide Specifications

## General

Furnish and install FHP water source heat pumps as indicated on the plans with capacities and characteristics as listed in the schedule and the specifications that follow. The units shall be manufactured in an ISO 9001:2000 certified facility.

## Split System Water Source Heat Pumps

With the factory installed extended range package, units shall operate with entering fluid temperatures between 50˚F (10˚C) and 110˚F (43.3˚C) in cooling and between 25˚F (-3.9˚C) and 80˚F (27˚C) in heating. Equivalent units from other manufacturers can be proposed, provided approval to bid is given 10 days prior to bid closing. All equipment with a nominal capacity of 135,000 BTUH Total Cooling or lower must be listed in the current AHRI Applied Equipment Directory under the AHRI Standard AHRI/ISO- 13256-1, WLHP, GWHP and GLHP certification points.

All equipment in this section must meet or exceed the DOE mandated minimum EER's and COP's as listed in ASHRAE 90.1 as follows:

For the AHRI/ISO-13256-1, WLHP Rating (12.0 EER and 4.2 COP for units larger than a nominal 17,000 BTUH Total Cooling – 11.2 EER and 4.2 COP for units below a nominal 17,000 BTUH Total Cooling).

For the AHRI/ISO-13256-1, GLHP Rating a minimum 13.4 EER and 3.1 COP. All units shall be listed with Underwriters Laboratories (UL) for safety.

## Standard Construction

Units shall have the air flow arrangement as shown on the plans. If units with these arrangements are not used, the contractor supplying the water source heat pumps is responsible for any extra costs incurred by other trades and must submit detailed mechanical drawings showing ductwork requirements and changes or relocation of any other mechanical or electrical system. If other arrangements make servicing difficult, the contractor must provide access panels and clear routes to ease service. **The architect must approve all changes 10 days prior to bid.**

All units shall have stainless steel drain pans to comply with this project's IAQ requirements. Painted steel or plastic is not acceptable.

The cabinet shall be fabricated from heavy-gauge galvanized steel for superior corrosion protection. All interior surfaces shall be lined with a minimum of 1/2 inch (12.7mm) thick, multi density, coated, glass fiber insulation. Insulation within the air handling section shall not have any exposed edges. All insulation must meet NFPA 9®0A and be certified to meet the GREENGUARD Indoor Air Quality Standard for Low Emitting Products. One blower access panel and two compressor compartment access panels shall be removable with supply and return air ductwork in place.

Unit shall have a floating compressor or pan consisting of a 1/2" (12 mm) thick high density elastomeric pad between the compressor base plate and the unit base pan to prevent transmission of vibration to the structure.

Units shall have a 1" thick throwaway type glass fiber filter as standard.

Units shall have an optional 2" thick pleated MERV-8 and MERV-13 available.

The filter rack shall incorporate a 1 inch duct flange.

Cabinets shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring.

Supply and return water connections shall be brass female pipe thread fittings and mounted flush to cabinet exterior. Connections that require a back up wrench or that extrude past the unit corner post are not acceptable. Condensate connections will be stainless steel female pipe thread fittings. Plastic is not acceptable.

Hanging brackets shall be provided as standard for horizontal units.

## Fan and Motor Assembly

The fan shall be direct-drive centrifugal forward curved type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low velocity operation.

# Guide Specifications

The blower housing shall feature a removable inlet ring to facilitate removal and servicing of the fan motor.

Models shall have an constant torque electronically commutated motor (ECM) for premium fan efficiency. These motors shall feature 5 pre-programmed torque settings that can be changed in the field to match design requirements. 460 V – 3 Ph – 60 Hz units with these motors must be able to operate without the need for a neutral wire for the motor.

Models shall have an optional constant CFM electronically commutated motor for premium fan efficiency and constant air delivery over a wide range of external static pressures. These motors shall be field adjustable for +/- 15% of nominal design air flow. These motors shall provide feedback to the unit control box to verify motor operating mode and the delivered CFM.

## Refrigerant Circuit

Units shall use R-410A refrigerant. All units shall have a factory sealed and fully charged refrigerant circuit with the following components:

Hermetic compressor: Hermetic reciprocating, or scroll compressors shall be specifically designed for R-410A refrigerant and shall be internally sprung (if reciprocating), externally isolated and with thermal overload protection.

A refrigerant metering thermal expansion valve (TXV) with internal checking shall be provided in the air handler and in the condensing section.

The finned tube heat exchanger shall be constructed of lanced aluminum fins not exceeding sixteen fins per inch bonded to rifled copper tubes in a staggered pattern and will have a 600 PSIG (4140 kPa) working pressure. The heat exchanger shall have aluminum end sheets.

Optional Air Coil Protection: The finned tube heat exchanger shall have optional Duo-Guard™ protective coil coating. This corrosion protection shall consist of tin plated copper tubing with coated aluminum fins that must pass 1000 hours of ASTM B117 salt fog testing. Painted, dipped or e-coated heat exchangers are not acceptable.

Reversing valve. Reversing valves shall be four-way solenoid activated refrigerant valves which shall fail to the heating operation should the solenoid fail to function. Reversing valves which fail to the cooling operation shall not be allowed.

Coaxial (tube in tube) refrigerant to water heat exchanger. Refrigerant to water heat exchangers shall be of copper inner water tube and steel outer refrigerant tube design rated to withstand 600 PSIG working refrigerant pressure and 400 PSIG working water pressure. Shell and Tube style refrigerant to water heat exchangers shall be treated as pressure vessels and shall require refrigerant pressure relief valves piped to the exterior of the building. The contractor supplying the water source heat pumps with Shell and Tube heat exchangers shall be responsible for any additional installation costs. Brazed Plate water to refrigerant heat exchangers shall require additional centrifugal separators added to the supply water piping at each unit. Each separator shall have an automated clean out valve piped to a waste line. The contractor supplying water source heat pumps with Brazed Plate heat exchangers shall be responsible for any additional costs.

Option for Cupro-Nickel water coil – The refrigerant to water heat exchanger shall be of cupro-nickel inner water tube construction.

Safety controls include both a high pressure and low pressure switch. Temperature sensors shall not replace these safety switches. See the controls section of this specification for additional information.

Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service.

Activation of any safety device shall prevent compressor operation via a lockout circuit. The lockout circuit shall be reset at the thermostat or at the contractor supplied disconnect switch. Units which may be reset at the disconnect switch only shall not be acceptable. Refer to solid state safety circuit below.

## Electrical

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include fan relay, compressor contactor, 24V transformer, reversing valve coil solid state lockout controller and Unit Protection Module (UPM). The standard transformer shall be rated for a minimum 50 VA. All units shall be name-plated for use with time delay fuses or HACR circuit breakers. Unit controls shall be 24 volts.

# Guide Specifications

Option: Optional transformers shall be rated 75VA or 100VA and shall have a push button reset circuit breaker on the secondary power.

## Solid-State Safety Circuit

All units shall have a solid-state UPM safety control circuit with the following features:

Anti-short cycle time delay (5 minute delay on break).

Random start time delay on initial power.

Brown out/surge/power interruption protection.

120 second low pressure switch bypass timer.

High refrigerant pressure shutdown.

Low refrigerant pressure shutdown.

Low water temperature shutdown (adjustable for closed loop systems).

24 VAC alarm output for remote fault indication.

The UPM shall automatically reset after a safety shut down. Restart the unit if the cause of the shut down no longer exists (except for low temperature shutdowns). Should a fault re-occur within 60 minutes after resest, then a “hard” lockout will occur. A light emitting diode (LED) shall annunciate the following alarms: brown out, high refrigerant pressure, low refrigerant pressure and low water temperature. The condensate overflow sensor is not included as standard and will be a field installed accessory item. The LED will display each fault condition as soon as the fault occurs. If a hard lockout occurs, then the fault LED will display the type of fault until the unit is reset.

The UPM shall feature the following field configurable adjustments:

Lock out reset on thermostat interruption or power reset.

2 or 4 restart attempts before a hard lockout.

Test mode (reduces all time delays to 5 seconds for diagnostic work).

Antifreeze setting for low water temperature sensor.

Safety devices include:

Low pressure cutout set a 40 PSIG (280 kPa) for loss of charge protection (freezestat and/ or high discharge gas temperature sensor is not acceptable).

High pressure cutout control set at 600 PSIG(4125 Kpa).

Low supply water temperature sensor that detects drops in refrigerant temperature that could result in water coax heat exchanger freezing.

On board voltage detection that disables the compressor control circuit if there are extreme variations in supply voltage.

An optional energy management relay that allows unit control by an external source shall be factory installed. A terminal block with screw terminals shall be provided for control wiring.

## Additional Options

Units shall have an optional 2-way electrically operated shut-off valve mounted internally in the unit cabinet.

Units shall have an optional water flow regulating valve set to 3 gallons per minute of water flow per nominal ton of refrigeration capacity.

Compressor blanket is optional for all LV Split units.

Water Differential Pressure Switch: Prevents unit operation if there is no fluid flow. This factory installed, internally mounted device shall be rated at 600 PSI and disable the compressor if a lack of waterflow occurs.

Factory-installed control options: Water differential pressure switch, 75 VA and 100 VA transformer (resettable), phase loss and reversal protection, and unit mounted disconnect switch.

A 2”, four-sided filter rack is optional to accommodate nominal 2” thick pleated filters.

## Hose Kits

All units shall be connected with hoses. The hoses shall be either 2 or 3 feet long, braided stainless steel, fire rated hoses complete with adapters. Non-fire rated hoses are not acceptable. optional ball valves with P/T ports, flow controller, Y strainer and electric valve shall be in included as specified in the schedule.

## Notes

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