ROOFTOP PACKAGE UNITS

DWY/DWC/DGY SERIES

WATER SOURCE HEAT PUMPS

HIGH EFFICIENCY ROOFTOP UNITS

DWY – WATER LOOP HEAT PUMP

DWC – WATER LOOP COOLING ONLY

DGY – GROUND LOOP HEAT PUMP

FHP packaged down-flow rooftop units are adaptable to a wide variety of applications including offices, schools, hotels, shopping centers and retirement communities.

The units are available in three configurations, water loop, geothermal and cooling only to meet your requirements.

- High efficiency in the cooling and heating modes
- Factory supplied roof curbs allow positioning on the roof above the conditioned space minimizing duct work
- All units are fully charged and run tested in both cooling and heating modes for trouble free startup
- Units designed to conform to appropriate UL/ANSI Standards by ETL or other nationally recognized testing laboratory.

Unit Performance

Model	DWY & DWC – Water Loop				DGY – Ground Loop			
	Btuh Cooling	EER	Btuh Heating	COP	Btuh Cooling	EER	Btuh Heating	COP
036	34,500	14.1	42,900	4.4	35,800	14.9	24,100	3.5
048	49,600	13.0	59,600	4.5	52,000	14.9	35,000	3.5
060	60,600	12.8	73,000	4.6	60,200	14.1	47,000	3.2
072	75,200	12.8	83,300	4.6	76,300	15.9	55,400	3.7
096	95,000	12.5	113,000	4.2	96,000	13.5	71,400	3.2
120	119,000	12.0	140,000	4.0	120,000	13.4	93,100	3.2
150	150,700	12.5	185,000	4.3	154,000	13.6	120,500	3.2
180	171,900	13.9	208,000	4.6	178,200	15.7	133,600	3.5
240	229,800	12.5	287,100	4.3	236,900	14.5	180,600	3.4
300	276,400	13.6	343,100	4.6	285,000	14.8	230,000	3.6
360	376,500	12.4	459,100	4.2	383,100	14.0	304,100	3.2
420	426,700	12.1	550,000	4.2	440,000	13.4	369,600	3.2

Rating in accordance with ISO Standard 13256-1

Application Range

DWY heat pumps and DWC cooling only units are designed to operate on a cooling tower/boiler system with loop entering fluid temperatures between 55 ^{O}F and 95 ^{O}F.

DGY ground loop units are designed to operate with ground loop fluid temperatures between 30 ^{O}F and 100 ^{O}F.

Standard Design Features

Heavy Duty Cabinet. All models are constructed of G-90 galvanized steel. Bases are 16-gauge, corner posts 18-gauge, access panels are 20-gauge and top panels are 18-gauge. The interior of the entire unit is thermally insulated with 1" thick fiberglass with an R-value of 4.2. Insulation exposed to the air stream is finished with acrylic coating that is resistant to air erosion. The cabinet is mounted on two steel rails to facilitate installation. The design of the cabinet allows access to the electrical panel without impairing the unit operation.

Non-Rust Sound Attenuating Base Pan. Unit base pans are fabricated from 16 gauge G-90 galvanized steel and filled with a viscous petroleum distillate to a uniform 1/4" wet depth, air dried, and cured into a solid protective layer to eliminate corrosive oxidation. Air handling sections have an additional layer of 24-gauge aluminum that covers and encapsulates the corrosion protection. A layer of 3/8" thick closed cell insulation is applied to the bottom of the base providing thermal insulation, sound attenuation and curb perimeter seal.

Paint Finish. Unit are constructed of hot dipped galvanized G90 steel that is chemically treated with zinc phosphate, coated with 0.2 to 0.3 MIL polyurethane primer then finished with .7 to .8 MIL polyester top coat, making these units suitable for a variety of applications. Finish meets or exceeds 1,000 hour Salt Spray Test per ASTM B117 97.

Non-Corroding Hardware. Exterior nuts, bolts and washers are stainless steel. Exterior screws are coated with Magnigard Silver 17, an epoxy finish containing aluminum flake pigment that meets or exceeds 10,000 hour Salt Spray Test per ASTM B117 97.

Compressor. Models 036 and 048 have high efficiency reciprocating compressors. All other models shall be equipped with scroll compressors selected for their reliability and high efficiency. Compressor mountings are designed to reduce vibration transmission to the unit and minimize piping stress.

Compressor Protection. All compressors have crankcase heaters and internal overheat-overload protection.

Compressor Control Module. Units are equipped with control modules having the following sequence: Three second start delay, ninety-second bypass of low-pressure cutout switch at start-up to avoid nuisance trips and five minute anti-short-cycle time delay. Compressor operation is locked out upon opening of high-pressure or low-pressure cutout (after 90 second start-up delay expires). Reset remotely at thermostat or by removing and reapplying power to the unit. Switched 24-vac output for remote fault indication (field installed).

Separate Refrigeration Circuits. Units have multiple refrigeration circuits on sizes 096 through 420. Multi-compressor models provide the added benefit of partial standby. They also provide two-stage operation with one compressor being activated from the first stage of the (optional) two-stage space thermostat in the cooling cycle. In the heating cycle, all compressors are activated by the first stage of the space thermostat.

Indoor Air Coil. Unit sizes 036, 048 and 060 have aluminum plate lance fins with seamless rifled copper tubes. All other models shall have sine waved shaped aluminum fins formed on multiple rows of seamless copper tubing arranged in a staggered tube configuration for maximum heat transfer. The copper tubes are mechanically expanded, firmly bonding the tube to the collar of each fin.

Multiple compressor models have face split coils for maximum dehumidification at part load conditions.

Coaxial Counterflow Water Coil. The coaxial counterflow water coil consists of an enhanced surface inner copper tube for the fluid with the outer steel tube containing the refrigerant (tube-in-tube).

Fluid connections are stubbed off inside the cabinet. Field piped return and supply fluid lines will enter through individual sleeves in the compressor base pan section after passing through the roof curb. Units are shipped with water pressure taps and upper elbows for easy connections to the fluid source.

DGY models are equipped with fully insulated refrigerant and water lines and polyurethane foam encased coaxial coil.

Evaporator Blower and Motor. A forward-curved, statically and dynamically balanced DIDW centrifugal blower(s) is used for the supply air. Blower wheels are fabricated of galvanized steel. Blower housings are be fabricated of galvanized or epoxy coated steel. The blower wheel(s) are mounted on a solid steel shaft supported by sealed ball bearings. The shaft is belt driven with adjustable drive sheaves connected to a nominal 1725-rpm motor with sealed ball bearings. The sealed bearings on both the blower shaft and motor are permanently lubricated. Motors up to 3 horsepower are internally protected (auto-reset) and motors 5 horsepower and larger are externally protected (manual reset).

Refrigerant Circuit. Each refrigerant circuit has a reversing valve (except DWC), high-pressure safety control, low pressure safety control/loss of charge protection, dual gauge connections for high and low pressure readings and bi-flow thermo-expansion valve. The expansion valve has adjustable superheat and distributors to meter the refrigerant evenly to the evaporator refrigerant circuits. The 24 v reversing valve is energized in the cooling mode making the unit fail safe to the heating mode.

Factory installed service ports in the compressor suction, discharge and liquid lines shall provide ease in servicing. A common refrigerant line connection is also provided for use with water regulating valves.

Electric Controls. Internally wired controls includes the compressor control module, reversing valve relay and blower and compressor contactors or starters in a sheet metal control panel. The isolated 24-v control circuit includes a transformer and low voltage terminal board for external thermostat hookup.

Terminal Boards Connections 24-volt terminal boards shall be furnished for loop pump interlock on DGY models and 24-volt thermostat connections on all models.

Low Pressure Controls DGY units are to be furnished with a 15 psig control for use on ground loop systems.

DWY & DWC units are furnished with a 30-psig control for use on an open loop or high temperature closed loop systems.

Filters. All models are shipped with 2 -inch thick disposable glass fiber media filters mounted in the factory installed filter rack on the return air opening.

Sloped Stainless Steel Condensate Drain Pans The condensate drain pan are sloped to comply with ASHRAE Standard 62-1089R and fabricated from stainless steel. The bottom is insulated with 5/8" closed cell neoprene insulation. Condensate may be drained from either side of the unit from MPT drain fittings positioned at the exterior of each side of the cabinet (unit sizes 036, 048, 060 and 072 are equipped for one side drain only).

Power Entry Power through the curb sleeves is standard on all models.

Factory Options

Corrosion Protection Options:
- Mill & Chemical Service
- Seacoast Construction

Indoor Air Coils Coatings:
- Baked phenolic
- Thermoguard

Specialty Coils:
- Copper tube, copper fin DX evaporator coil
- Cupronickel Coaxial Coil

Refrigerant Circuit Components
- Hot gas reheat
- Hot gas bypass (single compressor units or lead compressor only on dual compressor units)

Motors:
- High Efficiency Blower Motor
- Totally Enclosed Blower Motor

Cabinet:
- Foil faced fiberglass insulation
- Closed cell foam insulation
- Closed cell foam insulation with aluminum inner walls
- Steel pillow block blower bearings
- Quick release handles on service panels

Filters:
- 2-Inch aluminum metal media filters
- 2 Inch extended surface pleated filters (30% efficient)

Electrical Options:
- Clogged filter indicator
- Firestat, return air mounted manual reset limit control
- 115 volt GFCI convenience outlet
- Exhaust fan interlock relay (to start remote exhaust fan)
- Non-fused disconnect NEMA3R enclosure
- Phase/voltage monitor

Heat Recovery:
- Lead Compressor Waste Heat Recovery Water Heater

Supplemental Heat Options:
- Electric Heat

Controls:
- Manual 25% Outside Air Damper, with termination for 24V control
- Motorized proportional outside air damper with termination for 24V control
- ASHRAE type 3 economizer

Field Installed Accessories

- **Full Perimeter Curb**
- **Full Perimeter Curb with Burglar Bars**
- **Insulated Curb**
- **Sloped Roof Kit**
- **Tie Down Kit**
- **Room Thermostats**
  - Electromechanical
  - Electronic
  - Electronic programmable
  - Firestat, duct mounted manual reset limit control

Engineering Guide Specifications

General

Furnish and install FHP Manufacturing Model DWY/DGY/*DWC Series A water source heat pump where indicated in the plans and specifications.

Performance ratings shall be per ARI Standard ISO 13256-1 with capacity and energy efficiency not less than scheduled. Unit shall be provided with factory installed options listed as detailed below.

Approvals

Unit shall be design certified to conform to appropriate UL/ANSI Standards by ETL or other nationally recognized testing laboratory.

Cabinet

Cabinet shall be constructed of G-90 galvanized steel with minimum gauge thickness as follows: Bases - 16-gauge; Corner Posts and Tops - 18-gauge; Access Panels - 20-gauge. The interior of the indoor airside is to be thermally insulated with 1-inch thick – 1½-pound density glass fiber insulation. A closed cell neoprene liner is to be installed on the underside of the base pan for noise reduction and weather seal to the roof curb. The cabinet is to be mounted on two steel rails to facilitate installation. The design of the cabinet shall allow access to the compressor and electrical panel without impairing unit operation.

Non-Rust Base.

Unit base pan shall be coated with a viscous petroleum distillate to a uniform ¼" wet depth, air-dried and cured to form a solid protective layer to eliminate corrosive oxidation.

Sloped Stainless Steel Drain Pan

The condensate drain pan shall be sloped to comply with ASHRAE Standard 62-1089R and fabricated from stainless steel. The bottom shall be insulated with 5/8" closed cell neoprene insulation. Condensation may be drained from either side of the unit (model sizes096 through 420) from MPT drain fittings positioned at the exterior of each side of the cabinet.

Paint Finish.

Hot dipped galvanized G90 steel shall be chemically treated with zinc phosphate, coated with 0.2 to 0.3 MIL polyurethane primer then finished with .7 to .8 MIL polyester top coat. Finish shall meet or exceeds 1,000 hour Salt Spray Test per ASTM B117 97.

Non-Corroding Hardware.

All exterior nuts, bolts and washers shall be stainless steel type 304. All exterior screws shall be steel coated with Magnigard Silver 17.

Assembly and Test

The unit shall be completely factory assembled, wired, leak and safety control tested. After assembly, each unit is to be charged and run tested in both the heating and cooling cycles (DWC models cooling only).

Refrigerant System

The refrigerant system shall include a reciprocating compressor (model sizes 036 and 048) or scroll compressors (models 060 and larger) with a crankcase heater and thermal overload protection. The compressor shall rest on external rubber isolators. The compressor is to have an optional 5-year limited warranty by the unit manufacturer from date of installation.

Each system shall include a reversing valve (except DWC), accumulator, dual gauge connections for high and low pressure readings, bi-flow thermo-expansion valve with adjustable superheat, coaxial counterflow water coil with inner copper tube and outer steel tube and copper tube aluminum plate-finned indoor air coil. Multiple compressor models shall have face split coils for maximum dehumidification at part load conditions.

Safety controls shall include low-pressure safety control/loss of charge protection and high-pressure safety control (manual-reset). Unit shall include a compressor logic control module with a circuit to lock the compressor off in the event one of the safety controls have been activated. Unit shall include a circuit to bypass the 30/15 psig low-pressure cutout at start-up for 90 seconds. Unit shall not be restarted until the room thermostat has been turned off and then on again or electric power to the unit has been interrupted.

Electrical Controls

Internally wired controls are to include the compressor control module(s) and the blower and compressor motor contactors or starters. The 24-volt control circuit shall include a transformer and low voltage terminal board for external thermostat control hookup. Loop pump 24-volt interlock shall be furnished for DGY models.

Fan Section

A forward curved, statically and dynamically balanced DWDI centrifugal blower(s) shall used. Blower(s) and housing(s) shall be fabricated of galvanized steel. The blower wheel(s) shall be mounted on a solid steel shaft supported by sealed ball bearings. The shaft shall be driven by adjustable belt drive sheaves connected to a nominal 1725-rpm motor with sealed ball bearings. The sealed bearings on both the blower shaft and motor shall be permanently lubricated.

Filters.

2-inch thick disposable glass fiber media filters shall to be mounted in the factory installed flat filter rack on the return air opening.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

036

	Specifications		Model 036		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 1200 scfm - 8.6 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid.	34,500		
		EER	14.1		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	42,900		
		COP	4.4		
	Rating Conditions: 1200 scfm - 8.6 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid.	35,800		
		EER	14.9		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid.	24,100		
		COP	3.5		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Reciprocating (Qty.)	1		
		RLA (ea)	8.7	4.8	4.8
		LRA(ea)	68	36	36
	½ HP Fan Motor	FLA	2.8	1.4	1.2
		Unit Minimum Circuit Ampacity	13.7	7.4	7.2
		Max. Time Delay Fuse or HACR Breaker	20	15	15
	¾ HP Fan Motor	FLA	2.8	1.4	2.1
		Unit Minimum Circuit Ampacity	13.7	7.4	8.1
		Max. Time Delay Fuse or HACR Breaker	20	15	15
	1 HP Fan Motor	FLA	3.4	1.7	1.9
		Unit Minimum Circuit Ampacity	14.3	7.7	7.9
		Max. Time Delay Fuse or HACR Breaker	20	15	15
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	4.2 — (14 / 3)		
		Refrigerant Control — Quantity	TXV — 1		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	9 x 6 — 1		
	Coaxial Water Coil	Connections	7/8" ODS		
	Condensate Drain	Size — Quantity	¾" MPT — 1		
	Filters: Disposable Type	Standard Size — Quantity	28 x 30 x 2 — 1		
	Weights	Unit Only (lbs)	550		
		With largest Supplemental Electric Heat (lbs)	561		
		Unit Only Shipping Weight (lbs)	560		
		#557 Curb Weight (lbs)	84		

Blower Performance

External Static Pressure

CFM	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1,100	1,115	0.4	1,200	0.4	1,295	0.5	1,385	0.5	1,455	0.6	1,530	0.6	1,600	0.7
1,200	1,150	0.5	1,250	0.5	1,340	0.6	1,440	0.6	1,500	0.7	1,580	0.7	1,650	0.8
1,300	1,220	0.5	1,320	0.6	1,400	0.7	1,470	0.7	1,540	0.8	1,620	0.9	1,690	0.9

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice.

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BPH and subtract from total and sensible in tables.)

COOLING

EWT(°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	6.1	1100	45,810	32,040	1230	50,000
		1200	46,490	33,490	1230	50,700
		1300	47,100	34,850	1240	51,330
	8.6	1100	46.460	32,310	1120	50,280
		1200	47,180	33,740	1120	51,020
		1300	47,780	35,180	1130	51,630
50	6.1	1100	43,990	31,450	1490	49,080
		1200	44,680	32.780	1490	49,780
		1300	45,170	34,280	1500	50,310
	7.2	1100	44,330	31,590	1440	49,260
		1200	45,030	32,920	1450	49,970
		1300	45,590	34,320	1450	50,550
	8.6	1100	44,680	31,620	1400	49,450
		1200	45,340	33,070	1400	50,130
		1300	45,920	34,450	1410	50,720
70	6.1	1100	40,340	29,790	1940	46,970
		1200	40,860	31,240	1950	47,520
		1300	41,510	32,650	1960	48,210
	7.2	1100	40.610	30.040	1910	47,130
		1200	41,230	31,310	1910	47,760
		1300	41,850	32,800	1920	48,430
	8.6	1100	40,900	30,150	1880	47,310
		1200	41,530	31,440	1880	47,950
		1300	42,160	32,930	1890	48,620
85	6.1	1100	34,860	27,750	2090	41,990
		1200	35,310	29,140	2100	42,480
		1300	35,750	30,370	2110	42,940
	7.2	1100	35,140	27,860	2060	42,180
		1200	35,610	29,260	2070	42,680
		1300	36,010	30,610	2080	43,110
	8.6	1100	35,440	27,870	2030	42,380
		1200	35,870	29,360	2040	42,850
		1300	36,290	30,720	2050	43,290
100	6.1	1100	32,030	26,500	2340	40,030
		1200	32,420	27,860	2350	40,460
		1300	32,720	29.300	2360	40,790
	7.2	1100	32,300	26,610	2320	40,220
		1200	32.700	27.970	2330	40.660
		1300	33,010	29,420	2340	41,000
	8.6	1100	32,550	26,710	2300	40,400
		1200	32,960	28,060	2310	40,850
		1300	33,270	29,520	2320	41,190
110	6.1	1100	30,040	25,710	2490	38,560
		1200	30,340	27.200	2510	38,900
		1300	30,660	28,450	2520	39,260
	7.2	1100	30,300	25,810	2480	38,760
		1200	30,610	27,300	2490	39,100
		1300	30,900	28,640	2500	39,450
	8.6	1100	30.540	25.910	2460	38.930
		1200	30,850	27,400	2470	39,290
		1300	31,160	28,900	2480	39,630

HEATING

EWT(°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorbed Btu/h	Watts
30	6.1	1100	20860	15900	1450
		1200	20890	16060	1410
		1300	20910	16200	1380
	8.6	1100	21490	16410	1490
		1200	21520	16580	1450
		1300	21550	16730	1410
40	6.1	1100	25310	19670	1650
		1200	25350	19870	1610
		1300	25370	20040	1560
	8.6	1100	26090	20320	1690
		1200	26140	20540	1640
		1300	26170	20720	1600
50	6.1	1100	30200	23700	1910
		1200	30280	23950	1850
		1300	30320	24160	1800
	7.2	1100	30710	24130	1930
		1200	30790	24390	1870
		1300	30840	24610	1830
	8.6	1100	31170	24520	1950
		1200	31260	24790	1900
		1300	31320	25020	1850
60	6.1	1100	35180	27900	2130
		1200	35310	28220	2080
		1300	35400	28490	2030
	7.2	1100	35760	28390	2160
		1200	35900	28720	2100
		1300	36010	29000	2050
	8.6	1100	36290	28840	2180
		1200	36450	29180	2130
		1300	36570	29470	2080
70	6.1	1100	40030	32090	2320
		1200	40240	32490	2270
		1300	40410	32820	2220
	7.2	1100	40690	32650	2350
		1200	40930	33060	2300
		1300	41110	33410	2260
	8.6	1100	41340	33200	2390
		1200	41600	33620	2340
		1300	41800	33980	2290
80	6.1	1100	45170	36450	2550
		1200	45500	36940	2510
		1300	45770	37350	2460
	7.2	1100	45960	37120	2590
		1200	46320	37630	2550
		1300	46610	38060	2500
	8.6	1100	46660	37720	2620
		1200	47060	38250	2580
		1300	47370	38700	2540

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating Correction Multipliers at Entering Air Temperatures:

Entering Air Temperatur	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers – At Various Entering Air °F DB and °F WB Temperatures

Entering. Air °F WB	Multipliers				Multipliers for Sensible Cooling										
					Entering Air °F DB										
	Total Cooling	EER	Total Watts	Heat Rej.	70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Cooling Correction Multipliers for Fluid Flow Rate

Condenser Fuid Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	10.6	7.2	16.6	1.005	0.987	1.002	1.001	1.02
10	8.6	4.7	10.9	1.000	1.000	1.000	1.000	1.00
12	7.1	3.1	7.2	0.987	1.012	0.992	0.996	0.98
14	6.1	2.3	5.4	0.973	1.025	0.985	0.992	0.95
16	5.3	2.0	4.6	0.960	1.037	0.977	0.988	0.93
20	4.3	1.2	2.8	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20

Heaters may be specified one stage only
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest compressor RLA + electric heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

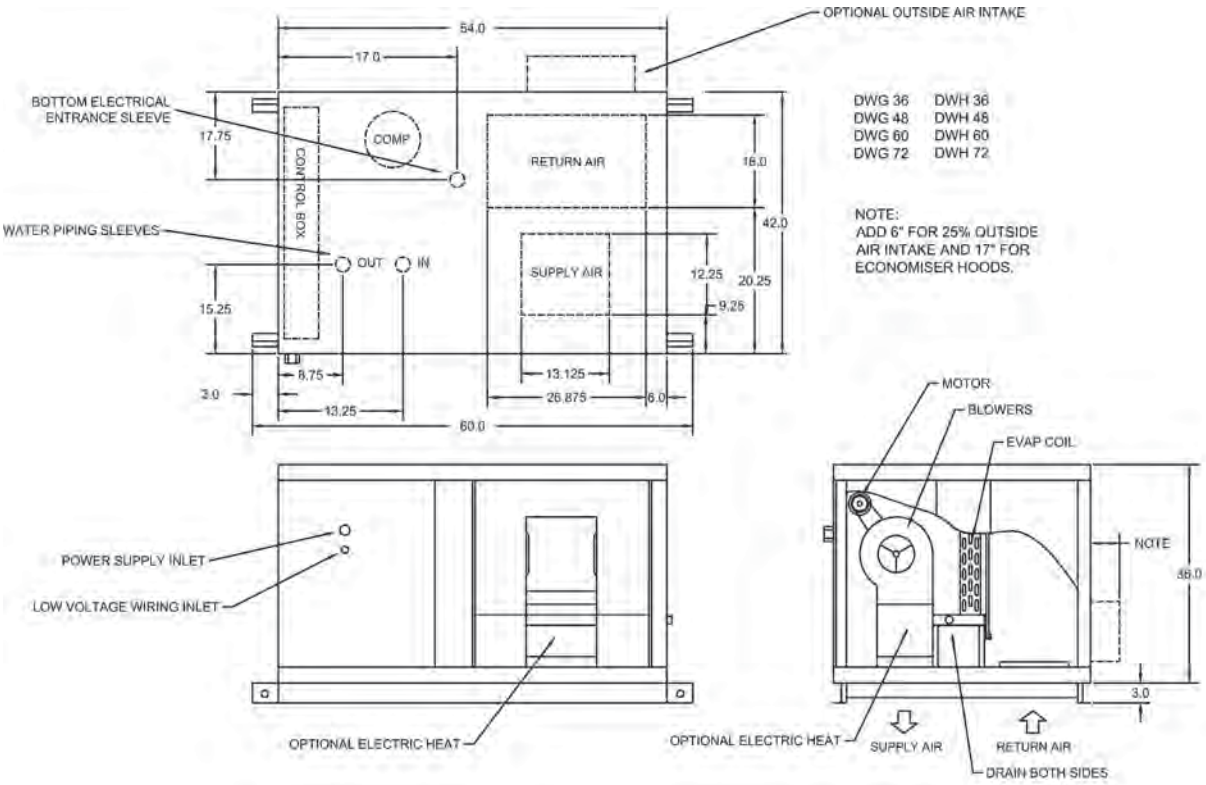
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

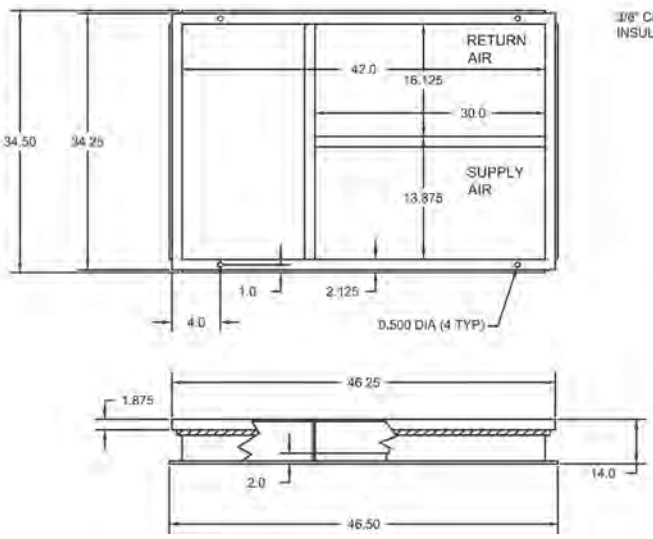
Rooftop Dimensions

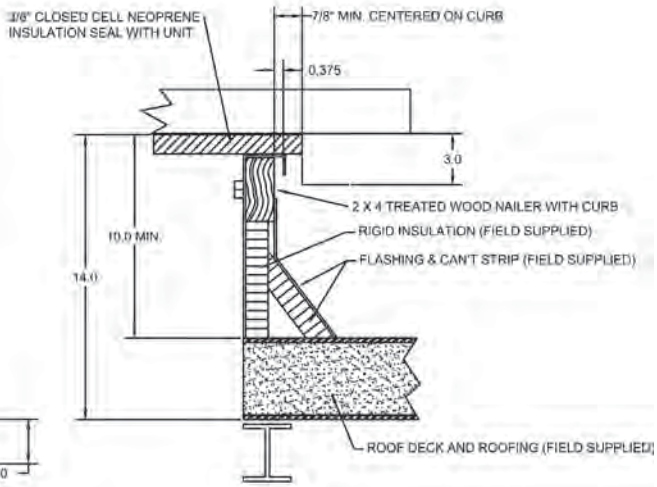
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 036, 048, 060 & 072



557 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

048

	Specifications		Model 048		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 1800 scfm – 13.0 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	49,600		
		EER	13.0		
	Heating DWY only	Btu/h @ 68/59°F ent air, 68°F ent Fluid	59,600		
		COP	4.5		
	Rating Conditions: 1800 scfm – 13.0 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	52,000		
		EER	14.9		
	Heating	Btu/h @ 68/59°F ent air, 32°F ent fluid.	35,000		
		COP	3.5		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Reciprocating (Qty.)	1		
		RLA (ea)	12.8	5.8	5.8
		LRA(ea)	91	42	42
	¾ HP Fan Motor	FLA	2.8	1.4	2.1
		Unit Minimum Circuit Ampacity	18.8	8.7	9.4
		Max. Time Delay Fuse or HACR Breaker	30	15	15
	1 HP Fan Motor	FLA	3.4	1.7	1.9
		Unit Minimum Circuit Ampacity	19.4	8.9	9.2
		Max. Time Delay Fuse or HACR Breaker	30	15	15
	1½ HP Fan Motor	RLA	4.6	2.3	2.7
		Unit Minimum Circuit Ampacity	20.6	9.6	9.9
		Max. Time Delay Fuse or HACR Breaker	30	15	15
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	5.1 - (14 / 3)		
		Refrigerant Control — Quantity	TXV - 1		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	9 x 9 - 1		
	Coaxial Water Coil	Connections	1 1/8 ODS		
	Condensate Drain	Size — Quantity	¾ " MPT - 1		
	Filters: Disposable Type	Standard Size — Quantity	28 x 30 x 2 - 1		
	Weights	Unit Only (lbs)	575		
		With largest Supplemental Electric Heat (lbs)	587		
		Unit Only Shipping Weight (lbs)	585		
		#557 Curb Weight (lbs)	84		

Blower Performance

External Static Pressure														
CFM	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1,700	1,290	0.7	1,370	0.7	1,450	0.8	1,530	0.9	1,600	1.0	1,680	1.1	1,750	1.2
1,800	1,330	0.8	1,420	0.8	1,490	1.0	1,570	1.1	1,650	1.1	1,710	1.2	1,800	1.4
1,900	1,390	0.9	1,460	1.0	1,540	1.1	1,610	1.2	1,680	1.2	1,760	1.4	1,840	1.5

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BPH and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	8.5	1,700	64,590	46,720	2,230	72,200
		1,800	65,270	47,840	2,230	72,880
		1,900	65,640	49,320	2,240	73,290
	13	1,700	65,590	47,110	2,130	72,840
		1,800	66,280	48,260	2,130	73,540
		1,900	66,810	49,540	2,130	74,080
50	8.5	1,700	62,230	45,660	2,470	70,670
		1,800	62,820	46,860	2,480	71,270
		1,900	63,230	48,230	2,490	71,710
	10.5	1,700	62,850	45,850	2,410	71,080
		1,800	63,420	47,100	2,420	71,660
		1,900	63,760	48,600	2,430	72,040
	13	1,700	63,270	45,970	2,370	71,360
		1,800	63,820	47,270	2,380	71,930
		1,900	64,180	48,760	2,390	72,320
70	8.5	1,700	56,940	43,710	2,980	67,120
		1,800	57,420	44,940	2,990	67,620
		1,900	58,060	46,220	3,000	68,290
	10.5	1,700	57,500	43,920	2,930	67,500
		1,800	58,070	45,010	2,930	68,080
		1,900	58,620	46,480	2,950	68,670
	13	1,700	57,890	44,030	2,890	67,770
		1,800	58,330	45,390	2,900	68,230
		1,900	58,910	46,830	2,910	68,840
85	8.5	1,700	58,910	41,280	3,110	69,530
		1,800	51,590	42,740	3,130	62,260
		1,900	51,960	43,980	3,140	62,670
	10.5	1,700	51,700	41,710	3,070	62,170
		1,800	52,140	42,940	3,080	62,640
		1,900	52,520	44,190	3,090	63,060
	13	1,700	52,060	41,840	3,040	62,420
		1,800	52,600	42,900	3,040	62,980
		1,900	52,900	44,330	3,050	63,320
100	8.5	1,700	47,130	39,590	3,470	58,980
		1,800	47,390	41,060	3,490	59,300
		1,900	47,760	42,180	3,500	59,700
	10.5	1,700	47,630	39,800	3,430	59,330
		1,800	47,910	41,250	3,450	59,680
		1,900	48,240	42,520	3,460	60,050
	13	1,700	47,880	40,150	3,410	59,500
		1,800	48,350	41,180	3,410	60,000
		1,900	48,590	42,640	3,430	60,290
110	8.5	1,700	44,150	38,650	3,710	56,830
		1,800	44,530	39,760	3,720	57,240
		1,900	44,760	41,130	3,740	57,530
	10.5	1,700	44,720	38,630	3,670	57,240
		1,800	44,970	40,110	3,690	57,560
		1,900	45,260	41,330	3,700	57,900
	13	1,700	45,040	38,770	3,640	57,480
		1,800	45,300	40,240	3,660	57,800
		1,900	45,600	41,470	3,680	58,150

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	8.5	1,700	32,000	24,260	2,270
		1,800	32,040	24,350	2,250
		1,900	32,170	24,490	2,250
	13	1,700	32,920	25,080	2,300
		1,800	33,020	25,210	2,290
		1,900	33,110	25,330	2,280
40	8.5	1,700	37,770	29,300	2,480
		1,800	37,890	29,470	2,470
		1,900	37,990	29,610	2,460
	13	1,700	38,950	30,340	2,520
		1,800	39,070	30,520	2,510
		1,900	39,190	30,670	2,500
50	8.5	1,700	43,880	34,680	2,700
		1,800	44,020	34,890	2,680
		1,900	44,150	35,070	2,660
	10.5	1,700	44,660	35,370	2,720
		1,800	44,820	35,590	2,700
		1,900	44,960	35,790	2,690
	13	1,700	45,230	35,870	2,740
		1,800	45,390	36,100	2,720
		1,900	45,540	36,300	2,710
60	8.5	1,700	50,260	40,310	2,910
		1,800	50,440	40,580	2,890
		1,900	50,600	40,820	2,870
	10.5	1,700	51,190	41,130	2,950
		1,800	51,390	41,410	2,920
		1,900	51,590	41,690	2,900
	13	1,700	51,870	41,730	2,970
		1,800	52,100	42,060	2,940
		1,900	52,280	42,320	2,920
70	8.5	1,700	56,890	46,150	3,150
		1,800	57,110	46,480	3,120
		1,900	57,310	46,780	3,090
	10.5	1,700	58,010	47,140	3,190
		1,800	58,250	47,500	3,150
		1,900	58,470	47,810	3,120
	13	1,700	58,790	47,840	3,210
		1,800	59,050	48,210	3,180
		1,900	59,270	48,540	3,150
80	8.5	1,700	63,680	52,150	3,380
		1,800	63,960	52,570	3,340
		1,900	64,210	52,950	3,300
	10.5	1,700	64,970	53,290	3,420
		1,800	65,270	53,740	3,380
		1,900	65,540	54,140	3,340
	13	1,700	65,820	54,040	3,450
		1,800	66,140	54,510	3,410
		1,900	66,410	54,930	3,370

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating Correction Multipliers at Entering Air Temperatures:

Entering air temperatur	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers – At Various Entering Air °F DB and °F WB Temperatures

Entering . Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F DB										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Cooling Correction Multipliers for Fluid Flow Rate

Condenser Fluid Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	Gpm	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	15.7	8.5	19.7	1.005	0.957	1.002	1.001	1.02
10	13.0	5.9	13.7	1.000	1.000	1.000	1.000	1.00
12	10.4	3.9	9.0	0.987	1.012	0.992	0.996	0.98
14	8.9	2.9	6.7	0.973	1.025	0.985	0.992	0.95
16	7.8	2.2	5.2	0.960	1.037	0.977	0.988	0.93
20	6.3	1.5	3.4	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25

Heaters may be specified one stage only
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply:
Use values from specification table.

For unit with supplemental electric heat: Single point power.
Minimum circuit ampacity ={(Largest com. RLA + electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply.
Use values from specification table.

For unit with supplemental electric heat: Single point power.
Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

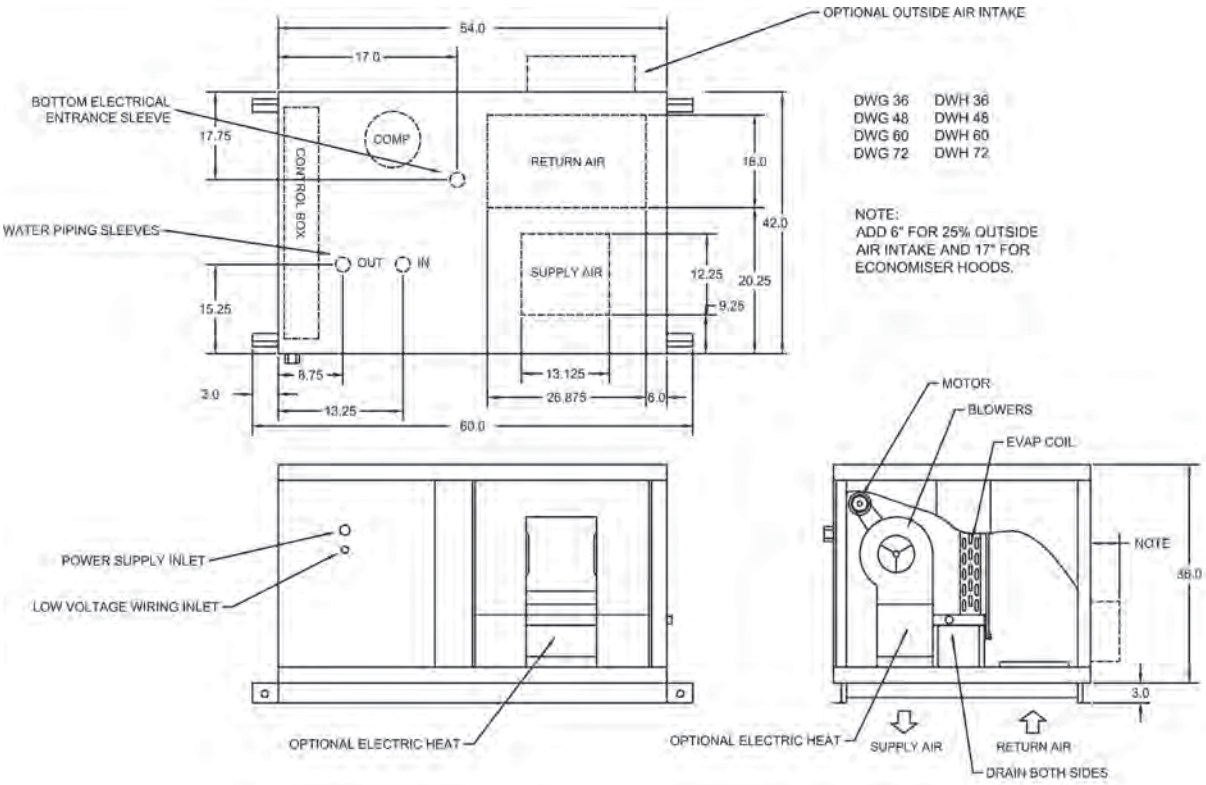
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

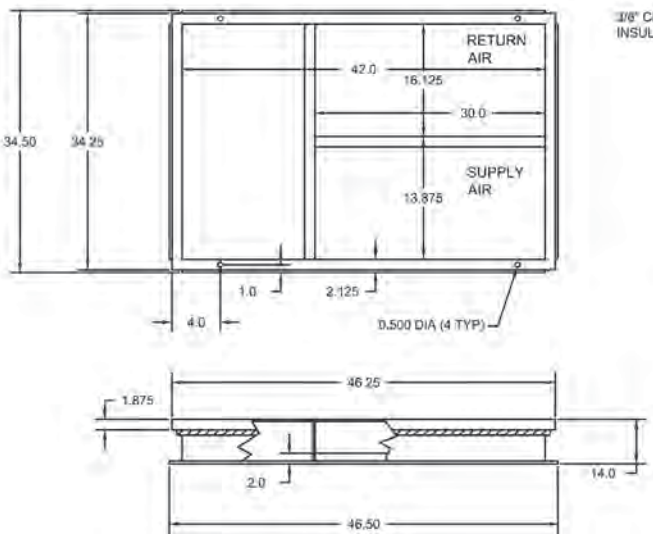
Rooftop Dimensions

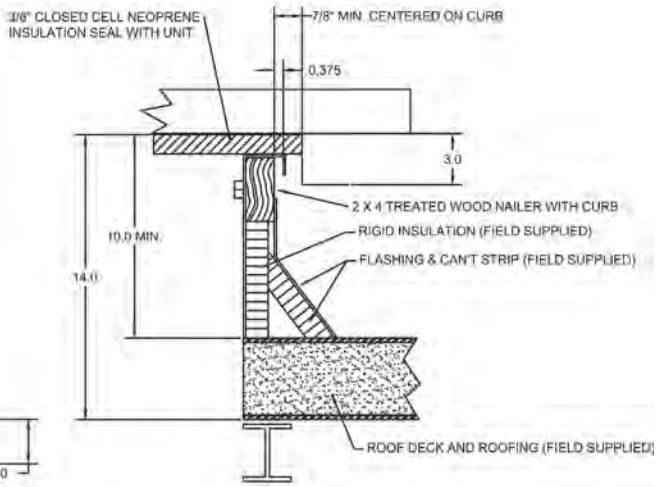
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 036, 048, 060 & 072



557 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

060

	Specifications		Model 060		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 2000 scfm – 15.5 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid.	60,600		
		EER	12.8		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	73,000		
		COP	4.6		
	Rating Conditions: 2000 scfm – 15.5 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid.	60,200		
		EER	14.1		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid.	47,000		
		COP	3.2		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	1		
		RLA (ea)	17.4	6.8	6.8
		LRA(ea)	123	49.5	49.5
	¾ HP Fan Motor	FLA	2.8	1.4	2.1
		Unit Minimum Circuit Ampacity	24.6	9.9	10.6
		Max. Time Delay Fuse or HACR Breaker	40	15	15
	1 HP Fan Motor	FLA	3.4	1.7	1.9
		Unit Minimum Circuit Ampacity	25.2	10.2	10.4
		Max. Time Delay Fuse or HACR Breaker	40	15	15
	1½ HP Fan Motor	FLA	4.6	2.3	2.7
		Unit Minimum Circuit Ampacity	26.4	10.8	11.2
		Max. Time Delay Fuse or HACR Breaker	40	15	15
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	6.4 — (14 / 3)		
		Refrigerant Control — Quantity	TXV — 1		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	10 x 10 — 1		
	Coaxial Water Coil	Connections	13/8" ODS		
	Condensate Drain	Size — Quantity	¾" MPT — 1		
	Filters: Disposable Type	Standard Size — Quantity	32 x 32 x 2 — 1		
	Weights	Unit Only (lbs)	600		
		With largest Supplemental Electric Heat (lbs)	612		
		Unit Only Shipping Weight (lbs)	610		
		#557 Curb Weight (lbs)	84		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1,800	910	0.6	995	0.7	1,080	0.8	1,165	0.9	1,245	0.9	1,320	1.0	1,390	1.1
2,000	970	0.7	1,045	0.8	1,125	0.9	1,200	1.0	1,275	1.1	1,345	1.2	1,410	1.3
2,200	1,040	0.8	1,140	0.9	1,200	1.0	1,260	1.1	1,340	1.2	1,400	1.4	1,570	1.5

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	11	1800	75,430	52,770	2640	84.430
		2000	76,660	55,660	2650	85,710
		2200	77,680	58,510	2670	86,780
	15.5	1800	76,030	53,070	2560	84,780
		2000	77,330	55,950	2580	86,120
		2200	78,370	58,840	2590	87,220
50	11	1800	73,490	51,990	2860	83.240
		2000	74,700	54,860	2870	84,500
		2200	75,670	57,720	2890	85,520
	13	1800	73,850	52,140	2820	83,450
		2000	75.070	55,010	2830	84.730
		2200	76,060	57,870	2840	85.760
	15.5	1800	74,160	52,270	2780	83,640
		2000	75,400	55,140	2790	84,930
		2200	76.400	58,000	2810	85.970
70	11	1800	69,200	50,230	3420	80,870
		2000	70,270	53,120	3440	82,000
		2200	71,260	55,620	3440	83,010
	13	1800	69,570	50,380	3370	81,060
		2000	70,660	53.260	3380	82,200
		2200	71,650	55,800	3390	83,220
	15.5	1800	69,890	50,510	3320	81,230
		2000	70,990	53,400	3340	82,380
		2200	71,870	56,330	3350	83,300
85	11	1800	65,680	48,850	3950	79,170
		2000	66.750	51,430	3960	80.270
		2200	67,440	54,580	3980	81,010
	13	1800	66,040	48,990	3890	79,330
		2000	67,120	51,600	3900	80,440
		2200	67,960	54,330	3910	81.310
	15.5	1800	66,360	49,110	3840	79.470
		2000	67,330	52,070	3860	80,490
		2200	68,160	54,870	3870	81,360
100	11	1800	62,050	47,150	4590	77,720
		2000	62,830	50,290	4610	78.560
		2200	63,620	52,870	4620	79,380
	13	1800	62,290	47,620	4530	77,760
		2000	63,320	50,040	4540	78,810
		2200	63,990	53,030	4550	79.520
	15.5	1800	62,590	47,720	4480	77,880
		2000	63.620	50,190	4480	78.930
		2200	64,300	53,190	4500	79,640
110	11	1800	59,520	46,080	5090	76,900
		2000	60,350	48,870	5100	77,760
		2200	61,140	51,730	5110	78,590
	13	1800	59,850	46,220	5030	76,990
		2000	60,690	49,020	5040	77,870
		2200	61,490	51,880	5040	78,700
	15.5	1800	60,130	46,360	4970	77,080
		2000	60,990	49,140	4980	77,970
		2200	61,800	52,010	4990	78,810

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	11	1800	42040	30300	3290
		2000	42100	30560	3230
		2200	42150	30770	3180
	15.5	1800	42760	31050	3310
		2000	42820	31310	3240
		2200	42880	31520	3190
40	11	1800	47700	35750	3410
		2000	47780	36060	3340
		2200	47840	36310	3280
	15.5	1800	48600	36570	3430
		2000	48690	36900	3350
		2200	48770	37170	3290
50	11	1800	53790	41530	3530
		2000	53900	41920	3450
		2200	53990	42220	3380
	13	1800	54370	42070	3550
		2000	54490	42470	3460
		2200	54580	42790	3390
	15.5	1800	54900	42560	3560
		2000	55020	42970	3470
		2200	55130	43290	3400
60	11	1800	60290	47610	3670
		2000	60430	48090	3570
		2200	60550	48470	3490
	13	1800	60990	48280	3690
		2000	61150	48780	3580
		2200	61280	49170	3500
	15.5	1800	61660	48940	3700
		2000	61830	49450	3600
		2200	61970	49850	3510
70	11	1800	67140	54130	3820
		2000	67330	54710	3700
		2200	67500	55180	3610
	13	1800	68000	54960	3840
		2000	68210	55560	3720
		2200	68390	56040	3630
	15.5	1800	68710	55620	3850
		2000	68940	56240	3730
		2200	69130	56740	3640
80	11	1800	74350	60960	3980
		2000	74610	61660	3850
		2200	74830	62230	3740
	13	1800	75320	61890	4010
		2000	75610	62620	3870
		2200	75840	63210	3760
	15.5	1800	76020	62480	4020
		2000	76320	63250	3880
		2200	76570	63850	3770

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperature °F	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering . Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F DB										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Cooling Correction Multipliers for Fluid Flow Rate

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	19.4	10	21.9	1.005	0.987	1.002	1.001	1.02
10	15.5	6	14.0	1.000	1.000	1.000	1.000	1.00
12	12.9	4	9.7	0.987	1.012	0.992	0.996	0.98
14	11.1	3	7.2	0.973	1.025	0.985	0.992	0.95
16	9.7	2	5.5	0.960	1.037	0.977	0.988	0.93
20	7.8	2	3.5	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25

1) Heaters may be specified one stage only
2) Selection based on 100 CFM per kW
3) MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + Electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

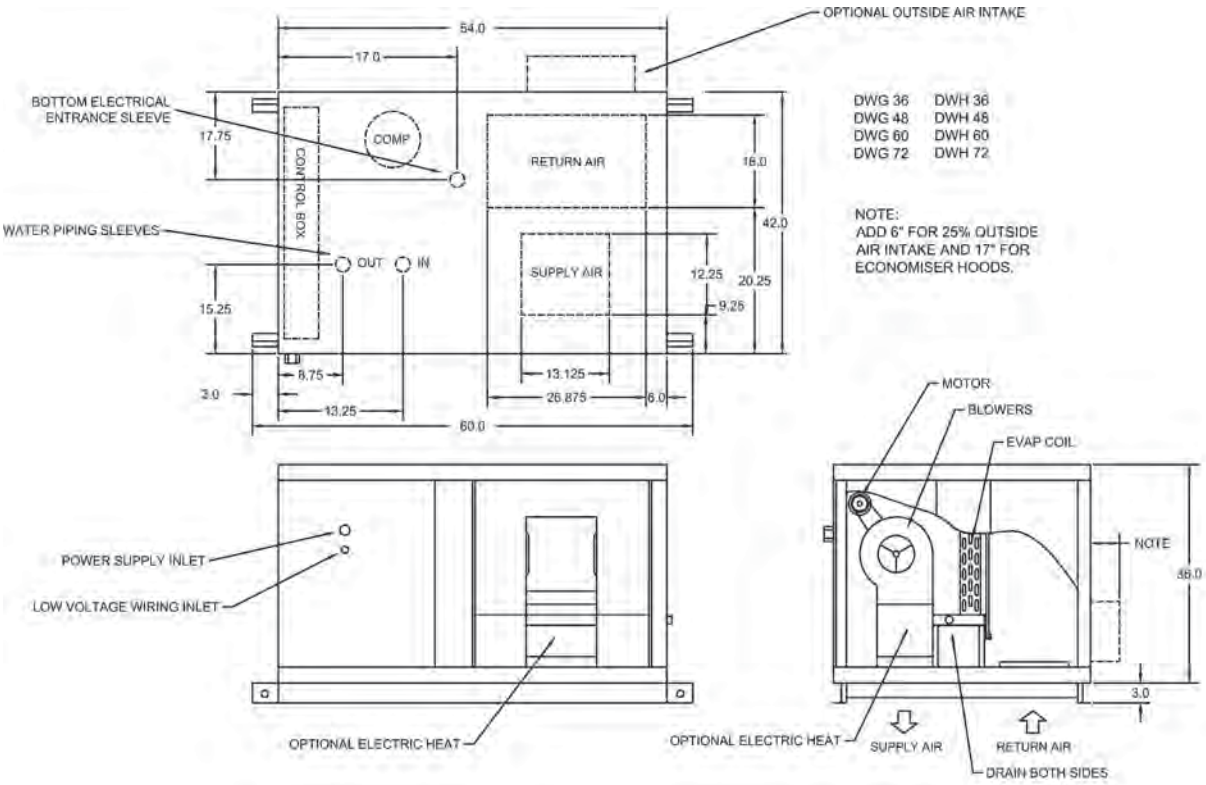
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation the max. fuse size is the same as MCA or next higher fuse size

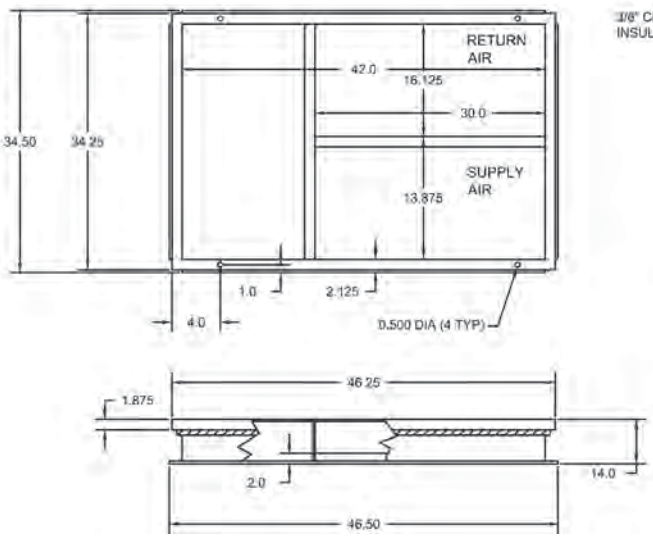
Rooftop Dimensions

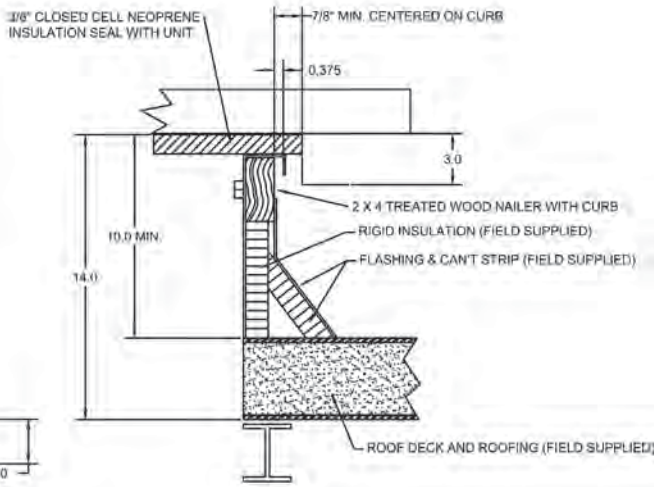
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 036, 048, 060 & 072



557 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

072

	Specifications		Model 072		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 2300 scfm – 18.0 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	75,200		
		EER	12.8		
	Heating DWY only	Btu/h @ 68/59°F ent Air. 68°F ent Fluid	83,300		
		COP	4.6		
	Rating Conditions: 2300 scfm - 18.0 gpm – 208/3/60				
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	76,300		
		EER	15.9		
	Heating	Btu/h @ 68/59°F ent Air. 32°F ent Fluid	55,400		
		COP	3.7		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	1		
		RLA (ea)	20	9	9
		LRA(ea)	156	75	75
	1 HP Fan Motor	FLA	3.4	1.7	1.9
		Unit Minimum Circuit Ampacity	28.4	12.9	13.2
		Max. Time Delay Fuse or HACR Breaker	45	20	20
	1½ HP Fan Motor	FLA	4.6	2.3	2.7
		Unit Minimum Circuit Ampacity	29.6	13.6	13.9
		Max. Time Delay Fuse or HACR Breaker	45	20	20
	2 HP Fan Motor	FLA	6.2	3.1	3.5
		Unit Minimum Circuit Ampacity	31.2	14.4	14.8
		Max. Time Delay Fuse or HACR Breaker	50	20	20
0PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	6.4 — (12 / 4)		
		Refrigerant Control — Quantity	TXV — 1		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	11 x 10 — 1		
	Coaxial Water Coil	Connections	1 1/8" ODS		
	Condensate Drain	Size — Quantity	¾" MPT— 1		
	Filters: Disposable Type	Standard Size — Quantity	32 x 32 x 2 — 1		
	Weights	Unit Only (lbs)	610		
		With largest Supplemental Electric Heat (lbs)	622		
		Unit Only Shipping Weight (lbs)	620		
		#557 Curb Weight (lbs)	84		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2,000	1,122	0.8	1,182	0.9	1,239	1.0	1,293	1.1	1,345	1.1	1,395	1.2	1,443	1.3
2,300	1,164	1.1	1,222	1.1	1,277	1.2	1,330	1.3	1,381	1.4	1,430	1.5	1,477	1.6
2,600	1,209	1.3	1,265	1.4	1,318	1.5	1,370	1.6	1,419	1.7	1,467	1.8	1,513	1.9

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	12	1800	82,960	56,110	4040	96,760
		2000	84.830	60,300	4100	98,820
		2200	86,310	64,280	4140	100,440
	18	1800	83,800	56,630	3930	97,210
		2000	85.720	60,850	3990	99,330
		2200	87,350	64,650	4020	101,080
50	12	1800	80,460	55,360	4350	95,310
		2000	82,390	59,270	4390	97,380
		2200	83,940	62,950	4420	99,040
	15	1800	81,010	55,590	4280	95,620
		2000	83,060	59,350	4320	97,790
		2200	84.370	63,550	4360	99,240
	18	1800	81,370	55,740	4230	95,820
		2000	83.370	59,660	4280	97,950
		2200	84,790	63,690	4310	99,500
70	12	1800	75.490	53,100	5040	92,700
		2000	77,090	57,230	5080	94,430
		2200	78,590	61,260	5120	96,040
	15	1800	75,940	53,470	4970	92,890
		2000	77,670	57,420	5000	94,740
		2200	79,190	61,480	5030	96,370
	18	1800	76,290	53,610	4920	93,070
		2000	78,050	57,550	4950	94,950
		2200	79,580	61,630	4980	96,580
85	12	1800	71,480	51,440	5690	90,880
		2000	73,110	55,200	5710	92,610
		2200	74,400	59,450	5750	94,030
	15	1800	72,000	51,630	5600	91,100
		2000	73,650	55,430	5630	92,840
		2200	75,110	59,370	5650	94,400
	18	1800	72,320	51,800	5540	91.230
		2000	73,840	55,910	5570	92,860
		2200	75,320	59,860	5600	94,430
100	12	1800	67,260	49,820	6490	89,390
		2000	68,960	53,570	6510	91,190
		2200	70,180	57,260	6540	92,490
	15	1800	67,760	49,980	6390	89,550
		2000	69,330	54,110	6420	91,220
		2200	70,560	57,840	6440	92,540
	18	1800	68,090	50,080	6320	89,660
		2000	69,810	53,920	6340	91,450
		2200	71,060	57,640	6370	92,780
110	12	1800	64,400	48,640	7120	88,710
		2000	65,900	52,660	7160	90,320
		2200	67,060	56,340	7190	91,580
	15	1800	65,010	48,500	7010	88.920
		2000	66,540	52,530	7040	90,550
		2200	67,530	56,640	7080	91,680
	18	1800	65,170	48,950	6950	88,870
		2000	66,700	53,010	6970	90,490
		2200	67,870	56,720	6990	91,740

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	12	1800	55920	40080	4660
		2000	56070	40540	4550
		2200	56180	40890	4470
	18	1800	57260	41400	4700
		2000	57430	41900	4580
		2200	57560	42270	4500
40	12	1800	63360	46460	4880
		2000	63550	47080	4750
		2200	63700	47540	4650
	18	1800	64940	47810	4920
		2000	65170	48470	4790
		2200	65350	48970	4690
50	12	1800	71140	53420	5110
		2000	71400	54200	4950
		2200	71610	54780	4830
	15	1800	72320	54510	5140
		2000	72620	55330	4980
		2200	72850	55940	4860
	18	1800	73130	55270	5160
		2000	73450	56110	5000
		2200	73690	56740	4880
60	12	1800	79440	61080	5350
		2000	79790	62030	5170
		2200	80080	62740	5040
	15	1800	80840	62380	5400
		2000	81240	63380	5210
		2200	81550	64130	5070
	18	1800	81820	63290	5430
		2000	82240	64320	5240
		2200	82570	65100	5100
70	12	1800	88140	69030	5630
		2000	88610	70190	5420
		2200	88980	71060	5260
	15	1800	89800	70570	5680
		2000	90320	71800	5460
		2200	90730	72710	5310
	18	1800	90920	71610	5720
		2000	91470	72880	5500
		2200	91910	73830	5340
80	12	1800	97200	77330	5930
		2000	97830	79020	5680
		2200	98320	80040	5510
	15	1800	99100	79300	5990
		2000	99770	80750	5740
		2200	100310	81840	5570
	18	1800	100360	80100	6040
		2000	101080	81650	5790
		2200	101650	82810	5610

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts

Heating correction multipliers at entering air temperatures:

Entering air temperatur	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering . Air °F wbt	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F dbt										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design ΔT	Gpm	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8°	23	5	12.0	1.006	0.988	1.003	1.003	1.02
10°	18	4	8.0	1.000	1.000	1.000	1.000	1.00
12°	15	3	6.0	0.995	1.011	0.998	0.995	0.99
14°	13	2	4.5	0.991	1.022	0.995	0.992	0.97
16°	11	2	3.5	0.986	1.035	0.992	0.990	0.95
20°	9	1	2.5	0.975	1.056	0.988	0.985	0.93

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25

Heaters may be specified one stage only
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + Electric Heater Amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

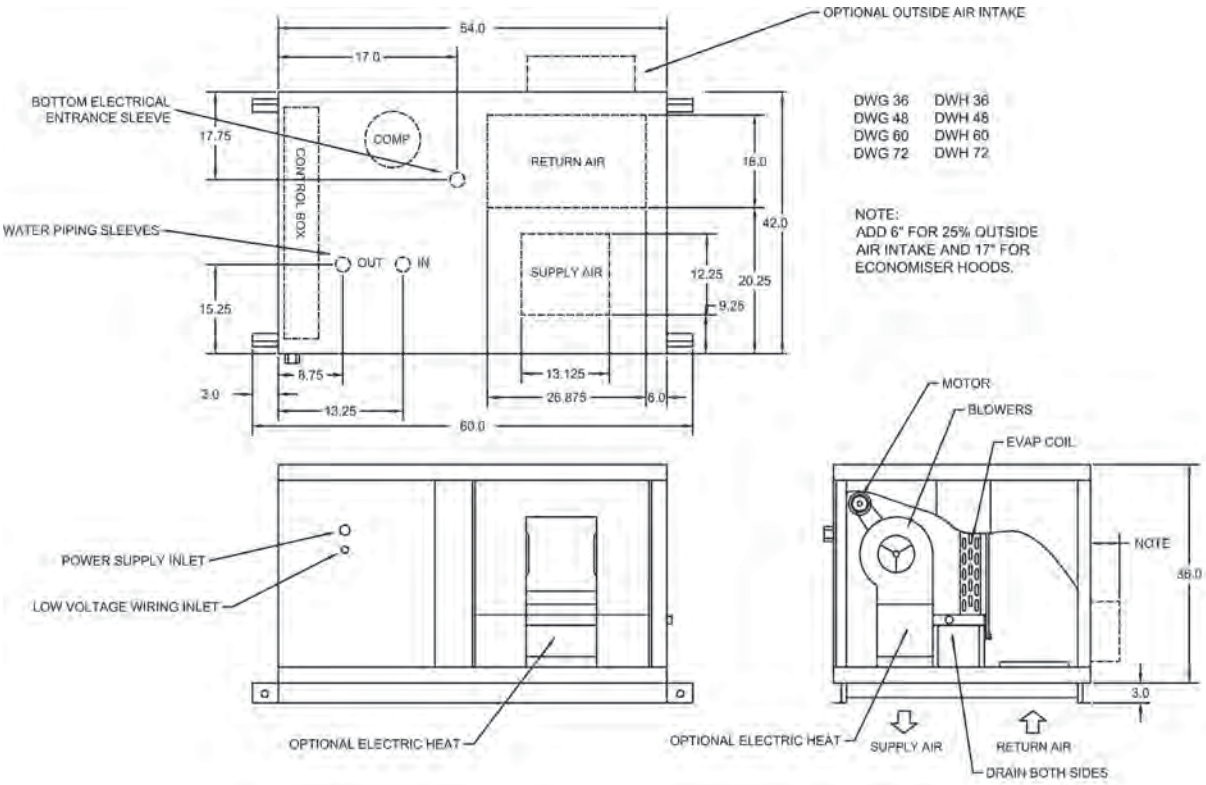
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

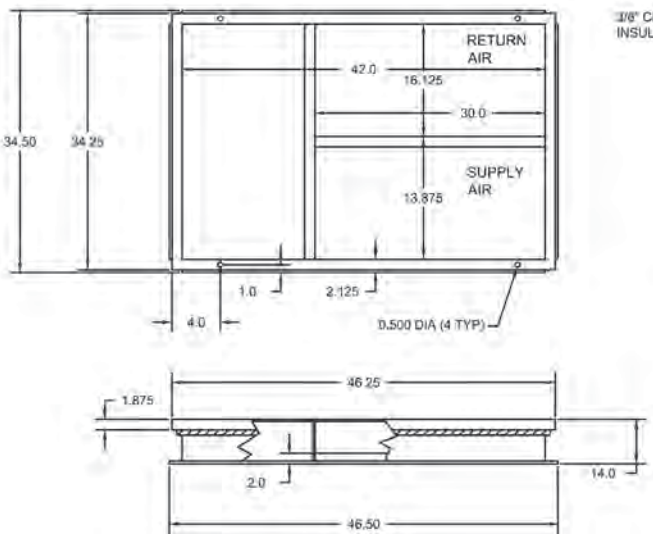
Rooftop Dimensions

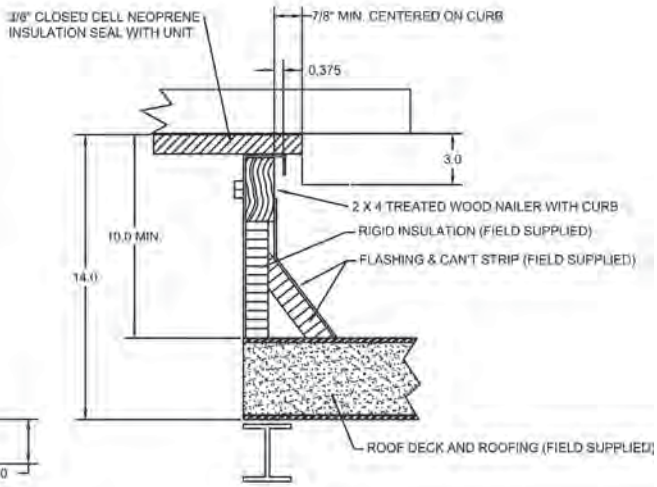
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 036, 048, 060 & 072



557 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

096

	Specifications		Model 096		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 3200 scfm – 24.0 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	95,000		
		EER	12.5		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent fluid	113,000		
		COP	4.2		
	Rating Conditions: 3200 scfm - 24 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	96,000		
		EER	13.5		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid	71,400		
		COP	3.2		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	2		
		RLA (ea)	12.9	6.5	6.5
		LRA(ea)	93	46.5	46.5
	1 HP Fan Motor	FLA	3.4	1.7	1.9
		Unit Minimum Circuit Ampacity	32.4	16.3	16.5
		Max. Time Delay Fuse or HACR Breaker	45	20	20
	1 ½ HP Fan Motor	FLA	4.6	2.3	2.7
		Unit Minimum Circuit Ampacity	33.6	16.9	17.3
		Max. Time Delay Fuse or HACR Breaker	45	20	20
	2 HP Fan Motor	FLA	6.2	3.1	3.5
		Unit Minimum Circuit Ampacity	35.2	17.7	18.1
		Max. Time Delay Fuse or HACR Breaker	45	20	20
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	8.0 — (13 / 4)		
		Refrigerant Control — Quantity	TXV — 2		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	12 x 9 — 2		
	Coaxial Water Coil	Connections	1 5/8" ODS		
	Condensate Drain	Size — Quantity	1"MPT — 2		
	Filters: Disposable Type	Standard Size — Quantity	14 x 25 x 2 — 4		
	Weights	Unit Only (lbs)	1125		
		With largest Supplemental Electric Heat (lbs)	1160		
		Unit Only Shipping Weight (lbs)	1145		
		#563 Curb Weight (lbs)	122		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2,800	870	0.8	960	1.0	1,030	1.1	1,090	1.3	1,160	1.4	1,230	1.6	1,290	1.8
3,200	910	1.1	1,00	1.2	1,060	1.4	1,130	1.6	1,200	1.8	1,270	1.9	1,320	2.2
3,600	970	1.4	1,040	1.5	1,080	1.7	1,170	1.8	1,210	2.0	—	—	—	—

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	16	2800	114,590	80,400	4200	121,750
		3200	116,920	85,710	4230	124,130
		3600	118,900	90,560	4240	126,140
	24	2800	115,980	80,980	4050	122,890
		3200	118,500	86,120	4070	125,450
		3600	120,450	91,150	4090	127,430
50	16	2800	111,350	78,800	4580	119,160
		3200	113,560	84,090	4610	121,420
		3600	115,180	89,420	4630	123,090
	20	2800	112,060	79,340	4490	119,710
		3200	114,360	84,570	4510	122,050
		3600	116,200	89,550	4530	123,920
	24	2800	112,600	79,560	4420	120,150
		3200	114.950	84,780	4440	122,530
		3600	116.810	89,780	4460	124.420
70	16	2800	104,180	76,040	5540	113,630
		3200	106,150	81,300	5560	115,640
		3600	108,290	86,360	5580	117,810
	20	2800	104,980	76,330	5420	114,230
		3200	106,990	81,600	5450	116,290
		3600	109,130	86,750	5460	118,450
	24	2800	105,510	76,520	5350	114,630
		3200	107,550	81,800	5370	116,710
		3600	109.680	87,010	5390	118,870
85	16	2800	98,620	73,800	6410	109,550
		3200	100,580	78,690	6430	111,550
		3600	102,520	83,940	6460	113,540
	20	2800	99,390	74,070	6290	110,110
		3200	101,200	79,360	6310	111,960
		3600	103,180	84,620	6330	113.990
	24	2800	99,890	74,260	6210	110,480
		3200	101,730	79,540	6230	112,350
		3600	103,720	84,830	6250	114,380
100	16	2800	92,840	71,510	7420	105,490
		3200	95,040	76,610	7440	107,730
		3600	96,580	81,350	7460	109,310
	20	2800	93,570	71,770	7290	106,000
		3200	95,630	77,260	7310	108,110
		3600	97,350	81,690	7330	109,850
	24	2800	94,050	71,940	7200	106,330
		3200	96.120	77,450	7230	108.450
		3600	97,700	82,260	7240	110,060
110	16	2800	88.950	69,820	8160	102,860
		3200	90,930	75,230	8190	104,900
		3600	92,320	80,050	8220	106.340
	20	2800	89,590	70,180	8030	103,290
		3200	91,650	75,510	8050	105,390
		3600	93,070	80,340	8080	106,850
	24	2800	90,220	69,970	7930	103,760
		3200	92,260	75,360	7960	105,840
		3600	93,560	80,530	7990	107,190

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	16	2800	68050	47680	5970
		3200	68230	48270	5850
		3600	68360	48730	5750
	24	2800	69650	49140	6010
		3200	69840	49770	5880
		3600	70000	50260	5790
40	16	2800	77690	56480	6220
		3200	77910	57220	6060
		3600	78110	57810	5950
	20	2800	78810	57530	6240
		3200	79060	58270	6090
		3600	79250	58870	5970
	24	2800	79610	58230	6270
		3200	79870	59020	6110
		3600	80070	59640	5990
50	16	2800	88010	65900	6480
		3200	88300	66820	6290
		3600	88520	67520	6150
	20	2800	89380	67140	6520
		3200	89700	68110	6330
		3600	89950	68850	6180
	24	2800	90350	68020	6540
		3200	90690	69030	6350
		3600	90960	69790	6200
60	16	2800	98890	75810	6760
		3200	99270	76950	6540
		3600	99570	77820	6370
	20	2800	100560	77310	6810
		3200	100980	78520	6580
		3600	101350	79480	6410
	24	2800	101750	78410	6840
		3200	102200	79660	6600
		3600	102550	80600	6430
70	16	2800	110300	86170	7070
		3200	110720	87510	6800
		3600	111110	88570	6610
	20	2800	112290	87980	7120
		3200	112850	89460	6850
		3600	113290	90590	6650
	24	2800	113620	89190	7160
		3200	114220	90720	6890
		3600	114690	91890	6680
80	16	2800	122170	96900	7400
		3200	122820	98620	7090
		3600	123340	99900	6870
	20	2800	124460	98980	7470
		3200	125190	100780	7150
		3600	125760	102150	6920
	24	2800	126050	100400	7520
		3200	126830	102280	7190
		3600	127450	103710	6960

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperature	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering . Air °F WB	Multipliers				Multipliers for Sensible Cooling										
					Entering Air °F DB										
	Total Cooling	EER	Total Watts	Heat Rej.	70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design ΔT °F	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	28	9.6	22.2	1.005	0.987	1.002	1.001	1.02
10	24	7.1	16.5	1.000	1.000	1.000	1.000	1.00
12	21	5.5	12.7	0.987	1.012	0.992	0.996	0.98
14	18	4.1	9.5	0.973	1.025	0.985	0.992	0.95
16	16	3.3	7.5	0.960	1.037	0.977	0.988	0.93
20	12	1.9	4.3	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50

Heaters may be specified one stage only
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + Electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

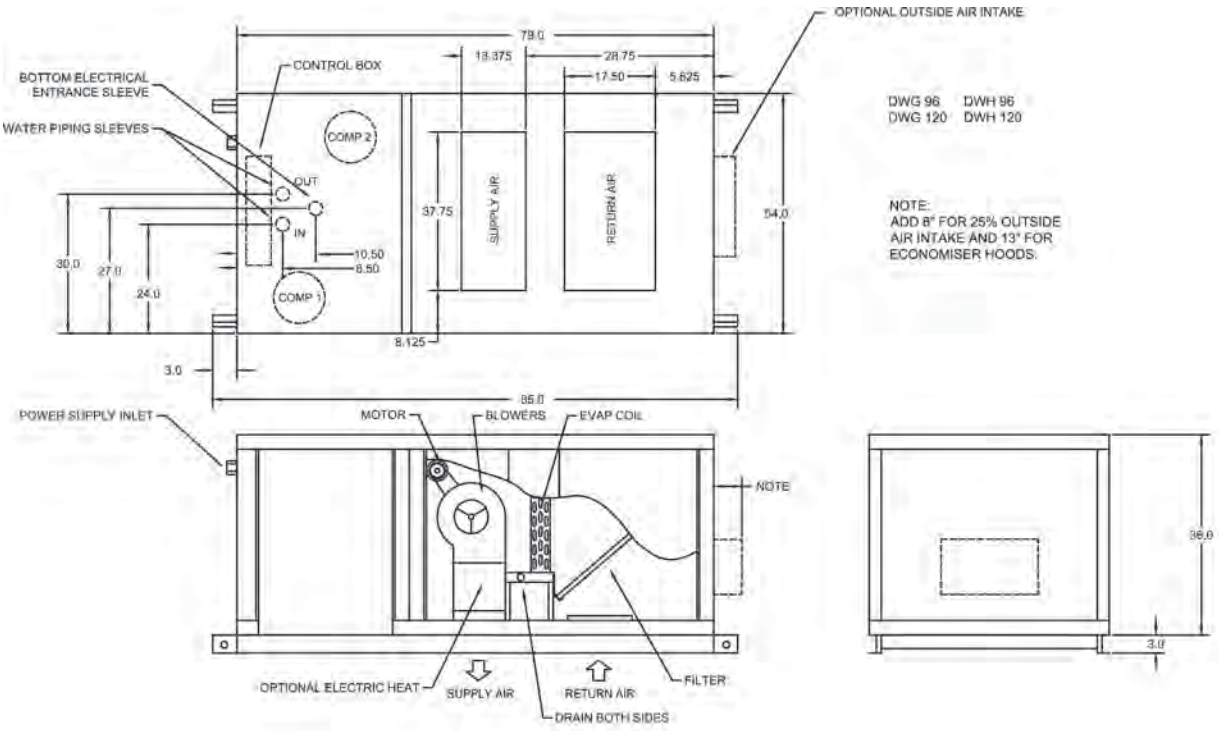
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

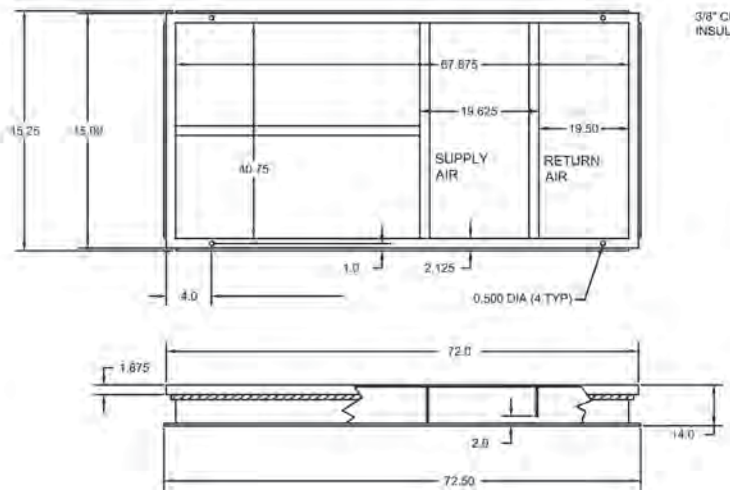
Rooftop Dimensions

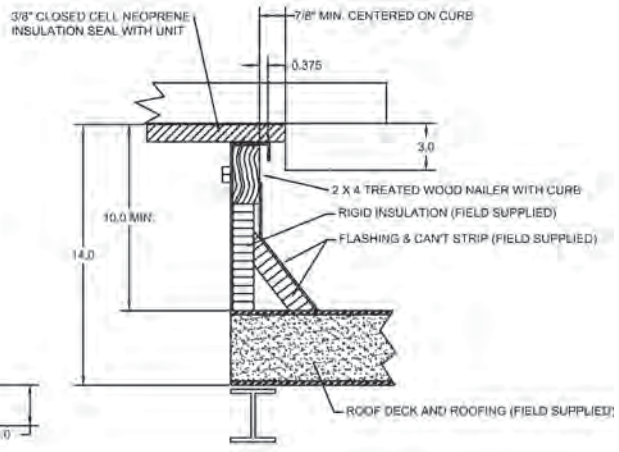
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 096 & 120



563 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

120

	Specifications		Model 1200		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 4000 scfm - 31 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	119,000		
		EER	12.0		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	4.0		
		COP	4.2		
	Rating Conditions: 4000 scfm – 31 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	120,000		
		EER	13.4		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid.	2.2		
		COP	3.1		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	2		
		RLA (ea)	16.1	8.1	8.1
		LRA(ea)	125	66.5	66.5
	1½HP Fan Motor	FLA	4.6	2.3	2.7
		Unit Minimum Circuit Ampacity	40.8	20.5	20.9
		Max. Time Delay Fuse or HACR Breaker	50	25	25
	2 HP Fan Motor	FLA	6.2	3.1	3.5
		Unit Minimum Circuit Ampacity	42.4	21.3	21.7
		Max. Time Delay Fuse or HACR Breaker	50	25	25
	3 HP Fan Motor	FLA	8.0	4.0	4.8
		Unit Minimum Circuit Ampacity	44.2	22.2	23.0
		Max. Time Delay Fuse or HACR Breaker	60	30	30
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	8.0 – (13 / 4)		
		Refrigerant Control — Quantity	TXV – 2		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	12 x 9 – 2		
	Coaxial Water Coil	Connections	1 5/8" ODS		
	Condensate Drain	Size — Quantity	1" MPT – 2		
	Filters: Disposable Type	Standard Size — Quantity	14 x 25 – 4		
	Weights	Unit Only (lbs)	1175		
		With largest Supplemental Electric Heat (lbs)	1200		
		Unit Only Shipping Weight (lbs)	1195		
		#563 Curb Weight (lbs)	122		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3,500	974	1.2	1,047	1.4	1,119	1.5	1,188	1.7	1,254	1.9	1,316	2.1	1,375	2.2
4,000	1,006	1.5	1,073	1.7	1,136	1.9	1,199	2.1	1,263	2.2	1,324	2.4	1,383	2.6
4,500	1,037	1.9	1,101	2.1	1,162	2.3	1,221	2.5	1,277	2.7	1,333	2.9	-	-

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	20	3500	141,280	99,160	5340	150.390
		4000	144,450	105,610	5380	153,630
		4500	146,750	111,940	5410	155,980
	31	3500	143,290	99,570	5130	152,050
		4000	146,280	106,290	5170	155.100
		4500	148,980	112,230	5200	157,840
50	20	3500	137,330	97,500	5840	147,290
		4000	140,360	103,910	5870	150,390
		4500	142,640	110,020	5900	152,700
	26	3500	138,750	97,630	5690	148,450
		4000	141,550	104,410	5730	151,320
		4500	143,900	110,550	5750	153,710
	31	3500	139,040	98,230	5620	148,630
		4000	142,190	104,670	5650	151,820
		4500	144,500	110,830	5670	154,180
70	20	3500	129,020	93,950	7030	141.020
		4000	131,660	100,250	7060	143,710
		4500	134,100	106,680	7100	146,210
	26	3500	130,120	94,410	6860	141,830
		4000	132,740	100,820	6890	144,500
		4500	135,290	107,200	6920	147,100
	31	3500	130,700	94,660	6780	142,260
		4000	133,350	101,080	6810	144,960
		4500	135,870	107,470	6830	147,530
85	20	3500	122,260	91,300	8110	136,100
		4000	122,670	96,110	8070	136,450
		4500	127,040	103,830	8180	140,990
	26	3500	123,310	91,760	7930	136,840
		4000	126,000	98,200	7960	139,580
		4500	128,190	104,340	7990	141,820
	31	3500	123,870	92,000	7840	137,240
		4000	126,580	98,520	7860	140,000
		4500	128,830	104,450	7890	142,290
100	20	3500	115,360	88,300	9350	131,310
		4000	117,820	94,740	9390	133,840
		4500	119,830	100,610	9420	135,910
	26	3500	116,360	88,750	9160	131,990
		4000	118,880	95,200	9190	134,560
		4500	120,850	101,240	9230	136,600
	31	3500	116,890	88,980	9060	132,350
		4000	119,440	95,440	9090	134,950
		4500	121,430	101,500	9120	137,000
110	20	3500	110,640	86,580	10270	128,170
		4000	112,900	92,810	10320	130,520
		4500	114,880	98,370	10350	132,540
	26	3500	111,700	86,440	10070	128,870
		4000	113,910	93,280	10120	131,180
		4500	115,870	98,980	10150	133,190
	31	3500	110,350	85,630	9900	127,240
		4000	114.480	93,380	10010	131,560
		4500	116,420	99,250	10040	133,560

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	20	3500	86130	61430	7240
		4000	86330	62150	7090
		4500	86430	62640	6970
	31	3500	88000	63130	7290
		4000	88240	63900	7130
		4500	88420	64490	7010
40	20	3500	98010	72290	7540
		4000	98260	73180	7350
		4500	98460	73860	7210
	26	3500	99620	73760	7580
		4000	99910	74690	7390
		4500	100130	75410	7240
	31	3500	100520	74570	7600
		4000	100820	75540	7410
		4500	101050	76270	7260
50	20	3500	110850	84010	7870
		4000	111190	85130	7640
		4500	111450	85970	7470
	26	3500	112860	85840	7920
		4000	113240	87030	7680
		4500	113530	87910	7510
	31	3500	113980	86860	7950
		4000	114370	88080	7710
		4500	114680	88990	7530
60	20	3500	124580	96550	8210
		4000	125020	97940	7940
		4500	125370	98980	7730
	26	3500	127020	98780	8280
		4000	127520	100240	7990
		4500	127910	101360	7780
	31	3500	128370	100010	8310
		4000	128900	101520	8020
		4500	129310	102670	7810
70	20	3500	139080	109770	8590
		4000	139670	111480	8260
		4500	140120	112760	8020
	26	3500	141980	112410	8660
		4000	142640	114230	8330
		4500	143160	115600	8080
	31	3500	143610	113920	8700
		4000	144320	115800	8360
		4500	144880	117210	8110
80	20	3500	154300	123610	8990
		4000	155070	125690	8610
		4500	155670	127250	8330
	26	3500	157720	126750	9080
		4000	158600	128970	8680
		4500	159290	130630	8400
	31	3500	159540	128390	9130
		4000	160540	130740	8730
		4500	161270	132480	8440

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperature °F	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F DB										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	39	18.5	42.8	1.005	0.987	1.002	1.001	1.02
10	31	11.9	27.6	1.000	1.000	1.000	1.000	1.00
12	26	8.5	19.7	0.987	1.012	0.992	0.996	0.98
14	22	6.2	14.3	0.973	1.025	0.985	0.992	0.95
16	19	4.7	10.8	0.960	1.037	0.977	0.988	0.93
20	16	3.4	7.8	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52,0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.	110	35	42.1	52.6	60
30	83.3	104.	110	40	96.2	120.	125	40	48.1	60.1	70

Heaters may be specified one stage only
Selection based on 100 CFM per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.
For supplemental electric heat: Optional separate power supply: Use values from specification table.
For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

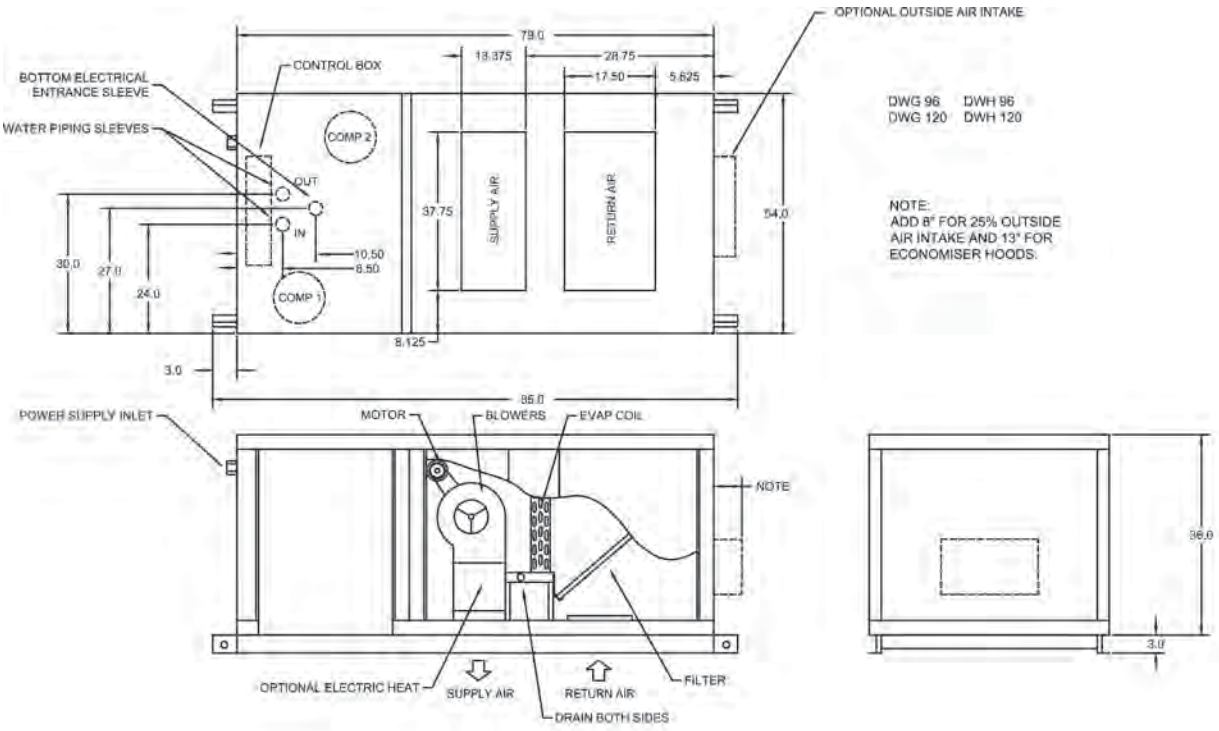
For units less supplemental electric heat: Use unit values.
For supplemental electric heat: Optional separate power supply. Use values from specification table.
For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.
Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

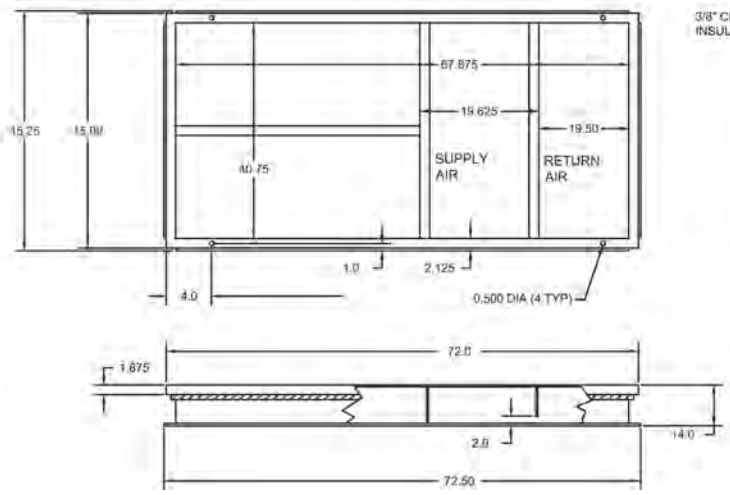
Rooftop Dimensions

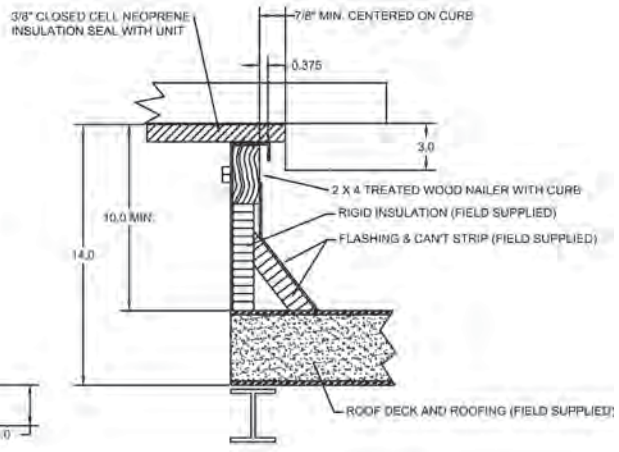
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 096 & 120



563 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

150

	Specifications		Model 150		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 5000 scfm - 36 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	150,700		
		EER	12.5		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	185,000		
		COP	4.3		
	Rating Conditions: 5000 scfm - 36 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	154,000		
		EER	13.6		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid	120,500		
		COP	3.2		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	2		
		RLA (ea)	20	9	9
		LRA(ea)	156	75	75
	1 ½ HP Fan Motor	FLA	4.6	2.3	2.7
		Unit Minimum Circuit Ampacity	49.6	22.6	22.9
		Max. Time Delay Fuse or HACR Breaker	60	30	30
	2 HP Fan Motor	FLA	6.2	3.1	3.5
		Unit Minimum Circuit Ampacity	51.2	23.4	23.8
		Max. Time Delay Fuse or HACR Breaker	70	30	30
	3 HP Fan Motor	FLA	8.0	4.0	4.8
		Unit Minimum Circuit Ampacity	53.0	24.3	25.1
		Max. Time Delay Fuse or HACR Breaker	70	30	30
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	14.6 — (13 / 4)		
		Refrigerant Control — Quantity	TXV — 2		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	12 x 9 — 2		
	Coaxial Water Coil	Connections	1 5/8" ODS		
	Condensate Drain	Size — Quantity	1" MPT — 2		
	Filters: Disposable Type	Standard Size — Quantity	15 x 30 5/8 — 5		
	Weights	Unit Only (lbs)	1630		
		With largest Supplemental Electric Heat (lbs)	1665		
		Unit Only Shipping Weight (lbs)	1670		
		#559 Curb Weight (lbs)	167		

Blower Performance

	External Static Pressure													
CFM	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4,500	800	1.3	860	1.5	930	1.7	1,000	1.9	1,050	2.1	1,100	2.3	1,160	2.5
5,000	830	1.7	900	1.9	970	2.2	1,040	2.4	1,100	2.6	1,150	2.7	1,200	2.9
5,500	880	2.2	960	2.4	1,020	2.6	1,070	2.8	-	-	-	-	-	-

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	20	4,500	178,400	125,900	6.500	200.600
		5,000	180,800	133,100	6,600	203,300
		5,500	183,800	139,300	6,700	206,600
	49	4,500	180,500	126,900	6,200	201,800
		5,000	183.300	133,400	6,300	204,900
		5,500	186,100	140,300	6,400	207,900
55	20	4,500	170,600	122,800	7,500	196,100
		5,000	173,000	129,600	7,500	198,800
		5,500	175,700	136,300	7,600	201,800
	49	4,500	172,600	123^00	7,200	197,300
		5,000	175,300	130,300	7,300	200,100
		5,500	178,000	137,300	7,300	203,000
65	20	4,500	165,100	120,800	8,200	193,200
		5,000	168,000	127,700	8,300	196,300
		5,500	170,200	133,900	8,300	198,600
	49	4,500	167,200	121,700	7,900	194,300
		5,000	170,100	128,600	8,000	197,400
		5,500	172,400	134,900	8,000	199,900
75	20	4,500	159,600	118,500	9,000	190,400
		5,000	162,500	125,100	9,100	193,500
		5,500	164,600	131,300	9,100	195,700
	49	4,500	161,700	119,400	8,700	191,400
		5,000	164,500	126,200	8,800	195,800
		5,500	166,800	132,200	8,800	196,800
85	20	4,500	154,400	116,300	10,000	188,300
		5,000	156,700	122,700	10,000	190,800
		5,500	158,700	129,000	10,000	192,900
	49	4,500	156,000	116,900	9,600	188,700
		5,000	158,800	123,600	9,700	194,700
		5,500	160,800	129,800	9,700	193,900
95	20	4,500	148,600	114,000	11,000	186,200
		5,000	150,700	120,500	11,100	188,600
		5,500	152,600	126,600	11,100	190,500
	49	4,500	150,600	114,700	10,600	186,900
		5,000	152,800	121,100	10,700	194,100
		5,500	154,600	127,600	10,800	191,400
110	20	4,500	139,500	110,400	13,000	183,900
		5,000	141,700	116,200	13,000	186,100
		5,500	143,200	122,900	13,100	187,800
	49	4,500	141,500	111,100	12,500	184,300
		5,000	143,500	117,600	12,600	182,500
		5,500	145,200	123,600	12,600	188,300

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	20	4,500	110,400	79,500	9,000
		5,000	110,500	80,300	8,800
		5,500	110,600	80,900	8,700
	49	4,500	113,300	82,300	9,100
		5,000	113,500	83,100	8,900
		5,500	113,700	83,800	8,800
40	20	4,500	126,000	93,800	9AOO
		5,000	126,200	94,800	9,200
		5,500	126,400	95,500	9,000
	49	4,500	129,800	97,300	9,500
		5,000	130,100	98,300	9,300
		5,500	130,300	99,100	9,100
55	20	4,500	151,500	117,000	10,100
		5,000	151,900	118,300	9JSOO
		5,500	152,300	119,400	9,600
	49	4,500	156,400	121,400	10,300
		5,000	157,000	123,000	10,000
		5,500	157,400	124,200	9,700
70	20	4,500	179,100	141,900	10,900
		5,000	179,800	143,700	10,600
		5,500	180,300	145,200	10,300
	49	4,500	185,300	147,400	11,100
		5,000	186,100	147,800	10,700
		5,500	186,700	151,100	10,400
80	20	4,500	198,600	159,200	11,500
		5,000	199,400	161,400	11,100
		5,500	200,100	163,200	10,800
	49	4,500	206,000	165,700	11,800
		5,000	207,000	164,800	11,400
		5,500	207,900	170,200	11,000

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°EWT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted
5. Above ratings are at 208 volts..

Heating correction multipliers at entering air temperatures:

Entering air temperature °F	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej	Entering Air °F DB										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	49	11.3	26.0	1.005	0.987	1.002	1.001	1.02
10	36	6.3	14.5	1.000	1.000	1.000	1.000	1.00
12	32	5.0	11.6	0.987	1.012	0.992	0.996	0.98
14	28	3.9	9.0	0.973	1.025	0.985	0.992	0.95
16	24	2.9	6.7	0.960	1.037	0.977	0.988	0.93
20	20	2.1	4.8	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.2	110	35	42.1	52.6	60
30	83.3	104.1	110	40	96.2	120.3	125	40	48.1	60.1	70

Heaters may be specified one stage only
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + Electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

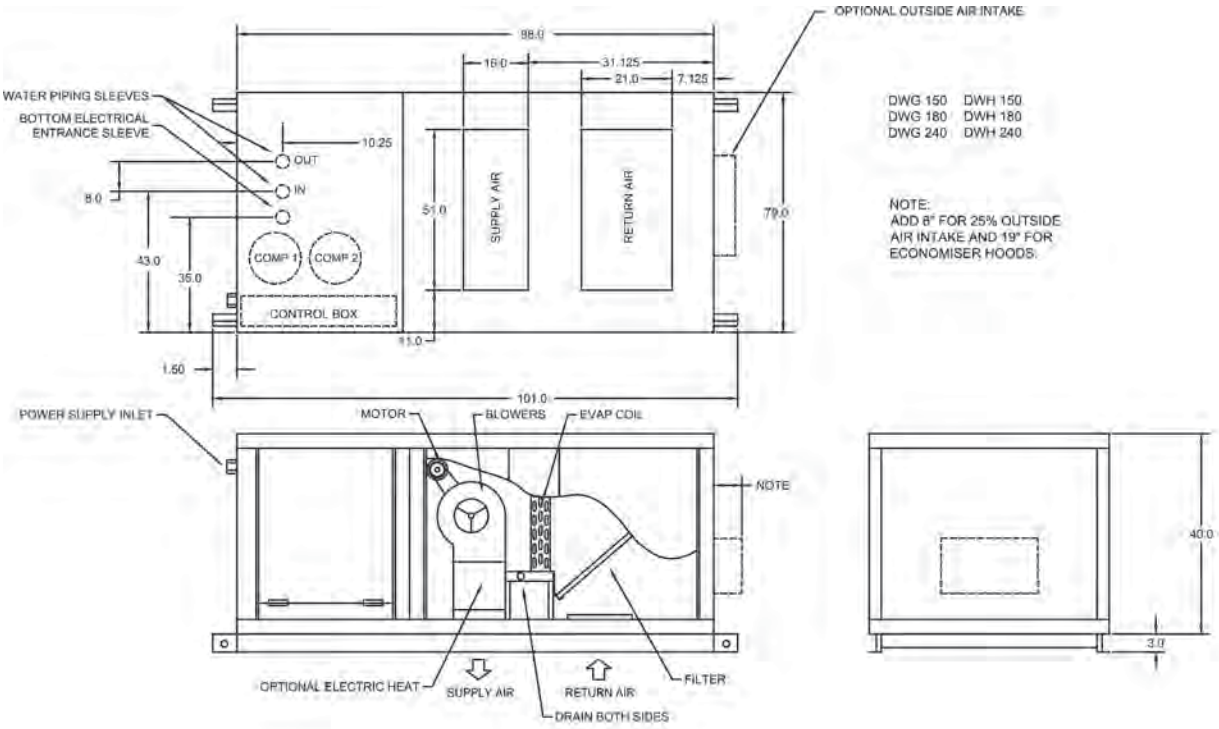
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

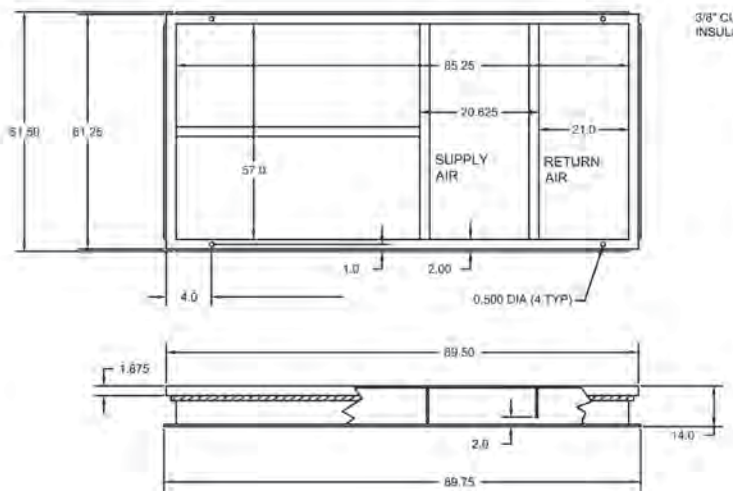
Rooftop Dimensions

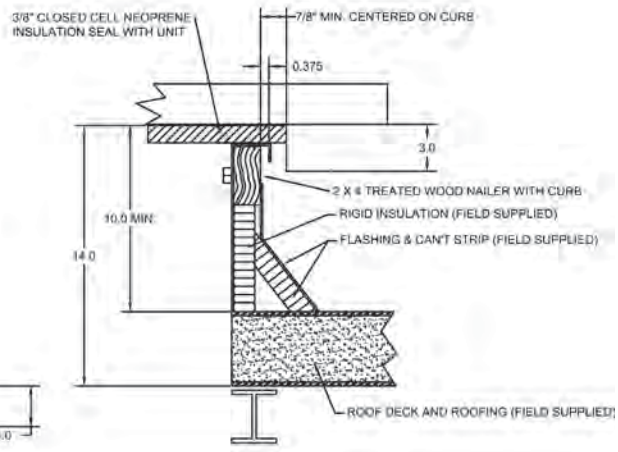
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 150, 180 & 240



559 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

180

	Specifications		Model 180		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 6000 scfm - 42 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	171,900		
		EER	13.9		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	208,000		
		COP	4.6		
	Rating Conditions: 6000 scfm - 42 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	178,200		
		EER	15.7		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid.	133,600		
		COP	3.5		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty)	2		
		RLA (ea)	19	9.5	9.5
		LRA(ea)	146	73	73
	2 HP Fan Motor	FLA	6.2	3.1	3.5
		Unit Minimum Circuit Ampacity	48.9	24.5	24.9
		Max. Time Delay Fuse or HACR Breaker	60	30	30
	3 HP Fan Motor	FLA	8.0	4.0	4.8
		Unit Minimum Circuit Ampacity	50.8	25.4	26.2
		Max. Time Delay Fuse or HACR Breaker	60	30	35
	5 HP Fan Motor	FLA	13.4	6.7	7.8
		Unit Minimum Circuit Ampacity	56.2	28.1	29.2
		Max. Time Delay Fuse or HACR Breaker	70	35	35
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	14.6 — (13 / 4)		
		Refrigerant Control — Quantity	TXV — 2		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	15 x 11 — 2		
	Coaxial Water Coil	Connections	1 5/8" ODS		
	Condensate Drain	Size — Quantity	1" MPT - 2		
	Filters: Disposable Type	Standard Size — Quantity	15 x 30 5/8 - 5		
	Weights	Unit Only (lbs)	1670		
		With largest Supplemental Electric Heat (lbs)	1705		
		Unit Only Shipping Weight (lbs)	1710		
		#559 Curb Weight (lbs)	167		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
5,500	760	1.9	800	2.0	840	2.2	890	2.4	950	2.7	1,000	2.9	1,050	3.2
6,000	790	2.3	830	2.5	870	2.8	920	3.0	970	3.3	1,020	3.5	1,070	3.8
6,500	830	2.7	880	2.9	920	3.2	960	3.5	1,020	3.8	1,060	4.0	1,100	4.3

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	28	5,500	201,748	148,314	6,888	225,260
		6,000	204,544	155,486	6,946	228,250
		6,500	206,710	162,080	6,990	230,570
	42	5,500	203,852	149,606	6,644	226,530
		6,000	206,912	156,410	6,692	229,750
		6,500	209,168	162,998	6,734	232,150
55	28	5,500	192,710	145,082	7,884	219,620
		6,000	195.322	151,186	7,922	222,360
		6,500	197,144	158,066	7,972	224,350
	42	5,500	194,752	145,376	7,584	220,640
		6,000	197,396	152,722	7,642	223,480
		6,500	199,864	158,424	7,668	226,030
65	28	5,500	186,826	142,822	8,676	216,440
		6,000	189,150	149,228	8,720	218,910
		6,500	191,068	155,640	8,760	220,970
	42	5,500	189,092	143,666	8,362	217,630
		6,000	191,726	149,610	8,394	220,370
		6,500	193,470	156,556	8,440	222,280
75	28	5,500	181.176	139,666	9,548	213,760
		6,000	183,280	146,218	9,596	216,030
		6,500	185,140	152.468	9,634	218,020
	42	5,500	183,326	140,646	9,218	214,790
		6.000	185.270	147,724	9,270	216,910
		6,500	187,146	154,118	9,306	218,910
85	28	5,500	174,692	137,810	10.564	210,750
		6,000	177,004	143,576	10,592	213,150
		6,500	178,434	150,498	10,642	214,760
	42	5,500	176,860	138,618	10,206	211,690
		6,000	179,192	144,534	10,234	214,120
		6,500	181.032	150,712	10,266	216,070
95	28	5,500	168,388	135,104	11,680	208,250
		6,000	170,220	141,598	11,724	210,230
		6,500	172,138	147,140	11,746	212,230
	42	5,500	170,716	135.416	11.292	209,260
		6,000	172,402	142,412	11,340	211,110
		6,500	174,326	148,110	11,362	213,100
110	28	5,500	159,554	130,878	13,666	206,200
		6,000	160,968	137,886	13,718	207,790
		6,500	162,714	143,406	13,736	209,590
	42	5,500	161,192	132,280	13,288	206,540
		6,000	162,970	138,614	13,320	208,430
		6,500	164.744	144.212	13.336	210.260

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	28	5,500	121,416	91,590	8,738
		6,000	121,450	92,070	8,608
		6,500	121,508	92,490	8,502
	42	5,500	124,758	94,440	8,882
		6,000	124,972	95,100	8,752
		6,500	125,038	95,550	8,640
40	28	5,500	139,438	107,850	9,254
		6,000	139,566	109,250	8.882
		6,500	139,678	109,090	8,962
	42	5,500	143,786	111,790	9,376
		6,000	143,964	112,540	9,208
		6,500	144,116	113,150	9,072
55	28	5,500	167,026	133,430	9,844
		6,000	167,350	134,440	9,642
		6,500	167,632	135,290	9,476
	42	5,500	172,722	138,570	10,006
		6,000	173,138	139,700	9,796
		6,500	173,492	140,650	9,624
70	28	5,500	199,260	162,450	10,784
		6,000	199,856	163,920	10,528
		6,500	200,364	165,150	10,318
	42	5,500	206,772	169,190	11,010
		6,000	207,508	170,850	10,742
		6,500	208,136	172,220	10,524
80	28	5,500	222,238	183,020	11,492
		6,000	223,074	184,860	11,196
		6,500	223,784	186,390	10,956
	42	5,500	230,790	190,620	11,770
		6,000	231,814	192,690	11,462
		6,500	232,682	194,420	11,210

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperature °F	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F DB										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	53	8.3	19.2	1.005	0.987	1.002	1.001	1.02
10	42	5.3	12.2	1.000	1.000	1.000	1.000	1.00
12	36	3.9	9.1	0.987	1.012	0.992	0.996	0.98
14	31	3.9	9.1	0.973	1.025	0.985	0.992	0.95
16	27	3.0	7.0	0.960	1.037	0.977	0.988	0.93
20	21	1.9	4,3	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.2	110	35	42.1	52.6	60
30	83.3	104.1	110	40	96.2	120.3	125	40	48.1	60.1	70
45	124.9	156.1	175	60	144.3	180.4	200	60	72.2	90.3	100

Heaters may be specified one stage only
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

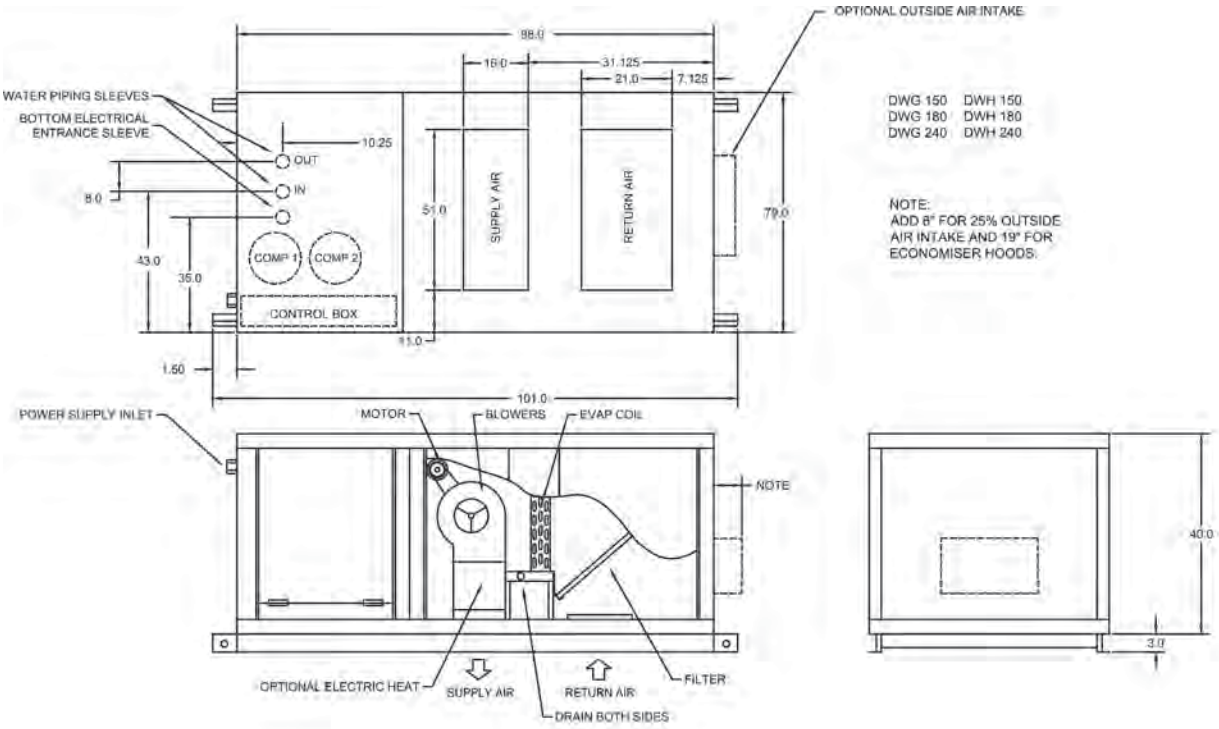
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

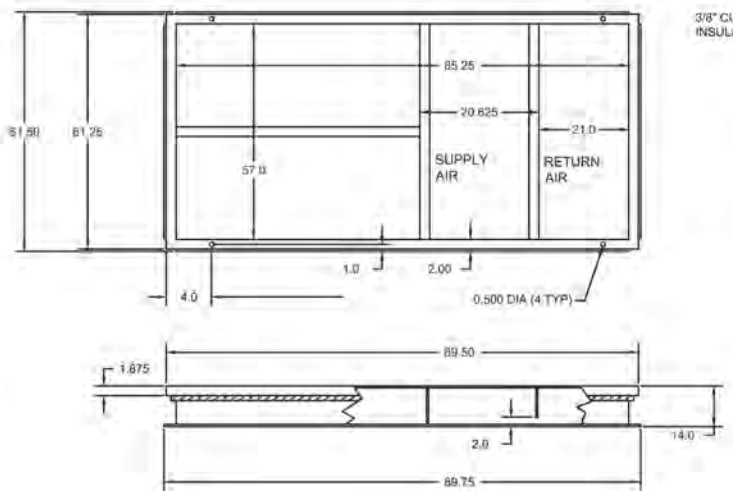
Rooftop Dimensions

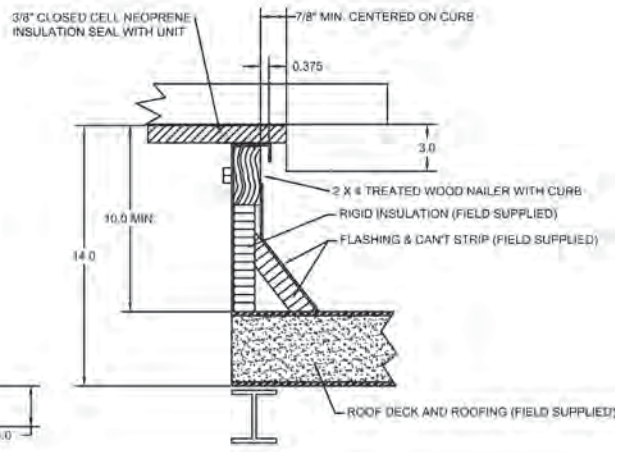
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 150, 180 & 240



559 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

240

	Specifications		Model 240		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 8000 scfm – 58.0 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	229,800		
		EER	12.5		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	278,100		
		COP	4.3		
	Rating Conditions: 8000 scfm – 58.0 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	236,900		
		EER	14.5		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid	180,600		
		COP	3.4		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	2		
		RLA (ea)	30.9	15.6	15.6
		LRA(ea)	225	114	114
	5 HP Fan Motor	FLA	13.4	6.7	7.8
		Unit Minimum Circuit Ampacity	82.9	41.8	42.9
		Max. Time Delay Fuse or HACR Breaker	110	50	50
	7 1/2 HP Fan Motor	FLA	20.0	10.0	11.5
		Unit Minimum Circuit Ampacity	89.5	45.1	46.6
		Max. Time Delay Fuse or HACR Breaker	110	60	60
	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	14.6 — (13 / 4)		
		Refrigerant Control — Quantity	TXV — 2		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	15 x 11 — 2		
PHYSICAL DATA	Coaxial Water Coil	Connections	1 5/8" ODS		
	Condensate Drain	Size — Quantity	1" — 2		
	Filters: Disposable Type	Standard Size — Quantity	15 x 30 5/8" MPT — 5		
	Weights	Unit Only (lbs)	1800		
		With largest Supplemental Electric Heat (lbs)	1835		
		Unit Only Shipping Weight (lbs)	1840		
		#559 Curb Weight (lbs)	200		

Blower Performance

External Static Pressure														
CFM	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
7,000	860	3.2	910	3.5	950	3.8	1,000	4.1	1,040	4.4	1,080	4.7	1,120	5.0
8,000	920	4.1	960	4.4	1,000	4.8	1,050	5.1	1,090	5.5	1,130	5.8	1,170	6.2
9,000	980	5.2	1,020	5.6	1,050	6.0	1,080	6.5	1,140	6.7	1,170	7.1	-	-

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

CAPACITY DATA (Cooling capacities shown are gross capacities. For net capacities, multiply blower bhp required times 2545 Btu per bph and subtract from total and sensible in tables.)

Cooling

EWT °F	gpm	cfm	Total Capacity Btu/h	SH. Btu/h	Watts	Heat Rejected Btu/h
40	38	7,000	264,966	188,448	11,284	303,480
		8,000	269,370	199,976	11,404	308,290
		9,000	273,086	210,464	11,494	312,320
	58	7,000	268,496	189,974	10,982	305,980
		8,000	273,058	201,502	11,098	310,940
		9,000	276,906	212,048	11,192	315,100
55	38	7,000	254,958	184,548	12,518	297,680
		8,000	259,126	196,040	12,624	302,210
		9,000	262,824	206,228	12,692	306,140
	58	7,000	257,920	185,764	12,156	299,410
		8,000	262,224	197,270	12,260	304,070
		9,000	266,060	207,440	12,326	308,130
65	38	7,000	247,516	181,442	13,488	293,550
		8,000	251,884	192,180	13,570	298,200
		9,000	254,826	203,482	13,656	301,430
	58	7,000	250,470	182,662	13,090	295,150
		8,000	254,556	194,196	13,186	299,560
		9,000	258,218	204,370	13,246	303,430
75	38	7,000	239,796	178,264	14,600	289,630
		8,000	243,984	188,924	14,674	294,070
		9,000	247,550	201,672	14,788	298,020
	58	7,000	242,740	179,442	14,162	291,070
		8,000	247,032	190,194	14,234	295,610
		9,000	249,816	201,706	14,316	298,680
85	38	7,000	232,176	174,222	15,860	286,310
		8,000	235,802	185,558	15,946	290,230
		9,000	239,570	197,680	16,050	294,350
	58	7,000	235,064	175,440	15,384	287,570
		8,000	238,808	186,810	15,462	291,580
		9,000	242,436	199,428	15,566	295,560
95	38	7,000	223,946	170,792	17,322	283,070
		8,000	226,980	183,206	17,422	286,440
		9,000	231,080	194,144	17,514	290,860
	58	7,000	226,778	171,984	16,802	284,120
		8,000	229,904	184,192	16,892	287,560
		9,000	234,124	195,360	16,972	292,050
110	38	7,000	209,576	165,996	19,864	277,370
		8,000	213,908	177,624	19,942	281,970
		9,000	217,010	187,358	20,004	285,280
	58	7,000	212,760	166,132	19,238	278,420
		8,000	216,772	178,750	19,338	282,770
		9,000	219,612	189,382	19,410	285,860

Heating

EWT °F	gpm	cfm	Heating Capacity Btu/h	Heat Absorpted Btu/h	Watts
30	38	7,000	166,860	119,400	13,906
		8,000	167,116	120,670	13,610
		9,000	167,270	121,590	13,384
	58	7,000	170,722	122,800	14,040
		8,000	170,768	123,960	13,716
		9,000	173,492	126,440	13,786
40	38	7,000	190,256	140,250	14,652
		8,000	190,664	142,750	14,040
		9,000	190,994	143,160	14,016
	58	7,000	195,072	144,520	14,812
		8,000	195,566	146,290	14,438
		9,000	195,964	147,650	14,156
55	38	7,000	226,878	173,270	15,708
		8,000	227,652	175,620	15,246
		9,000	228,276	177,410	14,904
	58	7,000	233,420	179,020	15,938
		8,000	234,346	181,570	15,462
		9,000	235,088	183,520	15,108
70	38	7,000	268,028	209,670	17,098
		8,000	269,248	212,870	16,518
		9,000	270,228	215,300	16,094
	58	7,000	276,188	216,880	17,376
		8,000	277,628	220,360	16,780
		9,000	278,780	223,000	16,342
80	38	7,000	297,058	235,090	18,156
		8,000	298,616	238,920	17,490
		9,000	299,868	241,840	17,002
	58	7,000	306,598	243,420	18,512
		8,000	308,512	247,680	17,824
		9,000	309,990	250,880	17,320

Notes:

1. Above ratings are based on 80°F dbt, 67°F wbt entering air in cooling, 70°F dbt in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°EWT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating Correction Multipliers At Various Entering Air °F dbt Temperature	Ent. Air °F dbt	Multipliers			
		Heating Btu/h	COP	Heat of Absorp.	Total Watts
	60	1.014	1.096	1.038	0.925
	65	1.007	1.046	1.019	0.963
	70	1	1	1	1
	75	0.993	0.957	0.981	1.077
	80	0.986	0.916	0.961	—

Cooling Correction Multipliers – At Various Entering Air °F dbt and °F wbt															
Ent. Air °F wbt	Multipliers				Multipliers for Sensible Cooling At Entering Air °F dbt										
	Total Cooling	EER	Total Watts	Heat Rej.	70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Condenser Water Flow Data				Cooling Performance Correction Factors				
Cooling Cycle Design DT	gpm	Pressure Drop psi	Pressure Drop Ft.HD.	Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
8°	73	17.9	41.5	1.005	0.987	1.002	1.001	1.02
10°	**58**	**11.6**	**26.7**	**1.000**	**1.000**	**1.000**	**1.000**	**1.00**
12°	49	8.4	19.4	0.987	1.012	0.992	0.996	0.98
14°	42	6.3	14.4	0.973	1.025	0.985	0.992	0.95
16°	36	4.7	10.8	0.960	1.037	0.977	0.988	0.93
20°	29	3.1	7.1	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat											
208/3/60				240/3/60				480/3/60			
Heater kW	amps	MCA	Max Fuse	Heater kW	amps	MCA	Max Fuse	Heater kW	amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.2	110	35	42.1	52.6	60
30	83.3	104.1	110	40	96.2	120.3	125	40	48.1	60.1	70
45	124.9	156.1	175	60	144.3	180.4	200	60	72.2	90.3	100

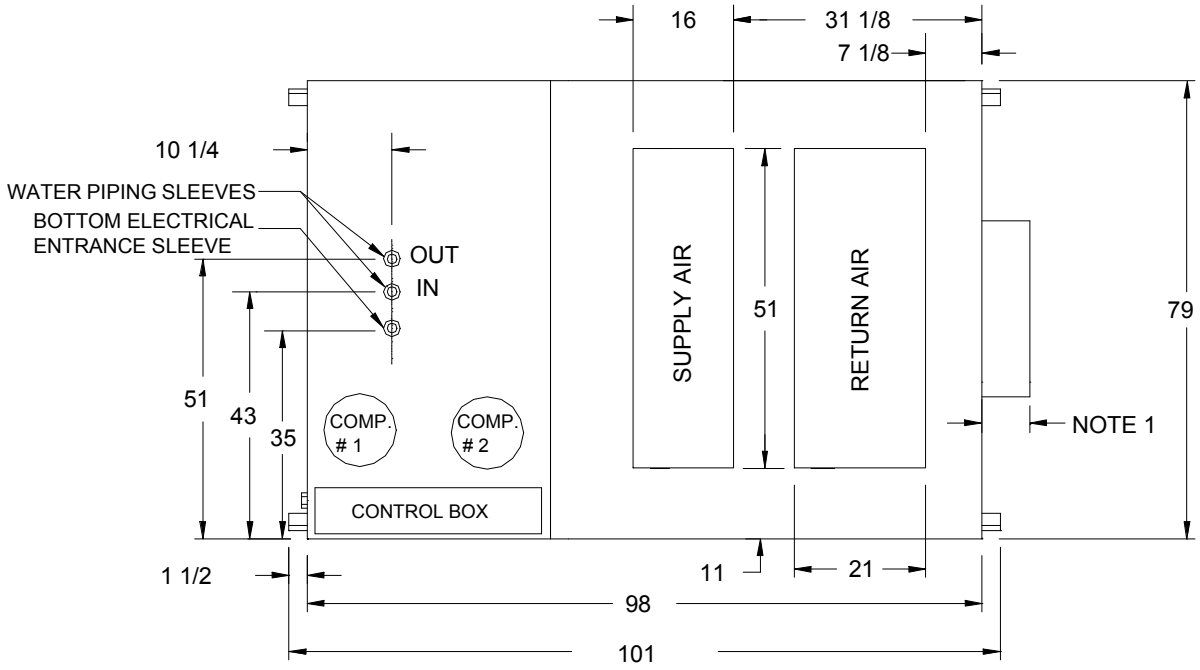
Heaters 20 kW or higher may be specified as two stage.
Selection based on 100 cfm per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.
For supplemental electric heat: Optional separate power supply. Use values from specification table.
For unit with supplemental electric heat: Single point power. Minimum circuit ampacity = [(Largest Comp. RLA + electric heater amps) x 1.25 + FLA of all other motors & compressors]

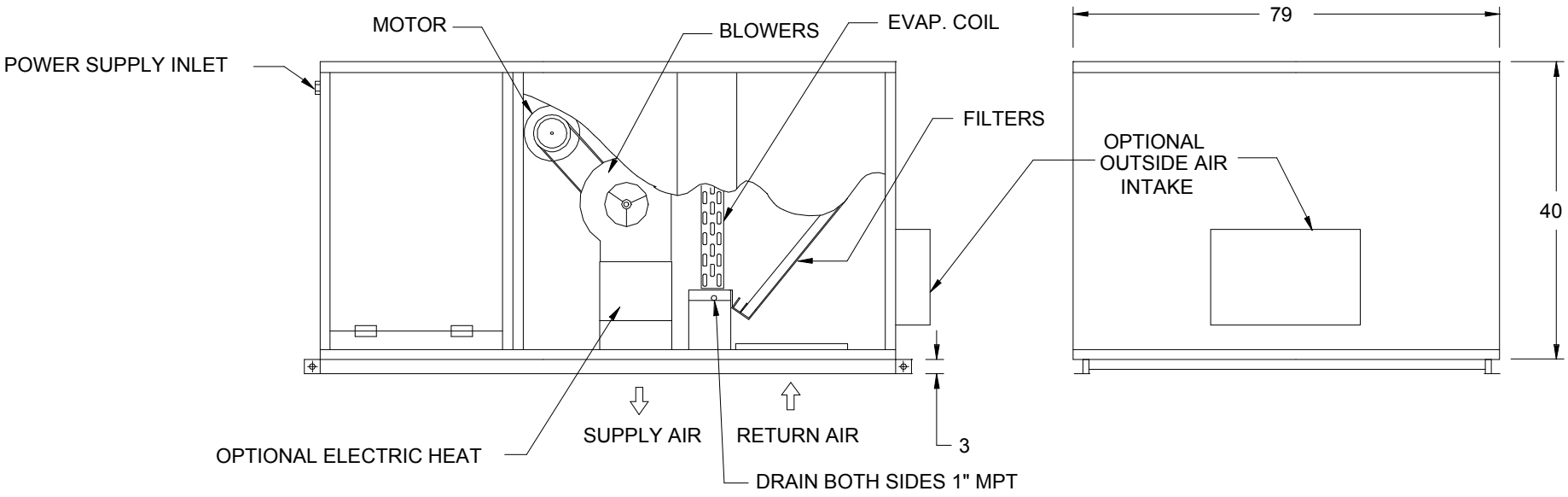
Maximum Fuse Size

For units less supplemental electric heat: Use unit values.
For supplemental electric heat: Optional separate power supply. Use values from specification table.
For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.
Select the next smaller from the following standard fuse sizes: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150, 200, 225, 250, and 300.
Note: in some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.



NOTE 1
ADD 6" FOR 25% OUTSIDE AIR INTAKE AND 19" FOR ECONOMIZER HOODS

DWY 150-240



CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

300A

PERFORMANCE PER ARI STD ISO 13256-1	Specifications		Model 300A		
	Rating Conditions: 10000 scfm - 68 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	276,400		
		EER	13.6		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F ent Fluid	343,100		
		COP	4.6		
	Rating Conditions: 10000 scfm - 8.6 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	285,000		
		EER	14.8		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid	230,000		
		COP	3.6		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty)	2		
		RLA (ea)	37.8	17.3	17.3
		LRA (ea)	239	125	125
	5 HP Fan Motor	FLA	13.4	6.7	7.8
		Unit Minimum Circuit Ampacity	98.5	45.6	46.7
		Max. Time Delay Fuse or HACR Breaker	125	60	60
	7 ½ HP Fan Motor	FLA	20.0	10.0	11.5
		Unit Minimum Circuit Ampacity	105.1	48.9	50.4
		Max. Time Delay Fuse or HACR Breaker	125	60	60
	10 HP Fan Motor	FLA	28.0	14.0	14.0
		Unit Minimum Circuit Ampacity	113.1	52.9	52.9
		Max. Time Delay Fuse or HACR Breaker	150	70	70
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	20.6 — (12 / 4)		
		Refrigerant Control — Quantity	TXV — 2		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	15 x 15 — 2		
	Coaxial Water Coil	Connections	2'/8" ODS		
	Condensate Drain	Size — Quantity	1" MPT — 2		
	Filters: Disposable Type	Standard Size — Quantity	20 x 25 — 8		
	Weights	Unit Only (IDS	2650		
		With largest Supplemental Electric Heat (lbs)	2700		
		Unit Only Shipping Weight (lbs)	2700		
		#626 Curb Weight (lbs)	167		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
9,000	800	3.5	840	3.9	890	4.2	930	4.7	980	5.0	1,020	5.6	1,050	6.0
10,000	850	4.6	890	5.1	940	5.6	980	6.1	1,020	6.6	1,060	7.1	1,100	7.6
11,000	900	6.0	940	6.5	990	7.0	1,030	7.3	1,070	7.7	1,110	8.2	1,150	8.7

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	44	9,000	320,688	233.148	12,844	364,520
		10,000	322,998	242,488	12,852	366,860
		11,000	329,302	257,850	13,020	373,740
	68	9,000	324,572	234,764	12,496	367,220
		10,000	329,086	247,038	12,580	372,020
		11,000	333,402	259,598	12,664	376,620
55	44	9,000	305,406	226,844	14,290	354,180
		10,000	309,480	238,646	14,374	358,540
		1U300	314,054	250,900	14,472	363,450
	68	9,000	310,140	227,220	13,798	357,230
		10,000	314,408	238,978	13,878	361,770
		11,000	318,994	251,412	13,966	366,660
65	44	9,000	295,812	222,928	15,464	348,590
		10,000	300,530	235,640	15,564	353,650
		11,000	304,188	246,718	15,644	357,580
	68	9,000	299,838	224,554	14,952	350,870
		10,000	304,338	235,306	14,994	355,510
		11,000	308,450	248,506	15,118	360,050
75	44	9,000	285,940	218,918	16,812	343,320
		10,000	291,072	230,236	16,862	348.620
		11,000	294,500	241,312	16,940	352,320
	68	9,000	289,898	220,508	16,250	345,360
		10,000	294,640	233,108	16,344	350,420
		11,000	298,228	244,180	16,414	354.250
85	44	9,000	276,410	213,304	18,292	338,840
		10,000	280,744	225,972	18,404	343,560
		11,000	283,954	237,018	18,480	347,030
	68	9,000	279,624	216,350	17,750	340,200
		10,000	284,764	227,570	17,788	345,470
		11,000	288,106	238,650	17,858	349,060
95	44	9,000	266,122	211,278	20,150	334,890
		10,000	270,008	22US44	20,166	338,830
		11,000	273,182	232,426	20,230	342,230
	68	9,000	270,264	211,884	19,420	336,540
		10,000	273,958	223,334	19,500	340,510
		11,000	277,058	234,424	19,566	343,840
110	44	9,000	249,724	205,896	23,050	328,390
		10,000	252,494	214,678	23,060	331,200
		11,000	255,690	228,532	23,178	334,800
	68	9,000	253,262	207,154	22,366	329,600
		10,000	256,524	218,918	22,434	333,090
		11,000	259.234	230,418	22,494	336,010

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	44	9,000	210,786	153,100	16.902
		10,000	211,164	154,490	16,604
		11,000	211,482	155,630	16,364
	68	9,000	214,496	156,290	17,054
		10,000	214,934	157,780	16,746
		11,000	215,306	159,000	16,498
40	44	9,000	237,674	177,520	17,626
		10,000	238,220	180,010	17,054
		11,000	238,680	180,690	16,992
	68	9,000	244,494	183,790	17,786
		10,000	245,144	185,680	17,422
		11,000	245,688	187,210	17,134
55	44	9,000	281,022	217,150	18,714
		10,000	281,902	219,530	18,276
		11,000	282,644	221,440	17,932
	68	9,000	290,596	225,760	18,998
		10,000	291,692	228,400	18,544
		11,000	292,610	230,550	18,184
70	44	9,000	330,078	261,230	20,172
		10,000	331,480	264,500	19,624
		11,000	332,654	267,140	19,194
	68	9,000	342,974	272,870	20,540
		10,000	344,686	276,510	19,976
		11,000	346,118	279,460	19,532
80	44	9,000	364,552	291,810	21,314
		10,000	366,398	295,800	20,686
		11,000	367,940	299,020	20,194
	68	9,000	379,460	305,140	21,776
		10,000	381,730	309,610	21,130
		11,000	383,622	313,240	20,622

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperature	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering . Air °F wbt	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F dbt										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design ΔT	Gpm	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8°	86	9.3	21.6	1.005	0.987	1.002	1.001	1.02
10°	68	5.9	13.7	1.000	1.000	1.000	1.000	1.00
12°	58	4.4	10.1	0.987	1.012	0.992	0.996	0.98
14°	49	3.2	7.3	0.973	1.025	0.985	0.992	0.95
16°	43	2.4	5.7	0.960	1.037	0.977	0.988	0.93
20°	35	1.6	3.8	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.2	110	35	42.1	52.6	60
30	83.3	104.1	110	40	96.2	120.3	125	40	48.1	60.1	70
45	124.9	156.1	175	60	144.3	180.4	200	60	72.2	90.3	100

Heaters may be specified one stage only
Selection based on 100 CFM per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.
For supplemental electric heat: Optional separate power supply:
Use values from specification table.
For unit with supplemental electric heat: Single point power.

Minimum circuit ampacity ={(Largest com. RLA + electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.
For supplemental electric heat: Optional separate power supply.
Use values from specification table.
For unit with supplemental electric heat: Single point power.
Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

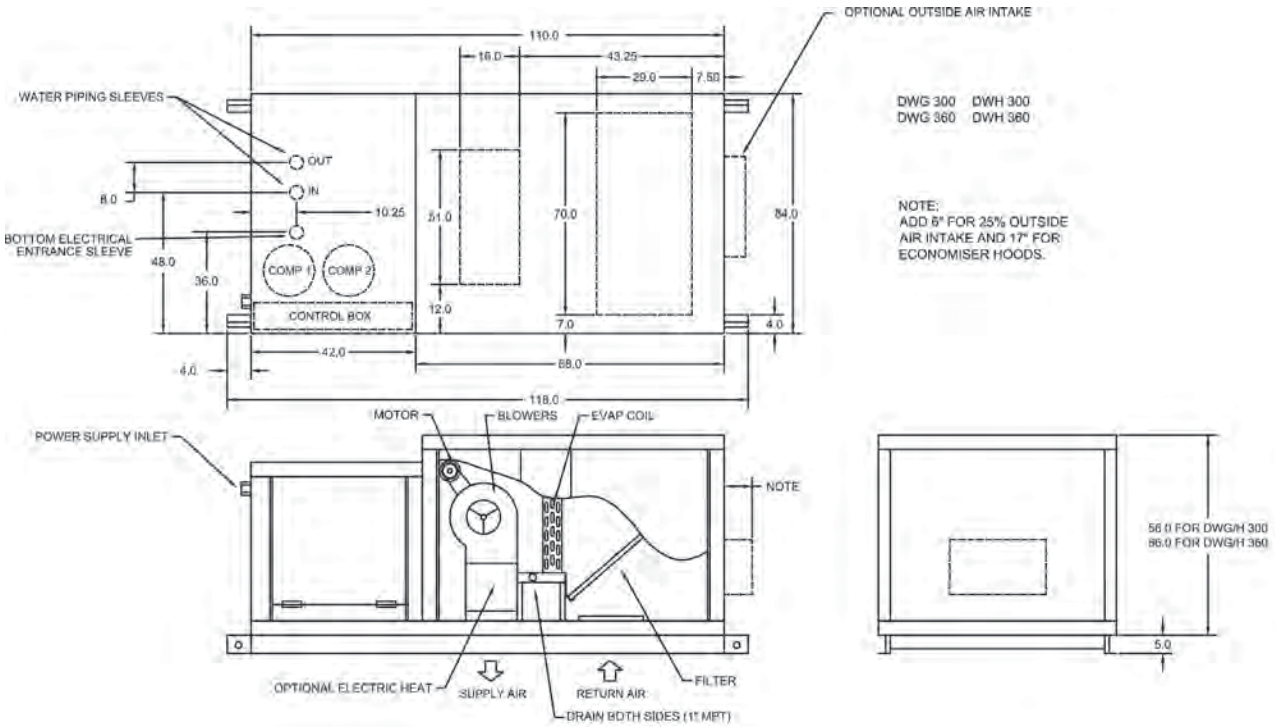
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

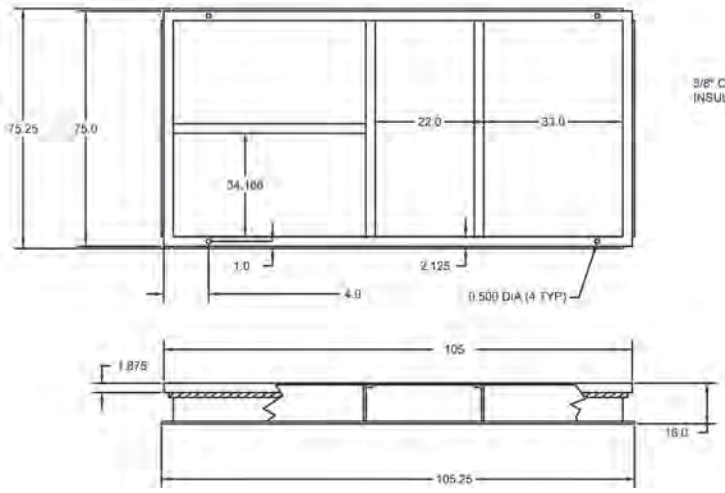
Rooftop Dimensions

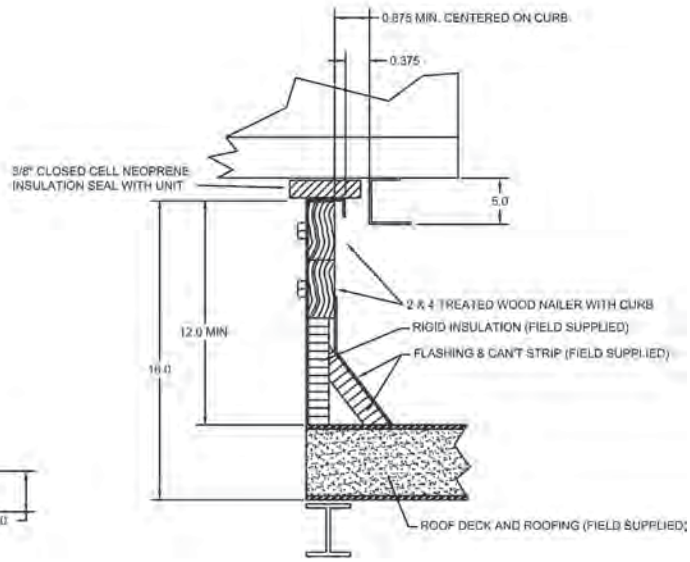
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 300 & 360



626 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

360

	Specifications		Model 360		
PERFORMANCE PER ARI STD ISO 13256-1	Rating Conditions: 12000 scfm 93 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	376,500		
		EER	12.4		
	Heating DWY only	Btu/h @ 68/59°F ent Air, 68°F Ent Fluid	459,100		
		COP	4.2		
	Rating Conditions: 12000 scfm - 93 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid.	383,100		
		EER	14.0		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent fluid.	304,100		
		COP	3.2		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	2		
		RLA (ea)	52.6	23.8	23.8
		LRA(ea)	425	187	187
	7 ½ HP Fan Motor	FLA	20.0	10.0	11.5
		Unit Minimum Circuit Ampacity	138.4	63.5	65.1
		Max. Time Delay Fuse or HACR Breaker	175	80	80
	10 HP Fan Motor	FLA	28.0	14.0	14.0
		Unit Minimum Circuit Ampacity	146.4	67.5	67.5
		Max. Time Delay Fuse or HACR Breaker	175	90	90
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	26.0 — (13 / 4)		
		Refrigerant Control — Quantity	TXV — 2		
	Evaporator Blower	DWDI. dia." x Width" — Quantity	15 x 15 — 2		
	Coaxial Water Coil	Connections	2'/8" ODS		
	Condensate Drain	Size — Quantity	1" MPT - 2		
	Filters: Disposable Type	Standard Size — Quantity	20 x 30 — 8		
	Weights	Unit Only (lbs)	3450		
		With largest Supplemental Electric Heat (lbs)	3500		
		Unit Only Shipping Weight (lbs)	3500		
		#626 Curb Weight (lbs)	330		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
11,000	840	5.5	880	5.9	920	6.4	970	6.9	1,010	7.3	1,050	7.7	1,090	8.1
12,000	900	6.8	940	7.3	980	7.8	1,030	8.3	1,070	8.8	1,100	9.3	1,150	9.8
13,000	940	8.1	980	8.6	1,020	9.2	1,060	9.7	-	-	-	-	-	-

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	62	11,000	434,250	300,200	17.716	494.710
		12,000	440,126	312,470	17,848	501,040
		13,000	445,902	324,898	17,944	507,140
	93	11,000	439,480	303,178	17,150	498,010
		12,000	445,592	315.016	17,250	504,470
		13,000	451,988	327,096	17,362	511,240
55	62	11,000	417,612	294,216	20,164	486,430
		12,000	423,120	306.052	20,254	492,250
		13,000	427,818	317,658	20,334	497,220
	93	11,000	422,418	296,058	19,468	488,860
		12,000	428,032	308,032	19,556	494,780
		13,000	432,884	319,672	19,630	499,880
65	62	11,000	405,372	288,964	22,078	480,720
		12,000	411,214	299,752	22,140	486,780
		13,000	414,984	312,424	22,236	490,880
	93	11,000	410.118	290.964	21,316	482,870
		12,000	416,116	301,864	21,376	489,070
		13,000	420,084	314,454	21,460	493,330
75	62	11,000	393,136	282,568	24,238	475,860
		12,000	398.130	294,176	24,314	481.110
		13,000	401,670	306,806	24,406	484,970
	93	11,000	397,254	285,602	23,430	477,220
		12,000	403,044	296,272	23,478	483,170
		13,000	407,416	307,784	23,538	487,750
85	62	11,000	379,742	276.840	26,718	470,930
		12,000	383,716	289,642	26,818	475,250
		13,000	387,566	301,274	26,886	479,330
	93	11,000	384,440	278,908	25,822	472,570
		12,000	388^00	291,688	25,908	477,020
		13,000	392,652	303,262	25,964	481,270
95	62	11,000	365,784	270.944	29.524	466,550
		12,000	369,360	283,896	29,628	470,480
		13,000	374,614	295,824	29,698	475,970
	93	11,000	370,454	272,938	28,560	467,930
		12,000	374,238	285,818	28,646	472,010
		13,000	378,006	297,372	28,702	475,970
110	62	11,000	340,246	262,236	34,226	457,060
		12,000	345,786	273,476	34,256	462,700
		13.000	348,756	285,94^	34,400	466,160
	93	11,000	344,864	264,130	33,152	458,010
		12,000	349,334	274,952	33,174	462,560
		13,000	354,364	286,424	33,238	467,810

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	62	9,000	281,798	194,590	25.552
		10,000	282,046	196,260	25,136
		11,000	271,288	186,970	24,706
	93	9,000	287,010	199,240	25,716
		10,000	287,166	200,820	25,298
		11,000	287,450	202,320	24,942
40	62	9,000	319,776	228,700	26,684
		10,000	320,166	232,400	25,716
		11,000	321,070	233,000	25,804
	93	9,000	326,890	234,970	26,932
		10,000	327,370	237,260	26,402
		11,000	327,994	239,290	25,990
55	62	11,000	379,220	282,800	28,250
		12,000	379,924	285,790	27,580
		13,000	380,540	288,290	27,028
	93	11.000	388,588	291.280	28.512
		12,000	389,466	294,520	27,820
		13,000	390,232	297,230	27,250
70	62	11,000	446,686	343,490	30,236
		12,000	447,932	347.710	29,366
		13,000	449,022	351,210	28,658
	93	11,000	458,962	354,560	30,590
		12,000	460,720	359,440	29,674
		13,000	462,060	363,280	28,942
80	62	11,000	493,874	385,910	31,632
		12,000	495,648	391,150	30,618
		13,000	497,194	395,490	29,798
	93	11,000	508,212	398,830	32,048
		12,000	510,406	404,620	30,996
		13,000	512,308	409,420	30,146

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering ir in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperature	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F dbt										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	119	20.1	46.4	1.005	0.987	1.002	1.001	1.02
10	93	12.5	29.0	1.000	1.000	1.000	1.000	1.00
12	80	9.4	21.7	0.987	1.012	0.992	0.996	0.98
14	68	6.9	15.9	0.973	1.025	0.985	0.992	0.95
16	60	5.4	12.6	0.960	1.037	0.977	0.988	0.93
20	48	3.6	8.2	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat											
208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.	110	35	42.1	52.6	60
30	83.3	104.	110	40	96.2	120.	125	40	48.1	60.1	70
45	124.9	156.	175	60	144.3	180.	200	60	72.2	90.3	100

Heaters may be specified one stage only
Selection based on 100 CFMr kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

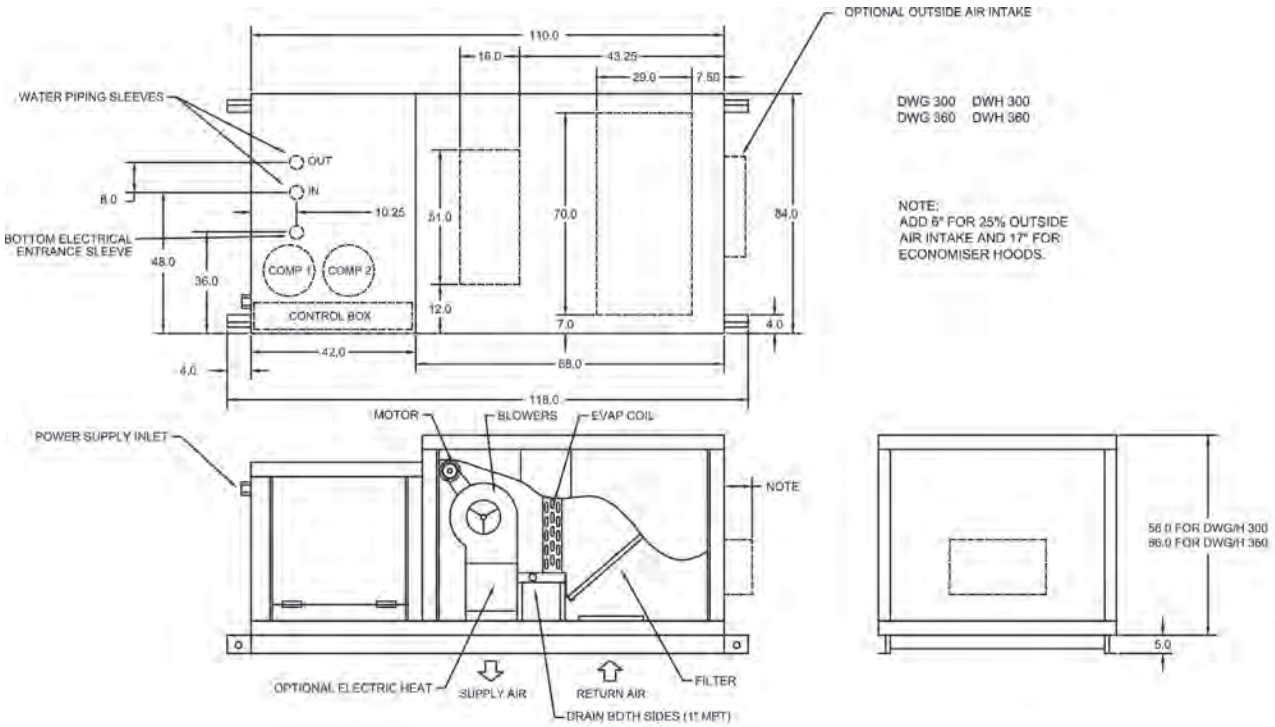
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

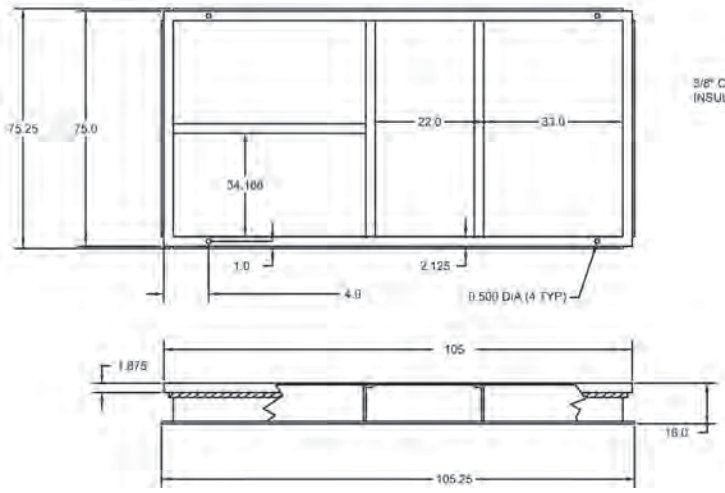
Rooftop Dimensions

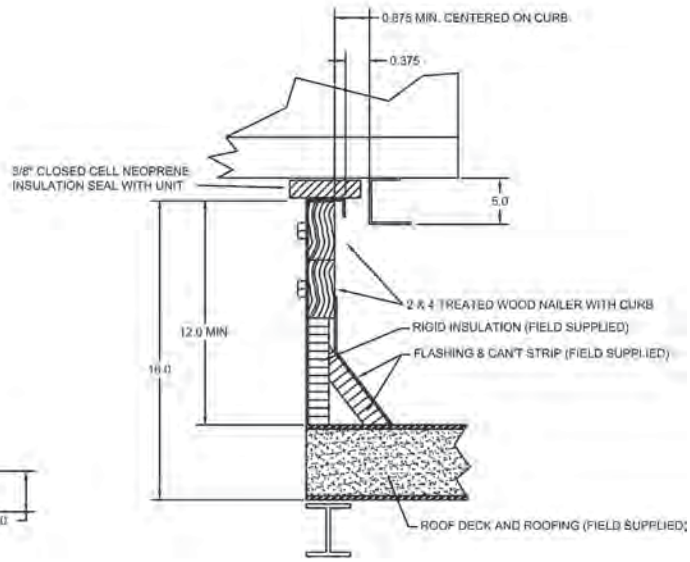
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 300 & 360



626 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.

CURB MOUNTED ROOFTOP UNITS
SPECIFICATIONS
WATER SOURCE HEAT PUMP SYSTEMS

DWY/DGY/DWC

420A

PERFORMANCE PER ARI STD ISO 13256-1	Specifications		Model 420A		
	Rating Conditions: 14000 scfm - 108 gpm – 208/3/60		DWY/DWC for Water Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 86°F ent Fluid	426,700		
		EER	12.1		
	Heating DWY Only	Btu/h @ 68/59°F ent Air, 68°ent Fluid	550,000		
		COP	4.2		
	Rating Conditions: 1200 scfm - 8.6 gpm – 208/3/60		DGY for Ground Loop		
	Cooling	Btu/h @ 80.6/66.2°F ent Air, 77°F ent Fluid	440,000		
		EER	13.4		
	Heating	Btu/h @ 68/59°F ent Air, 32°F ent Fluid	369,000		
		COP	3.2		
ELECTRICAL DATA	Service	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	Compressor	Scroll (Qty.)	3		
		RLA (ea)	37.8	17.3	17.3
		LRA(ea)	239	125	125
	10 HP Fan Motor	FLA	28.0	14.0	14.0
		Unit Minimum Circuit Ampacity	150.9	70.2	70.2
		Max. Time Delay Fuse or HACR Breaker	175	80	80
	15 HP Fan Motor	FLA	38.6	19.3	19.3
		Unit Minimum Circuit Ampacity	161.5	75.5	75.5
		Max. Time Delay Fuse or HACR Breaker	175	90	90
PHYSICAL DATA	Indoor Air Coil Lanced Alum. Fins on Copper Tubes	Face Area sq ft — (fins per inch / rows)	29.2 — (13 / 4)		
		Refrigerant Control — Quantity	TXV — 3		
	Evaporator Blower	DWDI, Dia." x Width" — Quantity	15 x 15 — 2		
	Coaxial Water Coil	Connections	21/8" ODS		
	Condensate Drain	Size — Quantity	1" MPT — 2		
	Filters: Disposable Type	Standard Size — Quantity	20 x 30 x 2 - 8		
	Weights	Unit Only (lbs)			
		With largest Supplemental Electric Heat (lbs)			
		Unit Only Shipping Weight (lbs)			
		#626 Curb Weight (lbs)	330		

Blower Performance

CFM	External Static Pressure													
	0.4		0.6		0.8		1		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
13,000	930	7.6	960	8.1	1,000	8.6	1,040	9.2	1,070	9.5	1,120	10	1,060	11
14,000	980	9.4	1,030	9.7	1,060	10.5	1,090	11.0	1,130	11,6	1,170	12	1,190	13
15,000	1,040	11.3	1,070	12.0	1,110	12.5	1,140	13.1	1,170	13.5	1,210	14	1,240	15

Notes: 1. Table can be interpolated but not extrapolated.

As a result of continuing research and development, specifications are subject to change without notice

FHP Manufacturing Co • 601 NW 65th Court • Ft. Lauderdale • FL 33309
Phone: 954 776-5471 • Fax: 954 776-5529
www.fhp-mfg.com

REV. 6-02

Capacity Data (Cooling capacities shown are gross capacities. For net capacities, multiply blower BHP required times 2545 Btu per BHP and subtract from total and sensible in tables.)

COOLING

EWT (°F)	GPM	CFM	Total Capacity Btu/h	SH Btu/h	Watts	Heat Rejected Btu/h
40	66	13,000	508,400	356,700	22,900	586,400
		14,000	515,500	367,100	22,900	593,700
		15,000	521,000	379,400	23,000	599,600
	135	13,000	522,000	360,300	21,300	594,700
		14,000	529,000	372,800	21,400	601.900
		15,000	535,100	385,000	21,500	608,300
55	66	13,000	488,500	346,000	25,500	575,400
		14.000	494,200	358,200	25,600	581.500
		15,000	499,100	370,100	25,700	586,800
	135	13,000	502,000	351,600	23,700	582,900
		14,000	508,200	364,200	23,800	589,400
		15,000	513,700	376,200	23,900	595,200
65	66	13,000	473,600	339,700	27,600	567,700
		14,000	478,700	351,800	27,700	573,200
		15,000	483,200	363,500	27,800	578,000
	135	13,000	487,200	345,500	25,600	574,700
		14,000	493,000	357,800	25,700	580,800
		15,000	498.100	369,700	25,800	586,200
75	66	13,000	456,400	335.600	30,200	559,300
		14,000	460,900	347,700	30,300	564,200
		15,000	466,400	361,000	30,400	570,200
	135	13,000	471,500	338,900	27,900	566,700
		14,000	476.800	351,000	28.000	576,400
		15,000	480,600	364,400	28,100	576,400
85	66	13,000	439,000	328,500	33,000	551,700
		14,000	444,300	337,800	32,900	556,700
		15,000	448,100	353,200	33,200	561,600
	135	13,000	453,900	333,400	30,500	558.100
		14,000	458,500	345,500	30,600	572,200
		15,000	464,800	357,200	30,700	569,500
95	66	13,000	420,100	321,100	36,400	544,300
		14,000	424,900	333,700	36,400	549,300
		15,000	429,300	342,800	36,300	553,300
	135	13,000	435,000	326,800	33.700	550,000
		14,000	440,400	340,200	33,800	570,800
		15,000	444.300	351,500	33,800	559,800
110	66	13,000	390,100	309,000	42,200	534,200
		14,000	392,700	320.000	42,300	537,100
		15,000	394,900	330,800	42,400	539,500
	135	13,000	405,500	315,500	39,200	539,400
		14,000	408,800	326,700	39,300	530,700
		15,000	411,700	337,700	39,400	546,100

HEATING

EWT (°F)	GPM	CFM	Heating Capacity Btu/h	Heat Absorption Btu/h	Watts
30	66	13,000	334,800	233,600	29,600
		14,000	335,600	236,000	29,200
		15,000	336,400	238,000	28,800
	135	13,000	354,800	251,600	30,300
		14,000	355,600	254,000	29,800
		15,000	356,300	256,100	29,400
40	66	13,000	381,500	275,700	31,000
		14,000	381,900	277,900	30,500
		15,000	382,200	279,800	30,000
	135	13,000	405,700	297,000	31,800
		14,000	406,100	299.400	31,300
		15,000	406,500	301,500	30,800
55	66	13,000	453,600	339,600	33,400
		14,000	453,800	342,200	32,700
		15,000	454,100	344,400	32,100
	135	13,000	484,500	367,000	34,400
		14,000	485,300	370,300	33,700
		15,000	486,000	373,200	33.100
70	66	13,000	525,900	403,300	35,900
		14,000	527,400	407,700	35,100
		15,000	528,500	411,200	34,400
	135	13,000	559,000	432,200	37,100
		14,000	562,100	432,800	36,300
		15,000	564,700	443,400	35,600
80	66	13,000	569,800	439,200	38,300
		14,000	572,700	447,700	36,600
		15,000	575,300	452,900	35,900
	135	13,000	599,500	467,400	38,700
		14,000	605,500	465,200	37,800
		15,000	610,500	484,200	37,000

Notes:

1. Above ratings are based on 80°F DB, 67°F WB entering air in cooling, 70°F DB in heating. For other entering air conditions see correction factor charts.
2. Above ratings do not include allowance for water pump power consumption.
3. Heating ratings below 45°F EFT based on the use of 20% methanol/water anti-freeze.
4. Interpolation of ratings is permitted.
5. Above ratings are at 208 volts.

Heating correction multipliers at entering air temperatures:

Entering air temperatur	Heating Btu/h	COP	Heat of Absorption	Total Watts
60	1.014	1.096	1.038	0.925
65	1.007	1.046	1.019	0.963
70	1.000	1.000	1.000	1.000
75	0.993	0.957	0.981	1.077
80	0.986	0.916	0.961	—

Cooling Correction Multipliers

Entering Air °F WB	Multipliers				Multipliers for Sensible Cooling										
	Total Cooling	EER	Total Watts	Heat Rej.	Entering Air °F DB										
					70	72	74	76	78	80	82	84	86	88	90
61	0.911	0.93	0.983	0.927	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—	—
63	0.938	0.95	0.989	0.949	0.74	0.83	0.91	1.00	1.09	1.18	—	—	—	—	—
65	0.968	0.97	0.994	0.973	0.65	0.74	0.83	0.91	1.00	1.09	1.18	1.27	—	—	—
67	1.000	1.00	1.000	1.000	0.56	0.65	0.73	0.82	0.91	1.00	1.09	1.18	1.27	—	—
69	1.035	1.03	1.007	1.029	—	0.56	0.65	0.73	0.82	0.91	1.00	1.08	1.17	1.26	—
71	1.072	1.06	1.012	1.060	—	—	0.56	0.64	0.73	0.82	0.9	0.99	1.08	1.17	1.26
73	1.108	1.09	1.019	1.092	—	—	—	—	0.64	0.72	0.81	0.9	0.99	1.07	1.16

Correction Multipliers for Fluid Flow

Condenser Water Flow				Cooling Performance Correction Factors				
Cooling Cycle Design °F ΔT	GPM	Pressure Drop		Total Capacity Btu/h	Watts Input	Heat Rejection Btu/h	Sensible Capacity Btu/h	EER
		PSI.	Ft.					
8	135	17	39.9	1.005	0.987	1.002	1.001	1.02
10	108	12	26.7	1.000	1.000	1.000	1.000	1.00
12	90	8	19.3	0.987	1.012	0.992	0.996	0.98
14	75	6	13.9	0.973	1.025	0.985	0.992	0.95
16	66	5	11.0	0.960	1.037	0.977	0.988	0.93
20	54	3	7.7	0.958	1.054	0.973	0.980	0.91

Factory Installed Supplemental Electric Heat

208/3/60				240/3/60				480/3/60			
Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse	Heater kW	Amps	MCA	Max Fuse
7.5	20.8	26.0	30	10	24.1	30.1	35	10	12.0	15.0	15
9	25.0	31.3	35	12	28.9	36.1	40	12	14.4	18.0	20
11.3	31.2	39.0	40	15	36.1	45.1	50	15	18.0	22.5	25
15	41.6	52.0	60	20	48.1	60.1	70	20	24.1	30.1	35
18.8	52.0	65.0	70	25	60.1	75.2	80	25	30.1	37.6	40
22.5	62.5	78.1	80	30	72.2	90.2	100	30	36.1	45.1	50
26.3	72.9	91.1	100	35	84.2	105.2	110	35	42.1	52.6	60
30	83.3	104.1	110	40	96.2	120.3	125	40	48.1	60.1	70
45	124.9	156.1	175	60	144.3	180.4	200	60	72.2	90.3	100

Heaters may be specified one stage only
Selection based on 100 CFM per kW
MCA and Max. Fuse Size to be calculated as part of unit.

Minimum Circuit Ampacity for Wiring Sizing

For unit less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply: Use values from specification table.

For unit with supplemental electric heat: Single point power. Minimum circuit ampacity ={(Largest com. RLA + electric Heater amps) x 1.25 + FLA of all other motors & compressors}

Maximum Fuse Size

For units less supplemental electric heat: Use unit values.

For supplemental electric heat: Optional separate power supply. Use values from specification table.

For unit with supplemental electric heat: Single point power. Maximum fuse size = (2.25 x compressor RLA) + FLA of all other motors and compressors + electric heater amps.

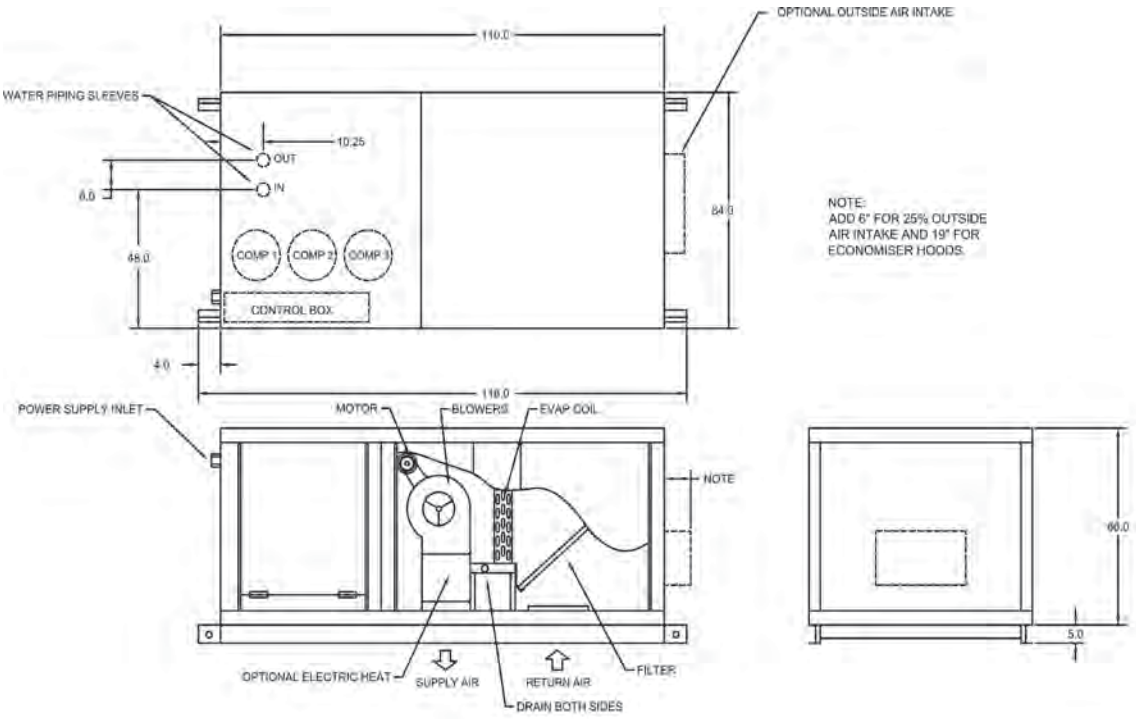
Select the next smaller from the following standard fuse sizes: 15, 20, 25,30,35,40,45,50,60, 70, 80, 90,100,110,125,150,200, 225, 250, and 300.

Note: In some instances with relatively large electric heat loads, the value computed for max. fuse size will be less than the MCA. In this situation, the max. fuse size is the same as MCA or next higher fuse size.

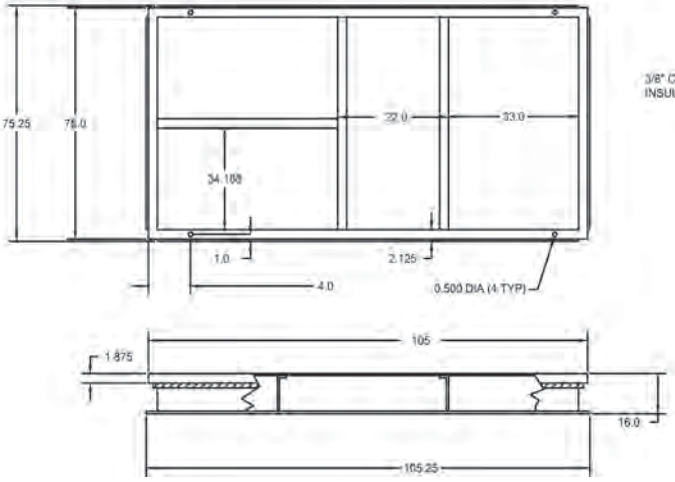
Rooftop Dimensions

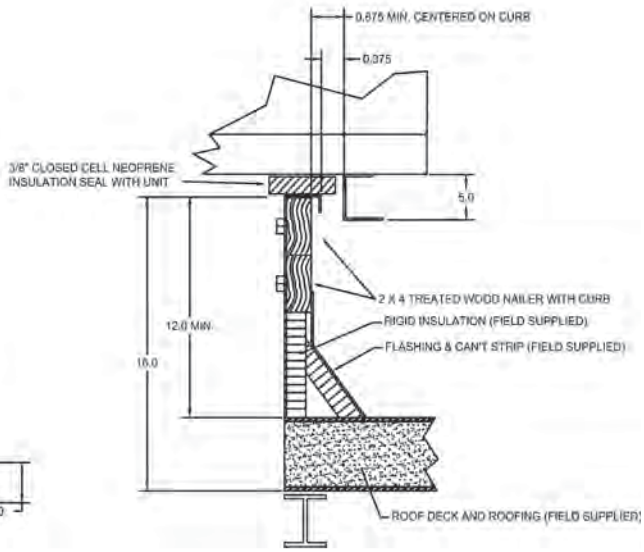
FHP Manufacturing Co.
601 N.W. 65th Court - Fort Lauderdale, FL 33309
Phone: (954) 776-5471 - Fax: (800) 776-5529
http://www.fhp-mfg.com

DWG/DWH 420



626 CURB DIMENSIONS





SECTION OF TYPICAL INSTALLATION

NOTES: Specifications subject to change without notice.