PRODIRECT™ Series ECM Air Handler

Installation & Owner's Manual



MODELS:

HAH024FEA

HAH036FEA

HAH060FEA

Read this manual carefully before installation and keep it where the operator can easily find it for future reference.

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice.

Version Date: 09/26/2024
Please visit www.mrcool.com/documentation
to ensure you have the latest version of this manual.

MRCOOL®
COMFORT MADE SIMPLE

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Safety Precautions

Read Before Using

Incorrect usage may cause serious damage or injury.

The symbols below are used throughout this manual to indicate instructions that should be followed closely or actions that should be avoided to prevent death, injury, and/or property damage.

WARNING	Indicates the possibility of personal injury or loss of life.
CAUTION	Indicates the possibility of property damage or serious consequences.

WARNING

1. These instructions are intended as an aid to qualified licensed service personnel for proper installation, adjustment, and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service, or maintenance possibly resulting in fire, electrical shock, property damage, personal injury, or death.
2. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
3. Children should be supervised to ensure that they do not play with the appliance.
4. This unit can't be used outdoors.
5. Because of possible damage to equipment or personal injury, installation, service, and maintenance should be performed by a trained, qualified service personnel. Consumer service is recommended only for filter cleaning/replacement. Never operate the unit with the access panels removed.
6. The first 6 inches of supply air plenum and ductwork must be constructed of sheet metal as required by NFPA 90B. The supply air plenum or duct must have a solid sheet metal bottom directly under the unit with no openings, registers or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the vertical walls of rectangular plenum, a minimum of 6 inches from the solid bottom. Metal plenum of duct may be connected to the combustible floor base, if not, it must be connected to the unit supply duct exposed to the supply air opening from the downflow unit. Exposing combustible (non-metal) material to the supply opening of a downflow unit can cause a fire resulting in property damage, personal injury or death.
7. Exception warning to downflow: Installations on concrete floor slab with supply air plenum and ductwork completely encased must be not less than 2 inches of concrete (See NFPA 90A).

ELECTRICAL WARNINGS

1. Disconnect power to the unit before installing or servicing. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.
2. If removal of the blower assembly is required, all disconnect switches supplying power to the equipment must be de-energized and locked (if not in sight of unit) so the field power wires can be safely removed from the blower assembly. Failure to do so can cause electrical shock resulting in personal injury or death.
3. The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

WARNING: PROPOSITION 65

- This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to the state of California to cause cancer.
- All manufacturer products meet current federal OSHA Guidelines for safety. California Proposition 65 warnings are not required for certain products, which are not covered by the OSHA standards.
- California's Proposition 65 requires warnings for products sold in California that contain or produce any of over 600 listed chemicals known to the state of California to cause cancer or birth defects such as fiberglass insulation, lead in brass, and combustion products from natural vapor.
- All "new equipment" shipped for sale in California will have labels stating that the product contains and/or produces Proposition 65 chemicals. Although we have not changed our processes, having the same label on all our products facilitates manufacturing and shipping. We cannot always know when or if products will be sold in the California market.
- You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air conditioning equipment, or found in natural vapor used with some of our products. The following are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers: glass wool (fiberglass) insulation, carbon monoxide (CO), formaldehyde, benzene
- More details are available on the following websites: www.osha.gov and www.oehha.org
- Consumer education is important since the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products present safety and health risks, when improperly used, handled, and maintained.

2.1 Location Selection

The unit can be positioned for bottom return air in the upflow position, left and right return in the horizontal position, top return in downflow position.

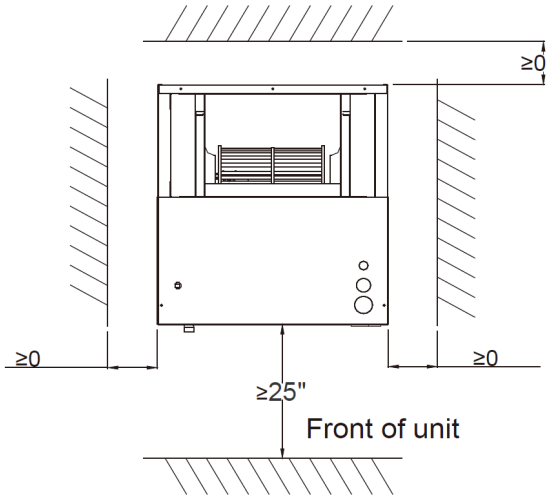
This Air Handler provides the flexibility for installation in any upflow or downflow horizontal application. The direct drive motors provide a selection of air volume to match any application. 3-Speed motors provide selections of air flow to meet desired applications.

Top and side power and control wiring, accessible screw terminals for control wiring all combine to make the installation easy, and minimize installation cost.

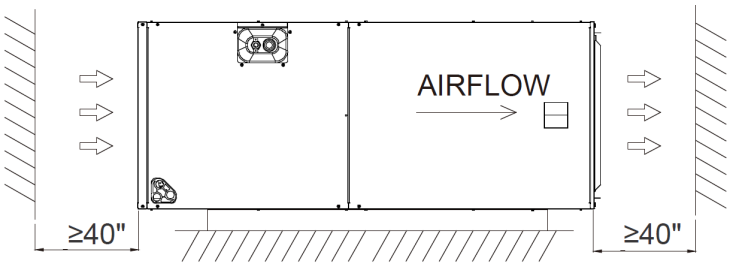
Do not install unit in an area where flammable materials are present due to the risk of an explosion resulting in serious injury or death.

The unit should be installed in a level position to ensure proper condensation drainage. Up to an additional 1/4" rise over the width or depth of the unit is allowed to create additional sloping towards the drain. The unit must be positioned between level and 1/4" rise, sloping toward the drain connections.

Install the indoor and outdoor unit, power supply wiring and connecting wires at least 3.5 ft. away from televisions or radios in order to prevent image interference or noise.



CLEARANCES IN THE VERTICAL POSITION



CLEARANCES IN THE HORIZONTAL POSITION

⚠WARNING

If the supporting structural members are not strong enough to support the unit's weight, the unit could fall out of place and cause serious injury.
If a return-air duct is not installed, carefully select the place and method of product installation so that airflow into the product will not be blocked.

When the unit is installed in a hot and humid place, if the humidity inside the installation space might exceed 86°F (30°C) and RH 80%, it is recommended to insulate the cabinet exterior.

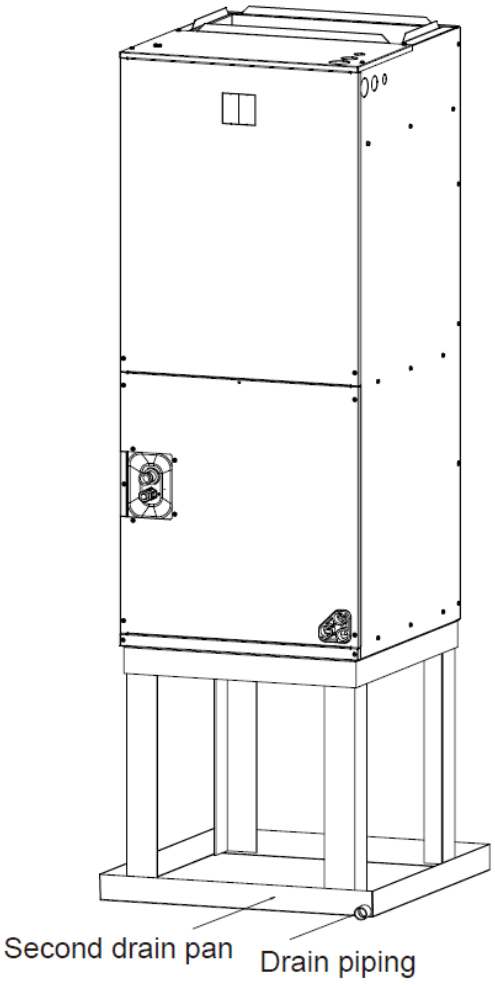
Use glass wood or polyethylene foam as insulation so that the thickness is more than 2 in. and fits inside the installation space opening.

Respectively, condensation may form on the surface of the insulation.

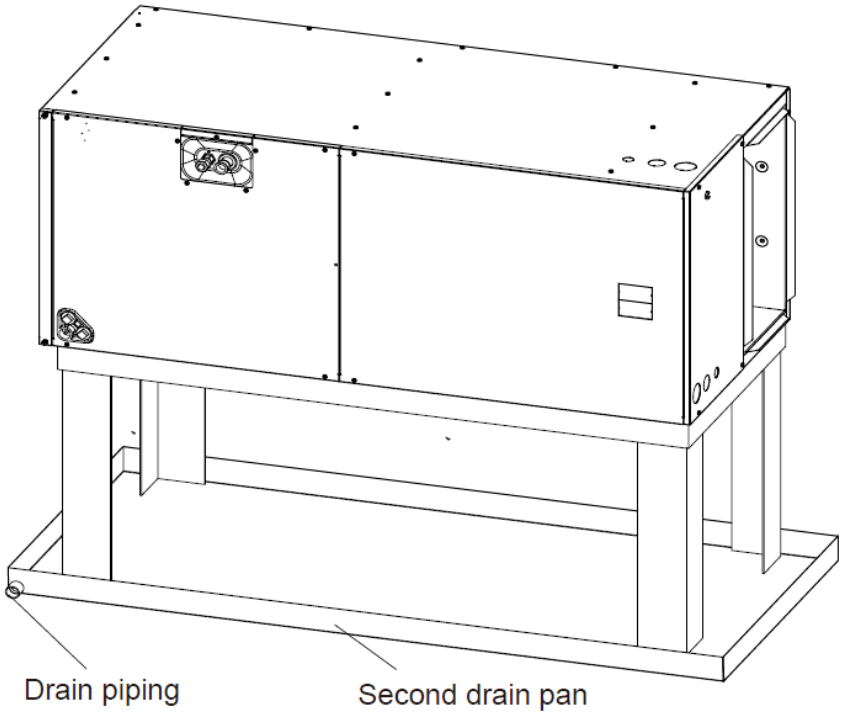
Be sure to use insulation that is designed for use with HVAC Systems.

Condensation may form on the product during cool operation.

It is also recommended to use the second drain pan and secure the unit firmly to prevent it from falling.

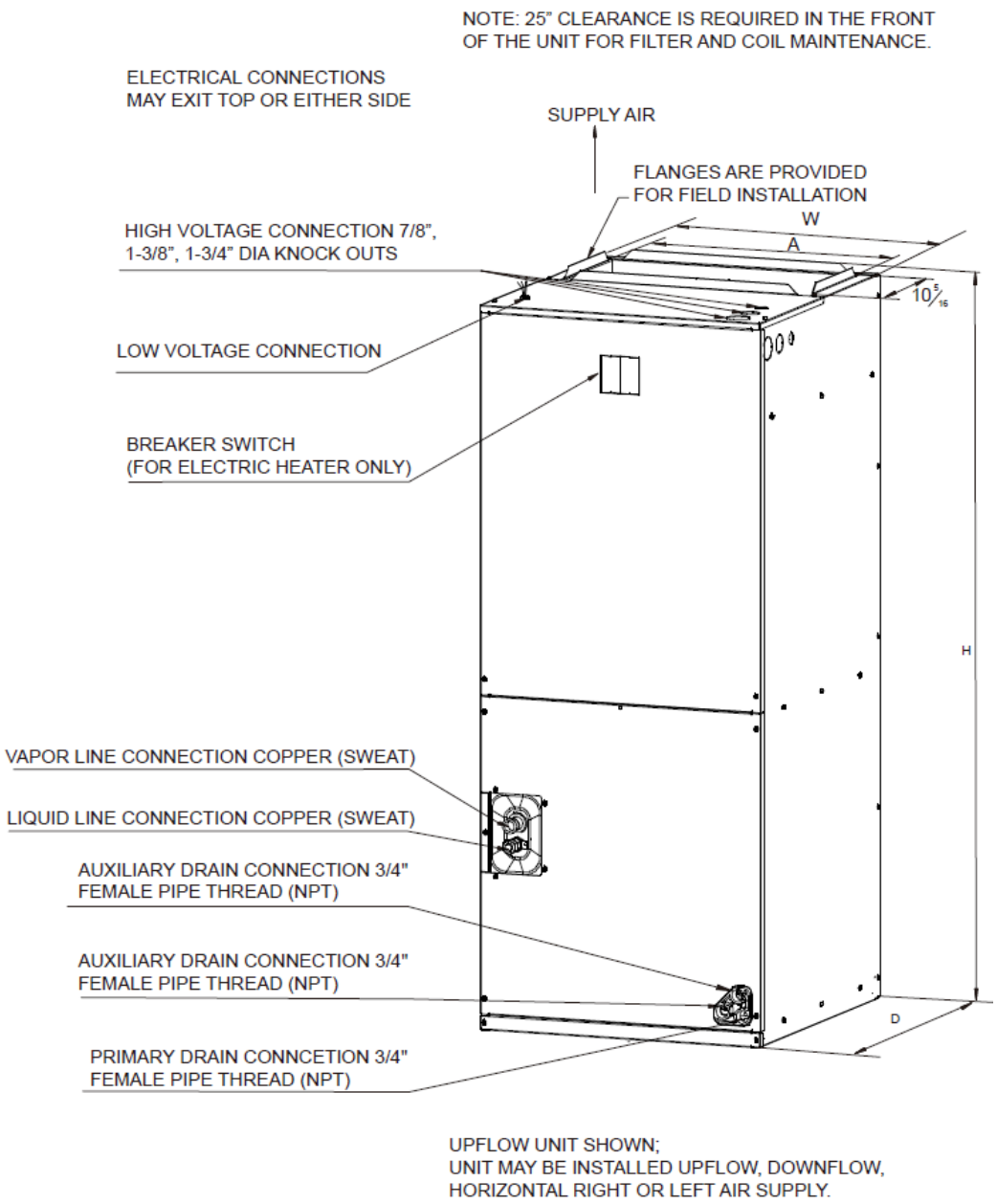


INSTALLED VERTICALLY



INSTALLED HORIZONTALLY

2.2 Unit Dimensions



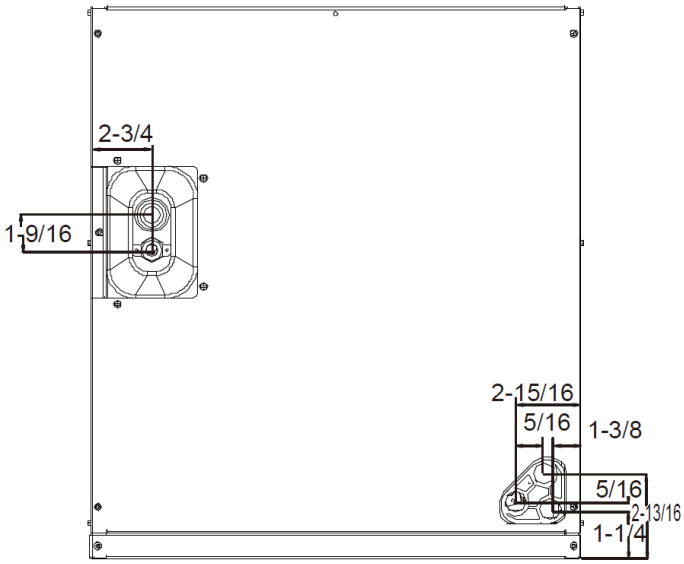
Unit Dimensions					
Model	**Height (in. [mm])**	**Width (in. [mm])**	**Length (in. [mm])**	**Supply Duct "A"**	**Unit Weight (lbs. [kg])**
24	41-3/8" [1050]	18-1/8 [460]	20-1/2 [520]	16" [406]	99 [45]
36	46-1/2" [1180]	19-5/8" [500]	21-5/8" [550]	18" [456]	121 [55]
60	54-1/2" [1385]	22" [560]	24" [610]	19-1/2" [496]	152 [69]

3.1 Vertical Upflow

Vertical Upflow configuration is the default factory setting on all models.

If return air is to be ducted, install the duct flush with the floor. Use a fireproof resilient gasket 1/8 to 1/4 in. thick between the ducts, unit, and floor. Set the unit on the floor over the opening.

Torque applied to drain connections should not exceed 15ft.lbs.



DIMENSIONS FOR FRONT CONNECT COIL

3.2 Vertical Downflow

Conversion to Vertical Downflow: A vertical upflow unit may be converted to vertical downflow. Remove the door and indoor coil and reinstall 180° from original position.

IMPORTANT: To comply with certification agencies and the National Electric Code for downflow application, the circuit breaker(s) on field-installed electric heater kits must be re-installed per procedure below so that the breaker switch's "on" position and marking is up and its "off" position and marking is down.

- To rotate breaker(s): rotate one breaker set (circuit) at a time starting with the one on the right. Loosen both lugs on the load side of the breaker. (Make sure that wires are identified and are reinstalled into the proper breaker.) Wires are bundled with wire ties, one bundle going to the right lug and one bundle going to the left lug.
- Using a screwdriver or pencil, lift the white plastic tab with hole away from the breaker until the breaker releases from the mounting opening.
- With breaker held in hand, rotate the breaker so that its "on" position is up, and its "off" position is down with the unit in its planned vertical mounting position. Insert right wire bundle into the top right breaker lug, ensuring all strands of all wires are inserted fully into the lug, and no wire insulation is in the lug.
- Tighten lug as tight as possible while holding the circuit breaker. Check the wires and ensure each wire is secure and none are loose. Repeat for left wire bundle in the left top circuit breaker lug.
- Replace breaker by inserting breaker mounting tab opposite the white pull tab in the opening. Hook the mounting tab over the edge in the opening.
- With a screwdriver or pencil, pull the blue tab with hole away from the breaker while placing that side of the breaker into the opening. When breaker is in place, release the tab, locking the circuit breaker into place in the opening.
- Repeat above operation for remaining breaker(s) (if more than one is provided).
- Replace the single point wiring jumper bar, if it is used, on the line side of the breaker and tighten it securely.
- Double-check all wires and lugs to make sure all are secure and tight. Check to make sure the unit wiring and circuit breaker load lugs match what is shown on the unit wiring diagram.

! CAUTION

When using the unit with an electrical heater, the switch is used only for the electrical heater on the front of the panel.

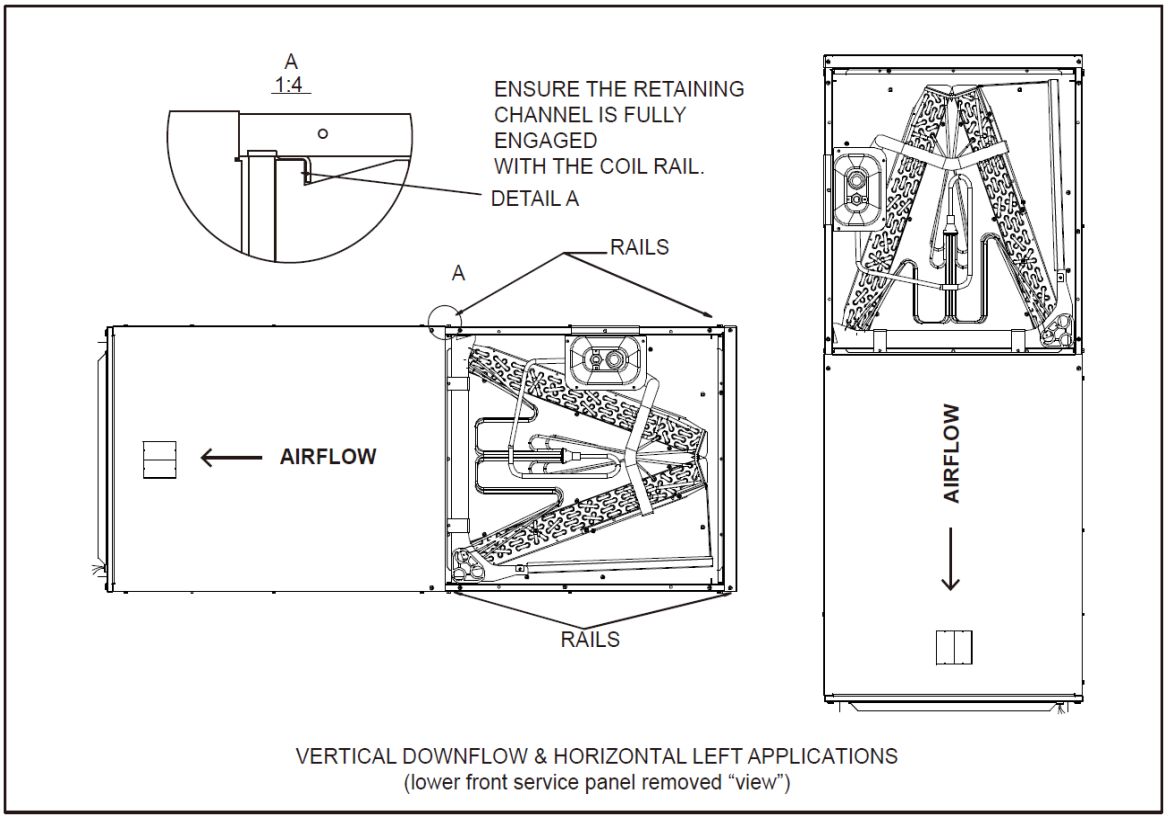
3.3 Horizontal

Horizontal right is the default factory configuration for the units.

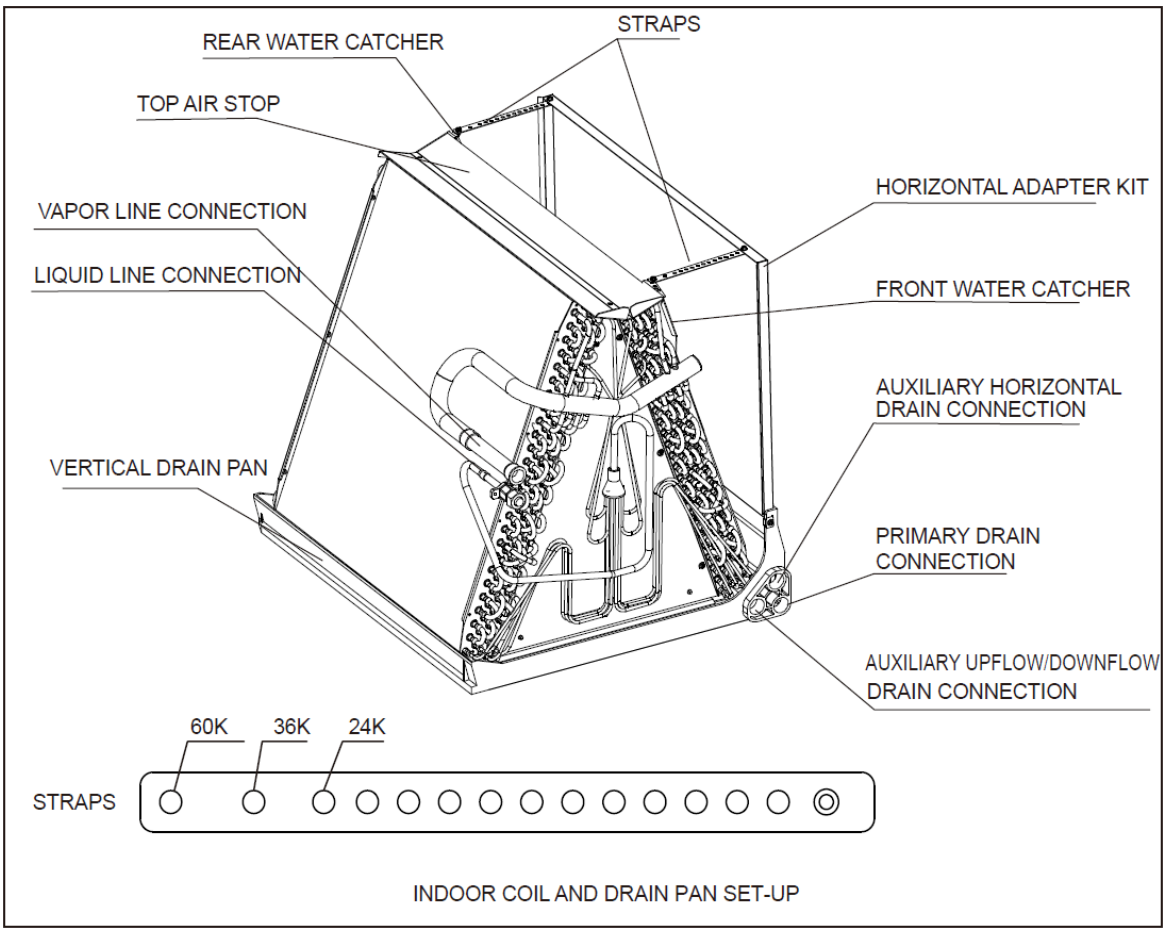
Horizontal left is **not** the default factory configuration for the units.

Conversion to Horizontal left: A vertical upflow unit may be converted to horizontal left by removing the indoor coil assembly and reinstalling the coil as shown for a left-hand air supply.

- Rotate the unit into the downflow position, with the coil compartment on top and the blower compartment on bottom.
- Reinstall the indoor coil 180° from its original position. Ensure the retaining channel is fully engaged with the coil rail.
- Secondary drain pan kits are recommended when the unit is configured for the horizontal position over a finished ceiling and/or living space.



VERTICAL DOWNFLOW & HORIZONTAL LEFT APPLICATIONS
(lower front service panel removed "view")



INDOOR COIL AND DRAIN PAN SET-UP

CAUTION

Horizontal units must be configured for right hand air supply or left hand air supply. Horizontal drain pan must be located under indoor coil. Failure to use the drain pan can result in property damage.

Conversion in Horizontal Direction: A unit with a horizontal right-hand supply can be changed to a horizontal left-hand supply by removing the indoor coil and reinstalling 180° from the original orientation.

3.4 Installation in an Unconditioned Space

IMPORTANT: There are two pairs of coil rails in the air handler for default and counter-flow application. If the air handler is installed in an unconditioned space, the two unused coil rails should be removed to minimize sweating on the air handler's surface. The coil rails can be easily removed by taking off the 6 mounting screws from both sides of the cabinet.

4 - Electrical Wiring

Field wiring must comply with the National Electric Code (C.E.C. in Canada) and any applicable local ordinance.

WARNING

Disconnect all power to the unit before performing any installation or service. More than one disconnect switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.

4.1 Power Wiring

It is important that proper electrical power is available for connection to the unit model being installed. See the unit nameplate, wiring diagram, and electrical data in the installation instructions.

- If required, install a branch circuit disconnect of adequate size, located within sight of, and readily available to the unit.
- **IMPORTANT:** After the Electric Heater is installed, units may be equipped with one, two, or three 30-60 amp. circuit breakers. These breaker(s) protect internal wiring in the event of a short circuit and serve as a disconnect. Circuit breakers installed within the unit do not provide over-current protection of the supply wiring and therefore may be sized larger than the branch circuit protection.
- Supply circuit power wiring must be 75°C minimum copper conductors only. See Electrical Data in this section for ampacity, wire size, and circuit protector requirement. Supply circuit protective devices may be either fuses or "HACR" type circuit breakers.
- Power wiring may be connected to either the right side, left side, or top. Three 7/8", 1-3/8", 1-3/4" dia. concentric knockouts are provided for connection of power wiring to unit.
- Power wiring is connected to the power terminal block in the unit's electrical cabinet.

4.2 Control Wiring

IMPORTANT: Class 2 low voltage control wiring should not be run in conduit with main power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used.

- Low voltage control wiring should be 18 AWG color-coded. For lengths longer than 100ft., 16 AWG wire should be used.
- Low voltage control connections are made to low voltage pigtails extending from the top of the air handler.
- Connections for control wiring are made with wire nuts. Control wiring knockouts (5/8" & 7/8") are also provided on the right and left side of the unit for a side connection.
- See wiring diagrams attached to indoor and outdoor sections to be connected.
- Make sure, after installation, separation of control wiring and power wiring has been maintained.

4.3 Grounding

- Grounding may be accomplished by grounding metal conduit when installed in accordance with electrical codes to the unit cabinet.
- Grounding may also be accomplished by attaching the ground wire(s) to the ground lug(s) provided in the unit wiring compartment.
- Ground lug(s) are located close to the wire entrance on the left side of the unit (upflow). Lug(s) may be moved to marked locations near the wire entrance on the right side of the unit (upflow), if an alternate location is more convenient.
- Use of multiple supply circuits require grounding of each circuit to the lug(s) provided in the unit.

⚠ WARNING

The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

4.4 Electrical Data

Model	Voltage	Hertz	HP	Speeds	Circuit Amps.	Maximum Circuit Protector
24	208/230	60	1/3	5	2.6	15(A)
36	208/230	60	1/2	5	3.0	15(A)
60	208/230	60	3/4	5	4.5	15(A)

4.5 Electric Kit MCA/MOP Data

Heater Kit Model Used	Air Handler Model	Electric Heat (kW)	Minimum Circuit Ampacity		Max. Fuse or Breaker (HACR) Ampacity		Fan Speed (AC/HP)				
			240V	208V	240V	208V	1	2	3	4	5
HHK-05	24	5	29	25.5	30	30	●	●	●	●	●
HHK-08		7.5	42	36.8	45	40	X	X	●	●	●
HHK-10		10	55	48.1	60	50	X	X	●	●	●
HHK-05	36	5	29.4	25.9	30	30	●	●	●	●	●
HHK-08		7.5	42.4	37.2	45	40	X	●	●	●	●
HHK-10		10	55.4	48.5	60	50	X	X	●	●	●
HHK-15		15	55.4/26.1	48.5/22.6	60/30	50/25	X	X	●	●	●
HHK-20		20	55.4/52.1	48.5/45.2	60/60	60/50	X	X	X	●	●
HHK-05	60	5	31.8	28.3	35	30	X	X	●	●	●
HHK-08		7.5	44.8	39.6	45	40	X	X	●	●	●
HHK-10		10	57.8	50.9	60	60	X	X	●	●	●
HHK-15		15	57.8/26.1	50.9/22.6	60/30	60/25	X	X	●	●	●
HHK-20		20	57.8/52.1	50.9/45.2	60/60	60/50	X	X	X	●	●

- Heat kit suitable for AHU 4-way installation.
- Ampacities for MCA and Fuse/breaker including the blower motor.
- Heat pump systems require a specified air flow. Each ton of cooling requires between 350 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.

Electric Heater Kits

No.	Kit	Description	Ref. Air Handler Use
1	HHK-05	5kW Heat Strip	24/36/60
2	HHK-08	7.5kW Heat Strip	24/36/60
3	HHK-10	10kW Heat Strip	24/36/60
4	HHK-15	15kW Heat Strip, double breaker panel	36/60
5	HHK-20	20kW Heat Strip, double breaker panel	36/60

5 - Airflow Performance

Airflow performance data is based on cooling performance with a coil and no filter in place. Select performance table for appropriate unit size.

External static applied to unit allows operation within the minimum and maximum limits shown in the table below for both cooling and electric heat operation.

Airflow Performance Data

Air Handler Model Size	Outdoor Unit Size (Tons)	Motor Speed		CFM Wet Coil Without Filter and Electric Heat								
				External Static Pressure-Inches W.C. [kPa]								
				0[0]	0.1[.025]	0.2[.050]	0.3[.075]	0.4[0.100]	0.5[0.125]	0.6[0.150]	0.7[0.175]	0.8[0.200]
24	1.5	1	SCFM	590	544	511	447	404	345	311	273	239
			Power/W	49	57	64	70	75	82	91	97	102
			Current/A	0.77	0.81	0.84	0.87	0.91	0.94	0.99	1.02	1.11
		2	SCFM	681	633	591	535	490	446	388	354	313
			Power/W	63	69	77	83	90	96	103	111	118
			Current/A	0.84	0.87	0.93	0.96	0.99	1.03	1.07	1.13	1.16
		3 (Recommended)	SCFM	788	736	687	648	597	558	511	473	429
			Power/W	86	91	100	108	114	121	128	133	142
			Current/A	0.95	0.99	1.11	1.14	1.18	1.21	1.26	1.31	1.37
		4 (Factory Default)	SCFM	883	842	796	758	717	681	642	599	524
			Power/W	121	128	135	144	151	159	165	173	181
			Current/A	1.21	1.28	1.32	1.38	1.43	1.47	1.54	1.59	1.64
		5	SCFM	1103	1073	1036	998	967	934	896	855	814
			Power/W	233	241	249	259	265	275	281	286	291
			Current/A	1.97	2.03	2.09	2.16	2.22	2.29	2.34	2.37	2.41
24	2	1	CFM	590	54	511	447	404	345	311	273	239
			Power/W	49	57	64	70	75	82	91	97	102
			Current/A	0.77	0.81	0.84	0.87	0.91	0.94	0.99	1.02	1.11
		2	CFM	681	633	591	535	490	446	388	354	313
			Power/W	63	69	77	83	90	96	103	111	118
			Current/A	0.84	0.87	0.93	0.96	0.99	1.03	1.07	1.13	1.16
		3	CFM	788	736	687	648	597	558	511	473	429
			Power/W	86	91	100	108	114	121	128	133	142
			Current/A	0.95	0.99	1.11	1.14	1.18	1.21	1.26	1.31	1.37
		4 (Factory Default)	CFM	883	842	796	758	717	681	642	599	524
			Power/W	121	128	135	144	151	159	165	173	181
			Current/A	1.21	1.28	1.32	1.38	1.43	1.47	1.54	1.59	1.64
		5	CFM	1103	1073	1036	988	967	934	896	855	814
			Power/W	233	241	249	258	265	275	281	286	291
			Current/A	1.97	2.03	2.09	2.16	2.22	2.29	2.34	2.37	2.41

5 AIRFLOW PERFORMANCE

Air Handler Model Size	Outdoor Unit Size (Tons)	Motor Speed		CFM Wet Coil Without Filter and Electric Heat								
				External Static Pressure-Inches W.C. [kPa]								
				0[0]	0.1[.025]	0.2[.050]	0.3[.075]	0.4[0.100]	0.5[0.125]	0.6[0.150]	0.7[0.175]	0.8[0.200]
36	2.5	1	SCFM	898	752	603	511	405	360	301	259	203
			Power/W	78	72	65	60	54	48	41	38	36
			Current/A	0.68	0.64	0.59	0.52	0.46	0.42	0.36	0.29	0.28
		2	SCFM	1026	902	810	694	630	544	490	406	366
			Power/W	109	99	106	111	120	126	135	140	148
			Current/A	0.94	0.86	0.91	0.95	1.03	1.07	1.14	1.18	1.24
		3	SCFM	1161	1114	1052	992	893	825	768	694	646
			Power/W	148	158	164	175	187	193	203	209	219
			Current/A	1.26	1.34	1.39	1.48	1.57	1.61	1.69	1.73	1.81
		4 (Recommended)	SCFM	1287	1244	1186	1142	1078	969	914	892	893
			Power/W	194	205	211	221	233	241	252	253	253
			Current/A	1.62	1.69	1.75	1.83	1.93	1.98	2.07	2.08	2.11
		5 (Factory Default)	SCFM	1491	1442	1396	1348	1302	1243	1150	1088	1029
			Power/W	290	298	307	318	325	337	351	362	367
			Current/A	2.35	2.42	2.49	2.58	2.64	2.73	2.83	2.92	2.96
36	3	1	SCFM	898	752	603	511	405	360	301	259	203
			Power/W	78	72	65	60	54	48	41	38	36
			Current/A	0.68	0.64	0.59	0.52	0.46	0.42	0.36	0.29	0.28
		2	SCFM	1026	902	810	694	630	544	490	409	366
			Power/W	109	99	106	111	120	126	135	140	148
			Current/A	0.94	0.86	0.91	0.95	1.03	1.07	1.14	1.18	1.24
		3	SCFM	1161	1114	1052	992	893	825	768	694	646
			Power/W	148	158	164	175	187	193	203	209	219
			Current/A	1.26	1.34	1.39	1.48	1.57	1.61	1.69	1.73	1.81
		4	SCFM	1287	1244	1186	1142	1078	969	914	892	893
			Power/W	194	205	211	221	233	241	252	253	253
			Current/A	1.62	1.69	1.75	1.83	1.93	1.98	2.07	2.08	2.11
		5 (Factory Default)	SCFM	1491	1442	1396	1348	1302	1243	1150	1088	1029
			Power/W	290	298	307	318	325	337	351	362	367
			Current/A	2.35	2.42	2.49	2.58	2.64	2.73	2.83	2.92	2.96
60	3.5	1	SCFM	1344	1284	1226	1151	1076	946	904	893	869
			Power/W	143	151	159	168	177	191	197	195	194
			Current/A	1.23	1.26	1.33	1.41	1.5	1.61	1.63	1.61	1.62
		1.62	SCFM	1531	1477	1418	1366	1299	1239	1138	1064	1001
			Power/W	200	211	222	231	239	250	266	277	291
			Current/A	1.73	1.74	1.81	1.89	2.02	2.14	2.22	2.31	2.38
		3 (Recommended)	SCFM	1647	1592	1538	1490	1436	1378	1315	1215	1140
			Power/W	244	254	263	273	283	300	305	325	336
			Current/A	2.03	2.11	2.14	2.19	2.31	2.38	2.53	2.64	2.72
		4 (Factory Default)	SCFM	1875	1822	1774	1729	1677	1629	1581	1533	1473
			Power/W	340	353	365	375	388	399	412	423	437
			Current/A	2.73	2.79	2.86	3.02	3.12	3.21	3.29	2.38	3.51
		5	SCFM	2021	1967	1924	1879	1828	1785	1742	1694	1641
			Power/W	409	416	429	447	461	471	487	500	513
			Current/A	3.21	3.29	3.38	3.52	3.61	3.73	3.766	3.86	4.04

Air Handler Model Size	Outdoor Unit Size (Tons)	Motor Speed		CFM Wet Coil Without Filter and Electric Heat								
				External Static Pressure-Inches W.C. [kPa]								
				0[0]	0.1[.025]	0.2[.050]	0.3[.075]	0.4[0.100]	0.5[0.125]	0.6[0.150]	0.7[0.175]	0.8[0.200]
60	4	1	SCFM	1344	1284	1226	1151	1076	976	904	893	869
			Power/W	143	151	159	168	177	191	197	195	194
			Current/A	1.23	1.26	1.33	1.41	1.5	1.61	1.63	1.61	1.62
		2	SCFM	1531	1477	1418	1366	1299	1239	1138	1064	1001
			Power/W	200	211	222	231	239	250	266	277	291
			Current/A	1.73	1.74	1.81	1.89	2.02	2.14	2.22	2.31	2.38
		3 (Recommended)	SCFM	1647	1592	1538	1490	1436	1378	1315	1215	1140
			Power/W	244	254	263	273	283	300	305	325	336
			Current/A	2.03	2.11	2.14	2.19	2.31	2.38	2.53	2.64	2.72
		4 (Factory Default)	SCFM	1875	1822	1774	1729	1677	1629	1581	1533	1473
			Power/W	340	353	365	375	388	399	412	423	437
			Current/A	2.73	2.79	2.86	3.02	3.12	3.21	3.29	2.38	3.51
		5	SCFM	2021	1967	1924	1879	1828	1785	1742	1694	1641
			Power/W	409	416	429	447	461	471	487	500	513
			Current/A	3.21	3.29	3.38	3.52	3.61	3.73	3.76	3.86	4.04
60	5	1	SCFM	1344	1284	1226	1151	1076	946	904	893	869
			Power/W	143	151	159	168	177	191	197	195	194
			Current/A	1.23	1.26	1.33	1.41	1.5	1.61	1.63	1.61	1.62
		2	SCFM	1531	1477	1417	1366	1299	1239	1138	1064	1001
			Power/W	200	211	222	231	239	250	266	277	291
			Current/A	1.73	1.74	1.81	1.89	2.02	2.14	2.22	2.31	2.38
		3	SCFM	1647	1592	1538	1490	1436	1378	1315	1215	1140
			Power/W	244	254	263	23	283	300	305	325	336
			Current/A	2.03	2.11	2.15	2.19	2.31	2.38	2.53	2.64	2.72
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			Power/W	340	353	365	375	388	399	412	423	437
			Current/A	2.73	2.79	2.86	3	3.12	3.21	3.29	2.38	3.51
		5	SCFM	2021	1967	1924	1879	1828	1785	1742	1694	1641
			Power/W	409	416	429	447	461	471	487	500	513
			Current/A	3.21	3.29	3.38	3.52	3.61	3.73	3.76	3.86	4.04

-- Shaded boxes represent airflow outside the required 300-450 cfm/ton, which are not recommended.

- Airflow based on cooling performance at 230V with no electric heat and no filter.
- Airflow at 208V is approximately the same as 230V because the multi-tap ECM motor is a constant torque motor. The torque doesn't drop off at the speeds at which the motor operates.
- The air distribution system has the greatest effect on airflow. The duct system is totally controlled by the contractor. For this reason, the contractor should use only industry-recognized procedures.
- Heat pump systems require a specified airflow for electric heating to operate. Each ton of cooling requires between 350 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.
- Duct design and construction should be carefully completed. System performance can be lowered dramatically through bad planning or workmanship.
- Air supply diffusers must be selected and located carefully. They must be sized and positioned to deliver treated air along the perimeter of the space. If they are too small for their intended airflow, they become noisy. If they are not located properly, they cause drafts. Return air grilles must be properly sized to carry air back to the blower. If they are too small, they also cause noise.
- The installers should balance the air distribution system to ensure proper quiet airflow to all rooms in the home. This ensures a comfortable living space.
- An air velocity meter or airflow hood can be used to balance and verify branch and system airflow (CFM).

6 - Ductwork

Field ductwork must comply with the National Fire Protection Association NFPA 90A, NFPA90B, and any applicable local ordinance.

WARNING

- Do not, under any circumstances, connect return ductwork to any other heat producing device such as a fireplace insert, stove, etc.
- Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury, or property damage.

Sheet metal ductwork in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous ductwork may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Ductwork must comply with National Fire Protection Association as tested by UL Standard 181 for Class I Air Ducts. Check local codes for requirements on ductwork and insulation.

- The duct system must be designed within the range of external static pressure that the unit is designed to operate against. It is important that the system has adequate airflow. Make sure all supply and return ductwork, grills, special filters, accessories, etc. are accounted for in total resistance. See airflow performance tables in this manual.
- Design the duct system in accordance with "ACCA" Manual "D" Design for Residential Winter and Summer Air Conditioning Equipment Selection. Latest editions are available from: "ACCA" Air Conditioning Contractors of America, 1513 16th Street, N.W., Washington, D.C. 20036. If duct system incorporates flexible air duct, be sure pressure drop information (straight length plus all turns) shown in "ACCA" Manual "D" is accounted for in the system.
- Supply plenum is attached to the 3/4" duct flanges supplied with the unit. Attach flanges around the blower outlet.

IMPORTANT: If an elbow is included in the plenum close to the unit, it cannot be smaller than the dimensions of the supply duct flange on the unit.

IMPORTANT: The front flange on the return duct if connected to the blower casing must not be screwed into the area where the power wiring is located. Drills or sharp screw points can damage insulation on wires located inside the unit.

- Secure the supply and return air ductwork to the unit flanges, using proper fasteners for the type of duct used and tape the duct-to-unit joint as required to prevent air leaks.

7 - Refrigerant Connections

Keep the coil connections sealed until refrigerant connections are made. See the installation instructions for the outdoor unit for details on the line sizing, tubing installation, and charging information.

Coil is shipped with nitrogen. Evacuate the system before charging with refrigerant.

Install refrigerant tubing so that it does not block service access to the front of the unit.

Nitrogen should flow through the refrigerant lines while brazing.

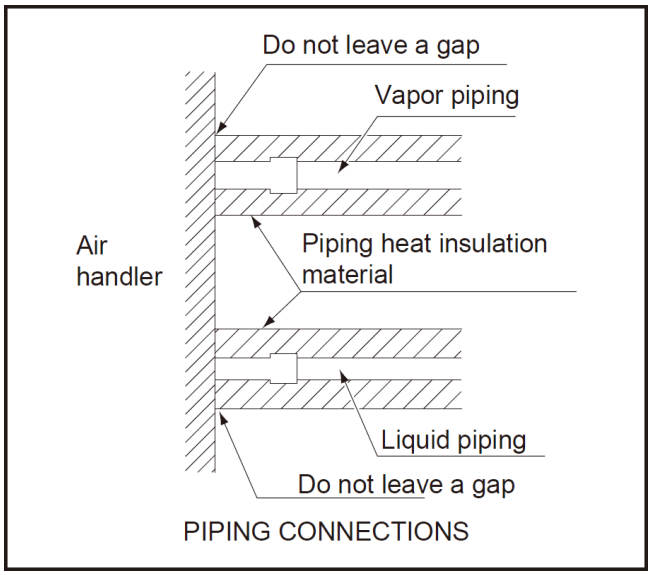
Use a brazing shield to protect the cabinet's paint and a wet rag to protect the rubber grommet and input pipe's piston seal ring from being damaged by torch flames.

After the refrigerant connections are made, seal the gap around the connections with a pressure sensitive gasket.

After the work is finished, make sure to check that there is no vapor leak. After checking for vapor leaks, be sure to insulate the piping connections.

WARNING

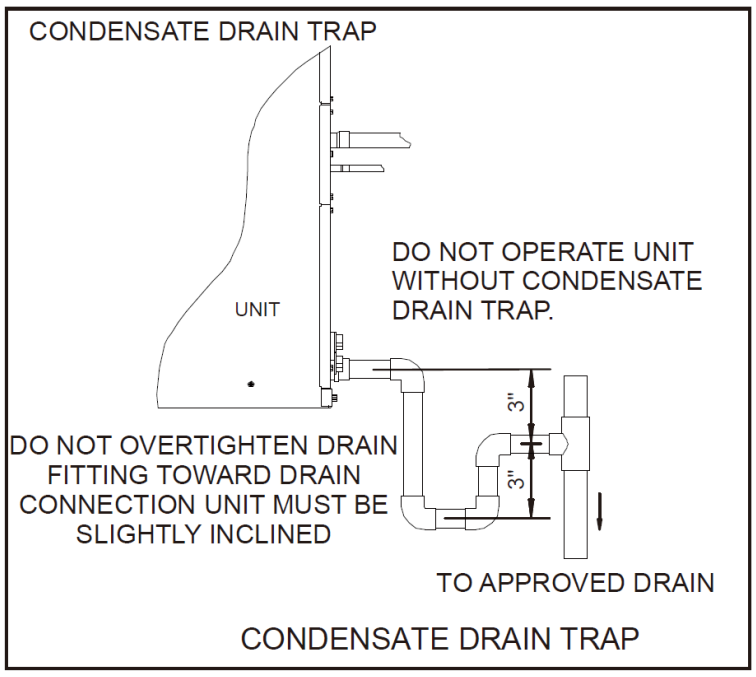
Use a wet rag to protect the two seal rings in the input pipe from being damaged by torch flames while brazing.



PIPING CONNECTIONS

7.1 Condensate Drain Tubing

Consult local codes for specific requirements.



CONDENSATE DRAIN TRAP

IMPORTANT:

1. When making drain fitting connections to the drain pan, use a thin layer of Teflon paste, silicone, or Teflon tape and install. Hand tighten.

2. When making drain fitting connections to the drain pan, do not over-tighten. Over-tightening fittings can split the pipe connections on the drain pan.

- Install drain lines so they do not block service access to the front of the unit. Minimum clearance of 24 inches is requires for filter, coil, or blower removal and service access.
- Make sure the unit is level or pitched slightly toward the primary drain connection so that water will drain completely from the pan.
- Do not reduce drain line size less than the connection size provided on the condensate drain pan. Use 3/4" PVC piping for drain piping connections.
- All drain lines must be pitched downward away from the unit a minimum of 1/8" per foot of line to ensure proper drainage.

- Do not connect condensate drain line to a closed or open sewer pipe. Run condensate to an open drain or run the line to a safe outdoor area.
- The drain line should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the line.
- Make provisions for disconnecting and cleaning of the primary drain line, should it become necessary. Install a 3 inch trap in the primary drain line as close to the unit as possible. Make sure that the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.
- The auxiliary drain line should be run to a place where it will be noticeable if it becomes operational. The homeowner should be warned that a problem exists if water should begin running from the auxiliary drain line.
- Plug the unused drain connection with the plugs provided in the parts bag, using a thin layer of Teflon paste, silicone, or Teflon tape to form a water tight seal.
- Test condensate drain pan and drain line after installation is complete. Pour water into the drain pan, enough to fill the drain trap and line. Check to make sure the drain pan is draining completely, no leaks are found in the drain line fittings, and water is draining from the termination of the primary drain line.
- Be sure to insulate the drain piping and drain socket since condensation may cause water leakage.
- Be sure to install a drain trap at the drain outlet since the inside of the unit is at negative pressure to atmospheric pressure during operation.

8 - Air Filter

External filter or other means of filtration is required. Units should be sized for a maximum of 300 feet/min air velocity or what is recommended for the type of filter installed.

Filter application and placement are critical to airflow, which may affect the heating and cooling system performance. Reduced airflow can shorten the life of the system's major components, such as motor, limits, elements, heat relays, evaporator coil or compressor. Consequently, we recommend that the return air duct system have only one filter location. Systems with a return air filter grill or multiple filter grills can have a filter installed at each of the return air openings.

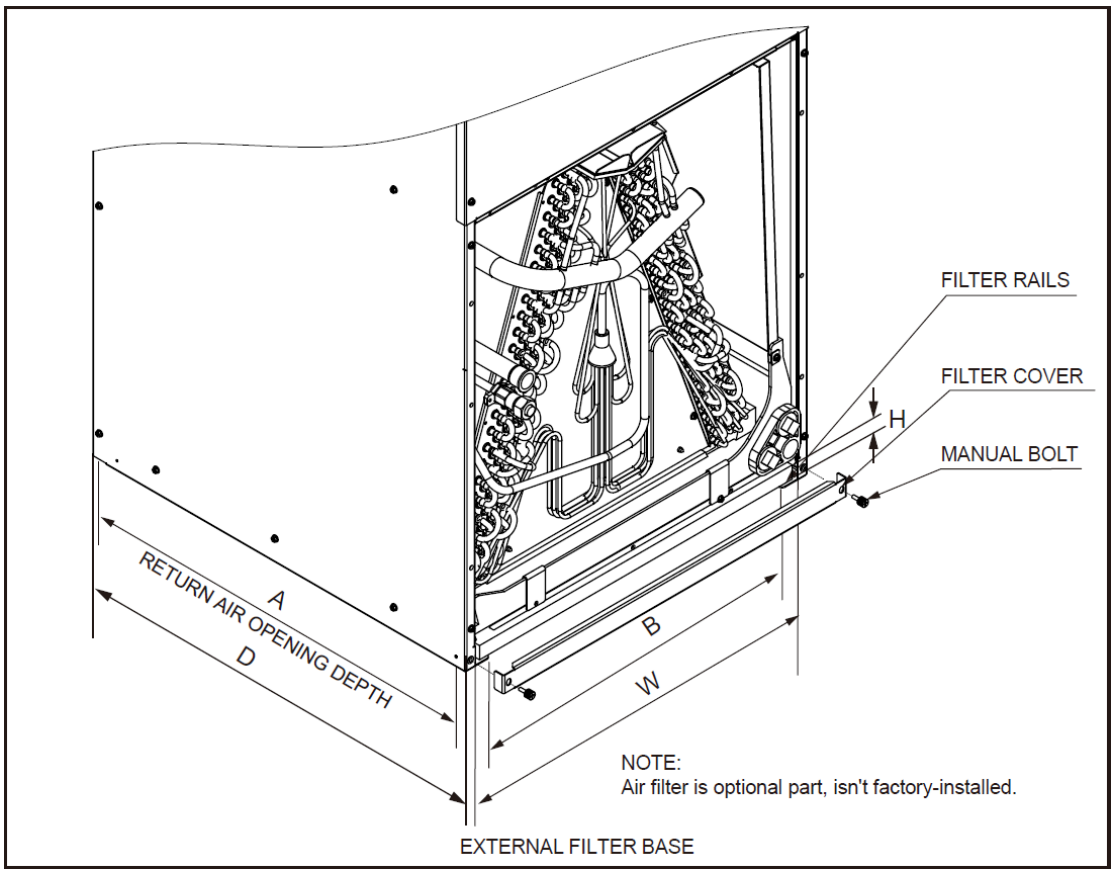
If adding high efficiency filters or electronic air filtration systems, it is very important that the air flow is not reduced. If air flow is reduced, the overall performance and efficiency of the unit will also be reduced. It is strongly recommended that a professional installation technician is contacted to ensure installation of these such filtration systems is performed correctly.

IMPORTANT: Do not double filter the return air duct system. Do not filter the supply air duct system. This will change the performance of the unit and reduce airflow.

WARNING

Do not operate the system without filters. A portion of the dust entrained in the air may temporarily lodge in the duct and run at the supply registers. Any circulated dust particles could be heated and charred by contact with the air handler elements. This residue could soil ceilings, walls, drapes, carpets, and other articles in the house.
Soot damage may occur with filters in place, when certain types of candles, oil lamps, or standing pilots are burned.

Filter Installation Dimensions

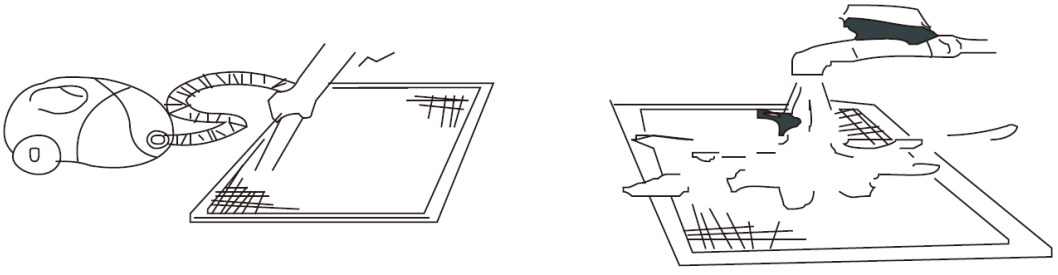


EXTERNAL FILTER BASE

Model	Filter Size in (mm)	"W" in (mm)	"D" in (mm)	"H" in (mm)	Return Width "A" in (mm)	Return Length "B" in (mm)
24K	16X20 [406X508]	16.8[426]	20.4[518]	1[25.4]	19.6	14.8
36K	18X20[457X508]	18.3[466]	21.6[548]	1[25.4]	20.8	16.3
60K	20X22[508X559]	20.7[526]	23.9[608]	1[25.4]	23	18.8

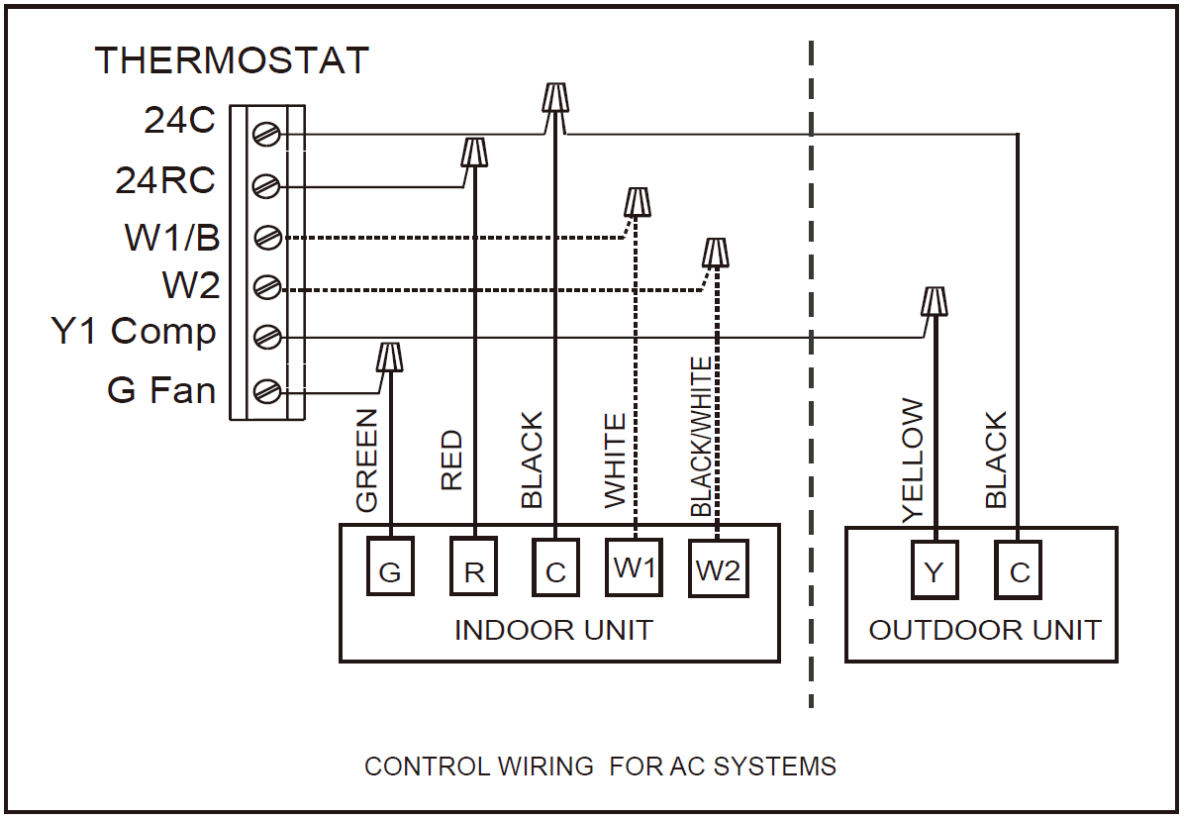
Air Filter Removal

1. Remove the bolts manually, and remove the air filter cover.
2. Hold the edge of the air filter and extract out.
3. Clean the air filter (A vacuum cleaner or plain water may be used to clean the air filter. If the dust accumulation is too heavy, use a soft brush and mild detergent to clean it and allow it to dry in a cool place.)
4. Install the new filter so that the arrow on the filter is in the same direction as airflow.

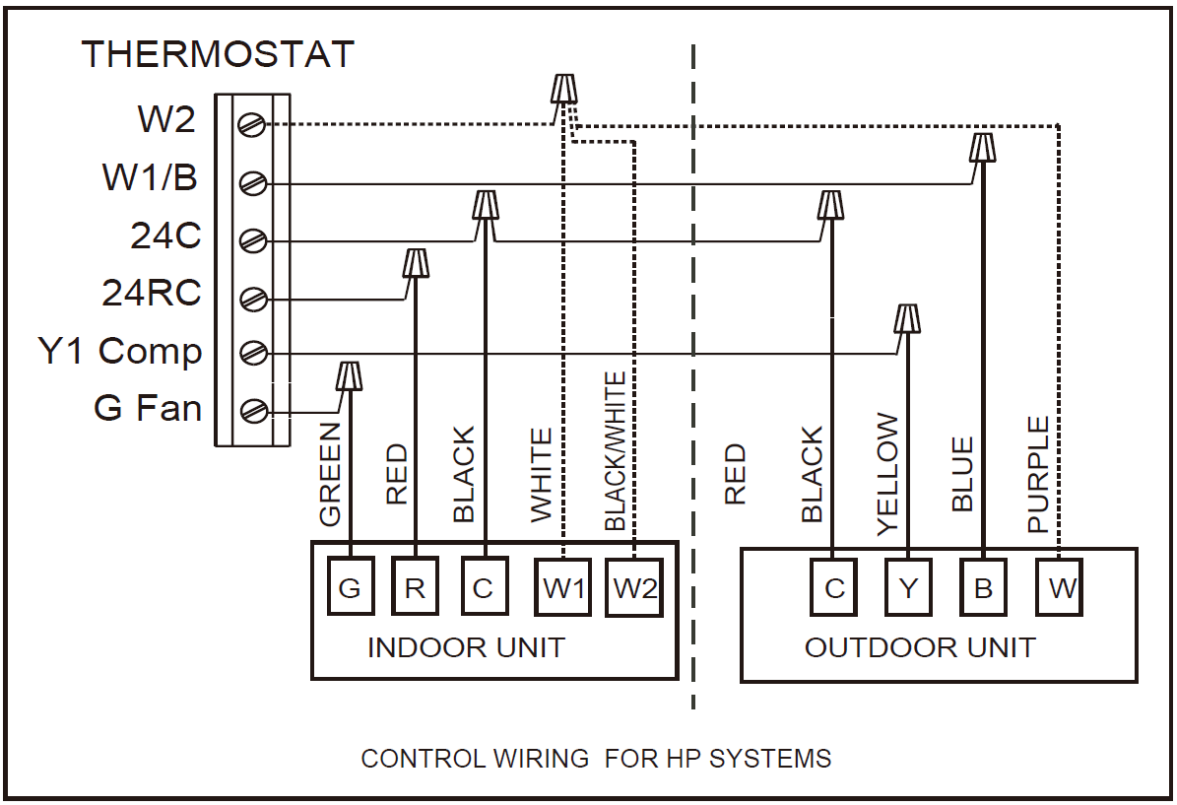


CLEANING THE AIR FILTER

9 - Wiring Diagrams



CONTROL WIRING FOR AC SYSTEMS



CONTROL WIRING FOR HP SYSTEMS

WARNING

HIGH VOLTAGE!

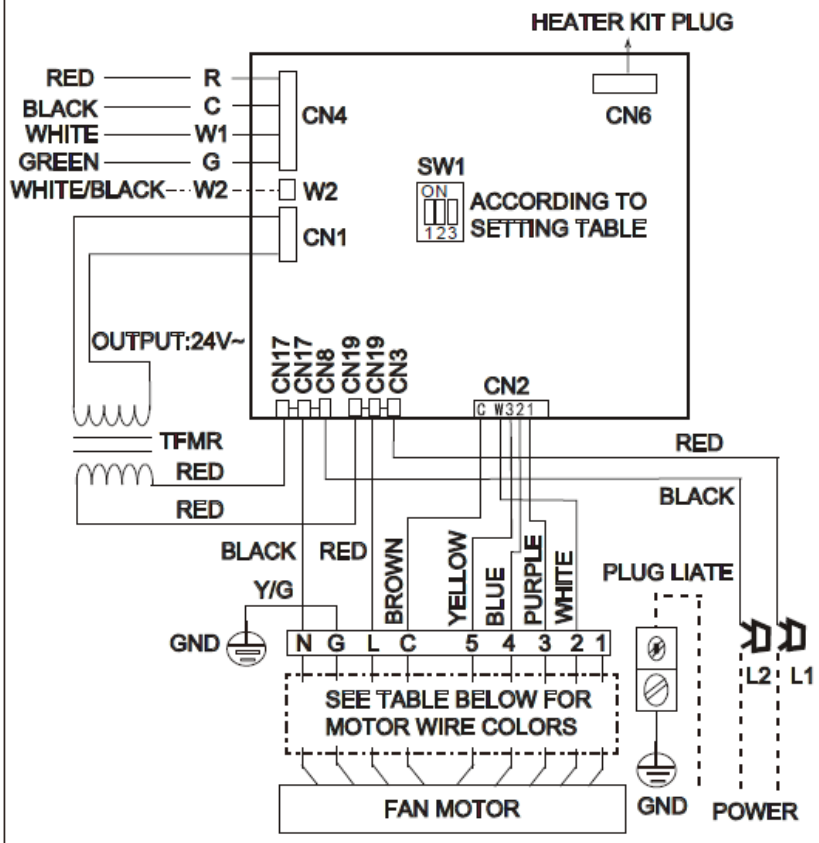
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY, OR DEATH.

SCHEMATIC DIAGRAM

SEE RATING PLATE FOR VOLTS&HERTZ

FIELD POWER WIRING

CAUTION:
NOT SUITABLE FOR USE ON SYSTEMS EXCEEDING 150V TO GROUND
ATTENTION:
NE CONVIENT PAS AUXINSTALLATIONS DE PLUS DE 150V ALA TERRE

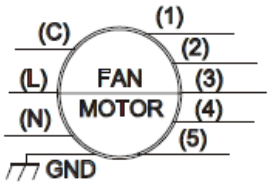


DIP SWITCH SW1 SETTINGS		
MODEL	DIAL CODE	SPEED
/	ON 123	3 MEDIUM
24K/60K	ON 123	4 MEDIUM HIGH
36K	ON 123	5 HIGH

SPEED TAPS

1	LOW
2	MEDIUM LOW
3	MEDIUM
4	MEDIUM HIGH
5	HIGH

SEE NOTE 6



	N	GND	L	C	5	4	3	2	1
FM WIRE CONFIG 1	YELLOW	Y/G	BLACK	BROWN	GRAY	WHITE	ORANGE	BLUE	BLACK
FM WIRE CONFIG 2	BLUE	GREEN	RED	WHITE	PINK	GRAY	BROWN	YELLOW	BLACK

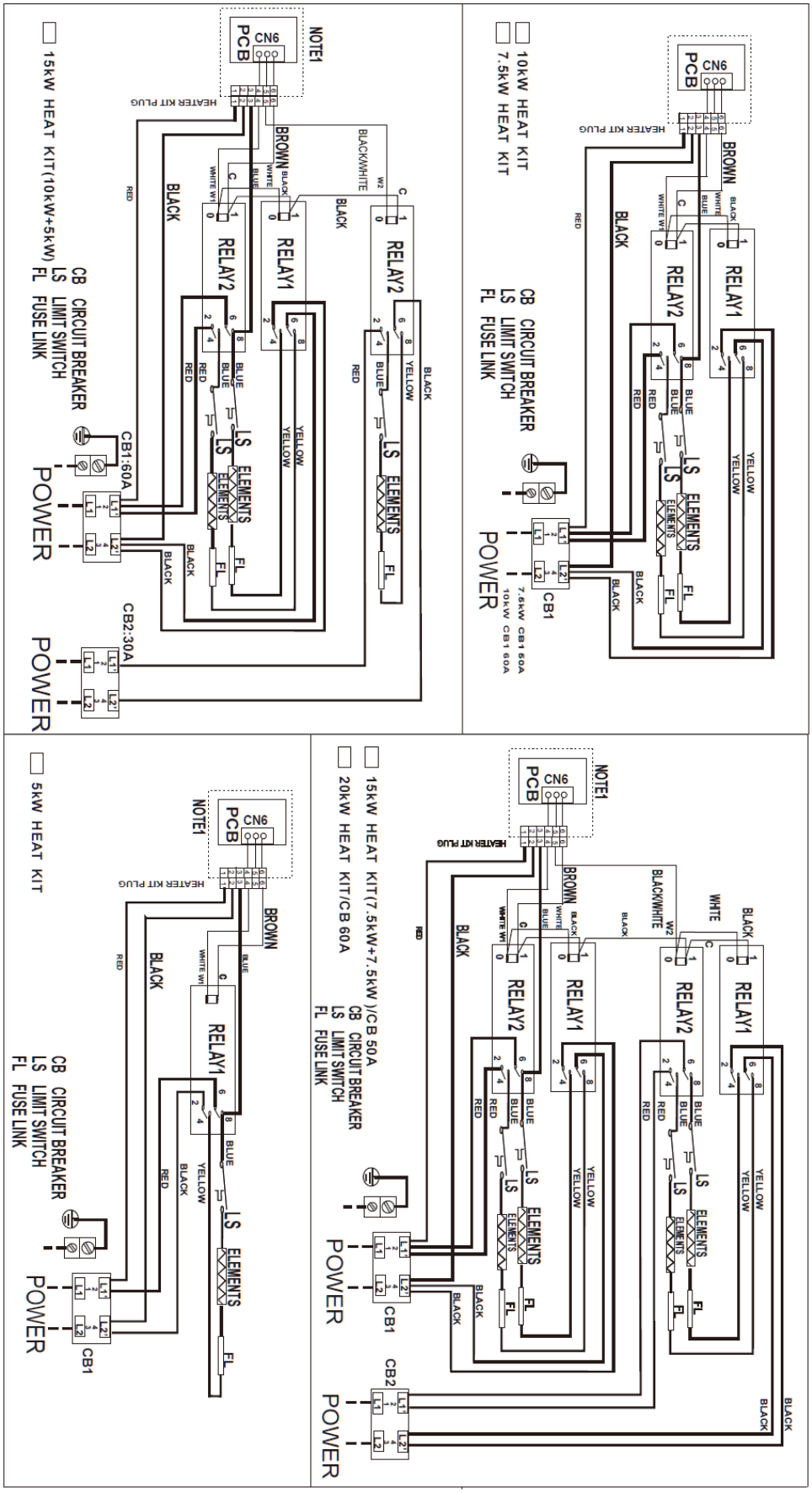
NOTES:
1:Use copper wire (75°C Min) only between disconnect switch and unit.
2:To be wired in accordance with NEC and local codes.
3:If any of the original wire, as supplied, must be replaced. Use the same or equivalent type wire.
4:Connect R to R, G to G, etc. See outdoor instruction for details.
5:To change speed tap, adjust dip switches (SW1).
6:See airflow tables for airflow settings.

FM FAN MOTOR
TFMR TRANSFORMER
GND GROUND
------ OPTIONAL
- - - - FIELD POWER WIRING

Factory code	Date	Revision
16023000013093	Jul. 26, 2022	A

THE WIRING DIAGRAM SHOWN IS FOR REFERENCE ONLY, ACTUAL PRODUNCT MAY VARY.

9 WIRING DIAGRAM



Note: When the unit does not contain PCB boards, the short lines in the accessory bag are not needed.
Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up to date wiring.

11 - Piston/TXV Installation

The coil comes with a factory-installed piston metering device. Some system combinations will require a different sized piston to be field-installed.

- Contact MRCOOL support at 270-366-0457 to order the appropriate piston kit for your system combination.

A TXV may be required to achieve minimum efficiency ratings or for long refrigerant line set applications. Reference AHRI for system combination ratings.

The following table shows the factory-installed piston size for each model. Additional piston sizes are provided with the included accessories as necessary.

Model	50	52	56	58	64	73	75	80	83	90
24K		X*		X						
36K		X		X	X	X*				
60K						X	X		X	X*

* means that this piston is pre-installed

WARNING

Failure to install the proper piston can lead to poor system performance and possible compressor damage.

NOTE: Due to continuing product and product data improvement, if the system combination you are looking for is not listed, check the latest version of this document at MRCOOL.com.

The following table shows the optional TXV kit part numbers. Some combinations may require a TXV. See AHRI for system combination ratings.

Outdoor Unit Capacity (Tons)	R410a TXV Kit
1.5-3	MHTXV1836
3.5-4	MHTXV4248
5	MHTXV6000

Charge the system by superheat when using a piston. Reference the outdoor unit installation guide to charge the system by subcooling when using a TXV.

Outdoor Temp (°F)	Indoor Temperature (°F) Dry Bulb/Wet Bulb					
	95/79	90/75	85/71	80/67	75/63	70/58
	Superheat (°F)					
115	23	16	7	6	5	5
110	24	17	9	6	5	5
105	26	19	11	6	5	5
100	27	21	13	7	6	5
95	29	23	14	9	6	5
90	30	25	18	12	7	5
85	32	26	20	15	9	6
80	34	28	22	17	11	6
75	35	30	24	19	13	7
70	37	32	26	21	16	10
65	38	34	29	24	19	13
60	40	36	31	27	22	17
55	41	37	34	30	26	21



PRODIRECT™ Series
PSC Air Handler

The design and specifications of this product and/or manual are subject to change without prior notice.
Consult with the sales agency or manufacturer for details.