INSTALLATION INSTRUCTIONS

7AH2AE

Two-Piece Constant Torque Air Handler-R410A

This manual must be left with the homeowner for future reference.

Table of Contents

⚠ IMPORTANT

If installing in an R454B application, R454B air handler sensor kit (27J27), Refrigerant Detection System Control (27A05) and R454B TXV (26Z70, 26Z71, or 26Z72) must be ordered. If installing in R454B application, use installation instructions provided in R454B air handler sensor kit (27J27).

For sensor maintenance recommendations, refer to the instructions in kit 27J27.

⚠ WARNING

Every working procedure that affects safety means shall only be carried out by competent persons. This appliance is not to be used 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. Children should be supervised to ensure they do not play with the appliance.

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ WARNING

Maximum Altitude of application is 3200m above sea level.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

***NOTE** – This unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of this Standard, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard, UL 60335-2-40/CSA C22.2 No. 60335-2-40, or UL 1995/CSA C22.2 No 236. Partial units shall only be connected to an appliance suitable for the same refrigerant.*

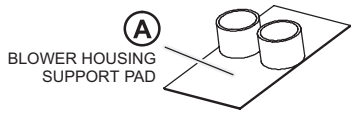
IMPORTANT: Special procedures are required for cleaning the all-aluminum coil in this unit. See page 16 in this instruction for information.

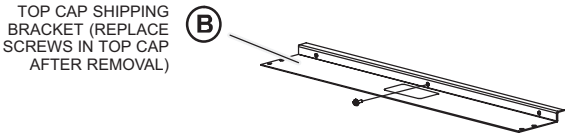
Allied Air Enterprises LLC
215 Metropolitan Drive
West Columbia, SC 29170

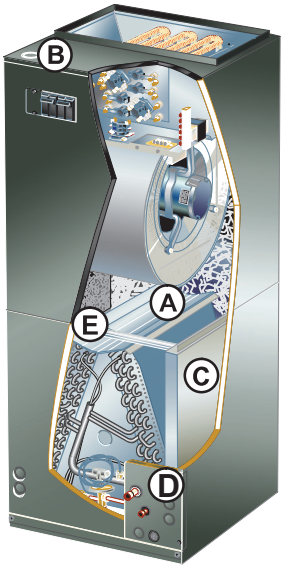
(P) 508476-01

IMPORTANT INFORMATION FOR INSTALLER

CHECK FOR AND REMOVE THESE ITEMS BEFORE OPERATING UNIT.

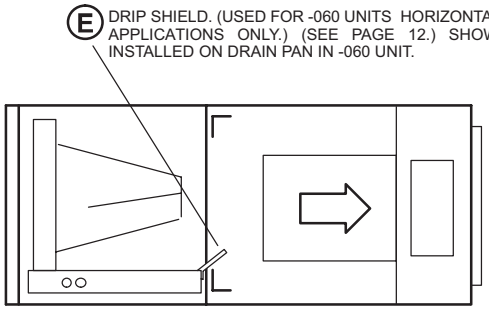






C HORIZONTAL DRAIN PAN (SEE PAGES 4 AND 6)

D REFRIGERANT LINE PLUGS (SEE PAGE 6)



General Information

The 7AH2AE series air handler **with all-aluminum coil** is designed for installation with optional field-installed electric heat and a matching HFC-410A outdoor unit.

This instruction is intended as a general guide and does not supersede local or national codes in any way. Consult authorities having jurisdiction before installation.

Shipping and Packing List

Package 1 of 1 contains:

1 – Assembled air handler unit

1 – Horizontal drip shield (7AH2AE-060 only)

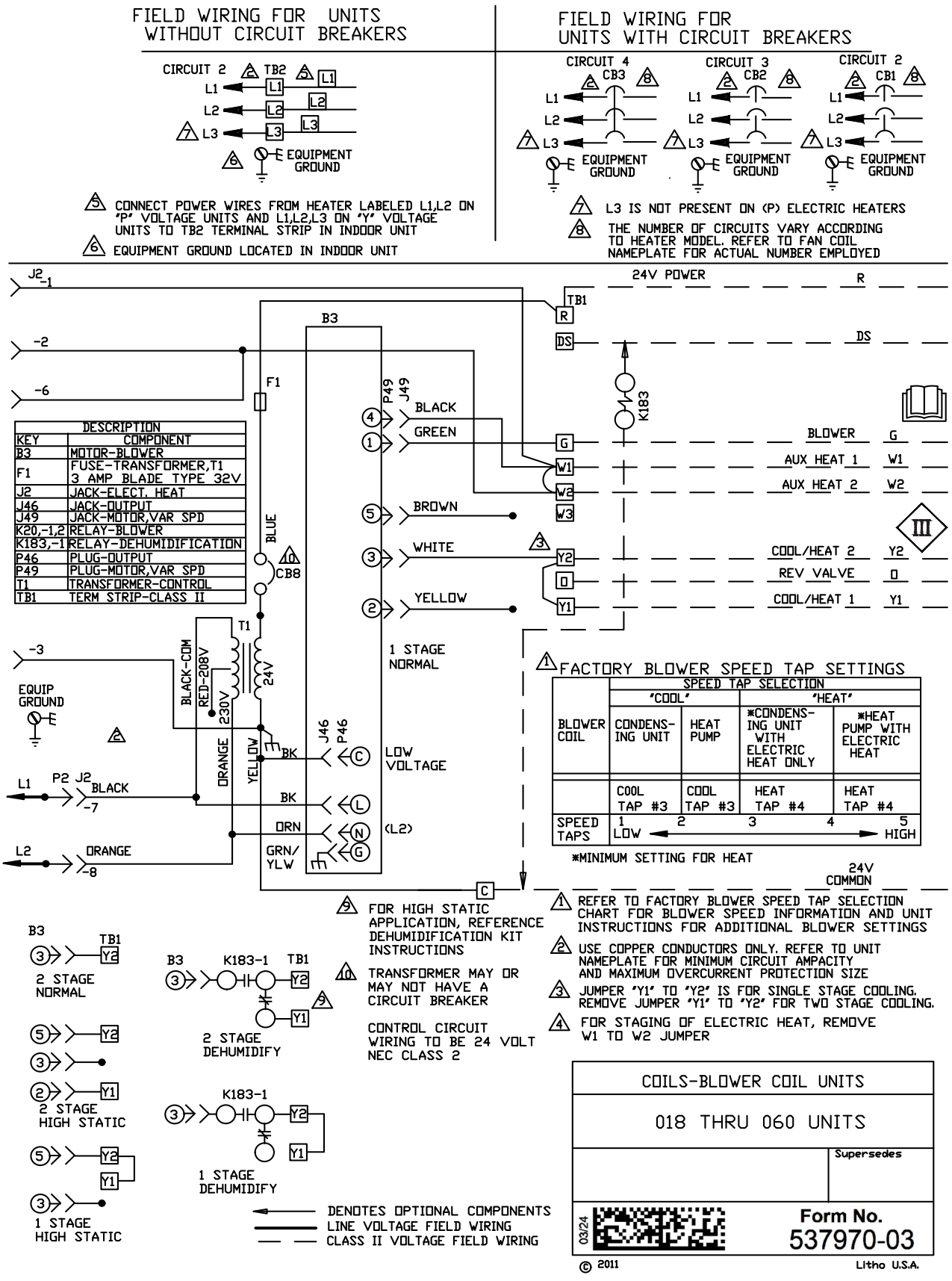
1 – Pipe nipple (Sch80, 3/4" I.D. x 5")

1 – Warranty card

NOTE – *For downflow applications, order kit number 28B60.*

Check the air handler for shipping damage; if found, immediately contact the last carrier.

Wiring diagram



DESCRIPTION	
KEY	COMPONENT
B3	MOTOR-BLOWER
F1	FUSE-TRANSFORMER,T1 3 AMP BLADE TYPE 32V
J2	JACK-ELECT. HEAT
J46	JACK-OUTPUT
J49	JACK-MOTOR,VAR SPD
K20,-1,2	RELAY-BLOWER
K183,-1	RELAY-DEHUMIDIFICATION
P46	PLUG-OUTPUT
P49	PLUG-MOTOR,VAR SPD
T1	TRANSFORMER-CONTROL
TB1	TERM STRIP-CLASS II

FIGURE 1. Typical System Wiring Diagram

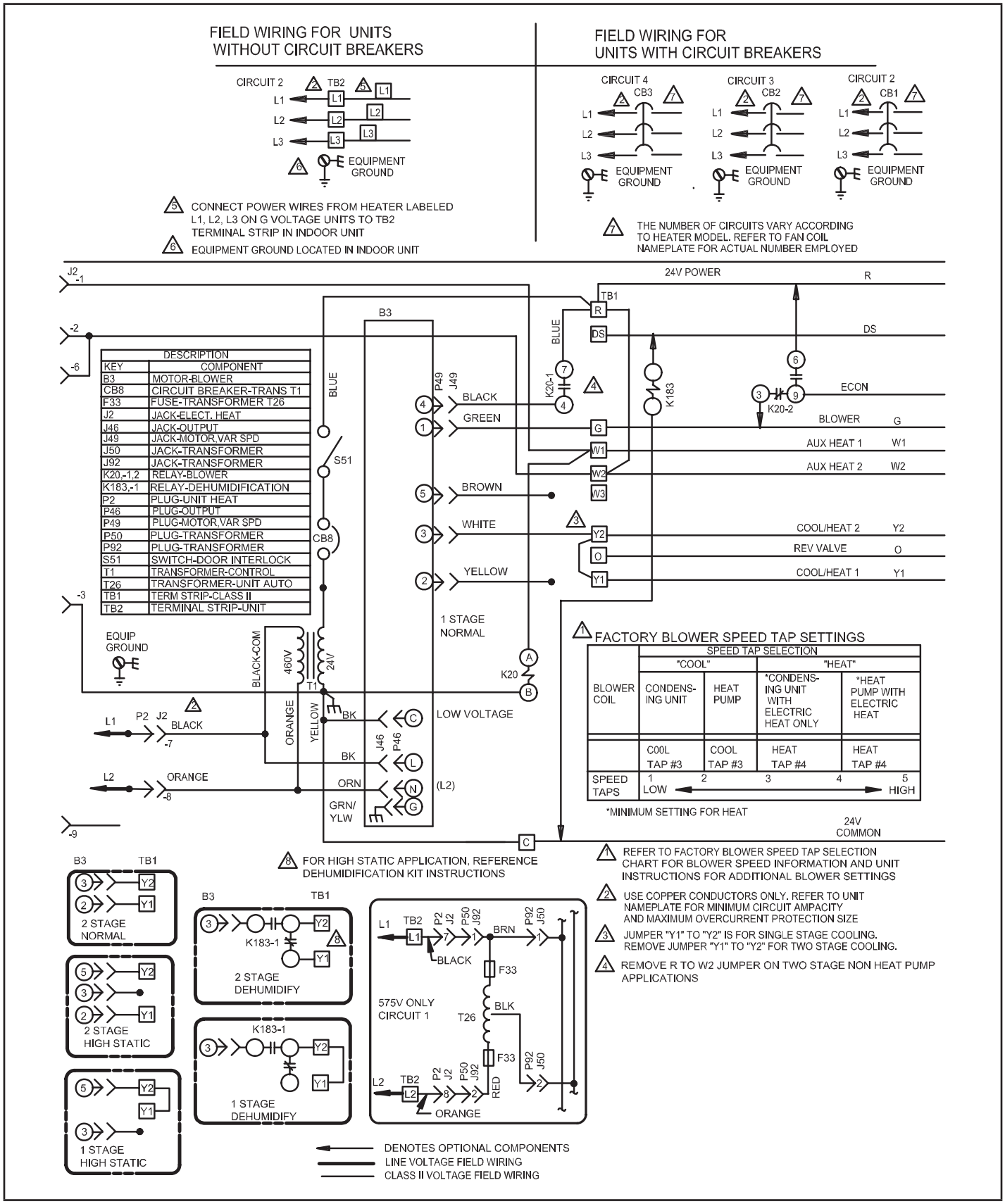


FIGURE 2. Typical System Wiring Diagram – 460V, Single- and Three-Phase Units (-036, -048 and -060 only)

Measuring Static Pressure

1 - Measure tap locations as shown in figure 3.

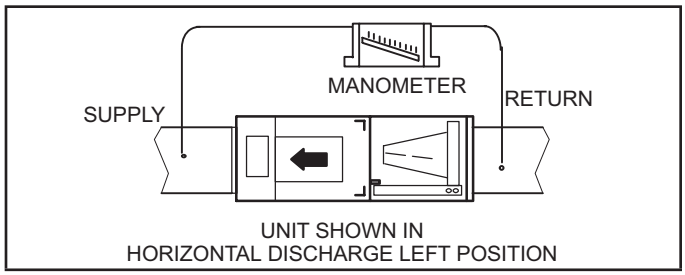


FIGURE 3. Static Pressure Test

2 - Punch a 1/4" (6mm) diameter hole in supply and return air plenums. Insert manometer hose flush with inside edge of hole or insulation. Seal around the hose with permagum. Connect the zero end of the manometer to the discharge (supply) side of the system. On ducted systems, connect the other end of manometer to the return duct as above. For systems with non-ducted returns, leave the other end of the manometer open to the atmosphere.

3 - With only the blower motor running and the evaporator coil dry, observe the manometer reading. Adjust blower motor speed to deliver the air desired according to the job requirements.

4 - For best air performance external static pressure drop must not exceed 0.5" W.C. (1.2 kPa). Refer to blower data tables for CFM and external static.

5 - Seal around the hole when the check is complete.

Adjusting Blower Speed

MOTOR SPEED TAPS

NOTE – *Motor is programmed for a 45-second delayed OFF on all speed taps except TAP #1 (continuous fan speed).*

Table 1 lists the recommended factory blower speed tap selections for 7AH2AE series units.

TABLE 1. Recommended Blower Speed Tap Selection

Operation	7AH2AE	Outdoor Unit	Tap
Cooling	ALL SIZES	Air conditioner	3
		Heat pump	3
Heating*		Air conditioner with electric heat only	4
		Heat pump with electric heat	4

**Minimum setting for heat*

These settings are for nominal tonnage match-ups with the 7AH2AE units. When matched with other sizes, it is recommended that the CFM be adjusted to approximately 400 CFM per ton.

To change blower motor speed tap remove the speed tap from Y2 on the terminal strip and insert the desired speed tap. Use the Blower Data tables on pages 6-8 for the desired CFM setting.

⚠ IMPORTANT

The high-efficiency programmable motor features programmed electronic braking. The integral control brakes the motor near the end of the supply blower operation, allowing the motor to maintain a more controlled ramping shut-down.

TABLE 2. Motor Speed Taps

Tap	Operation	Remarks
1	**Continuous or low-speed fan** (for two-speed heat pumps or AC units)	Continuous fan speed is energized (24volt input to G) when either G or Y1 has a 24 volt signal (24 volt input from Y1 passes through the room thermostat's Fan Automatic contacts to the G terminal).
2	**Low-speed operation on high-static system**	CFM set at 1/2 ton less than nominal of unit (e.g. 3-ton set at 1000 CFM).
3	**Cooling speed setting**	CFM set at 400 cfm per nominal ton at ARI minimum static allowed, as follows: 1.5 to 2.0 ton - 0.10 2.5 to 3.5 ton - 0.15 4 to 5 ton - 0.20
4	**Heat pump with electric heat**	CFM set at 400 cfm per nominal ton at .4 static. Energized when electric heat element has a call for heat.
5	**High-static applications**	CFM set at 400 cfm per nominal ton at .8 static.

BLOWER DATA

7AH2AE018X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	589	55	713	80	805	101	805	101	963	155
.20	520	61	666	88	760	109	760	109	928	163
.30	452	67	601	96	710	118	710	118	889	173
.40	407	73	548	101	647	126	647	126	851	181
.50	344	81	502	107	598	132	598	132	803	190
.60	293	84	456	114	561	138	561	138	748	199
.70			418	122	522	143	522	143	714	207
.80			362	128	479	150	479	150	676	213
.90			315	132	435	162	435	162	640	220
1.0					389	167	389	167	602	228
1.1					341	173	341	173	576	234
1.2									540	243

7AH2AE024X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	665	68	804	101	933	143	933	143	1056	197
.20	613	74	762	106	889	151	889	151	1019	206
.30	556	81	718	114	856	158	856	158	988	214
.40	481	87	667	122	822	165	822	165	953	222
.50	425	93	614	129	772	175	772	175	922	229
.60	368	97	527	138	733	182	733	182	895	238
.70	336	101	487	143	683	193	683	193	846	249
.80	293	105	455	148	597	202	597	202	799	258
.90	239	108	414	153	555	208	555	208	725	268
1.0			367	158	519	212	519	212	656	276
1.1			312	162	485	215	485	215	592	267
1.2			291	163	468	219	468	219	486	240

7AH2AE030X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	775	77	1074	152	1158	182	1158	182	1256	215
.20	727	84	1023	163	1115	193	1115	193	1215	226
.30	669	91	990	170	1081	200	1081	200	1169	237
.40	590	100	948	180	1040	211	1040	211	1135	246
.50	522	106	913	186	1007	219	1007	219	1100	255
.60	463	114	870	196	967	227	967	227	1065	263
.70	417	121	812	206	930	236	930	236	1031	272
.80	375	127	735	219	871	250	871	250	993	281
.90	339	130	676	231	791	264	791	264	965	290
1.0										
1.1										
1.2										

BLOWER DATA

7AH2AE036X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts at 208V									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	973	115	1239	210	1301	243	1301	243	1447	320
.20	925	123	1194	221	1264	253	1264	253	1411	331
.30	876	131	1156	230	1229	263	1229	263	1379	341
.40	841	138	1118	240	1189	275	1189	275	1336	354
.50	762	150	1082	248	1158	284	1158	284	1306	364
.60	694	161	1049	257	1127	293	1127	293	1274	375
.70	644	168	1001	270	1094	303	1094	303	1241	386
.80	583	178	978	279	1032	321	1032	321	1215	394
.90	552	184	868	299	958	339	958	339	1169	412
1.0	497	193	828	307	913	350	913	350	1112	430
1.1	455	201	783	318	877	357	877	357	1059	445
1.2	418	207	745	327	838	367	838	367	1011	458

7AH2AE042X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	1185	150	1330	202	1534	279	1471	282	1697	405
.20	1131	161	1278	214	1487	293	1437	292	1659	419
.30	1077	171	1236	224	1447	304	1395	305	1620	434
.40	1029	181	1191	235	1406	317	1353	315	1590	445
.50	989	188	1152	244	1367	327	1310	331	1552	459
.60	922	201	1107	255	1319	342	1277	341	1521	471
.70	872	210	1061	265	1286	352	1240	352	1483	487
.80	833	217	1013	276	1248	363	1200	365	1453	497
.90	774	225	970	285	1199	377	1162	376	1415	511
1.0	742	233	937	293	1160	388	1085	393	1384	525
1.1	651	250	893	302	1121	398	1072	400	1302	544
1.2	606	259	816	315	1077	410	1038	410	1277	553

7AH2AE048X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	1202	172	1569	355	1755	470	1753	472	1967	637
.20	1147	192	1526	376	1713	486	1728	495	1942	647
.30	1121	191	1498	372	1701	497	1675	497	1916	657
.40	1066	201	1452	383	1675	529	1669	511	1879	681
.50	1031	220	1430	411	1636	524	1639	536	1845	704
.60	936	227	1400	404	1602	547	1594	548	1811	713
.70	865	237	1358	421	1582	562	1584	541	1777	730
.80	827	251	1328	441	1551	566	1545	569	1767	731
.90	777	253	1292	442	1524	572	1513	581	1732	758
1.0	718	278	1258	453	1487	580	1482	588	1703	777
1.1	692	272	1152	498	1451	613	1452	599	1681	788
1.2	666	293	1115	507	1429	624	1412	627	1639	783

7AH2AE 060X BLOWER PERFORMANCE

External Static Pressure in. w.g.	Air Volume and Motor Watts									
	Tap 1		Tap 2		Tap 3		Tap 4		Tap 5	
	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts	cfm	Watts
.10	1354	222	1768	454	1954	616	1870	550	2148	808
.20	1307	240	1742	478	1929	627	1845	556	2124	846
.30	1267	246	1706	479	1898	643	1817	581	2097	843
.40	1222	263	1677	492	1861	675	1781	609	2058	859
.50	1177	273	1644	511	1837	693	1759	616	2034	888
.60	1150	289	1608	526	1814	703	1719	635	2019	894
.70	1044	308	1577	555	1786	687	1671	661	1975	912
.80	994	311	1537	577	1773	710	1645	680	1938	930
.90	938	317	1516	561	1712	736	1639	666	1927	938
1.0	877	330	1475	590	1696	753	1613	687	1892	943
1.1	846	346	1418	619	1677	755	1567	713	1836	945
1.2	816	345	1392	626	1648	765	1526	719	1795	940

Making Electrical Connections

⚠ WARNING

Run 24V Class II wiring only through specified low voltage opening. Run line voltage wiring only through specified high voltage opening. Do not combine voltage in one opening.

To prevent serious injury or death: 1. Lock-out/tag-out before performing maintenance.

2. If system power is required (e.g., smoke detector maintenance), disable power to blower , remove fan belt where applicable , and ensure all controllers and thermostats are set to the “OFF” position before performing maintenance.

3. Always keep hands hair clothing.

⚠ CAUTION

USE COPPER CONDUCTORS ONLY.

⚠ IMPORTANT

This unit is approved for installation clearance to combustible material as stated on the rating plate. Accessibility and service clearances must take precedence over combustible material clearances The air handler must be installed so that free access is allowed to the coil/filter compartment and blower/control compartment.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

This unit is provided with knock-outs for conduit. Refer to figure 1 on page 3 for unit wiring diagram, which includes all field wiring. Separate openings have been provided for 24V low voltage and line voltage. Refer to the dimension illustration on page 2 or 3 for specific location.

Wiring must conform to the current National Electric Code ANSI/NFPA No. 70, or Canadian Electric Code Part I, CSA Standard C22.1, and local building codes. Refer to following wiring diagrams. See unit nameplate for minimum circuit ampacity and maximum overcurrent protection size.

Select the proper supply circuit conductors in accordance with tables 310-16 and 310-17 in the National Electric Code, ANSI/NFPA No. 70 or tables 1 through 4 in the Canadian Electric Code, Part I, CSA Standard C22.1.

The motor speed is set by the speed tap connection to the low voltage terminal strip in the control section. The speed can be increased by swapping wires as shown in figure 1.

WIRING CONNECTIONS

1 - Install line voltage power supply to unit from a properly installed circuit breaker.

2 - Ground unit at unit disconnect switch or to an earth ground.

NOTE – *Connect conduit to the unit using a proper conduit fitting. Units are approved for use only with copper conductors. A complete unit wiring diagram is located on the back side of the unit’s access panel.*

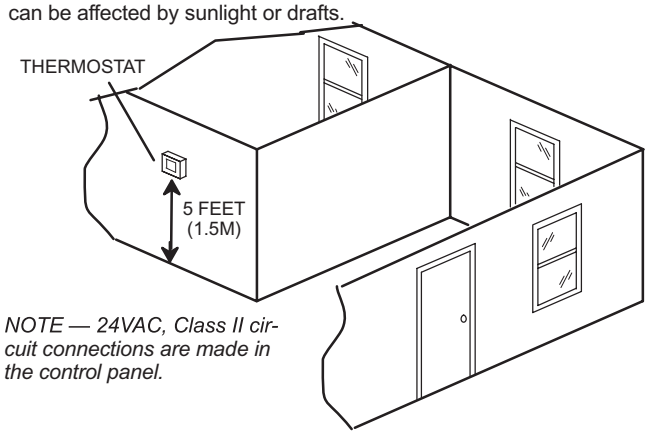
3 - Install low voltage wiring from outdoor to indoor unit and from thermostat to indoor unit.

NOTE – *For proper voltages, select thermostat wire gauge per the following chart:*

TABLE 3. Run Length (Class II Rated Wiring)

Wire Run Length	AWG #	Insulation / Core Types
Less than 100' (30m)	18	Color coded, temperature rating 95°F (35°C) minimum, solid core
More than 100' (30m)	16	

Install room thermostat (ordered separately) on an inside wall approximately in the center of the conditioned area and 5 feet (1.5m) from the floor. It should not be installed on an outside wall or where it can be affected by sunlight or drafts.



NOTE — 24VAC, Class II circuit connections are made in the control panel.

NOTE — Units are approved for use only with copper conductors. Ground unit at disconnect switch or to an earth ground.

FIGURE 4. Thermostat Installation

208 VOLT CONVERSION

1 - Disconnect all power supplies.

2 - Remove the air handler access panel.

3 - Using the wiring diagram located on the unit access panel as a reference, move the 2 connected black transformer leads from the 240 volt terminal on the transformer to the 208 volt terminal on the transformer.

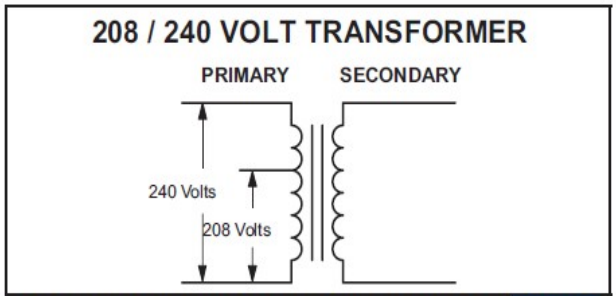


FIGURE 5. Converting Unit from 240VAC to 208VAC

Requirements

These instructions are intended as a general guide and do not supersede local or national codes in any way. Consult authorities having jurisdiction before installation.

Compliance with all local, state, or national codes pertaining to this type of equipment should be determined prior to installation. Read this instruction manual, as well as the instructions supplied in separate equipment, before starting the installation.

In addition to conforming to manufacturer's installation instructions and local municipal building codes, installation of Allied air handler units (with or without optional electric heat), MUST conform with National Fire Protection Association (NFPA) standards: "Standard for Installation of Air Conditioning and Ventilation Systems" (NFPA No. 90A) and "Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems" (NFPA No. 90B).

All models are designed for indoor installation only. The installation of the air handler, field wiring, duct system, etc. must conform to the requirements of the National Electrical Code, ANSI/NFPA No. 70 (latest edition) in the United States, and any state laws, and local ordinances (including plumbing or waste water codes).

Local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.

Install the conditioned air plenum, ducts and air filters (provided) in accordance with NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems (latest edition).

The air handler is shipped from the factory completely assembled. The unit is provided with flanges for the connection of the duct system.

Do not remove the cabinet knockouts until it has been determined which knockouts will need to be removed for the installation.

Select the air discharge position which best suits the site conditions. Consider required clearances, space, routing requirements for refrigerant line, condensate disposal, filters, duct system, wiring, and accessibility for service. Refer to the rating plate on the air handler for specific information.

⚠ WARNING

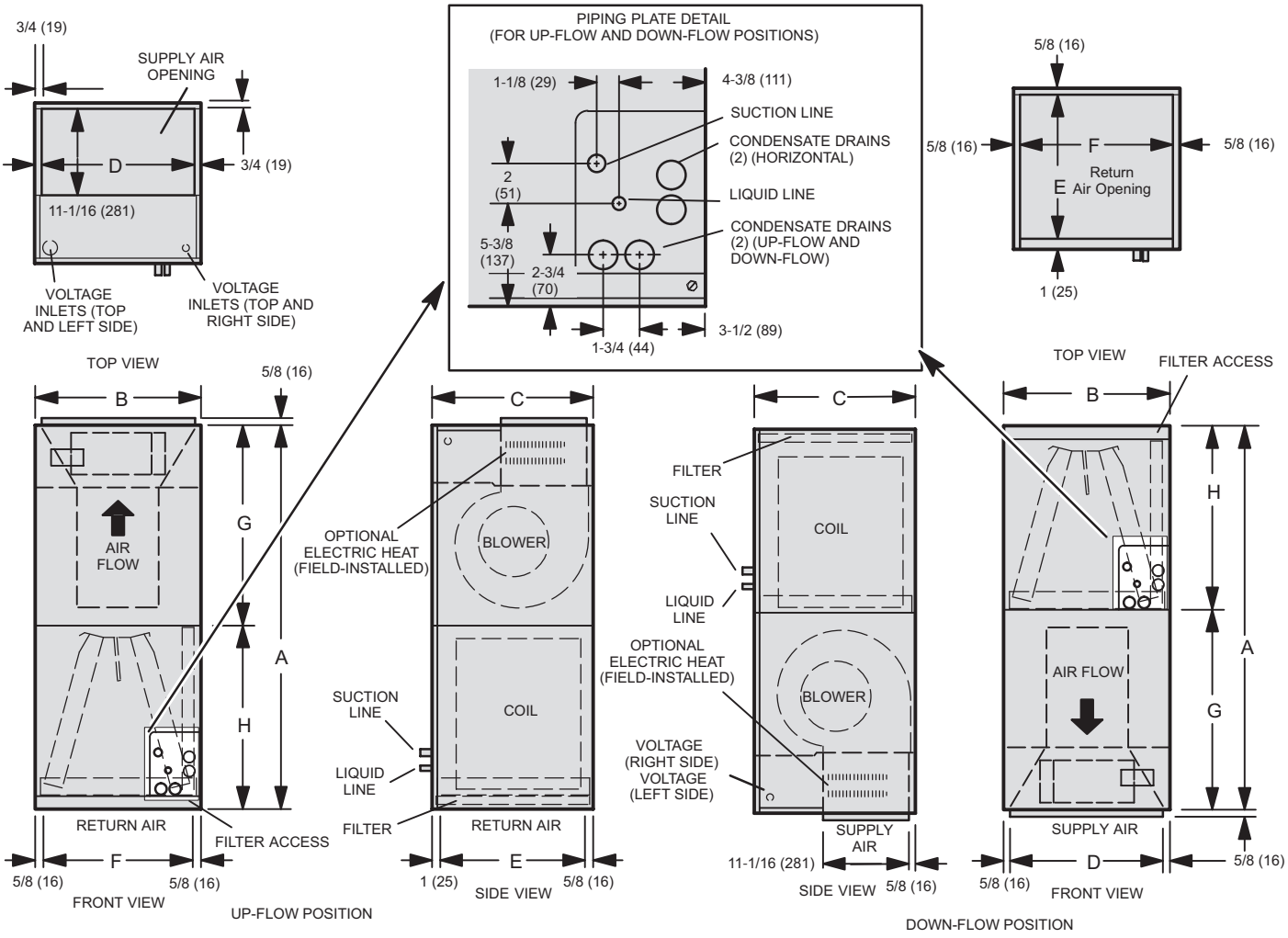
Electrically ground air handler. Connect ground wire to ground terminal marked "GND".

Failure to do so can result in death or eletrical shock.

⚠ IMPORTANT

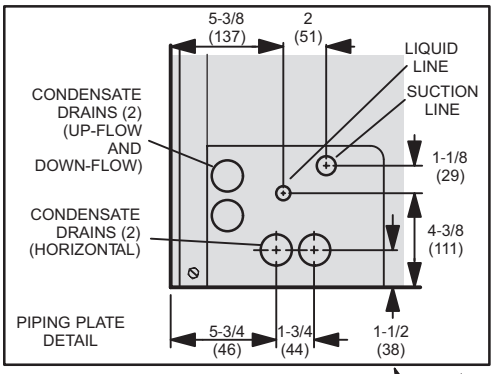
7AH2AE units include a factory-installed check/expansion valve which will provide optimal refrigerant control and system performance with outdoor units of varying capacities. These units must be installed as a part of a matched system as outlined in the 7AH2AE Product Specification bulletin (EHB).

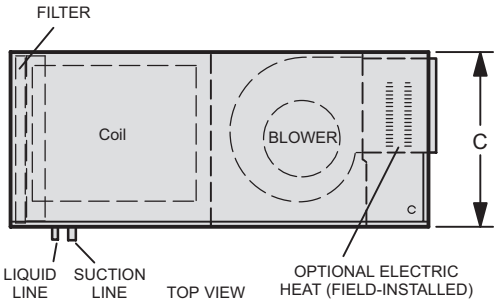
Upflow and Downflow Unit Dimensions



7AH2AE Common Dimensions - Inches (mm)				
Dim.	**-018/-024**	**-030/-036**	**-042/-048**	**-060**
A	49-1/4 (1251)	51 (1295)	58-1/2 (1486)	62-1/2 (1588)
B	21-1/4 (540)	21-1/4 (540)	21-1/4 (540)	21-1/4 (540)
C	20-5/8 (524)	22-5/8 (575)	24-5/8 (625)	24-5/8 (625)
D	19-3/4 (502)	19-3/4 (502)	19-3/4 (502)	19-3/4 (502)
E	19 (483)	21 (533)	23 (584)	23 (584)
F	20 (508)	20 (508)	20 (508)	20 (508)
G	24-5/8 (625)	26-3/8 (670)	27-7/8 (708)	27-7/8 (708)
H	24-5/8 (625)	24-5/8 (625)	30-5/8 (778)	34-5/8 (879)

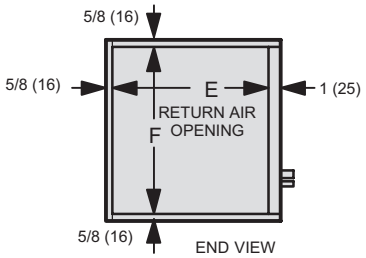
Horizontal Left- and Right-Hand Discharge Unit Dimensions

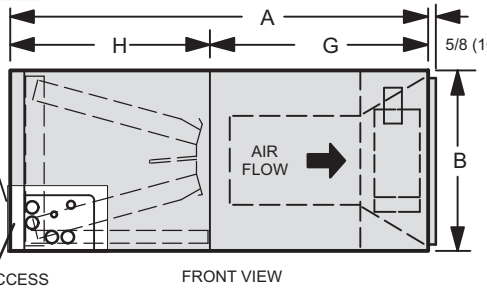


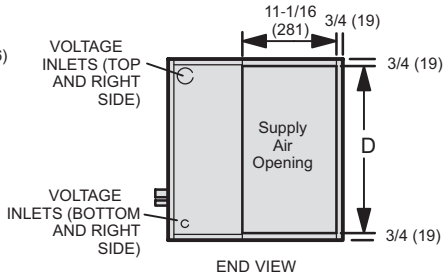


Horizontal Position (Right-Hand Air Discharge)

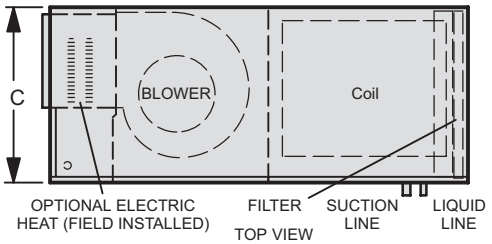
FOR DIMENSIONS "A" THROUGH "H", SEE CHART ON PAGE 2.

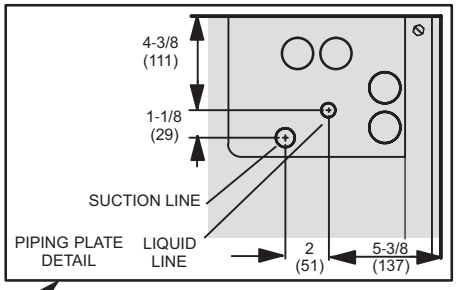


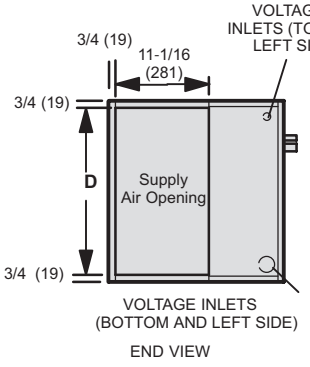


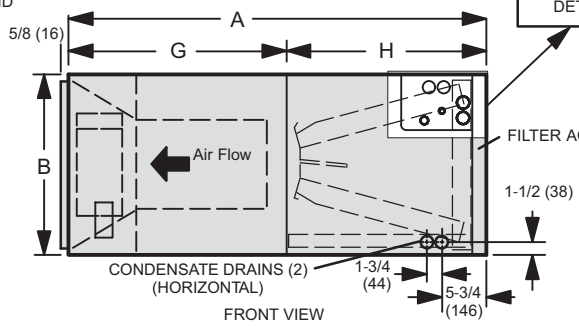


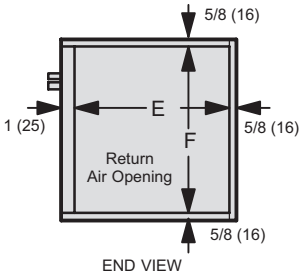
Horizontal Position (Left-Hand Air Discharge)











Installing the Unit

These units are factory-configured for upflow and horizontal right-hand discharge installation. For downflow or horizontal left-hand discharge, certain field modifications are required.

DISASSEMBLE/REASSEMBLE AIR HANDLER UNITS

The air handler units consists of two factory-assembled sections. It may be necessary to disassemble the sections when positioning the unit for installation.

To disassemble:

1 - Remove access panels.

2 - Remove both blower and coil assemblies. This will lighten the cabinet for lifting.

3 - Remove one screw from the left and right posts inside the unit. Remove one screw from each side on the back of the unit. Unit sections will now separate.

To reassemble:

1 - Align cabinet sections together.

2 - Reinstall screws.

3 - Replace blower and coil assemblies.

4 - Replace access panel.

UPFLOW APPLICATION

Use the following procedures to configure the unit for upflow operations:

1 - Remove access panels.

2 - Remove and discard the horizontal drip shield (-060 model, used only on horizontal applications) and the corrugated padding between the blower and coil assembly.

3 - The horizontal drain pan must be removed when the coil blower is installed in the upflow position. Removing the horizontal drain pain will allow proper air flow and increased efficiency.

4 - After removing the horizontal drain pan, place the unit in the desired location. Set unit so that it is level. Connect return and supply air plenums as required using sheet metal screws as illustrated in figure 6.

5 - Install units that have no return air plenum on a stand that is at least 14" from the floor to allow for proper air return. Allied offers an optional upflow unit stand as listed in table 4.

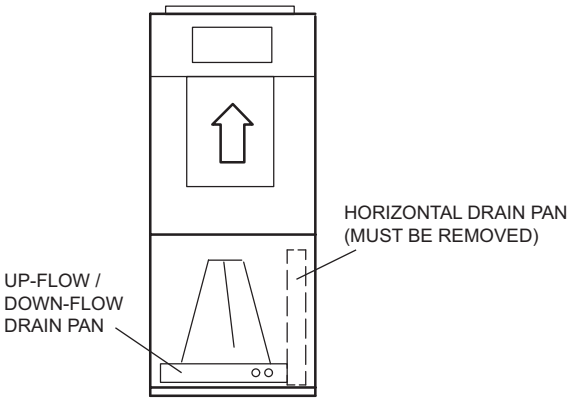


FIGURE 6. Upflow Configuration

TABLE 4. Optional Side-Return Unit Stand (Upflow Only)

Model	Kit Number
All unit sizes	45K32

HORIZONTAL RIGHT-HAND DISCHARGE APPLICATION

Use the following procedures to configure the unit for horizontal right-hand discharge operations:

NOTE – *For horizontal applications, a secondary drain pan is recommended. Refer to local codes.*

1 - Before operating the unit, remove access panels and the horizontal drip shield (-060 model) and the corrugated padding between the blower and coil assembly. Discard the corrugated padding.

2 - Install the horizontal drip shield (-060 model) on the front edge of the horizontal drain pan as illustrated in figure 7.

3 - No further adjustment is necessary. Set unit so that it is sloped 1/4" towards the drain pan end of the unit.

4 - If the unit is suspended, the entire length of the cabinet must be supported. If you use a chain or strap, use a piece of angle iron or sheet metal attached to the unit (either above or below) to support the length of the cabinet. Use securing screws no longer than 1/2" to avoid damaging the coil or filter as illustrated in figure 8. Use sheet metal screws to connect the return and supply air plenums as required.

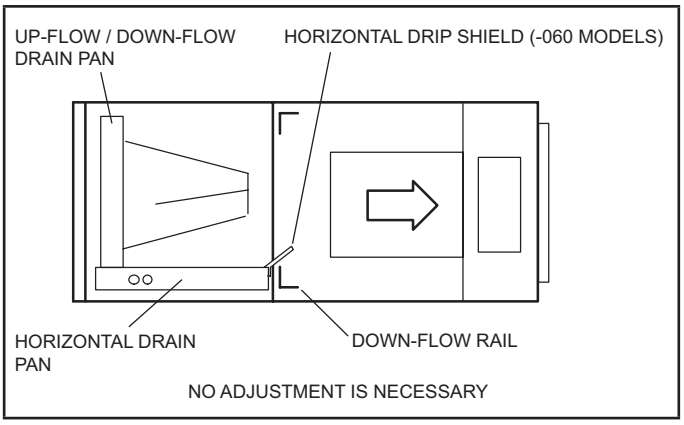


FIGURE 7. Right-Hand Discharge Configuration

HORIZONTAL RIGHT-HAND DISCHARGE APPLICATION IN HIGH-HUMIDITY AREAS

For horizontal applications in high humidity areas, remove the downflow rail closest to the drain pan.

To remove rail:

1 - Remove the screws from the rail at the back of unit and at the cabinet support rail.

2 - Remove the downflow rail then replace screws.

3 - Seal around the exiting drain pipe, liquid line, and suction line to prevent humid air from infiltrating into the unit.

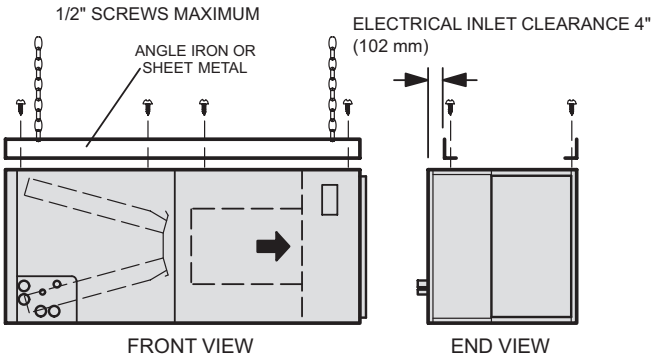


FIGURE 8. Suspending Horizontal Unit

⚠ IMPORTANT

When removing the coil, there is possible danger of equipment damage and personal injury. Be careful when removing the coil assembly from a unit installed in right- or left-hand applications. The coil may tip into the drain pan once it is clear of the cabinet. Support the coil when removing it.

HORIZONTAL LEFT-HAND DISCHARGE APPLICATION

NOTE – *For horizontal applications, a secondary drain pan is recommended. Refer to local codes.*

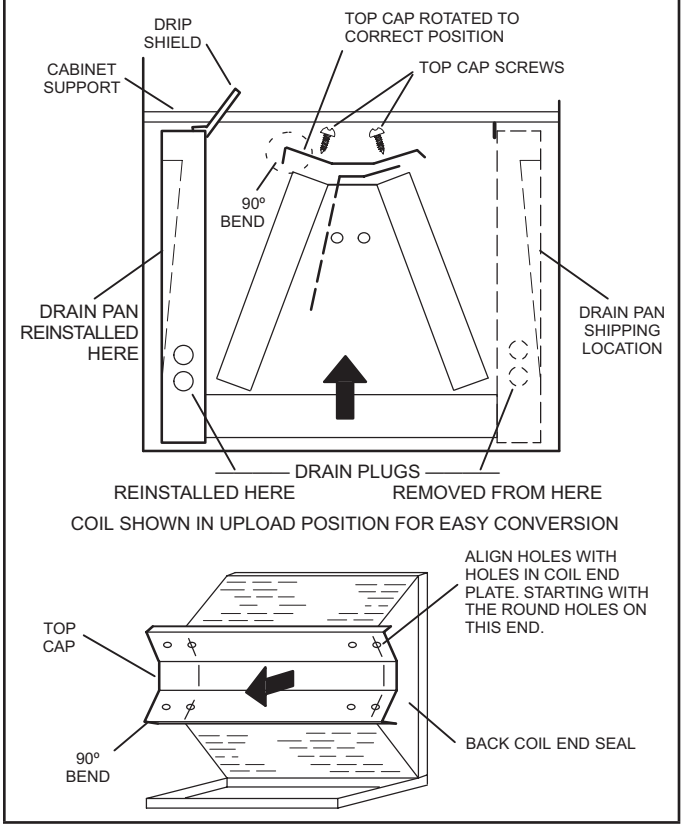


FIGURE 9. Field Modification for Left-Hand Discharge

Use the following procedures to configure the unit for horizontal left-hand discharge operations:

1 - Before operating the unit, remove access panels and the horizontal drip shield (-060 model) and the corrugated padding between the blower and coil assembly. Discard the corrugated padding.

2 - Pull the coil assembly from unit. Pull off the horizontal drain pan.

3 - Remove the drain plugs from back drain holes on horizontal drain pan and reinstall them on front holes.

⚠ IMPORTANT

After removal of drain pan plug(s), check drain hole(s) to verify that drain opening is fully open and free of any debris. Also check to make sure that no debris has fallen into the drain pan during installation that may plug up the drain opening.

4 - Rotate drain pan 180º front-to-back and install it on the opposite side of the coil.

5 - Remove screws from top cap. Remove horizontal drip shield screw located in the center of the back coil end seal as illustrated in figure 9.

6 - Rotate horizontal drip shield 180º front-to-back.

7 - Remove plastic plug from left hole on coil front end seal and reinstall plug in back hole. Reinstall horizontal drip shield screw in front coil end seal. Drip shield should drain downward into horizontal drain pan inside coil.

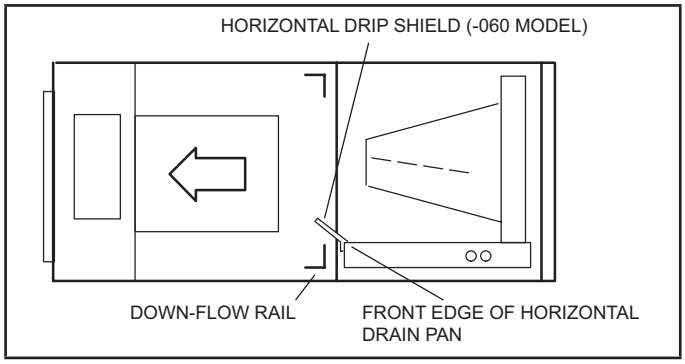


FIGURE 10. Left-Hand Discharge Configuration

8 - Rotate top cap 180º front-to-back and align with unused screw holes. Holes must align with front and back coil end plates. The top cap has a 45º bend on one side and a 90º bend on the other. **The 90º bend must be on the same side as the horizontal drain pan** as illustrated in figure 9.

NOTE – *Be very careful when reinstalling the screws into the coil end plate engaging holes. Misaligned screws may damage the coil.*

9 - From the upflow position, flip cabinet 90º to the left and set into place. Replace blower assembly. Secure coil in place by bending down the tab on the cabinet support rail as illustrated in figures 9 and 10.

10 - Install the horizontal shield (-060 model) on the front edge of the horizontal drain pan as illustrated in figure 10.

NOTE – *For horizontal applications in high humidity areas, remove the downflow rail closest to the drain pan. To remove rail, remove screw from rail at back of unit and at cabinet support rail. Remove downflow rail then replace screws. Also, seal around the exiting drain pipe, liquid and suction lines to prevent infiltration of humid air.*

11 - Knock out drain seal plate from access door. Secure plate to cabinet front flange with screw provided.

12 - Flip access door and replace it on the unit.

13 - Set unit so that it is sloped 1/4" toward the drain pan end of the unit. Connect return and supply air plenums as required using sheet metal screws.

14 - If suspending the unit, it must be supported along the entire length of the cabinet. If using chain or strap, use a piece of angle iron or sheet metal attached to the unit (either above or below) so that the full length of the cabinet is supported. Use securing screws no longer than 1/2" to avoid damage to coil or filter, as illustrated in figure 8. Connect return and supply air plenums as required using sheet metal screws.

DOWNFLOW APPLICATION

NOTE – *If downflow application is required, separately order kit number 28B60 and install per kit's instructions. Also use metal or class I supply and return air plenums.*

Use the installation instruction provided with the downflow kit. For Downflow installation on combustible flooring with a 25KW Electric Heater Only, an additive base (44K15) must be used . See Unit Nameplate or Product Specifications (EHB) for more information.

⚠ IMPORTANT

If electric heat section with circuit breakers (ECB47) is installed in a 7AH2AE unit in a downflow application, the circuit breakers must be rotated 180° to the UP position. See ECB47 installation instructions for more details.

Brazing Connections

For R454B refrigerant installations, do not braze the line set to the evaporator coil until the outdoor unit is installed. Refer to R454B Air Handler Conversion Kit (27J27) Instructions for installation details.

⚠ IMPORTANT

To prevent the build-up of high levels of nitrogen when purging, it must be done in a well-ventilated area. Purge low-pressure nitrogen (1 to 2 psig) through the refrigerant piping during brazing. This will help to prevent oxidation and the introduction of moisture into the system.

All coils are equipped with a factory-installed, internally mounted check/expansion valve.

The air handler's coil line sizes are listed in table 5. Use Allied L15 (sweat) series line sets (refer to the outdoor unit Product Specifications (EHB) for proper size, type and application). For field-fabricated refrigerant lines, see the piping section of the Allied Unit Information Service Manual.

⚠ WARNING

Danger of explosion!

Can cause equipment damage, injury, or death.

When using a high pressure gas such as dry nitrogen to pressurize a refrigeration or air conditioning system, use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kPa).

⚠ IMPORTANT

Refrigerant lines must be clean, dry, refrigerant-grade copper lines. Air handler coils should be installed only with specified line sizes for approved system combinations.

Handle the refrigerant lines gently during the installation process. Sharp bends or kinks in the lines will cause a restriction.

Do not remove the caps from the lines or system connection points until connections are ready to be completed.

⚠ WARNING

Polyol ester (POE) oils used with HFC-410A refrigerant absorb moisture very quickly.It is very important that the refrigerant system be kept closed as much as possible. DO NOT remove line set caps or service valve stub caps until you are ready to make connections.

⚠ WARNING

Danger of fire. Bleeding the refrigerant charge from only the high side may result in pressurization of the low side shell and suction tubing. Application of a brazing torch to a pressurized system may result in ignition of the refrigerant and oil mixture check.

⚠ WARNING

When using a high pressure gas such as nitrogen to pressurize a refrigeration or air conditioning system, use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kpa).

⚠ CAUTION

Brazing alloys and flux contain materials which are hazardous to your health. Avoid breathing vapors or fumes from brazing operations. Perform operations only in well-ventilated areas. Wear gloves and protective goggles or face shield to protect against burns. Wash hands with soap and water.

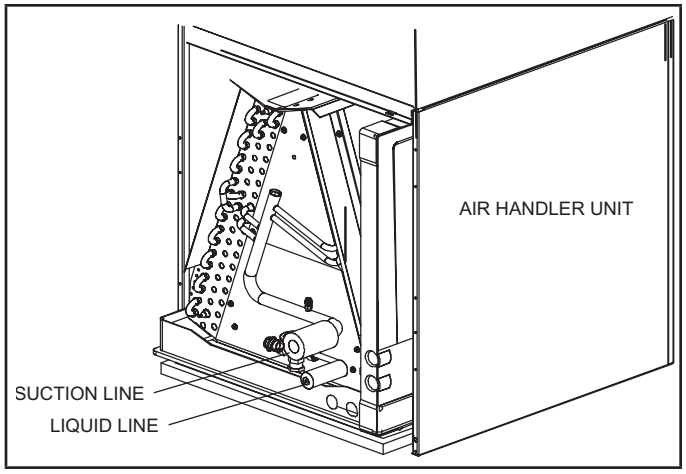


FIGURE 11. Brazing Connections

NOTE – *7AH2AE series air handlers use nitrogen or dry air as a holding charge. If there is no pressure when the rubber plugs are removed, check the coil for leaks before installing. After installation, pull a vacuum on the line set and coil before releasing the unit charge into the system.*

NOTE – *See outdoor unit instructions on how to flow nitrogen through line sets.*

1 - Remove access panel.

2 - Remove the refrigerant line caps from the refrigerant lines.

3 - Use a wet rag to protect TXV sensing bulb (or remove it) when brazing suction line connections.

4 - Place a wet rag against piping plate and around the suction line connection. The wet rag must be in place to guard against damage to the paint.

5 - With the wet rag in place, position a field provided elbow fitting to the air handler's suction line and line set. Start nitrogen flow before brazing.

6 - After the procedure is completed then remove the wet rag.

7 - Place wet rag against piping plate and around the liquid line connection. Position liquid line elbow to air handler's suction line and to line set. Start nitrogen flow and begin brazing both connections and after procedure is completed then remove both wet rags.

8 - Refer to instructions provided with outdoor unit for leak testing, evacuating and charging procedures.

9 - Install access panel.

TABLE 5. Refrigerant Line Sizes

Model	Liquid Line	Vapor Line	Line Sets
-018 -024 -030 -036	3/8" (10mm)	3/4" (19mm)	L15 line set sizes are dependant on unit match-up. See Product Specifications (EHB) for outdoor unit to determine correct line set sizes
-042 -048	3/8" (10mm)	7/8" (22mm)	
-060	3/8" (10mm)	7/8" (22mm)	Field fabricated

Leak Testing, Evacuating and Charging

Refrigerant system installations shall be installed and tested per ASHRAE Standard 15.2, Section 10.0 (latest edition).

Refer to the outdoor unit instruction for leak testing, evacuating and charging procedures. Always leak check entire system before charging.

Installing the Condensate Drain

MAIN DRAIN

Connect the main drain and route downward to drain line or sump. Do not connect drain to a closed waste system. See Figure 13 for typical drain trap configuration.

OVERFLOW DRAIN

It is recommended that the overflow drain is connected to an overflow drain line for all units. If overflow drain is not connected, it must be plugged with provided cap.

For downflow orientation, the overflow drain **MUST** be connected and routed to a overflow drain line. See Figure 12 for main and overflow drain locations based on coil orientation.

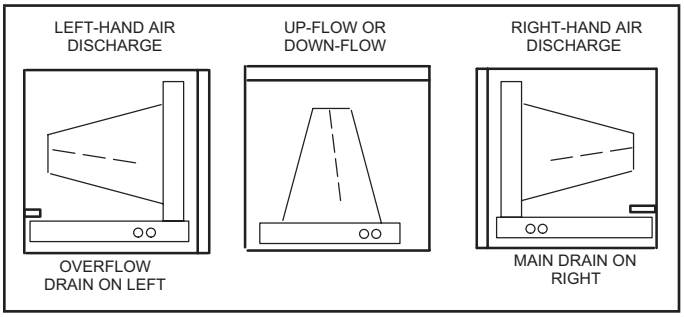


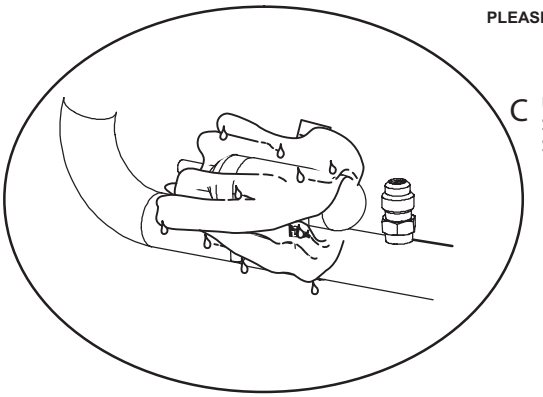
FIGURE 12. Main and Overflow Drain Locations Based on Coil Orientation

BEST PRACTICES

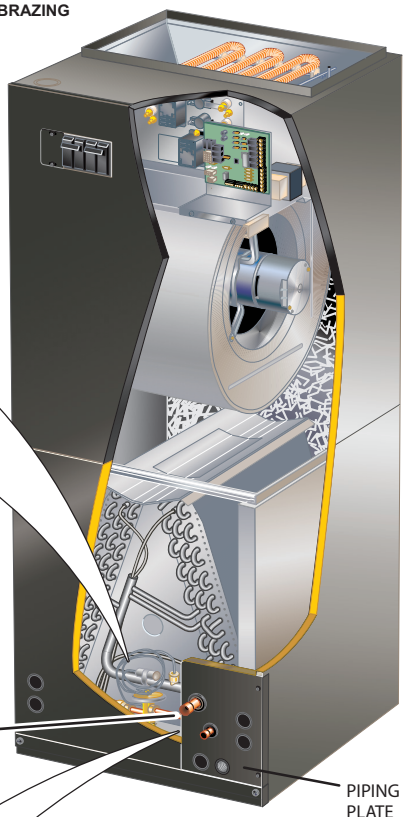
The following best practices are recommended for the condensate removal process:

- Main and overflow drain lines should **NOT** be smaller than both drain connections at drain pan.
- Overflow drain line should run to an area where homeowner will notice drainage.
- It is recommended that the overflow drain line be vented and a trap installed. Refer to local codes.

PLEASE READ IMPORTANT ISSUES CONCERNING BRAZING

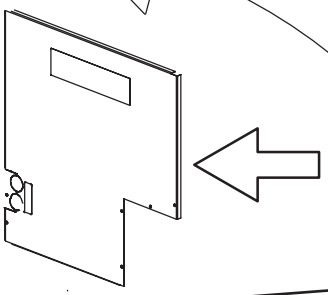


C USE A WET RAG TO PROTECT CTXV SENSING BULB WHEN BRAZING SUCTION LINE CONNECTIONS.



NOTE — REFER TO OUTDOOR UNIT INSTALLATION INSTRUCTIONS FOR REFRIGERANT PIPING SIZE REQUIREMENTS .

NOTE - Use silver alloy brazing rods with five or six percent minimum silver alloy for copper-to-copper brazing, 45 percent alloy for copper-to-brass and copper-to-steel brazing.



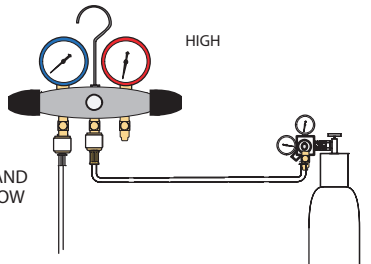
A REMOVE ACCESS PANEL

B REMOVE RUBBER PLUG FROM BOTH LIQUID AND SUCTION LINES

NOTE — CBK47UHET SERIES UNITS USE NITROGEN OR DRY AIR AS A HOLDING CHARGE. IF THERE IS NO PRESSURE WHEN THE RUBBER PLUGS ARE REMOVED, CHECK THE COIL FOR LEAKS BEFORE INSTALLING.

PIPING PLATE

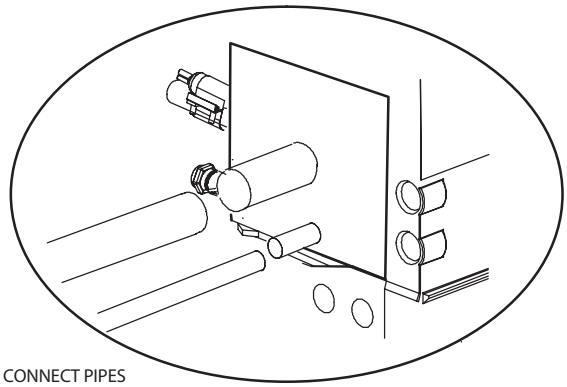
D EITHER REMOVE OR PUSH PIPE WRAPPING BACK THROUGH HOLE IN PIPING PLATE BEFORE LINE SET CONNECTION AND BRAZING.

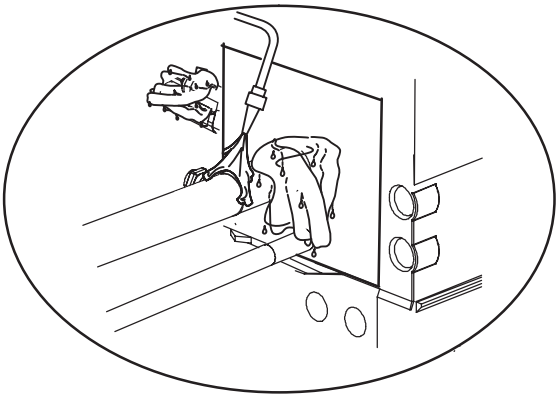


F CONNECT GAUGES AND START NITROGEN FLOW

FLOW REGULATED NITROGEN (AT 1 TO 2 PSIG) THROUGH THE REFRIGERATION GAUGE SET INTO THE VALVE STEM POR T CONNECTION ON THE OUTDOOR UNIT LIQUID LINE SER VICE VALVE AND OUT OF THE VALVE STEM PORT CONNECTION ON THE SUCTION SERVICE VALVE.

NITROGEN





E CONNECT PIPES

NOTE — REFRIGERANT LINE SETS SHOULD BE ROUTED TO ALLOW FILTER ACCESSIBILITY.

G PLACE A WET RAG AGAINST PIPING PLATE AND AROUND THE SUCTION LINE CONNECTION. A

H BRAZE CONNECTION. ALLOW PIPE TO COOL BEFORE REMOVING WET RAG FROM CTXV SENSING BULB AND PIPING PANEL AREA.

I REPEAT PREVIOUS PROCEDURE FOR LIQUID LINE.

REFER TO INSTRUCTIONS PROVIDED WITH OUTDOOR UNIT FOR LEAK TESTING, EV ACUATING AND CHARGING PROCEDURES

REFRIGERANT SYSTEM INSTALLATIONS SHALL BE INSTALLED AND TESTED PER ASHRAE STANDARD 15.2, SECTION 10.0 (LATEST EDITION)

- Condensate drain lines must be configured or provided with a cleanout to permit the clearing of blockages and for maintenance without requiring the drain line to be cut.

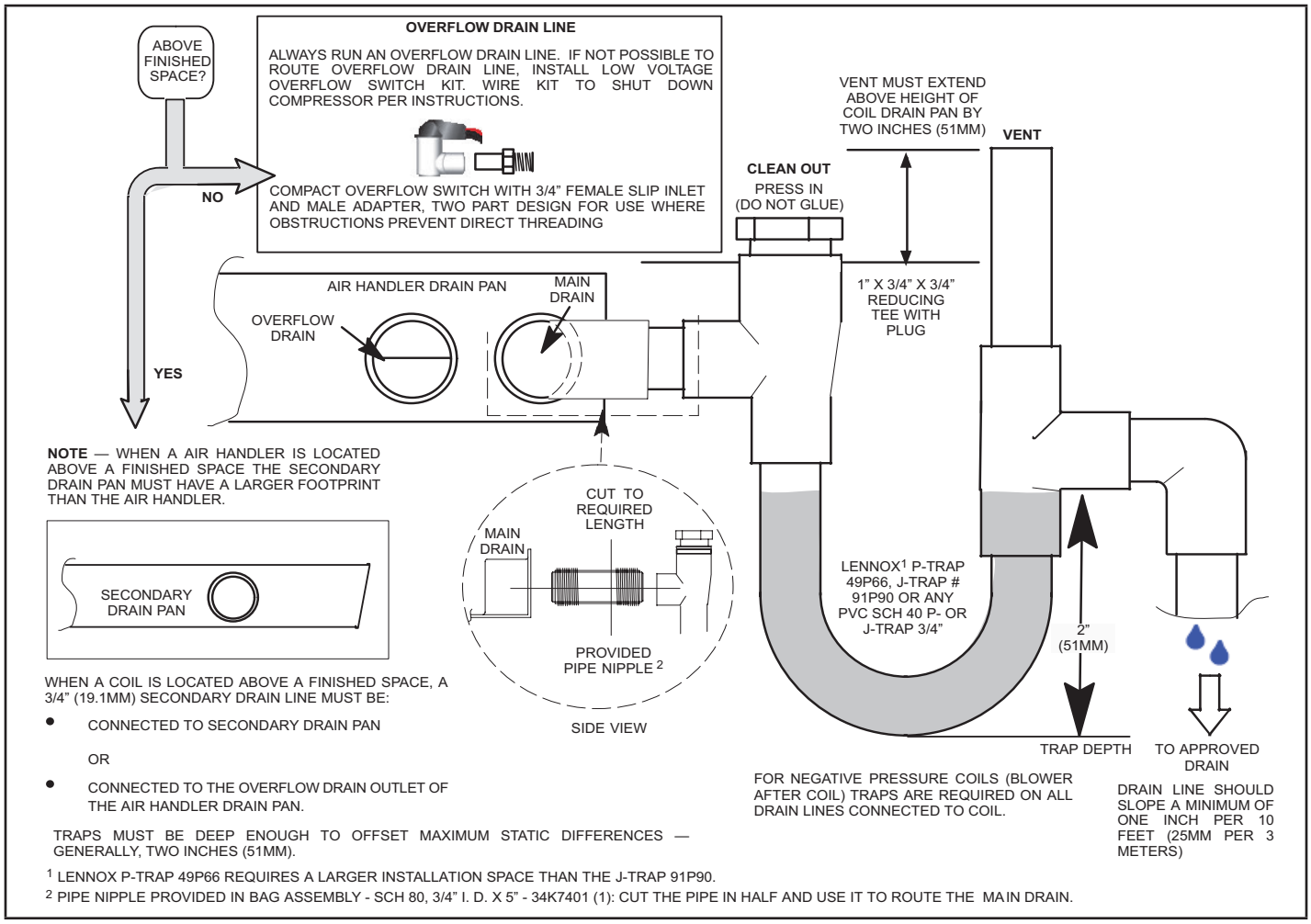


FIGURE 13. Typical Main and Overflow Drain

Inspecting and Replacing Filters

⚠ IMPORTANT

Filter access panel must be in place during unit operation. Excessive warm air entering the unit may result in water blow-off problems.

Filters may be duct-mounted or installed in the cabinet. A filter is installed at the factory. Note that filter access door fits over access panel. Air will leak if the access panel is placed over the filter door.

Filters should be inspected monthly and must be cleaned or replaced when dirty to assure proper air handler operation.

Reusable filters supplied with some units can be washed with water and mild detergent. Some units are equipped with standard throw-away type filters which should be replaced when dirty.

To replace filter:

1 - Loosen the thumbscrews holding the filter panel in place. Remove the dirty filter.

2 - Insert new filter and replace panel.

TABLE 6. Filter Dimensions

7AH2AE	Filter Size – In. (mm)
-018, -024, -030, -036	20" x 20" (508mm x 508mm)
-042, -048, -060	20" x 24" (508mm x 610mm)

Sealing the Unit

⚠ WARNING

There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

Seal the unit so that warm air is not allowed into the cabinet. Warm air introduces moisture, which results in water blow-off problems. This is especially important when the unit is installed in an unconditioned area.

Make sure the liquid line and suction line entry points are sealed with either the provided flexible elastomeric thermal insulation, or field provided material (e.g. Armaflex, Permagum or equivalent). Any of the previously mentioned materials may be used to seal around the main and auxiliary drains, and around open areas of electrical inlets.

Repairing or Replacing Cabinet Insulation

⚠ IMPORTANT

DAMAGED INSULATION MUST BE REPAIRED OR REPLACED before the unit is put back into operation. Insulation loses its insulating value when wet, damaged, separated or torn.

Matte- or foil-faced insulation is installed in indoor equipment to provide a barrier between outside air conditions (surrounding ambient temperature and humidity) and the varying conditions inside the unit. If the insulation barrier is damaged (wet, ripped, torn or separated from the cabinet walls), the surrounding ambient air will affect the inside surface temperature of the cabinet. The temperature/humidity difference between the inside and outside of the cabinet can cause condensation on the inside or outside of the cabinet which leads to sheet metal corrosion and subsequently, component failure.

REPAIRING DAMAGED INSULATION

Areas of condensation on the cabinet surface are an indication that the insulation is in need of repair.

If the insulation in need of repair is otherwise in good condition, the insulation should be cut in an X pattern, peeled open, glued with an appropriate all-purpose glue and placed back against the cabinet surface, being careful to not overly compress the insulation so the insulation can retain its original thickness. If such repair is not possible, replace the insulation. If using foil-faced insulation, any cut, tear, or separations in the insulation surface must be taped with a similar foil-faced tape.

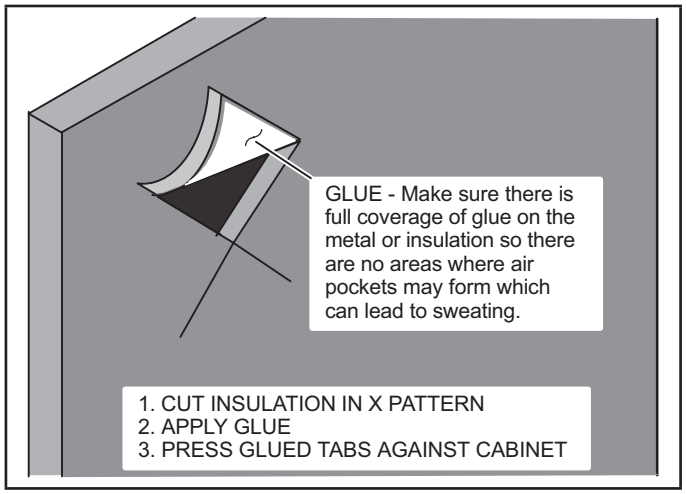


FIGURE 14. Repairing Insulation

⚠ WARNING

Electric Shock Hazard.

Can cause injury or death.

Foil-faced insulation has conductive characteristics similar to metal. Be sure there are no electrical connections within 1/2" of the insulation. If the foil-faced insulation comes in contact with electrical voltage, the foil could provide a path for current to pass through to the outer metal cabinet. While the current produced may not be enough to trip existing electrical safety devices (e.g., fuses or circuit breakers), the current can be enough to cause an electrical shock hazard that could cause personal injury or death.

Homeowner Maintenance

⚠ IMPORTANT

Do not operate system without a filter. A filter is required to protect the coil, blower, and internal parts from excessive dirt and dust. The filter is placed in the return duct by the installer.

- Inspect air filters at least once a month and replace or clean as required. Dirty filters are the most common cause of inadequate heating or cooling performance.
- Replace disposable filters. Cleanable filters can be cleaned by soaking in mild detergent and rinsing with cold water.
- Install new/clean filters with the arrows on the side pointing in the direction of air flow. Do not replace a cleanable (high velocity) filter with a disposable (low velocity) filter unless return air system is properly sized for it.
- If water should start coming from the secondary drain line, a problem exists which should be investigated and corrected. Contact a qualified service technician.

Professional Maintenance

NOTICE !

Failure to follow instructions will cause damage to the unit.

This unit is equipped with an aluminum coil. Aluminum coils may be damaged by exposure to solutions with a pH below 5 or above 9. The aluminum coil should be cleaned using potable water at a moderate pressure (less than 50psi). If the coil cannot be cleaned using water alone, Allied recommends use of a coil cleaner with a pH in the range of 5 to 9. The coil must be rinsed thoroughly after cleaning.

In coastal areas, the coil should be cleaned with potable water several times per year to avoid corrosive buildup (salt).

Nameplate Marking

Prior to installing the front panel, mark the unit nameplate to permanently identify the refrigerant configuration.

Nameplate example shown in figure 14 below.

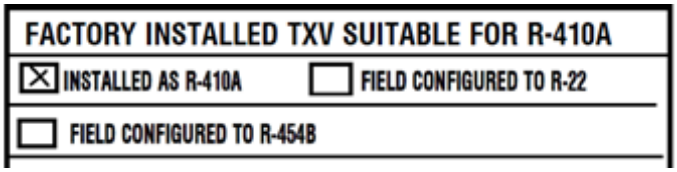


FIGURE 15. Nameplate Marking

Check-out Procedures

⚠ IMPORTANT

During installation, service or maintenance, make sure that copper tubing does not rub against metal edges or other copper tubing. Care should also be taken to ensure that tubing does not become kinked. Use wire ties to secure tubing to prevent movement.

Do not secure electrical wires to tubing that carries hot refrigerant gas. Heat from the tubing may melt the wiring insulation, causing a short circuit.

NOTE – *Refer to outdoor unit installation instructions for system start-up instructions and refrigerant charging instructions.*

PRE-START-UP CHECKS

- Is the air handler properly and securely installed?
- If horizontally configured, is the unit sloped up to 1/4 inch toward drain lines?
- Will the unit be accessible for servicing?
- Has an auxiliary pan been provided under the unit with separate drain for units installed above a finished ceiling or in any installation where condensate overflow could cause damage?
- Have ALL unused drain pan ports been properly plugged?
- Has the condensate line been properly sized, run, trapped, pitched, and tested?
- Is the duct system correctly sized, run, sealed, and insulated?
- Have all cabinet openings and wiring been sealed?
- Is the indoor coil factory-installed TXV properly sized for the outdoor unit being used?
- Have all unused parts and packaging been disposed of?
- Is the filter clean, in place, and of adequate size?
- Is the wiring neat, correct, and in accordance with the wiring diagram?
- Is the unit properly grounded and protected (fused)?
- Is the thermostat correctly wired and in a good location?
- Are all access panels in place and secure?

CHECK BLOWER OPERATION

- Set thermostat to FAN ON.
- The indoor blower should come on.

CHECK COOLING OPERATION

- Set thermostat to force a call for cooling (approximately 5ºF lower than the indoor ambient temperature).
- The outdoor unit should come on immediately and the indoor blower should start between 30 - 60 seconds later.
- Check the air flow from a register to confirm that the system is moving cooled air.
- Set the thermostat 5ºF higher than the indoor temperature. The indoor blower and outdoor unit should cycle off.

CHECK ELECTRIC HEAT (IF USED)

- Set thermostat to call for auxiliary heat (approximately 5°F above ambient temperature). The indoor blower and auxiliary heat should come on together. Allow a minimum of 3 minutes for all sequencers to cycle on.
- Set the thermostat so that it does not call for heat. Allow up to 5 minutes for all sequencers to cycle off.

Use of Air Handler During Construction

Allied does not recommend the use of its air handler unit during any phase of construction. Very low return air temperatures, harmful vapors and operation of the unit with clogged or misplaced filters will damage the unit.

Air handler units may be used for heating (heat pumps) or cooling of buildings under construction, if the following conditions are met:

- A room thermostat must control the air handler. The use of fixed jumpers is not allowed.
- Air filter must be installed in the system and must be maintained during construction.
- Air filter must be replaced upon construction completion.
- The air handler evaporator coil, supply fan assembly and duct system must be thoroughly cleaned following final construction clean-up.
- All air handler operating conditions must be verified according to these installation instructions.
- If refrigerant leak detection sensor kit (R454B applications only) has been installed, ensure that sensor opening is clear and free of debris. Follow sensor maintenance recommendations as outlined in sensor kit instruction.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before starting decommissioning.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure, ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do not overfill cylinders (no more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

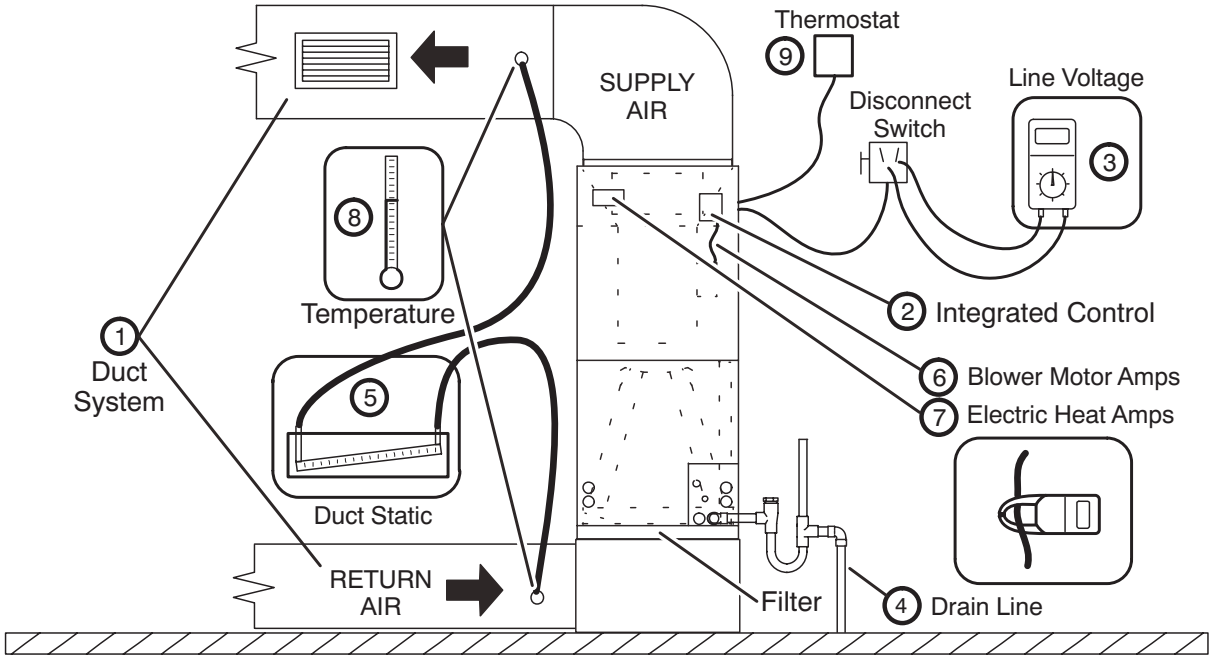
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

Installing Contractor's Name_____ Installing Date_____

Installing Contractor's Phone_____ Air Handler Model #_____

Job Address_____



1 DUCT SYSTEM

SUPPLY AIR DUCT

☐ Sealed

☐ Insulated (if necessary)

☐ Registers Open and Unobstructed

RETURN AIR DUCT

☐ Sealed

☐ Filter Installed and Clean

☐ Registers Open and Unobstructed

2 INTEGRATED CONTROL

☐ Jumpers Configured Correctly (if applicable)

☐ Appropriate Links in Place (if applicable)

3 VOLTAGE CHECK

☐ Supply Voltage _____

☐ Low Voltage _____

☐ Electrial Connections Tight

4 DRAIN LINE

☐ Leak Free

5 TOTAL EXTERNAL STATIC (dry coil)

	dry coil	wet coil
Supply External Static	_____	_____
Return External Static	_____	_____
Total External Static =	_____	_____

6 ELECTRIC HEAT AMPS_____

7 INDOOR BLOWER AMPS_____

INDOOR BLOWER CFM_____

8 TEMPERATURE DROP (Cooling Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Drop = _____

8 TEMPERATURE RISE (Heating Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Rise = _____

9 THERMOSTAT

☐ Adjusted and Programmed

☐ Operation Explained to Owner

☐ Explained Operation of System to Homeowner

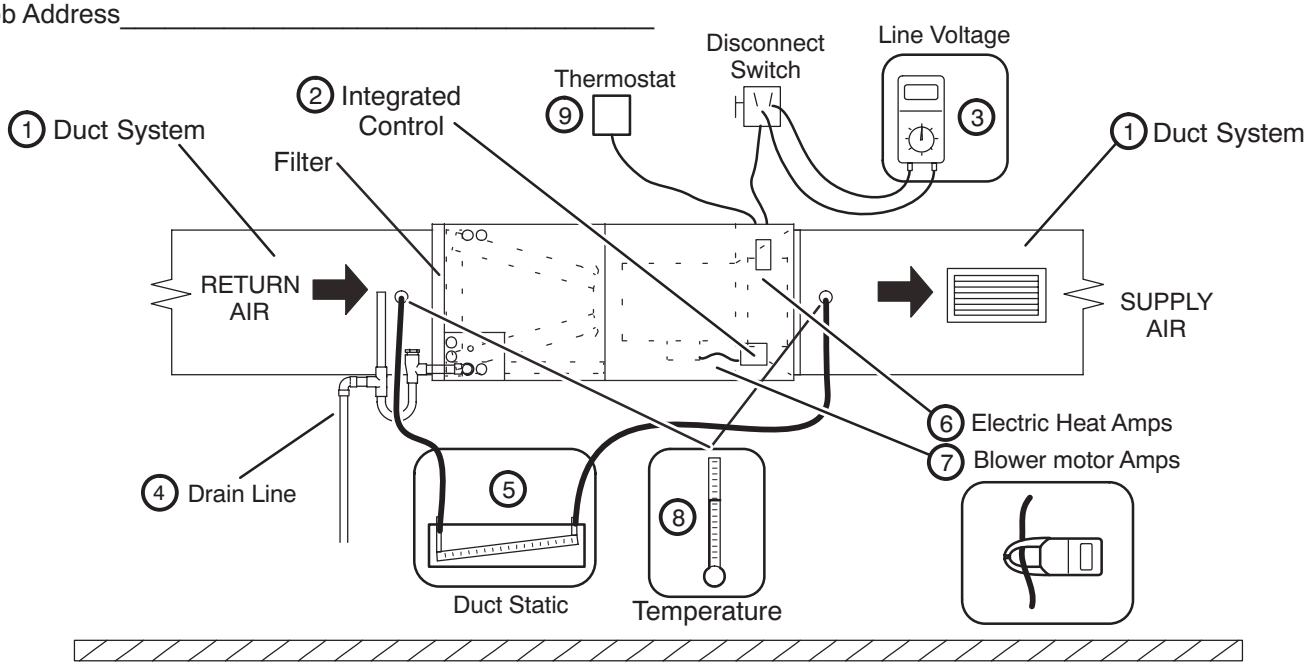
Technician's Name:_____Date Start–Up & Performance Check Completed_____

FIGURE 16. Start-up and Performance Checklist (Upflow Configuration)

Installing Contractor's Name_____ Installing Date_____

Installing Contractor's Phone_____ Air Handler Model #_____

Job Address_____



1 DUCT SYSTEM

SUPPLY AIR DUCT

☐ Sealed

☐ Insulated (if necessary)

☐ Registers Open and Unobstructed

RETURN AIR DUCT

☐ Sealed

☐ Filter Installed and Clean

☐ Registers Open and Unobstructed

2 INTEGRATED CONTROL

☐ Jumpers Configured Correctly (if applicable)

☐ Appropriate Links in Place (if applicable)

3 VOLTAGE CHECK

☐ Supply Voltage _____

☐ Low Voltage _____

☐ Electrial Connections Tight

4 DRAIN LINE

☐ Leak Free

5 TOTAL EXTERNAL STATIC (dry coil)

	dry coil	wet coil
Supply External Static	_____	_____
Return External Static	_____	_____
Total External Static =	_____	_____

6 ELECTRIC HEAT AMPS_____

7 INDOOR BLOWER AMPS_____

INDOOR BLOWER CFM_____

8 TEMPERATURE DROP (Cooling Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Drop = _____

8 TEMPERATURE RISE (Heating Mode)

Return Duct Temperature _____

Supply Duct Temperature – _____

Temperature Rise = _____

9 THERMOSTAT

☐ Adjusted and Programmed

☐ Operation Explained to Owner

☐ Explained Operation of System to Homeowner

Technician's Name:_____Date Start–Up & Performance Check Completed_____

FIGURE 17. Start-Up and Performance Checklist (Horizontal Configuration)