



FRIEDRICH

1 8 8 3

Commercial Split F-Series™ Heat Pump Air Handlers



RHCYP Series

Nominal Sizes: 7.5 & 10 Tons [26.4 kW to 35.2 kW]

Cooling Capacities: 90.0k Btu/h to 120.0k Btu/h [26.4 kW to 35.2 kW]

Refrigerant Type: R-454B

Designed for use with matching RPCY models



9001:2015



LISTED

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RHCYP STANDARD FEATURES INCLUDE:

- Designed for R-454B refrigerant
- Wired and run tested
- Convertible airflow – vertical up flow or horizontal side flow
- Cooling operation up to 125°F ambient
- TXV refrigerant metering system
- Field-adjustable TXVs
- Solid-core liquid line filter drier
- Insulation encapsulated throughout entire unit
- Galvanized steel drain pan
- Standard Variable Frequency Drives (VFDs)
- Innovative, separable cabinet design makes it easier to fit the unit in tight spaces.
- MERV 8 & MERV 13 filters are available as an accessory



Designing for Sustainability with Low GWP: For 2025, the Environmental Protection Agency (EPA) has set a global warming potential (GWP) limit of 700 for refrigerant used in heating and cooling systems. This new requirement will result in a 78%¹ lower GWP than previous-generation refrigerants — with only minimal changes to system installation. For us, this is another step toward our continued sustainability goal of reducing greenhouse gas emissions, while still delivering an exceptional level of energy efficient, dependable comfort.

¹When comparing the GWP of R-454B to R-410A refrigerant.

ACCESSORIES

ACCESSORY DESCRIPTION	MODEL NUMBER	SIZE USED ON	DIMENSIONS D x L x W (INCHES)
MERV 13 Filter	RXMF-M13A11625	090, 120	1 X 16 X 25
	RXMF-M13A21625	090, 120	2 X 16 X 25
MERV 8 Filter	RXMF-M08A11625	090, 120	1 X 16 X 25
	RXMF-M08A21625	090, 120	2 X 16 X 25
Electric Heat (* = C, D, or Y Voltage)	RXHE-AG005CA	090, 120	N/A
	RXHE-AG005DA	090, 120	N/A
	RXHE-AG010*A	090, 120	N/A
	RXHE-AG015*A	090, 120	N/A
	RXHE-AG020*A	090, 120	N/A
	RXHE-AG025*A	090, 120	N/A
Economizers for Commercial Air Handler (No Controls) McDaniel Metals Econmzier with Siemens Controller	RXHM-71SA	090, 120	N/A

R **H** **C** **Y** **P** **2** **090** **C** **A** **R**
1 **2** **3** **4** **5** **6** **789** **10** **11** **12**

1—Brand

R = Friedrich®

2—Unit Type

H = Air Handler

3—Cabinet Type

C = Commercial

4—Refrigerant

Y = R-454B

5—Heat Type

P = Heat Pump

6—Airflow Configuration

2 = 2-Stage

7,8,9—Capacity

090 = 7.5 Ton

120 = 10 Ton

10—Electrical Designation

C = 208/230 V, 3 PH, 60 Hz

D = 460 V, 3 PH, 60 Hz

Y = 575 V, 3 PH, 60 Hz

11—Minor Series

A = 1st Design

12—Drive

R = Belt Drive—VFD Low Static

S = Belt Drive—VFD Medium Static

T = Belt Drive—VFD High Static

COMMERCIAL SPLIT HEAT PUMP MODEL MATCH-UPS

Outdoor Unit Model Number	Indoor Air Handler Model Number
RPCY2090	RHCYP2090
RPCY2120	RHCYP2120

GENERAL DATA

Model RHCYP2 Series	090C	090D	090Y
			CONTINUED →
Indoor Coil—Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	10.2 [0.95]	10.2 [0.95]	10.2 [0.95]
Rows / FPI [FPcm]	4 /15 [10 / 38]	4 /15 [10 / 38]	4 /15 [10 / 38]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
Diameter in. [mm]	12x12 [305x305]	12x12 [305x305]	12x12 [305x305]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds (Standard / VFD)	Single / Multiple	Single / Multiple	Single / Multiple
No. Motors	1	1	1
Motor HP			
R - Low Static Drive	2	2	2
S - Medium Static Drive	2	2	2
T - High Static Drive	3	3	3
Motor RPM	1725	1725	1725
Weights			
Net Weight lbs. [kg]	409 [186]	409 [186]	409 [186]
R - Low Static Drive	409 [186]	409 [186]	409 [186]
S - Medium Static Drive	419 [190]	419 [190]	419 [190]
T - High Static Drive			
Shipping Weights lbs. [kg]			
R - Low Static Drive	429 [195]	429 [195]	429 [195]
S - Medium Static Drive	429 [195]	429 [195]	429 [195]
T - High Static Drive	439 [199]	439 [199]	439 [199]

[] Designates Metric Conversions

GENERAL DATA (CONTINUED)

Model RHCYP2 Series	120C	120D	120Y
Indoor Coil—Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	16.5 [1.5]	16.5 [1.5]	16.5 [1.5]
Rows / FPI [FPcm]	3 / 18 [8 / 46]	3 / 18 [8 / 46]	3 / 18 [8 / 46]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
Diameter in. [mm]	18x15 [457x381]	18x15 [457x381]	18x15 [457x381]
Drive Type	Belt (Adjustable)	Belt (Adjustable)	Belt (Adjustable)
No. Speeds (Standard / VFD)	Single / Multiple	Single / Multiple	Single / Multiple
No. Motors	1	1	1
Motor HP			
R - Low Static Drive	2	2	2
S - Medium Static Drive	2	2	2
T - High Static Drive	3	3	3
Motor RPM	1725	1725	1725
Weights			
Net Weight lbs. [kg]	575 [261]	575 [261]	575 [261]
R - Low Static Drive	585 [265]	585 [265]	585 [265]
S - Medium Static Drive	595 [270]	595 [270]	595 [270]
T - High Static Drive			
Shipping Weights lbs. [kg]			
R - Low Static Drive	595 [270]	595 [270]	595 [270]
S - Medium Static Drive	605 [274]	605 [274]	605 [274]
T - High Static Drive	615 [279]	615 [279]	615 [279]

[] Designates Metric Conversions

UNIT DIMENSIONS

Model Number	CONNECTIONS				UNIT					
	Liquid		Vapor		W (Width)		H (Height)		L (Length)	
	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm
RHCYP2090	1/2	[12.70]	1-1/8	[28.58]	54-1/2	1384.30	27-43/50	707.52	57-17/20	1469.39
RHCYP2120	5/8	[15.88]	1-3/8	[34.93]	61-47/50	1573.28	35-1/10	891.54	78-25/61	1991.59

[] Designates Metric Conversions

ELECTRICAL DATA – RHCYP2 SERIES				
		090C	090D	090Y
Unit Information	Unit Operating Voltage Range	187-253	414-506	541-610
	Volts	208/230	460	575
	Minimum Circuit Ampacity			
	R - Low Static Drive	8	4	3
	S - Medium Static Drive	8	4	3
	T - High Static Drive	12	6	5
	Maximum Overcurrent Protection Device Size			
	R - Low Static Drive	15/15	15/15	15/15
	S - Medium Static Drive	15/15	15/15	15/15
	T - High Static Drive	15/20	15/15	15/15
Motor Information	No.	1	1	1
	Volts	208/230	460	575
	Phase	3	3	3
	Rating Plate Amps			
	R - Low Static Drive	6.2	3	2.4
	S - Medium Static Drive	6.2	3	2.4
	T - High Static Drive	9.2	4.6	3.5
	LRA (Amps)			
	R - Low Static Drive	47	24	22.72
	S - Medium Static Drive	47	24	22.72
T - High Static Drive	74.5	38.1	30	

ELECTRICAL DATA – RHCYP2 SERIES				
		120C	120D	120Y
Unit Information	Unit Operating Voltage Range	187-253	414-506	541-610
	Volts	208/230	460	575
	Minimum Circuit Ampacity			
	R - Low Static Drive	8	4	3
	S - Medium Static Drive	8	4	3
	T - High Static Drive	12	6	5
	Maximum Overcurrent Protection Device Size			
	R - Low Static Drive	15/15	15/15	15/15
	S - Medium Static Drive	15/15	15/15	15/15
	T - High Static Drive	15/15	15/15	15/15
Motor Information	No.	1	1	1
	Volts	208/230	460	575
	Phase	3	3	3
	Rating Plate Amps			
	R - Low Static Drive	6.2	3	2.4
	S - Medium Static Drive	6.2	3	2.4
	T - High Static Drive	9.2	4.6	3.5
	LRA (Amps)			
	R - Low Static Drive	47	24	22.72
	S - Medium Static Drive	47	24	22.72
T - High Static Drive	74.5	38.1	30	

AUXILIARY ELECTRIC HEATER KIT CHARACTERISTICS AND APPLICATION

208/230V, Three Phase, 60 Hz, Auxiliary Electric Heater Kit Characteristics and Application									
Single Power Supply for Both Unit and Heater Kit					Separate Power Supply for Both Unit and Heater Kit				
Unit Model Number RHCYP2	Heater Kit			Heat Pump		Heater Kit		Heat Pump	
	Model No. RXHE-	Rated Heater kW @ 208/230V	FLA	Unit Min. Ckt. Ampacity	Max. Fuse or Ckt. Bkr. Size	Heater Kit Min. Ckt. Ampacity	Heater Kit Max. Fuse or Ckt. Bkr. Size	Air Cond. Min. Ckt. Ampacity	Air Cond. Max. Fuse or Ckt. Bkr. Size
090CAR 090CAS	AG005CA	3.76/5.00	10.44/12.03	21/23	25/25	14/16	15/20	8/8	15/15
	AG010CA	7.75/9.98	20.82/24.01	34/38	35/40	27/31	30/35	8/8	15/15
	AG015CA	11.27/15.0	31.28/36.08	47/53	50/60	40/46	40/50	8/8	15/15
	AG020CA	15.6/20.2	43.1/48.9	62/69	70/70	54/62	60/70	8/8	15/15
	AG025CA	18.78/25.0	52.13/60.14	73/83	80/90	66/76	70/80	8/8	15/15
090CAT	AG005CA	3.76/5.00	10.44/12.03	25/27	30/30	14/16	15/20	12/12	20/20
	AG010CA	7.75/9.98	20.82/24.01	38/42	40/45	27/31	30/35	12/12	20/20
	AG015CA	11.27/15.0	31.28/36.08	51/57	60/60	40/46	40/50	12/12	20/20
	AG020CA	15.6/20.2	43.1/48.9	66/73	70/80	54/62	60/70	12/12	20/20
	AG025CA	18.78/25.0	52.13/60.14	77/87	80/90	66/76	70/80	12/12	20/20
120CAR 120CAS	AG010CC	7.50/9.98	20.82/24.01	34/38	35/40	27/31	30/35	8/8	15/15
	AG020CC	14.98/19.95	41.58/47.99	60/68	60/70	52/60	60/60	8/8	15/15
120CAT	AG010CC	7.50/9.98	20.82/24.01	38/42	40/45	27/31	30/35	12/12	20/20
	AG020CC	14.98/19.95	41.58/47.99	64/72	70/80	52/60	60/60	12/12	20/20

460V, Three Phase, 60 Hz, Auxiliary Electric Heater Kit Characteristics and Application									
Single Power Supply for Both Unit and Heater Kit					Separate Power Supply for Both Unit and Heater Kit				
Unit Model Number RHCYP2	Heater Kit			Heat Pump		Heater Kit		Heat Pump	
	Model No. RXHE-	Rated Heater kW @ 460V	FLA	Unit Min. Ckt. Ampacity	Max. Fuse or Ckt. Bkr. Size	Heater Kit Min. Ckt. Ampacity	Heater Kit Max. Fuse or Ckt. Bkr. Size	Air Cond. Min. Ckt. Ampacity	Air Cond. Max. Fuse or Ckt. Bkr. Size
090DAR 090DAS	AG005DA	5	6.01	12	15	8	15	4	15
	AG010DA	9.98	12	19	20	15	15	4	15
	AG015DA	15	18.04	27	30	23	25	4	15
	AG020DA	20.2	24.7	35	35	31	35	4	15
	AG025DA	25	30.07	42	45	38	40	4	15
090DAT	AG005DA	5	6.01	14	15	8	15	6	15
	AG010DA	9.98	12	21	25	15	15	6	15
	AG015DA	15	18.04	29	30	23	25	6	15
	AG020DA	20.2	24.7	37	40	31	35	6	15
	AG025DA	25	30.07	44	45	38	40	6	15
120DAR 120DAS	AG010DC	9.98	12	19	20	15	15	4	15
	AG020DC	20	24.06	34	35	31	35	4	15
120DAT	AG010DC	9.98	12	21	25	15	15	6	15
	AG020DC	20	24.06	36	40	31	35	6	15

575V, Three Phase, 60 Hz, Auxiliary Electric Heater Kit Characteristics and Application									
Single Power Supply for Both Unit and Heater Kit					Separate Power Supply for Both Unit and Heater Kit				
Unit Model Number RHCYP2	Heater Kit			Heat Pump		Heater Kit		Heat Pump	
	Model No. RXHE-	Rated Heater kW @ 575V	FLA	Unit Min. Ckt. Ampacity	Max. Fuse or Ckt. Bkr. Size	Heater Kit Min. Ckt. Ampacity	Heater Kit Max. Fuse or Ckt. Bkr. Size	Air Cond. Min. Ckt. Ampacity	Air Cond. Max. Fuse or Ckt. Bkr. Size
090YAR 090YAS	AG010YA	9.98	10.02	16	20	13	15	3	15
	AG015YA	15	15.06	22	25	19	20	3	15
	AG020YA	20	20.08	44	45	38	40	3	15
	AG025YA	25	25.1	35	35	32	35	3	15
090YAT	AG010YA	9.98	10.02	17	20	13	15	5	15
	AG015YA	15	15.06	24	25	19	20	5	15
	AG020YA	20	20.08	30	30	26	30	5	15
	AG025YA	25	25.1	36	40	32	35	5	15
120YAR 120YAS	AG010YC	9.98	10.02	16	20	13	15	3	15
	AG020YC	20	20.08	29	30	26	30	3	15
120YAT	AG010YC	9.98	10.02	17	20	13	15	5	15
	AG020YC	20	20.08	30	30	26	30	5	15

A2L REFRIGERANT INSTALLATION SAFETY DATA

Qmin at Rating Plate Charge Weight [0'-200' 1/2" Line Set]						
RHCYP2		090 [0']	090 [50']	090 [100']	090 [150']	090 [200']
Refrigerant Charge weight (oz)		328.5	378.5	428.5	478.5	528.5
Minimum Total Room Area, T _{Amin} (ft ²)		605.5	697.7	789.8	882.0	974.2
Minimum circulation airflow, Q _{min} (cfm)		1093.0	1259.0	1425.0	1592.0	1758.0
Installed Altitude (ft above sea level)	Altitude Adjustment Factor	Minimum Total Conditioned Room Area, T _{Amin} (sq ft)				
0	1.000	606	698	790	882	974
1000	1.025	621	715	809	904	998
2000	1.051	636	733	830	927	1024
3000	1.078	653	752	852	951	1050
4000	1.107	670	772	874	977	1079
5000	1.138	689	794	899	1003	1108
6000	1.170	708	816	924	1032	1140
6500	1.187	719	828	937	1047	1156

Qmin at Rating Plate Charge Weight [0'-200' 5/8" Line Set]						
RHCYP2		120 [0']	120 [50']	120 [100']	120 [150']	120 [200']
Refrigerant Charge weight (oz)		460.0	535.0	610.0	685.0	760.0
Minimum Total Room Area, T _{Amin} (ft ²)		847.9	940.1	1032.2	1124.4	1216.6
Minimum circulation airflow, Q _{min} (cfm)		1530.0	1696.0	1863.0	2029.0	2195.0
Installed Altitude (ft above sea level)	Altitude Adjustment Factor	Minimum Total Conditioned Room Area, T _{Amin} (sq ft)				
0	1.000	848	940	1032	1124	1217
1000	1.025	869	963	1058	1152	1247
2000	1.051	891	988	1085	1182	1278
3000	1.078	914	1014	1113	1212	1312
4000	1.107	939	1041	1143	1245	1347
5000	1.138	965	1069	1174	1279	1384
6000	1.170	992	1100	1208	1315	1423
6500	1.187	1006	1116	1225	1334	1444

AIRFLOW PERFORMANCE RHCYP2090 — 60 Hz (CONTINUED)

Airflow CFM [L/s]	AIRFLOW CORRECTION FACTORS *			Power kW	COMPONENT AIRFLOW RESISTANCE		
	Total MBH	Sensible MBH	Power kW		Wet Coil		MERV 13 Filter Resistance Inches of Water
					Resistance Inches of Water [kPa]	Resistance Inches of Water	
2400 [1133]	0.93	0.73	0.96	0.04 [01]	0.153	0.157	
2500 [1180]	0.93	0.74	0.96	0.05 [01]	0.164	0.168	
2600 [1227]	0.94	0.76	0.97	0.05 [01]	0.175	0.179	
2700 [1274]	0.94	0.78	0.97	0.05 [01]	0.186	0.189	
2800 [1321]	0.95	0.80	0.97	0.05 [01]	0.198	0.200	
2900 [1368]	0.95	0.81	0.97	0.06 [01]	0.209	0.211	
3000 [1416]	0.95	0.83	0.98	0.06 [01]	0.220	0.221	
3100 [1463]	0.96	0.85	0.98	0.06 [01]	0.231	0.232	
3200 [1510]	0.96	0.87	0.98	0.06 [01]	0.242	0.243	
3300 [1557]	0.97	0.88	0.99	0.07 [02]	0.253	0.254	
3400 [1604]	0.97	0.90	0.99	0.07 [02]	0.264	0.264	
3500 [1652]	0.98	0.92	0.99	0.07 [02]	0.276	0.275	
3600 [2171]	0.98	0.93	0.99	0.08 [02]	0.287	0.286	
3700 [1746]	0.99	0.95	1.00	0.08 [02]	0.298	0.296	
3800 [1793]	0.99	0.97	1.00	0.08 [02]	0.309	0.307	
3900 [1840]	1.00	0.99	1.00	0.08 [02]	0.320	0.318	
4000 [1888]	1.00	1.00	1.01	0.09 [02]	0.331	0.329	

*Multiply correction factor times gross performance data — resulting sensible capacity cannot exceed total capacity.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE RHCYP2120 — 60 HZ

Air Flow CFM [L/s]		RHCYP2120 Voltage 208/230, 460, 575 — 3 phase 60 HZ																																								
		External Static Pressure—Inches of Water [kPa]																																								
		0.1 [.02]		0.2 [.05]		0.3 [.07]		0.4 [.10]		0.5 [.12]		0.6 [.15]		0.7 [.17]		0.8 [.20]		0.9 [.22]		1.0 [.25]		1.1 [.27]		1.2 [.30]		1.3 [.32]		1.4 [.35]		1.5 [.37]		1.6 [.40]		1.7 [.42]		1.8 [.45]		1.9 [.47]		2.0 [.50]		
RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	
3200 [1510]	—	—	—	425	596	459	668	494	738	528	805	561	870	589	2285	618	2458	646	2700	673	3009	699	3386	724	3832	748	4345	766	4086	788	4450	810	4917	832	5487	853	6160	873	6936			
3300 [1557]	—	—	—	429	622	463	695	497	766	531	835	564	902	592	2317	621	2503	649	2757	676	3079	701	3469	726	3927	750	4453	768	4172	790	4554	812	5040	834	5628	854	6319	875	7114			
3400 [1604]	—	—	—	433	649	467	724	501	796	535	867	568	935	595	2355	624	2554	651	2820	678	3155	704	3557	728	4028	752	4566	770	4282	792	4662	814	5166	836	5772	856	6482	876	7295			
3500 [1652]	—	—	—	437	678	471	754	505	828	538	899	571	969	598	2397	627	2608	654	2887	680	3235	708	3650	730	4133	749	4039	772	4355	795	4773	816	5295	837	5920	858	6649	878	7480			
3600 [1699]	—	—	407	628	442	707	476	785	509	860	542	933	575	1004	601	2444	630	2668	657	2960	683	3319	708	3747	732	4242	752	4117	775	4451	797	4888	818	5429	839	6072	860	6819	880	7668		
3700 [1746]	—	—	412	657	446	738	480	817	513	893	546	968	578	1040	605	2496	633	2732	660	3036	686	3409	711	3849	735	4357	754	4199	777	4551	799	5007	821	5566	841	6227	862	6992	882	7800		
3800 [1793]	—	—	417	688	451	770	484	850	517	928	550	1004	582	1077	608	2553	636	2801	662	3118	688	3503	713	3955	737	4476	757	4285	779	4655	801	5129	823	5706	844	6386	864	7169	884	8056		
3900 [1840]	—	—	422	720	455	803	489	885	521	964	554	1041	583	1144	611	2614	639	2875	665	3204	691	3602	716	4067	739	4600	759	4374	782	4763	804	5255	825	5850	846	6548	866	7350	886	8255		
4000 [1888]	—	—	427	753	460	838	493	920	526	1001	558	1079	588	1160	615	2680	642	2954	668	3296	694	3705	718	4183	741	4729	762	4466	784	4873	806	5384	828	5998	848	6714	868	7534	888	8458		
4100 [1935]	—	—	432	787	465	873	498	957	530	1039	562	1119	590	1253	618	2751	645	3037	671	3391	697	3814	721	4304	744	4862	765	4562	787	4988	809	5517	830	6149	851	6884	870	7722	890	8664		
4200 [1982]	—	—	437	822	470	910	503	995	535	1079	566	1160	594	1296	622	2827	649	3125	675	3492	700	3927	724	4430	746	5000	768	4662	790	5106	812	5653	833	6304	853	7057	873	7914	—	—		
4300 [2029]	409	767	442	859	475	948	507	1034	539	1119	571	1201	598	1264	601	2736	629	2992	656	3316	681	3707	706	4167	729	4695	752	5291	774	4872	796	5353	817	5937	838	6624	858	7414	878	8308	—	—
4400 [2076]	415	804	448	896	480	987	512	1075	544	1161	575	1244	601	1308	605	2813	633	3082	659	3418	685	3822	709	4285	732	4835	754	4587	777	4983	799	5482	820	6084	841	6790	861	7598	880	8510	—	—
4500 [2123]	421	841	453	935	486	1027	517	1116	549	1204	560	1289	605	1366	605	2813	633	3082	659	3418	685	3822	709	4285	732	4835	754	4587	777	4983	799	5482	820	6084	841	6790	861	7598	880	8510	—	—

	R										S										T																					
	2 [3728.5]										BK130H										BK105H																					
Drive Package	2 [3728.5]										BK130H										BK105H																					
Motor H.P. [W]	2 [3728.5]										BK130H										BK105H																					
Blower Sheave	BK130H										BK130H										BK105H																					
Motor Sheave	1VL40 7/8"										1VP50 7/8"										1VP50 7/8"																					
Belt	B52										B52										B50																					
Turns Open	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5						
RPM	563	541	517	490	463	646	746	939	906	874	840	806	866	1032	997	963	927	892	866	1032	997	963	927	892	866	1032	997	963	927	892	866	1032	997	963	927	892	866	1032	997	963	927	892

NOTES: 1. Factory sheave settings are shown in bold type.
2. Do not set motor sheave below minimum or maximum turns open shown.
3. Re-adjustment of sheave required to achieve rated airflow at AHRI minimum External Static Pressure
4. Drive data shown is for horizontal airflow with dry coil. Add component resistance (below) to duct resistance to determine total External Static Pressure.

[] Designates Metric Conversions

AIRFLOW PERFORMANCE RHCYP2120 — 60 Hz (CONTINUED)

Airflow CFM [L/s]	AIRFLOW CORRECTION FACTORS *			COMPONENT AIRFLOW RESISTANCE					
	Total MBH	Sensible MBH	Power kW	Wet Coil		MERV 8 Filter		MERV 13 Filter	
				Resistance Inches of Water [kPa]	Resistance Inches of Water	Resistance Inches of Water	Resistance Inches of Water		
3500 [1652]	0.98	0.92	0.99	0.07 [0.02]	0.091	0.097	0.098		
3600 [1699]	0.98	0.93	0.99	0.08 [0.02]	0.097	0.103	0.103		
3700 [1746]	0.99	0.95	1.00	0.08 [0.02]	0.103	0.109	0.109		
3800 [1793]	0.99	0.97	1.00	0.08 [0.02]	0.109	0.115	0.115		
3900 [1840]	1.00	0.99	1.00	0.08 [0.02]	0.115	0.121	0.121		
4000 [1888]	1.00	1.00	1.01	0.09 [0.02]	0.121	0.127	0.127		
4100 [1935]	1.00	1.02	1.01	0.09 [0.02]	0.127	0.132	0.132		
4200 [1982]	1.01	1.04	1.01	0.09 [0.02]	0.133	0.138	0.138		
4300 [2029]	1.01	1.06	1.01	0.10 [0.02]	0.139	0.144	0.144		
4400 [2076]	1.02	1.07	1.02	0.10 [0.02]	0.145	0.150	0.150		
4500 [2123]	1.02	1.09	1.02	0.10 [0.02]	0.151	0.156	0.156		
4600 [2171]	1.03	1.11	1.02	0.10 [0.02]	0.157	0.161	0.161		
4700 [2218]	1.03	1.12	1.03	0.11 [0.03]	0.163	0.167	0.167		
4800 [2265]	1.04	1.14	1.03	0.11 [0.03]	0.169	0.173	0.173		
4900 [2312]	1.04	1.16	1.03	0.11 [0.03]	0.175	0.179	0.179		
5000 [2359]	1.05	1.18	1.03	0.12 [0.03]	0.181	0.185	0.185		
5100 [2407]	1.05	1.19	1.04	0.12 [0.03]	0.188	0.190	0.190		

*Multiply correction factor times gross performance data — resulting sensible capacity cannot exceed total capacity.

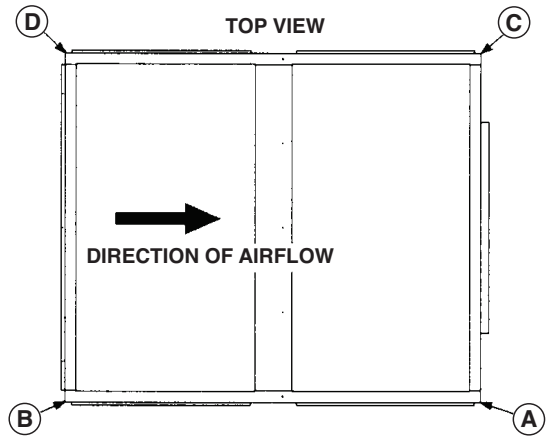
[] Designates Metric Conversions

RHCYP2 DIMENSIONAL DATA

7.5 NOMINAL TONS [26.4 kW]

REFRIGERANT STUB SIZES, IN. [mm]				
MODEL	DUAL LIQ.	DUAL SUC.	SINGLE LIQ.	SINGLE SUC.
090	1/2, 1/2 [13, 13]	7/8, 7/8 [22, 22]	1/2 [13]	1 1/8 [29]

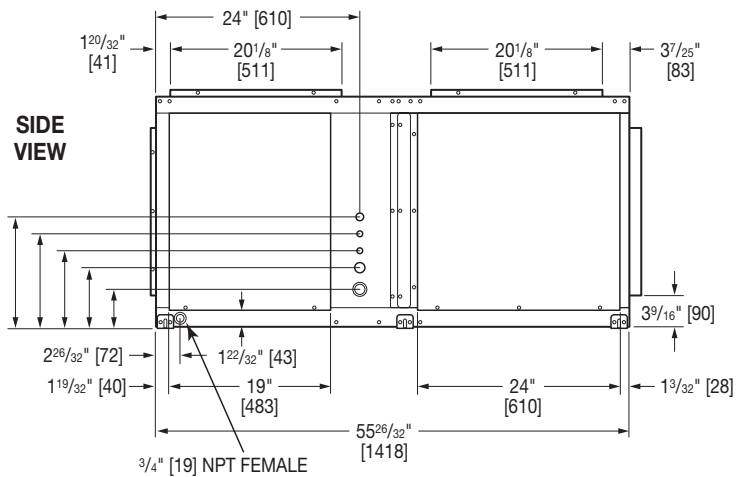
MODEL	CORNER WEIGHTS LBS. [kg]				OPERATING WEIGHT	SHIPPING WEIGHT
	A	B	C	D		
090	75.75 [34.36]	133.31 [60.49]	106.04 [48.10]	93.92 [42.60]	409 [185.52]	429 [194.60]



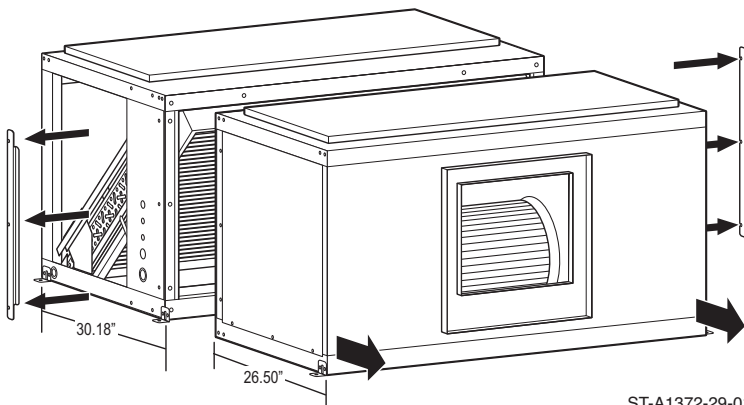
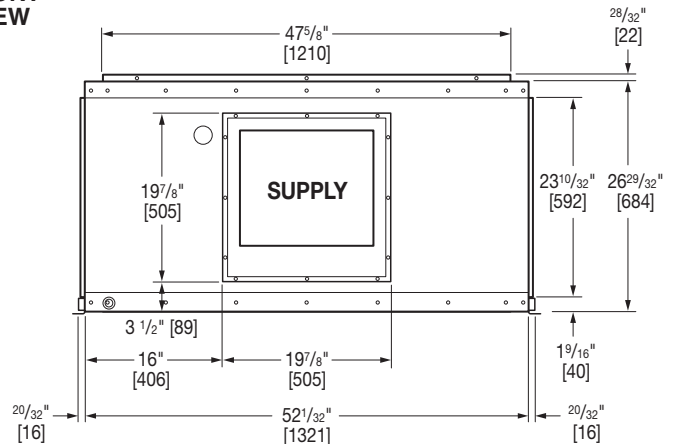
RETURN AIR OPENINGS = 47³/₈" [1203] x 19⁷/₈" [505] HEIGHT

RETURN AIR OPENINGS = 47⁵/₈" [1203] WIDTH x 19⁷/₈" [505] HEIGHT

KNOCK-OUTS BOTH SIDES	
7/8" [22]	12 ¹⁹ / ₁₆ " [325]
5/8" [16]	10 ¹³ / ₁₆ " [275]
5/8" [16]	8 ¹³ / ₁₆ " [224]
1 1/4" [32]	6 ¹³ / ₁₆ " [173]
1 1/4" x 1 3/4" [32 x 44]	4 ⁵ / ₁₆ " [110]



FRONT VIEW



ST-A1372-29-01

ST-A1372-16-01

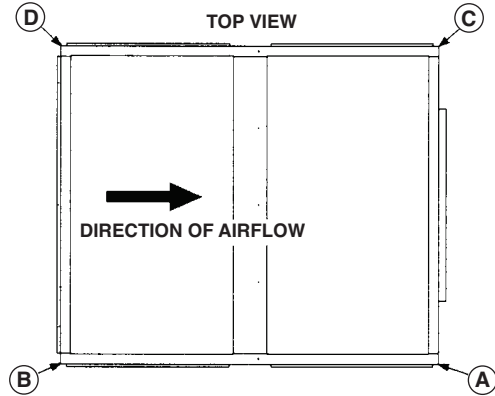
*Drain connections are provided on both sides of the drain pan. The drain can be connected to either side of the drain pan, but not both. The drain must be trapped.

[] Designates Metric Conversions

RHCYP2 DIMENSIONAL DATA 10 NOMINAL TONS [35.2 kW]

REFRIGERANT STUB SIZES, IN. [mm]				
MODEL	DUAL LIQ.	DUAL SUC.	SINGLE LIQ.	SINGLE SUC.
120	1/2, 1/2 [13, 13]	7/8, 7/8 [22, 22]	5/8 [16]	1 3/8 [35]

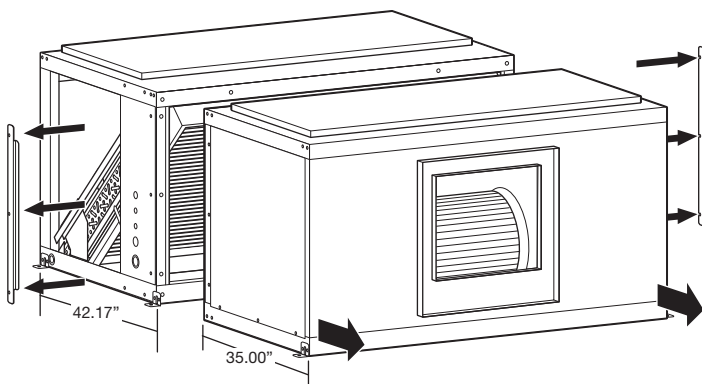
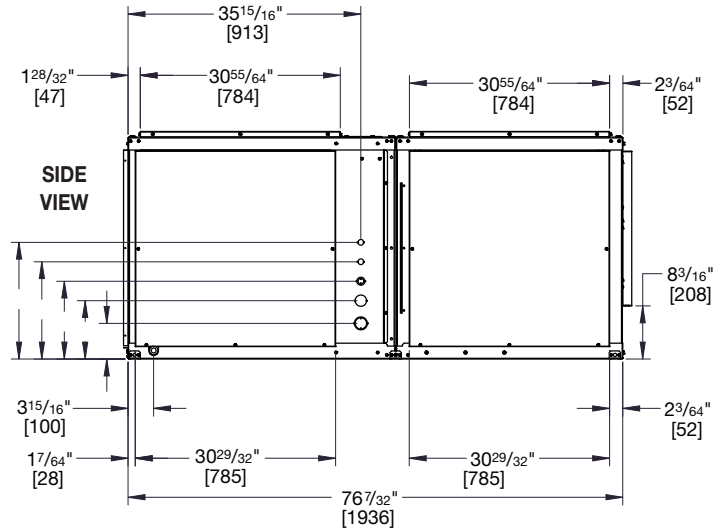
MODEL	CORNER WEIGHTS LBS. [kg]				OPERATING WEIGHT	SHIPPING WEIGHT
	A	B	C	D		
120	139.42 [63.24]	184.62 [83.74]	79.81 [36.20]	171.15 [77.63]	575.0 [260.82]	585.0 [265.35]



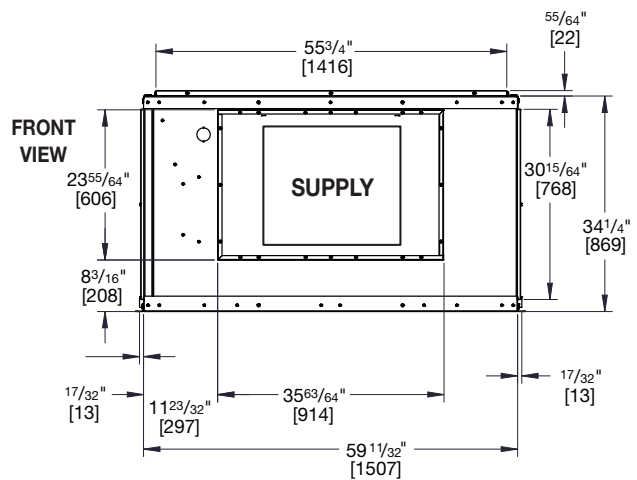
RETURN AIR OPENINGS = 47³/₈" [1203] x 19⁷/₈" [505] HEIGHT

RETURN AIR OPENINGS = 55¹³/₃₂" [1407] WIDTH x 30¹⁷/₃₂" [776] HEIGHT

KNOCK-OUTS BOTH SIDES	
7/8" [22]	18" [457]
7/8" [22]	15" [381]
1 1/4" x 7/8" [32 x 22]	12" [305]
1 3/4" [44]	9" [229]
2" x 1 3/4" [51 x 44]	5 1/2" [140]



ST-A1372-43-01



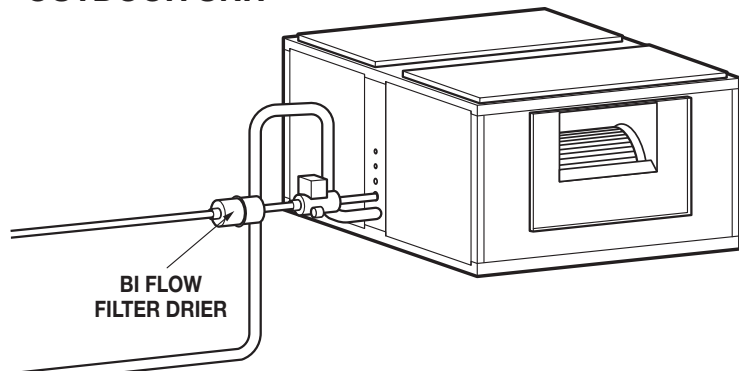
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*Drain connections are provided on both sides of the drain pan. The drain can be connected to either side of the drain pan, but not both. The drain must be trapped.

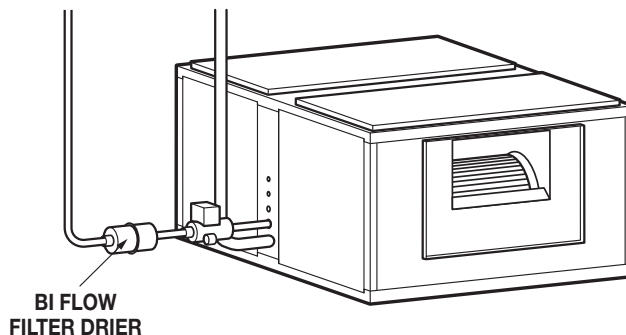
[] Designates Metric Conversions

TYPICAL PIPING RECOMMENDATIONS

INDOOR COIL ABOVE OUTDOOR UNIT



INDOOR COIL BELOW OUTDOOR UNIT



NOTE: PIPING ACCESSORIES SHOWN SHOULD BE MOUNTED AS CLOSE TO AIR HANDLER UNIT AS POSSIBLE

REFRIGERANT PIPING

1. Size liquid line for no more than 50 PSIG pressure drop.
2. Size suction lines for no more than 2°F loss, which corresponds to approximately 5 PSIG pressure drop.
3. When evaporator is installed below condensing unit, do not exceed the recommend-ed suction line O.D. This will insure adequate velocities for proper oil return.
4. Install strainer-drier and sight glass in liquid line.
5. Pitch all horizontal suction lines downward in the direction of flow.
6. When making up refrigerant piping, take every precaution to prevent dirt and moisture from entering the piping.
7. Locate the condensing unit and evaporator(s) as close together as possible to minimize piping runs.
8. A liquid line solenoid installed just ahead of the expansion valve is recommended.
9. See tables below for general refrigerant line sizing and equivalent length of valves and fittings.
10. Refer to the vapor and liquid line selection procedure and charts in the outdoor unit installation manual or literature for more specific refrigerant line sizing information. When dual outdoor units are matched with the air-handler using dual circuits, size the refrigerant lines for each system independently.

CONDENSATE DRAIN PIPING

- Consult local codes or ordinances for specific requirements regarding condensate drain.
- Condensate drain is open to atmosphere and must be trapped. Trap must be at least 3 inches [76 mm] deep and made of flexible material or fabricated to prevent freeze-up.
- Pitch the drain line at least 1/4 inch [6 mm] per foot away from the drain pan.
- Do not reduce the drain line size from the connection size provided on the unit.
- Do not connect the drain line to a closed sewer line.

RECOMMENDED VAPOR AND LIQUID LINE SIZES FOR VARIOUS LENGTHS OF RUN				
LINEAR LENGTH (FT.) [m]	LIQUID LINE O.D. SIZES (IN.) [mm]		VAPOR LINE O.D. SIZES (IN.) [mm]	
	090	120	090	120
0-40 [0-12.19]	1/2 [12.7]	5/8 [15.88]	1 1/8 [28.58]	1 3/8 [34.93]
41-90 [12.5-27.43]	1/2 [12.7]	5/8 [15.88]	1 3/8 [34.93]*	1 3/8 [34.93]*

*NOTE: With the outdoor unit located below the indoor air handler, all vertical vapor lines must not exceed 1 1/8" [28.58 mm] O.D.

[] Designates Metric Conversions

TYPICAL PIPING RECOMMENDATIONS

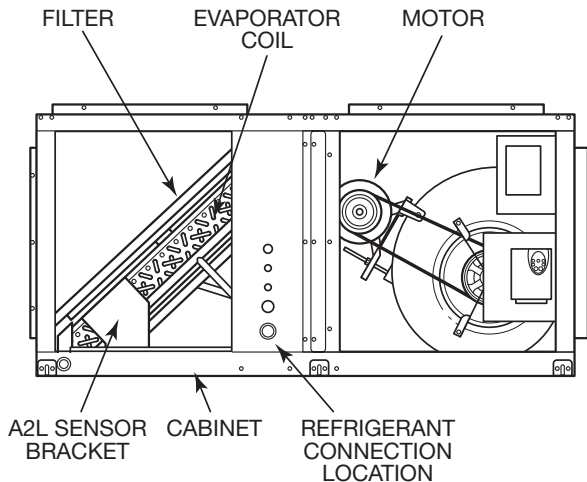
All models are provided with dual circuit coil manifolds that can be configured for dual condensing unit applications. The coil is circuited to provide full face coil operation for each system. Knock-outs are provided on both sides of the unit to allow the refrigerant tubing to enter from either side. Remove the rubber grommets from the parts bag and install them in the appropriate

holes prior to running the line set tubing into the cabinet to seal around and protect the tubing. Copper fittings are provided in the parts bag to allow the two refrigerant circuits to be tied together for single condensing unit applications. The fittings may be installed to allow the tubing to enter the unit from either side.

REQUIRED OUNCES OF R-454B CHARGE PER FOOT OF TUBING									
Tube Size		Liquid Tube		Vapor Tube		Total		Internal Volume	
OD (in)	OD (mm)	oz/ft	kg/m	oz/ft	kg/m	oz/ft	kg/m	ft ³ /ft	m ³ /m
3/8	9.5	0.5	0.05	0.0	0.00	0.5	0.05	0.000555	0.0000480
1/2	12.7	1.0	0.09	0.0	0.00	1.0	0.09	0.001080	0.0000929
5/8	15.9	1.5	0.14	0.1	0.00	1.6	0.15	0.001730	0.0001490
3/4	19.1	2.2	0.21	0.1	0.01	2.3	0.21	0.002480	0.0002140
7/8	22.2	3.1	0.29	0.1	0.01	3.2	0.30	0.003430	0.0002960
1	25.4	4.0	0.37	0.1	0.01	4.2	0.39	0.004500	0.0003890
1-1/8	28.6	5.2	0.49	0.2	0.02	5.4	0.50	0.005850	0.0005030
1-1/4	31.8	6.5	0.60	0.2	0.02	6.7	0.62	0.007210	0.0006230
1-3/8	34.9	7.3	0.68	0.2	0.02	7.6	0.70	0.008165	0.0007590
1-1/2	38.1	9.4	0.87	0.3	0.03	9.7	0.90	0.010500	0.0009100
1-5/8	41.3	11.2	1.04	0.4	0.03	11.6	1.08	0.012500	0.0010800
2-1/8	54.0	19.5	1.82	0.6	0.06	20.2	1.88	0.021800	0.0018800

REFRIGERANT LEAK DETECTION

In the event of a detected refrigerant leak, the refrigerant leak detection sensor will trigger a mitigation procedure that shuts off the compressor(s) and turns on the indoor blower motor.



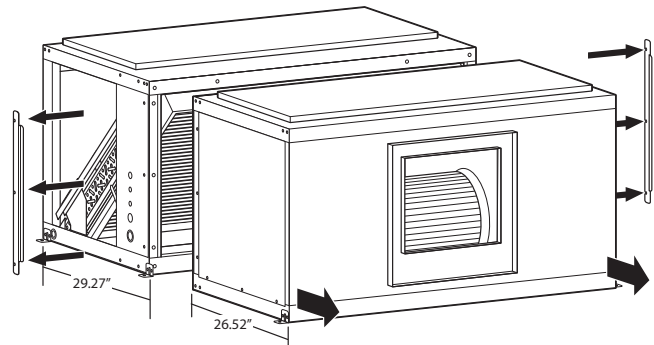
UNIT SHOWN WITH SIDE PANELS REMOVED FOR COIL CONNECTIONS AND AIR FILTER ACCESS.

SEPARABLE CABINET

For ease of installation into the indoor space, the air handler unit is separable. If required to move into the space, follow the steps below to separate and reconnect the two halves of the air handler.

NOTE: Separation and reconnection should be completed on a flat, stable surface. Do not attempt while unit is suspended from the ceiling.

1. Unscrew and remove the two metal brackets on each side of the air handler.
2. Remove access panels.
3. Remove the 3/8 inch bolts from the frame. The unit can now be pulled apart.
4. Move the air handler into place.
5. If gasketing is damaged, use included replacement gasketing to repair the unit.
6. Align the two sides. Reattach the metal brackets and access panels—these brackets should help align the connecting holes—then insert and fasten the 3/8 inch bolts. The unit can now be reconnected and installation and set-up can commence.



Guide Specifications RHCYP2-090-120

You may copy this document directly into your building specification. This specification is written to comply with the 2016 version of the "master format" as published by the Construction Specification Institute. www.csinet.org.

HP AIR HANDLER UNIT

HVAC Guide Specifications

Size Range: 7.5 & 10 Nominal Tons

1.01 Quality Assurance:

- A. Unit shall be rated in accordance with AHRI Standard 340/360.
- B. Unit construction shall comply with ANSI/ASHRAE 15 safety code latest revision and comply with NEC.
- C. Unit shall be constructed in accordance with UL 60335-2-40 standard and shall carry the UL label.
- D. Unit cabinet shall be capable of withstanding 500 hour salt spray exposure per ASTM B117 (scribed specimen).
- E. Unit shall be subjected to oz/ft run test on the assembly line.
- F. Unit meets ASHRAE 90.1 2022 minimum efficiency requirements.
- G. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
- H. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory and must be available upon request.

1.02 Manufacturer Qualifications:

- A. Unit shall be manufactured in a facility registered to ISO 9001:2015 manufacturing quality standard.

1.03 Installer Qualifications:

- A. The installer shall be trained to install and service equipment with A2L refrigerants.

1.04 Delivery, Storage, and Handling:

- A. Unit shall be shipped as single package only, and shall be stored and handled according to unit manufacturer's recommendations.
- B. Unit shall be stored and handled per manufacturer's recommendations.
- C. Refer to the manufacturer's installation and operation manual for guidance on how to properly lift the unit.
- D. Unit shall only be stored or positioned in the upright position.

1.05 Unit Cabinet:

- A. Unit cabinet shall be constructed of galvanized steel and coated with a pre-painted baked enamel finish.
- B. Cabinets shall be insulated with 1/2" [13 mm] by 1-1/2 pound [.68 kg] density fiberglass insulation coated with neoprene and bonded to the cabinet surface with a U.L. approved adhesive. Insulation shall have fire retarding characteristics in accordance with smoke developed rating not to exceed 50 and flame spread rating of 25 per UL testing procedures.
- C. Unit cabinet exterior paint shall be: pre-painted steel.
- D. Insulation:
 - i. Interior cabinet surfaces shall be insulated with a minimum of 1/2-in. thick, minimum 1.6 LB density, flexible fiberglass insulation bonded with foil face on the air side.
 - ii. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
 - iii. Insulation shall also be mechanically fastened with welded pin and retainer washer.
- E. Condensate pan and connections:
 - i. Shall be a sloped condensate drain pan made of a non-corrosive material and be removable for cleaning.
 - ii. Shall comply with ASHRAE Standard 62.
 - iii. Shall use a 3/4" NPT drain connection through either side of the drain pan. The connection shall be made per the manufacturer's recommendations.
 - iv. Shall have drain connections on each side of the unit in either horizontal or vertical type applications.
- F. Side panel:
 - i. The separable unit shall have removable side panels on each side of the unit. Each side has two removable panels: four panels total.
- G. Electrical Connections:
 - i. All unit power wiring shall enter the unit cabinet through factory-prepared knockouts next to the unit access panels.
- H. Component access panels (standard):
 - i. Cabinet panels shall be easily opened for servicing.

1.06 Refrigerant Components:

- A. The refrigerant circuit shall include the following control, safety, and maintenance features:
 - i. Refrigerant filter drier.
 - ii. Service gauge connections on suction and discharge lines.
 - iii. External pressure gauge ports allows pressures to be checked on the side, without removing access panel.

1.07 Evaporator Coils:

- A. The evaporator coil shall consist of copper tubes with aluminum fins bonded to the tubes by mechanical expansion. Suction and liquid line connections or supply and discharge connections shall be field-configurable to either side of the coil.
- B. Evaporator coil in 10 ton unit shall be 3-row.
- C. Evaporator coil in 7.5 ton unit shall be 4-row.
- D. Direct expansion coils shall feature factory-installed thermostatic expansion valves (TXVs) for refrigerant control. The TXVs shall be R-454B compatible and capable of external adjustment.

1.08 Controls and Safeties:

- A. Components are not compatible between different refrigerants. Do not use R-410A service equipment or components on R-454B equipment. System or part failure could occur.

1.09 Operating Characteristics:

- A. When combined with matching RACY condensing unit, the system shall be capable of starting and running at ambient outdoor temperatures up to 125.6°F (52°C) in cooling mode.
- B. Unit shall be factory configured for horizontal supply & return configurations.
- C. Unit shall be field convertible from vertical to horizontal configuration.

1.10 Electrical Requirements:

- A. Unit shall operate at ±10% from rated voltage.
- B. Unit electrical power shall be single-point connection.
- C. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

1.11 Thermostats:

- A. Thermostat shall:
 - i. Have the capability to energize 2 stages of cooling.
 - ii. The variable speed drive (VFD) must be powered continuously and controlled by the thermostat signals.
- B. Thermostat Controls:
 - i. The appropriate thermostat control wires (C, G, Y2) must also be connected to the low voltage terminal block (TB2) located on the outside of the air-handler control box (No heat application).
 - ii. Electric Heat Application - The appropriate thermostat control wires must be connected to the thermostat pigtailed on the heater kit and to the C, G, Y2, W1 and R terminals on the low voltage terminal block located on the outside of the air handler control box.
 - iii. Low voltage terminal block (TB3) to be used for A2L sensor. Red wire to "24V VAC/VDC", Brown wire to "24V COM".

1.12 Motor:

- A. Fan motor of the size and electrical characteristics specified on the equipment schedule shall be factory supplied and installed.
- B. Motors shall have inherent thermal overload protection.
- C. Alternate Motor and Drive:
 - i. An alternate motor and/or medium-static or high-static drive shall be available to meet the airflow and external static pressure requirements specified on the equipment schedule.
- D. Variable Frequency Drive (VFD) Standard:
 - i. Unit shall be supplied with an electronic variable frequency drive for the supply air fan.
 - ii. Drive shall be factory installed in an enclosed cabinet.
 - iii. Drive shall meet UL Standard 95-5V.
 - iv. The completed unit assembly shall be UL listed.
 - v. Drives are to be accessible through a tooled access hinged door assembly.
 - vi. The unit manufacturer shall install all power and control wiring.
 - vii. The supply air fan drive output shall be controlled by the factory installed main unit control system and drive status and operating speed shall be monitored and displayed at the main unit control panel.
 - viii. Drive shall be programmed and factory run tested in the unit.

1.13 Special Features:

- A. Electric Heaters:
 - i. Heaters for nominal 240V or 460V, 3phase, 60 Hz shall be field-installed as shown on the equipment drawings.
 - ii. Electric heat assembly shall be UL agency approved and shall have single-point power wiring.
- B. A2L Sensor:
 - i. Sensor shall provide the ability to signal the blower, compressor, and electric heat to comply with the UL 60335-2-40 mitigation when a refrigerant leak is detected.
 - ii. Sensor shall be operable when the unit is installed in either vertical or horizontal configurations.



FRIEDRICH

1 8 8 3

GENERAL TERMS OF LIMITED PARTS WARRANTY*

Friedrich® will furnish a replacement for any part of this product which fails in normal use and service within the applicable periods stated, in accordance with the terms of the limited warranty.

Parts

Commercial Applications.One (1) Year

***For Complete Details of the Limited Warranty, Including Applicable Terms and Conditions, See Your Local Installer or Contact the Manufacturer for a Copy.**

Before proceeding with installation, refer to installation instructions packaged with each model, as well as complying with all Federal, State, Provincial, and Local codes, regulations, and practices.

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