

**CNPHP, CNRHP
Evaporator Coil
N Coil – Cased Horizontal**



Product Data

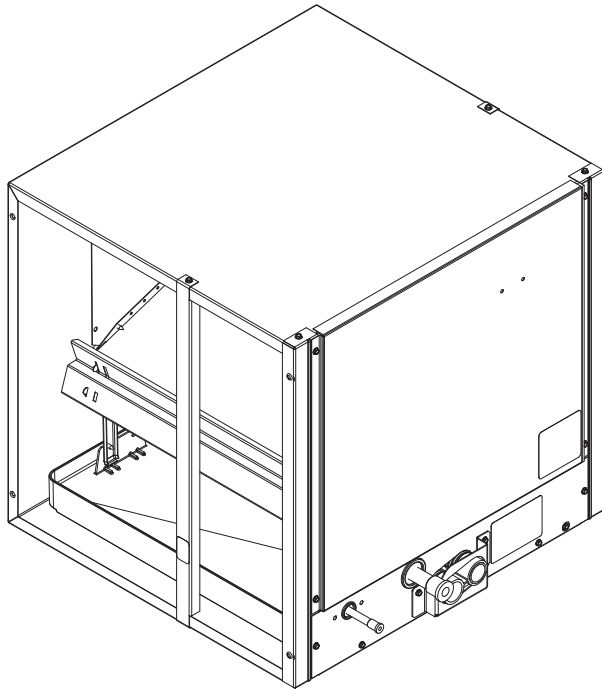


Fig. 1 – CNPHP / CNRHP

A06005

This horizontal design N-coil is an evaporator coil designed to provide the highest standards of reliability and durability. The coils are available for use in Puron®, the environmentally friendly refrigerant, and R-22 systems.

Both designs have a painted case (taupe metallic) and come with factory-installed thermostatic expansion valves (TXV). The coils are offered in different cabinet configurations for use in multiple installation applications. Easy maintenance is provided as the coil slides out of the cabinet after removing the access door and service panel. The coils are available in sizes 024 through 061 (2 to 5 tons).

Tin Plated Copper Coils

“T” models are built with special hairpins, tin plated to resist both general pitting corrosion and excessive indoor Formicary Corrosion. (Formicary Corrosion is an industry phenomenon.)

Aluminum Coils

“L” models are built with aluminum hairpins, designed to resist both general pitting corrosion and excessive indoor-Formicary Corrosion. (Formicary Corrosion is an industry phenomenon.)

DESIGN FEATURES

Water Management

These coil designs do an excellent job of water management. The coils are designed to avoid water blow-off into the ducts by directing condensate away from the fins and into the drain pan. The coil drain pan design provides improved condensate removal into the drain. This improves indoor air quality.

Durable Condensate Pan

Each coil is equipped with a corrosion-resistant condensate drain pan. The condensate drain pan is designed with a slope to help ensure proper drainage, improved moisture removal, and home comfort.

Compact Design

The unique design is great for all those horizontal applications. They are designed for either horizontal-right or horizontal-left furnace fit up. The coil is ideally suited for either attic or crawl space installation.

Brass Inserts

Every condensate pan features two 3/4-in. female threaded brass insert connections. The unique brass inserts provide for a leak-free condensate line connection to prevent water damage.

Refrigerant Connections

The coils are provided with proven sweat connections for leak-free operation maintaining system reliability.

Burst Pressures

These coils meet or exceed burst pressure of 2100 psi which is at least three to five times the pressure they will see in actual application.

Thermostatic Expansion Valves (TXV)

All the Carrier coils have refrigerant-specific factory-installed TXVs.

Teflon Ring

The ring, installed inside the liquid line connection at the TXV is the best option for preventing refrigerant leaks and future service calls. Teflon works with both Puron® and R-22 refrigerants.

Table 1 – Model Number Nomenclature

1	2	3	4	5	6	7	8	9	10	11	12
C	N	P	H	P	2	4	1	7	A	C	A

Product

C = Coil

Type

N = N Coil

Refrigerant Type

P = Puron[®] Refrigerant TXV

R = R-22 TXV

Coil Configuration

H = Horizontal

Cabinet Finish

P = Painted

Variations

A = Basic

Tubing Design

C = Copper

L = Aluminum

T = Tin-Plated Copper

Revision Level

A = 1st

Cabinet Width

17 = 17-in / 432mm

21 = 21-in / 533mm

24 = 24-in / 610mm

Unit Capacity

24 = 2 Ton

43 = 3 1/2 Ton

30 = 2 1/2 Ton

48 = 4 Ton

31 = 2 1/2 Ton

60 = 5 Ton

36 = 3 Ton

61 = 5 Ton

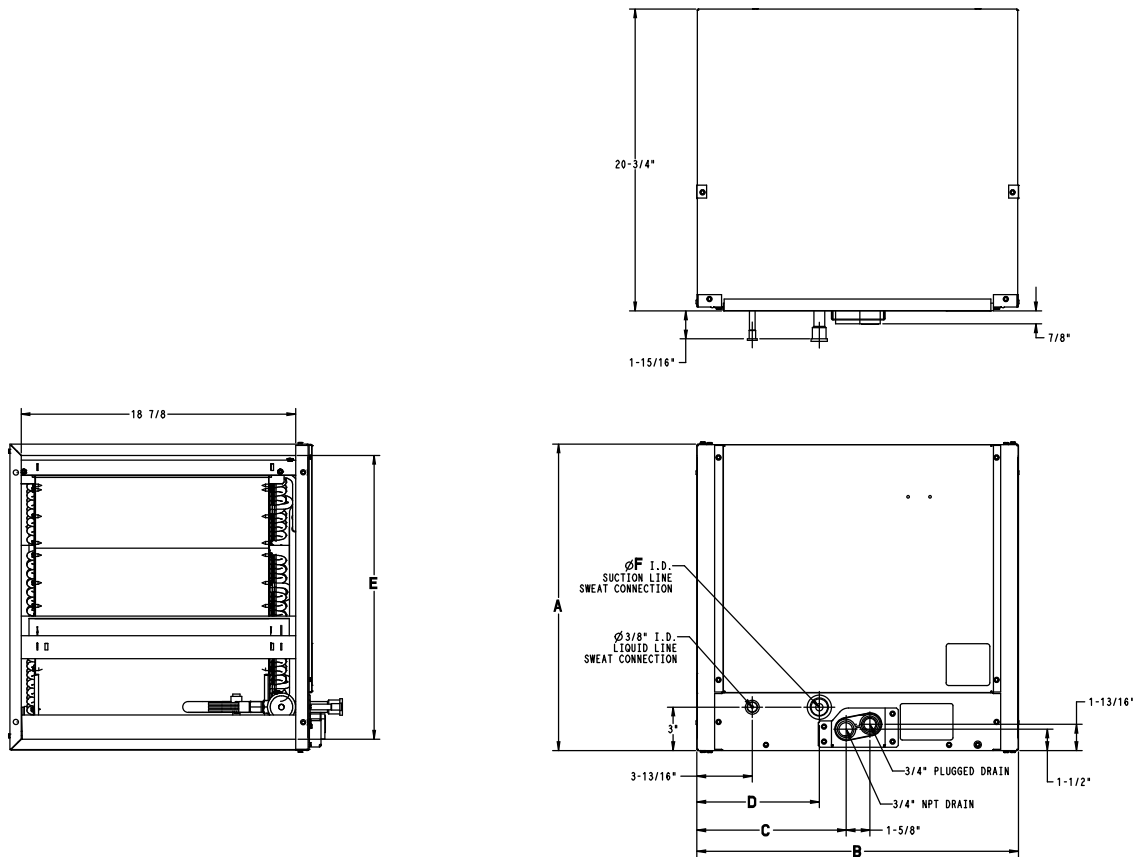
42 = 3 1/2 Ton



Use of the AHRI Certified™ Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahridirectory.org.



DIMENSIONS



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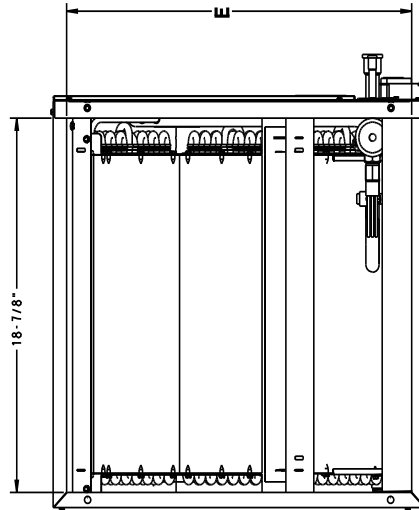
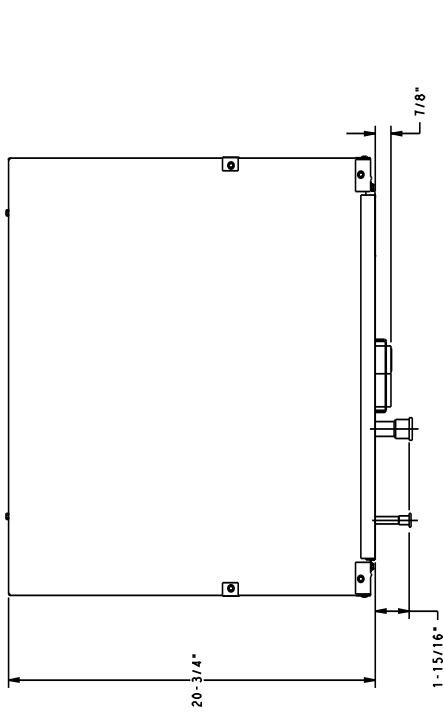
Table 2 – Dimensions

CN(P,R)HP	SERIES	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	SHIPPING WT. LBS. (KG)	
								Non-Coated Hairpins (C)	Tin-Coated Hairpins (T)
2417A(C,T)A	A	17-1/2 (445)	19 (483)	10-3/4 (273)	9-5/16 (237)	16 (406)	5/8 (16)	39.5 (18)	41.5 (19)
3017A(C,T)A	A	17-1/2 (445)	22-1/16 (560)	10-5/16 (262)	8-7/16 (214)	16 (406)	3/4 (19)	50.0 (23)	53.0 (24)
3617A(C,T)A	A	17-1/2 (445)	22-1/16 (560)	10-5/16 (262)	8-7/16 (214)	16 (406)	3/4 (19)	49.5 (22)	52.5 (24)
4221A(C,T)A	A	21 (533)	22-1/16 (560)	10-5/16 (262)	8-7/16 (214)	19-1/2 (495)	7/8 (22)	59.0 (27)	62.0 (28)
4821A(C,T)A	A	21 (533)	28-1/16 (713)	13-3/16 (335)	8-7/16 (214)	19-1/2 (495)	7/8 (22)	71.0 (32)	73.5 (33)
6024A(C,T)A	A	24-1/2 (622)	29 (737)	14-1/8 (359)	9-5/16 (237)	23 (584)	7/8 (22)	81.0 (37)	84.0 (38)
6124A(C,T)A	A	24-1/2 (622)	29 (737)	14-1/8 (359)	9-5/16 (237)	23 (584)	7/8 (22)	88 (194)	91 (201)

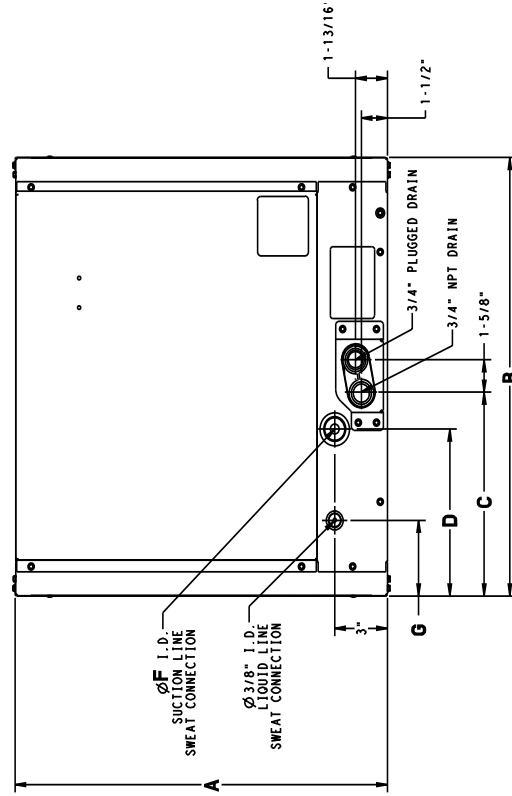
CNPHP	SERIES	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	SHIPPING WT. LBS. (KG)	
								Non-Coated Hairpins (C)	Tin-Coated Hairpins (T)
3117A(C,T)A	B	17-9/16 (446)	27-1/2 (699)	12-7/16 (316)	7-13/16 (198)	16 (406)	3/4 (19)	44.1 (20)	50.7 (23)
4321A(C,T)A	B	21-1/16 (535)	30-1/8 (765)	21-1/16 (386)	10-1/2 (267)	19-1/2 (495)	7/8 (22)	59.1 (26.8)	61.7 (28)

DIMENSIONS (cont.)

UNIT	SERIES	A	B	C	D	E	F	G	SHIPPING WT (lbs)
CNPHP2417ALA	A	17 1/2"	19"	10 3/4"	9 5/16"	16"	5/8"	3 13/16"	39.5
CNPHP3017ALA	A	17 1/2"	22 1/16"	10 5/16"	8 7/16"	16"	3/4"	3 13/16"	50.0
CNPHP3117ALA	A	17 9/16"	21 1/2"	12 7/16"	7 13/16"	16"	3/4"	3 3/16"	44.1
CNPHP3617ALA	A	17 1/2"	22 1/16"	10 5/16"	8 7/16"	16"	3/4"	3 13/16"	49.5
CNPHP4221ALA	A	21"	22 1/16"	10 5/16"	8 7/16"	19 1/2"	7/8"	3 13/16"	59.0
CNPHP4321ALA	A	21 1/16"	30 1/8"	15 3/16"	10 1/2"	19 1/2"	7/8"	5"	59.1
CNPHP4821ALA	A	21"	28 1/16"	13 3/16"	8 7/16"	19 1/2"	7/8"	3 13/16"	71.0
CNPHP6024ALA	A	24 1/2"	29"	14 1/8"	9 5/16"	23"	7/8"	3 13/16"	81.0
CNPHP6124ALA	A	24 9/16"	29 1/16"	14 1/16"	9 5/16"	23"	7/8"	3 7/8"	88.0



DUCT OPENING
TYP. BOTH SIDES

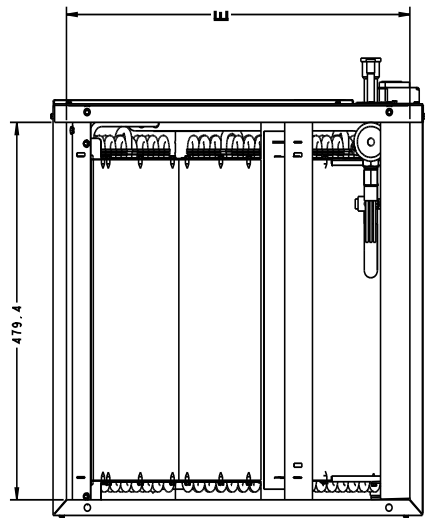
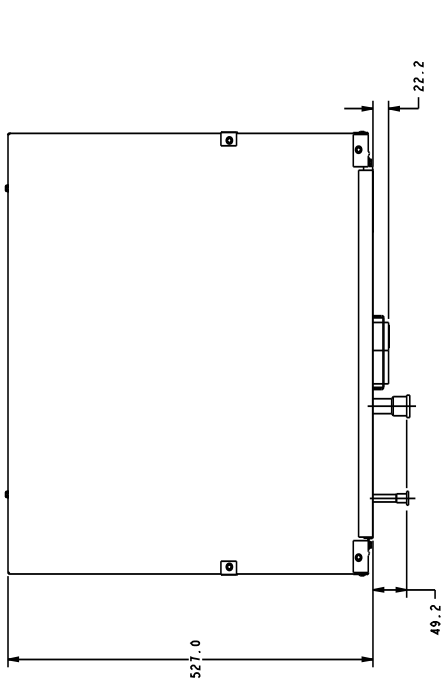


MEASUREMENT - ENGLISH

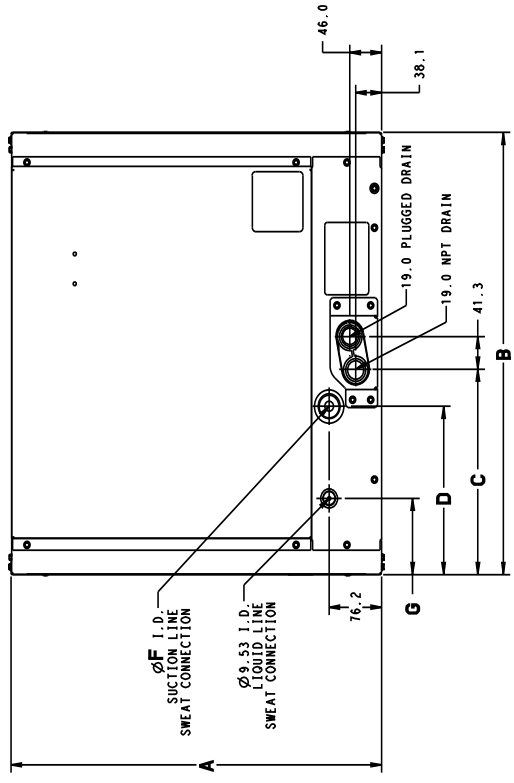
- NOTE:
- SERIES DESIGNATION IS THE 14TH POSITION OF UNIT MODEL NUMBER.
 - ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.

DIMENSIONS (cont.)

UNIT	SERIES	A	B	C	D	E	F	G	SHIPPING WT (kgs)
CNPHP2417ALA	A	444.5	482.6	273.0	236.6	406.4	15.88	96.8	17.9
CNPHP3017ALA	A	444.5	560.4	262.0	214.3	406.4	19.05	96.8	22.7
CNPHP3117ALA	A	445.5	698.6	316.3	198.2	406.5	19.05	81.2	20.0
CNPHP3617ALA	A	444.5	560.4	262.0	214.3	406.4	19.05	96.8	22.4
CNPHP4221ALA	A	533.4	560.4	262.0	214.3	495.3	22.23	96.8	26.8
CNPHP4321ALA	A	534.5	765.5	384.9	266.3	495.5	22.23	127.3	26.8
CNPHP4821ALA	A	533.4	712.8	335.0	214.3	495.3	22.23	96.8	32.2
CNPHP6024ALA	A	622.3	736.6	358.8	236.6	584.2	22.23	96.8	36.7
CNPHP6124ALA	A	623.5	737.7	357.1	236.8	584.3	22.23	97.8	39.9



DUCT OPENING
TYP. BOTH SIDES



MEASUREMENT- METRIC "SI"

- NOTE:
- SERIES DESIGNATION IS THE 14TH POSITION OF UNIT MODEL NUMBER.
 - ALL DIMENSIONS ARE IN "MM" UNLESS NOTED.

PERFORMANCE DATA (cont.)

Table 4 – Cooling Capacities (MBH) - Puron® Refrigerant

CNPH UNIT SIZE	INDOOR COIL AIR		SATURATED TEMPERATURE LEAVING EVAPORATOR _F (_C)														
			30 (-1)		35 (2)			40 (4)			45 (7)			50 (10)			
	CFM	EWB	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF
6024	1600	72(22)	103.20	50.40	0.00	94.40	45.90	0.00	84.80	41.10	0.00	74.10	36.30	0.00	62.40	31.20	0.02
		67(19)	86.40	52.10	0.02	77.50	47.20	0.02	67.80	42.30	0.02	57.10	37.20	0.03	45.40	32.10	0.03
		62(17)	71.20	53.30	0.03	62.20	48.30	0.03	52.40	43.30	0.03	42.30	38.30	0.03	33.50	33.50	0.07
	2000	72(22)	120.70	58.70	0.00	110.40	53.60	0.00	99.00	48.20	0.00	86.40	42.50	0.02	72.60	36.70	0.03
		67(19)	101.20	61.30	0.03	90.70	55.70	0.04	79.20	50.00	0.04	66.60	44.10	0.04	52.80	38.10	0.05
		62(17)	83.40	63.20	0.05	72.80	57.40	0.05	61.40	51.60	0.05	49.70	46.00	0.05	40.30	40.30	0.11
	2400	72(22)	135.60	65.80	0.00	124.10	60.30	0.00	111.20	54.40	0.01	97.00	48.00	0.04	81.30	41.50	0.05
		67(19)	113.90	69.30	0.05	102.10	63.20	0.06	89.10	56.90	0.06	74.80	50.30	0.06	59.20	43.60	0.06
		62(17)	94.10	72.10	0.06	82.10	65.70	0.06	69.30	59.30	0.06	56.40	53.00	0.07	46.50	46.50	0.14
6124	1600	72(22)	142.31	69.71	0.00	131.14	64.12	0.00	118.67	58.20	0.00	104.55	51.83	0.01	88.62	45.08	0.02
		67(19)	119.05	72.45	0.02	107.63	66.45	0.02	94.79	60.09	0.02	80.30	53.36	0.02	63.94	46.26	0.02
		62(17)	97.96	74.63	0.03	86.21	68.29	0.02	73.29	61.74	0.02	59.53	55.08	0.03	48.11	48.11	0.09
	2000	72(22)	164.20	80.16	0.00	151.58	74.13	0.00	137.25	67.52	0.02	121.04	60.38	0.03	102.61	52.74	0.03
		67(19)	137.68	84.38	0.04	124.66	77.75	0.04	109.89	70.63	0.04	93.13	63.00	0.04	74.14	54.89	0.04
		62(17)	113.54	87.89	0.04	100.05	80.79	0.04	85.34	73.48	0.04	69.79	65.96	0.05	57.86	57.86	0.12
	2400	72(22)	182.47	89.12	0.00	168.62	82.68	0.02	152.91	75.56	0.04	134.97	67.83	0.04	114.48	59.50	0.05
		67(19)	153.40	94.82	0.05	139.05	87.71	0.05	122.70	80.00	0.05	104.07	71.67	0.06	82.87	62.74	0.06
		62(17)	126.74	99.73	0.06	111.87	92.08	0.06	95.76	84.19	0.06	78.98	76.01	0.07	66.58	66.58	0.16

Legend:

CFM - Cubic Ft. per Minute
SHC - Gross Sensible Capacity 1000 Btuh

EWB - Entering Wet Bulb
BF - Bypass Factor

LWB - Leaving Wet Bulb
MBH - 1000 Btuh

TC - Gross Cooling Capacity 1000 Btuh

NOTES:

- Contact manufacturer for cooling capacities at conditions other than shown in table.
- Formulas:
Leaving db = entering db - $\frac{\text{sensible heat cap.}}{1.09 \times \text{CFM}}$

Leaving wb = wb corresponding to enthalpy of air leaving coil (hLWB)

 $h_{LWB} = h_{EWB} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{CFM}}$
Where h_{EWB} = enthalpy of air entering coil
- SHC is based on 80°F (27°C) db temperature of air entering the evaporator coil.
Below 80°F (27°C) db, subtract (Correction Factor x CFM) from SHC.
Above 80°F (27°C) db, add (Correction Factor x CFM) to SHC.
- Direct interpolation is permissible. Do not extrapolate.
- Fan motor heat has not been deducted.
- All data points are based on 10°F (-12°C) superheat leaving coil and use of thermostatic expansion valve (TXV) device.
- All units have sweat suction-tube connection and a liquid-tube connection. For 1-1/8-in. system suction tube, 3/4 x 1-1/8-in. suction tube connection adapter is available as accessory.
- The CNPHP coils can be used in any properly designed system using Puron® refrigerant.
- The CNRHP coils can be used in any properly designed system using R-22 refrigerant.
- Before using maximum cfm shown in table, check coil static pressure drop to ensure system blower can provide necessary static pressure needed for coil and duct systems.
- Bypass Factor = 0 indicates no psychometric solution. Use bypass factor of next lower EWB for approximation.

BYPASS FACTOR	ENTERING AIR DRY BULB TEMPERATURE °F (°C)					
	79 (26)	78 (26)	77 (25)	76 (24)	75 (24)	Under 75 (24)
	81 (27)	82 (28)	83 (28)	84 (29)	84 (29)	Above 85 (29)
Correction Factor						
0.10	0.98	1.96	2.94	3.92	4.91	Use formula shown below
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	

Interpolation is permissible.
Correction Factor = $1.09 \times (1 - \text{BF}) \times (\text{db} - 80)$

PERFORMANCE DATA (cont.)

Table 6 – Coil Static Pressure Drop (in. w.c.) Puron® and R-22 Refrigerants

UNIT SIZE	Standard CFM																		
	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
2417	Dry																		
	0.048	0.068	0.090	0.112	0.140	0.170	0.203												
	Wet																		
	0.064	0.091	0.122	0.150	0.188	0.224	0.263												
3017	Dry																		
	0.042	0.060	0.080	0.102	0.128	0.157	0.188	0.222	0.259										
	Wet																		
	0.055	0.076	0.104	0.127	0.158	0.190	0.225	0.266	0.309										
3117	Dry																		
	0.031	0.046	0.063	0.083	0.105	0.130	0.156	0.193	0.230										
	Wet																		
	0.039	0.056	0.075	0.097	0.121	0.149	0.179	0.212	0.249										
3617	Dry																		
	0.043	0.061	0.082	0.103	0.128	0.157	0.189	0.221	0.259	0.299	0.341								
	Wet																		
	0.056	0.079	0.107	0.133	0.166	0.200	0.236	0.276	0.315	0.361	0.413								
4221	Dry																		
	0.030	0.041	0.054	0.066	0.082	0.099	0.118	0.137	0.158	0.180	0.205	0.231	0.259						
	Wet																		
	0.043	0.059	0.078	0.101	0.126	0.153	0.181	0.207	0.234	0.260	0.288	0.319	0.354						
4321	Dry																		
			0.040	0.052	0.066	0.081	0.098	0.117	0.137	0.156	0.183	0.205	0.233						
	Wet																		
			0.049	0.062	0.079	0.096	0.114	0.138	0.162	0.189	0.216	0.239	0.27						
4821	Dry																		
			0.047	0.060	0.075	0.092	0.110	0.130	0.152	0.176	0.204	0.230	0.256	0.284	0.318				
	Wet																		
			0.053	0.067	0.085	0.104	0.125	0.147	0.172	0.200	0.228	0.259	0.292	0.327	0.365				
6024	Dry																		
					0.062	0.073	0.084	0.097	0.111	0.126	0.138	0.154	0.172	0.190	0.210	0.228	0.251	0.273	0.293
	Wet																		
					0.082	0.096	0.112	0.129	0.145	0.163	0.171	0.191	0.212	0.235	0.258	0.283	0.310	0.336	0.366
6124	Dry																		
											0.196	0.216	0.238	0.259	0.286	0.312	0.336	0.363	0.390
	Wet																		
											0.208	0.233	0.259	0.281	0.307	0.339	0.368	0.400	0.431