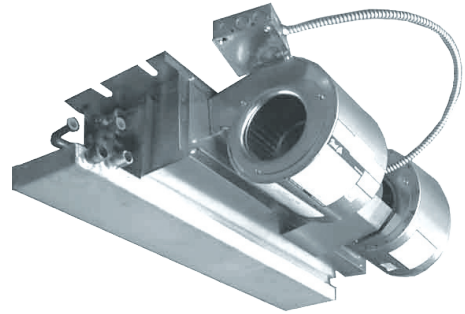




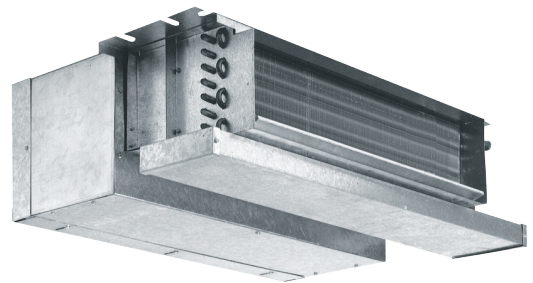
# HH Series PHH / RHH / CHH

*Horizontal Ceiling Fan Coil*

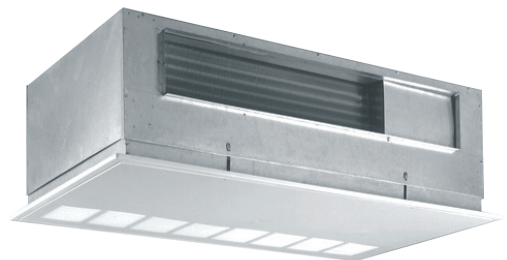
PSC Motor  
Chilled Water / Hot Water  
2-Pipe with Electric Heat  
300 - 1200 CFM



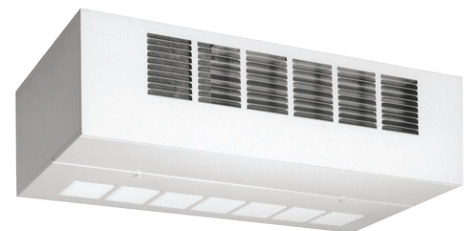
*Ceiling Concealed*



*Ceiling Concealed with Plenum*



*Ceiling Recessed*



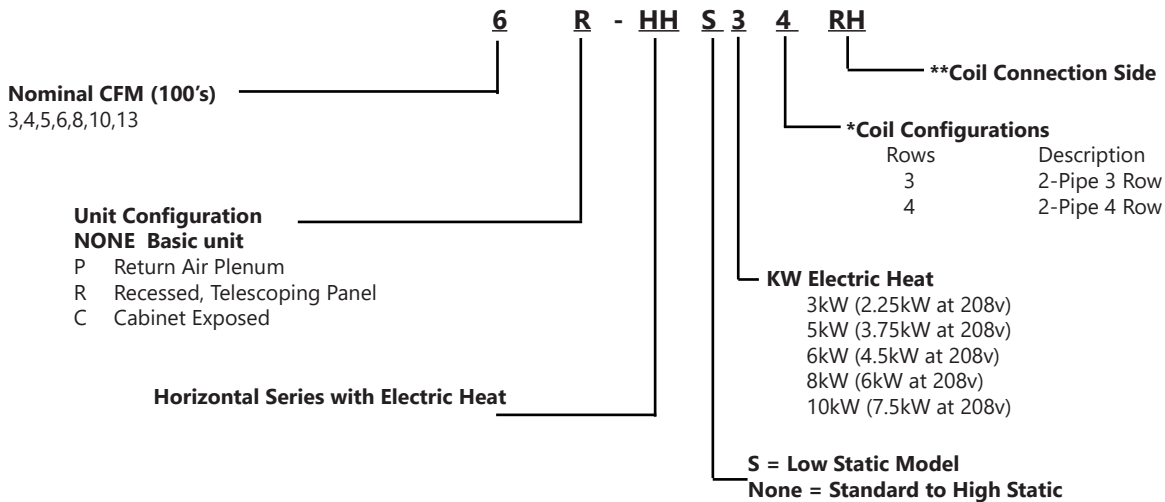
*Ceiling Exposed*



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## MODEL NOMENCLATURE



**Available Voltage (PSC Motors)**  
208-230V/1/60  
277V/1/60

**\*\*Coil Connection Side**  
RH Right Hand (default)  
LH Left Hand  
Hand connection is determined by looking with airflow

# STANDARD FEATURES

## Basic Unit

All fan coils are manufactured with heavy gauge galvanized steel to resist corrosion. All models are approved for installation with "0" clearance to combustible material.

## Insulation

Plenums and cabinets are insulated with Tuf-Skin dual density fiber glass blanket insulation with an anti-microbial agent.

## Ceiling Panels

Hinged access/return panels are manufactured with heavy gauge galvanized steel with captive mounting screws and an attractive white baked powder finish.

## Condensate Pans

Positive sloped drain pans are galvanized steel, coated on the inside surface with insulation. Pan includes both primary and secondary drain connections.

## Return Air Plenums

Return air plenums are manufactured from galvanized steel insulated with dual density fiber glass blanket insulation and a 1" TA fiber glass filter.

## Coils

Constructed with seamless copper tubes and headers. The tubes are mechanically expanded into corrugated aluminum fin material for a permanent primary to secondary surface bond. Coils are tested under water at 450 PSI for operation at 300 PSI. Coils include manual air vents.

## Fan Wheels-Housing

The fan wheels are double width, double inlet (DWDI) forward curved, centrifugal type. Wheels are statically and dynamically balanced for smooth, quiet operation. The housing is constructed from heavy gauge galvanized steel with die-formed inlet cones.

## Motors

Standard motors are PSC, permanently lubricated type with internal thermal overload protection.

## Options

Factory mounted options include ECM motors (HHX models), stainless steel drain pans, foil faced cabinet insulation, Multi-24 3-speed 24V control, valve packages, thermostats, aqua stats, service switches. 120V, 208V/230V, 277V, 60hz

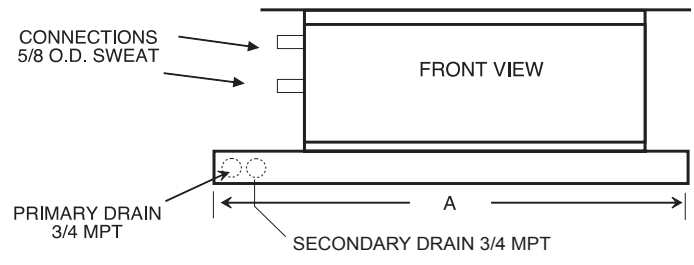
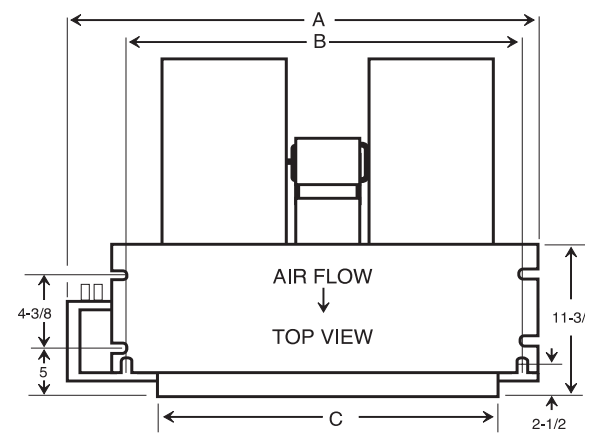
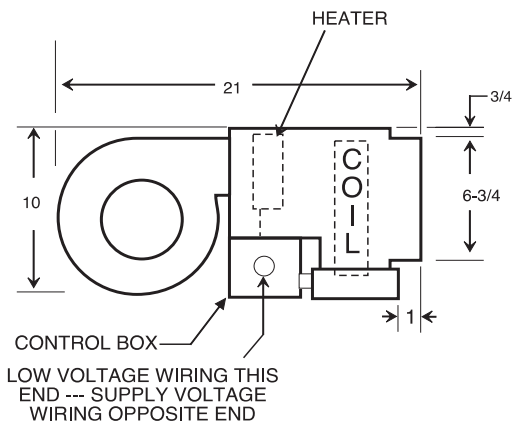


**MERV 8  
Louvered Access Panels**  
See page 29



# HH Series

## CEILING RECESSED



NOTE: RIGHT HAND MODEL SHOWN - LEFT HAND MODEL HAS DRAIN AND PIPING CONNECTIONS ON OPPOSITE SIDE OF FAN COIL.

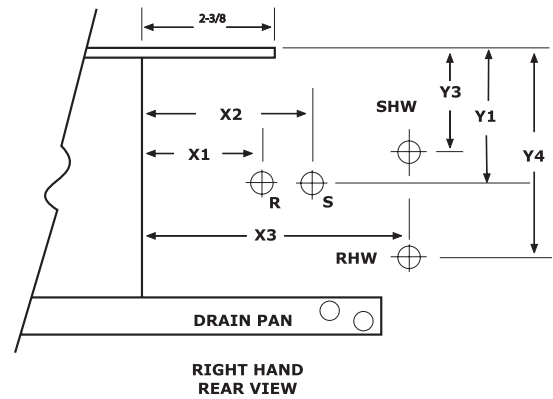
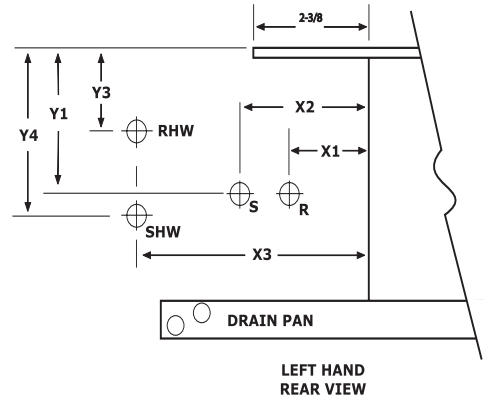
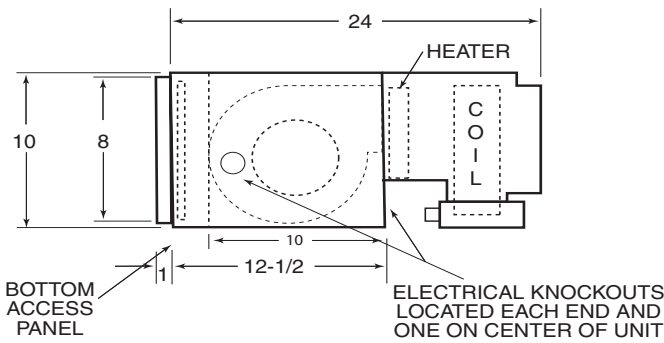
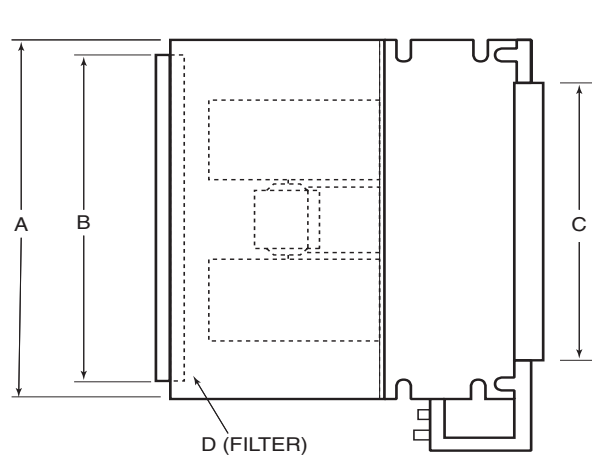
PHYSICAL DIMENSIONS (LESS PLENUM)					
MODEL	A	B	C	NUMBER OF MOTORS	NUMBER OF BLOWERS
3HHS	25	19-11/16	15	1	1
4HHS(X) 6HHS(X) 6HH(X) 8HH(X)	40	34-11/16	30	1	2
10HH(X)	46	40-11/16	36	1	2
12HH(X)	52	46-11/16	42	1	2



In keeping with its policy of continuous progress and product improvement, First Operations reserves the right to make changes without notice.

# PHH Series

## CEILING RECESSED



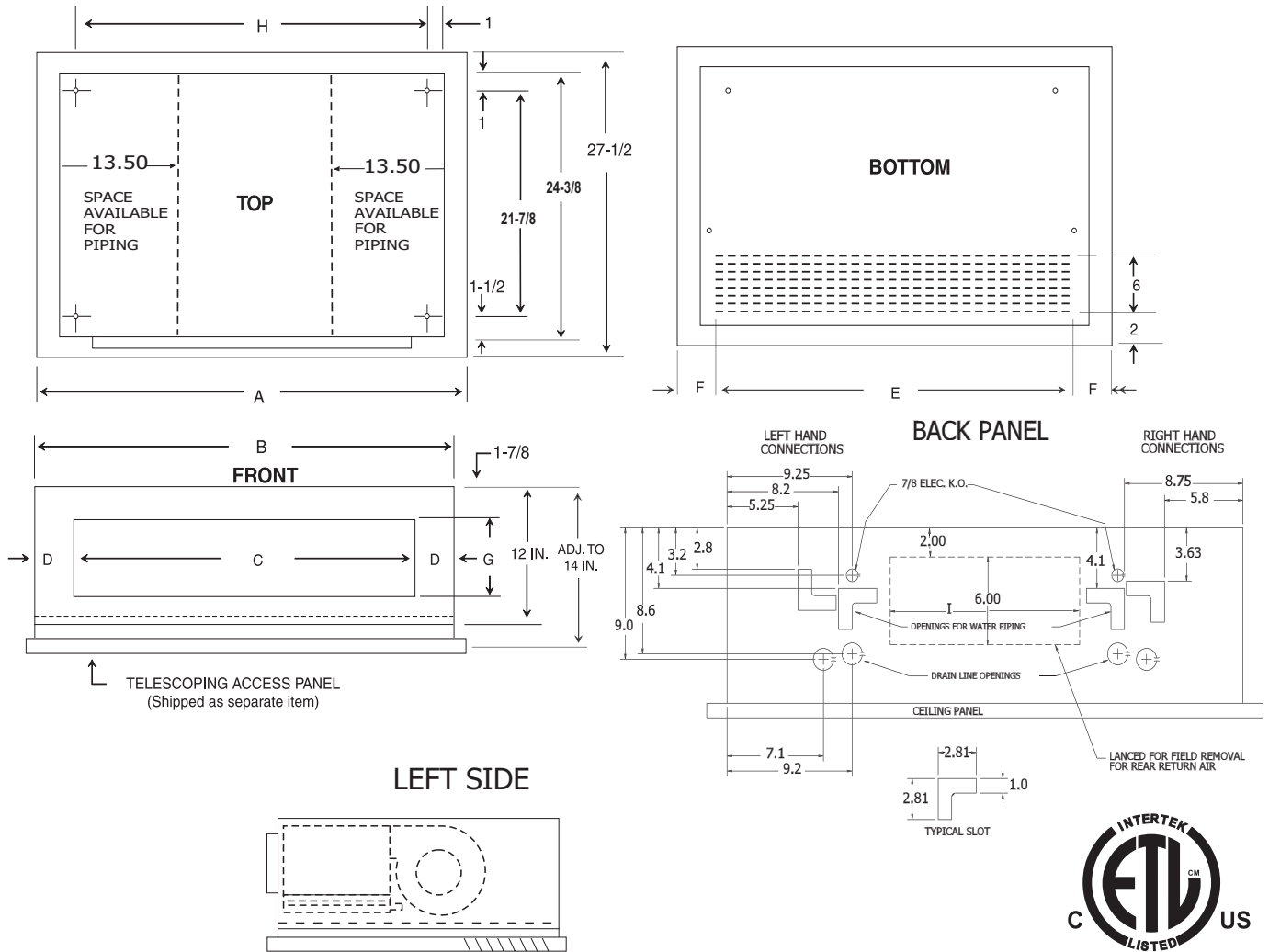
PLENUM DATA				
MODEL	A	B	C	D (FILTER)
3PHHS	20	18	15	10 X 20 X 1
4PHHS(X) 6PHHS(X) 6PHH(X) 8PHH(X)	34	32	30	10 X 34 X 1
10PHH(X)	40	38	36	10 X 40 X 1
12PHH(X)	46	44	42	10 X 46 X 1

- NOTE:** 1. Return plenums are insulated  
2. All plenums include throw away filter



# RHH Series

## CEILING RECESSED



**NOTES:**

- 1) ALL DIMENSIONS IN INCHES.
- 2) COIL CONNECTION TOLERANCE  $\pm 1/4"$ .
- 3) LEFT HAND UNIT SHOWN, RIGHT HAND MIRROR IMAGE. (HAND IS DETERMINED BY FACING THE BLOWER END)

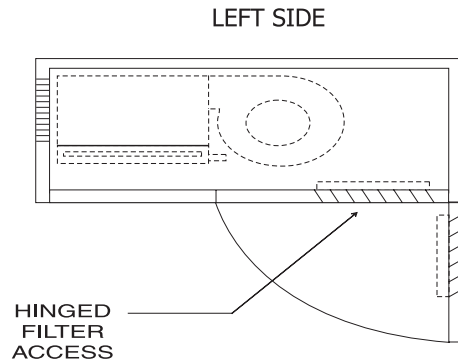
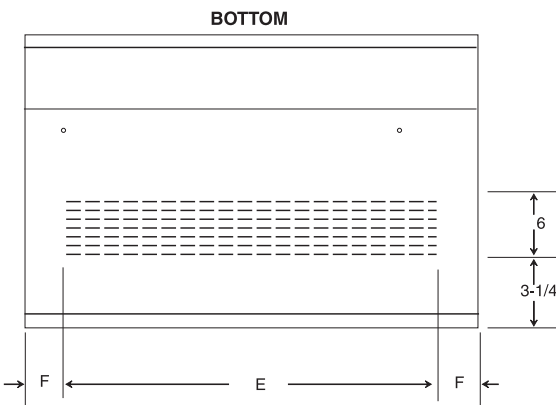
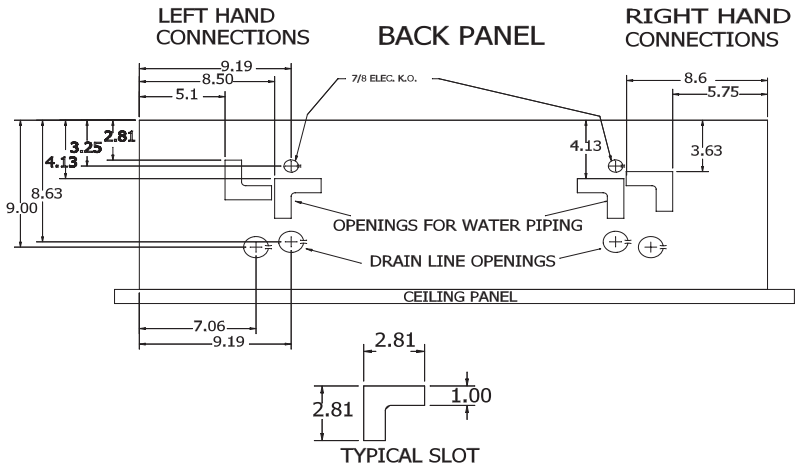
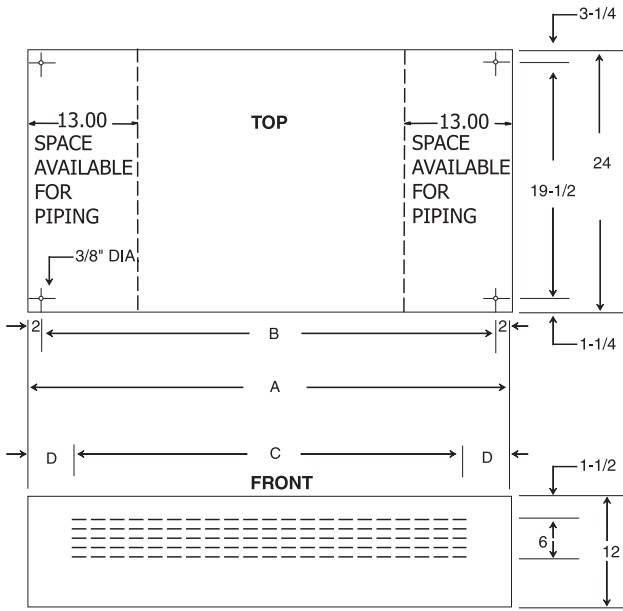
**NOTES:**

1. Telescoping panel allows the cabinet to be installed to within 2 inches of the ceiling line. The adjustable panel frame ensures a flush installation.
2. Louvered access panel (bottom return) is standard. Specify solid panel if ducted rear return air is required.

GENERAL DIMENSIONS												
MODEL	A	B	C	D	E	F	G	H	I	TELESCOPING LOUVERED ACCESS PANEL	TELESCOPING SOLID ACCESS PANEL	FILTER SIZE (INCL)
3RHHS	41	38-1/8	29	4-1/2	36-5/8	2-3/16	5-1/2	36	14	968-1	968-1S	10 X 37
4RHHS(X)	51	48-1/8	39	4-1/2	47-1/4	1-7/8	5-1/2	46	24	968-3	968-3S	10 X 47.5
6RHHS(X) 6RHH(X) 8RHH(X)	51	48-1/8	39	4-1/2	47-1/4	1-7/8	5-1/2	46	24	968-3	968-3S	10 X 47.5
10RHH(X)	57	54-1/8	45	4-1/2	52-1/2	2-1/4	5-1/2	52	30	968-4	968-4S	10 X 53
12RHH(X)	63	60-1/8	51	4-1/2	57-7/8	2-9/16	5-1/2	58	36	968-5	968-5S	10 X 59

# CHH Series

## CEILING EXPOSED



**NOTES:**

- 1) ALL DIMENSIONS IN INCHES.
- 2) COIL CONNECTION TOLERANCE  $\pm 1/4"$ .
- 3) LEFT HAND UNIT SHOWN, RIGHT HAND MIRROR IMAGE.  
(HAND IS DETERMINED BY FACING THE BLOWER END)

**NOTES:**

1. Side panels are removable for easier valve access.
2. Plastic thumb screws are provided for easy filter access.

GENERAL DIMENSIONS								
MODEL	A	B	C	D	E	F	FILTER SIZE (INCL)	CONNECTIONS PRIMARY O.D.
3CHHS(X)	33	29	21	6	25-1/2	3-1/2	10 X 30	5/8"
4CHHS(X)	48	44	37	5-1/2	41-1/2	3-1/2	10 X 46	
6CHHS(X) 6CHH(X)	48	44	37	5-1/2	41-1/2	3-1/2	10 X 46	
8CHH(X)	48	44	37	5-1/2	41-1/2	3-1/2	10 X 46	
10CHH(X)	54	50	42-1/2	5-3/4	46-1/2	3-1/2	10 X 53	
12CHH(X)	60	56	48	6	52	4	10 X 59	

# COOLING CAPACITIES

## Product Specifications

Horizontal Fan Coils  
2 Pipe

COOLING / HEATING CAPACITIES							
MODEL	COIL ROWS	NOM. CFM	GPM	P.D. (FT. WTR)	TOTAL (2) COOLING	SENSIBLE COOLING	WATER (3) HEATING CAPACITY
3HHS	3	270	1.0	1.4	6.1	5.1	18.9
			2.0	5.0	8.1	5.9	21.0
			3.0	10.5	8.9	6.2	21.8
4HHS	4	215	1.0	1.8	6.7	5.1	18.8
			2.0	6.3	8.4	5.7	20.5
			3.0	13.1	9.0	6.0	21.1
4HHS	3	410	1.5	4.2	11.1	8.6	32.2
			2.0	7.0	12.5	9.2	33.6
			2.5	10.5	13.5	9.5	34.5
4HHS	4	390	1.5	5.8	12.5	9.3	34.9
			2.0	9.7	14.1	9.9	36.4
			2.5	14.5	15.1	10.3	37.4
6HHS	3	535	3.0	5.7	15.3	11.3	41.1
			4.0	9.5	16.6	11.8	42.4
			5.0	14.2	17.5	12.1	43.3
6HHS	4	490	3.0	3.9	16.5	11.9	43.5
			4.0	6.5	18.0	12.5	45.0
			5.0	9.7	18.9	12.8	46.0
6HH	3	600	3.0	5.7	16.3	12.3	44.2
			4.0	9.5	17.7	12.8	45.7
			5.0	14.2	18.7	13.1	46.7
6HH	4	600	3.0	3.9	18.2	13.7	50.1
			4.0	6.5	20.1	14.4	52.0
			5.0	9.7	21.3	14.8	53.2
8HH	3	800	4.0	5.4	19.6	15.0	54.2
			5.0	8.0	21.1	15.6	55.8
			6.0	11.0	22.1	15.9	56.9
8HH	4	800	4.0	6.5	23.2	17.4	63.4
			5.0	9.6	24.9	18.0	65.3
			6.0	13.3	26.2	18.5	66.5
10HH	3	1000	4.0	5.5	22.9	18.1	65.5
			5.0	8.4	24.9	18.8	67.7
			6.0	11.7	26.3	19.3	69.2
10HH	4	1000	4.0	4.3	28.6	21.5	78.3
			5.0	6.5	30.3	22.1	80.2
			6.0	9.1	31.6	22.6	81.6
12HH	3	1200	6.0	7.9	28.6	22.0	79.4
			7.0	10.5	30.0	22.5	81.0
			8.0	13.3	31.2	23.0	82.3
12HH	4	1200	6.0	10.0	33.9	25.6	93.2
			7.0	13.1	35.6	26.2	95.1
			8.0	16.5	37.0	26.8	96.6

(1) Cooling at 80DB/67WB, 45°F EWT.

(2) Heating at 70DB/180°F EWT.



# COOLING CAPACITIES

## Product Specifications

Horizontal Fan Coils  
2 Pipe

AIR STANDARD APPROVED RATINGS								
MODEL	COIL	CFM	GPM	P.D. (FT.WTR.)	COOLING (1000 BTUH)		POWER INPUT (WATTS)	TYPE MOTOR
					TH	SH		
3HHS(*)-230-3	3 ROW	280	1.5	3.3	7.5	4.9	130	SP
4HHS(*)-230-3		410	2.6	12.0	12.9	8.9		PSC
4HHX(*)-230-3								ECM
6HHS(*)-230-3		590	3.1	7.0	15.4	10.5		PSC
6HH(*)-230-3		790	4.0	10.5	19.8	14.2		PSC
6HHX(*)-230-3								ECM
8HH(*)-230-3		950	4.2	6.5	21.2	16.3	320	PSC
8HHX(*)-230-3								ECM
10HH(*)-230-3			5.2	10.0	26.2	20.2	398	PSC
10HHX(*)-230-3								ECM
12HH(*)-230-3			6.4	9.2	32.1	24.9	490	PSC
12HHX(*)-230-3								ECM
3HHS(*)-230-4		4 ROW	220	1.7	5.0	8.5	5.1	120
4HHS(*)-230-4	400		3.2	24.0	15.8	9.8		PSC
4HHX(*)-230-4								ECM
6HHS(*)-230-4	550		3.3	6.0	16.5	11.0		PSC
6HH(*)-230-4	770		4.5	9.0	22.5	15.5		PSC
6HHX(*)-230-4								ECM
8HH(*)-230-4	920		5.0	10.0	24.9	17.5	310	PSC
8HHX(*)-230-4								ECM
10HH(*)-230-4			6.2	10.5	30.9	22.1	390	PSC
10HHX(*)-230-4								ECM
12HH(*)-230-4			8.4	18.4	42.2	30.7	485	PSC
12HHX(*)-230-4								ECM

**NOTE:**

Ratings based on high fan speed, standard air at dry coil operation, 10 °F water temp. rise, ent. air 80DB, 67WB entering water at 45°F.

Rated in accordance with ARI Standard 440.

SH - sensible heat  
 TH - total heat  
 Sp - shaded pole motor  
 PSC - perm. split capacitor  
 ECM - Electrically commutated motor  
 Power input is for motor only

# HH (PSC) Series

ELECTRICAL DATA (240V)										
UNIT MODEL	NOM. CFM	Heat				TOTAL AMPS (1)	MIN. CIR. AMPACITY (MCA)		MAX. OVERCURRENT PROTECTION (MOP)	
		kW @240v	BTUH@ 240v	kW @ 208V	BTUH @ 208V		208V	240V	208V	240V
3HHS-2	300	2	6,820	1.5	5,120	9.3	11	12	15	15
-3		3	10,230	2.3	7,680	13.5	15	17	15	20
-4		4	13,640	3.0	10,240	17.6	20	23	20	25
-5		5	17,050	3.8	12,800	21.8	24	28	25	30
4HHS-3	400	3	10,230	2.3	7,680	13.3	15	17	15	20
-5		5	17,050	3.8	12,800	21.6	24	27	25	30
-6		6	20,460	4.5	15,360	25.8	28	33	30	35
6HHS-3	600	3	10,230	2.3	7,680	13.8	16	18	20	20
-5		5	17,050	3.8	12,800	22.1	23	28	25	30
-6		6	20,460	4.5	15,360	26.3	30	34	30	35
6HH-3	600	3	10,230	2.3	7,680	14.5	16	20	20	20
-4		4	13,640	3.0	10,240	18.7	21	24	25	25
-5		5	17,050	3.8	12,800	22.8	25	30	25	30
-6		6	20,460	4.5	15,360	27	30	35	30	35
-8		8	27,280	6.0	20,480	35.3	39	47	40	50
-10		10	34,100	7.5	25,600	43.7	48	55	50	60
8HH-3	800	3	10,230	2.3	7,680	14.5	16	20	20	20
-4		4	13,640	3.0	10,240	18.7	24	21	25	25
-5		5	17,050	3.8	12,800	22.8	25	30	25	30
-6		6	20,460	4.5	15,360	27	30	35	30	35
-8		8	27,280	6.0	20,480	35.3	39	47	40	50
-10		10	34,100	7.5	25,600	43.7	48	55	50	60
10HH-3	1000	3	10,230	2.3	7,680	14.5	16	20	20	20
-4		4	13,640	3.0	10,240	18.7	21	24	25	25
-5		5	17,050	3.8	12,800	22.8	25	30	25	30
-6		6	20,460	4.5	15,360	27	30	35	30	35
-8		8	27,280	6.0	20,480	35.3	39	47	40	50
-10		10	34,100	7.5	25,600	43.7	48	55	50	60
12HH-3	1200	3	10,230	2.3	7,680	15.3	18	20	20	20
-5		5	17,050	3.8	12,800	23.6	27	30	30	30
-6		6	20,460	4.5	15,360	27.8	31	35	35	35
-8		8	27,280	6.0	20,480	36.1	40	46	40	50
-10		10	34,100	7.5	25,600	44.5	49	56	50	60

(1) Includes motor and heaters (at 240V)

# HH Series

ELECTRICAL DATA (277V)								
UNIT MODEL	NOM. CFM	Heat		MOTOR HP	MOTOR AMPS	TOTAL AMPS (1)	MIN. CIR. AMPACITY (MCA)	MAX. OVERCURRENT. PROTECTION (MOP)
		kW	BTUH				277V	277V
3HHS-1-277	300	1	3,410	1/20	0.48	4.1	6	15
-2-277		2	6,820		0.48	7.7	10	15
-3-277		3	10,230		0.48	11.3	15	15
4HHS-1-277	400	1	3,410	1/10	0.90	4.5	6	15
-2-277		2	6,820		0.90	8.1	11	15
-3-277		3	10,230		0.90	11.7	15	15
-4-277		4	13,640		0.90	15.3	20	20
4HHS-1-277	400	1	3,410	1/6	1.40	5.0	7	15
-2-277		2	6,820		1.40	8.6	11	15
-3-277		3	10,230		1.40	12.2	16	20
-4-277		4	13,640		1.40	15.8	20	20
6HHS-1-277	600	1	3,410	1/6	1.40	5.0	7	15
-2-277		2	6,820		1.40	8.6	11	15
-3-277		3	10,230		1.40	12.2	16	20
-4-277		4	13,640		1.40	15.8	20	20
6HH-1-277	600	1	3,410	1/2	3.60	7.2	10	15
-2-277		2	6,820		3.60	10.8	14	15
-3-277		3	10,230		3.60	14.4	19	20
-4-277		4	13,640		3.60	18.0	23	25
-5-277		5	17,050		3.60	21.7	28	30
-6-277		6	20,460		3.60	25.3	32	35
8HH-1-277	800	1	3,410	1/2	3.60	7.2	10	15
-2-277		2	6,820		3.60	10.8	14	15
-3-277		3	10,230		3.60	14.4	19	20
-4-277		4	13,640		3.60	18.0	23	25
-5-277		5	17,050		3.60	21.7	28	30
-6-277		6	20,460		3.60	25.3	32	35
-8-277	8	27,280	3.60	32.5	41	45		
10HH-2-277	1000	2	6,820	1/2	3.60	10.8	14	15
-3-277		3	10,230		3.60	14.4	19	20
-4-277		4	13,640		3.60	18.0	23	25
-5-277		5	17,050		3.60	21.7	28	30
-6-277		6	20,460		3.60	25.3	32	35
-8-277		8	27,280		3.60	32.5	41	45
-10-277	10	34,100	3.60	39.7	50	50		
12HH-2-277	1200	2	6,820	1/2	3.60	10.8	14	15
-3-277		3	10,230		3.60	14.4	19	20
-4-277		4	13,640		3.60	18.0	23	25
-5-277		5	17,050		3.60	21.7	28	30
-6-277		6	20,460		3.60	25.3	32	35
-8-277		8	27,280		3.60	32.5	41	45
-10-277	10	34,100	3.60	39.7	50	50		

# HHS 230 VOLT PSC

## BLOWER PERFORMANCE

HH SERIES		CFM vs EXTERNAL STATIC PRESSURE (3 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3HHS-3	1/30	COOL	300	270	235	205	---	---	---	---
		HEAT	265	230	210	200	---	---	---	---
4HHS-3	1/15	COOL	425	410	380	330	---	---	---	---
		HEAT	395	360	320	285	---	---	---	---
6HHS-3	1/12	COOL	605	535	485	425	---	---	---	---
		HEAT	500	390	320	270	---	---	---	---
6HH-3	1/8	COOL	---	---	805	770	735	700	665	625
		HEAT	---	---	700	970	640	610	580	550
8HH-3	1/4	COOL	---	---	895	860	825	795	760	725
		HEAT	---	---	775	750	720	690	655	625
10HH-3	1/4	COOL	---	---	1110	1075	1040	1000	955	915
		HEAT	---	---	715	695	670	645	620	600
12HH-3	1/3	COOL	---	---	1395	1345	1295	1245	1195	1145
		HEAT	---	---	950	920	890	855	820	775

HH SERIES		CFM vs EXTERNAL STATIC PRESSURE (4 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3HHS-4	1/30	COOL	255	215	200	175	---	---	---	---
		HEAT	230	200	175	150	---	---	---	---
4HHS-4	1/15	COOL	410	390	335	265	---	---	---	---
		HEAT	325	320	290	235	---	---	---	---
6HHS-4	1/12	COOL	535	490	435	365	---	---	---	---
		HEAT	350	335	320	290	---	---	---	---
6HH-4	1/8	COOL	---	---	740	705	675	640	605	565
		HEAT	---	---	650	625	600	570	535	495
8HH-4	1/4	COOL	---	---	810	780	750	715	680	645
		HEAT	---	---	730	700	670	640	610	580
10HH-4	1/4	COOL	---	---	1070	1030	995	960	930	895
		HEAT	---	---	775	750	725	700	670	640
12HH-4	1/3	COOL	---	---	1270	1215	1165	1115	1070	1025
		HEAT	---	---	950	915	880	850	820	790

# PHH / RHH / CHH 230 VOLT PSC

## BLOWER PERFORMANCE

PHH / RHH / CHH SERIES 230V										
PHH/RHH SERIES		CFM vs EXTERNAL STATIC PRESSURE (3 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3PHHS-3	1/30	COOL	270	255	215	180	150	105	---	---
		HEAT	250	215	185	160	130	80	---	---
4PHHS-3	1/15	COOL	430	395	350	295	239	---	---	---
		HEAT	340	320	295	255	202	---	---	---
6PHHS-3	1/12	COOL	570	490	415	335	245	140	---	---
		HEAT	290	285	270	230	175	60	---	---
6PHH-3	1/8	COOL	820	765	710	660	615	570	530	485
		HEAT	720	673	625	575	535	495	460	415
8PHH-3	1/4	COOL	---	---	860	830	800	770	740	710
		HEAT	---	---	555	540	525	505	490	470
10PHH-3	1/4	COOL	---	---	1050	1010	965	920	875	825
		HEAT	---	---	760	735	710	675	640	600
12PHH-3	1/3	COOL	---	---	1230	1205	1165	1115	1065	1005
		HEAT	---	---	910	870	835	805	765	720

PHH / RHH / CHH SERIES										
HH SERIES		CFM vs EXTERNAL STATIC PRESSURE (4 ROW)								
MODEL	H.P.	"FAN SPEED"	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3PHHS-4	1/30	COOL	225	195	165	130	90	55	---	---
		HEAT	210	175	145	115	80	45	---	---
4PHHS-4	1/15	COOL	420	375	315	243	170	50	---	---
		HEAT	330	305	265	208	150	50	---	---
6PHHS-4	1/12	COOL	500	450	395	320	245	245	---	---
		HEAT	325	320	300	245	190	100	---	---
6PHH-4	1/8	COOL	---	---	680	645	610	570	530	490
		HEAT	---	---	645	565	485	430	395	360
8PHH-4	1/4	COOL	---	---	740	690	645	605	560	515
		HEAT	---	---	650	610	570	530	490	445
10PHH-4	1/4	COOL	---	---	990	950	915	875	840	800
		HEAT	---	---	750	725	700	675	650	620
12PHH-4	1/3	COOL	---	---	1200	1150	1110	1065	1020	975
		HEAT	---	---	900	870	840	800	760	710

# PHH / RHH / CHH 208 VOLT PSC

## BLOWER PERFORMANCE

PHH / RHH / CHH SERIES 208V										
RHH SERIES		CFM vs EXTERNAL STATIC PRESSURE (3 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3RHHS-3	1/30	COOL	265	237	205	176	146	104	---	---
		HEAT	250	215	185	160	130	80	---	---
4RHHS-3	1/50	COOL	359	336	312	263	214	131	47	---
		HEAT	278	256	233	198	162	103	43	---
6RHHS-3	1/12	COOL	547	471	394	317	239	141	---	---
		HEAT	227	218	208	168	128	59	---	---
6RHH-3	1/8	COOL	779	726	673	633	592	545	498	448
		HEAT	640	592	544	510	475	435	394	348
8RHH-3	1/4	COOL	875	838	800	768	736	701	666	629
		HEAT	730	704	677	650	623	596	568	538
10RHH-3	1/4	COOL	1075	1034	993	952	911	875	839	786
		HEAT	702	679	656	631	606	579	552	511
12RHH-3	1/3	COOL	1304	1256	1208	1168	1127	1076	1025	971
		HEAT	851	813	774	738	702	671	640	605

RHH SERIES		CFM vs EXTERNAL STATIC PRESSURE (4 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3RHHS-4	1/30	COOL	220	180	162	125	93	58	---	---
		HEAT	198	170	141	109	80	43	---	---
4RHHS-4	1/50	COOL	360	319	278	214	149	48	---	---
		HEAT	---	---	224	166	108	34	---	---
6RHHS-4	1/12	COOL	489	434	379	347	249	149	48	---
		HEAT	227	210	157	84	157	---	---	---
6RHH-4	1/8	COOL	736	700	663	630	596	558	520	476
		HEAT	641	585	529	486	443	399	355	301
8RHH-4	1/4	COOL	834	779	723	684	645	600	555	502
		HEAT	710	659	607	568	529	491	453	408
10RHH-4	1/4	COOL	1025	991	956	922	887	847	807	770
		HEAT	687	664	640	619	597	579	561	537
12RHH-4	1/3	COOL	1284	1233	1182	1133	1084	1036	988	941
		HEAT	832	796	760	731	702	671	640	605

# RHH 277 VOLT PSC

## BLOWER PERFORMANCE

RHH SERIES		CFM vs EXTERNAL STATIC PRESSURE (3 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3RHHS-3	1/20	COOL	265	235	205	170	---	---	---	---
		HEAT	230	195	165	135	---	---	---	---
4RHHS-3	1/15	COOL	530	465	415	365	---	---	---	---
		HEAT	445	390	335	280	---	---	---	---
6RHHS-3	1/15	COOL	525	445	375	300	---	---	---	---
		HEAT	425	370	305	225	---	---	---	---
6RHH-3	1/12	COOL	---	---	565	515	470	420	375	---
		HEAT	---	---	445	400	360	---	---	---
8RHH-3	1/6	COOL	---	---	745	715	690	665	650	635
		HEAT	---	---	660	630	600	570	535	495
10RHH-3	1/4	COOL	---	---	990	950	910	870	830	795
		HEAT	---	---	870	830	795	765	730	700
12RHH-3	1/3	COOL	---	---	1305	1260	1220	1185	1145	1100
		HEAT	---	---	1180	1140	1105	1070	1030	990

RHH SERIES		CFM vs EXTERNAL STATIC PRESSURE (4 ROW)								
MODEL	H.P.	FAN SPEED	EXTERNAL STATIC PRESSURE (inches of water)							
			0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35
3RHHS-4	1/20	COOL	230	215	180	160	---	---	---	---
		HEAT	205	180	150	125	---	---	---	---
4RHHS-4	1/15	COOL	490	420	360	295	---	---	---	---
		HEAT	415	365	310	230	---	---	---	---
6RHHS-4	1/15	COOL	485	410	330	250	---	---	---	---
		HEAT	420	345	280	210	---	---	---	---
6RHH-4	1/12	COOL	---	---	560	525	490	455	415	370
		HEAT	---	---	480	445	415	380	350	---
8RHH-4	1/6	COOL	---	---	660	610	565	520	470	415
		HEAT	---	---	585	535	490	445	395	350
10RHH-4	1/4	COOL	---	---	925	890	860	830	795	765
		HEAT	---	---	820	790	765	740	710	680
12RHH-4	1/3	COOL	---	---	1190	1145	1105	1065	1030	995
		HEAT	---	---	1070	1030	995	960	920	885

# GUIDE SPECIFICATIONS

## Part 1 — General

### 1.01 SECTION INCLUDES

A. Fan Coil Units

### 1.02 REFERENCES

AMCA 99 – Standards Handbook

AMCA 210 -- Laboratory Methods for Testing Fans for Rating Purposes

AMCA 300 – Test Code for Sound Rating Air Moving Devices

ARI 440 – Room Fan-Coil Unit

ASTMB117 – Standard Practice for Operating Salt Spray Apparatus

NEMA MGI – Motors and Generators

NFPA 70 – National Electric Code

SMACNA – HVAC Duct Construction Standards – Metal and Flexible

UL 723 – Test for Surface Burning Characteristics of Building Materials

UL 900 – Test Performance of Air Filter Units

UL 1995 – Standard for Heating and Cooling Equipment

UL 94 – Test for Flammability of Plastic Materials for Parts in Devices and Appliances

### 1.03 SUBMITTALS

A. Shop drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements. A computer generated capacity selection shall be submitted for each cooling coil with design points and final operating point clearly noted.

B. Product Data:

1. Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, finishes of materials, and electrical characteristics and connection requirements.

2. Provide data of filter media, filter performance data.

3. Manufacturer's installation instructions.

### 1.04 OPERATION AND MAINTENANCE DATA

A. Maintenance Data: Include instructions for lubrication, filter replacement and motor and drive replacement.

### 1.05 QUALIFICATIONS

A. Maintenance Data: Include instructions for lubrication, filter replacement and motor and drive replacement.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site on factory-installed shipping skids. Inspect for damage.

B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

### 1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, and fan has been test run under observation.



# GUIDE SPECIFICATIONS (CONT.)

## Part 2 — Products

### 2.01 MANUFACTURERS

- A. The following manufacturers are approved for use. No substitutions will be permitted.  
First Company, Dallas TX

### 2.02 CASING

- A. Unit shall have corrosion resistant casing consisting of galvanized steel panels. Unit panels shall be fully insulated with 1.5lb fiberglass insulation with anti-microbial agent. Removable panels shall provide full access to unit components..
- B. Drain pans shall be heavy gauge galvanized steel with an insulating coating. Optional stainless steel drain pan shall include an insulating coating. Drain pans shall be removable for cleaning or replacement without removing coils or disturbing coil connections.

### 2.03 SUPPLY FAN

- A. Provide DWDI forward-curved supply fans. Fan assemblies shall be statically and dynamically balanced by manufacturer. The housings are constructed from heavy gauge galvanized steel with die-formed inlet cones.
- B. Fan and motor mounting platform shall be a minimum of 12 gauge LFQ galvanized steel.

### 2.04 MOTORS

- A. Direct drive motors to be PSC or ECM type, permanently lubricated type with internal thermal overload protection and mounted with rubber isolation bushings.

### 2.05 ELECTRICAL

- A. Provide units with 115, 208-230, or 277V, 3-speed with 24v control transformer, and 15 amp service switch or optional ECM motor with 120/24V control transformer, 15 amp service switch, 4 speed taps. Controls to be factory mounted and tested.

### 2.07 COOLING AND HEATING COIL SECTIONS

- A. Provide access to coils for service and cleaning..
- B. Water Coils: fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tube shall not be visible between fins. Coil tubes shall be seamless copper, expanded into fins, and brazed at joints. Coil connections shall be copper with sweat connection size to be determined by manufacturer based upon the most efficient coil circuiting. Manual air vent connections shall be provided at the highest point to assure proper venting. Coils shall be tested with 350 pounds air pressure and suitable for 300 psig working pressure. Coil casings shall be a formed channel frame of galvanized steel.

### 2.08 FILTERS

- A. Filter to be disposable type and media shall be UL 900 listed, Class I or Class II.
- B. MERV 8 can be used as an option, will increase static by 0.25

## Part 3 — Execution

### 3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.



# ACCESS PANELS /FILTER



*STANDARD PANEL OPTIONS FOR HH SERIES					*IAQ MERV 8 PANEL OPTIONS FOR HH SERIES				
PART #	UNIT SIZE	PANEL TYPE	FRAME DIMENSIONS	*FILTER SIZE	PART #	UNIT SIZE	PANEL TYPE	FRAME DIMENSIONS	*FILTER SIZE
965	3,4,5,6,8	LOUVERED	27-1/2 X 43	20X20X1 (1)	965-M8	3,4,5,6,8	LOUVERED	27-1/2 X 43	20X30X1 (1)
965-1		SOLID							
966	10	LOUVERED	27-1/2 X 49	20X20X1 (1)	966-M8	10	LOUVERED	27-1/2 X 49	20X20X1 (2)
966-1		SOLID							
967	12	LOUVERED	27-1/2 X 55-1/2	20X20X1 (1)	967-M8	12	LOUVERED	27-1/2 X 55-1/2	20X20X1 (2)
967-1		SOLID							

NOTE: \* Filters not included











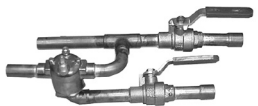

IAQ PANEL PERFORMANCE DATA (4) (Clean Filter)										
	CFM									
	500	600	700	800	900	1000	1100	1200	1300	1500
965-M8 with AF20301HV (20x030, Merv 8) Filters (2)	0.04	0.06	0.06	0.08	0.09	0.10	---	---	---	---
966-M8 with AF20201HV (20x020, Merv 8) Filters (2)	0.04	0.06	0.06	0.08	0.09	0.10	---	---	---	---
967-M8 with AF20201HV (20x020, Merv 8) Filters (2)	---	0.05	0.05	0.07	0.08	0.10	---	---	---	---
967-6-M8 with AF20251HV (20x025, Merv 8) Filters (2)	---	---	---	0.05	0.06	0.07	0.08	0.09	---	---
967-8-M8 with AF20301HV (20x30, Merv 8) Filters (2)	---	---	---	---	---	0.06	0.06	0.08	0.08	0.10

**NOTES:**

- (1) The above is the actual laboratory test data on these panels.
- (2) Glassfloss® Industries HV series Merv 8 filters were used to generate above data (**filters must be field supplied**)
- (3) Alternate Merv 8 filters would be acceptable provided they have equal or less resistance.
- (4) Refer to fan coil specification sheets for fan coil blower data.

# ACCESSORIES

## VALVE PACKAGES AND ACCESSORIES

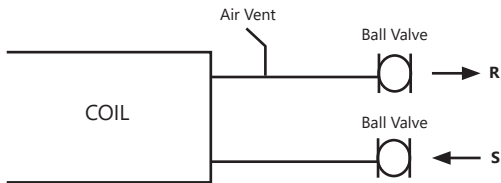
ACTUATOR		 <p>2-Way Valve and Actuator</p>	ACTUATOR MATERIALS							
2-POSITION (ON-OFF) 50/60HZ			BASE	POLYCARBONATE		APPROVALS				
VOLTAGE	PART #		COVER	POLYCARBONATE		ETL Cul CE				
24V	E50131180		BASE PLATE	ALUMINUM						
120/1/60	E50132180		LEAD LENGTH	6" - (24V 18")						
230/1/60	E50138180		POWER REQUIREMENTS	6.5W, 7 VA						
277/1/60	E50137180		AMBIENT TEMPERATURE RANGE	32 TO 170 F						
		MICRO SWITCH	5 A, 250 V							
		HUMIDITY	95% NON-CONDENSING							
VALVE BODY MATERIALS			VALVE BODIES (2-POSITION)							
BODY	BRASS		E43XXXX 3-WAY		E42XXXX 2-WAY					
STEM	STAINLESS STEEL									
TWO O-RINGS SEALS	EPDM									
PADDLE	EPDM									
FLUID	WATER/GLYCOL									
MAXIMUM % OF GLYCOL	50%		VALVE PACKAGE ACCESSORIES							
TEMPERATURE RANGE	32 TO 230		Automatic Fixed Flow Control		Manual Adj. Flow Setter					
MAXIMUM STATIC PRESSURE	300 PSI		1/2"	3/4"	1/2"	3/4"				
SWEAT CONNECTION	1/2", 3/4", 1"		CP654XXXXX	CP655XXXXX		CP601	CP6011			
FLOW CHARACTERISTICS			PETE'S PLUG	Requires CP6025 CP61712						
Connection Size	Flow Coefficient	Maximum Close-Off Pressure AP	<b>Ball Valves (Sweat)</b>			<b>Y-Strainer (Sweat)</b>				
1/2"	1.0 Cv	75	Full Port (T-Handle)			1/2"	3/4"			
1/2"	2.5 Cv	50	1/2"	3/4"	1"	CP603	CP6031			
3/4"			CP-9	CP-90	CP-905					
1/2"	3.5 Cv	30								
3/4"										
1"	5 Cv	25						919-1 15"		
3/4"	7.5 Cv	20	919-1X1ss 15"							
1"			8 Cv	20	919-1EXT 19"					
STANDARD VALVE PACKAGE FACTORY MOUNTED 2-POSITION (ON-OFF)										
2-WAY 9VH*22BM WITH 2-BV'S				3-WAY 9VH*23BM WITH 2-BV'S						
T4071 5/8 T4072 7/8 Auto Changeover Requires Aguastat (2-pipe applications)				Strap-on Aquastat 5/8" O.D. Tubing 10 amps induction 60 amps locked rotor 25 amps resistive Temperature Changes at 95° F + 10° F Resets at 65° F + 5° F						

# PIPING PACKAGE OPTIONS

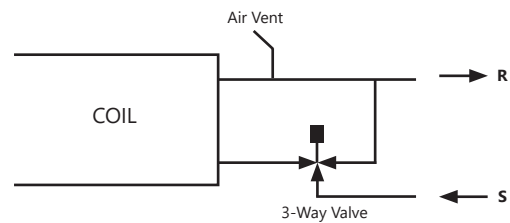
## TWO POSITION OR MODULATING

Manual air vents are standard and are factory mounted on all chilled water and hot water coils. All pre-piped on/off or modulating valve packages are factory assembled with sweat connections.

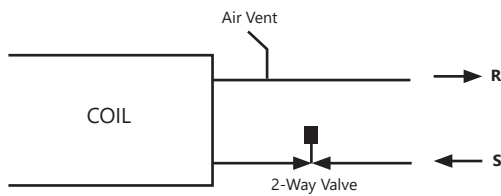
**Ball Valves only, No Control Valve**



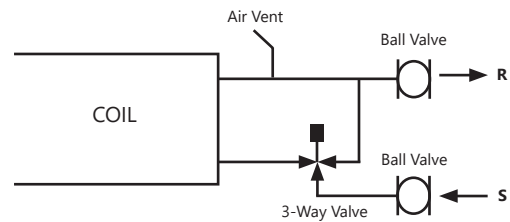
**3-Way Valve, No Ball Valves**



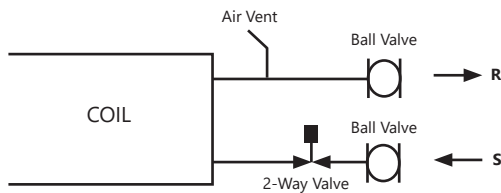
**2-Way Valve, No Ball Valves**



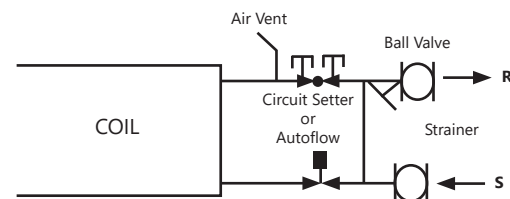
**3-Way Valve, with 2-Ball Valves**



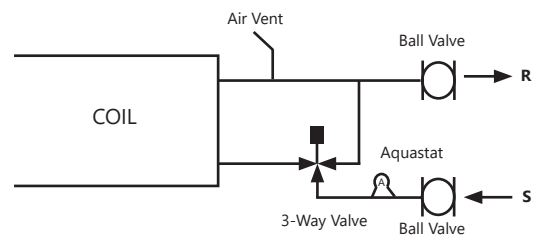
**2-Way Valve with 2-Ball Valves**



**3-Way Valve, with 2-Ball valve and Manual Circuit Setter or Automatic Flow Control, Y-Strainer, PT's**



**3-Way Valve with 2-Ball Valves and Aquastat**



### Add Options:

Y-Strainers, Pete's Plugs, Cleanout Blow-down, SS hose kits, Aquastats

Additional options and configurations may be available. Contact factory for availability.

Valve packages are available as kits or factory mounted on certain products. Contact factory for availability.



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