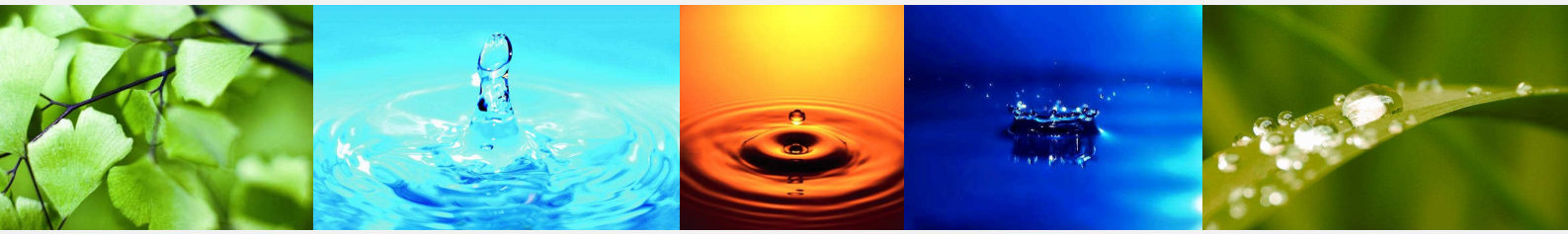
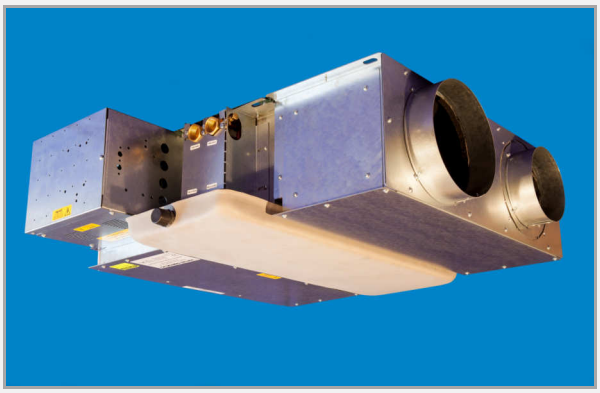
Series CRE





Horizontal Fan Coil Unit

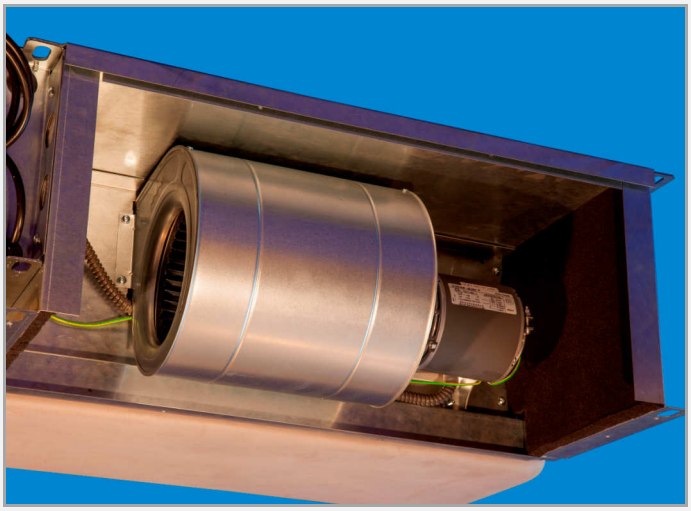
Chilled water cooling
LPHW and electric heating
Air volume flow rates up to 789l/s
External static pressures up to 70Pa

Dunham-Bush Series CRE is a high performance, low noise and high air volume fan coil unit. It is the ideal solution for cost effective treatment of commercial and industrial buildings without compromise on the high standards of engineering quality that are synonymous with Dunham-Bush.

They are concealed units for installation into ceiling voids and comprise a galvanised steel inlet plenum with inlet filter, fan/motor section, cooling coil, discharge spigots and optional electric heating. Series CRE is available in a range of 10 sizes.

Casing

Casings are fabricated in 1.0mm thick galvanised steel, riveted to provide a robust chassis, with removable panels for access. The casing includes a G2 polyester welded fibre filter on the inlet for treating return air from the ceiling void.



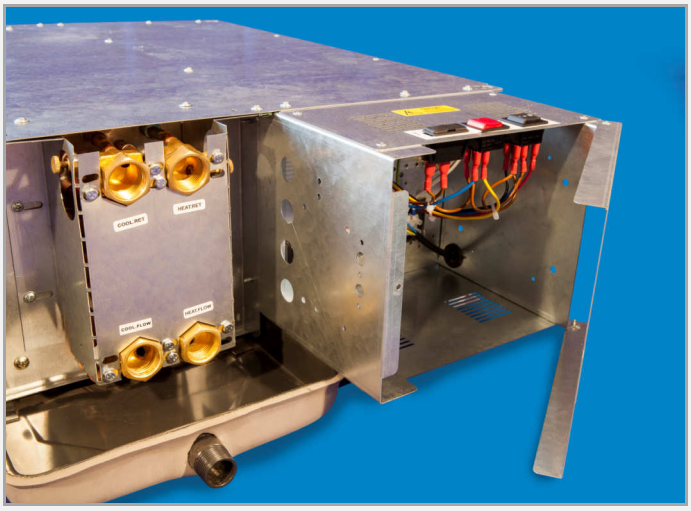
Forward curved centrifugal fans with EC motors

Fans

Fans comprise double width, double inlet forward curved centrifugal impellers which are shaft driven. Impellers are dynamically balanced to provide low noise, vibration free operation.

Motors

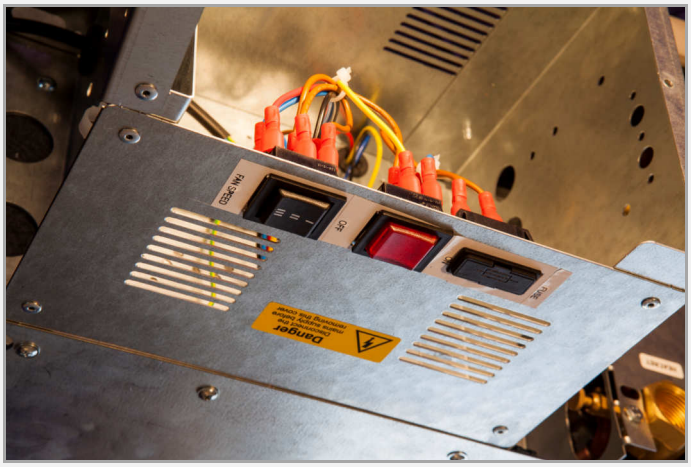
Fan impellers are driven by AC or EC motors, with built-in thermal overload protection. Motors are configured with three speeds (low, medium and high) and incorporate permanently lubricated, maintenance free bearings. Motors are connected to an external terminal block for supply connection and speed selection. Motors are rated for 220V, 230V and 240V mains supply voltage, with 50 and 60Hz options.



Dual purpose heating and cooling coil

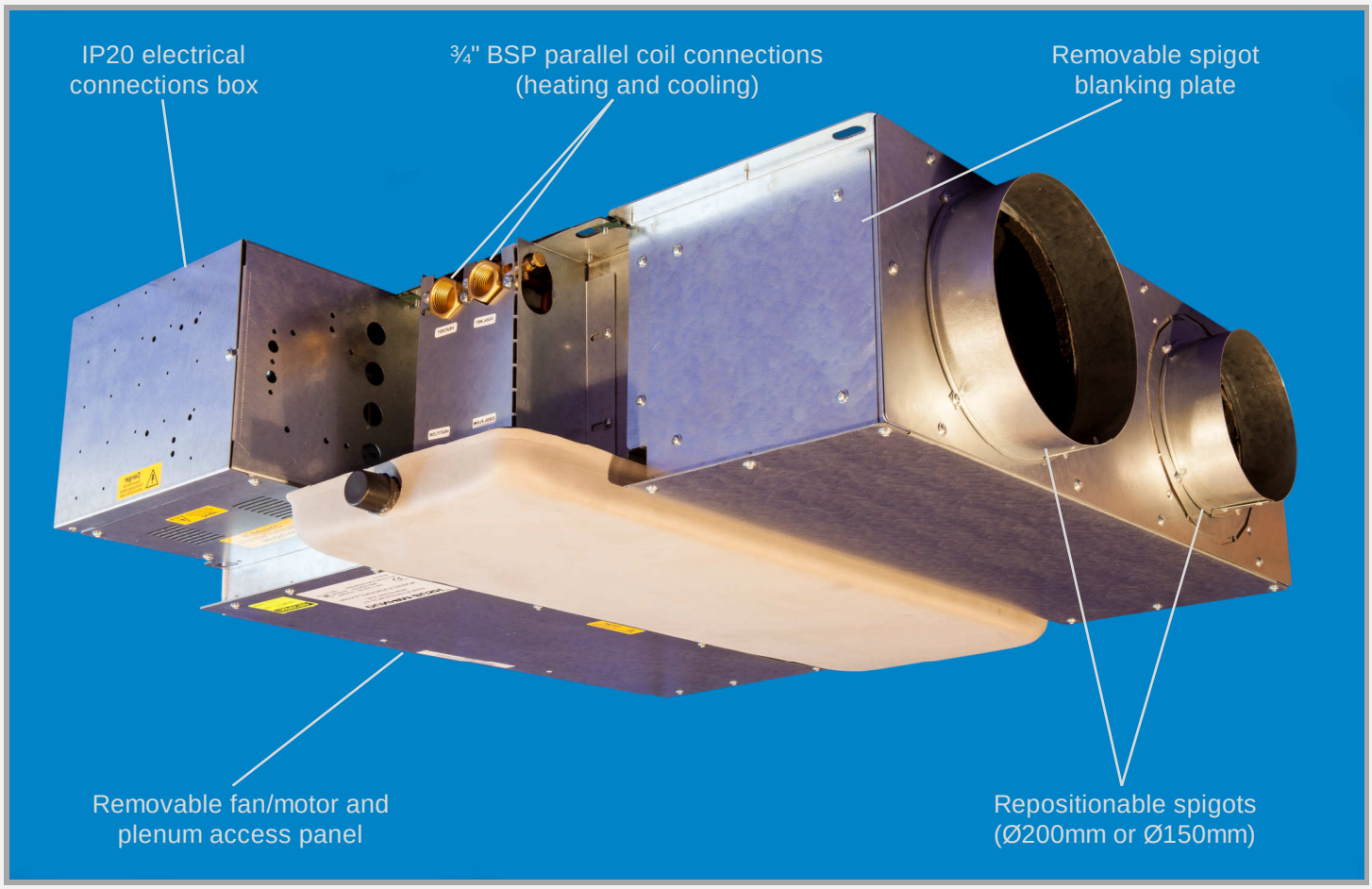
Coils

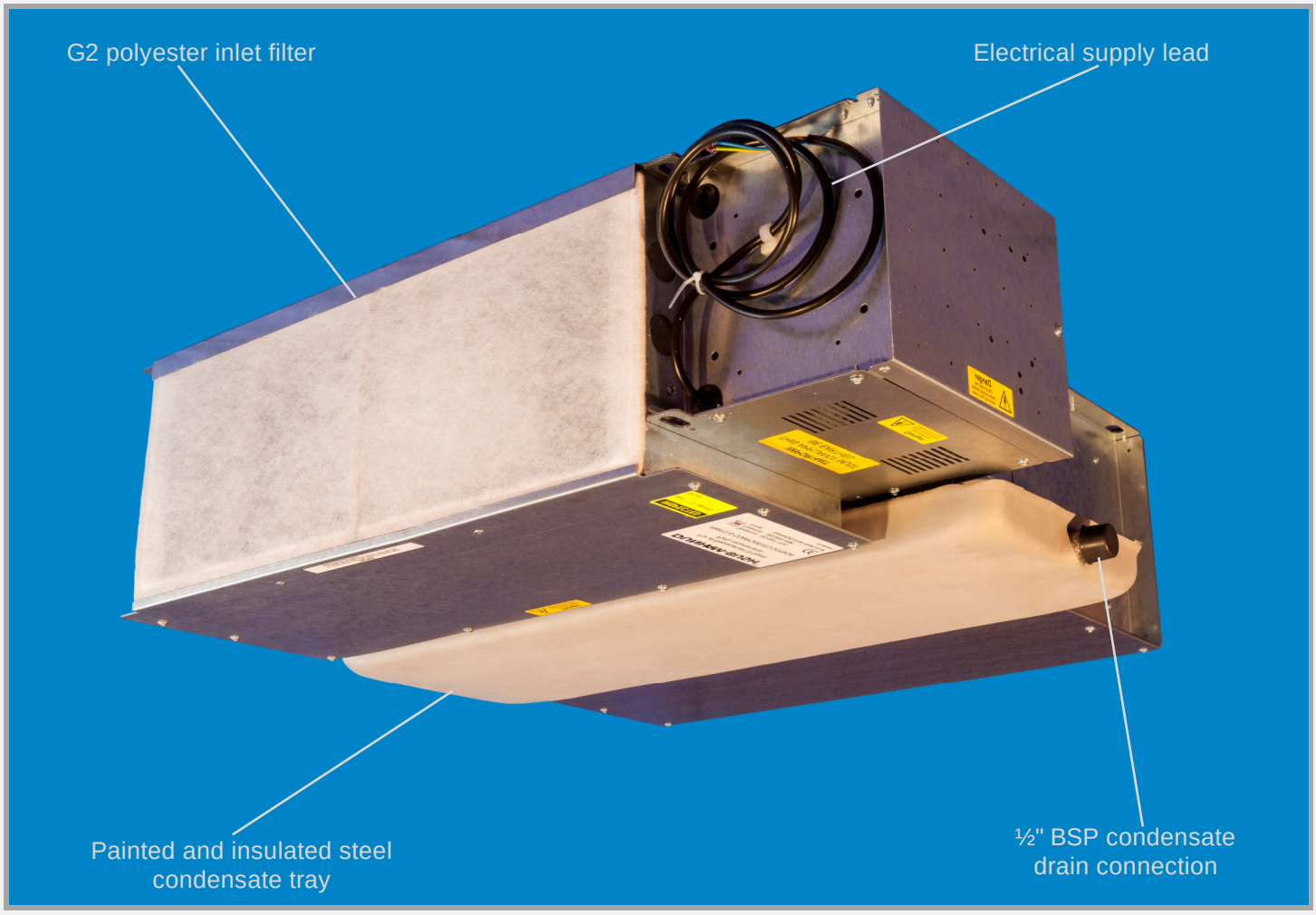
Series CRE is available with a 3 or 4 row cooling coil, comprising 3/8”OD copper tube in staggered rows which are mechanically expanded into die-formed corrugated aluminium fins, with brass 3/4” BSP parallel female connections The coil section incorporates a steel condensate tray which is powder coated with a gloss finish, and externally lined with PE insulation.



Controls box with fan speed commissioning switch

Features


IP20 electrical connections box
¾" BSP parallel coil connections (heating and cooling)
Removable spigot blanking plate
Removable fan/motor and plenum access panel
Repositionable spigots (Ø200mm or Ø150mm)


G2 polyester inlet filter
Electrical supply lead
Painted and insulated steel condensate tray
½" BSP condensate drain connection

Air Volume Flow Rates & Electrical Data

Airflow (l/s) - EC motor - G2 filter										Electrical Data @ 0Pa		
Size	Speed	External static resistance (Pa)								FLC (A)	Power (W)	SFP (W/l/s)
		0	10	20	30	40	50	60	70			
Fig 02	5	120	100	-	-	-	-	-	-	0.128	25.6	0.21
	6	138	119	102	-	-	-	-	-	0.154	32.0	0.23
	7	159	139	120	103	-	-	-	-	0.192	40.1	0.25
	8	173	157	141	126	112	-	-	-	0.228	51.0	0.29
	9	194	178	163	148	133	-	-	-	0.284	60.8	0.31
Fig 03	5	158	132	104	-	-	-	-	-	0.141	25.2	0.16
	6	182	157	133	105	-	-	-	-	0.174	37.3	0.20
	7	205	181	158	137	111	-	-	-	0.217	47.8	0.23
	8	224	206	187	170	150	121	-	-	0.276	61.0	0.27
	9	245	228	211	194	178	157	131	-	0.330	73.6	0.30
Fig 04	5	192	156	122	-	-	-	-	-	0.168	35.1	0.18
	6	220	188	156	124	-	-	-	-	0.211	45.1	0.21
	7	244	218	192	162	128	-	-	-	0.240	53.7	0.22
	8	270	246	222	198	174	142	-	-	0.302	66.8	0.25
	9	300	279	257	235	211	185	155	-	0.355	79.0	0.26
Fig 05	5	215	177	146	-	-	-	-	-	0.194	41.6	0.19
	6	247	216	184	149	-	-	-	-	0.245	53.7	0.22
	7	278	248	217	186	156	-	-	-	0.306	68.2	0.25
	8	313	287	262	234	201	172	-	-	0.396	89.7	0.29
	9	350	323	296	259	242	215	187	-	0.502	115.2	0.33
Fig 06	5	228	193	161	-	-	-	-	-	0.189	43.8	0.19
	6	268	233	202	171	-	-	-	-	0.248	57.2	0.21
	7	300	271	239	208	180	-	-	-	0.319	73.3	0.24
	8	336	306	279	255	234	208	-	-	0.411	94.4	0.28
	9	369	343	318	292	259	246	220	-	0.511	120.2	0.33
Fig 07	5	263	211	159	118	-	-	-	-	0.201	46.3	0.18
	6	304	255	217	178	-	-	-	-	0.273	62.1	0.20
	7	338	299	261	223	182	-	-	-	0.359	80.1	0.24
	8	384	349	314	278	243	202	161	-	0.501	114.6	0.30
	9	423	388	354	321	288	256	218	-	0.654	148.5	0.35
Fig 08	5	319	274	225	165	-	-	-	-	0.283	64.0	0.20
	6	375	332	287	238	-	-	-	-	0.380	85.6	0.23
	7	417	378	339	294	250	-	-	-	0.475	111.2	0.27
	8	470	435	401	363	321	278	230	-	0.638	145.7	0.31
	9	522	486	450	415	378	342	303	-	0.794	179.5	0.34
Fig 10	5	368	293	232	140	-	-	-	-	0.288	62.7	0.17
	6	422	357	293	233	-	-	-	-	0.380	83.2	0.20
	7	478	416	354	295	241	-	-	-	0.472	104.8	0.22
	8	538	480	422	370	325	271	218	-	0.652	140.5	0.26
	9	598	543	488	432	365	340	293	-	0.801	179.8	0.30
Fig 12	5	429	370	295	203	-	-	-	-	0.336	74.5	0.17
	6	499	441	380	306	221	-	-	-	0.452	101.7	0.20
	7	561	510	458	398	323	-	-	-	0.587	135.5	0.24
	8	635	586	537	487	430	362	294	-	0.803	184.0	0.29
	9	700	654	610	566	518	460	396	329	1.028	237.4	0.34
Fig 14	5	501	427	348	262	-	-	-	-	0.366	80.7	0.16
	6	574	503	435	362	290	-	-	-	0.488	111.0	0.19
	7	642	580	517	458	388	-	-	-	0.647	144.5	0.23
	8	717	664	615	558	490	423	355	-	0.871	197.6	0.28
	9	789	742	695	645	588	529	469	402	1.147	258.7	0.33

Table 1: Air volume flow rates and electrical data for EC motors with 230V/1ph/50Hz electrical supply and G2 inlet filter. Full load currents (FLC) and specific fan powers (SFP) based on 0Pa external static pressure drop

Acoustic Data

Size	Speed	NR Levels	Discharge radiated Lw (dB Ref 10-12W)						Inlet & case radiated Lw (dB Ref 10-12W)					
			125	250	500	1k	2k	4k	125	250	500	1k	2k	4k
Fig 02	5	NR30	33	32	26	20	20	20	41	44	45	39	32	24
	6	NR33	33	33	27	20	20	20	44	47	48	42	36	29
	7	NR34	35	34	27	20	20	20	47	50	49	45	39	33
	8	NR37	37	36	31	21	20	20	48	54	53	48	43	37
	9	NR39	37	38	32	25	20	20	52	55	55	50	45	40
Fig 03	5	NR29	35	37	24	20	20	20	41	44	45	42	35	26
	6	NR32	39	40	29	20	20	20	45	46	48	46	39	31
	7	NR34	42	42	33	20	20	20	47	49	50	48	42	34
	8	NR38	45	46	36	22	20	20	50	53	54	51	45	38
	9	NR40	47	47	38	24	20	20	51	54	56	53	48	41
Fig 04	5	NR31	42	41	29	20	20	20	41	44	46	42	36	28
	6	NR33	45	43	33	20	20	20	45	47	49	45	40	33
	7	NR36	45	45	36	21	20	20	47	50	51	48	43	37
	8	NR39	48	49	40	23	20	20	49	54	54	51	46	40
	9	NR40	50	50	41	25	20	20	52	54	55	53	49	43
Fig 05	5	NR32	41	41	30	20	20	20	44	46	48	43	36	29
	6	NR35	45	44	34	20	20	20	48	49	51	46	40	33
	7	NR38	47	47	37	20	20	20	51	54	54	49	44	37
	8	NR40	50	49	40	21	20	20	53	55	56	52	46	40
	9	NR41	53	51	42	25	20	20	55	57	58	54	49	43
Fig 06	5	NR32	42	42	30	20	20	20	46	47	48	42	36	27
	6	NR35	45	44	33	20	20	20	48	50	52	46	40	33
	7	NR38	46	47	35	22	20	20	51	53	54	49	44	37
	8	NR40	48	49	39	26	20	20	53	55	57	53	46	40
	9	NR41	51	51	41	27	21	20	55	57	58	54	49	43
Fig 07	5	NR33	44	42	32	20	20	20	46	49	49	43	38	30
	6	NR36	46	45	35	20	20	20	52	52	52	47	42	35
	7	NR38	47	47	37	23	20	20	52	55	54	50	45	39
	8	NR40	50	48	40	25	20	20	55	57	56	52	48	42
	9	NR42	52	51	42	28	22	20	57	59	58	55	50	45
Fig 08	5	NR33	42	42	33	22	20	20	47	48	49	47	40	31
	6	NR35	44	45	35	26	20	20	49	51	52	50	44	36
	7	NR38	47	49	39	28	22	20	51	55	54	53	47	39
	8	NR40	49	50	40	31	26	20	53	56	56	55	50	43
	9	NR42	51	52	43	34	28	21	56	58	58	58	52	46
Fig 10	5	NR32	43	42	33	20	20	20	47	48	48	46	39	31
	6	NR34	45	46	35	23	20	20	51	52	51	50	44	35
	7	NR38	48	49	40	29	22	20	52	55	55	52	46	39
	8	NR39	51	50	41	32	26	20	55	56	55	54	49	42
	9	NR40	52	52	43	34	29	20	57	58	57	56	51	45
Fig 12	5	NR33	40	43	32	21	20	20	46	48	50	46	40	31
	6	NR35	42	45	35	25	20	20	49	52	52	49	44	36
	7	NR38	44	47	39	29	22	20	52	54	55	53	47	40
	8	NR40	48	50	41	32	26	20	54	57	57	56	50	44
	9	NR41	50	52	44	35	28	22	56	59	59	57	53	47
Fig 14	5	NR34	42	43	34	23	20	20	48	50	51	45	40	32
	6	NR36	44	46	37	28	21	20	51	52	53	48	44	36
	7	NR38	47	49	40	32	24	20	53	55	55	51	47	47
	8	NR40	49	51	43	34	28	21	55	57	58	54	50	44
	9	NR42	52	53	45	37	31	24	58	60	59	57	53	47

Table 2: Sound power levels derived from SPL measured using the real room test method; sizes Fig 02 and Fig 03 with 2no 350x255 supply air diffusers and all other sizes with 4no 350x255 supply air diffusers. All connected with Ø200mm supply air ductwork and external static pressure drop 30Pa.
NR levels based on standard model; ceiling height 2.7m; room reverberation time 1.0s and appropriate ceiling insertion losses; maximum air velocities 3.0m/s
Sensible cooling loads typically 87W/m² floor area with maximum air temperature drop 10K

Maximum Cooling Data

Size	Fan Speed	Airflow @ 30Pa (l/s)	CW 5/11℃		CW 6/12℃		CW 7/12℃		CW 8/13℃		CW 10/14℃	
			Total Clg (kW)	Sens Clg (kW)	Total Clg (kW)	Sens Clg (kW)	Total Clg (kW)	Sens Clg (kW)	Total Clg (kW)	Sens Clg (kW)	Total Clg (kW)	Sens Clg (kW)
Fig 02	5	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-	-	-	-
	7	103	1.57	1.26	1.40	1.18	1.40	1.19	1.24	1.10	1.09	1.02
	8	126	1.81	1.48	1.61	1.37	1.63	1.40	1.44	1.29	1.28	1.20
	9	148	2.04	1.69	1.82	1.57	1.85	1.61	1.64	1.48	1.46	1.37
Fig 03	5	-	-	-	-	-	-	-	-	-	-	-
	6	105	1.68	1.33	1.50	1.24	1.49	1.25	1.32	1.15	1.15	1.07
	7	137	2.14	1.71	1.90	1.59	1.91	1.61	1.68	1.48	1.48	1.38
	8	170	2.54	2.06	2.25	1.91	2.28	1.94	2.01	1.79	1.77	1.66
	9	194	2.86	2.32	2.53	2.15	2.57	2.20	2.27	2.03	2.00	1.88
Fig 04	5	-	-	-	-	-	-	-	-	-	-	-
	6	124	2.11	1.64	1.88	1.53	1.87	1.54	1.64	1.42	1.41	1.31
	7	162	2.72	2.12	2.41	1.96	2.41	1.99	2.12	1.84	1.82	1.69
	8	198	3.19	2.52	2.84	2.35	2.82	2.36	2.49	2.19	2.15	2.01
	9	235	3.67	2.93	3.31	2.75	3.21	2.72	2.87	2.54	2.46	2.30
Fig 05	5	-	-	-	-	-	-	-	-	-	-	-
	6	149	2.25	1.82	2.00	1.69	2.02	1.72	1.78	1.58	1.57	1.47
	7	186	2.71	2.21	2.41	2.05	2.45	2.10	2.16	1.93	1.92	1.80
	8	234	3.25	2.69	2.88	2.48	2.95	2.56	2.61	2.35	2.34	2.20
	9	259	3.57	2.96	3.16	2.73	3.25	2.82	2.87	2.59	2.59	2.44
Fig 06	5	-	-	-	-	-	-	-	-	-	-	-
	6	171	2.73	2.17	2.43	2.01	2.44	2.04	2.15	1.89	1.88	1.75
	7	208	3.26	2.60	2.89	2.41	2.92	2.46	2.57	2.27	2.26	2.11
	8	255	3.85	3.11	3.40	2.87	3.46	2.94	3.04	2.70	2.68	2.51
	9	292	4.36	3.53	3.85	3.26	3.92	3.34	3.45	3.07	3.04	2.85
Fig 07	5	118	1.64	1.36	1.50	1.28	1.45	1.26	1.31	1.18	1.14	1.07
	6	178	2.61	2.12	2.33	1.98	2.34	2.00	2.08	1.86	1.84	1.73
	7	223	3.24	2.64	2.88	2.45	2.94	2.52	2.59	2.31	2.31	2.17
	8	278	3.83	3.18	3.40	2.93	3.50	3.04	3.09	2.79	2.77	2.60
	9	321	4.37	3.64	3.87	3.35	4.00	3.48	3.52	3.18	3.18	2.99
Fig 08	5	165	2.55	2.04	2.29	1.91	2.27	1.92	2.01	1.78	1.76	1.65
	6	238	3.83	3.03	3.40	2.81	3.43	2.86	3.01	2.64	2.63	2.45
	7	294	4.62	3.69	4.09	3.41	4.15	3.49	3.64	3.21	3.20	2.99
	8	363	5.51	4.44	4.87	4.11	4.95	4.20	4.35	3.86	3.83	3.58
	9	415	6.25	5.05	5.52	4.67	5.59	4.76	4.93	4.39	4.31	4.04
Fig 10	5	140	2.17	1.74	1.80	1.54	1.92	1.62	1.71	1.51	1.49	1.39
	6	233	3.79	2.99	3.36	2.77	3.38	2.81	2.97	2.60	2.59	2.41
	7	295	4.78	3.78	4.23	3.50	4.27	3.56	3.74	3.28	3.27	3.05
	8	370	5.76	4.61	5.10	4.27	5.15	4.34	4.52	4.00	3.96	3.70
	9	432	6.64	5.33	5.88	4.94	5.86	4.98	5.21	4.62	4.51	4.23
Fig 12	5	203	2.61	2.20	2.39	2.08	2.61	2.25	2.10	1.91	2.05	1.93
	6	306	4.48	3.65	3.97	3.38	4.06	3.47	3.58	3.20	3.19	2.99
	7	398	5.61	4.62	4.95	4.25	5.13	4.42	4.51	4.05	4.05	3.81
	8	487	6.65	5.53	5.88	5.09	6.10	5.29	5.37	4.85	4.84	4.55
	9	566	7.66	6.38	6.76	5.86	7.03	6.11	6.18	5.59	5.57	5.24
Fig 14	5	262	3.95	3.19	3.52	2.97	3.55	3.02	3.13	2.78	2.76	2.58
	6	362	5.71	4.55	5.05	4.21	5.15	4.32	4.51	3.97	3.97	3.70
	7	458	6.96	5.61	6.13	5.17	6.28	5.32	5.50	4.88	4.87	4.55
	8	558	8.36	6.76	7.36	6.24	7.53	6.40	6.61	5.88	5.84	5.47
	9	645	9.45	7.69	8.34	7.10	8.48	7.27	7.49	6.69	6.56	6.16

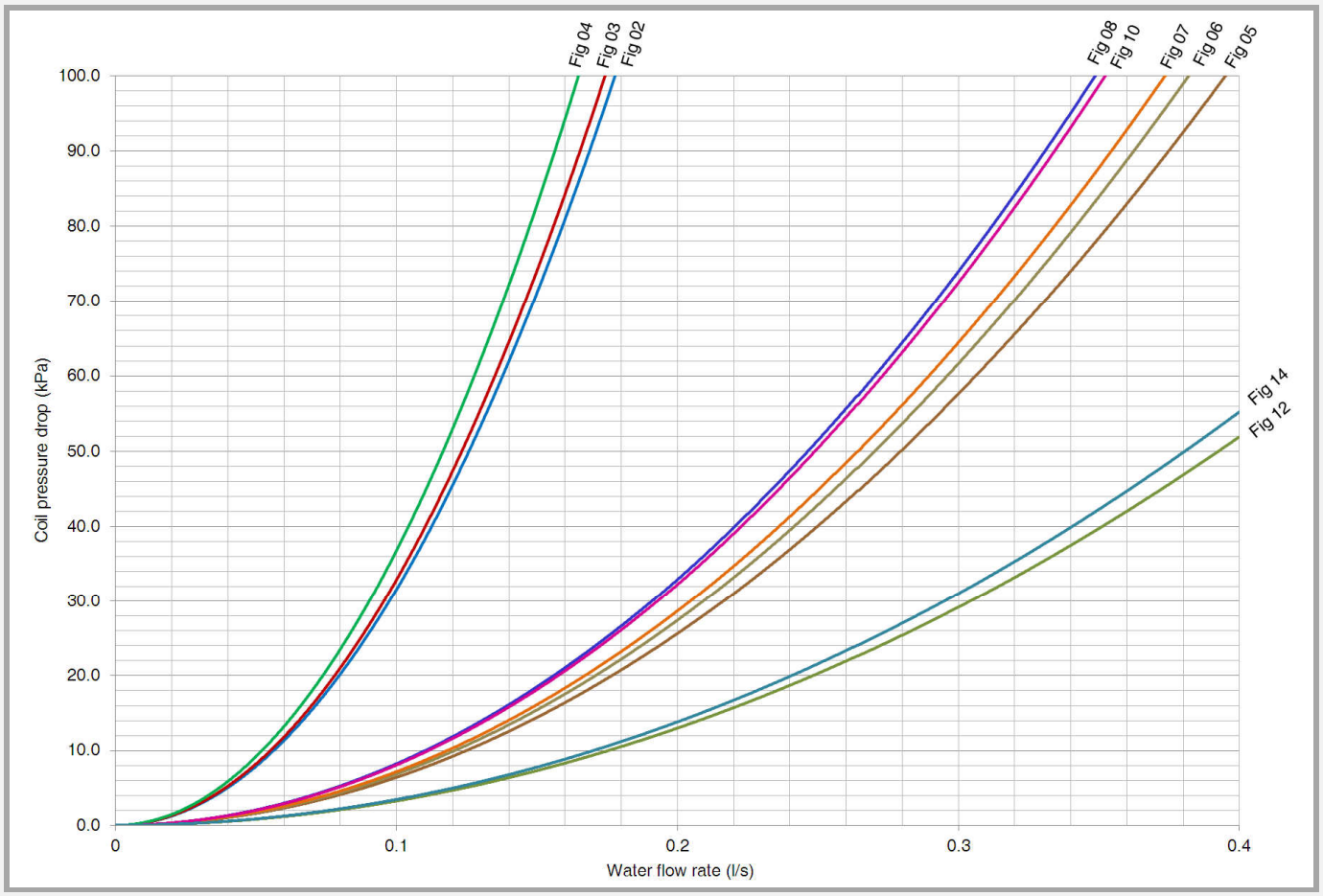
Table 3: Maximum cooling data for selected speeds with chilled water at flow and return temperatures given. Airflow rates at external static pressure drop of 30Pa; air-on conditions at 24℃ 50%RH Total and sensible cooling duties provided

Maximum Heating Data

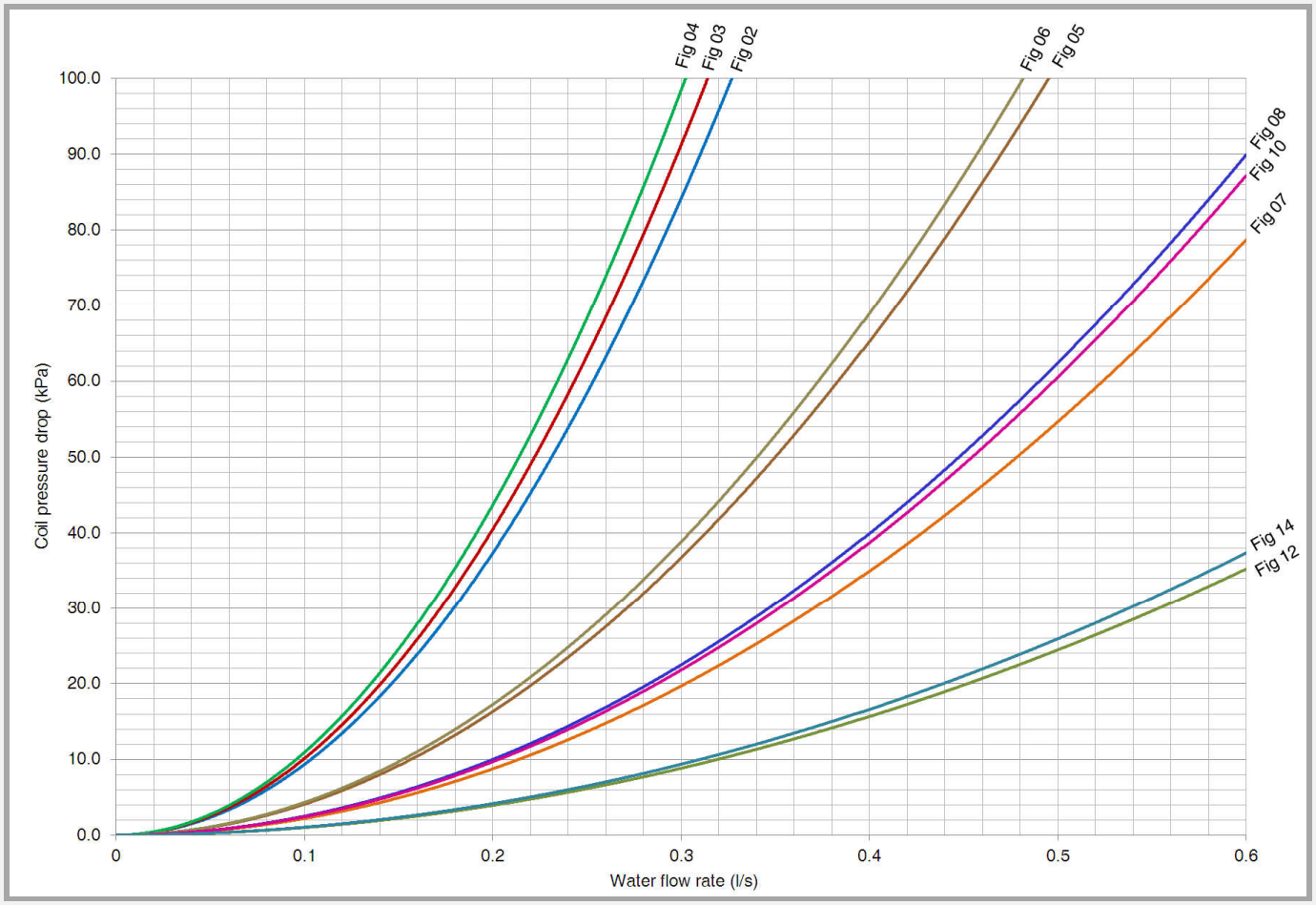
Size	Fan Speed	Airflow @ 30Pa (l/s)	LPHW 80/70℃		LPHW 80/60℃		LPHW 70/50℃		LPHW 60/50℃		LPHW 50/40℃	
			Htg (kW)	LAT db (℃)	Htg (kW)	LAT db (℃)	Htg (kW)	LAT db (℃)	Htg (kW)	LAT db (℃)	Htg (kW)	LAT db (℃)
02	5	-	-	-	-	-			-	-	-	-
	6	-	-	-	-	-			-	-	-	-
	7	103	3.78	48.4	3.32	44.8	2.61	39.0	2.37	37.1	1.66	31.4
	8	126	4.35	46.6	3.81	43.1	2.99	37.7	2.72	35.9	1.90	30.5
	9	148	4.87	45.3	4.26	41.9	3.34	36.7	3.05	35.1	2.13	29.9
03	5	-	-	-	-	-			-	-	-	-
	6	105	3.86	48.5	3.42	45.0	2.70	39.3	2.44	37.2	1.72	31.6
	7	137	4.85	47.3	4.28	43.9	3.37	38.4	3.05	36.5	2.15	31.0
	8	170	5.65	45.6	4.97	42.2	3.91	37.1	3.55	35.3	2.49	30.2
	9	194	6.26	44.8	5.50	41.5	4.32	36.5	3.93	34.8	2.75	29.8
04	5	-	-	-	-	-	-	-	-	-	-	-
	6	124	4.58	48.7	4.08	45.3	3.23	39.6	2.91	37.4	2.06	31.8
	7	162	5.75	47.4	5.10	44.1	4.03	38.7	3.64	36.6	2.57	31.2
	8	198	6.63	45.8	5.86	42.6	4.63	37.4	4.19	35.5	2.95	30.4
	9	235	7.55	44.6	6.67	41.5	5.26	36.6	4.76	34.8	3.36	29.8
05	5	-	-	-	-	-	-	-	-	-	-	-
	6	149	5.40	48.0	4.69	44.1	3.65	38.3	3.36	36.7	2.31	30.9
	7	186	6.45	46.8	5.59	42.9	4.36	37.4	4.00	35.9	2.77	30.3
	8	234	7.59	44.9	6.55	41.2	5.09	36.0	4.70	34.6	3.24	29.5
	9	259	8.22	44.3	7.08	40.7	5.50	35.6	5.08	34.3	3.50	29.2
06	5	-	-	-	-	-			-	-	-	-
	6	171	6.23	48.2	5.46	44.5	4.28	38.7	3.90	36.9	2.72	31.2
	7	208	7.30	47.1	6.38	43.4	4.99	37.9	4.56	36.2	3.17	30.7
	8	255	8.43	45.4	7.33	41.8	5.73	36.6	5.25	35.1	3.64	29.9
	9	292	9.37	44.6	8.13	41.1	6.35	36.0	5.83	34.5	4.04	29.5
07	5	118	4.23	47.7	3.74	44.3	2.86	38.1	2.67	36.7	1.82	30.8
	6	178	6.50	48.3	5.73	44.7	4.51	39.0	4.09	37.1	2.87	31.4
	7	223	8.03	47.9	7.06	44.3	5.55	38.6	5.04	36.8	3.53	31.1
	8	278	9.37	45.9	8.20	42.5	6.44	37.2	5.87	35.5	4.10	30.2
	9	321	10.49	45.1	9.16	41.7	7.18	36.6	6.56	34.9	4.57	29.8
08	5	165	6.00	48.2	5.33	44.8	4.22	39.2	3.80	37.1	2.69	31.5
	6	238	8.79	48.6	7.79	45.1	6.15	39.4	5.55	37.3	3.92	31.7
	7	294	10.36	47.2	9.16	43.8	7.22	38.4	6.53	36.4	4.60	31.0
	8	363	12.03	45.5	10.60	42.2	8.35	37.1	7.57	35.3	5.32	30.2
	9	415	13.35	44.7	11.74	41.5	9.24	36.5	8.39	34.8	5.89	29.8
10	5	140	5.03	47.8	4.49	44.6	3.54	38.9	3.20	36.9	2.25	31.3
	6	233	8.59	48.6	7.63	45.2	6.04	39.5	5.44	37.4	3.85	31.7
	7	295	10.53	47.6	9.32	44.2	7.36	38.7	6.65	36.7	4.69	31.2
	8	370	12.35	45.7	10.90	42.4	8.60	37.3	7.79	35.5	5.48	30.3
	9	432	13.91	44.7	12.26	41.5	9.65	36.5	8.76	34.8	6.16	29.8
12	5	203	5.88	42.0	5.10	34.8	3.75	33.3	3.66	32.9	2.38	27.7
	6	306	9.02	42.4	7.79	39.1	6.07	34.4	5.59	33.2	3.86	28.5
	7	398	10.97	40.9	9.44	37.7	7.33	33.3	6.78	32.1	4.67	27.7
	8	487	12.60	39.5	10.81	36.4	8.38	32.4	7.77	31.2	5.34	27.1
	9	566	14.07	38.6	12.04	35.6	9.33	31.7	8.67	30.7	5.94	26.7
14	5	262	7.68	42.3	6.70	39.2	5.18	34.4	4.80	33.2	3.30	28.4
	6	362	10.75	42.6	9.34	39.4	7.30	34.7	6.69	33.3	4.65	28.7
	7	458	12.62	40.9	10.92	37.8	8.52	33.4	7.84	32.2	5.43	27.8
	8	558	14.61	39.7	12.61	36.7	9.82	32.6	9.06	31.5	6.26	27.3
	9	645	16.09	38.7	13.86	35.8	10.78	31.9	9.96	30.8	6.87	26.8

Table 4: Maximum heating data for selected speeds with low pressure hot water at flow and return temperatures given. Airflow rates at external static pressure drop of 30Pa; air on conditions at 18°C Sensible heating duties and leaving air (air-off coil) dry bulb temperatures provided.

Hydraulic Data

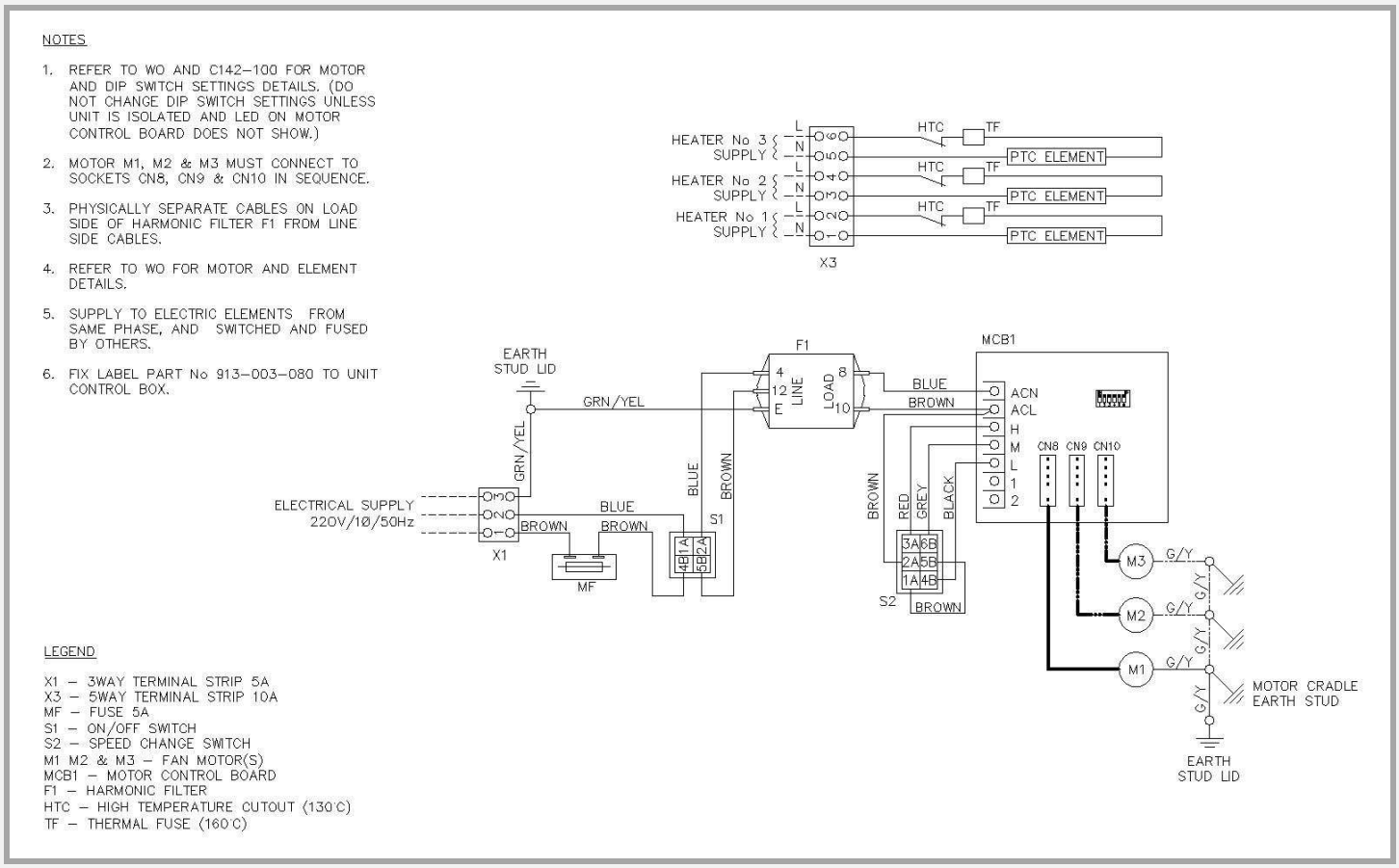


Heating coil pressure drops



Cooling coil pressure drops

Controls



Standard wiring diagram for three speed EC motors and optional electric heating (waterside controls omitted)

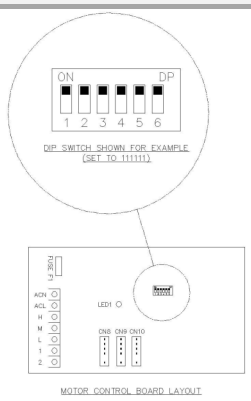
Airflow Control
Series CRE is available with energy efficient EC (electronically commutated) brushless DC motors. Standard fan controls comprise a fitted on/off switch and a three speed commissioning switch, with design speed set at medium; low speed is also available. EC motors are available with 9 standard speed configurations available from a range of 32 three speed configurations; air volume flow rates can be commissioned on-site by adjusting 6 DIP switches on the motor controller. Alternatively, air volume flow rates can be automatically adjusted to suit demand by using DDC control to switch between low, medium and high speeds.

Thermal Control
Series CRE is available with factory fitted, waterside controls comprising a PID controller with adjustable temperature setpoint, zero-energy band and proportional band, 4 port modulating control valves and actuators (heating and cooling) and a return air sensor. Remote room air sensors and setpoint adjustment is also available.

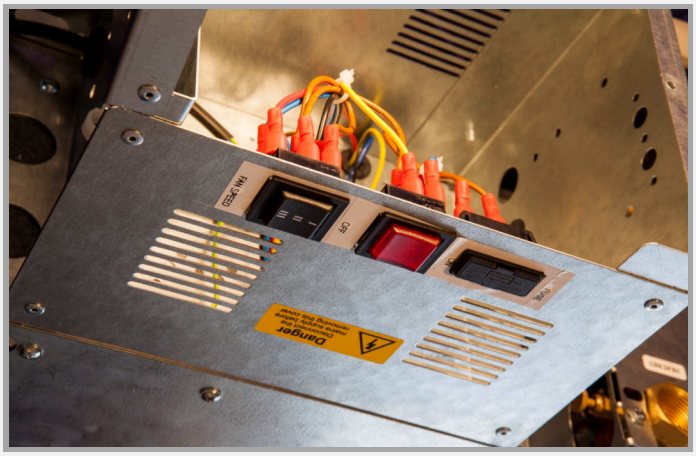
Master/Slave Control
Units are supplied as 'stand-alone' as standard but units can be configured for 'master/slave' operation for airflow and thermal control, with a single master unit controlling four or more slave units.

DIP SWITCH SETTINGS

NO.	DIP SETTING	HIGH(RPM)	MEDIUM(RPM)	LOW(RPM)
1	111111	816	614	412
2	111101	862	707	534
3	111011	906	721	553
4	111001	910	733	574
5	110111	1014	794	599
6	110101	1057	848	654
7	110011	1057	848	646
8	110001	1058	837	628
9	101111	983	776	598
10	101101	1142	909	712
11	101011	1127	911	687
12	101001	1043	832	626
13	100111	1028	848	664
14	100101	1010	895	646
15	100011	1094	915	673
16	100001	1144	922	734
17	011111	1141	914	715
18	011101	1196	999	758
19	011011	1141	967	700
20	011001	1214	968	777
21	010111	1223	993	784
22	010101	1143	904	673
23	010011	1155	968	742
24	010001	1210	954	700
25	001111	1244	1000	823
26	001101	1270	1054	850
27	001011	1272	1055	867
28	001001	1315	1084	851
29	000111	1257	1071	865
30	000101	1326	1113	876
31	000011	1328	1130	954
32	000001	1210	1009	810



Fan speed commissioning with EC motor DIP switches


Fitted on/off and three speed commissioning switches

Application

Series CRE fan coil units will provide efficient and effective comfort cooling and heating to most buildings, including commercial office and retail spaces, hotel common areas, bedrooms and restaurants. They are designed for installation above ceilings, typically inside ceiling voids at least 250mm deep.

Fan coil units are selected when the sensible cooling loads to the treated space are known; a further criteria for selection are room noise levels, which are commonly measured as NR (noise rating). Selections are best undertaken against a tabulated design schedule; a complete selection requires the following information

Room name or number Room noise requirement (NR)	External static pressure drop Fresh air flow rate
Sensible cooling load (kW) Room summer design conditions (℃db & %RH) Fresh air summer conditions (℃db & %RH) CWS flow temperature (℃) CWS return temperature (℃)	Heating load (kW) Fresh air winter condition (℃) Fresh air winter condition (℃) LPHW flow temperature (℃) LPHW return temperature (℃)

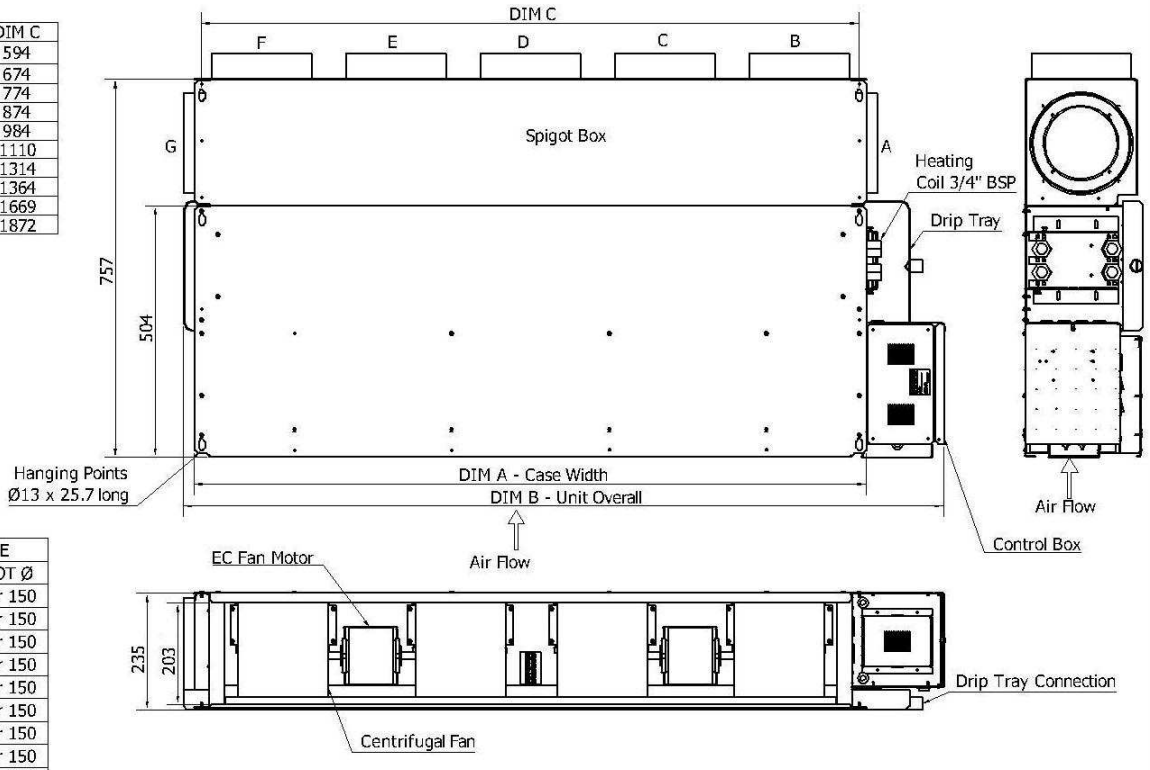
Fan coil units are available with left hand or right hand connections to the coil (handings are when facing against the direction of airflow). The control box, electrical connections and condensate tray connections will always be on the same side as the coil connections

Treated (supply) air can be ducted to the space, with room (return) air taken from the ceiling void plenum or directly via ductwork. Fresh air or make-up air can be ducted and mixed with return air.

The discharge plenum can be fitted with Ø150mm or Ø200mm spigots, which can be individually selected or omitted with blanking plates fitted. Spigots and blanking plates are removable.

Each Series CRE fan coil unit supplied with IOM instructions as well as a project-specific wiring diagram and is labelled with a unique serial number on the bottom access panel; a unique stencil reference can also be applied for co-ordinating installation of units on-site.

FIGURE	DIM A	DIM B	DIM C
2	624	800	594
3	704	879	674
4	804	980	774
5	904	1080	874
6	1014	1190	984
7	1140	1316	1110
8	1344	1520	1314
10	1394	1570	1364
12	1699	1875	1669
14	1902	2078	1872



AVAILABLE SPIGOT QTY & SIZE		
FIGURE	No. OF SPIGOTS	SPIGOT Ø
2	4	200 or 150
3	4	200 or 150
4	5	200 or 150
5	5	200 or 150
6	6	200 or 150
7	6	200 or 150
8	7	200 or 150
10	7	200 or 150
12	8	200 or 150
14	9	200 or 150

Overall dimensions of Series CRE fan coil unit (right hand connections shown; left hand opposite)

Specification

Engineering Specification
Series CRE blow-through horizontal chassis fan coil units shall be manufactured by Dunham-Bush Ltd, Downley Road, Havant, Hampshire PO9 2JD.

Unit Chassis
The chassis shall be riveted construction, manufactured from hot dipped galvanized sheet steel with a minimum thickness of 0.9mm. Stiffeners and strengthening folds shall provide a solid robust structure, complete with 25.4x13mm mounting slots. The unit shall comprise a rectangular inlet complete with a filter, fan plenum, coil plenum and a rectangular discharge spigot or an optional dicharge plenum with spigots suitable for connection to ductwork. Where specified, a positive temperature co-efficient (PTC) electric heater shall be fitted inside the coil plenum.

Air Filter
The air filter shall be formed from bonded synthetic polyester fibres, with an arrestance class G2 to EN779. The filter shall be fire rated to class F1 when tested to DIN 53 438. The filter media shall be washable, secured over a mild steel wire frame. Filters shall be easily removable from either side of the unit without the need to remove any panels. Sizes Fig 02 to Fig 12 shall have one filter and size Fig 14 shall have two filters.

Coils
The coil shall be constructed from 3/8” seamless copper tube mechanically expanded onto aluminum fins to form a single coil block. Fins shall be formed with raised collars to maximize heat transfer from the tube to the fin and have an ‘e-wave’ profile to improve heat transfer from the fin to the air. The coil block shall be brazed to headers formed from machined brass casings and shall be circuited to provide optimum hydraulic resistance under normal operating conditions, whilst ensuring good heat transfer from the medium to the tube. Coil headers shall be complete with air vents and Rp3/4 connections to ISO 7-1 (3/4" BSP parallel female). Coils shall be pressure tested ‘air-under-water’ after manufacture to 24barg and marked accordingly.

Condensate Tray
The condensate tray shall be formed from pressed sheet steel, plastic coated and insulated with marine grade closed cell foam. The tray shall be graded in all directions to a single R1/2 connection to ISO 7-1 (1/2" male taper).

Motors
Motors shall be single or dual-shafted electronically commutated brushless DC motors with Class B windings. They shall have sealed-for-life sleeve bearings, integral thermal overload protection and be mounted on resilient rubber mountings to minimize noise. Motors shall be selected to operate with the specified electrical supply, typically 230V/1 ph/50Hz to achieve optimum efficiency.

Fans
Fans shall comprise direct-drive double-inlet forward curved centrifugal impellers, manufactured from aluminium. Each impeller shall be statically and dynamically balanced prior to assembly and secured directly to a motor shaft using a vibration-resistant grub screw.

Electric heating
When specified, positive temperature co-efficient (PTC) electric heating elements shall be fitted on the discharge side of the coil within the coil plenum. These shall be complete with an auto reset thermal cutout and cables shall be taken to the control box for connection and control by others.

Discharge Plenum
When specified, the discharge plenum shall be riveted construction, manufactured from hot dipped galvanized sheet steel with a minimum thickness of 0.9mm. It can be supplied loose or factory fitted. Spigots shall be preformed and fitted to positions specified and shall accept Ø150mm or Ø200mm ductwork; spigots shall be repositionable with optional blanking plates of specified.

Controls Box
Each unit shall be provided with an IP20 electrical enclosure, containing a terminal connection block to allow selection of any one of the three fan speeds or remote selection of the same by additional controls. Fan speed control shall provide three speeds (low, medium and high). When specified, temperature control shall be provided in accordance with the project specification. Typically this will comprise modulating 2 or 4 port valves and actuators, return air or room sensor, in conjunction with an electronic stand alone or DDC controller. A wide variety of controls packages are available from Dunham Bush Ltd, including the fitting of ‘free-issue’ controls, supplied by the client for fitting by Dunham-Bush Ltd.

DUNHAM-BUSH
Downley Road
Havant
Hants PO9 2JD
Tel. 023 9247 7700
Fax. 023 9245 3601
Email: infouk@dunham-bush.com
www.dunham-bush.com

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PDS-1000-F-0268-04
May 2013