

# **ABILITY**

**FAN COIL UNITS**

# **TROJAN 270**

**HORIZONTAL CHASSIS FAN COIL UNIT**

**Chassis** panelwork is all 'In House' manufactured from nominally 1.2mm Galvanised steel. Where at all possible, flanges are formed inward facing to prevent exposure to bare metal edges. Sufficient forms and folds are incorporated to provide a vibration free, robust structure. The panel work is jointed throughout using 3/16" 'Polygrip' self adjusting and 'air tight' rivets.

**Access** is provided through a single panel. This covers the fan and motor sets, the coil and condensate tray do not require the removal of any panels. The fan access hooks in place on a front lip and swings closed. This is then retained by machine screws into captive "Nutserts". The coil / condensate tray assembly is retained again by Machine Screws into 'Nutserts'.

**Fans** are direct drive, double inlet, forward curved centrifugal type. Both the impellers & impellor housings are of galvanised steel. Fan & motor assemblies are mounted separately to the fan deck assembly using M6 Machine screws into captive "Nutserts" and can be removed individually for non routine servicing or replacement. Each fan is connected to the fan wiring loom by terminal strip. Motor & impellor assemblies are statically and dynamically balanced in twin planes.

**Motors** are totally enclosed, external rotor, permanent split capacitor type. Power factor shall be 0.9 or better. Bearings are sealed for life ball race type with a manufacturers minimum life expectancy of 50,000 hours under typical operating conditions. Overload protection is afforded to each individual motor by an auto resetting thermal contactor. Motor insulation is to class 'B' with the enclosure to IP44. Supply 230V 1Ph 50Hz.

**Speed Control** is by multi-tapped transformer. 18 speed outputs are available and 9 selected outputs are wired for on site adjustment. Controls are fed from an additional 50VA 24V output. More detail about our speed control method is given on the last page of this data sheet.

**Coils** are manufactured from seamless 3/8" copper tube, mechanically expanded onto aluminium fins. Fins are punched with die formed collars to afford maximum heat transfer surface area with the tubes. All coils are circuited for maximum output and from bottom to top, optimising output and ensuring free venting and draining. Vents and drains are slotted type. Coils are unhandled but not interchangeable. Handings notated against direction of airflow. Coil terminations are 15mm dia' plain copper at 40mm centres through an aluminium support plate for rigidity. Every coil is leak tested using dry air under water to 20 bar. Pressure drop details are given on page 6 of this data sheet.

**The Condensate Tray** covers the entire coil and valve assembly area and has a positive fall to the 15mm drain point. The pan is manufactured from galvanised steel, corners are brazed and the termination is silver soldered into position. Each pan additionally incorporates a pressure normalising external cover. Stainless steel pans are available as an option.

**Insulation** is used throughout for both thermal and acoustic damping. Insulation is open cell, class 'O', CFC and HFC free expanded foam. Foam complies with CAA airport and London Borough flammability and toxicity requirements. Adhesive has light, ageing and temperature tolerance.

**Spigots** as standard, are circular 200mm or 250mm dia. manufactured from galvanised steel. These are screw fixed to the front of the fan coil unit in the positions indicated. Unused spigot connections are capped off but remain available for use if layout changes occur. End spigot connections can be provided on request. Rectangular spigots are also available if requested.

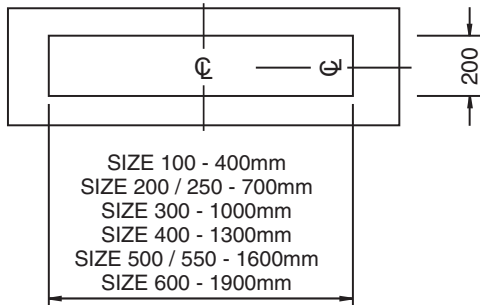
**Controls Enclosure** All controls are, as standard, fitted to a control back plate which is located on the side of the fan coil. The electrical cover then encloses the controls and gives access from both the side and below. The whole electrical assembly including switches is mounted on the side of the fan coil unit alongside the coil terminations and valve assembly.

**Control Valves** are modulating 4 port via a stand alone controller. Standard return air sensors are bead type for mounting in the return air path. Room located sensor/set point adjustment/fan speed control is optional. The standard valve assembly (and any free issued valves) should terminate in 15mm or 22mm copper compression fittings at 40mm centres.

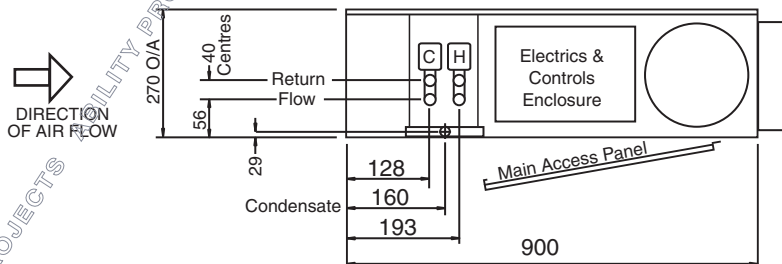
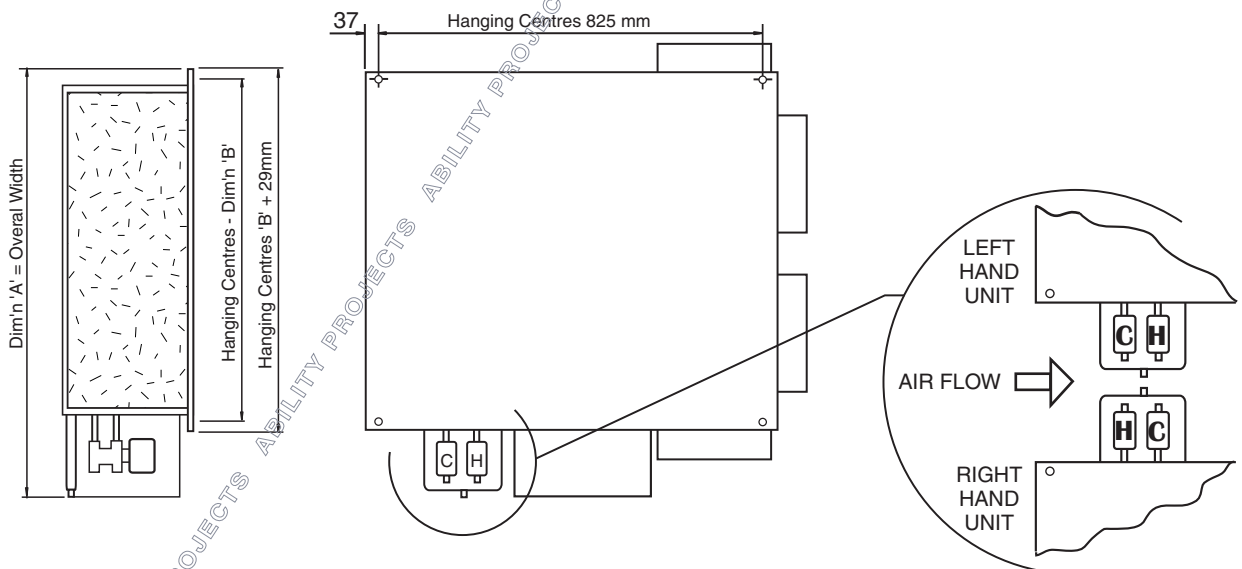
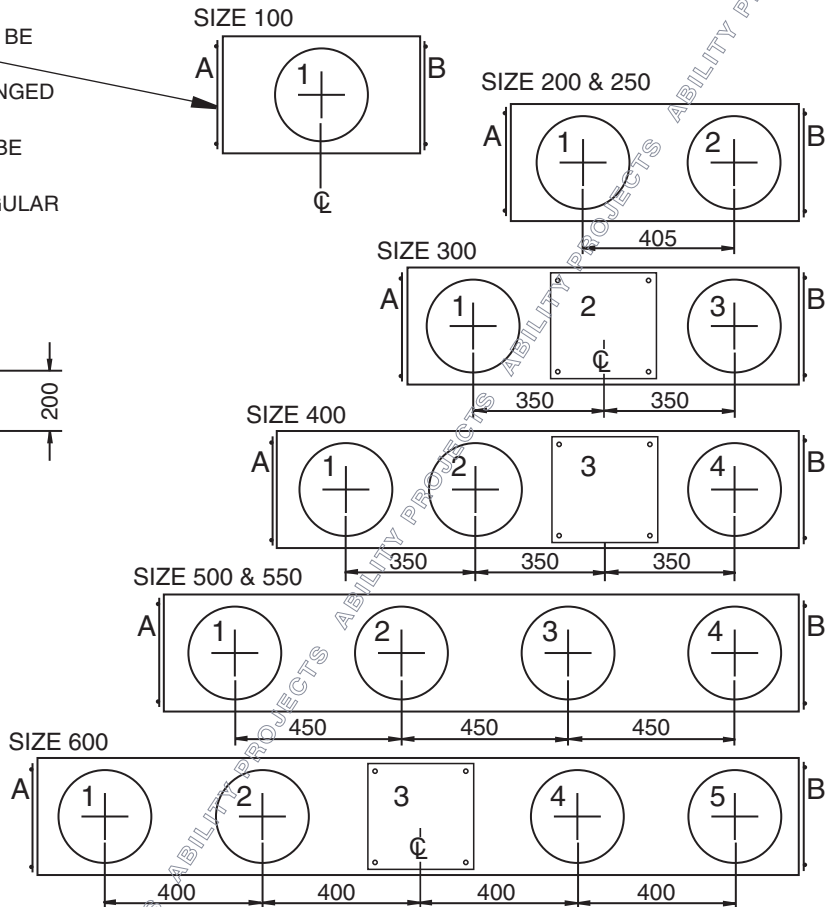
**Filters** are EU2 or EU3 media secured to a wire metal frame, easily removable for routine maintenance, cleaning or replacement. Other types are available.

- ❑ SPIGOTS (200 & 250) AND SPIGOT BLANKS WILL ALWAYS BE FITTED AS SHOWN.
- ❑ PROVISION FOR SIDE SPIGOTS WILL BE PROVIDED ONLY IF REQUESTED.
- ❑ SPIGOTS AND COVERS CAN BE CHANGED TO SUIT SITE REQUIREMENTS.
- ❑ EXTRA SPIGOTS AND COVERS CAN BE SUPPLIED IF REQUESTED.
- ❑ ALL SPIGOTS, ROUND AND RECTANGULAR ARE 50mm DEEP.

RECTANGULAR SPIGOT OPTION



FCU SIZE	Dim'n 'A'	Dim'n 'B'	WEIGHT Kg
100	805	587	41
200 & 250	1105	887	52 & 56
300	1405	1187	66
400	1705	1487	82
500 & 550	2005	1787	93 & 97
600	2305	2087	105



LEFT HAND UNIT SHOWN - RIGHT HAND UNIT OPPOSITE  
 ABILITY UNITS HANDED AGAINST THE AIR FLOW

Do Not Scale

Rev A

DIMENSIONS

**DISCHARGE SOUND POWER**

**ACOUSTICS**

**Acoustic Selection Guide**

The noise figures shown are for a unit operating against 30Pa with sufficient duct connections to keep in duct air velocities at or below 2.5m/s.

As a guide, for each additional 10Pa external resistance the Sound Power figures will increase by 1 to 1.5dB

The inlet Sound Power figures are as measured. Introducing an inlet plenum box will reduce the inlet sound power figures by at least 2-3dB.

The discharge figures have been factored to allow for ductwork, a plenum and grille. Please refer to the bottom of this column for the factors used.

Reducing the lowest fan speed using the fine trimming device will lower the Ultra Low SWL .

NR levels can only be used as a guide as they cannot be accurate for every office environment. An evaluation must be undertaken by an acoustician to reliably ascertain the final NR levels in the air conditioned space.

Independent test data to qualify the SWL's and the discharge factors shown below is available from the office upon request.

**DISCHARGE FACTORS**

63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
-5	-5	-5	-9	-12	-12	-12	-3

63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8Hz
------	-------	-------	-------	------	------	------	-----

37	34	34	24	23	15	17	20
43	38	38	29	29	22	19	20
44	41	41	33	34	27	22	24
45	43	43	36	38	31	28	32
46	45	45	40	39	35	32	36

36	34	33	29	23	14	16	20
40	39	37	32	28	21	13	20
43	43	41	36	33	27	21	23
46	45	44	39	37	31	27	30
46	47	46	41	39	35	31	35

45	39	41	33	29	21	12	20
48	42	44	37	34	27	20	22
50	46	47	40	38	32	27	29
52	48	50	43	42	36	31	35
53	50	52	46	45	39	35	39

45	40	40	34	28	20	10	20
48	43	43	37	32	26	18	21
48	46	46	40	37	31	25	27
50	48	48	42	40	35	30	33
53	50	51	45	43	39	35	38

45	40	42	34	30	21	14	20
48	43	44	38	36	28	21	21
51	47	48	41	40	34	28	28
54	49	53	45	44	38	33	34
55	52	55	47	47	39	37	41

45	41	41	35	29	22	11	20
48	44	45	38	34	27	19	21
49	47	47	41	38	33	26	28
52	49	51	44	42	37	32	35
53	52	53	46	45	40	36	40

46	42	44	37	31	24	15	20
50	45	47	41	36	29	22	24
51	48	50	43	40	34	29	31
54	51	53	46	44	39	34	38
55	53	56	48	47	41	37	42

50	45	45	38	33	25	16	20
52	48	49	42	38	31	23	25
55	50	51	45	42	36	30	33
56	53	54	47	45	39	35	38
58	55	56	49	47	42	38	42

**INLET SOUND POWER**

63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8Hz
44	44	42	41	30	23	17	20
48	48	46	46	36	31	24	20
52	52	50	49	41	36	31	22
55	55	53	51	44	40	35	26
56	56	55	52	47	42	38	30
41	43	40	38	31	24	16	20
44	47	44	42	37	32	23	20
47	51	47	46	42	37	30	22
49	54	50	48	45	41	36	26
52	55	52	51	48	43	39	30
48	48	49	45	37	31	22	21
50	51	52	49	42	37	30	22
52	54	55	52	46	41	37	26
53	57	58	55	49	45	41	32
55	59	60	57	52	48	44	35
51	49	47	43	36	30	21	21
53	51	51	47	41	36	29	21
53	54	53	50	45	41	35	24
54	56	56	53	48	44	40	30
58	61	61	55	51	48	44	34
48	49	51	48	39	33	24	21
49	52	53	51	44	39	30	21
52	56	57	54	48	44	38	25
53	60	60	57	52	47	44	33
57	61	62	59	54	49	46	36
51	50	49	46	38	32	22	21
52	52	52	49	43	38	29	21
53	56	55	52	47	43	36	26
54	59	58	55	51	46	42	32
55	60	60	57	53	49	45	36
52	52	50	48	40	34	25	20
55	54	53	51	44	40	32	22
56	58	57	54	49	45	39	29
58	61	61	57	53	49	44	35
59	63	63	59	55	51	48	39
52	53	52	49	41	35	25	21
55	56	56	52	45	41	33	23
58	59	59	55	50	46	40	30
58	61	62	58	53	49	45	35
61	63	64	61	57	52	49	40

**100 200 250 300 400 500 550 600**

NR	SPEED	AC FULL LOAD AMPS	AC START AMPS
25	UL LOW	0.15	0.45
30	EX LOW	0.22	0.66
33	STD LOW	0.30	0.90
35	LOW PLUS	0.37	1.11
36	MEDIUM	0.46	1.38
25	UL LOW	0.15	0.45
26	EX LOW	0.22	0.66
30	STD LOW	0.30	0.90
32	LOW PLUS	0.37	1.11
34	MEDIUM	0.46	1.38
29	UL LOW	0.29	0.87
33	EX LOW	0.43	1.29
34	STD LOW	0.59	1.77
37	LOW PLUS	0.74	2.22
38	MEDIUM	0.92	2.76
26	UL LOW	0.29	0.87
31	EX LOW	0.43	1.29
32	STD LOW	0.59	1.77
34	LOW PLUS	0.74	2.22
38	MEDIUM	0.92	2.76
29	UL LOW	0.44	1.32
33	EX LOW	0.65	1.95
35	STD LOW	0.89	2.67
37	LOW PLUS	1.11	3.33
39	MEDIUM	1.38	4.14
29	UL LOW	0.44	1.32
30	EX LOW	0.65	1.95
34	STD LOW	0.89	2.67
36	LOW PLUS	1.11	3.33
38	MEDIUM	1.38	4.14
30	UL LOW	0.60	1.80
32	EX LOW	0.88	2.64
35	STD LOW	1.20	3.60
38	LOW PLUS	1.48	4.44
40	MEDIUM	1.84	5.52
30	UL LOW	0.75	2.25
33	EX LOW	1.10	3.30
35	STD LOW	1.50	4.50
39	LOW PLUS	1.85	5.55
42	MEDIUM	2.30	6.90

**COOLING DUTY - kW**
**PERFORMANCE**

The cooling duties are based on 30Pa external resistance, Summer Entering Air at 23 °C db - 50% RH and the heating duties are based on Winter Entering Air at 20 °C. Cooling kW are the maximum available. Leaving air temperature or pressure drop constraints may reduce outputs.

**HYDRAULIC PRESSURE DROPS**

$$\frac{\text{NEW PRESS DROP}}{\text{KNOWN PRESS DROP}} = \left( \frac{\text{NEW FLOW}}{\text{KNOWN FLOW}} \right)^2$$

4 ROW COOLING COIL	FLOW L/S	KPa
SIZE 100	0.10	13.05
SIZE 200 / 250	0.15	13.97
SIZE 300	0.20	13.14
SIZE 400	0.25	13.28
SIZE 500 / 550	0.30	20.26
SIZE 600	0.35	24.99

1 ROW HEATING COIL	FLOW L/S	KPa
SIZE 100	0.05	2.35
SIZE 200 / 250	0.05	3.05
SIZE 300	0.08	9.66
SIZE 400	0.10	18.00
SIZE 500 / 550	0.10	6.00
SIZE 600	0.10	6.30

**Direct Current FCUs**


The Trojan fan coil units illustrated in this catalogue are also available in Direct Current (DC) motor versions. These reduce electrical loads by 65-75%, have infinite speed control effected by a 0-10v signal, they give off no motor heat and last twice as long as their AC equivalents.

SEN kW	TOTAL kW	SEN kW	TOTAL kW	SEN kW	TOTAL kW	SEN kW	TOTAL kW
0.88	1.04	0.82	0.96	0.77	0.85	0.61	0.61
1.27	1.52	1.18	1.39	1.13	1.24	0.88	0.88
1.64	1.95	1.52	1.79	1.45	1.59	1.13	1.13
2.07	2.46	1.92	2.26	1.83	2.01	1.43	1.43
2.42	2.88	2.25	2.65	2.14	2.35	1.67	1.67

0.97	1.16	0.91	1.06	0.86	0.94	0.67	0.67
1.40	1.67	1.30	1.53	1.24	1.36	0.97	0.97
1.80	2.14	1.67	1.97	1.59	1.75	1.24	1.24
2.28	2.71	2.12	2.49	2.01	2.21	1.58	1.58
2.66	3.16	2.47	2.91	2.35	2.58	1.84	1.84

1.59	1.89	1.48	1.74	1.41	1.55	1.10	1.10
2.39	2.84	2.22	2.61	2.11	2.32	1.65	1.65
3.26	3.88	3.04	3.57	2.89	3.17	2.26	2.26
4.01	4.77	3.72	4.40	3.55	3.90	2.78	2.78
4.77	5.88	4.44	5.23	4.22	4.64	3.30	3.30

1.80	2.14	1.67	1.97	1.59	1.75	1.24	1.24
2.64	3.14	2.46	2.89	2.34	2.57	1.83	1.83
3.61	4.30	3.36	3.95	3.20	3.51	2.50	2.50
4.57	5.44	4.25	5.00	4.04	4.44	3.16	3.16
5.39	6.42	5.02	5.91	4.77	5.24	3.73	3.73

2.59	3.09	2.41	2.84	2.29	2.52	1.80	1.80
3.72	4.43	3.46	4.07	3.29	3.62	2.58	2.58
5.22	6.21	4.86	5.71	4.62	5.07	3.61	3.61
6.17	7.35	5.75	6.76	5.46	6.00	4.27	4.27
7.26	8.64	6.75	7.94	6.42	7.05	5.02	5.02

2.85	3.39	2.65	3.12	2.52	2.77	1.97	1.97
4.30	5.11	4.00	4.70	3.80	4.18	2.97	2.97
5.84	6.95	5.43	6.39	5.17	5.68	4.04	4.04
7.03	8.37	6.55	7.70	6.22	6.84	4.87	4.87
8.21	9.77	7.64	8.99	7.26	7.98	5.68	5.68

3.42	4.07	3.18	3.74	3.03	3.33	2.37	2.37
5.25	6.25	4.88	5.75	4.65	5.10	3.64	3.64
6.79	8.09	6.32	7.44	6.01	6.60	4.70	4.70
8.19	9.76	7.63	8.97	7.25	7.97	5.67	5.67
9.52	11.33	8.86	10.42	8.42	9.25	6.59	6.59

4.63	5.51	4.31	5.07	4.10	4.50	3.21	3.21
6.59	7.84	6.13	7.21	5.83	6.40	4.56	4.56
8.27	9.85	7.70	9.06	7.32	8.04	5.73	5.73
9.91	11.80	9.22	10.85	8.77	9.64	6.86	6.86
11.47	13.66	10.67	12.65	10.15	11.15	7.94	7.94

Rev A

**HEATING DUTY - kW**

82°C/71°C    60°C/50°C    50°C/40°C

1.23	0.81	0.58
1.51	1.00	0.71
1.67	1.10	0.78
1.81	1.20	0.85
1.99	1.32	0.93

1.43	0.95	0.67
1.76	1.16	0.82
1.95	1.28	0.91
2.11	1.39	0.99
2.32	1.53	1.09

2.05	1.36	0.96
2.63	1.73	1.23
2.95	1.94	1.38
3.25	2.14	1.52
3.57	2.36	1.67

2.33	1.54	1.09
2.98	1.97	1.40
3.35	2.21	1.57
3.69	2.44	1.73
4.06	2.68	1.90

3.57	2.36	1.67
4.47	2.95	2.09
4.98	3.29	2.33
5.47	3.61	2.56
6.02	3.97	2.82

3.88	2.56	1.82
4.86	3.21	2.27
5.41	3.57	2.53
5.95	3.93	2.78
6.54	4.32	3.06

4.43	2.93	2.08
5.65	3.73	2.64
6.32	4.17	2.96
6.99	4.61	3.27
7.68	5.07	3.60

5.24	3.46	2.45
7.06	4.66	3.30
7.71	5.09	3.61
8.55	5.64	4.00
9.41	6.21	4.40

**SPEED**

UL LOW
EX LOW
STD LOW
LOW PLUS
MEDIUM

UL LOW
EX LOW
STD LOW
LOW PLUS
MEDIUM

UL LOW
EX LOW
STD LOW
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LOW PLUS
MEDIUM

UL LOW
EX LOW
STD LOW
LOW PLUS
MEDIUM

100  
200  
250  
300  
400  
500  
550  
600

**AIR VOLUMES L/S**

10Pa    20Pa    30Pa    40Pa    50Pa

65	58	55	N/A	N/A
95	85	80	75	70
111	107	103	97	93
135	133	130	127	120
156	154	152	150	148

77	66	61	N/A	N/A
110	94	88	83	77
130	118	113	107	102
154	147	143	140	132
172	169	167	165	163

129	115	100	91	77
170	160	150	142	134
218	212	205	198	190
260	256	252	247	242
310	306	300	296	289

145	130	113	101	85
194	179	166	161	150
248	240	227	220	209
297	290	287	282	272
352	345	339	333	328

200	180	163	142	126
270	256	234	229	220
354	340	328	315	300
408	395	388	378	364
470	467	456	445	440

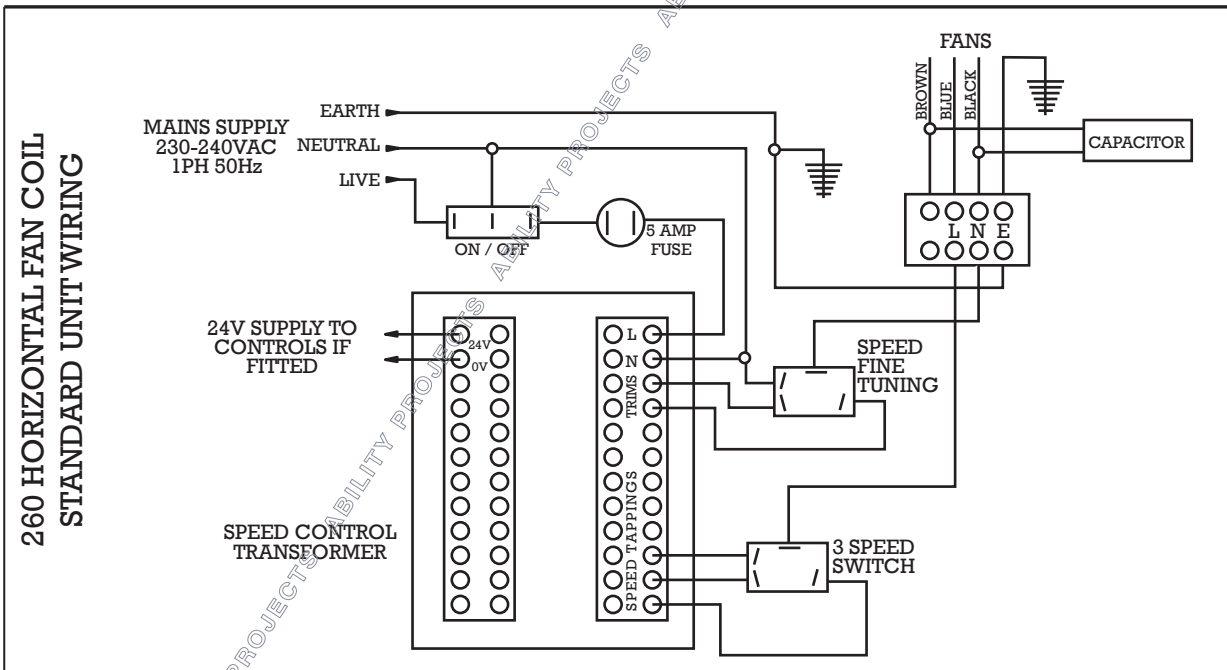
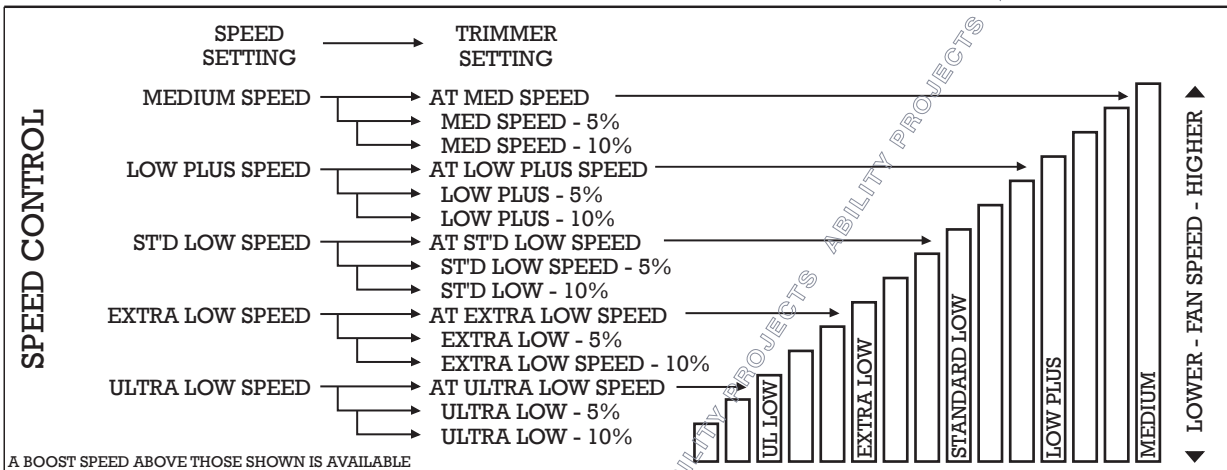
226	199	179	157	139
308	290	270	255	242
402	382	367	352	332
468	453	442	431	425
537	526	516	505	495

269	244	215	191	174
369	345	330	305	290
465	443	427	413	400
537	530	515	500	486
627	612	598	585	570

352	319	291	270	242
456	438	414	400	377
554	538	520	500	481
657	641	623	607	589
760	743	721	708	690

**USEFUL INFORMATION**

**Speed Control.** Every fan coil is supplied with a speed controlling transformer incorporating 6 speed tappings. Ability will wire each fan coil to the 3 speeds selected as the most appropriate for your project. Notwithstanding this, on site changes can be made if another set of speeds is felt more suitable for a particular area. Each fixed speed is additionally complemented with two fine adjustments. These are effected by adjusting the "fine tune" three position switch. The "fine tune" at setting one gives the selected speed unmodified with the two other fine tune settings giving two reductions on the main speed set.



**Options & Extras**  
 Inlet Plenums. Electric Heating. 200 or 250mm Spigots. Side Spigots Upon Request. Condensate Pumps. Fresh Air Connections. All Control Packages Catered For.

As part of our continuous improvement initiative we have to reserve the right to alter the specifications and or dimensions without notice. Therefore, please check your selections and any recent updates by calling the Ability internal sales office.

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