



®

40LM - PRODUCT DATA DIGEST

# CHILLED WATER FAN-COIL UNITS



QUALITY SYSTEM



MALAYSIA  
MS ISO 9001  
REG. NO: AR 0239

# The New, Versatile and Flexibility in Commercial Air Conditioning System

## FEATURES:

- Chilled Water Furred-in model with Plenum Fan Coil units.
- The low silhouette styling of this unit makes it a popular choice for the “in-the-ceiling” or “over the closet” applications in all types of building.
- Horizontal ducted application. The 40LM150 & 200 can easily be converted to vertical ducted application.
- Insulated & painted condensate drain pan and a factory fitted frame complete with filter media.  
(Filter media is optional for 40LM150 & 200).
- Integral filter frame capable of adapting 1” or 2” filter media for 40LM150 & 200.
- 40LM120 is standard factory supplied with 3-speed direct drive motor.
- 40LM150 & 200 is standard factory supplied with TEFC Induction motor and taper lock pulleys with wedge belts.
- Standard copper tube aluminium fins (Cu/Al) evaporator coil for maximum heat transfer.
- Carrier Lanced Sine Wave fin pattern ensures energy efficient performance.
- Units shall be manufactured as left-hand side (in the direction of air flow) piping connection as standard.

## SPECIFICATIONS

TYPE		CHILLED WATER FAN COIL		
MODEL		40LM120	40LM150	40LM200
NOMINAL CAPACITY	kW	35.0	44.0	58.6
	Btu/hr	119 420	150 000	199 940
AIR QUANTITY	RANGE (l/s)	850 ~ 1640	1700 ~ 2600	2000 ~ 3400
POWER SUPPLY	V/Ph/Hz	230/1/50	380 - 415/3/50	380 - 415/3/50
FAN	TYPE	CENTRIFUGAL FORWARD CURVED BLADES		
	DRIVE	DIRECT DRIVE	BELT DRIVE	BELT DRIVE
	QUANTITY	2	1	1
	MAX. rpm	2100	1200	1200
	DIAMETER (mm)	250	400	400
FAN MOTOR	TYPE	PSC, 3 SPEED	TEFC	TEFC
	QUANTITY	1	1	1
	kW	1.83	2.2	3
	FLA (Amps)	7.3	5.08 @ 380V	6.72 @ 380V
	RPM	1325	1500	1500
COIL	TYPE	COPPER TUBES, ALUMINIUM PLATE FINS		
	ROW - FPI	4 - 14	4 - 12	4 - 12
	FACE AREA (M <sup>2</sup> )	0.61	1.01	1.36
FILTER	TYPE	WASHABLE		
	SIZE (H x W x D) mm	398 x 1344 x 12	406 x 635 x 25	406 x 635/508 x 25
	QUANTITY	1	4	2 & 4
CONNECTIONS	SUPPLY (mm)	25.4 BSP MPT	38.1 BSP MPT	50.8 BSP MPT
	RETURN (mm)	25.4 BSP MPT	38.1 BSP MPT	50.8 BSP MPT
	DRAIN (mm)	19.05 NPT MPT	19.05 NPT MPT	19.05 NPT MPT
NET WEIGHT	KG	120	200	230
DIMENSIONS	HEIGHT (mm)	480	1487	1541
	WIDTH (mm)	1600	1346	1651
	DEPTH (mm)	680	710	764

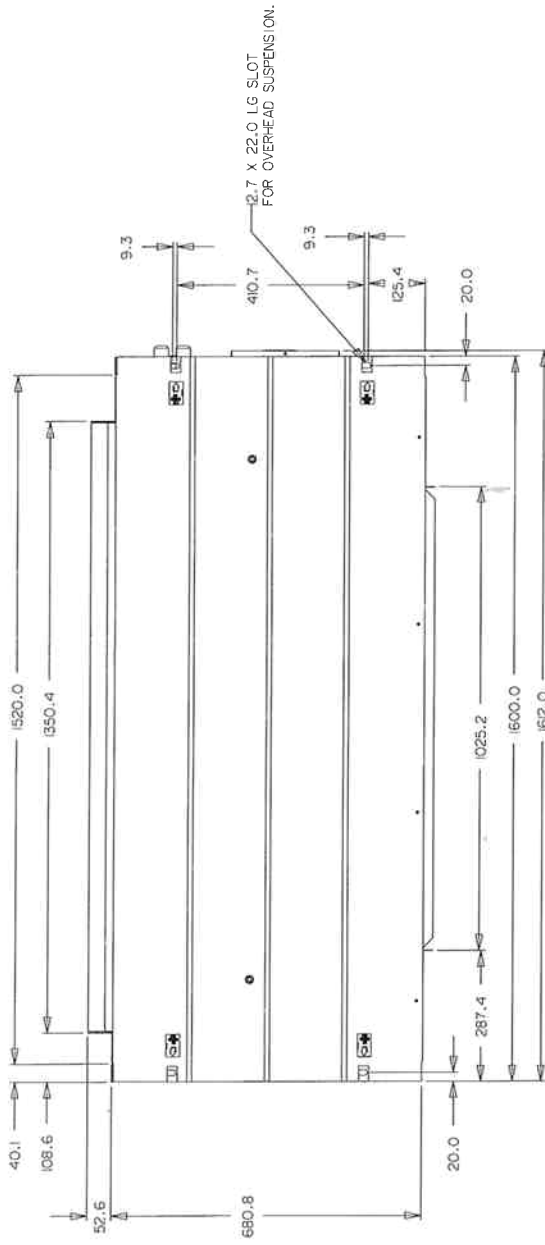
FLA: FULL LOAD AMPS

FPI: FINS PER INCH

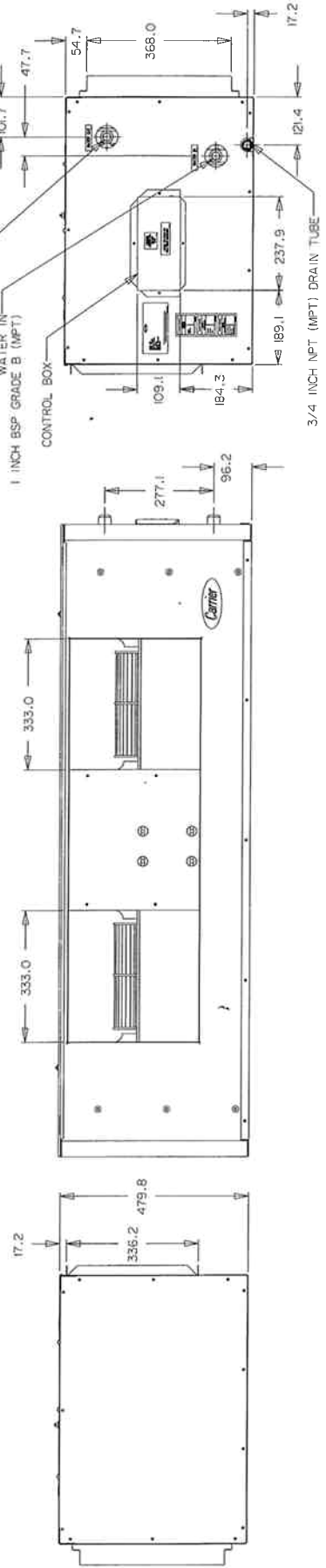
NOTES: STANDARD UNITS ARE SUPPLIED WITHOUT MOTOR, DRIVE PACKAGES AND FILTER MEDIA FOR 40LM150 AND 40LM200

**PHYSICAL DIMENSION**

**40LM120**



TOP VIEW



LEFT SIDE VIEW

FRONT VIEW

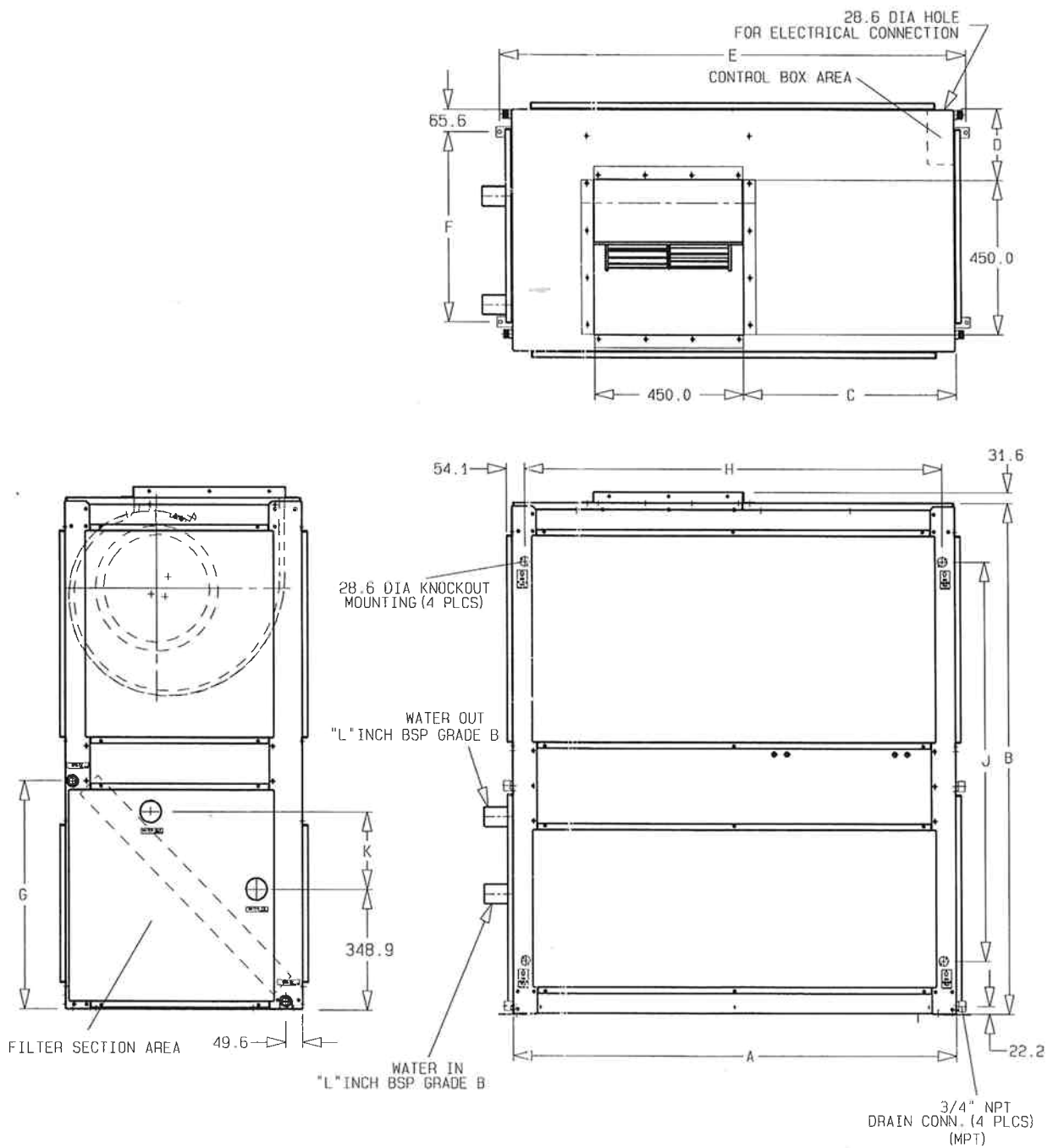
RIGHT SIDE VIEW

ALL DIMENSION IS IN MM

# PHYSICAL DIMENSION

## 40LM150/200

Model No	A	B	C	D	E	F	G	H	J	K	L
40LM150	1346	1487	644	208	1413	553	660	1270	1161	224	1.5
40LM200	1651	1541	698	235	1713	606	714	1575	1215	276	2.0



## PERFORMANCE DATA COOLING CAPACITIES

MODEL: 40LM120

AIR QUANTITY (l/s)	ENT CHILLED WATER TEMP (°C)	CHILLED WATER FLOW (L/MIN)	ENT AIR TEMP DB/WB (°C)					
			25.0/17.0		27.0/19.5		29.0/22.0	
			TC	SHC	TC	SHC	TC	SHC
849.4	5	45	19.4	15.6	23.8	16.3	28.8	17
		90	22.2	17.0	28.1	18.2	34.5	19.3
		135	23.5	17.6	29.7	18.9	36.5	20.2
	6	45	18.0	15.0	22.3	15.7	27.3	16.4
		90	20.7	16.3	26.4	17.4	32.7	18.6
		135	21.7	16.8	27.9	18.1	34.7	19.4
	7	45	16.7	14.4	20.9	15.1	25.7	15.8
		90	19.1	15.5	24.7	16.7	31.0	17.8
		135	20.0	15.9	26.1	17.3	32.9	18.6
	8	45	15.4	13.8	19.5	14.5	24.2	15.2
		90	17.4	14.8	22.9	15.9	29.2	17.0
		135	18.3	15.2	24.3	16.5	31.0	17.9
	9	45	14.2	13.2	18.0	13.9	22.7	14.6
		90	15.8	14.1	21.1	15.2	27.3	16.4
		135	16.5	14.4	22.4	15.7	29.1	17.0
1130.2	5	45	22.3	19.0	27.0	19.6	32.2	20.1
		90	26.4	20.9	33.0	22.2	40.4	23.3
		135	28.2	21.8	35.6	23.3	43.7	24.7
	6	45	20.9	18.3	25.4	18.9	30.5	19.4
		90	24.5	20.1	30.9	21.3	38.3	22.4
		135	26.1	20.9	33.4	22.3	41.5	23.8
	7	45	19.5	17.6	23.8	18.2	28.8	18.7
		90	22.7	19.2	28.9	20.4	36.2	21.6
		135	24.1	19.9	31.2	21.4	39.2	22.8
	8	45	18.0	16.9	22.2	17.6	27.2	18.1
		90	20.8	18.4	26.8	19.6	34.0	20.7
		135	22.1	19.0	29.0	20.4	36.9	21.9
	9	45	16.7	16.2	20.6	16.9	25.5	17.5
		90	19.0	17.6	24.8	18.7	31.8	19.9
		135	20.0	18.1	26.7	19.5	34.6	20.9
1639.9	5	45	26.2	23.9	30.8	24.4	36.3	24.6
		90	31.9	26.9	39.2	28.0	47.7	29.0
		135	34.68	28.3	43.3	29.8	52.9	31.2
	6	45	24.6	23.1	29.1	23.6	34.4	23.9
		90	29.7	25.9	36.8	27.0	45.1	28.1
		135	32.2	27.1	40.6	28.6	50.2	30.0
	7	45	23.1	22.2	27.4	22.9	32.7	23.2
		90	27.8	25.4	35.2	26.3	43.4	27.4
		135	29.7	26.0	37.9	27.5	47.4	28.9
	8	45	21.6	21.3	25.7	22.1	30.8	22.5
		90	25.5	23.9	32.1	25.0	39.9	26.1
		135	27.4	24.9	35.1	26.4	44.5	27.8
	9	45	20.3	20.3	24.0	21.4	28.9	21.8
		90	23.6	22.8	29.7	24.1	37.3	25.1
		135	25.0	23.7	32.5	25.2	41.6	26.7

TC : TOTAL HEAT CAPACITY (kW)

SHC : SENSIBLE HEAT COOLING CAPACITY (kW)

# PERFORMANCE DATA COOLING CAPACITIES

MODEL: 40LM150

AIR QUANTITY (l/s)	ENT CHILLED WATER TEMP (°C)	CHILLED WATER FLOW (L/MIN)	ENT AIR TEMP DB/WB (°C)					
			25.0/17.0		27.0/19.5		29.0/22.0	
			TC	SHC	TC	SHC	TC	SHC
1700	5	55	29.4	26.0	35.0	26.6	41.5	27.1
		110	35.8	29.2	44.4	30.6	54.2	32.0
		165	38.8	30.6	48.9	32.6	59.9	34.4
	6	55	27.6	25.1	33.1	25.8	39.4	26.2
		110	33.3	28.1	41.6	29.5	51.3	30.9
		165	36.1	29.4	45.9	31.3	56.8	33.1
	7	55	25.8	24.2	31.0	24.9	37.3	25.4
		110	30.8	26.9	38.9	28.4	48.5	29.7
		165	33.3	28.1	42.8	29.9	53.7	31.8
	8	55	24.1	23.2	29.1	24.1	35.1	24.6
		110	28.6	25.9	36.2	27.2	45.5	28.6
		165	30.4	26.8	39.7	28.7	50.5	30.5
	9	55	22.5	22.2	27.1	23.2	33.1	23.9
		110	26.1	24.6	33.5	26.1	42.5	27.4
		165	27.8	25.6	36.6	27.4	47.3	29.2
2100	5	55	32.4	29.9	37.9	30.6	44.5	30.8
		110	40.1	34.2	49.1	35.5	59.8	36.7
		165	44.1	36.1	55.0	37.9	67.2	39.7
	6	55	30.5	28.9	35.9	29.6	42.3	29.9
		110	37.4	32.9	46.2	34.2	56.6	35.4
		165	41.0	34.6	51.6	36.5	63.7	38.2
	7	55	28.7	27.8	33.9	28.8	39.9	29.1
		110	34.9	31.6	43.3	33.0	53.3	34.2
		165	37.8	33.2	48.1	35.0	60.2	36.8
	8	55	26.9	26.7	31.8	27.8	37.7	28.2
		110	32.2	30.3	40.3	31.8	50.0	33.0
		165	34.9	31.7	44.7	33.6	56.6	35.4
	9	55	25.3	25.3	29.7	26.8	35.5	27.4
		110	29.8	28.9	37.3	30.5	46.7	31.8
		165	31.9	30.3	41.3	32.2	52.9	34.0
2600	5	55	35.0	33.3	40.4	33.9	46.8	34.1
		110	43.7	38.5	53.0	39.7	63.8	40.8
		165	48.4	40.8	59.9	42.6	73.0	44.3
	6	55	32.9	31.9	38.2	32.9	44.4	33.2
		110	40.9	37.0	49.9	38.4	60.4	39.5
		165	44.9	39.2	56.1	41.1	69.2	42.7
	7	55	31.0	30.8	36.0	32.0	42.1	32.3
		110	38.1	35.7	46.7	37.1	56.9	38.2
		165	41.7	37.7	52.3	39.5	65.2	41.2
	8	55	29.3	29.3	33.9	30.9	39.8	31.4
		110	35.5	34.2	43.5	35.8	53.5	36.8
		165	38.6	36.1	48.7	38.0	61.3	39.8
	9	55	27.6	27.6	31.9	29.8	37.6	30.4
		110	32.9	32.6	40.4	34.4	50.1	35.6
		165	35.5	34.4	45.1	36.5	57.3	38.3

TC : TOTAL HEAT CAPACITY (kW)

SHC : SENSIBLE HEAT COOLING CAPACITY (kW)

# PERFORMANCE DATA COOLING CAPACITIES

MODEL: 40LM200

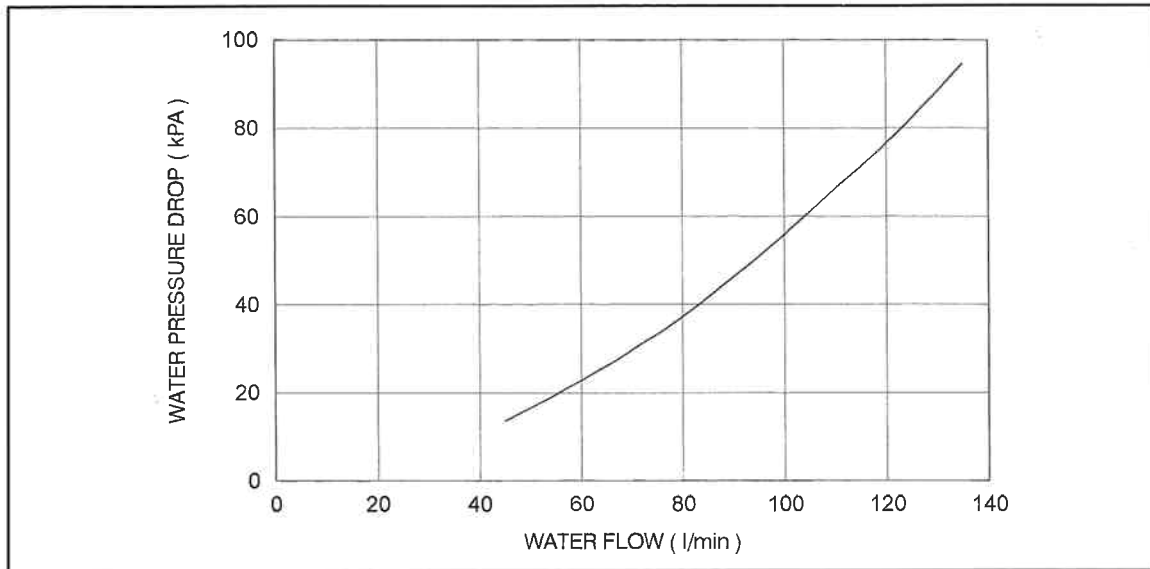
AIR QUANTITY (l/s)	ENT CHILLED WATER TEMP (°C)	CHILLED WATER FLOW (L/MIN)	ENT AIR TEMP DB/WB (°C)					
			25.0/17.0		27.0/19.5		29.0/22.0	
			TC	SHC	TC	SHC	TC	SHC
2000	5	73	37.8	32.3	45.6	33.3	54.3	34.0
		145	45.2	35.9	56.5	38.0	69.1	40.0
		218	48.6	37.5	61.4	40.1	75.3	42.6
	6	73	35.4	31.1	42.9	32.2	51.5	32.9
		145	42.1	34.5	53.1	36.5	65.5	38.5
		218	45.1	35.9	57.7	38.5	71.5	40.9
	7	73	33.0	29.9	40.2	31.0	48.7	31.7
		145	38.9	33.0	49.5	35.0	61.9	36.9
		218	41.6	34.3	53.9	36.8	67.6	39.3
	8	73	30.6	28.8	37.5	29.9	45.9	30.8
		145	35.7	31.6	45.9	33.5	58.2	35.5
		218	38.1	32.7	50.0	35.2	63.7	37.6
	9	73	28.5	27.6	34.9	28.8	43.0	29.7
		145	32.7	30.1	42.5	32.1	54.4	34.0
		218	34.5	31.1	46.1	33.6	59.8	36.1
2800	5	73	44.0	40.1	51.7	40.9	60.8	41.4
		145	54.3	45.6	66.7	47.6	81.1	49.3
		218	59.4	48.2	74.3	50.8	90.8	53.2
	6	73	41.4	38.7	48.9	39.7	57.7	40.2
		145	50.6	44.0	62.6	45.9	76.7	47.6
		218	55.2	46.2	69.7	48.8	86.1	51.3
	7	73	38.9	37.2	46.1	38.5	54.9	39.2
		145	47.0	42.2	58.6	44.2	72.4	45.9
		218	51.0	44.2	65.0	46.9	81.2	49.3
	8	73	36.5	35.7	43.2	37.1	51.8	37.9
		145	43.5	40.4	54.6	42.5	67.9	44.3
		218	46.8	42.3	60.3	44.9	76.4	47.4
	9	73	34.1	34.1	40.4	35.9	48.6	36.8
		145	40.1	38.6	50.6	40.8	63.5	42.6
		218	42.9	40.4	55.6	43.0	71.4	45.5
3400	5	73	47.3	44.5	55.0	45.4	63.9	45.7
		145	59.0	51.4	71.8	53.2	86.7	54.6
		218	65.2	54.5	80.9	57.0	98.6	59.3
	6	73	44.7	42.8	52.4	44.2	60.7	44.5
		145	55.2	49.4	67.6	51.3	82.0	52.9
		218	60.6	52.3	75.9	54.9	93.4	57.3
	7	73	42.1	41.2	49.1	42.7	57.4	43.3
		145	51.5	47.6	63.2	49.6	77.3	51.0
		218	56.1	50.2	70.7	52.9	88.1	55.2
	8	73	39.5	39.4	46.1	41.4	54.2	43.0
		145	47.7	45.6	58.9	47.7	72.6	49.3
		218	51.8	48.0	65.7	50.7	82.8	53.2
	9	73	37.2	37.2	43.2	39.9	51.2	40.7
		145	44.3	43.5	54.6	45.9	67.9	47.5
		218	47.6	45.8	60.8	48.7	77.4	51.1

TC : TOTAL HEAT CAPACITY (kW)

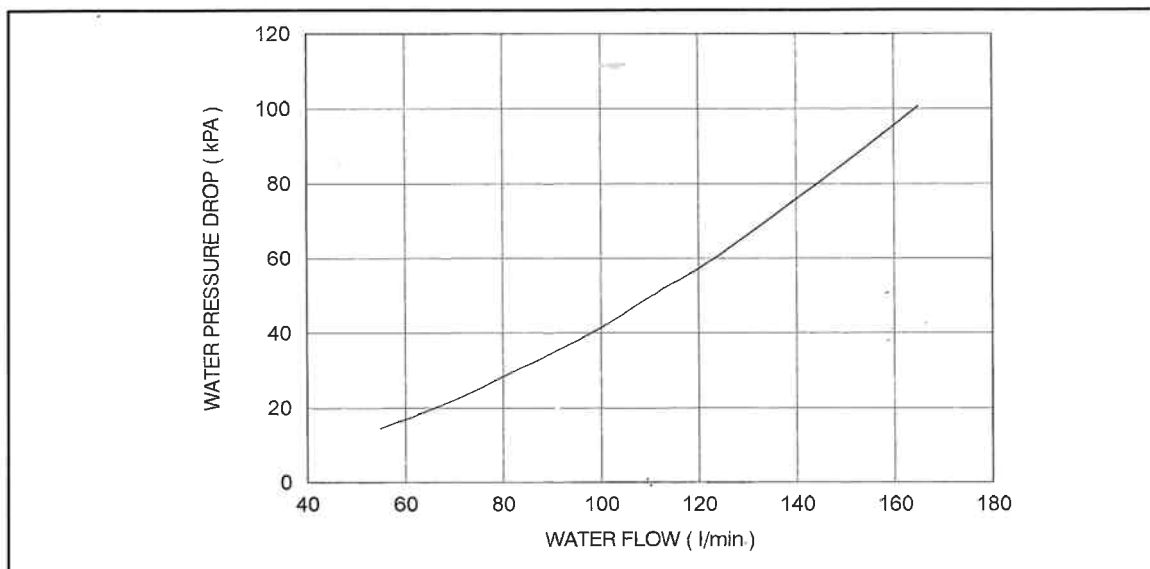
SHC : SENSIBLE HEAT COOLING CAPACITY (kW)

# PERFORMANCE DATA COIL PRESSURE DROP

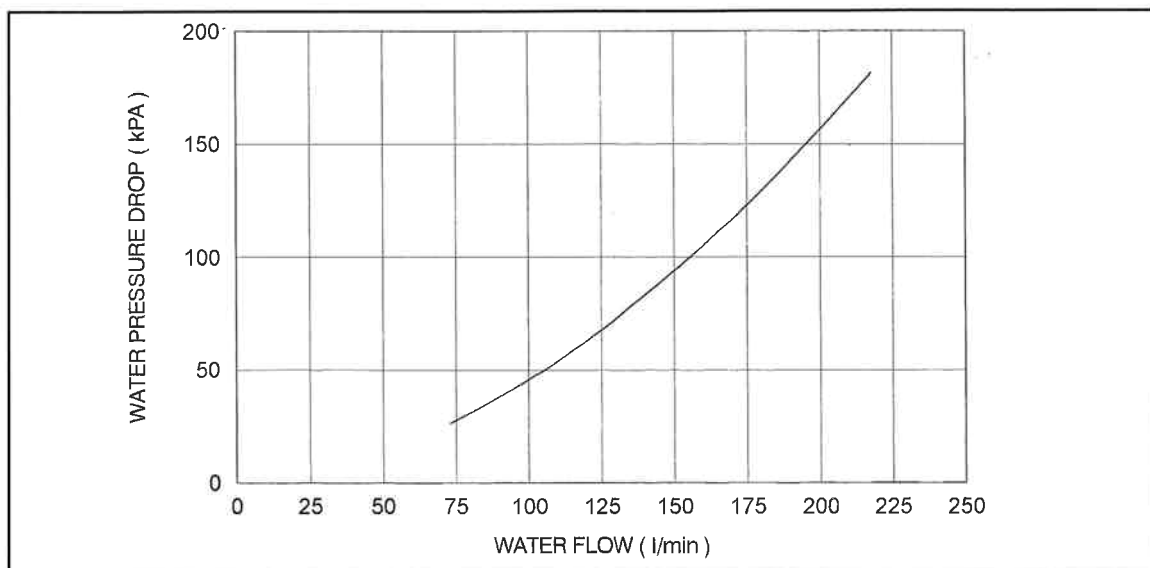
## 40LM120



## 40LM150

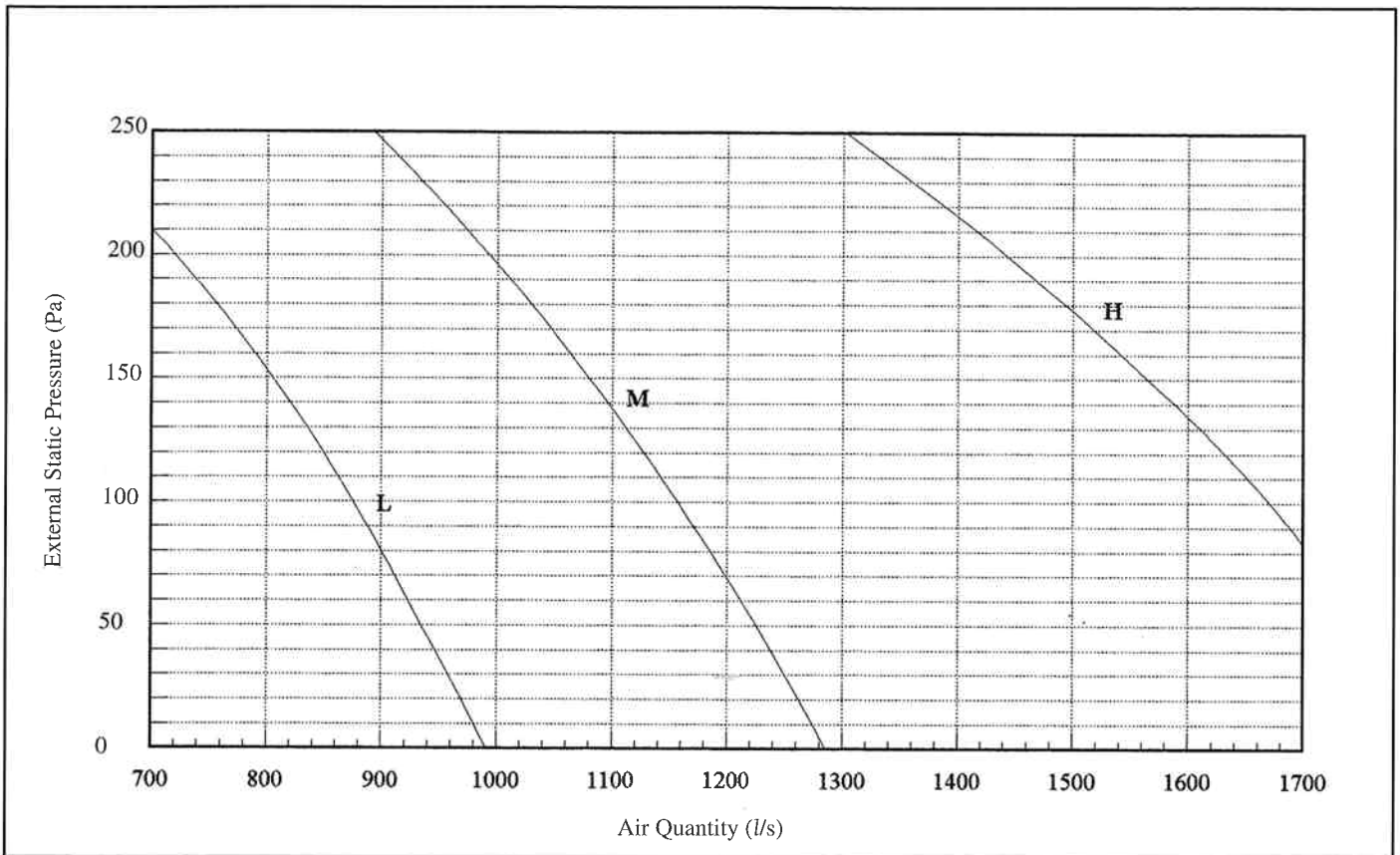


## 40LM200

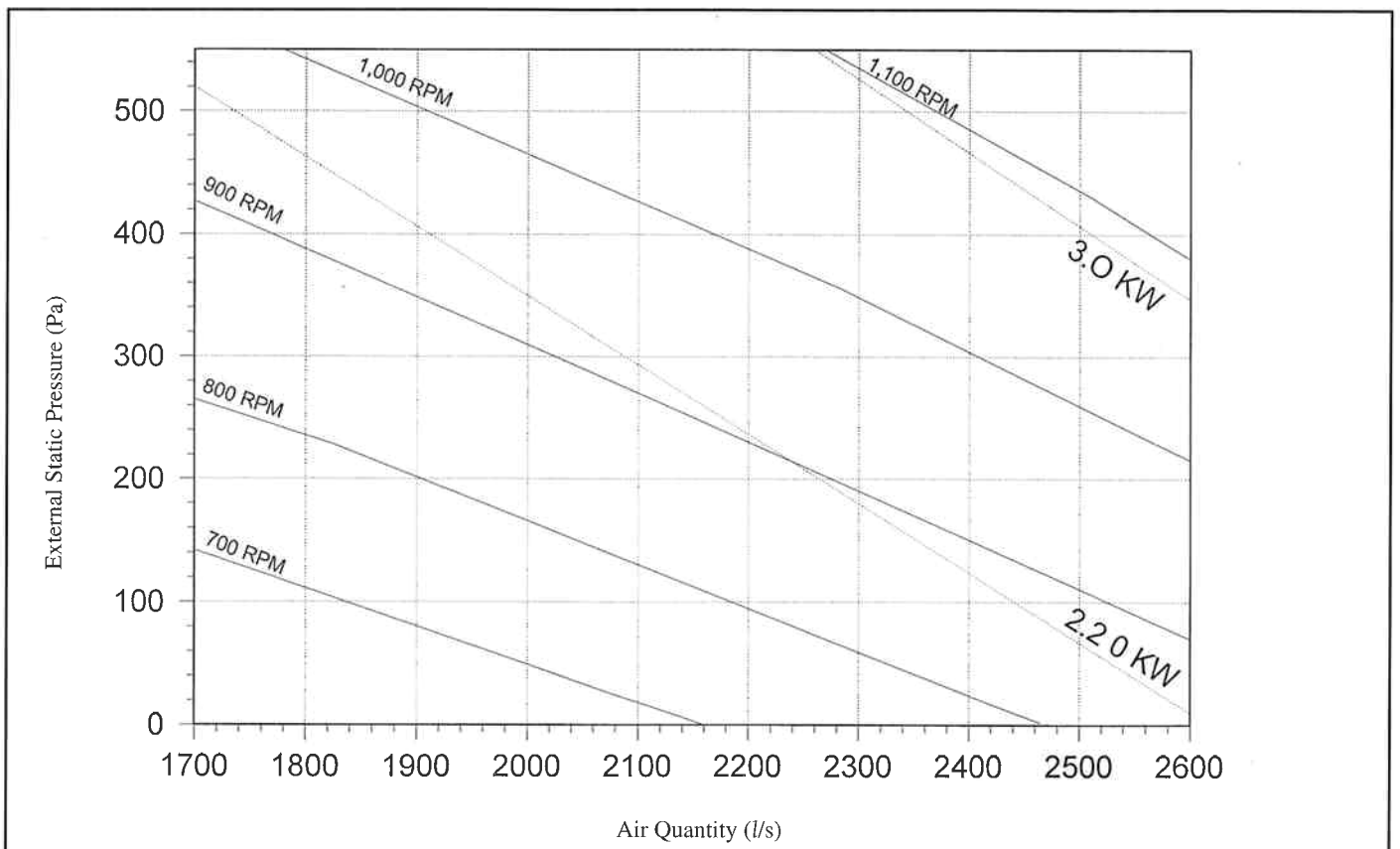


# FAN PERFORMANCE

## 40LM120

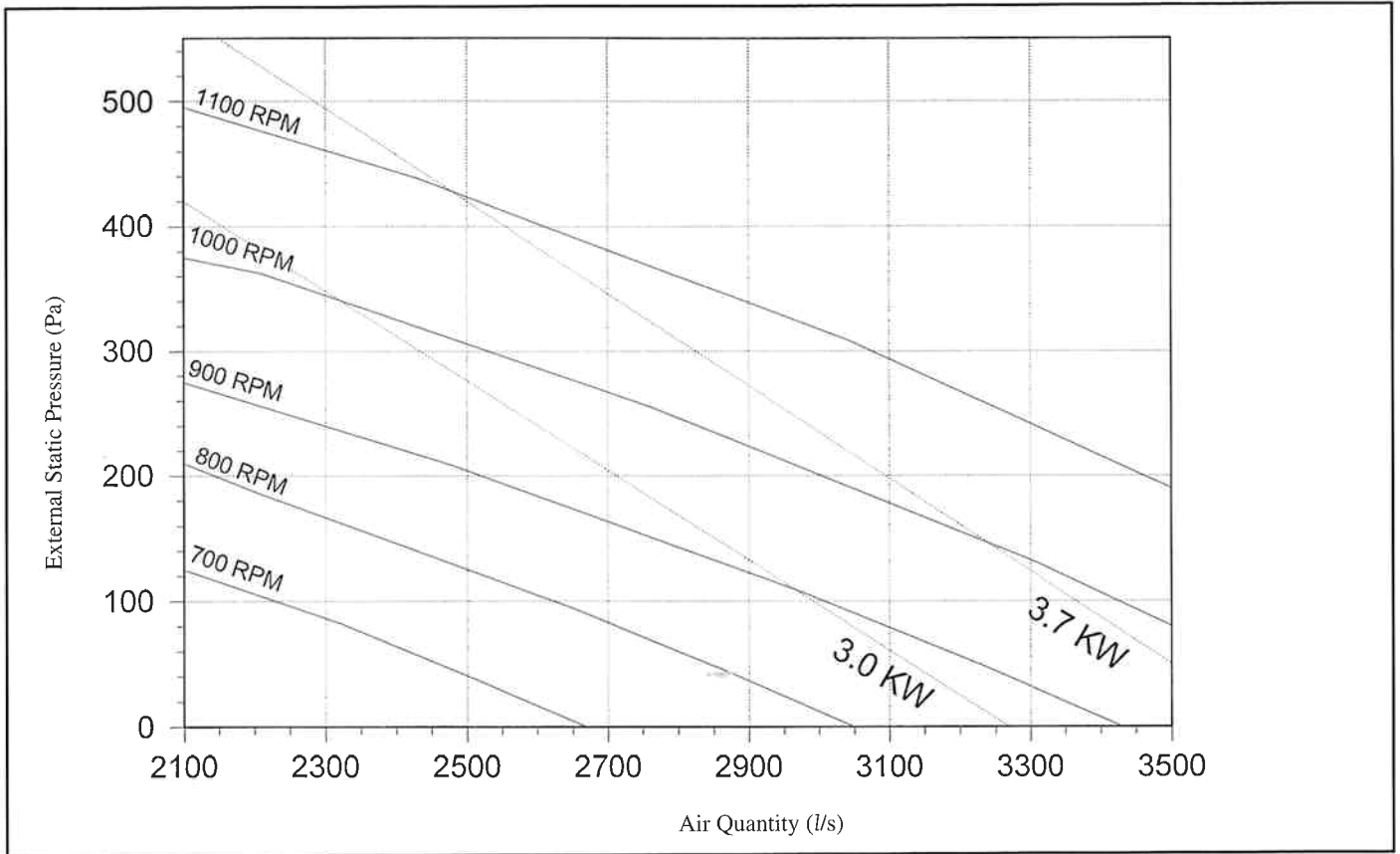


## 40LM150



## FAN PERFORMANCE (CONT')

### 40LM200



## SOUND PRESSURE LEVEL

MODEL	OCTAVE BAND CENTRE FREQUENCY Hz									
	63	125	250	500	1000	2000	4000	8000	dB(A)	
40LM120	H	47.3	57.5	59.0	63.0	70.2	69.8	68.8	60.0	75.3
	M	42.5	51.3	49.3	57.6	62.9	59.8	57.2	47.8	66.4
	L	35.4	43.7	44.1	50.9	51.0	53.9	50.0	39.5	60.4
40LM150		41.6	51.0	52.6	52.1	51.3	50.6	45.8	37.1	59.0
40LM200		43.5	51.6	53.4	55.2	53.3	51.5	47.2	41.9	60.7

**Note:** Break out sound pressure level at 1.5m under center of the unit as per JIS B8616.

## FAN MOTORS AND DRIVES

(Optional for 40LM150 & 200)

UNIT 40LM	FAN MOTOR kW		FAN RPM	PITCH DIA (mm)		BELT(SPZ)		CENTER LINE DISTANCE (mm)	FAN SHAFT DIA (mm)
				MOTOR PULLEY	FAN PULLEY	SIZE (mm)	NO.		
150	STD	2.2	879	80	132	1040	2	335.8 <sub>+40</sub>	35.0 <sup>+0</sup> <sub>-0.062</sub>
	ALT	3.0	-	-	-	-	-	335.8 <sub>+40</sub>	
200	STD	3.0	906	100	160	1112	2	335.8 <sub>+40</sub>	35.0 <sup>+0</sup> <sub>-0.062</sub>
	ALT	3.7	-	-	-	-	-	335.8 <sub>+40</sub>	

**Note:** Above data are based on IEC standard motor size.

### Equation 1: Pulley Diameter

$$PD_f = \frac{PD_m \times RPS_m}{RPS_f}$$

$$PD_m = \frac{PD_f \times RPS_f}{RPS_m}$$

PD <sub>f</sub>	Fan pulley pitch diameter (mm)
PD <sub>m</sub>	Motor pulley pitch diameter (mm)
RPS <sub>f</sub>	Fan speed
RPS <sub>m</sub>	Motor speed
L <sub>b</sub>	V belt length (mm)
L <sub>w</sub>	Center line distance (mm)
S <sub>b</sub>	V belt size

### Equation 2: V Belt Length

$$L_b = 2 \times L_w + \frac{\pi(PD_m + PD_f)}{2} + \frac{(PD_m - PD_f)^2}{4 \times L_w}$$

### Equation 3: V Belt Size

$$S_b = \frac{L_b}{25.4}$$

## GUIDE SPECIFICATIONS

Furnish and install fan coil units in the location and manner shown in IOM. Units shall be suitable for use with 230V-1Ph-50Hz (40LM120) or 415V - 3Ph - 50Hz (40LM150 & 40LM200) electrical supply.

The base units shall be completed with chilled water coil which equipped with connections for both supply and return line.

Units shall be complete with one or more centrifugal fans, integral-high pitched condensate drain pan and galvanized steel casing panels. It shall be internally insulated on the discharge side of fan with 12.7mm polyethylene.

Coils shall be constructed with lanced sine wave aluminium plate fins mechanically bonded to 3/8" (9.5mm) copper tubing with all joints brazed. Coil shall be 4 rows deep with a nominal fin spacing of 14FPI (40LM120) and 12FPI (40LM150 & 200)

Fan(s) shall be centrifugal forward curve, direct driven by a permanent split capacitor motor (40LM120) or belt driven by a totally enclosed fan cooled motor (40LM150 & 40LM200)

Drain pan shall be painted galvanized steel insulated with 6.4mm thick polyethylene foam and pitch for positive drainage with unit level.



**Carrier International Sdn. Bhd. (3385-T)**

Lot 4, Jalan P/6, Bandar Baru Bangi,  
43650, Selangor, Malaysia.

Tel: 03-8925 8001

Telex: MA 31610/MA 31614

Fax: 03-8925 3578

40LM	REV. 1
9	2000