



 United Technologies

**40LM 120,150,200 – PRODUCT DATA DIGEST**

# **CHILLED WATER FAN COIL UNITS**



*The World Leading Air-conditioning Company*

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

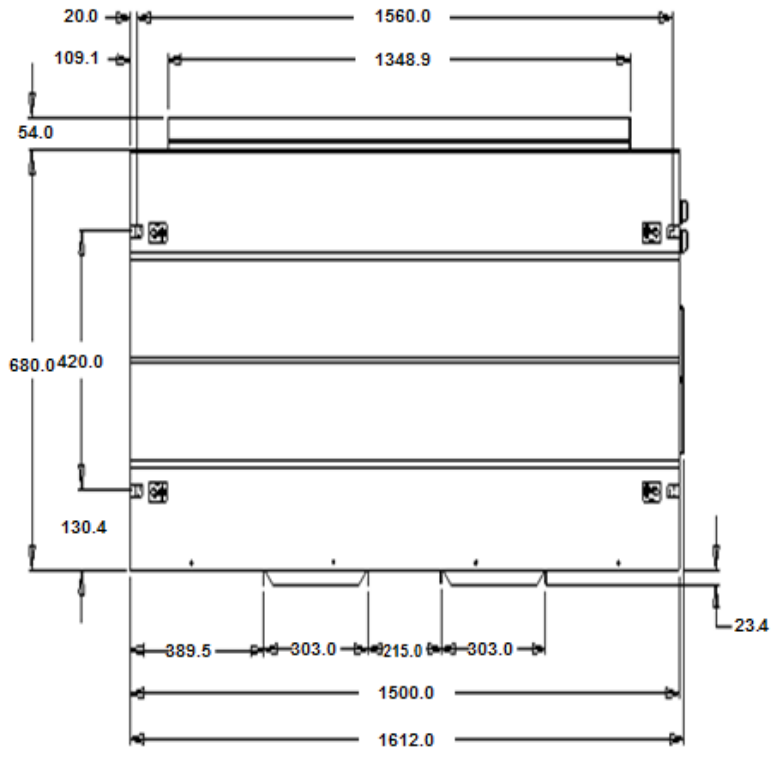
- Chilled Water Furred-in model with Plenum Fan Coil units.
- The low silhouette styling of this unit makes it a popular choice for the “in-the-ceiling” or “over the closet” applications in all types of building.
- Horizontal ducted application. The 40LM 150 & 200 can easily be converted to vertical 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 40LM 150 & 200.
- 40LM 120 is standard factory supplied with 3-speed direct drive motor.
- 40LM 150 & 200 is standard factory supplied with TEFC Induction motor and taper lock pulleys with wedge belts.
- Standard copper tube aluminum fins (Cu/Al) evaporator coil for maximum heat transfer.
- Carrier Lanced Sine Wave fin pattern ensures energy efficient performance.
- Units piping connection as below:
  - a) 40LM 120 → LHS
  - b) 40LM 150~200 → RHS (Vertical)  
LHS (Horizontal)

TYPE		CHILLED WATER FAN COIL		
MODEL		40LM120	40LM150	40LM200
NOMINAL CAPACITY	<i>kW</i>	34.8	44	58.6
	<i>Btu/hr</i>	119 000	150 000	199 940
AIR QUANTITY	<i>Range (l/s)</i>	1280 - 1753	421 - 659	2000 ~ 3400
POWER SUPPLY	<i>V/Ph/Hz</i>	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 <i>pcs</i>	2	1	1
	Max Rev <i>rpm</i>	150	1200	1200
	Diameter <i>mm</i>	241	400	400
FAN MOTOR	Type	PSC, 3 Speeds	TEFC	TEFC
	Quantity <i>pcs</i>	1	1	1
	Power Input <i>kW</i>	1.41	2.2	3
	Full Load Amps <i>A</i>	7.4	5.08 @ 380V	6.72 @ 380V
	Rev <i>rpm</i>	1405	1500	1500
COIL	Type	Copper Tube, Aluminium Plate Fins		
	Row - Fins/in	4 - 14	4 - 12	4 - 12
	Face Area <i>m<sup>2</sup></i>	0.61	1.01	1.36
FILTER	Type	Washable / Throw Away		
	Size (H x W x D) <i>mm</i>	398 x 1344 x 12	406 x 635 x 25	406 x 635/508 x 25
	Quantity <i>pcs</i>	1	4	2 & 4
CONNECTIONS	Supply <i>Inch</i>	25.4 BSP MPT	38.1 BSP MPT	50.8 BSP MPT
	Return <i>Inch</i>	25.4 BSP MPT	38.1 BSP MPT	50.8 BSP MPT
	Drain Pipe <i>Inch</i>	19.05 NPT MPT	19.05 NPT MPT	19.05 NPT MPT
NET WEIGHT	<i>Kg</i>	117	200	200
DIMENSIONS	Height <i>mm</i>	480	1487	1541
	Width <i>mm</i>	1600	1346	1651
	Length <i>mm</i>	680	710	764

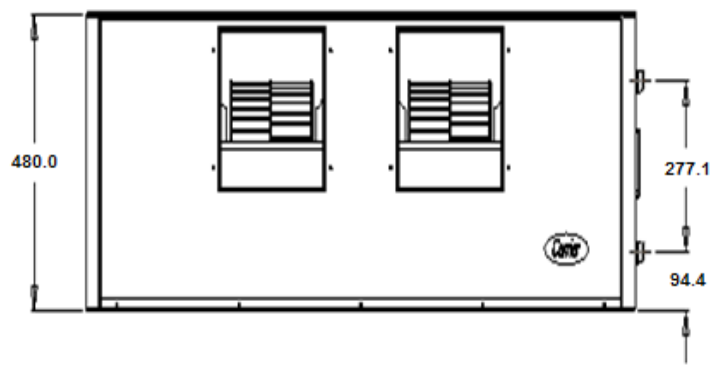
FLA: FULL LOAD AMPS

FPI: FINS PER INCH

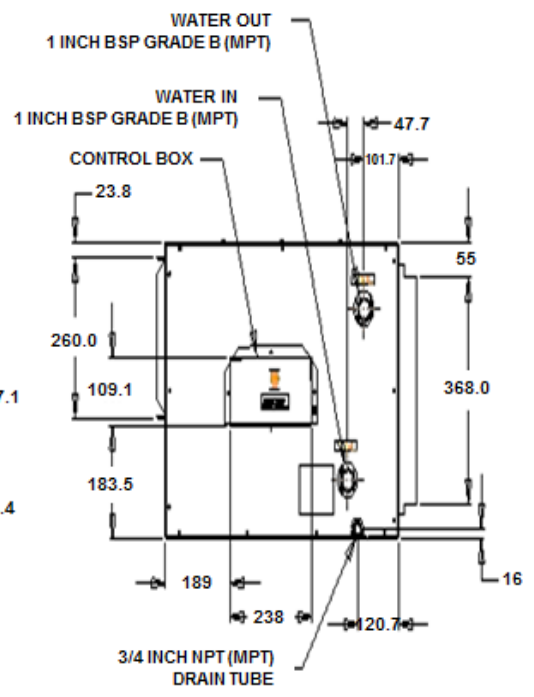
**PHYSICAL DIMENSION – UNIT SIZE 40LM 120**



**TOP VIEW**



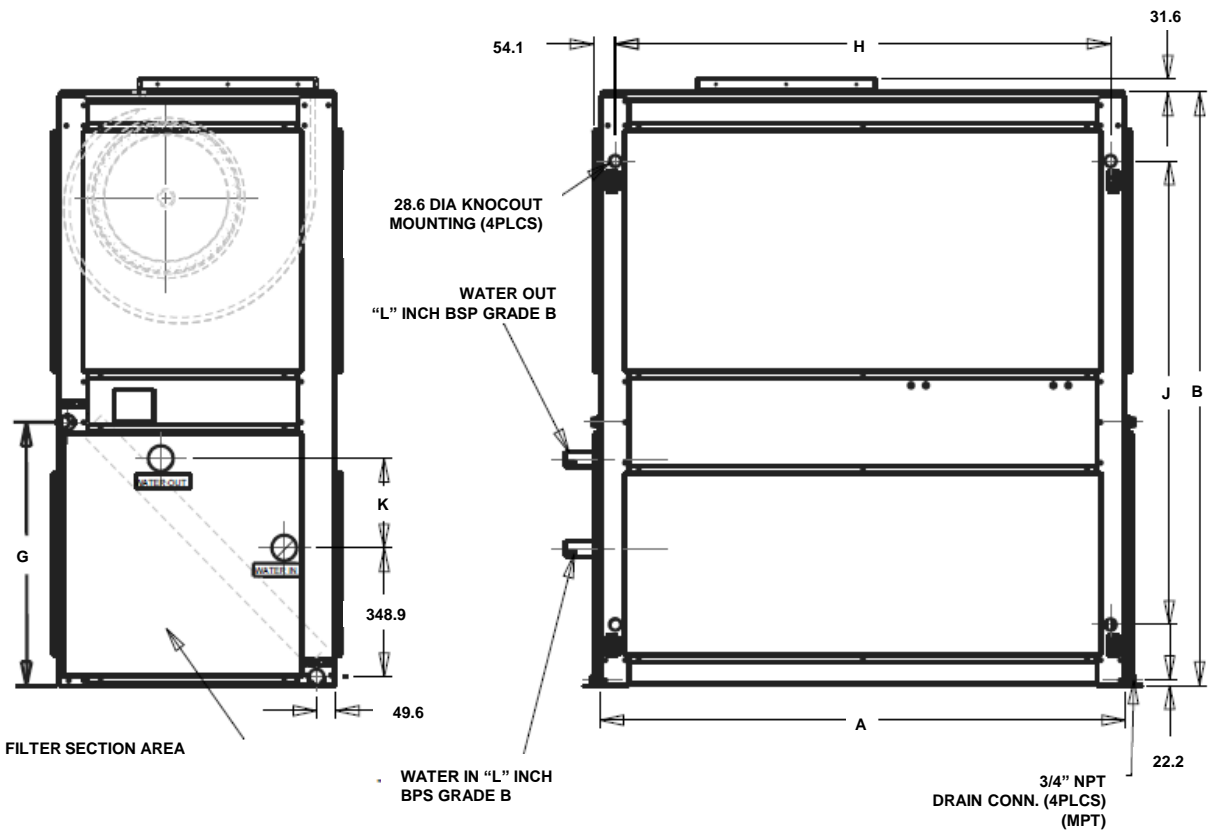
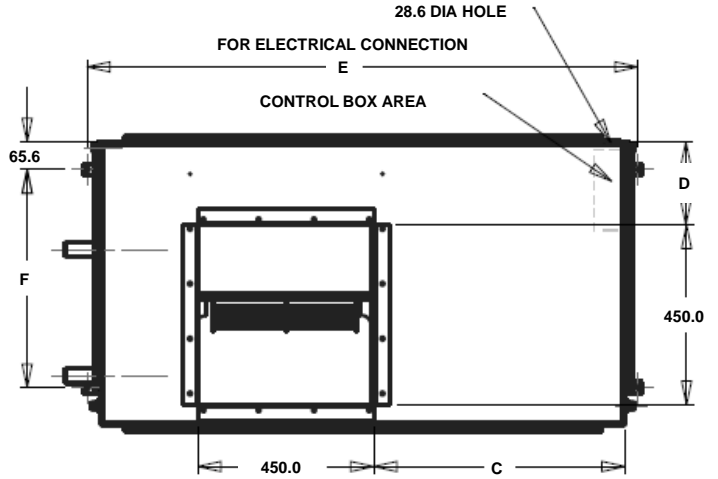
**FRONT VIEW**



**RIGHT SIDE VIEW**

# PHYSICAL DIMENSION – UNIT SIZE 40LM 150,200

Model No	A	B	C	D	E	F	G	H	J	K	L
40LM 150	1346	1487	644	208	1413	553	660	1270	1161	224	1.5
40LM 200	1651	1541	698	235	1713	606	714	1575	1215	276	2.0



# PERFORMANCE DATA COOLING CAPACITIES

## MODEL: 40LM 120

Air Quantity (l/s)	Ent Chilled Water Temp (°C)	Chilled Water Flow (l/min)	Ent Air Temperature DB/WB (°C)					
			25.0 / 17.0		27.0/ 19.5		29.0 / 22.0	
			TC	SHC	TC	SHC	TC	SHC
1000	5	45	20.3	17	24.7	17.6	29.9	18.2
		90	23.8	18.7	30	19.9	36.7	21
		135	25.4	19.4	32.1	20.8	39.4	22.2
	6	45	18.9	16.3	23.3	17	28.2	17.6
		90	22.2	17.9	28.1	19.1	34.9	20.2
		135	23.4	18.5	30.2	20	37.4	21.3
	7	45	17.6	15.7	21.8	16.4	26.6	16.9
		90	20.4	17.1	26.3	18.3	32.9	19.4
		135	21.6	17.7	28.2	19.1	35.4	20.4
	8	45	16.3	15.1	20.3	15.7	25.1	16.3
		90	18.7	16.3	24.4	17.5	31	18.6
		135	19.8	16.8	26.2	18.2	33.4	19.6
	9	45	15	14.4	18.8	15.1	23.5	15.7
		90	17	15.5	22.5	16.7	29	17.8
		135	17.9	16	24.1	17.4	31.3	18.7
1300	5	45	22.9	20.1	27.5	20.7	32.7	21.1
		90	27.5	22.5	34.3	23.7	41.9	24.7
		135	29.6	23.5	37.4	25	45.8	26.4
	6	45	21.4	19.4	25.8	20	31	20.4
		90	25.6	21.6	32.1	22.8	39.7	23.8
		135	27.5	22.5	35.1	24	43.5	25.4
	7	45	20	18.7	24.3	19.3	29.3	19.8
		90	23.6	20.6	30	21.8	37.5	23
		135	25.4	21.5	32.8	23	41.1	24.4
	8	45	18.6	17.9	22.7	18.6	27.6	19.1
		90	21.8	19.7	27.8	20.9	35.2	22.1
		135	23.2	20.5	30.4	22	38.7	23.4
	9	45	17.3	17.1	21.1	18	25.9	18.5
		90	19.9	18.9	25.8	20.1	32.9	21.2
		135	21.1	19.5	27.9	21	36.2	22.4
1820	5	45	26.2	24.6	30.8	25.2	36.1	25.4
		90	32.2	28	39.5	29.1	48.1	30.1
		135	35.4	29.6	44.2	31.1	54	32.4
	6	45	24.7	23.7	29.1	24.4	34.2	24.7
		90	30.1	26.9	37.2	28.1	45.5	29.1
		135	32.8	28.4	41.4	29.9	51.1	31.2
	7	45	23.3	22.8	27.4	23.7	32.4	24
		90	28.1	25.9	34.8	27.1	42.9	28.1
		135	30.3	27.1	38.5	28.7	48.3	30.1
	8	45	21.8	21.8	25.8	22.9	30.6	23.3
		90	25.9	24.8	32.4	26.1	40.1	27
		135	28	26	35.8	27.5	45.3	29
	9	45	20.5	20.5	24	22.1	28.7	22.5
		90	24	23.6	30	25.1	37.6	26.1
		135	25.6	24.7	33.1	26.4	42.4	27.9

# PERFORMANCE DATA COOLING CAPACITIES

## MODEL: 40LM 150

Air Quantity (l/s)	Ent Chilled Water Temp (°C)	Chilled Water Flow (l/min)	Ent Air Temperature 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	35	26.6	41.5	27.1
		110	35.8	29.2	44.4	30.6	54.2	32
		165	38.8	30.3	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	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	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	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	53.3	34.2
		165	37.8	33.2	48.1	35	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	33
		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
2600	5	55	35	33.3	40.4	33.9	46.8	34.1
		110	43.7	38.5	53	39.7	63.8	40.8
		165	48.4	40.8	59.9	42.6	73	44.3
	6	55	32.9	31.9	38.2	32.9	44.4	33.2
		110	40.9	37	49.9	38.4	60.4	39.5
		165	44.9	39.2	56.1	41.1	69.2	42.7
	7	55	31	30.8	36	32	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	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

# PERFORMANCE DATA COOLING CAPACITIES

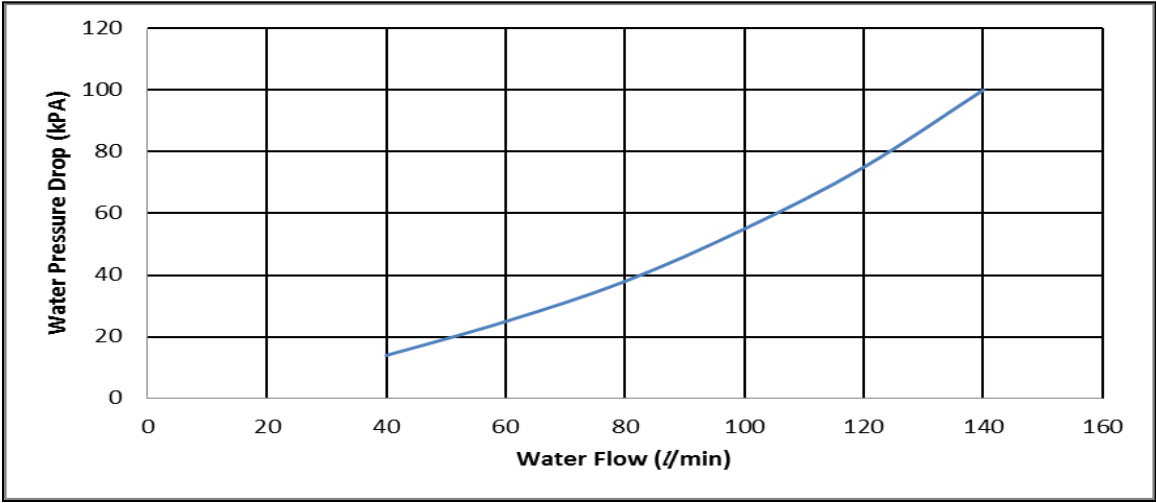
## MODEL: 40LM 200

Air Quantity (l/s)	Ent Chilled Water Temp (°C)	Chilled Water Flow (l/min)	Ent Air Temperature 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
		145	45.2	35.9	56.5	38	69.1	40
		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	29.9	40.2	31	48.7	31.7
		145	38.9	33	49.5	35	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	35.2	63.7	37.6
	9	73	28.5	27.6	34.9	28.8	43	29.7
		145	32.7	30.1	42.5	32.1	54.4	34
		218	34.5	31.1	46.1	33.6	59.8	36.1
2800	5	73	44	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	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	42.2	58.6	44.2	72.4	45.9
		218	51	44.2	65	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	71.4	45.5
3400	5	73	47.3	44.5	55	45.4	63.9	45.7
		145	59	51.4	71.8	53.2	86.7	54.6
		218	65.2	54.5	80.9	57	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	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
		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
		145	47.7	45.6	58.9	47.7	72.6	49.3
		218	51.8	48	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

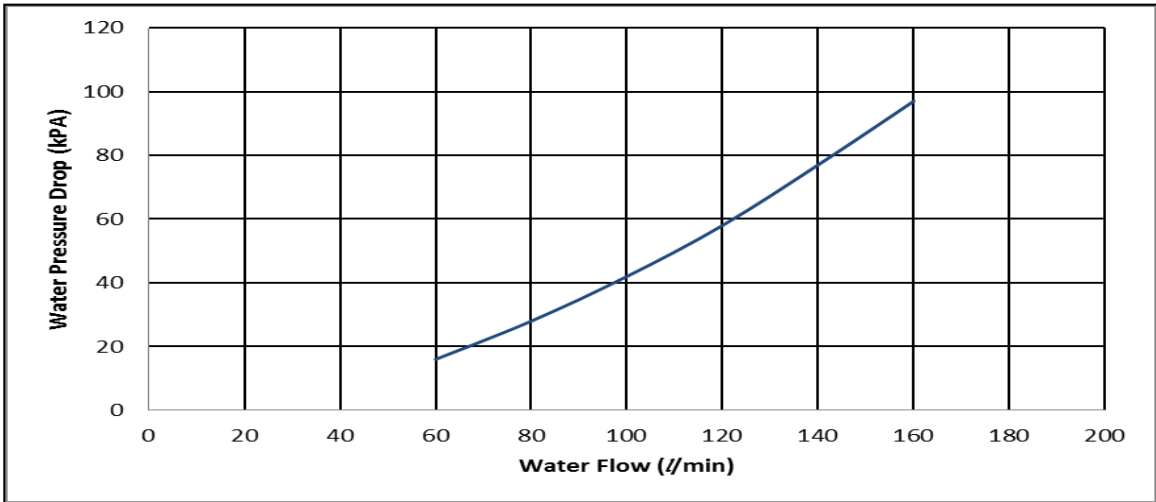


# PERFORMANCE DATA COIL PRESSURE DROP

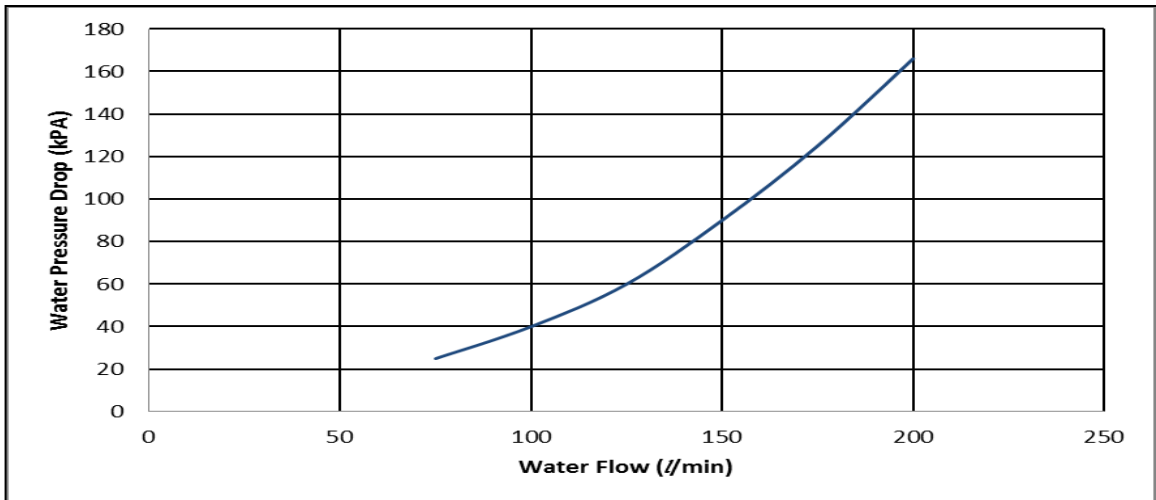
### 40LM 120



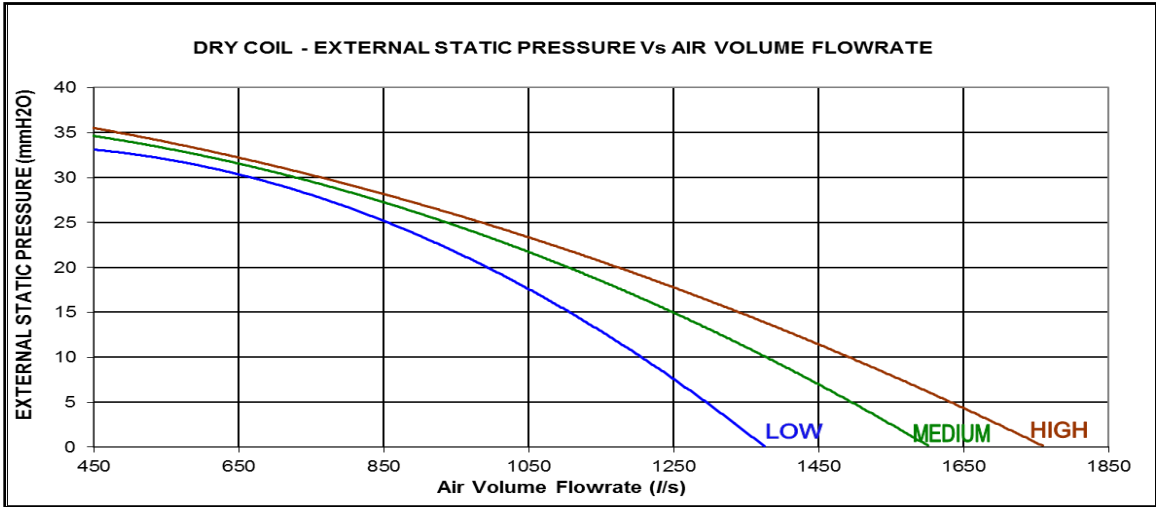
### 40LM 150



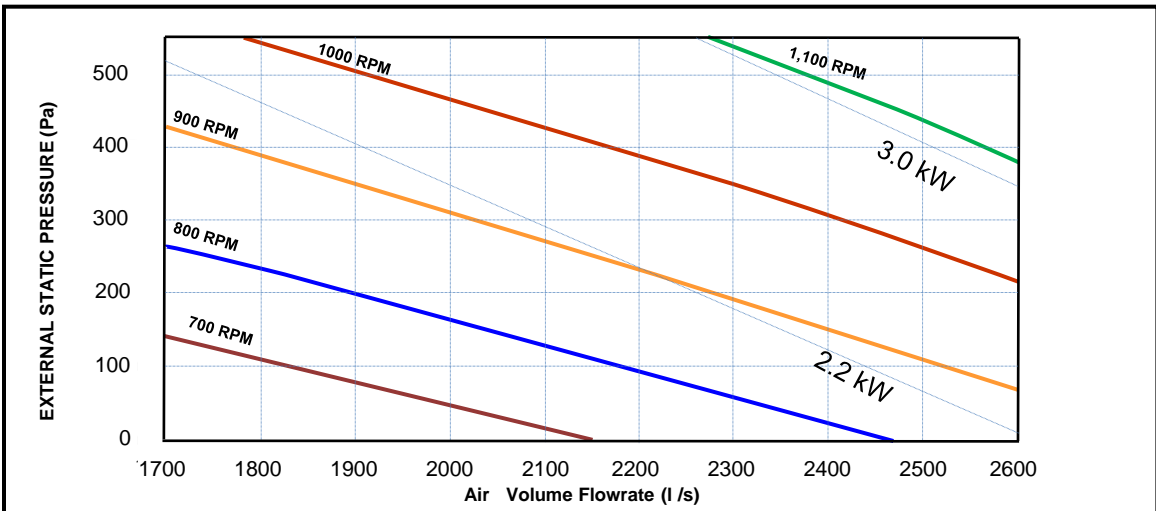
### 40LM 200



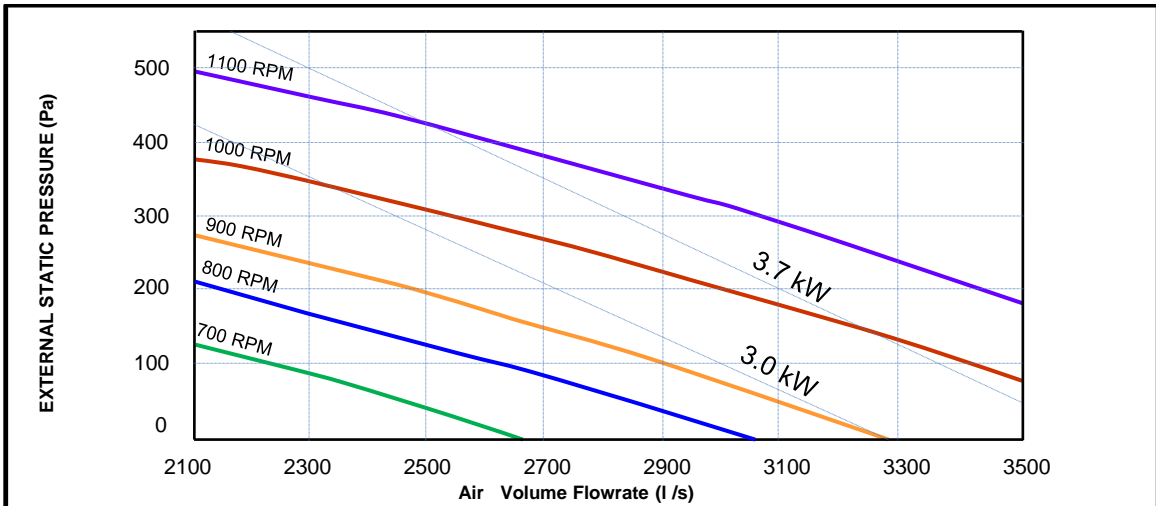
## 40LM 120



## 40LM 150



## 40LM 200



## SOUND PRESSURE LEVEL DATA

MODEL		OCTAVE BAND CENTRE FREQUENCY Hz								dB(A)
		63	125	250	500	1000	2000	4000	8000	
40LM120	H	30	40	48	48	53	54	45	35	58
	M	28	37	45	46	51	53	44	34	56
	L	25	35	40	42	49	50	41	30	53
40LM150		41.6	51	52.6	52.1	51.3	50.6	45.8	37.1	59
40LM200		43.5	51.6	53.4	55.2	53.3	51.5	47.2	41.9	60.7

**Note:** Sound measurement in accordance with standard JIS B8616-2006 (1.5 Meter below the unit bottom at 8mm ESP)

# FAN MOTOR AND DRIVES

UNIT 40LM	FAN MOTOR (Kw)		FAN RPM	PITCH DIA		BELT(SPZ)		CENTER LINE DISTANCE	FAN SHAFT DIA (mm)	
				MOTOR PULLEY	FAN PULLEY	SIZE (mm)	NO			
150	STD	2.2	879	80	132	1040	2	335.8 ± 40	35.0	+0
	ALT	3	-	-	-	-	-	335.8 ± 40		-0.062
200	STD	3	906	100	160	1112	2	335.8 ± 40	35.0	+0
	ALT	3.7	-	-	-	-	-	335.8 ± 40		-0.062

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

### Equation 1: Pulley Diameter

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

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

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

### Equation 2: V Belt Length (mm)

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

### Equation 3: V Belt Size

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

## Part 1 – GENERAL

### 1.1 System Description

Horizontal, furred-in, above ceiling for ducting room fan coil unit (40LM120). Horizontal or vertical ducted fan coil unit (40LM150/200).

### 1.2 Quality Assurance

Unit shall be tested in accordance with ARI Standard 440. Each coil shall be factory tested for leakage at 400 psig air pressure with coil submerged in water. Factory is ISO-9001 certified.

### 1.3 Delivery Storage and Handling

Each unit shall be individually packaged from point of manufacture. Units shall be handled and stored in accordance with the manufacturer's instructions.

## Part 2 – PRODUCTS

### Equipment

#### 2.1 General

Units shall be completed with water coil(s), fan(s), motor(s), drain pan, filters and all required wiring, collars for ducted units. Unit insulation and unit's drain pan insulation are UL94 compliance.

#### 2.2 40LM Furred-in Units

Base (40LM120) unit with factory installed plenum section and cleanable filter as shown on equipment drawings. The plenum (40LM120) shall be rear air return. Shall enclose the fan/motor assemblies and shall be lined with 12.7mm thick PU insulation 20kg/m<sup>3</sup> density and 6.0mm PE insulation 28.6kg/m<sup>3</sup> density on the drain pan. Unit shall have a removable panel to provide access to fan/motor assemblies and unit identification label.

#### 2.3 40LM150/200 Horizontal & Vertical Installations

Unit can be installed in vertical installation or hanging in horizontal installation. The inner insulation of 12.7mm PU insulation 20kg/m<sup>3</sup> and 6.0mm PE insulation 28.6kg/m<sup>3</sup> on the drain pan and include a removable panel to provide access to the fan/ motor assembly.

#### 2.4 Fan

Direct driven (40LM120) or belt driven (40LM150/200) double width fan wheel with forward curved blades shall be statically and dynamically balanced. Fan wheels shall be constructed of high density reinforced polypropylene. (40LM150/200) or fan wheels shall be constructed of steel (40LM150/200).

#### 2.5 Coils

Drain pan covers entire length and width of coil till the headers. Drain pan inside coated and outside insulated,

Standard base unit shall be equipped with a 4-row coil for installation in a 2-pipe system. Coils shall have 9.5mm copper tubes, aluminum fins bonded to the tubes by mechanical expansion. Each coil shall have a manual air vent and threaded connections field piping. Working pressure 1.72 Mpa, 0.105mm fin thickness and 0.24mm tube wall thickness.

#### 2.6 Operating Characteristics

A one coil unit installed in a 2-pipe system shall be capable of providing cooling as determined by the operating mode of the central water supply system.

#### 2.7 Electrical Requirements

Standard unit shall operate on 230V±10%, single phase, 50Hz electric power.

#### 2.8 Motor(s)

40LM120's fan motors shall be 3-speed, 230V, single phase, 50Hz permanent split capacitor type, with ball type bearings and over-sized oil reservoirs to ensure lubrication. The fan motor(s) shall be equipped with integral automatic temperature reset for motor protection. Motor insulation is Class E and motor is open drip proof type. Totally enclosed fan cooled motors with belt driven are used on 40LM150/200.

#### 2.9 Filter

Permanent washable synthetic media filters with 12mm thick and G2 filter class as per European Union EN779.



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*Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.*