



# INSTALLATION, START-UP AND SERVICE INSTRUCTIONS

**40LM**  
120-200  
50Hz

## CHILLED WATER FAN COIL UNIT

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**TABLE 1 PHYSICAL DATA**

Model : 40LM			120	150	200
Power Source	V-Ph-Hz		230-1-50	415-3-50	
Min/Max Voltage	V		207 - 253	390 – 440	
Operating Weight	kg		120	200	230
Coil	Type	Copper Tube Aluminium Fin			
	Face Area	m <sup>2</sup>	0.61	1.01	1.36
	No. of Rows		4		
Fin	Type	Lanced Sine Wave Plate Fins			
	Fins/inch		14	12	
Fan	Type	Centrifugal Forward Curved			
	Quantity		2	1	
	Drive		Direct Drive	Belt Drive	
Air Flow Range	ℓ/s		1000 - 1820	1700 - 2600	2000 – 3400
Fan Motor	Type		PSC	TEFC	
	Quantity		1		
	Output	kW	1.83	2.2	3.0
	Speed	rpm	1325	1500	
Connection	Type	BSP MPT			
	Supply	mm	25.4	38.1	50.8
	Return	mm	25.4	38.1	50.8
	Drain	mm	19.05 NPT MPT		
Dimension	Height	mm	480	1487	1541
	Width	mm	1600	1346	1651
	Depth	mm	680	710	764

Note : For 40LM150 & 40LM200; Motor, filter media and drive packages are field supplied.



**Carrier**

A United Technologies Company

DIMENSION

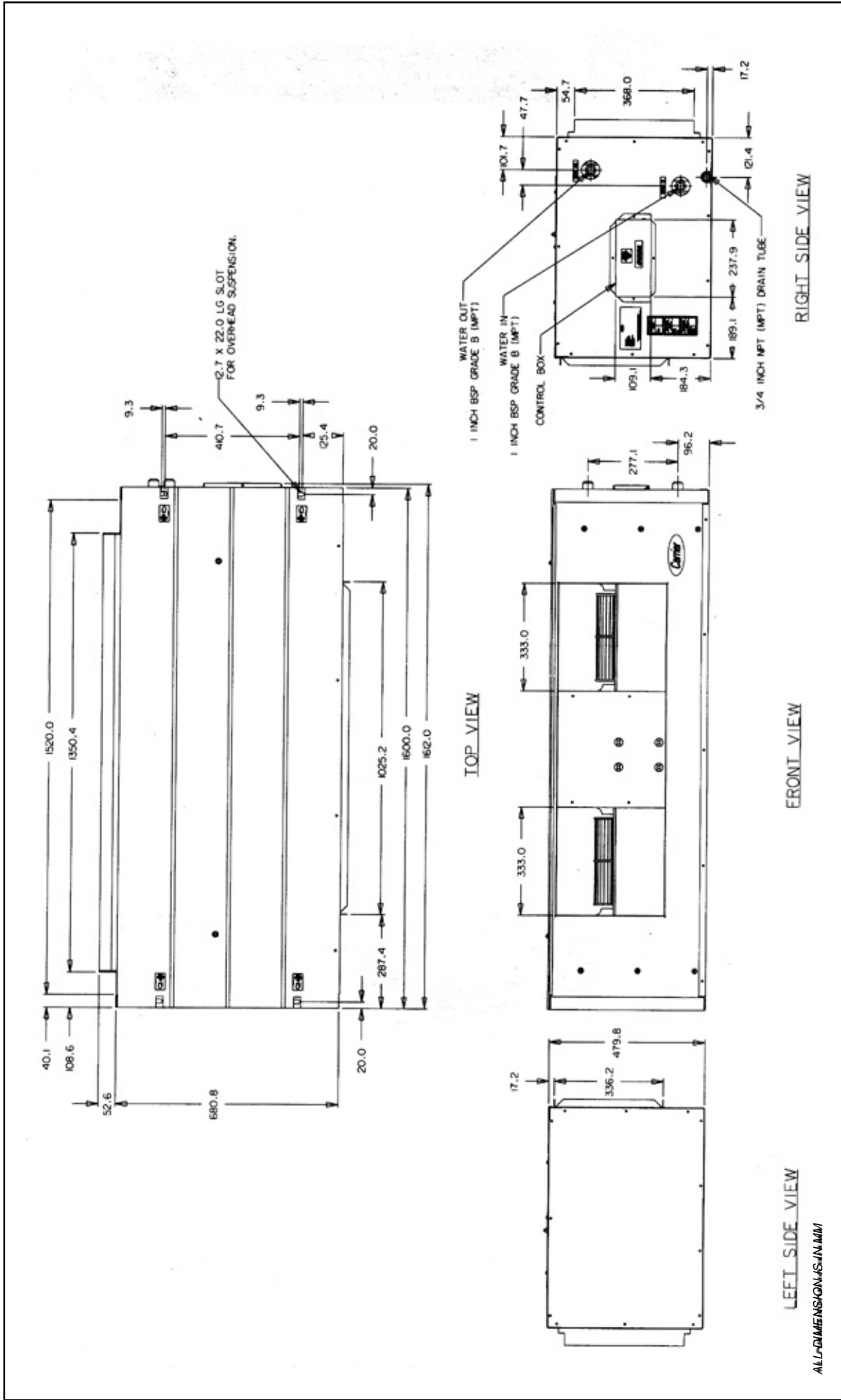


FIG. 1 40LM120 DIMENSIONAL DRAWING

**DIMENSION**

**40LM 150/200**

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

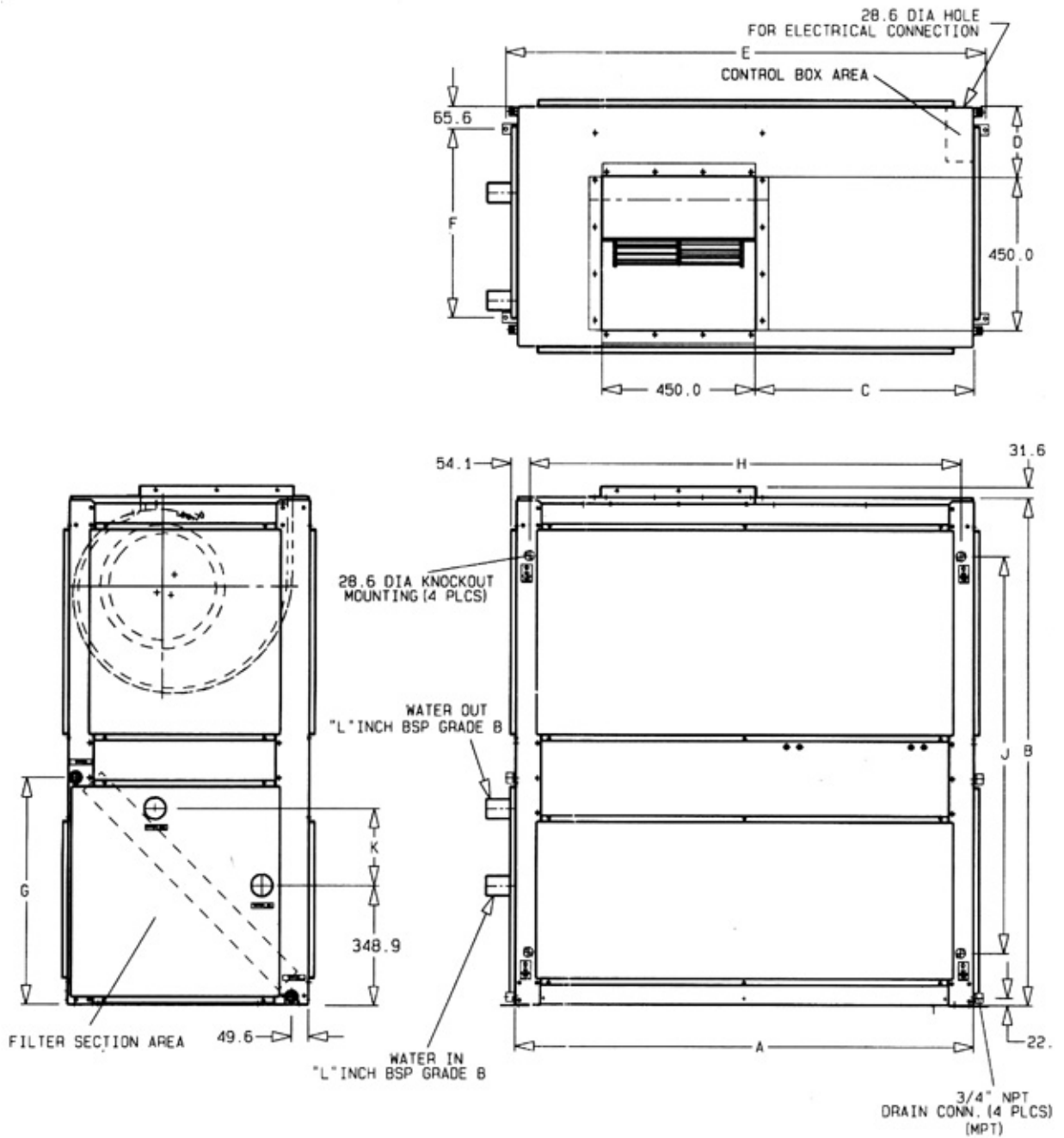


FIG.2 40LM150 & 200 DIMENSIONAL DRAWING

## SAFETY CONSIDERATIONS

Installation and servicing of air conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair or service air conditioning equipment.

When working on air conditioning equipment observe precautions in the literature and labels attached to the unit and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available for all brazing operations.

### WARNING !!!

Before performing service or maintenance operations on system, turn off main power switches to indoor unit and outdoor unit. Electrical shock could cause personal injury.

### PRELIMINARY SURVEY:

Following is a check list which should be checked before the installation is started. The installer should be familiar with each of the following requirements before the actual installation.

- Space requirement and clearance
- Ceiling or mounting strength
- Piping connections
- Condensate drain connection
- Power supply and wiring
- Air duct connections

## RIGGING AND UNPACKING

Carton / crate should not be removed from unit until reaching final location to avoid damage. Inspect unit for shipping damage and file claim with transportation agency if necessary, check nameplate voltage against available power supply. For special installation, consult local building and electrical codes.

## LOCATION, MOUNTING & ISOLATION

Unit could be installed either horizontally above a ceiling or vertically in a mechanical room. 40LM150/200 are convertible either horizontally or vertically. 40LM120 can only be installed horizontally. For horizontal discharge application, suspend horizontally using the factory-provided holes located at the top side flanges of unit. (Refer Fig.1 & Fig.2 for holes position).

Make sure the ceiling or floor is strong enough to support unit operating weight and proper isolation installed.

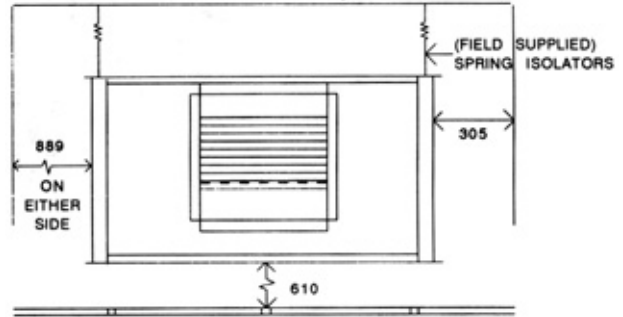
Where vibrations cause noise, insert isolation pads between unit and floor.

Note: Units are designed for indoor use, do not expose the unit to the outdoor weather. Place in indoor space where refrigerant piping, electrical wiring and duct connections are conveniently applied.

## SPACE REQUIREMENT AND SERVICE CLEARANCE

Do not restrict service areas. Refer Fig.3 and Table 2 for minimum recommended clearance space.

### (a) For Horizontal Application



### (b) For Vertical Application (40LM150/200 only)

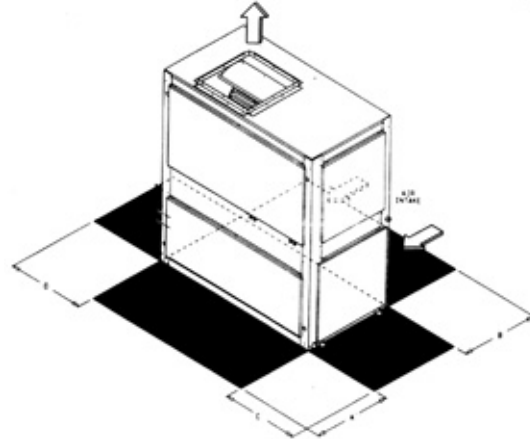


FIG.3 UNIT CLEARING & MOUNTING

Table 2. Unit Clearance

MODEL	A	B	C	D
40LM150	400	500	500	600
40LM200	500	600	500	700

**Note:** Clearance space beneath the unit may be levied provided the ceiling offers sufficient access to the unit for servicing and maintenance works.

Select and adjust vibration isolators and suspension rods so that unit is uniformly suspended. See Table 1 for the approximate unit weight and ensuring that the ceiling strength is sufficient enough to support it.

Ductwork to be installed and insulated in accordance with Carrier System Design Manual and applicable codes, use flexible connections to minimize duct to unit alignment problems plus vibration and noise transmission.

## PIPING CONNECTION

Refer to table 1 for connection's types and sizes. Install piping in accordance with all applicable codes. When all joints are completed, perform hydrostatic test for leaks. Vent all coils at this time. Check unit piping for signs of leakage. If leaks are found, notify Carrier representative before initiating any repairs. Release trapped air from system. Following the hydrostatic test, insulate all piping to prevent sweating.

To ensure compliance with building codes, restore the structure's original fire resistance rating by sealing all holes with material carrying the same fire rating as structure.

## CONDENSATE DRAIN

During installation, suspend unit level. Plug the other drain pipe with the factory supplied condensate plug. Observe all local sanitary codes and provide plugged tees for cleaning. See Fig.4.

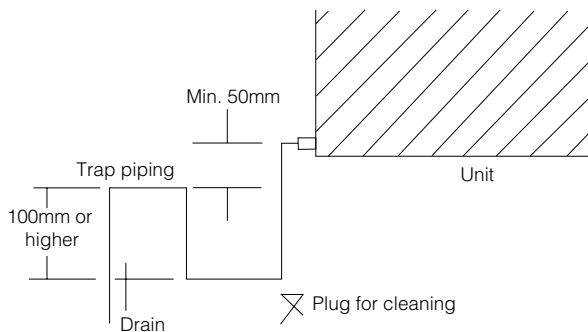


FIG.4 CONDENSATE DRAINAGE

For drain piping, observe the following items:

- i) Size of drain line must be equal to or larger than connection size.
- ii) Provide a trap which should be cleanable.
- iii) Provide insulation to prevent water condensation near the unit or indoor piping.

### Note:

In most application, it is recommended that an auxiliary drain pan be used. It should be a water tight pan installed beneath the coil section to catch overflow condensate due to clogged condensate drain. The auxiliary condensate pan drain should be a minimum 12.7mm nominal pipe size, discharging at a point which can be readily observed. Condensate drains should not be directly connected to a plumbing drainage system nor be made common to the unit condensate drain.

## DUCT CONNECTION

See Fig.1 & Fig. 2 for connection size.

### SUPPLY DUCT CONNECTION

Connect the flanged discharged openings to the supply duct utilizing a canvas connection to prevent vibration. It is important that this connection be properly fabricated to prevent high friction losses and air noise.

### RETURN DUCT CONNECTION

Attach flanges on the return air openings and connect return and outside air duct thru a canvas connection.

## FILTER (40LM120 only)

Filter is supplied with the standard unit. The unit is designed such that a filter in a rectangular frame (collapsible type) of dimension shown below may be inserted or removed at the back of the unit with ease by removing the side angles (see Fig.5). Throwaway filter of the right dimensions may be purchased from Carrier.

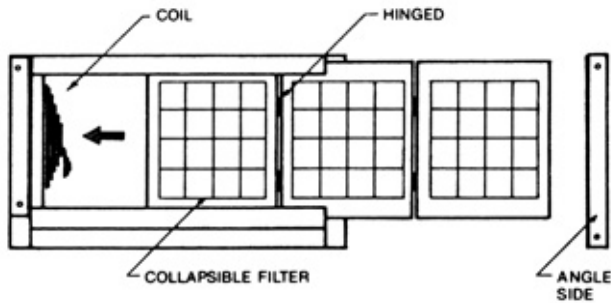


Fig. 5 Filter Access

Note: Filter size for 40LM120 is 1344mm x 398mm x 12mm.

## FILTER (40LM150/200)

Filter is field supplied and not factory fitted with the standard unit.

The filter sizes are:

Model	Filter size	Quantity
40LM150	635mm x 406mm x 25mm	4 pcs
40LM200	635mm x 406mm x 25mm	2 pcs
	508mm x 406mm x 25mm	4 pcs

To insert / remove the filters, follow the procedures below:

1. Remove opposite header's side panel at the coil section.
2. Slide in/out the filter media on the provided filter track.
3. Re-install the side panel.

## UNIT ACCESS (40LM120 only)

All internal parts of the unit should be accessible by removing access panel at the base of the unit. Do not remove the base pan which is connected with the drain pipe unless necessary. To remove the access panel, follow the procedures below (Refer to Fig.6).

1. Remove the screws from the fan deck & side panel.
2. Pull down the access panel as shown in Fig.6 (approximate 25mm)
3. Slide out the access panel.

To reinstall access panel, reverse the procedures.

Finally, slot the access panel in place with screw from side thru the holes in the deck & side panel.

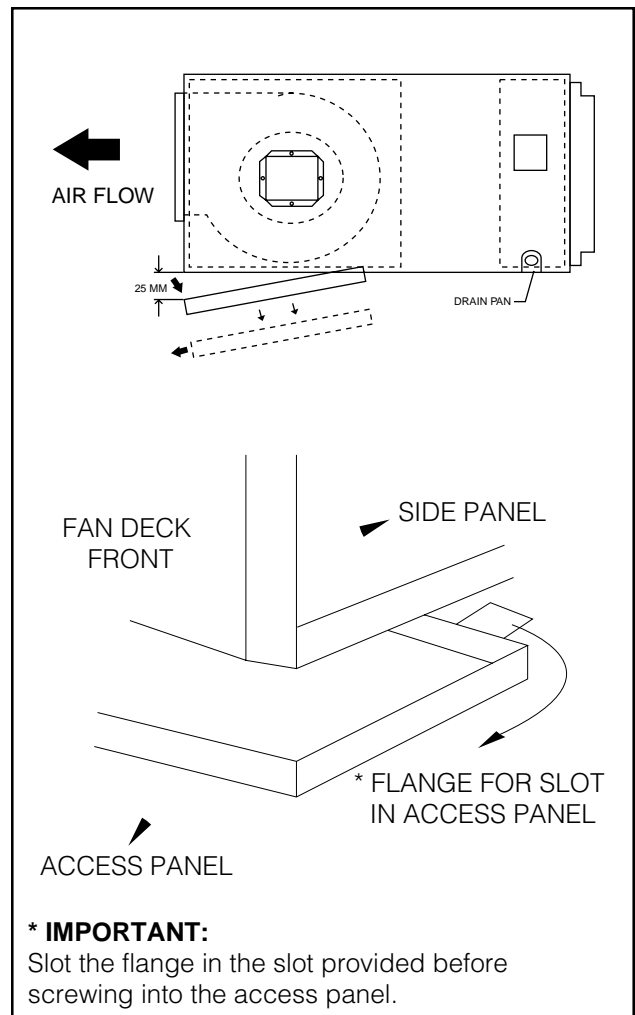


FIG.6 MOUNTING ACCESS PANEL

## WIRING

Beware! When making wiring connections or working on unit be sure that electrical disconnect is open, locked & tagged. Follow local codes describing conduit and shielding requirements.

The unit may be operated at either one of its three fan speeds. Refer wiring diagram (Fig.9 & 10) to relate colour & number of wire to the respective speed required.

**REMEMBER** that although power is supplied to only one of the speeds, the remaining wires are live and must be isolated from unit body.

## CONFIGURATION

The unit is factory installed with coil connections located on the left hand side when viewed in direction of air flow.

The control box is fixed on the left hand side when viewed in direction of air flow.

## START-UP

BEFORE STARTING UNIT - Check the following:-

- (1) No water leaks in system.
- (2) Correct field wiring and tight connections.
- (3) Panels and covers to be tightly fitted.
- (4) Check 40LM unit for correct fan operation and condensate drainage must be confirmed and unit level adjusted if necessary for proper drainage.

## SERVICE

Ensure that electrical disconnect is open, locked and tagged while working on unit.

### **MOTOR & BLOWER REMOVAL : (40LM120 only)**

1. Remove access panel by following the steps described previously.
2. Disconnect motor wires from terminal block in junction box at the side of the unit.
3. If capacitor is to be removed, detach it from the control box by removing the capacitor bracket.
4. Removed the bolts on the left & right hand sides of fan discharge.
5. Slide the inner fan deck, motor & blower out at the bottom.
6. Dismantle the end plate at the left by unscrewing the screw on fan deck & scroll.
7. Release the blower by unscrewing the screw on blower & motor shaft.
8. Repeat step 5 & 6.
9. Dismantle the rest of the screws on fan deck.
10. To dismantle the motor, loosen the bolts on the motor bracket.

To reinstall blower, reverse the above procedures. Ensure that the fan deck insulation is not turn and exposing the internal panel surface. If this happens, replace the insulation.

To install motor, reverse the above procedures, ensure all screws are tightened securely and blower wheel is centered and can be turned freely by hand before switching on supply.

### **DRAIN CHECK**

If water drips from unit either drain pipe, drain line or trap may be clogged. Also drain pipe plug on opposite side of unit may have fallen loose, replace them.

Check drain pan water level by removing access panel, remove particles obstructing flow from drain pan or drain line. Drain pan may also be removed from suspended unit. To do this, first remove the access panel as illustrated previously.

### **FILTER CHECK**

They should be checked periodically. Do not attempt to clean or reuse disposable filters, replace them.

## CHECK LIST

Before completing the installation, re-check the following:

- i) Make sure units are firmly installed.
- ii) Pulley, V belt alignment. Fan motor installation.
- iii) Check for any loosen parts which may cause vibration and noise.
- iv) No water leaks.
- v) Correct field wiring.
- vi) Slope for drain pipe and correct trap setting.
- vii) Panels and covers are fastened correctly.

### **ALIGNMENT OF PULLEY (40LM150/200)**

Position motor pulley and fan pulley in straight line. Fit straight edge to side of both pulleys to check alignment (Fig.7).

Misalignment causes excessive power consumption and shorter life of belts.

### **ADJUSTING BELT TENSION (40LM150/200)**

Refer to Fig.8. Adjust belts so that they can be depressed 15mm with one finger midway between two pulleys. New belts are likely to stretch during operation so adjust again. Refer Carrier General Maintenance Guidelines for proper belt tension.

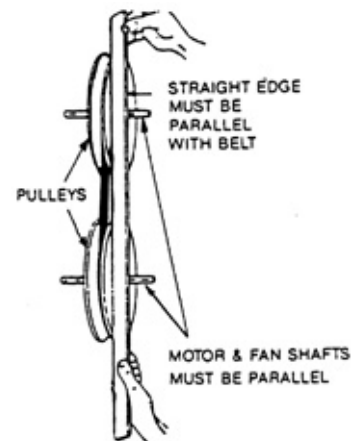


FIG.7 PULLEY ALIGNMENT

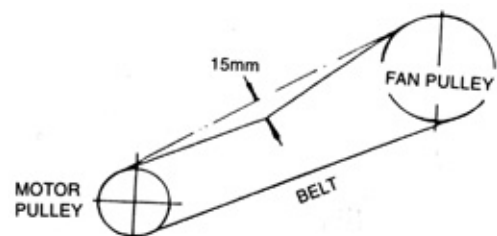


FIG.8 BELT TENSION

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## **MAINTENANCE**

Proper maintenance prevents trouble and extends unit life. Check unit periodically.

### ***DRAIN CHECK***

If water drips from unit either drain pipe, drain line or trap may be clogged. Also drain-pipe plug on opposite side of unit may have fallen loose, replace them.

### ***FILTER CHECK***

Check twice a month, and wash if clogged. Clogged filter increases air-resistance and decreases air flow. Soak filters in detergent solution. Rinse and allow them to dry before reinstalling.

### ***V-BELT (40LM150/200)***

Loose belt causes excessive belt slipping and wear. Check for proper tension and adjust as required. Replace excessively worn belts.

### ***COIL***

Keep clean. Never operate unit without a filter or panel. Check inlet side of coil and brush out or vacuum if coil is clogged with dirt.

### ***BEARINGS (40LM150/200)***

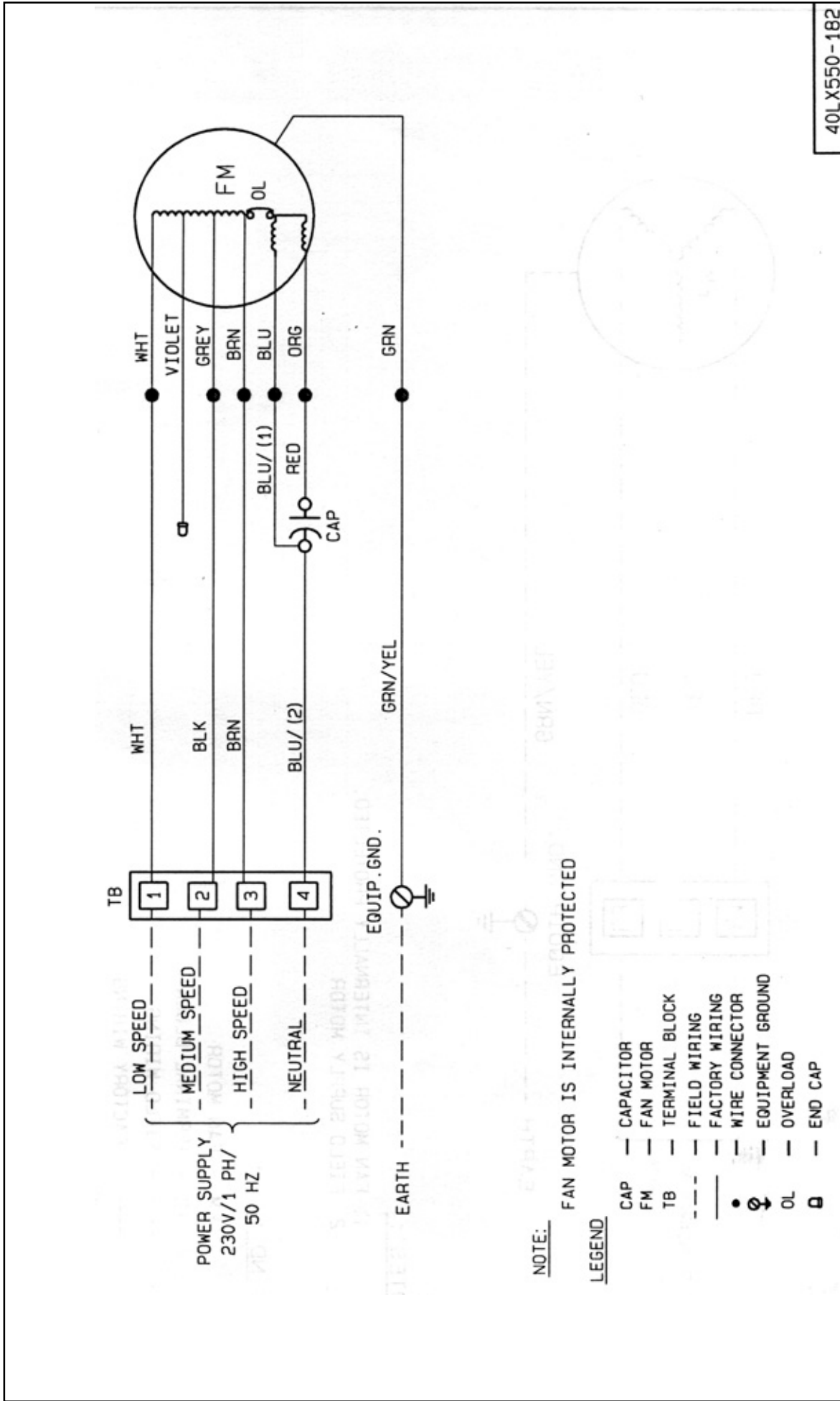
Hermetic permanently lubricated bearings are used. The bearings are maintenance-free for the first five years under normal operating condition. If abnormal sounds are detected, change to new one.

### ***PANEL***

Fasten panels tightly to the unit so that there is no air leakage.



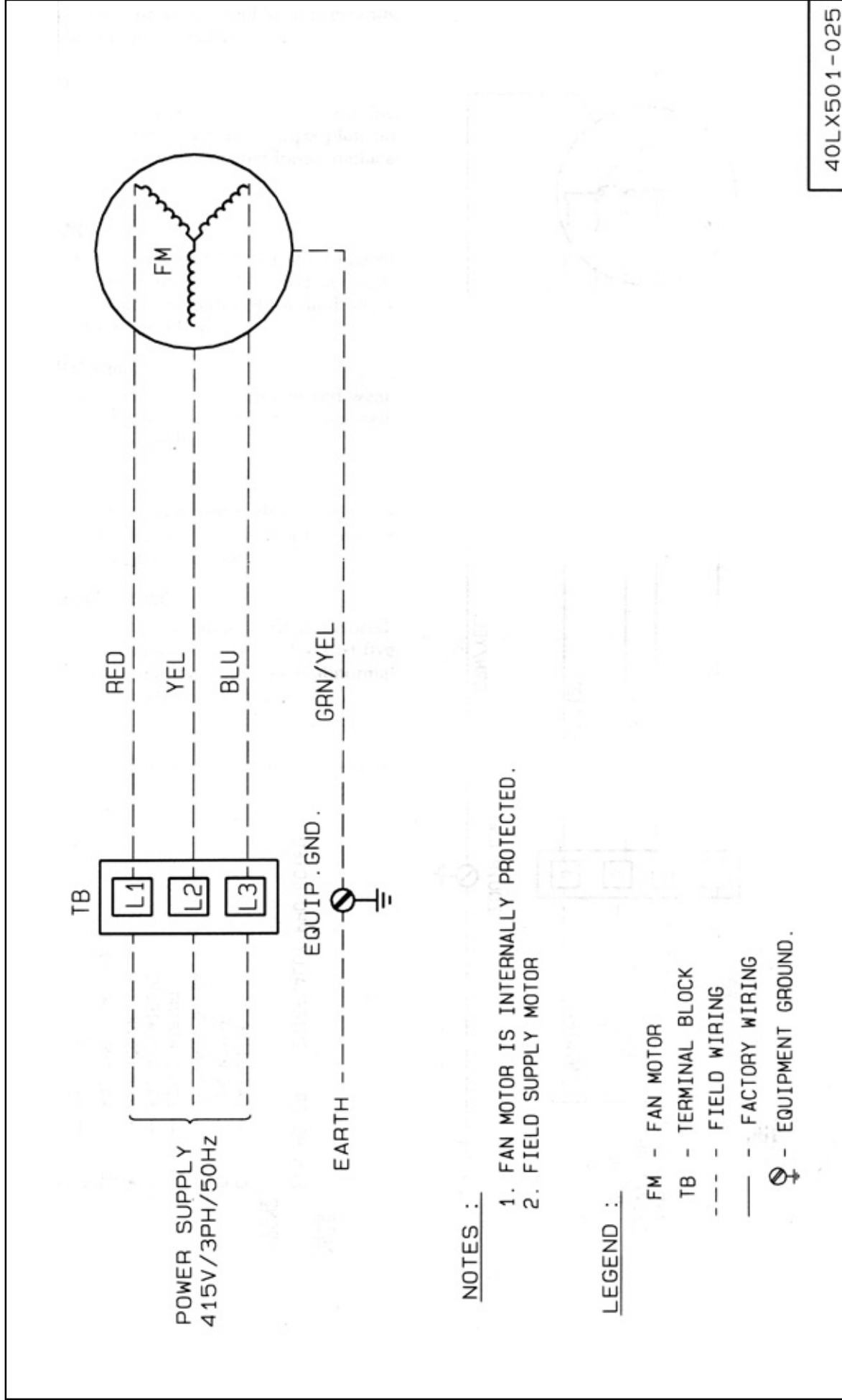
# WIRING DIAGRAM



40LX550-1B2

FIG.9 40LM120 WIRING DIAGRAM

**WIRING DIAGRAM**



40LX501-025

FIG.10 40LM150 & 200 WIRING DIAGRAM

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# MEMO



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40LM	REV-1
05	2010