



Installation, Start-Up and Service Instructions

SAFETY CONSIDERATIONS

Air-handling equipment is designed to provide safe and reliable service when operated within design specifications. To avoid injury to personnel and damage to equipment or property when operating this equipment, use good judgment and follow safe practices as outlined below.

⚠ DANGER

NEVER enter an enclosed fan cabinet or reach into a unit while the fan is running.

LOCK OPEN AND TAG the fan motor power disconnect switch before working on a fan. Take fuses with you and note removal on tag.

LOCK OPEN AND TAG the electric heat coil power disconnect switch before working on or near heaters.

⚠ WARNING

CHECK the assembly and component weights to be sure that the rigging equipment can handle them safely. Note, also, the centers of gravity and any specific rigging instructions.

CHECK for adequate ventilation so that fumes will not migrate through ductwork to occupied spaces when welding or cutting inside air-handling unit cabinet or plenum.

WHEN STEAM CLEANING COILS be sure that the area is clear of personnel.

DO NOT attempt to handle access covers and removable panels on outdoor units when winds are strong or gusting until you have sufficient help to control them. Make sure panels are properly secured while repairs are being made to a unit.

DO NOT remove access panel fasteners until fan is completely stopped. Pressure developed by a moving fan can cause excessive force against the panel and toward personnel.

DO NOT work on dampers until their operators are disconnected.

BE SURE that fans are properly grounded before working on them.

⚠ CAUTION

SECURE drive sheaves with a rope or strap before working on a fan to ensure that rotor cannot free-wheel.

DO NOT restore power to unit until all temporary walkways inside components have been removed.

NEVER pressurize equipment in excess of specified test pressures.

PROTECT adjacent flammable material when welding or flame cutting. Use sheet metal or asbestos cloth to contain sparks. Have a fire extinguisher at hand and ready for immediate use.

⚠ CAUTION

FIELD supplied motors should be UL (Underwriters' Laboratories) or CSA (Canadian Standards Association) approved.

FIELD wiring must comply with National Electric Code and all local requirements.

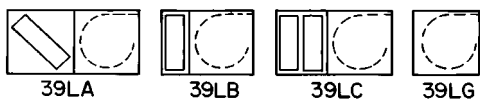
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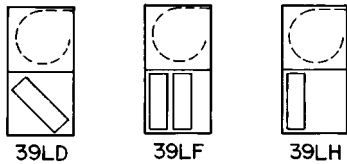
INTRODUCTION

Unit Identification — 39L units are identified by the 18-digit part number listed on the serial plate. The part number describes all component, coil, motor, drive, and control selections. See Fig. 1 for unit identification. See Fig. 2 and Table 1-6 for part number nomenclature.

For units with product integrated controls (PIC), also refer to separate Installation, Start-Up and Troubleshooting Instructions for PIC installation.



HORIZONTAL DRAW-THRU



VERTICAL DRAW-THRU

Fig. 1 — Unit Identification

PREINSTALLATION

1. Check items received against packing list. Notify Carrier of any discrepancy.
2. Refer to Fig. 3 for service area requirements.
3. To transfer unit from truck to storage site, refer to rigging details in Fig. 4 and section on unit rigging for proper handling. See Table 7 for component weights.

⚠ CAUTION

If a fork lift truck is used, lift only from heavy end of skid. Minimum recommended fork length is 48 inches.

4. Do not stack unit components or accessories during storage. Stacking can cause damage or deformation.
5. If unit is to be stored for more than 2 weeks prior to installation, observe the following precautions:
 - a. Choose a dry storage site that is reasonably level and sturdy to prevent undue stress or permanent damage to the unit structure or components. Do not store unit on vibrating surface. Damage to stationary bearings can occur. Set unit off ground if in heavy rain area.
 - b. Remove all fasteners and other small parts from job-site to minimize theft. Tag and store parts in a safe place until needed.
 - c. Cover entire unit with a tarp or plastic coverall. Extend cover under unit if stored on ground. Secure cover with adequate tiedowns or store indoors. Be sure all coil connections have protective shipping caps.
 - d. Monthly — Remove tarp from unit, enter fan section through access door or through fan inlet, and rotate fan and motor slowly by hand to redistribute the bearing grease and to prevent bearing corrosion.

Rigging (Fig. 4) — All 39L units can be rigged by means of the lifting brackets on bottom of unit.

Units are shipped fully assembled. Do not remove shipping skids or protective covering until unit is ready for final placement. Use slings and spreader bars as applicable to lift unit. *Do not lift unit by coil connections or headers.*

Do not remove protective caps from coil piping connections until ready to connect piping.

Do not remove protective cover or grease from fan shaft until ready to install sheave.

Lay rigid temporary protection such as plywood walkways in unit to prevent damage to insulation or bottom panel during installation.

Suspended Units — Figure 5 shows overhead suspension of unit using optional factory-supplied suspension channels.

Each support channel consists of 2 pieces, the smaller of which fits inside the larger one. This allows the channel to be adjusted to the required length for installation.

Channels are shipped on top of the unit. The 2 sections of each channel are shipped one inside the other, and are held in place during shipping by the panel screws in the top panel.

Hardware required for installation of suspension channels is shipped in a package inside the fan section.

At least 2 suspension channels are shipped with each fan and coil unit. One or more extra channels will be supplied depending on the number of accessories ordered. Be sure to install all the suspension channels shipped with a unit. Refer to 39L Isolator Mounting (Suspended Unit) certified drawing for details.

To install suspension channels:

1. Remove panel screws to free suspension channels for installation. Replace screws in top panel.
2. Adjust channel to required length by sliding one channel section inside the other. The channel must extend at least 9 in. but not more than 12 in. beyond the edge of the unit. Set length of channel by installing factory-supplied bolts through the overlapping channel sections.
3. Mount unit to suspension channel using factory-supplied nuts and bolts through $\frac{7}{16}$ -in. diameter holes in unit lifting bracket.
4. Install field-supplied suspension rods through $\frac{9}{16}$ -in. diameter holes provided at outer edges of channel. Be sure hanger rods are securely fastened in place.

Service Clearance — Provide adequate space for unit service access (fan shaft and coil removal, filter removal, motor access, damper linkage access, etc.) as shown in Fig. 3.

Condensate Drain — To prevent excessive build-up of condensate in drain pan, adequate trap clearance must be provided beneath the unit as indicated in Fig. 6. See Installation, Condensate Drain section (page 14) for additional details.

External Vibration Isolators — Install vibration isolators per certified drawings, and in accordance with the job specifications and the instructions of the vibration isolator manufacturer. The coil piping must be isolated or have a flexible connection to avoid coil header damage because of unit motion. A flexible connection should be installed at the fan discharge.

Figure 5 shows isolation location for floor mounting or overhead suspension of unit.

Table 1 — Unit Part Number

POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
UNIT	3	9	L	C	1	0	G	K	-	C	H	E	A	C	G	-	A	

POSITION 1,2,3	POSITION 4	POSITION 5,6	POSITION 7,8	POSITION 9	POSITION 10	POSITION 11	POSITION 12	POSITION 13	POSITION 14	POSITION 15	POSITION 16	POSITION 17	POSITION 18						
MODEL NO.	UNIT MODEL	UNIT SIZE	DRAW-THRU ACC. OPTIONS	PREHEAT COIL	BASE UNIT COIL TYPE & ARR.	BASE UNIT COIL DESCRIPTION	FANS		FAN SPEED	MOTOR	PIC	OPT. EXP. SUSP. HAND	SPECIAL ORDER						
39L	A B C D F G H	03 06 08 10 12 15 18 21 25	- = NO ACCESSORIES	- = NO COIL SECTION FOR COIL SECTION IN POS. 7 & 8	- = LG	- = NO COIL	- = NO COIL	OPTION	IGV	DISCHARGE	- = NO DRIVE	- = NO MOTOR	- = NO PIC	A N N R					
					A = CW ONLY	LA, LB, LD	MUST BE - IF POS. 11 IS -	A	N	THF 60HZ					B N Y R	BLANK = (STD. UNIT)			
					B = DX ONLY	LC, LF UNITS	1st COIL IN AIRFLOW	2nd COIL IN AIRFLOW	B	N	UBF 60HZ					C Y N R	CARRIER SPECIAL ORDER MODELS		
					C = CW/HTG.	HTG. COIL NOT AVAIL. ON LF03.			C	N	UBR 60HZ						D Y Y R	6= COPPER FIN COILS	
					D = DX/HTG.	NOT AVAIL. AS HTG. ONLY UNITS			D	N	THR 60HZ						1 N N L	7= .025 WALL TUBE	
					E = HTG./CW	LC, LF UNITS MUST HAVE BOTH POS. 11 & POS. 12 COILS			E	Y	THF 60HZ						2 N Y L	8= 6 + 7	
					F = HTG./DX	LH UNITS WITH HTG. COIL ONLY POS. 11			F	Y	UBF 60HZ						3 Y N L	9= ()	
					J = HTG. ONLY				G	Y	UBR 60HZ						4 Y Y L		
									H	Y	THR 60HZ								
												1 N THF 50HZ							
							2 N UBF 50HZ												
							3 N UBR 50HZ												
							4 N THR 50HZ												
							5 Y THF 50HZ												
							6 Y UBF 50HZ												
							7 Y UBR 50HZ												
							8 Y THR 50HZ												
							SEE NOTES 1, 2 & 3												
	SEE FIG. 2		(SEE TABLE 2)	(SEE TABLE 3)		(SEE TABLE 3)			(SEE TABLE 4)	(SEE TABLE 5)	(SEE TABLE 6)								

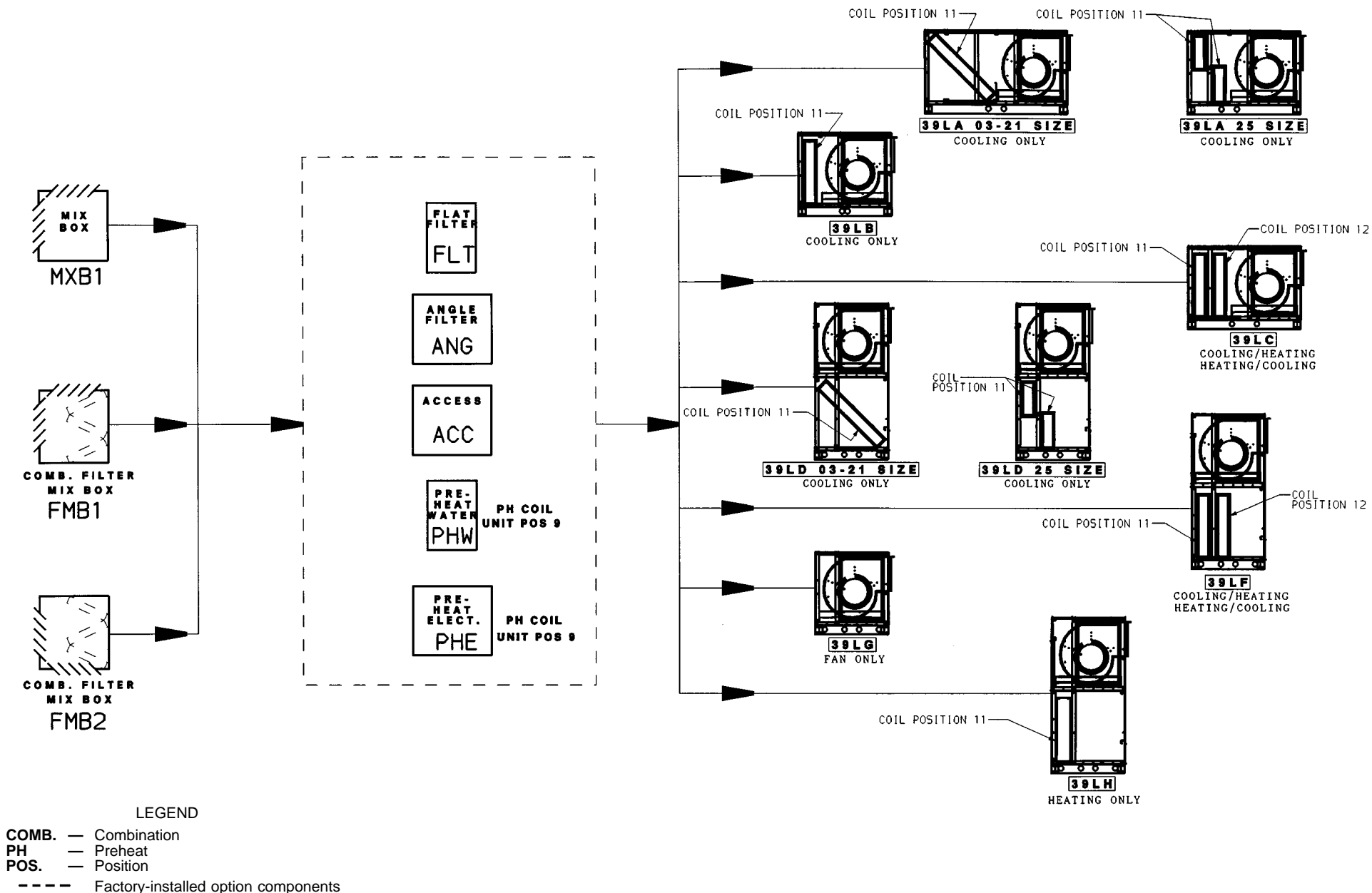
LEGEND

CW — Chilled Water
DX — Direct Expansion
EXP — Export Crate
HTG — Heating
IGV — Inlet Guide Vanes
L — Left-Hand
N — No
OPT. — Option
PIC — Product-Integrated Controls

POS. — Position
R — Right-Hand
SUSP — Internal Suspension
THF — Top Horizontal Front
THR — Top Horizontal Rear
T.S. — Tuf-Skin™
UBF — Upblast Front
UBR — Upblast Rear
Y — Yes

NOTES:

1. THR discharge not available on 39LA, LB, LC, or LG units.
2. IGVs not available for 03 size units.
3. Hand refers to fan motor location or coil header location when facing component inlet. For components with one access door, hand also refers to door location when facing component inlet. Motor, header, and door hand must be the same in factory-assembled unit.



**Fig. 2 — Position 4, Unit Configuration Model
(Component Sequence Also Shown)**

Table 2 — Positions 7 and 8; Draw-Thru Factory-Installed Option (FIOP) Components

POSITION 7

OPTION	A	B	D	E	F	G	H	K	L	M	N	P	Q	
A	1	2	4	5	6	7, 1	7, 2	8	—	—	9	—	—	
B	1, 5	2, 5	4, 5	5, 4	6, 4	7, 1 5	7, 2 5	8, 4	8, 5	8, 6	9, 4	9, 5	9, 6	
C	1, 6	2, 6	4, 6	—	—	7, 1 6	7, 2 6	8, 4 5	8, 5 4	8, 6 4	9, 4 5	9, 5 4	9, 6 4	
P O S I T I O N 8	D	1, 4 5	2, 4 5	4, 5 4	—	7, 1 4, 5	7, 2 4, 5	8, 4 6	—	—	9, 4 6	—	—	
	E	1, 4 6	2, 4 6	4, 6 4	—	7, 1 4, 6	7, 2 4, 6	8, 4 5, 4	—	—	9, 4 5, 4	—	—	
	F	1, 5 4	2, 5 4	—	—	—	7, 1 5, 4	7, 2 5, 4	8, 4 6, 4	—	—	9, 4 6, 4	—	—
	G	1, 6 4	2, 6 4	—	—	—	7, 1 6, 4	7, 2 6, 4	—	—	—	—	—	—
	H	1, 4 5, 4	2, 4 5, 4	—	—	—	7, 1, 4 5, 4	—	—	—	—	—	—	—
	J	1, 4 6, 4	2, 4 6, 4	—	—	—	7, 1, 4 6, 4	—	—	—	—	—	—	—
	K	1, 4	2, 4	—	—	—	7, 1 4	7, 2 4	—	—	—	—	—	—

MXB/FMB LEGEND

- T — Top Damper
- B — Bottom Damper
- R — Rear Damper

COMPONENT LEGEND

- 1 — FLT
- 2 — ANG
- 4 — ACC
- 5 — PHE
- 6 — PHW
- 7 — MXB1 T+R
- 8 — FMB1 T+R
- 9 — FMB2 R+B

NOTES:

1. Components listed in direction of airflow. For example, G and D in positions 7 and 8 represent component codes 7, 1, 4, and 5. According to the component legend, the matching component names are MXB1, FLT, ACC, and PHE.



- 2. Position 9 defines preheat coil if used.
- 3. See Fig. 2, page 4 for component descriptions.

Table 3 — Positions 9, 11, 12 — Cooling and Heating Coils

OPTION	39L CHILLED WATER UNIT SIZE												HW OR STEAM			39L DIRECT EXPANSION UNIT SIZE																																			
	03, 06			08-18			21			25			Hot Water Coils			03						06						08 - 18						21						25											
	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	HOT WATER COILS			SFA		LFA		SFA		LFA		SFA		LFA		SFA		LFA		SFA		LFA		SFA		LFA													
	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir	Row	Fin	Cir						
A	4	8	Q	4	8	H	4	8	H	4	8	H	1	8	H	4	8	A	4	8	A	4	8	A	4	8	B	4	8	B	4	8	B	4	8	B	4	8	B	4	8	B	4	8	B	4	8	B			
B	4	8	H	4	8	F	4	8	F	4	8	F	1	11	H	4	8	E	4	8	E	4	8	E	4	8	H	4	8	H	4	8	H	4	8	H	4	8	H	4	8	H	4	8	H	4	8	H			
C	4	8	F	—	—	—	4	8	D	4	8	D	1	14	H	4	8	B	4	8	B	4	8	B	6	8	B	4	8	C	4	8	C	4	8	C	4	8	C	4	8	C	4	8	C	4	8	C			
D	6	8	H	6	8	H	6	8	H	—	—	—	2	8	H	4	8	H	4	8	H	4	8	H	6	8	H	4	8	F	4	8	F	4	8	F	4	8	F	4	8	F	4	8	F	4	8	F			
E	6	8	F	6	8	F	6	8	F	6	8	F	2	8	F	6	8	A	6	8	B	6	8	B	6	8	C	4	8	B	6	8	B	6	8	B	6	8	B	6	8	B	6	8	B	6	8	B			
F	8	8	H	6	8	D	6	8	D	6	8	D	2	11	H	6	8	E	6	8	H	6	8	H	6	8	F	6	8	H	6	8	H	6	8	H	6	8	H	6	8	H	6	8	H	6	8	F	6	8	F
G	8	8	F	8	8	H	—	—	—	—	—	—	2	11	F	6	8	B	6	8	C	6	8	C	4	11	B	6	8	C	6	8	C	6	8	C	6	8	C	6	8	C	8	8	C	—	—	—			
H	4	11	Q	8	8	F	8	8	F	8	8	F	2	14	H	6	8	H	6	8	F	8	8	B	4	11	H	6	8	F	6	8	F	6	8	F	6	8	F	6	8	F	—	—	—	—	—	—			
J	4	11	H	8	8	D	8	8	D	8	8	D	2	14	F	8	8	B	4	11	A	8	8	H	6	11	B	8	8	H	4	11	B	—	—	—	—	—	—	—	—	—	—	—	—	—					
K	4	11	F	—	—	—	—	—	—	—	—	—	Steam Coils			8	8	H	4	11	E	8	8	C	6	11	H	8	8	C	4	11	H	8	8	C	4	11	H	4	11	B	4	11	B	—	—	—			
L	6	11	H	—	—	—	—	—	—	—	—	—	Row	Fin	Cir	4	11	A	4	11	B	8	8	F	6	11	C	8	8	F	4	11	C	8	8	F	4	11	C	4	11	H	4	11	H	—	—	—			
M	6	11	F	4	11	H	4	11	H	4	11	H	1	6	F	4	11	E	4	11	H	4	11	A	6	11	F	4	11	B	4	11	F	4	11	B	4	11	F	4	11	F	4	11	F	4	11	F			
N	8	11	H	4	11	F	4	11	F	4	11	F	1	9	F	4	11	B	6	11	B	4	11	E	4	14	B	4	11	H	6	11	B	4	11	H	6	11	B	4	11	F	4	11	F	4	11	F			
P	8	11	F	—	—	—	4	11	D	4	11	D	1	12	F	4	11	H	6	11	H	4	11	B	4	14	H	4	11	C	6	11	H	4	11	C	6	11	H	6	11	C	6	11	C	6	11	C			
Q	4	14	Q	6	11	H	6	11	N	—	—	—	—	—	—	6	11	A	6	11	C	4	11	H	6	14	B	4	11	F	6	11	C	4	11	F	6	11	C	6	11	C	6	11	C	6	11	C			
R	4	14	H	6	11	F	6	11	F	6	11	F	—	—	—	6	11	E	6	11	F	6	11	B	6	14	H	6	11	B	6	11	F	6	11	F	6	11	F	6	11	F	6	11	F	—	—	—			
S	4	14	F	6	11	D	6	11	D	6	11	D	—	—	—	6	11	B	4	14	A	6	11	H	6	14	C	6	11	H	4	14	B	6	11	H	4	14	B	6	11	H	8	11	F	—	—	—			
T	6	14	H	8	11	H	—	—	—	—	—	—	—	—	—	6	11	H	4	14	E	6	11	C	6	14	F	6	11	C	4	14	H	6	11	C	4	14	H	8	11	D	—	—	—	—	—	—			
U	6	14	F	8	11	F	8	11	F	8	11	F	—	—	—	8	11	B	4	14	B	8	11	B	—	—	—	6	11	F	4	14	C	6	11	F	4	14	C	4	14	B	4	14	B	—	—	—			
V	8	14	H	8	11	D	8	11	D	8	11	D	—	—	—	8	11	H	4	14	H	8	11	H	—	—	—	8	11	H	4	14	F	—	—	—	4	14	F	4	14	H	4	14	H	—	—	—			
W	8	14	F	—	—	—	—	—	—	—	—	—	—	—	—	4	14	A	6	14	B	8	11	C	—	—	—	8	11	C	6	14	B	8	11	C	6	14	B	4	14	C	4	14	C	—	—	—			
X	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	14	E	6	14	H	8	11	F	—	—	—	8	11	F	6	14	H	8	11	F	6	14	H	4	14	F	4	14	F	—	—	—			
Y	—	—	—	4	14	H	4	14	H	4	14	H	—	—	—	4	14	B	6	14	C	4	14	A	—	—	—	4	14	B	6	14	C	4	14	B	6	14	C	4	14	B	6	14	C	6	14	C			
Z	—	—	—	4	14	F	4	14	F	4	14	F	—	—	—	4	14	H	6	14	F	4	14	E	—	—	—	4	14	H	6	14	F	4	14	H	6	14	F	6	14	F	6	14	F	—	—	—			
1	—	—	—	—	—	—	4	14	D	4	14	D	—	—	—	6	14	A	—	—	—	4	14	B	—	—	—	4	14	C	—	—	—	4	14	C	—	—	—	4	14	C	—	—	—	8	14	C	—	—	—
2	—	—	—	6	14	H	6	14	H	—	—	—	—	—	—	6	14	E	—	—	—	4	14	H	—	—	—	4	14	F	—	—	—	4	14	F	—	—	—	4	14	F	—	—	—	8	14	F	—	—	—
3	—	—	—	6	14	F	6	14	F	6	14	F	—	—	—	6	14	B	—	—	—	6	14	B	—	—	—	6	14	B	—	—	—	6	14	B	—	—	—	6	11	B	—	—	—	8	14	D	—	—	—
4	—	—	—	6	14	D	6	14	D	6	14	D	—	—	—	6	14	H	—	—	—	6	14	H	—	—	—	6	14	H	—	—	—	6	14	H	—	—	—	6	14	H	—	—	—	—	—	—	—		
5	—	—	—	8	14	H	—	—	—	—	—	—	—	—	—	8	14	B	—	—	—	6	14	C	—	—	—	6	14	C	—	—	—	6	14	C	—	—	—	6	14	C	—	—	—	—	—	—	—		
6	—	—	—	8	14	F	8	14	F	8	14	F	—	—	—	8	14	H	—	—	—	8	14	B	—	—	—	6	14	F	—	—	—	6	14	F	—	—	—	6	14	F	—	—	—	—	—	—	—		
7	—	—	—	8	14	D	8	14	D	8	14	D	—	—	—	—	—	—	—	—	—	8	14	H	—	—	—	8	14	H	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	14	C	—	—	—	8	14	C	—	—	—	8	14	C	—	—	—	8	14	C	—	—	—	—	—	—	—		
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	14	F	—	—	—	8	14	F	—	—	—	8	14	F	—	—	—	8	14	F	—	—	—	—	—	—	—		

COIL CIRCUITING LEGEND

CHILLED WATER OR HEATING

- Cir** — Circuit
- D** — Double
- F** — Full
- Fin** — Fins Per in.
- H** — Half
- HW** — Hot Water
- Q** — Quarter

DIRECT EXPANSION

- A** — Face Split Quarter Circuit
- B** — Face Split Half Circuit
- C** — Face Split Full Circuit
- Cir** — Circuit
- E** — Row Split Quarter Circuit
- F** — Row Split Full Circuit
- Fin** — Fins Per in.
- H** — Row Split Half Circuit
- LFA** — Large Face Area
- SFA** — Small Face Area

ELECTRIC HEAT VOLTAGE LEGEND

- A** — 208/3/60
- D** — 380/3/50
- F** — 480/3/60

NOTES:

1. Coils in Positions 9, 11, and 12 must be in direction of airflow through unit and are installed in coil sections according to sections specified in Positions 7 and 8 or coil section options specified in Position 10.
2. 8-row coils are not available for 39LA, LB, or LD units.
3. Nominal kW ratings are shown for electric heat coils.

Table 3 — Positions 9, 11, 12 — Cooling and Heating Coils (cont)

OPTION	ELECTRIC HEAT UNIT SIZE																	
	03		06		08		10		12		15		18		21		25	
	kW	VOLT	kW	VOLT	kW	VOLT	kW	VOLT	kW	VOLT	kW	VOLT	kW	VOLT	kW	VOLT	kW	VOLT
A	9	A	8	A	15	A	15	A	19	A	19	A	19	A	19	A	30	A
B	9	D	8	D	15	D	15	D	19	D	19	D	19	D	19	D	30	D
C	9	F	8	F	15	F	15	F	19	F	19	F	19	F	19	F	30	F
D	15	A	10	A	25	A	25	A	29	A	29	A	25	A	25	A	39	A
E	15	D	10	D	25	D	25	D	29	D	29	D	25	D	25	D	39	D
F	15	F	10	F	25	F	25	F	29	F	29	F	25	F	25	F	39	F
G	17	A	17	A	35	A	39	A	39	A	39	A	35	A	35	A	50	A
H	17	D	17	D	35	D	39	D	39	D	39	D	35	D	35	D	50	D
J	17	F	17	F	35	F	39	F	39	F	39	F	35	F	35	F	50	F
K	—	—	19	A	39	A	47	A	43	A	45	A	45	A	45	A	65	A
L	—	—	19	D	39	D	47	D	43	D	45	D	45	D	45	D	65	D
M	—	—	19	F	39	F	47	F	43	F	45	F	45	F	45	F	65	F
N	—	—	27	A	43	A	51	A	51	A	51	A	51	A	51	A	79	A
P	—	—	27	D	43	D	51	D	51	D	51	D	51	D	51	D	79	D
Q	—	—	27	F	43	F	51	F	51	F	51	F	51	F	51	F	79	F
R	—	—	29	A	51	A	59	D	72	D	65	D	78	D	79	D	96	A
S	—	—	29	D	51	D	59	F	72	F	65	F	78	F	79	F	96	D
T	—	—	29	F	51	F	—	—	—	—	86	D	94	D	92	D	96	F
U	—	—	36	A	—	—	—	—	—	—	86	F	94	F	92	F	110	D
V	—	—	36	D	—	—	—	—	—	—	—	—	—	—	116	F	110	F
W	—	—	36	F	—	—	—	—	—	—	—	—	—	—	—	—	145	D
X	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	145	F
Y	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Z	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 4 — Position 14, Fan Speed (RPM)

OPTION	39L UNIT SIZE									
	03	06	08	10	12	15	18	21	25	
A	2500	2000	2000	1600	1600	1400	1300	1100	1000	
B	2375	1900	1900	1520	1520	1330	1235	1043	959	
C	2256	1805	1805	1444	1444	1264	1173	990	909	
D	2143	1714	1714	1372	1372	1200	1114	939	861	
E	2036	1629	1629	1303	1303	1140	1058	890	815	
F	1934	1548	1548	1238	1238	1083	1005	843	771	
G	1837	1470	1470	1176	1176	1029	954	798	729	
H	1745	1397	1397	1117	1117	976	906	755	690	
J	1659	1327	1327	1061	1061	927	861	715	654	
K	1576	1260	1260	1008	1008	881	818	678	617	
L	1497	1197	1197	957	957	836	777	643	583	
M	1422	1137	1137	909	909	794	738	610	551	
N	1351	1080	1080	863	863	754	701	579	523	
P	1283	1026	1026	820	820	716	666	550	496	
Q	1219	975	975	779	779	680	632	523	470	
R	1158	926	926	740	740	646	600	497	445	
S	1100	880	880	703	703	613	570	473	422	
T	1045	836	836	668	668	—	541	451	401	
U	993	—	—	—	—	—	514	430	380	

Table 5A — Position 15, Fan Motors (60 Hz, 200/230/460 v)

OPTION	39L UNIT SIZE																	
	03		06		08		10		12		15		18		21		25	
	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV
Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V
A	2 RA 1	5 RA 1	5 RA 1	10 RA 1	7.5 RA 1	10 RA 1	10 RA 1	15 RA 1	15 RA 1	15 RA 1	15 RA 1	20 RA 1	15 RA 1	20 RA 1	20 RA 1	20 RA 1	25 RA 1	20 RA 1
B	2 SA 1	5 SA 1	5 SA 1	10 SA 1	7.5 SA 1	10 SA 1	10 SA 1	15 SA 1	15 SA 1	15 SA 1	15 SA 1	20 SA 1	15 SA 1	20 SA 1	20 SA 1	20 SA 1	25 SA 1	20 SA 1
C	2 RC 1	5 RC 1	— — —	— — —	— — —	10 RC 1	10 RC 1	— — —	— — —	— — —	— — —	— — —	— — —	20 RC 1	20 RC 1	20 RC 1	25 RC 1	20 RC 1
D	2 SC 1	5 SC 1	— — —	— — —	— — —	10 SC 1	10 SC 1	— — —	— — —	— — —	— — —	— — —	— — —	20 SC 1	20 SC 1	20 SC 1	25 SC 1	20 SC 1
E	1.5 RA 1	3 RA 1	3 RA 1	7.5 RA 1	5 RA 1	7.5 RA 1	7.5 RA 1	10 RA 1	10 RA 1	10 RA 1	10 RA 1	15 RA 1	10 RA 1	15 RA 1	15 RA 1	15 RA 1	20 RA 1	15 RA 1
F	1.5 SA 1	3 SA 1	3 SA 1	7.5 SA 1	5 SA 1	7.5 SA 1	7.5 SA 1	10 SA 1	10 SA 1	10 SA 1	10 SA 1	15 SA 1	10 SA 1	15 SA 1	15 SA 1	15 SA 1	20 SA 1	15 SA 1
G	1.5 RC 1	3 RC 1	3 RC 1	— — —	5 RC 1	7.5 RC 1	7.5 RC 1	10 RC 1	10 RC 1	10 RC 1	10 RC 1	15 RC 1	10 RC 1	15 RC 1	15 RC 1	15 RC 1	20 RC 1	15 RC 1
H	1.5 SC 1	3 SC 1	3 SC 1	— — —	5 SC 1	7.5 SC 1	7.5 SC 1	10 SC 1	10 SC 1	10 SC 1	10 SC 1	15 SC 1	10 SC 1	15 SC 1	15 SC 1	15 SC 1	20 SC 1	15 SC 1
J	1 RA 1	2 RA 1	2 RA 1	5 RA 1	3 RA 1	5 RA 1	5 RA 1	7.5 RA 1	7.5 RA 1	7.5 RA 1	7.5 RA 1	10 RA 1	7.5 RA 1	10 RA 1	10 RA 1	10 RA 1	15 RA 1	10 RA 1
K	1 SA 1	2 SA 1	2 SA 1	5 SA 1	3 SA 1	5 SA 1	5 SA 1	7.5 SA 1	7.5 SA 1	7.5 SA 1	7.5 SA 1	10 SA 1	7.5 SA 1	10 SA 1	10 SA 1	10 SA 1	15 SA 1	10 SA 1
L	1 RC 1	2 RC 1	2 RC 1	5 RC 1	3 RC 1	5 RC 1	5 RC 1	7.5 RC 1	7.5 RC 1	7.5 RC 1	7.5 RC 1	10 RC 1	7.5 RC 1	10 RC 1	10 RC 1	10 RC 1	15 RC 1	10 RC 1
M	1 SC 1	2 SC 1	2 SC 1	5 SC 1	3 SC 1	5 SC 1	5 SC 1	7.5 SC 1	7.5 SC 1	7.5 SC 1	7.5 SC 1	10 SC 1	7.5 SC 1	10 SC 1	10 SC 1	10 SC 1	15 SC 1	10 SC 1
N	.75 RA 1	1.5 RA 1	1.5 RA 1	3 RA 1	2 RA 1	3 RA 1	3 RA 1	5 RA 1	5 RA 1	5 RA 1	5 RA 1	7.5 RA 1	5 RA 1	7.5 RA 1	7.5 RA 1	7.5 RA 1	10 RA 1	7.5 RA 1
P	.75 RC 1	1.5 SA 1	1.5 SA 1	3 SA 1	2 SA 1	3 SA 1	3 SA 1	5 SA 1	5 SA 1	5 SA 1	5 SA 1	7.5 SA 1	5 SA 1	7.5 SA 1	7.5 SA 1	7.5 SA 1	10 SA 1	7.5 SA 1
Q	.50 RA 1	1.5 RC 1	1.5 RC 1	3 RC 1	2 RC 1	3 RC 1	3 RC 1	5 RC 1	5 RC 1	5 RC 1	5 RC 1	7.5 RC 1	5 RC 1	7.5 RC 1	7.5 RC 1	7.5 RC 1	10 RC 1	7.5 RC 1
R	.50 RC 1	1.5 SC 1	1.5 SC 1	3 SC 1	2 SC 1	3 SC 1	3 SC 1	5 SC 1	5 SC 1	5 SC 1	5 SC 1	7.5 SC 1	5 SC 1	7.5 SC 1	7.5 SC 1	7.5 SC 1	10 SC 1	7.5 SC 1
S	— — —	1 RA 1	1 RA 1	2 RA 1	1.5 RA 1	2 RA 1	2 RA 1	3 RA 1	3 RA 1	3 RA 1	3 RA 1	5 RA 1	3 RA 1	5 RA 1	5 RA 1	5 RA 1	7.5 RA 1	5 RA 1
T	— — —	1 SA 1	1 SA 1	2 SA 1	1.5 SA 1	2 SA 1	2 SA 1	3 SA 1	3 SA 1	3 SA 1	3 SA 1	5 SA 1	3 SA 1	5 SA 1	5 SA 1	5 SA 1	7.5 SA 1	5 SA 1
U	— — —	1 RC 1	1 RC 1	2 RC 1	1.5 RC 1	2 RC 1	2 RC 1	3 RC 1	3 RC 1	3 RC 1	3 RC 1	5 RC 1	3 RC 1	5 RC 1	5 RC 1	5 RC 1	7.5 RC 1	5 RC 1
V	— — —	1 SC 1	1 SC 1	2 SC 1	1.5 SC 1	2 SC 1	2 SC 1	3 SC 1	3 SC 1	3 SC 1	3 SC 1	5 SC 1	3 SC 1	5 SC 1	5 SC 1	5 SC 1	7.5 SC 1	5 SC 1
W	— — —	.75 RA 1	.75 RA 1	1.5 RA 1	— — —	1.5 RA 1	1.5 RA 1	2 RA 1	2 RA 1	— — —	— — —	3 RA 1	— — —	3 RA 1	3 RA 1	3 RA 1	5 RA 1	— — —
X	— — —	.75 RC 1	.75 RC 1	1.5 SA 1	— — —	1.5 SA 1	1.5 SA 1	2 SA 1	2 SA 1	— — —	— — —	3 SA 1	— — —	3 SA 1	3 SA 1	3 SA 1	5 SA 1	— — —
Y	— — —	— — —	— — —	1.5 RC 1	— — —	1.5 RC 1	1.5 RC 1	2 RC 1	2 RC 1	— — —	— — —	3 RC 1	— — —	3 RC 1	3 RC 1	3 RC 1	5 RC 1	— — —
Z	— — —	— — —	— — —	1.5 SC 1	— — —	1.5 SC 1	1.5 SC 1	2 SC 1	2 SC 1	— — —	— — —	3 SC 1	— — —	3 SC 1	3 SC 1	3 SC 1	5 SC 1	— — —
1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 RA 1	1.5 RA 1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
2	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 SA 1	1.5 SA 1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
3	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 RC 1	1.5 RC 1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
4	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 SC 1	1.5 SC 1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —

8

Fixed drives. Drives for all other motors are adjustable.

LEGEND

- IGV — Inlet Guide Vanes
- RA — High Efficiency, Open Drip-Proof
- RC — High Efficiency, Totally-Enclosed Fan Cooled
- SA — Premium Efficiency, Open Drip-Proof
- SC — Premium Efficiency, Totally-Enclosed Fan Cooled
- V — Voltage Code

VOLTAGE LEGEND

- 1 — 230/460-3-60
- 200-3-60


NOTES:

1. All motors are 3 phase, 60 cycle and 1800 rpm.
2. All (ODP) motors have top mounted conduit box, excluding motors with fractional horsepower.
3. Motors are dual nameplated.
4. 60 Hz motors shown. For 50 Hz and 60 Hz, 575 v motors see page 9.

Table 5B — Position 15, Fan Motors (50 Hz and 60 Hz, 575 v)

OPTION	39L UNIT SIZE																	
	03		06		08		10		12		15		18		21		25	
	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV	No IGV	IGV
	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V	Hp-Type-V
A	2 A 7	5 A 7	5 A 7	10 A 7	7.5 A 7	10 A 7	10 A 7	15 A 7	15 A 7	15 A 7	15 A 7	20 A 7	15 A 7	20 A 7	20 A 7	25 A 7	20 A 7	20 A 7
B	2 A 8	5 A 8	5 A 8	10 A 8	7.5 A 8	10 A 8	10 A 8	15 A 8	15 A 8	15 A 8	15 A 8	20 A 8	15 A 8	20 A 8	20 A 8	25 A 8	20 A 8	20 A 8
C	2 C 7	5 C 7	— — —	— — —	— — —	— — —	— — —	10 C 7	10 C 7	— — —	— — —	— — —	— — —	— — —	20 C 7	20 C 7	25 C 7	20 C 7
D	2 C 8	5 C 8	— — —	— — —	— — —	— — —	— — —	10 C 8	10 C 8	— — —	— — —	— — —	— — —	— — —	20 C 8	20 C 8	25 C 8	20 C 8
E	1.5 A 7	3 A 7	3 A 7	7.5 A 7	5 A 7	7.5 A 7	7.5 A 7	10 A 7	10 A 7	10 A 7	10 A 7	15 A 7	10 A 7	15 A 7	15 A 7	20 A 7	15 A 7	15 A 7
F	1.5 A 8	3 A 8	3 A 8	7.5 A 8	5 A 8	7.5 A 8	7.5 A 8	10 A 8	10 A 8	10 A 8	10 A 8	15 A 8	10 A 8	15 A 8	15 A 8	20 A 8	15 A 8	15 A 8
G	1.5 C 7	3 C 7	3 C 7	— — —	5 C 7	7.5 C 7	7.5 C 7	10 C 7	10 C 7	10 C 7	10 C 7	15 C 7	10 C 7	15 C 7	15 C 7	20 C 7	15 C 7	15 C 7
H	1.5 C 8	3 C 8	3 C 8	— — —	5 C 8	7.5 C 8	7.5 C 8	10 C 8	10 C 8	10 C 8	10 C 8	15 C 8	10 C 8	15 C 8	15 C 8	20 C 8	15 C 8	15 C 8
J	1 A 7	2 A 7	2 A 7	5 A 7	3 A 7	5 A 7	5 A 7	7.5 A 7	7.5 A 7	7.5 A 7	7.5 A 7	10 A 7	7.5 A 7	10 A 7	10 A 7	15 A 7	10 A 7	10 A 7
K	1 A 8	2 A 8	2 A 8	5 A 8	3 A 8	5 A 8	5 A 8	7.5 A 8	7.5 A 8	7.5 A 8	7.5 A 8	10 A 8	7.5 A 8	10 A 8	10 A 8	15 A 8	10 A 8	10 A 8
L	1 C 7	2 C 7	2 C 7	5 C 7	3 C 7	5 C 7	5 C 7	7.5 C 7	7.5 C 7	7.5 C 7	7.5 C 7	10 C 7	7.5 C 7	10 C 7	10 C 7	15 C 7	10 C 7	10 C 7
M	1 C 8	2 C 8	2 C 8	5 C 8	3 C 8	5 C 8	5 C 8	7.5 C 8	7.5 C 8	7.5 C 8	7.5 C 8	10 C 8	7.5 C 8	10 C 8	10 C 8	15 C 8	10 C 8	10 C 8
N	.75 A 7	1.5 A 7	1.5 A 7	3 A 7	2 A 7	3 A 7	3 A 7	5 A 7	5 A 7	5 A 7	5 A 7	7.5 A 7	5 A 7	7.5 A 7	7.5 A 7	10 A 7	7.5 A 7	7.5 A 7
P	.75 C 8	1.5 A 8	1.5 A 8	3 A 8	2 A 8	3 A 8	3 A 8	5 A 8	5 A 8	5 A 8	5 A 8	7.5 A 8	5 A 8	7.5 A 8	7.5 A 8	10 A 8	7.5 A 8	7.5 A 8
Q	.50 A 7	1.5 C 7	1.5 C 7	3 C 7	2 C 7	3 C 7	3 C 7	5 C 7	5 C 7	5 C 7	5 C 7	7.5 C 7	5 C 7	7.5 C 7	7.5 C 7	10 C 7	7.5 C 7	7.5 C 7
R	.50 C 8	1.5 C 8	1.5 C 8	3 C 8	2 C 8	3 C 8	3 C 8	5 C 8	5 C 8	5 C 8	5 C 8	7.5 C 8	5 C 8	7.5 C 8	7.5 C 8	10 C 8	7.5 C 8	7.5 C 8
S	— — —	1 A 7	1 A 7	2 A 7	1.5 A 7	2 A 7	2 A 7	3 A 7	3 A 7	3 A 7	3 A 7	5 A 7	3 A 7	5 A 7	5 A 7	7.5 A 7	5 A 7	5 A 7
T	— — —	1 A 8	1 A 8	2 A 8	1.5 A 8	2 A 8	2 A 8	3 A 8	3 A 8	3 A 8	3 A 8	5 A 8	3 A 8	5 A 8	5 A 8	7.5 A 8	5 A 8	5 A 8
U	— — —	1 C 7	1 C 7	2 C 7	1.5 C 7	2 C 7	2 C 7	3 C 7	3 C 7	3 C 7	3 C 7	5 C 7	3 C 7	5 C 7	5 C 7	7.5 C 7	5 C 7	5 C 7
V	— — —	1 C 8	1 C 8	2 C 8	1.5 C 8	2 C 8	2 C 8	3 C 8	3 C 8	3 C 8	3 C 8	5 C 8	3 C 8	5 C 8	5 C 8	7.5 C 8	5 C 8	5 C 8
W	— — —	.75 A 7	.75 A 7	1.5 A 7	— — —	1.5 A 7	1.5 A 7	2 A 7	2 A 7	— — —	— — —	3 A 7	— — —	3 A 7	3 A 7	5 A 7	— — —	— — —
X	— — —	.75 C 7	.75 C 7	1.5 A 8	— — —	1.5 A 8	1.5 A 8	2 A 8	2 A 8	— — —	— — —	3 A 8	— — —	3 A 8	3 A 8	5 A 8	— — —	— — —
Y	— — —	— — —	— — —	1.5 C 7	— — —	1.5 C 7	1.5 C 7	2 C 7	2 C 7	— — —	— — —	3 C 7	— — —	3 C 7	3 C 7	5 C 7	— — —	— — —
Z	— — —	— — —	— — —	1.5 C 8	— — —	1.5 C 8	1.5 C 8	2 C 8	2 C 8	— — —	— — —	3 C 8	— — —	3 C 8	3 C 8	5 C 8	— — —	— — —
1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 A 7	1.5 A 7	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
2	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 A 8	1.5 A 8	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
3	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 C 7	1.5 C 7	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
4	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1.5 C 8	1.5 C 8	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —

6

 Fixed drives. Drives for all other motors are adjustable.

LEGEND

- A — Open Drip-Proof
- C — Totally-Enclosed Fan Cooled
- IGV — Inlet Guide Vanes
- V — Voltage Code

VOLTAGE LEGEND

- 7 — 575-3-60
- 8 — 200/400-3-50
- 190/380-3-50 (See Note 2)

NOTES:

1. All motors are 3 phase, 1800 rpm (for 60 Hz) or 1400 rpm (for 50 Hz).
2. 200/400 v motors are also nameplated for 190/380-3-50.
3. 50 Hz and 60 Hz, 575 v motors shown. For other 60 Hz motors see page 8.

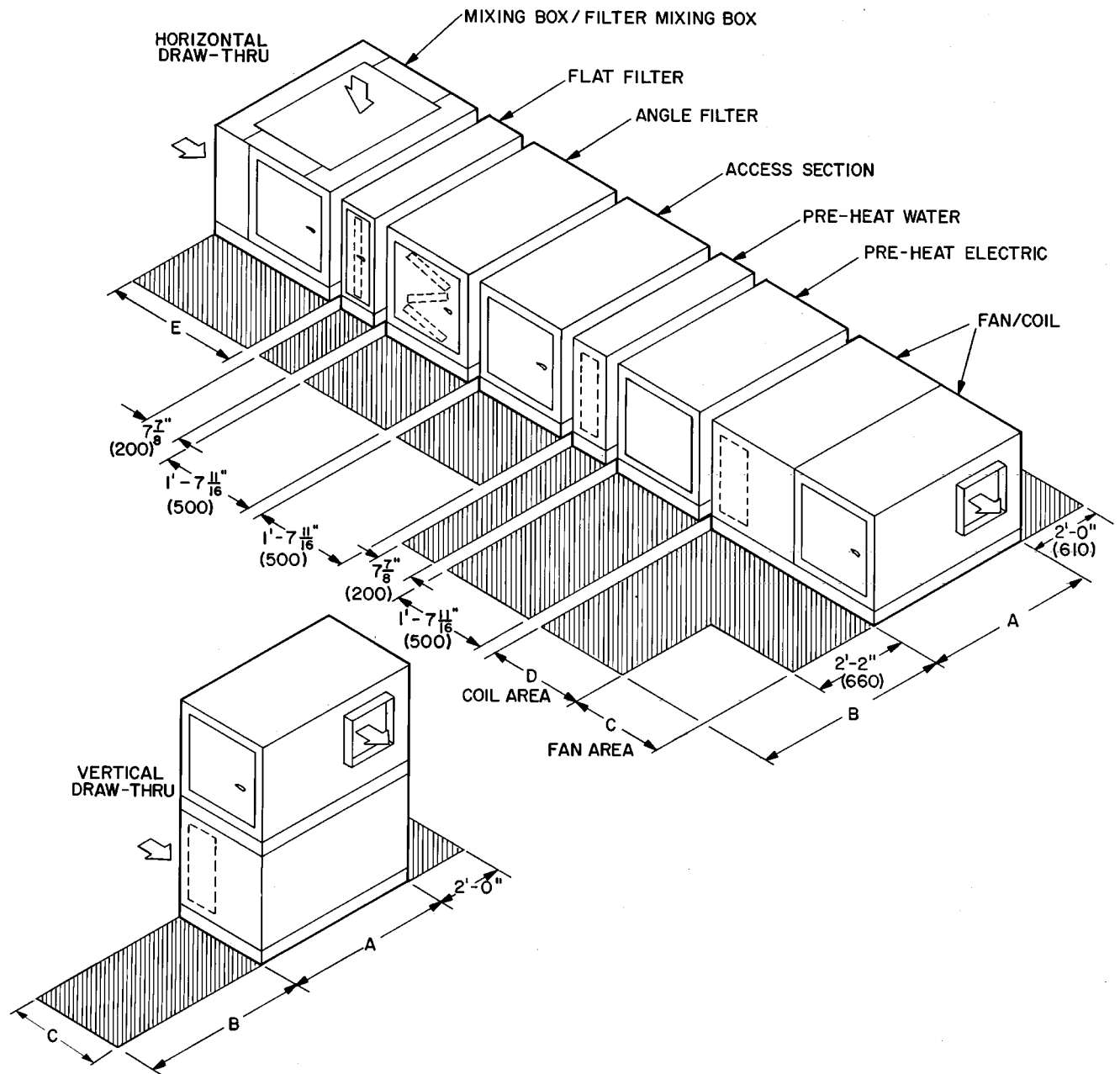
Table 6 — Position 16, Product Integrated Controls (PIC)

39L PIC OPTION	FACTORY-INSTALLED COMPONENTS IN REMOTE CONTROL BOX																					FACTORY SUPPLIED/ FACTORY INSTALLED							FACTORY SUPPLIED/ FACTORY INSTALLED																			
	PSIO	PSIO(S)	LTT	OAVP	AFS	CR1	HIR	HPS	RVP	SF	SVP	TB5	SW	SP	T1	T2	T3	T4	T5	T6	T7	T9	C1	C2	C3	SAT	LTT	TUBING	FLTS	MAT	MAD	RAD	IGV	RAT	SPT	OAT	ENT	OAP	EXB	IGVRF								
CONSTANT VOLUME (CV) OFFERINGS																																																
A Fan, Coil — Basic (CV)	X		X		X	X				X			X		X	X	X		X	X							X	X	X							X	X	X										
B Fan, Coil, Filter	X		X		X	X				X			X		X	X	X		X	X							X	X	X	X							X	X	X									
C Fan, Coil, Filter, Field Supplied MXB	X		X		X	X				X			X		X	X	X		X	X	X						X	X	X	X	X						X	X	X	X								
D Fan, Coil, Filter, MXB	X		X		X	X				X			X		X	X	X		X	X	X						X	X	X	X	X						X	X	X	X								
F Fan, Coil, Filter, MXB, Smoke Control	X	X	X		X	X				X		X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X						X			
VARIABLE AIR VOLUME (VAV) OFFERING — IGV CONTROL																																																
H Fan, Coil — Basic (VAV)	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X							X	X	X	X									
J Fan, Coil, Filter	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X	X							X	X	X	X								
K Fan, Coil, Filter, Field Supplied MXB	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X	X	X						X	X	X	X								
L Fan, Coil, Filter, MXB	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X	X	X						X	X	X	X								
N Fan, Coil, Filter, MXB, Fan Tracking	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
P Fan, Coil, Filter, MXB, Smoke Control	X	X	X		X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
R Fan, Coil, Filter, MXB, Smoke Control, Fan Tracking	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S Fan, Coil, Filter, MXB, Smoke Control, Constant Outside Air	X	X	X	X	X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
U Fan, Coil, Filter, MXB, Constant Outside Air	X	X	X	X	X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
VARIABLE AIR VOLUME (VAV) OFFERING — VFD CONTROL																																																
W Fan, Coil — Basic (VAV)	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X						X	X	X								X	X	X										
X Fan, Coil, Filter	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X						X	X	X	X								X	X	X									
Y Fan, Coil, Filter, Field Supplied MXB	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X	X	X							X	X	X	X							
Z Fan, Coil, Filter, MXB	X		X		X	X	X	X		X			X	X	X	X	X	X	X	X						X	X	X	X	X							X	X	X	X								
2 Fan, Coil, Filter, MXB, Fan Tracking	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3 Fan, Coil, Filter, MXB, Smoke Control	X	X	X		X	X	X	X		X			X	X	X	X	X	X	X	X	X						X	X	X	X	X							X	X	X	X							
5 Fan, Coil, Filter, MXB, Smoke Control, Fan Tracking	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6 Fan, Coil, Filter, MXB, Smoke Control, Constant Outside Air	X	X	X	X	X	X	X	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8 Fan, Coil, Filter, MXB, Constant Outside Air	X	X	X	X	X	X	X	X		X			X	X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

LEGEND

- | | | |
|--|---|--|
| AFS — Airflow Switch | MAT — Mixed-Air Temperature Sensor | T1 — 21 v PSIO (Master) Transformer |
| C1 — Supply Damper Smoke Relay | MXB — Mixing Box | T2 — 24 v Control Power Transformer |
| C2 — Return Damper Smoke Relay | OAP — Outdoor Air Probe | T3 — 24 v Chilled Water Valve Transformer |
| C3 — Exhaust Damper Smoke Relay | OAT — Outdoor-Air Temperature Sensor | T4 — 24 v IGV Actuator (Supply) Transformer |
| CR1 — Low Temperature Thermostat Relay | OAVP — Outdoor-Air Velocity Pressure Transducer | T5 — 21 v PSIO (Slave) or DSIO Transformer |
| CV — Constant Volume | PSIO — Processor Module | T6 — 24 v Hot Water Valve Transformer |
| DSIO — Relay Module, Electric Heat and/or DX | PSIO(S) — Option (Slave Processor) Module | T7 — 24 v MXB or Supply-Air/Smoke Relay Damper Actuator Transformer |
| DX — Direct Expansion | RAD — Return-Air Damper Actuator | T9 — 24 v Exhaust-Air Damper/Smoke Relay Transformer |
| ENT — Enthalpy Switch | RAT — Return-Air Temperature Sensor | TB5 — Terminal Block (Smoke) |
| EXB — Exhaust Air Damper Actuator | RVP — Return Velocity Pressure Transducer | VAV — Variable Air Volume |
| FLTS — Filter Status Switch | SAT — Supply-Air Temperature Sensor (Supply Fan) | VFD — Variable Frequency Drive |
| HIR — Heater Interlock Relay | SF — Supply Fan Relay | |
| HPS — High-Pressure Switch | SP — Static Pressure Transducer | |
| IGV — Inlet Guide Vane Actuator (Supply Fan) | SPT — Space Temperature Sensor | |
| IGVRF — Inlet Guide Valve Actuator (Return Fan) | SVP — Supply Velocity Pressure Transducer | |
| LTT — Low Temperature Thermostat | SW — On/Off Power Switch | |
| LTT — Manual Reset for LTT | | |
| MAD — Mixed-Air or Outdoor-Air Damper Actuator | | |

NOTE: For additional information on ordering PIC options and accessories, see the Product Integrated Controls (PIC) Option Guide for 39L,T units.



DIMENSIONS (ft-in.)

SIZE	A	B	C	D			E
				39LA	39LB	39LC	
03	3-1 ⁷ / ₈	3-1 ³ / ₄	1-9 ¹ / ₄	1- 7 ¹¹ / ₁₆	0-7 ⁷ / ₈	1-3 ³ / ₄	2- 3 ³ / ₁₆
06	3-9 ³ / ₄	3-9 ⁵ / ₈	2-1 ³ / ₁₆	1-11 ⁵ / ₈	0-7 ⁷ / ₈	1-3 ³ / ₄	2- 3 ³ / ₁₆
08	4-1 ¹¹ / ₁₆	4-1 ¹ / ₁₆	2-5 ¹ / ₈	2- 3 ³ / ₁₆	0-7 ⁷ / ₈	1-3 ³ / ₄	2- 3 ³ / ₁₆
10	4-9 ⁹ / ₁₆	4-9 ⁷ / ₁₆	2-5 ¹ / ₈	2- 3 ³ / ₁₆	0-7 ⁷ / ₈	1-3 ³ / ₄	2- 3 ³ / ₁₆
12	5-5 ¹ / ₁₆	5-5 ⁵ / ₁₆	2-5 ¹ / ₈	2- 3 ³ / ₁₆	0-7 ⁷ / ₈	1-3 ³ / ₄	2- 3 ³ / ₁₆
15	5-5 ¹ / ₁₆	5-5 ⁵ / ₁₆	3-1	2-11 ¹ / ₁₆	0-7 ⁷ / ₈	1-3 ³ / ₄	2- 3 ³ / ₁₆
18	5-5 ¹ / ₁₆	5-5 ⁵ / ₁₆	3-4 ¹⁵ / ₁₆	3- 3 ³ / ₈	0-7 ⁷ / ₈	1-3 ³ / ₄	2-11 ⁷ / ₁₆
21	6-5 ¹ / ₄	6-5 ¹ / ₈	3-4 ¹⁵ / ₁₆	3- 3 ³ / ₈	0-7 ⁷ / ₈	1-3 ³ / ₄	2-11 ⁷ / ₁₆
25	6-5 ¹ / ₄	6-5 ¹ / ₈	4-0 ¹⁵ / ₁₆	2- 3 ³ / ₁₆	0-7 ⁷ / ₈	1-3 ³ / ₄	2-11 ⁷ / ₁₆

DIMENSIONS (mm)

SIZE	A	B	C	D			E
				39LA	39LB	39LC	
03	952	959	540	500	200	400	700
06	1162	1159	640	600	200	400	700
08	1262	1259	740	700	200	400	700
10	1462	1459	740	700	200	400	700
12	1653	1659	740	700	200	400	700
15	1653	1659	940	900	200	400	700
18	1653	1659	1040	1000	200	400	900
21	1962	1959	1040	1000	200	400	900
25	1962	1959	1240	700	200	400	900

Fig. 3 — Service Area Requirements

Table 7 — Physical Data

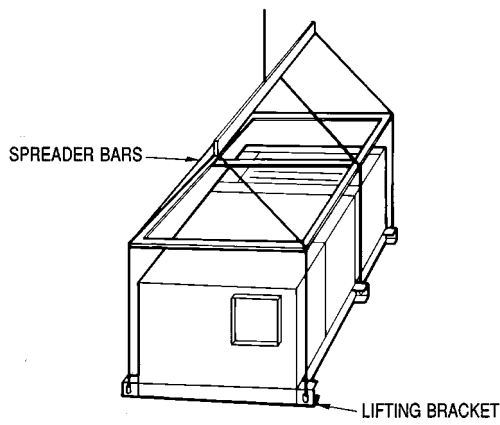
UNIT SIZE	03	06	08	10	12	15	18	21	25
UNIT WEIGHTS (lb)*									
39LA	200	280	411	470	540	620	695	740	820
39LB	150	210	308	352	405	465	521	555	615
39LC	170	238	349	400	459	527	590	629	697
39LD	230	322	472	540	621	713	799	851	943
39LF	230	322	472	540	621	713	799	851	943
39LG	120	168	246	282	324	372	417	444	492
39LH	220	308	452	517	594	682	764	814	902
COMPONENT WEIGHTS (lb)									
Mixing Box Section	139	164	193	219	226	244	283	272	311
Filter Mixing Box	150	173	208	227	245	279	327	340	395
Angle Filter Section	75	82	97	107	114	134	140	159	185
Flat Filter Section	37	43	48	50	55	74	75	86	90
Access Section	48	55	60	64	68	74	77	87	92
Preheat (Water) Section	36	42	43	46	49	52	54	53	57
Preheat (Electric) Section	49	56	61	66	72	74	76	87	89
TYPICAL DRY COIL WEIGHTS (lb)									
Large Face Area Cooling Coils, ½-in. OD (Chilled Water & DX)†									
4-Row	56	84	98	109	137	178	198	251	280
6-Row	63	95	123	138	174	234	270	327	363
Small Face Area Cooling Coils, ½-in. OD (Chilled Water & DX)†									
4-Row	45	72	91	105	133	161	182	211	238
6-Row	53	85	113	129	162	197	225	270	307
8-Row	61	92	129	143	189	228	263	324	377
Hot Water Coils, ½-in. OD†									
1-Row	19	34	38	48	58	62	77	86	95
2-Row	28	43	51	61	76	89	104	117	130
Steam Coils, 1-row, 1-in. OD									
6-FPI	50	70	85	95	110	135	150	180	215
9-FPI	55	80	100	115	125	155	175	214	256
12-FPI	60	85	115	130	145	180	205	248	297
FAN									
Wheel Diameter (in.)	9½	12⅝	12⅝	15	15	18⅞	20	20	25
Wheel Width (in.)	7⅞	9½	11⅞	11⅞	15	15	13½	18	15
Shaft Diameter (in.)	¾	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜	1⅜
Maximum Fan Rpm	2500	2000	2000	1600	1600	1400	1300	1100	1000
OPERATING CHARGE, R-22 (lb)									
4-Row Coil	1-2	2-3	3-4	4-5	4-5	5-6	6-7	6-8	6-9
6-Row Coil	1-2	2-4	5-6	5-6	6-8	8-10	9-11	11-13	11-16
8-Row Coil	2-3	3-5	5-6	5-7	7-9	10-12	12-14	13-19	16-24
COIL VOLUME (gal. water)									
Chilled Water, ½-in. OD Tube, Large Face Area									
4-Row	2.5	3.5	4.5	5.2	5.6	7.3	8.5	10.4	12.0
6-Row	3.2	4.7	6.0	6.8	7.7	10.1	11.7	14.2	16.3
Chilled Water, ½-in. OD Tube, Small Face Area									
4-Row	2.1	3.3	3.9	4.1	5.1	6.3	7.3	8.7	9.8
6-Row	2.4	3.7	5.1	5.9	6.6	8.3	9.5	11.8	13.5
8-Row	2.7	4.1	6.4	7.4	8.4	10.7	12.1	14.7	17.2
Hot Water, ½-in. OD Tube									
1-Row	0.5	0.8	1.0	1.3	1.5	1.8	2.1	2.5	2.9
2-Row	0.7	1.3	1.6	2.0	2.4	2.9	3.4	4.0	4.8
COOLING COILS									
Chilled Water ½-in. OD Tube, (4, 6 Row) Large Face Area									
Face Area (sq ft)	3.63	5.90	7.90	9.54	11.18	14.91	17.71	21.6	25.0
Number of Tubes/Face	16	20	24	24	24	32	38	38	44
Finned Tube Length (in.)	26.1	34.0	37.9	45.8	53.7	53.7	53.7	65.5	65.5
Chilled Water ½-in. OD Tube (4, 6, 8 Row) Small Face Area									
Face Area (sq ft)	2.72	4.72	6.58	7.95	9.32	12.12	13.98	17.1	20.5
Number of Tubes/Face	12	16	20	20	20	26	30	30	36
Finned Tube Length (in.)	26.1	34.0	37.9	45.8	53.7	53.7	53.7	65.5	65.5
DX ½-in. OD Tube (4, 6 Row) Large Face Area									
Face Area (sq ft)	3.63	5.90	7.90	9.54	11.18	14.91	17.71	21.6	25.0
Finned Tube Length (in.)	26.1	34.0	37.9	45.8	53.7	53.7	53.7	65.5	65.5
DX ½-in. OD Tube (4, 6, 8 Row) Small Face Area									
Face Area (sq ft)	2.72	4.72	6.58	7.95	9.32	12.12	13.98	17.1	20.5
Finned Tube Length (in.)	26.1	34.0	37.9	45.8	53.7	53.7	53.7	65.5	65.5
HEATING COILS									
Hot Water ½-in. OD Tube, U-Bend (1, 2 Row)									
Face Area (sq ft)	2.72	4.72	6.58	7.95	9.32	12.12	13.98	17.1	20.5
Number Tubes/Face	12	16	20	20	20	26	30	30	36
Finned Tube Length (in.)	26.1	34.0	37.9	45.8	53.7	53.7	53.7	65.5	65.5
Steam 1-in. OD (1 Row)									
Face Area (sq ft)	2.13	4.18	6.22	7.53	8.85	11.06	13.28	16.2	18.9
Number Tubes/Face	4	6	8	8	8	10	12	12	14
Finned Tube Length (in.)	25.5	33.4	37.3	45.2	53.1	53.1	53.1	53.1	64.9

LEGEND

DX — Direct Expansion
FPI — Fins Per Inch

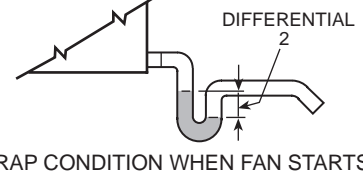
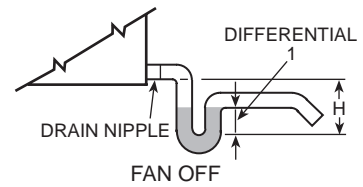
*Less coil.

†Coils have 14 aluminum fins per inch on copper tubes.

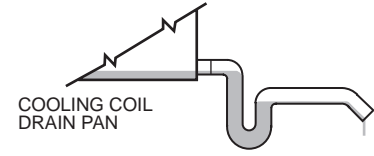


NOTE: Lift in one piece. Use slings and spreader bars at each lifting bracket.

Fig. 4 — Unit Rigging Details



TRAP CONDITION WHEN FAN STARTS



FAN RUNNING AND CONDENSATE DRAINING

Fig. 6 — Condensate Drain

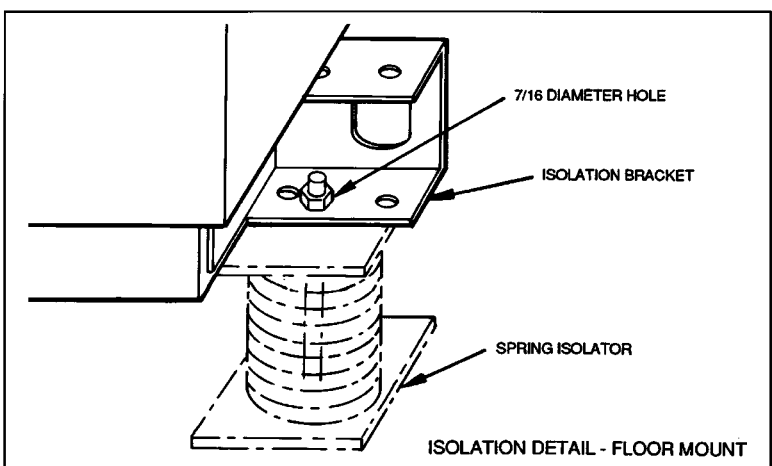
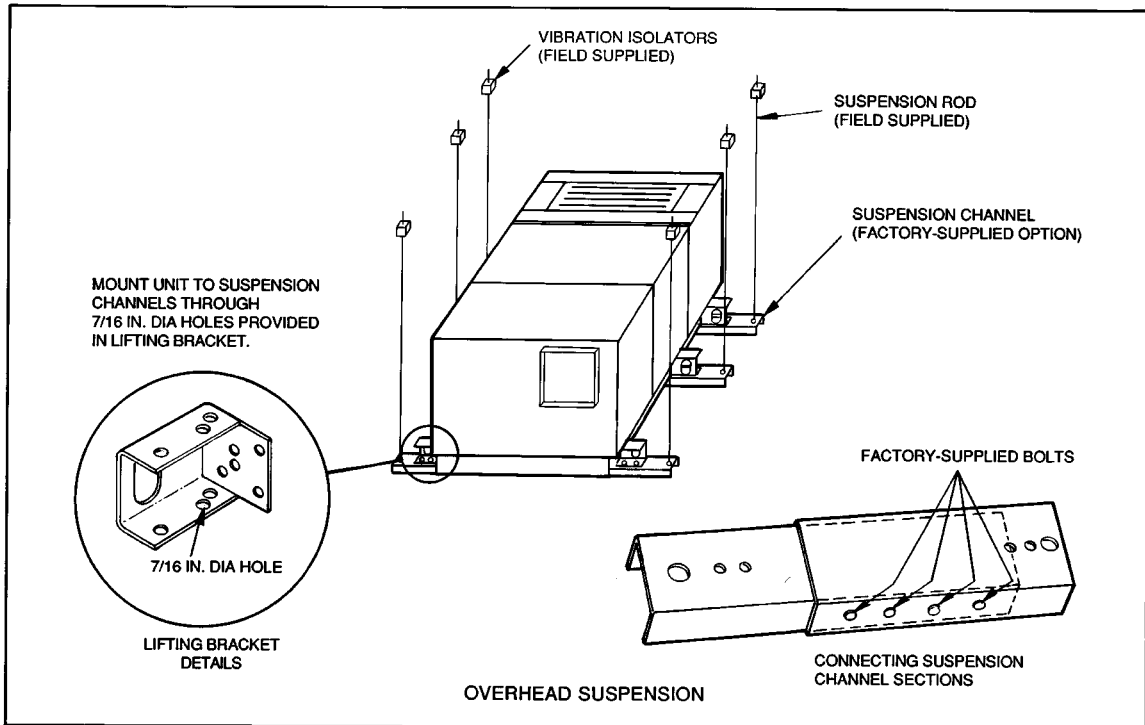


Fig. 5 — Unit Support Details

INSTALLATION

Mixing Box

DAMPER ACTUATORS — The 39L mixing boxes are supplied with low leak dampers and blade and edge seals. Damper operating torques are shown in Table 8.

The actuator and mounting brackets are field supplied and may be mounted inside or outside the unit. A typical inside mounting bracket is shown in Fig. 7. For external mounting of actuators, drill or punch a hole in the exterior panel.

To ensure torque is transmitted equally to both damper sections, actuator must be connected to the 1-in. hollow jackshaft that drives the interconnecting linkage bar. Connection to any other shaft is not recommended.

DUCTWORK ATTACHMENT — Ductwork should be flanged out and attached to the mixing box panels as shown in Fig. 8. See Fig. 9 for duct connection sizes.

Table 8 — Mixing Box Damper Operating Torque (in.-lb)

39L UNIT SIZE	TORQUE
03	20
06	20
08	26
10	29
12	33
15	41
18	52
21	56
25	76

NOTES:

1. Torque values are based on interconnected dampers driven by one operator. For units with separate operators for each damper, calculate torque as follows: Table values x .80 = torque per damper section.
2. Damper shaft moves 90 degrees from open to closed position.

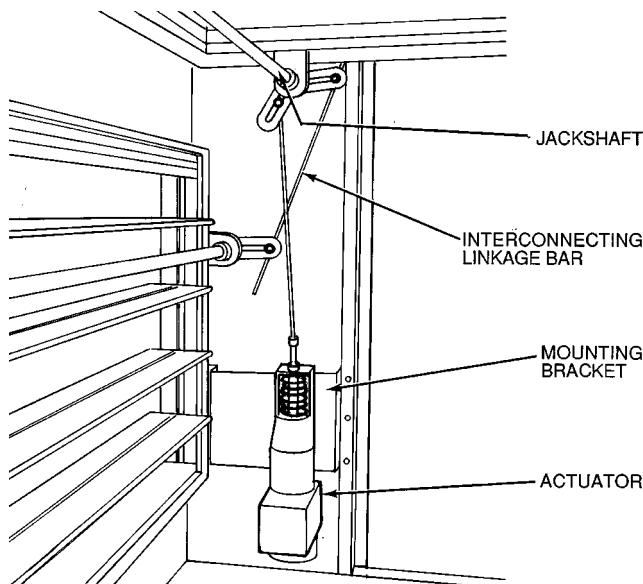
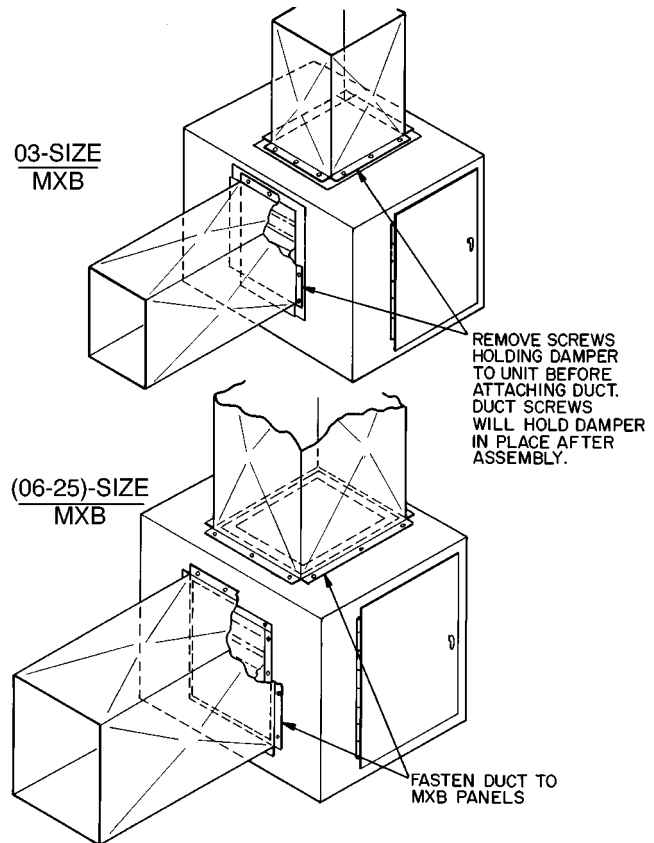


Fig. 7 — Typical Mixing Box Actuator Mounting

Condensate Drain — Install a trapped condensate drain line at unit drain connection. Use 1-in. standard pipe.

Measure maximum design negative static pressure upstream from the fan. Referring to Fig. 6, height “H” must be equal to or larger than negative static pressure at design operating conditions. Prime enough water in trap to prevent losing seal (Differential 1). When the fan starts, Differential 2 is equal to the maximum negative static pressure.

Provide freeze-up protection as required.



MXB — Mixing Box

Fig. 8 — Mixing Box Ductwork Attachment

Inlet Guide Vane Actuators

POSITION ACTUATOR — Optional inlet guide vanes are available on 39L fans. The interconnecting linkage between the 2 vane assemblies is factory supplied. The actuator and mounting bracket are field supplied. Actuator is to be mounted to any suitable structural member. Recommended mounting location is the scroll side plate, as shown in Fig. 10.

CHECK LINKAGE — See Fig. 11. Slots are provided in the actuator crankarm and the jackshaft crankarm to allow linkage adjustment from the maximum to minimum stroke as shown in Table 9. After adjusting the actuator and linkage bar to the proper stroke, verify that both vane assemblies move from the fully open to the fully closed position.

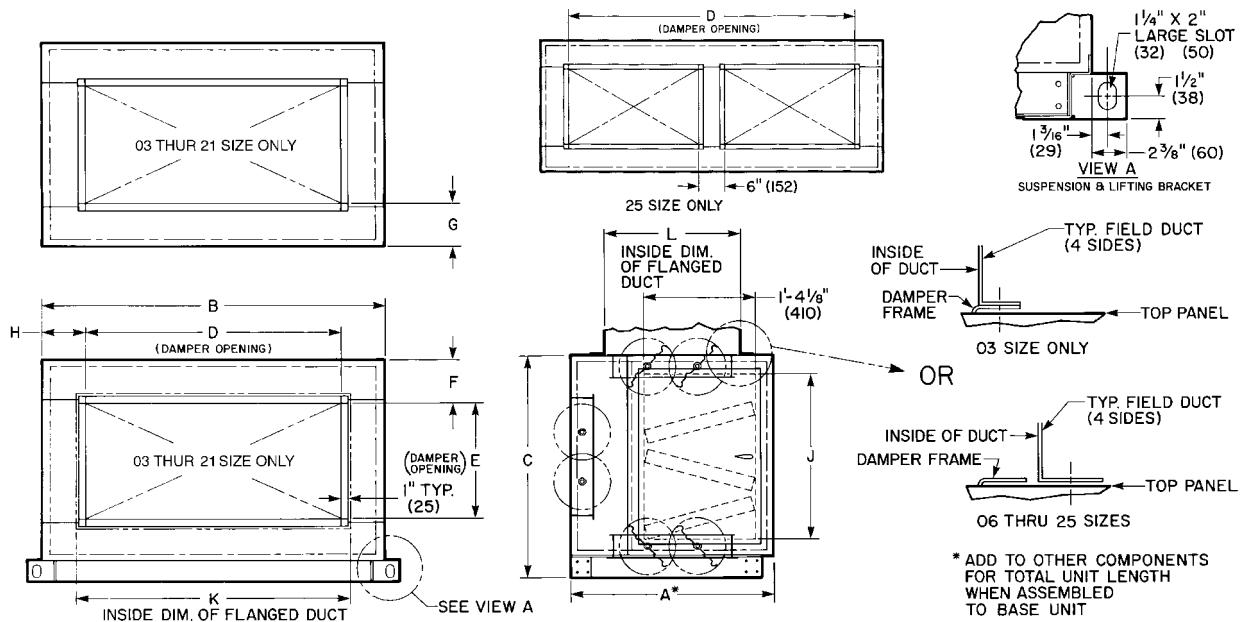
CAUTION

Do not force vanes past full open or closed position.

Table 9 — Inlet Guide Vane Operator Requirements

39L UNIT SIZE	MINIMUM STROKE		MAXIMUM STROKE	
	Stroke Length (in.)	Maximum Operator Force* (lb)	Stroke Length (in.)	Maximum Operator Force* (lb)
06, 08	1.75	10	3.25	5.4
10, 12	1.75	25	3.25	10.7
15	1.75	30	3.25	16.1
18	1.75	40	3.25	20.8
21	3.25	40	6.25	20.8
25	3.25	60	6.25	23.4

*Maximum operating force is required at the point of initial opening of the vanes.



NOTES:

1. Hand is determined by the location of the fan drive and/or coil connection when viewed while facing the direction toward which air is flowing
2. Dimensions in () are in millimeters.

DIMENSIONS (ft-in.)

UNIT 39L-	A	B	C	D	E	F	G	H	J	K	L
03	2- 3 ³ / ₁₆	3-1 ⁷ / ₈	2-0 ¹ / ₄	1- 5	1-5	0- 1 ⁵ / ₈	0-6 ¹ / ₁₆	0-10 ¹ / ₂	1-4 ³ / ₄	1-5 ¹ / ₄	1- 5 ¹ / ₄
06	2- 3 ³ / ₁₆	3-9 ³ / ₄	2-4 ³ / ₁₆	1-11	1-5	0- 4 ¹ / ₈	0-6 ¹ / ₁₆	0-11 ³ / ₈	1-8 ¹ / ₁₆	2-1 ¹ / ₄	1- 7 ¹ / ₄
08	2- 3 ³ / ₁₆	4-1 ¹ / ₁₆	2-8 ¹ / ₈	3- 1	1-5	0- 6 ¹ / ₁₆	0-6 ¹ / ₁₆	0- 6 ³ / ₈	2-0 ⁵ / ₈	3-3 ¹ / ₄	1- 7 ¹ / ₄
10	2- 3 ³ / ₁₆	4-9 ⁹ / ₁₆	2-8 ¹ / ₈	3- 5	1-5	0- 6 ¹ / ₁₆	0-6 ¹ / ₁₆	0- 8 ⁵ / ₁₆	2-0 ⁵ / ₈	3-7 ¹ / ₄	1- 7 ¹ / ₄
12	2- 3 ³ / ₁₆	5-5 ⁷ / ₁₆	2-8 ¹ / ₈	3-11	1-5	0- 6 ¹ / ₁₆	0-6 ¹ / ₁₆	0- 9 ¹ / ₄	2-0 ⁵ / ₈	4-1 ¹ / ₄	1- 7 ¹ / ₄
15	2- 3 ³ / ₁₆	5-5 ⁷ / ₁₆	3-4	3-11	1-9	0- 8	0-4 ¹ / ₁₆	0- 9 ¹ / ₄	2-8 ¹ / ₂	4-1 ¹ / ₄	1-11 ¹ / ₄
18	2-11 ⁷ / ₁₆	5-5 ⁷ / ₁₆	3-7 ¹⁵ / ₁₆	3-11	2-3	0- 7	0-5	0- 9 ¹ / ₄	3-0 ⁷ / ₁₆	4-1 ¹ / ₄	2- 5 ¹ / ₄
21	2-11 ⁷ / ₁₆	6-5 ¹ / ₄	3-7 ¹⁵ / ₁₆	3-11	2-5	0- 6	0-4	1- 3 ¹ / ₈	3-0 ⁷ / ₁₆	4-1 ¹ / ₄	2- 7 ¹ / ₄
25	2-11 ⁷ / ₁₆	6-5 ¹ / ₄	4-3 ¹³ / ₁₆	5- 4	2-5	0- 9 ⁷ / ₈	0-4	0- 6 ⁵ / ₈	3-8 ⁵ / ₁₆	5-6 ¹ / ₄	2- 7 ¹ / ₄

Fig. 9 — Mixing Box Duct Connections

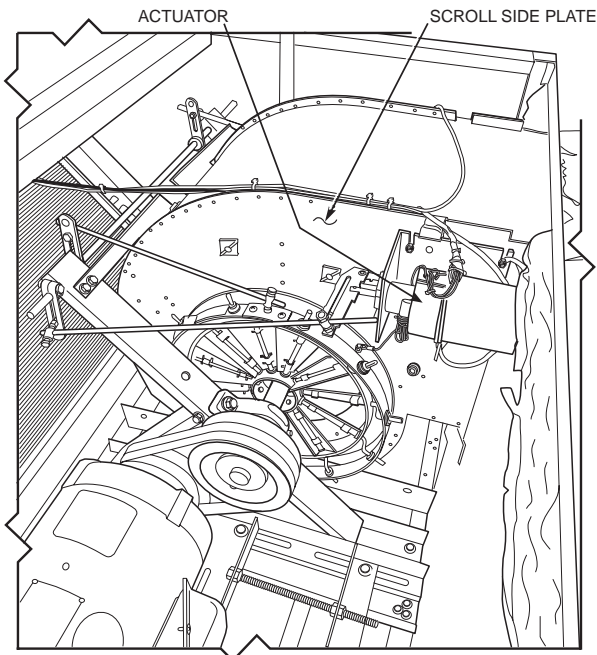


Fig. 10 — Typical Inlet Guide Vane Actuator Installation

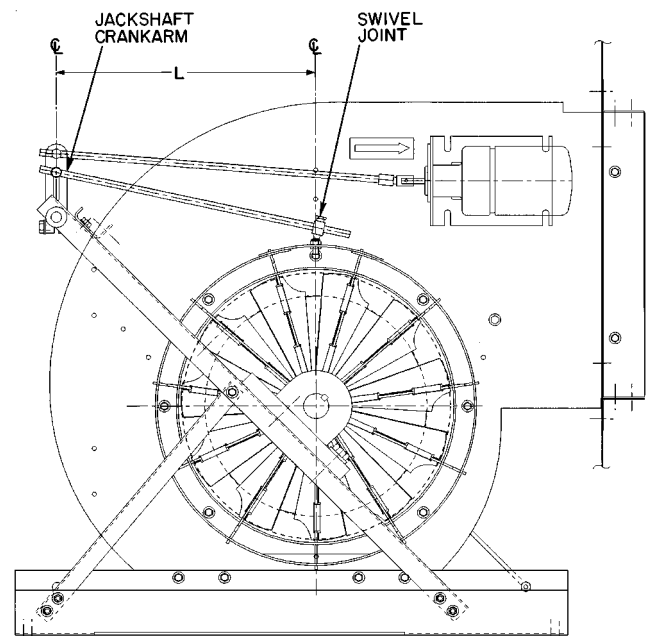


Fig. 11 — Inlet Guide Vanes Linkage Adjustment (Vaness at 45 Degree Position)

Set the vanes at the 45 degree position and make sure the distance “L” (Fig. 11) between swivel joint and jackshaft crankarm is the same for both sides. Centerline through swivel joint and jackshaft crankarm should be parallel.

Figure 11 shows swivel joint at 12 o’clock position. It can be at 3, 6, 9, or 12 o’clock position depending on unit size and fan discharge arrangement. Regardless of position, the jackshaft crankarm and swivel joint on both left and right vane assemblies must be in line with each other for proper operation.

Install Fan Motor — *For field installation of motors, be sure electrical junction box is toward the center of the unit.* This is necessary for drive and belts to be properly tightened. Use smallest slots in motor mounting base that will accommodate motor and allow minimum overhang (Fig. 12). Be sure that motor holddown bolts are tight on field-installed motor.

JUNCTION BOX CONDENSATE PREVENTION — When air handlers are installed outdoors in a high humidity environment or indoors where the apparatus room is used as a fresh air plenum, precautions must be taken to prevent condensation from forming inside the junction box of the internally mounted motor.

Standard installation practice is to mount the motor starter or fused disconnect box adjacent to the air handler and enclose the power wiring to the motor in flexible conduit.

The sheet metal housing of the disconnect switch or motor starter is not airtight (even when a box meeting NEMA [National Electrical Manufacturers Association] IV standards is used). Thus, warm moist air can migrate through the flexible conduit to the junction box on the motor. With the motor located inside the unit, the motor temperature is that of the cool supply air; thus, condensate can form inside the junction box and, possibly, on the live terminal lugs.

To prevent the moist air from migrating through the conduit to the motor, seal the power wires inside the flexible conduit at the motor starter or fused disconnect.

Use a nonconductive, nonhardening sealant. Permagum (manufactured by Schnee Morehead) or sealing compound, thumb grade (manufactured by Calgon), are acceptable materials.

POWER KNOCKOUTS — Panels are not provided with knockouts for the fan motor power wiring. Openings must be drilled or punched in the exterior panels of the unit. It is recommended that power wiring be routed through the discharge panel whenever possible, as this panel is rarely removed for service access.

Install Sheaves on Motor and Fan Shafts — Factory-supplied drives are prealigned and tensioned, however, Carrier recommends that you check the belt tension and alignment before starting the unit. Always check the drive alignment after adjusting belt tension.

When field installing or replacing sheaves, install sheaves on fan shaft and motor shaft for minimum overhang. (See Fig. 12.) Use care when mounting sheave on fan shaft; too much force may damage bearing. Remove rust-preventative coating or oil from shaft. Make sure shaft is clean and free of burrs. Add grease or lubricant to bore of sheave before installing.

The 39L fan, shaft, and drive pulley are balanced as a complete assembly to a high degree of accuracy. If excessive unit vibration is present after fan pulley replacement, the unit must be rebalanced. For drive ratio changes, always reselect the motor pulley — do not change the fan pulley.

ALIGNMENT — Make sure that fan shafts and motor shafts are parallel and level. The most common causes of misalignment are nonparallel shafts and improperly located sheaves. Where shafts are not parallel, belts on one side are drawn tighter and pull more than their share of the load. As a result, these belts wear out faster, requiring the entire set to be replaced before it has given maximum service. If misalignment is in the sheave, belts will enter and leave the grooves at an angle, causing excessive belt cover and sheave wear.

1. Shaft alignment can be checked by measuring the distance between the shafts at 3 or more locations. If the distances are equal, then the shafts will be parallel.

2. Sheave alignment:

Fixed sheaves — To check the location of the fixed sheaves on the shafts, a straightedge or a piece of string can be used. If the sheaves are properly lined up the string will touch them at the points indicated by the arrows in Fig. 13.

Adjustable sheave — To check the location of adjustable sheave on shaft, make sure that the centerlines of both sheaves are in line and parallel with the bearing support channel. See Fig. 13. Adjustable pitch drives are installed on the motor shaft.

▲ CAUTION

With adjustable sheave, do not exceed maximum fan rpm.

3. Rotating each sheave a half revolution will determine whether the sheave is wobbly or the drive shaft is bent. Correct any misalignment.

4. With sheaves aligned, tighten cap screws evenly and progressively.

NOTE: There should be a 1/8-in. to 1/4-in. gap between the mating part hub and the bushing flange. If gap is closed, the bushing is probably the wrong size.

5. With taper-lock bushed hubs, be sure the bushing bolts are tightened evenly to prevent side-to-side pulley wobble. Check by rotating sheaves and rechecking sheave alignment. When substituting field-supplied sheaves for factory-supplied sheaves, consider that the fan shaft sheave has been factory balanced with fan and shaft as an assembly. For this reason, substitution of motor sheave is preferable for final speed adjustment.

Install V-Belts — *When installing or replacing belts, always use a complete set of new belts.* Mixing old and new belts will result in the premature wear or breakage of the newer belts.

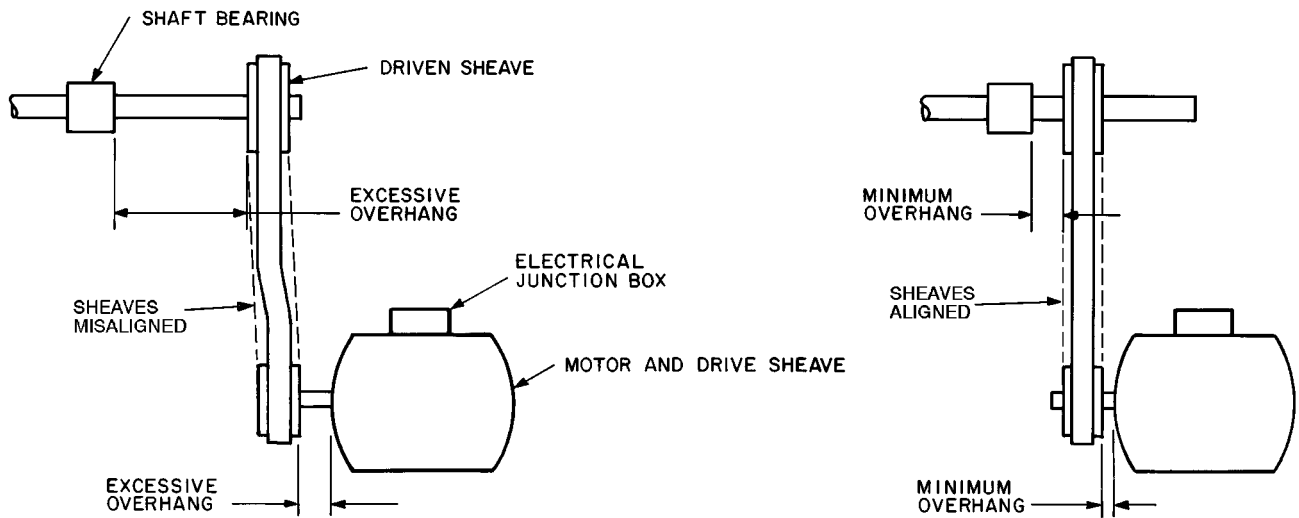
1. Always adjust the motor position so that V-belts can be installed without stretching over grooves. Forcing belts can result in uneven stretching and a mismatched set of belts.

2. **Do not allow belt to bottom out in sheave.**

3. Tighten belts by turning motor-adjusting jackscrews. Turn each jackscrew an equal number of turns.

4. Equalize belt slack so that it is on the same side of belt for all belts. Failure to do so may result in uneven belt stretching.

5. Tension new drives at the maximum deflection force recommended (Fig. 14).



POOR INSTALLATION

BETTER INSTALLATION

Fig. 12 — Determining Sheave-Shaft Overhang

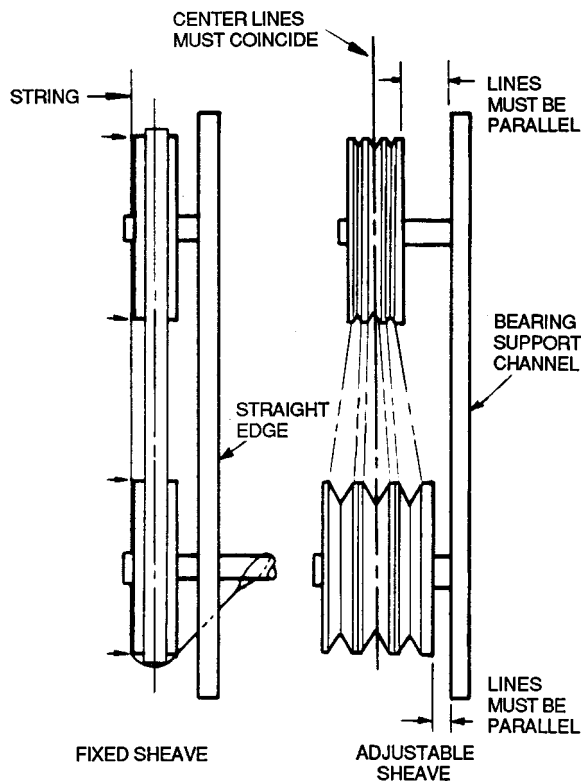
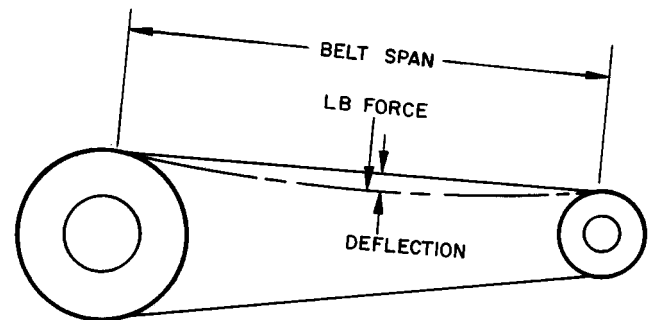


Fig. 13 — Sheave Alignment



BELT CROSS SECTION	SMALL SHEAVE PD RANGE (in.)	DEFLECTION FORCE — LBS					
		Super Belts		Notch Belts		Steel Cable Belts	
		Min	Max	Min	Max	Min	Max
A	3.0- 3.6	3	4 1/4	3 7/8	5 1/2	3	4
	3.8- 4.8	3 1/2	5	4 1/2	6 1/4	3 3/4	4 3/4
	5.0- 7.0	4	5 1/2	5	6 7/8	4 1/4	5 1/4
B	3.4- 4.2	4	5 1/2	5 3/4	8	4 1/2	5 1/2
	4.4- 5.6	5 1/8	7 1/8	6 1/2	9 1/8	5 3/4	7 1/4
	5.8- 8.6	6 3/8	8 3/4	7 3/8	10 1/8	7	8 3/4
C	7.0- 9.4	11 1/4	14 3/8	13 3/4	17 7/8	11 1/4	14
	9.6-16.0	14 1/8	18 1/2	15 1/4	20 1/4	14 1/4	17 3/4
3V	2.65-3.65	3 1/2	5	3 7/8	5 1/2	—	—
	4.12-6.90	4 3/4	6 7/8	5 1/4	7 7/8	—	—
5V	4.40-6.70	—	—	10	15	—	—
	7.1-10.9	10 1/2	15 3/4	12 7/8	18 3/4	—	—
	11.8-16.0	13	19 1/2	15	22	—	—
8V	12.5-17.0	27	40 1/2	—	—	—	—
	18.0-22.4	30	45	—	—	—	—

PD — Pitch Diameter, inches

Fig. 14 — Fan Belt Tension Data

6. To determine correct belt tension, use the deflection formula given below and the tension data from Fig. 14 as follows:

EXAMPLE:

Given

Belt Span 16 in.
 Belt Cross-Section A, Super Belt
 Small Sheave PD 5 in.

$$\text{Deflection} = \frac{(\text{Belt Span})}{64}$$

Solution

1. From Fig. 14 find that deflection force for type A, super belt with 5-in. small sheave PD is 4 to 5-1/2 lbs.

$$\begin{aligned} \text{Deflection} &= \frac{16}{64} \\ &= 1/4 \text{ in.} \end{aligned}$$

3. Increase or decrease belt tension until force required for 1/4-in. deflection is 5-1/2 lbs.

Check belt tension at least twice during first operating day. Readjust as required to maintain belt tension within the recommended range.

With correct belt tension, belts may slip and squeal momentarily on start up. This slippage is normal and disappears after unit reaches operating speed. *Excessive belt tension shortens belt life and may cause bearing and shaft damage.*

After run-in, set belt tension at lowest tension at which belts will not slip during operation.

Steam and Water Piping Recommendations —

Steam coils should be piped so that steam supply enters top coil connection. Condensate connections are at the bottom. Unit must be kept level for proper drainage. It is recommended that standard piping practices be used in sizing and placement of condensate trap, vacuum breaks, and control valves. Refer to Fig. 15 for typical vent and drain locations.

Pipe all water coils for counterflow. See Tables 10-12 for circuiting data. **Pipe chilled water coils so that coldest water meets coldest air; similarly, pipe hot water coils so that warmest water meets warmest air.** To achieve this counterflow arrangement, some water coils may be piped with inlet at top, outlet at bottom. *This will have no impact on chilled water coil performance. See coil connections label on unit.*

Support unit piping connections to prevent damage to coil headers. Inadequate support may cause cracks at the coil header. *When tightening coil connections, use a back-up wrench on nozzles to prevent coil damage.* Piping practices are outlined in Carrier System Design Manual, Part 3, Piping Design.

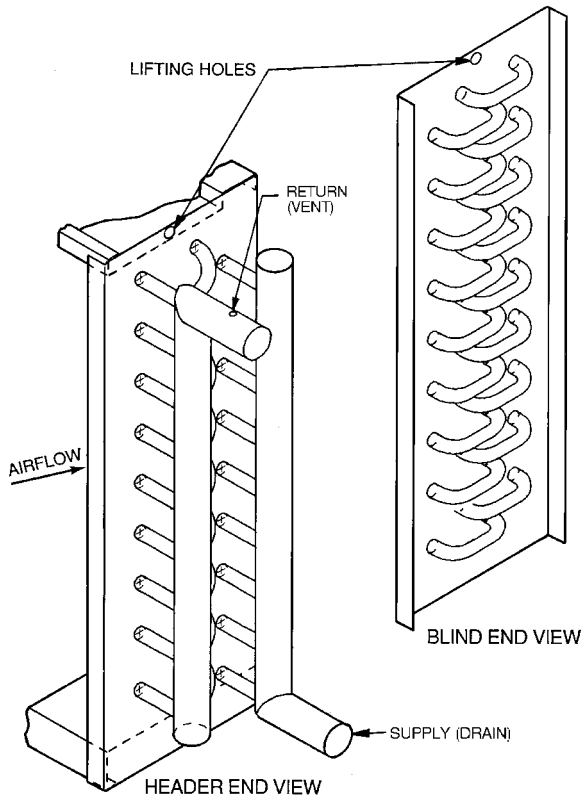


Fig. 15 — Coil Connections and Lifting Points

Coil Freeze-Up Protection

WATER COILS — If a chilled water coil is applied with outside air, provisions must be made to prevent coil freeze-up. It is recommended that a coil freeze-up thermostat be installed on the entering side of the water coil to shut down the system if any air temperature below 36 F is encountered entering the water coil. Follow thermostat manufacturer's instructions.

For outside air application where intermittent chilled water coil operation is possible, one of the following steps should be taken:

1. An auxiliary blower heater should be installed in cabinet to maintain above-freezing temperature around coil while unit is shut down.
2. Drain coils and fill with an ethylene glycol solution suitable for the expected cold weather operation.
3. Shut down the system and drain coils. See Service, Winter Shutdown section on page 31.

STEAM COILS — When used for preheating outside air in pressure or vacuum systems, an immersion thermostat is recommended to control outdoor air damper and fan motor. This control is actuated when steam supply fails or condensate temperature drops below an established level, such as 120 to 150 F. A vacuum breaker should also be used to equalize coil pressure with the atmosphere when steam supply throttles to close. Steam should not be modulated when outside air is below freezing.

Refrigerant Piping, Direct-Expansion (DX) Coils

(Fig. 16) — Direct-expansion coils are divided into 2 or 4 splits depending upon the unit size and coil circuiting. See Table 13 for coil circuiting data. Each split requires its own distributor nozzle, expansion valve, and suction piping. Suction connections are on the air entering side when the coil is properly installed. Matching distributor connections for each coil split are on the air leaving side. See unit label or certified drawing to assure connection to matching suction and liquid connections. See Table 14 for distributor part numbers.

CAUTION

Direct-expansion coils are shipped pressurized with dry air. Release pressure from each coil split through valves in protective caps before removing caps.

Do not leave piping open to the atmosphere unnecessarily. Water and water vapor are detrimental to the refrigerant system. Until the piping is complete, recap the system and charge with nitrogen at the end of each workday. Clean all piping connections before soldering joints.

The lower split of face split coils should be *first on, last off.*

Row split coils utilize special intertwined circuits (as shown in Fig. 16); either split of these row split coils can be *first on, last off.*

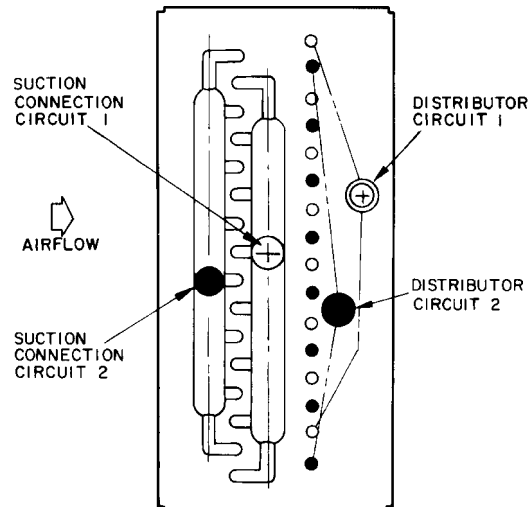


Fig. 16 — Typical Direct-Expansion Row Split Coil

Table 10 — Hot Water Coil Circuiting Data

39L UNIT SIZE		03	06	08	10	12	15	18	21	25
		No. of Circuits								
1-ROW	H	6	8	10	10	10	13	15	15	13
2-ROW	F	12	16	20	20	20	26	30	30	36

LEGEND

F — Full Circuit
H — Half Circuit

NOTE: All hot water coils have 1½-in. MPT.

Table 11 — Chilled Water Coil Circuiting Data

LARGE FACE AREA (39LA, 39LD)											
COIL TYPE	CIRCUITING	UNIT SIZE									
		03		06		08		10		12	
		Face Area (sq ft)									
		3.63		5.90		7.90		9.54		11.18	
		No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size
4-ROW	Q	4	1½	5	1½	—	—	—	—	—	—
	H	8	1½	10	1½	12	1½	12	1½	12	1½
	F	16	1½	20	1½	24	2½	24	2½	24	2½
	D	—	—	—	—	—	—	—	—	—	—
6-ROW	H	8	1½	10	1½	12	1½	12	1½	12	1½
	F	16	1½	20	1½	24	2½	24	2½	24	2½
	D	—	—	—	—	36	2½	36	2½	36	2½

LARGE FACE AREA (39LA, 39LD)									
COIL TYPE	CIRCUITING	UNIT SIZE							
		15		18		21		25	
		Face Area (sq ft)							
		14.91		17.71		21.60		25.00	
		No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size
4-ROW	Q	—	—	—	—	—	—	—	—
	H	16	1½	19	1½	19	1½	22	1½
	F	32	2½	38	2½	38	2½	44	2½
	D	—	—	—	—	76	2½	88	2½
6-ROW	H	16	1½	19	1½	19	1½	—	—
	F	32	2½	38	2½	38	2½	44	2½
	D	48	2½	57	2½	57	2½	66	2½

LEGEND

D — Double Circuit
F — Full Circuit
H — Half Circuit
Q — Quarter Circuit

NOTES:

1. Nozzle sizes are MPT - inches.
2. Sizes 21-25 have 2 coils.

Table 11 — Chilled Water Coil Circuiting Data (cont)

SMALL FACE AREA (39LB, 39LC, 39LF)											
COIL TYPE	CIRCUITING	UNIT SIZE									
		03		06		08		10		12	
		Face Area (sq ft)									
		2.72		4.72		6.58		7.95		9.32	
No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size
4-ROW	Q	3	1½	4	1½	—	—	—	—	—	—
	H	6	1½	8	1½	10	1½	10	1½	10	1½
	F	12	1½	16	1½	20	2½	20	2½	20	2½
	D	—	—	—	—	—	—	—	—	—	—
6-ROW	H	6	1½	8	1½	10	1½	10	1½	10	1½
	F	12	1½	16	1½	20	2½	20	2½	20	2½
	D	—	—	—	—	30	2½	30	2½	30	2½
	D	—	—	—	—	—	—	—	—	—	—
8-ROW*	H	6	1½	8	1½	10	1½	10	1½	10	1½
	F	12	1½	16	1½	20	2½	20	2½	20	2½
	D	—	—	—	—	40	2½	40	2½	40	2½
	D	—	—	—	—	—	—	—	—	—	—

SMALL FACE AREA (39LB, 39LC, 39LF)									
COIL TYPE	CIRCUITING	UNIT SIZE							
		15		18		21		25	
		Face Area (sq ft)							
		12.12		13.98		17.10		20.50	
No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size	No. Circuits	Nozzle Size
4-ROW	Q	—	—	—	—	—	—	—	—
	H	13	1½	15	1½	15	1½	18	1½
	F	26	2½	30	2½	30	2½	36	2½
	D	—	—	—	—	60	2½	72	2½
6-ROW	H	13	1½	15	1½	15	1½	—	1½
	F	26	2½	30	2½	30	2½	36	2½
	D	39	2½	45	2½	45	2½	54	2½
	D	—	—	—	—	—	—	—	—
8-ROW*	H	13	1½	13	1½	—	1½	—	1½
	F	26	2½	30	2½	30	2½	36	2½
	D	52	2½	60	2½	60	2½	72	2½
	D	—	—	—	—	—	—	—	—

LEGEND

- D — Double Circuit
- F — Full Circuit
- H — Half Circuit
- Q — Quarter Circuit

*Not available on 39LB units.

NOTE: Nozzle sizes are MPT - inches.

Table 12 — Steam Coil Connection Size

39L UNIT SIZE	FACE AREA	COIL TYPE	CIRCUITING	CONNECTION	NOZZLE SIZE
3-25	Small	1-Row	F	Inlet	2½
				Outlet	1½

LEGEND

- F — Full Circuit

NOTE: Nozzle sizes are NPT - inches.

SUCTION PIPING — Connect suction piping as shown in Fig. 17 for face split coil or Fig. 18 for row split coil.

Suction line from coil connection to end of the 15-diameter-long riser should be same tube size as coil connection to ensure proper refrigerant velocity.

Refer to Carrier System Design Manual, Part 3, and size remaining suction line to compressor for a pressure drop equivalent to 2.0 F. This will provide a total suction line header pressure drop equivalent to approximately 2.5 F. Refer to Fig. 19 for piping risers to the compressor.

To minimize the possibility of flooded starts and compressor damage during prolonged light load operation, install an accumulator in the suction line or a solenoid in the liquid line of *last-on, first off* split in row-split applications.

EXPANSION VALVE PIPING — Distributor nozzles sized for acceptable performance for a range of conditions are factory supplied. Use the AHU (Air-Handling Unit) selection program in the Carrier electronic catalog to select optimal nozzle sizes. Replace factory nozzle as necessary for best performance. See Fig. 20.

Thermostatic expansion valves are field supplied. See Fig. 20.

NOTE: Be sure that correct nozzle is installed in each distributor before installing expansion valve. Before installing field-supplied nozzles, remove nozzle retainer rings and factory-installed minimum-sized nozzles from distributors.

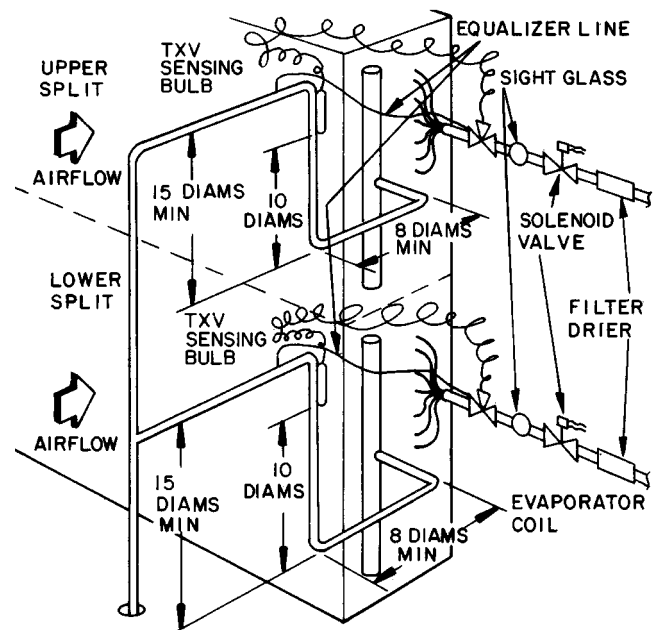
Install expansion valve (Fig. 20) as follows:

1. Wrap wet cloths around valve body to prevent excessive heat from reaching diaphragm and internal parts. *Do not allow water to enter system.* Disassemble expansion valve before soldering, if accessible, for easy reassembly. Use 95-5 tin-antimony soft solder.
2. Solder expansion valve outlet directly to distributor unless:
 - a. An adapter bushing or coupling is supplied by the factory (solder adapter to distributor first, then to expansion valve).
 - b. Hot gas bypass is required. (See Hot Gas Bypass section, below.)
3. Solder expansion valve equalizer line to suction line and locate control bulb on suction line as in Fig. 17 or 18.
4. Insulate expansion valve body, diaphragm assembly and control bulb area to prevent charge migration and excessive condensation.
5. Install filter drier ahead of expansion valve to ensure satisfactory valve operation.

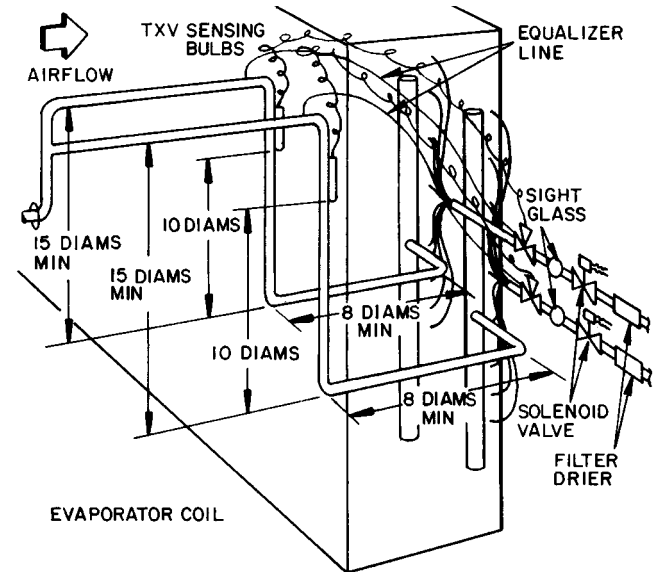
HOT GAS BYPASS — When low-load operation requires use of hot gas bypass, hot gas must be introduced between expansion valve and distributor. See Table 15.

Install hot gas bypass connector (Fig. 21) in coil split that is *first on, last off* as follows:

1. Remove distributor nozzle and retainer ring (area A) from distributor and reinstall in inlet (area B) of side connector.
2. Solder side connector outlet to distributor inlet, using silver solder or equivalent with 1300 to 1500 F melt temperature.
3. Silver-solder expansion valve outlet to side connector inlet.
4. If required, install factory-supplied adapter bushing or coupling to connector inlet before soldering to expansion valve outlet.



TXV — Thermostatic Expansion Valve
Fig. 17 — Face Split Coil Suction Line Piping



TXV — Thermostatic Expansion Valve
Fig. 18 — Row Split Coil Suction Line Piping

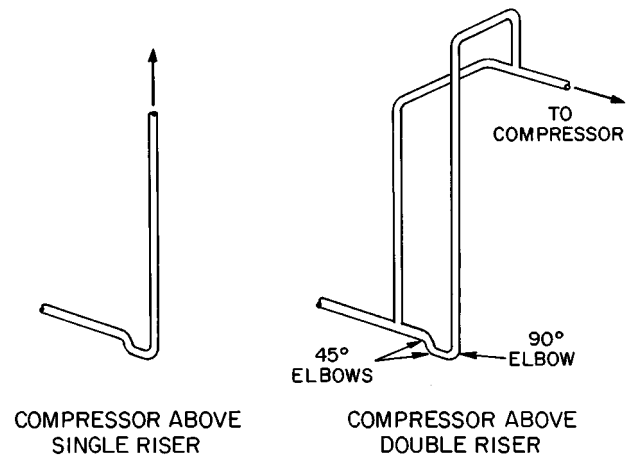


Fig. 19 — Suction Line Riser Piping

Table 13 — Direct Expansion Coil Circuiting Data

LARGE FACE AREA (39LA, 39LD)														
UNIT SIZE	03			06			08			10			12	
CIRCUITING TYPE	Qtr	Half	Full	Qtr	Half	Full	Qtr	Half	Full	Qtr	Half	Full	Half	Full
CFM AT 550 FPM	1996			3245			4345			5247			6149	
FACE AREA (sq ft)	3.63			5.90			7.90			9.54			11.18	
TUBE FACE	16			20			24			24			24	
TUBE LENGTH (in.)	26.1			34.0			37.9			45.8			53.7	
NUMBER OF CIRCUITS	4	8	16	—	10	20	—	12	24	—	12	24	12	24
NUMBER OF TXVs	2	2	2	—	2	2	—	2	2	—	2	2	2	2
NUMBER OF CIRCUITS/TXV†	2	4	8	—	5	10	—	6	12	—	6	12	6	12
SUCTION CONNECTIONS (in. OD)	7/8	1 1/8	1 3/8	—	1 1/8	1 3/8	—	1 1/8	1 5/8	—	1 1/8	1 5/8	1 1/8	1 5/8
DISTRIBUTOR CONNECTIONS (in. OD)	7/8	7/8	1 1/8	—	7/8	1 1/8	—	7/8	1 5/8	—	7/8	1 5/8	7/8	1 1/8
4-ROW COIL														
Circuit Equivalent Length (ft)	52	26	—	—	32	—	—	34	18	—	40	20	45	23
Distributor Tube Length (in.)														
Face Split	11	11	—	—	11	—	—	13	15	—	13	15	13	15
Row Split	13	15	—	—	16	—	—	18	18	—	18	18	18	18
Distributor Nozzle Size**	2	2	—	—	3	—	—	4	4	—	5	5	6	6
6-ROW COIL														
Circuit Equivalent Length (ft)	—	39	20	—	47	24	—	51	26	—	59	30	67	34
Distributor Tube Length (in.)														
Face Split	—	11	11	—	11	13	—	13	15	—	13	15	13	15
Row Split	—	15	16	—	16	18	—	18	21	—	18	21	18	21
Distributor Nozzle Size**	—	2	3	—	3	3	—	4	4	—	5	5	6	6

LARGE FACE AREA (39LA, 39LD)															
UNIT SIZE	15		18		21			25							
CIRCUITING TYPE	Half	Full	Half	Full	Half	Full	Double	Half		Full		Double			
CFM AT 550 FPM	8200		9740		11,880			13,750							
FACE AREA (sq ft)	14.91		17.71		21.6			25.0							
TUBE FACE	32		38		38			22U-22L							
TUBE LENGTH (in.)	53.7		53.7		65.5			65.5							
NUMBER OF CIRCUITS	16	32	19	38	19	38	—	22		44		88			
NUMBER OF TXVs	2	4*	2	4*	2	4*	—	U	L	U	L	U	L		
NUMBER OF CIRCUITS/TXV†	8	8	9-10	9-10	9-10	9-10	—	5-6	5-6	2	11	2	11	4	4
SUCTION CONNECTIONS (in. OD)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 1/8	—	1 1/8	1 1/8	1 3/8	1 3/8	1 5/8	1 5/8		
DISTRIBUTOR CONNECTIONS (in. OD)	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	—	7/8	7/8	1 3/8	1 3/8	1 3/8	1 3/8		
4-ROW COIL															
Circuit Equivalent Length (ft)	45	23	45	23	54	26	—	54	54	26	26	—	—		
Distributor Tube Length (in.)															
Face Split	15	16	16	16	16	16 3/4	—	12	12	15	15	—	—		
Row Split	26	16	28	16	28	16 3/4	—	21	21	23	23	—	—		
Distributor Nozzle Size**	8	4	10	5	10	5	—	8	8	5	5	—	—		
6-ROW COIL															
Circuit Equivalent Length (ft)	67	34	67	34	81	40	—	—	—	40	40	—	—		
Distributor Tube Length (in.)															
Face Split	15	16	16	18	16	18 1/2	—	—	—	15	15	—	—		
Row Split	23	16	28	18	28	18 1/2	—	—	—	22	22	—	—		
Distributor Nozzle Size**	8	4	10	5	10	5	—	—	—	5	5	—	—		

LEGEND

AHU — Air-Handling Unit Selection Program

TXV — Thermostatic Expansion Valve (Field-supplied)

*May be field manifolded for either face split or row split.

†Where each TXV has the same number of circuits, that number is shown once. When coil has an uneven number of circuits per TXV, both values are shown.

**Factory-supplied distributors have factory-selected nozzle sizes shown. If necessary, replace factory-supplied nozzles with field-supplied and installed nozzles. Consult Electronic Catalog AHU selection program for correct nozzle selection.

††Not available on 39LB units.

Table 13 — Direct Expansion Coil Circuiting Data (cont)

SMALL FACE AREA (39LB, 39LC, 39LF)														
UNIT SIZE	03			06			08			10			12	
CIRCUITING TYPE	Qtr	Half	Full	Qtr	Half	Full	Qtr	Half	Full	Qtr	Half	Full	Half	Full
CFM AT 550 FPM	1496			2596			3619			4372			5126	
FACE AREA (sq ft)	2.72			4.72			6.58			7.95			9.32	
TUBE FACE	12			16			20			20			20	
TUBE LENGTH (in.)	26.1			34.0			37.9			45.8			53.7	
NUMBER OF CIRCUITS	4	6	—	4	8	16	—	10	20	—	10	20	10	20
NUMBER OF TXVs	2	2	—	2	2	2	—	2	2	—	2	2	2	2
NUMBER OF CIRCUITS/TXV†	2	3	—	2	4	8	—	5	10	—	5	10	5	10
SUCTION CONNECTIONS (in. OD)	7/8	1 1/8	—	7/8	1 1/8	1 3/8	—	1 1/8	1 3/8	—	1 1/8	1 3/8	1 1/8	1 3/8
DISTRIBUTOR CONNECTIONS (in. OD)	7/8	7/8	—	7/8	7/8	1 1/8	—	7/8	7/8	—	7/8	7/8	7/8	7/8
4-ROW COIL														
Circuit Equivalent Length (ft)	52	26	—	62	32	—	—	34	18	—	40	20	45	23
Distributor Tube Length (in.)														
Face Split	11	11	—	11	11	—	—	11	18	—	11	18	11	18
Row Split	11	11	—	11	15	—	—	16	18	—	16	18	16	18
Distributor Nozzle Size**	1 1/2	1 1/2	—	2 1/2	2 1/2	—	—	4	4	—	5	5	5	5
6-ROW COIL														
Circuit Equivalent Length (ft)	58	39	—	—	47	24	—	51	26	—	59	30	67	34
Distributor Tube Length (in.)														
Face Split	11 1/2	11 1/2	—	—	11 1/2	11 1/2	—	11 1/2	13	—	11 1/2	13	11 1/2	13
Row Split	11 1/2	13	—	—	15	16	—	16	18 1/2	—	16	18 1/2	16	18 1/2
Distributor Nozzle Size**	1 1/2	1 1/2	—	—	2 1/2	3	—	4	4	—	5	5	5	5
8-ROW COIL††														
Circuit Equivalent Length (ft)	—	52	—	—	63	32	—	68	34	—	78	39	89	45
Distributor Tube Length (in.)														
Face Split	—	11 1/2	—	—	11 1/2	11 1/2	—	11 1/2	13	—	11 1/2	13	11 1/2	13
Row Split	—	13	—	—	15	16	—	16	18 1/2	—	16	18 1/2	16	18 1/2
Distributor Nozzle Size**	—	1 1/2	—	—	2 1/2	3	—	4	4	—	5	5	5	5

SMALL FACE AREA (39LB, 39LC, 39LF)										
UNIT SIZE	15		18		21		25		Double	
CIRCUITING TYPE	Half	Full	Half	Full	Half	Full	Half	Full		
CFM AT 550 FPM	6666		7689		9405		11,275			
FACE AREA (sq ft)	12.12		13.98		17.1		20.5			
TUBE FACE	26		30		30		36			
TUBE LENGTH (in.)	53.7		53.7		65.5		65.5			
NUMBER OF CIRCUITS	16	26	15	30	15	30	18	36	72	
NUMBER OF TXVs	2	4*	2	4*	2	4*	2	4*	4*	
NUMBER OF CIRCUITS/TXV†	6-7	6-7	7-8	7-8	7-8	7-8	9	9	18	
SUCTION CONNECTIONS (in. OD)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 5/8	
DISTRIBUTOR CONNECTIONS (in. OD)	7/8	7/8	7/8-1 1/8	7/8-1 1/8	7/8-1 1/8	7/8-1 1/8	1 1/8	1 1/8	1 3/8	
4-ROW COIL										
Circuit Equivalent Length (ft)	45	23	45	23	54	26	54	26	—	
Distributor Tube Length (in.)										
Face Split	13	16	13	16	13/15	16	16	15	—	
Row Split	21	16	23	16	23 1/2	16	26	15	—	
Distributor Nozzle Size**	6	3	8	4	8	4	8	4	—	
6-ROW COIL										
Circuit Equivalent Length (ft)	67	34	67	34	81	40	—	40	—	
Distributor Tube Length (in.)										
Face Split	13	16	13	16	13/15	16	—	16 3/4	—	
Row Split	21	16	23 1/2	16	23 1/2	16	—	16 3/4	—	
Distributor Nozzle Size**	6	3	8	4	8	4	—	4	—	
8-ROW COIL††										
Circuit Equivalent Length (ft)	89	45	89	45	—	54	—	54	26	
Distributor Tube Length (in.)										
Face Split	13	16	15	16	—	16	—	16 3/4	16	
Row Split	21	16	23 1/2	16	—	16	—	16 3/4	16	
Distributor Nozzle Size**	6	3	8	4	—	4	—	4	8	

LEGEND

AHU — Air-Handling Unit Selection Program

TXV — Thermostatic Expansion Valve (Field-supplied)

*May be field manifolded for either face split or row split.

†Where each TXV has the same number of circuits, that number is shown once. When coil has an uneven number of circuits per TXV, both values are shown.

**Factory-supplied distributors have factory-selected nozzle sizes shown. If necessary, replace factory-supplied nozzles with field-supplied and installed nozzles. Consult Electronic Catalog AHU selection program for correct nozzle selection.

††Not available on 39LB units.

Table 14 — Distributor Part Numbers

PART NO.		NO. OF TUBES	CONNECTION OD (in.)	SPORLAN NOZZLE	
Sporlan	Carrier			Type	Size
1112-2-1/4	EA07NC261	2	0.88	G	3/4 to 12
1112-3-1/4	EA07FC027	3			
1112-4-1/4	EA07NC262	4			
1112-5-1/4	EA07NC263	5			
1112-6-1/4	EA07NC264	6			
1113-7-1/4	EA07HC207	7			
1113-8-1/4	EA07HC208	8			
1115-8-1/4	EA07KC240	8			
1115-9-1/4	EA07KC241	9			
1115-10-1/4	EA07KC242	10			
1116-11-1/4	EA07HC011	11			
1117-11-1/4	EA07LC510	11	1.38	C	3 to 50
1117-12-1/4	EA07HC012	12			
1117-13-1/4	EA07HC013	13			
1126-14-1/4	EA07TC290	14			
1126-15-1/4	EA07HC015	15			
1126-16-1/4	EA07TC207	16			
1126-17-1/4	EA07HC017	17			

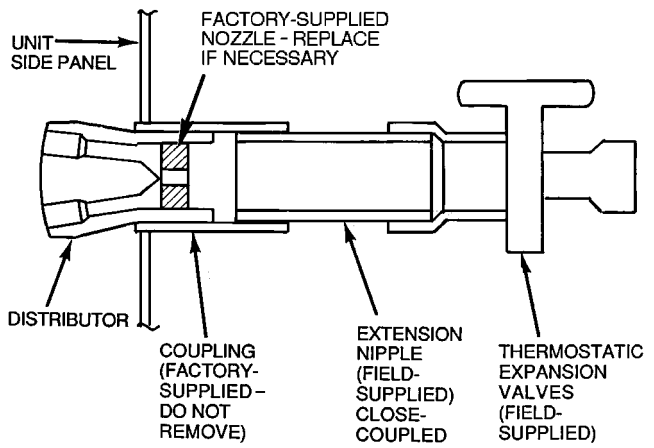
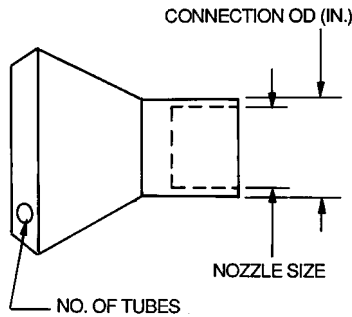


Fig. 20 — Expansion Valve Piping

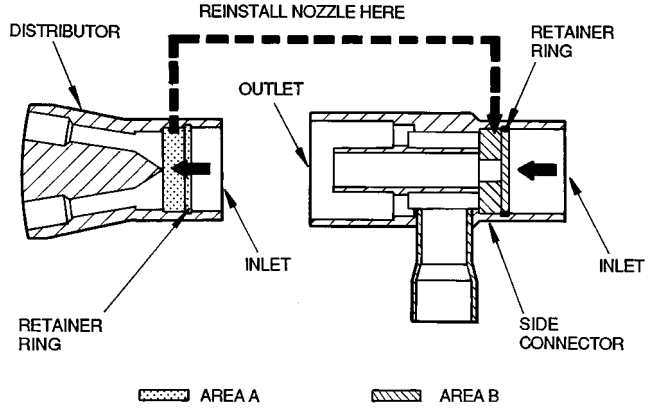
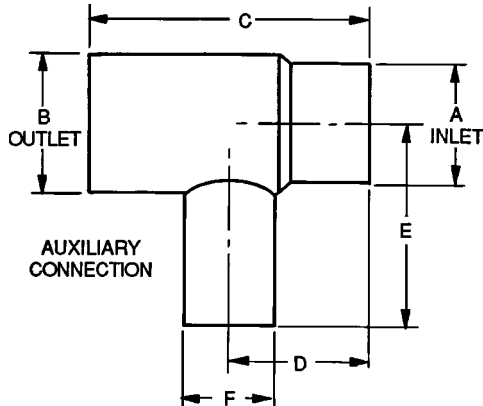


Fig. 21 — Distributor and Hot Gas Bypass Auxiliary Side Connector

Table 15 — Side Connector (Hot Gas Bypass) Data

SPORLAN TYPE	CARRIER PART NO.	CONNECTION SIZES (in.)			USED WITH DISTRIBUTOR TYPE	NOZZLE SIZE
		Inlet — ODM Solder	Outlet — ODF Solder	Auxiliary — ODF Solder		
ASC-5-4	—	5/8	5/8	1/2	1620, 1622	J
ASC-7-4	EA19BA504	7/8	7/8	1/2	1112, 1113	G
ASC-9-5	EA19BA705	1 1/8	1 1/8	5/8	1115, 1116	E
ASC-11-7	EA19BA905	1 3/8	1 3/8	7/8	1117, 1126	C
ASC-13-9	—	1 5/8	1 5/8	1 1/8	1125, 1127, 1143	A



DIMENSIONS (in.)

SPORLAN TYPE	A	B	C	D	E	F
ASC-5-4	5/8 ODM	5/8 ODF	1.88	0.95	1.25	1/2 ODF
ASC-7-4	7/8 ODM	7/8 ODF	2.25	1.06	1.38	1/2 ODF
ASC-9-5	1 1/8 ODM	1 1/8 ODF	2.81	1.47	1.62	5/8 ODF
ASC-11-7	1 3/8 ODM	1 3/8 ODF	3.53	1.89	2.19	7/8 ODF
ASC-13-9	1 5/8 ODM	1 5/8 ODF	3.72	1.83	2.75	1 1/8 ODF

LEGEND

ODF — Outside Diameter, Female
 ODM — Outside Diameter, Male

SPECIAL PIPING WITH 4 SPLITS PER COIL

Manifolding for 2-Face Splits — Refer to Fig. 22 and externally manifold as follows:

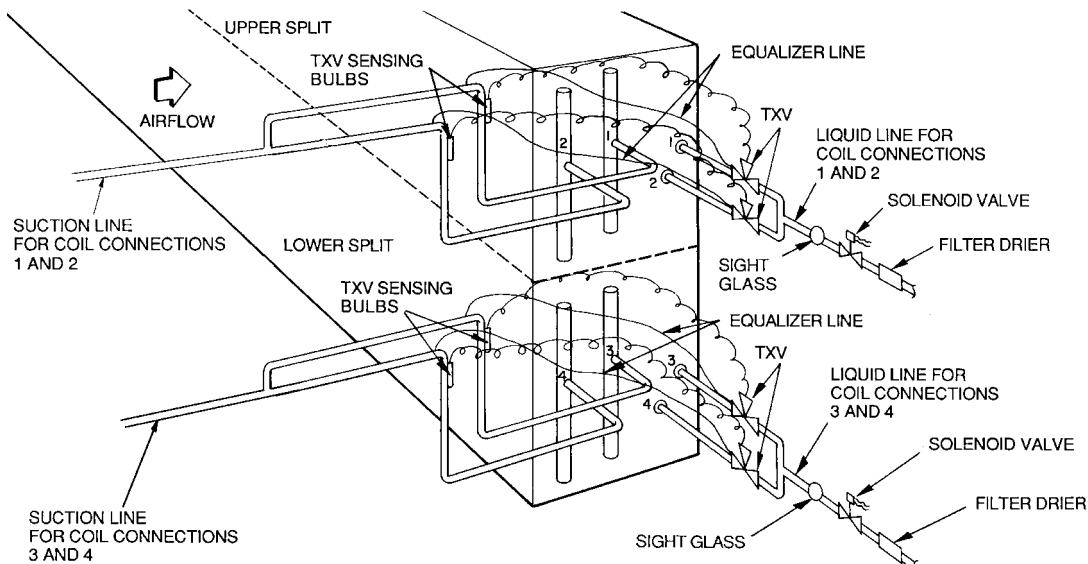
1. Connect the 4 expansion valves to the 4 distributors on each coil and connect the 4 suction lines to the 15-diameter-long risers as outlined in previous piping instructions.
2. Install common liquid line for upper face split to first (upper) and second expansion valves. Also, install a common suction line from suction lines attached to first (upper) and second suction header connections.
3. Repeat Step 2 for lower face split using third and fourth distributor and suction connections.

Manifolding for 2-Row Splits — Refer to Fig. 23 and externally manifold as outlined for the 2-face splits with the following exceptions:

1. Manifold in pairs, the first and third coil connections for one split.
2. Manifold the second and fourth pairs of coil connections for the other split.

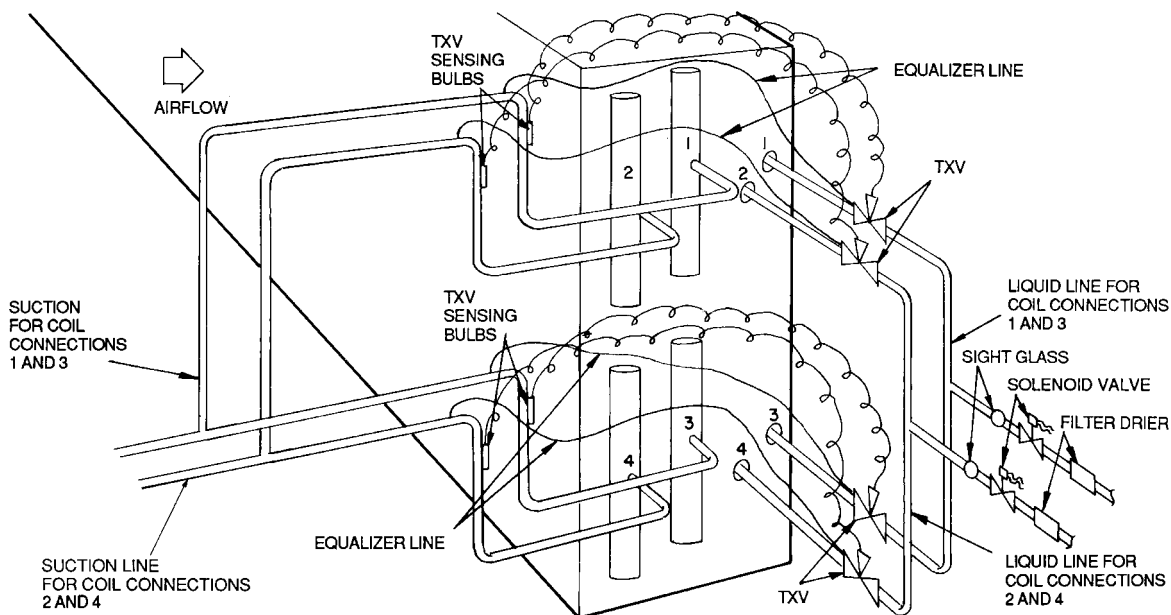
NOTE: Split section using first and third pairs of coil connections should be *first on, last off* for coils with right hand (facing direction of airflow) connections and the reverse for left hand connections.

Hot Gas Bypass Connection with 4 Splits per Coil — For either face or row splits connect a hot gas bypass auxiliary side connector to each distributor of coil split that is *first on, last off*. Refer to installation instructions for Hot Gas Bypass.



TXV — Thermostatic Expansion Valve

Fig. 22 — Face Split Coil Manifolding (Typical)



TXV — Thermostatic Expansion Valve

Fig. 23 — Row Split Coil Manifolding (Typical)

Electric Heaters — Electric heaters may be factory installed or drop shipped to the jobsite and field installed. The heater can only be installed in the preheat-electric section.

To install electric heater, refer to Fig. 24 and proceed as follows:

1. Locate preheat-electric section already mounted on unit and remove protective shipping cover.
2. Locate crate containing electric heater and verify heater matches the unit. Unit hand and heater hands must agree.
3. Remove both knockout slugs (power and signal). Install conduit connectors in top of coil connection box.
4. Remove top panel of the preheat-electric section and drill or punch 2 holes are specified in Fig. 24.
5. Insert the electric heater into unit. It must slide between 2 angles located on the bottom of the section.
6. Secure heater to the preheat-electric section using 4 screws.
7. Locate top panel of section. Run conduit through top panel and tighten conduit connectors. Lower top panel and replace panel on unit.
8. Complete wiring per wiring diagram and job requirements. Follow all applicable local codes.

CONNECT POWER AND CONTROL WIRES — Heater wiring schematic is located on control box panel. (Figure 25 shows typical wiring details.) Electrical data for each standard heater arrangement is shown in Table 16. Verify that minimum airflow requirement (minimum coil face velocity, fpm) will be met, especially on applications where variable air volume is supplied.

Use copper power supply wires rated for 75 C minimum. On 250-v or greater applications, use 600-v rated wiring. Size wires to carry 125% of current load on each set of terminals (Table 17). Use the following formulas as required:

Single-phase line current

$$= \frac{1 \text{ (kW per set of terminals) (1000)}}{\text{voltage}}$$

Three-phase line current

$$= \frac{\text{(kW per set of terminals) (1000)}}{(\text{voltage}) (1.73)}$$

Note that if the heater is rated at 50 kW (or more) and is controlled by a cycling device such as a multi-stage thermostat, or a step controller, conductors may be sized at 100% of load amperes (as in Tables 16 and 17) per National Electrical Code (NEC) Section 424-22. Heater construction and application information (Tables 16 and 17) are based upon Underwriters' Laboratories (UL) Space Heating Standard No. 1096 and the requirements of the NEC. Installer is responsible for observing local code requirements.

Install a disconnect switch or main circuit breaker in accordance with NEC and other applicable codes. Locate so that it is easily accessible and within sight of heater control box (per NEC Article 424-19 and 424-65).

Weatherproof junction boxes have no knockouts for wire entrance. Drill or punch holes for conduit as required and make all junctions watertight.

Where field-supplied thermostats are used, isolate circuits to prevent possible interconnection of control circuit wiring.

Where field-supplied step controller is used, connect steps to terminals as marked on wiring schematic. When connecting multi-stage heaters, wire stage no. 1 so that it is first stage on, last stage off. Connect thermostats as required.

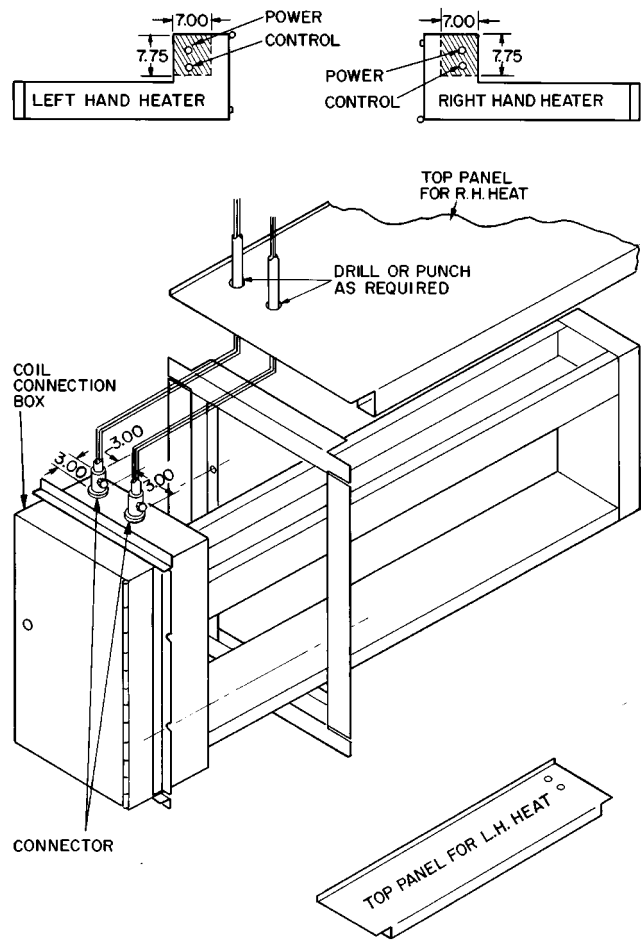


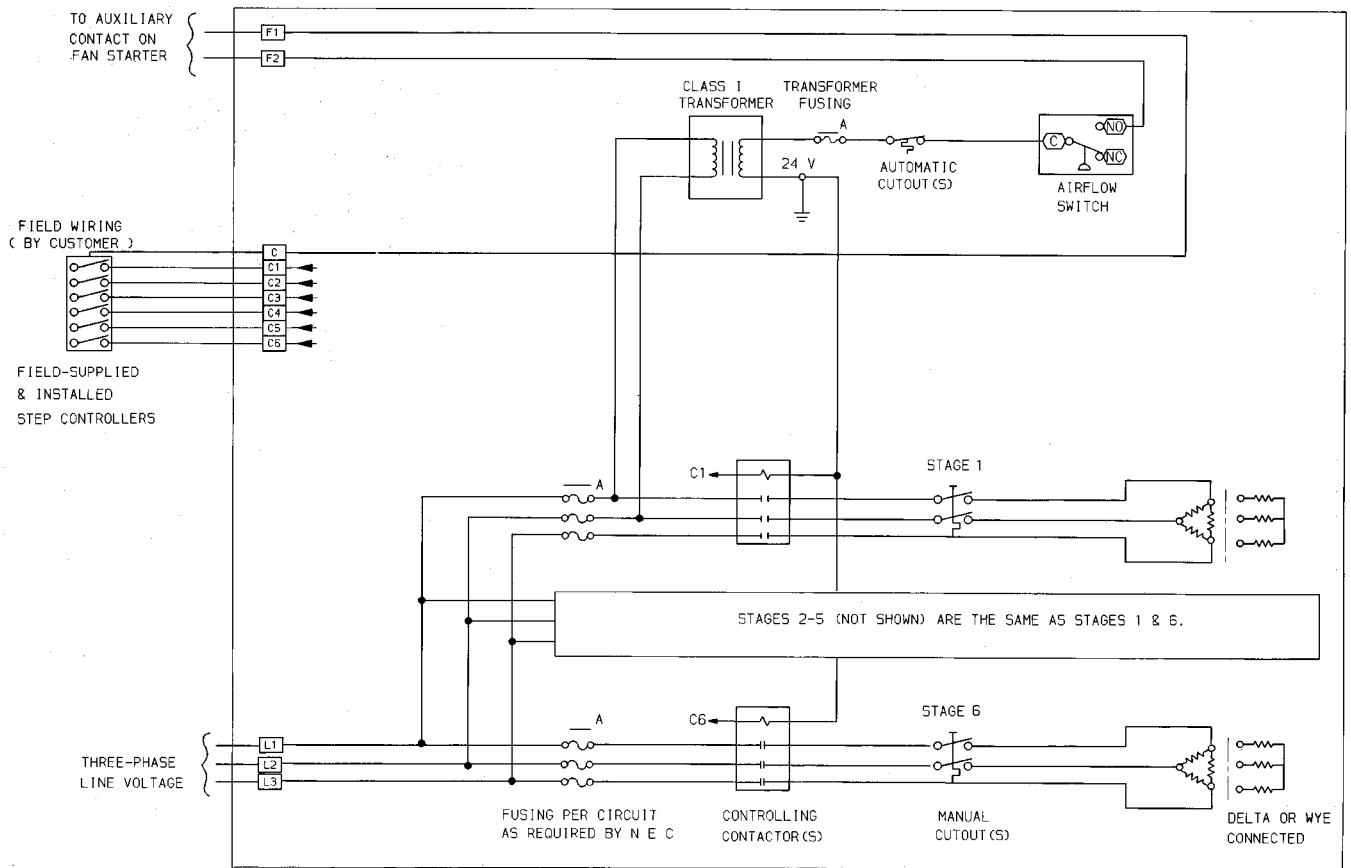
Fig. 24 — Electric Heater Installation

Provide sufficient clearance for convection cooling of heaters with solid-state controllers. Provide at least 5-in. of free air space above and below cooling fins extending from heater terminal box. Be sure to connect interlock terminals F1 and F2 to auxiliary contacts on fan starter.

Each heater has 2 different types of factory-installed thermal cutouts for overtemperature protection; an automatic reset thermal cutout for primary protection and a manual reset thermal cutout to protect against failure of the primary system. Also provided is an airflow pressure differential switch to prevent the heater from operating when the fan is not in operation or airflow is restricted or insufficient. The primary automatic reset cutout is a bi-metal disk-type cutout. It is wired into the control circuit which operates the magnetic disconnecting contactors (the same contactors which also switch on and off the various steps of the coil). The secondary manual reset cutout is a bi-metal disk-type cut-out. This secondary thermal cutout is load carrying and is installed in each heater subcircuit. The primary and secondary overtemperature protection systems are independent of each other. The secondary system is designed to protect against possible failure of the primary system to deenergize the heater.

Subcircuits in the heaters are designed in compliance with paragraph 424-22 of the NEC. The coil is subdivided into circuits that draw no more than 48 amps each and is fused for at least 125% of the circuit rating.

Pitot tube is to be positioned so that the airflow switch is actuated by a minimum negative pressure of 0.07 in. wg.



NOTE: All wiring must be copper and must conform to the NEC (National Electrical Code).

Fig. 25 — Typical Electric Heater Wiring Schematic

Table 16 — Electric Heater Data

39L UNIT SIZE	HEATER AREA (sq ft)	MIN COIL FACE VEL (Fpm)	CONTROL STEPS	HEATER COIL (kW)	TEMP RISE	POWER SUPPLY, 3-PHASE CIRCUITS (V-Ph)								
						208-60			380-50			480-60		
						FLA (tot)	Sub-Ckt	Fuse*	FLA (tot)	Sub-Ckt	Fuse*	FLA (tot)	Sub-Ckt	Fuse*
03	2.17	450	3	9.0	29	25	1	35	14	1	20	11	1	15
		500	3	15.0	44	42	1	60	23	1	30	19	1	25
		550	3	17.2	46	48	1	60	27	1	35	21	1	30
06	3.70	200	6	8.0	35	23	1	30	13	1	20	10	1	15
		300	6	10.0	29	28	1	35	16	1	20	13	1	20
		400	6	17.0	38	48	1	60	26	1	35	21	1	30
		450	6	19.9	40	59	2	80	31	1	40	26	1	35
		500	6	27.0	47	75	3	100	42	1	60	33	1	45
		550	6	29.8	47	83	3	110	46	1	60	36	1	45
600	6	36.0	52	100	3	125	55	2	70	44	1	60		
08	5.12	300	6	15.0	31	42	1	60	23	1	30	19	1	25
		400	6	25.0	39	70	2	90	38	1	50	31	1	40
		450	6	35.0	49	98	3	125	54	2	70	43	1	60
		500	6	39.9	50	112	3	150	61	2	80	49	2	70
		550	6	43.2	49	123	3	175	66	2	90	53	2	70
		600	6	51.0	53	142	3	200	78	3	100	62	2	80
10	6.18	300	6	15.0	26	42	1	60	23	1	30	19	1	25
		400	6	25.0	32	70	2	90	38	1	50	31	1	40
		450	6	39.9	46	112	3	150	61	2	80	49	2	70
		500	6	47.3	49	132	3	175	72	2	90	57	2	80
		550	6	51.8	49	144	3	200	79	3	100	63	2	80
		600	6	59.8	51	—	—	—	91	3	125	75	3	100
12	7.25	300	6	19.9	29	56	2	70	31	1	40	24	1	30
		400	6	29.8	33	83	3	110	46	1	60	36	1	45
		450	6	39.9	39	111	3	150	61	2	80	48	1	60
		500	6	43.0	38	120	3	150	66	2	90	52	2	70
		550	6	51.8	41	144	3	200	79	3	100	63	2	80
		600	6	72.0	53	—	—	—	110	3	150	94	3	125
15	10.04	300	6	19.9	21	56	2	70	31	1	40	24	1	30
		400	6	29.8	24	83	3	110	46	1	60	36	1	45
		450	6	39.9	28	112	3	150	61	2	80	49	2	70
		500	6	45.0	29	125	3	175	69	2	90	55	2	70
		550	6	51.8	30	142	3	200	79	3	100	62	2	80
		600	6	86.0	46	—	—	—	99	3	125	79	3	100
600	6	86.0	46	—	—	—	131	3	175	104	3	150		
18	11.74	300	6	19.9	18	56	2	70	31	1	40	24	1	30
		400	6	25.8	18	72	2	90	40	1	50	32	1	40
		450	6	35.0	21	98	3	125	54	2	70	43	1	60
		500	6	45.0	24	125	3	175	69	2	90	55	2	70
		550	6	51.8	26	144	3	200	79	3	100	63	2	80
		600	6	78.0	35	—	—	—	119	3	150	94	3	125
600	6	94.0	43	—	—	—	143	3	200	114	3	150		
21	14.21	300	6	19.9	15	56	2	70	31	1	40	24	1	30
		400	6	25.8	14	72	2	90	40	1	50	32	1	40
		450	6	35.0	17	98	3	125	54	2	70	43	1	60
		500	6	45.0	20	125	3	175	69	2	90	55	2	70
		550	6	51.8	21	144	3	200	79	3	100	63	2	80
		600	6	79.8	30	—	—	—	122	3	175	96	3	125
600	6	92.0	34	—	—	—	140	3	175	111	3	150		
600	6	116.0	43	—	—	—	—	—	—	—	140	3	175	
25	17.79	300	6	30.0	18	84	3	110	46	1	60	37	1	50
		400	6	39.9	18	111	3	150	61	2	80	48	1	60
		450	6	50.0	20	139	3	175	76	3	100	61	2	80
		500	6	65.0	23	181	6	250	99	3	125	79	3	100
		550	6	79.8	26	222	6	300	122	3	175	96	3	125
		600	6	96.5	29	268	6	350	147	6	200	117	3	150
600	6	110.0	33	—	—	—	168	6	225	133	3	175		
600	6	145.0	43	—	—	—	221	6	300	175	6	225		

LEGEND

FLA — Total Full Load Amps — electric heating coils
kW — Kilowatt Rating

*External fuse size required per circuit.

NOTES:

1. Subcircuits are internal heater circuits of 48 A or less ampacity.
2. All lugs of terminal blocks are sized for copper conductors.
3. ARI certification program does not cover electric heating coil ratings.

⚠ CAUTION
To avoid damage from overheating, coils must not be operated at less than minimum cfm.
Minimum cfm = $\frac{\text{Coil Face Area} \times \text{Minimum Coil Face Velocity}}{\text{Coil Face Velocity}}$

Table 17 — Field Wiring for Incoming Conductors Sized for 125% of Heater Load

WIRE SIZE (AWG or kcmil)	LOAD AMPS*	WIRE SIZE (AWG or kcmil)	LOAD AMPS*
	Copper		Copper
12	16	1/0	120
10	24	2/0	140
8	40	3/0	160
6	52	4/0	184
4	68	250	204
3	80	300	228
2	92	350	248
1	104	400	268
		500	304

LEGEND

AWG — American Wire Gage
kcmil — Thousand Circular Mills

*Values are based on Table 310-16 of the NEC (National Electrical Code) for 75 C insulated copper wire. Not more than 3 conductors in a raceway.

NOTES:

1. Be sure to consider length of wiring run and possible voltage drops when sizing wires.
2. Field power wiring — Heaters are furnished with a terminal block sized for incoming copper conductors with 75 C insulation rated to carry at least 125% of the heater load. However, conductors can be sized to carry 100% of the heater load if the heater is rated at 50 kW or more, and the heater is controlled by a cycling device such as a multi-stage thermostat, step controller, or SCR (silicon control rectifier) power controller. Terminal blocks and knockouts are sized to handle either 100% or 125% conductors.

Discharge Modification — If field modification of discharge position is required, 39L fans can be converted (by a skilled mechanic) to any standard hand and discharge without any additional parts. (NOTE: This does not apply to a model change conversion.) All mounting holes are prepunched.

To convert a 39L fan, note the following:

1. Sizes 03-18 without inlet guide vanes (IGVs) — See Fig. 26. It is not necessary to remove the bearing support channels from the fan housing.
 2. Inlet guide vane actuators and linkages, where provided, may be moved to the opposite fan scroll side sheet.
- Sizes 21 and 25 without IGV and 06-25 with IGVs — See Fig. 27. The 'A' frame support must be removed. To change from upblast to horizontal discharge or from horizontal to upblast discharge, the bearings must be relocated to keep the wheel centered in the housing. To change from upblast front (UBF) to upblast rear (UBR) or from top horizontal front (THF) to top horizontal rear (THR) or vice versa, turn the entire fan housing 180 degrees about its base.
3. The fan shaft may be driven out and reinstalled to place the drive pulley on the opposite end.
 4. The fan scroll is prepunched for horizontal or vertical discharge to match the support angles at the base of the unit.
 5. The motor and motor base may be rotated to place the motor at the front or rear of the unit. Proper location is that which results in the longest drive center line distance. The motor conduit box location may need to be reversed.
 6. When hand of fan is changed, it may be necessary to turn the discharge panel inside-out to fit correctly with the fan discharge. In this case, remove the existing insulation and install new duct-liner type insulation on the opposite side of the discharge panel.
 7. Rebalancing of the unit is recommended.

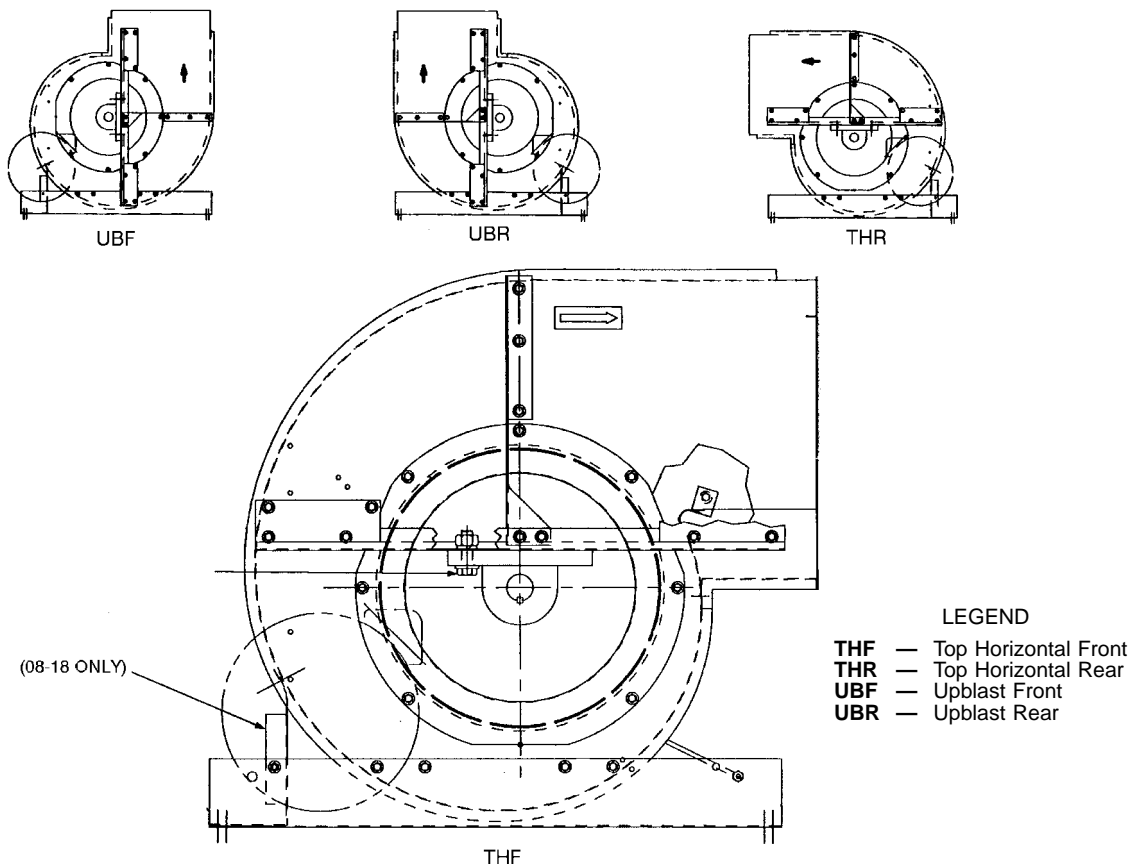


Fig. 26 — Fan Discharge Positions, Fans without IGVs

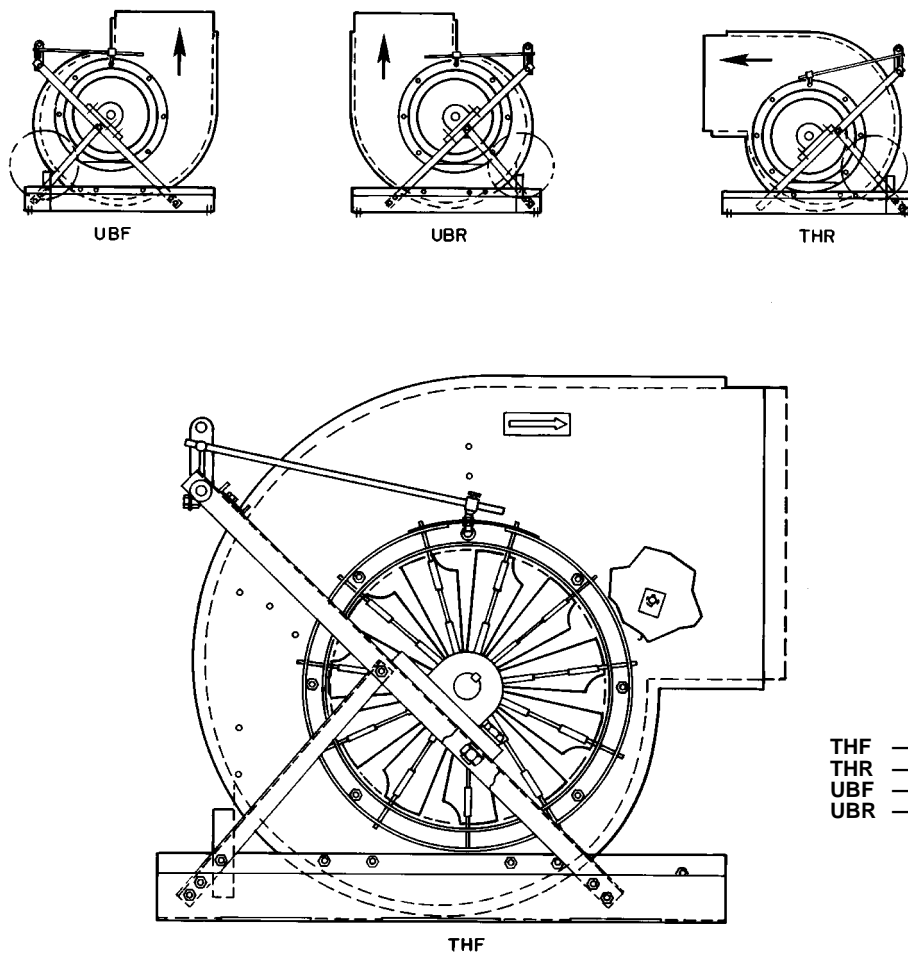


Fig. 27 — Fan Discharge Positions, Fans with IGVs

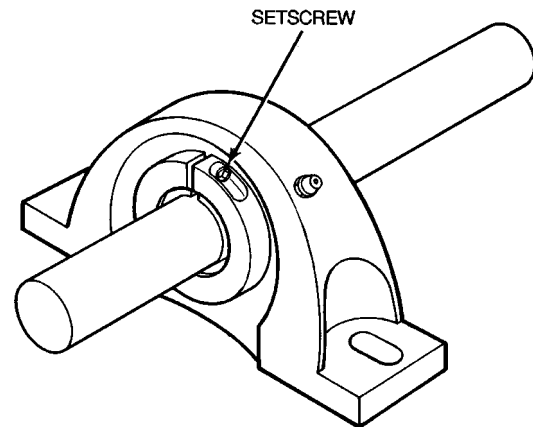
START-UP

Check List — Make a walkway inside unit components to protect insulation. Remove all construction debris from unit interior. *Remove walkway before starting unit.*

FILTERS — Install unit filters in all filter sections.

FANS

1. Check lubrication of fan, motor bearings, and linkages.
 - a. Note that bearings are shipped completely full of grease for corrosion protection and may run warm temporarily on start-up until excess grease has discharged.
 - b. Hand-operate all linkages, such as damper and guide vanes, to check for freedom of movement.
2. Check tightness of bearing setscrews or locking collars (Fig. 28). Also, check tightness of setscrews on fan wheels and sheaves.
3. Check tightness of fan shaft bearing mounting.
4. Recheck sheave alignment and belt tension. (Refer to Fig. 13 and 14.)
5. Hand turn fan to make certain fan wheel does not rub in housing.



SQUEEZE-TYPE LOCKING COLLAR

BEARING SETSCREW TORQUE (in.-lb)

39L UNIT SIZE	TORQUE
03,06,08,10,12	70
15,18,21,25	90

BEARING HOLDDOWN BOLT TORQUE (ft-lb)

BOLT SIZE	TORQUE
3/8 - 16	30
1/2 - 13	63
5/8 - 11	100

Fig. 28 — Fan Shaft Bearing Details

6. Check fan speed with a strobe-type tachometer or use the following formula:

Obtain the motor rpm from the fan motor nameplate and read sheave pitch diameters marked on the fan and motor pulleys, or estimate the pitch diameters by using the pulley outside diameters.

Then:

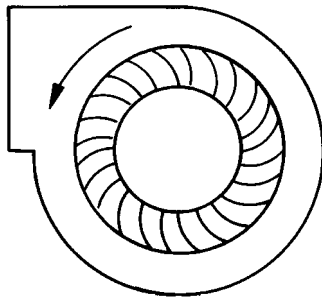
$$\text{Fan Rpm} = \frac{\text{Motor Rpm} \times \text{Motor Sheave Pitch Diameter (in.)}}{\text{Fan Sheave Pitch Diameter (in.)}}$$

Example:

	<u>Actual</u>	<u>Approximate</u>
Nameplate Motor Rpm	= 1760	1760
Mtr Sheave Pitch Diameter	= 8.9 in.	9.0 (OD)
Fan Sheave Pitch Diameter	= 12.4 in.	12.5 (OD)
Fan Rpm	= $\frac{1760 \times 8.9}{12.4}$	= $\frac{1760 \times 9}{12.5}$
	= 1263 Rpm	1267 Rpm

Refer to Table 7, Physical Data for maximum allowable fan speeds for standard wheels. *Excessive fan speed may result in condensate carryover from cooling coil or fan motor overload and wheel failure.*

7. Check direction of rotation (see Fig. 29). Arrow on drive side of fan housing indicates correct direction of rotation.



FORWARD CURVED

Fig. 29 — Fan Wheel Rotation

8. Check vibration. If excessive vibration occurs, check for the following:
 - a. Variable sheave (if air balance of system has been accomplished: replace sheave with fixed sheave for continuous application).
 - b. Drive misalignment.
 - c. Mismatched, worn or loose belts.
 - d. Wheel or sheaves loose on shaft.
 - e. Loose bearings.
 - f. Loose mounting bolts.
 - g. Motor out of balance.
 - h. Sheaves eccentric or out of balance.
 - i. Vibration isolators improperly adjusted.
 - j. Out-of-balance or corroded wheel (rebalance or replace if necessary).
 - k. Accumulation of material on wheel (remove excess material).

COILS

Chilled Water Coil — Typical coil vents, drains, and lifting points are shown in Fig. 15.

DX Coil — Charge refrigerant. Also refer to condensing unit service and installation instructions. Refrigerant operating charge for unit coil is shown in Table 7.

SERVICE

General

1. Place a suitable walkway to protect floor insulation whenever entering the fan section.
2. Review Safety Considerations at beginning of these instructions. Good safety habits are important tools when performing service procedures.
3. To make speed measurements, use a strobe-style tachometer or calculate per Step 6 of Start-Up, Check List.

Fan Motor Replacement

1. Shut off motor power.
2. Disconnect and tag power wires at motor terminals.
3. Loosen motor brace-to-mounting-rail attaching bolts. Loosen belt tensioning bolts to adjust the motor position so V-belts can be removed without stretching over grooves.
4. Mark belt as to position. Remove and set aside belts.
5. Remove motor to motor bracket holddown bolts.
6. Remove motor pulley and set aside.
7. Remove motor.
8. Install new motor. Reassemble by reversing Steps 1-6. Be sure to reinstall multiple belts in their original position. Use a complete new set if required. Do not stretch belts over sheaves. Review the sections on motor and sheave installation, sheave alignment and belt tensioning discussed previously (Fig. 12, 13, and 14).
9. Reconnect motor leads and restore power. Check fan for proper rotation as described in Start-Up, Check List.

Coil Cleaning

DETERGENT — Spray mild detergent solution on coils with garden-type sprayer. Rinse with fresh water. Check to ensure condensate line is free. Excess water from cleaning may flood unit if condensate line is plugged.

STEAM — Remove coil to facilitate cleaning and prevent damage to unit insulation. See Coil Removal section which follows.

Winter Shutdown (Chilled Water Coil Only) —

It is recommended that auxiliary drain piping be added to coil piping if yearly winterizing of coils is anticipated. This auxiliary piping should be located at the highest and lowest point on the respective header connection for each coil.

ANTIFREEZE METHODS OF COIL PROTECTION

1. Close coil water supply and return valves.
2. Drain coil as follows:

Method I — ‘Break’ flange of coupling at each header location. Separate flange or coupling connection to facilitate coil draining.

Method II — Open both valves to auxiliary drain piping.
3. After coil is drained, *Method I*, connect line with a service valve and union from upper nozzle to an antifreeze reservoir. Connect a self-priming reversible pump between the low header connection and the reservoir. *Method II*, make connection to auxiliary drain valves.
4. Fill reservoir with any inhibited antifreeze acceptable to code and underwriter authority.
5. Open service valve and circulate solution for 15 minutes; then check its strength.

6. If solution is too weak, add more antifreeze until desired strength is reached, then circulate solution through coil for 15 minutes or until concentration is satisfactory.
7. Remove upper line from reservoir to reversible pump. Drain coil to reservoir and then close service valve.
8. Break union and remove reservoir and its lines.
9. Leave coil flanges or coupling open and auxiliary drain valves open until spring.

AIR DRYING METHOD OF COIL PROTECTION (Unit and coil must be level for this method.)

1. Close coil water supply and return main valves.
2. Drain coil as described in procedures for Antifreeze Methods of Coil Protection.
3. Connect air supply or air blower to inlet header connection and close its drain connection.
4. Circulate air and check for air dryness by holding mirror in front of open vent in outlet header drain connection. Mirror will fog if water is still present.
5. Allow coil to stand for a few minutes; repeat step 4 until coil is dry.

Coil Removal

HORIZONTAL UNIT SLANT COIL REMOVAL (39LA Units)

NOTE: Item numbers are in Fig. 30.

1. Refer to Fig. 3 for service area clearance.
2. Disconnect piping (Item 5).
3. On top panel (Item 3), remove screws located directly above side panels (Items 2 and 6). Top panels may be removed from unit to provide more workspace, but it is not required.
4. Remove right side panels (Item 6).
5. If accessory is present, remove accessory side panel (Item 1) on left side of unit. Detach filter track support bracket if upstream accessory is a filter.
6. Remove screws from inside baffle (Item 13). Leave baffle attached to left side panel (Item 2).
7. Remove left side panel (Item 2).
8. Remove condensate baffle (Item 8).
9. Remove coil holddown screws (Items 9 and 11).
10. Remove baffle screws (Item 4) from downstream side of coil.
11. Tilt coil (Item 10) away from coil support panels (Items 7 and 12) and slowly slide coil out of unit.
12. Replace coil by reversing preceding Steps 1 - 11.

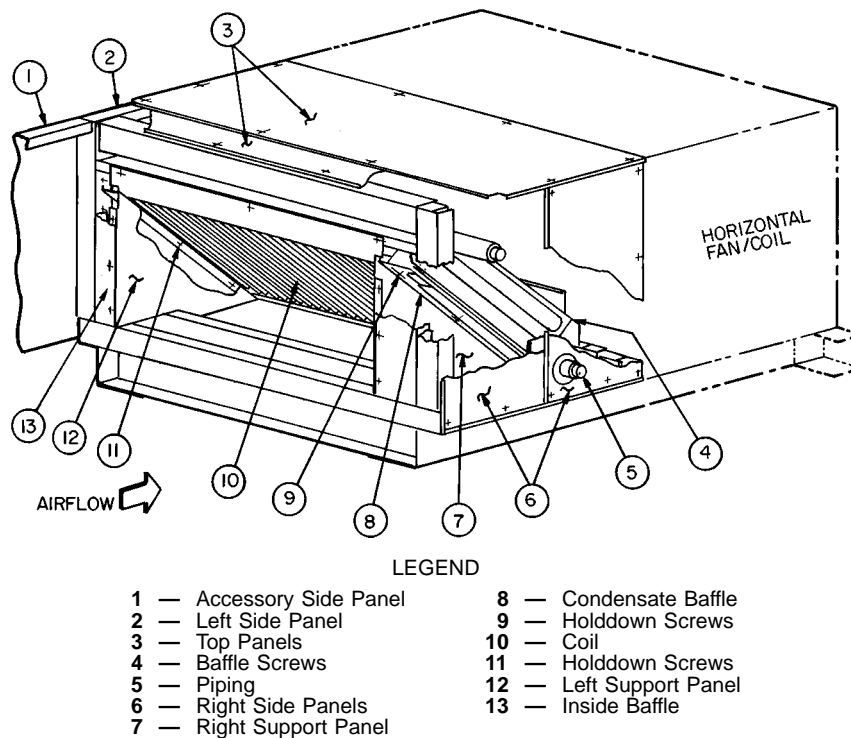


Fig. 30 — Horizontal Unit Slant Coil Removal (39LA Units — Sizes 03-21)

VERTICAL UNIT SLANT COIL REMOVAL (39LD Units)

NOTE: Item numbers are in Fig. 31.

1. Refer to Fig. 3 for service area clearance.
2. Disconnect piping (Item 6).
3. Through fan access door (Item 2), remove screws (Item 3), while holding angle (Item 4) to top of coil side panels (Item 7). On opposite end of unit, gain access to similar screws by removing side panels (Item 1).
4. Remove right side panels (Item 7).

NOTE: Support of fan section may be required after removal of side panels (Items 7 and 16).

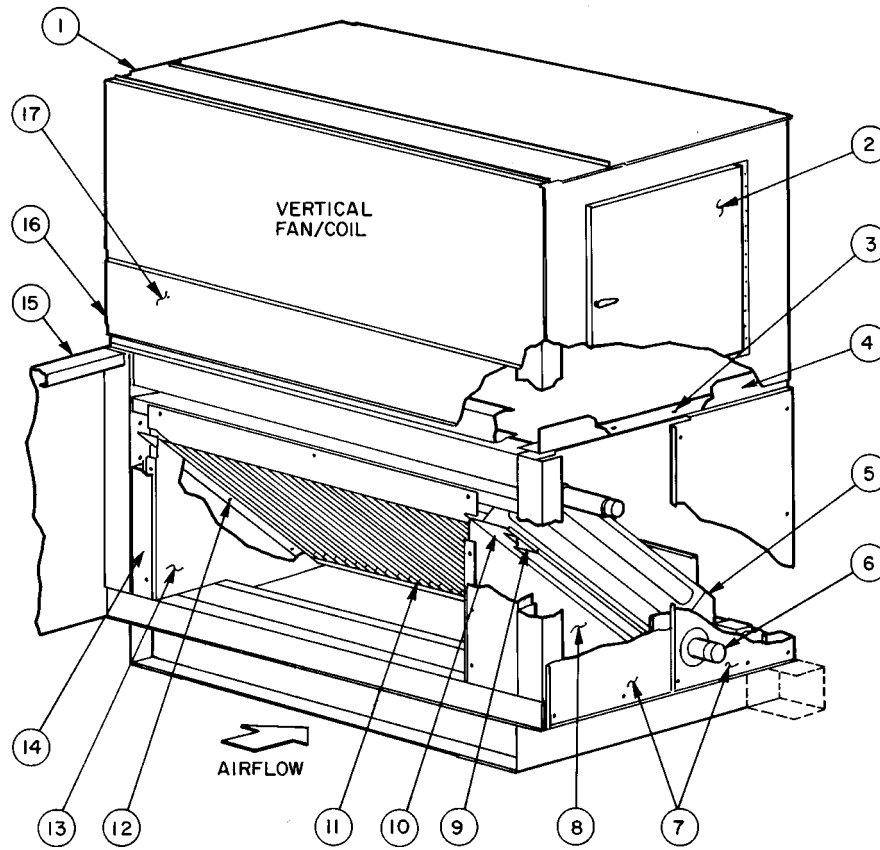
5. If accessory is present, remove accessory side panel (Item 15) on left side of unit. Detach filter track support bracket if upstream accessory is a filter.

6. Remove screws from inside baffle (item 14). Leave baffle attached to left side panel (Item 16).

7. Remove left side panel (Item 16).

NOTE: Support of fan section may be required after removal of side panels (Items 7 and 16).

8. Remove condensate baffle (Item 9).
9. Remove coil holddown screws (Items 10 and 12).
10. Remove baffle screws (Item 5) from downstream side of coil.
11. Tilt coil (Item 11) away from coil support panels (Items 8 and 13).
12. Replace coil by reversing preceding Steps 1 - 11.



LEGEND

- | | |
|-------------------------|---------------------------|
| 1 — Fan Side Panel | 10 — Holddown Screws |
| 2 — Fan Access Door | 11 — Coil |
| 3 — Screws | 12 — Holddown Screws |
| 4 — Angle | 13 — Left Support Panel |
| 5 — Baffle Screws | 14 — Inside Baffle |
| 6 — Piping | 15 — Accessory Side Panel |
| 7 — Right Side Panels | 16 — Left Side Panels |
| 8 — Right Support Panel | 17 — Rear Panel |
| 9 — Condensate Baffle | |

Fig. 31 — Vertical Unit Slant Coil Removal (39LD Units — Sizes 03-21)

HORIZONTAL OR VERTICAL UNIT — DUAL COIL REMOVAL (39LA,LD units — size 25) — (NOTE: Item numbers are in Fig. 32 unless otherwise indicated.)

1. Refer to Fig. 3 for service area requirements.
2. Disconnect piping (Item 5).
3. Horizontal Unit, 39LA —

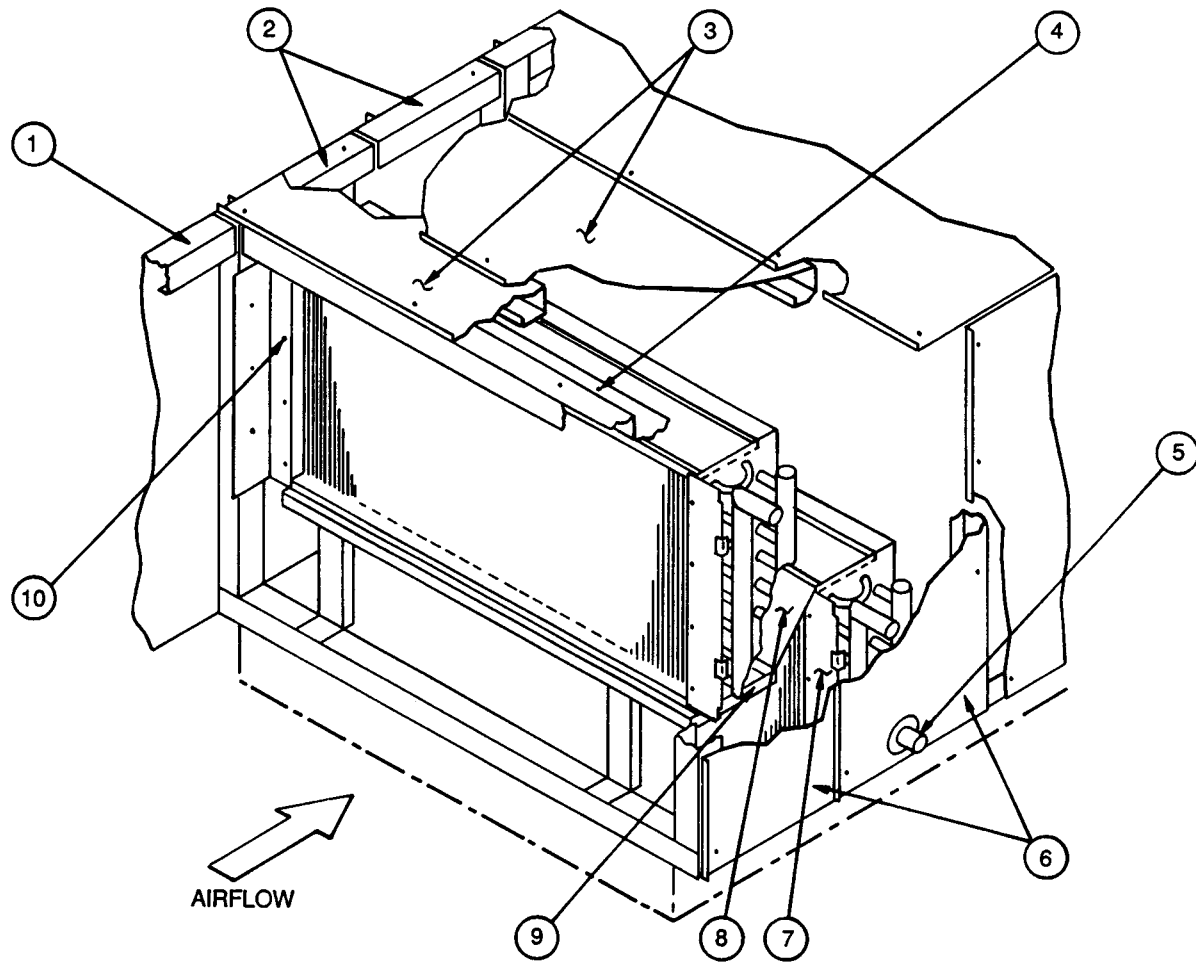
On top panel (Item 3) remove screws located directly above side panels (Items 2 and 6). Top panels may be removed from unit to provide more workspace, but it is not required.

Vertical Unit, 39LD —

Through fan access door (Item 2, Fig. 31), remove screws (Item 3, Fig. 31) holding angle (Item 4, Fig. 31) to top of coil panels (Item 7, Fig. 31).

Remove rear panel (Item 17, Fig. 31) and remove baffle angle screws (Item 4) holding top baffle to coil.

4. Remove side panel(s) (Item 6).
- NOTE: Vertical units may require support of fan section after removal of side panels.
5. If accessory is present, remove accessory side panel (Item 1) on left side of unit. Detach filter track support bracket if upstream accessory is a filter.
 6. Remove screws from horizontal baffle (Item 8). Leave baffle attached to upper condensate pan (Item 9).
 7. Remove screws from inside baffles (Item 7). Leave baffles attached to left side panel (Item 2).
 8. Slide coils and header and baffles from unit.
 9. Replace coils by reversing proceeding Steps 1 - 8.



LEGEND

- | | |
|--------------------------|--------------------------|
| 1 — Accessory Side Panel | 6 — Right Side Panels |
| 2 — Left Side Panel | 7 — Inside Baffle |
| 3 — Top Panels | 8 — Horizontal Baffle |
| 4 — Baffle Angle Screws | 9 — Upper Condensate Pan |
| 5 — Piping | 10 — Baffle Screw |

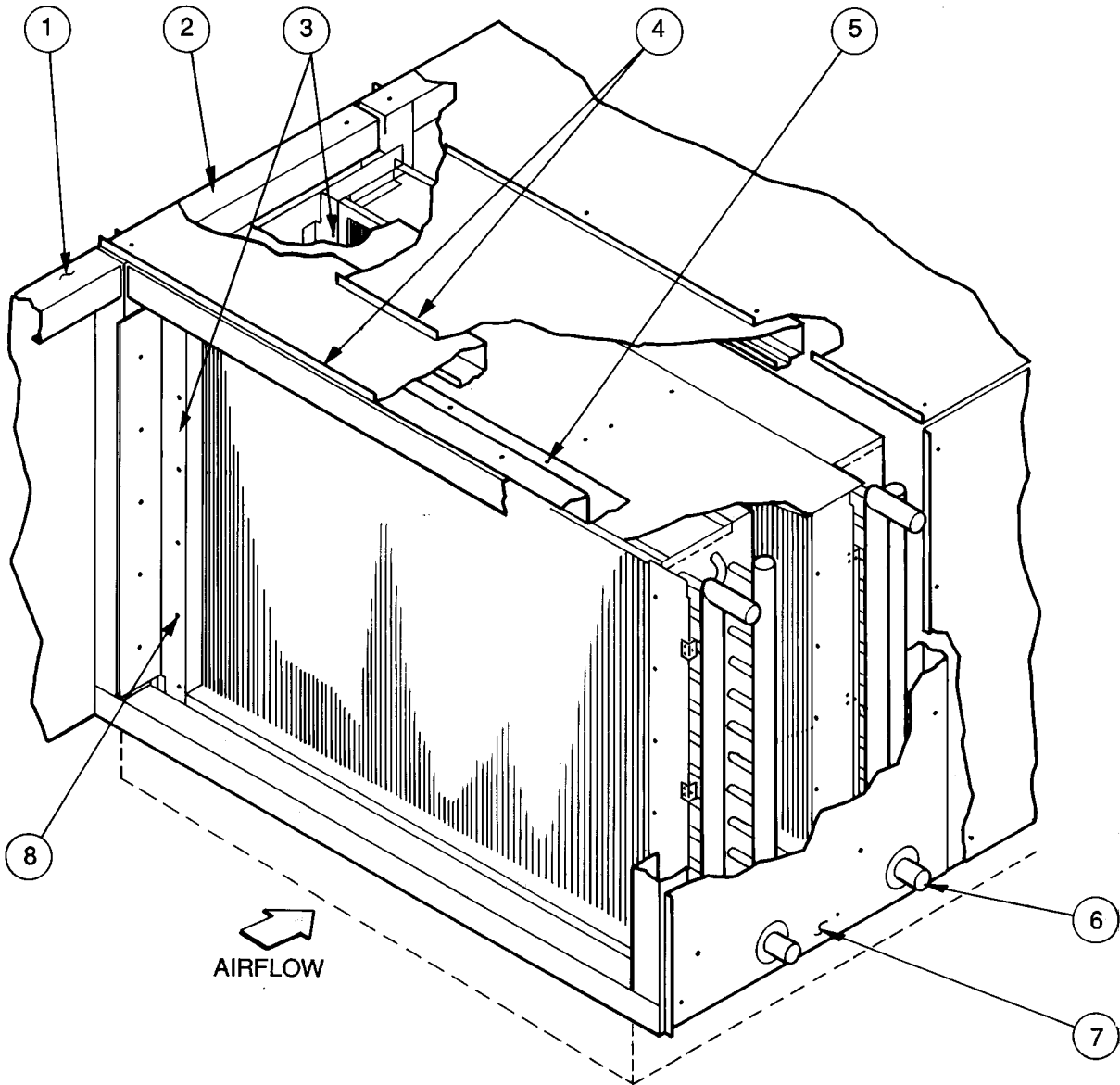
Fig. 32 — Horizontal or Vertical Unit — Dual Coil Removal (39LA,LD Units, Size 25)

HORIZONTAL OR VERTICAL UNIT — VERTICAL COIL REMOVAL (39LB,LC,LF,LH Units) — Item numbers are in Fig. 33 unless otherwise indicated.

1. Refer to Fig. 3 for service area requirements.
 2. Disconnect piping (Item 6).
 3. Horizontal Unit, 39LB and 39LC — On top panel (Item 4) remove screws located directly above side panels (Items 2 and 7). Top panels may be removed from unit to provide more workspace, but it is not required.
- Vertical Unit, 39LF and 39LH — Through fan access door (Item 2, Fig. 31), remove screws (Item 3, Fig. 31) holding angle (Item 4, Fig. 31) to top of coil panels (Item 7, Fig. 31).

Remove rear panel (Item 17, Fig. 31) and remove baffle angle screws (Item 5) holding top baffle to coil.

4. Remove side panel(s) (Item 7).
- NOTE: Vertical units may require support of fan section after removal of side panels.
5. If accessory is present, remove accessory side panel (Item 1) on left side of unit. Detach filter track support bracket if upstream accessory is a filter.
 6. Remove screws (Item 8) from inside baffle (Item 3). Leave baffle attached to left side panel (Item 2).
 7. Slide coil and header end baffle from unit.
 8. Replace coil by reversing preceding Steps 1 - 7.



LEGEND

- | | |
|--------------------------|------------------------|
| 1 — Accessory Side Panel | 5 — Baffle Angle Screw |
| 2 — Left Side Panel | 6 — Piping |
| 3 — Inside Baffles | 7 — Right Side Panel |
| 4 — Top Panels | 8 — Baffle Screw |

Fig. 33 — Horizontal or Vertical Unit — Vertical Coil Removal (39LB,LC,LF,LH Units)

Changing Coil Hand

NOTE: Hand of electric heat coils *cannot* be changed.

To change coil hand, remove coil per instructions in Coil Removal section. The coil cover plate is not part of the coil. Remove cover plate from end of unit.

All coils *except* steam coils must be rotated in the vertical plane and reinstalled. Steam coils must be rotated in the horizontal plane and reinstalled.

New holes must be cut in cover plate. Original holes remaining in cover plate must be plugged. *It will no longer be possible to drain slant chilled water coils after hand is changed.*

Direct expansion, chilled and hot water coils should always be piped for counterflow (fluid should enter the coil at the leaving air side). Steam coils must have the condensate connection at the bottom.

Filters

FILTER SECTIONS — See Table 18 for filter data. Filters are field supplied.

On the size 03 angle filter, a spacer is required on each side of the filters. On the size 03 flat filter, a center baffle is used between the 2 overlapping filters. See Fig. 34.

Flat filter section can use 2-in. or 4-in. thick filters. (Size 03 accepts 2-in. filters only.) The flat filter section as shipped accepts 2-in. filters. Remove angle spacer in each filter track to provide the 4-in. space required to accommodate 4-in. filters.

On all filter sections except size 03, filters are pushed into the track until they touch the opposite side of the unit. Any remaining space is taken up by the adjustable 2-piece sheet metal spacer. See Fig. 35 for filter arrangements.

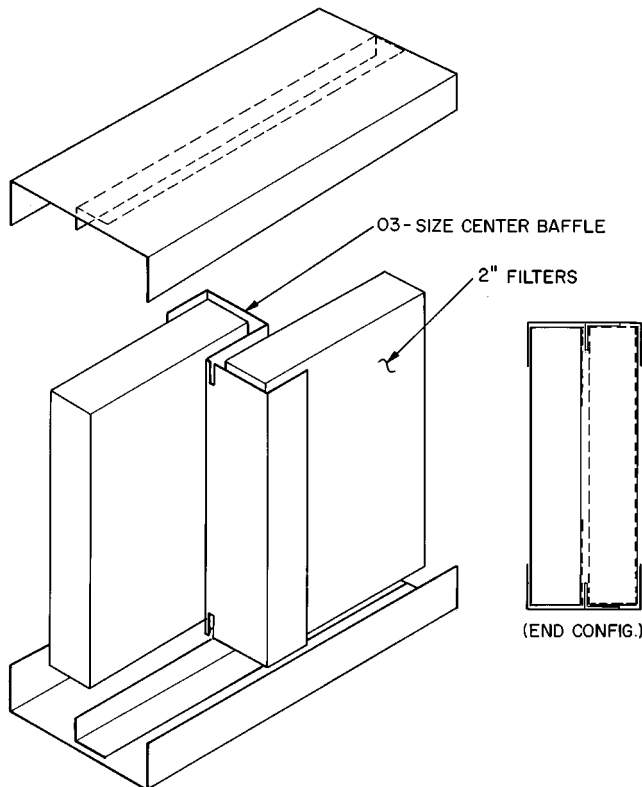


Fig. 34 — Size 03 Center Baffle

Table 18 — Filter Data

39L UNIT SIZE	QUANTITY — NOMINAL SIZE (in.)	
	Angle Filter Section* (2-in.)	Flat Filter Section (2-in. or 4-in.)
03	2 - 16 x 25	2 - 16 x 20†
06	4 - 16 x 20	2 - 20 x 20
08	3 - 16 x 20	2 - 20 x 25
	3 - 16 x 25	
10	6 - 16 x 25	2 - 16 x 25
		1 - 20 x 25
12	9 - 16 x 20	3 - 20 x 25
15	12 - 16 x 20	6 - 16 x 20
18	12 - 16 x 20	3 - 16 x 20
		3 - 20 x 20
21	4 - 16 x 20	3 - 20 x 25
	8 - 16 x 25	3 - 16 x 25
25	5 - 16 x 20 10 - 16 x 25	2 - 16 x 20
		2 - 20 x 20
		2 - 20 x 25
		2 - 16 x 25

*Filter Mixing Box sections use the same filters as angle filter sections.

†Only 2-in. filters are available on size 03.

Fan Shaft Bearing Removal

1. Lock open and tag electrical disconnect.
2. Enter through fan section access door or remove panels as required.
3. Place plywood or other rigid covering on floor to protect insulation from damage.
4. Loosen motor base to frame bolts. Adjust motor to release belt tension so removal of belts is done without stretching. *Do not stretch belts over sheaves. Damage to belt can result.*
5. Remove bolts on bushing of fan shaft sheave, insert bolts in jacking hole provided on bushing and slowly jack bushing from sheave. Then remove bushing on sheave.
6. Loosen bearing setscrews and locking collar.
7. Remove bearing holddown bolts.
8. Remove bearing while observing the following precautions:
 - a. Make certain fan shaft surface is not rough or scored. If so, clean up surface with fine emery cloth.
 - b. Add a few drops of oil after cleanup of shaft end.

⚠ CAUTION

It should not be necessary to drive a new bearing onto shaft. If light tapping is needed, do not tap against outer race.

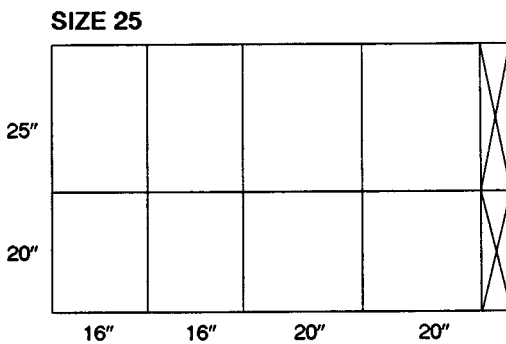
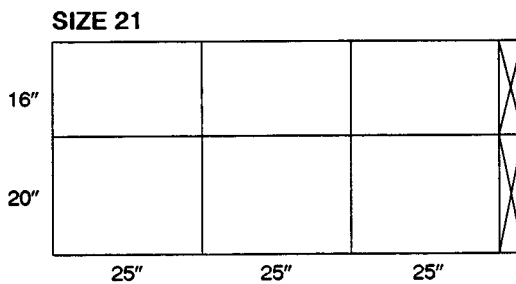
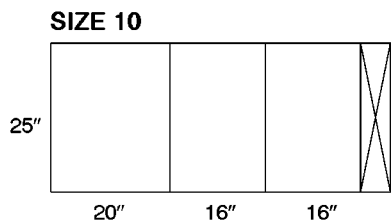
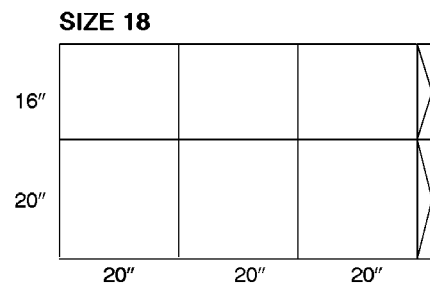
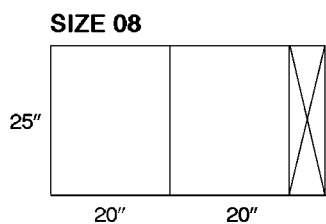
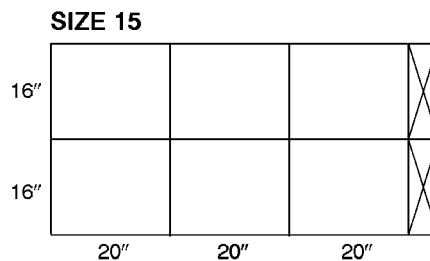
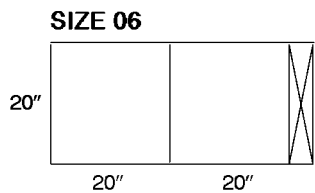
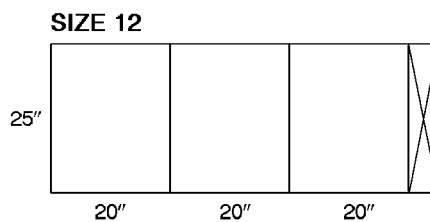
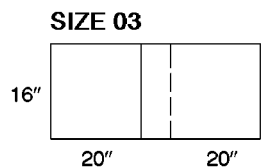


Fig. 35 — Filter Arrangement, 2-in. and 4-in. Flat

9. Check fan shaft diameter at bearing mount. If worn by more than .001 in. below nominal, shaft should be replaced.
10. Install new bearing, tighten holddown bolts and then tighten bearing locking collar and setscrews.
11. Make certain fan wheel does not rub sides of fan housing after installing new bearings.
12. Recoat fan shaft with a rust inhibitor or grease.
13. Replace sheave and belts. Adjust and align as described in Installation sections on installing sheaves and V-belts.
14. Remove insulation protection.
15. Replace access panels.
16. Restore electrical power.

Fan and Shaft Removal (Fig. 36) — The fan wheel and shaft may be removed through inlet side of fan housing.

1. Remove drive belts as described in Fan Shaft Bearing Removal on page 36.
2. Block up fan wheel within housing to prevent dropping when bearing bolts are removed.
3. Loosen and remove bearing holddown bolts.
4. Remove bearing support channels and inlet ring from one side.
5. Remove fan shaft and fan wheel from unit.
6. Remove fan shaft from fan wheel.
7. Replace shaft and wheel into fan in the reverse order of their removal.
8. Inspect bearings and if serviceable, replace on shaft.
9. Align fan wheel and shaft assembly in fan scroll. Check cutoff location if wheel failure damaged cutoff plate. See Fig. 37.
10. Tighten bearing holddown bolts, bearing setscrews and shaft setscrews.
11. Field balancing of shaft and wheel is recommended.

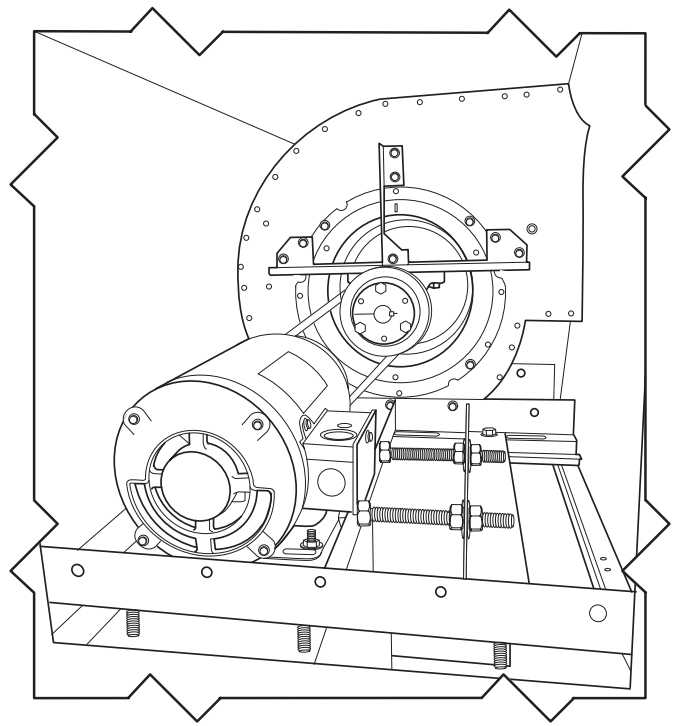
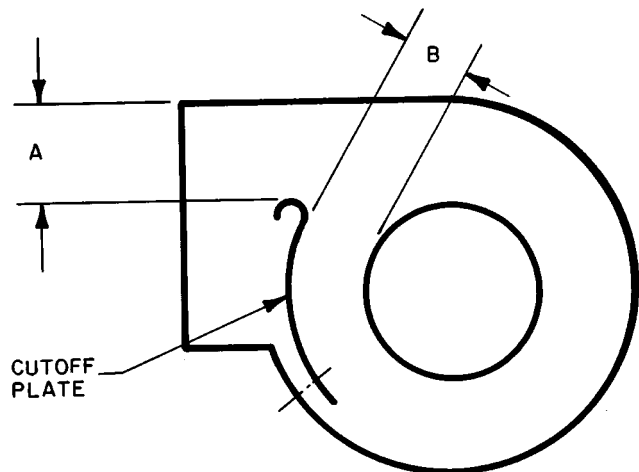


Fig. 36 — Fan Shaft and Bearing Removal (Unit without IGVs shown)



39L UNIT SIZE	CUTOFF A	CUTOFF CLEARANCE B
03	6 ⁵ / ₈	7 ⁷ / ₈
06	8	1
08	10 ³ / ₈	1 ¹ / ₂
10	9 ³ / ₄	1 ³ / ₈
12	9 ³ / ₄	1 ³ / ₈
15	12	1 ⁵ / ₈
18	15 ³ / ₄	2
21	15 ³ / ₄	2
25	20 ¹ / ₂	2 ¹¹ / ₁₆

Fig. 37 — Fan Cutoff Plate Data (in.)

IMPORTANT: Replacement shafts must have a diameter tolerance at bearing mount of $\frac{+.0000}{-.001}$ nominal. Carrier-specified parts are recommended.

Lubrication

MOTORS — Lubricate in accordance with nameplate attached to motor or with manufacturer's recommendations included with motor.

BEARINGS

Fan Bearings — Lubricate fan bearings every 3 months with suitable bearing grease. Typical lubricants are given in Table 19.

Inlet Vane and Outlet Damper Bearings — These bearings are oil-impregnated. Annually lubricate with a few drops of nondetergent SAE (Society of Automotive Engineers) 20 oil.

Table 19 — Lubricant Data

MANUFACTURER	LUBRICANT
Sunoco	Prestige 42
Texaco	Multipak 2
Texaco	Regal AFB-2*
Mobil	Mobilplex EP No. 1

*Preferred lubricant because it contains rust and oxidation inhibitors.

METRIC CONVERSION CHART

METRIC TECH	X	= ENGLISH UNIT	X	= SI UNIT
Area				
cm ²			100	mm ²
cm ²	0.1550	in ²	645.2	mm ²
m ²			1.0	m ²
m ²	10.76	ft ²	0.09290	m ²
Length				
μ m			1.0	μ m
μ m	39.37	micro-inch	0.0254	μ m
mm			1.0	mm
mm	0.03937	in.	25.4	mm
mm	0.003281	ft	304.8	mm
m			1.0	m
m	3.281	ft	0.3048	m
m	1.094	yd	0.9144	m
Mass				
g			1.0	g
g	0.03527	oz	28.35	g
kg			1.0	kg
kg	2.205	lb	0.4536	kg
tonne, Mg			1.0	tonne, Mg
tonne, Mg	1.102	U.S. ton (2000 lb)	0.9072	tonne, Mg
Power				
kcal/h			1.163	W
kcal/h	3.968	Btu/h	0.2931	W
HP metric			0.7355	kW
HP metric	0.9863	HP (550 $\frac{\text{ft} \cdot \text{lb}}{\text{S}}$)	0.7457	kW
Mcal/h			1.163	kW
Mcal/h	0.3307	Ton refr.	3.517	kW
Pressure				
mm w.g. 4°C			9.806	Pa
mm w.g. 4°C	0.03937	in H ₂ O 39.2°F	249.1	Pa
mm Hg 0°C			0.1333	kPa
mm Hg 0°C	0.03937	in Hg 32°F	3.386	kPa
kg _f /cm ²			98.07	kPa
kg _f /cm ²	14.22	psi	6.895	kPa
mH ₂ O	3.281	ft H ₂ O	2.989	kPa

METRIC TECH	X	= ENGLISH UNIT	X	= SI UNIT
Temperature Interval				
°C			1.0	K
°C	1.8	°F	0.5556	°C
Velocity				
m/s			1.0	m/s
m/s	3.281	ft/s	0.3048	m/s
m/s	196.9	ft/min	0.00508	m/s
Volume				
mm ³			1.0x10 ⁻⁶	L
mm ³	6.102x10 ⁻⁵	in. ³	0.01639	L
L			1.0	L
L	0.03531	ft ³	28.32	L
m ³			1.0	m ³
m ³	1.308	yd ³	0.7646	m ³
L	0.2642	U.S. gal	3.785	L
L	2.113	U.S. pint	0.4732	L
mL, cm ³			1.0	mL
mL, cm ³	0.03381	U.S. oz	29.57	mL
Volume/Time				
m ³ /h			0.2778	L/s
m ³ /h	0.5886	ft ³ /min	0.4719	L/s
m ³ /h	4.403	U.S. gal/min	0.06309	L/s
L/h			2.778x10 ⁻⁴	L/s
L/h	4.403x10 ⁻³	U.S. gal/min	0.06309	L/s
(m ³ /h)/ (1000 kcal/h)	1.780	cfm/ton	0.1342	L/s · kW
METRIC TECH CONVERSION FACTOR = ENGLISH UNIT CONVERSION FACTOR = SI UNIT				
Temperature				
°C			°C + 273.15	K
°C	(°C x 1.8) + 32	°F	(°F - 32) ÷ 1.8	°C

PREFIXES		
M	MEGA-	10 ⁶
k	KILO-	10 ³
d	DECI	10 ⁻¹
c	CENTI	10 ⁻²
m	MILLI	10 ⁻³
μ	MICRO	10 ⁻⁶

LEGEND	
m	METER
cal	CALORIE
kg	KILOGRAM (mass)
kgf	KILOGRAM — FORCE
kp	KILOGRAM — FORCE
L	LITER
°C	DEGREES CELSIUS
K	KELVIN
W	WATT
Pa	PASCAL
J	JOULE
N	NEWTON
h	HOUR

UNITS	
cP	CENTIPOISE
cSt	CENTISTOKE
HP metric =	(PS, CV, ch) METRIC HORSEPOWER
mm w.g.	MILLIMETERS WATER GAUGE
mm CE	MILLIMETERS WATER GAUGE
mm Hg	MILLIMETERS MERCURY
tonne =	1000 kg
kcal =	fg FRIGORIE
bar =	100 kPa

SERVICE TRAINING

Packaged Service Training programs are an excellent way to increase your knowledge of the equipment discussed in this manual, including:

- Unit Familiarization
- Installation Overview
- Maintenance
- Operating Sequence

A large selection of product, theory, and skills programs are available, using popular video-based formats and materials. All include video and/or slides, plus companion book.

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