

39E, ER

2,300 — 63,000 cfm

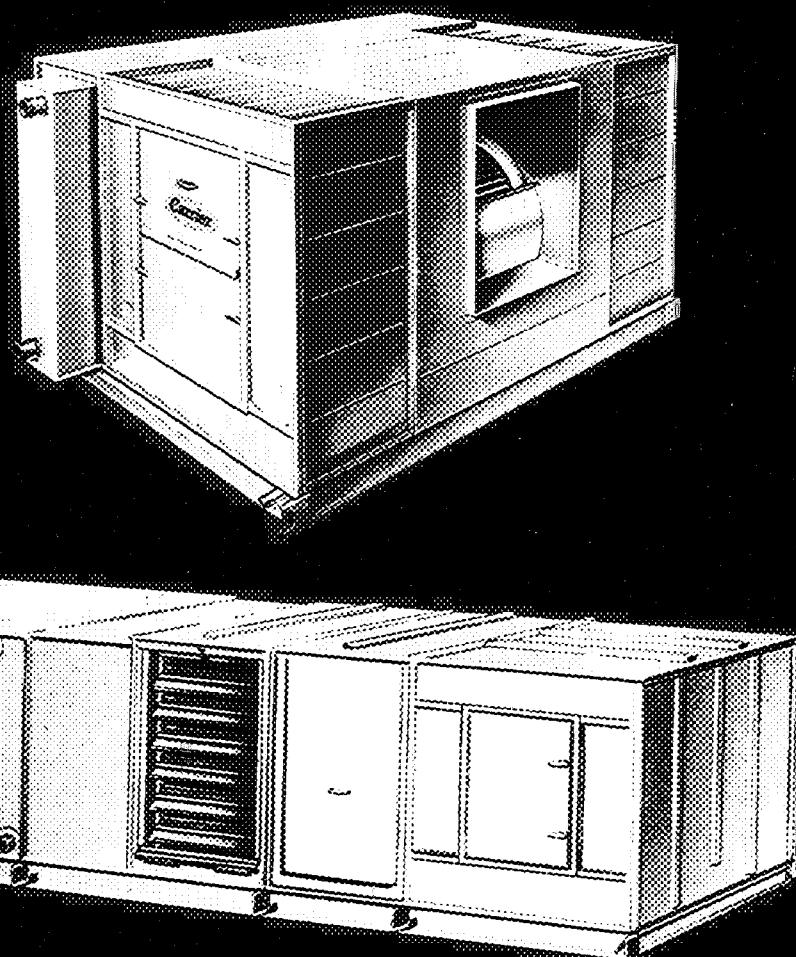


Carrier Central Station Air Handling Units

With the introduction of the Carrier 39E, ER Central Station Air Handling Unit, you can now have the best of both worlds.

The Carrier 39E, ER Central Station Air Handling Unit is a compact, modular unit designed for high efficiency and reliability. It features a unique design that allows for easy installation and maintenance.

The Carrier 39E, ER Central Station Air Handling Unit is manufactured to ASHRAE Standard 10 and ASHRAE Standard 110, ensuring that it meets the highest standards of quality and performance.



Carrier

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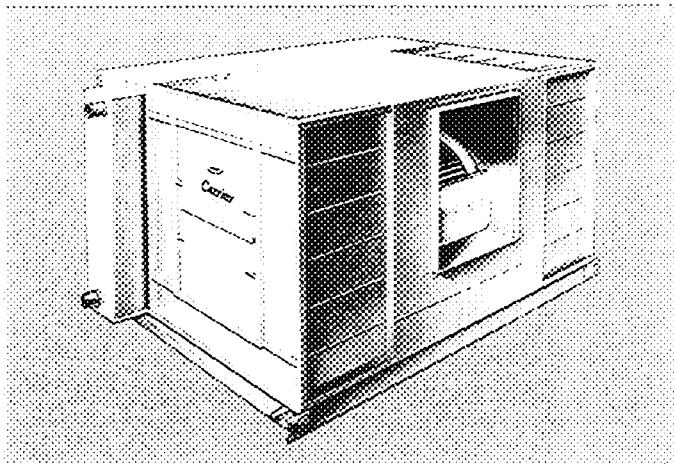
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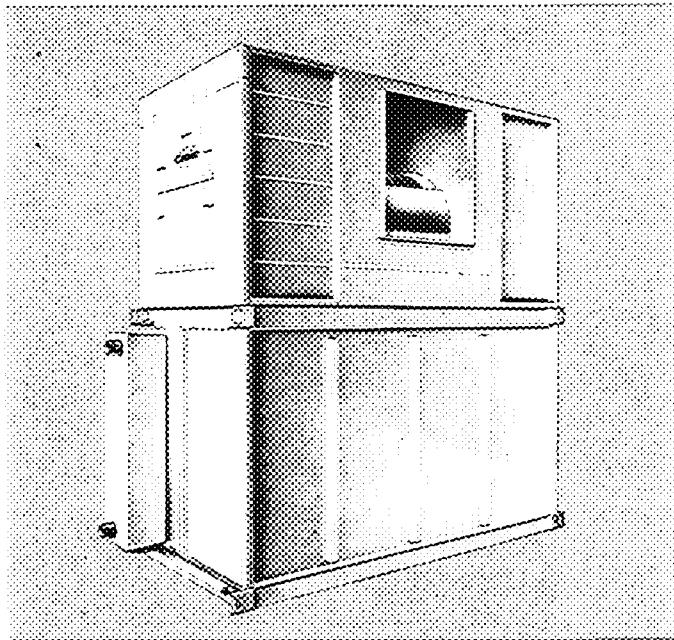
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Carrier 39 Series Air Handlers provide a complete airside array.

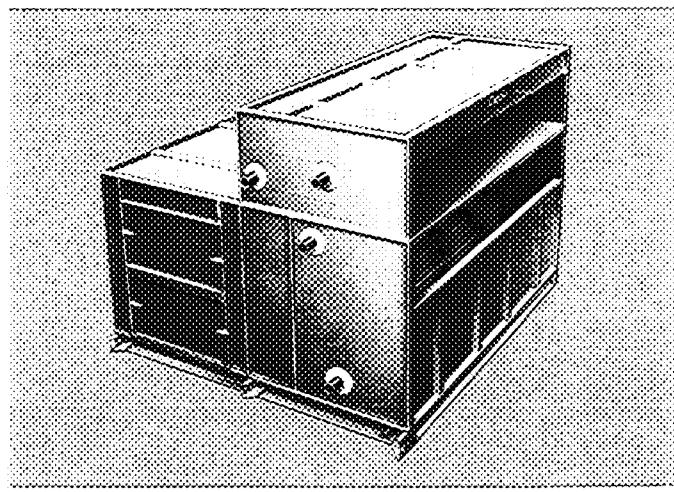
Horizontal draw-thru units



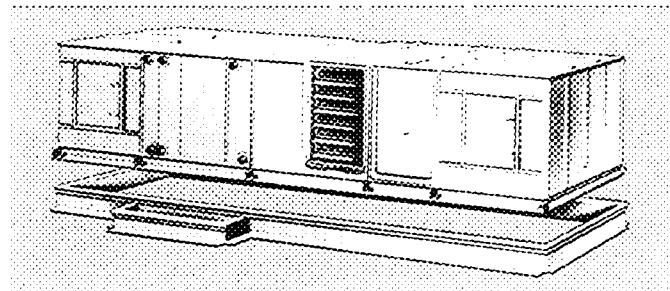
Vertical draw-thru units



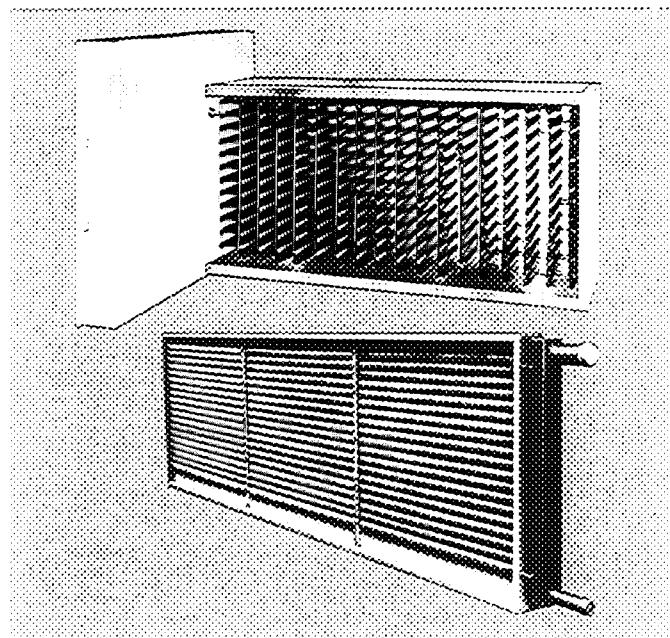
Blow-thru units



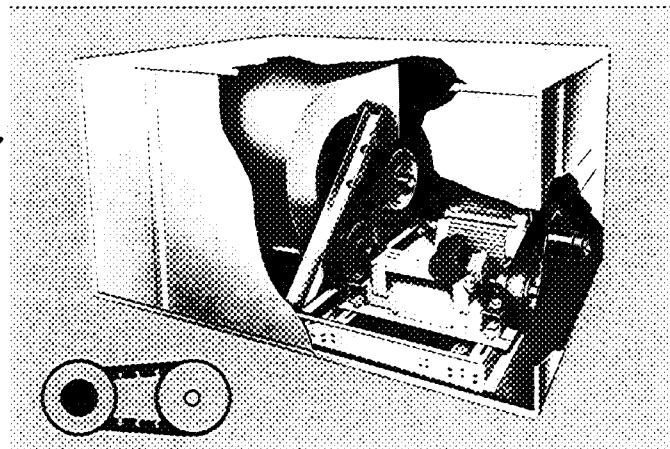
Roof-mounted units



A large selection of coils



Many options and accessories



PLUS . . .

A logical, time-saving selection procedure.

Assembly diagrams enable the designer to select the proper components for his air-handling needs in a clear, straightforward manner.

39E...the proven air handler with more features

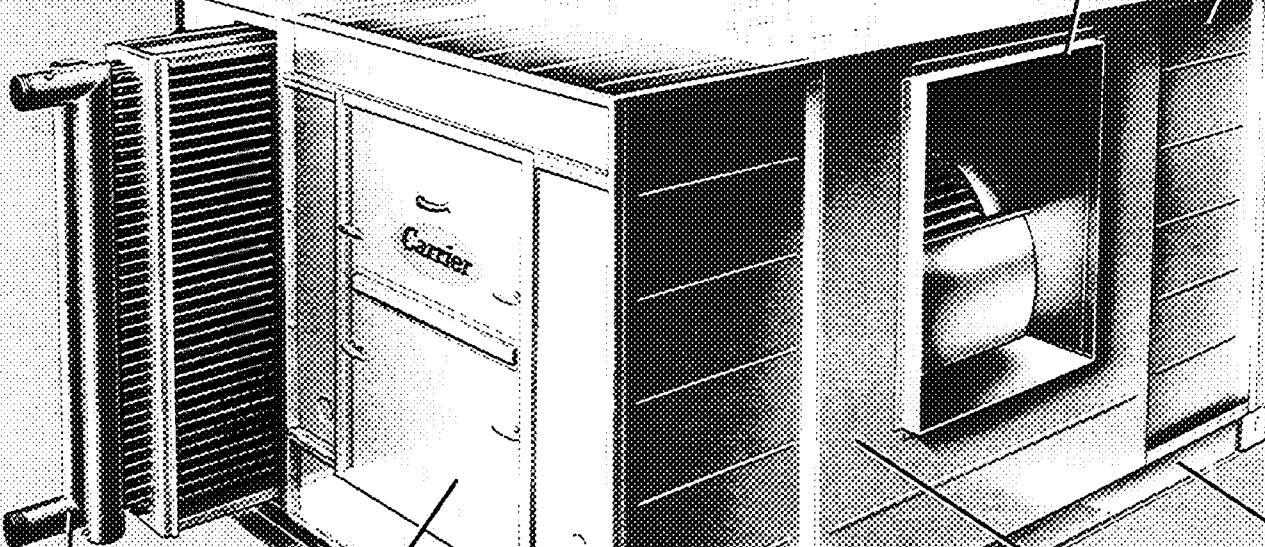
Draw-thru units

ALL GALVANIZED
STEEL CONSTRUCTION

PANELS STRENGTHENED BY
EMBOSSED RIBBING OR
HAT CHANNELS

SINGLE FANS
FOR ALL SIZES

INTERNAL
MOUNTED
MOTORS



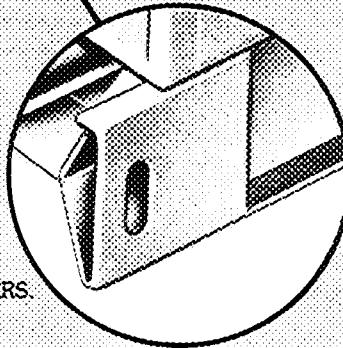
ACCESS PANEL
WITH HANDLES

PILLOW BLOCK BEARINGS
SHORT, SOLID STEEL
FAN SHAFTS

INTERNAL SPRING ISOLATION
OPTIONAL

SLIDE-OUT COILS.
TWO COOLING COIL
FACE AREAS AVAILABLE
FOR EACH UNIT.

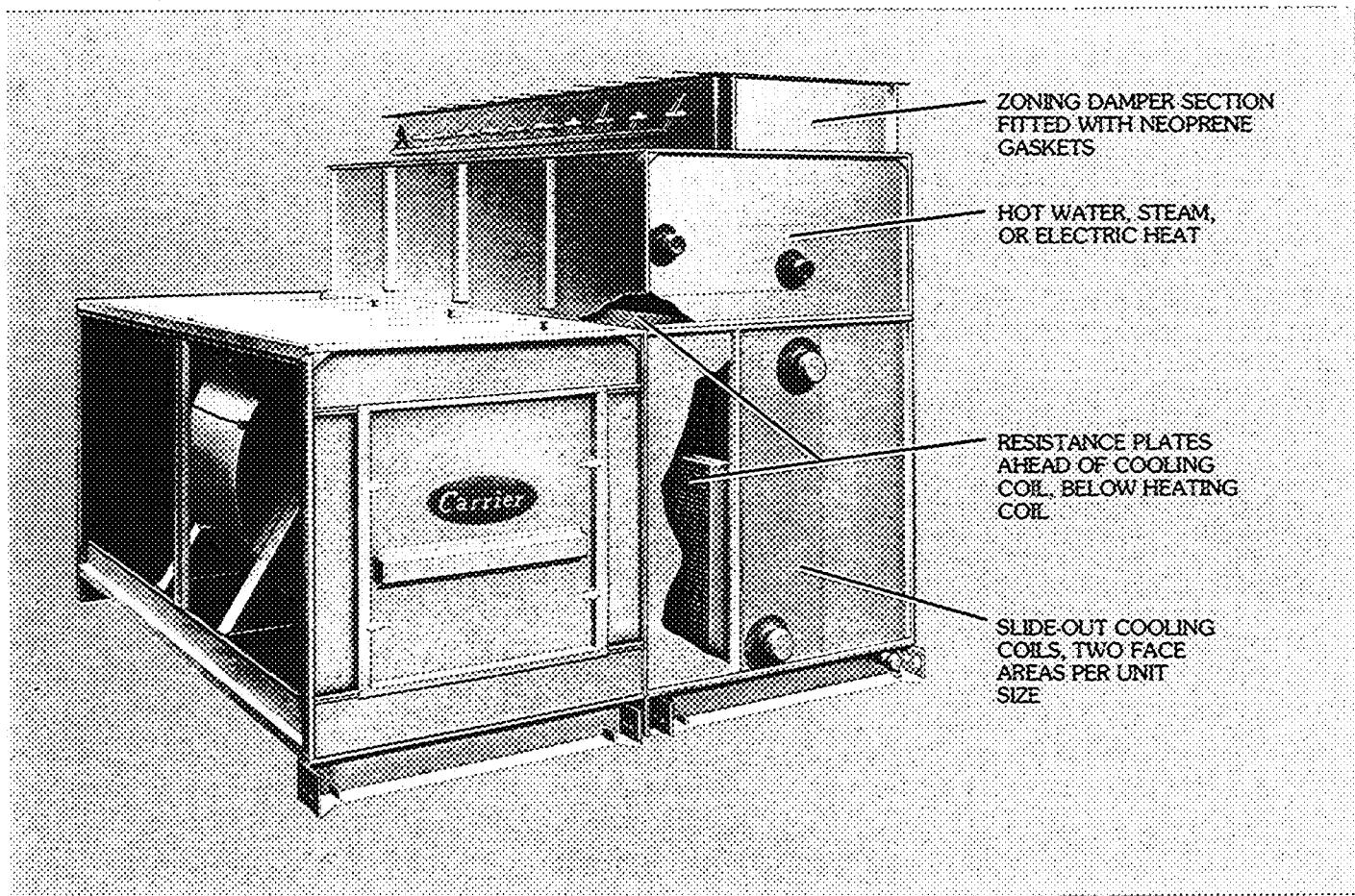
RUGGED 8-GAGE
STEEL SUPPORT MEMBERS.
ALL SIZE UNITS CAN BE
CEILING SUSPENDED.



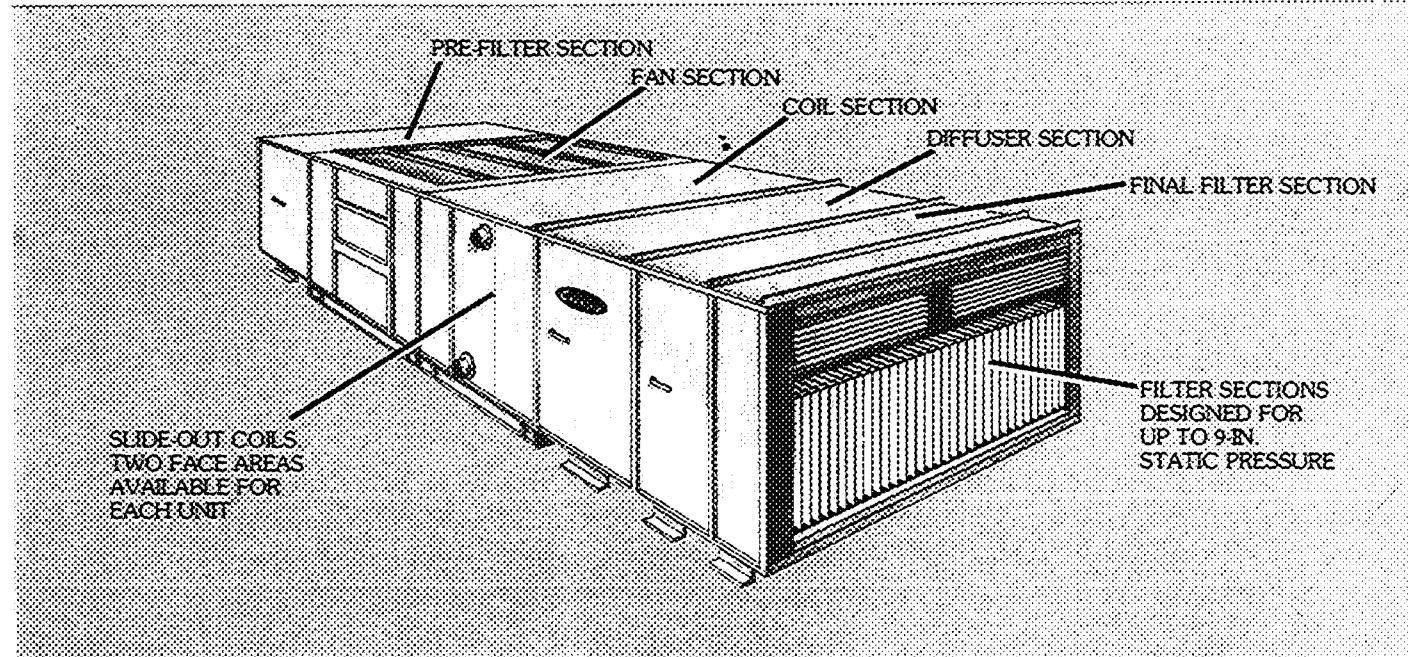
39 Series Air Handlers (cont)

Blow-thru units

Multizone (shown) and dual duct



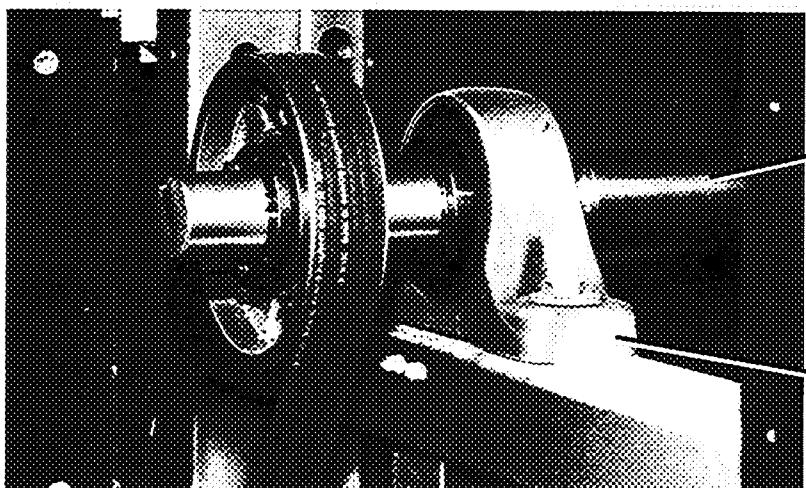
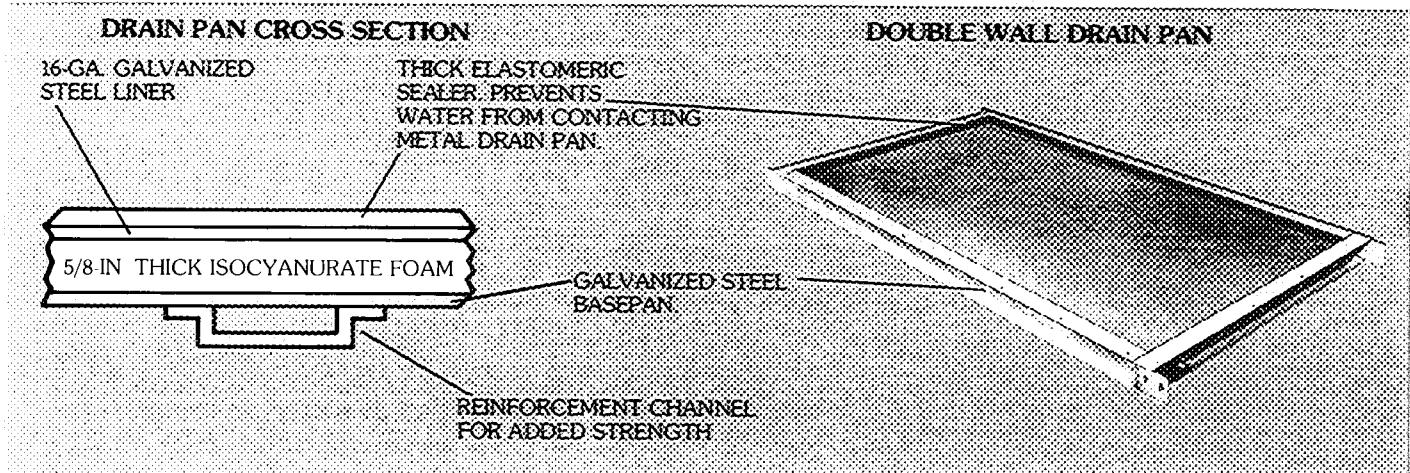
Single zone (hospital unit shown)



39 Series Air Handlers — constructed for long life and top performance

Designed to perform
Built to last
ARI certified

Double drain pan construction — standard for all coil sections.



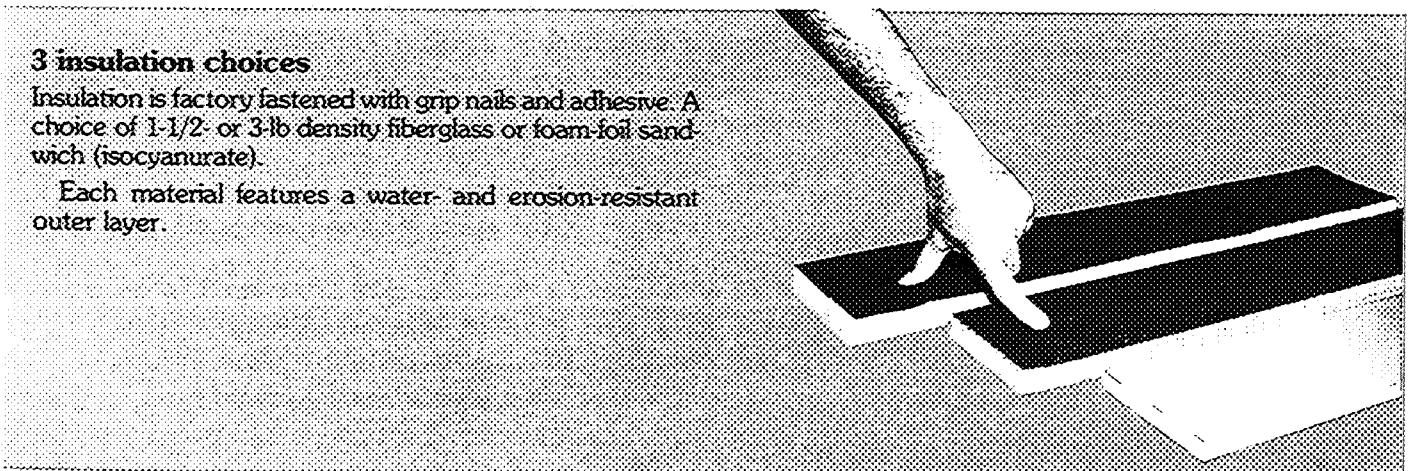
SHORT, SOLID STEEL FAN SHAFTS (FAN WHEELS KEYED TO SHAFT)

RUGGED, LONG-LASTING PILLOW BLOCK BALL BEARINGS

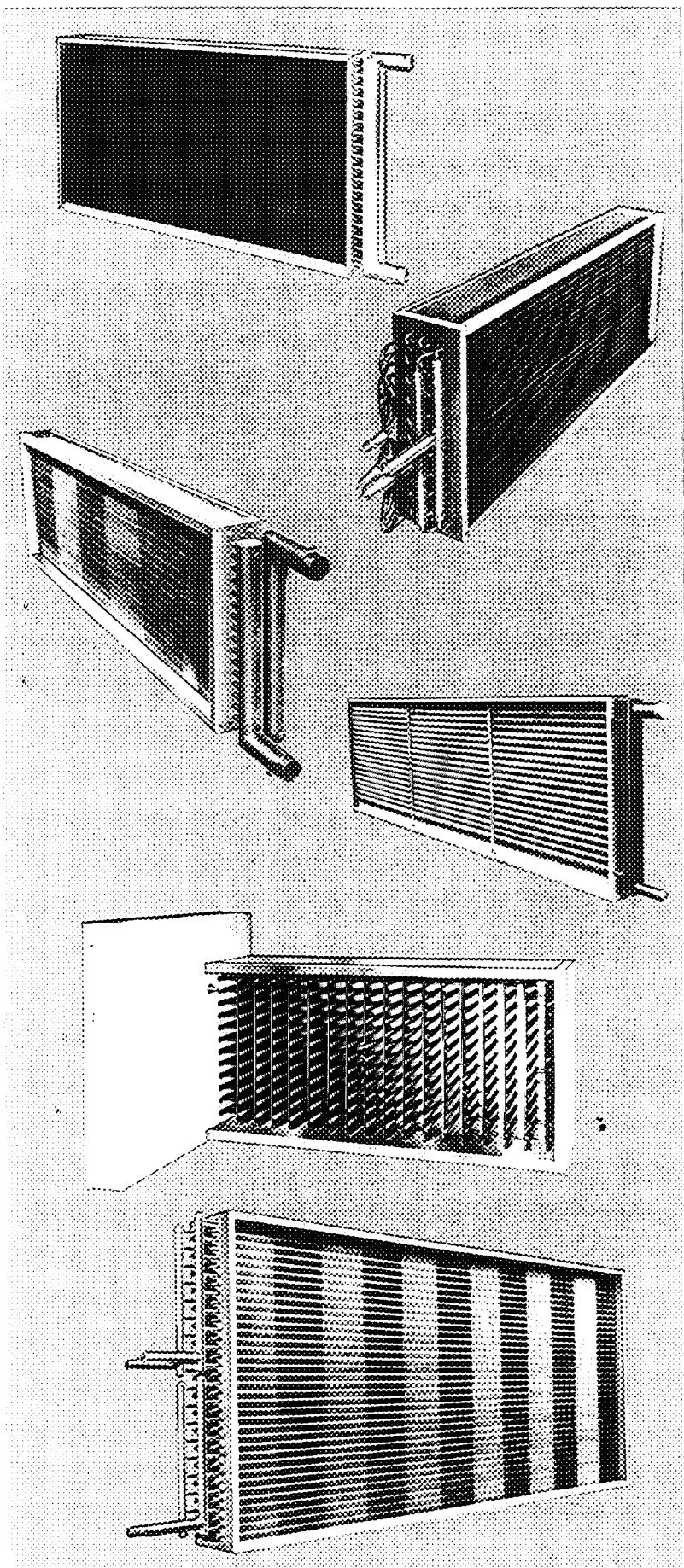
3 insulation choices

Insulation is factory fastened with grip nails and adhesive. A choice of 1-1/2" or 3-lb density fiberglass or foam-foil sandwich (isocyanurate).

Each material features a water- and erosion-resistant outer layer.



A complete coil line — tuned to the air handler



Chilled water

- 4, 6 or 8 rows
- Plate or spiral fin
- Aluminum or copper fin
- Staggered copper tubes
- Computer selected
- Two sizes for each air handler
- ARI certified

Direct expansion

- 4, 6 or 8 rows
- Plate fin
- Aluminum or copper fin
- Staggered copper tubes
- Intertwined circuiting
- Computer selected
- Two sizes for each air handler
- ARI certified

Heating — hot water or steam

- 1, 2 or 4 rows
- Plate or spiral fin
- Aluminum or copper fin
- Staggered copper tubes
- Computer selected (hot water)
- ARI certified

Heating — internal steam distributing

- 1 or 2 rows
- Spiral fin
- Aluminum or copper fin
- Large 1-in. OD outer copper tube
- ARI certified

Heating — electric

- Open coil or finned tubular construction
- Wide range of kW and control steps
- Integral or remote control box
- Draw-thru or blow-thru application

Refrigerant condensing coil

- 4 or 6 rows
- 50/50 face split
- Dual-purpose condensing and heat recovery

A choice of Fans — for Constant Volume or Variable Air Volume (VAV) systems

Centrifugal fans — 2 designs

1. Fans with forward-curved blades. Available for units thru size 57
2. Airfoil bladed fans available for all unit sizes

All fans keyed to short, smooth running solid-steel shafts that spin in pillow block type ball bearings Galvanized steel housings

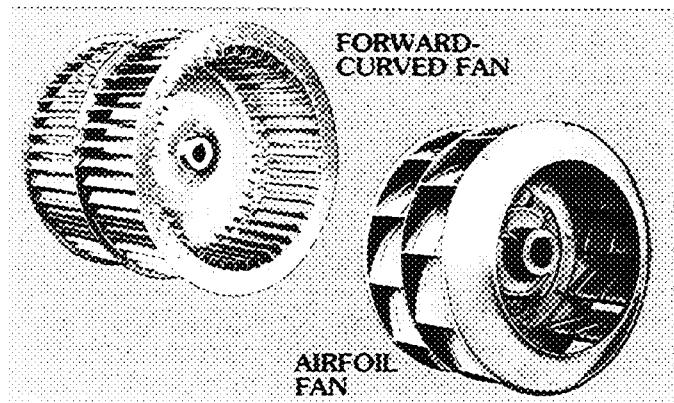
VAV choices

Forward-curved fans

- Ride the fan curve
- Opposed blade discharge dampers
- Modudrive™ variable speed drive

Airfoil fans

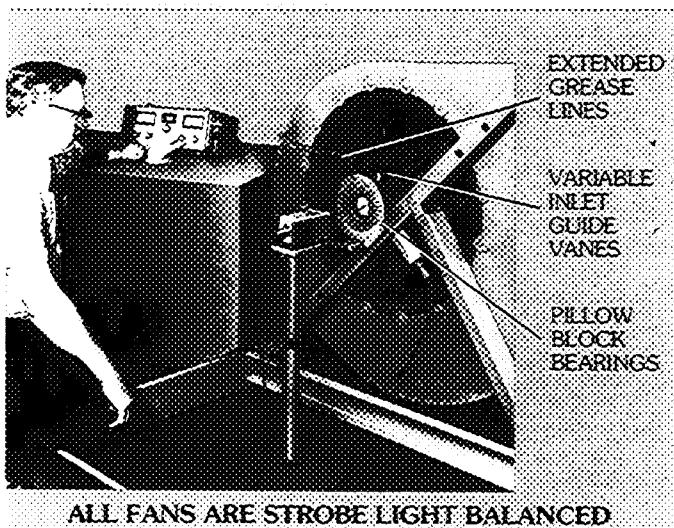
- Variable inlet vanes
- Modudrive variable speed drive



Precision balancing — 200,000-hour minimum average bearing life

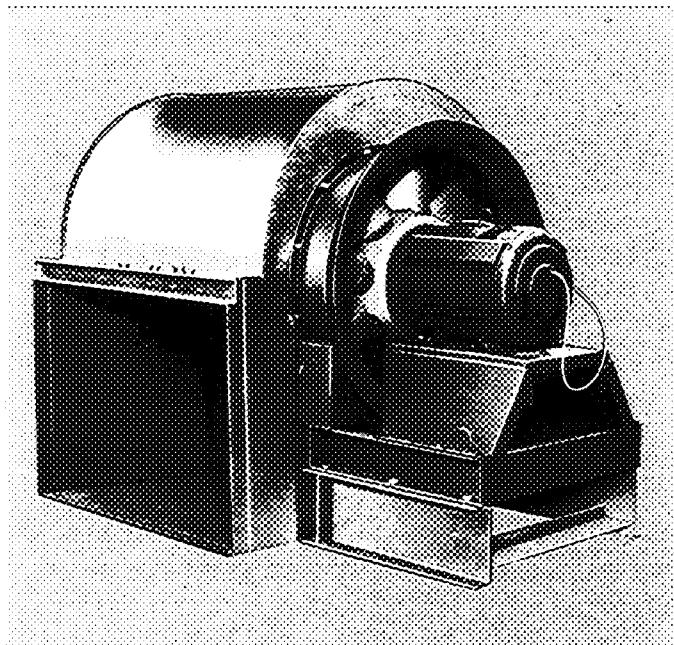
Every fan wheel is precision-balanced within narrowly prescribed limits after assembly. If it doesn't pass, it doesn't ship.

All pillow block bearings are selected at a minimum 200,000 hours average life at maximum allowable operating conditions. Therefore, most unit selections greatly exceed this minimum at system design point.

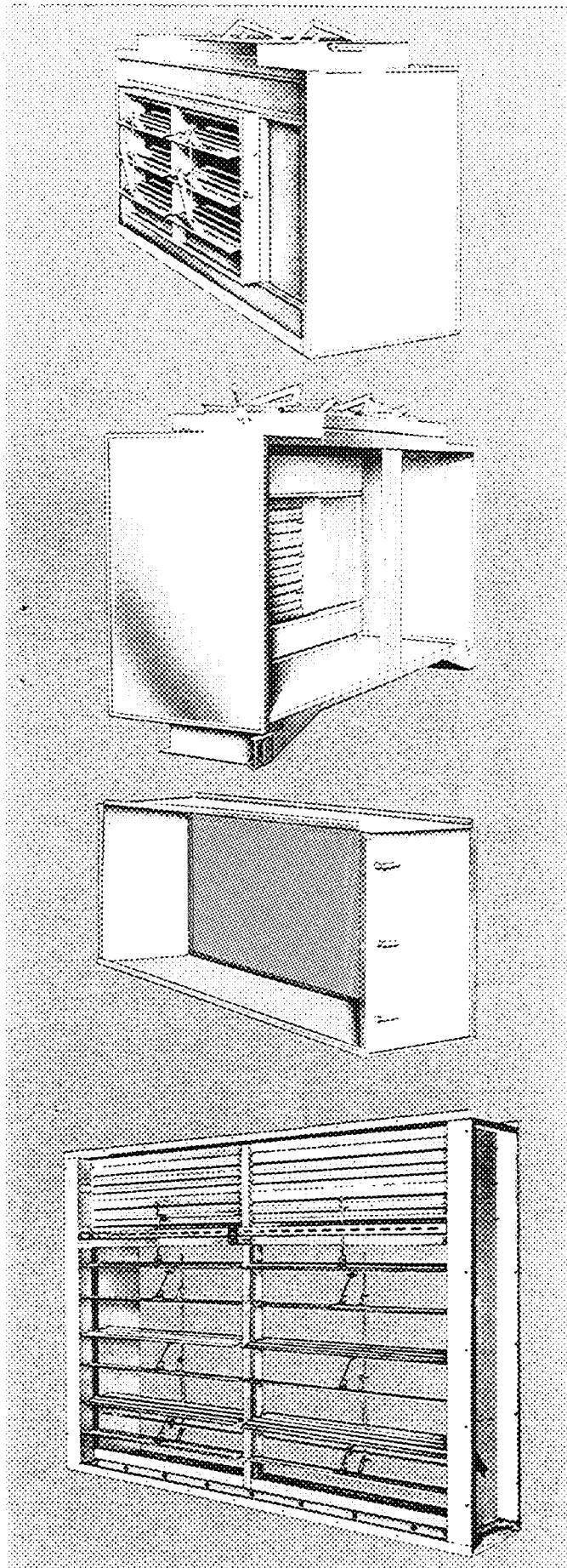


Controllable Pitch Axial (CPA) fans

- For large airflow VAV systems
- More efficient than airfoil centrifugal fans with inlet vanes
- Uniquely designed into air-handler fan section
- Acoustic, spiral discharge volute provides quiet operation
- See separate catalog for details and ratings.



Accessories



Mixing boxes (MXB)

- Three arrangements available
- Parallel blades built to direct airstreams toward each other for efficient mixing
- Standard and low-leak versions
- Stiff, strong blades; 1/2-in steel rods
- Combination Mix Box Filter Section available

Exhaust boxes (RAD)

- For installation between return air fan and mixing box
- Exhaust damper can be in bottom or top
- Operates in phase with outdoor air damper in mixing box to provide economizer capability

Diffuser sections (DIF)

Diffuser section for placement between fan section discharge and filter section. Diffuses air for uniform velocity. Hinged access doors both sides

Access sections (ACC)

Access section for entry into airway space between other unit components such as coil sections or between coil section and fan section. Provides extra space for placement of controls or sensors. Inlet side of fan only.

Face and bypass sections

- Permit freeze-up control for heating coils or humidity control for cooling coils.
- Opposed-acting blades mounted on 1/2-in. steel rods.
- Standard and low-leak versions available. Low-leak damper leakage is less than 2% at 4-in. static pressure and 2,000 fpm approach velocity

Filter sections for all filter types

Low-velocity filter section (LVF)

For 2-in. cleanable or throwaway filters, 16 x 25 x 2 inch. No odd size filters required.

High-velocity filter section (HVF)

For 2-in. cleanable or throwaway filters, 16 x 25 x 2 inch. No odd size filters required.

Bag filter section (BFS)

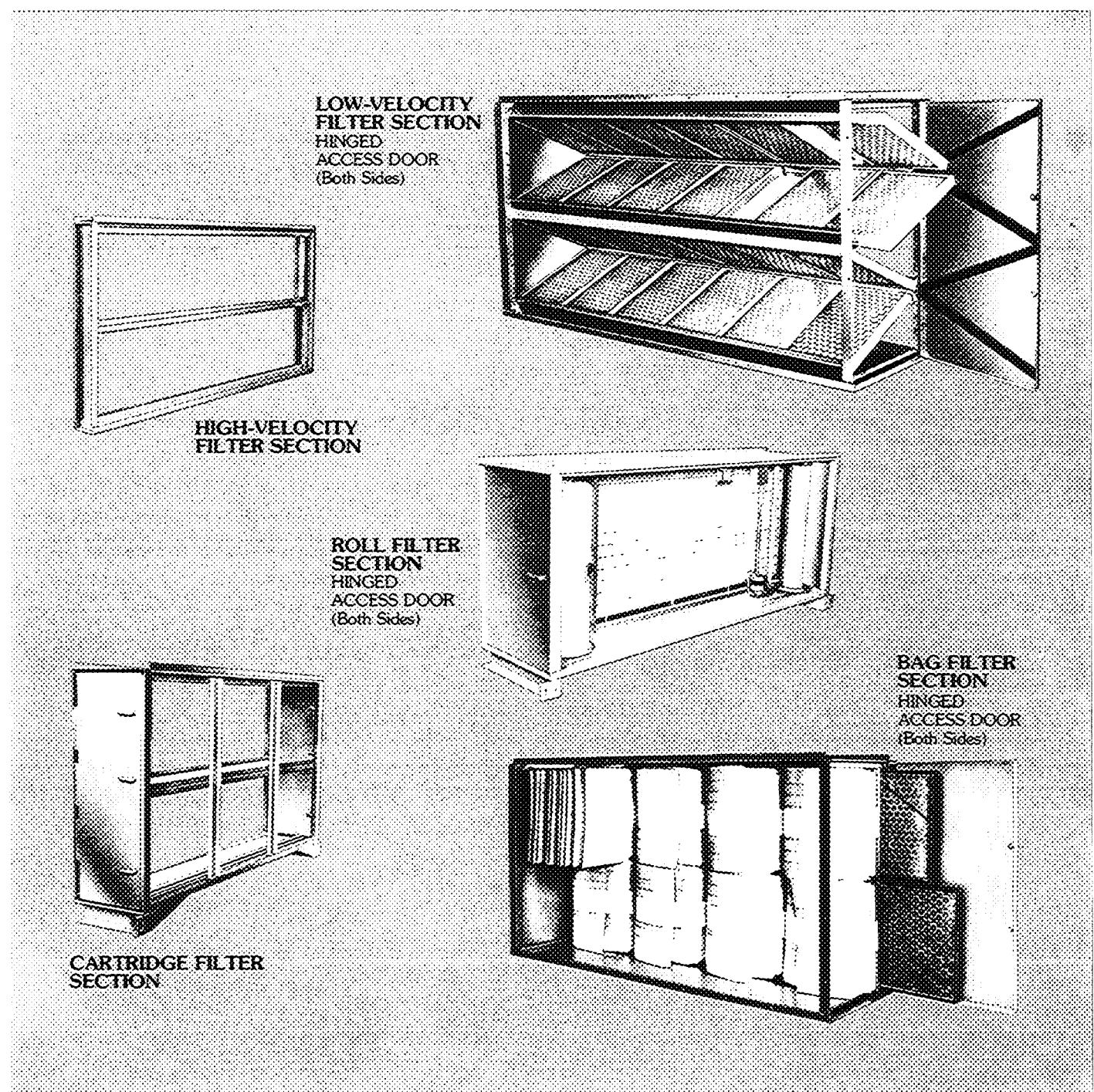
For 24- x 12- or 24- x 24-in. filters and 2-in. pre-filters. Twenty-one in. long filters can be accommodated without projection into adjacent component. Bag filter extension section available for accepting bag filters up to 39 in. long.

Roll filter section (RFS)

Same unit can be operated automatically in response to static pressure differential or manually. Automatic unit advances media full width of section during each operating cycle to maintain uniform velocities thru filter media.

Cartridge filter section (FFS2)

This section is built to accept 24- x 12- or 24- x 24-in. cartridge type filter elements. Bag filters can also be accommodated. Designed for static pressures up to 9-in. total static pressure (TSP).



Modudrive™ — the fan energy-saving option

What it does

Modudrive automatically varies fan speed to match system airflow and static pressure requirements in response to an electric or pneumatic signal. With Modudrive control, the reduction in fan speed at part load is matched by a substantial reduction in motor power input. Fan speed can be reduced to approximately 40% design rpm. At this reduction only about 17% of the motor's full load power is required.

How it works

To vary the fan speed, a 1/10-hp reversing motor moves the fan motor along polished rails. As the distance from the driven pulley changes, spring tension on the movable side

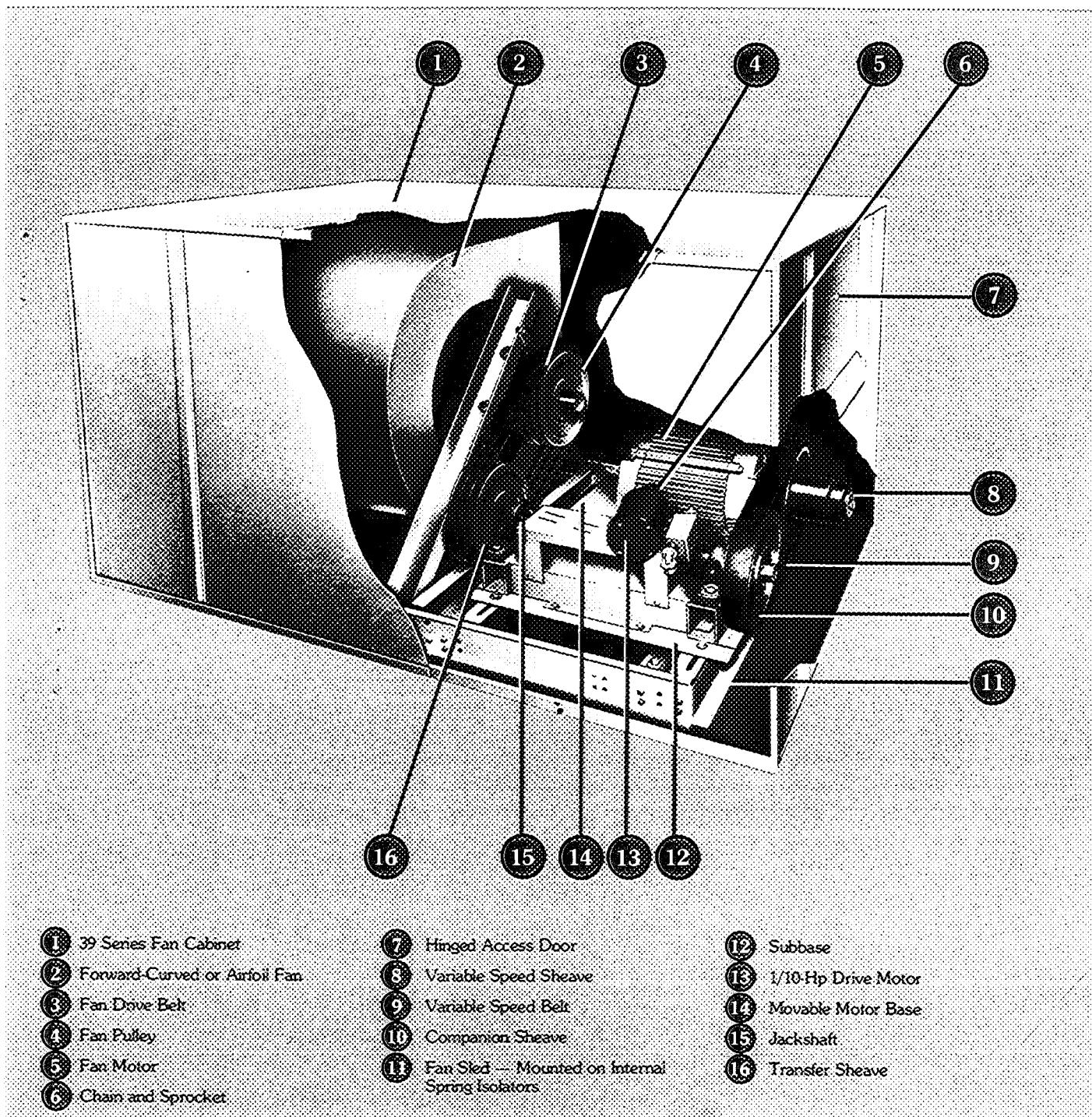
of the motor pulley causes the drive belt to ride up or down the motor sheave. This changes the sheave diameter and therefore the fan speed.

Quick payback

The initial investment in Modudrive compared to inlet guide vanes or discharge dampers can be recovered rapidly even where power is relatively inexpensive.

Available sizes

Modudrive is available in unit sizes 17 thru 90 with motor horsepower to 30. Forward-curved or airfoil fans can be furnished.

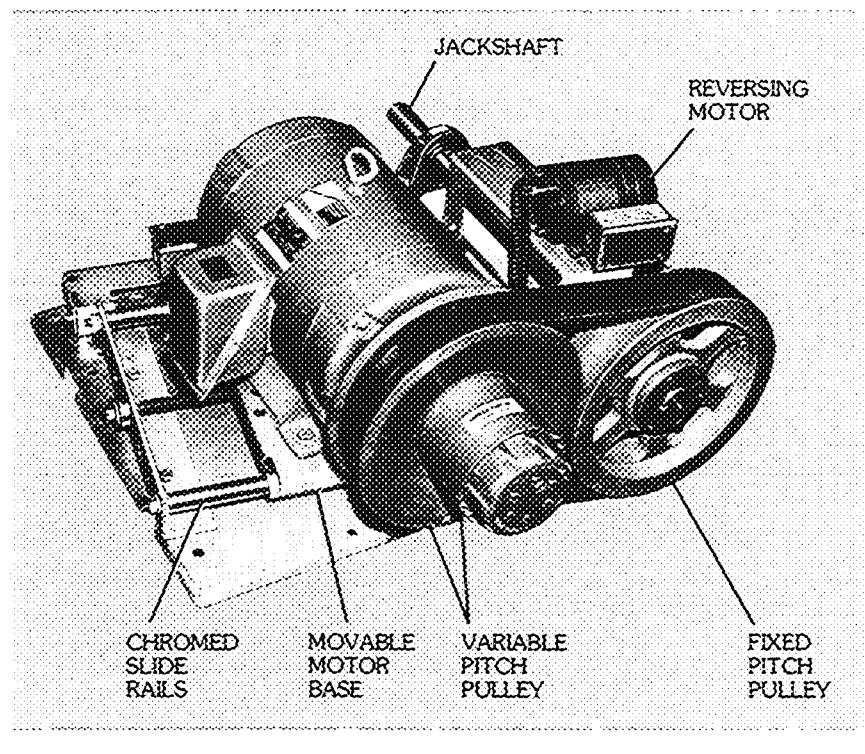
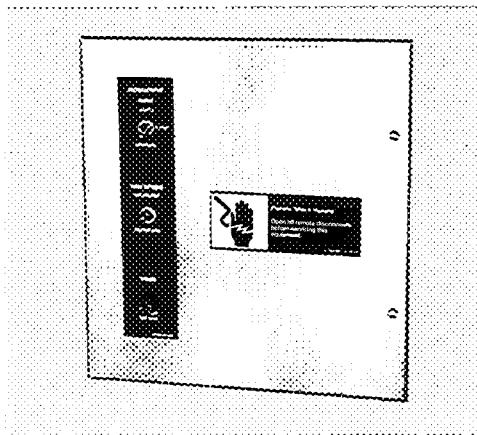


Modudrive™ . . . rugged and quiet

A complete variable-speed drive package

- Factory-installed and aligned motor and drive, including variable speed belt, all inside fan cabinet.
- Internal spring isolation of complete fan and motor-drive assembly
- Control panel for field mounting and wiring to drive components. Panel may be furnished for interface with electric or pneumatic field-furnished static pressure duct sensor.

Field proven in hundreds of installations



12-1/4" H
x
11-1/4" W
x
4-3/8" DEEP

Low sound levels

The Modudrive fan section automatically modulates fan speed with changing load requirements. Sound levels at full load operation compare favorably with standard centrifugal fans, and sound levels decrease significantly as air volume drops. The factory-installed internal spring isolators

effectively dampen vibration and prevent unwanted sound from being transmitted to the building structure.

Modudrive is available for draw-thru, blow-thru, horizontal or vertical units, 39E indoor or 39ER Roofrite outdoor units

Modudrive offerings

UNIT SIZE 39E OR 39ER	DRIVE MOTOR HORSEPOWER							CABINET WIDTH EXTENSION (in.)
	3	5	7½	10	15	20	25*,30*	
17,19	X	X	X	X	X	AFS	NA	17½
23	NA	X	X	X	X	X	NA	17½
29,36	NA	X	X	X	X	X	X	16½
39	NA	NA	X	X	X	X	X	10½
48	NA	NA	NA	FCS	X	X	X	5½†
57	NA	NA	NA	NA	X	X	X	5½†
75,90	NA	NA	NA	NA	AFS	AFS	AFS	0

X — Available on airfoil and forward-curved fan sections

AFS — Available only on airfoil fan section

FCS — Available only on forward-curved fan section

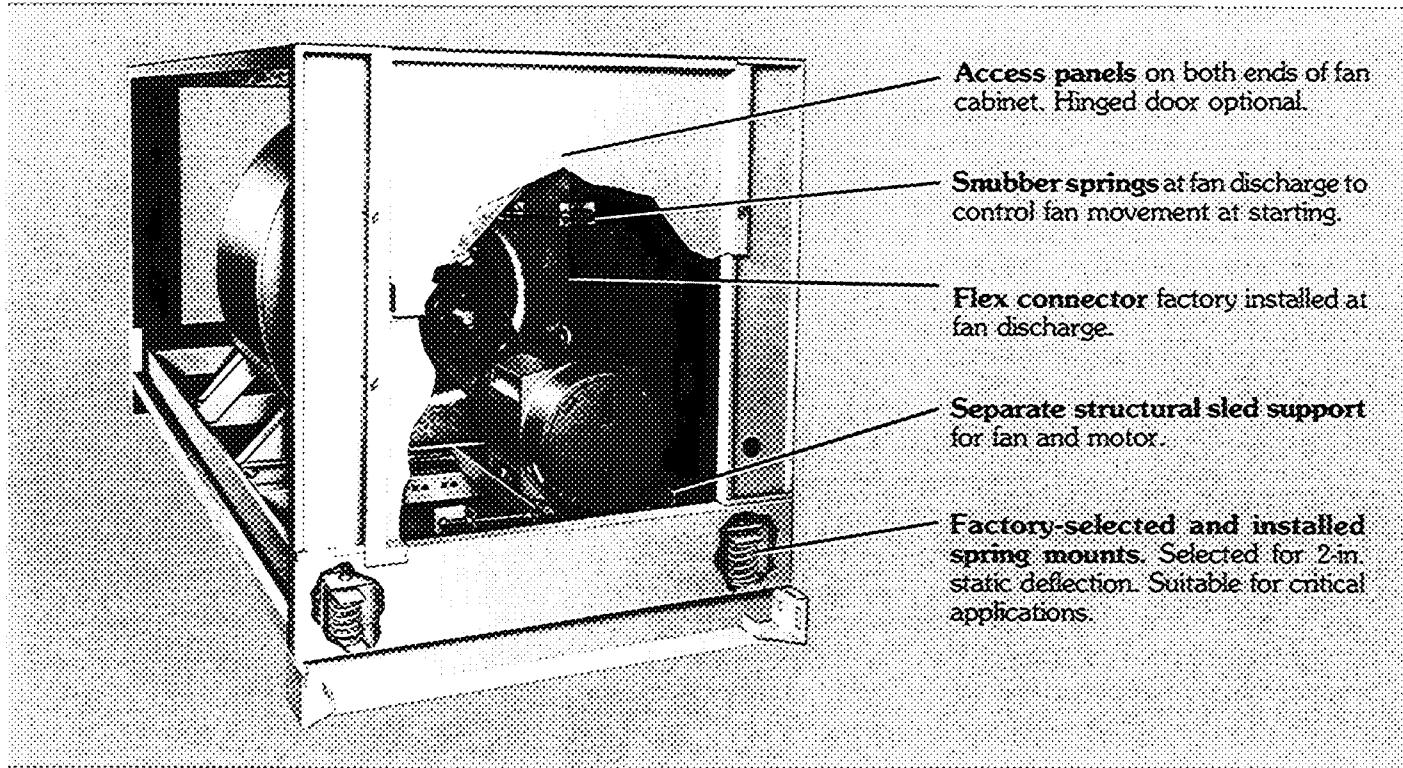
NA — Not Available

*25,30 HP motors not available for 50 Hz

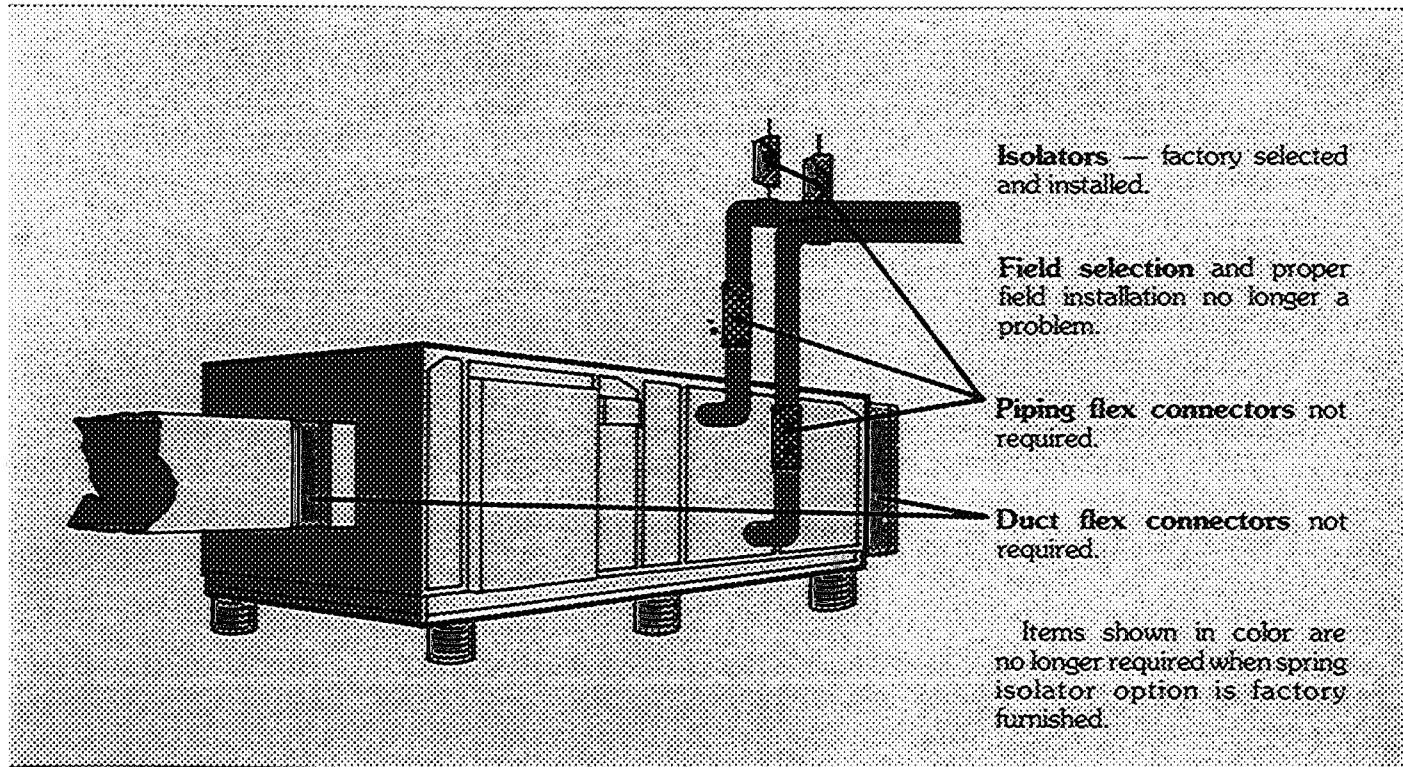
†Required on airfoil fan only

Factory-installed spring isolation... available for all models.

Included in the internal spring isolation option:



Factory-furnished isolation saves money and simplifies air-handler installation

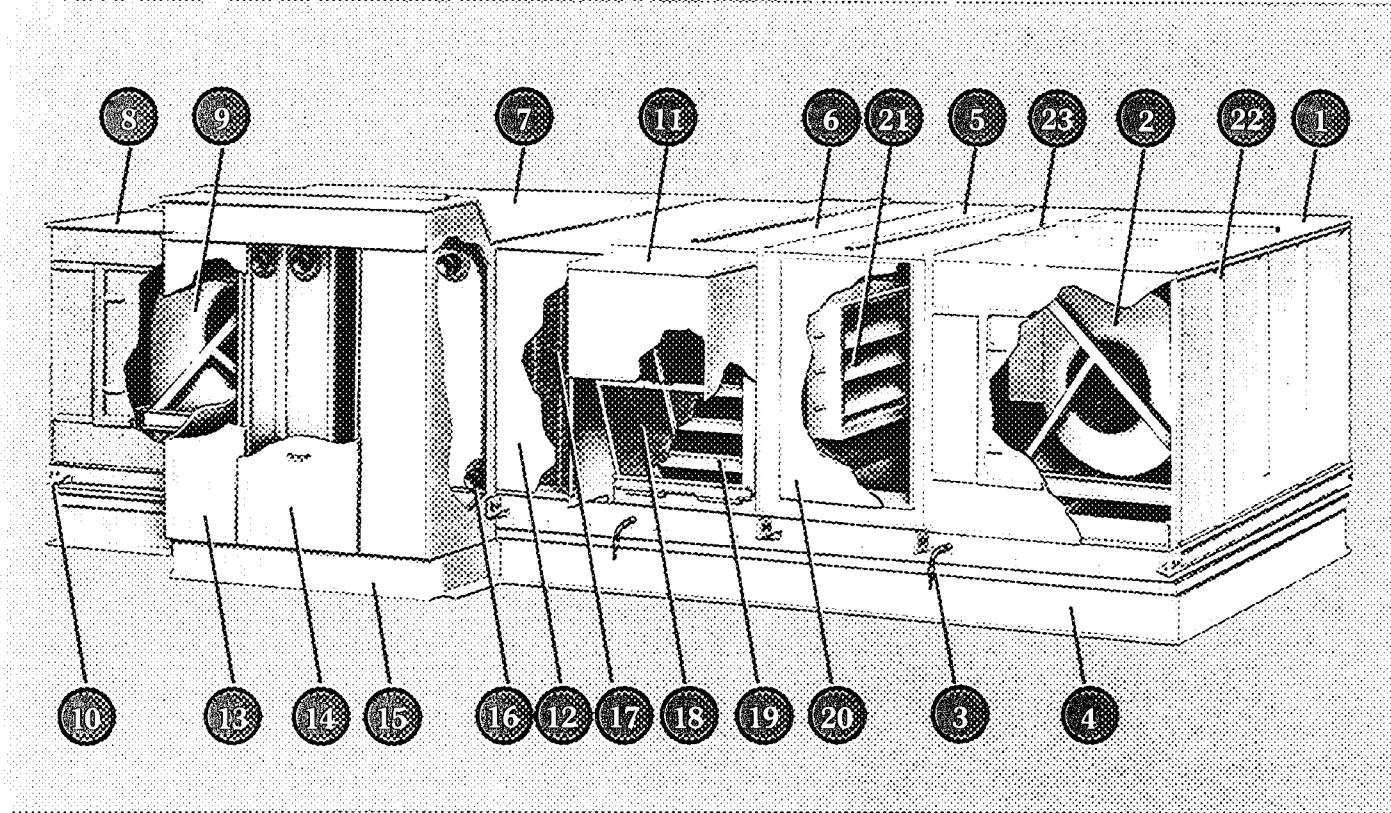


39ER Roofrite units . . .

Carrier quality inside and out

Available with all the fan and coil choices offered for 39E indoor units.

Available with filtration after the fan for hospital applications.



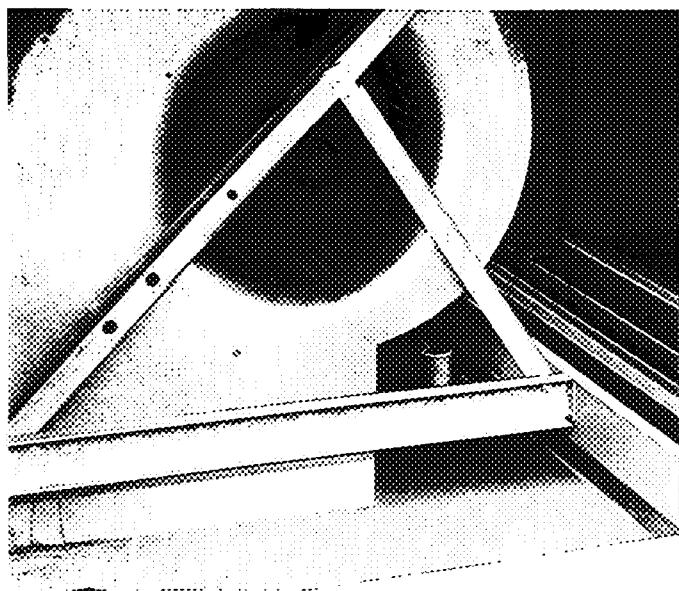
- (1) Return Air Fan Section
- (2) Return Air Fan
- (3) Non-Freeze Airtight Drain
- (4) Roof Curb
- (5) Exhaust Box Section
- (6) Mixing Box
- (7) Coil Section with 3 Coil Tracks
- (8) Supply Air Fan Section
- (9) Supply Air Fan
- (10) Lifting Brackets
- (11) Rainhood
- (12) Hinged Filter Door
- (13) Coil Connection Housing
- (14) Access Panel
- (15) Roof Curb under Coil Housing
- (16) Coil Connections
- (17) Roll Filter
- (18) Moisture Eliminators
- (19) Outside Air Dampers
- (20) Exhaust Box Access Panel
- (21) Return Air Dampers
- (22) Hat Channel Reinforcement
- (23) Seam Caulking (between all sections)

Unit and 14-in. curb assembly approved by the National Roofing Contractors Association

Thick, high-density gasket material, 2 in. wide forms the seal between the unit and the curb.



39ER Roofrite units — available in sizes 08 - 90



Carrier testing ensures long-lasting performance

- Built to last. Strong galvanized steel construction throughout. All sections gasketed. Insulations, paints, sealants, and adhesives meet requirements of NFPA 90A for flame spread and smoke generation.
- Curb mounted on Carrier-furnished matched curbs
- All units internally spring isolated.

Isocyanurate foam insulation foil-faced. Insulation resists water absorption. Foil acts as superior vapor barrier. Unit interior completely insulated — top, sides and bottom.

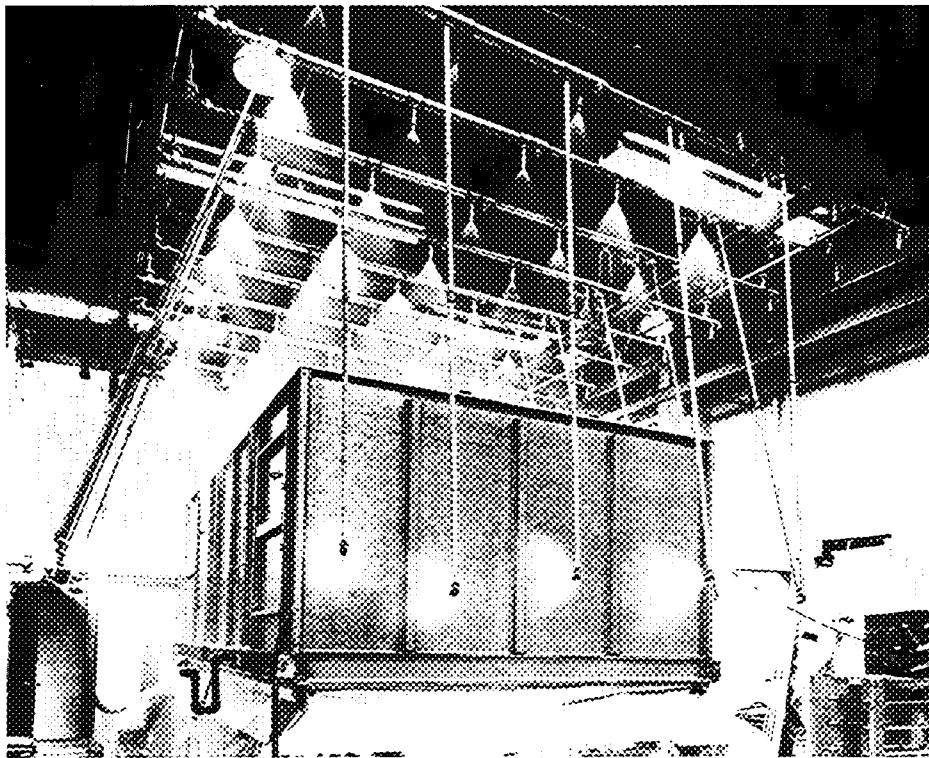
Completely tested design

A special-purpose rain test facility was constructed in the Carrier Laboratories to simulate severe storm conditions. More than 9 in. of water per hour was dumped onto the 39ER unit. Weathertight gasketing, rainhoods and double-wall drain pans all received the ultimate test.

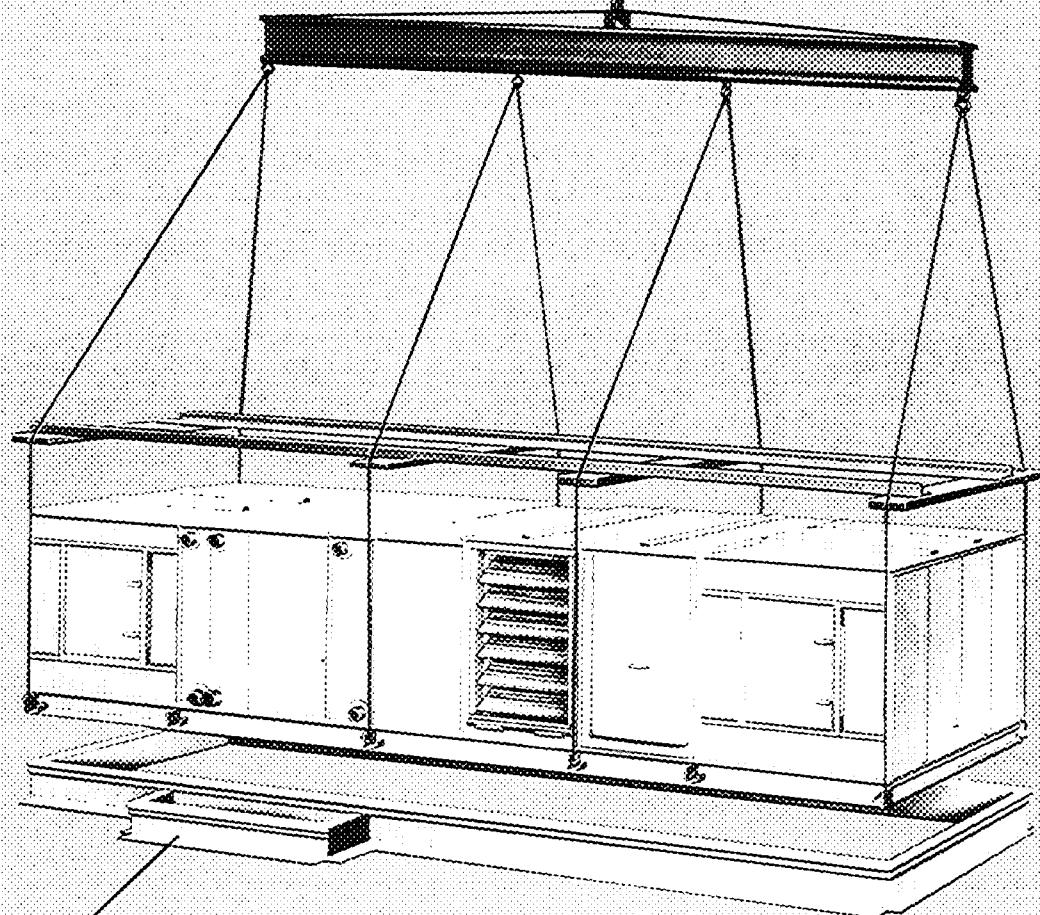
Leak-tight integrity

If water enters the unit, it cannot enter the conditioned space because

- All components include a full bottom panel forming a cap over the entire curb
- Six-in. high standpipes are provided in fan sections, and mixing boxes for electrical wiring and controls
- All sections are drained to the roof



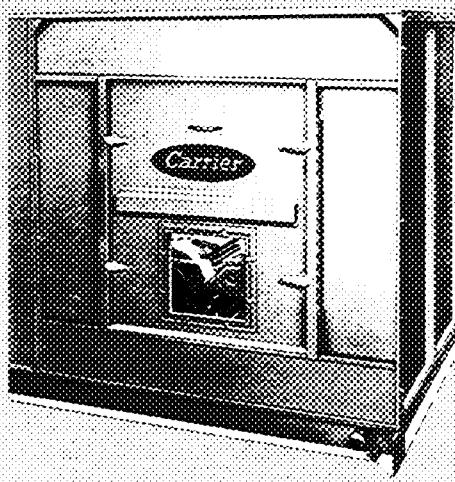
39ER Curb-Mounted units — designed and built for easy installation



- Sizes 08-57 (without return air fans) and sizes 08-23 (with return air fan) shipped in one piece. Other sizes can be shipped in one piece on special order.
- Unit and 14-in. curb assembly approved by the National Roofing Contractors Association.

Many options

This industrial marine light has a protective wire cage installed in the fan section. A wire and glass viewport is included with this time-saving option. Viewport by itself is also available as an option.



Preliminary selection in 3 easy steps

Step 1

Determine unit size based on cfm and coil face area. For 39ER, skip steps 2 and 3 and proceed with final selection (see page 32 for 39ER unit lineup sketches). (Use in conjunction with the Fan Performance Catalog and Coil Performance Catalog.)

UNIT 39E/ER		08	11	13	17	19	23	29	36	39	48	57	75	90
Air Delivery (cfm)														
COOLING COIL FACE VELOCITY (fpm)	400	3,112	4,600	5,280	6,920	8,160	9,160	11,760	14,000	17,120	22,760	24,560	36,000	—
	Large Face	500	3,890	5,750	6,600	8,650	10,200	11,450	14,700	17,500	21,400	28,450	30,700	45,000
	550	4,279	6,303	7,260	9,493	11,231	12,568	16,159	19,250	23,540	31,295	33,770	49,500	—
	600	4,668	6,900	7,920	10,380	12,240	13,740	17,640	21,000	25,680	34,140	36,840	54,000	—
	700	5,446	8,022	9,240	12,082	14,294	15,995	20,566	24,500	29,960	39,830	42,980	63,000	—
HEATING COIL FACE VELOCITY (fpm)	400	2,696	3,668	4,600	5,920	6,920	8,160	10,520	12,760	15,600	19,240	22,760	30,000	36,000
	Small Face	500	3,370	4,585	5,750	7,400	8,650	10,200	13,150	15,950	19,500	24,050	28,450	37,500
	550	3,707	5,044	6,303	8,135	9,493	11,231	14,438	17,523	21,450	26,455	31,295	41,250	49,500
	600	4,044	5,502	6,900	8,880	10,380	12,240	15,780	19,140	23,400	28,860	34,140	45,000	54,000
	700	4,718	6,419	8,022	10,353	12,082	14,294	18,375	22,302	27,300	33,670	39,830	52,500	63,000
Coil Face Area (sq ft)														
COOLING COILS	Large	7.8	11.5	13.2	17.3	20.4	22.9	29.4	35.0	42.8	56.9	61.4	90.0	—
	Small	6.7	9.2	11.5	14.8	17.3	20.4	26.3	31.9	39.0	48.1	56.9	75.0	90.0
BLOW-THRU HEATING COILS	U-Bend	5.8	6.9	6.9	9.9	9.9	11.7	14.6	17.7	21.3	30.6	30.6	45.0	45.0
	IDT	4.0	4.7	4.7	8.0	8.0	9.5	11.8	14.3	18.6	28.2	28.2	40.2	40.2
DRAW-THRU, PREHEAT & REHEAT COILS	U-Bend	11.5*	17.3*								56.9*		90.0*	
	9.3*			14.8	17.3	20.4		26.3	31.9	39.0	48.1	56.9	75.0	90.0
	IDT	6.3	7.4	9.3	12.9	15.9	18.8	23.5	28.6	32.9	40.7	51.2	64.5	80.5

*When used in same coil section as large face area cooling coils, the larger listed face area coil is furnished

Step 2

39E only — Find approximate base unit and accessory sizes (use 39E unit lineup sketches, page 20) with these dimensions. See Dimensions section for more details.

UNIT 39E		08	11	13	17	19	23	29	36	39	48	57	75	90
Roughing-In Dimensions (in) --- Fan and Coil Sections														
39EB	L	62	62	62	84	84	84	103	103	131	151	151	181	181
BLOW-THRU (single/multizone)	W	71	81	81	91	91	99	99	117	117	141	141	159	159
	H	36/55	36/55	36/55	47/68	47/68	47/68	56/78	56/78	70/92	80/105	80/105	103/138	103/138
39ED	L	31	31	31	42	42	42	52	52	66	76	76	—	—
VERTICAL	W	71	81	81	91	91	99	99	117	117	141	141	—	—
DRAW-THRU	H	71	71	71	93	93	93	112	112	141	161	161	—	—
(SCS/LCS)	L	55/62	55/62	55/62	66/84	66/84	66/84	76/103	76/103	114/131	124/151	124/151	140/-	140/-
39ED HORIZONTAL	W	71	81	81	91	91	99	99	117	117	141	141	159	159
DRAW-THRU	H	36	36	36	47	47	47	56	56	70	80	80	103	103
39EH (Heating Ventilating)	L	40	40	40	51	51	51	61	61	78	88	88	104	104
	W	71	81	81	91	91	99	99	117	117	141	141	159	159
	H	36	36	36	47	47	47	56	56	70	80	80	103	103
39EF (Ventilating Only)	L	31	31	31	42	42	42	52	52	66	76	76	92	92
	W	71	81	81	91	91	99	99	117	117	141	141	159	159
	H	36	36	36	47	47	47	56	56	70	80	80	103	103
Airway Length (in)														
FILTER SECTIONS														
HVF														
LVF, BFS														
FFS, BFE														
RFS														
CMF														
ACC														
PLN														
PHS, RHS														
CPS, CRS														
ZDS														
MXB														
FBD														
FDD														

Step 3

Step 3 — 39E only — Compute base unit and accessory weights.

UNIT 39E		08	11	13	17	19	23	29	36	39	48	57	75	90
COOLING COIL SECTION		Component Weights (lb)												
Horizontal Draw-Thru	Bypass Nonbypass	345 310	385 345	365 325	520 490	485 450	515 480	615 585	700 665	1,130 1,010	1,630 1,495	1,470 1,330	1,465 1,785	1,735 1,565
Vertical Draw-Thru	Cool Only Cool & Heat	270 —	310 —	310 —	435 560	435 520	445 560	535 675	610 760	1,115 1,220	1,770 1,965	1,680 1,965	— —	— —
Slow-Thru	Multizone Single Zone	555 380	610 420	610 420	875 625	875 625	920 650	1,090 795	1,230 895	1,550 1,300	1,975 1,675	2,190 1,800	2,525 2,000	2,890 2,265
FAN SECTION (less motor & drive)	FCS AFS CPA	410 435 —	476 489 —	491 512 —	707 778 —	725 806 —	781 809 —	999 1,102 1,642	1,114 1,258 1,765	1,300 1,258 2,246	2,065 2,395 3,116	2,075 2,420 3,284	— 3,725 4,792	— 3,725 4,811
FILTER SECTIONS	HVF LVF BFS FFS BFE3 BFE1 RFS CMF	60 165 175 215 98 80 240 237	75 175 175 240 109 90 265 260	75 225 270 365 127 127 310 336	90 225 270 365 135 105 310 336	90 225 270 390 135 110 310 336	95 235 285 397 144 161 330 384	100 265 310 450 161 110 415 474	125 315 365 600 172 135 575 554	160 335 430 600 170 135 575 832	190 455 510 720 203 170 720 832	190 455 510 720 203 170 720 840	250 565 645 1,000 242 205 720 1,044	250 565 645 1,000 242 205 720 840
ACCESSORIES	ACC PLN PHS, RMS CPS, CRS ZDS MXB FBP FDD DIF	135 60 55 95 145 179 150 28 221	145 65 60 100 170 186 185 58 247	145 75 75 130 170 186 185 58 247	170 75 75 130 225 248 225 60 316	170 80 85 140 225 248 225 60 316	180 80 110 185 245 273 250 65 336	180 80 120 200 245 287 335 80 347	225 95 120 485 330 352 385 80 396	225 95 120 485 330 352 385 80 396	280 120 425 485 350 394 435 73 472	280 120 475 585 470 641 545 87 566	335 145 475 585 470 641 545 87 566	335 145 490 685 520 795 815 — 840

UNIT SIZES		08	11	13	17	19	23	29	36	39	48	57	75	90
		Approximate Coil Weights — 14 Plate Fins/in. (lb. dry coil)												
CHILLED WATER, DX (cooling)	Large 4 Row Face 6 Row Area 8 Row	140 175 205	185 235 280	205 260 315	255 325 400	285 375 460	310 410 505	385 510 635	440 590 735	585 765 945	735 975 1,215	780 1,040 1,300	1,075 1,455 1,835	— — —
REFRIGERANT CONDENSER, HEAT PUMP	Small 4 Row Face 6 Row Area 8 Row	130 155 185	155 195 235	185 235 280	225 330 350	255 375 400	285 465 460	355 465 575	410 545 680	545 710 875	645 710 875	735 845 1,050	920 975 1,215	1,075 1,455 1,835
DRAW-THRU (Heating)	1 Row U-Bend 2 Row U-Bend 4 Row U-Bend 1 Row, Steam IDT 2 Row, Steam IDT	60 75 110 105	65 85 125 120	75 100 150 135	85 120 185 180	95 135 210 210	110 155 240 235	130 185 300 270	150 215 350 310	210 295 460 550	245 345 550 590	275 395 635 750	330 490 810 945	380 570 950 1,400
BLOW-THRU (Heating)	1 Row U-Bend 2 Row U-Bend 4 Row U-Bend 1 Row, Steam IDT 2 Row, Steam IDT	50 65 90 85	55 70 100 105	55 70 100 105	70 90 130 125	70 90 130 125	75 100 150 145	90 120 180 170	100 135 215 195	115 155 250 230	145 210 340 340	145 210 340 475	190 285 475 475	190 285 475 475

39E and 39ER final selection — Select final coils or fans with one of the methods listed below:

- Refer to 39 Series coil catalog and 39 Series fan catalog.
- Use Carrier E20-II computer programs.
- Contact your Carrier representative.

Unit planning and assembly sequence diagrams

Using assembly diagrams

The diagrams on the following pages are a quick, pictorial method to aid the designer in component selection.

The procedure is as follows.

1. Start at left side of diagram and follow arrows.
2. Select components as required.
3. Where several components are listed under a component symbol, select component(s) if desired.
4. Read notes at bottom of each diagram carefully. Unit type and size, diagram number and list of components describe desired unit.

EXAMPLE:

39ED29 — Diagram 3

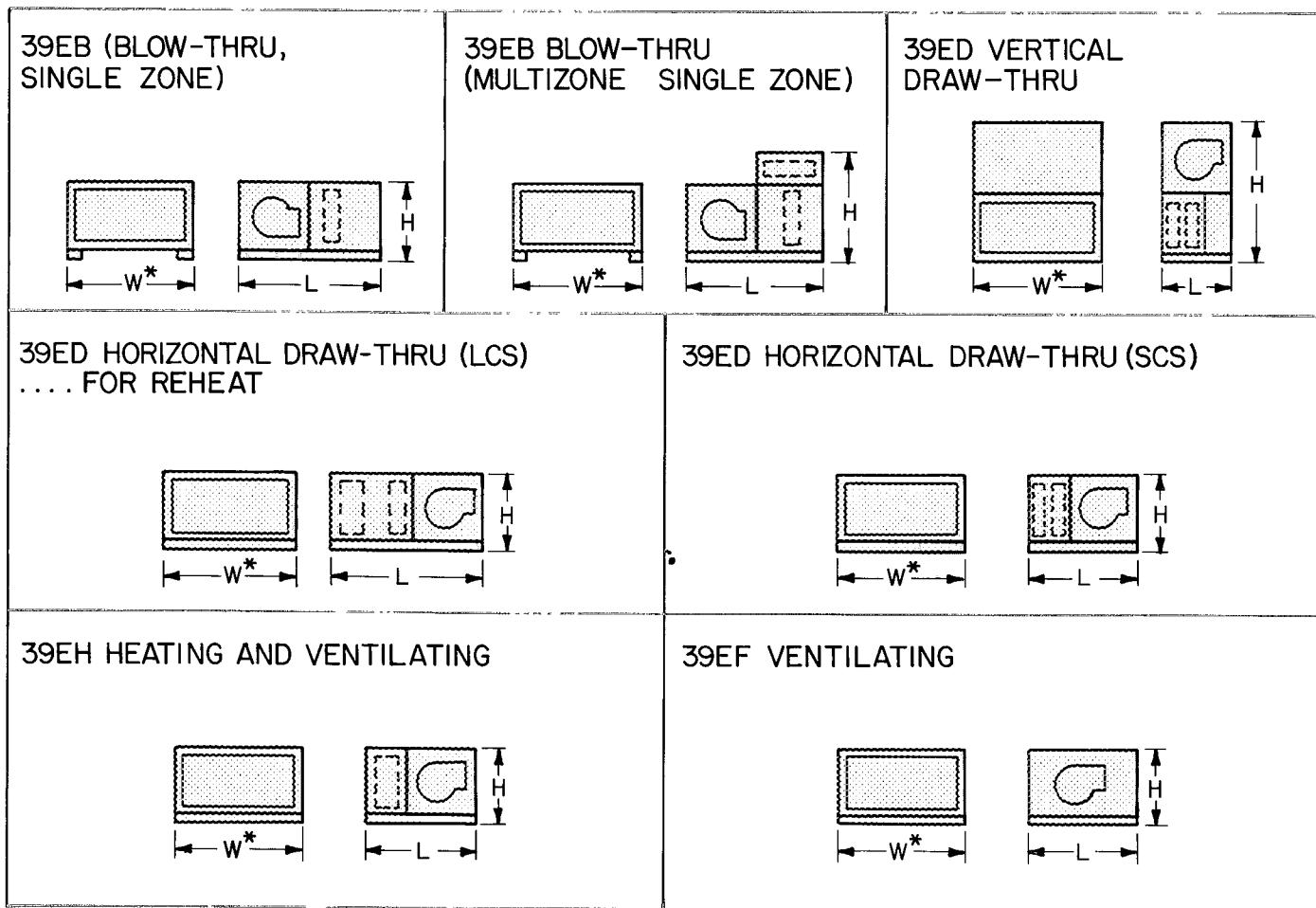
MXB1 — LVF1 — FBP1 — PHS2 — LCS2 — AFS2

Designates a 39E draw-thru horizontal air handler, size 29 from diagram 3. Consists of:

- Mixing box with top and rear inlet.
- Low-velocity filter section.
- Face and bypass damper section.
- Preheat coil section with bypass duct
- Long coil section with cooling coil track, cooling coil bypass and heating coil track.
- Airfoil fan section with internal isolation.

39E Draw-thru and Blow-thru units

39E Unit lineup NOTE: See Step 1, page 18.



*Width increases for some large face area coils, Modudrive™ and some motor sizes

Component identification

Fan sections

FCS1	Forward-curved fan
FCS2	Forward-curved fan with internal isolation
AFS2	Airfoil fan with internal isolation
AFS1	Airfoil fan
CPA2	Controllable pitch axial with internal isolation
BHF	Bottom horizontal front
BHR	Bottom horizontal rear
DBF	Downblast front
THF	Top horizontal front
THR	Top horizontal rear
UBF	Upblast front
UBR	Upblast rear

Long coil sections

LCS1	Cooling and reheat, nonbypass
LCS3	Cooling and heating, nonbypass
LCS5	Preheat and cooling, nonbypass
LCS2	Cooling with reheat, bypass cooling
LCS4	Cooling and heating, bypass both
LCS6	Preheat and cooling, bypass both
LCS8	Cooling with reheat, bypass both

Short coil sections

SCS1	Cooling and reheat, nonbypass
SCS3	Cooling and heating, nonbypass
SCS5	Preheat and cooling, nonbypass
SCS2	Cooling only, bypass
SCS4	Cooling and heating, bypass cooling
SCS6	Preheat and cooling, bypass both
SCS8	Cooling and heating/reheat, bypass both (39 thru 90 sizes only)

Vertical coil sections

VCS1	Cooling only
VCS3	Cooling and heating
VCS5	Preheat and cooling

Blow-thru coil sections

BCS1	Multizone, heating and cooling, horizontal discharge
BCS2	Multizone, heating and cooling, vertical discharge
BCS3	Single zone, cooling, horizontal discharge
BCS4	Single zone, cooling, vertical discharge

Short preheat coil sections

PHS1	Nonbypass
PHS2	Bypass

Short reheat coil sections

RHS1	Nonbypass
RHS2	Bypass

Condenser, reheat or preheat sections

CPS1	Condenser or preheat, nonbypass
CPS2	Condenser or preheat, bypass
CRS1	Condenser or reheat, nonbypass
CRS2	Condenser or reheat, bypass

Plenum sections

PLN1	Nonbypass
PLN2	Bypass into
PLN4	Bypass over
PLN10	Bypass into, vertical unit

Damper sections

FDD1	Fan discharge damper
FBP1	Face and bypass damper
ZDS1	Zoning damper

Access sections

ACC1	Nonbypass
ACC2	Bypass

Filter sections

HVF1	High-velocity filter
LVF1	Low-velocity filter
BFS1	Bag filter, 21-in. deep bag
BFE1	Bag filter extension
FFS2	Bag or cartridge, hospital unit (final filter)
BFE3	Bag filter extension, hospital unit
RFS1	Roll filter
RFS10	Roll filter, outdoor unit
DIF2	Diffuser

Mixing box sections

MXB1	Mixing box, top and rear inlet
MXB2	Mixing box, bottom and rear inlet
MXB3	Mixing box, top and bottom inlet
RAD1	Exhaust box (top exhaust)
RAD2	Exhaust box (bottom exhaust)
CMF1	Combination mixing box filter top and rear dampers
CMF2	Combination mixing box filter bottom and rear dampers

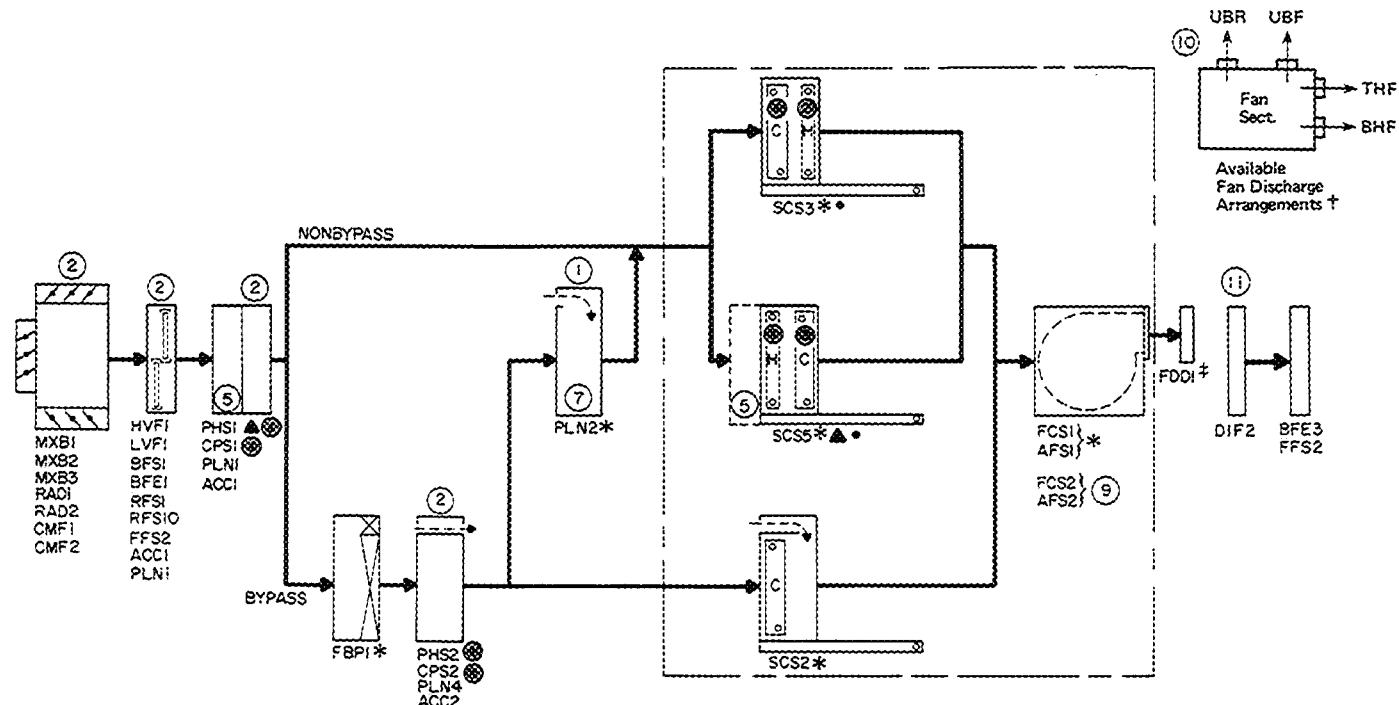
Legend

DX	— Direct expansion
H	— Height
IDT	— Inner distributing tube
L	— Length
NA	— Not Available
W	— Width

Unit planning and assembly sequence diagrams (cont)

Horizontal draw-thru units with short coil section

DIAGRAM 1 — SIZES 08 THRU 36



Shaded numbers (●) & (●) designate coil positions.

NOTES

*Required (select one).

†Downblast discharge not available.

‡Not available with AFS.

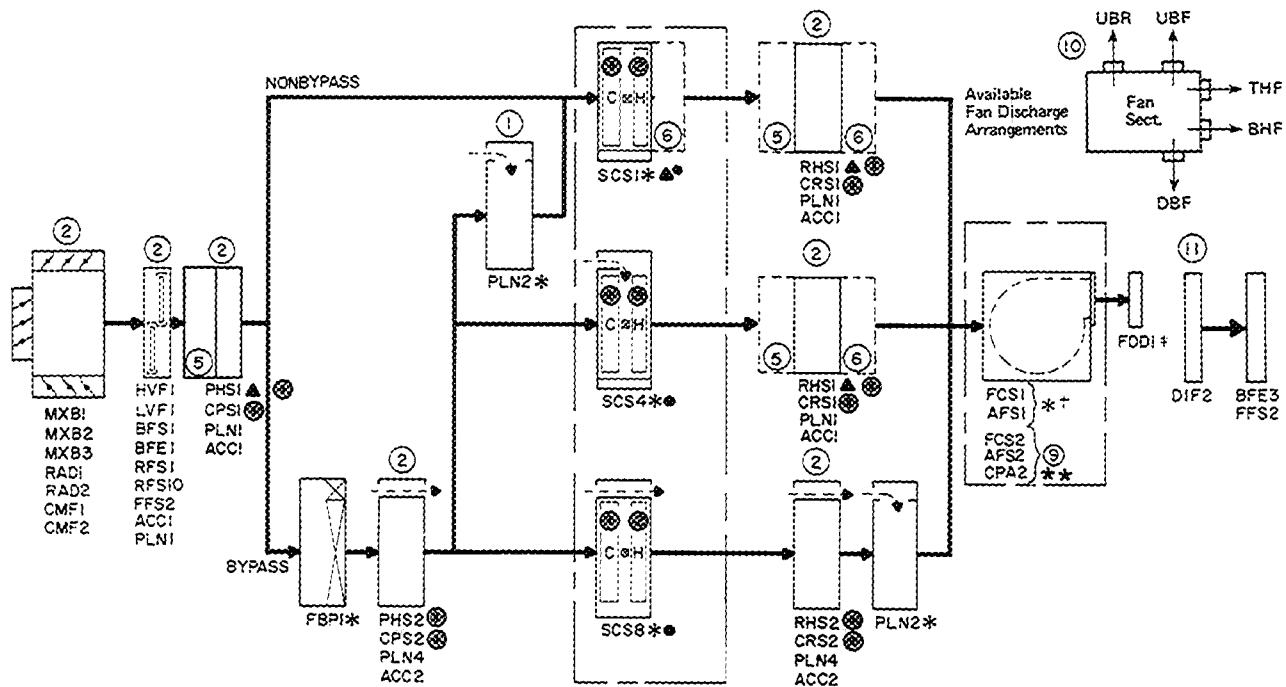
▲Electric heat available only in components shown.

●Opposite hand coil connections available except with electric heat.

- 1 Only one component of this group may be used
- 2 One or more components may be used.
- 5 When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box
- 7 Not available with electric heat in SCS5.
- 9 Fan with internal isolation
- 10 For return air fan refer to Diagram 11
- 11 DIF2 required between fan and FFS2

Horizontal draw-thru units with short coil section

DIAGRAM 2 -- SIZES 39 THRU 90



Shaded numbers (1) & (2) designate coil positions

NOTES.

*Required (select one).

†FCS not available on Sizes 75 & 90 units

‡Not available with AFS, CPA or downblast discharge.

**A minimum of 11 in. required between a coil and inlet to CPA fan section. Spacer section such as PLN1 required

☒ Humidifier location (field furnished)

▲ Electric heat available only in components shown

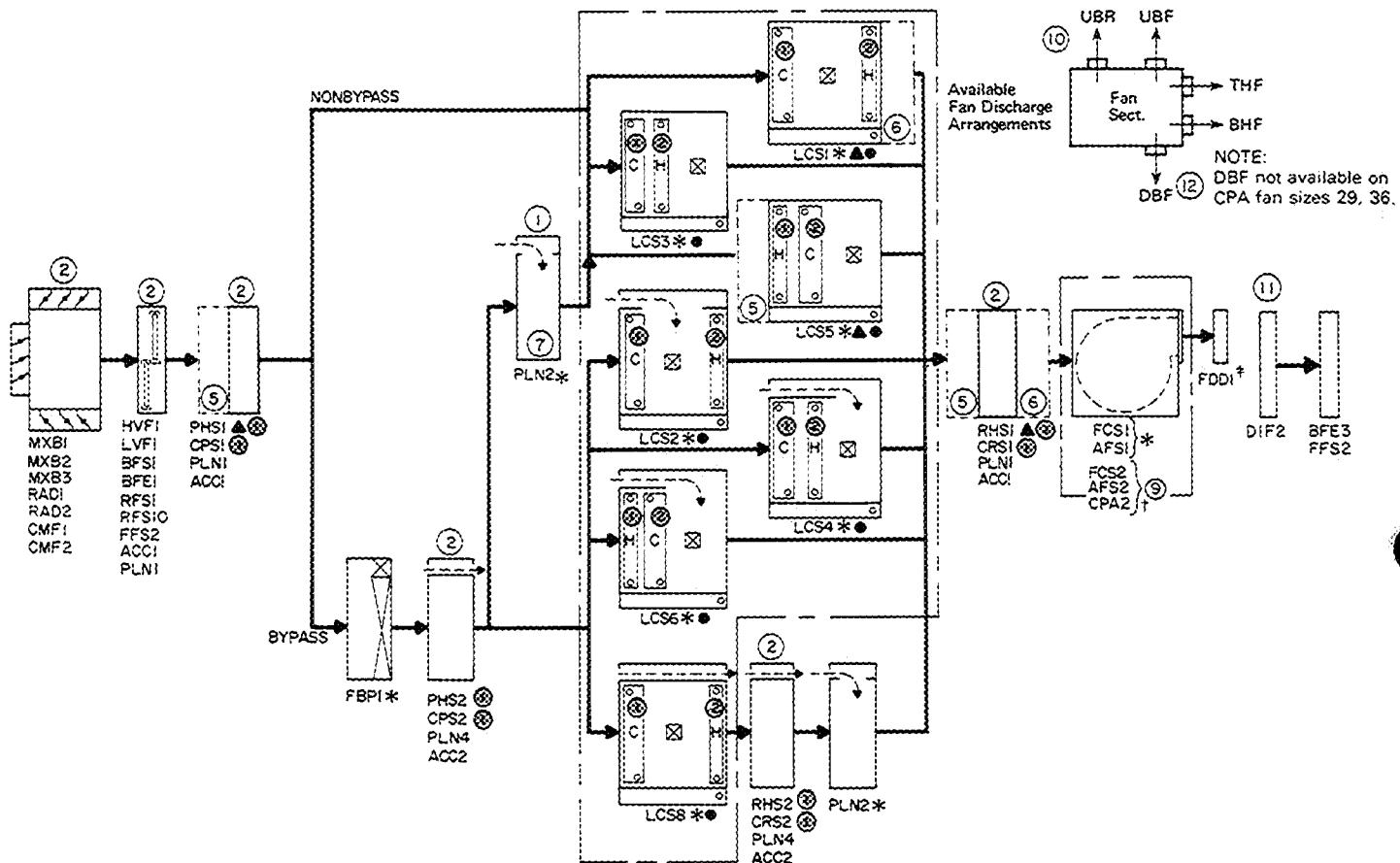
● Opposite hand connections available except on units with electric heat

- (1) Only one component of this group may be used.
- (2) One or more components may be used.
- (3) When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box.
- (4) When using electric heat: (A) PLN1 required with THF, BHF, UBF and DB fan discharge or (B) ACC1 required with UBR fan discharge
- (5) Fan with internal isolation (standard with CPA fan)
- (6) For return air fan refer to Diagram 11.
- (7) DIF2 required between fan and FFS2

Unit planning and assembly sequence diagrams (cont)

Horizontal draw-thru units with long coil section

DIAGRAM 3 — SIZES 08 THRU 36



Shaded numbers (1) & (2) designate coil positions.

NOTES:

*Required (select one).

†A minimum of 11 in. required between a coil and inlet to CPA fan section. Spacer section such as PLN1 required.

‡Not available with AFS, CPA or downblast discharge.

▢ Humidifier location (field furnished)

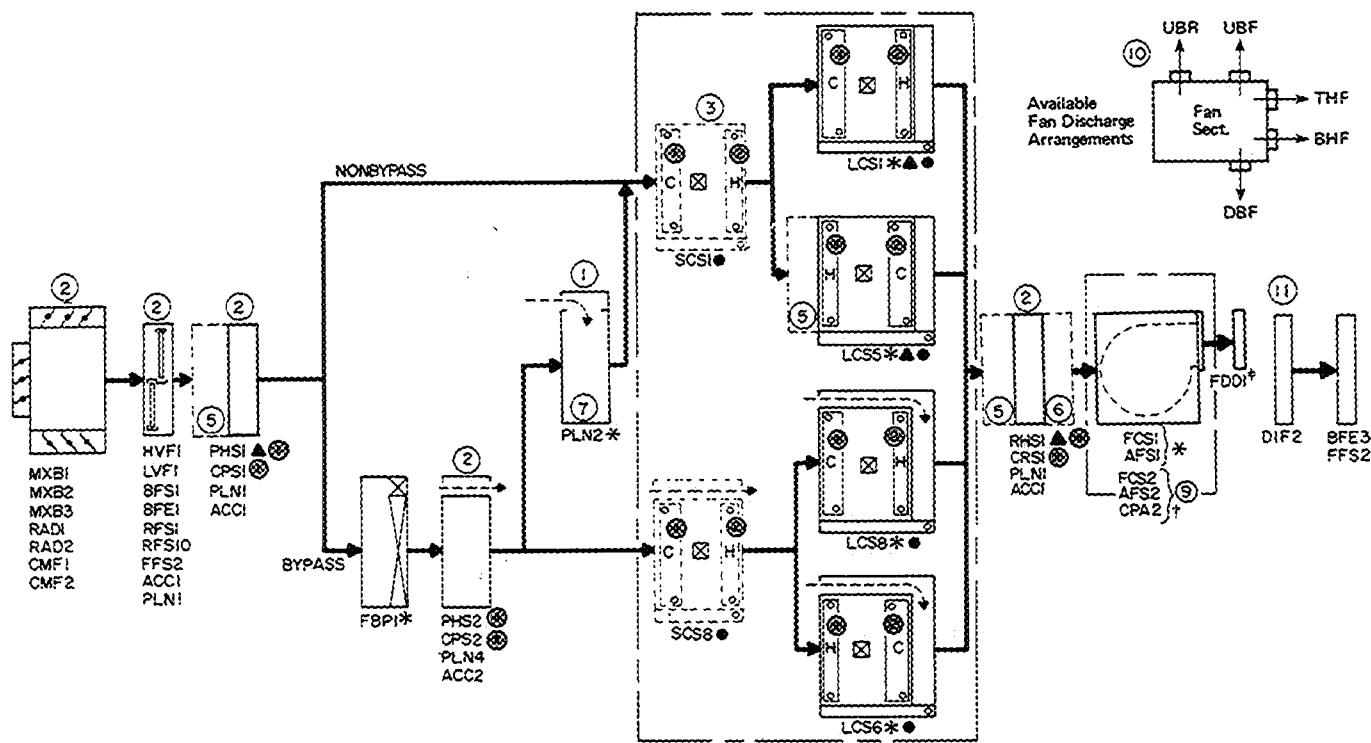
▲ Electric heat available only in components shown.

● Opposite hand coil connections available except with electric heat.

- (1) Only one component of this group may be used
- (2) One or more components may be used
- (5) When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box
- (6) When using electric heat: (A) PLN1 required with THF, BHF, UBF, DB fan discharge or (B) ACC1 required with UBR fan discharge.
- (7) Not available with electric heat in LCS5
- (9) Fan with internal isolation (standard with CPA fan)
- (10) For return air fan refer to Diagram 11.
- (11) DIF2 required between fan and FFS2
- (12) DBF available only with internal isolation on 11 thru 36 size units

Horizontal draw-thru units with long coil section

DIAGRAM 4 -- SIZES 39 THRU 57



Shaded numbers ② & ⑤ designate coil positions

NOTES.

*Required (select one)

†A minimum of 11 in. required between a coil and inlet to CPA fan section. Spacer section such as PLN1 required

‡Not available with AFS, CPA or downblast discharge

§Humidifier location (field furnished).

▲Electric heat available only in components shown.

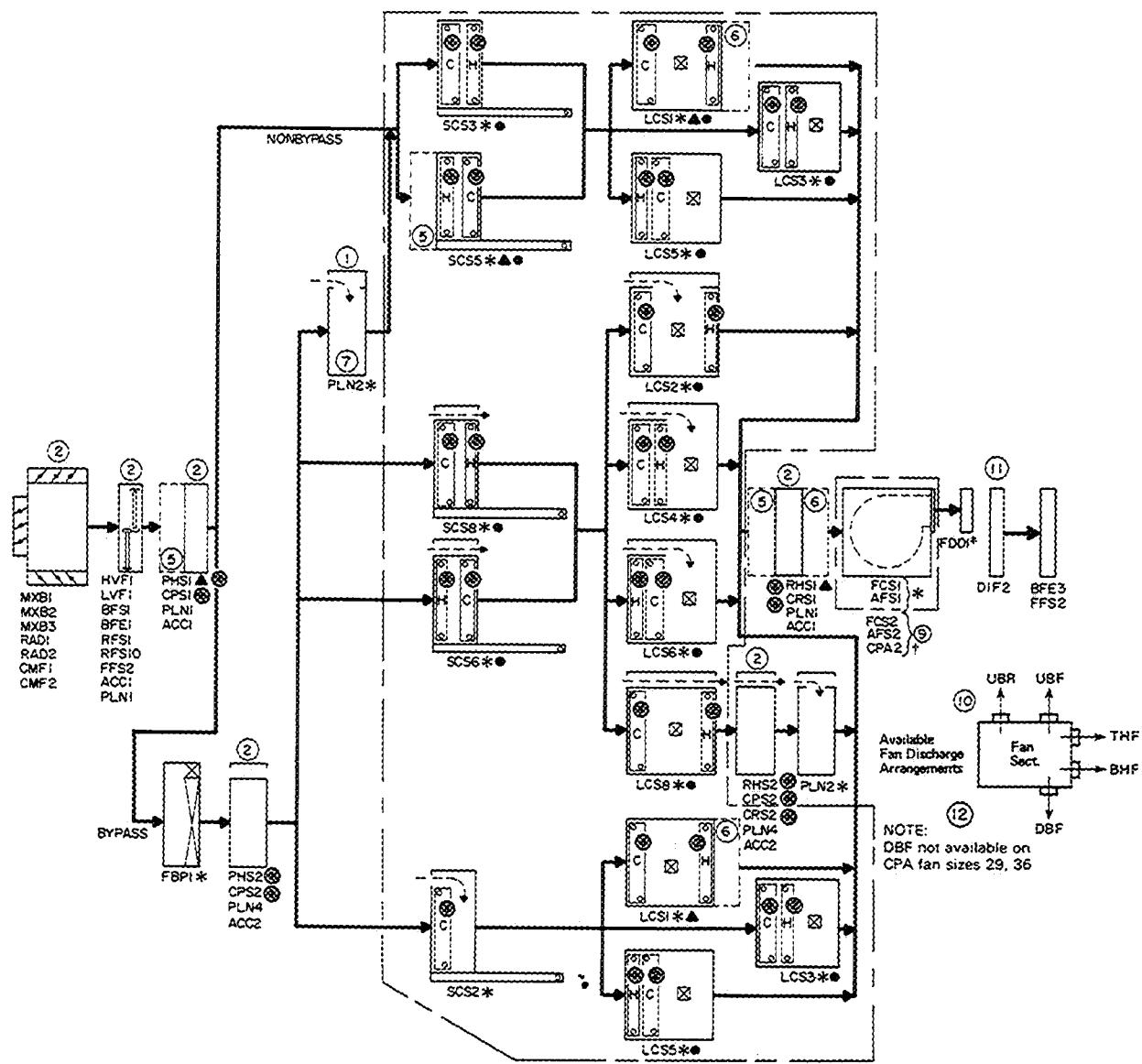
●Opposite hand coil connections available except with electric heat

- ① Only one component of this group may be used.
- ② One or more components may be used.
- ③ May be used upstream or downstream of LCS when additional coils are required.
- ⑤ When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box.
- ⑥ When using electric heat (A) PLN1 required with THF, BHF, UBF and DB fan discharge or (B) ACC1 required with UBR fan discharge
- ⑦ Not available with electric heat in LCS5.
- ⑨ Fan with internal isolation (standard with CPA fan).
- ⑩ For return air fan refer to Diagram 11.
- ⑪ DIF2 required between fan and FFS2

Unit planning and assembly sequence diagrams (cont)

Horizontal draw-thru units with multiple coil sections

DIAGRAM 5 — SIZES 08 THRU 36



Shaded numbers ① & ② designate coil positions

NOTES

*Required (select one).

†A minimum of 11 in required between a coil and inlet to CPA fan section. Spacer section such as PLN1 required.

‡Not available with AFS, CPA or downblast discharge.

☒ Humidifier location (field furnished).

▲ Electric heat available in components shown

● Opposite hand coil connections available except with electric heat.

① Only one component of this group may be used

② One or more components may be used

⑤ When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box

⑥ When using electric heat (A) PLN1 required with THF, BHF, UBF and DB fan discharge or (B) ACC1 required with UBR fan discharge

⑦ Not available with electric heat in SCS5

⑨ Fan with internal isolation (standard with CPA)

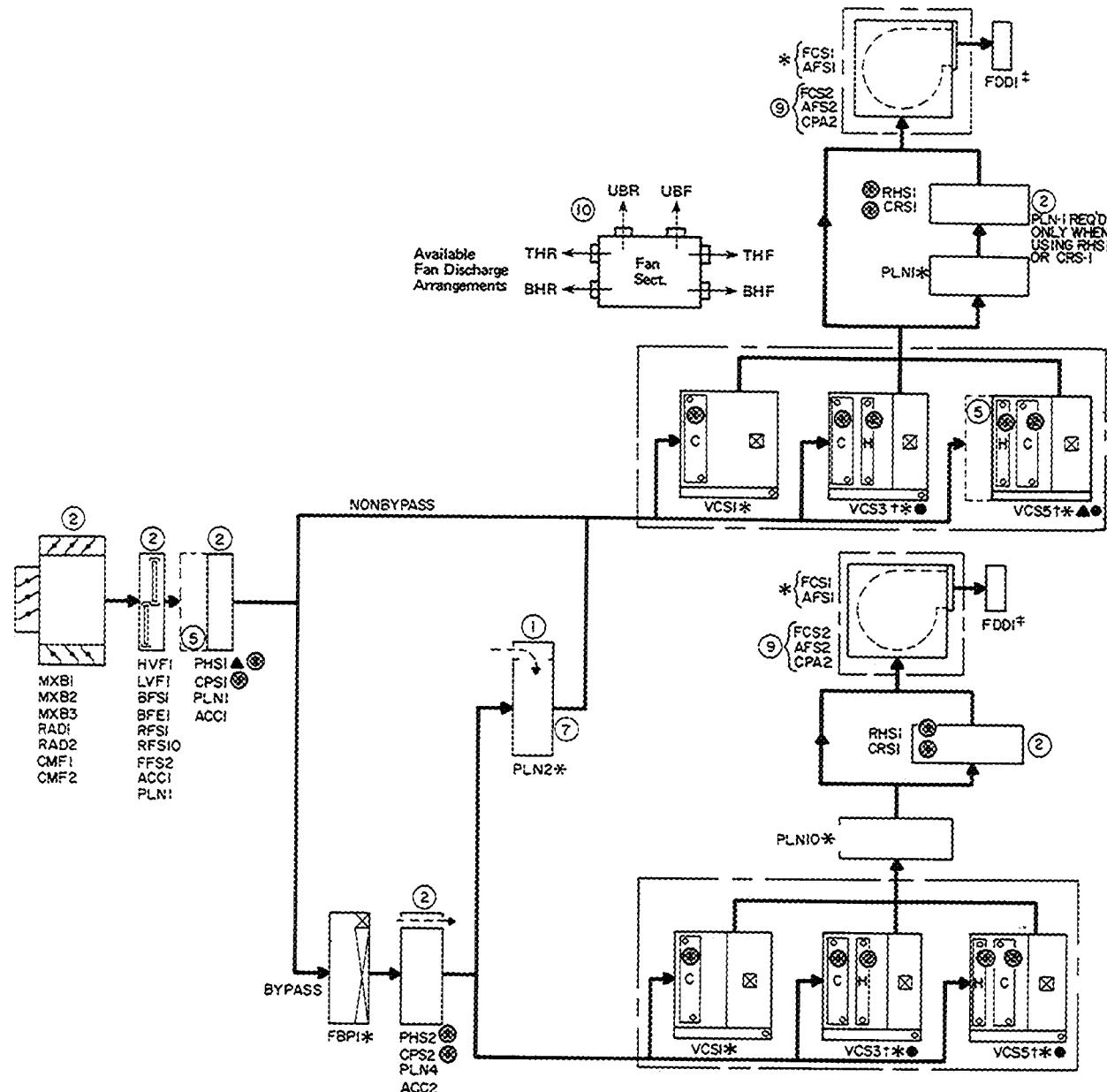
⑩ For return air fan refer to Diagram 11

⑪ DIF2 required between fan and FFS2

⑫ DBF available only with internal isolation on 11 thru 36 size units

Vertical draw-thru units

DIAGRAM 6 — SIZES 08 THRU 36



Shaded numbers & designate coil positions.

NOTES

*Required (select one)

†Not available on 08, 11 & 13 size units

‡Not available with AFS or CPA

Humidifier location (field furnished).

Electric heat available only in components shown

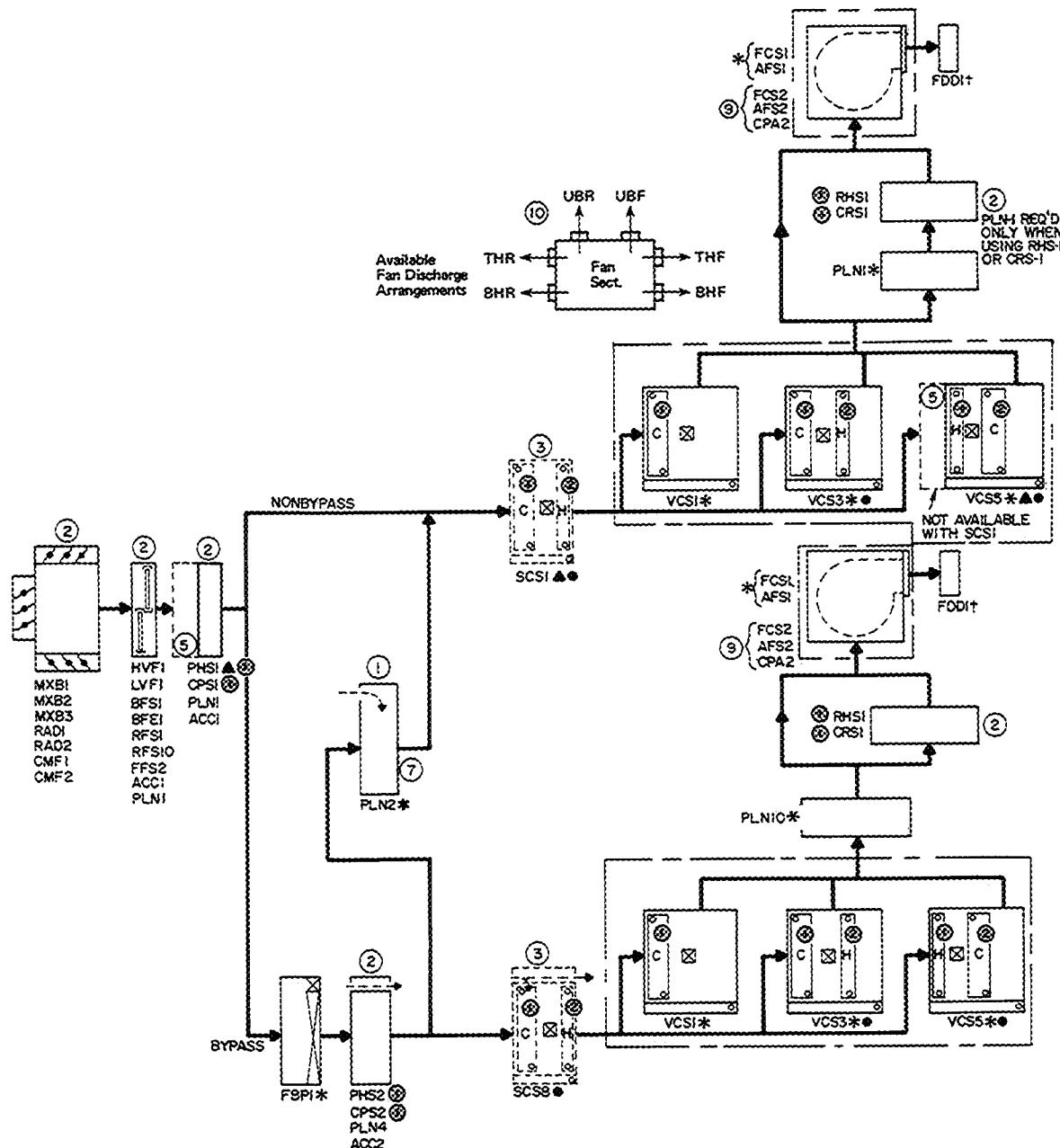
Opposite hand coil connections available except with electric heat.

- (1) Only one component of this group may be used
- (2) One or more components may be used.
- (5) When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box
- (7) Not available with electric heat in VCS5.
- (9) Fan with internal isolation (standard with CPA)
- (10) For return air fan refer to Diagram 11.

Unit planning and assembly sequence diagrams (cont)

Vertical draw-thru units

DIAGRAM 7 — SIZES 39 THRU 57



Shaded numbers (3) & (2) designate coil positions.

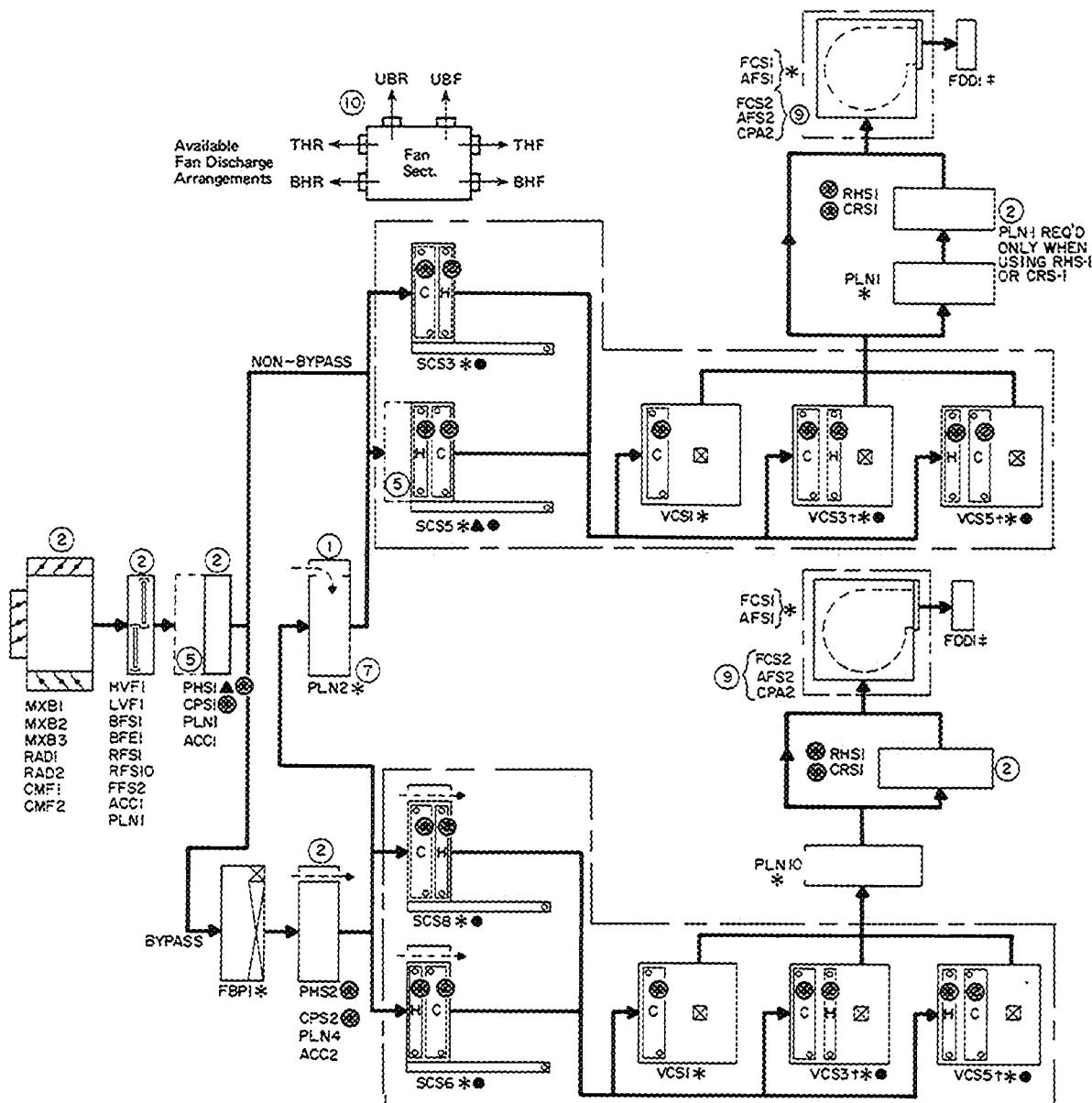
NOTES:

- * Required (select one)
- †Not available with AFS or CPA
- ☒Humidifier location (field furnished)
- ▲Electric heat available only in components shown.
- Opposite hand coil connections available except with electric heat.
- (1) Only one component of this group may be used.
- (2) One or more components may be used

- (3) May be used ahead of VCS when additional coils are required.
- (5) When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box.
- (7) Not available with electric heat in VCS5.
- (9) Fan with internal isolation (standard with CPA)
- (10) For return air fan refer to Diagram 11

Vertical draw-thru units with multiple coil sections

DIAGRAM 8 -- SIZES 08 THRU 36



Shaded numbers ① & ② designate coil positions

NOTES:

*Required (select one)

→ †Not available on 08, 11 & 13 size units

‡Not available with AFS or CPA

☒ Humidifier location (field furnished)

▲Electric heat available only in components shown.

●Opposite hand coil connections available except with electric heat

① Only one component of this group may be used

② One or more components may be used

⑤ When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box

⑦ Not available with electric heat in SCS5

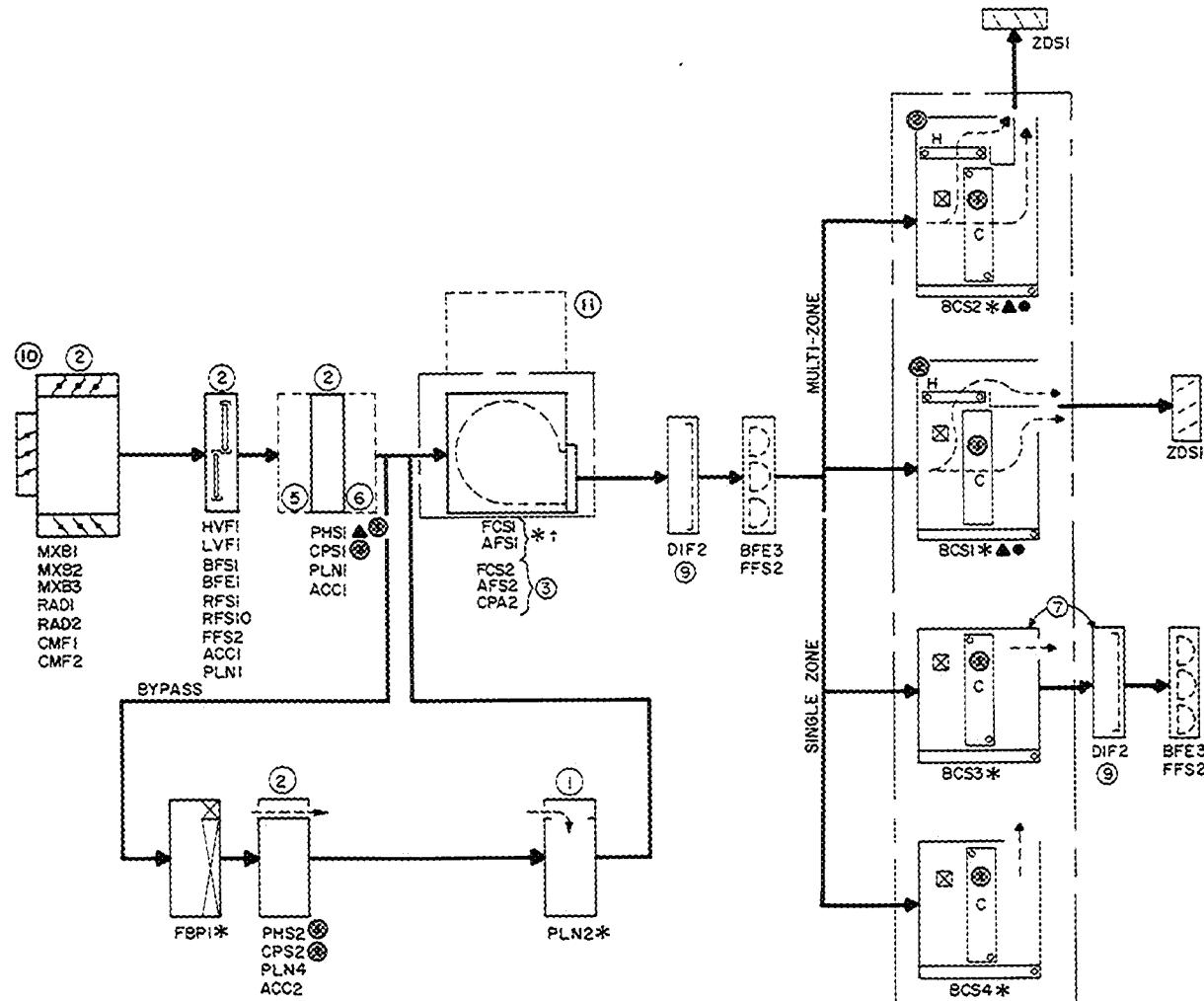
⑨ Fan with internal isolation (standard with CPA)

⑩ For return air fan refer to Diagram 11

Unit planning and assembly sequence diagrams (cont)

Blow-thru units

DIAGRAM 9 -- SIZES 08 THRU 90



Shaded numbers (5) & (6) designate coil positions.

NOTES:

*Required (select one).

†FCS not available on 75 & 90 size units. A minimum of 11 in required between a coil and inlet to CPA fan section. Spacer section such as PLN1 required.

▢ Humidifier location (field furnished) N.A. with electric heat.

▲ Electric heat available only in components shown

● Opposite hand connections available.

(1) Only one component of this group may be used

(2) One or more components may be used.

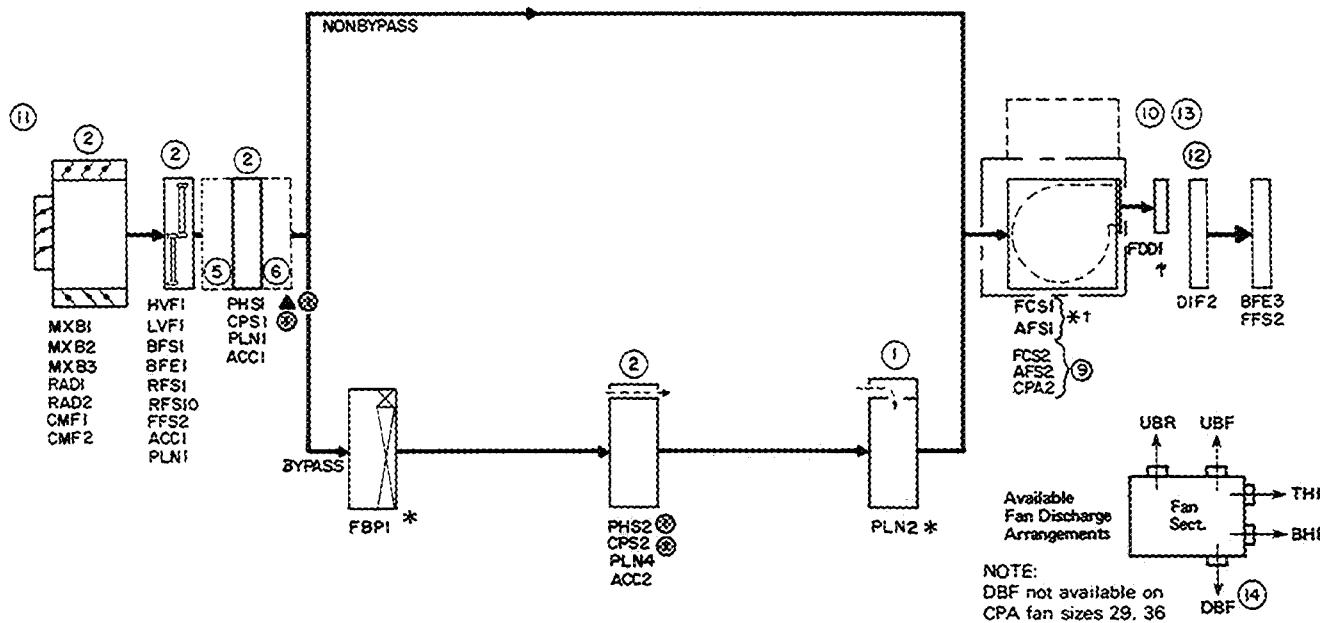
(3) Fan with internal isolation (standard with CPA).

- (5) When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box.
- (6) When using electric heat, PLN1 is required
- (7) Field drilling of flanges required on BSC3
- (9) DIF2 required between fan and FFS2.
- (10) For return air fan refer to Diagram 11
- (11) Vertical inlet to fan section (option K3) permits inlet of air to top of fan section. Filter section may be set on top of fan section. Additional accessories require field-furnished supports or suspension

Draw-thru heating and ventilating units; ventilating units (fan only); air-cooled condensers

DIAGRAM 11 -- SIZES 08 THRU 90

NOTE: Diagrams 10A, 10B, 10C and 10D are for 39ER Roofrite Units, see pages 33 - 36.



Shaded number designates coil position.

NOTES:

*Required (select one).

†FCS not available on 75 & 90 size units. A minimum of 11 in. required between a coil and inlet to CPA fan section. Spacer section such as PLN1 required.

‡Not available with AFS, CPA or downblast discharge.

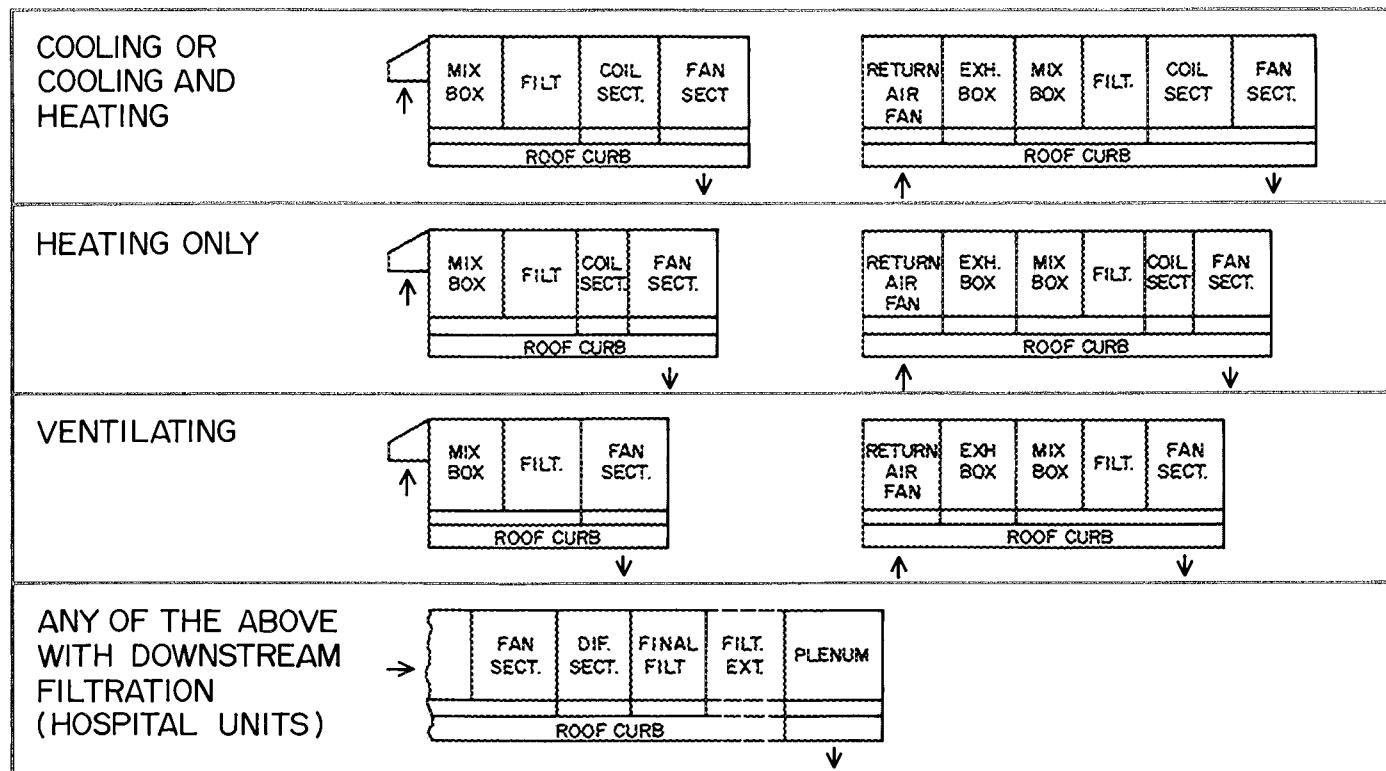
▲Electric heat available only in PHS1 as shown.

- ① Only one component of this group may be used
- ② One or more components may be used.
- ⑤ When using electric heat, BFE1 required with integral control box, or PLN1 required with remote control box.
- ⑥ When using electric heat, (A) PLN1 required with THF, UBF and DB fan discharge or (B) ACC1 required with UBR fan discharge.
- ⑨ Fan with internal isolation (standard with CPA).
- ⑩ Vertical inlet to fan section (option K3) permits inlet of air to top of fan section. Filter section may be set on top of fan section. Additional accessories require field-furnished supports or suspension.
- ⑪ For return air fan refer to Diagram 11.
- ⑫ DIF2 required between fan and FFS2.
- ⑬ Bottom inlet to fan available on special order, Sizes 08-57.
- ⑭ DBF available only with internal isolation on 11 thru 36 size units.

Unit planning and assembly sequence diagrams (cont)

39ER Roofrite units

39ER Unit lineup NOTE: See Step 2, page 18.



Component identification

Fan sections

- FCS2 Forward-curved fan, supply, internal isolation
- RFC2 Forward-curved fan, return, internal isolation
- AFS2 Airfoil fan, supply, internal isolation
- RAF2 Airfoil fan, return, internal isolation
- CPA2 Controllable Pitch Axial fan, supply, internal isolation
- RCPA2 Controllable Pitch Axial fan, return, internal isolation

Coil sections, bypass

- LCS6 Preheat and cooling, long
 - LCS8 Cooling with reheat, long
 - HCS2 Heating only
 - LCS21
 - LCS22
 - LCS41
 - LCS42
 - LCS61
 - LCS62
- } Triple coil sections, long, for heating and cooling

Mixing box sections

- MXB4 Bottom and rear inlets
- MXB5 With 100% outside air, rear only; no return air
- MXB6 Use with return air fan only; rear damper, 2 side inlets

Coil sections, nonbypass

- LCS1 Cooling and reheat, long
 - LCS5 Preheat and cooling, long
 - HCS1 Heating only
 - LCS11
 - LCS12
 - LCS31
 - LCS32
 - LCS51
 - LCS52
 - LCS91
- } Triple coil sections, long, for heating and cooling

Damper sections

- FDD1 Fan discharge damper
- FBP1 Face and bypass damper

Discharge arrangements

- BHF Bottom horizontal front
- DB Downblast (front only)
- THF Top horizontal front

Filter sections

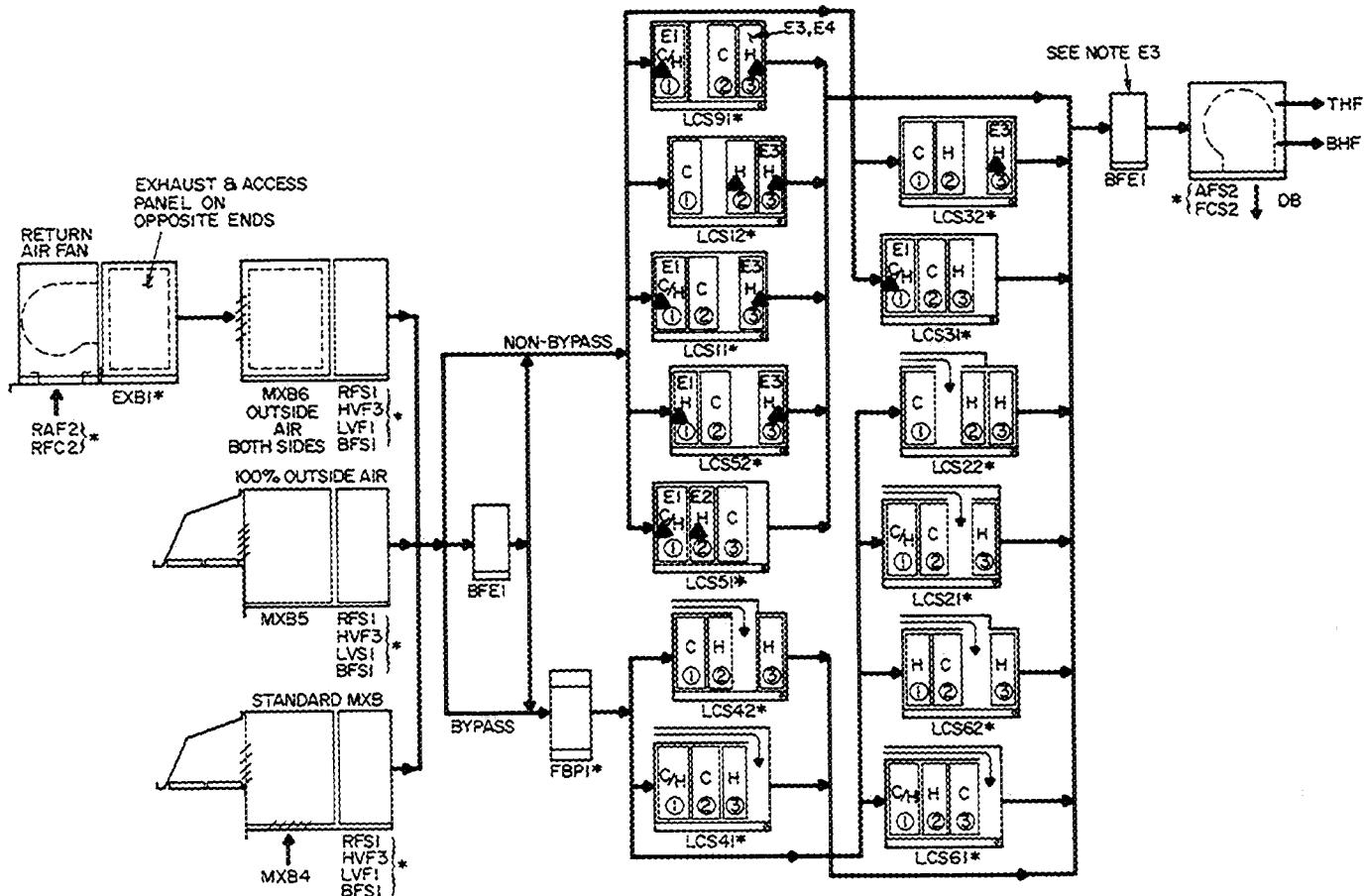
- HVF3 High-velocity filter
- LVF1 Low-velocity filter
- BFS1 Bag filter, 21-in. deep bag
- BFE1 Bag filter extension
- RFS1 Roll filter, automatic feed or manual feed

Accessories

- EXB1 Exhaust air outlet box (one side only; RH or LH; use with MXB6)
- DIF2 Diffuser section
- PLN15 Plenum section
- BFE3 Bag filter extension
- FFS2 Final filter section

39ER Roofrite units

DIAGRAM 10A -- SIZES 08-36



NOTE Above numbers (1), (2), (3) designate coil positions

ELECTRIC HEAT NOTES:

- E1 — BFE required ahead of coil To provide airway clearance between filters and electric heat coil except with HVF. HVF section provides ample airway clearance between filters and electric coil.
- E2 — Electric heat may be used if cooling coil is not in C/H position.
- E3 — BFE must be used between coil and fan to provide airway clearance with electric heat coil in this location
- E4 — Electric heat cannot be used with cooling coil in position (2)

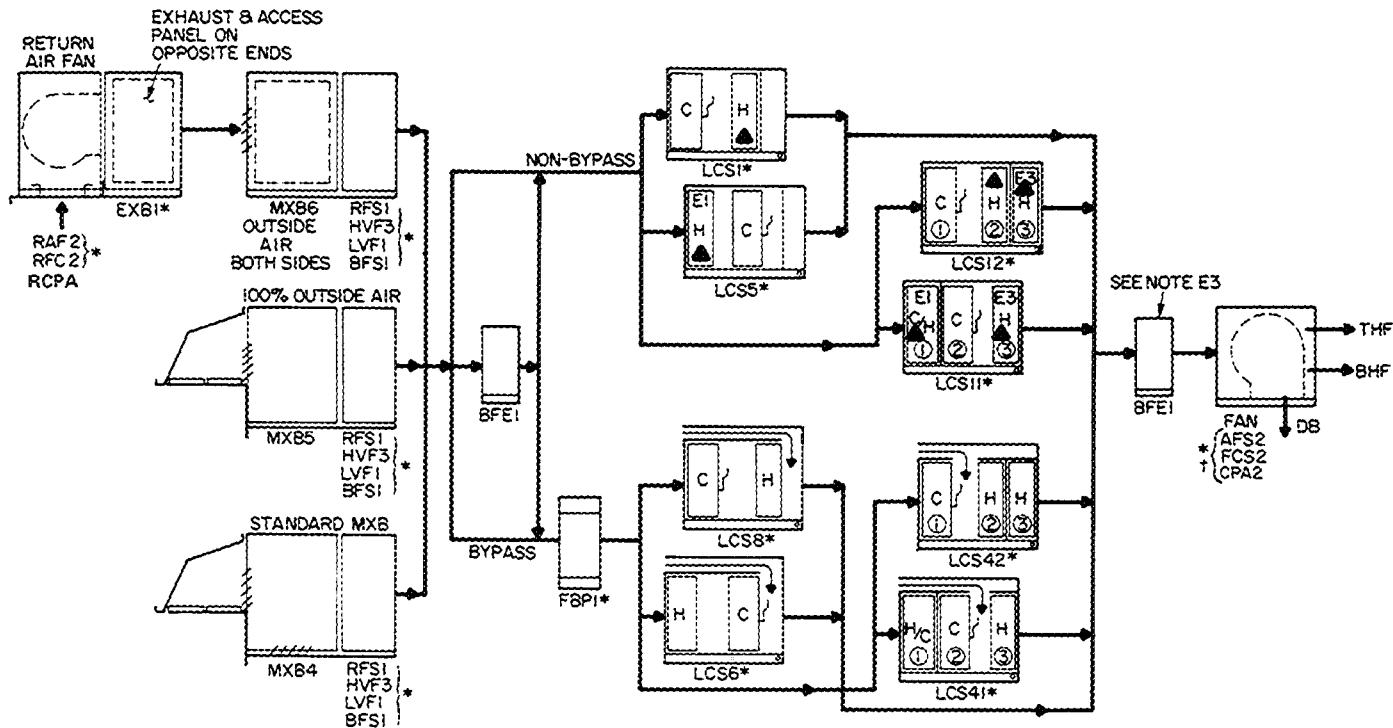
*Required (select one).

▲Electric heat available. Remote control box must be used on units with coil connection housing.

Unit planning and assembly sequence diagrams (cont)

39ER Roofrite units

DIAGRAM 10B — SIZES 39-57



NOTE Above numbers (1), (2), (3) designate coil positions

ELECTRIC HEAT NOTES

E1 -- BFE required ahead of coil to provide airway clearance between filters and electric heat coil except with HVF. HVF section provides ample airway clearance between filters and electric coil

E3 — BFE must be used between coil and fan to provide airway clearance with electric heat coil in this location

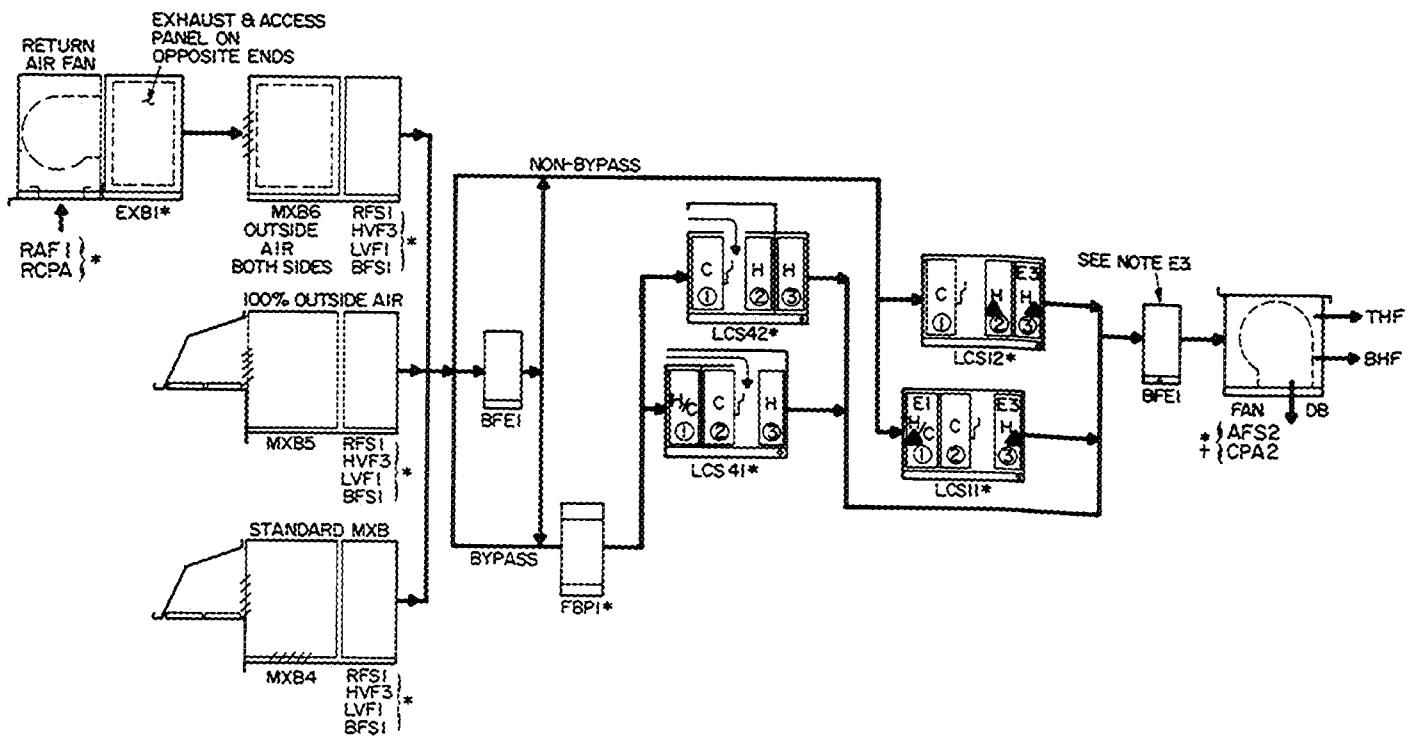
*Required

▲Electric heat available. Remote control box must be used on units with coil connection housing.

[†]BFE required between CPA and coil section when coil is located in position 3

39ER Roofrite units

DIAGRAM 10C — SIZES 75-90



NOTE: Above numbers ①, ②, ③ designate coil positions

ELECTRIC HEAT NOTES:

- E1 — BFE required ahead of coil to provide airway clearance between filters and electric heat coil except with HVF. HVF section provides ample airway clearance between filters and electric coil.
- E3 — BFE must be used between coil and fan to provide airway clearance with electric heat coil in this location.

*Required

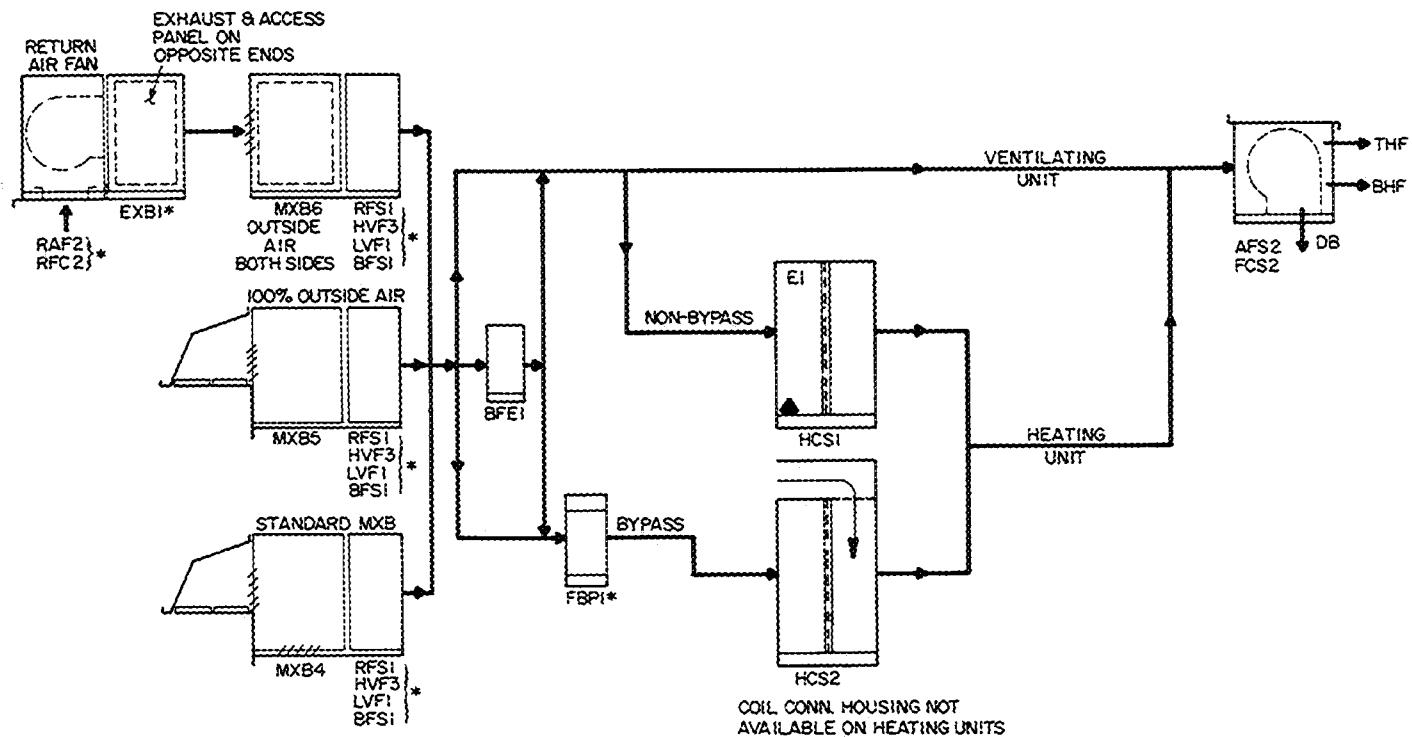
▲ Electric heat available. Remote control box must be used on units with coil connection housing.

† BFE required between CPA and coil section when coil is located in position 3

Unit planning and assembly sequence diagrams (cont)

39ER Roofrite units

DIAGRAM 10D — SIZES 08-23



ELECTRIC HEAT NOTES:

Steam, hot water or electric heat coils may be used

*Required.

▲Electric heat available

E1 — BFE required ahead of coil to provide airway clearance between filters and electric heat coil except with HVF. HVF section provides ample airway clearance between filters and electric coil

Coils, fans and Modudrive™

Selection procedure

Refer also to 39 Series coil catalog and 39 Series fan catalog.

1. Determine unit size.

Given:

Air Quantity 12,500 cfm
Maximum Face Velocity, Cooling Coil 550 fpm

Size Determination:

See page 18. Notice that each unit size is offered with 2 cooling coil choices, large and small face area. Either coil may be selected. Required face velocity determines coil selection. In this example, the maximum face velocity is given as 550 fpm. Therefore a size 23 unit with large face area coil at 12,568 cfm is a good choice

2. Determine chilled water cooling coil size.

Given:

Entering Air db	84 F
Entering Air wb	70 F
Chilled Water Entering	44 F
Chilled Water Leaving	60 F
Total Required Btuh	630,000

Coil Determination.

Select 6-row, 14F coil from Quick Select Catalog or 39 Series Coil Catalog or from Carrier computer programs

3. Determine preheat coil size. Preheat coil to be in separate coil section.

Given.

Entering Air db	50 F
Entering Water Temperature	180 F
Water Temperature Drop	40 F
Required Btuh	900,000

Coil Determination:

Select 2-row, 14F coil from Quick Select Catalog or 39 Series Coil Catalog or from Carrier computer programs.

4. Determine fan type, rpm and motor hp.

Given.

Unit Configuration	Horizontal draw-thru
Unit Components	Mix Box Bag Filter Section with 85% Efficient Bags

External Static Pressure 1.5-in

Determine total static pressure

Pressure drop (PD) thru mix box (see page 40) =	.04
PD thru pre-filters	= .30
PD thru bag filters	= .50
PD thru preheat coil	= .28

PD thru cooling coil

$$\frac{= 1.05}{2.17}$$

+ External Static Pressure

$$= 1.5$$

Total Static Pressure

$$= 3.67\text{-in.}$$

Since total static pressure is below 5-in., a forward-curved fan would normally be used.

Refer to Carrier fan curve catalog or use Carrier computer programs to determine rpm and bhp.

$$\begin{aligned} \text{rpm} &= 920 \\ \text{bhp} &= 12 \end{aligned}$$

Modudrive selection

For variable air volume (VAV) systems, the use of a Modudrive variable speed drive produces substantial savings in energy

The procedure for selecting fans with Modudrive is as follows

- 1 Use same fan curves as for units without Modudrive
Determine rpm and fan bhp from the curves.
- 2 Correct bhp for Modudrive losses by using the following formula:

$$\rightarrow \text{Modudrive motor bhp} = \frac{\text{Fan bhp from curve}}{0.93}$$

Select a motor based on this requirement. The maximum motor size which can be accommodated is 30 hp at the present time. See page 13.

Modudrive considerations

For best operating economy, keep the following criteria in mind when selecting your Modudrive Fan:

1. Consider operating the fan at a maximum speed somewhat lower than that required to match the indicated full load rpm. Very few, if any, operating hours are spent at full load. Therefore, cutting back slightly on peak horsepower by lowering the fan maximum speed can result in a significant reduction in electrical demand charges
2. Determine the required system static pressure with care. An overestimate here can result in oversizing the motor and in uneconomical operation of the fan at higher than necessary speeds
3. Do not oversize the motor. Your Modudrive fan will be operating most of the time at part load. An oversized motor will be operating at a lower percentage of its full load rating than a properly sized motor. It is at these lower percentages that the motor efficiency drops off rapidly.

Coils, fans and Modudrive™ (cont)

Sound power determination

Sound ratings

These ratings are based on sound tests conducted in accordance with the in-duct sound measuring procedure as described in ASHRAE Standard 68P.

The sound power values for 39E/ER fans may be determined by using the formula:

$$\text{Sound power } (L_w) = A + B + C$$

L_w — Sound power generated by fan and radiated in direction of airflow in db re 10^{-12} watts.

A — Base value of sound power (by octave band in dB re 10^{-12} watts)

B — Component of sound power due to fan bhp, cfm, and total static pressure (TSP):

$$B = B_1 + B_2 + B_3$$

B_1 — Component due to fan bhp

B_2 — Component due to fan cfm

B_3 — Component due to fan total static pressure

The values of each of the above components are determined from the charts given on this page. The value of B obtained after adding B_1 , B_2 and B_3 is added to the base value of sound power (A) in each octave band.

C — Component of sound power due to blade passage frequency (bpf). Determine octave band in which bpf occurs by entering small horizontal portion of chart on page 39. C = 3 dB for both forward-curved fans and airfoil fans.

EXAMPLE:

Determine sound power level of a 39ED39 air handler with

a forward-curved fan when handling 20,000 cfm at 3-in. TSP. The air handler is running at 680 rpm and requires 15.8 bhp.

1. Pick off values of component A from chart and enter these values on line A of the Sound Power Determination table.

2. Determine values of B from Sound Level Charts for unit fan bhp (B1), cfm (B2) and static pressure (B3).

Read that:

$$B_1 = 31$$

$$B_2 = -69$$

$$B_3 = -3$$

$$B = -41$$

Write the value -41 on line B of the Sound Power Determination table.

3. Determine octave band in which value C occurs by drawing a line between value for fan rpm (680) and the number of fan blades (56). This line intersects the scale in the 500-Hz octave band. Value C is 3. Enter the value 3 on line C in octave band 4.

4. Add values of A, B, and C to obtain sound power level in each octave band.

SOUND POWER DETERMINATION EXAMPLE

OCTAVE BAND	1	2	3	4	5	6	7	8
MID BAND FREQUENCY (Hz)	63	125	250	500	1,000	2,000	4,000	8,000
Value A	136	132	128	127	122	116	109	99
Value B ($B_1 + B_2 + B_3$)	-41	-41	-41	-41	-41	-41	-41	-41
Value C					3			
SOUND POWER ($L_w = A + B + C$)	95	91	87	86	84	75	68	58

VALUES OF COMPONENT A OF SOUND POWER (by octave band) in dB re 10^{-12}

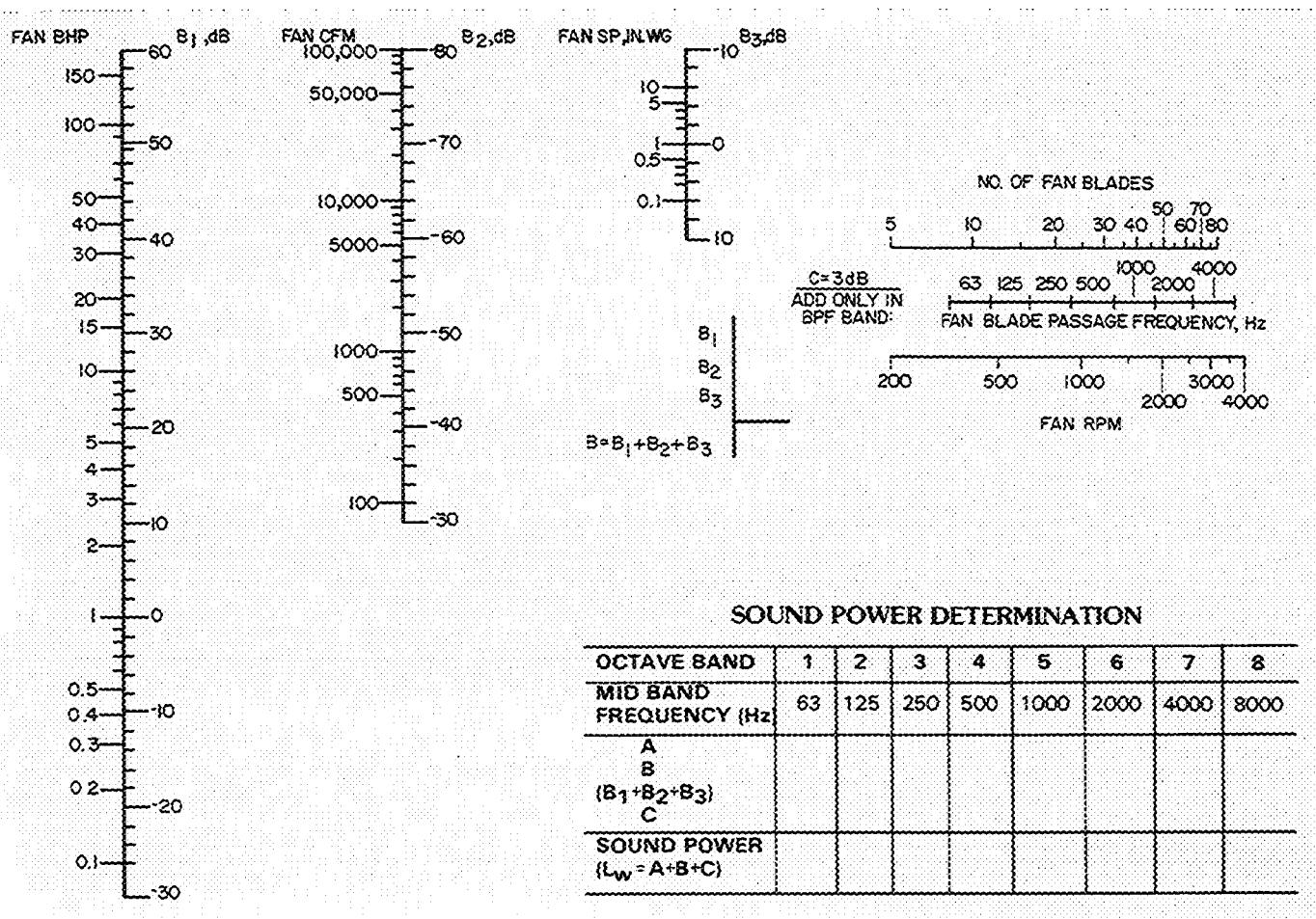
UNIT 39E	FAN TYPE	FAN WHEEL DIAMETER (in.)	NO. BLADES PER WHEEL	OCTAVE BAND							
				Octave Band Center-Frequency (F, Hz)							
				63	125	250	500	1000	2000	4000	8000
08	FC AF	12 13 1/4	43 12	139 139	135 136	132 135	131 132	130 131	126 127	123 120	118 114
11	FC AF	18 1/4 16 13/16	48 12	138 139	133 135	129 132	128 129	126 127	121 122	115 115	107 107
13	FC AF	18 1/4 17 13/16	48 12	138 138	133 134	129 131	128 128	126 125	121 121	115 113	109 105
17	FC AF	20 19 11/16	53 12	137 138	133 134	129 131	128 127	125 124	119 119	113 111	105 103
19	FC AF	20 21 13/16	53 12	137 138	133 133	129 130	128 127	125 123	119 118	113 110	105 102
23	FC AF	22 24	48 12	137 138	132 133	128 129	127 127	124 123	118 117	111 109	103 101
29	FC AF	25 26 7/16	56 12	137 138	132 133	128 119	127 126	123 122	117 117	110 109	100 100
36	FC AF	27 1/2 29 1/2	56 12	136 138	132 133	128 129	126 126	122 122	117 117	109 109	99 100
39	FC AF	27 1/2 29 1/2	56 12	136 138	132 133	128 129	127 126	122 122	116 117	109 109	99 100
48	FC AF	30 32 1/2	66 12	136 138	131 133	128 129	126 125	123 122	116 116	108 108	99 99
57	FC AF	36 35 13/16	78 12	136 138	131 133	129 129	126 125	121 122	115 116	107 108	96 99
75	FC AF	NA 39 1/2	12	138	133	129	125	122	116	108	99
90	FC AF	NA 43 1/2	12	138	133	129	125	122	116	108	99

FC — Forward Curve

AF — Airfoil

NA — Not Available

Sound level charts



Air friction, pressure loss data

Air friction — 39E,ER components

COOLING COIL AIR FRICTION (in. wg)

ROWS	FINS	FACE VELOCITY (fpm)					
		300	400	500	550	600	700
4	8	0.13 0.20	0.21 0.31	0.32 0.43	0.39 0.50	0.45 0.57	0.60 0.72
4	14	0.20 0.27	0.33 0.43	0.49 0.60	0.57 0.70	0.67 0.80	0.97 1.02
6	8	0.19 0.30	0.32 0.46	0.48 0.65	0.58 0.75	0.68 0.86	0.90 1.08
6	14	0.30 0.40	0.50 0.64	0.73 0.91	0.86 1.05	1.00 1.21	1.31 1.53
8	8	0.25 0.40	0.43 0.62	0.64 0.87	0.77 1.00	0.90 1.14	1.20 1.44
8	14	0.40 0.54	0.66 0.85	0.97 1.21	1.16 1.40	1.33 1.61	1.74 2.04

Dry Wet

HEATING COIL AIR FRICTION (in. wg) U-Bend Coils

ROW DEPTH	FINS PER IN.	AIR FRICTION (in. wg)									
		Face Velocity (fpm)									
300	400	500	600	700	800	900	1000	1100	1200		
1 and 2	8	0.6	1.0	1.5	2.1	2.7	3.5	4.3	5.2	6.2	7.3
	14	1.0	1.7	2.4	3.3	4.3	5.4	6.6	7.9	9.3	1.07
4	8	1.3	2.1	3.2	4.5	6.0	7.7	9.5	1.16	1.38	1.62
	14	2.0	3.3	4.9	6.7	8.7	1.09	1.34	1.60	1.89	2.20

STEAM DISTRIBUTING TUBE COILS — 1-IN. OD TUBES

ROW DEPTH	FINS	AIR FRICTION (in. wg)									
		Face Velocity (fpm)									
300	400	500	600	700	800	900	1000	1100	1200		
1	8	0.3	0.5	0.8	1.0	1.3	1.7	2.1	2.5	2.9	3.4
	14	0.6	0.9	1.3	1.7	2.1	2.6	3.2	3.7	4.4	5.0
2	8	0.6	1.0	1.5	2.1	2.7	3.3	4.2	5.0	5.9	6.8
	14	1.1	1.8	2.5	3.3	4.3	5.2	6.3	7.5	8.8	1.00

ELECTRIC HEATING COILS (in. wg)

COIL FACE VEL (fpm)	200	400	600	800	1000	1200	1300
AIR FRICTION (in. wg)	0.02	0.045	0.07	0.10	0.148	0.215	0.240

Air friction, pressure loss data (cont)

Air friction — 39E,ER components

FILTER AIR FRICTION (in. wg)

FILTER TYPE	AIR FRICTION (in. wg)									
	Velocity (fpm) thru Filter									
	250	300	350	400	450	500	550	600	650	
BAG (21-in.)				45% Efficiency						
Initial	15	17	19	22	26	30	—	—	—	
Final	.60	.60	.60	.60	.60	.60	—	—	—	
Initial	20	24	29	32	36	40	—	—	—	
Final	.60	.60	.60	.60	.60	.60	—	—	—	
BAG (39-in.)				45% Efficiency						
Initial	19	21	24	26	28	30	34	38	—	
Final	75	75	75	75	75	75	75	75	—	
Initial	21	25	29	33	37	40	45	49	—	
Final	80	80	80	80	80	80	80	80	—	
ROLL	Initial	07	09	12	15	18	22	25	30	—
	Final	55	55	55	55	55	55	55	55	—

*Filter data is typical All filters except roll, are field-supplied

39E ACCESSORY PRESSURE LOSSES (in. wg)

COMPONENT	APPROACH VELOCITY (ft/min)													
	250	300	350	400	450	500	550	600	650	700	800	900	1000	1200
DIFFUSER SECTION	01	01	01	02	02	03	03	04	05	—	—	—	—	—
MIXING BOX	—	—	01	02	02	03	04	04	05	06	—	—	—	—
FACE & BYPASS DAMPER	—	—	—	01	—	02	—	03	—	04	.05	.06	.07	.10
VELOCITY (ft/min, based on discharge area)														
FAN DISCHARGE AND ZONING DAMPER		1000	1500	2000	2500	3000	3500	4000						
		03	06	10	17	25	35	48						

39E ACCESSORY FACE AREAS (sq ft nominal)

UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57	75	90
DIFFUSER SECTION	11.5	13.3	13.3	21.5	21.5	23.3	29.3	35.1	45.7	65.5	65.5	100.1	100.1
MIXING BOX DAMPER	6.03	7.15	7.15	12.04	12.04	13.34	13.34	22.0	22.0	32.6	32.6	49.6	49.6
Outside Air	6.03	7.15	7.15	12.04	12.04	13.4	13.4	22.0	22.0	32.6	32.6	49.6	49.6
Return Air	6.03	7.15	7.15	12.04	12.04	13.4	13.4	22.0	22.0	32.6	32.6	49.6	49.6
FAN DISCHARGE DAMPER	2.38	3.31	3.31	4.72	4.72	4.72	7.62	9.46	13.65	13.65	13.65	—	—
FACE & BYPASS DAMPERS	11.1	13.0	13.0	21.6	21.6	23.8	29.6	34.7	44.7	64.4	64.4	91.5	91.5

39ER ACCESSORY PRESSURE LOSSES (in. wg)

COMPONENT	PRESSURE LOSS (in. wg) — 39ER MIXING AND EXHAUST BOXES																	
	Approach Velocity (fpm)																	
	350	400	450	500	550	600	650	700	800	900	1000	1200	1300	1400	1500	1600	1700	1800
MXB4 and 5 OUTSIDE AIR DAMPERS WITH RAIN HOOD	0.03	0.04	0.05	0.07	0.08	0.10	0.11	0.13	0.17	0.22	0.27	0.40	—	—	—	—	—	—
MXB6 OUTSIDE AIR DAMPERS WITH RAIN HOOD	0.05	0.07	0.09	0.11	0.13	0.15	0.18	0.21	0.27	0.34	0.42	0.60	—	—	—	—	—	—
MXB4 and 6 RETURN AIR DAMPERS	—	—	—	—	—	0.02	0.02	0.03	0.03	0.04	0.05	0.07	—	—	—	—	—	—
EXB1 EXHAUST AIR DAMPERS WITH RAIN HOOD	—	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.10	0.12	0.14	0.16	0.18	0.20	0.23

For filter sizes and component face areas, see Physical Data

39ER COMPONENT FACE AREAS (sq ft)

UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57	75	90
OUTSIDE AIR DAMPER													
MXB6	7 08	7 08	7 08	13 78	13 78	13 78	16 43	19 58	25 91	37 48	37 48	54 68	54 68
MXB5	5 06	5 97	5 97	8 79	8 79	10 40	10 40	17 50	17 50	29 63	29 63	39 12	39 12
MXB4	5 06	5 97	5 97	8 79	8 79	10 40	10 40	17 50	17 50	29 63	29 63	39 12	39 12
RETURN AIR DAMPER													
MXB6	5 06	5 97	5 97	8 79	8 79	10 40	10 40	17 50	17 50	29 63	29 63	39 12	39 12
MXB4	5 06	5 97	5 97	8 79	8 79	10 40	10 40	17 50	17 50	29 63	29 63	39 12	39 12
EXHAUST AIR DAMPER													
EXB1	3 54	3 54	3 54	6 89	6 89	6 89	8 21	9 79	12 95	18 74	18 74	27 34	27 34
FACE AND BYPASS	11 08	13 02	13 02	21 60	21 60	21 60	29 60	34 70	44 70	64 40	64 40	91 50	91 50

FILTER DATA

UNIT SIZE 39E, ER	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
LOW VELOCITY (LVF1) Cell Size (in.)									
Quantity	8	10	15	18	24	28	28	48	80
Nom Face Area (sq ft)	22 2	27 7	41 6	49 9	66 6	77 7	77 7	136 1	222 2
HIGH VELOCITY (HVF1) Cell Size (in.)									
Quantity	4	6	8	9	12	14	16	24	38
Nom Face Area (sq ft)	11 1	16 6	22 2	24 9	33 3	38 8	44 4	66 6	105 5
BAG (BFS1 or FFS2) Cell Size (in.)									
Quantity	1	—	4	4	—	2	6	3	4
Cell Size (in.)									
Quantity	2	3	3	4	8	8	8	15	24
Area									
ROLL (RFS1) Area (sq ft)	10 0	11 6	19 5	21 4	27 6	33 1	43 2	62 0	92 2
Height Media Roll (in.)	23 5	23 5	34 5	34 5	44 0	44 0	58 0	68 0	44 0*
RIGID CARTRIDGE (FFS2)									
Quantity									
Size 12 x 24 in.	1	0	4	4	0	2	6	3	4
Size 24 x 24 in.	2	3	3	4	8	8	8	15	24
Nom Face Area (sq ft)	10	12	20	24	32	36	44	66	104

*Height for each of 2 sections on size 75 and 90 units

NOTES:

- All filters except roll type are field supplied. Roll media is 2-in. spun glass, 85% weight arrestance efficiency
- Do not exceed filter manufacturer's velocity limits when selecting filters
- Filters having cardboard-type frames are usually not suitable for use in high-velocity or bag filter sections.
- High-velocity and low-velocity filter sections accept 16-in. x 25-in. (nominal size) standard filters
- Bag filter sections (BFS1) accept prefilters and a combination of 12-in. x 24-in. and 24-in. x 24-in. (nominal sizes) bag filters. Prefilters are same size as bag filters

39ER MIXING BOX RAINHOOD FILTER* DATA (No. ...Size [in.], 1-in. thick)

UNIT SIZE	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
MXB6	4 16 x 25	4 16 x 25	4 16 x 20 4 16 x 25	4 16 x 20 4 16 x 25	8 16 x 25	4 16 x 25 4 20 x 25	2 16 x 25 4 20 x 20 2 20 x 25	4 16 x 20 4 16 x 25 4 20 x 20 4 20 x 25	6 16 x 20 18 16 x 25
MXB4, 5	1 20 x 20 2 20 x 25	4 20 x 20	2 16 x 25 3 20 x 25	5 20 x 25	10 16 x 20	4 16 x 20 6 16 x 25	3 16 x 25 2 20 x 20 3 20 x 25	21 16 x 20	9 16 x 20 9 20 x 20 6 20 x 25

*Factory-supplied moisture eliminators

Physical data

FANS

UNIT SIZE	08		11		13		17		19		23		29	
TYPE OF FAN	FC	AF	FC	AF	FC	AF	FC	AF	FC	AF	FC	AF	FC	AF
Wheel Diameter (in.)	12	13 ⁷ / ₃₂	18 ¹ / ₈	16 ³ / ₁₆	18 ¹ / ₈	17 ¹³ / ₁₆	20	19 ¹¹ / ₁₆	20	21 ⁹ / ₁₆	22	24	25	26 ⁷ / ₁₆
Max Speed (Rpm)	2,000	4,335	1,600	4,067	1,300	3,161	1,100	2,858	1,100	2,547	1,200	2,255	1,000	2,079
Shaft Diameter (in.)*	1 ³ / ₁₆	1 ⁷ / ₁₆	1 ¹¹ / ₁₆	1 ⁷ / ₁₆	1 ¹⁵ / ₁₆	1 ⁷ / ₁₆	1 ¹⁵ / ₁₆	1 ⁷ / ₁₆	2 ³ / ₁₆	1 ¹¹ / ₁₆	2 ³ / ₁₆	1 ¹⁵ / ₁₆	2 ⁷ / ₁₆	
Shaft Length (in.)	26 ¹ / ₄	31 ³ / ₄	33 ¹ / ₂		37	37 ⁵ / ₁₆	38 ¹ / ₈	32 ³ / ₈	43 ¹ / ₈	35 ¹ / ₈	46	44	49 ¹ / ₈	42 ¹ / ₂
Fan Wheel Wt (lb)	10	20	27 ¹ / ₈		27	33	36	40	54	41	61	62	78	74
Shaft Wt (lb)	8	15	15		24	17	32	14.9	36	16.5	49	28	52	35.6
No. of Fan Blades	43	12	48		12	48	12	53	12	53	12	48	12	56
	Min	145	145		145	145	145	182	182	182	182	182	182	182
T Frame Motor Size	ODP	215	215	254	254	254	254†	256	256	256	256†	284	284	284
Max														
	TEFC	215	213	215	254†	215	254†	256	256†	256	256†	284	256†	284†

FANS (cont)

UNIT SIZE	36		39		48		57		75		90		
TYPE OF FAN	FC	AF	FC	AF	FC	AF	FC	AF	FC	AF	FC	AF	
Wheel Diameter (in.)	27 ¹ / ₂	29 ¹ / ₈	27 ¹ / ₂	29 ¹ / ₈	30	32 ³ / ₈	36	35 ⁹ / ₁₆	—	39 ³ / ₈	—	43 ⁷ / ₁₆	
Max Speed (Rpm)	900	1,886	900	1,886	770	1,611	650	1,397	—	1,412	—	1,334	
Shaft Diameter (in.)*	1 ¹⁵ / ₁₆	2 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	2 ¹¹ / ₁₆	2 ³ / ₁₆	2 ⁷ / ₁₆	2 ³ / ₁₆	2 ⁷ / ₁₆	—	2 ¹⁵ / ₁₆	—	2 ¹⁵ / ₁₆	
Shaft Length (in.)	46 ¹ / ₁₆	56 ¹ / ₂	49		57	54 ¹ / ₄	69 ³ / ₈	54 ¹ / ₄	69 ³ / ₈	—	84 ¹ / ₈	—	84 ¹ / ₈
Fan Wheel Wt (lb)	85	136	92	136	110	172	144	189	—	228	—	411	
Shaft Wt (lb)	38.7	91	41	94	58	135	58	135	—	—	—	—	
No. of Fan Blades	56	12	56	12	66	12	78	12	—	12	—	12	
T Frame Motor Size	Min	182	182	182	182	215	215	215	—	254	—	254	
Max	ODP	324	324	326	326	365	365	365	—	405	—	405	
	TEFC	324	324†	326	326†	365	365	365	—	404	—	404	

AF — Airfoil

FC — Forward Curved

ODP — Open, drip-proof

TEFC — Totally Enclosed Fan Cooled

*At fan sheave

†Extended cabinet required

COIL VOLUME (gal. water)

UNIT SIZE 39E,ER	08	11	13	17	19	23	29	36	39	48	57	75	90
CHILLED WATER COILS	Large Rows 4	4.5	6.1	6.7	8.7	9.8	10.7	13.6	15.6	19.4	24.2	26.6	38.2
	Face Rows 6	5.9	8.1	9.1	11.9	13.5	14.8	18.9	21.8	27.1	35.1	37.5	66.2
	Area 8	7.3	10.2	11.5	15.0	17.2	18.9	24.2	28.1	34.8	45.3	48.5	70.3
HOT WATER COILS	Small Rows 4	4.1	4.9	6.1	7.5	8.7	9.8	12.5	14.5	18.0	21.3	24.2	38.2
	Face Rows 6	5.3	6.6	8.1	10.2	11.9	13.5	17.2	20.2	25.1	29.9	35.1	66.2
	Area 8	6.6	8.3	10.2	12.9	15.0	17.2	22.0	25.9	32.2	38.5	45.3	58.7
	Rows, Blow-Thru 1	1.1	1.2	1.2	1.6	1.6	1.8	2.2	2.4	2.9	3.8	3.8	5.4
	Blow-Thru 2	1.9	1.8	1.8	2.5	2.5	2.8	3.5	4.0	4.8	6.6	6.6	8.7
	Blow-Thru 4	2.7	3.1	3.1	4.3	4.3	4.9	6.1	7.2	8.6	12.1	12.1	17.4
	Draw-Thru 1	1.4	1.6	1.9	2.3	2.7	2.9	3.7	4.2	5.3	6.1	7.2	9.0
	Draw-Thru 2	2.2	2.4	2.9	3.7	4.2	4.8	6.1	7.1	8.8	10.4	12.3	15.7
	Draw-Thru 4	3.6	4.1	5.0	6.4	7.4	8.5	10.9	12.8	15.8	19.1	22.4	29.1

OPERATING CHARGE

UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57	75	90	
REFRIGERANT	R-22 (lb)													
Rows	4	3-4	3-5	4-6	5-6	6-7	6-9	7-12	10-15	12-18	15-22	18-26	25-39	30-47
	6	4-6	5-7	7-9	8-10	10-12	11-16	14-20	17-26	21-32	25-33	30-45	44-56	53-68
	8	6-8	7-10	9-13	10-15	12-18	16-24	20-30	25-34	30-40	37-48	44-56	65-71	80-86

COIL WEIGHTS

		Approximate Coil Weights — 14 Fins/in. (lb. dry coil)												
UNIT 39E,ER		08	11	13	17	19	23	29	36	39	48	57	75	90
CHILLED WATER	Large 4 Row Face 6 Row	140	185	205	255	285	310	385	440	585	735	780	1075	—
DX COOLING	Area 8 Row	175	235	260	325	375	410	510	590	765	975	1040	1455	—
REFRIGERANT CONDENSER	Small 4 Row Face 6 Row	205	280	315	400	460	505	635	735	945	1215	1300	1835	—
HEAT PUMP	Area 8 Row	130	155	185	225	255	285	355	410	545	645	735	920	1075
DRAW-THRU (Heating)	2 Row U-Bend	155	195	235	290	330	375	465	545	710	845	975	1240	1455
	4 Row U-Bend	185	235	280	350	400	460	575	680	875	1050	1215	1555	1835
BLOW-THRU (heating)	1 Row U-Bend	60	65	75	85	95	110	130	150	210	245	275	330	380
	2 Row U-Bend	75	85	100	120	135	155	185	215	295	345	395	490	570
	4 Row U-Bend	110	125	150	185	210	240	300	350	460	550	635	810	950
	1 Row, Steam IDT	105	120	135	180	210	235	270	310	550	590	750	865	945
	2 Row, Steam IDT	150	160	195	270	315	365	420	490	845	920	1020	1165	1400
	1 Row U-Bend	50	55	55	70	70	75	90	100	115	145	145	190	190
	2 Row U-Bend	65	70	70	90	90	100	120	135	155	210	210	285	285
	4 Row U-Bend	90	100	100	130	130	150	180	215	250	340	340	475	475
	1 Row, Steam IDT	85	105	105	125	125	145	170	195	230	340	340	475	475
	2 Row, Steam IDT	100	140	140	180	180	205	255	285	360	520	520	700	700

39ER COMPONENT WEIGHTS

UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57	75	90
UNIT 39ER													
MIXING BOX, RAINHOOD(S) SECTION	516	530	530	705	705	727	727	854	1035	1453	1453	1924	1924
EXHAUST BOX SECTION	265	280	280	335	335	355	360	425	450	592	592	725	725
HIGH-VELOCITY FILTER SECTION	160	176	175	220	220	230	250	300	320	400	400	540	540
LOW-VELOCITY FILTER SECTION	165	175	175	225	225	235	265	315	335	455	455	565	565
BAG FILTER SECTION	175	200	200	270	270	285	310	365	430	510	510	645	645
BAG FILTER EXTENSION	136	151	151	171	171	180	182	215	219	262	262	345	345
ROLL FILTER SECTION	240	265	265	310	310	330	370	415	430	575	575	720	720
FACE & BYPASS SECTION	206	246	246	291	291	320	407	465	519	637	637	955	955
HEAT COIL SECTIONS													
Bypass	192	228	209	280	243	243	—	—	—	—	—	—	—
Non-Bypass	136	165	146	210	173	188	—	—	—	—	—	—	—
LONG COIL SECTION (3-coil type)													
Bypass	587	646	627	840	803	855	1031	1156	1603	2298	2135	2900	2681
Non-Bypass	514	565	546	729	692	735	844	947	1344	1962	1799	2506	2287
LONG COIL SECTION (2-coil type)													
Bypass	—	—	—	—	—	—	—	—	1386	2067	1977	—	—
Non-Bypass	—	—	—	—	—	—	—	—	1127	1731	1641	—	—
COIL CONNECTION HOUSING	136	136	136	174	174	174	209	209	242	305	305	335	335
FAN SECTION (Supply or Return)													
Forward-Curved	410	445	455	700	725	745	985	1085	1300	2065	2075	—	—
Airfoil	435	475	485	730	765	775	1030	1185	1575	2393	2420	3751	3734
ROOF CURB													
									7.3 lb per linear foot				

/ 3 lb per linear foot

Application data — General air-handler information

Determining type of air handler to use

Draw-thru: The most commonly used air handler is one that the fan section pulls air thru the other components and discharges directly into the ductwork. Some reasons for its widespread use are:

1. Draw-thru fan horsepower is less than blow-thru. This can be seen by comparing the fan curves of both types.
 2. Connection to ductwork is simpler and more flexible. Various discharge arrangements are possible.
 3. Carryover of moisture into the ductwork is less likely since the moisture must be drawn into the fan before it can be discharged to the ductwork.
 4. Face and bypass control of air across cooling and heating coils can be easily accommodated.
 5. Uniform airflow across cooling and heating coils is more easily accomplished.

Blow-thru: This arrangement is used when. . .

1. A multizone or dual duct type unit with hot and cold deck coils is to be applied.
 2. Minimum possible air temperature is required in the ductwork leaving the unit. Here, the fan heat is added to the air before the cooling coil instead of after.

Hospital unit: In a hospital type unit the air is filtered just before it enters the conditioned space. This filtered air

cannot be contaminated by passing thru coils or other components. Normally a hospital unit contains pre-filters before the coils, then final filters after the fan.

Determining which fan to use

As a general rule, forward-curved fans are used at total static pressures up to approximately 4 inches. At higher pressures, airfoil fans are applied.

For large cfm requirements up to approximately 4-in. total static pressure (TSP) in variable air volume systems, controllable pitch axial (CPA) fans should be considered.

Outdoor modified 39E units versus 39ER Roofrite units

For outdoor duty, 39E units modified for outdoor application should be considered when:

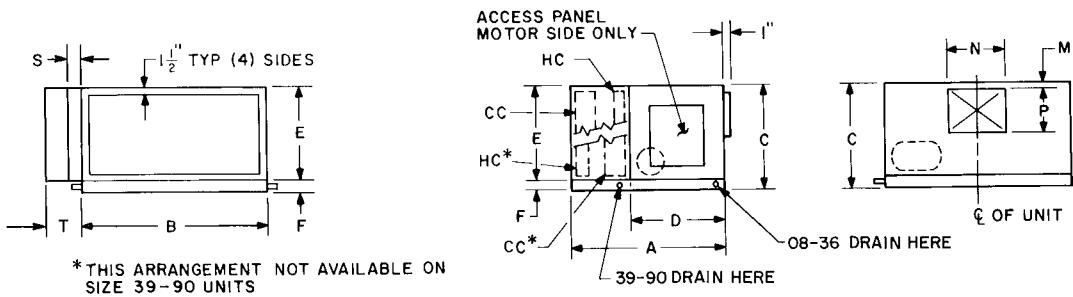
1. The unit is to be pier mounted with horizontal inlet and outlet.
 2. The required assembly of components is not offered as standard in the 39ER Roofrite product line.

Roofrite units should always be used when. .

The unit is to be mounted on a curb and inlet or discharge connection or both are in the unit bottom.

39E dimensions (ft-in.)

39ED HORIZONTAL DRAW-THRU (SHORT COIL) UNIT



UNIT SIZE	08	11	13	-17	19	23	29	36	39	48	57	75	90
39ED HORIZONTAL DRAW-THRU SHORT COIL (SCS)	A	4-7			5-6		6-3½	9- 5½	10-3½	11-8			
	B	5-11	6-9		7-7	8-3		9-9		11-9	13-3		
	C	2-11 ¹ / ₁₆			3-10 ¹¹ / ₁₆		4-8 ³ / ₁₆	5-10 ¹ / ₁₆	6-8 ⁷ / ₁₆	8-7 ⁷ / ₁₆			
	D										7-8		
	E	2-7			3-6		4-3½	5- 5½	6-3½		8-4		
	F				0-4 ¹¹ / ₁₆				0-4 ¹⁵ / ₁₆	0-3 ⁷ / ₁₆			
Fans	M	0- 5 ¹⁵ / ₁₆	0-1 ¹³ / ₁₆		0-2 ¹³ / ₁₆	0- 2½	0-3½	0- 1 ¹ / ₁₆	0- 6 ¹³ / ₁₆	0-5 ¹ / ₁₆	NA		
	O	0- 4%	0- 1 ¹ / ₄	0-1 ¹ / ₄	0-1 ¹ / ₄	0- 1¾	0- 1¾	0- 1¾	0- 7¾	0-2 ¹ / ₄	0-3 ¹ / ₄		
	N	1- 2 ¹ / ₂	1- 7 ¹³ / ₁₆	2- 0 ⁵ / ₁₆	1- 7 ¹ / ₈	1-10 ¹ / ₁₆	2- 6 ³ / ₁₆	2- 4½	2- 7 ¹ / ₈	2-10 ¹ / ₂	3-0 ¹ / ₈	NA	
	P	1- 7 ¹ / ₁₆	1-3 ¹³ / ₁₆	2- 3 ¹ / ₈	2- 4 ¹ / ₈	2- 7 ¹ / ₁₆	2- 3 ¹ / ₈	2- 8 ¹ / ₁₆	3- 2 ¹ / ₁₆	3- 7 ¹ / ₁₆	4-5 ¹ / ₈	5-1 ¹ / ₂	
	R	1- 1 ¹ / ₂	1- 8 ³ / ₁₆	1-8 ³ / ₁₆	2- 2 ¹³ / ₁₆	2- 2 ¹³ / ₁₆	1-11 ¹³ / ₁₆	2- 9 ¹ / ₈	2-11 ¹ / ₁₆	2-10 ¹ / ₂	3-7 ³ / ₁₆	NA	
	S	0		0-8 ¹ / ₁₆			0-8 ¹ / ₁₆			0-6	0	0-6	0 NA
MODUDRIVE EXTENSION MOTOR END	T			NA			1-5½		1-4½	0-10½	0-5½‡	0	
	U												
MAX HP MOTOR EXTENSION - AFF FANS	V	NA			0-4					NA			

Forward-curve type fan wheel Airfoil type fan wheel

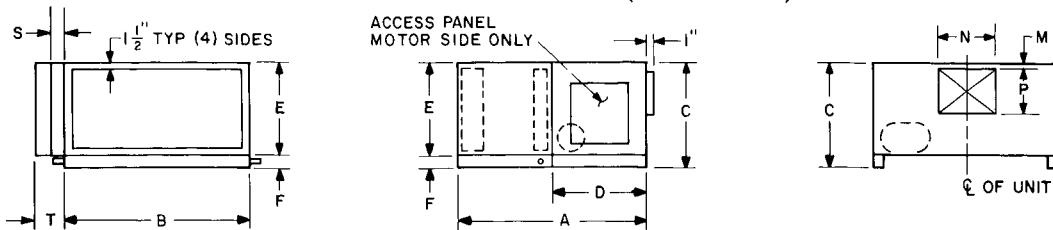
NA — Not Available

^aCoil header extension contains condensate drain.

No Modudrive extension required for 48, 57 sizes with FC family

39E dimensions (cont)

39ED HORIZONTAL DRAW-THRU (LONG COIL) UNIT



UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57
A	5-2				7-0			8-7		10-11	12-7
B	5-11		6-9		7-7		8-3		9-9		11-9
C	2-11 ¹¹ / ₁₆				3-10 ¹¹ / ₁₆			4-8 ³ / ₁₆		5-10 ⁷ / ₁₆	6-8 ⁷ / ₁₆
D	-										
E	2-7				3-6			4-3 ¹ / ₂		5- 5 ¹ / ₂	6-3 ¹ / ₂
F					0-4 ¹¹ / ₁₆					0-4 ¹⁵ / ₁₆	
M	0- 5 ¹⁵ / ₁₆	0-1 ¹³ / ₁₆	0-2 ¹ / ₈	0- 2 ¹ / ₈	0- 3 ¹ / ₈	0- 1 ¹ / ₁₆	0- 6 ¹³ / ₁₆	0-5 ⁷ / ₁₆			
Fans N	0- 4 ¹ / ₈	0- 1 ¹ / ₈	0-1 ¹ / ₁₆	0-1 ¹ / ₁₆	0- 1 ¹ / ₈	0- 3 ¹ / ₈	0- 1 ¹ / ₁₆	0- 7 ¹ / ₈	0-2 ¹ / ₈		
P	1- 2 ¹ / ₈	1- 7 ¹ / ₁₆	2-0 ¹ / ₈	1-7 ¹ / ₁₆	1-10 ¹ / ₁₆	2- 6 ¹ / ₈	2-4 ¹ / ₈	2- 7 ¹ / ₈	3-2 ¹ / ₈	3- 6 ¹ / ₁₆	3- 7 ¹ / ₈
S	0		0-8 ⁷ / ₁₆	0			0-8 ⁷ / ₁₆		0-6	0	0-6
T	NA					1-5 ¹ / ₂		1-4 ¹ / ₂	0-10 ¹ / ₂	0-5 ¹ / ₂	
U	NA				0-4				NA		

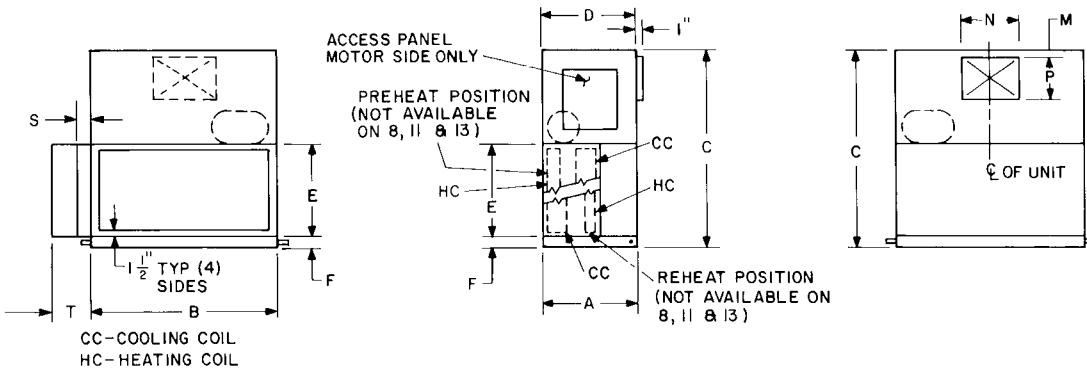
■ Forward-curve type fan wheel ■ Airfoil type fan wheel

NA — Not Available

*Coil header extension contains condensate drain

†No Modudrive extension required for 48, 57 sizes with FC fan

39ED VERTICAL DRAW-THRU UNIT



UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57
A	2-7				3-6			4-3 ¹ / ₂		5- 6 ¹ / ₂	6-3 ¹ / ₂
B	5-11		6-9		7-7		8-3		9-9		11-9
C	5-6 ¹¹ / ₁₆ /5-11 ³ / ₁₆				7-4 ¹¹ / ₁₆ /7-9 ³ / ₁₆		8-11 ¹¹ / ₁₆ /9-4 ³ / ₁₆		11-3 ¹⁵ / ₁₆ /11-8 ¹¹ / ₁₆		12-11 ¹⁵ / ₁₆ /13-4 ¹¹ / ₁₆
D	-										
E	2-7				3-6			4-3 ¹ / ₂		5- 5 ¹ / ₂	6-3 ¹ / ₂
F					0-4 ¹¹ / ₁₆					0-4 ¹⁵ / ₁₆	
M	0- 5 ¹⁵ / ₁₆	0-1 ¹³ / ₁₆	0-2 ¹ / ₈	0- 2 ¹ / ₈	0- 3 ¹ / ₈	0- 1 ¹ / ₁₆	0- 6 ¹³ / ₁₆	0-5 ⁷ / ₁₆			
Fans N	0- 4 ¹ / ₈	0- 1 ¹ / ₈	0-1 ¹ / ₁₆	0-1 ¹ / ₁₆	0- 1 ¹ / ₈	0- 3 ¹ / ₈	0- 1 ¹ / ₁₆	0- 7 ¹ / ₈	0-2 ¹ / ₈		
P	1- 2 ¹ / ₈	1- 7 ¹ / ₁₆	2-0 ¹ / ₈	1-7 ¹ / ₁₆	1-10 ¹ / ₁₆	2- 6 ¹ / ₈	2-4 ¹ / ₈	2- 7 ¹ / ₈	3-2 ¹ / ₈	3- 6 ¹ / ₁₆	3- 7 ¹ / ₈
S	0		0-8 ⁷ / ₁₆	0		0-8 ⁷ / ₁₆		0-6	0	0-6	
T	NA				1-5 ¹ / ₂		1-4 ¹ / ₂	0-10 ¹ / ₂	0-5 ¹ / ₂		
U	NA				0-4			NA			

■ Forward-curve type fan wheel ■ Airfoil type fan wheel

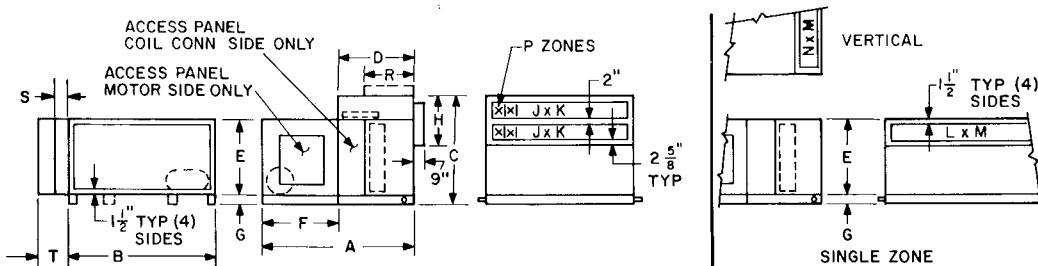
*Second value is height with internal vibration isolation

†Coil header extension contains condensate drain

‡No Modudrive extension required for 48, 57 sizes with FC fan

39E Dimensions (cont)

39EB BLOW-THRU UNIT



UNIT SIZE	08	11	13	17	19	23	29	36	39	48	57	75	90
A	5-2												15-1½
B	5-11	6-9		7-7	8-3		9-9		10-11	12-7		11-9	13-3
C	4-6 11/16			5- 7 ¾		6-6 3/16	7- 7 11/16	8- 9 15/16		8- 9 15/16		11-5 ½	
D												7-5 ½	
E	2-7			3-6		4-3 ½	5- 5 ½	6- 3 ½		6- 3 ½		8-4	
F												7-8	
G	0-4 11/16							0-4 15/16		0-3 7/16			
H	2-7 ¾			3- 1 ½		3- 6 ¾	3- 8	4- 3		4- 3		5-9 ½	
J	0-8 ¾			1- 0 ¾		1- 4 ¾	1- 6 ¾	1- 9 ¾		1- 9 ¾		2-7 ½	
K	5-6	6-4		7-2	7-10		9-4		11-4	12-10			
L	0-9 ¾			1- 1 ¾		1- 5 ¾	1- 7 ¾	1-11 ¼		1-11 ¼		2-8 ½	
M	5-8	6-6		7-4	8-0	9-6		11-6		11-6		13-0	
N	0-7 ½			0-11 1/16		1- 1 ¾	1- 4	1- 9 15/16		1- 9 15/16		2-6 ¾	
P	7	8		10	11	13		16		16		18	
R	2-0			2-7 ¾		3-4	4-3	4-10 ¾		4-10 ¾		6-0 ½	
COIL HEADER EXTENSION FOR LARGE FACE AREA COILS* S	0	0-8 7/16	0	0-8 7/16		0-6	0	0-6	0	NA			
MODUDRIVE EXTENSION MOTOR END T	NA			1-5 ½		1-4 ½	0-10 ½	0- 5 ½ †		0			
MAX HP MOTOR EXTENSION — AF FANS	NA	0-4					NA						

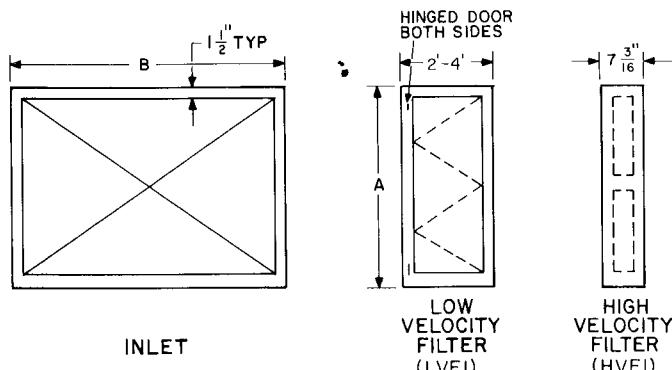
NA — Not Available

*Coil header extension contains condensate drain

†No Modudrive extension required for 48, 57 sizes with FC fan

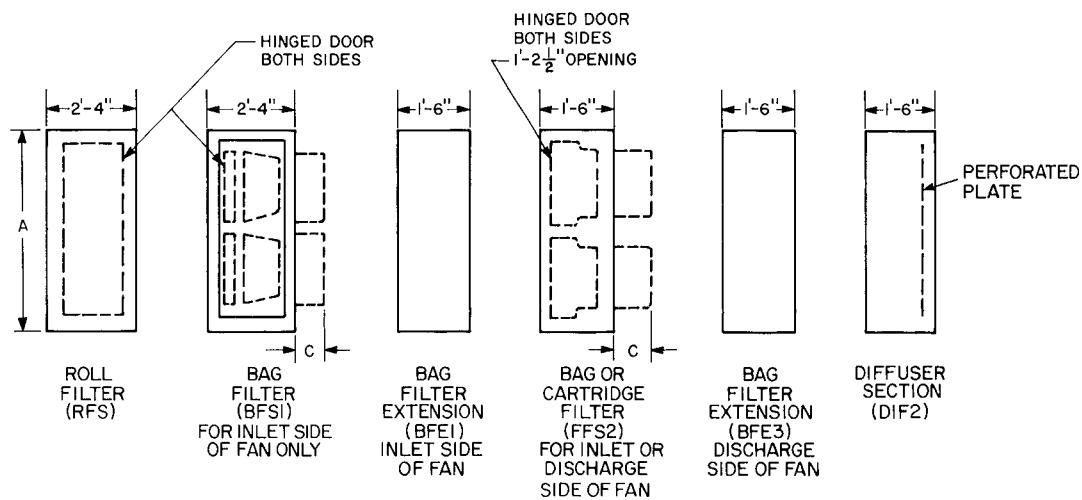
39E accessory dimensions

FILTER SECTIONS



DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11,13	17,19	23	29	36	39	48,57	75,90
A	2-7	2-7	3-6	3-6	4-3 ½	4-3 ½	5-5 ½	6-3 ½	8-4
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3

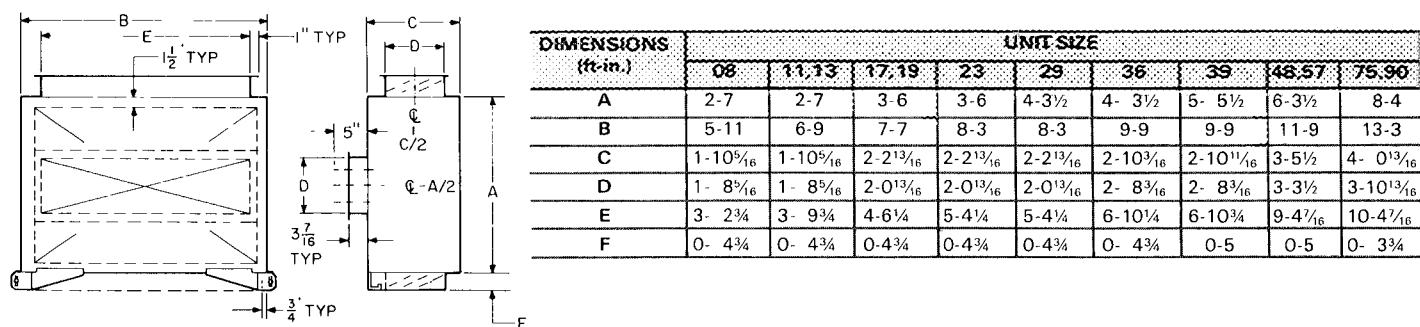
FILTER SECTIONS (cont)



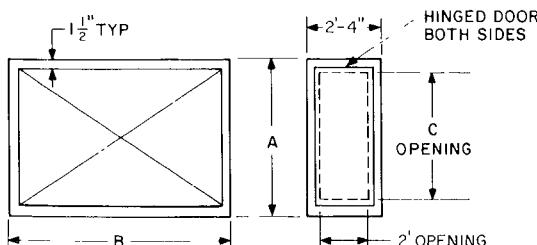
Dimension C

FILTER TYPE	FILTER SIZE	BAG FILTER PROJECTION C (ft-in.)							
		1-9	1-11	2-6	3-0	1-9	1-11	2-6	3-0
BFS1	1-9								0
	1-11								0-5 1/8
	2-6								0-7 1/8
	3-0								1-1 1/8
FFS2	1-9								0-6 3/4
	1-11								0-8 3/4
	2-6								1-3 3/4
	3-0								1-9 3/4

MIXING BOX SECTION



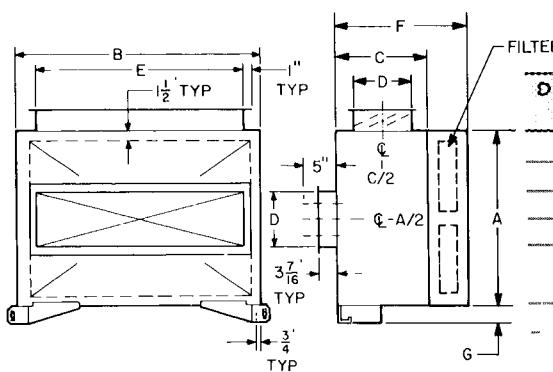
ACCESS SECTION



DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11.13	17.19	23	29	36	39	48.57	75.90
A	2-7	2-7	3-6	3-6	4-3 1/2	4-3 1/2	5-5 1/2	6-3 1/2	8-4
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	2-2 1/2	2-2 1/2	3-1 1/2	3-1 1/2	3-11	3-11	5-1	5-11	7-11 1/2

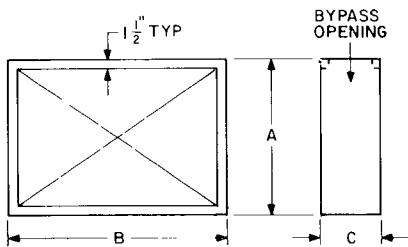
39E accessory dimensions (cont)

COMBINATION MIXING BOX FILTER



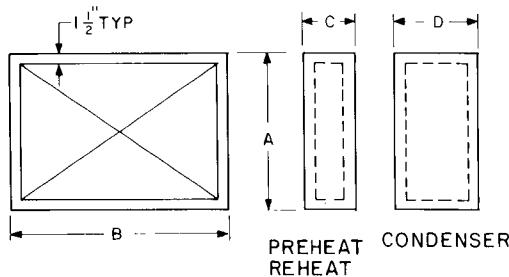
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11.13	17.19	23	29	36	39	48.57	75.90
A	2-7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	8-4
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	1-10⁹/₁₆	1-10⁹/₁₆	2-2¹³/₁₆	2-2¹³/₁₆	2-2¹³/₁₆	2-10³/₄	2-10³/₄	3-5½	4-0¹⁹/₁₆
D	1-8⁹/₁₆	1-8⁹/₁₆	2-0¹³/₁₆	2-0¹³/₁₆	2-0¹³/₁₆	1-8³/₄	2-8³/₁₆	3-3½	3-10¹³/₁₆
E	3-2¾	3-9¾	4-6¼	5-4¼	5-4¼	6-10¼	6-10¼	9-4⁹/₁₆	10-4⁹/₁₆
F	2-5½	2-5½	2-10	2-10	2-10	3-5¾	3-5¾	4-0¹¹/₁₆	4-8
G	0-4¾	0-4¾	0-4¾	0-4¾	0-4¾	0-4¾	0-5	0-5	0-3¼

PLENUM SECTIONS, BYPASS AND NON-BYPASS



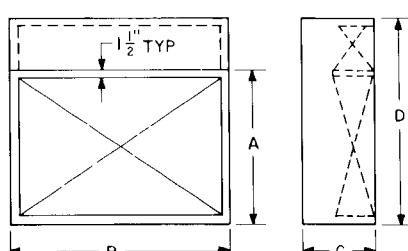
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11.13	17.19	23	29	36	39	48.57	75.90
A	2-7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	8-4
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	0-9	0-9	0-9	0-9	1-5½	1-5½	1-5½	1-5½	2-1

COIL SECTIONS — PREHEAT, REHEAT, CONDENSER



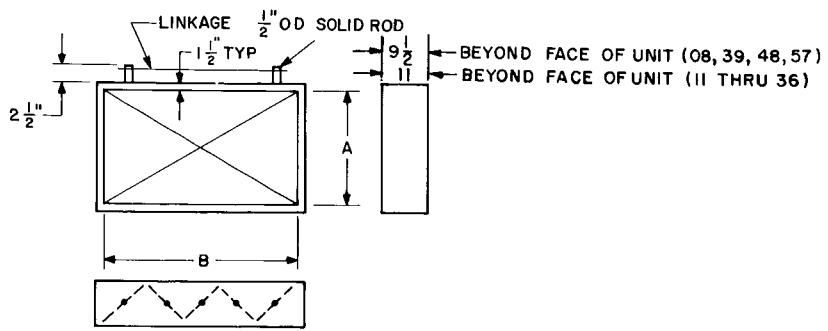
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11.13	17.19	23	29	36	39	48.57	75.90
A	2-7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	8-4
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	0-9	0-9	0-9	0-9	0-9	0-9	1-0	1-0	1-0
D	1-1½	1-1½	1-1½	1-1½	1-5½	1-5½	1-5½	1-5½	1-5½

DAMPER SECTIONS — FACE AND BYPASS DAMPERS



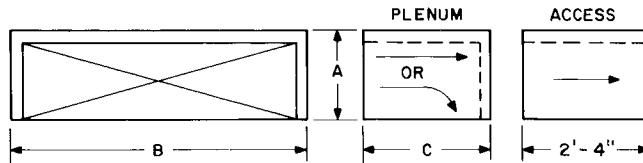
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11.13	17.19	23	29	36	39	48.57	75.90
A	2-7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	8-4
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	1-2	1-2	1-2	1-2	1-5½	1-5½	1-5½	1-5½	2-4
D	3-4	3-4	4-3	4-3	5-9	5-9	6-11	7-9	10-3⁹/₁₆

DAMPER SECTIONS — FAN DISCHARGE DAMPERS



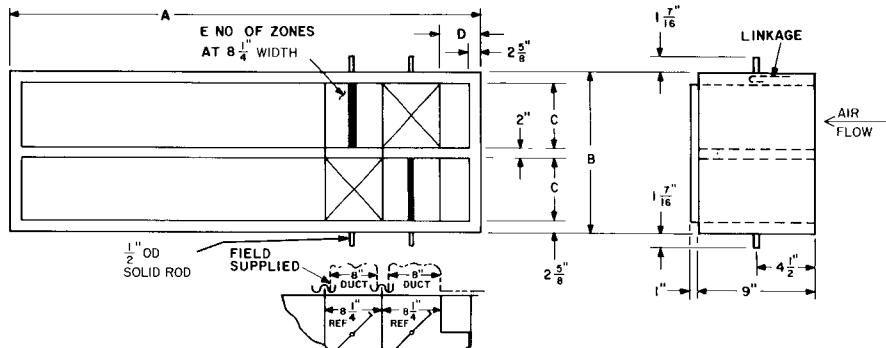
DIMENSIONS (ft-in.)	UNIT SIZE							
	08	11, 13	17, 19	23	29	36	39	48, 57
A	1-6 1/8	2-2 3/16	2-7 3/16	2-2 3/16	3-1 13/16	3-1 13/16	3-0 1/8	4-1 1/8
B	1-6 11/16	2-5 15/16	2-8 1/8	3-2 1/8	3-4 1/8	3-4 1/8	3-1 11/16	3-4
NUMBER OF BLADES	2	4	4	5	5	5	5	5

BYPASS DUCT SECTIONS — PLENUM (into or thru) AND ACCESS SECTIONS



DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
A	0- 9	0- 9	0- 9	0- 9	1-5 1/2	1-5 1/2	1-5 1/2	1-5 1/2	1-11 1/8
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	0- 9	0- 9	0- 9	0- 9	1-5 1/2	1-5 1/2	1-5 1/2	1-5 1/2	2-1

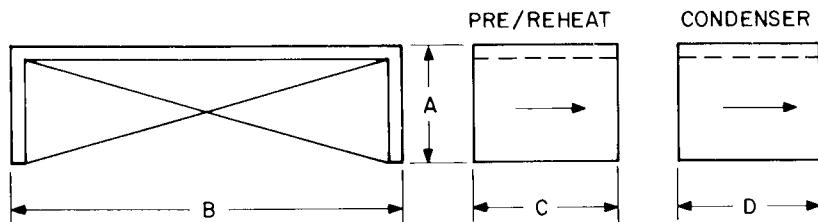
DAMPER SECTIONS — ZONING DAMPERS



DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
A	5-11	6-9	7- 7	8- 3	8- 3	9- 9	9- 9	11-9	13-3
B	2- 0	2- 0	2- 8	2- 8	3- 4	3- 4	3- 8	4- 3	5-9 1/2
C	0-8 1/8	0-8 1/8	1-0 1/8	1-0 1/8	1-4 1/8	1-4 1/8	1-6 1/8	1-9 1/8	2-7 1/8
D	0-6 1/8	0-3 1/8	0-4 1/4	0-4 1/8	0-4 1/8	0-4 1/8	0-4 1/8	0-4 1/2	0-5 1/4
E	7	9	10	11	11	13	13	16	18

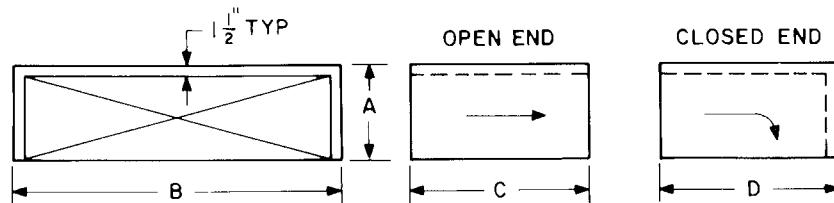
39E accessory dimensions (cont)

BYPASS DUCT SECTIONS — PREHEAT, REHEAT AND CONDENSER COIL SECTIONS



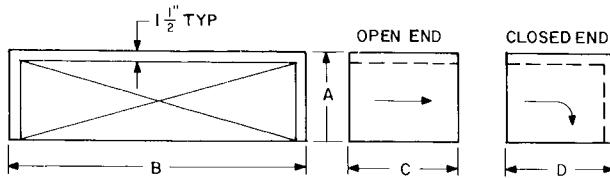
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
A	0- 9	0- 9	0- 9	0- 9	1-5½	1-5½	1-5½	1-5½	1-11½
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	0- 9	0- 9	0- 9	0- 9	0- 9	0- 9	1-0	1-0	1-0
D	1-1½	1-1½	1-1½	1-1½	1-5½	1-5½	1-5½	1-5½	1- 5½

BYPASS DUCT SECTIONS — HORIZONTAL LONG COIL SECTIONS



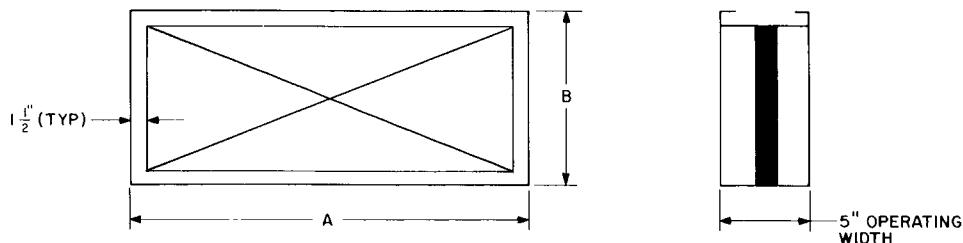
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
A	0- 9	0- 9	0- 9	0- 9	1-5½	1-5½	1-5½	1-5½	1-11½
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	2- 7	2-7	3-6	3-6	4-3½	4-3½	4-0	4-0	4-0
D	2- 7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	6-1

BYPASS DUCT SECTIONS — HORIZONTAL SHORT COIL SECTIONS



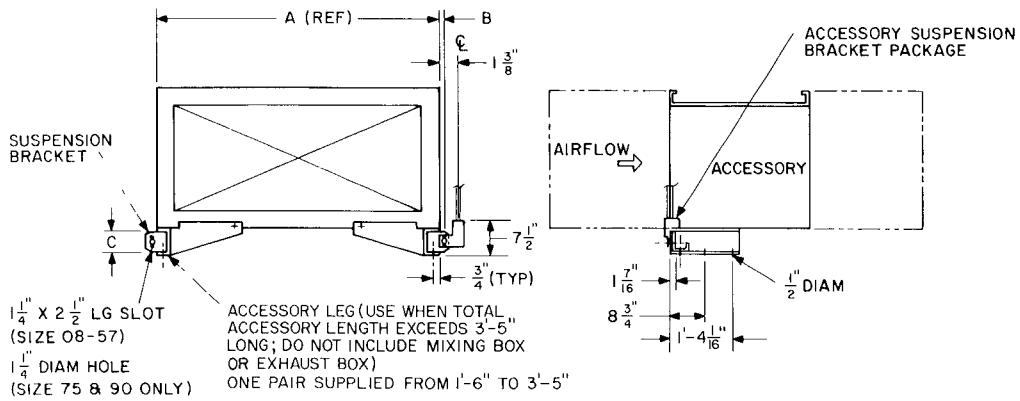
DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
A	0- 9	0-9	0-9	0-9	1-5½	1-5½	1-5½	1-5½	1-11½
B	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
C	2- 7	2-7	3-6	3-6	4-3½	4-3½	4-0	4-0	4-0
D	2- 7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	6-1

FLEXIBLE CONNECTIONS



COMPONENT	DIMS (ft-in.)	UNIT SIZE								
		08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
INLET SIDE FAN OR COIL SECTION	A	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
	B	2- 7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	8-4
DISCHARGE SIDE FAN ONLY	B	2- 7	2-7	3-6	3-6	4-3½	4-3½	5-5½	6-3½	7-8

ACCESSORY LEG/SUSPENSION BRACKET (Note 1) AND ACCESSORY SUSPENSION BRACKET PACKAGE (Note 2)



DIMENSIONS (ft-in.)	UNIT SIZE								
	08	11, 13	17, 19	23	29	36	39	48, 57	75, 90
A	5-11	6-9	7-7	8-3	8-3	9-9	9-9	11-9	13-3
B	$0-1\frac{1}{16}$	$0-1\frac{1}{16}$	$0-1\frac{1}{16}$	$0-1\frac{1}{16}$	$0-1\frac{1}{16}$	$0-1\frac{1}{16}$	$0-0\frac{1}{16}$	$0-0\frac{1}{16}$	$0-0\frac{13}{16}$
C	$0-4\frac{1}{2}$	$0-3\frac{3}{8}$							

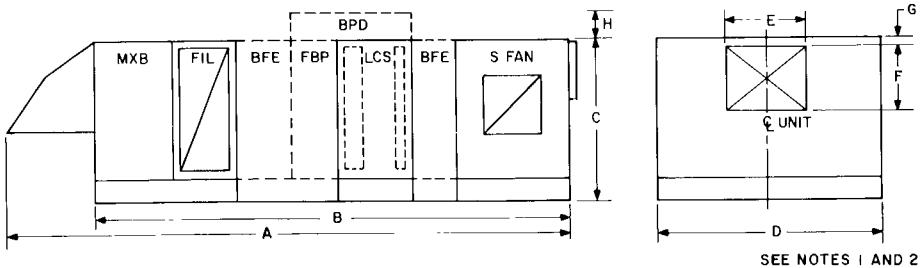
NOTES

1 Required for all accessory sections except Mixing Box (MXB) and Return Air Damper (RAD)

2 Must be used with accessory leg suspension bracket except on fan, short coil (SCS), long coil (LCS) and blow-thru coil (BCS) sections

39ER dimensions

COOLING UNITS



Unit Arrangements

	COMPONENTS				
A	MXB	Filter	BFE	LCS	SFAN
B	MXB	Filter	BFE	LCS	SFAN
C	MXB	Filter	FBP	LCS	SFAN
D	MXB	Filter	BFE	FBP	LCS
E	MXB	Filter		LCS	BFE SFAN
F	MXB	Filter	BFE	LCS	BFE SFAN
G	MXB	Filter	FBP	LCS	BFE SFAN
H	MXB	Filter	BFE	FBP	LCS BFE SFAN

Dimensions A and B

UNIT SIZE 39ER	DIM. (ft-in.)	UNIT ARRANGEMENT (see table)						
		A	B	C	D	E	F	G
08, 11, 13	A	13- 0 1/8	14- 6 5/16	14- 2 3/16	15- 8 7/16	14- 6 5/16	16- 0 7/16	15- 8 1/16
	B	11-3	12- 9 3/16	12- 5 3/16	13-11 1/16	12- 9 3/16	14- 3 5/16	13-11 5/16
17, 19, 23	A	15- 9 1/16	17- 3 1/4	16-11 1/4	18- 5 7/16	17- 3 1/4	18- 9 7/16	18- 5 7/16
	B	13- 5 1/4	14-11 1/16	14- 7 7/16	16- 1 1/4	14-11 1/16	16- 5 5/16	16- 1 1/8
29	A	17-10 11/16	19- 5 1/8	19- 4 3/8	20-10 1/16	19- 4 1/8	20-11 1/16	20-10 1/16
	B	15- 0 1/4	16- 6 7/16	16- 5 15/16	18- 0 1/8	16- 6 7/16	18- 0 1/8	18- 0 1/8
36	A	18- 3 11/16	19- 9 3/4	19- 9 3/8	21- 3 3/16	19- 9 1/8	21- 3 3/8	21- 3 3/16
	B	15- 5 1/4	16-11 5/16	16-10 5/16	18- 5 1/8	16-11 7/16	18- 5 7/16	18- 5 7/16
39	A	20- 0 7/16	21- 6 5/8	21- 6 1/8	23- 0 5/16	21- 6 5/8	23- 0 5/16	23- 0 5/16
	B	16- 7 3/4	18- 1 15/16	18- 1 1/16	19- 7 5/8	18- 1 15/16	19- 7 7/8	21- 1 13/16
48, 57	A	23- 3 3/4	26- 9 3/8	24- 8 7/8	26- 3 1/16	24- 9 3/8	26- 3 3/16	26- 3 1/16
	B	19- 0 3/4	20- 6 15/16	20- 6 7/16	22- 0 5/8	20- 6 15/16	22- 1 1/8	22- 0 5/8
75 90	A	25- 4 11/16	26-10 1/8	27- 8 7/8	29- 3 1/16	26-10 1/8	28-5	29- 3 1/16
	B	19-11 1/4	21- 5 7/16	22- 3 1/16	23- 9 5/8	21- 5 7/16	22-11 1/16	23- 9 5/8

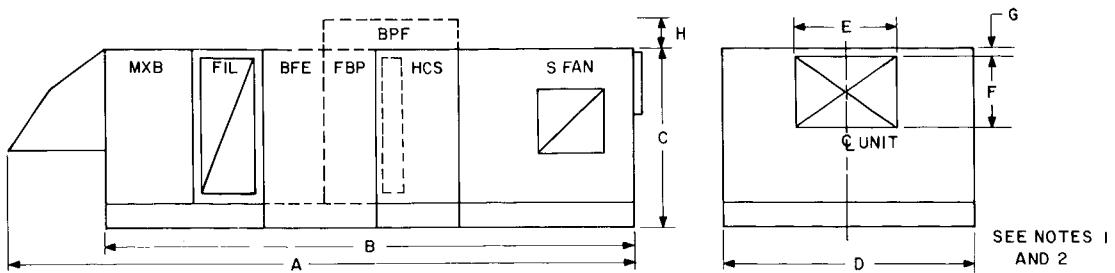
Dimensions C thru H

UNIT SIZE 39ER	DIMENSIONS (ft-in.)							
	C	D	Airfoil Fan			Forward-Curved Fan		H
			E	F	G	E	F	
08	2-11 3/4	5-11	1- 7 1/2	0-11 1/2	0-4 1/2	1- 2 5/16	1- 1 1/16	0-6 15/16
11		6-9	1-11 13/16	1- 4 1/2	0-1 1/4	1- 7 1/8	1- 8 3/16	0-1 1/16
13		2- 1 15/16	1- 6 5/16	0-1 1/16	2- 0 7/8	1- 8 3/16	0-1 1/16	0-9
17	3-10 3/4	7-7	2- 4 7/8	1- 8 7/8	0-1 1/8	1- 7 1/8	2- 2 11/16	
19			2- 7 3/4	1- 9 5/8	0-1 1/8	1- 10 3/8	2- 2 11/16	
23		8-3	2-11 1/8	2- 0 1/2	0-0 3/4	2- 6 1/8	1-11 13/16	0-1 1/8
29	4- 8 1/4	8-3	3- 2 7/8	2- 2 1/8	0-3 1/8	2- 4 1/8	2- 9 1/8	0-2 15/16
36		9-9	3- 6 15/16	2- 5 1/2	0-1 1/4	2- 7 1/8	2-11 1/8	0-1 1/8
39	5-10 1/2		3- 7 9/16	2- 1 3/4	0-7 1/8	2-10 1/2	2-10 7/16	0-6 13/16
48	6- 8 1/2	11-9	4-5	2- 7 1/16	0-2 1/8	3- 0 11/16	3- 6 15/16	0-5 7/16
57						NA	NA	NA
75	8- 7 1/2	13-3	5- 4 11/16	3-2	0-3 5/16	NA	NA	1-11 1/8
90								

NOTES:

- 1 Dimensions E and F also apply to downblast discharge
- 2 Dimension G applies to top horizontal front (THF) arrangement shown. For BHF and DB arrangements, see Carrier certified prints

HEATING AND VENTILATING UNITS



Dimensions A and B

UNIT SIZE 39ER	DIM. (ft-in.)	UNIT ARRANGEMENT (see table)			
		K	L	M	N
08, 11, 13	A	10-9 $\frac{1}{8}$	12-3 $\frac{1}{16}$	11-11 $\frac{13}{16}$	13-5 $\frac{15}{16}$
	B	9-0 $\frac{1}{2}$	10-6 $\frac{11}{16}$	10-2 $\frac{11}{16}$	11-8 $\frac{13}{16}$
17, 19, 23	A	12-7 $\frac{1}{16}$	14-1 $\frac{1}{4}$	13- 9 $\frac{3}{4}$	15-3 $\frac{15}{16}$
	B	10-3 $\frac{3}{4}$	11-9 $\frac{15}{16}$	11- 5 $\frac{15}{16}$	13-0 $\frac{1}{8}$

Unit Arrangement

	COMPONENTS					
K	MXB	Filter			HCS	SFAN
L	MXB	Filter	BFE		HCS	SFAN
M	MXB	Filter		FBP	HCS	SFAN
N	MXB	Filter	BFE	FBP	HCS	SFAN

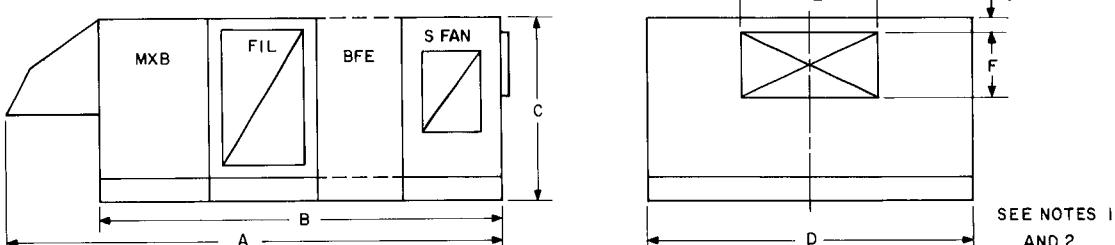
Dimensions C thru H

UNIT SIZE 39ER	C	D	DIMENSIONS (ft-in.)			H	
			Airfoil Fan				
			E	F	G		
08		5-11	1- 7 $\frac{1}{2}$	0-11 $\frac{1}{2}$	0-4 $\frac{1}{2}$	1- 2 $\frac{9}{16}$	
11	2-11 $\frac{3}{4}$	6- 9	1-11 $\frac{13}{16}$	1- 4 $\frac{1}{2}$	0-1 $\frac{1}{4}$	1- 7 $\frac{7}{8}$	
13			2- 1 $\frac{15}{16}$	1- 6 $\frac{5}{16}$	0-1 $\frac{1}{16}$	2- 0 $\frac{7}{8}$	
17		7- 7	2- 4 $\frac{7}{8}$	1- 8 $\frac{1}{8}$	0-1 $\frac{1}{8}$	1- 7 $\frac{7}{8}$	
19	3-10 $\frac{3}{4}$		2- 7 $\frac{3}{4}$	1- 9 $\frac{1}{8}$	0-1 $\frac{1}{8}$	1-10 $\frac{3}{8}$	
23		8- 3	2-11 $\frac{1}{8}$	2- 0 $\frac{1}{2}$	0-0 $\frac{3}{4}$	2- 6 $\frac{3}{8}$	

NOTES:

- 1 Dimensions E and F also apply to downblast discharge
- 2 Dimension G applies to top horizontal front (THF) arrangement shown For BHF and DB arrangements, see Carrier certified prints

VENTILATING UNITS



Dimensions A and B

UNIT SIZE 39ER	DIM. (ft-in.)	UNIT ARRANGEMENT (see table)	
		P	R
08, 11, 13	A	9-3 $\frac{7}{16}$	10-9 $\frac{1}{8}$
	B	7-6 $\frac{5}{16}$	9-0 $\frac{1}{2}$
17, 19, 23	A	11-1 $\frac{1}{8}$	12-7 $\frac{9}{16}$
	B	8-9 $\frac{9}{16}$	10-3 $\frac{3}{4}$

Unit Arrangements

	COMPONENTS			
P	MXB	Filter		SFAN
R	MXB	Filter	BFE	SFAN

Dimensions C thru H

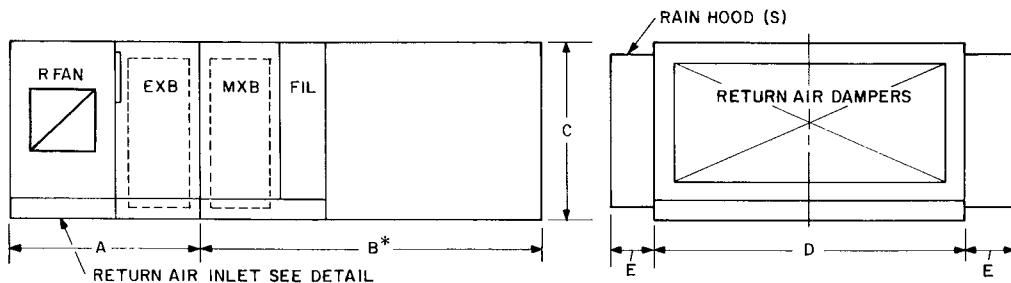
UNIT SIZE 39ER	C	D	DIMENSIONS (ft-in.)			H	
			Airfoil Fan				
			E	F	G		
08	5-11	1- 7 $\frac{1}{2}$	0-11 $\frac{1}{2}$	0-4 $\frac{1}{2}$	1- 2 $\frac{9}{16}$	1- 1 $\frac{15}{16}$	
11	2-11 $\frac{3}{4}$	6- 9	1-11 $\frac{13}{16}$	1- 4 $\frac{1}{2}$	0-1 $\frac{1}{4}$	1- 7 $\frac{7}{8}$	
13			2- 1 $\frac{15}{16}$	1- 6 $\frac{5}{16}$	0-1 $\frac{1}{16}$	2- 0 $\frac{7}{8}$	
17		7- 7	2- 4 $\frac{7}{8}$	1- 8 $\frac{1}{8}$	0-1 $\frac{1}{8}$	1- 7 $\frac{7}{8}$	
19	3-10 $\frac{3}{4}$		2- 7 $\frac{3}{4}$	1- 9 $\frac{1}{8}$	0-1 $\frac{1}{8}$	1-10 $\frac{3}{8}$	
23		8- 3	2-11 $\frac{1}{8}$	2- 0 $\frac{1}{2}$	0-0 $\frac{3}{4}$	2- 6 $\frac{3}{8}$	

NOTES:

- 1 Dimensions E and F also apply to downblast discharge
- 2 Dimension G applies to top horizontal front (THF) arrangement shown For BHF and DB arrangements, see Carrier certified prints

39ER DIMENSIONS (cont)

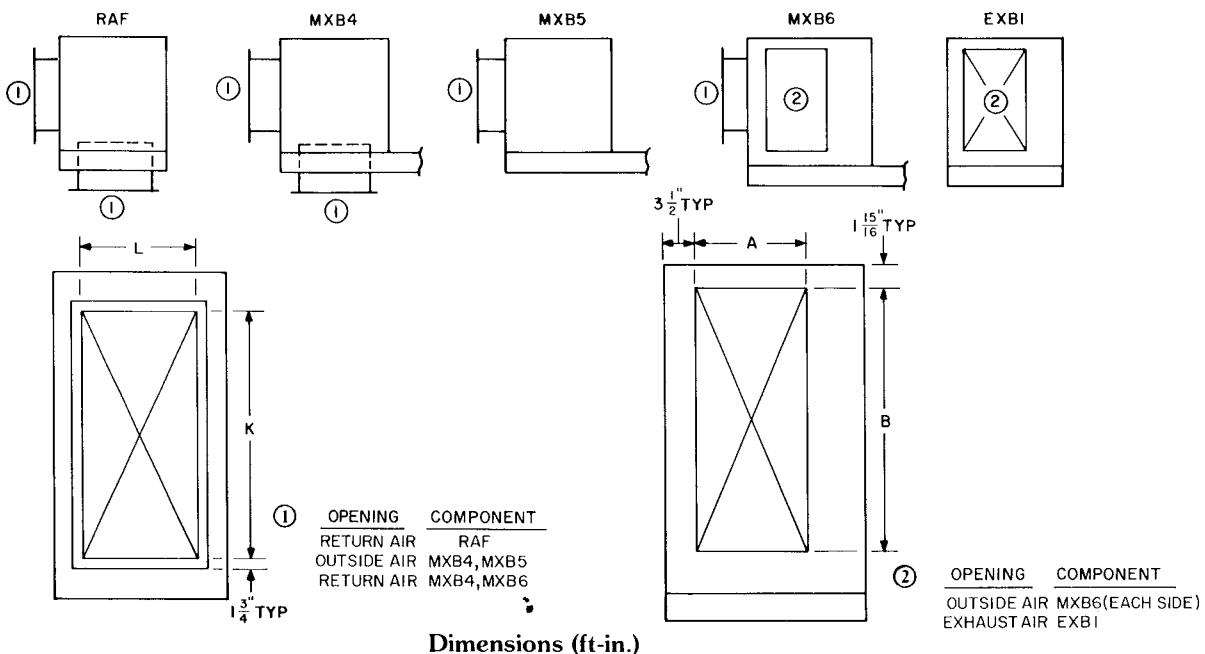
UNIT WITH RETURN AIR FAN



UNIT SIZE 39ER	DIMENSIONS (ft-in.)				
	A	B*	C	D	E
08	5- 2 $\frac{5}{16}$		2-11 $\frac{3}{4}$	5-11	1-2 $\frac{3}{4}$
11, 13	5- 2 $\frac{5}{16}$		2-11 $\frac{3}{4}$	6- 9	1-2 $\frac{3}{4}$
17, 19	6- 5 $\frac{5}{16}$		3-10 $\frac{3}{4}$	7- 7	1-7 $\frac{11}{16}$
23	6- 5 $\frac{5}{16}$		3-10 $\frac{3}{4}$	8- 3	1-7 $\frac{11}{16}$
29	7- 3 $\frac{1}{16}$		4- 8 $\frac{1}{2}$	8- 3	1-7 $\frac{11}{16}$
36	7- 8 $\frac{1}{16}$		4- 8 $\frac{1}{2}$	9- 9	1-7 $\frac{11}{16}$
39	8-10 $\frac{1}{16}$		4-10 $\frac{1}{2}$	9- 9	1-7 $\frac{11}{16}$
48, 57	10- 5 $\frac{1}{16}$		6- 8 $\frac{1}{2}$	11- 9	2-0 $\frac{1}{2}$
75, 90	12- 1 $\frac{1}{2}$		8- 7 $\frac{1}{2}$	13- 3	2-2 $\frac{1}{2}$

*Obtain B dimension from the appropriate Dimension/Arrangement table on pages 52 and 53

INLET OPENINGS



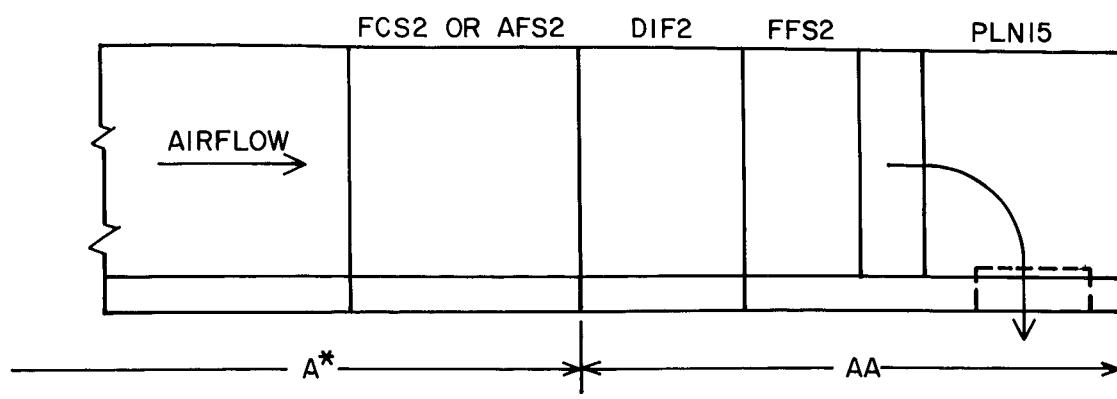
Dimensions (ft-in.)

UNIT SIZE	WIDTH K	LENGTH L
08	3- 2 $\frac{3}{4}$	
11	3- 9 $\frac{3}{4}$	1- 6 $\frac{13}{16}$
13		
17	4- 6 $\frac{1}{4}$	
19		1-11 $\frac{5}{16}$
23	5- 4 $\frac{5}{16}$	
29		
36	6-10 $\frac{1}{4}$	2- 6 $\frac{5}{8}$
39		
48	9- 4 $\frac{1}{16}$	3- 1 $\frac{15}{16}$
57		
75	10- 4 $\frac{7}{16}$	3- 9 $\frac{5}{16}$
90		

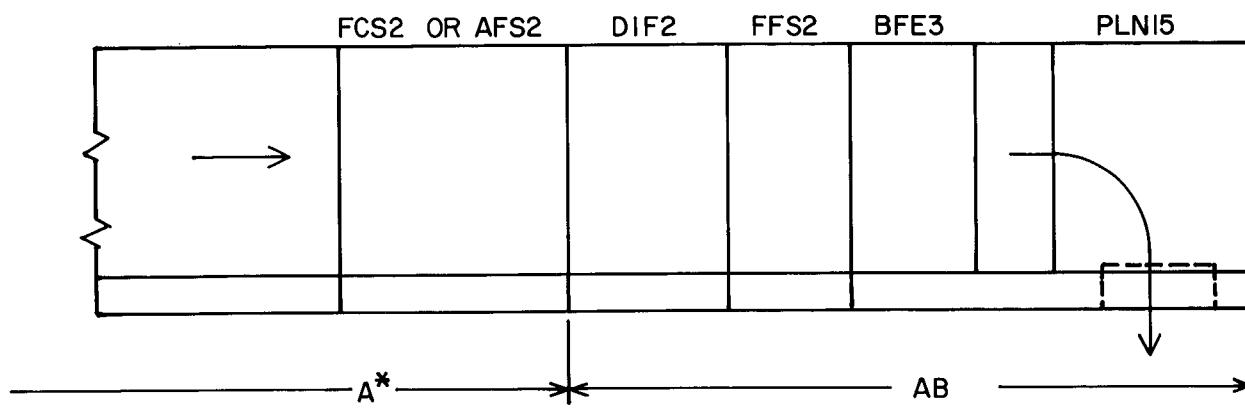
UNIT SIZE	WIDTH A	HEIGHT B
08		
11	1-9 $\frac{1}{8}$	1-11 $\frac{5}{16}$
13		
17		
19		3- 1 $\frac{15}{16}$
23	2-2 $\frac{1}{8}$	
29		
36	2-7 $\frac{1}{8}$	3- 9 $\frac{5}{16}$
39		4-11 $\frac{15}{16}$
48	3-4 $\frac{1}{8}$	
57		
75	3-8 $\frac{1}{8}$	7- 5 $\frac{1}{4}$
90		

39ER units with downstream filtration (hospital units)

UNIT WITH BAG FILTER OR RIGID CARTRIDGE FILTER DOWNSTREAM



UNIT WITH BAG FILTER AND BAG FILTER EXTENSION DOWNSTREAM

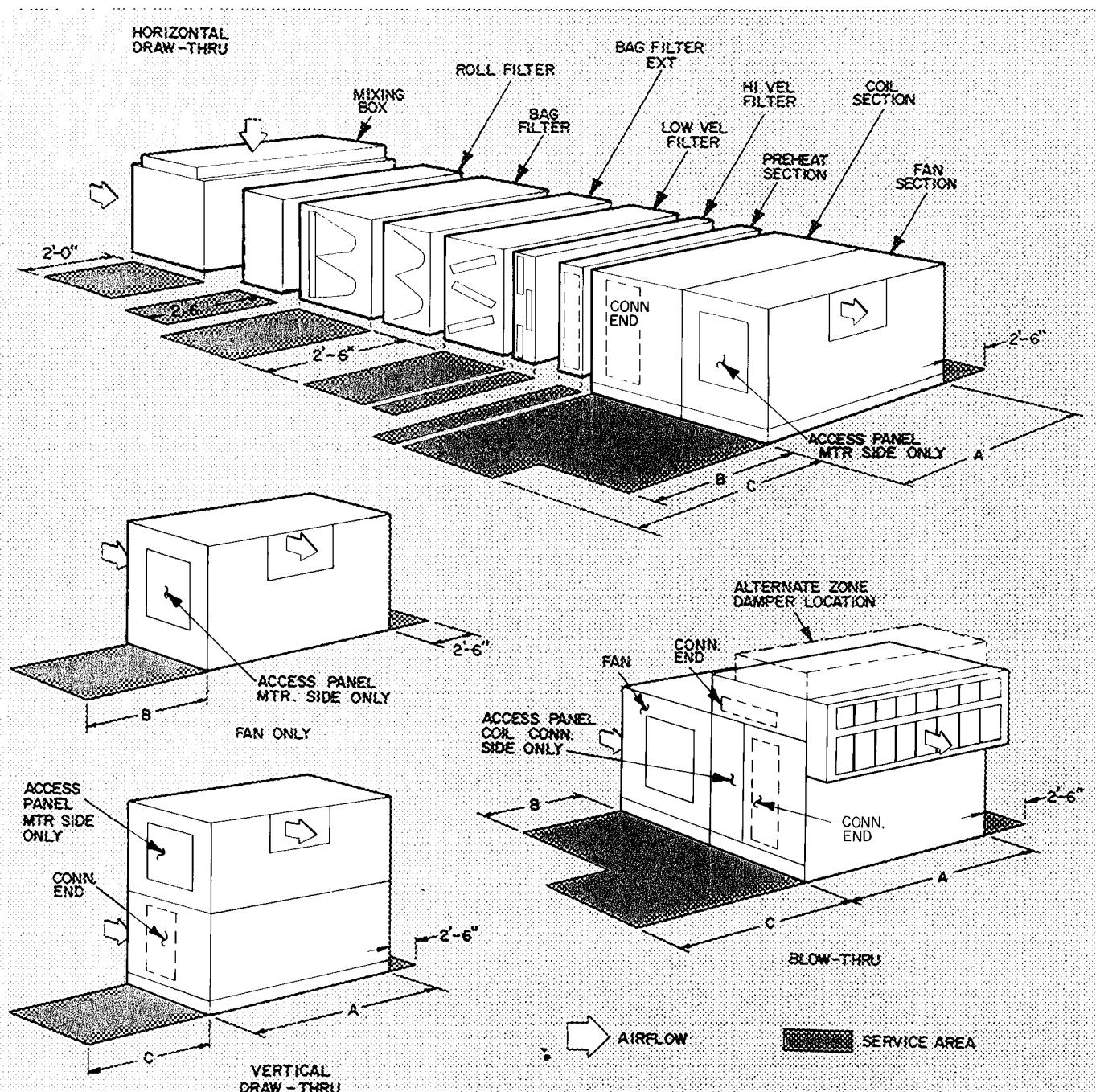


*See applicable Carrier certified drawing

Dimensions (ft-in.)

UNIT SIZE 39ER	ADDITIONAL UNIT LENGTH BEYOND SUPPLY FAN		SUPPLY OPENING IN PLN 15	
	AA	AB	Length	Width
08	6- 5 $\frac{9}{16}$	7-11 $\frac{3}{4}$	1- 6 $\frac{13}{16}$	3- 2 $\frac{3}{4}$
11, 13				3- 9 $\frac{3}{4}$
17, 19	6- 9 $\frac{3}{4}$	8- 4 $\frac{1}{16}$	1-11 $\frac{5}{16}$	4- 6 $\frac{1}{4}$
23, 29				5- 4 $\frac{5}{16}$
36, 39	7- 2 $\frac{3}{4}$	8- 9 $\frac{1}{16}$	2- 6 $\frac{5}{8}$	6-10 $\frac{1}{4}$
48, 57	7-11 $\frac{3}{4}$	9- 6 $\frac{1}{16}$	3- 1 $\frac{15}{16}$	9- 4 $\frac{7}{16}$
75, 90	8- 3 $\frac{3}{4}$	9-10 $\frac{1}{16}$	3- 9 $\frac{5}{16}$	10- 4 $\frac{7}{16}$

39E service area requirements



DIM. (ft-in.)	UNIT SIZE												
	08	11	13	17	19	23	29	36	39	48	57	75	90
A	5-11	6- 9	6- 9	7- 7	7- 7	8- 3	8- 3	9- 9	9- 9	11- 9	11- 9	13- 3	13- 3
B*	3- 4	3- 6	3-11	4- 1	4- 4	4- 7	4-10	5- 3	5- 6	6- 6	6- 6	7- 8	7- 8
C†	7- 0	7-10	7-10	8- 8	8- 8	9- 4	9- 4	10-10	10-10	12-10	12-10	14-4	14-4

*Service area on motor end only.

†Service area on coil connection end only.

Guide specifications — 39E/ER

Furnish and install central station air-handling units of the type, size and capacity shown on the equipment schedules. Unit performance shall be certified in accordance with Air-Conditioning and Refrigeration Institute (ARI) Standard 430 for central station air-handling units.

Equipment schedules and specifications are based on Carrier 39E Series. Other manufacturers of equal quality may be submitted to the engineer for approval. When substitution of equipment is made, the contractor shall be responsible for the costs of any item and engineering revisions necessary in his or any other contract that may be required to satisfy plans and specifications.

39E/ER air-handling units specified in this section are for larger sizes (6.7 sq ft or greater cooling coil face area). For smaller sizes, refer to Guide Specifications — 39B.

Units shall be of the horizontal or vertical type as shown on the drawings and may consist of a fan and coil section with factory-installed chilled water or DX coil, preheat or reheat coil, heating coil sections, filter section, mixing box and access section as indicated on the equipment schedules.

Component modules shall be constructed of sectionalized, formed panels, rigidly reinforced with external hat channels or embossed ribs. Casing panels shall be removable for easy access to the unit. Panels shall be mill galvanized steel.

On all sections requiring access doors, the handles shall be safety latch type.

All units installed externally shall have gasketed joints between panels, and, where indicated on the drawings, shall be mounted on a 14-in. high prefabricated curb, NRCA approved, complete with gasketing. Curb to be supplied by the air-handling unit manufacturer.

Insulation of coil section, fan section and accessory sections of unit shall be with (1-in. thick, 1-1/2 lb dual density fiberglass) (1-in. thick, 3 lb density neoprene-coated fiberglass) or (5/8-in. thick isocyanurate foam, with aluminum foil, vapor barrier facing). (All externally installed units shall be insulated with 5/8-in. thick isocyanurate foam, with aluminum foil, vapor barrier facing.)

Insulation shall be secured to casing with waterproof adhesive and permanent mechanical fasteners.

Insulation shall meet NFPA-90A flame spread and smoke generation requirements.

Condensate drain pans shall have double wall construction with threaded drain connections on both ends. Condensate drain pan to be insulated with 5/8-in. thick isocyanurate foam faced with an additional aluminum foil vapor barrier and cemented between the steel outer pan and the heavy-gauge steel inner pan. Inner pan shall be coated with corrosion-resistant elastomeric based material. Insulation adhesive and inner coating to comply with NFPA-90A flame spread and smoke generation requirements.

Fan sections shall be constructed of galvanized steel and have a formed channel base for integral mounting of fan, motor and casing panels. Fan scroll, wheel, shaft, and

bearings are to be mounted on a structural steel "A" or "H" frame rigidly secured to the channel base.

Each unit shall have one fan wheel and scroll only. Fans shall be double width, double inlet type, with forward-curved blades or backward-curved airfoil section blades as indicated on the equipment schedule. Forward-curved wheels shall be bonderized steel painted with baked enamel, or galvanized steel. Airfoil wheels shall be steel painted with zinc chromate primer and an enamel finish coat.

Fan shafts shall be solid steel, turned, ground and polished.

Fan wheels shall be keyed to the shaft and shall be designed for continuous operation at the maximum rated fan speed and motor horsepower. Fan wheels and shafts shall be selected to operate at least 25% below the first critical speed, and shall be statically and dynamically balanced as an assembly.

Fan bearings shall be self-aligning, pillow block regreasable ball type selected for an average life of 200,000 hours at design operation conditions, per ANSI Code B3 15.

Vibration isolation of the entire fan, motor and drive assembly to be by use of 2-in. deflection springs, internally mounted at the factory, together with fan discharge flexible connection and thrust restraint springs.

As an alternative, the contractor may provide vibration isolation external to the air-handling unit. In this case, the contractor shall provide 2-in. deflection springs, pipe duct flexible connections, thrust restraint springs, and spring type pipe hangers on all pipes direct-connected to the unit, for a distance of 25 ft from the unit.

Fan motors are to be factory mounted inside the fan section casing, on slide rails having 2 adjusting screws. Motors are to be (open drip-proof) (totally enclosed fan cooled) type for ____ v, 3-phase, 60-hz electric supply. Motors shall be 1750 or 3450 rpm as indicated on the equipment schedule.

Fan drives shall be factory mounted with final alignment and belt adjustment to be made by the contractor after installation. Belt drives shall be variable pitch type up to and including 15 hp, fixed pitch type above 15 hp. Drive design shall provide a 1.4 service factor.

Variable speed drives, where indicated on the equipment schedules, shall be factory installed. The variable speed drive system shall be capable of fan speed reduction to approximately 40% of design rpm. Drive design shall provide a 1.4 service factor.

The variable speed drive assembly shall consist of a fan motor mounted on a movable base, spring-loaded variable-pitch drive pulley, 2 fixed-pitch jackshaft pulleys and a fixed-pitch fan shaft pulley. The solid-steel jackshaft shall be supported by regreasable pillow block bearings, selected for an average life of 200,000 hours at design conditions per ANSI Code B3.15. All belts to be factory furnished.

The movable motor base shall be fitted with permanently lubricated bronze bearings which shall ride on polished chrome rails. The motor base shall be chain driven by a 1/10-hp reversing type gear motor.

Guido Specifications - 39L/ER (cont)

Variable speed drive control shall be by factory-furnished electric (pneumatic) control panel for field installation. The panel shall contain control relays, manual fan speed switch, fan starter auxiliary contact, mode switch, control transformer, gear motor start capacitor, and terminal block. The controls shall be activated by a duct-mounted static pressure controller furnished by the automatic control subcontractor.

Variable inlet vanes — Where indicated on the equipment schedules (with airfoil fans), units shall be provided with variable inlet vanes integral with the inlet bells of the fan. Vane operating shafts shall be connected to control ring by crankarms. Both sets of vanes are operated by a lever on the fan scroll with connecting shaft between inlets. Operators for inlet vane operation shall be provided by automatic temperature control subcontractor.

Fan discharge dampers — Where indicated on the equipment schedules (with forward-curved fans), units will be provided with fan discharge damper sections. Dampers shall have opposed action damper blades, formed at the edges and mechanically secured to steel rods rotating in bronze bushings, mounted on a rigid, flanged, galvanized steel frame.

Coil sections shall have heavy-duty coil tracks extending the full width of the unit to provide slip-in, slip-out coils for ease of service and maintenance.

All coils shall be of the cartridge type, removable from coil connection side of casing. They shall be tested at 350 psig air pressure while submerged in water. Coil performance shall be certified in accordance with ARI Standard 410.

Chilled water coils shall be aluminum plate fins with belled collars and bonded to 1/2-in. minimum OD copper tubes by mechanical expansion. Coils shall have galvanized steel casings and steel headers with threaded connections. Working pressure shall be 300 psig at 200F. Coils shall be drainable and have nontrapping circuits. No turbulence promoting devices will be permitted inside the tubes. Headers shall have drain and vent connections.

Direct-expansion coils shall be aluminum plate fins with belled collars and bonded to 1/2-in. OD copper tubes by mechanical expansion. Coils shall be provided with pressure-type brass distributors with solder-type connections and shall have a minimum of (2) distributors. Coils for full face active or face split operation shall have intertwined circuits for equal loading on each circuit. Suction and discharge connections shall be on the same end. After testing, coils shall be dehydrated and charged with dry air. Coils shall be designed and tested in accordance with American National Standards Safety Code for Mechanical Refrigeration (ANSI B9.1).

Hot water heating coils shall be aluminum plate fins with belled collars bonded to copper tubes by mechanical expansion. Coils shall have galvanized steel casings and steel headers with threaded connections. Working pressure shall be 175 psig at 400F. Headers shall have drain and vent connections.

Steam distributing coils (non-freeze type) shall have an outer copper tube diameter of 1 in. with a 5/8-in. diameter

inner distributing tube, galvanized steel casings and steel headers. Tubing shall be individually finned with smooth aluminum fins tightly wound under tension. Working pressure shall be 175 psig at 400F.

Electric heating coils for use in large air-handling units shall be open wire type, 80% nickel, 20% chromium resistance coils, insulated by floating ceramic bushings and supported in an aluminized or galvanized steel frame. Bushings shall be recessed into embossed openings and stacked into supporting brackets spaced on not more than 4-in. centers. Thermal cutouts for primary and secondary over-temperature protection shall be provided to meet UL and NEC requirements.

An integral control box shall be furnished by the manufacturer. It shall contain thermal cutouts, primary and secondary control, back-up contactors, sub-circuit fusing, airflow switch and fused control transformer.

Filter section shall be supplied by the air-handling unit manufacturer, with the same casing construction as before specified for other unit sections. The type of filters to be housed within the filter section shall be of the type and efficiency indicated on the equipment schedule. Different types of filter sections shall be supplied as specified in the following paragraphs.

High-velocity filter sections shall be capable of receiving 2-in. thick filters of standard sizes. Section to be complete with side access slide rails and access panels both sides. High-velocity filter section to be arranged with minimum depth in direction of airflow (flat filters).

Low-velocity filter sections shall be similar to high-velocity type, but with filters arranged in horizontal V formation. Hinged access doors shall be provided on both sides.

Bag filter sections for installation of fan inlet shall be capable of accepting standard 2-in. thick prefilters and a combination of 12-in. x 24-in. and 24-in. x 24-in. bag filters with length up to 23 inches. Bag filter sections shall have hinged access doors on both sides for filter replacement.

Bag filter sections for installation on fan outlet shall be capable of withstanding 9-in. total static pressure. They shall accept a combination of 12-in. x 24-in. and 24-in. x 24-in. bag filters.

Bag filter extension sections shall be furnished by air-handling unit manufacturers as required when bag filters extend beyond airway length of bag filter sections.

Roll filter sections shall be supplied by the air-handling unit manufacturer to be directly attached to other sections without modification or sheet metal adapter sections.

Roll filter section to house supply- and take-up spools, media track, motor and gear drive assembly. Drive motor to be 1/10 hp, 115 v, single phase, 60 Hz. Access doors to be provided on both sides of section.

Control of media advance mechanism to be by pressure difference measured across the filter media. A runout switch shall monitor the media, and controls shall change full span of media when required. Indicating and operating lights to be provided. All controls to be factory prewired

Cartridge filter sections shall be capable of accepting standard 12-in deep cartridge filters Access doors to be provided on both sides for filter replacement

Mixing boxes shall have parallel blade, interconnected outside air and return air dampers Damper blades shall have parallel bends for stiffness and shall be welded to 1/2-in diameter steel rods rotating in nylon bushings and mounted in rigid galvanized steel damper frames Dampers shall be sectionalized to limit blade length to not more than 50 inches in order to prevent excess blade warping and to assure tight closure

Face and bypass sections shall have opposed acting damper blades Damper blades shall be brake formed at the edges and be mechanically secured to 1/2-in steel rods, rotating in nylon bushings and mounted in a rigid galvanized steel damper frame Dampers shall be sectionalized to limit blade length to not more than 50 inches in order to prevent excess blade warping and assure tight closure.

Rated low-leakage dampers, having a leakage rate not to exceed 2% of air quantity calculated at 2000 fpm velocity thru damper and 4.0-in wg pressure difference, shall be furnished Damper blades shall be gasketed and perimeter sealing strips shall be provided

Access sections shall be installed where indicated on the drawings and shall have hinged doors on both sides

Zoning damper sections shall have hot and cold air damper blades mechanically secured at 90 degree angles to each other on a common steel rod rotating in nylon bushings and mounted in rigid flanged galvanized steel damper frame. Dampers seat firmly against neoprene gasketed stops to minimize air leakage Parallel acting dampers are to be interconnected by a single bar and field adaptable to the number of zones required

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Form 39E-8P Supersedes 39E-5P, 39E-7P, 38ER-2P

Printed in U S A

PC 201

Catalog No 523-918