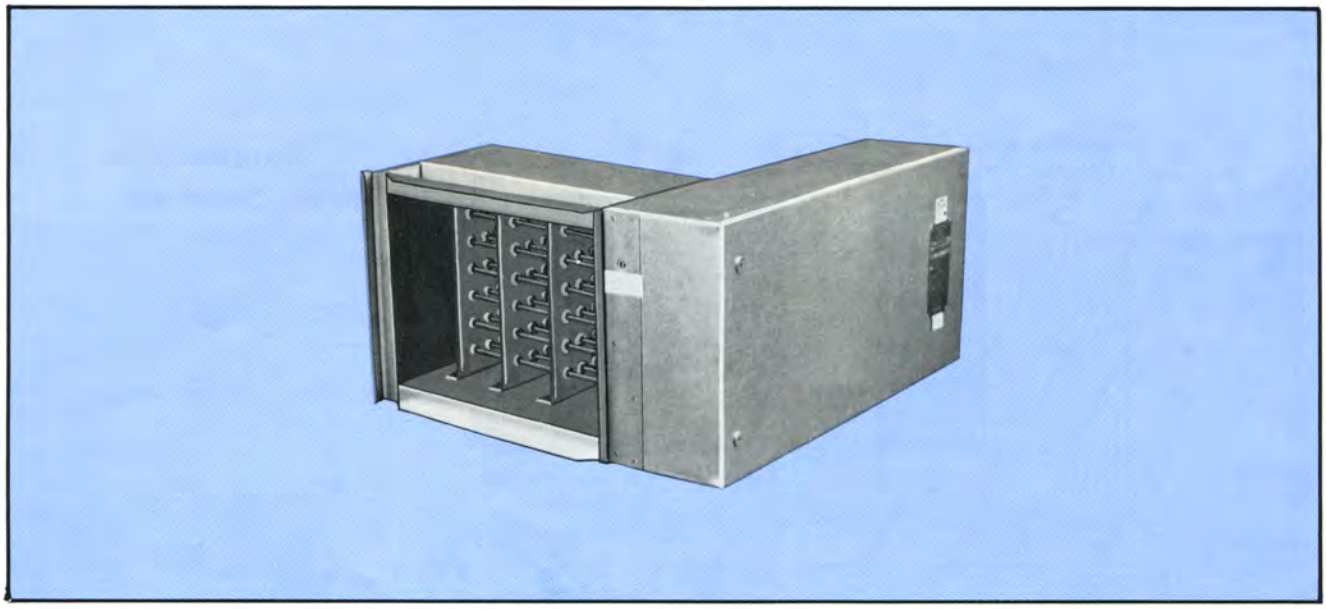
4 Accessories—Electric Reheat Coil



The Carnes Electric Coil is available on both the single duct terminal units and the fan powered terminal units. Electric coils meet all applicable requirements of the National Electric Code (NEC). Heater frames and boxes are constructed of 20 gauge or heavier galvanized steel. Factory pre-wiring of components eliminates costly field installation. A specific wiring diagram is furnished for every heater regardless of the options.

Standard Features Include:

For Terminal Units with Electric Controls

Standard Basic Controls

- Automatic Reset Primary Thermal Cutout
- Replaceable Secondary Thermal Cutout
- De-energizing Magnetic Contactors
- Transformer for 24 Volt Controls
- Power Terminal Block
- Control Terminal Block
- Slip and Drive Construction
- Air Flow Interlock with Single Duct Throttling Units
- Fan Interlock with Fan Units

For Terminal Units with Pneumatic Controls

Standard Basic Controls

- Automatic Reset Primary Thermal Cutout
- Replaceable Secondary Thermal Cutout
- PE Switches
- De-energizing Magnetic Contactors (as required)
- Power Terminal Block
- Control Terminal Block
- Slip and Drive Construction
- Air Flow Interlock with Single Duct Throttling Units
- Fan Interlock with Fan Units

Optional Features:

- Disconnect Switch
- Mercury De-energizing Contactors
- Fusing
- Single Point Wiring

Engineering Data—Electric Reheat Coil

The following load calculation and recommended operating ranges are based on standard 75°F entering air (comfort heating).

1. **Conversion:** 1 KW = 3413 BTU

2. **Load Requirement:** $KW = \frac{\text{Cubic Feet per Min. x Temperature Rise}}{3160}$

3. **Ohm's Law:** $\text{Watts} = \frac{(\text{Volts})^2}{\text{Resistance}} = \text{Volts x Amps}$

4. **Line Current, 1 Phase:** $\text{Amps} = \frac{\text{Watts}}{\text{Volts}}$

5. **Line Current, 3 Phase:** $\text{Amps} = \frac{\text{Watts}}{1.73 \times \text{Volts}}$

6. **Pressure Drop:** $\text{Inches } H_2O = \frac{(KW/ft^2)}{760} \times \left(\frac{\text{Velocity in FPM}}{500}\right)^2$

MINIMUM KW

Small frame sizes with high voltages require at least the following minimum wattages:

Frame Size		Supply Voltage	Stages	Minimum KW
8" x 10"		277V/1 Phase	1	0.5
Model	Sizes		2	0.5
AVEB	02/04		3	1.5
ACEA/ACEE	04	480V/3 Phase	1	1.5
ASEC/ASEE	04			
10" x 12"		277V/1 Phase	1	0.5
Model	Sizes		2	0.5
AVEB	06/08		3	1.0
ACEA/ACEE	06	480V/3 Phase	1	1.0
ASEC/ASEE	06/08		2	3.0
ATEC/ATEE	08		3	Not Available
12" x 14"		277V/1 Phase	1	0.5
Model	Sizes		2	0.5
AVEB	12		3	0.5
ACEA/ACEE	08	480V/3 Phase	1	0.5
ASEC/ASEE	12		2	1.5
ATEC/ATEE	12		3	3.0

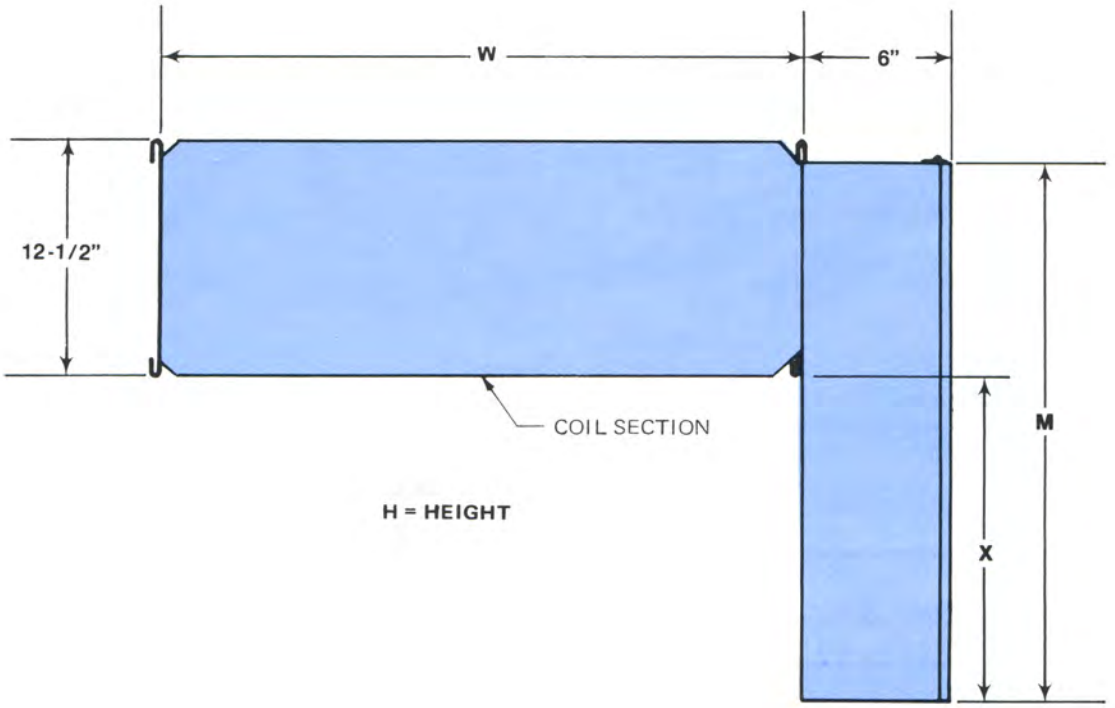
Coils with lower wattages cannot be built.

MAXIMUM KW

Model	Unit Size						
ASEC/ASEE	04	06	08	12	16	24	32
ATEC/ATEE	08	12	16	24	32	45	60
ACEA/ACEE	04	06	08	12	16	24	32
Heater Voltage/Phase	Maximum Allowable KW						
120/1	5.5	5.4	5.2	4.9	4.7	4.2	3.7
208/1	7.0	8.0	9.5	9.3	9.1	8.6	8.2
277/1	7.0	8.0	10.0	12.4	12.1	11.5	11.0
208/3	7.0	8.0	10.0	14.9	14.3	12.6	11.3
480/3	7.0	8.0	10.0	15.0	17.0	20.0	25.0

1. *A combined load of 48 amps or more cannot be provided on Carnes fan terminal units.*
2. *A combined load of 48 amps or more on Model AVEB single duct throttling units requires fusing by Carnes.*

4 Dimensional Data—Electric Reheat Coil



DIMENSIONS LISTED IN INCHES		
SIZE H x W	M	X
8 x 10	29	16¼
10 x 12	29	17
12 x 14	33	20¼
14 x 16	35	23
16 x 18	41	28¼
18 x 20	42	29¼
18 x 24	56	43½
18 x 32	56	43½

All M and X dimensions are maximum *(not to exceed)* and may be less than those shown.

ELECTRIC COIL VOLTAGE SELECTION CHART

PNEUMATIC

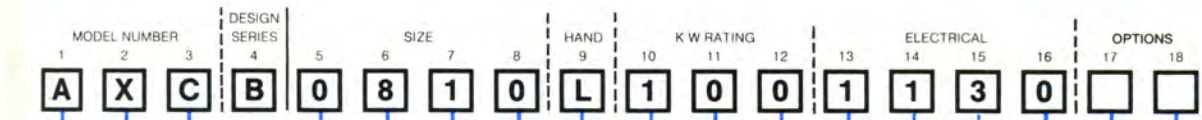
Control	Supply/Coil	Fan
24V/1ø	480V/3ø/3 Wire	—
120V/1ø	120V/1ø	120V/1ø
	208V/3ø/4 Wire	120V/1ø
277V/1ø	277V/1ø	277V/1ø
	480V/3ø/4 Wire	277V/1ø
208V/1ø	208V/1ø	208V/1ø
	208V/3ø/3 Wire	—

ELECTRIC/ELECTRONIC

Control	Supply/Coil	Fan
24V/1ø	120V/1ø	120V/1ø
	277V/1ø	277V/1ø
	208V/3ø/3 Wire	—
	208V/3ø/4 Wire	120V/1ø
	480V/3ø/3 Wire	—
	480V/3ø/4 Wire	277V/1ø

NOTE: *4 Wire Service is required when using 3 phase supply voltage and fan terminal units.*

Model Numbering System—Electric Reheat Coil



A - AIR TERMINAL

X - SHIPPED SEPARATELY *(Standard)*
Y - ATTACHED/ WIRED *(Optional)*

Type
C - THROTTLING UNIT ELECTRIC/ELECTRONIC CONTROLS *(For Model AVEB)*
D - THROTTLING UNIT PENUMATIC CONTROLS *(Normally open P/E Connection) (For Model AVEB w/Reverse Acting Thermostat)*
E - THROTTLING UNIT PNEUMATIC CONTROLS *(Normally Closed P/E Connection) (For Model AVEB w/Direct Acting Thermostat)*
R - FAN POWERED UNIT WITH ELECTRIC OR ELECTRONIC CONTROLS *(For Models ASE__, ATE__ & ACE__)*
S - FAN POWERED UNIT WITH PNEUMATIC CONTROLS *(Normally Open P/E Connection) (For Models ASE__, ATE__ & ACE__ w/ Reverse Acting Thermostat)*
T - FAN-POWERED UNIT WITH PNEUMATIC CONTROLS *(Normally Closed P/E Connection) (For Models ASE__, ATE__ & ACE__ w/ Direct Acting Thermostat)*

Model	Unit Size	Height x Width
AVEB	02/04	08 x 10
ASE__	04	
ACE__	04	
AVEB	06/08	10 x 12
ASE__	06/08	
ATE__	08	
ACE__	06	
AVEB	12	12 x 14
ASE__	12	
ATE__	12	
ACE__	08	
AVEB	16	14 x 16
ASE__	16	
ATE__	16	
ACE__	12	
AVEB	24	16 x 18
ASE__	24	
ATE__	24	
ACE__	16	
AVEB	32	18 x 20
ASE__	32	
ATE__	32	
AVEB	45	18 x 24
ATE__	45	
AVEB	60	18 x 32
ACE__	24/32	
ATE__	60	

Hand of Control Panel
L - LEFT
R - RIGHT

00 to 39 K. W.

Last Digit is 1/10 K. W.
0 - 0
1 - 1
2 - 2
3 - 3
4 - 4
5 - 5
6 - 6
7 - 7
8 - 8
9 - 9

Supply Voltage
1 - 120
2 - 208
4 - 480
5 - 277

Phase
1 - SINGLE
3 - THREE

Stages
1
2
3

Control Voltage
0 - 24
1 - 120
2 - 208
5 - 277

Contactors
G - MERCURY DE-ENERGIZING CONTACTORS
V - MAGNETIC DE-ENERGIZING CONTACTORS OR LOAD CARRYING P/E SWITCHES AS REQUIRED

D - DOOR LOCKING DISCONNECT SWITCH w/HEATER FUSING
J - HEATER FUSING
S - DOOR LOCKING DISCONNECT SWITCH
P - PANEL MOUNTED DISCONNECT
F - PANEL MOUNTED DISCONNECT w/ HEATER FUSING

NOTE: *Hand of the coil is selected by facing the outside of the coil control panel and determing the direction of the control panel overhang from the coil section.*