

**HVAC Submittal Data**

**SHS Development Inc.**

**Project: Home 2 Suites by Hilton**

**Flowood, MS**

**Architect: Richard Molenaar**

**Mech. Engineer: Innovative Engineering**

**Contractor: Comfort Designs, Inc.**

**Section 1) AHU-1-7**

**Section 2) CU-1-7**

**Section 3) thermostats**

**Section 4) MUA-1-2**

**Section 5) exhaust fans**

**Section 6) electric baseboard heater**

**Section 7) fire dampers & access**

**Doors**

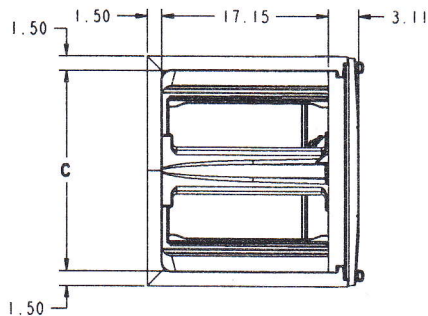
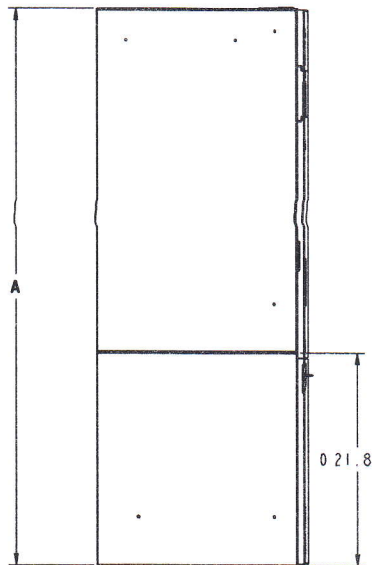
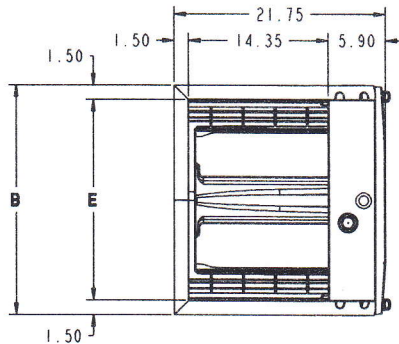
**Section 8) grilles and registers**

**Section 9) louvers**

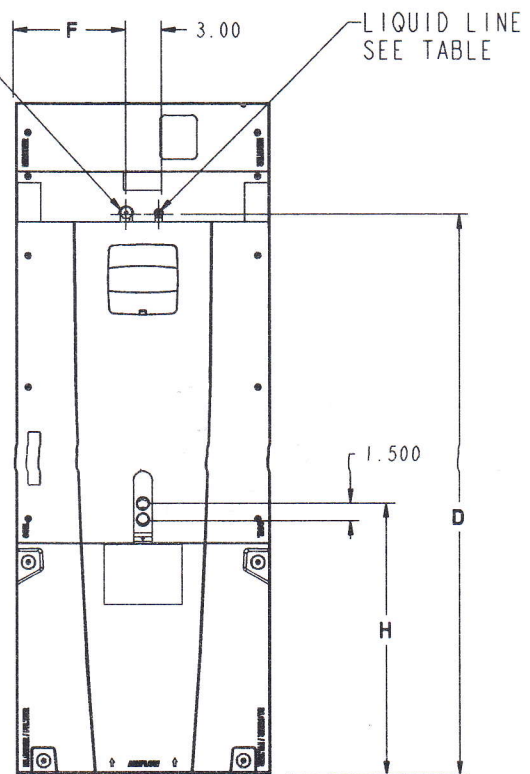
**Section 10) control dampers**

TAG: AHU-1**Submittal**

**3 Ton Convertible Air Handler**  
**Black Epoxy Coil - GAM5B0B36M31EA**  
**Standard Coil - GAM5B0B36M31SB**

GAS LINE  
SEE TABLE

F 3.00

LIQUID LINE  
SEE TABLE

MINIMUM UNIT CLEARANCE TABLE		
	TO COMBUSTIBLE MATERIAL (REQUIRED)	SERVICE CLEARANCE (RECOMMENDED)
SIDES	0"	2"
FRONT	0"	21"
BACK	0"	0"
INLET DUCT	0"	
OUTLET DUCT	0"	

MODEL NO.	A	B	C	D	E	F	H	Flow Control	R-410A Gas Line BRAZE	R-410A Liq. Line BRAZE
GAM5B0B36	55.7	21.3	18.4	45.5	18.4	9.2	24.8	TXV	7/8	3/8



## PRODUCT SPECIFICATIONS

### PRODUCT SPECIFICATIONS

<b>MODEL</b>	<b>GAM5B0B36M31SB</b> <b>GAM5B0B36M31EA</b>
<b>RATED VOLTS/PH/HZ.</b>	208-230/1/60
<b>RATINGS ①</b>	See O.D. Specifications
<b>INDOOR COIL — Type</b>	Plate Fin
Rows — F.P.I.	3 - 14
Face Area (sq. ft.)	5.04
Tube Size (in.)	3/8
Refrigerant Control	TXV
Drain Conn. Size (in.) ②	3/4 NPT
<b>DUCT CONNECTIONS</b>	See Outline Drawing
<b>INDOOR FAN — Type</b>	Centrifugal
Diameter-Width (In.)	11 X 10
No. Used	1
Drive - No. Speeds	Direct - 5
CFM vs. in. w.g.	See Fan Performance Table
No. Motors — H.P.	1 - 1/2
Motor Speed R.P.M.	1050
Volts/Ph/HZ	208-230/1/60
F.L. Amps	4.1
<b>FILTER</b>	
Filter Furnished?	No
Type Recommended	Throwaway
No.-Size-Thickness	1 - 20 X 20 - 1 in.
<b>REFRIGERANT</b>	<b>R-410A</b>
Ref. Line Connections	Brazed
Coupling or Conn. Size — in. Gas	7/8
Coupling or Conn. Size — in. Liq.	3/8
<b>DIMENSIONS</b>	H x W x D
Crated (In.)	57-1/4 x 24-1/4 x 25-3/4
Uncrated	55-3/4 x 21-1/4 x 21-3/4
<b>WEIGHT</b>	
Shipping (Lbs.)/Net (Lbs.)	150/142

① These Air Handlers are A.H.R.I. certified with various Split System Air Conditioners and Heat Pumps (AHRI STANDARD 210/240). Refer to the Split System Outdoor Unit Product Data Guides for performance data.

② 3/4" Male Plastic Pipe (Ref.: ASTM 1785-76)



GAM5B0B36M31SB, GAM5B0B36M31EA MINIMUM HEATER AIRFLOW CFM		
Heater	Minimum Air Speed Tap	
	Without HP	With HP
BAYEAAC04BK1 BAYEAAC04LG1	Tap 2	Tap 3
BAYEAAC05BK1 BAYEAAC05LG1	Tap 2	Tap 3
BAYEAAC08BK1 BAYEAAC08LG1	Tap 3	Tap 4
BAYEAAC10BK1 BAYEAAC10LG1	Tap 4	Tap 5
BAYEAAC10LG3	Tap 4	Tap 5
BAYEABC15BK1	Tap 4	Tap 5
BAYEABC15LG3	Tap 4	Tap 5
BAYEABC20BK1	-	-
BAYEACC25BK1	-	-

**Note:** Heating and cooling speeds are the same, factory set at Speed Tap #4.

**Note:** A "G" only signal from the comfort control will run the blower at a lower speed, factory set at Speed Tap #1. See the Sequence of Operation for additional information.

**Note:** Speed Tap 1 is NOT used for two stage systems. Two stage systems will require an airflow adjustment

AIRFLOW PERFORMANCE										
GAM5B0B36M31SB, GAM5B0B36M31EA										
EXTERNAL STATIC (in w.g)	AIRFLOW (CFM)									
	Speed Taps - 230 VOLTS					Speed Taps - 208 VOLTS				
	5	4 †	3	2	1	5	4 †	3	2	1
0	1438	1387	1197	1013	732	1435	1383	1194	1009	729
0.1	1394	1340	1143	945	552	1388	1334	1137	939	546
0.2	1350	1299	1090	892	413	1341	1291	1082	884	404
0.3	1301	1245	1031	817	305	1289	1233	1019	806	293
0.4	1253	1197	975	751	209	1239	1183	960	737	195
0.5	1205	1151	917	651	-	1188	1134	900	634	-
0.6	1155	1094	837	578	-	1136	1075	817	559	-
0.7	1099	1032	766	499	-	1077	1010	744	476	-
0.8	1039	972	691	453	-	1014	946	666	-	-
0.9	964	889	633	409	-	936	861	605	-	-

NOTES:

1. Values are with wet coil and without filters.
2. Contact your particular filter manufacturer for pressure drop data.
3. Electric heater pressure drop is negligible and is included within the airflow data.
4. Tap 1 is an continuous fan speed tap.
5. † Factory Setting

WIRING DATA											
GAM5B0B36M31SB, GAM5B0B36M31EA											
Heater Model No.	No. of Circuits	240 VOLT					208 VOLT				
		Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection	Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection
		kW	BTUH				kW	BTUH			
No Heater	-	-	-	4.1*	5	15	-	-	4.1*	5	15
BAYEAAAC04BK1 BAYEAAAC04LG1	1	3.84	13100	16.0	25	25	2.88	9800	13.8	22	25
BAYEAAAC05BK1 BAYEAAAC05LG1	1	4.80	16400	20.0	30	30	3.60	12300	17.3	27	30
BAYEAAAC08BK1 BAYEAAAC08LG1	1	7.68	26200	32.0	45	45	5.76	19700	27.7	40	40
BAYEAAAC10BK1 BAYEAAAC10LG1	1	9.60	32800	40.0	55	60	7.20	24600	34.6	48	50
BAYEAAAC10LG3	1-3 PH	9.60	32800	23.1	33	35	7.20	24600	20.0	30	30
BAYEABC15LG3	1-3 PH	14.40	49200	34.6	48	50	10.80	36900	30.0	42	45
BAYEABC15BK1 - Circuit 1 ①	2	9.60	32800	40	55	60	7.20	24600	34.6	48	50
BAYEABC15BK1 - Circuit 2		4.80	16400	20	25	25	3.60	12300	17.3	22	25

Note: \* Motor Amps  
① MCA and MOP for circuit 1 contains the motor amps

Notes:

1. See Product Data or Air Handler nameplate for approved combinations of Air Handlers and Heaters
2. Heater model numbers may have additional suffix digits.



# Mechanical Specifications

- Unique Cabinet Design
  - Double Wall Foamed and Formed Cabinet System
  - Water Proof Cabinet Design
  - R-4.2 Insulating Value (Avg Insulating Value R-8.2)
  - Composite Foamed Cabinet Doors
  - Sweat Eliminating Cabinet Design
  - Loose Fiber Eliminating Cabinet Design
  - Smooth Cleanable Cabinet Design
  - 2% or Less air leakage
  - Precision Durable Door Seals
  - Modular Cabinet
- Multi-Position UP/Down Flow Horizontal Left /Right
- Phillips head door fasteners
- Side Return Option
- Refrigerant Connections
- Condensate Connections
- Premarked Conduit Connection Locations
- Vortica® Blower with Integrated Slide Deck for Easy Removal
- Polarized Plug connections on Blower
- Aluminum Coil with Integrated Slide Deck for Easy Removal
- Slide in Electric Heaters with polarized plug connections (sold as accessory)
- Polarized Plug connections for Electric Heater
- UVC light kit with safety switch and polarized plug connections (sold as accessory)
- Labeled Panels and connections
- 1 1/4" to 1" And 3/4" to 1/2" Conduit connection on Left, Right and Top
- Molded in 1" Standard Filter rail
- R-410A Thermal Expansion Valve
- R-22 conversion Thermal Expansion Valve available (sold as accessory)
- Low Voltage Pigtail Connections
- Enhanced Coil Fin Patented
- Blow Through Design
- High Efficiency ECM Motor
- Maximum Width of 23.5"
- Compact 20.8" depth with doors removed
- Integrated Horizontal Drain pans
- Soft start fan motor operation
- Built in fan delay modes
- Single Color
- Fused 24V Power
- Safety Door Switch
- **5 year warranty**
- **10-year warranty registered**
- **Optional extended warranty available**

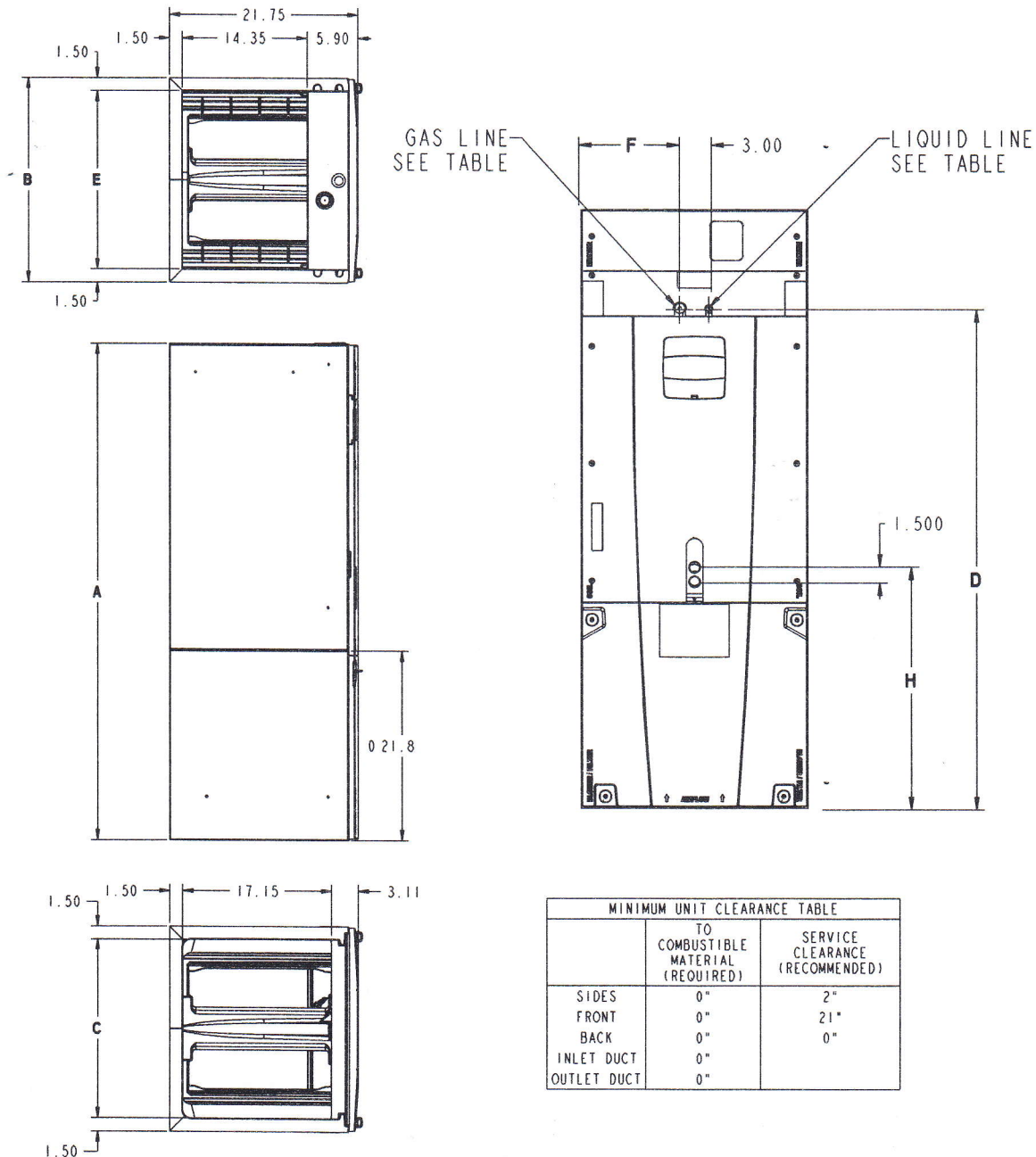
**Ingersoll Rand**  
6200 Troup Highway  
Tyler, TX 75707



The manufacturer has a policy of continuous product and product data improvement and it reserves the right to change design and specification without notice.

TAG: AHU-2**Submittal**

**5 Ton Convertible Air Handler**  
**Black Epoxy Coil - GAM5B0C60M51EA**  
**Standard Coil - GAM5B0C60M51SB**



MODEL NO.	A	B	C	D	E	F	H	Flow Control	R-410A Gas Line	R-410A Liq. Line
GAM5B0C60	61.7	23.5	20.5	51.5	20.5	10.3	24.9	TXV	BRAZE	BRAZE
									7/8	3/8



## PRODUCT SPECIFICATIONS

### PRODUCT SPECIFICATIONS

<b>MODEL</b>	<b>GAM5B0C60M51SB</b> <b>GAM5B0C60M51EA</b>
<b>RATED VOLTS/PH/HZ.</b>	208-230/1/60
<b>RATINGS ①</b>	See O.D. Specifications
<b>INDOOR COIL — Type</b>	Plate Fin
Rows — F.P.I.	4 - 14
Face Area (sq. ft.)	5.96
Tube Size (in.)	3/8
Refrigerant Control	TXV
Drain Conn. Size (in.) ②	3/4 NPT
<b>DUCT CONNECTIONS</b>	See Outline Drawing
<b>INDOOR FAN — Type</b>	Centrifugal
Diameter-Width (In.)	11 X 10
No. Used	1
Drive - No. Speeds	Direct - 5
CFM vs. in. w.g.	See Fan Performance Table
No. Motors — H.P.	1 - 1
Motor Speed R.P.M.	1050
Volts/Ph/HZ	208-230/1/60
F.L. Amps	7.6
<b>FILTER</b>	
Filter Furnished?	No
Type Recommended	Throwaway
No.-Size-Thickness	1 - 22 X 20 - 1 in.
<b>REFRIGERANT</b>	<b>R-410A</b>
Ref. Line Connections	Brazed
Coupling or Conn. Size — in. Gas	7/8
Coupling or Conn. Size — in. Liq.	3/8
<b>DIMENSIONS</b>	H x W x D
Crated (In.)	63-1/4 x 27-1/2 x 25-3/4
Uncrated	61-3/4 x 23-1/2 x 21-3/4
<b>WEIGHT</b>	
Shipping (Lbs.)/Net (Lbs.)	180/170

① These Air Handlers are A.H.R.I. certified with various Split System Air Conditioners and Heat Pumps (AHRI STANDARD 210/240). Refer to the Split System Outdoor Unit Product Data Guides for performance data.

② 3/4" Male Plastic Pipe (Ref.: ASTM 1785-76)



GAM5B0C60M51SB, GAM5B0C60M51EA MINIMUM HEATER AIRFLOW CFM		
Heater	Minimum Air Speed Tap	
	Without HP	With HP
BAYEAAC04BK1 BAYEAAC04LG1	Tap 2	Tap 3
BAYEAAC05BK1 BAYEAAC05LG1	Tap 2	Tap 3
BAYEAAC08BK1 BAYEAAC08LG1	Tap 2	Tap 3
BAYEAAC10BK1 BAYEAAC10LG1	Tap 2	Tap 3
BAYEAAC10LG3	Tap 2	Tap 3
BAYEABC15BK1	Tap 3	Tap 4
BAYEABC15LG3	Tap 3	Tap 4
BAYEABC20BK1	Tap 3	Tap 4
BAYEACC25BK1	Tap 4	Tap 5 ①②
① If the air handler is applied in downflow or horizontal configurations, the airflow should not exceed 2000 CFM. Airflow above 2000 CFM could result in water blow-off. ② Tap 5 can be used but only when the external static pressure is .6" or above.		

**Note:** Heating and cooling speeds are the same, factory set at Speed Tap #4.

**Note:** A "G" only signal from the comfort control will run the blower at a lower speed, factory set at Speed Tap #1. See the Sequence of Operation for additional information.

**Note:** Speed Tap 1 is NOT used for two stage systems. Two stage systems will require an airflow adjustment



AIRFLOW PERFORMANCE										
GAM5B0C60M51SB, GAM5B0C60M51EA										
EXTERNAL STATIC (in w.g.)	AIRFLOW (CFM)									
	Speed Taps - 230 VOLTS					Speed Taps - 208 VOLTS				
	5	4 †	3	2	1	5	4 †	3	2	1
0	2327	2020	1914	1819	1125	2324	2017	1910	1816	1122
0.1	2285	1980	1873	1780	990	2279	1974	1867	1774	984
0.2	2237	1944	1835	1740	831	2228	1935	1826	1731	822
0.3	2182	1908	1800	1705	600	2171	1896	1789	1693	589
0.4	2125	1869	1756	1659	331	2111	1854	1742	1645	317
0.5	2062	1830	1717	1620	249	2045	1813	1700	1603	232
0.6	1995	1747	1664	1575	187	1975	1727	1644	1555	168
0.7	1922	1707	1629	1540	-	1899	1685	1607	1518	-
0.8	1844	1673	1594	1502	-	1819	1648	1569	1477	-
0.9	1761	1629	1553	1464	-	1733	1601	1525	1436	-

**NOTES:**

1. Values are with wet coil and without filters.
2. Contact your particular filter manufacturer for pressure drop data.
3. Electric heater pressure drop is negligible and is included within the airflow data.
4. Tap 1 is an continuous fan speed tap.
5. If the air handler is applied in downflow or horizontal configurations, the airflow should not exceed 2000 CFM. Airflow above 2000 CFM could result in water blow-off.
6. † Factory Setting

WIRING DATA											
GAM5B0C60M51SB, GAM5B0C60M51EA											
Heater Model No.	No. of Circuits	240 VOLT					208 VOLT				
		Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection	Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection
		kW	BTUH				kW	BTUH			
No Heater	-	-	-	7.6*	10	15	-	-	7.6*	10	15
BAYEAAC04BK1 BAYEAAC04LG1	1	3.84	13100	16.0	30	30	2.88	9800	13.8	27	30
BAYEAAC05BK1 BAYEAAC05LG1	1	4.80	16400	20.0	35	35	3.60	12300	17.3	31	35
BAYEAAC08BK1 BAYEAAC08LG1	1	7.68	26200	32.0	50	50	5.76	19700	27.7	44	45
BAYEAAC10BK1 BAYEAAC10LG1	1	9.60	32800	40.0	60	60	7.20	24600	34.6	53	60
BAYEAAC10LG3	1-3 PH	9.60	32800	23.1	37	40	7.20	24600	20.0	34	35
BAYEABC15LG3	1-3 PH	14.40	49200	34.6	52	60	10.80	36900	30.0	46	50
BAYEABC15BK1 - Circuit 1 ①	2	9.60	32800	40	60	60	7.20	24600	34.6	53	60
BAYEABC15BK1 - Circuit 2		4.80	16400	20	25	25	3.60	12300	17.3	22	25
BAYEABC20BK1 - Circuit 1 ①	2	9.60	32800	40	60	60	7.20	24600	34.6	53	60
BAYEABC20BK1 - Circuit 2		9.60	32800	40	50	50	7.20	24600	34.6	43	45
BAYEACC25BK1 ②③ - Circuit 1 ①	3	9.60	32800	40	60	60	7.20	24600	34.6	53	60
BAYEACC25BK1 - Circuit 2		9.60	32800	40	50	50	7.20	24600	34.6	43	45
BAYEACC25BK1 - Circuit 3		4.80	16400	20	25	25	3.60	12300	17.3	22	25

Note: \* Motor Amps

① MCA and MOP for circuit 1 contains the motor amps

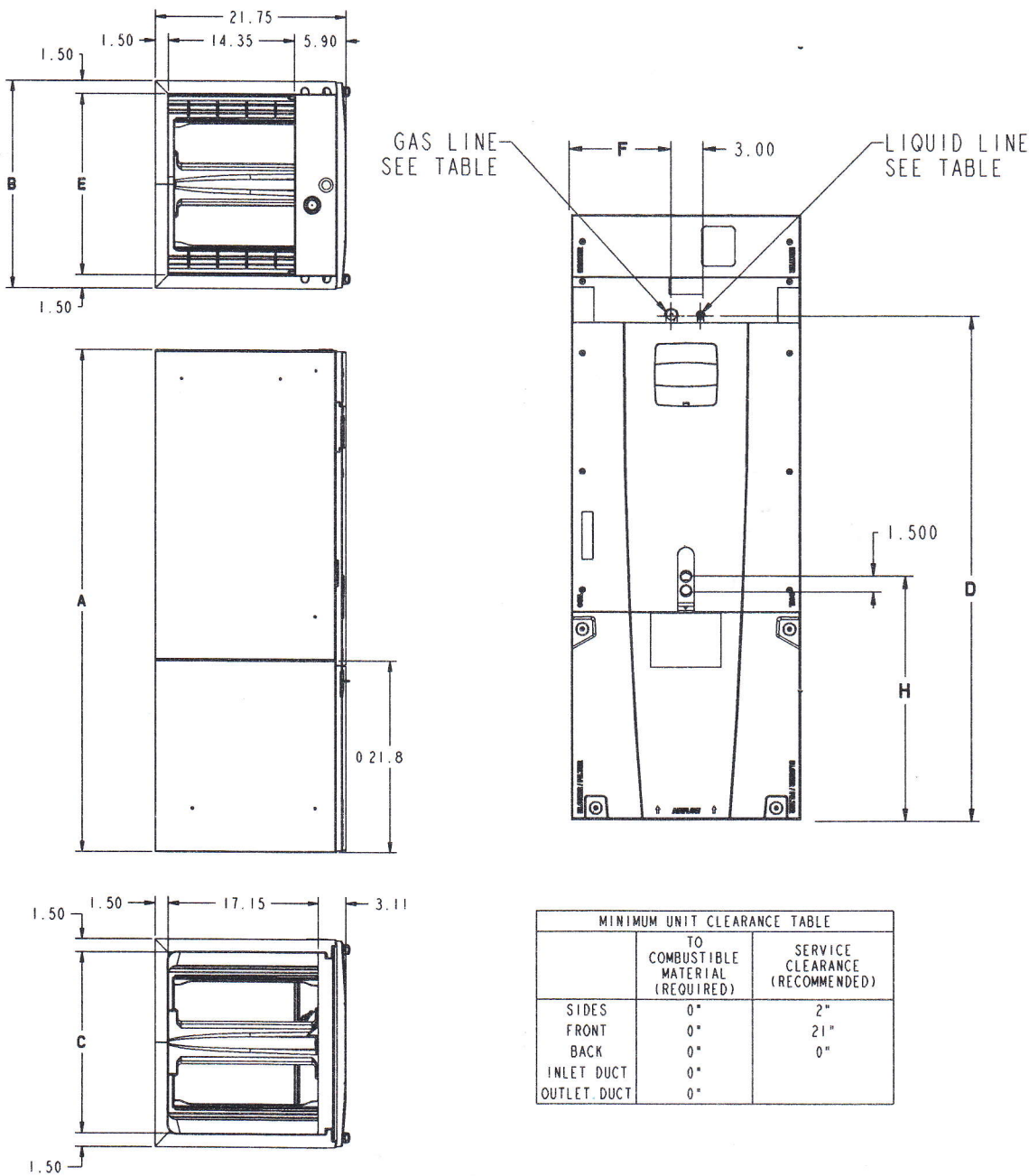
② If the air handler is applied in downflow or horizontal configurations, the airflow should not exceed 2000 CFM. Airflow above 2000 CFM could result in water blow-off.

③ Tap 5 can be used but only when the external static pressure is .6" or above.

TAG: AHU-3,7

**Submittal**

**4 Ton Convertible Air Handler**  
**Black Epoxy Coil - GAM5B0C48M41EA**  
**Standard Coil - GAM5B0C48M41SB**



MODEL NO.	A	B	C	D	E	F	H	Flow Control	R-410A Gas Line BRAZE	R-410A Liq. Line BRAZE
GAM5B0C48	61.7	23.5	20.5	51.5	20.5	10.3	24.9	TXV	7/8	3/8



## PRODUCT SPECIFICATIONS

### PRODUCT SPECIFICATIONS

<b>MODEL</b>	<b>GAM5B0C48M41SB</b> <b>GAM5B0C48M41EA</b>
<b>RATED VOLTS/PH/HZ.</b>	208-230/1/60
<b>RATINGS ①</b>	See O.D. Specifications
<b>INDOOR COIL — Type</b>	Plate Fin
Rows — F.P.I.	4 - 14
Face Area (sq. ft.)	5.96
Tube Size (in.)	3/8
Refrigerant Control	TXV
Drain Conn. Size (in.) ②	3/4 NPT
<b>DUCT CONNECTIONS</b>	See Outline Drawing
<b>INDOOR FAN — Type</b>	Centrifugal
Diameter-Width (In.)	11 X 10
No. Used	1
Drive - No. Speeds	Direct - 5
CFM vs. in. w.g.	See Fan Performance Table
No. Motors — H.P.	1 - 3/4
Motor Speed R.P.M.	1050
Volts/Ph/Hz	208-230/1/60
F.L. Amps	6.0
<b>FILTER</b>	
Filter Furnished?	No
Type Recommended	Throwaway
No.-Size-Thickness	1 - 22 X 20 - 1 in.
<b>REFRIGERANT</b>	<b>R-410A</b>
Ref. Line Connections	Brazed
Coupling or Conn. Size — in. Gas	7/8
Coupling or Conn. Size — in. Liq.	3/8
<b>DIMENSIONS</b>	H x W x D
Crated (In.)	63-1/4 x 27-1/2 x 25-3/4
Uncrated	61-3/4 x 23-1/2 x 21-3/4
<b>WEIGHT</b>	
Shipping (Lbs.)/Net (Lbs.)	176/166

① These Air Handlers are A.H.R.I. certified with various Split System Air Conditioners and Heat Pumps (AHRI STANDARD 210/240). Refer to the Split System Outdoor Unit Product Data Guides for performance data.

② 3/4" Male Plastic Pipe (Ref.: ASTM 1785-76)



GAM5B0C48M41SB, GAM5B0C48M41EA MINIMUM HEATER AIRFLOW CFM		
Heater	Minimum Air Speed Tap	
	Without HP	With HP
BAYEAAC04BK1 BAYEAAC04LG1	Tap 2	Tap 3
BAYEAAC05BK1 BAYEAAC05LG1	Tap 2	Tap 3
BAYEAAC08BK1 BAYEAAC08LG1	Tap 2	Tap 3
BAYEAAC10BK1 BAYEAAC10LG1	Tap 2	Tap 3
BAYEAAC10LG3	Tap 2	Tap 3
BAYEABC15BK1	Tap 3	Tap 4
BAYEABC15LG3	Tap 3	Tap 4
BAYEABC20BK1	Tap 3	Tap 4
BAYEACC25BK1	Tap 4	Tap 5

**Note:** Heating and cooling speeds are the same, factory set at Speed Tap #4.

**Note:** A "G" only signal from the comfort control will run the blower at a lower speed, factory set at Speed Tap #1. See the Sequence of Operation for additional information.

**Note:** Speed Tap 1 is NOT used for two stage systems. Two stage systems will require an airflow adjustment



AIRFLOW PERFORMANCE										
GAM5B0C48M41SB, GAM5B0C48M41EA										
EXTERNAL STATIC (in w.g)	AIRFLOW (CFM)									
	Speed Taps - 230 VOLTS					Speed Taps - 208 VOLTS				
	5	4 †	3	2	1	5	4 †	3	2	1
0	1913	1770	1694	1593	866	1910	1767	1691	1590	863
0.1	1874	1730	1653	1547	791	1868	1724	1647	1541	785
0.2	1834	1690	1611	1505	699	1825	1681	1602	1496	690
0.3	1791	1646	1567	1456	620	1780	1635	1556	1445	609
0.4	1748	1600	1521	1410	537	1734	1586	1506	1396	522
0.5	1708	1556	1476	1367	453	1691	1539	1459	1350	437
0.6	1668	1516	1436	1326	370	1648	1496	1416	1306	351
0.7	1629	1475	1394	1283	-	1607	1452	1372	1260	-
0.8	1588	1435	1352	1236	-	1563	1410	1327	1211	-
0.9	1541	1390	1304	1183	-	1513	1362	1276	1156	-

NOTES:

1. Values are with wet coil and without filters.
2. Contact your particular filter manufacturer for pressure drop data.
3. Electric heater pressure drop is negligible and is included within the airflow data.
4. Tap 1 is an continuous fan speed tap.
5. † Factory Setting

WIRING DATA											
GAM5B0C48M41SB, GAM5B0C48M41EA											
Heater Model No.	No. of Circuits	240 VOLT					208 VOLT				
		Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection	Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection
		kW	BTUH				kW	BTUH			
No Heater	-	-	-	6.0*	8	15	-	-	6.0*	8	15
BAYEAC04BK1 BAYEAC04LG1	1	3.84	13100	16.0	28	30	2.88	9800	13.8	25	25
BAYEAC05BK1 BAYEAC05LG1	1	4.80	16400	20.0	33	35	3.60	12300	17.3	29	30
BAYEAC08BK1 BAYEAC08LG1	1	7.68	26200	32.0	48	50	5.76	19700	27.7	42	45
BAYEAC10BK1 BAYEAC10LG1	1	9.60	32800	40.0	58	60	7.20	24600	34.6	51	60
BAYEAC10LG3	1-3 PH	9.60	32800	23.1	36	40	7.20	24600	20.0	32	35
BAYEABC15LG3	1-3 PH	14.40	49200	34.6	50	50	10.80	36900	30.0	44	45
BAYEABC15BK1 - Circuit 1 ①	2	9.60	32800	40	58	60	7.20	24600	34.6	51	60
BAYEABC15BK1 - Circuit 2		4.80	16400	20	25	25	3.60	12300	17.3	22	25
BAYEABC20BK1 - Circuit 1 ①	2	9.60	32800	40	58	60	7.20	24600	34.6	51	60
BAYEABC20BK1 - Circuit 2		9.60	32800	40	50	50	7.20	24600	34.6	43	45
BAYEACC25BK1 - Circuit 1 ①	3	9.60	32800	40	58	60	7.20	24600	34.6	51	60
BAYEACC25BK1 - Circuit 2		9.60	32800	40	50	50	7.20	24600	34.6	43	45
BAYEACC25BK1 - Circuit 3		4.80	16400	20	25	25	3.60	12300	17.3	22	25

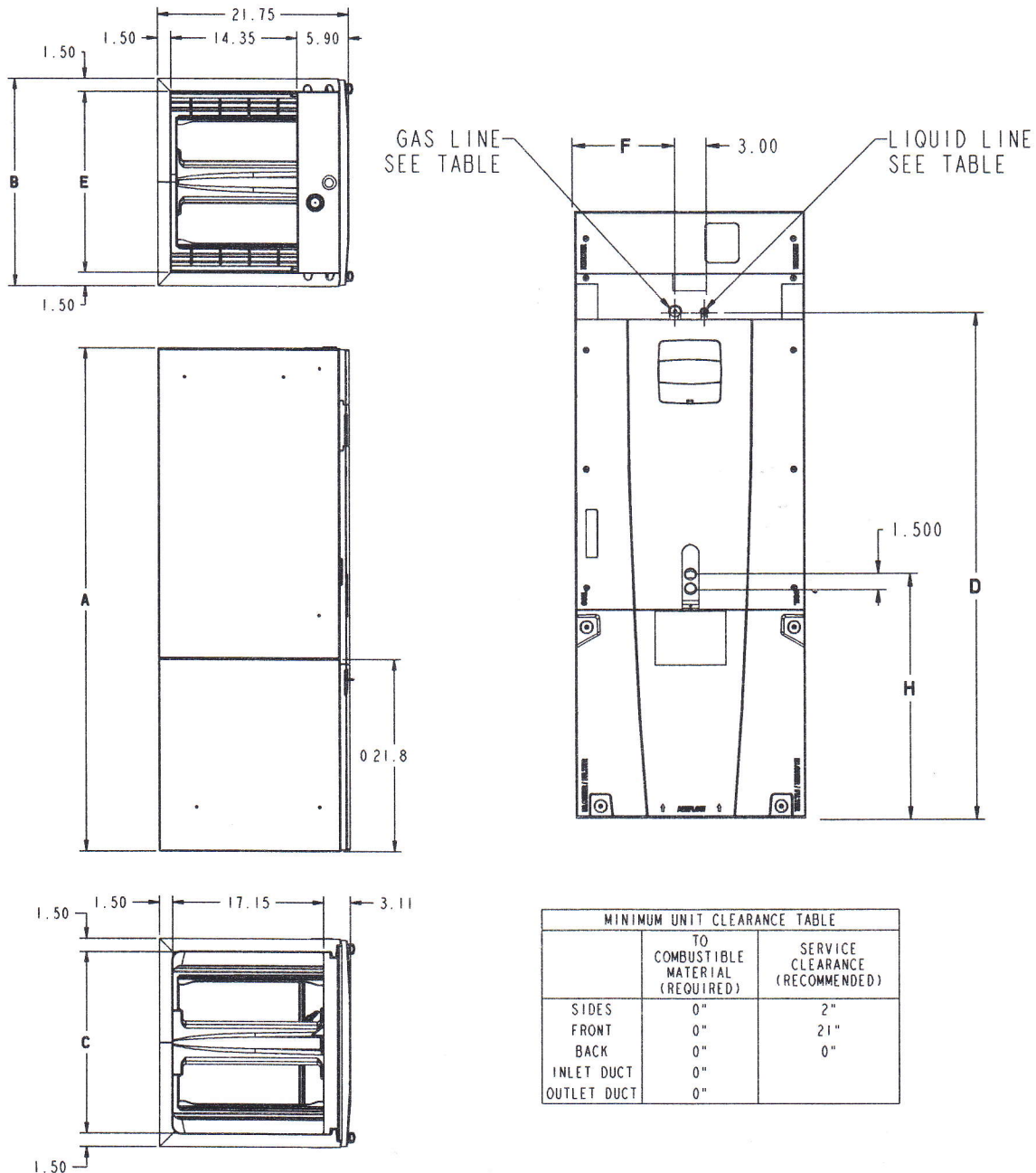
Note: \* Motor Amps  
① MCA and MOP for circuit 1 contains the motor amps

Notes:

1. See Product Data or Air Handler nameplate for approved combinations of Air Handlers and Heaters
2. Heater model numbers may have additional suffix digits.

TAG: AHU-4**Submittal**

**3-1/2 Ton Convertible Air Handler**  
**Black Epoxy Coil - GAM5B0C42M31EA**  
**Standard Coil - GAM5B0C42M31SB**



MINIMUM UNIT CLEARANCE TABLE		
	TO COMBUSTIBLE MATERIAL (REQUIRED)	SERVICE CLEARANCE (RECOMMENDED)
SIDES	0"	2"
FRONT	0"	21"
BACK	0"	0"
INLET DUCT	0"	
OUTLET DUCT	0"	

MODEL NO.	A	B	C	D	E	F	H	Flow Control	R-410A Gas Line BRAZE	R-410A Liq. Line BRAZE
GAM5B0C42	56.9	23.5	20.5	46.7	20.5	10.3	24.5	TXV	7/8	3/8



## PRODUCT SPECIFICATIONS

### PRODUCT SPECIFICATIONS

<b>MODEL</b>	<b>GAM5B0C42M31SB</b> <b>GAM5B0C42M31EA</b>
<b>RATED VOLTS/PH/HZ.</b>	208-230/1/60
<b>RATINGS</b> ①	See O.D. Specifications
<b>INDOOR COIL — Type</b>	Plate Fin
Rows — F.P.I.	4 - 14
Face Area (sq. ft.)	5.04
Tube Size (in.)	3/8
Refrigerant Control	TXV
Drain Conn. Size (in.) ②	3/4 NPT
<b>DUCT CONNECTIONS</b>	See Outline Drawing
<b>INDOOR FAN — Type</b>	Centrifugal
Diameter-Width (In.)	11 X 10
No. Used	1
Drive - No. Speeds	Direct - 5
CFM vs. in. w.g.	See Fan Performance Table
No. Motors — H.P.	1 - 1/2
Motor Speed R.P.M.	1050
Volts/Ph/Hz	208-230/1/60
F.L. Amps	4.1
<b>FILTER</b>	
Filter Furnished?	No
Type Recommended	Throwaway
No.-Size-Thickness	1 - 20 X 22 - 1 in.
<b>REFRIGERANT</b>	<b>R-410A</b>
Ref. Line Connections	Brazed
Coupling or Conn. Size — in. Gas	7/8
Coupling or Conn. Size — in. Liq.	3/8
<b>DIMENSIONS</b>	H x W x D
Crated (In.)	58-1/2 x 27-1/2 x 25-3/4
Uncrated	56-7/8 x 23-1/2 x 21-3/4
<b>WEIGHT</b>	
Shipping (Lbs.)/Net (Lbs.)	163/153

① These Air Handlers are A.H.R.I. certified with various Split System Air Conditioners and Heat Pumps (AHRI STANDARD 210/240). Refer to the Split System Outdoor Unit Product Data Guides for performance data.

② 3/4" Male Plastic Pipe (Ref.: ASTM 1785-76)



GAM5B0C42M31SB, GAM5B0C42M31EA MINIMUM HEATER AIRFLOW CFM		
Heater	Minimum Air Speed Tap	
	Without HP	With HP
BAYEAAAC04BK1 BAYEAAAC04LG1	Tap 2	Tap 3
BAYEAAAC05BK1 BAYEAAAC05LG1	Tap 2	Tap 3
BAYEAAAC08BK1 BAYEAAAC08LG1	Tap 2	Tap 3
BAYEAAAC10BK1 BAYEAAAC10LG1	Tap 2	Tap 3
BAYEAAAC10LG3	Tap 2	Tap 3
BAYEABC15BK1	Tap 3	Tap 4
BAYEABC15LG3	Tap 3	Tap 4
BAYEABC20BK1	-	-
BAYEACC25BK1	-	-

**Note:** Heating and cooling speeds are the same, factory set at Speed Tap #4.

**Note:** A "G" only signal from the comfort control will run the blower at a lower speed, factory set at Speed Tap #1. See the Sequence of Operation for additional information.

**Note:** Speed Tap 1 is NOT used for two stage systems. Two stage systems will require an airflow adjustment

AIRFLOW PERFORMANCE										
GAM5B0C42M31SB, GAM5B0C42M31EA										
EXTERNAL STATIC (in w.g)	AIRFLOW (CFM)									
	Speed Taps - 230 VOLTS					Speed Taps - 208 VOLTS				
	5	4 †	3	2	1	5	4 †	3	2	1
0	1644	1575	1401	1266	752	1641	1572	1398	1263	749
0.1	1596	1525	1346	1215	665	1590	1519	1340	1209	659
0.2	1550	1480	1300	1157	569	1542	1471	1291	1148	560
0.3	1509	1437	1252	1110	492	1497	1425	1241	1099	480
0.4	1463	1391	1205	1058	384	1449	1377	1191	1043	370
0.5	1420	1345	1151	980	327	1403	1328	1134	963	310
0.6	1376	1301	1085	917	259	1356	1282	1066	898	239
0.7	1332	1251	1020	865	-	1310	1228	998	842	-
0.8	1271	1179	969	813	-	1246	1154	944	788	-
0.9	1199	1119	924	747	-	1171	1091	897	719	-

NOTES:

1. Values are with wet coil and without filters.
2. Contact your particular filter manufacturer for pressure drop data.
3. Electric heater pressure drop is negligible and is included within the airflow data.
4. Tap 1 is an continuous fan speed tap.
5. † Factory Setting

WIRING DATA											
GAM5B0C42M31SB, GAM5B0C42M31EA											
Heater Model No.	No. of Circuits	240 VOLT					208 VOLT				
		Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection	Capacity		Heater Amps per Circuit	Minimum Circuit Ampacity	Maximum Overload Protection
		kW	BTUH				kW	BTUH			
No Heater	-	-	-	4.1*	5	15	-	-	4.1*	5	15
BAYEAAAC04BK1 BAYEAAAC04LG1	1	3.84	13100	16.0	25	25	2.88	9800	13.8	22	25
BAYEAAAC05BK1 BAYEAAAC05LG1	1	4.80	16400	20.0	30	30	3.60	12300	17.3	27	30
BAYEAAAC08BK1 BAYEAAAC08LG1	1	7.68	26200	32.0	45	45	5.76	19700	27.7	40	40
BAYEAAAC10BK1 BAYEAAAC10LG1	1	9.60	32800	40.0	55	60	7.20	24600	34.6	48	50
BAYEAAAC10LG3	1-3 PH	9.60	32800	23.1	33	35	7.20	24600	20.0	30	30
BAYEABC15LG3	1-3 PH	14.40	49200	34.6	48	50	10.80	36900	30.0	42	45
BAYEABC15BK1 - Circuit 1 ①	2	9.60	32800	40	55	60	7.20	24600	34.6	48	50
BAYEABC15BK1 - Circuit 2		4.80	16400	20	25	25	3.60	12300	17.3	22	25

Note: \* Motor Amps  
 ① MCA and MOP for circuit 1 contains the motor amps

Notes:

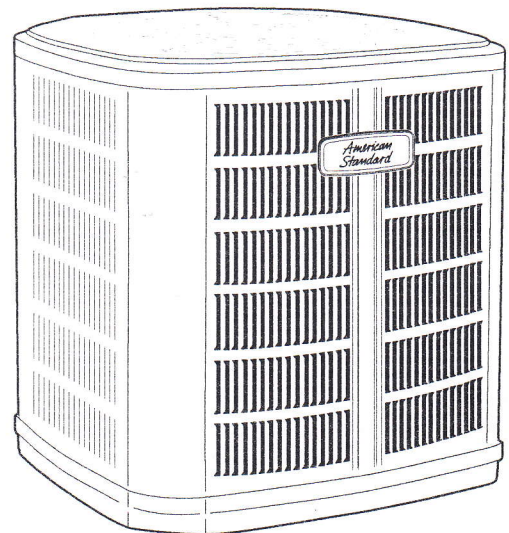
1. See Product Data or Air Handler nameplate for approved combinations of Air Handlers and Heaters
2. Heater model numbers may have additional suffix digits.



# Submittal

## Split System Cooling

4A7A4024L1000A

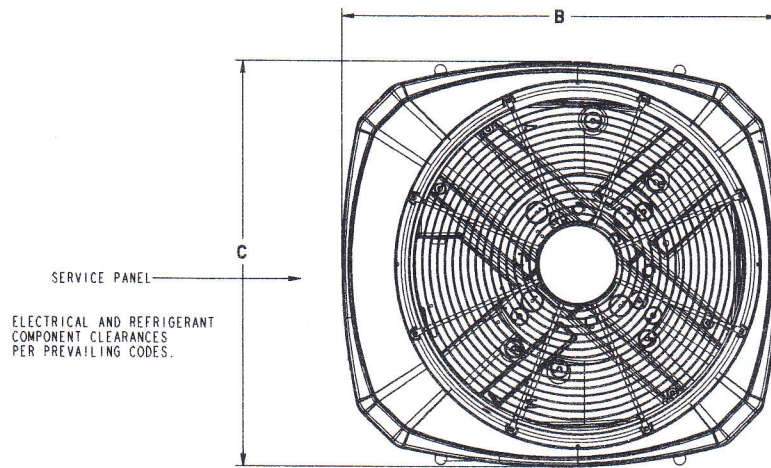


*Note: "Graphics in this document are for representation only. Actual model may differ in appearance."*

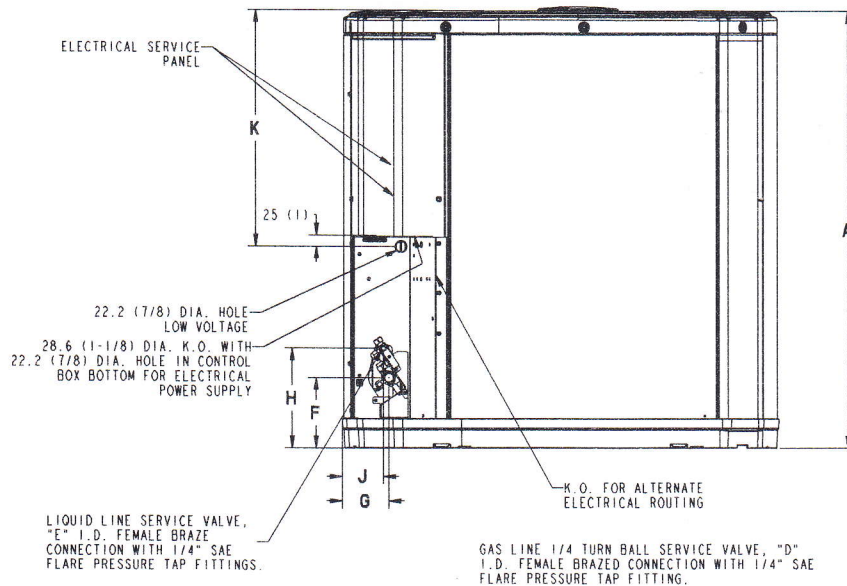
TAG: **CU-1**

### ▲ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 1524 (5 FEET) ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 305 (12") FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.



Model	Base	A	B	C	D	E	F	G	H	J	K
4A7A4024L	2	730 (28-3/4)	724 (28-1/2)	651 (25-5/8)	3/4	3/8	127 (5)	57 (2-1/4)	194 (7-5/8)	38 (1-1/2)	457 (18)

SOUND POWER LEVEL										
Model	A-Weighted Sound Power Level [dB(A)]	Full Octave Sound Power [dB]								
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
4A7A4024L	71	74	71	65	68	67	63	56	50	

Note: Rated in accordance with AHRI Standard 270-2008

## Product Specifications

<b>OUTDOOR UNIT</b> <sup>(a)</sup> <sup>(b)</sup>	4A7A4024L1000A
POWER CONNS. — V/PH/HZ <sup>(c)</sup>	208/230/1/60
MIN. BRCH. CIR. AMPACITY	14
BR. CIR. PROT. RTG. — MAX. (AMPS)	25
<b>COMPRESSOR</b>	CLIMATUFF®- SCROLL
NO. USED — NO. STAGES	1 — 1
VOLTS/PH/HZ	208/230/1/60
R.L. AMPS <sup>(d)</sup> — L.R. AMPS	10.9 — 63
FACTORY INSTALLED	
START COMPONENTS <sup>(e)</sup>	YES
INSULATION/SOUND BLANKET	NO
COMPRESSOR HEAT	NO
<b>OUTDOOR FAN</b>	PROPELLER
DIA. (IN.) — NO. USED	18.2 — 1
TYPE DRIVE — NO. SPEEDS	DIRECT — 1
CFM @ 0.0 IN. W.G. <sup>(f)</sup>	2450
NO. MOTORS — HP	1 — 1/15
MOTOR SPEED R.P.M.	1075
VOLTS/PH/HZ	200/230/1/60
F.L. AMPS	0.60
<b>OUTDOOR COIL — TYPE</b>	SPINE FIN™
ROWS — F.P.I.	1 — 24
FACE AREA (SQ. FT.)	13.75
TUBE SIZE (IN.)	3/8
<b>REFRIGERANT</b>	
LBS. — R-410A (O.D. UNIT) <sup>(g)</sup>	4 LBS., 11 OZ
FACTORY SUPPLIED	YES
LINE SIZE — IN. O.D. GAS <sup>(h)</sup>	3/4
LINE SIZE — IN. O.D. LIQ.	3/8
<b>CHARGING SPECIFICATIONS</b>	
SUBCOOLING	10°F
<b>DIMENSIONS</b>	H X W X D
CRATED (IN.)	30.1 x 26.7 x 30
<b>WEIGHT</b>	
SHIPPING (LBS.)	153
NET (LBS.)	133

<sup>(a)</sup> Certified in accordance with the Air-Source Unitary Air-conditioner Equipment certification program, which is based on AHRI standard 210/240.

<sup>(b)</sup> Rated in accordance with AHRI standard 270.

<sup>(c)</sup> Calculated in accordance with Natl. Elec. Codes. Use only HACR circuit breakers or fuses.

<sup>(d)</sup> This value shown for compressor RLA on the unit nameplate and on this specification sheet is used to compute minimum branch circuit ampacity and max. fuse size. The value shown is the branch circuit selection current.

<sup>(e)</sup> No means no start components. Yes means quick start kit components. PTC means positive temperature coefficient starter. Optional kit shown.

<sup>(f)</sup> Standard Air — Dry Coil — Outdoor

<sup>(g)</sup> This value approximate. For more precise value see unit nameplate.

<sup>(h)</sup> Max. linear length 60 ft.; Max. lift — Suction 60 ft.; Max. lift — Liquid 60 ft. For greater length consult refrigerant piping software Pub. No. 32-3312-0\* (\* denotes latest revision).



## Mechanical Specification Options

### General

The Outdoor Units are fully charged from the factory for up to 15 feet of piping. This unit is designed to operate at outdoor ambient temperatures as high as 115°F. Cooling capacities are matched with a wide selection of air handlers and furnace coils that are AHRI certified. The unit is certified to UL 1995. Exterior is designed for outdoor application.

### Casing

Unit casing is constructed of heavy gauge, galvanized steel and painted with a weather-resistant powder paint finish on all louvered panels and the fan top panel. The corner panels are prepainted. All panels are subjected to our 1,000 hour salt spray test. The base is made of a CMBP-G30 weatherproof material to resist corrosion.

### Refrigerant Controls

Refrigeration system controls include condenser fan, compressor contactor and high pressure switch. High and low pressure controls are inherent to the compressor. A factory supplied liquid line drier is standard. Some models may require field installation.

### Compressor

The compressor features internal over temperature, pressure protection and total dipped hermetic motor. Other features include: Centrifugal oil pump and low vibration and noise.

### Condenser Coil

The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

### Low Ambient Cooling

As manufactured, this system has a cooling capacity to 55°F. The addition of an evaporator defrost control permits operation to 40°F. The addition of an evaporator defrost control with TXV permits low ambient cooling to 30°F.

**Thermostats**—Cooling only and heat/cooling (manual and automatic change over). Sub-base to match thermostat and locking thermostat cover.

**Evaporator Defrost Control** — See Low Ambient Cooling.



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4A7A4024L-SUB-1B-EN 20 Feb 2015

Supersedes 4A7A4024L-SUB-1A-EN (September 2014)

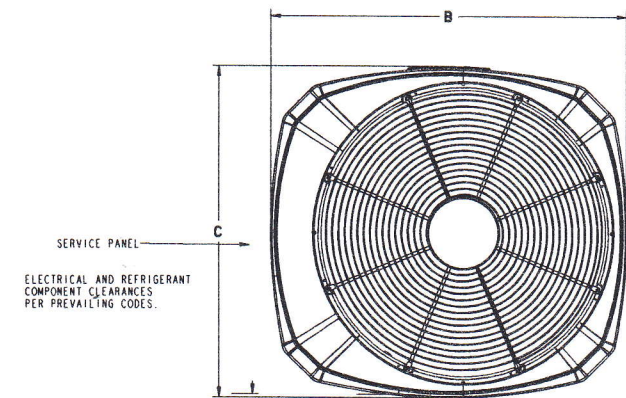


TAG: **C4-2**

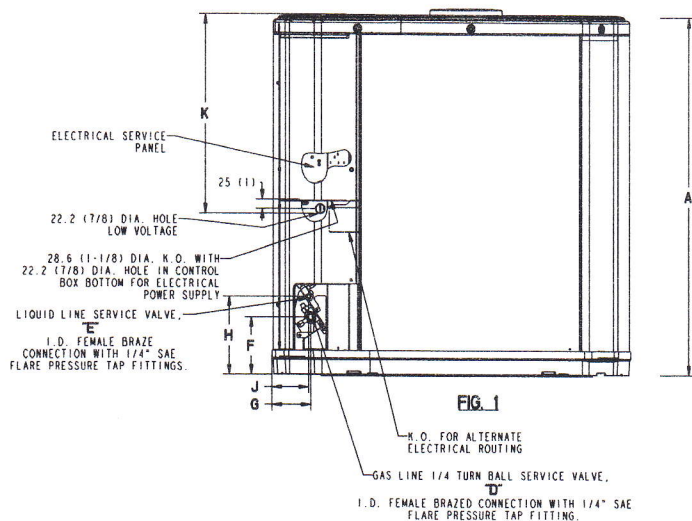
**4TTA3060D-SPC-106.01**

## SPECIFICATIONS

NOTE: All dimensions are in mm/inches.



TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 1524 (5 FEET) ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 305 (12") FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.



From Dwg. D152898

## 5 Ton Split System Cooling — 3 Phase

### 4TTA3060D

#### Product Specifications

OUTDOOR UNIT ①②	4TTA3060D3000C	4TTA3060D4000C
<b>POWER CONNS. — V/PH/HZ ③</b>	208/230/3/60	460/3/60
MIN. BRCH. CIR. AMPACITY	21	10
BR. CIR. PROT. RTG. - MAX. (AMPS)	35	15
<b>COMPRESSOR</b>	SCROLL	SCROLL
NO. USED - NO. SPEEDS	1 - 1	1 - 1
VOLTS/PH/HZ	200/230/3/60	460/3/60
R.L. AMPS ⑦ - L.R. AMPS	15.6 - 110	7.8 - 52
FACTORY INSTALLED		
START COMPONENTS ⑧	NO	NO
INSULATION/SOUND BLANKET	NO	NO
COMPRESSOR HEAT	YES	YES
<b>OUTDOOR FAN</b>	PROPELLER	PROPELLER
DIA. (IN.) - NO. USED	27.6 - 1	27.6 - 1
TYPE DRIVE - NO. SPEEDS	DIRECT - 1	DIRECT - 1
CFM @ 0.0 IN. W.G. ④	4320	4320
NO. MOTORS - HP	1 - 1/5	1 - 1/5
MOTOR SPEED R.P.M.	825	825
VOLTS/PH/HZ	200/230/1/60	460/3/60
F.L. AMPS	1.2	0.6
<b>OUTDOOR COIL — TYPE</b>	SPINE FIN™	SPINE FIN™
ROWS - F.P.I.	1 - 24	1 - 24
FACE AREA (SQ. FT.)	24.93	24.93
TUBE SIZE (IN.)	3/8	3/8
<b>REFRIGERANT</b>		
LBS. — R-410A (O.D. UNIT) ⑤	8 LBS., 0 OZ.	8 LBS., 0 OZ.
FACTORY SUPPLIED	YES	YES
LINE SIZE - IN. O.D. GAS ⑥	7/8	7/8
LINE SIZE - IN. O.D. LIQ. ⑥	3/8	3/8
<b>CHARGING SPECIFICATION</b>		
SUBCOOLING	10°F	10°F
<b>DIMENSIONS</b>	H X W X D	H X W X D
CRATED (IN.)	42.4 x 35.1 x 38.7	42.4 x 35.1 x 38.7
<b>WEIGHT</b>		
SHIPPING (LBS.)	261	261
NET (LBS.)	226	226

① Certified in accordance with the Air-Source Unitary Air-conditioner Equipment certification program, which is based on AHRI standard 210/240.

② Rated in accordance with AHRI standard 270.

③ Calculated in accordance with Natl. Elec. Codes. Use only HACR circuit breakers or fuses.

④ Standard Air — Dry Coil — Outdoor

⑤ This value approximate. For more precise value see unit nameplate.

⑥ Max. line length 60 ft.; Max. lift - Suction 60 ft.; Max. lift - Liquid 60 ft.

For greater length consult refrigerant piping software Pub. No. 32-3312-0\*

(\* denotes latest revision).

⑦ This value shown for compressor RLA on the unit nameplate and on this specification sheet is used to compute minimum branch circuit ampacity and max. fuse size. The value shown is the branch circuit selection current.

⑧ No means no start components. Yes means quick start kit components. PTC means positive temperature coefficient starter.

MODELS	BASE	FIG.	A	B	C	D	E	F	G	H	J	K
4TTA3060D	4	1	943 (37-1/8)	946 (37-1/4)	870 (34-1/4)	7/8	3/8	152 (6)	98 (3-7/8)	219 (8-5/8)	86 (3-3/8)	508 (20)

A-WEIGHTED SOUND POWER LEVEL [dB(A)]									
MODELS	SOUND POWER LEVEL [dB(A)]	A-WEIGHTED FULL OCTOAVE SOUND POWER LEVEL Db - [dB(A)]							
		63	125	250	500	1000	2000	4000	8000
4TTA3060D3	75	80	73	70	72	71	65	63	59
4TTA3060D4	80	47.3	55.7	69	72.7	75.8	69.4	62.2	53.3

Note: Rated in accordance with AHRI Standard 270-2008

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# Mechanical Specification Options

## General

The 4TTA3 - D model is fully charged from the factory for up to 15 feet of piping. This unit is designed to operate at outdoor ambient temperatures as high as 115°F. Cooling capacities are matched with a wide selection of air handlers and furnace coils that are AHRI certified. The unit is certified to UL 1995. Exterior is designed for outdoor application.

## Casing

Unit casing is constructed of heavy gauge, G90 galvanized steel and painted with a weather-resistant powder paint on all louvers, panels, prepaint on all other panels. Corrosion and weather-proof CMBP-G30 DuraBase™ base.

## Refrigerant Controls

Refrigeration system controls include condenser fan, compressor contactor and high pressure switch. High and low pressure controls are inherent to the compressor. A factory installed liquid line drier is standard.

## Compressor

The Duration™ compressor features internal over temperature and pressure protection and total dipped hermetic motor. Other features include: roto lock suction and discharge refrigerant connections, centrifugal oil pump and low vibration and noise.

## Condenser Coil

The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

## Low Ambient Cooling

As manufactured, this unit has a cooling capability to 55°F. The addition of an evaporator defrost control permits operation to 40°F. The addition of an evaporator defrost control with TXV permits low ambient cooling to 30°F.

## Accessories

**Thermostats** — Cooling only and heat/cooling (manual and automatic change-over). Sub-base to match thermostat and locking thermostat cover.

**Evaporator Defrost Control** — See Low Ambient Cooling.



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10/12

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The Manufacturer has a policy of continuous product and product data improvement and it reserves the right to change design and specifications without notice.

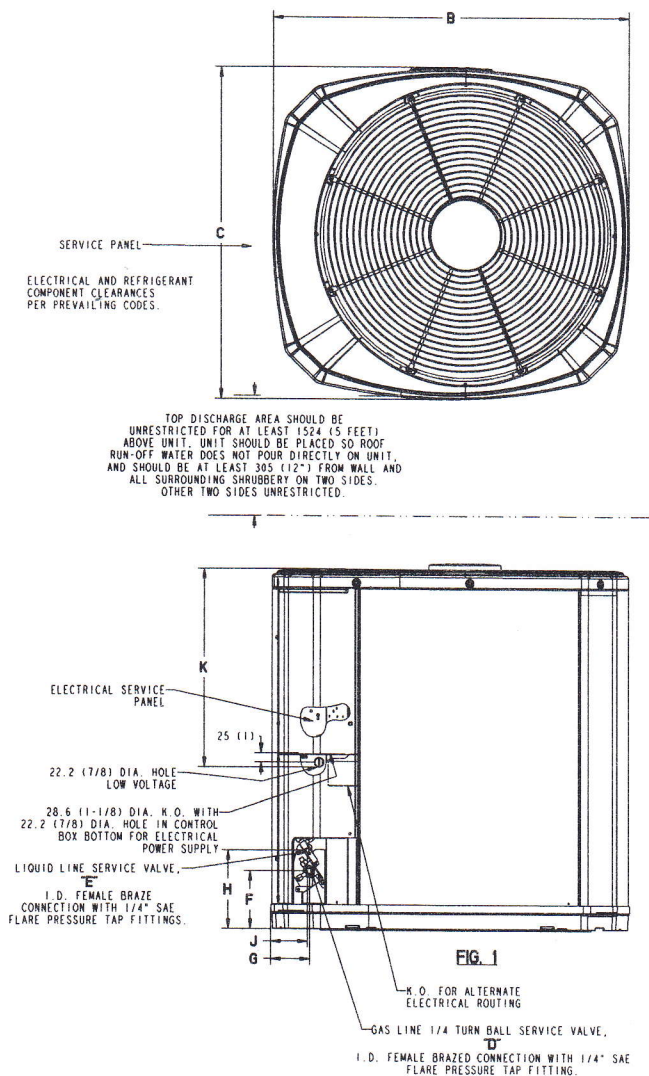


TAG: **CU-3, 7**

**4TTA3048D-SPC-105.01**

## SPECIFICATIONS

NOTE: All dimensions are in mm/inches.



From Dwg. D152898

## 4 Ton Split System Cooling — 3 Phase

### 4TTA3048D

#### Product Specifications

OUTDOOR UNIT ①②	4TTA3048D3000C	4TTA3048D4000C
<b>POWER CONNS. — V/PH/HZ ③</b>	208/230/3/60	460/3/60
MIN. BRCH. CIR. AMPACITY	18	8
BR. CIR. PROT. RTG. - MAX. (AMPS)	30	15
<b>COMPRESSOR</b>	SCROLL	SCROLL
NO. USED - NO. SPEEDS	1 - 1	1 - 1
VOLTS/PH/HZ	200/230/3/60	460/3/60
R.L. AMPS ⑦ - L.R. AMPS	13.7 - 83	6.2 - 41
FACTORY INSTALLED		
START COMPONENTS ④	NO	NO
INSULATION/SOUND BLANKET	NO	NO
COMPRESSOR HEAT	YES	YES
<b>OUTDOOR FAN</b>	PROPELLER	PROPELLER
DIA. (IN.) - NO. USED	27.6 - 1	27.6 - 1
TYPE DRIVE - NO. SPEEDS	DIRECT - 1	DIRECT - 1
CFM @ 0.0 IN. W.G. ④	3950	3950
NO. MOTORS - HP	1 - 1/5	1 - 1/5
MOTOR SPEED R.P.M.	825	825
VOLTS/PH/HZ	200/230/1/60	460/3/60
F.L. AMPS	1.2	0.6
<b>OUTDOOR COIL — TYPE</b>	SPINE FIN™	SPINE FIN™
ROWS - F.P.I.	1 - 24	1 - 24
FACE AREA (SQ. FT.)	19.07	19.07
TUBE SIZE (IN.)	3/8	3/8
<b>REFRIGERANT</b>		
LBS. — R-410A (O.D. UNIT) ⑤	6 LBS., 13 OZ.	6 LBS., 13 OZ.
FACTORY SUPPLIED	YES	YES
LINE SIZE - IN. O.D. GAS ⑥	7/8	7/8
LINE SIZE - IN. O.D. LIQ. ⑥	3/8	3/8
<b>CHARGING SPECIFICATION</b>		
SUBCOOLING	10°F	10°F
<b>DIMENSIONS</b>		
CRATED (IN.)	H X W X D 34.4 x 35.1 x 38.7	H X W X D 34.4 x 35.1 x 38.7
<b>WEIGHT</b>		
SHIPPING (LBS.)	235	235
NET (LBS.)	203	203

- ① Certified in accordance with the Air-Source Unitary Air-conditioner Equipment certification program, which is based on AHRI standard 210/240.
- ② Rated in accordance with AHRI standard 270.
- ③ Calculated in accordance with Natl. Elec. Codes. Use only HACR circuit breakers or fuses.
- ④ Standard Air — Dry Coil — Outdoor
- ⑤ This value approximate. For more precise value see unit nameplate.
- ⑥ Max. linear length 60 ft.; Max. lift - Suction 60 ft.; Max. lift - Liquid 60 ft.
- For greater length consult refrigerant piping software Pub. No. 32-3312-0\*
- (\* denotes latest revision).
- ⑦ This value shown for compressor RLA on the unit nameplate and on this specification sheet is used to compute minimum branch circuit ampacity and max. fuse size. The value shown is the branch circuit selection current.
- ⑧ No means no start components. Yes means quick start kit components. PTC means positive temperature coefficient starter.

MODELS	BASE	FIG.	A	B	C	D	E	F	G	H	J	K
4TTA3048D	4	1	741 (29-1/8)	946 (37-1/4)	870 (34-1/4)	7/8	3/8	152 (6)	98 (3-7/8)	219 (8-5/8)	86 (3-3/8)	508 (20)

A-WEIGHTED SOUND POWER LEVEL [dB(A)]									
MODELS	SOUND POWER LEVEL [dB(A)]	A-WEIGHTED FULL OCTOAVE SOUND POWER LEVEL Db - [dB(A)]							
		63	125	250	500	1000	2000	4000	8000
4TTA3048D3	75	80	73	70	72	71	65	63	59
4TTA3048D4	79	47.4	60	66.9	75.3	73.5	70.3	62	51.4

Note: Rated in accordance with AHRI Standard 270-2008

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# Mechanical Specification Options

## General

The 4TTA3 - D model is fully charged from the factory for up to 15 feet of piping. This unit is designed to operate at outdoor ambient temperatures as high as 115°F. Cooling capacities are matched with a wide selection of air handlers and furnace coils that are AHRI certified. The unit is certified to UL 1995. Exterior is designed for outdoor application.

## Casing

Unit casing is constructed of heavy gauge, G90 galvanized steel and painted with a weather-resistant powder paint on all louvers, panels, prepaint on all other panels. Corrosion and weather-proof CMBP-G30 DuraBase™ base.

## Refrigerant Controls

Refrigeration system controls include condenser fan, compressor contactor and high pressure switch. High and low pressure controls are inherent to the compressor. A factory installed liquid line drier is standard.

## Compressor

The Duration™ compressor features internal over temperature and pressure protection and total dipped hermetic motor. Other features include: roto lock suction and discharge refrigerant connections, centrifugal oil pump and low vibration and noise.

## Condenser Coil

The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

## Low Ambient Cooling

As manufactured, this unit has a cooling capability to 55°F. The addition of an evaporator defrost control permits operation to 40° F. The addition of an evaporator defrost control with TXV permits low ambient cooling to 30° F.

## Accessories

**Thermostats** — Cooling only and heat/cooling (manual and automatic change-over). Sub-base to match thermostat and locking thermostat cover.

**Evaporator Defrost Control** — See Low Ambient Cooling.



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The Manufacturer has a policy of continuous product and product data improvement and it reserves the right to change design and specifications without notice.



TAG: **cu-4**

4TTA3042D-SPC-104.01

## SPECIFICATIONS

NOTE: All dimensions are in mm/inches.

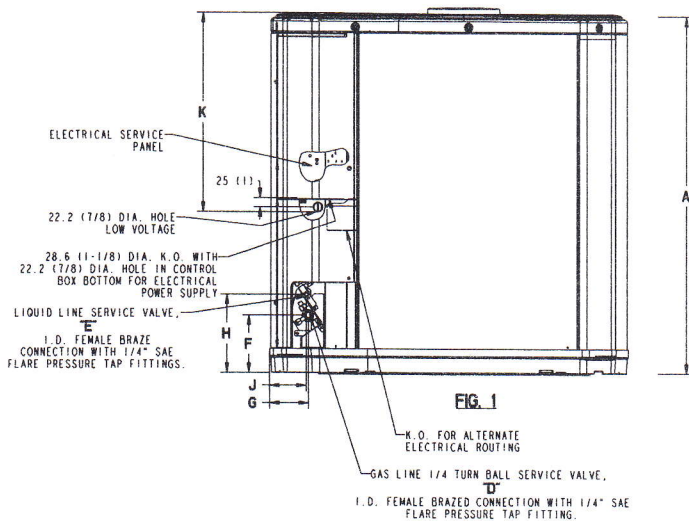
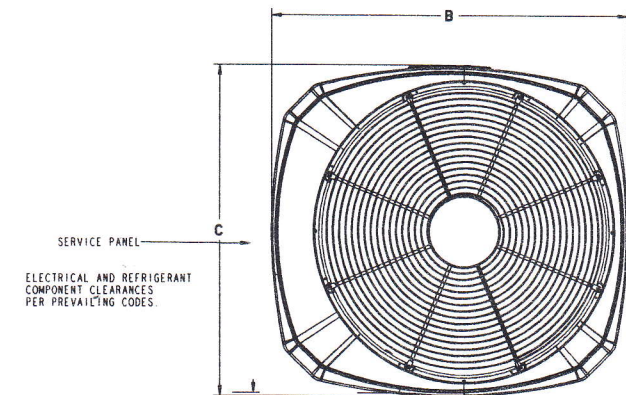


FIG. 1

From Dwg. D152898

## 3½ Ton Split System Cooling — 3 Phase

### 4TTA3042D

#### Product Specifications

OUTDOOR UNIT ①②	4TTA3042D3000C	4TTA3042D4000C
POWER CONNS. — V/PH/HZ ③	208/230/3/60	460/3/60
MIN. BRCH. CIR. AMPACITY	18	8
BR. CIR. PROT. RTG. - MAX. (AMPS)	30	15
COMPRESSOR	SCROLL	SCROLL
NO. USED - NO. SPEEDS	1 - 1	1 - 1
VOLTS/PH/HZ	200/230/3/60	460/3/60
R.L. AMPS ⑦ - L.R. AMPS	13.6 - 83	6.4 - 41
FACTORY INSTALLED		
START COMPONENTS ④	NO	NO
INSULATION/SOUND BLANKET	NO	NO
COMPRESSOR HEAT	YES	YES
OUTDOOR FAN	PROPELLER	PROPELLER
DIA. (IN.) - NO. USED	27.6 - 1	27.6 - 1
TYPE DRIVE - NO. SPEEDS	DIRECT - 1	DIRECT - 1
CFM @ 0.0 IN. W.G. ④	4150	4150
NO. MOTORS - HP	1 - 1/5	1 - 1/5
MOTOR SPEED R.P.M.	825	825
VOLTS/PH/HZ	200/230/1/60	460/3/60
F.L. AMPS	1.2	0.6
OUTDOOR COIL — TYPE	SPINE FIN™	SPINE FIN™
ROWS - F.P.I.	1 - 24	1 - 24
FACE AREA (SQ. FT.)	19.07	19.07
TUBE SIZE (IN.)	3/8	3/8
REFRIGERANT		
LBS. — R-410A (O.D. UNIT) ⑤	6 LBS., 2 OZ.	6 LBS., 2 OZ.
FACTORY SUPPLIED	YES	YES
LINE SIZE - IN. O.D. GAS ⑥	3/4	3/4
LINE SIZE - IN. O.D. LIQ. ⑥	3/8	3/8
CHARGING SPECIFICATION		
SUBCOOLING	10°F	10°F
DIMENSIONS	H X W X D	H X W X D
CRATED (IN.)	34.4 x 35.1 x 38.7	34.4 x 35.1 x 38.7
WEIGHT		
SHIPPING (LBS.)	228	228
NET (LBS.)	196	196

① Certified in accordance with the Air-Source Unitary Air-conditioner Equipment certification program, which is based on AHRI standard 210/240.

② Rated in accordance with AHRI standard 270.

③ Calculated in accordance with Natl. Elec. Codes. Use only HACR circuit breakers or fuses.

④ Standard Air — Dry Coil — Outdoor

⑤ This value approximate. For more precise value see unit nameplate.

⑥ Max. line length 60 ft.; Max. lift - Suction 60 ft.; Max. lift - Liquid 60 ft.

For greater length consult refrigerant piping software Pub. No. 32-3312-0\*

(\* denotes latest revision).

⑦ This value shown for compressor RLA on the unit nameplate and on this specification sheet is used to compute minimum branch circuit ampacity and max. fuse size. The value shown is the branch circuit selection current.

⑧ No means no start components. Yes means quick start kit components. PTC means positive temperature coefficient starter.

MODELS	BASE	FIG.	A	B	C	D	E	F	G	H	J	K
4TTA3042D	4	1	741 (29-1/8)	946 (37-1/4)	870 (34-1/4)	3/4	3/8	152 (6)	98 (3-7/8)	219 (8-5/8)	86 (3-3/8)	508 (20)

A-WEIGHTED SOUND POWER LEVEL [dB(A)]									
MODELS	SOUND POWER LEVEL [dB(A)]	A-WEIGHTED FULL OCTOAVE SOUND POWER LEVEL Db - [dB(A)]							
		63	125	250	500	1000	2000	4000	8000
4TTA3042D3	74	76	73	69	71	70	64	58	53
4TTA3042D4	79	47.5	64.5	67	75.3	74	70.7	62.2	52.8

Note: Rated in accordance with AHRI Standard 270-2008

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# Mechanical Specification Options

## General

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The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

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**Evaporator Defrost Control** — See Low Ambient Cooling.



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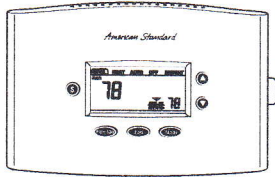
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The Manufacturer has a policy of continuous product and product data improvement and it reserves the right to change design and specifications without notice.



## Non-Programmable Comfort Controls



**ACONT402A**

### ACONT402AN32DA

Auto Changeover  
Backlit Display & Keys  
Comfort Information Compar™ent  
Energy Savings Mode  
Filter Reminder  
BAYSEN01ATEMPAA-Outdoor  
Temperature Sensor included\*  
Keypad Lock

**Application** (3-9 Wire Hookup -2  
for Outdoor Sensor) Heat Pump\*  
or A/C

3 Heat/2 Cool  
No external Dual Fuel Kit Required  
Do not use with TAYPLUS103A  
ZZSENSAL0400AA - Remote Indoor  
Temperature Sensor

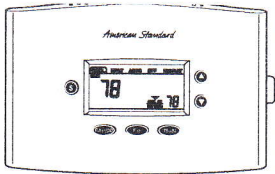
### Dimensions:

6.75" w x 4.52" h x 1.20" d

Finish: Bright White

\* Requires external relay for oil furnace applications.

\* Installation is required for outdoor temperature sensing and display



**ACONT401A**

### ACONT401AN21MA

Auto Changeover  
Backlit Display & Keys  
Comfort Information Compar™ent  
Energy Savings Mode  
Filter Reminder  
Outdoor Temperature Sensor  
Keypad Lock

**Application** (3-9 Wire Hookup -2  
for Outdoor Sensor) Heat Pump\*  
or A/C

1 Stage Heat Pump\*\*, 1 Stage Aux Heat  
1 Stage Heat Pump\*\*, 0 Stage Aux Heat  
1 Stage Cool, 2 Stage Heat  
(Gas, Electric or Oil\*)  
1 Stage Cool, 1 Stage Heat  
(Gas, Electric or Oil\*)

1 Stage Cool, 0 Stage Heat

0 Stage Cool, 2 Stage Heat  
(Gas, Electric or Oil\*)

0 Stage Cool, 1 Stage Heat  
(Gas, Electric or Oil\*)

### Dimensions:

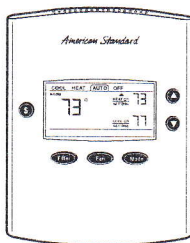
6.75" w x 4.52" h x 1.20" d

Finish: Bright White

\* Requires external relay for oil furnace applications.

\*\* **External TAYPLUS103A required for dual fuel applications.**

BAYSEN01ATEMPA required for outdoor temperature sensing and display



**ACONT200A**

### ACONT200AN11AA①

Auto Changeover  
Backlit Display & Keys  
Comfort Information Compar™ent  
Energy Savings Mode  
Filter Reminder  
Key Pad Lock

**Application** (4 wire hookup - power stealing)\*

1 Heat/1 Cool (Gas, Oil or electric)

1 Heat/0 Cool (Gas, Oil or electric)

0 Heat/1 Cool

Finish: Bright White

### Dimensions:

4.25" w x 5.33" h x 1.20" d

① Power Stealing 4 Wire - Resistor Terminal in Box, 4 - wire system to supply power with heating mode; both resistors must be installed for proper operation.

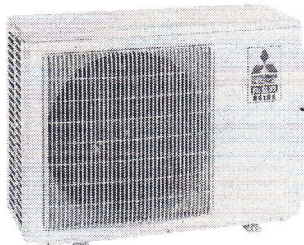
**SUBMITTAL DATA: PKA-A12HA4 & PUY-A12NHA4 (-BS)**

12,000 BTU/H WALL-MOUNTED AIR-CONDITIONING SYSTEM

Job Name: Home 2 Suites	Location: Flowood	Date: 12/9/16
Purchaser:	Engineer: Innovative Engineering	
Submitted to: SHS Development	For <input type="checkbox"/> Reference <input checked="" type="checkbox"/> Approval <input type="checkbox"/> Construction	
System Designation: AHU ,CU -5 & 6	Schedule No.:	



Indoor Unit: PKA-A12HA4



Outdoor Unit: PUY-A12NHA4 (-BS)

**GENERAL FEATURES**

- Wall-mounted indoor unit for residential and commercial applications
- Shiny-white-exterior plastic; compact design
- Quiet operation—both indoor and outdoor units
- Self-check function—integrated diagnostics
- Limited warranty: five years parts and seven years compressors

**UNIT OPTION**

- ☐ Standard Model.....PUY-A12NHA4
- ☐ Sea Coast (BS) Model.....PUY-A12NHA4-BS

**ACCESSORIES**
**Indoor Unit**

- ☐ Mini Condensate Pump (SI3100-230, 230V)
- ☐ L-Connector Pipe (PAC-SC84PI; for left side unit piping installation)

**Outdoor Unit**

- ☐ Drain Pan (PAC-SG63DP)
- ☐ Drain Socket (PAC-SG61DS)
- ☐ Three-pole Disconnect Switch (TAZ-MS303)
- ☐ Wind Baffle (WB-PA1)
- ☐ Air Outlet Guide (PAC-SG58SG)
- ☐ Mounting Base (DSD-400N)
- ☐ Mounting Pad (ULTRILITE1)
- ☐ Wall-mounting Brackets (CWMB1)

**Controller Options**

- ☐ Wireless Wall-mounted Remote Controller Kit (MHK1)\*\*
  - ☐ Portable Central Controller (MCCH1)\*\*
  - ☐ Outdoor Air Sensor (MOS1)\*\*
  - ☐ Wired Wall-mounted Controller (PAR-31MAA)\*\*
  - ☐ Simple MA Remote Controller (PAC-YT53CRAU)\*\*
- \*\*See Submittal for information on each option.
- ☐ M-NET Adapter (PAC-SF81MA)
  - ☐ CN51 Connector for Multiple Remote Controller Adapters/Duct Fan Controller (PAC-725AD)
  - ☐ CN32 Connector for Remote On/Off (PAC-715AD)
  - ☐ Remote Temperature Sensor (PAC-SE41TS)
  - ☐ Remote Operation Adapter - Display and On/Off (PAC-SF40RM)
  - ☐ Hand-held Wireless Remote Controller (PAR-FL32MA; req. PAR-FA32MA-E)
  - ☐ Wireless Signal Receiver Module (PAR-FA32MA-E)
  - ☐ Lockdown Bracket for Hand-held Controller (RCMKP1CB)
  - ☐ Control/Service Tool (PAC-SK52ST)

**SEACOAST PROTECTION**

- External Outer Panel: Phosphate coating + Acrylic-Enamel coating
- Fan Motor Support: Epoxy resin coating (at edge face)
- Separator Assembly ; Valve Bed: Epoxy resin coating (at edge face)
- Screws (used outer side): Zinc nickel coating 5µm + Polyvinylidene chloride coating

"Blue Fin" treatment is an anti-corrosion treatment that is applied to the condenser coil to protect it against airborne contaminants..


**INVERTER**



# SPECIFICATIONS: PKA-A12HA4 & PUY-A12NHA4 (-BS)

## Cooling\*

Rated Capacity .....12,000 Btu/h  
 Minimum Capacity .....6,000 Btu/h  
 SEER .....15.2 Btu/h/W  
 EER .....10.1 Btu/h/W  
 Total Input .....1,190 W

## \* Rating Conditions per AHRI Standard

Cooling | Indoor: 80° F (27° C) DB / 67° F (19° C) WB  
 Cooling | Outdoor: 95° F (35° C) DB / 75° F (24° C) WB

## Electrical Requirements

Power Supply .....208 / 230V, 1-Phase, 60 Hz  
 Recommended Fuse/Breaker Size .....15 A

## Voltage

Indoor - Outdoor S1-S2 .....AC 208 / 230V  
 Indoor - Outdoor S2-S3 .....DC ±24V

## OPERATING CONDITIONS

		Indoor Intake Air Temp.	Outdoor Intake Air Temp.
Cooling	Maximum	95° F (35° C) DB 71° F (22° C) WB	115° F (46° C) DB
	Minimum	67° F (19° C) DB 57° F (14° C) WB	0° F** (-18° C) DB

\*\* With optional wind baffle accessory installed. If not installed, the minimum temperature will be 23° F (-5° C) DB.

## Indoor Unit

MCA .....1 A  
 Blower Motor (ECM) .....0.33 F.L.A.  
 Blower Motor Output .....30 W  
 Airflow (Lo - Mid - Hi) .....320 - 370 - 425 Dry CFM  
 290 - 335 - 380 Wet CFM  
 Air Filter .....Polypropylene Honeycomb  
 Sound Pressure Level (Lo - Mid - Hi) .....36 - 40 - 43 dB(A)  
 SHF .....0.81  
 Moisture Removal .....2.0 pt./h

DIMENSIONS	UNIT INCHES / MM
W	35-3/8 / 898
D	9-13/16 / 249
H	11-5/8 / 295

Weight .....29 lbs. / 13 kg  
 External Finish .....Munsell No. 1.0Y 9.2 / 0.2  
 Field Drainpipe Size O.D. ....5/8" / 16 mm

## Outdoor Unit

Compressor .....DC Inverter-driven Twin Rotary  
 MCA .....13 A  
 MOCP .....15 A  
 Fan Motor (ECM) .....0.35 F.L.A.  
 Sound Pressure Level  
 Cooling .....46 dB(A)

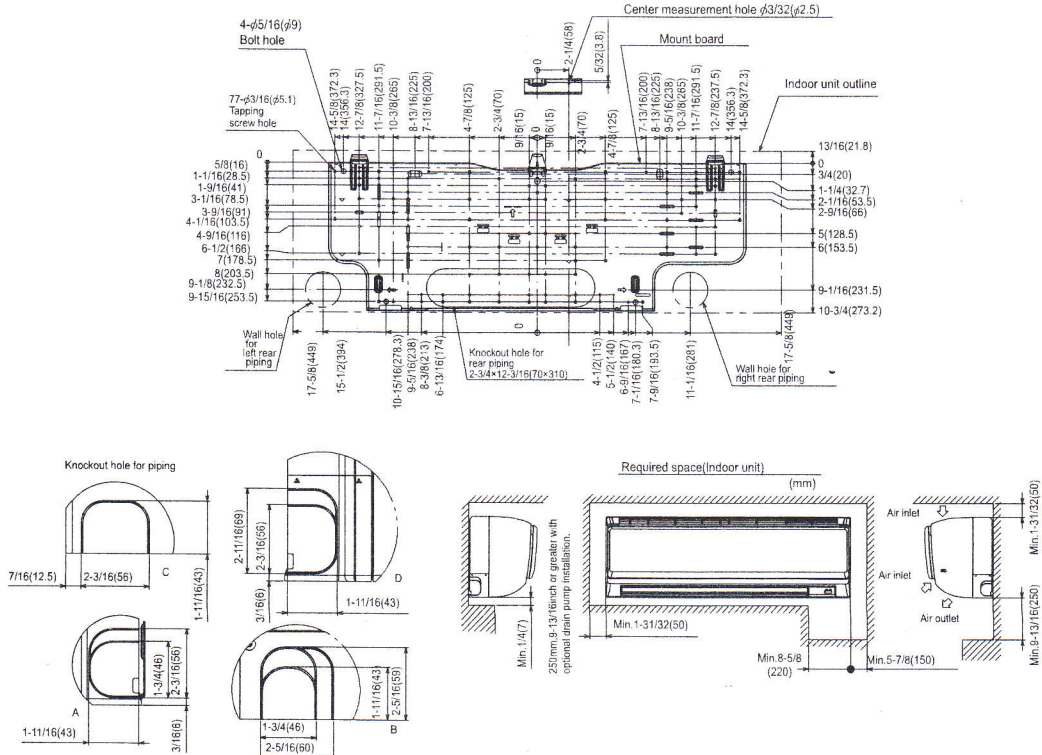
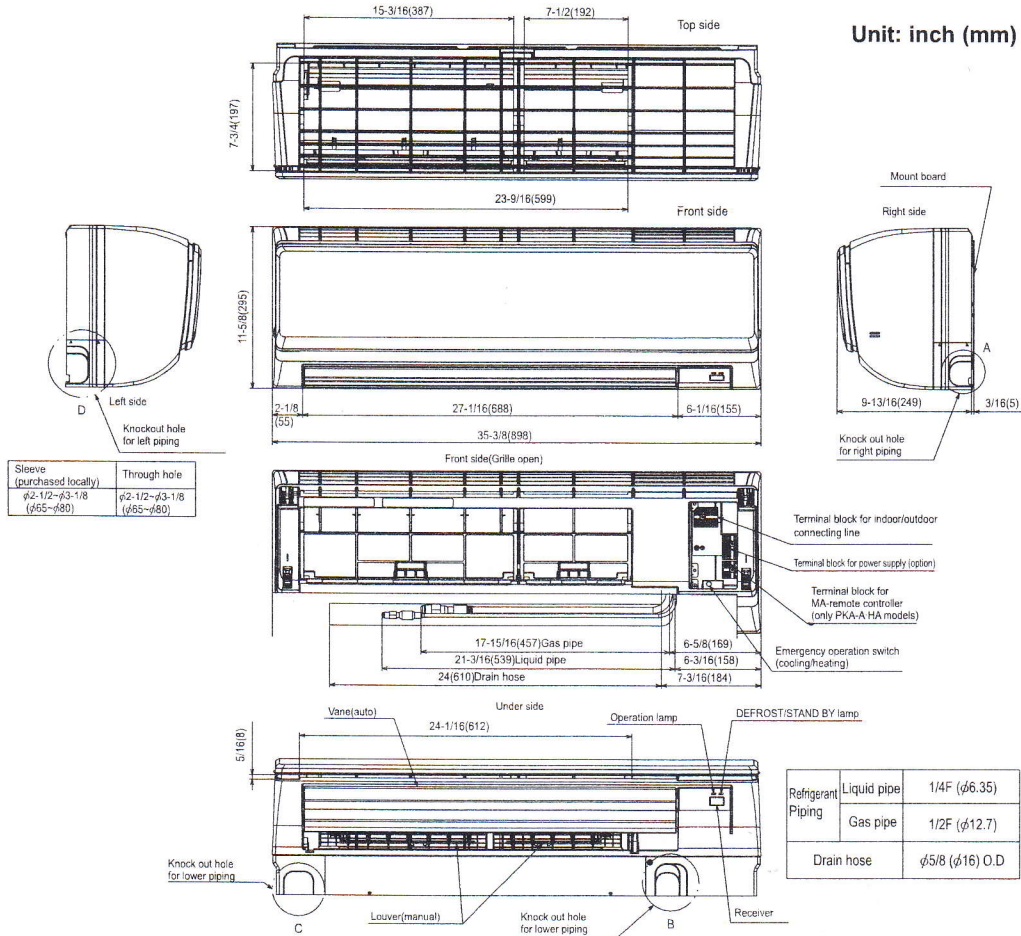
DIMENSIONS	INCHES / MM
W	31-1/2 / 800
D	11-13/16 + 7/8 / 300 + 23
H	23-5/8 / 600

Weight .....82 lbs. / 37 kg  
 External Finish .....Munsell No. 3Y 7.8 / 1.1  
 Refrigerant Type .....R410A  
 Refrigerant Pipe Size O.D.  
 Gas Side .....1/2" / 12.7 mm  
 Liquid Side .....1/4" / 6.35 mm  
 Max. Refrigerant Pipe Length .....100' / 30 m  
 Max. Refrigerant Pipe Height Difference .....100' / 30 m  
 Connection Method .....Flared

Notes:

# DIMENSIONS: PKA-A12HA4

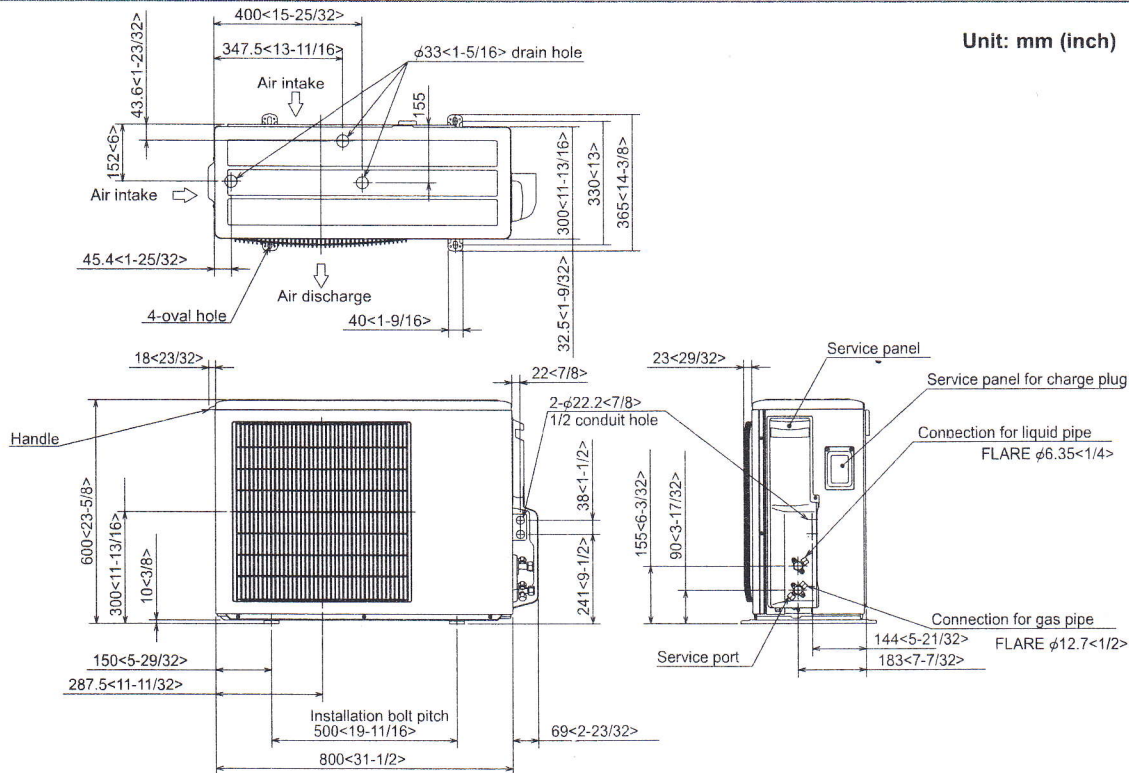
Unit: inch (mm)



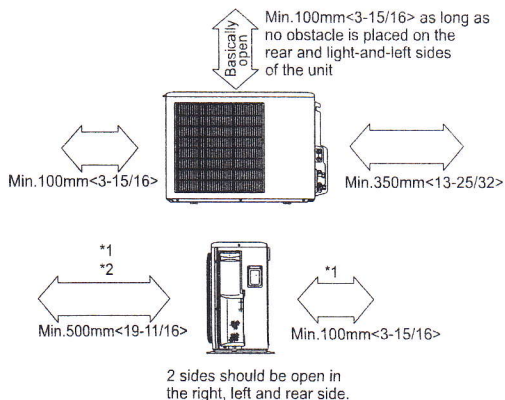


**DIMENSIONS: PUY-A12NHA4 (-BS)**

Unit: mm (inch)

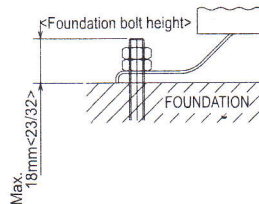


Clearance space around the outdoor unit



## FOUNDATION BOLTS

Please secure the unit firmly with 4 foundation M10<W3/8> bolts. (Bolts, washers and nut must be purchased locally.)



### PIPING-WIRING DIRECTION

Piping and wiring connection can be made from the rear direction only.

### Minimum installation space for outdoor unit

- \*1 In the place where short cycle tends to occur, cooling and heating capacity and power consumption might get lowered 10%.  
Air outlet guide (optional) will help them improve.
- \*2 If air discharges to the wall, the surface might get stained.



## Intertek



1340 Satellite Boulevard  
Suwanee, GA 30024  
Tele: 678-376-2900 • Fax: 800-889-9904  
Toll Free: 800-433-4822  
[www.mehvac.com](http://www.mehvac.com)



**GORHAM/SCHAFFLER**

PRODUCTS FOR THE  
ENGINEERED ENVIRONMENT

# ***SUBMITTAL***

*Job Title:* **Home2 Suites by Hilton**

*Location:* Flowood, MS

*Contractor:* Comfort Designs

*Date:* December 9, 2016

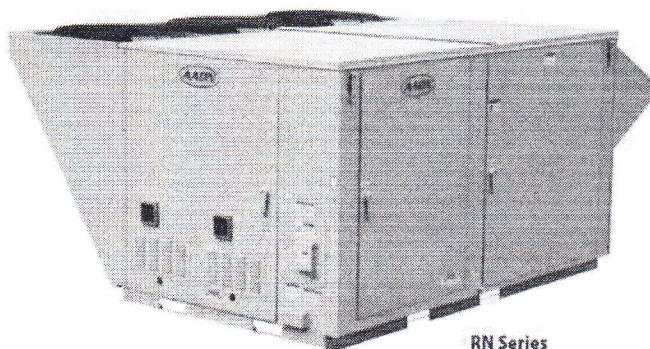
*Submitted By:* Rob Thomas

**GORHAM/SCHAFFLER, INC.**

115A Lone Wolf Drive  
Madison, MS 39110

Phone: (601) 405-9775

[www.gorhamschaffler.com](http://www.gorhamschaffler.com)



RN Series

**Estimated lead time for curbs is 3 weeks, and 8 weeks for equipment, from receipt of approved submittals.**







**GORHAM/SCHAFFLER**

*PRODUCTS FOR THE  
ENGINEERED ENVIRONMENT*

**Equipment selection based on 208/3 electrical service and natural gas heating source**

**100% OSA HEATING & COOLING UNITS**

Manufacturer: AAON, INC.  
Model: Series RN  
Tag: MAU-1 & 2  
Description:

Unit is designed specifically for 100% outside air rooftop applications with weatherproof cabinet, dual circuit refrigeration system, modulating natural gas heating system, total operating and safety controls. Unit is completely factory assembled, piped, tested, internally wired and shipped as a single package. Unit is certified in accordance with UL Standard UL465, and ANSI Standard Z21.47. Units are ETL labeled.

The hinged access panels have 1/4 turn latches. All airside roof and wall casing shall include 2-inch thick rigid, closed cell polyurethane foam double wall construction with an R-value of 13. Finish of corrosion resistant, two par polyurethane, heat dried paint.

Supply fan shall be direct drive, single width inlet, un-housed airfoil centrifugal plenum fan. Motor bearings shall be rated for 200,000 hours service and shall have external lubrication lines. Fan(s) and motor(s) shall be dynamically balanced, and the entire fan assembly mounted on rubber isolators.

Unit has two independent refrigeration circuits. Compressors are fully hermetic type equipped with internal overload protection, mounted with suitable vibration isolators and carry a 5 year parts warranty. Condenser fans shall be high efficiency electronically commutated motor driven with factory installed head pressure control module. Condenser airflow shall continuously modulate based on head pressure. Propeller fans are top discharge, aluminum blades with zinc plated steel hubs. Refrigeration piping includes thermostatic expansion valve, liquid line filter drier, service ports, manual reset high-pressure switch and low-pressure switch.

Hot gas bypass is provided on all circuits. In addition, heat reclaim coil is provided with a modulating refrigerant control valve for leaving air humidity control.

Coils are aluminum plate rippled fin, mechanically bonded to heavy wall seamless copper rifled tubes. Evaporator coil is interlaced to assure all air is conditioned when only one circuit in operation.

The unit filters are 4" pleated type with 2" pleated pre-filters and easily accessible through removable panels.

Heat exchanger is indirect fired, tubular type with .120 wall stainless steel construction. Combustion system includes induced draft combustion blower with electric pressure switch. Control system is 100% safe with electronic spark ignition with pilot relight and





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ENGINEERED ENVIRONMENT**

flame sensor. Controls include main gas solenoid with manual shutoff valve and integral pressure regulator, combination fan and limit control, and proven airflow switch. Gas furnace system is modulating control and approved for outdoor application. Heat exchanger has 25-year non-prorated warranty.

Outside air hood is bottom inlet with mesh grille eliminating the possibility of rain or large foreign objects from being drawn into the outside air opening.

The unit manufacturer supplies all controls for the complete operation of the rooftop unit.

**OPTIONAL ACCESSORIES INCLUDE:**

1. 100% OSA hood with birdscreen
2. Programmable controller
3. Stainless steel heat exchanger
4. 10:1 turndown furnace control
5. Hot gas bypass all circuits
6. Heat reclaim coil with modulating valve
7. Stainless steel drain pan
8. Sight glass
9. Double wall construction
10. ECM condenser fans for head pressure control
11. Non-fused disconnect
12. MERV 8 pre-filters
13. MERV 12 unit filters
14. Phase protection

**SHIPPED LOOSE**

1. OE212 room sensors
2. Plenum roof curbs with vibration isolation rails
3. Programming tool

**IMPORTANT NOTES:**

1. **Required roof curb height is dependent upon actual roofing insulation thickness and minimum clearance requirements. Supply openings in side of plenum curb to be field cut. Factory openings are available with contractor provided detail of opening locations and sizes. Curb drawings are for dimensional reference only. Curb height will be coordinated with contractor and a formal curb/isolation rails submittal will be provided for approval prior to curb release.**
2. Cut roof curb discharge opening in field as required matching discharge duct. Locate unit so that outside air intake is 10' from nearest exhaust fan. **Exterior of curb at base flange must be mopped in with roofing compound or sealant to form airtight seal.**
3. Check blower RPM and adjust as required to RPM shown in submittal schedule. Additional balancing may be required depending on actual external static pressure.
4. Supply air temperature sensor (located in RTU controls cabinet) must be field installed in supply ductwork a minimum of 12 feet downstream of unit discharge. **Wire must be run in watertight conduit external to the unit/duct.**







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*PRODUCTS FOR THE  
ENGINEERED ENVIRONMENT*

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5. **Field install space temperature sensors on top floor using 18 AWG - plenum rated, 3 insulated conductor wire with a shield and drain, for each sensor, to the location specified by others.** All sensor wires run from the RTU should be installed properly. Please keep all control wires at least 18 inches from Light Ballasts, High Voltage wires and conduit to prevent interference.
6. **Contractor to confirm equipment heating source and voltage prior to ordering or submittal is assumed correct.**





# Unit Rating

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094  
AAONEcat32 Ver. 4.247 (SN: 7126944-6D3F6439)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23  
RN-020-8-0-BA02-349:M000-U00-DQQ-AF0-0JKBHBF-00-0000000AX  
Tag: MUA-1,2

(Values do not account for changes described in SPA)

## Job Information

Job Name: Flowwood MS Home2 Suites  
Job Number: Flowwood MS Home2 Suites  
Site Altitude: 0 ft  
Refrigerant: R-410A

## Static Pressure

External: 1.50 in. wg.  
Evaporator: 0.12 in. wg.  
Filters Clean: 0.10 in. wg.  
Dirt Allowance: 0.35 in. wg.

## Cooling Section

	Gross	Net
Total Capacity:	255.82	250.61 MBH
Sensible Capacity:	95.66	90.45 MBH
Latent Capacity:	160.16 MBH	
Mixed Air Temp:	83.50 °F DB	78.70 °F WB
Entering Air Temp:	83.50 °F DB	78.70 °F WB
Lv Air Temp (Coil):	55.11 °F DB	54.91 °F WB
Lv Air Temp (Unit):	56.58 °F DB	55.50 °F WB
Supply Air Fan:	1 x 270D60 @ 1.81 BHP	
SA Fan RPM / Width:	1009 / 3.091"	
Evaporator Coil:	19.9 ft <sup>2</sup> / 4 Rows / 14 FPI	
Evaporator Face Velocity:	161.1 fpm	

## Rating Information

Cooling Capacity (MBH): 230.0  
Cooling EER: 12  
Cooling IEER: 13.8  
Rated in accordance with AHRI 340/360

Application EER @ Op. Conditions: 14.2

## Electrical Data

Rating: 208/3/60  
Unit FLA: 85

Minimum Circuit Amp: 92  
Maximum Overcurrent: 110

	Qty	HP	VAC	Phase	RPM	FLA	RLA
Compressor 1:	2		208	3			30.1
Condenser Fans:	2	1.00	208	1	1110	7.0	
Supply Fan:	1	3.00	208	3	1170	10.6	
Combustion:	1	0.25	208	1	3210	1.7	

## Cabinet Sound Power Levels\*

Octave Bands:	63	125	250	500	1000	2000	4000	8000
Discharge LW(dB):	84	84	84	81	77	82	79	75
Return LW(dB):	74	70	67	62	63	59	47	41

\*Sound power levels are given for informational purposes only. The sound levels are not guaranteed.

## Unit Information

\*\*WEIGHT AND PERFORMANCE DO NOT INCLUDE SPA

Approx. Op./Ship Weights: 2672 / 2672 lbs. (±5%)  
Supply CFM/ESP: 3200 / 1.5 in. wg.  
Pre-Filter FV / Qty: 153.60 fpm / 6  
Final Filter FV / Qty: 153.60 fpm / 6  
Outside CFM: 3200  
Ambient Temperature: 83.5 °F DB / 78.7 °F WB

Economizer: 0.00 in. wg.  
Heating: 0.07 in. wg.  
Cabinet: 0.01 in. wg.  
Re-Heat Coil: 0.01 in. wg.  
Total: 2.17 in. wg.

## Heating Section

PreHeat Type: Std (No Preheat)  
Heating Type: Nat. Gas Heat  
Heating CFM: 3200  
Total Capacity: 218.7 MBH  
OA Temp: 17.1 °F DB / 16.0 °F WB  
RA Temp: 75.0 °F DB / 62.0 °F WB  
Entering Air Temp: 17.1 °F DB / 16.0 °F WB  
Leaving Air Temp: 80.3 °F DB / 51.4 °F WB  
Input: 270.0 MBH  
Heater Qty: 1  
Consumption: 270.0 MBH

## Re-Heat Coil:

Capacity: 58 MBH  
LA DB / WB: 72.00 °F / 61.30 °F  
RH: 55%





# Unit Submittal

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094  
AAONEcat32 Ver. 4.247 (SN: 7126944-6D3F6439)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23  
RN-020-8-0-BA02-349:M000-U00-DQQ-AF0-0JKBHBF-00-0000000AX  
Tag: MUA-1,2

Job Name:  
Job Number:

Flowood MS Home2 Suites  
Flowood MS Home2 Suites

Unit Submittal For:  
Unit Submittal Date:

February 16, 2016

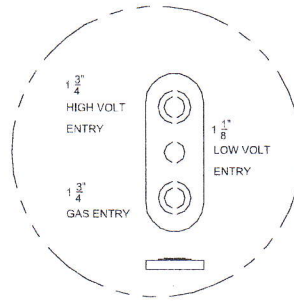
	Base Option	Description
R	Series	Roof Top Unit
N	Generation	Ninth Generation
020	Unit Size	Twenty
8	Voltage	208V/3O/60Hz
0	Interior Protection	Standard
B	Refrigerant Style	R-410A
A	Unit Configuration	Air-Cooled Cond. + Std Evap. Coil
0	Coil Coating	Standard
2	Cooling/Heat Pump Staging	2 Stage
3	Heating Type	Natural Gas Stainless Steel
4	Heating Designation	Heat 4 - 270 MBtuh
9	Heating Staging	Modulating Gas - Temperature Control

	Feature Option	Description
M	1A. RA/OA Section	Motorized 100% Outside Air Dampers - No RA Opening
0	1B. RA/EA Blower Configuration	Standard - None
0	1C. RA/EA Blower	Standard - None
0	1D. RA/EA Blower Motor	Standard - None
U	2. OA Control	2 Position Actuator
0	3. Heat Options	Standard
0	4. Maintenance Options	Standard
D	5A. SA Blower Configuration	1 Blower + Premium Efficiency Motor + 1 VFD
Q	5B. SA Blower	27" Direct Drive Backward Curved Plenum - 60% Width
Q	5C. SA Motor	3.0 hp - 1170 rpm
A	6A. Pre Filter Type	2" Pleated Pre Filter - MERV 8
F	6B. Unit Filter Type	4" Pleated - MERV 12
0	6C. Filter Options	Standard
0	7. Refrigeration Control	Standard - Fixed 55°F Comp. Cooling Lock Out
J	8. Refrigeration Options	HGB Lead + HGB Lag + MHGR
K	9. Refrigeration Accessories	ECM Condenser Fan - Head Pressure Control + Sight Glass
B	10. Power Options	Non-fused Disconnect Power Switch - 150 Amps
H	11. Safety Options	Remote Safety Shutdown Terminals
B	12. Controls	Phase & Brown Out Protection
F	13. Special Controls	Make Up Air Unit Controller - CV Cool + CV Heat
0	14A. Preheat Configuration	Standard - None
0	14B. Preheat Sizing	Standard - None
0	15. Glycol Percent	Water or No WSHP
0	16. Interior Cabinet Options	Standard - Double Wall + R-13 Foam Insulation + Stainless Steel Drain Pan
0	17. Exterior Cabinet Options	Standard
0	18. Customer Code	Standard
0	19. Code Options	Standard - ETL U.S.A. Listing
0	20. Crating	Standard
0	21. Water-Cooled Cond.	Standard - None
A	22. Control Vendors	WattMaster VCM-X Controls
X	23. Type	Special Price Authorization + AAON Gray Paint

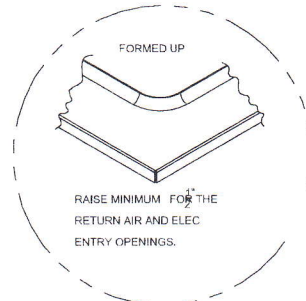
# RN SERIES C - CABINET STANDARD ~ 16-30 TON

## CLEARANCES

LOCATION	• UNIT SIZE • 16 - 30 TON
OUTSIDE AIR (BACK)	48
CONTROLS SIDE (FRONT)	48
LEFT SIDE	6
RIGHT SIDE	60
TOP	UNOBSTRUCTED



DETAIL A

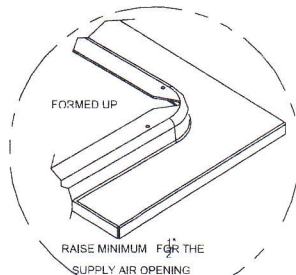


DETAIL B

## NUMBER OF CONDENSER FANS

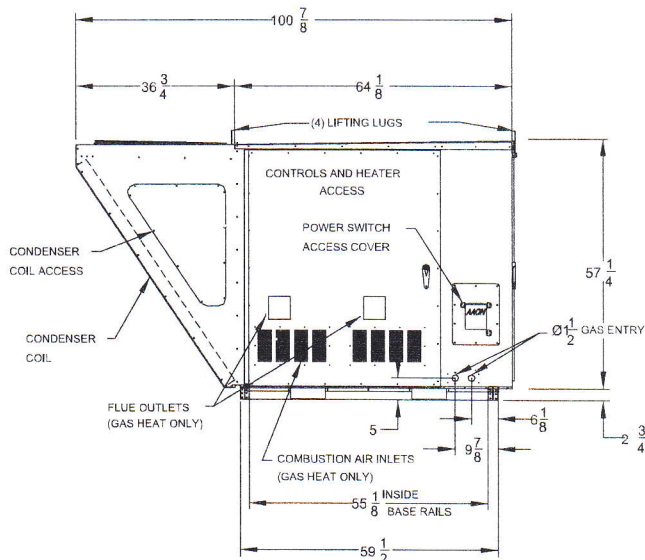
16, 18 & 20 TON - 2 FANS

25 & 30 TON - 3 FANS



DETAIL C

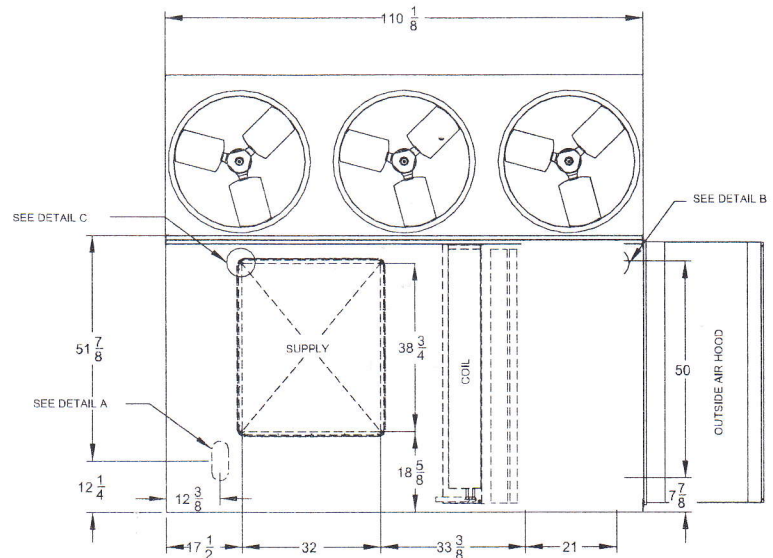
## FRONT VIEW



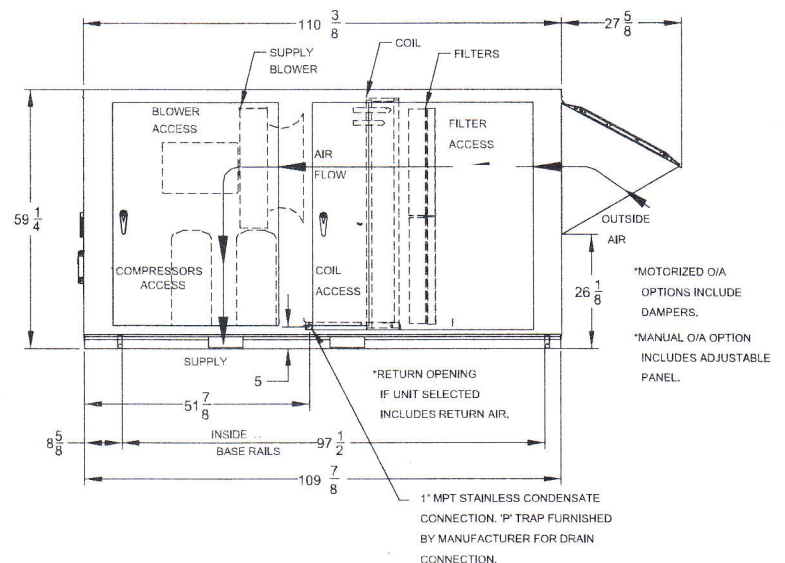
RNC-00001 REV D 08/20/10 JWC

NOTE: ALL DIMENSIONS ARE IN INCHES

## TOP VIEW

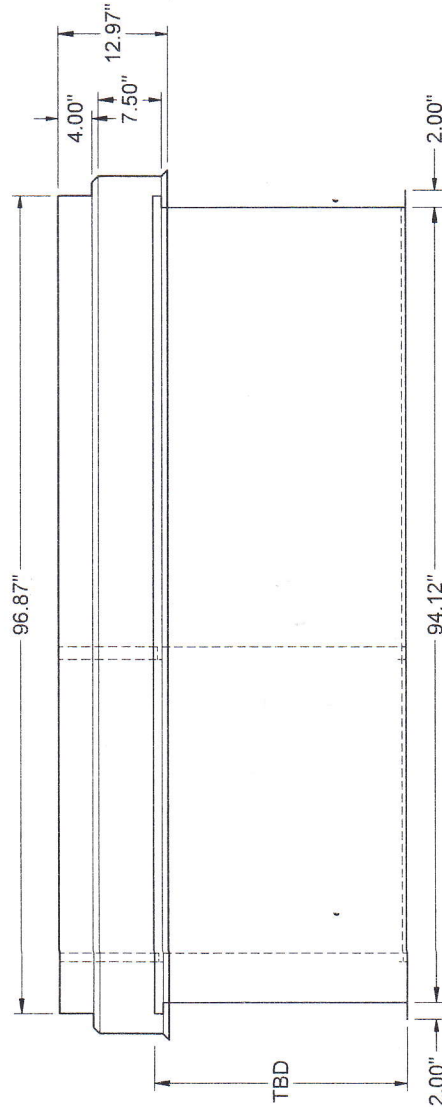
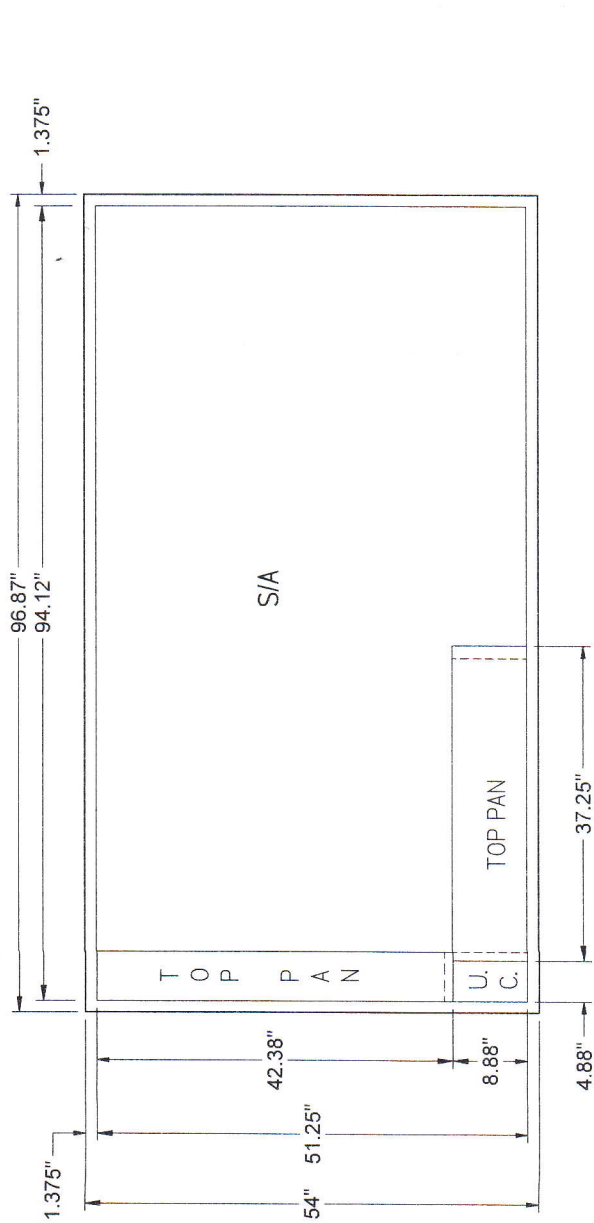


## RIGHT SIDE VIEW





REV	DESCRIPTION	DATE	APPROVED
1	INITIAL DRAWING	1/7/15	



**MGM PRODUCTS, INC.**

1080 CULPEPPER DRIVE CONYERS, GA 30094  
PHONE: (770) 483-0055, (800) 344-3536 FAX: (770) 483-0130  
WWW.MGMPRODUCTS.COM

APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_

NOTES	
1. TALL FRC	
2. GALV STEEL FULLY WELDED	
3. FULLY FOIL FACED INSULATED, 1X4 NAILER	
4. NO PARTITION, SOLID BOTTOM	
5. FULL DEPTH WALLS	

TITLE	
AAON RN "C" STANDARD PLENUM	
1" DEFLECTION ISO	
NAME	DATE
DRAWN	1/7/2015
WEIGHT	
GAUGE	

FILE NAME: I:\MGM\RN"C" CABINET STANDARD PLENUM 30 TALL FRC DEF 1" ISO PART 1.DWG

## Duct Temperature Sensors OE230 (6" Probe) & OE231 (12" Probe)

### Caution!

The Duct Sensor Is Used For Sensing Supply Or Return Air Temperatures. Location Of The Sensors Is Very Important In Order To Obtain Accurate Temperature Readings. The Following Recommendations Should Be Followed:

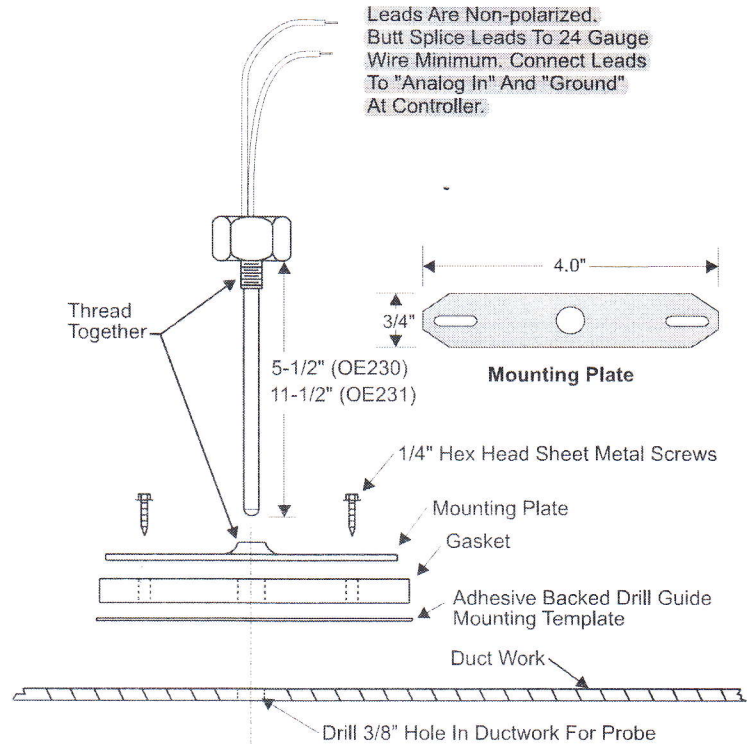
### Supply Air

When Used As A Supply Air Sensor The Sensor Should Be Mounted In The Supply Air Duct As Close To The HVAC Unit As Possible And Upstream Of The Bypass Damper (If Used) For Best Results. For Best Accuracy, Apply Insulation On The Outside Of The Ductwork Over The Sensor. This Will Help Thermal Gradients From Affecting The Sensor.

### Return Air

When Used As A Return Air Sensor The Sensor Should Be Mounted In The Return Air Duct As Close To The HVAC Unit As Possible And Upstream Of The Bypass Damper (If Used) For Best Results. For Best Accuracy, Apply Insulation On The Outside Of The Ductwork Over The Sensor. This Will Help Thermal Gradients From Affecting The Sensor.

See The Systems Installation And Operation Manual For Other Design Considerations And Recommendations Regarding Duct Temperature Sensor Location.



**Temperature Sensor Resistance/Voltage Chart**

Temp ° F	Resistance* Ohms	Voltage @ Input*	Temp ° F	Resistance* Ohms	Voltage @ Input*	Temp ° F	Resistance* Ohms	Voltage @ Input*	Temp ° F	Resistance* Ohms	Voltage @ Input*
-10	93333	4.620	45	21094	3.470	69	11906	2.780	84	8514	2.352
-5	80531	4.550	50	18655	3.330	70	11652	2.752	86	8153	2.297
0	69822	4.474	52	17799	3.275	71	11379	2.722	88	7805	2.242
5	60552	4.390	54	16956	3.217	72	11136	2.695	90	7472	2.187
10	52500	4.297	56	16164	3.160	73	10878	2.665	95	6716	2.055
15	45902	4.200	58	15385	3.100	74	10625	2.635	100	6047	1.927
20	40147	4.095	60	14681	3.042	75	10398	2.607	105	5453	1.805
25	35165	3.982	62	14014	2.985	76	10158	2.570	110	4923	1.687
30	30805	3.862	64	13382	2.927	78	9711	2.520	115	4449	1.575
35	27140	3.737	66	12758	2.867	80	9302	2.465	120	4030	1.469
40	23874	3.605	68	12191	2.810	82	8893	2.407	125	3656	1.369

### \*Chart Notes:

1. Use the resistance column to check the thermistor sensor while disconnected from the controllers (not powered).
2. Use the voltage column to check sensors while connected to powered controllers. Read voltage with meter set on DC volts. Place the "-" (minus) lead on GND terminal and the "+" (plus) lead on the sensor input terminal being investigated. If the voltage is above 5.08 VDC, the sensor or wiring is "open." If the voltage is less than 0.05 VDC, the sensor or wiring is shorted.

### Notes:

- 1.) All Wiring To Be In Accordance With Local And National Electrical Codes And Specifications.

JOB NAME	
FILENAME	
G-DUCSENS1.CDR	
DATE: 04/25/02	DRAWN BY: B. CREWS
PAGE	DESCRIPTION:
1	OE230 & OE231 Duct Temperature Sensor



## Description

The patented design, OE21x series Standard Room Sensor provides accurate sensing of the room temperature. Its design allows for flush wall mounting yet rejects the influence of surface and internal wall temperatures. The Standard Room Sensor is used in conjunction with the Orion VAV/CAV controller or the MUA II controller. Wire terminals are provided on the sensor for connection to the controllers. The Standard Room Sensor cannot be used for connection to the VAV/Zone controller. For this application the Modular Room Sensor must be used. Please see the Orion Modular Room Sensor submittal sheet for information.

Sensors provided with the setpoint adjustment option can be programmed to allow a temperature range adjustment of  $\pm 6^\circ$  F from their standard setpoint. Sensors provided with the pushbutton override option can be programmed to provide a timed override duration of up to 8.0 hours.

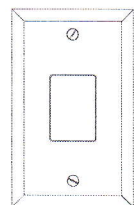
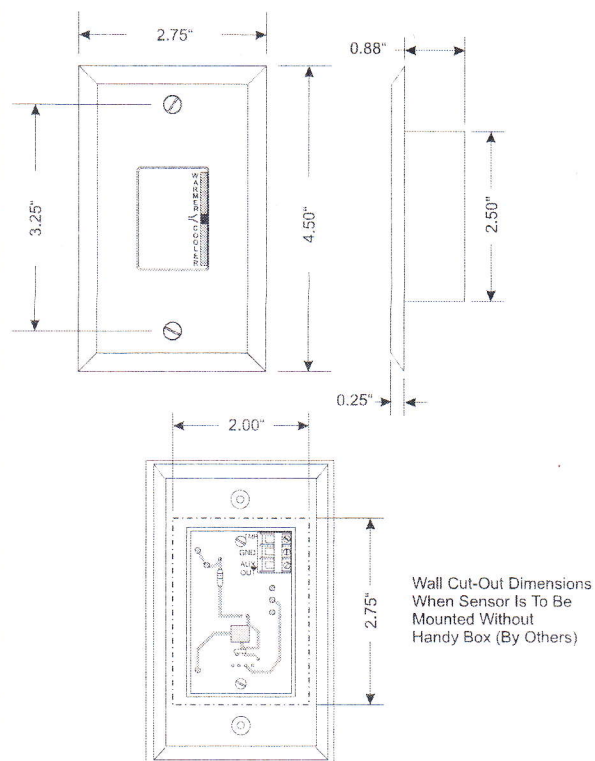
The Room Sensor's attractive styling and off white casing color make it suitable for most building decors. If interior decoration requires, the Room Sensor casing can also be painted or wall papered without affecting the sensor's performance. Room Sensors are available in 4 different configurations:

- OE210 Sensor Plain
- OE211 Sensor with Override
- **OE212 Sensor with Setpoint Adjustment**
- OE213 Sensor with Setpoint Adjustment and Override

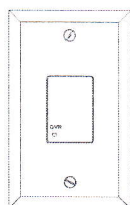
Modular cable from the VAV/Zone Controller to the Modular Room Sensor should not be run in conduit with other AC line voltage wiring, or with any conductors carrying highly inductive loads.

## Mounting

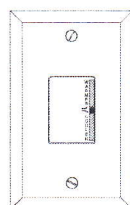
The Room Sensors are designed to be mounted on a vertical, 2" x 4" electrical box recessed in the wall. If the wall cannot be penetrated, a plastic surface mount box such as those made by Wiremold™, may be used to mount the sensor to the wall surface.



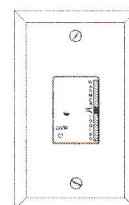
**OE210**  
Room Sensor - Plain



**OE211**  
Room Sensor  
With Override



**OE212**  
Room Sensor  
With Setpoint Adjust

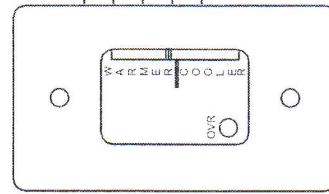


**OE213**  
Room Sensor  
With Setpoint Adjust  
& Override

Technical Data		OE210, OE211, OE212, OE213 Standard Room Sensor	
Sensor Element	Type III Thermistor 10k ohm @ 77° F	Mounting	Designed to be Flush Mounted to Wall using Vertical 2" x 4" Handy Box (by others)
Accuracy	$\pm 0.4^\circ$ F between 40° F to 95° F	Line Loss	0.25° F max. error, using 22 AWG wire at 1000 ft
Range	-30° F to 150° F	Weight	4 oz.
3 Year Warranty		WattMaster reserves the right to change specifications without notice	

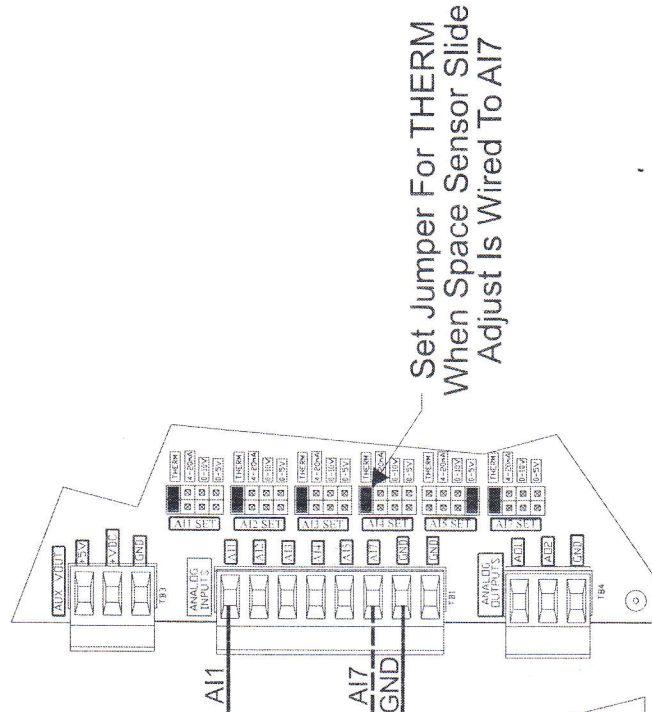
**Note:**  
 Either The Slide Offset Option For The Space  
 Temperature Sensor Or The Remote Supply  
 Air Temperature Reset Signal Option (By  
 Others) May Be Connected To An AI7 On  
 The VCM-X Controller. Only One Option Is  
 Allowed, Not Both.

### Space Temperature Sensor



TMP  
 GND  
 AUX

Wire Required For  
 Sensors With Slide  
 Adjust Option Only



### VCM-X Controller



## Description

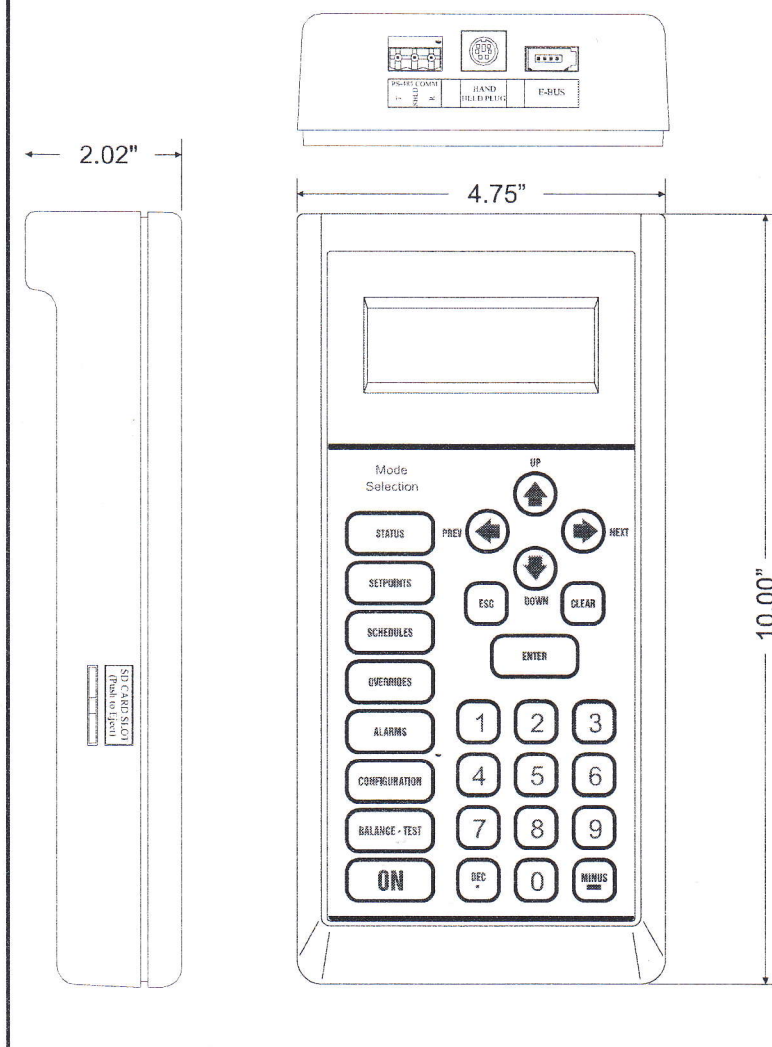
The OE391-12 Modular Service Tool SD is a system interface that provides a direct link to enable the system operator to view the status, configure, and adjust the setpoints of the following Orion controllers:

- VCM-X Series Controller
- VCM-X E-BUS Series Controller
- RNE Controller
- VCB-X Controller
- SA E-BUS Controller
- VCM Controller
- VAV/CAV Controller
- MUA II Controller
- VAV/Zone Controller
- MiniLink PD

The OE391-12 Modular Service Tool SD is housed in a black plastic enclosure. The display area is covered with a clear plastic bezel for protection of the display screen. The Modular Service Tool SD has a four line by 20 character display panel with adjustable contrast control and a 27 key membrane keypad for data selection and entry. All keypad operations are simple and straight forward, utilizing non-cryptic plain English language messages. Menu-driven programming allows for easy setup and operation without the need for specialized training. The OE391-12 Modular Service Tool SD is supplied with a programmable 4 Gigabyte SD memory card, with (4) AA 1.5 V batteries, a wall mount a DC power supply, a mini-Din communication cable, and an E-BUS communication cable. The mini-Din cable allows you to connect the Modular Service Tool to any Orion controller which has a mini-Din connector socket for programming, monitoring, and troubleshooting purposes.

The Modular Service Tool is also equipped with an EBC E-BUS port and an RS-485 three conductor terminal block port. The E-BUS port and included E-BUS cable are used for updating E-BUS Module software. The RS-485 port is used for hard-wiring to older controllers that do not have a mini-DIN connector socket.

The Modular Service Tool SD is designed to be carried by the system installer or service technician. Its rugged plastic housing provides superior protection for the electronic components housed inside. The Modular Service Tool SD is a top quality service tool that will stand up to the demands of the typical job site for many years.



Technical Data		OE391-12 Modular Service Tool SD	
Power	(4) AA (1.5V) Batteries Supplied	Display	4 Line by 20 Character
Power Switch	Membrane Switch	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Color	Black
Keypad	27 Key Membrane Style	Communications	RS-485 9600 or 57,600 Baud
SD Memory Card	Programmable 4 Gigabyte	Connections	RS-485 and EBC E-BUS Ports
3 Year Warranty		WattMaster reserves the right to change specifications without notice	



December 2, 2016

## Submittal Data

Project Name: Home 2 Suites – Flowood, MS

Contractor: Comfort Designs

Submitted By: Trent Dismuke  
Airflo Sales Inc.  
103 First Choice Drive  
Madison, MS 39110  
601-898-1017 Phone  
601-898-1018 Fax

Items Submitted: Loren Cook Exhaust Fans and Roof Hoods with Flat Curbs

Approved By:

Date of Approval:





# COOK



UL US



MARK: EF-1

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

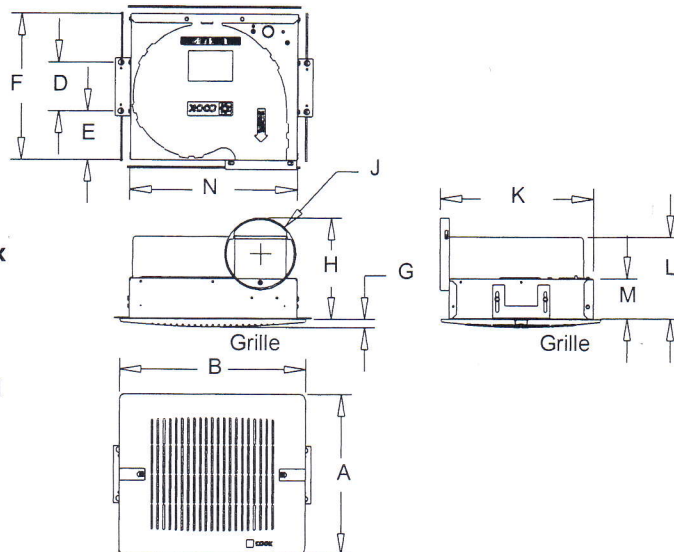
## GEMINI

### Ceiling Fans

#### 100 Series

##### STANDARD CONSTRUCTION FEATURES:

Forward curved injection molded polypropylene fan wheel - Injection molded flame resistant fan housing with round outlet duct - 22 ga. galvanized steel inlet box - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.



##### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
106	GC-128	50	.250	673	25	FSC

Altitude (ft): 331 Temperature (F): 70

##### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	.252

##### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
45	45	50	45	38	30	22	13	46	31	.8

##### Accessories:

CEILING RAD. DAMPER  
INTEGRAL BD DAMPER  
FAN SPEED CONTROLLER 5 AMP 120 VOLT  
WHITE STEEL GRILLE  
GEMINI ISOLATOR KIT - ISOLATORS

##### Dimensions (inches)

A Steel	13-1/2
B Steel	15-1/2
D	4
E	4
F	12
G	5/8
H	8-3/8
J O.D.	5-15/16
K	12-3/4
L	6-11/16

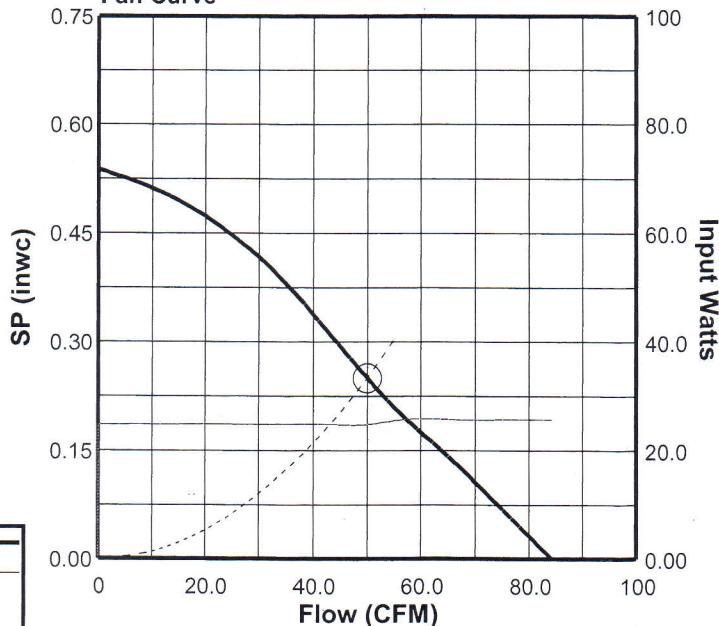
M	3-1/4
N	14
N	14

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	24	Unit	21
----------------	----------	----	------	----

\*\*\*Includes fan, motor & accessories.

##### Fan Curve



##### Fan Curve Legend

CFM vs SP	—
CFM vs Watts	- - -
Point of Operation	○
System Curve	.....



# COOK

## GEMINI

### Ceiling Fans 100 Series

#### STANDARD CONSTRUCTION FEATURES:

Forward curved injection molded polypropylene fan wheel - Injection molded flame resistant fan housing with round outlet duct - 22 ga. galvanized steel inlet box - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.

#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
6	GC-146	75	.250	810	31	FSC

Altitude (ft): 331 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	.313

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
46	48	50	48	41	34	28	19	48	33	1.1

#### Accessories:

INTEGRAL BD DAMPER  
FAN SPEED CONTROLLER 5 AMP 120 VOLT  
WHITE PLASTIC GRILLE  
GEMINI ISOLATOR KIT - ISOLATORS

#### Fan Curve Legend

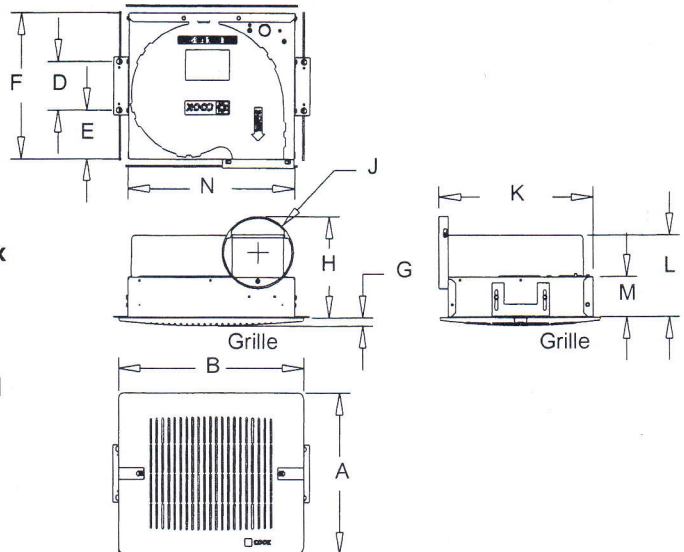
CFM vs SP	—
CFM vs Watts	—
Point of Operation	○
System Curve	-----



MARK: EF-2

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016



#### Dimensions (inches)

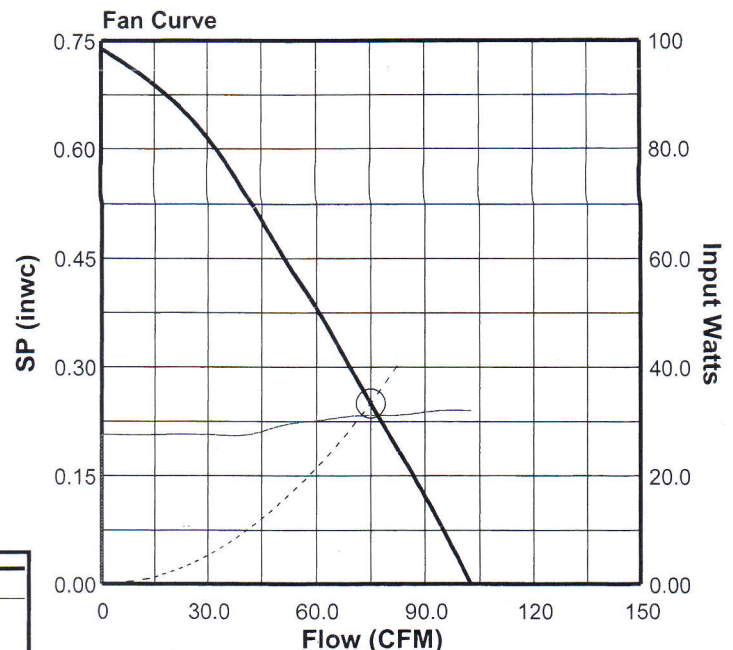
A Plastic	13-1/4
B Plastic	15-1/2
D	4
E	4
F	12
G	5/8
H	8-3/8
J O.D.	5-15/16
K	12-3/4
L	6-11/16

M	3-1/4
N	14

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	18	Unit	15
----------------	----------	----	------	----

\*\*\*Includes fan, motor & accessories.







# COOK



MARK: EF-3

PROJECT: HOME2SUITES FLOWOOD

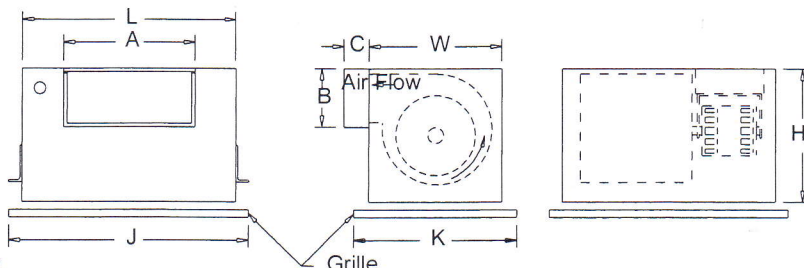
DATE: 12/1/2016

## GEMINI

### Ceiling and Wall Blowers 200-700 Series

#### STANDARD CONSTRUCTION FEATURES:

Forward curved galvanized steel fan wheels -  
Corrosion resistant galvanized steel fan housing -  
Acoustically insulated housing - Aluminum  
backdraft damper with solid aluminum hinge rod  
mounted in brass bushings - Permanently  
lubricated motor with built-in thermal overload  
protection and disconnect plug - Interchangeable  
panels with removable fasteners allows the  
discharge to be easily changed - Internal wiring box  
with disconnect receptacle - Powder-painted white  
steel grille. Plastic grill standard on sizes 220,  
240,320 and 340..



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts
2	GC-542	361	.250	1600	124

Altitude (ft): 331 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	1.2

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
62	69	72	60	52	48	46	43	65	51	5.5

#### Accessories:

WHITE ALUM GRILLE  
GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

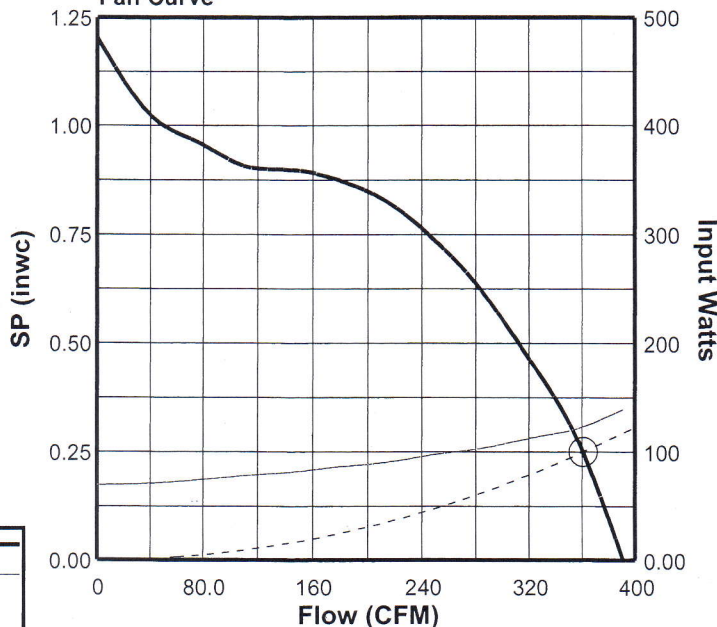
L-HSG	17
W-HSG	11-7/8
H-HSG	11-7/8
A-Outlet	8
B-Outlet	6
C	1
Alum Grille J	18-3/4
Alum Grille K	13-3/4

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	34	Unit	30
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\*\*\*Includes fan, motor & accessories.

#### Fan Curve



#### Fan Curve Legend

CFM vs SP	—
CFM vs Watts	- - -
Point of Operation	○
System Curve	.....



# COOK

## GEMINI

### Ceiling Fans 100 Series

#### STANDARD CONSTRUCTION FEATURES:

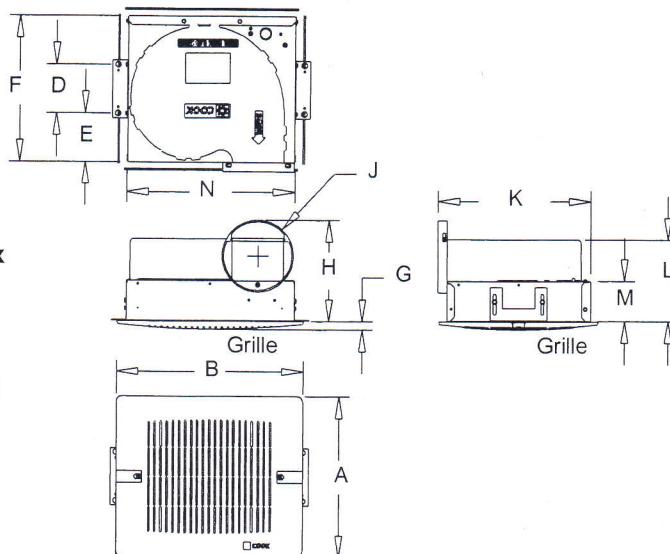
Forward curved injection molded polypropylene fan wheel - Injection molded flame resistant fan housing with round outlet duct - 22 ga. galvanized steel inlet box - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.



MARK: EF-3A

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts
4	GC-186	218	.250	1100	91

Altitude (ft): 331 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	.817

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
58	60	66	66	60	54	53	48	66	51	5.5

#### Accessories:

INTEGRAL BD DAMPER  
WHITE PLASTIC GRILLE  
GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

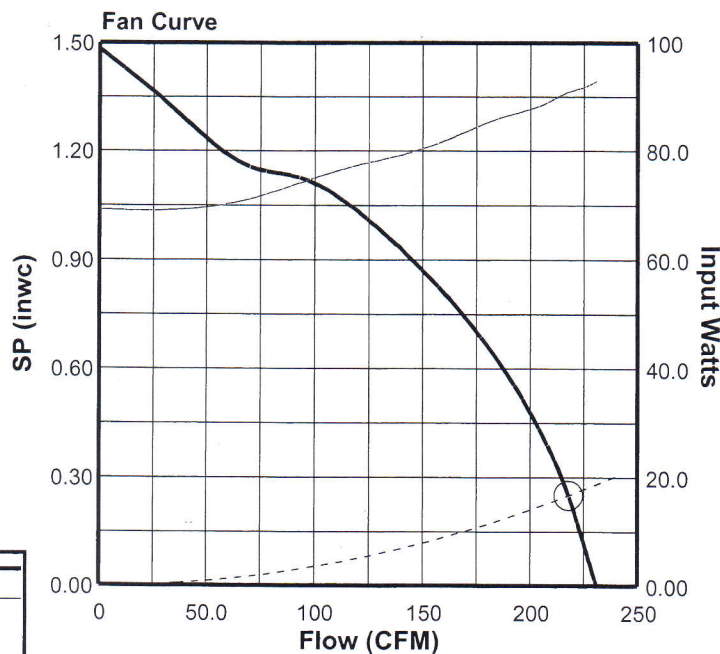
A Plastic	13-1/4
B Plastic	15-1/2
D	4
E	4
F	12
G	5/8
H	8-3/8
J O.D.	5-15/16
K	12-3/4
L	6-11/16

M	3-1/4
N	14

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	18	Unit	15
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\*\*\*Includes fan, motor & accessories.



#### Fan Curve Legend

CFM vs SP	—
CFM vs Watts	- - -
Point of Operation	○
System Curve	.....





# COOK



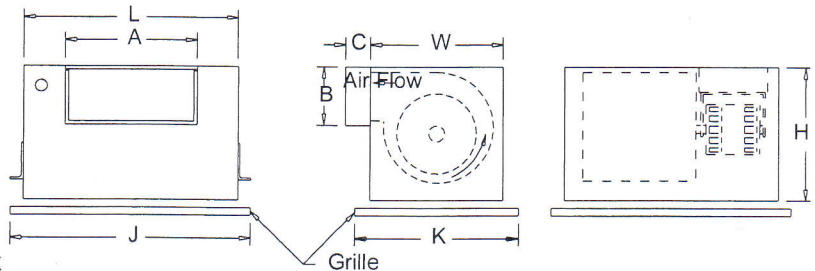
MARK: EF-4
PROJECT: HOME2SUITES FLOWOOD
DATE: 12/1/2016

## GEMINI

### Ceiling and Wall Blowers 200-700 Series

#### STANDARD CONSTRUCTION FEATURES:

Forward curved galvanized steel fan wheels -  
Corrosion resistant galvanized steel fan housing -  
Acoustically insulated housing - Aluminum  
backdraft damper with solid aluminum hinge rod  
mounted in brass bushings - Permanently  
lubricated motor with built-in thermal overload  
protection and disconnect plug - Interchangeable  
panels with removable fasteners allows the  
discharge to be easily changed - Internal wiring box  
with disconnect receptacle - Powder-painted white  
steel grille. Plastic grill standard on sizes 220,  
240,320 and 340..



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts	Speed Control
1	GC-720	600	.250	1283	237	FSC

Altitude (ft): 331 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	3.9

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
68	67	64	59	53	48	49	49	61	47	4.5

#### Accessories:

FAN SPEED CONTROLLER 5 AMP 120 VOLT  
WHITE ALUM GRILLE  
GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

L-HSG	17
W-HSG	11-7/8
H-HSG	11-7/8
A-Outlet	10-1/2
B-Outlet	4-3/4
C	1
Alum Grille J	18-3/4
Alum Grille K	13-3/4

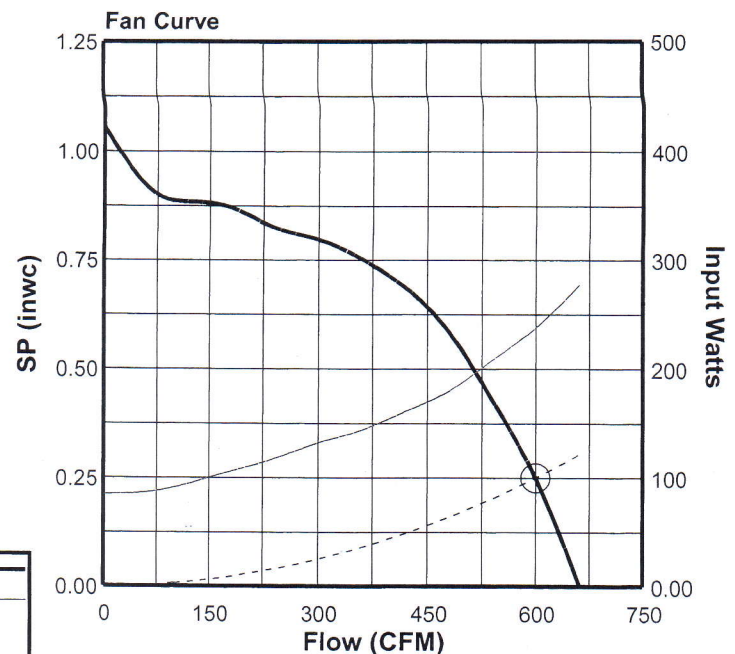
NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	38	Unit	34
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\*\*\*Includes fan, motor & accessories.

#### Fan Curve Legend

CFM vs SP	—
CFM vs Watts	—
Point of Operation	○
System Curve	-----





# COOK

## GEMINI

### Ceiling Fans 100 Series

#### STANDARD CONSTRUCTION FEATURES:

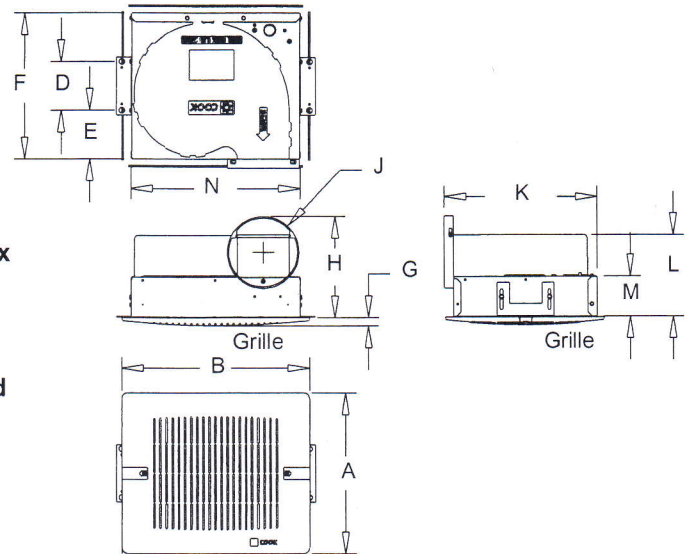
Forward curved injection molded polypropylene fan wheel - Injection molded flame resistant fan housing with round outlet duct - 22 ga. galvanized steel inlet box - Isolation mounted motor, mounted to one piece galvanized stamped steel integral motor mount/inlet - Permanently lubricated 2-speed motor with built-in thermal overload protection and disconnect plug - Field wiring compartment with receptacle - Adjustable prepunched mounting bracket - White, high impact styrene injection molded grille - Shipped in ISTA certified transit tested packaging.



MARK: EF-5 & 6

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Nominal RPM	Input Watts
2	GC-188	234	.375	1450	108

Altitude (ft): 331 Temperature (F): 70

#### Motor Information

Volts/Ph/Hz	Nameplate Amps
115/1/60	1

#### Sound Data Inlet Sound Power by Octave Band

1	2	3	4	5	6	7	8	LwA	dBA	Sones
59	63	69	66	62	57	55	50	68	53	6.0

#### Accessories:

INTEGRAL BD DAMPER  
WHITE PLASTIC GRILLE  
GEMINI ISOLATOR KIT - ISOLATORS

#### Dimensions (inches)

A Plastic	13-1/4	M	3-1/4
B Plastic	15-1/2	N	14
D	4		
E	4		
F	12		
G	5/8		
H	8-3/8		
J O.D.	5-15/16		
K	12-3/4		
L	6-11/16		

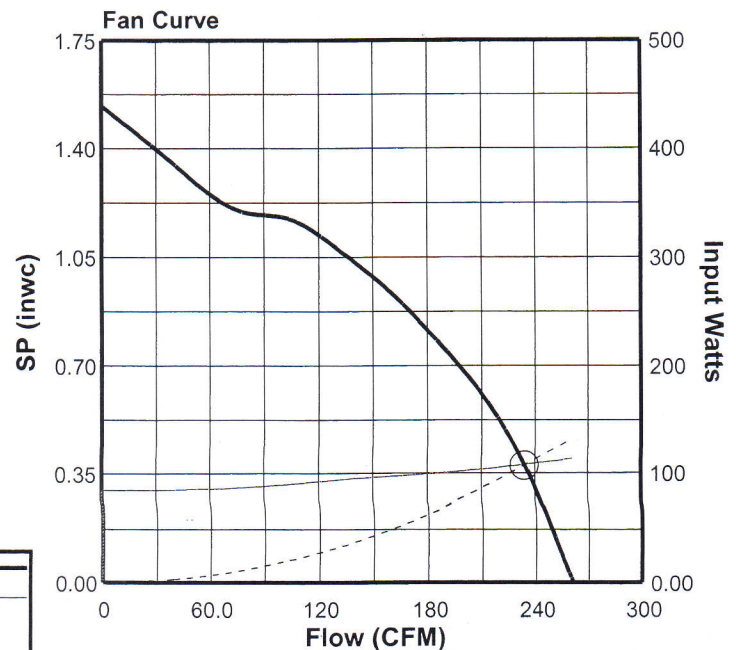
NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	18	Unit	15
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\*\*\*Includes fan, motor & accessories.

#### Fan Curve Legend

CFM vs SP	—
CFM vs Watts	---
Point of Operation	○
System Curve	-----







# COOK

MARK: RHOOD8

PROJECT: HOME2SUITES FLOWOOD

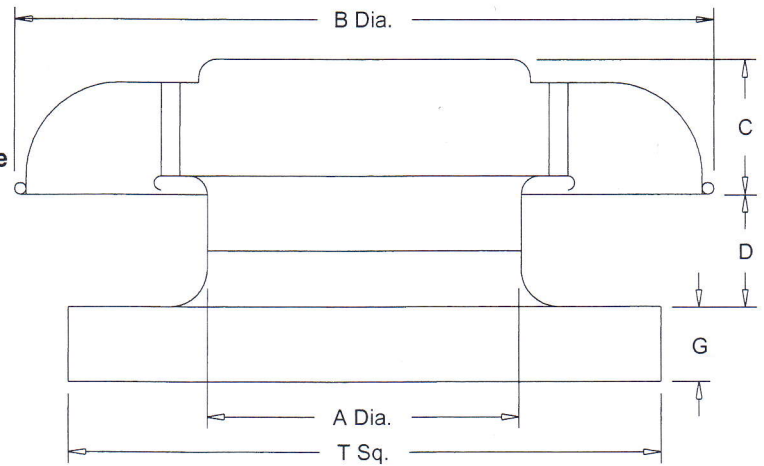
DATE: 12/1/2016

## PR

### Spun Aluminum Intake/Relief Ventilator

#### STANDARD CONSTRUCTION FEATURES:

All aluminum construction - Anti-backdraft flange - Five year warranty.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)
1	8 PR	209	.050

Altitude (ft): 331 Temperature (F): 70

#### Accessories:

ROOF CURB RCG 16-13.5H  
BIRDSCREEN

#### Dimensions (inches)

A Dia.	8-5/8
B Dia.	18-3/4
C	4-5/8
D	3-1/2
G	2
T Sq.	18
Roof Open.	13-1/2

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	36	Unit	32
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\*\*\*Includes accessories.



# COOK

MARK: RHOOD16

PROJECT: HOME2SUITES FLOWOOD

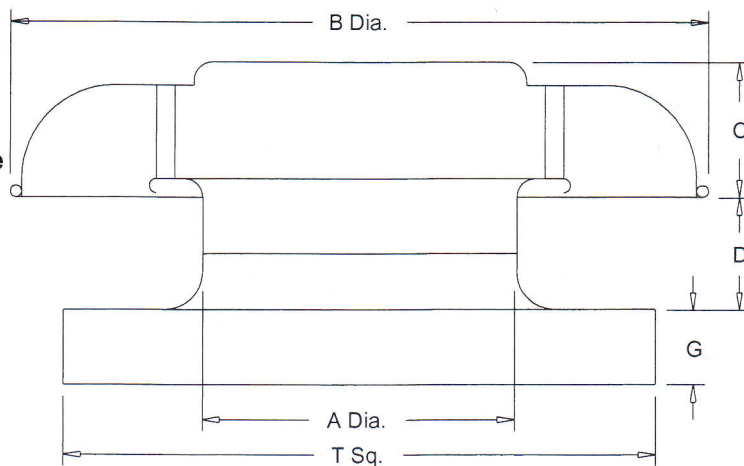
DATE: 12/1/2016

## PR

### Spun Aluminum Intake/Relief Ventilator

#### STANDARD CONSTRUCTION FEATURES:

All aluminum construction - Anti-backdraft flange - Five year warranty.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)
12	16 PR	927	.050

Altitude (ft): 331 Temperature (F): 70

#### Accessories:

ROOF CURB RCG 26-13.5H  
BIRDSCREEN

#### Dimensions (inches)

A Dia.	16-1/2
B Dia.	27-3/4
C	5-1/16
D	5-1/2
G	2
T Sq.	28
Roof Open.	23-1/2

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	66	Unit	60
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\*\*\*Includes accessories.





# COOK

MARK: RHOD18

PROJECT: HOME2SUITES FLOWOOD

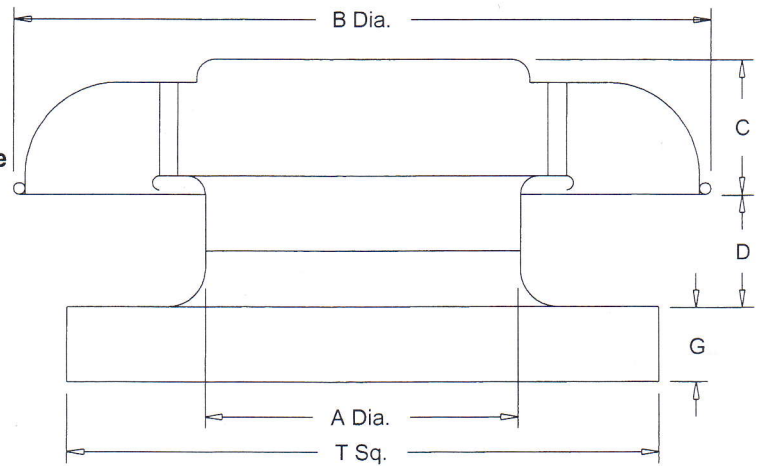
DATE: 12/1/2016

## PR

### Spun Aluminum Intake/Relief Ventilator

#### STANDARD CONSTRUCTION FEATURES:

All aluminum construction - Anti-backdraft flange - Five year warranty.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)
4	20 PR	1438	.050

Altitude (ft): 331 Temperature (F): 70

#### Accessories:

ROOF CURB RCG 30-13.5H  
BIRDSCREEN

#### Dimensions (inches)

A Dia.	20-1/2
B Dia.	36-5/8
C	6-3/4
D	4-7/8
G	2
T Sq.	32
Roof Open.	27-1/2

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	88	Unit	78
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\*\*\*Includes accessories.



# COOK

MARK: RHOOD36X36

PROJECT: HOME2SUITES FLOWOOD

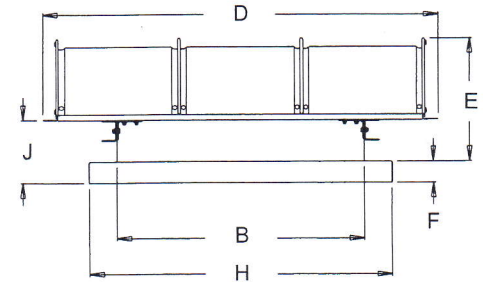
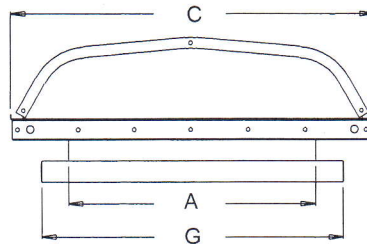
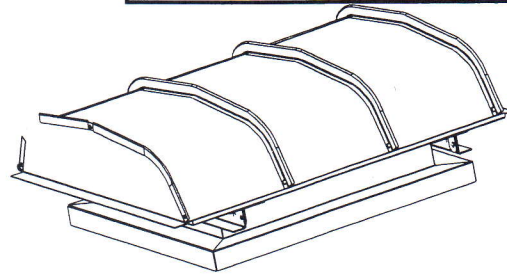
DATE: 12/1/2016

## GR

### Gravity Relief Ventilator

#### STANDARD CONSTRUCTION FEATURES:

Heavy gauge aluminum construction -  
Birdscreen - Radius throat - Rain gutter to  
prevent rain infiltration - Welded curb cap  
corners - Integral lifting lugs/tie down points  
- Hinged hood standard on throat lengths  
less than 73" - Five year warranty.



#### Performance

Qty	Catalog Number	Flow (CFM)	SP (inwc)	Face Velocity (fpm)	Installation
2	36X36GR	2700	.011	386	Ducted

Altitude (ft): 331 Temperature (F): 70

#### Accessories:

ROOF CURB RCG 40X 40-13.5H W/TRAY  
ALUM BIRDSCREEN

#### Dimensions (inches)

A	36
B	36
C	57
D	51
E	18.26
F	2
G	41.5
H	41.5
J	9

NOTE: Accessories may affect dimensions shown.

Weight(lbs)***	Shipping	253	Unit	116
----------------	----------	-----	------	-----

\*\*\*Includes accessories.





# COOK



PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

## GEMINI

### CEILING RADIATION DAMPERS

#### NOTE:

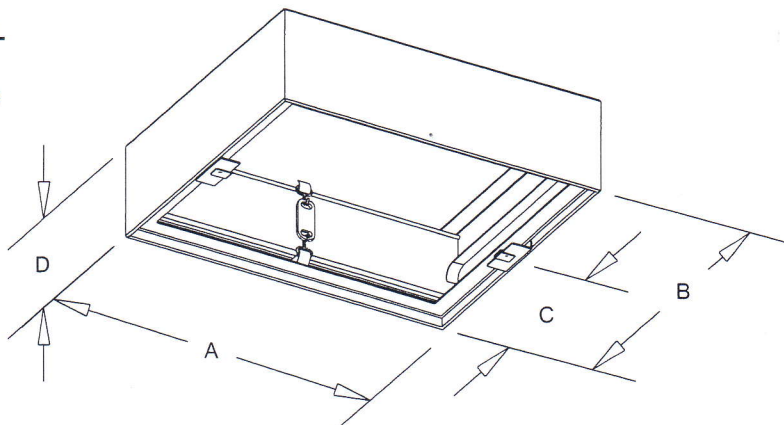
Loren Cook Company's curtain style ceiling radiation dampers are classified by UL to function as heat barriers in air handling penetrations through fire resistive membrane ceiling assemblies.

Meets NFPA 90A requirements.

Meets BOCA, SBCCA, UBC requirements.

The City of New York 460-88-5A

California State Fire Marshall 3225-0935:102



#### Dimensions (inches)

Mark	Qty	Description	A	B	C	D
EF-1	106	CEILING RAD. DAMPER	14-1/2	12-3/8	6-3/16	4-3/16



# COOK

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

## FSC

### Fan Speed Controls

#### STANDARD CONSTRUCTION FEATURES:

**PRODUCT DESCRIPTION** - Through the "Quadrac" integrated semi-conductor device it is now possible to offer this system with many advantages. Fewer semi-conductor parts mean greater reliability and the passivation process used in the manufacture of the semi-conductor insures long life. Printed circuit construction eliminates wiring difficulties and guarantees workmanship.

All of these factors serve to offer the most important of all features - quality.

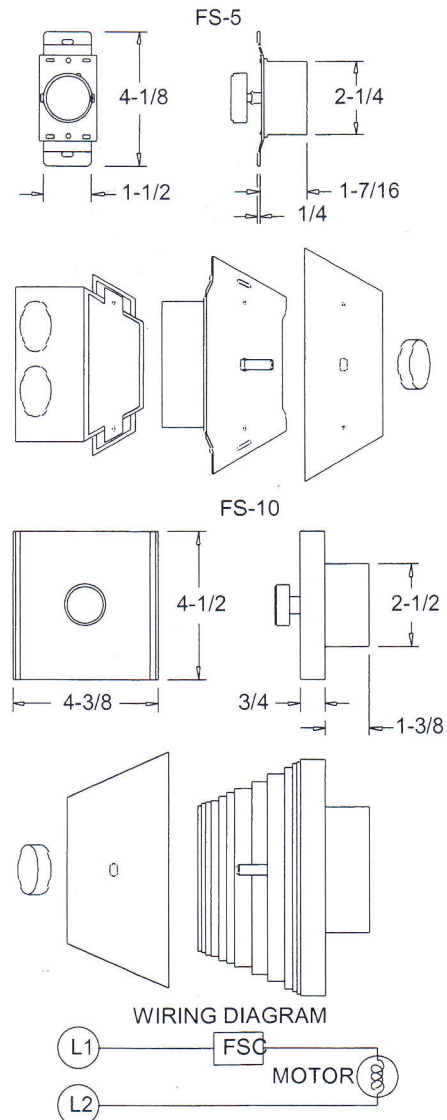
**SPEED CONTROL** - Positive Off/On action in the control dial. Speed range set to the customer's requirements. **CONTROL RATING** - 120 volts, 60 cycles, 1 phase. Maximum ambient temperature - 120 degree F (5 AMP, 10 AMP, 15 AMP). 220/240 volt, 50/60 cycles, 1 phase. Maximum ambient temperature - 120 degree F (5 AMP, 10 AMP). 220/240 volt model not UL listed. Fan cannot have UL listing if furnished with prewired 220/240 volt FSC. 277 volt, 60 cycles, 1 phase.

Maximum ambient temperature - 120 degree F (5 AMP). **WARNING** - Power must be turned off before installing this unit. **STANDARD INSTALLATION** - Fits any standard single gang box.

Turn off power and connect the two wires on the control to the two switch wires in the usual manner. The connection box is not supplied. **SPECIAL FEATURES** - Complete range control, solid state "Quadrac" integrated circuitry, solid state construction for long reliable operating life, saves on electric bills.

#### Dimensions (inches)

Mark	Qty	Description
EF-1	106	FSC 5 AMP 120 VOLT
EF-2	6	FSC 5 AMP 120 VOLT
EF-4	1	FSC 5 AMP 120 VOLT







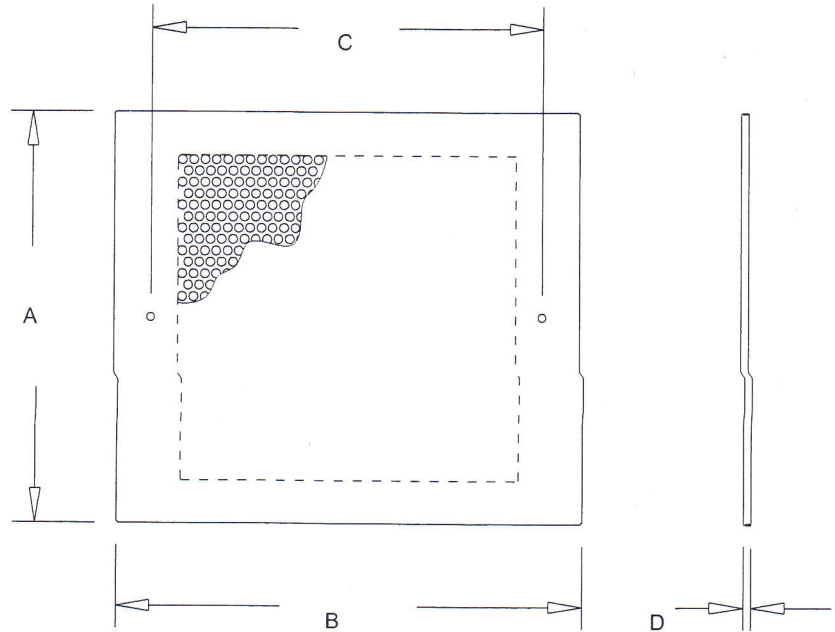
**COOK**

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

# GEMINI

## STEEL GRILLE



### Dimensions (inches)

Mark	Qty	Description	A	B	C	D
EF-1	106	WHITE STEEL GRILLE	13-1/2	15-1/2	13	1/4



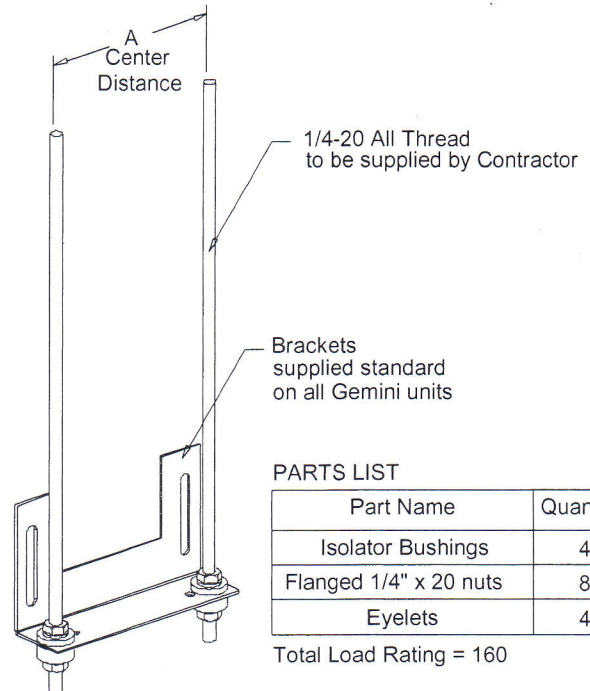
# COOK

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

## GEMINI

Gemini Isolator Kit  
GIK  
Rubber In Shear



### Dimensions (inches)

Mark	Qty	Description	Part #	A
EF-1	106	GEMINI ISOLATO	GIK	4
EF-2	6	GEMINI ISOLATO	GIK	4
EF-3	2	GEMINI ISOLATO	GIK	4
EF-3A	4	GEMINI ISOLATO	GIK	4
EF-4	1	GEMINI ISOLATO	GIK	4
EF-5 & 6	2	GEMINI ISOLATO	GIK	4



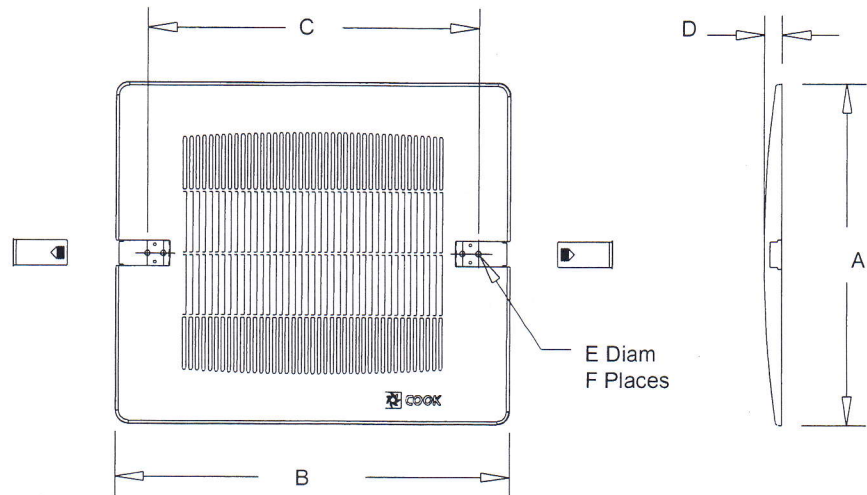


# COOK

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

## GEMINI PLASTIC GRILLE



### Dimensions (inches)

Mark	Qty	Description	A	B	C	D	E Diam	F Places
EF-2	6	WHITE PLASTIC GRILLE	13-1/4	15-1/2	13	1/4	1/4	4
EF-3A	4	WHITE PLASTIC GRILLE	13-1/4	15-1/2	13	1/4	1/4	4
EF-5 & 6	2	WHITE PLASTIC GRILLE	13-1/4	15-1/2	13	1/4	1/4	4



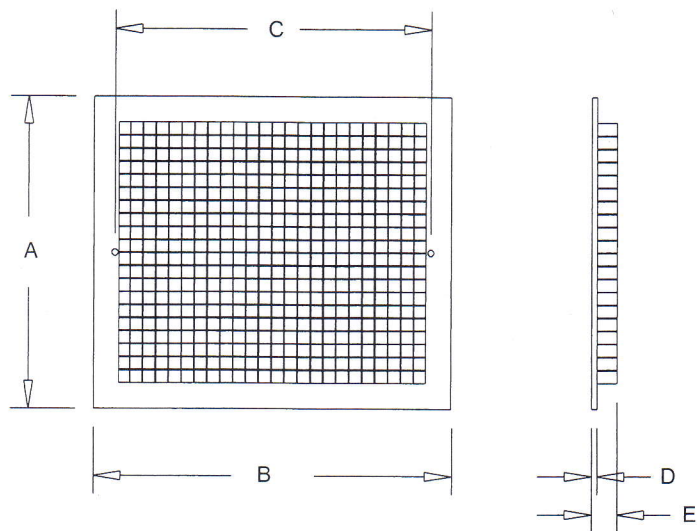
# COOK

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

## GEMINI

### ALUMINUM GRILLE



#### Dimensions (inches)

Mark	Qty	Description	A	B	C	D	E
EF-3	2	WHITE ALUM GRILLE	12-3/4	17-3/4	16-3/8	1/4	1-1/16
EF-4	1	WHITE ALUM GRILLE	12-3/4	17-3/4	16-3/8	1/4	1-1/16





# COOK

PROJECT: HOME2SUITES FLOWOOD

DATE: 12/1/2016

## RCG

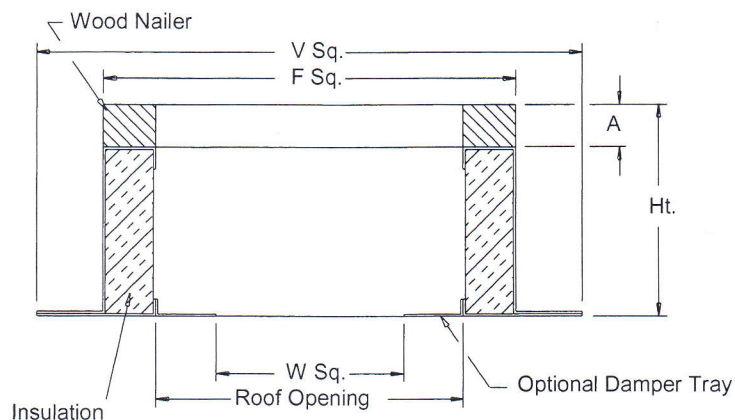
### Galvanized Steel Roof Curb

#### STANDARD CONSTRUCTION FEATURES:

18 gauge galvanized steel - 1-1/2",  
3 lbs. density thermal and acoustical  
insulation - Continuously welded corners -  
Wood nailer.

#### Options:(As noted below\*)

- 1) No wood nailer (deduct 1-1/2"  
for actual height).
- 2) Damper tray.



#### Dimensions (inches)

Mark	Qty	Description	Ht	Options*	A	F Sq.	V Sq.	W Sq.	Roof Opening
RHOOD8	1	RCG 16	13.5	-	1-1/2	16-1/2	20-1/2	9-3/4	13-1/2
RHOOD16	12	RCG 26	13.5	-	1-1/2	26-1/2	30-1/2	19-3/4	23-1/2
RHOOD18	4	RCG 30	13.5	-	1-1/2	30-1/2	34-1/2	23-3/4	27-1/2



## RCG

### Galvanized Steel

#### STANDARD CONSTRUCTION FEATURES:

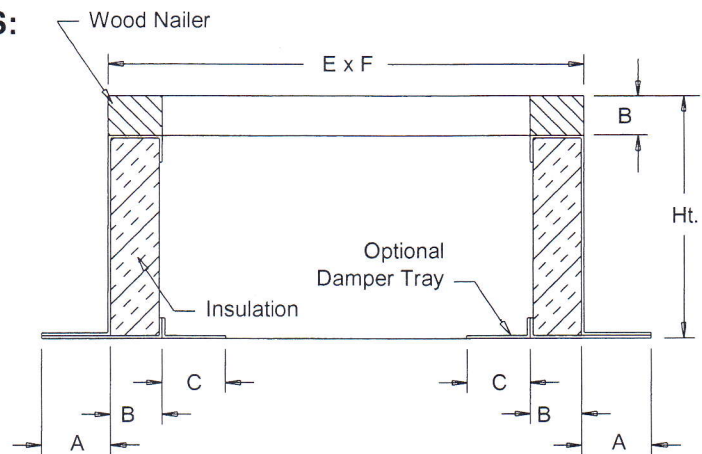
18 ga. galvanized steel - 1-1/2"(3.81 cm),  
3 lbs./cu.ft.(1.36 kg/cu. meter) density  
thermal and accoustical insulation -  
Continuously welded corners - Wood nailer.

Options:(As noted below\*)

- 1) No wood nailer
- 2) Damper tray

#### Note:

Roof Opening is (E - 3) X (F - 3)



#### Dimensions (inches)

Mark	Qty	Description	Ht	Options*	A	B	C	E	F	Roof Opening
RHOOD36X36	2	RCG 40X 40	13.5	2;	2	1.5	1.875	40	40	37 X 37





December 2, 2016

## Submittal Data

Project Name: Home 2 Suites – Flowood, MS

Contractor: Comfort Designs

Submitted By: Trent Dismuke  
Airflo Sales Inc.  
103 First Choice Drive  
Madison, MS 39110  
601-898-1017 Phone  
601-898-1018 Fax

Items Submitted: Fantech Dryer Booster Fans

Approved By:

Date of Approval:

# Submittal Sheet

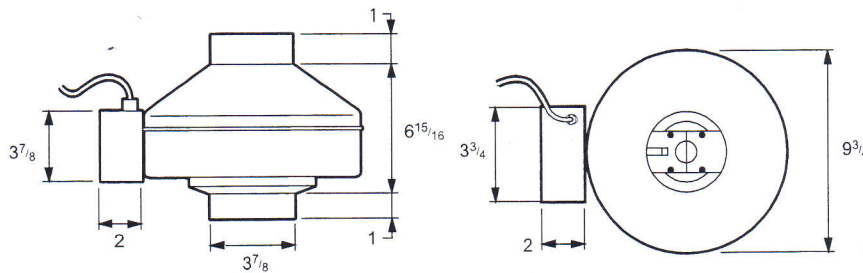
Item #: 450377  
Rev Date: 2015-05-12

## DBF 4XL

### Dryer Exhaust Booster

#### STANDARD FEATURES

- Airtight galvanized steel housing
- Permanently lubricated sealed ball bearings
- Self-cleaning backward curved impeller
- Automatic reset thermal overload protection
- 5 1/2 foot 120Vac power cord
- Five-year factory warranty



Model	Metal Gauge	Weight
DBF 4XL	22	8

All dimensions in inches. Weights in pounds.

Fan Specifications							Motor Specifications				
Line	Qty	Model No.	Tag	CFM	SP	Fan RPM	Watts	Volts	Phase	Hertz	Encl
1	3	DBF 4XL	DBF	188	.25	2175	.54A	120	1	60	
2											
3											
4											

Accessory Items	1	2	3	4	Accessory Items	1	2	3	4
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Project: HOME 2 SUITES - FLOWOOD, MS  
Customer: COMFORT DESIGNS  
Location: FLOWOOD, MS

Submitted: AIRFLO SALES, INC  
Approved: \_\_\_\_\_

United States 10048 Industrial Blvd. • Lenexa, KS 66215 • 1.800.747.1762 • [www.fantech.net](http://www.fantech.net)  
Canada 50 Kanalkræft Way • Bouctouche, NB E4S 3M5 • 1.800.565.3548 • [www.fantech.net](http://www.fantech.net)

Fantech reserves the right to make technical changes.  
For updated documentation please refer to [www.fantech.net](http://www.fantech.net)







December 2, 2016

## Submittal Data

Project Name: Home 2 Suites – Flowood, MS

Contractor: Comfort Designs

Submitted By: Trent Dismuke  
Airflo Sales Inc.  
103 First Choice Drive  
Madison, MS 39110  
601-898-1017 Phone  
601-898-1018 Fax

Items Submitted: Q mark Electric Wall Heaters

Approved By:

Date of Approval:

# PRODUCT SUBMITTAL SHEET



Capacities
500, 562, 750, 900, 1000, 1125, 1500, 1800 or 2000 Watts 120, 208, 240 or 277V @ 1Ø Only
Thermostat Range: 40° - 85° F Air Movement: 65 CFM

## CWH1000 SERIES FAN-FORCED WALL HEATERS

Job Name: HOME 2 SUITES  
 Location: FLOWOOD, MS  
 Architect: RICHARD MOLENAAR  
 Engineer: IES  
 Contractor: COMFORT DESIGNS  
 Submitted By: AIRFLO SALES  
 Date: 12-2-20016

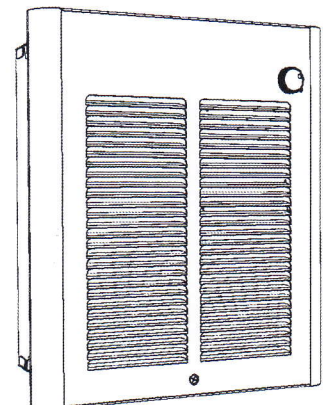
Submitted By:	Date:
Approved By:	Date:

Item	QTY	Catalog Number	Tag	Watts	Volts	PH	AMPS	Weight
	4	CWH1208DSF	WALL HEATER	1000	208	1	4.8	

ACCESSORIES			
Item	QTY	Part Number	Tag
	4	CWHSM	WALL HEATERS



470 Beauty Spot Road East  
 Bennettsville, South Carolina 29512  
[www.marleymep.com](http://www.marleymep.com)



ZSS-QCWH2 | 9-2015



Catalog Number	Volts	Amps	Watts	BTU/HR	Wire Size
CWH1101DSF	120	8.4/4.2	1000/500	3413/1706	14AWG
CWH1151DSF	120	12.5/6.3	1500/750	5120/2560	12AWG
CWH1201DSF	120	15.0/7.5	1800/900	6143/3072	12AWG
CWH1202DSF	240	8.4/4.2	2000/1000	6826/3413	14AWG
	208	7.3/3.6	1500/750	5120/2560	14AWG
CWH1207DSF	277	7.3/3.6	2000/1000	6826/3413	14AWG
	240	6.3/3.2	1500/750	5120/2560	14AWG
CWH1157DSF	277	5.5/2.75	1500/750	5120/2560	14AWG
	240	4.7/2.4	1125/562	3840/1920	14AWG
CWH1208DSF	208	9.6/4.8	2000/1000	6826/3413	14AWG
Accessories					
CWHSM	Surface Mounting Frame (Accessory) Order Separately - Northern White 12-1/2" (318mm)H X 10-3/8" (264mm)W X 4" (102mm)				
CWHS1	1" (25mm) Recess Mounting Frame (Accessory) Order Separately - Northern White				
CWHS2	2" (50mm) Recess Mounting Frame (Accessory) Order Separately - Northern White				
SRAFCTP F	Tamper-resistant front cover - Northern White				

Standard color is Northern White.

### ARCHITECT'S AND ENGINEER'S SPECIFICATIONS\*

The heating equipment shall include an electric automatic fan forced air heater suitable for small area heating, as manufactured by QMark®, a Marley Engineered Products® Brand, Bennettsville, SC. The heater shall be designed for wall mounting, recess or surface. Heaters shall be cETLus listed.

**BACK BOX:** The back box shall be designed as a recessed rough-in box in either masonry or frame installations and is also used when surface mounting frames are used in surface mounting installations. The back box shall be heavy gauge galvanized steel and shall contain knockouts through which power leads enter.

**INNER FRAME ASSEMBLY:** The heater assembly, which fits into the back box, shall consist of a heavy gauge steel fan panel to which all of the operational parts of the heater are mounted. The inner frame assembly shall be completely pre-wired.

**HEATING ELEMENT:** The heating element shall be of the non-glowing design consisting of an 80/20 nickel-chromium resistance wire enclosed in a steel sheath to which plate fins are copper brazed. The element shall cover the entire air discharge area to ensure uniform heating of all discharged air. It shall be warrantied for 5 years.

**ON/OFF SWITCH:** A double-pole, single throw on/off switch shall be mounted on the back box for positive disconnect of power supply. It will be completely concealed behind the front cover.

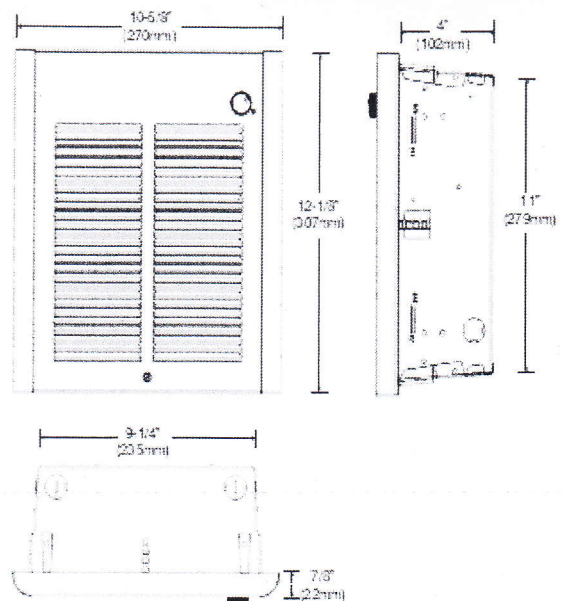
**MOTOR AND CONTROLS:** The fan motor shall be impedance protected, permanently lubricated. Fan control shall be of the bi-metallic, snap-action type and shall activate fan after heating element reaches operating temperature, and continue to operate the fan after the thermostat is satisfied and until all heated air has been discharged. The thermostat shall be single-pole type on all models. Thermal cutout shall be self-hold (manual-reset) type designed to shut off heat in the event of overheating. The fan shall be four-bladed aluminum. A back-up (End of Life) thermal fuse shall be provided for additional safety.

**SURFACE MOUNTING FRAME:** The surface mounting frame shall be of heavy gauge steel designed to mount around the back box for a finished surface installation. Slot knock outs shall be provided for power supply conduit.

**FRONT COVER:** The louvered front cover shall be of heavy gauge steel with a powder paint finish. A plug button will be provided to replace the thermostat knob and render the unit tamper-resistant.

**FINISH:** All sheet metal parts, except the galvanized steel back box, shall be phosphatized, then completely painted by a powder paint process.

*\*In the interest of continual improvements in product and performance, Marley Engineered Products reserves the right to change specifications without notice.*





December 2, 2016

## Submittal Data

Project Name: Home 2 Suites – Flowood, MS

Contractor: Comfort Designs

Submitted By: Trent Dismuke  
Airflo Sales Inc.  
103 First Choice Drive  
Madison, MS 39110  
601-898-1017 Phone  
601-898-1018 Fax

Items Submitted: Ruskin Fire Dampers and Access Doors

Approved By:

Date of Approval:

## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	WIDTH	HEIGHT	SIZE	FRAME	MOUNTING	FUSELINK TEMP	VELOCITY	STATIC PRESSURE	SLEEVE/TRANS	MOUNTING ANGLES	SLV. ACCESS.	SEALED SLEEVE	Comments
DIBD20G	1	FD G	24	12	Actual Size	G STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	FAST 1.5 1 SIDE	NONE	NO	
DIBD20G	1	FD G	30	24	Actual Size	G STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	FAST 1.5 1 SIDE	NONE	NO	





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**IBD20G and DIBD20G**  
**CURTAIN TYPE FIRE DAMPERS FOR GRILLES**  
**1 1/2 HOUR UL555 RATED FOR USE IN STATIC OR DYNAMIC SYSTEMS**

### APPLICATION

IBD20G (Static) and DIBD20G (Dynamic) curtain type fire dampers for grille installation may be installed vertically in walls or horizontally in floors with fire resistance ratings of less than 3 hours. Model 'G' curtain fire dampers are offset in a sleeve to fit within the wall/floor plane behind the customer's supplied grille. The damper/sleeve assembly is installed with angle one side (FAST) to allow the use of all types of grilles.

Model 'G' dampers require access to both sides of the wall/floor for the proper installation; however, access through the grille for inspection or maintenance is permissible.

For application where the damper would be installed outside the plane of the wall or floor refer to model GA (Grille Access) or OW (Out of Wall).

### STANDARD CONSTRUCTION

#### FRAME AND BLADES

Galvanized (in gauges required by UL listing R-5531).

#### CLOSURE SPRINGS

Stainless steel (when required by UL listing R-5531).

#### FUSIBLE LINK

165°F (74°C) is standard. 212°F (100°C) and 285°F (141°C) are optional.

#### SLEEVE

20 gauge (1.0) galvanized steel.

#### MOUNTING ANGLE (FAST)

20 gauge (1.0) galvanized steel (one piece wrap around angle).

### OPTIONS

- **FM Approved** as Specification Tested Product.
- **SP100 Switch Package** to remotely indicate damper blade position.
- **Factory sealed sleeve**

### NOTES

1. Dimensions shown in parentheses ( ) indicate millimeters.
2. Damper/sleeve assembly furnished actual size to inside of sleeve.

The (D)IBD20G meets the requirements for fire dampers established by:

- **National Fire Protection Association NFPA Standards** 90A and 101
- **ICC International Building Codes**
- **CSFM California State Fire Marshal Fire Damper Listing** (#3225-245:005)
- **New York City** (BSA Listing #297-71-SA)

**UL CLASSIFIED**  
UL555 Listing R5531



SEE COMPLETE  
MARKING  
ON PRODUCT



SPECIFICATION  
TESTED PRODUCT  
(OPTION)

### DAMPER SIZES

#### IBD20G

Not for use in Dynamic (fans on) System

#### MINIMUM SIZE

Vertical Installation – 4"w x 4"h (102 x 102)

Horizontal Installation – 6"w x 6"h (152 x 152)

#### MAXIMUM SIZE

Vertical Installation – 48"w x 30"h (1219 x 762) or 33"w x 54"h (838 x 1372) or 36"w x 36"h (914 x 914)

Horizontal Installation – 30"w x 45 1/2"h (762 x 1156) or 33"w x 38"h (838 x 965)

#### DIBD20G

For use in Dynamic (fans on) or Static (fans off) System

#### MINIMUM SIZE

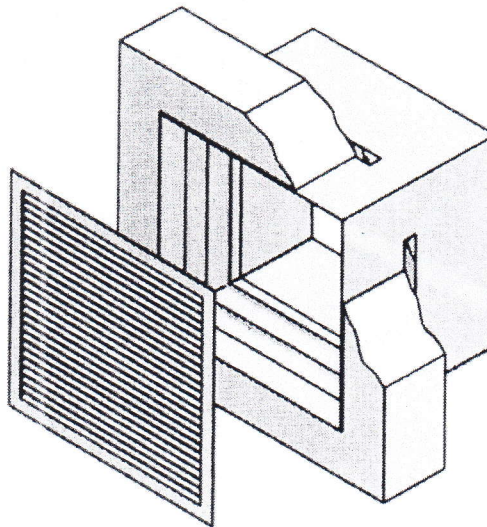
Vertical – 4"w x 4"h (102 x 102)

Horizontal Installation – 6"w x 6"h (152 x 152)

#### MAXIMUM SIZE

Vertical Installation – 33"w x 36"h (762 x 914)

Horizontal Installation – 24"w x 24"h (610 x 610)



## HOW TO APPLY IBD20G AND DIBD20G

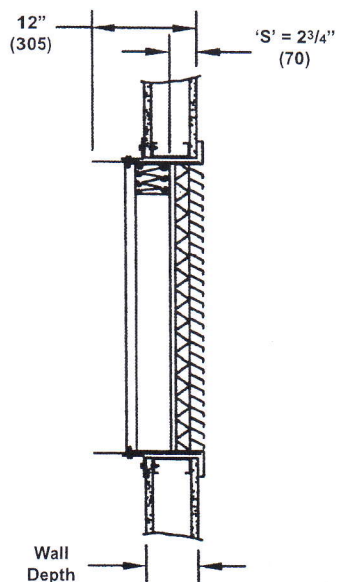
1. Size the damper A x B (width x height)
2. 'S' dimension = 2<sup>3</sup>/<sub>4</sub>" (70).
3. Determine the orientation (wall, floor or ceiling)
4. Determine the wall, floor, or ceiling depth.

### DUCTED

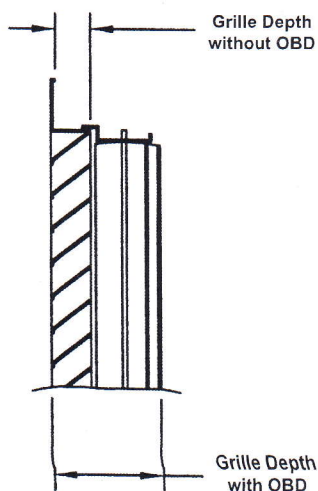
1. 'G' models have a standard 'S' set back dimension of 2<sup>3</sup>/<sub>4</sub>" (70).
2. Sleeve lengths (L) are calculated as:  
Minimum wall, floor, or ceiling depth = 4" (102)
3. The minimum wall, floor or ceiling depth is calculated by adding the 'S' dimension + 1<sup>1</sup>/<sub>4</sub>" (31) (See note 1).

### NOTES:

1. If the wall, floor, or ceiling depth is less than the minimum depth, refer to Models 'GA' or 'OW' for the proper UL installation. Also, consider changing to a grille with a shallower overall depth.

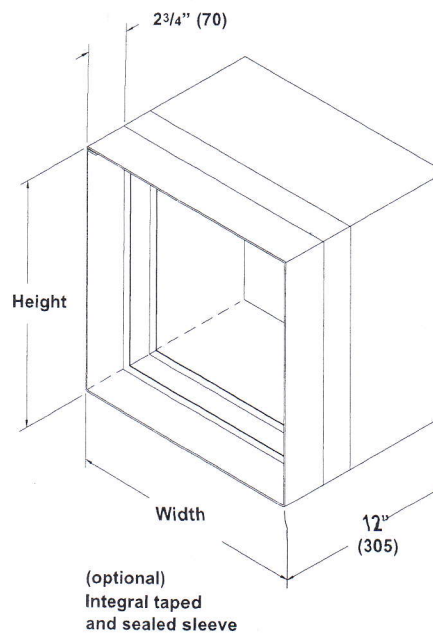
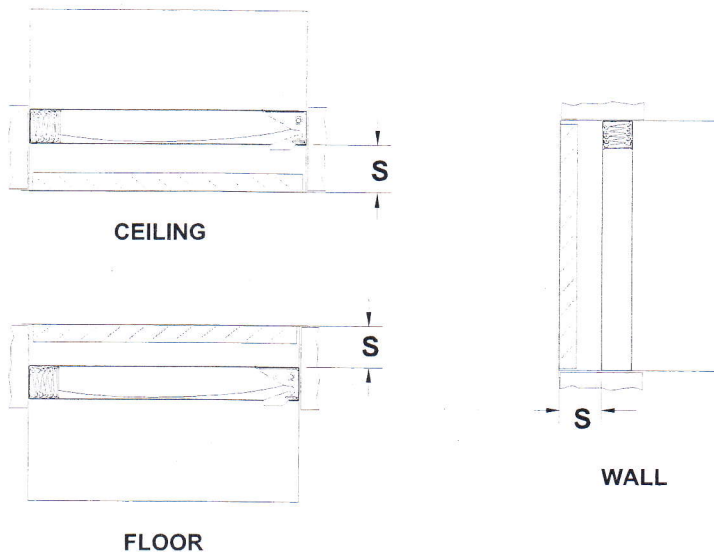


DAMPER DETAIL



GRILLE DETAIL

### ORIENTATION



**RUSKIN®**

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FAX (816) 765-8955  
www.ruskin.com

## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	WIDTH	HEIGHT	SIZE	FRAME	MOUNTING	FUSELINK TEMP	VELOCITY	STATIC PRESSURE	SLEEVE/TRANS	MOUNTING ANGLES	SLV. ACCESS	SEALED SLEEVE	Comments
DIBD20	2	FD B	22	14	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	12	12	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	24	10	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	24	9	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	20	15	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	17	10	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	10	6	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	16	FD B	24	6	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	22	12	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	18	10	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	1	FD B	14	8	Deduct 1/4	B STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	
DIBD20	3	FD R	7	7	Deduct 1/4	R STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO	



Job Name: Home2Suites Flowood

DIBD20	7	FD R	6	6	Deduct 1/4	R STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	5	FD R	8	8	Deduct 1/4	R STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	3	FD R	10	10	Deduct 1/4	R STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	2	FD R	9	9	Deduct 1/4	R STYLE	VERTICAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	8	FDH R	6	6	Deduct 1/4	R STYLE	HORIZONTAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	1	FDH B	20	15	Deduct 1/4	B STYLE	HORIZONTAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	1	FDH B	26	12	Deduct 1/4	B STYLE	HORIZONTAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	1	FDH B	25	10	Deduct 1/4	B STYLE	HORIZONTAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO
DIBD20	1	FDH B	24	9	Deduct 1/4	B STYLE	HORIZONTAL	165 DEGREES	2000 FPM	4 INCHES	SLEEVE	PFMA 1.5 2 SIDES	NONE	NO



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## **DIBD20, 40 and 60 CURTAIN TYPE STATIC FIRE DAMPERS** **1½ HOUR UL555 RATED FOR USE IN DYNAMIC AND STATIC SYSTEMS**

### **APPLICATION**

Ruskin Model DIBD20, 40, & 60 are 1½ hour UL classified dynamic (fans on) or static (fans off) curtain style fire dampers for use in HVAC systems that remain in operation during a fire. Fire dampers are used for the protection of openings in walls, partitions, or masonry floors with fire resistance ratings of less than 3 hours and shall have a 1½ hour fire protection rating. The DIBD20,40 & 60 can be installed vertically in walls or horizontally in masonry floors and is rated for airflow in either direction.

### **DYNAMIC CLOSURE RATINGS**

4000 fpm (20.3 m/s) vertical mount only, up to 24" x 24" (610 x 610).  
3000 fpm (15.2 m/s) vertical and horizontal mount, up to 24" x 24" (610 x 610).  
2000 fpm (10.2 m/s) vertical or horizontal mount on all sizes.  
4 in. w.g. (1 kPa) maximum pressure on all sizes.

### **STANDARD CONSTRUCTION**

#### **Frame and Blades Material**

Galvanized steel or stainless steel (in gauges required by UL listing R-5531).

#### **Closure Springs**

301 stainless steel constant force or spring clip type.

Note: Vertical units 24" x 24" (610 x 610) and smaller utilize spring clips only and do not have constant force springs.

#### **Fusible Link**

165°F (74°C) is standard. 212°F (100°C) and 285°F (141°C) are available option.

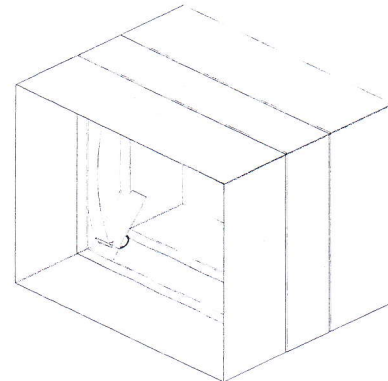
### **DAMPER SIZES**

See pages 2 - 5 for minimum and maximum UL sizes.

See pages 6 - 9 for construction details on multiple section assemblies.

### **OPTIONS**

- **True Round Fire Damper** - See model FDR25
- **Stainless Steel Construction** - See model (D)IBD20SS
- **FM Approvals** as Specification Tested Product
- **SP200** Switch Package to allow remote indication of damper blade position
- **FAST Angles** factory supplied one-side installation. Other angles of various sizes and gauges also available for one-side or two-side installation
- **Factory** sealed sleeves and transitions
- **MCP** Control panels for monitoring purpose
- **Grille Mounting** See (D)IBD20G model



Models DIBD20, 40, and 60 series meet the requirements for fire dampers established by:

- **National Fire Protection Association** NFPA Standards 80, 90A, 92A, 92B, and 101
- **ICC International Building Codes**
- **CSFM California State Fire Marshal** IBD2 #3225-0245:0005
- **New York City** MEA 450-06-M

**UL CLASSIFIED**  
UL555 Listing R5531



SEE COMPLETE  
MARKING  
ON PRODUCT

**FM Approvals**  
Specification Tested Product  
(Option)

### **Notes:**

1. Dimensions shown in parentheses ( ) indicate millimeters.
2. Dampers may require sealing of seams in the field to meet local code leakage requirements.

## DAMPER STYLES AND SIZES

### A Style

Frame and blades in air stream  
Sleeve optional  
75 - 85% free area

#### MINIMUM SIZE 2000 fpm (10.2 m/s)

Vertical Installation – 4" w x 4" h (102 x 102)  
Horizontal Installation – 6" w x 6" h (152 x 152)

#### MAXIMUM SIZE 2000 fpm (10.2 m/s)

##### Single Section

Vertical Installation – 33" w x 36" h (838 x 914)  
Horizontal Installation – 24" w x 24" h (610 x 610)

##### Multiple Section Assembly

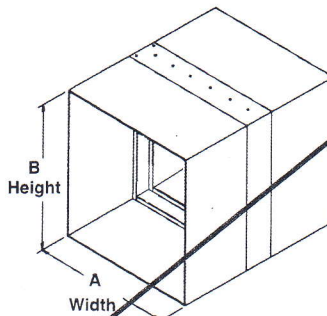
Vertical Installation – 54" w x 48" h (1372 x 1219) or  
48" w x 54" h (1219 x 1372) or 54" w x 24" h (1372 x 610)  
Horizontal Installation – 36" w x 48" h (914 x 1219) or  
48" w x 36" h (1219 x 914).  
The minimum width or height becomes 9" x 9"  
(229 x 229) when dampers width or height is over 24" (610).

#### MINIMUM SIZE UNITS ABOVE 2000 fpm (10.2 m/s)

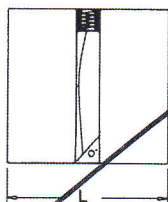
Vertical or Horizontal Installation – 9" w x 9" h (229 x 229)

#### MAXIMUM SIZE UNITS ABOVE 2000 fpm (10.2 m/s)

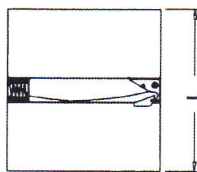
Vertical or Horizontal Installation – 24" w x 24" h (610 x 610)



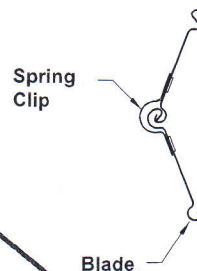
#### VERTICAL MOUNT



#### HORIZONTAL MOUNT



L = Frame/Sleeve Length



Spring Detail used on Vertical Mount  
Units 24" x 24" (610 x 610) and Under

Note: See page 6 for overall dimensional information

## → B Style - Blades out of the Airstream for Greater Free Area

### B Style

Blades out of air stream  
Sleeve optional  
80 - 90% free area

#### MINIMUM SIZE 2000 fpm (10.2 m/s)

Vertical Installation – 4" w x 4" h (102 x 102)  
Horizontal Installation – 6" w x 4" h (152 x 102)

#### MAXIMUM SIZE 2000 fpm (10.2 m/s)

##### Single Section

Vertical Installation – 33" w x 32" h (838 x 813)  
Horizontal Installation – 24" w x 21" h (610 x 533)

##### Multiple Section Assembly

Vertical Installation – 54" w x 45" h (1372 x 1143) or  
48" w x 51" h (1219 x 1295) or 54" w x 21" h (1372 x 533)  
Horizontal Installation – 36" w x 42" h (914 x 1067) or  
48" w x 30" h (1219 x 813).  
The minimum width or height becomes 9" w x 8" h  
(229 x 203) when damper's width or height is over 21" (533).

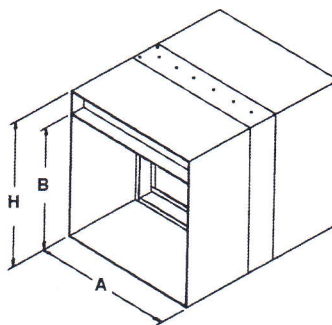
#### DIBD2 MINIMUM SIZE UNITS ABOVE 2000 fpm (10.2 m/s)

Vertical or Horizontal Installation – 9" w x 7" h (229 x 178)

#### DIBD2 MAXIMUM SIZE UNITS ABOVE 2000 fpm (10.2 m/s)

##### Single Section only

Vertical or Horizontal Installation – 24" w x 21" h (610 x 533)



A = Duct Width  
B = Duct Height  
H = Overall Damper Height

Note: See page 7 for overall dimensional information



## DAMPER STYLES AND SIZES

### LO Style – Oval Transition

Frame and blades out of air stream

Non-sealed sleeve standard

Sealed sleeve optional

95 - 100% free area

#### MINIMUM SIZE

Vertical or Horizontal Installation – 4"w x 3"h (102 x 76)

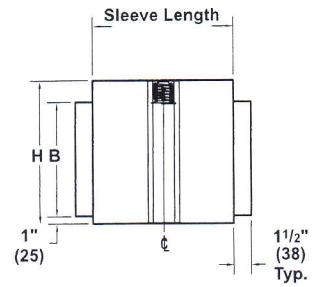
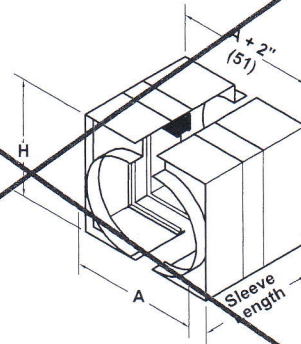
#### MAXIMUM SIZE

##### Single Section

Vertical Installation – 31"w x 31"h (787 x 787)

Horizontal Installation – 22"w x 20"h (533 x 533)

A = Duct Width  
B = Duct Height  
H = Overall Damper Height



#### NOTE:

1. Style LO the duct connection extends 1 1/2" (38) beyond the damper.
2. See page 8 for overall dimensional information

### R Style – Round Transition

Round enclosure. Blades partially in the air stream

Non-sealed sleeve standard

Sealed sleeve optional

85 - 95% free area

#### MINIMUM SIZE

Vertical Installation – 3" diameter (76)

Horizontal Installation – 4" diameter (102)

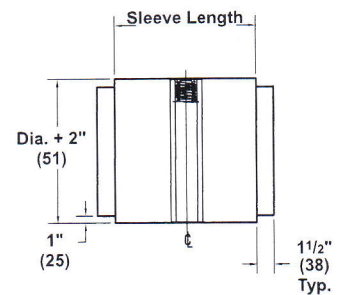
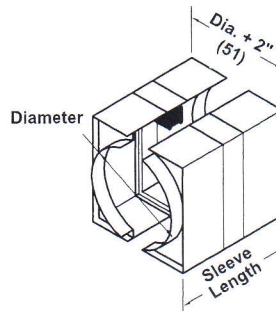
#### MAXIMUM SIZE

##### Single Section

Vertical Installation – 31" diameter (787)

Horizontal Installation – 22" diameter (559)

D = Diameter  
H = Overall Damper Height



#### NOTE:

1. Style R the duct connection extends 1 1/2" (38) beyond the damper.
2. See page 10 for overall dimensional information

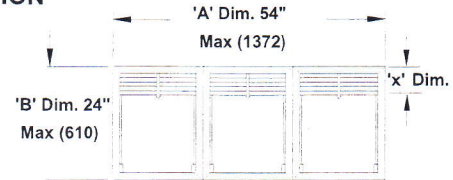
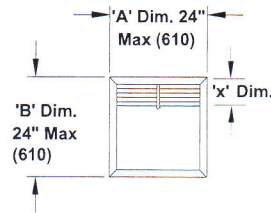
## ASSEMBLY AND DIMENSIONAL INFORMATION

Dampers normally fabricated approximately 1/4" (6) less than given duct dimensions. A (width) and B (height) dimensions shown describe maximum UL Classified sizes. Multiple section damper assemblies ordered without sleeves are shipped in individual sections, for field assembly. Multiple section dampers ordered with factory furnished sleeves are normally shipped in complete assemblies,

### DIBD20, 40, & 60 A STYLE DAMPERS

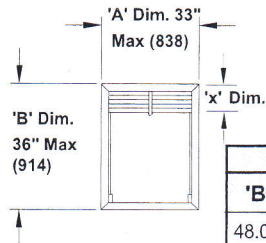
#### VERTICAL INSTALLATION

Single Section Units 24" (610) wide and 24" (610) high and under	
'B' Damper Height	'x' Dim.
4" (102) thru 7" (178)	1 1/2" (39)
7.01" (179) thru 12" (305)	2" (51)
12.01" (306) thru 17" (432)	2 1/2" (64)
17.01" (433) thru 21" (533)	3" (76)
21.01" (534) thru 24" (610)	3 1/2" (90)

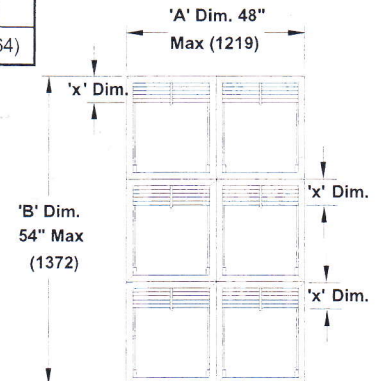


Multiple Section Wide and Single Section 24" (610) high and under	
'B' Damper Height	'x' Dim.
6" (152) thru 10" (254)	1 1/2" (39)
10.01" (255) thru 17" (432)	2" (51)
17.01" (433) thru 21" (533)	2 1/2" (64)
21.01" (534) thru 24" (610)	3" (76)

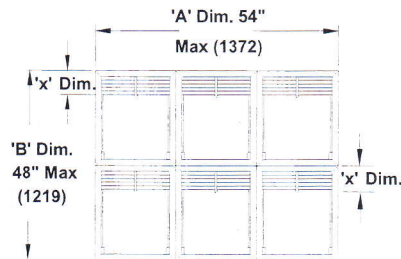
Single Section Units above 24" (610) wide or high thru 33" (838) wide by 36" (914) high	
'B' Damper Height	'x' Dim.
6" (152) thru 10" (254)	1 1/2" (39)
10.01" (255) thru 17" (432)	2" (51)
17.01" (433) thru 21" (533)	2 1/2" (64)
21.01" (534) thru 26" (660)	3" (76)
26.01" (661) thru 31" (787)	3 1/2" (90)
31.01" (788) thru 36" (914)	4" (102)



3 Section High Units	
'B' Damper Height	'x' Dim.
48.01" (1220) thru 51" (1295)	2" (51)
51.01" (1296) thru 54" (1372)	2 1/2" (64)

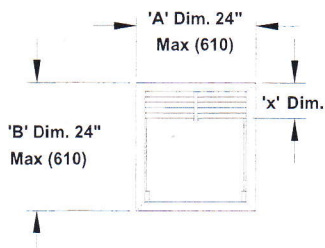


2 Section High Units	
'B' Damper Height	'x' Dim.
24.01" (611) thru 34" (864)	2" (51)
34.01" (865) thru 42" (1067)	2 1/2" (64)
42.01" (1068) thru 48" (1219)	3" (76)

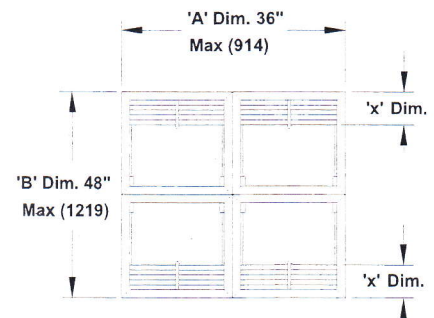
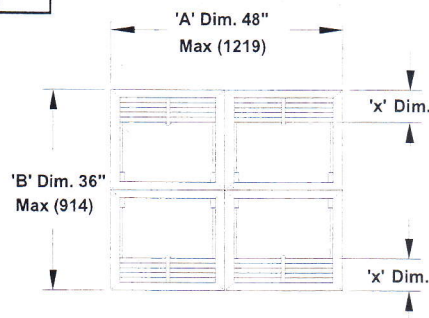


#### HORIZONTAL INSTALLATION

Single Section Units 24" (610) wide or high and under	
'B' Damper Height	'x' Dim.
6" (152) thru 10" (254)	1 1/2" (39)
10.01" (255) thru 17" (431)	2" (51)
17.01" (432) thru 21" (533)	2 1/2" (64)
21.01" (534) thru 24" (610)	3" (76)



Two Section High Units	
'B' Damper Height	'x' Dim.
18.01" (458) thru 28" (711)	2" (51)
28.01" (712) thru 42" (1067)	2 1/2" (64)
42.01" (1068) thru 48" (1219)	2 3/4" (70)



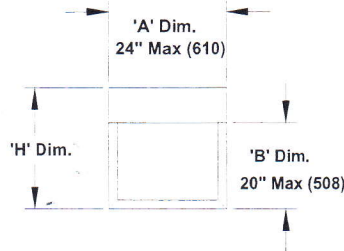
## ASSEMBLY AND DIMENSIONAL INFORMATION



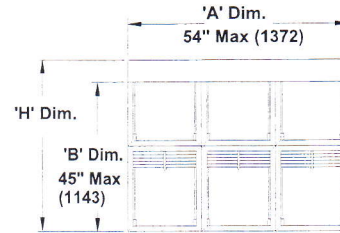
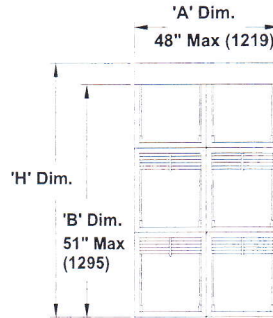
### B STYLE DAMPERS VERTICAL INSTALLATION

'X' dim. + 'B' dim. = 'H' dim.

Single Section Units 24" (610) wide and 20" (508) high and under	
'B' Damper Height	'x' Dim.
4" (102) thru 8" (203)	1 <sup>3</sup> / <sub>4</sub> " (44)
8.01" (204) thru 16" (406)	2 <sup>3</sup> / <sub>4</sub> " (70)
16.01" (407) thru 20" (508)	3 <sup>3</sup> / <sub>4</sub> " (95)



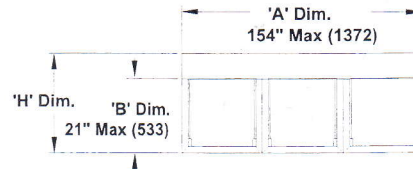
Multiple Section Wide and High Above 21" (533) thru 69" (1153) high	
'B' Damper Height	'x' Dim.
22" (559) thru 26" (660)	1 <sup>3</sup> / <sub>4</sub> " (44)
26.01" (661) thru 51" (1295)	2 <sup>3</sup> / <sub>4</sub> " (70)



Single Section Units Above 24" (610) wide or 20" (508) high through 33" (838) wide by 32" (813) high	
'B' Damper Height	'x' Dim.
4" (102) thru 12" (305)	1 <sup>3</sup> / <sub>4</sub> " (44)
12.01" (306) thru 23" (584)	2 <sup>3</sup> / <sub>4</sub> " (70)
23.01" (585) thru 32" (813)	3 <sup>3</sup> / <sub>4</sub> " (95)



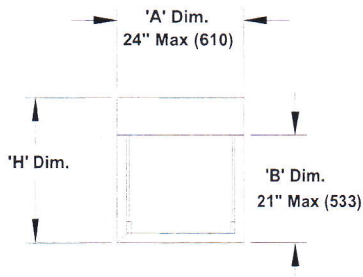
Multiple Section Wide and Single Section High 21" (533) and under	
'B' Damper Height	'x' Dim.
4" (102) thru 12" (305)	1 <sup>3</sup> / <sub>4</sub> " (44)
12.01" (306) thru 21" (533)	2 <sup>3</sup> / <sub>4</sub> " (70)



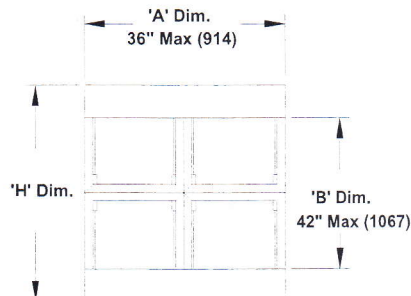
### HORIZONTAL INSTALLATION

'X' dim. + 'B' dim. = 'H' dim.

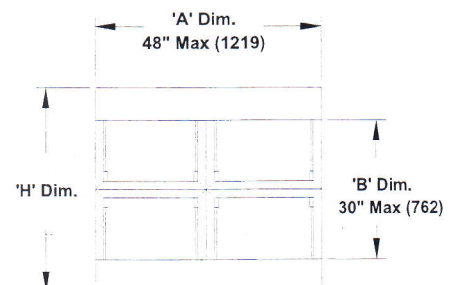
Single Section Units 24" (610) wide and 20" (508) high and under	
'B' Damper Height	'x' Dim.
4" (102) thru 10" (254)	1 <sup>3</sup> / <sub>4</sub> " (44)
10.01" (255) thru 21" (533)	2 <sup>3</sup> / <sub>4</sub> " (70)



Multiple Section High and 36" (914) wide and under	
'B' Damper Height	'x' Dim.
8" (203) thru 12" (305)	1 <sup>3</sup> / <sub>4</sub> " (44)
12.01" (306) thru 21" (533)	2 <sup>3</sup> / <sub>4</sub> " (70)
21.01" (534) thru 24" (610)	3 <sup>1</sup> / <sub>2</sub> " (89)
24.01" (611) thru 42" (1067)	5 <sup>1</sup> / <sub>2</sub> " (140)



Multiple Section High and Over 36" (914) wide	
'B' Damper Height	'x' Dim.
8" (203) thru 12" (305)	1 <sup>3</sup> / <sub>4</sub> " (44)
12.01" (306) thru 15" (381)	2 <sup>3</sup> / <sub>4</sub> " (70)
15.01" (382) thru 22" (559)	3 <sup>1</sup> / <sub>2</sub> " (89)
22.01" (560) thru 30" (762)	5 <sup>1</sup> / <sub>2</sub> " (140)



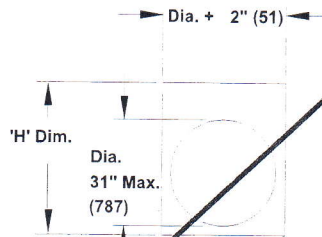


# ASSEMBLY AND DIMENSIONAL INFORMATION For 2000 fpm (10.2 m/s) and 4 in. wg. (1 kPa) MAX.

## CR and LR STYLE DAMPERS VERTICAL INSTALLATION

'X' dim. + 'Dia' dim. = 'H' dim.

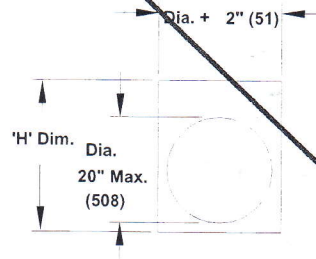
SINGLE SECTION HIGH	
'H' DIMENSION	
'Dia' Damper Height	'x' Dim.
3" (76) thru 7" (178)	2 3/4" (70)
7.01" (179) thru 15" (533)	3 3/4" (95)
15.01" (534) thru 19" (483)	4 3/4" (121)
19.01" (484) thru 22" (559)	3 3/4" (95)
22.01" (560) thru 31" (787)	4 3/4" (121)



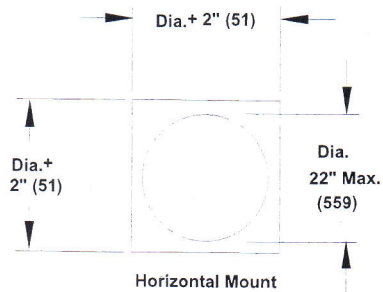
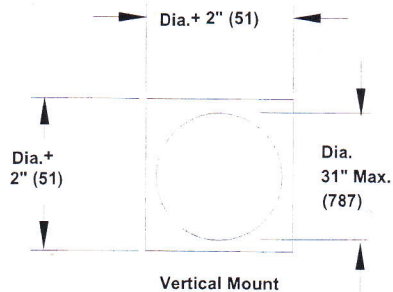
## HORIZONTAL INSTALLATION

'X' dim. + 'Dia' dim. = 'H' dim.

SINGLE SECTION HIGH	
'H' DIMENSION	
'Dia' Damper Height	'x' Dim.
4" (102) thru 9" (228)	2 3/4" (70)
9.01" (229) thru 20" (508)	3 3/4" (95)



## R STYLE DAMPERS VERTICAL AND HORIZONTAL INSTALLATION



## ASSEMBLY AND DIMENSIONAL INFORMATION

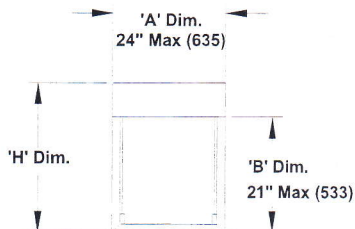
For 4000 fpm (20.3 m/s) and 4 in. wg. (1 kPa) MAX. Vertical Mount Only

For 3000 fpm (15.2 m/s) and 4 in. wg. (1 kPa) MAX. Vertical or Horizontal Mount

### B DAMPERS

'X' dim. + 'B' dim. = 'H' dim.

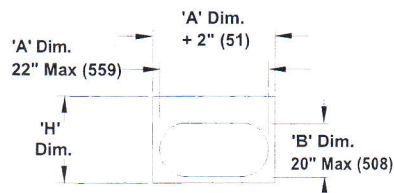
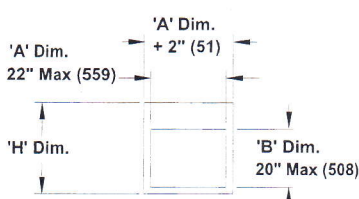
Single Section Units	
'B' Damper Height	'x' Dim.
8" (203) thru 12" (305)	1 <sup>3</sup> / <sub>4</sub> " (44)
12.01" (306) thru 21" (533)	2 <sup>3</sup> / <sub>4</sub> " (70)



### C and CO DAMPERS

'X' dim. + 'B' dim. = 'H' dim.

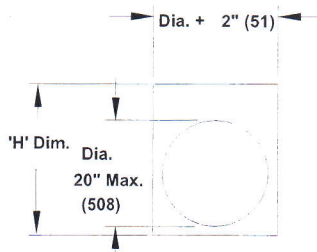
Single Section Units	
'B' Damper Height	'x' Dim.
7" (178) thru 11" (280)	2 <sup>3</sup> / <sub>4</sub> " (44)
11.01" (281) thru 20" (508)	3 <sup>3</sup> / <sub>4</sub> " (95)



### CR Dampers

'X' dim. + 'Dia' dim. = 'H'

Single Section Units	
'Dia' Damper Height	'x' Dim.
7" (178) thru 11" (280)	2 <sup>3</sup> / <sub>4</sub> " (44)
11.10" (281) thru 20" (508)	3 <sup>3</sup> / <sub>4</sub> " (95)



## DIBD20, 40 & 60 SUGGESTED SPECIFICATION

Furnish and install at locations shown on the plans, or as described in schedules for curtain type fire dampers suitable for vertical wall or horizontal masonry floor or ceiling. Dynamic fire dampers tested, constructed and labeled in accordance with the latest edition of UL Standard 555. Dampers shall have a fire rating of 1½ hours and shall meet the requirements of the latest edition of NFPA90A. Fire dampers shall be produced in an ISO 9001 certified factory.

Damper frame and blades shall be galvanized steel in gauges required by UL listing R-5531 installed in a factory mounted sleeve and shipped loose mounting angle. Damper blades shall be steel interlock to provide fire shield in gauges required by UL listing R-5531. Closure spring dampers shall be of 301 stainless steel and shall be constant force type.

Each dynamic fire damper shall include a steel sleeve and mounting angles furnished by the damper manufacturer to ensure appropriate installation. Submittal information shall include the fire protection rating, maximum velocity/pressure ratings and the manufac-

turer's UL installation instructions. The dampers shall be installed in accordance with the manufacturer's UL installation instructions. Dynamic fire dampers shall be in all respects equivalent to Ruskin model DIBD20, 40 & 60.

Each damper shall include a 165°F (74°C), 212°F (100°C) or 285°F (141°C) fusible link and shall be labeled for use in dynamic systems. Dampers labeled for use in static systems only are not permitted. The damper shall be rated for dynamic closure at 2000 fpm (10.16 m/s) and 4 inches w.g. (1 kPa) static pressure and shall be rated to close with airflow in either direction.

#### Optional FM Approvals Specification

Each fire damper shall be listed in Factory Mutual (FM) Approvals Specification Tested Product and labeled accordingly.

Dynamic fire dampers shall be Ruskin model DIBD20, 40 & 60. (Consult [www.ruskin.com](http://www.ruskin.com) for electronic version of this "Quick" spec as well as for complete 3-part CSI MasterFormat Specifications)

**RUSKIN®**

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FAX (816) 765-8955  
[www.ruskin.com](http://www.ruskin.com)

Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	WIDTH	HEIGHT	SIZE	CAM MATERIAL	CONSTRUCTION	DOOR GAUGE	EXTRA CAMS	LATCHES	SECURITY CHAIN	DOOR SEAL	Comments
ADC24	2	AD	6	6	Actual Size	STANDARD	GALVANIZED	24 GAUGE	NONE	CAM LATCH	NO	POLYURETHANE	
ADC24	29	AD	12	12	Actual Size	STANDARD	GALVANIZED	24 GAUGE	NONE	CAM LATCH	NO	POLYURETHANE	



## STANDARD ACCESS DOORS

### APPLICATION

Ruskin access doors offer quick, easy and economical installation wherever duct access is needed. Manual locks assure tight door closure and the continuous piano-type hinge models give smooth operation. The ADCW and ADHW models feature a "see through" panel that permits visual duct inspection without door removal.

### STANDARD CONSTRUCTION

#### FRAME

22 gage (.8) galvanized steel with seal.

#### DOOR

24 gage (.7) galvanized steel.

ADC14 – Removable, single skin.

ADH14 – Hinged, single skin.

→ ADC24 – Removable, double skin.

ADH24 – Hinged, double skin.

ADCW24 – Removable, double skin with round transparent plexiglass window.

ADHW24 – Hinged, double skin with round transparent plexiglass window.

#### HINGE (ADH Models Only)

Continuous piano type.

#### LOCKS

ADH Models – Doors 16" (406) and under have one lock, doors over 16" (406) have two locks.

ADC Models – Doors 16" (406) and under have two locks, doors over 16" (406) have four locks.

#### MAXIMUM STATIC PRESSURE

Double skin access doors have been tested to 6" w.g. Leakage increases as system pressure increases. Refer to chart on page 2.

#### SEALS

Foam gasket.

#### INSULATION

1" (25) fiberglass.

#### MINIMUM SIZE

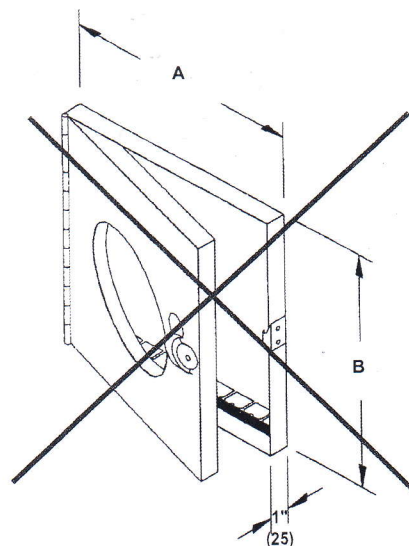
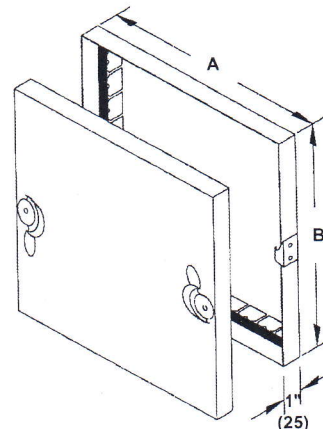
6"w x 6"h (152 x 152).

#### MAXIMUM SIZE

24"w x 24"h (610 x 610).

#### INSTALLATION

Cut hole 1 1/8" (28) smaller than door size.



### VARIATIONS

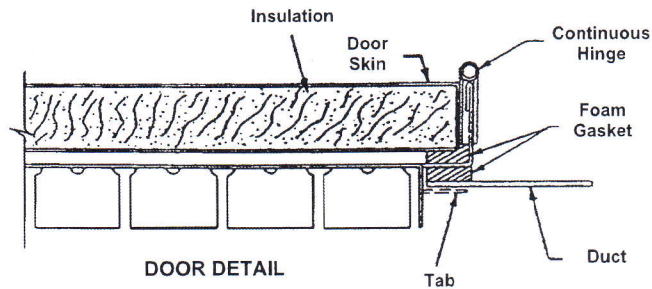
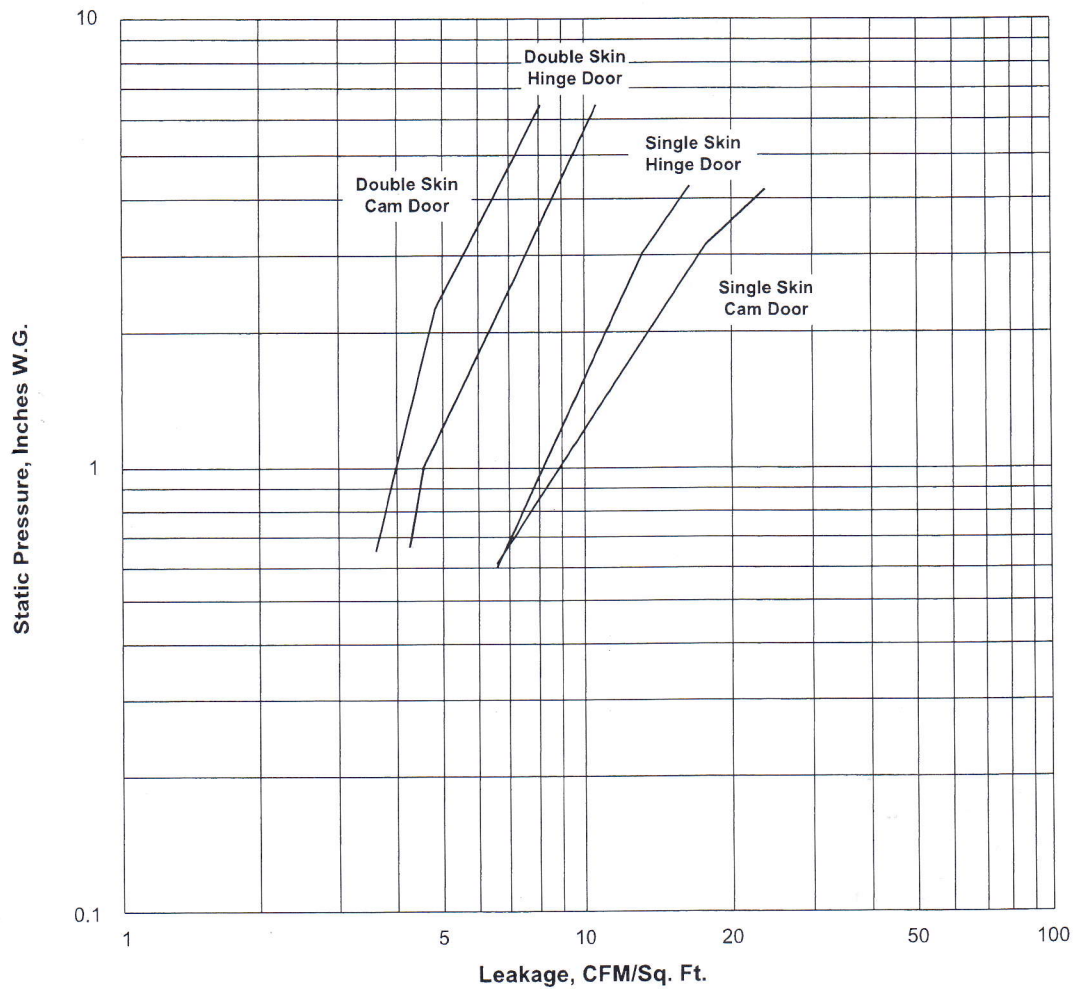
- Additional cam locks
- Wire reinforced glass window
- 20 gage (.9) door panels
- Ventlock 100 latches
- Stainless steel construction
- Bronze hinge pins
- Brass cams
- Security chain
- Intermediate sizes between 6" x 6" (152 x 152) and 24" x 24" (610 x 610)

### NOTES

1. Dimensions shown in parenthesis ( ) indicate millimeters.
2. Access doors furnished actual size.
3. For doors larger than 24" x 24" (610 x 610) see GPAD.

## PERFORMANCE DATA

### 12" x 12" ACCESS DOOR



**RUSKIN®**

3900 Dr. Greaves Rd.  
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(816) 761-7476  
FAX (816) 765-8955  
www.ruskin.com

## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	SIZE	DUCT DIAMETER	DOOR SIZE	CONSTRUCTION	Comments
ADR1	15	ADR	Actual Size	6 Inch DIA.	10 Inch X 6 Inch	GALVANIZED	
ADR1	8	ADR	Actual Size	8 Inch DIA.	10 Inch X 6 Inch	GALVANIZED	
ADR1	5	ADR	Actual Size	10 Inch DIA.	10 Inch X 6 Inch	GALVANIZED	





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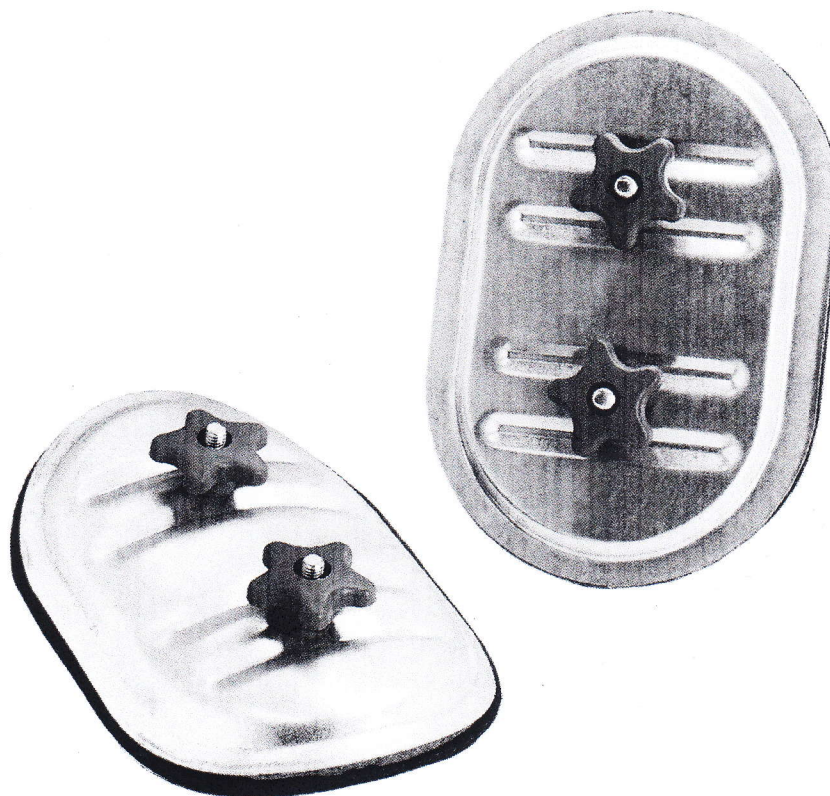
• (816) 761-7476

• FAX (816) 765-8955

## ADR and ADF ACCESS DOORS

Ruskin ADR and ADF access doors are an inexpensive and trouble-free way to gain access into sheet metal ductwork systems for resetting dampers, cleaning filters, or access for general maintenance. The oval shaped opening permits the back plate or "inner plate" to be easily passed through the duct openings, and the neoprene gasket on the inner plate provides for an absolutely air-tight

seal. The large hand knobs insure a quick method to remove and reinstall the door without the use of special tools. The ADR (for round duct work) and ADF (for flat duct work) are available in three sizes, 16" x 12", 10" x 6" and 8" x 4" to accommodate the many different sizes of duct work that are available.



### METAL THICKNESSES

- 20 (.9) gauge steel - 10" x 6" (254 x 152) door size.
- 20 (.9) gauge steel - 16" x 12" (406 x 305) door size.
- 20 (.9) gauge steel - 8" x 4" (203 x 102) door size.

### CELLULAR SPONGE GASKET

Fixed to the inner plate keeps the doors free of leaks at pressures to 20" w.g.

### ACCESS DOOR MODELS AND SIZES

Ruskin ADF is available in 8" x 4" (203 x 102), 10" x 6" (254 x 152) and 16" x 12" (406 x 305) sizes for rectangular (flat) ductwork. Ruskin ADR is available as the ADR1 size 10" x 6" (254 x 152), the ADR2 size 16" x 12" (406 x 305), and the ADR3 size 8" x 4" (203 x 102) for round duct work in the following sizes:

### AVAILABLE OPTIONS

- Aluminum Construction: ADR1 and ADR2 Only.
- 304SS Construction: ADR1 and ADR2 Only.

### ADR1, 10" x 6" (254 x 152) DUCT SIZES

6", 8", 9" 10", 12", 14", 16", 18", 20", 22", 24", 26", 28", 30" (152, 203, 229, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711, 762).

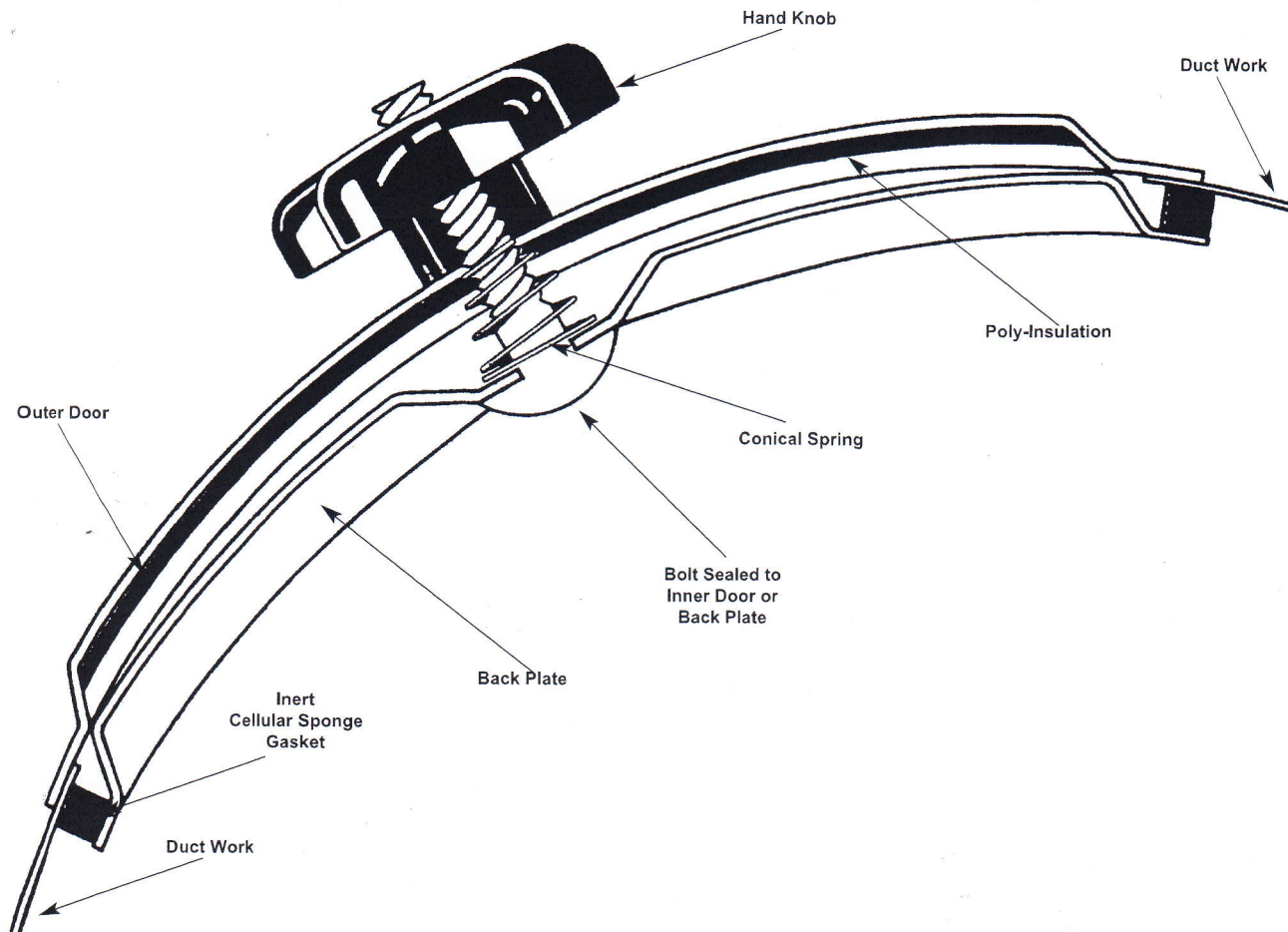
### ADR2, 16" x 12" (406 x 305) DUCT SIZES

12", 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", 48" (305, 356, 406, 457, 508, 559, 610, 660, 711, 762, 813, 864, 914, 965, 1067, 1118, 1168, 1219).

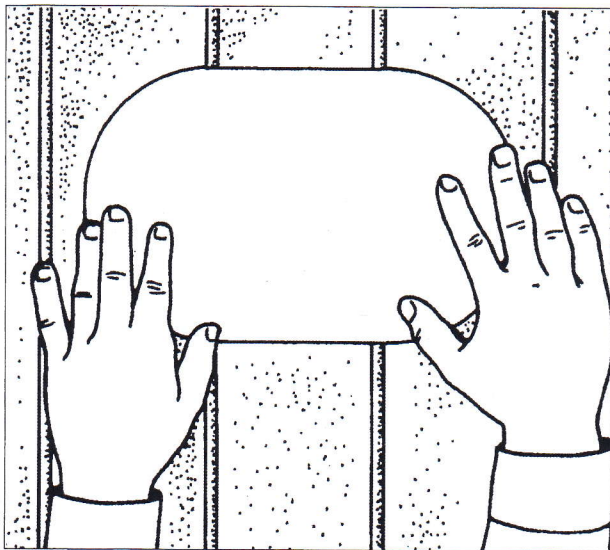
### ADR3, 8" x 4" (203 x 102) DUCT SIZES

4", 6", 8", 9" 10", 12", 14", 16", 18", 20", 22", 24", 26", 28", (102, 152, 203, 229, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711).

## ACCESS DOOR CUTAWAY



## INSTALLATION INSTRUCTIONS



**SELF-ADHESIVE TEMPLATES** are also provided so that the duct opening can be cut without expensive lay-out.



**EASY INSTALLATION** after door opening has been cut, unscrew handles or door in insert in the opening, align then tighten knobs.

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[www.ruskin.com](http://www.ruskin.com)



December 2, 2016

## Submittal Data

Project Name: Home 2 Suites – Flowood, MS

Contractor: Comfort Designs

Submitted By: Trent Dismuke  
Airflo Sales Inc.  
103 First Choice Drive  
Madison, MS 39110  
601-898-1017 Phone  
601-898-1018 Fax

Items Submitted: Titus Grilles and Diffusers

Approved By:

Date of Approval:



## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	DIM 1	DIM 2	Module	Border	Finish	Pattern	Damper	Accessory 1	Accessory 2	Accessory 3	Comments
TMSA-AA	23	CD LI	10" DIAMETER		24X24	3 - LAY-IN	26 - WHITE		D-75 - ROUND NECK-MOUNTED OBD	IB - INSULATION BLANKET	NONE	NONE	
TMSA-AA	22	CD LI	8" DIAMETER		24X24	3 - LAY-IN	26 - WHITE		D-75 - ROUND NECK-MOUNTED OBD	IB - INSULATION BLANKET	NONE	NONE	
TMSA-AA	5	CD LI	6" DIAMETER		24X24	3 - LAY-IN	26 - WHITE		D-75 - ROUND NECK-MOUNTED OBD	IB - INSULATION BLANKET	NONE	NONE	



# Submittal

TMSA-AA 1.0

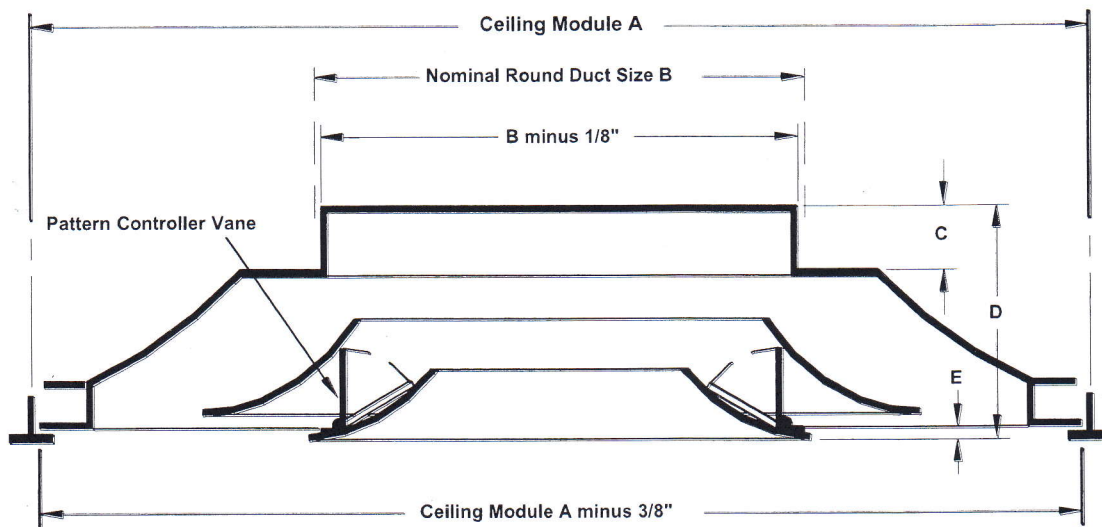
4-6-15

## Square Ceiling Diffusers

Aluminum • Adjustable • High Performance

Model: TMSA-AA • Round Neck • Vertical-to-Horizontal Discharge Pattern

☒ Border Type 3 (Lay-In) Full Face.

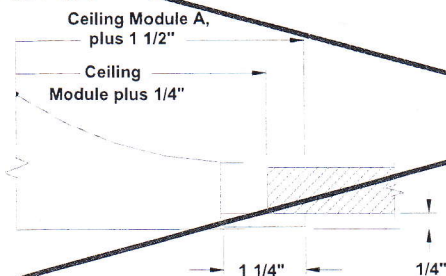


Ceiling Module A	Nominal Round Duct Size B	C	D	E
12 x 12	4, 5*	3 1/8	5 3/8	3/8
12 x 12	6, 7	1 1/8	3 3/8	3/8
12 x 12	8	1 1/4	3 1/2	3/8
20 x 20	4, 5*	2 3/4	6 3/8	1 1/4
20 x 20	6, 8, 10	3/4	4 3/8	1 1/4
24 x 24	6, 8	1 1/4	5	1/4
24 x 24	10, 12, 14, 15	1 3/8	5 1/8	1/4

\* Adapter is provided for 4 & 5

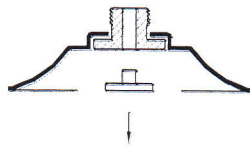
## Other Available Border Types

☐ Frame Type 1 (Surface Mount)  
Full Face

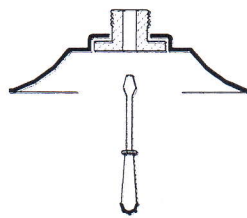


Ceiling Module	Face Size	Nominal Round Duct Sizes	Border Types
20 x 20	20 x 20	4, 5, 6, 8, 10	1, 3
24 x 24	24 x 24	6, 8, 10, 12, 14, 15	1, 2, 3, 4

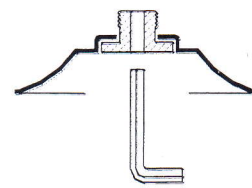
### Adjusting Optional Damper • Removing Center Cone



1. Remove center pin.

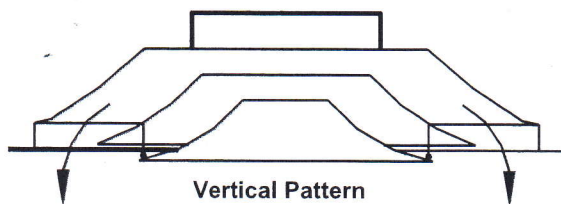


2. To adjust optional damper, insert screwdriver through hex hole.

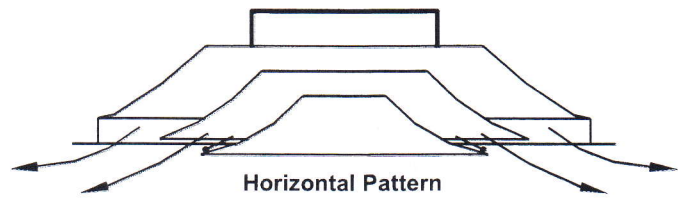


3. To remove center cone, insert hex key (by others) and unscrew center hub.

### TMSA-AA Discharge Patterns



Vertical Pattern

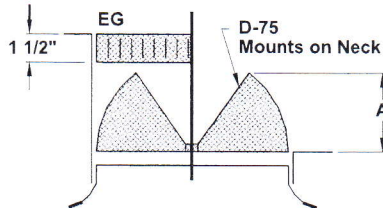


Horizontal Pattern

Note: Pattern controller vanes are adjustable to any position from vertical to horizontal.

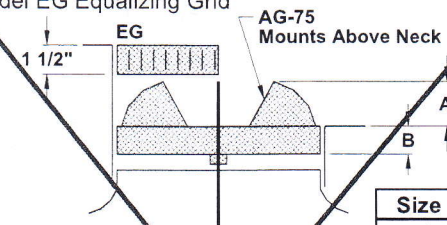
### Accessories (Optional) Check ☒ if provided.

- ☒ Model D-75 Opposed Blade Damper  
☐ Model EG Equalizing Grid



Model D-75 damper is available in duct sizes 6 thru 12 inches only.

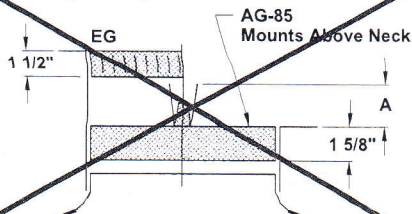
- ☐ Model AG-75 Opposed Blade Damper  
☐ Model EG Equalizing Grid



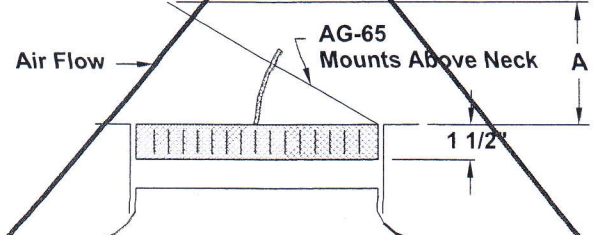
Model AG-75 damper is available in 6, 7, 8, 10, 12, 14, and 15 inch duct sizes only.

Size	B
6 - 12	1 1/2
14, 15	2 1/8

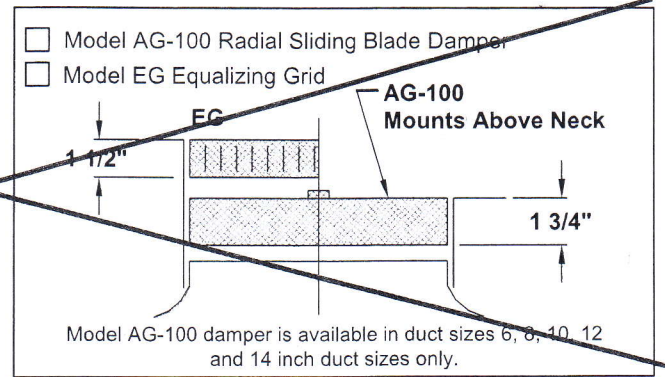
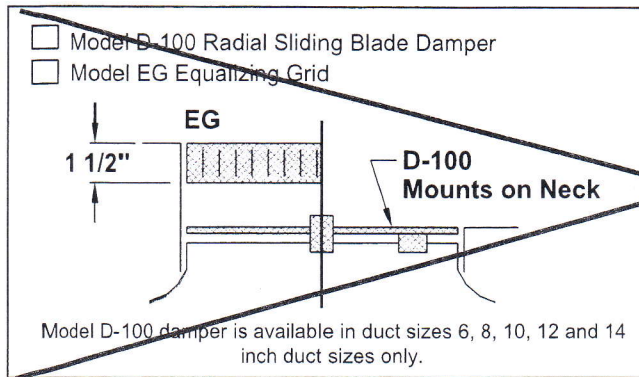
- ☐ Model AG-85 Butterfly Damper  
☐ Model EG Equalizing Grid



- ☐ Model AG-65 Combination Damper and Equalizing Grid







Dimension "A" in Inches, for Dampers Shown as Above

Accessories	Nominal Round Duct Sizes						
	6	7	8	10	12	14	15
AG-100	—	—	—	—	—	—	N/A
D-100	—	—	—	—	—	—	N/A
D-75	2 3/8	2 7/8	3 1/4	4 1/8	4 7/8	N/A	N/A
AG-85	2 1/2	3	3 1/2	4 1/2	5 1/2	6 1/2	7
AG-65	3 3/8	4	4 1/2	5 1/2	7 1/8	8 5/8	9
AG-75	2 3/4	3 1/4	3 5/8	4 1/2	5 3/8	2 3/4	3

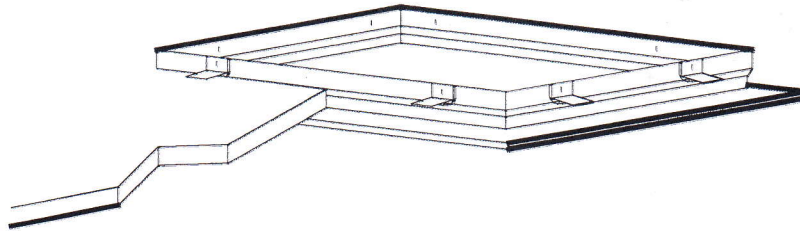
**Note:**

D-100 and AG-100 dampers have radial blades that slide in a horizontal plane. For that reason, no opening clearance "A" is dimensioned.

### Other Accessories (Optional)

☐ Model SB Sectorizing Baffles

☐ TRM TITUS Rapid Mount Frame



For Surface Mounting Border Type 3

Standard Finish: #26 White

### General Description

- Model TMSA-AA includes adjustable vanes which vary the discharge pattern between horizontal and vertical.
- Delivers supply air in a true 360° pattern. Designed to protect ceiling from streaking and smudging.
- Excellent for variable volume systems. The uniform, nearly horizontal jet maintains effective room air distribution even when air volume varies over a considerable range.
- The TMSA-AA consists of 3 concentric cones in all sizes. This uniformity of design enhances appearance in installations where more than one size is involved.
- Screwdriver adjustment of the optional damper is achieved without removing the inner cone. (See Note 2, page 2.)
- Quick removal of inner cone with a hex key speeds installation. (See Note 3, page 2.)
- All cones are die-stamped one-piece construction with smooth, clean surfaces and no corner joints.
- Material is heavy gauge aluminum with steel bar webbing.

This submittal is meant to demonstrate general dimensions of this product. The drawings are not meant to detail every aspect of the product. Drawings are not to scale. Titus reserves the right to make changes without written notice.

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## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	DIM 1	DIM 2	Module	Border	Finish	Pattern	Damper	Accessory 1	Accessory 2	Accessory 3	Comments
PAR-AA	3	RAG	6 INCHES	6 INCHES	24X24	3 - LAY-IN	26 - WHITE		0 - NONE	NONE	NONE	NONE	
PAR-AA	4	RAG	8 INCHES	8 INCHES	24X24	3 - LAY-IN	26 - WHITE		0 - NONE	NONE	NONE	NONE	
PAR-AA	2	RAG	12 INCHES	12 INCHES	24X24	3 - LAY-IN	26 - WHITE		0 - NONE	NONE	NONE	NONE	
PAR-AA	2	RAG	22 INCHES	22 INCHES	24X24	3 - LAY-IN	26 - WHITE		0 - NONE	NONE	NONE	NONE	



# Submittal

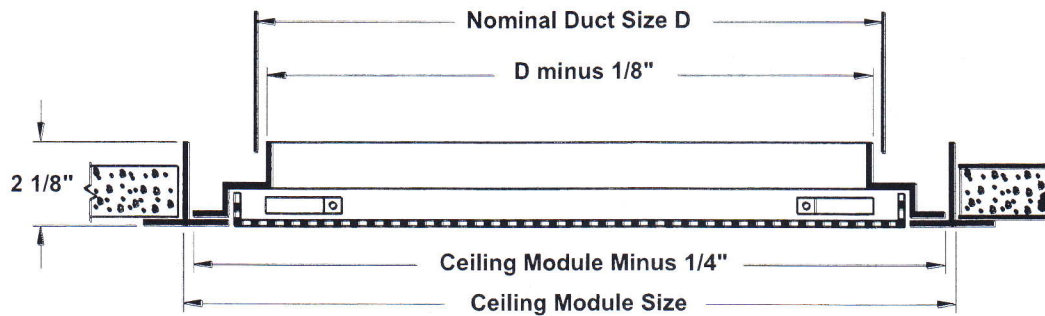
PAR-AA

8-13-15

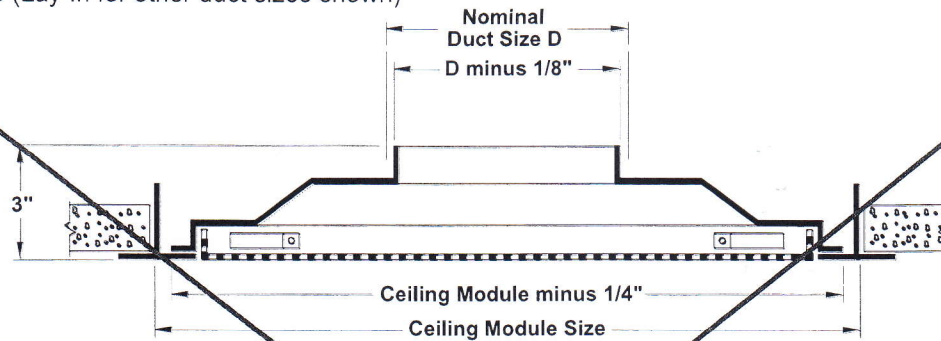
## Perforated Ceiling Diffusers Aluminum • Flush Face

Model: PAR-AA • Return

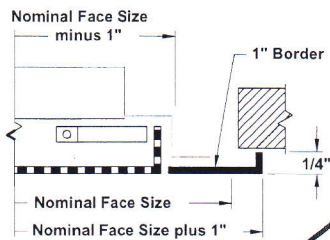
☒ Border Type 3 (Lay-In when D=Module size -2)



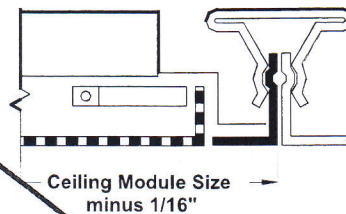
☐ Border Type 3 (Lay-In for other duct sizes shown)



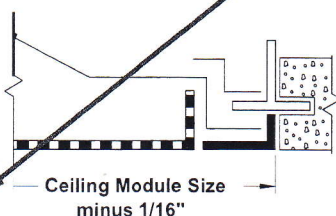
☐ Border Type 1 (Surface Mount)



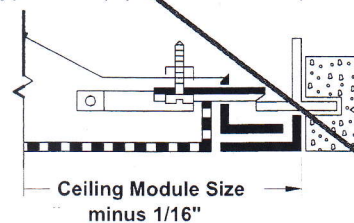
☐ Border Type 2 (Snap-In)



☐ Border Type 4 (Spline)



☐ Border Type 4SL (Spline Side Lock)



Note: 4SL can be installed after ceiling tiles are in place.



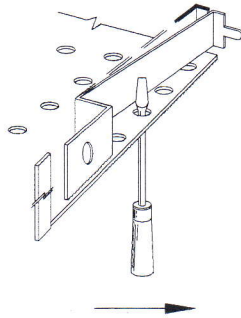
Available Sizes for Border Types 1, 2, 3, 4, 4SL														
Face or Ceiling Module	Nominal Duct Size D													
	6 x 6	8 x 8	10 x 10	12 x 12	15 x 15	18 x 18	22 x 22	22 x 10	6" Dia.	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.
12 x 12	•		•						•					
24 x 12								•						
24 x 24	•	•	•	•	•	•	•	•	•	•	•	•	•	•

• Indicates available combination.

## Removing Perforated Face

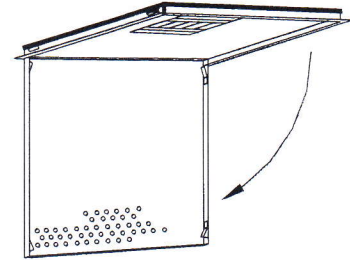
1. Insert small Screwdriver or other slim instrument to push latch inward from border.

2. Repeat on opposite side.



3. Face will now swing down with 2 remaining latches acting as hinges.

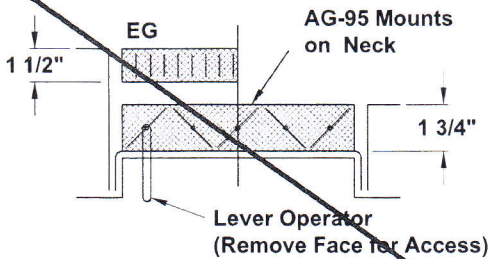
For complete removal, release 2 remaining latches at left.



## Accessories (Optional) Check ☒ if provided.

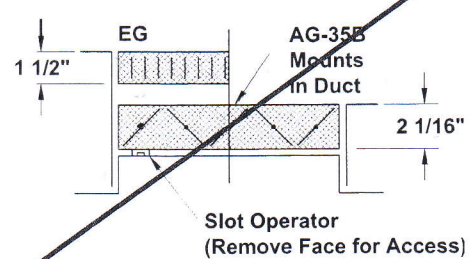
☐ Model AG-95 Opposed Blade Damper

☐ Model EG Equalizing Grid



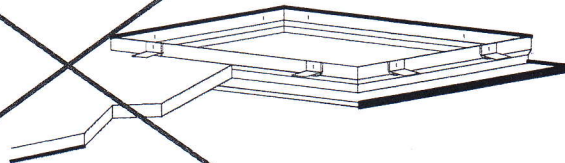
☐ Model AG-35B Opposed Blade Damper

☐ Model EG Equalizing Grid

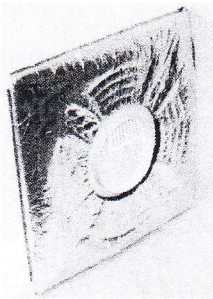


☐ TRM TITUS Rapid Mount Frame

For Surface Mounting Border Type 3



☐ IB Molded Insulation Blanket



Insulation is R-6 where blanket has the most depth. One-inch clearance on each side of neck is left for insulated duct connection. 24 x 24-inch module size only. Blanket is factory installed.

## Standard Finish: #26 White

### General Description

---

- Model PAR-AA flush face perforated ceiling diffusers are designed for use as returns to match the Model PAS supply diffusers.
- Can be mounted in a plenum or connected to a return duct.
- Optional damper is easily adjusted by dropping the perforated face (see above).
- Perforated face has 3/16" diameter holes on 1/4" staggered centers.
- Material is heavy gauge aluminum face, steel backpan and pattern controllers.

## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	Width	Height	Module	Border	Fastening	Finish	Damper	Accessory - 1	Accessory - 2	Accessory - 3	Comments
355FL	1	RAG SW	24	12	NONE	1 - SURFACE MOUNT	A - SCREW HOLES	26 - WHITE	0 - NONE	NONE	NONE	NONE	
355FL	1	RAG SW	30	24	NONE	1 - SURFACE MOUNT	A - SCREW HOLES	26 - WHITE	0 - NONE	NONE	NONE	NONE	





# Submittal

G-355F

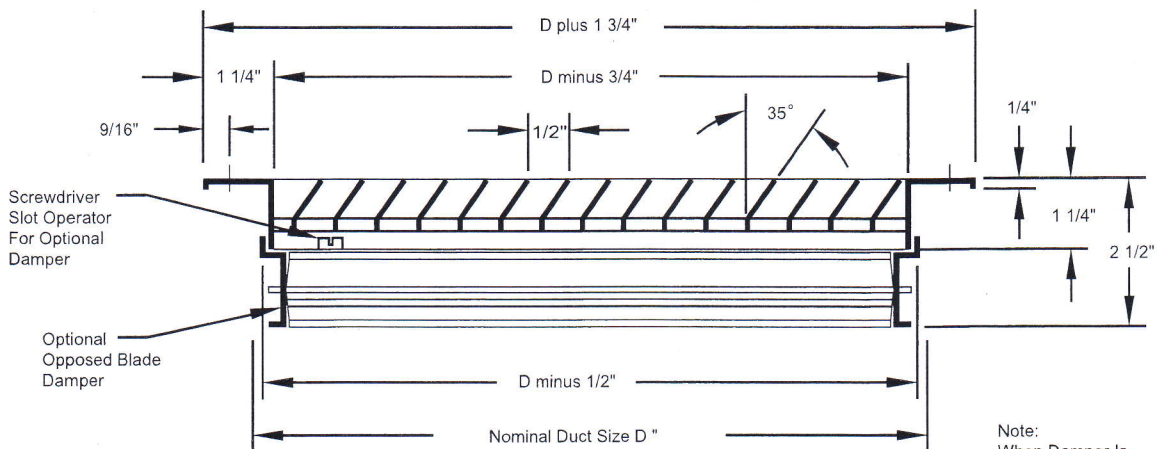
1-1-01

## Louvered Return Grilles and Registers • Aluminum

Models: ☒ 355FL • 35° Deflection • Long Blades • 1/2" Blade Spacing

☐ 355FS • 35° Deflection • Short Blades • 1/2" Blade Spacing

### ☒ Border Type 1 (Surface Mount)



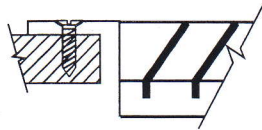
### Available Sizes (D" x D")

Border Type 1 is available in sizes 6" x 4" through 48" x 48" in 2" increments in one piece construction. Odd and fractional sizes are available at additional cost. Sizes larger than 48" x 48" are shipped in multiple sections with joining strips for field assembly.

Note: Wall or duct opening should be duct size  $\pm 1/8$ ". All dimensions are in inches.

## Fastenings

### ☒ Type A • External Screw

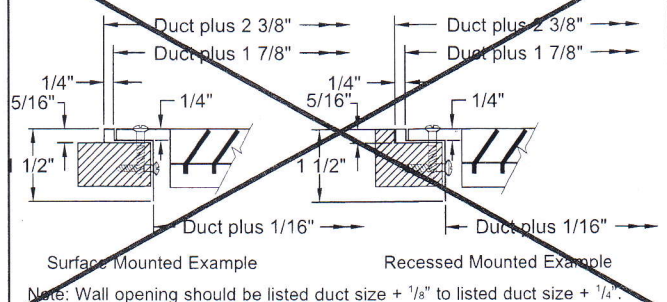


Available with Border Type 1 only.

## Mounting Frames

### ☐ PF • Steel Plaster Frame

### ☐ PFA • Aluminum Plaster Frame



## Accessories (Optional)

Check ☐ if provided

- ☐ Neck mounted opposed blade damper (galvanized steel)
- ☐ IS • Insect Screen (1/16" square mesh – galvanized steel)

- ☐ DS • Debris Screen (1/4" square mesh – galvanized steel)
- ☐ EQT • Earthquake tabs
- ☐ Other \_\_\_\_\_

## General Description

- Available with louvers vertical or horizontal.
- Optional opposed blade damper has screwdriver adjustment accessible through face of register.

- Insect and debris screens are not available when dampers are fitted.
- Material: Aluminum.

## Standard Finish: #26 White

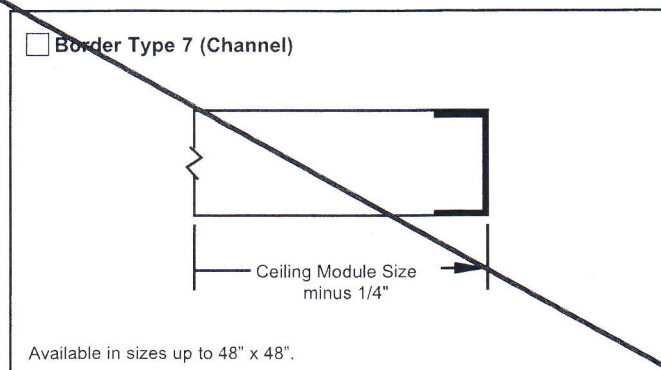
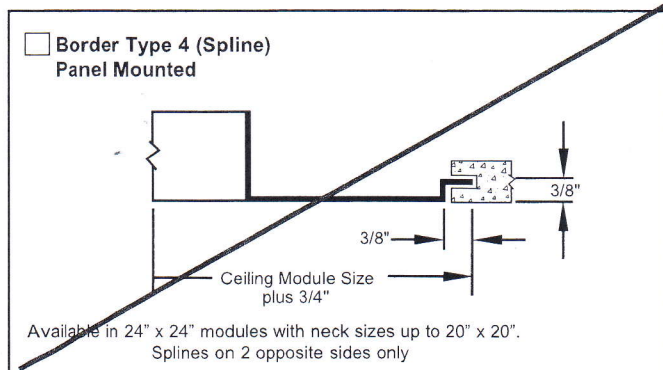
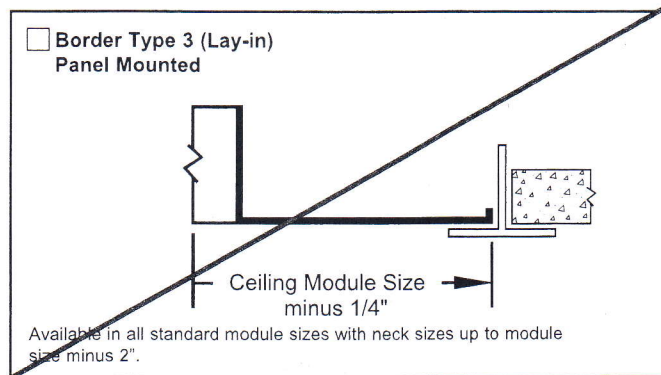
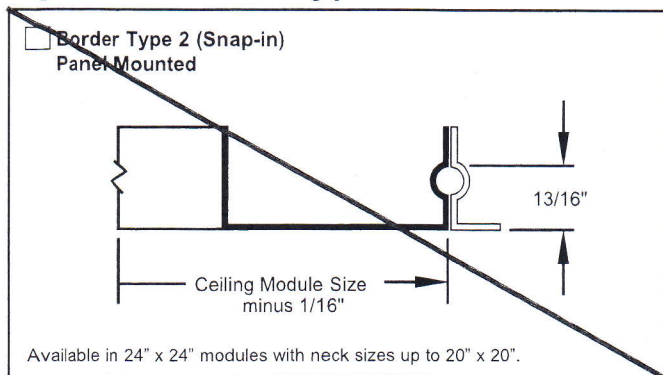
☐ Optional finish \_\_\_\_\_

- #8 x 1 1/4" lg. Phillips flat head sheet metal screws painted white.
- All dimensions are  $\pm 1/16$ ".

G-17.0-S

(Please see reverse side for other border types.)

## Optional Border Types Available



### Border Type 2, 3, 4

• **Accessories & Options**

Check ☐ if provided

- ☐ AG-15 • Neck mounted opposed blade damper (galvanized steel)
- ☐ IS • Insect Screen (1/16" square mesh – galvanized steel)
- ☐ DS • Debris Screen (1/4" square mesh – galvanized steel)
- ☐ EQT • Earthquake tabs
- ☐ Other \_\_\_\_\_

### Standard Finish: #26 White

☐ Optional finish \_\_\_\_\_

### Border Type 7

• **Accessories & Options**

Check ☐ if provided

- ☐ EQT • Earthquake tabs
- ☐ Other \_\_\_\_\_

### Standard Finish: #26 White

☐ Optional finish \_\_\_\_\_

G-17.0-S



Note: This submittal is meant to demonstrate general dimensions of this product. The drawings on this submittal are not meant to detail every aspect of the product with exactness. Drawings are not to scale. TITUS reserves the right to make changes without written notice.  
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## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	Length	Slots/Width	End Border/Module Width/Angle	Border	Finish	Fastening/Throw	Damper/Miter Type	Accessory 1	Accessory 2	Accessory 3	Comments
ML-39	4	LSD-1	96	2 SLOTS	XX - TWO END BORDERS	2A - CONCEALED MOUNT	26 - WHITE			NONE	NONE	NONE	





# Submittal

D-ML-1.0 6-08-12

- ☐ **ML-37** • ½" Slot • Supply  
☐ **ML-38** • ¾" Slot • Supply  
☒ **ML-39** • 1" Slot • Supply  
☐ **ML-40** • 1-½" Slot • Supply

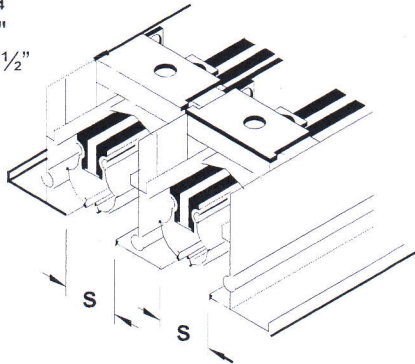
- ☐ **MLR-37** • ½" Slot • Return  
☐ **MLR-38** • ¾" Slot • Return  
☐ **MLR-39** • 1" Slot • Return  
☐ **MLR-40** • 1-½" Slot • Return

## Linear Slot Ceiling Diffusers Aluminum • Modulinear

### Supply

#### Model

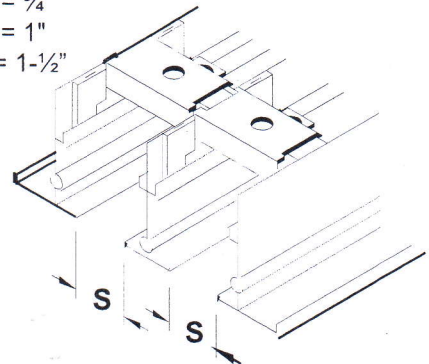
- ☐ ML-37 S = ½"  
☐ ML-38 S = ¾"  
☒ ML-39 S = 1"  
☐ ML-40 S = 1-½"



### Return

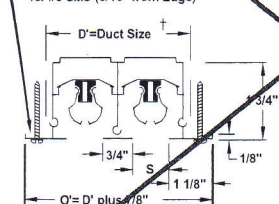
#### Model

- ☐ MLR-37 S = ½"  
☐ MLR-38 S = ¾"  
☐ MLR-39 S = 1"  
☐ MLR-40 S = 1-½"

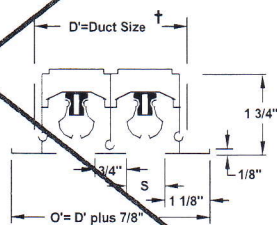


- ☐ **Border Type 1A**  
 with  
 • Flange Border  
 • Screw Mounting

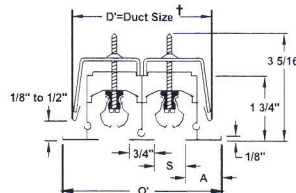
Countersunk Screw Holes  
for #8 SMS (5/16" from Edge)



- ☐ **Border Type 1B**  
 with  
 • Flange Border  
 • Duct Mounting

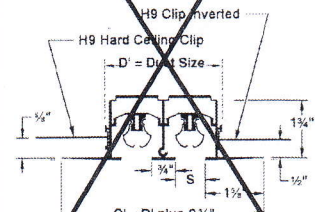


- ☒ **Border Type 2A**  
☒ **Border Type 2B**  
 both with  
 • Flanged Border  
 • Concealed Mounting



Type	A	O'
→ 2A	1 1/8	D' + ¾
2B	7/8	D' + ¼

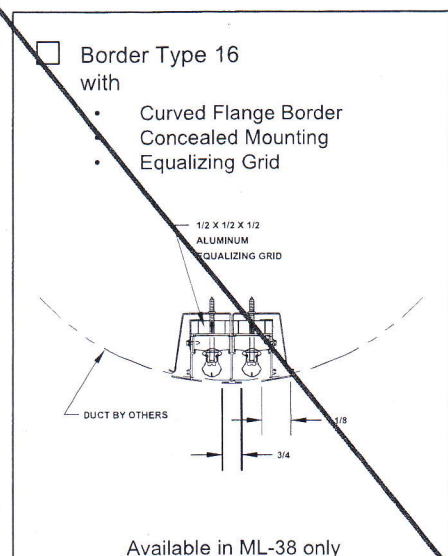
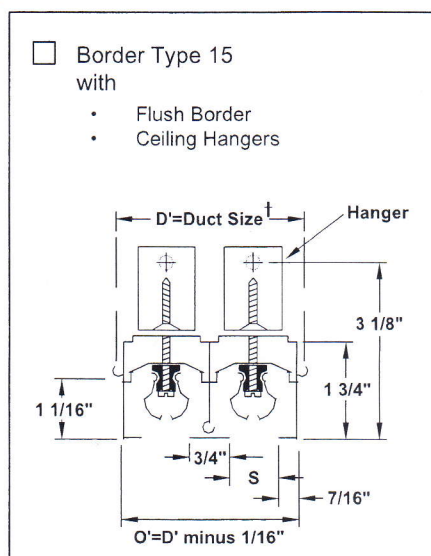
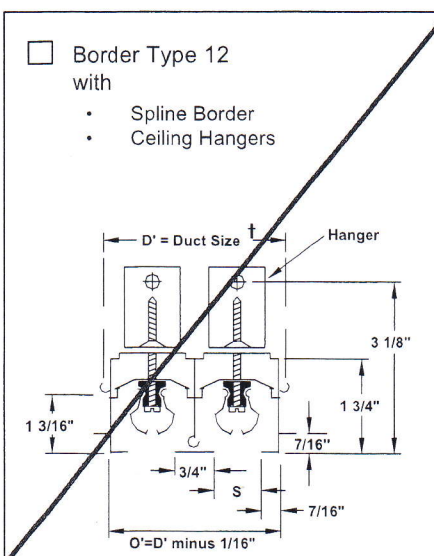
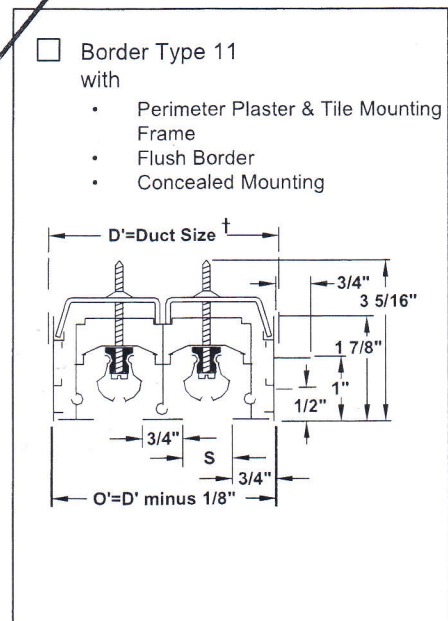
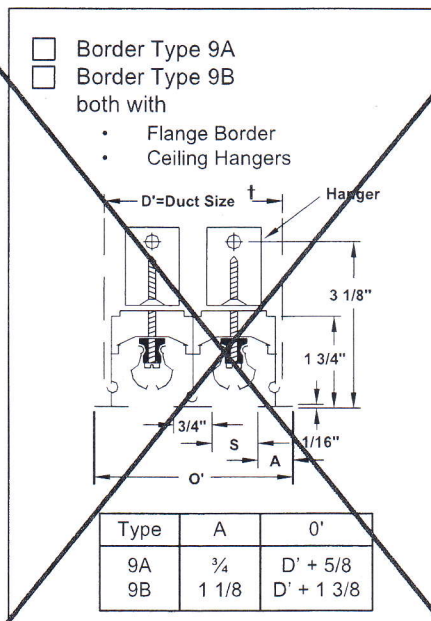
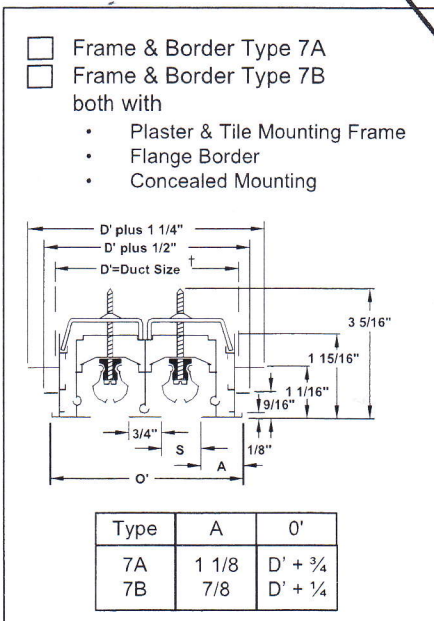
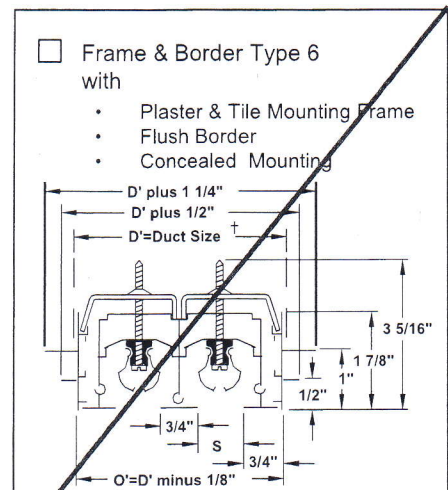
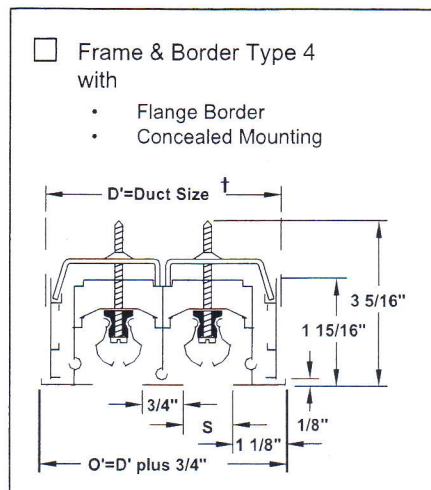
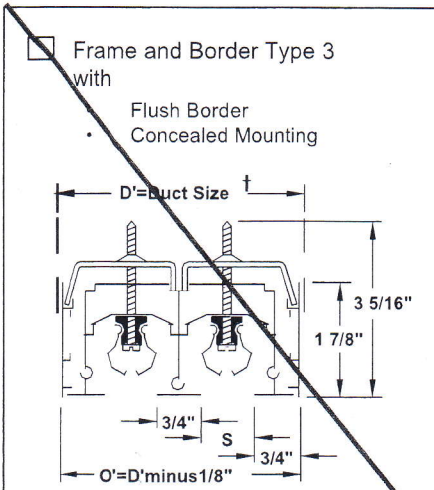
- ☐ **Border Type 22**  
 with  
 • Tape & Spackle Border  
 • H9 Hard Ceiling Clip



Note:  
ML/MLR-37 is not available for border 22

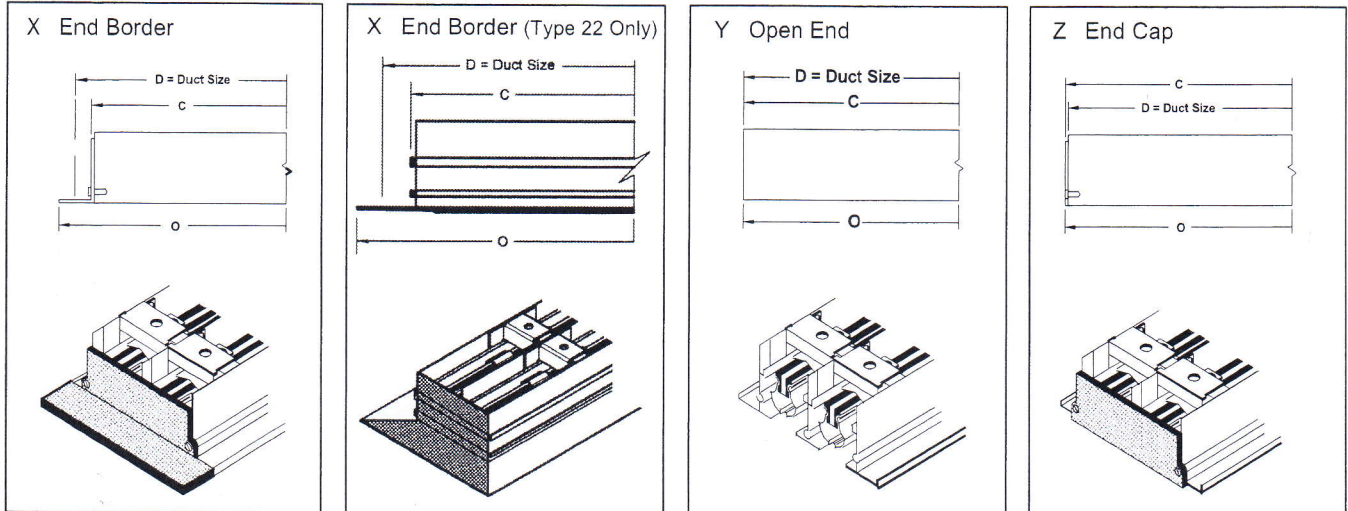
Dimensions are in inches.

# Frame & Border Types, Dimensions (cont'd) Check ☒ if provided.





# End Fabrication



## Overall Length for Various End Fabrications

Frame and/or Border Type	X X		X Y		X Z		Y Y		Y Z		Z Z	
	X-X		X-Y		X-Z		Y-Y		Y-Z		Z-Z	
	C	O	C	O	C	O	C	O	C	O	C	O
1A, 1B, 9B	D - 1 3/8	D + 3/4	D - 11/16	D + 3/8	D - 5/8	D + 7/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
2A, 4, 7A, 16	D - 1 3/8	D + 3/4	D - 11/16	D + 3/8	D - 5/8	D + 7/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
3, 6, 11	D - 1 3/8	D	D - 11/16	D	D - 5/8	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
2B, 7B	D - 1 3/8	D + 1/4	D - 11/16	D + 1/8	D - 5/8	D + 3/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
9A	D - 1 3/8	D	D - 11/16	D	D - 5/8	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
12, 15	D - 11/16	D	D - 5/16	D	D - 1/4	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8
22	D - 1 3/16	D + 1 1/16	D - 19/32	D + 17/32	N/A	N/A	D	D	N/A	N/A	N/A	N/A

## Duct Dimensions D' (Width) for Various Frame & Border Types

No. of Slots	Types 1A, 1B				Types 2A, 2B, 4, 7A, 7B, 16			
	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR
	37	38	39	40	37	38	39	40
	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2
1	1 7/8	2 1/8	2 3/8	2 7/8	2	2 1/4	2 1/2	3
2	3 1/8	3 5/8	4 1/8	5 1/8	3 1/4	3 3/4	4 1/4	5 1/4
3	4 3/8	5 1/8	5 7/8	7 3/8	4 1/2	5 1/4	6	7 1/2
4	5 5/8	6 5/8	7 5/8	9 5/8	5 3/4	6 3/4	7 3/4	9 3/4
5	6 7/8	8 1/8	9 3/8	N/A	7	8 1/4	9 1/2	N/A
6	8 1/8	9 5/8	11 1/8	N/A	8 1/4	9 3/4	11 1/4	N/A
7	9 3/8	11 1/8	12 7/8	N/A	9 1/2	11 1/4	13	N/A
8	10 5/8	12 5/8	14 5/8	N/A	10 3/4	12 3/4	14 3/4	N/A

No. of Slots	Types 3, 6, 11				Types 9A, 9B, 12, 15, 22			
	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR
	37	38	39	40	37	38	39	40
	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2
1	2 1/8	2 3/8	2 5/8	3 1/8	1 3/8	1 5/8	1 7/8	2 3/8
2	3 3/8	3 7/8	4 3/8	5 3/8	2 5/8	3 1/8	3 5/8	4 5/8
3	4 5/8	5 3/8	6 1/8	7 5/8	3 7/8	4 5/8	5 3/8	6 7/8
4	5 7/8	6 7/8	7 7/8	9 7/8	5 1/8	6 1/8	7 1/8	9 1/8
5	7 1/8	8 3/8	9 5/8	N/A	6 3/8	7 5/8	8 7/8	N/A
6	8 3/8	9 7/8	11 3/8	N/A	7 5/8	9 1/8	10 5/8	N/A
7	9 5/8	11 3/8	13 1/8	N/A	8 7/8	10 5/8	12 3/8	N/A
8	10 7/8	12 7/8	14 7/8	N/A	10 1/8	12 1/8	14 1/8	N/A

= Not Available in Type 22



## Accessories (optional)

Check ☒ if provided.

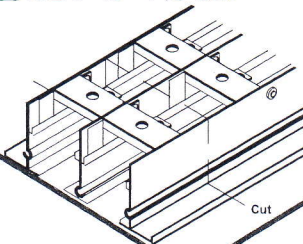
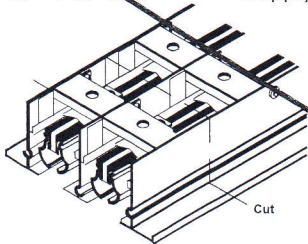
### Optional Field Cut Diffuser (Unit includes one field spacer kit)

- ☐ MLF-37 • ½" Slot
- ☐ MLF-38 • ¾" Slot
- ☐ MLF-39 • 1" Slot
- ☐ MLF-40 • 1-½" Slot

- Supply
- Supply
- Supply
- Supply

- ☐ MLRF-37 • ½" Slot
- ☐ MLRF-38 • ¾" Slot
- ☐ MLRF-39 • 1" Slot
- ☐ MLRF-40 • 1-½" Slot

- Return
- Return
- Return
- Return



Ideal when the exact length of an ML or MLR diffuser is not known until it is being installed.

Standard factory cut diffusers can be trimmed as much as 6 inches. If more than 6" is to be removed, use the optional field cut diffuser.

The field cut ML or MLR diffuser is 72" long, with the sides pre-punched to assure the proper alignment of field installed spacers.

These field installed spacers provide additional rigidity during and after cutting. Additional spacer kits available at extra cost.

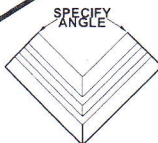
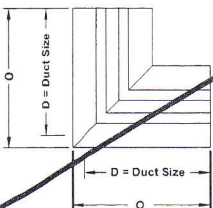
### Optional Mitered Corner

- ☐ MC-37 • ½" Slot
- ☐ MC-38 • ¾" Slot
- ☐ MC-39 • 1" Slot
- ☐ MC-40 • 1-½" Slot

- Supply
- Supply
- Supply
- Supply

- ☐ 90 Degree (minimum)

- ☐ Larger than 90 Degree. Specify \_\_\_\_\_



#### Dimensions for 90 Degree Mitered Corners

No. of Slots	1A, 1B		2A, 4, 7A		2B, 7B		3, 6, 11		9A		9B		12, 15		22	
	O	D	O	D	O	D	O	D	O	D	O	D	O	D	O	D
1, 2	12 7/16	12	12 3/8	12	12 1/8	12	11 7/8	12	12 5/16	12	12 11/16	12	12 1/2	12	13 3/16	12
3-8	24 7/16	24	24 3/8	24	24 1/8	24	23 7/8	24	24 5/16	24	24 11/16	24	24 1/2	24	25 3/16	24

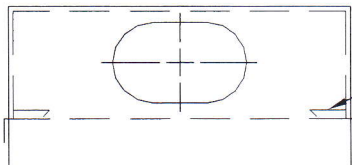
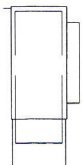
All dimensions are in inches.

### Optional Plenum

- ☐ MP-37 • ½" Slot • Uninsulated
- ☐ MP-38 • ¾" Slot • Uninsulated
- ☐ MP-39 • 1" Slot • Uninsulated
- ☐ MP-40 • 1-½" Slot • Uninsulated

- ☐ MPI-37 • ½" Slot • Insulated
- ☐ MPI-38 • ¾" Slot • Insulated
- ☒ MPI-39 • 1" Slot • Insulated
- ☐ MPI-40 • 1-½" Slot • Insulated

Note: endcaps are not insulated



Optional MP-SP Design

Note:

- MP and MPI are available for all frames and border types.
- Standard nominal lengths are 2, 3, 4 and 5 feet.
- Request Submittal D-MP for details.
- Option MP-SP available with maximum spread pattern.

## Optional Blank-Offs

- ☐ BLKS - Cold Rolled Steel - Fits over Neck

- ☐ BLKV - Vinyl - Fits in Slot

## Standard Finish:

- #26 White border
- Black pattern controllers.

## General Description

- Standard lengths of diffuser sections are 12", 24", 36", 48", 60" and 72".
- Lengths greater than 72" are furnished in multiple sections, the number and size determined by the factory.
- Pattern controllers change direction and volume of air flow. Maximum length is 36". Pattern controllers are furnished in multiple sections for diffuser longer than 36".
- Mounting frames are cut to length and assembled in the field.
- Material is extruded aluminum with steel pattern controllers.

This submittal is meant to demonstrate general dimensions of this product. The drawings are not meant to detail every aspect of the product. Drawings are not to scale. Titus reserves the right to make changes without written notice.

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## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	Length	Slots	Width/Throw	Plenum Inlet	Module	Border	Finish	Damper	Accessory 1 / Configuration	Accessory 2	Accessory 3	Comments
MPI-39	8	LSD-1 PL	48 INCHES	2LP - 2 SLOT LOW PROFILE		8 INCH		2A - CONCEALED MOUNT		0 - NONE	XX - TWO END BORDERS	STRAIGHT		
MPI-39	8	LRD-1 PL	48 INCHES	2LP - 2 SLOT LOW PROFILE		8 INCH		2A - CONCEALED MOUNT		0 - NONE	XX - TWO END BORDERS	STRAIGHT		



# Submittal

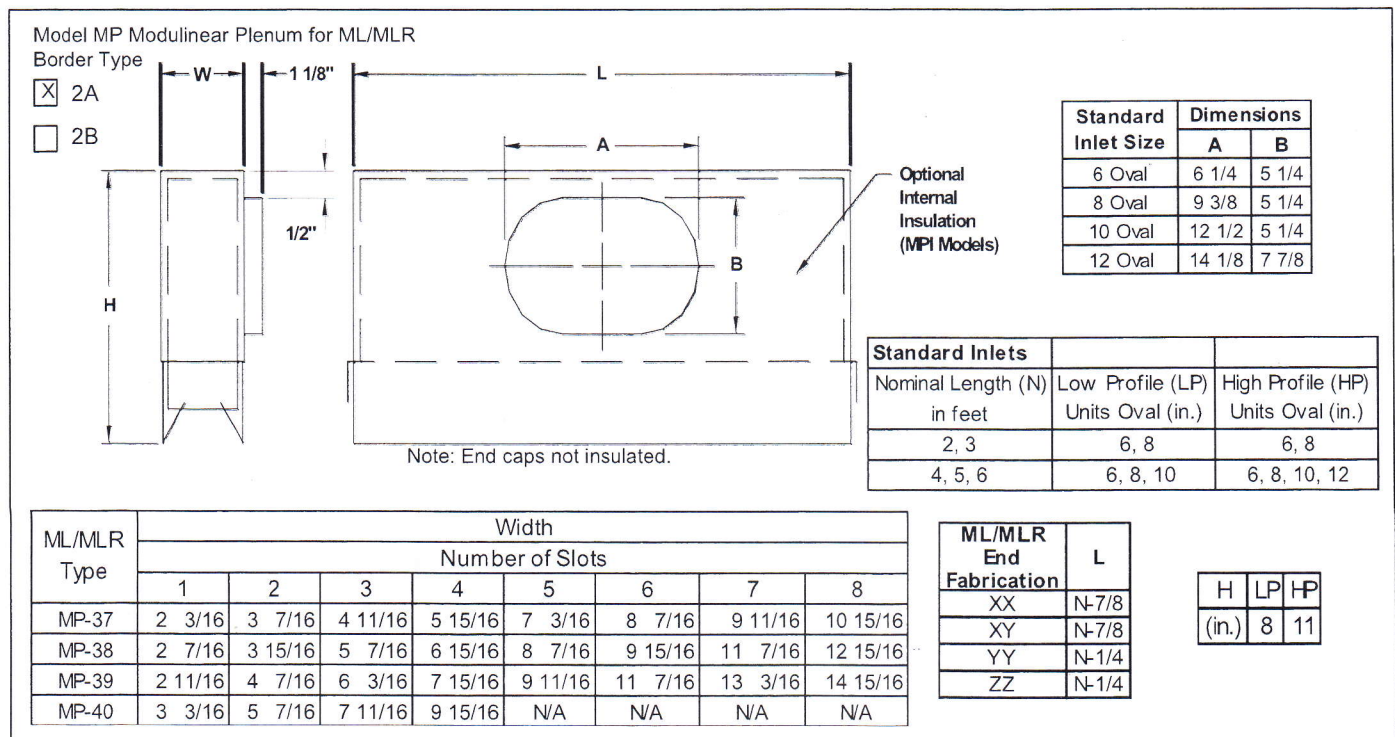
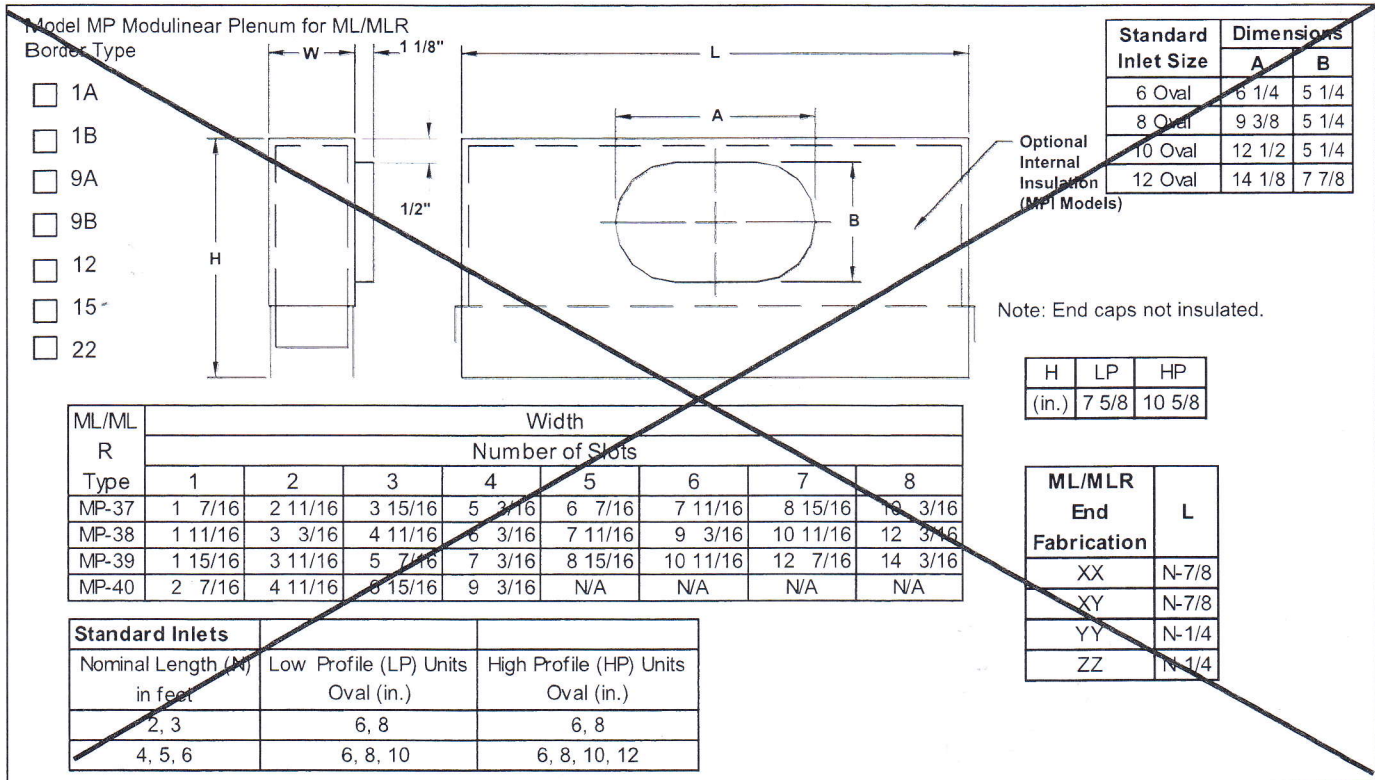
MP 1.0

8-30-13

## Modular Plenum Adapters for ML Modular Diffusers

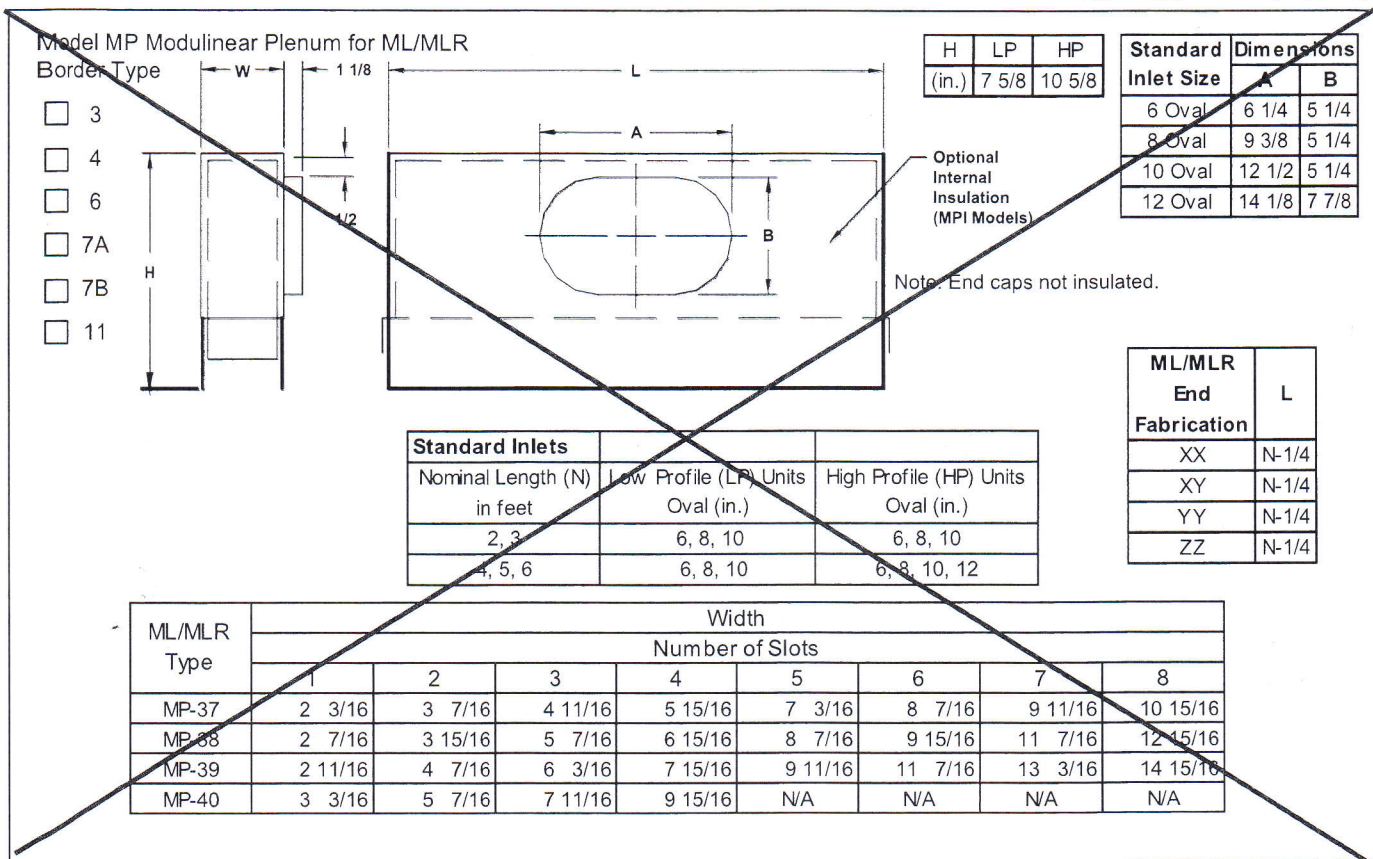
Models: MP-37 • ½" Slot  
 MP-38 • ¾" Slot  
 MP-39 • 1" Slot  
 MP-40 • 1½" Slot

MPI-37 • ½" Slot • Insulated  
 MPI-38 • ¾" Slot • Insulated  
 → MPI-39 • 1" Slot • Insulated  
 MPI-40 • 1½" Slot • Insulated

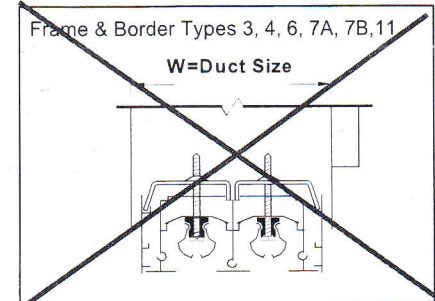
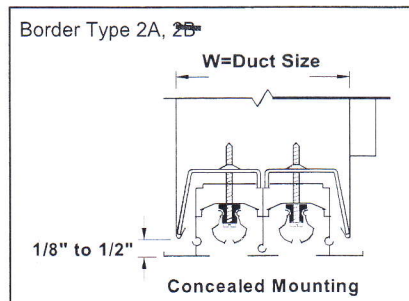
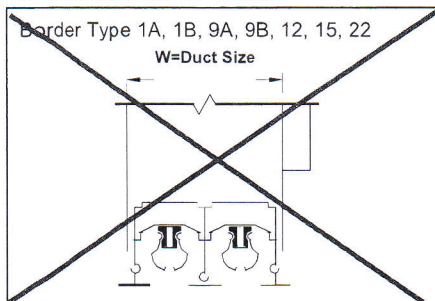


Dimensions are in inches.





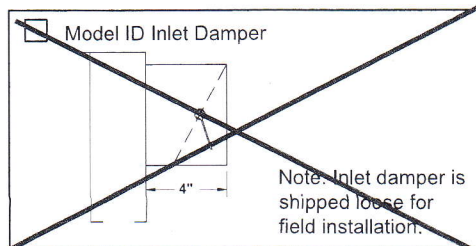
## Installation Details



## Accessories (optional)

### Internal Insulation

- ☐ MPI-37 • For ML/MLR-37 • 1/2" Slot
- ☐ MPI-38 • For ML/MLR-38 • 3/4" Slot
- ☒ MPI-39 • For ML/MLR-39 • 1" Slot
- ☐ MPI-40 • For ML/MLR-40 • 1 1/2" Slot



## General Description

- Model MP modulinear plenums are tailored for field attachment to ML or MLR modulinear diffusers.
- End caps can be turned up to allow installing the MP on continuous runs of ML diffuser.
- Available to fit ML or MLR 1-8 slot units.
- Material is steel.
- Can be selected to integrate with all ML or MLR frame and border types.
- Available with optional internal insulation, Model MPI.
- Standard lengths are 2', 3', 4', 5' and 6'.
- Model MP can be used as supply or return.

This submittal is meant to demonstrate general dimensions of this product. The drawings are not meant to detail every aspect of the product. Drawings are not to scale. Titus reserves the right to make changes without written notice.

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## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	Length	Slots/Width	End Border/Module Width/Angle	Border	Finish	Fastening/Throw	Damper/Miter Type	Accessory 1	Accessory 2	Accessory 3	Comments
MLR-39	4	LRD-1	96	2 SLOTS	XX - TWO END BORDERS	2A - CONCEALED MOUNT	26 - WHITE			NONE	NONE	NONE	



# Submittal

D-ML-1.0 6-08-12

- ☐ **ML-37** • ½" Slot • Supply  
☐ **ML-38** • ¾" Slot • Supply  
☐ **ML-39** • 1" Slot • Supply  
☐ **ML-40** • 1-½" Slot • Supply

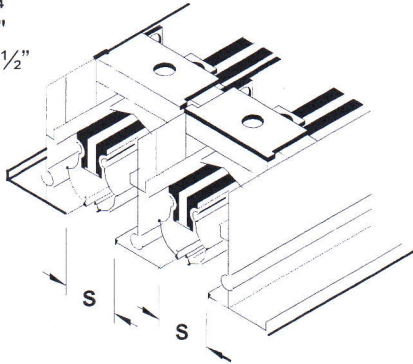
- ☐ **MLR-37** • ½" Slot • Return  
☐ **MLR-38** • ¾" Slot • Return  
☒ **MLR-39** • 1" Slot • Return  
☐ **MLR-40** • 1-½" Slot • Return

## Linear Slot Ceiling Diffusers Aluminum • Modulinear

### Supply

#### Model

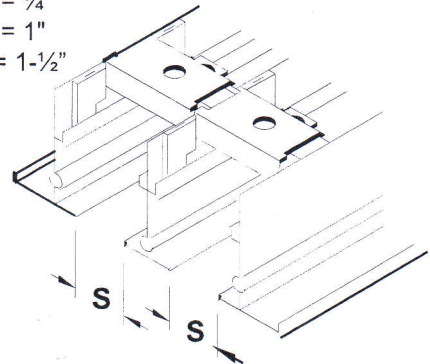
- ☐ ML-37 S = ½"  
☐ ML-38 S = ¾"  
☐ ML-39 S = 1"  
☐ ML-40 S = 1-½"



### Return

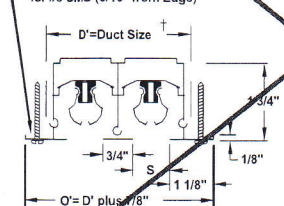
#### Model

- ☐ MLR-37 S = ½"  
☐ MLR-38 S = ¾"  
☒ MLR-39 S = 1"  
☐ MLR-40 S = 1-½"

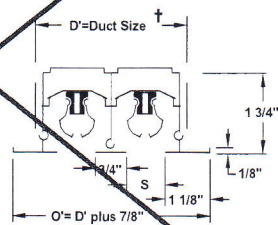


- ☐ **Border Type 1A**  
 with  
 • Flange Border  
 • Screw Mounting

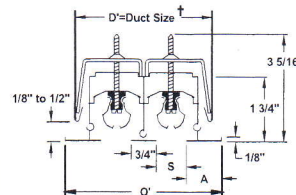
Countersunk Screw Holes  
for #8 SMS (5/16" from Edge)



- ☐ **Border Type 1B**  
 with  
 • Flange Border  
 • Duct Mounting

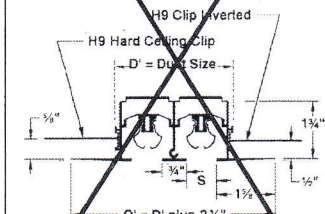


- ☒ **Border Type 2A**  
☒ **Border Type 2B**  
 both with  
 • Flanged Border  
 • Concealed Mounting



Type	A	O'
2A	1 1/8	D' + ¾
2B	7/8	D' + ¼

- ☐ **Border Type 22**  
 with  
 • Tape & Spackle Border  
 • H9 Hard Ceiling Clip



Note:  
ML/MLR-37 is not available for border 22

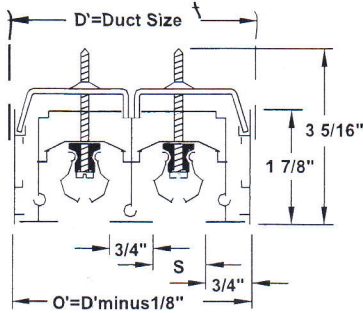
Dimensions are in inches.



# Frame & Border Types, Dimensions (cont'd) Check ☒ if provided.

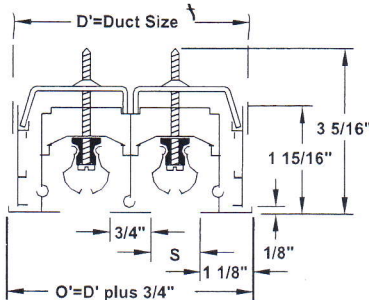
## ☐ Frame and Border Type 3 with

- Flush Border
- Concealed Mounting



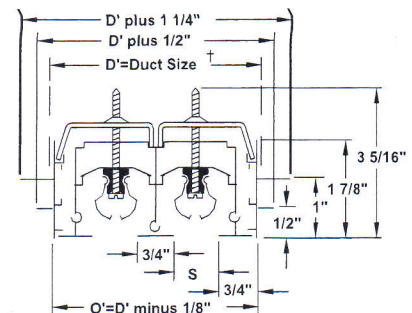
## ☐ Frame & Border Type 4 with

- Flange Border
- Concealed Mounting

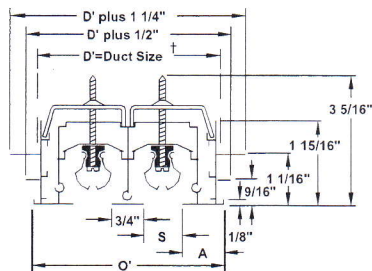


## ☐ Frame & Border Type 6 with

- Plaster & Tile Mounting Frame
- Flush Border
- Concealed Mounting



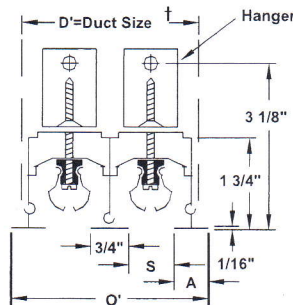
- ☐ Frame & Border Type 7A  
☐ Frame & Border Type 7B both with
- Plaster & Tile Mounting Frame
  - Flange Border
  - Concealed Mounting



Type	A	O'
7A	1 1/8	D' + 3/4
7B	7/8	D' + 1/4

- ☐ Border Type 9A  
☐ Border Type 9B both with

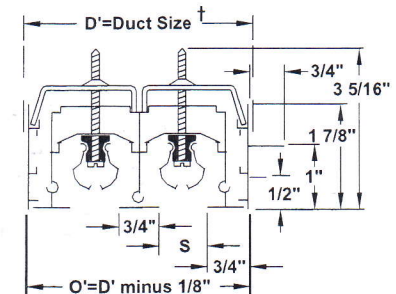
- Flange Border
- Ceiling Hangers



Type	A	O'
9A	3/4	D' + 5/8
9B	1 1/8	D' + 1 3/8

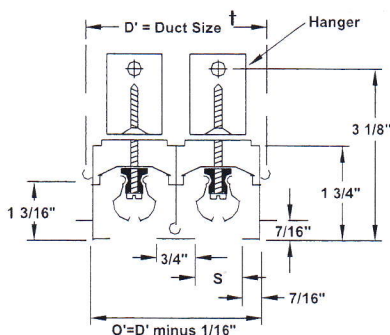
- ☐ Border Type 11 with

- Perimeter Plaster & Tile Mounting Frame
- Flush Border
- Concealed Mounting



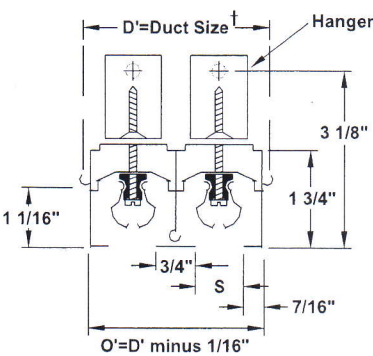
- ☐ Border Type 12 with

- Spline Border
- Ceiling Hangers



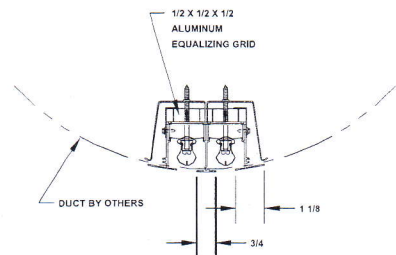
- ☐ Border Type 15 with

- Flush Border
- Ceiling Hangers



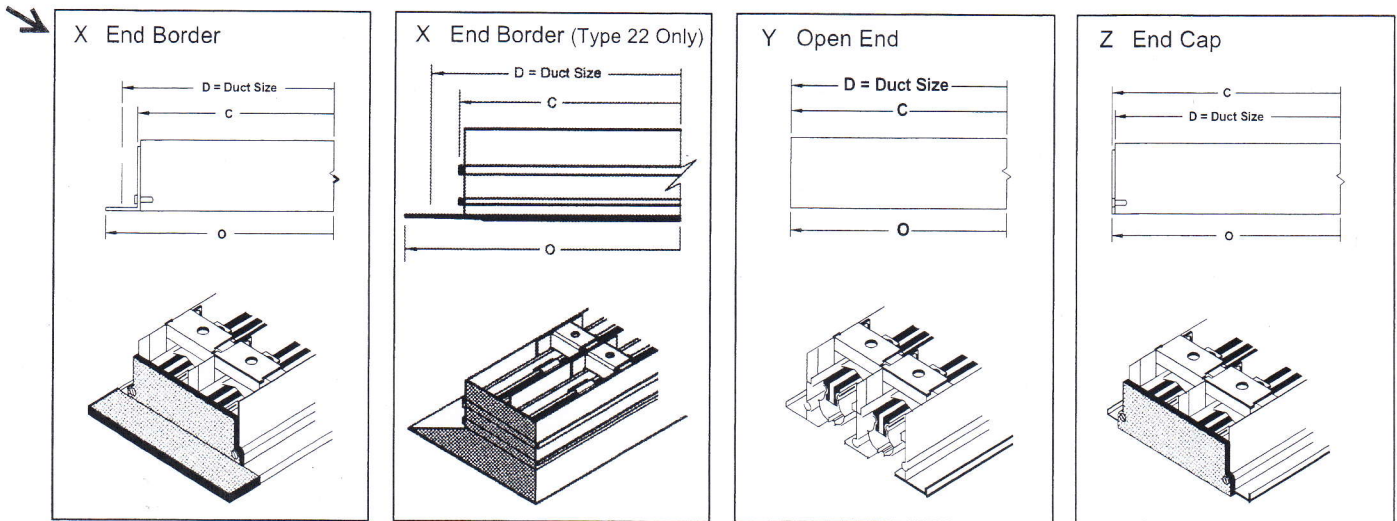
- ☐ Border Type 16 with

- Curved Flange Border
- Concealed Mounting
- Equalizing Grid



Available in ML-38 only

# End Fabrication



## Overall Length for Various End Fabrications

Frame and/or Border Type	X		X		Y		Z		Y		Y		Z		Z	
	X-X		X-Y		X-Z		Y-Y		Y-Z		Y-Z		Z-Z		Z-Z	
	C		C		C		C		C		C		C		C	
	O		O		O		O		O		O		O		O	
1A, 1B, 9B	D - 1 3/8	D + 3/4	D - 11/16	D + 3/8	D - 5/8	D + 7/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8
2A, 4, 7A, 10	D - 1 3/8	D + 3/4	D - 11/16	D + 3/8	D - 5/8	D + 7/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8
3, 6, 11	D - 1 3/8	D	D - 11/16	D	D - 5/8	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8
2B, 7B	D - 1 3/8	D + 1/4	D - 11/16	D + 1/8	D - 5/8	D + 3/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8
9A	D - 1 3/8	D	D - 11/16	D	D - 5/8	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8
12, 15	D - 11/16	D	D - 5/16	D	D - 1/4	D + 1/16	D	D	D + 1/16	D + 1/16	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8	D + 1/8
22	D - 1 3/16	D + 1 1/16	D - 19/32	D + 17/32	N/A	N/A	D	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

## Duct Dimensions D' (Width) for Various Frame & Border Types

No. of Slots	Types 1A, 1B				Types 2A, 2B, 4, 7A, 7B, 10			
	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR
	37	38	39	40	37	38	39	40
1	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2
2	1 7/8	2 1/8	2 3/8	2 7/8	2	2 1/4	2 1/2	3
3	3 1/8	3 5/8	4 1/8	5 1/8	3 1/4	3 3/4	4 1/4	5 1/4
4	4 3/8	5 1/8	5 7/8	7 3/8	4 1/2	5 1/4	6	7 1/2
5	5 5/8	6 5/8	7 5/8	9 5/8	5 3/4	6 3/4	7 3/4	9 3/4
6	6 7/8	8 1/8	9 3/8	N/A	7	8 1/4	9 1/2	N/A
7	8 1/8	9 5/8	11 1/8	N/A	8 1/4	9 3/4	11 1/4	N/A
8	9 3/8	11 1/8	12 7/8	N/A	9 1/2	11 1/4	13	N/A
9	10 5/8	12 5/8	14 5/8	N/A	10 3/4	12 3/4	14 3/4	N/A

No. of Slots	Types 3, 6, 11				Types 9A, 9B, 12, 15, 22			
	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR	ML/MLR
	37	38	39	40	37	38	39	40
1	S = 1/2	S = 3/4	S = 1	S = 1 1/2	S = 1/2	S = 3/4	S = 1	S = 1 1/2
2	2 1/8	2 3/8	2 5/8	3 1/8	1 5/8	1 7/8	2 3/8	3 1/8
3	3 3/8	3 7/8	4 3/8	5 3/8	2 5/8	3 1/8	3 5/8	4 5/8
4	4 5/8	5 3/8	6 1/8	7 5/8	3 7/8	4 5/8	5 3/8	6 7/8
5	5 7/8	6 7/8	7 7/8	9 7/8	5 1/8	6 1/8	7 1/8	9 1/8
6	7 1/8	8 3/8	9 5/8	N/A	6 3/8	7 5/8	8 7/8	N/A
7	8 3/8	9 7/8	11 3/8	N/A	7 5/8	9 1/8	10 5/8	N/A
8	9 5/8	11 3/8	13 1/8	N/A	8 7/8	10 5/8	12 3/8	N/A
9	10 7/8	12 7/8	14 7/8	N/A	10 1/8	12 1/8	14 1/8	N/A

□ = Not Available in Type 22

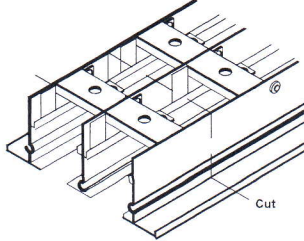
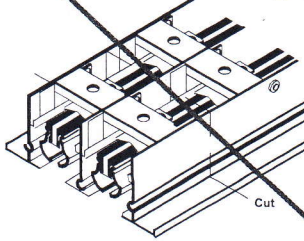


## Accessories (optional)

Check ☒ if provided.

### Optional Field Cut Diffuser (Unit includes one field spacer kit)

- |   |          |  |          |
|---|----------|--|----------|
| <input type="checkbox"/> MLF-37 • ½" Slot   | • Supply | <input type="checkbox"/> MLRF-37 • ½" Slot   | • Return |
| <input type="checkbox"/> MLF-38 • ¾" Slot   | • Supply | <input type="checkbox"/> MLRF-38 • ¾" Slot   | • Return |
| <input type="checkbox"/> MLF-39 • 1" Slot   | • Supply | <input type="checkbox"/> MLRF-39 • 1" Slot   | • Return |
| <input type="checkbox"/> MLF-40 • 1-½" Slot | • Supply | <input type="checkbox"/> MLRF-40 • 1-½" Slot | • Return |



Ideal when the exact length of an ML or MLR diffuser is not known until it is being installed.

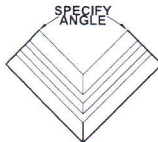
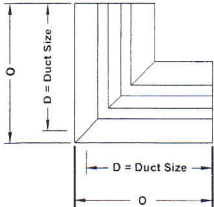
Standard factory cut diffusers can be trimmed as much as 6 inches. If more than 6" is to be removed, use the optional field cut diffuser.

The field cut ML or MLR diffuser is 72" long, with the sides pre-punched to assure the proper alignment of field installed spacers.

These field installed spacers provide additional rigidity during and after cutting. Additional spacer kits available at extra cost.

### Optional Mitered Corner

- |  |          |   |
|--|----------|---|
| <input type="checkbox"/> MC-37 • ½" Slot   | • Supply | <input type="checkbox"/> 90 Degree (minimum)                  |
| <input type="checkbox"/> MC-38 • ¾" Slot   | • Supply | <input type="checkbox"/> Larger than 90 Degree. Specify _____ |
| <input type="checkbox"/> MC-39 • 1" Slot   | • Supply |   |
| <input type="checkbox"/> MC-40 • 1-½" Slot | • Supply |   |



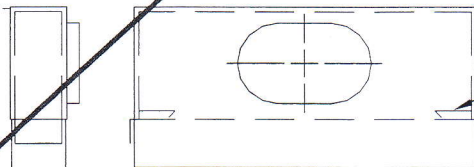
### Dimensions for 90 Degree Mitered Corners

No. of Slots	1A, 1B		2A, 4, 7A		2B, 7B		3, 6, 11		9A		9B		12, 15		22	
	O	D	O	D	O	D	O	D	O	D	O	D	O	D	O	D
1, 2	12 7/16	12	12 3/8	12	12 1/8	12	11 7/8	12	12 5/16	12	12 11/16	12	12	12	13 3/16	12
3-8	24 7/16	24	24 3/8	24	24 1/8	24	23 7/8	24	24 5/16	24	24 11/16	24	24	24	25 3/16	24

All dimensions are in inches.

### Optional Plenum

- |  |   |
|--|---|
| <input type="checkbox"/> MP-37 • ½" Slot • Uninsulated   | <input type="checkbox"/> MPI-37 • ½" Slot • Insulated   |
| <input type="checkbox"/> MP-38 • ¾" Slot • Uninsulated   | <input type="checkbox"/> MPI-38 • ¾" Slot • Insulated   |
| <input type="checkbox"/> MP-39 • 1" Slot • Uninsulated   | <input type="checkbox"/> MPI-39 • 1" Slot • Insulated   |
| <input type="checkbox"/> MP-40 • 1-½" Slot • Uninsulated | <input type="checkbox"/> MPI-40 • 1-½" Slot • Insulated |
- Note: endcaps are not insulated



Optional MP-SP Design

### Note:

- MP and MPI are available for all frames and border types.
- Standard nominal lengths are 2, 3, 4 and 5 feet.
- Request Submittal D-MP for details.
- Option MP-SP available with maximum spread pattern.

## Optional Blank-Offs

☐ BLKS - Cold Rolled Steel - Fits over Neck

☐ BLKV - Vinyl - Fits in Slot

## Standard Finish:

- #26 White border
- Black pattern controllers.

## General Description

- Standard lengths of diffuser sections are 12", 24", 36", 48", 60" and 72".
- Lengths greater than 72" are furnished in multiple sections, the number and size determined by the factory.
- Pattern controllers change direction and volume of air flow. Maximum length is 36". Pattern controllers are furnished in multiple sections for diffuser longer than 36".
- Mounting frames are cut to length and assembled in the field.
- Material is extruded aluminum with steel pattern controllers.

This submittal is meant to demonstrate general dimensions of this product. The drawings are not meant to detail every aspect of the product. Drawings are not to scale. Titus reserves the right to make changes without written notice.

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December 2, 2016

## Submittal Data

Project Name: Home 2 Suites – Flowood, MS

Contractor: Comfort Designs

Submitted By: Trent Dismuke  
Airflo Sales Inc.  
103 First Choice Drive  
Madison, MS 39110  
601-898-1017 Phone  
601-898-1018 Fax

Items Submitted: Ruskin Wind Driven Rain Louvers

Approved By:

Date of Approval:

## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	WIDTH	HEIGHT	SIZE	FRAME	SCREEN1	SCREEN1 MTG	INSTALL. ANGL	FINISH TYPE	FINISH COLOR	CONSTRUCTION	WINDLOAD	Comments
EME220DD	4	L	20	12	Deduct 1/4	BOX	5/8 Inch .040 ALUM	REAR	NONE	50% PVDF (B1)	TO MATCH (98)	STANDARD	20	
EME220DD	1	L	20	14	Deduct 1/4	BOX	5/8 Inch .040 ALUM	REAR	NONE	50% PVDF (B1)	TO MATCH (98)	STANDARD	20	
EME220DD	2	L	48	48	Deduct 1/4	BOX	5/8 Inch .040 ALUM	REAR	NONE	50% PVDF (B1)	TO MATCH (98)	STANDARD	20	
EME220DD	1	L	18	14	Deduct 1/4	BOX	5/8 Inch .040 ALUM	REAR	NONE	50% PVDF (B1)	TO MATCH (98)	STANDARD	20	
EME220DD	3	L	14	14	Deduct 1/4	BOX	5/8 Inch .040 ALUM	REAR	NONE	50% PVDF (B1)	TO MATCH (98)	STANDARD	20	

## EME220DD WIND-DRIVEN RAIN RESISTANT STATIONARY LOUVER EXTRUDED ALUMINUM

### STANDARD CONSTRUCTION

#### FRAME

2" (51) deep, 6063T6 extruded aluminum with .060" (1.5) nominal wall thickness.

#### BLADES

6063T6 extruded aluminum .045" (1.1) nominal wall thickness. Double drainable blades are sightproof.

#### SCREEN

5/8" x .040" (16 x 1) expanded flattened aluminum bird screen in removable frame. Screen adds approximately 1/2" (13) to louver depth.

#### FINISH

Mill.

#### MINIMUM SIZE

6"w x 6"h (152 x 152).

#### APPROXIMATE SHIPPING WEIGHT

4 lbs. per sq. ft. (19.4 kg/m<sup>2</sup>)

#### MAXIMUM FACTORY ASSEMBLY SIZE

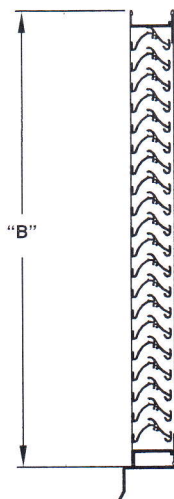
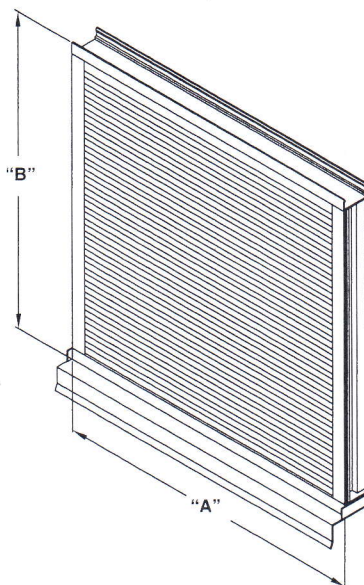
Single sections shall not exceed 120" x 90" (3048 x 2286) or 90" w x 120" h (2286 x 3048).

Louvers larger than the maximum single section size will require field assembly of smaller sections.

#### SUPPORTS

Louvers may be provided with rear mounted blade supports that increase overall louver depth depending on louver size, assembly configuration or windload.

Consult Ruskin for additional information.



### FEATURES

- Closely spaced horizontal blades minimize the penetration of wind-driven rain, reducing damage and additional operating expenses.
- Tested in the AMCA 500-L Wind-Driven Rain Penetration Test.
- Published performance ratings based on testing in accordance with AMCA Publication 511.
- 43% Free Area.
- Excellent pressure drop performance.
- Aluminum construction for low maintenance and high resistance to corrosion.

### VARIATIONS

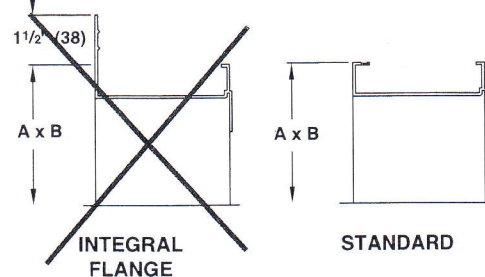
- Extended sill.
- Hinged frame.
- Front or rear security bars.
- Filter racks.
- Installation angles.
- A variety of bird and insect screens.

#### Finishes:

- Prime coat.
- Baked enamel (modified fluoropolymer).
- Epoxy
- Pearledize 50 & 70.
- Kynar.
- Clear and color anodize.
- Triangular and round shapes available.

Consult Ruskin for other special requirements.

### FRAME CONSTRUCTION OPTIONS



Please reference our website  
www.ruskin.com for up to date  
LEED® information

#### NOTES:

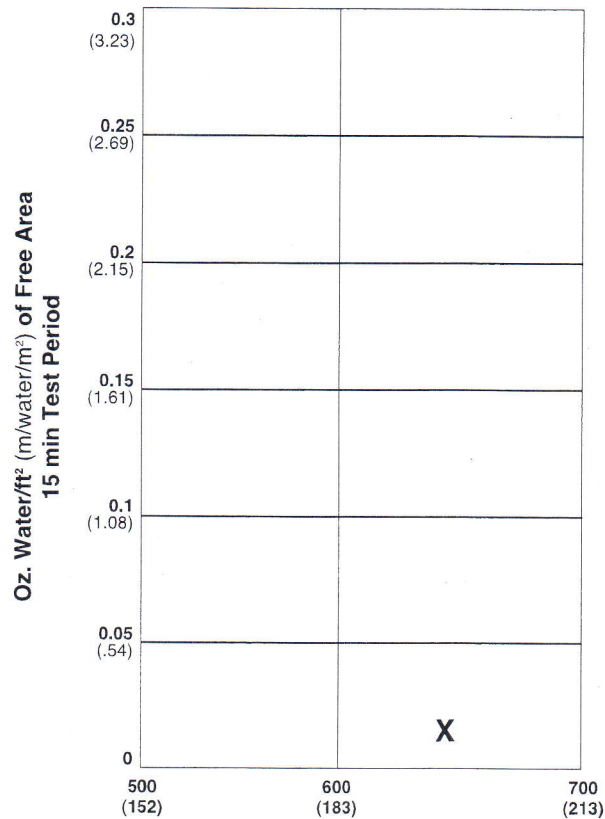
1. Dimensions in inches, parenthesis ( ) indicate millimeters.
2. Units furnished 1/4" (6) smaller than given opening dimensions.

TAG	QTY.	SIZE		FRAME	VARIATIONS
		A*-WIDE	B*-HIGH		
	4	20	12	BOX	
	1	20	14	BOX	
	2	48	48	BOX	
	1	18	14	BOX	
	3	14	14	BOX	
<div> <div>PROJECT HOME 2 SUITES</div> <div>ARCH./ENGR. RICHARD MOLENAAR ARCHITECT/IES</div> <div>REPRESENTATIVE</div> </div> <div> <div>LOCATION FLOWOOD, MS</div> <div>CONTRACTOR COMFORT DESIGNS</div> <div>DATE 12/1/2016</div> </div>					



# WATER PENETRATION GRAPH

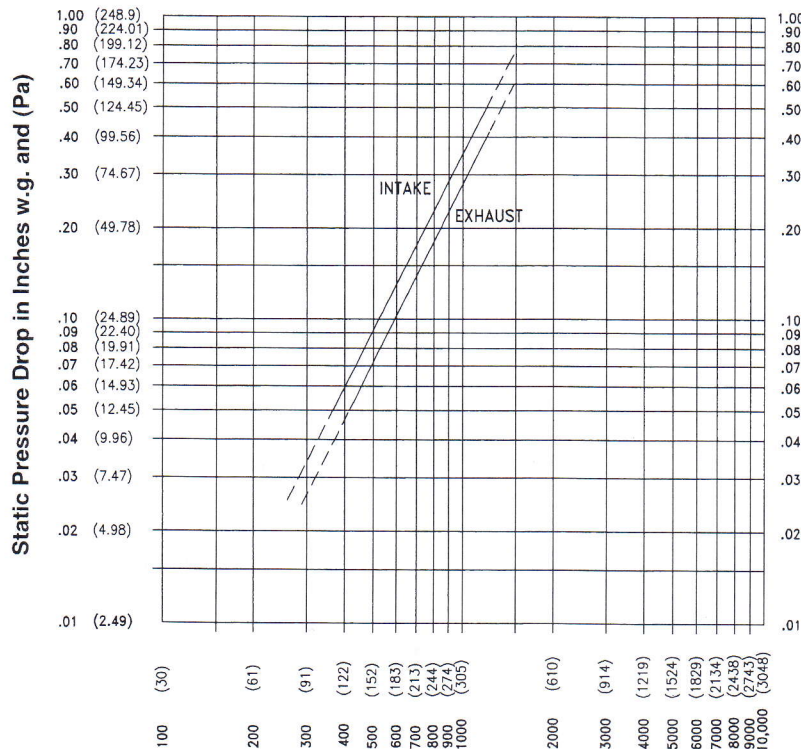
Test size 48" x 48" (1219 x 1219)  
Beginning point of water penetration at .01 oz./sq. ft. is 680 fpm (208 m/min.)



Ruskin Company certifies that the louver shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings, water penetration ratings and wind driven rain ratings only.

## PRESSURE DROP

Pressure Drop testing performed on 48" x 48" (1219 x 1219) unit.



Ratings do not include the effect of a bird screen.

Air Velocity in feet (meters) per minute through Free Area

## FREE AREA GUIDE

Free Area Guide shows free area in ft<sup>2</sup> and m<sup>2</sup> for various sizes of EME220DD. Width – Inches and Meters

Height – Inches and Meters

	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
6	0.15	0.30	0.46	0.61	0.76	0.91	1.07	1.22	1.37	1.52	1.68	1.83	1.98	2.13	2.29	2.44	2.59	2.74	2.90	3.05
0.15	0.04	0.11	0.18	0.25	0.32	0.39	0.46	0.53	0.60	0.67	0.74	0.82	0.89	0.96	1.03	1.10	1.17	1.24	1.31	1.38
12	0.10	0.28	0.46	0.64	0.82	1.00	1.18	1.36	1.54	1.72	1.90	2.08	2.26	2.44	2.62	2.80	2.98	3.16	3.34	3.52
0.30	0.01	0.03	0.04	0.06	0.08	0.09	0.11	0.13	0.14	0.16	0.18	0.19	0.21	0.23	0.24	0.26	0.28	0.29	0.31	0.33
18	0.17	0.48	0.78	1.09	1.40	1.71	2.01	2.32	2.63	2.94	3.24	3.55	3.86	4.17	4.47	4.78	5.09	5.40	5.70	6.01
0.46	0.02	0.04	0.07	0.10	0.13	0.16	0.19	0.22	0.24	0.27	0.30	0.33	0.36	0.39	0.42	0.44	0.47	0.50	0.53	0.56
24	0.24	0.67	1.11	1.54	1.98	2.41	2.85	3.28	3.72	4.15	4.59	5.02	5.45	5.89	6.32	6.76	7.19	7.63	8.06	8.50
0.61	0.02	0.06	0.10	0.14	0.18	0.22	0.26	0.31	0.35	0.39	0.43	0.47	0.51	0.55	0.59	0.63	0.67	0.71	0.75	0.79
30	0.30	0.84	1.39	1.93	2.48	3.02	3.56	4.11	4.65	5.20	5.74	6.29	6.83	7.37	7.92	8.46	9.01	9.55	10.10	10.64
0.76	0.03	0.08	0.13	0.18	0.23	0.28	0.33	0.38	0.43	0.48	0.53	0.58	0.64	0.69	0.74	0.79	0.84	0.89	0.94	0.99
36	0.37	1.04	1.71	2.38	3.05	3.73	4.40	5.07	5.74	6.41	7.08	7.76	8.43	9.10	9.77	10.44	11.11	11.78	12.46	13.13
0.91	0.03	0.10	0.16	0.22	0.28	0.35	0.41	0.47	0.53	0.60	0.66	0.72	0.78	0.85	0.91	0.97	1.03	1.10	1.16	1.22
42	0.43	1.21	1.99	2.77	3.55	4.33	5.12	5.90	6.68	7.46	8.24	9.02	9.80	10.58	11.37	12.15	12.93	13.71	14.49	15.27
1.07	0.02	0.05	0.08	0.11	0.14	0.17	0.20	0.23	0.26	0.29	0.32	0.36	0.39	0.42	0.45	0.48	0.51	0.54	0.57	0.60
48	0.50	1.41	2.31	3.22	4.13	5.04	5.95	6.86	7.77	8.67	9.58	10.49	11.40	12.31	13.22	14.12	15.03	15.94	16.85	17.76
1.22	0.05	0.13	0.22	0.30	0.38	0.47	0.55	0.64	0.72	0.81	0.89	0.98	1.06	1.14	1.23	1.31	1.40	1.48	1.57	1.65
54	0.57	1.60	2.64	3.67	4.71	5.75	6.78	7.82	8.85	9.89	10.92	11.96	13.00	14.03	15.07	16.10	17.14	18.17	19.21	20.24
1.37	0.05	0.15	0.25	0.34	0.44	0.53	0.63	0.73	0.82	0.92	1.02	1.11	1.21	1.30	1.40	1.50	1.59	1.69	1.79	1.88
60	0.63	1.77	2.92	4.06	5.21	6.35	7.50	8.65	9.79	10.94	12.08	13.23	14.37	15.52	16.66	17.81	18.95	20.10	21.24	22.39
1.52	0.06	0.16	0.27	0.38	0.48	0.59	0.70	0.80	0.91	1.02	1.12	1.23	1.34	1.44	1.55	1.66	1.76	1.87	1.98	2.08
66	0.70	1.97	3.24	4.52	5.79	7.06	8.33	9.61	10.88	12.15	13.42	14.70	15.97	17.24	18.51	19.79	21.06	22.33	23.60	24.88
1.68	0.06	0.18	0.30	0.42	0.54	0.66	0.77	0.89	1.01	1.13	1.25	1.37	1.49	1.60	1.72	1.84	1.96	2.08	2.20	2.31
72	0.76	2.14	3.52	4.90	6.29	7.67	9.05	10.43	11.82	13.20	14.58	15.96	17.34	18.73	20.11	21.49	22.87	24.25	25.64	27.02
1.83	0.07	0.20	0.33	0.46	0.58	0.71	0.84	0.97	1.10	1.23	1.36	1.48	1.61	1.74	1.87	2.00	2.13	2.26	2.38	2.51
78	0.83	2.34	3.85	5.36	6.87	8.37	9.88	11.39	12.90	14.41	15.92	17.43	18.94	20.45	21.96	23.47	24.98	26.49	28.00	29.51
1.98	0.08	0.22	0.36	0.50	0.64	0.78	0.92	1.06	1.20	1.34	1.48	1.62	1.76	1.90	2.04	2.18	2.32	2.46	2.60	2.74
84	0.90	2.53	4.17	5.81	7.44	9.08	10.72	12.35	13.99	15.63	17.26	18.90	20.54	22.17	23.81	25.45	27.08	28.72	30.36	31.99
2.13	0.08	0.24	0.39	0.54	0.69	0.84	1.00	1.15	1.30	1.45	1.61	1.76	1.91	2.06	2.21	2.37	2.52	2.67	2.82	2.98
90	0.96	2.70	4.45	6.20	7.94	9.69	11.44	13.18	14.93	16.67	18.42	20.17	21.91	23.66	25.41	27.15	28.90	30.64	32.39	34.14
2.29	0.09	0.25	0.41	0.58	0.74	0.90	1.06	1.23	1.39	1.55	1.71	1.88	2.04	2.20	2.36	2.53	2.69	2.85	3.01	3.17
96	1.03	2.90	4.77	6.65	8.52	10.39	12.27	14.14	16.01	17.89	19.76	21.64	23.51	25.38	27.26	29.13	31.00	32.88	34.75	36.62
2.44	0.10	0.27	0.44	0.62	0.79	0.97	1.14	1.32	1.49	1.66	1.84	2.01	2.19	2.36	2.53	2.71	2.88	3.06	3.23	3.41
102	1.04	3.52	5.50	7.48	9.47	11.45	13.43	15.42	17.40	19.38	21.37	23.35	25.33	27.32	29.30	31.28	33.27	35.25	37.23	39.21
2.59	0.14	0.33	0.51	0.70	0.88	1.06	1.25	1.43	1.62	1.80	1.99	2.17	2.36	2.54	2.72	2.91	3.09	3.28	3.46	3.65
108	1.16	3.27	5.38	7.49	9.60	11.71	13.82	15.93	18.04	20.15	22.26	24.37	26.48	28.59	30.70	32.81	34.92	37.03	39.14	41.25
2.74	0.11	0.30	0.50	0.70	0.89	1.09	1.29	1.48	1.68	1.87	2.07	2.27	2.46	2.66	2.86	3.05	3.25	3.44	3.64	3.84
114	1.23	3.46	5.70	7.94	10.18	12.41	14.65	16.89	19.13	21.36	23.60	25.84	28.08	30.32	32.55	34.79	37.03	39.27	41.50	43.74
2.90	0.11	0.32	0.53	0.74	0.95	1.15	1.36	1.57	1.78	1.99	2.20	2.40	2.61	2.82	3.03	3.24	3.44	3.65	3.86	4.07
120	1.29	3.63	5.98	8.33	10.68	13.02	15.37	17.72	20.06	22.41	24.76	27.11	29.45	31.80	34.15	36.50	38.84	41.19	43.54	45.88
3.05	0.12	0.34	0.56	0.77	0.99	1.21	1.43	1.65	1.87	2.08	2.30	2.52	2.74	2.96	3.18	3.39	3.61	3.83	4.05	4.27

## WIND-DRIVEN RAIN PERFORMANCE

Test size is 1m x 1m (39" x 39") core area, 1.04m x 1.12m (41" x 44") nominal. Free Area of test louver is 4.20 ft<sup>2</sup> (.39m<sup>2</sup>).

29 mph (75 mm/h) wind & 3" (76) per hour rain conditions

Core Velocity <sub>1</sub> fpm (m/s)	Airflow cfm (m <sup>3</sup> /min)	Free Area Velocity <sub>2</sub> fpm (m/sec.)	Effectiveness Ratio	Class
0	0	0	99.9	A
132 (.7)	1421	383	99.9	A
197 (1.0)	2120	505	99.9	A
285 (1.4)	3068	730	99.9	A
374 (1.9)	4031	960	99.9	A
472 (2.4)	5077	1209	99.3	A
583 (3.0)	6277	1495	97.1	B
685 (3.5)	7373	1755	96.1	B

50 mph (202 mm/h) wind & 8" (203) per hour rain conditions

Core Velocity <sub>1</sub> fpm (m/s)	Airflow cfm (m <sup>3</sup> /min)	Free Area Velocity <sub>2</sub> fpm (m/sec.)	Effectiveness Ratio	Class
0	0	0	99.9	A
114 (.6)	1228	292	99.8	A
186 (.9)	2001	476	99.4	A
294 (1.5)	3181	757	99.3	A
398 (2.0)	4285	1020	97.8	B
494 (2.5)	5315	1265	96.2	B
568 (2.9)	6114	1456	95.4	B
691 (3.5)	7442	1772	90.9	C

### NOTES

- Core area is the open area of the louver face (face area less louver frames). Core Velocity is the airflow velocity through the Core Area of the louver (1m x 1m).
- Free Area of test size is calculated per AMCA standard 500-L.
- Wind Driven Rain Penetration Classes:

Class	Effectiveness
A	1 to .99
B	0.989 to 0.95
C	0.949 to 0.80
D	Below 0.8

- Intake Discharge Loss Class 2

Discharge Loss Coefficient is calculated by dividing a louvers' actual airflow rate vs. a theoretical airflow for the opening. It provides an indication of the louvers' airflow characteristics.

Discharge Loss Classes:

**Class Discharge Loss Coefficient**

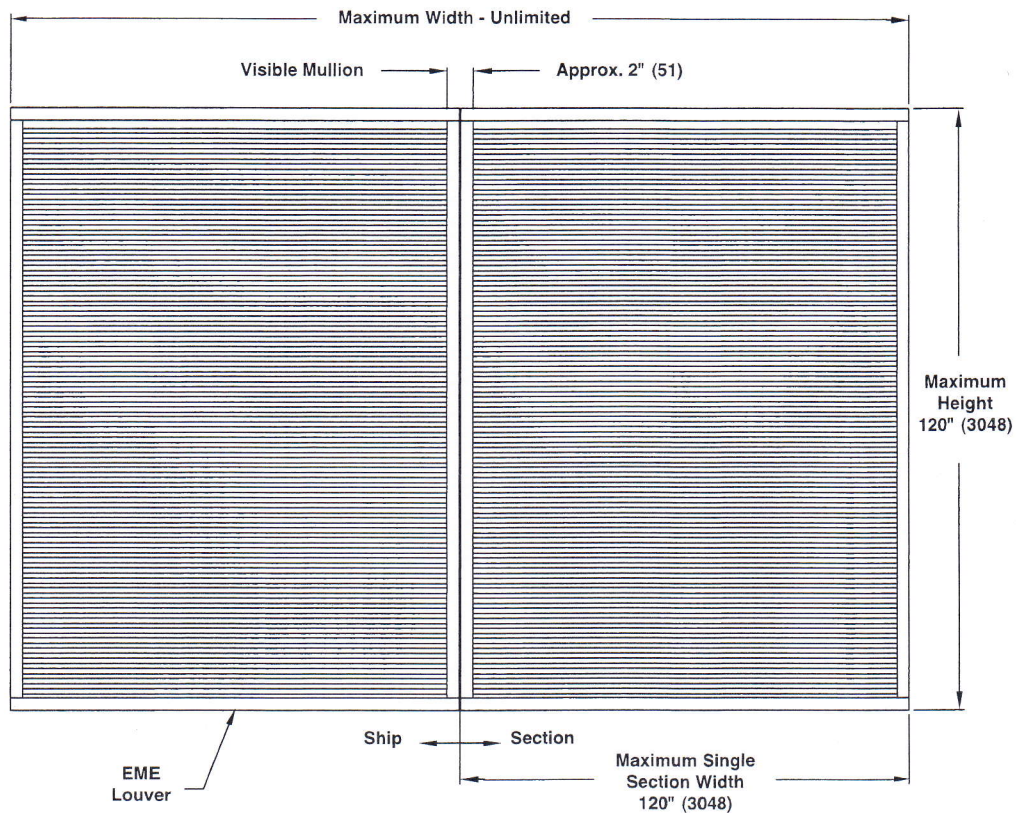
- 0.4 and above
- 0.3 to 0.399
- 0.2 to 0.299
- 0.199 and below

(The higher the coefficient, the less resistance to airflow.)

5. The AMCA Wind Driven Rain Test is performed in a laboratory environment and incorporates controlled wind, water and system airflow effects. In actual field installations, storms may create conditions not considered by the AMCA test. Penthouse and similar applications where wind can pass through multiple louvers in an enclosure is another condition that is not simulated by AMCA tests. These applications can create elevated water penetration rates through any louver. Because of these uncontrolled situations, it is recommended that provisions to manage water penetration through louvers be included in the building design.



## EME220DD CONSTRUCTION INFORMATION



1. Reference separate Installation Instruction sheets for installation details. It is the responsibility of the installing contractor to properly install the louvers per the appropriate detail.
2. Louvers wider than the maximum single section width will be shipped in multiple sections and will require field assembly. Field assembly is not by Ruskin.

**RUSKIN®**

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[www.ruskin.com](http://www.ruskin.com)



## Schedule



Job: Home2Suites Flowood

Model	Quantity	Tag	WIDTH	HEIGHT	SIZE	FRAME	BLADE ACTION	OPER.SHAFT	ACT TYPE	FAIL POS.	INSTALLATION	SIDE PLATE	ACCESSORIES	Slv/Tran	Comments
CD36	2	MOD	36	36	Deduct 1/4	CHANNEL	OPPOSED	EXTENDED	ELECTRIC/120 VOLT	CLOSE	OUT	YES	NONE	None	
CD36	2	MOD	48	48	Deduct 1/4	CHANNEL	OPPOSED	EXTENDED	ELECTRIC/120 VOLT	CLOSE	OUT	YES	NONE	None	

## CD36 LOW LEAKAGE CONTROL DAMPER

### APPLICATION

Ruskin model CD36 incorporates the industry's only one-piece steel frame construction, making it the engineer's preferred frame design. It promotes tighter leakage, and there are no bolts, screws or rivets that could fail over time. Frame corners are internally braced to reduce racking. V-groove blades are suitable for low and medium velocity applications. Blade edge seals are mechanically fastened to ensure years of dependable low leakage performance. Factory mounted and commissioned pneumatic and electric actuators are available options.

### STANDARD CONSTRUCTION

#### FRAME

5" x 1" x 16 gage (127mm x 25mm x 1.6mm) hot dipped, roll formed galvanized steel.

#### BLADE

6" x 16 gage (152mm x 1.6mm) hot dipped, roll formed galvanized steel.

#### AXLES

1/2" (13mm) nominal hexagonal zinc plated steel.

#### BEARINGS

High impact, molded synthetic, formed to hexagonal axle shape.

#### BLADE SEALS

Mechanically fastened, fire resistant, vinyl coated polyester. Meets requirements to qualify for UL94, 5903.

#### JAMB SEALS

300 series stainless steel compression type.

#### LINKAGE

Shake proof Swedgelock™ plated steel assembly, concealed out of airstream.

#### PRESSURE

Up to 5" W.C. (1.2 kPa). Refer to chart.

#### VELOCITY

Up to 3,000 FPM (15.3 m/s). Refer to chart.

#### LEAKAGE

Superior to AMCA Class 2. Refer to chart.

#### TEMPERATURE RANGE

Standard -25°F to +185°F (-32°C to +85°C).

Enhanced -45°F to +350°F (-43°C to +177°C).

With silicone blade seals and stainless bearings, see variations.

#### MINIMUM SIZE

Single blade – 5" (127mm) "A" width x 5" (127mm) "B" height.

Opposed blade – 5" (127mm) "A" width x 10" (254) "B" height.

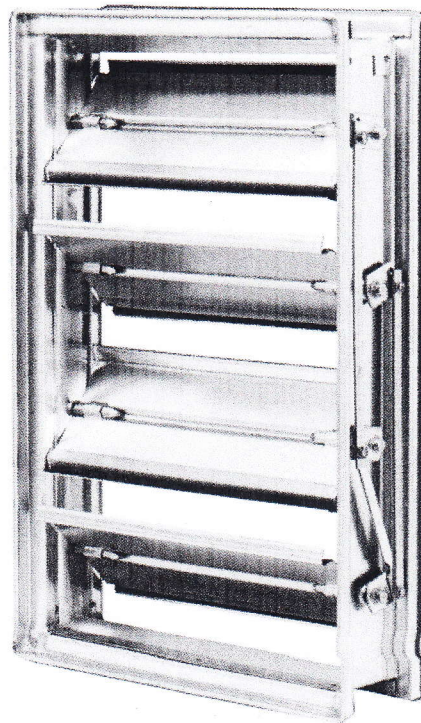
#### MAXIMUM SIZE

Single section – 48" (1219mm) "A" width x 72" (1829mm) "B" height.

Multi-section – multiple factory assembled equal sections with unlimited overall dimensions.

#### ESTIMATED SHIPPING WEIGHT

7 lbs. (3.2kg) per square foot.



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### FEATURES

- One-piece roll formed frame
- Swedgelock™ shake proof concealed linkage
- Mechanically fastened blade seals

### VARIATIONS

Ruskin model CD36 is available with the following variations at additional cost.

- Front, rear or double flange frame
- Stainless axles, bearings and linkage
- Factory mounted sleeves with round and oval transitions
- Security bars
- Factory mounted and commissioned electric ~~and pneumatic~~ actuators, chain pull devices, and manual locking handles
- Enamel and epoxy finishes
- Remote blade position indicator switches
- Wireless (on/off) remote control



### NOTES

- Values shown in parenthesis ( ) indicate metric units.
- Units furnished approximately 1/4" (6mm) smaller than given opening dimensions.

## LEAKAGE AND PERFORMANCE DATA



### LEAKAGE AND PERFORMANCE

All data represented in this literature are based on tests performed in accordance with AMCA test standards at Ruskin's AMCA accredited test facility. Third party verification of testing procedures and data are verified through ISO procedure audits.

CD36	Leakage (CFM/Ft <sup>2</sup> )			
Maximum Damper "A" Width	1" wg (0.25 kPa)	4" wg (1 kPa)	8" wg (2 kPa)	10" wg (2.5 kPa)
48" (1219mm)	5.4	10.7	N/A	N/A

Leakage testing is performed in accordance with ANSI/AMCA Standard 500-D, figure 5.5. Leakage data are based on a closing torque of 5 inch pounds/ft<sup>2</sup> (0.57N.m).

Air performance testing is performed in accordance with ANSI/AMCA Standard 500-D, figure 5.3.

Damper "A" Width	Maximum System Pressure
48" (1219)	2.5" wg (.62 kPa)
36" (914)	3.0" wg (.75 kPa)
24" (610)	4.0" wg (1 kPa)
12" (305)	5.0" wg (1.25 kPa)

As defined by AMCA, the maximum allowable leakage for class 2 rated dampers is as follows.

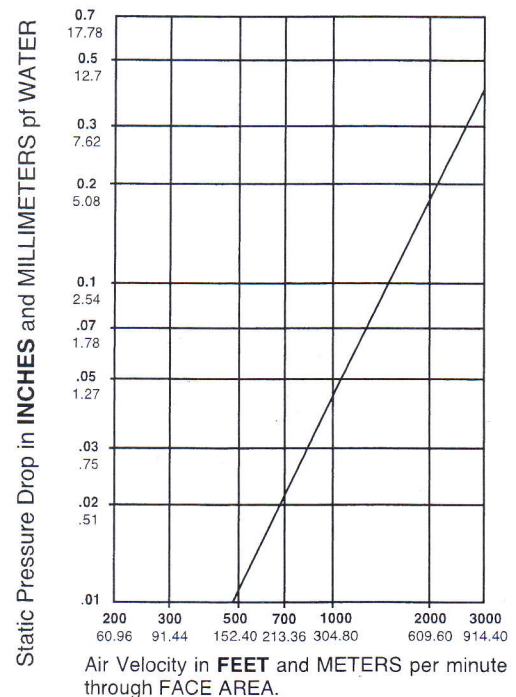
#### Leakage Class 2

- 10cfm/ft<sup>2</sup> @ 1 inch wg
- 20cfm/ft<sup>2</sup> @ 4 inch wg
- 28cfm/ft<sup>2</sup> @ 8 inch wg
- 35cfm/ft<sup>2</sup> @ 12 inch wg

To calculate leakage at a given pressure, multiply the leakage at 1 inch wg by the square root of the given leakage.

Example: given 5 inches wg  
 $5.4 \text{ cfm} (\sqrt{5}) = 20.07 \text{ cfm}$

### PRESSURE DROP - DAMPER OPEN (24" X 24" size)



## MAXIMUM VELOCITY AND RECOMMENDATIONS

Damper Width "A" Dimension in inches (mm)	Maximum Velocity	
	fpm	m/s
Above 5" (127) through 24" (609)	3000	15.25
Above 24" (609) through 36" (914)	2500	12.71
Above 36" (914) through 48" (1219)	2000	10.17
Velocity recommendation (see note below)	1500	7.6

**NOTE:** For optimum sound characteristics and pressure drop performance on dampers with v-groove blades, we recommend sizing dampers for 1,500 fpm. Higher velocities are not recommended for outside air openings, due to water penetration concerns. For best pressure drop and sound performance at higher velocities, consider an airfoil blade damper, such as Ruskin model CD60.

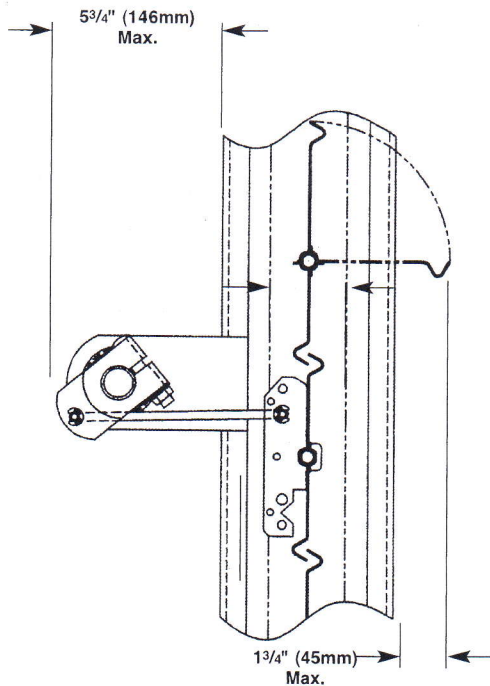
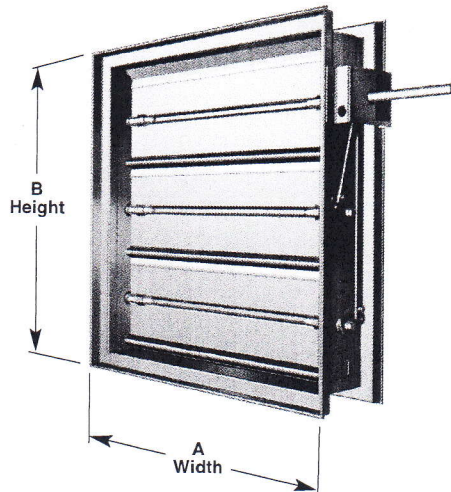
### INSTALLATION

Ruskin model CD36 is **not recommended for installation with blades running vertically** unless ordered with thrust washers. For proper performance, damper must be installed square and free from racking. Actuator must be installed on linkage side. Opposed blade dampers must be operated from a power blade or shaft. Refer to installation instructions for additional information.

The CD36 is intended to be self supporting only in its largest single section size. Multiple section damper assemblies may require bracing to support the weight of the assembly and to hold against system pressure. Ruskin recommends appropriate bracing to support the damper horizontally at a minimum of every 8 feet of damper width. Vertical assemblies and higher system pressures may require more bracing.



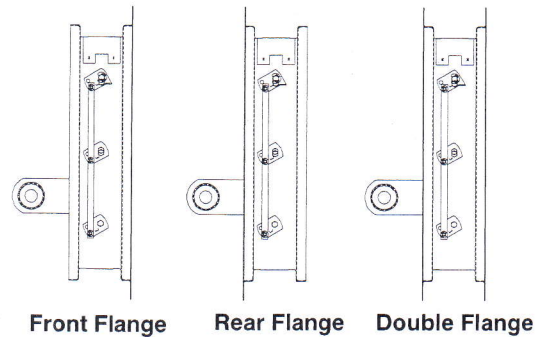
## DIMENSIONAL DATA



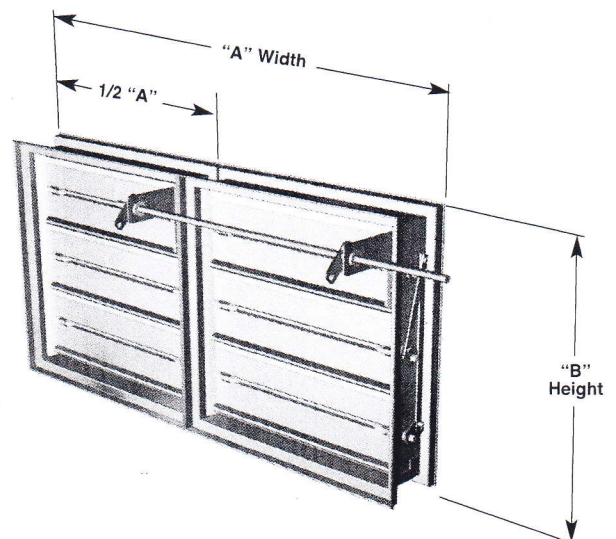
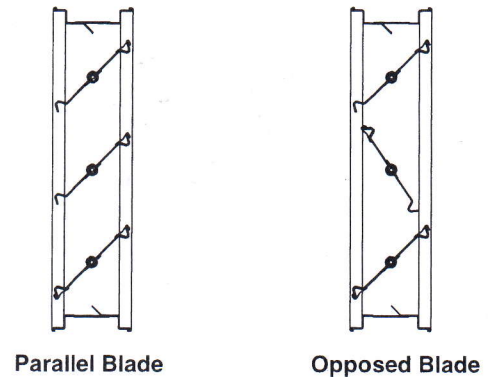
**Typical Envelope Dimensions**

### \*TYPICAL JACKSHAFT ASSEMBLY

Unless other wise specified, all dampers larger than the maximum single section 48" (1219mm) "A" width of 72" (1829mm) "B" height will be built in equal smaller sections and factory assembled with jackshaft as indicated in the detail to the right. In this detail, the damper is over the 48" (1219mm) width, but is less than 96" (2438mm), so it will be built two sections wide. The height is less than 72" (1829mm) so it remains one section tall. Multiple section dampers are not intended to be structural supports, or self-supporting. Additional bracing is recommended to support the damper weight and support against system pressure. Ruskin recommends appropriate bracing to support the damper horizontally at a minimum of every 96" (2438mm) of damper width. Vertical assemblies and higher pressure systems may require additional bracing.



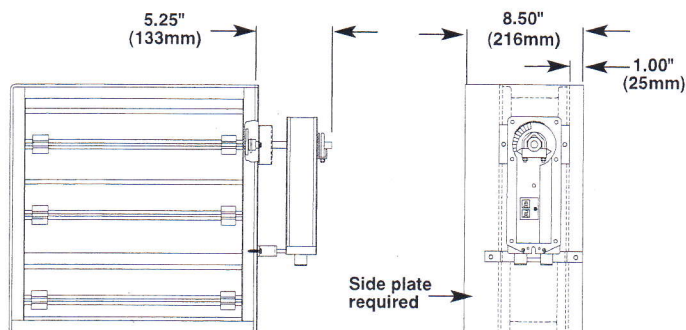
Ruskin model CD36 is bi-directional, meaning it can be installed with the airflow in either direction. When considering mounting flange location, orientation must be defined to properly communicate the desired results. For definition purposes only, the "front" of the damper can be determined by viewing the jackshaft\*, linkage, and blade rotation. When required, jackshaft is always placed on the "rear" surface of the damper. When viewing the concealed side linkage, the "front" surface is adjacent on the right side. Also, when viewing the linkage, the top blade should rotate clockwise to open, as shown in the blade orientation graphic below. If it does not, rotate the damper 180° so the blade rotation is clockwise to open when viewing the linkage side.



## DIMENSIONAL DATA

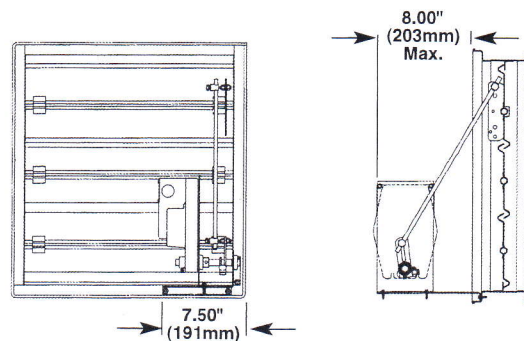
Ruskin model CD36 is available with a wide variety of factory furnished, installed, and commissioned actuators. Actuators can be installed for a fraction of the cost when compared to field installation. It also makes installation faster and more reliable. Actuators vary from manufacturer to manufacturer, so it is not practical to illustrate every mounting arrangement. The four illustrations below

are intended to be used for general guidance on similar mounting arrangements. These provide typical maximum envelope dimensions for layout purposes. If space is a concern, consult your local Ruskin representative for specific details based on your unique actuator selection and installation requirements.



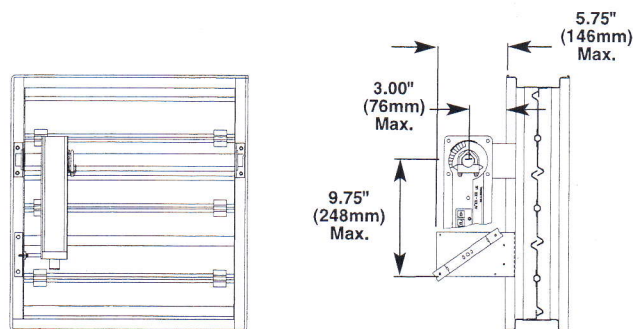
External side plate mounted actuators

Figure 1



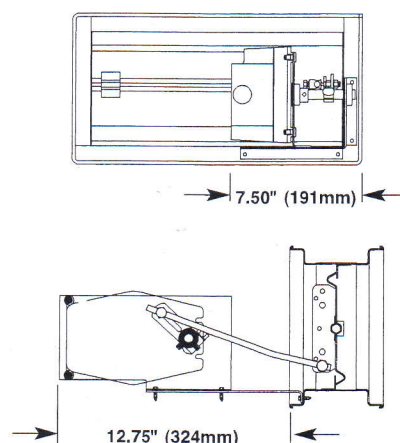
"A" width 9" (229mm) x "B" height 20" (508mm) minimum

Figure 2



Jackshaft mounted actuators. If "A" width is greater than 9" (229mm) and "B" height is more than 20" (508mm) jackshaft will be used for internally mounted actuators.

Figure 3



If "B" height is less than 20" (508mm) it may be necessary to rotate the actuator 90° as illustrated.

Figure 4

## SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans, or in accordance with schedules, control dampers that meet the following minimum construction standards. Control dampers shall be produced in an ISO9001 certified factory. Frame shall be 16 ga. (1.6mm) galvanized steel structural hat channel with tabbed corners for reinforcement. The blades shall be 6" (152mm) single skin, 16 gage (1.6mm) galvanized steel with three longitudinal grooves to reduce blade deflection. Bearings shall be corrosion resistant, molded synthetic sleeve type turning in an extruded hole in the damper frame. Axles shall be hexagonal positively locked into the damper blade. Linkage shall be concealed out of airstream, within the damper frame to

reduce pressure drop and noise. Blade edge seals shall be PVC coated polyester fabric suitable for -25°F to +185°F (-32°C to +85°C) mechanically locked into the blade edge. Adhesive or clip-on type seals are unacceptable. Jamb seals shall be stainless steel compression type to prevent leakage between blade end and damper frame. Blade end overlapping frame is unacceptable. Multiple section dampers must have factory installed jackshafts unless clearly eliminated by the engineer. Submittal must include leakage, pressure drop, maximum velocity and maximum pressure data based on AMCA Publication 500D. Dampers shall be in all respects equivalent to **Ruskin Model CD36**.

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