



INSTALLATION, OPERATION, & MAINTANANCE MANUAL

AT2000-3

TABLE OF CONTENTS

1)	AT2000-3 Brochure	Pgs. 2-3
	AT2000-3 Drawing	Pg. 4
	AT2000-3 Wiring	Pg. 5
2)	Operation Instructions	Pgs. 6-9
	Spare Parts List	Pg. 10
3)	Daily Filter Report	Pg. 12
	Impeller Info	Pgs. 13-14
	Capacitor Info	Pg. 15
	Motor Control Info	Pgs. 16-18
4)	Filter Selection Code	Pg. 20
	Filter Drawing	Pg. 21
5)	Halco Warranty	Pg. 23

CHAPTER 1



HALCO PRODUCTS COMPANY

100 N. Gordon Street - Elk Grove Village, IL 60007-1193
Tel: 847-956-1600 - Fax: 847-956-0595
E-Mail: Info@Halco-Products.com
Website: www.Halco-Products.com

HALCO
PRODUCT
INFORMATION

400.4000

HEPA Blower Module AT2000

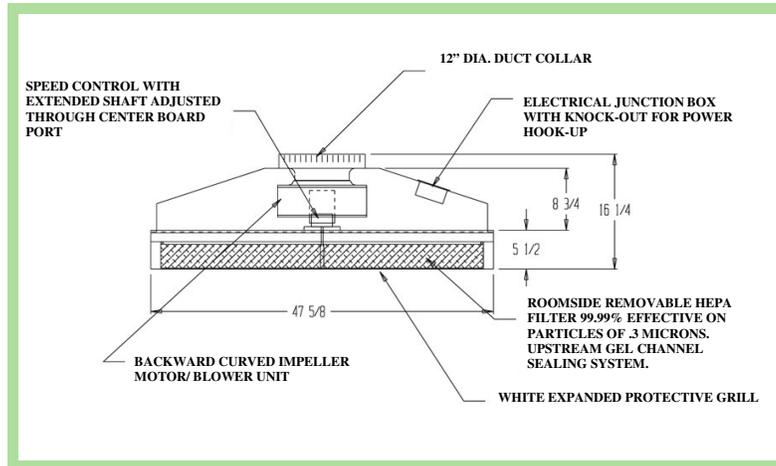
- **Designed to meet the latest NEC codes.**
- **Unit capable of producing a 120 FPM of air at 6" form filter face.**
- **Unit supplied with relay for dry contact (spot) for blower running indication.**

Specifications

- Brush aluminum motor housing
- 12" dia duct housing
- Electrical junction box with knock out for power hook up
- Room side removable HEPA filter
99.97% effective on particles of .3 microns or larger

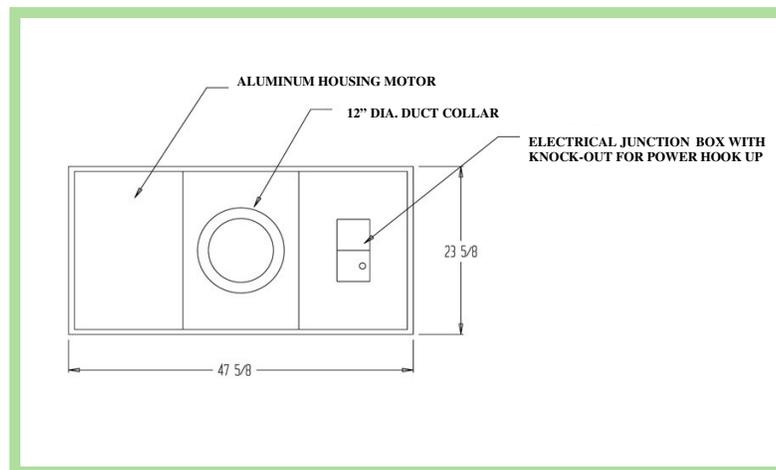


SPECIFICATIONS



FEATURES

- Speed Control with Extended Shaft Adjusted from Clean Room Below
- Room side Removable HEPA Filter 99.99% Effective on Particle of 0.3 Microns. Upstream Gel Channel Sealing System
- Blower on Indicator Light (Optional)
- Unit Supplied with Relay for Dry Contact (Spot) for Blower Running Indication



OPTIONS

- AT2000 99.99%
- Gel Seal
- ULPA 99.999% @ 0.12 micron
- Relay Spot
- Pilot Light
- Pre-Filter
- 12" Duct Collar

VOLTAGE

- 120-1-60
- 277-1-60
- 220-1-60

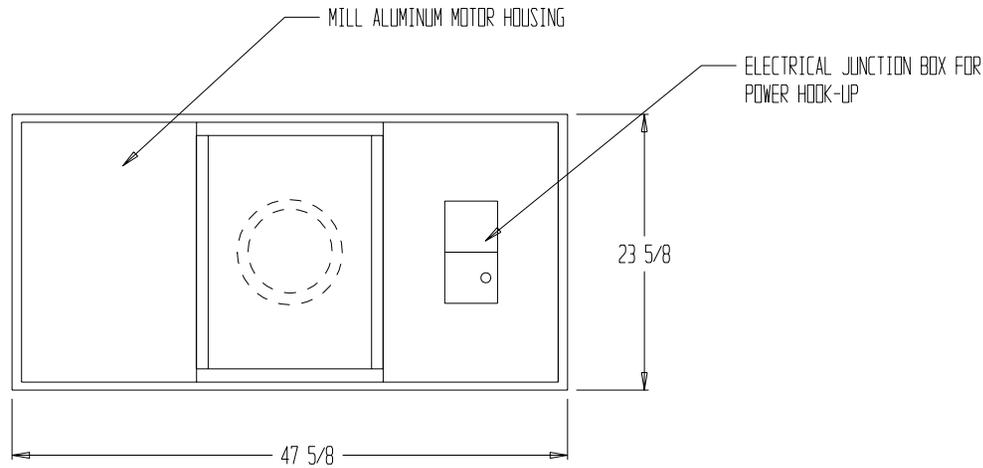
HEPA blower to be Halco™ Model AT2000 packaged fan powered ceiling HEPA filter blower module. HEPA to be 99.99% eff. on 0.3. Micron, room side replaceable (optional gel seal). Housing to be brushed aluminum (optional insulated) with 12" duct collar or optional pre-filter. Blower to be backward incline direct drive variable speed design with speed control accessible from ceiling below module. Unit to be capable of providing 120FPM of air at 6" from filter face. Unit to have optional operating pilot light and SPDT relay for remote signaling of unit operation. Voltage to be 120-1-60 with optional 220 or 277 volts.

HALCO PRODUCTS COMPANY

100 North Gordon Street
 Elk Grove Village, Illinois 60007-1193
 (847) 956-1600 Fax (847) 956-0595
 E-Mail: Info@Halco-Products.com
 Website: www.Halco-Products.com

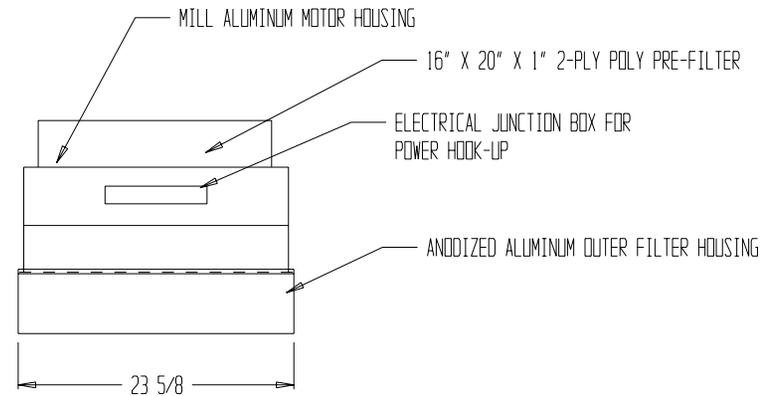
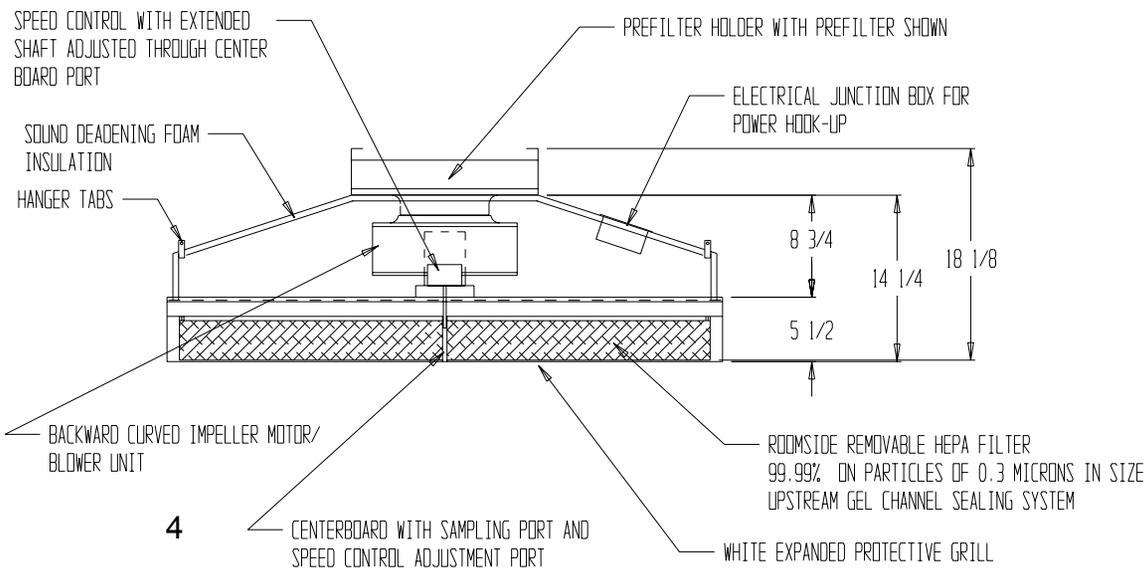
In line with our policy of continual product improvement, HALCO reserves the right to incorporate and use equipment and material to conform with the latest design of its products, and in keeping with the specifications of this equipment.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



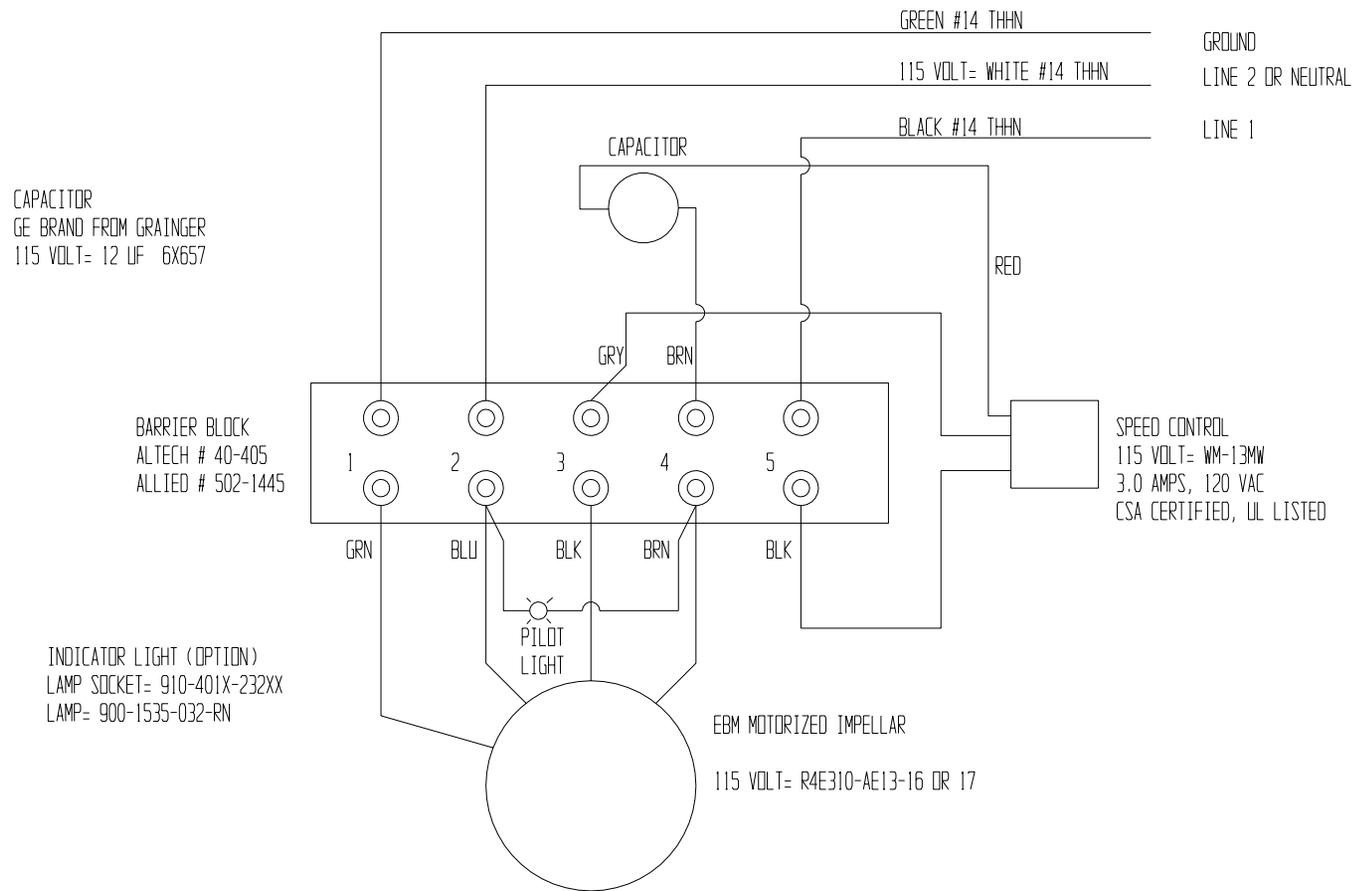
NOTES:

- ELECTRICAL TO MEET LATEST NEC CODES
- ELECTRICAL REQUIREMENT: 115 VOLT, 1 PHASE, 165 WATTS MAX
- UNIT TO BE CAPABLE OF PRODUCING AN AVERAGE AIRFLOW OF 650 CFM
- UNIT CAPABLE OF PRODUCING 90 FPM WITH A EXTERNAL STATIC OF 0.4 WC
- UNIT SOUND RATING OF 54 DBA WHEN SET AT 90 FPM AND MEASURED 36" FROM FACE GRILL
- UNIT ROOMSIDE SERVICABLE
- UNIT WEIGHT 70 LBS



DRAWN FOR:		HALCO PRODUCTS CO.		
		100 NO. GORDON STREET ELK GROVE, IL. 60007		
		TITLE AT2000-341100 FAN FILTER UNIT		
DRAWN BY	TM	SIZE	JOB NO.	DWG NO.
APPROVED BY		SCALE	1"=1"	DATE
				1715862B0
				10-6-09
				SHEET

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



DRAWN FOR STANDARD 115V	HALCO PRODUCTS CO. 100 NO. GORDON STREET ELK GROVE, IL. 60007		
	TITLE WIRING DIAGRAM: AT2000 FAN FILTER UNIT		
DRAWN BY DK	SIZE N/A	JOB NO. 2112268B0	REV
APPROVED BY	SCALE N/A	DATE 5/30/00	SHEET 2111028B0

CHAPTER 2

TABLE OF CONTENTS

COVER PAGE	
IMPORTANT SAFETY INSTRUCTIONS	
INSTALLATION.....	1
SEQUENCE OF OPERATION.....	1
TESTING & RECERTIFICATION.....	1
GENERAL MAINTENANCE.....	1
BLOWER	1
ROOMSIDE ACCESSIBLE SPEED CONTROL.....	1
PREFILTER.....	1
HEPA FILTER.....	2
HEPA FILTER REPLACEMENT.....	2
PARTS LIST.....	2
UNIT DRAWING# 1715862B0	
WIRING DRAWING# 2112268B0	
FILTER TEST REPORT	
MANUFACTURERS PARTS LITERATURE	

IMPORTANT SAFETY INSTRUCTIONS

READ AND SAVE THESE INSTRUCTIONS

- Read all of the instructions before operating this equipment.
- Pay particular attention to all safety precautions.
- Retain the instructions for future reference.

WARNING- TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

- a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

WARNING- TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

- a) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- b) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
- c) When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the manual accompanying the unit.

FAN FILTER UNIT

INSTALLATION:

- Set Fan Filter Unit in place.
- The electrical wiring to conform to the latest NEC standards. Customer to supply electrical power source of 115 volts, 1 phase and 60 hertz. Manufacturer recommends a 15-amp service for each. Refer to the electrical tag on unit to verify proper voltage, hertz and amperage. **Note:** When servicing unit please disengage unit from electrical power source.
- Turn blower switch to "on" position.
- Allow unit to purge for at least 30 minutes.

Note: If the module contains a **gel seal** HEPA filter and is hardwired the gel seal HEPA filter should not be installed until **after** the unit is wired.

TESTING & RECERTIFICATION:

Unit to meet ISO standard 14644-1 classification of air cleanliness.

The manufacturer recommends that recertification of the HEPA filter should be performed on at least a yearly basis to assure that the unit is working at its optimum performance.

GENERAL MAINTENANCE:

This model requires virtually no maintenance. The few elements, which do require attention, are readily accessible and take a minimum amount of time. Perform visual, electrical and mechanical inspections on a regular basis. This should be determined by the environment and frequency of use.



WARNING: Always disconnect primary power source before inspection or servicing unit.

BLOWER:

The backward curve AC impellers in the Fan Filter Units are designed for continuous operation and do not require maintenance. The backward curve AC impellers shall provide an air capacity of 800 cfm.

ROOMSIDE ACCESSIBLE SPEED CONTROL:

The filter/module is equipped with a roomside accessible speed control. Using a (slotted) screwdriver remove the well nut from the test port in the center divider of the HEPA filter face. Insert a (slotted) screwdriver into the opening (approx. 3") to adjust the speed control. Rotating the screwdriver clockwise will decrease the blower speed and rotating counter-clockwise will increase the blower speed. Once desired airflow has been achieved, replace the well nut.

PREFILTER:

The prefilters should be inspected weekly until a replacement cycle can be established. When contaminants begin to collect on the face of the prefilter, replace it with a new prefilter. The prefilter is located on the upper housing of the filter unit. It can be removed by sliding it out of its holding frame. **Note:** If contaminants are allowed to continuously collect on the prefilter the life of the HEPA filter.

FAN FILTER UNIT

HEPA FILTER:

The HEPA filter is capable of removing 99.99% of all particles 0.3 microns in size and larger. The average life of the HEPA filter is about two (2) to three (3) years, however, the life of the HEPA (or final) filter will depend on good prefilter maintenance and ambient conditions.

If the HEPA filter has an internal test port for DOP challenge to filter and seal to gain access to the test port, use a (phillips) screwdriver to remove well nut. When testing is completed, replace well nut.

Initially, the static pressure reading should be recorded. Should the pressure rise to twice the initial reading it is an indication that the HEPA filter is reaching its useful life. Periodically, check the static pressure reading. A more specific check is to periodically determine the airflow from the HEPA filter. Initially this will average 90 f.p.m. @ 6" from face of filter, +/-20 f.p.m, should the airflow drop to below 70 f.p.m, with the speed control on high; this would be an indication that the HEPA filter requires changing.

Note: The HEPA filter media is easily damaged please remember to handle the HEPA Filters carefully!

HEPA FILTER REPLACEMENT:

The HEPA filter is replaceable from roomside. To replace the HEPA filter for the Model# AT2000 (**RSR**):

- Disconnect unit from the power source.
- Remove the four (4) allen screws from the face of the HEPA filter.
- Pry from edge and carefully remove the HEPA filter and discard.
- To install new HEPA filter, carefully lift up filter making sure to align the speed control shaft with the port in the HEPA filter, that the (slotted) well nut is aligned with the speed control port and the (phillips) well nut is aligned with the filter test port.
- Replace the four (4) allen screws from the face of the HEPA filter and tighten down on the holding devices securely so as not to have the seal of the HEPA filter leak.
- Reconnect Fan Filter Unit to power source.

PARTS LIST ▪ MODEL# AT2000-3 (41100)

PART DESCRIPTION	PART NO.	MFG.	QTY.
Motorized Impeller 115V, 160W	R4E310-AE13-16	Ebm Pabst	1
Inlet Ring	9621-2-4013	Ebm Pabst	1
Capacitor 12.5mfd., 370vac	97F9003BX/6X657	GE	1
Speed Control (3.0Amps) 120vac	WM-13MW	Trivar	1
HEPA Filter 99.99% eff. on particles 0.3 micron size and large (gel seal)	H2145F99-BAAJCBJ	Atmos-Aire	1●◇
Prefilter 2-Ply poly	2P/1620-1	Tridim	1●‡

● MANUFACTURER RECOMMENDED STOCKING SPARE PARTS

◇ THE AVERAGE LIFE OF THE HEPA FILTER IS ABOUT TWO (2) TO THREE (3) YEARS, HOWEVER, THE LIFE OF THE HEPA (OR FINAL) FILTER WILL DEPEND ON GOOD PREFILTER MAINTENANCE AND AMBIENT CONDITIONS

CHAPTER 3

DAILY FILTER TEST REPORT

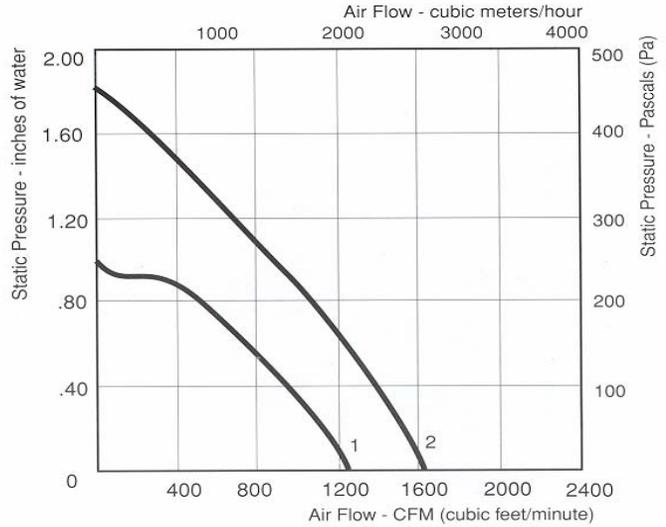
05/15/09

SERIAL #	JOB #	CUSTOMER	FILTER CODE	OPER. EQUIP			CHALLENGE	TEST				FILTER SIZE			PAK		PRES ACT		TEST EXPECT		LEAK SCAN TEST					PASS	FAIL	
				JB	LASER	PSL		SCALE	WIDTH	LENGTH	DEPTH	DPH	MEDIA	FRAME	PPI	FACT	PRES	CFM	VEL	PRES	DAMAGE CODE	DP	DH					
090515	25	SH362	Halco	H2145F99-BAAJCBJ	JB	LASER	PSL	0.1	21.93	45.93	4	2.75	HEPA	RGF	6	1.18	0.24	567	90	0.306	LP	LF	CB	DP	DH	PASS	FAIL	25

DAMAGE CODE KEY

LP = Leak repaired on pleated edge of urethane seal
 LF = Leak repaired on flat edge of urethane seal
 CB = Leak repaired on center board urethane seal
 DP = Damage repaired due to pleater or paper handling
 DH = Damage repaired due to filter handling
 << Highlighted areas indicate repair >>

310 & 355 Ø (12.2" & 14.0" Ø) Backward Curved AC Impellers

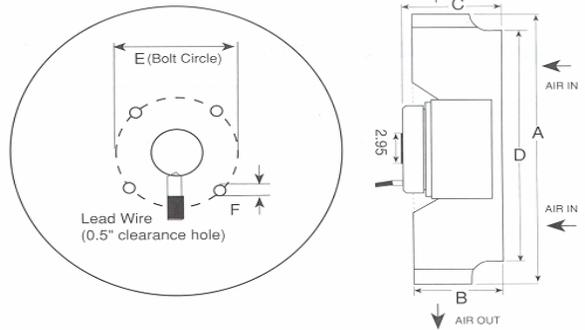


Curve Number	PART NUMBER	AC Volts	Hertz	Watts	CFM @ 0"	dBA	Temp. Max °C	Wgt. (lbs.)	Wiring Dgm.	Capacitor (µf)	Impeller Material
→ 1	R4E310-AE13-16	115	60	160	1265	68	60	8	A	12	Plastic
1	R4E310-AE05-16	230	50/60	165	1265	68	60	8	A	4	Plastic
1	R4E310-AE15-16	277	60	160	1265	68	60	8	A	3	Plastic
2	R4E355-AF13-09	115	60	270	1620	66	40	10	A	20	Plastic
2	R4E355-AF05-09	230	60	270	1620	66	40	10	A	6	Plastic

Impeller Dimensions [Inches (mm)]

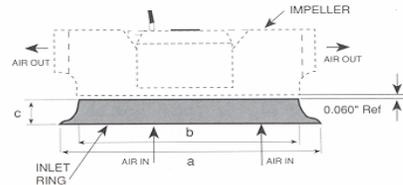
Type	A	B	C	D	E	F	Holes
R4E310-AE	12.20 (310)	5.20 (132)	6.06 (154)	7.87 (200)	3.54 (90)	M6	4 x 90°
R4E355-AF	13.98 (355)	5.87 (149)	6.54 (166)	9.33 (237)	3.54 (90)	M6	4 x 90°

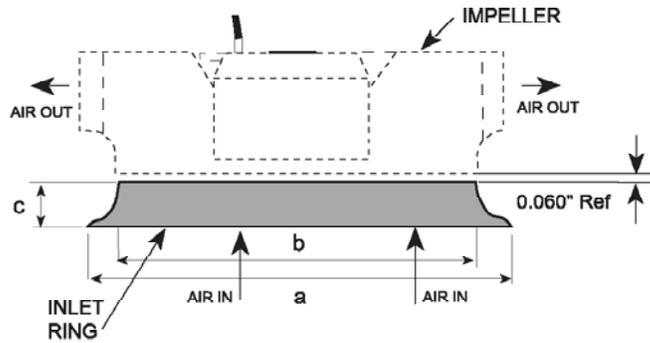
MOUNT DETAIL



Inlet Rings are recommended

Type	Inlet Ring #	a	b	c
R4E310	9621-2-4013	11.81 (300)	7.60 (193)	1.69 (43)
R4E355	51357-2-4013	13.78 (350)	8.82 (224)	2.36 (60)





Part Number	Impeller Number	Mixed-Flo Number	Max. Dimensions (inches)		
			a	b	c
9566-2-4013	133		5.08 (129)	3.43 (87)	0.51 (13)
9588-2-4013	175, 180 & 190		7.28 (185)	5.12 (130)	0.67 (17)
9609-2-4013	220		9.96 (253)	6.10 (155)	0.79 (20)
9597-2-4013	R1G225 R4E225-AR R2E225-BB		8.27 (210)	5.87 (149)	1.10 (28)
9607-2-4013	R4S225 R4E225-AC 250		8.78 (223)	6.57 (167)	0.87 (22)
9614-2-4013	280		10.04 (255)	7.40 (188)	0.98 (25)
→ 9621-2-4013	310		11.81 (300)	7.60 (193)	1.69 (43)
51357-2-4013	355		13.78 (350)	8.90 (226)	2.36 (60)
IR/265497	RH28M		10.43 (265)	7.09 (180)	1.69 (43)
IR/265498	RH31M		11.81 (300)	7.56 (192)	2.09 (53)
IR/265499	RH35M		13.19 (335)	8.98 (228)	2.28 (58)
IR/265500	RH40M	RM35D	14.72 (374)	10.12 (257)	2.60 (66)
IR/265501	RH45M	RM40D	15.94 (405)	11.38 (289)	2.80 (71)
IR/265502	RH50M	RM45D	17.72 (450)	12.80 (325)	3.11 (79)
IR/265503	RH56M	RM50D	19.88 (505)	14.33 (364)	3.43 (87)
IR/265504	RH63M	RM56D	22.05 (560)	16.14 (410)	3.74 (95)
IR/265505	RH71M		25.00 (635)	18.11 (460)	4.17 (106)



No. 6X653



Oval 370 & 440 Volt Run Capacitors

Operate in temperatures of -40°F to 156°F (-40°C to 70°C) with microfarad values within ±6% of nominal rating. Hermetically sealed aluminum case with turnplate steel cover.

1/4" male quick-connect terminals. Phenolic insulating bushings. Individually cartoned.

Uses: Air conditioners and refrigerators.

MFD Rating	Depth	Dimensions (In.)		Height	E.I.A. UL Base	GE Model	Stock No.
370VAC OVAL							
2	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5502BX	6X650
3	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5503BX	6X651
4	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5704BX	6X652
5	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5705BX	6X653
6	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5706BX	6X654
7.5	1 1/8	2 1/8	2 1/8	2 1/8	A	97F9001BX	6X655
10	1 1/8	2 1/8	2 1/8	2 1/8	A	97F9002BX	6X656
12.5	1 1/8	2 1/8	2 1/8	3 1/8	A	97F9003BX	6X657
15	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9121BX	6X658
17.5	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9601BX	6X659
20	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9603BX	6X660
25	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9607BX	6X661
30	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9609BX	6X662
35	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9612BX	6X663
40	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9615BX	6X664
45	2	3 1/8	2 1/8	2 1/8	D	97F9618BX	5X432
50	2	3 1/8	2 1/8	2 1/8	D	97F9622BX	5X433
15/5	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9437BX	4X760
17.5/5	1 1/8	2 1/8	2 1/8	2 1/8	C	97F5474BX	4X762
20/5	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9673BX	4X764
25/5	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9675BX	4X766
30/5	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9681BX	4X767
35/5	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9796BX	4X768
440VAC OVAL							
4	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5337BX	4M988
5	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5339BX	4M989
6	1 1/8	2 1/8	2 1/8	2 1/8	A	97F5436BX	4M990
7.5	1 1/8	2 1/8	2 1/8	2 1/8	A	97F9036BX	4M875
10	1 1/8	2 1/8	2 1/8	3 1/8	A	97F5300BX	6X665
15	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9627BX	6X666
17.5	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9629BX	6X667
20	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9631BX	6X668
25	1 1/8	2 1/8	2 1/8	2 1/8	C	97F9633BX	6X669
30	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9637BX	6X670
35	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9638BX	6X671
40	1 1/8	2 1/8	2 1/8	3 1/8	C	97F9641BX	6X672
45	2	3 1/8	3 1/8	3 1/8	D	97F9644BX	5X434
50	2	3 1/8	3 1/8	3 1/8	D	97F5320BX	4X758
55	2	3 1/8	4 1/8	4 1/8	D	97F9084BX	5X435

UL recognized by type number: (*) Type P921, (†) Type P923, (‡) Type P924.

Oval or Round Capacitor Accessories

KBWC

Wall-Mount Series

Solid-State

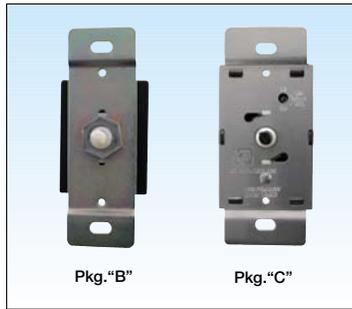
Variable Speed AC Motor Controls

**For Use with Shaded Pole,
Permanent Split Capacitor (PSC)
and Universal Motors**

Ratings: 2.5 thru 15.0 Amps
115 and 230 VAC – 50/60 Hz

TYPICAL APPLICATIONS

- Fans • Fireplace Blowers • Humidifiers • Air Conditioners
- Ceiling Fans • Attic Fans
- Ventilators • Range Hoods



STANDARD FEATURES

- Built-In On/Off AC Line Switch
- Minimum Speed Trimptot
- RFI Filter (Provides RFI and EMI Suppression)
- All Models Mount in a Standard 2" x 4" Electrical Wall Box
- Agency Approvals*
 - UL Listing / Recognition
 - CSA Certified
 - ISO-9001: 2000 QMS Certified

OPTIONAL FEATURES (See Options Table)

- Custom Packaging
- Special Lead Lengths, Colors, and Terminations

DESCRIPTION

The KBWC Series is a comprehensive line of motor speed controls for air-moving applications that utilize Shaded Pole, Permanent Split Capacitor (PSC), and AC/DC motors. These economical speed controls are designed to replace obsolete, tapped winding, or reactive methods of speed control. The full-wave phase control circuitry minimizes power loss, thereby reducing energy requirements. The controls provide infinitely variable speed adjustment which allows the end-user to select the desired level of air volume. These models cover a wide range of current ratings (2.5 - 15 Amps AC) and voltage ratings (115, 230, 277 Volts AC).

Important features, such as RFI Filter, Minimum Speed Trimptot, and built-in On/Off Line Switch are standard. These speed controls are available as bulk packaged or in distributor type packaging with accessories such as: knob, dial plate, mounting hardware, instructions, and individual carton. All models are designed to be mounted into a standard 2" X 4" electrical wall box.

OPTIONS (Add Suffix to Model No.)

Suffix	Description	Example
C	Omits mounting tabs (KBWC-16 only).	KBWC-16C
F	Adds Built-In Fuse (not available for Model KBWC-23NS).	KBWC-15F
K	Mounting Kit: Includes individual packaging with dial plate, knob, mounting screws, wire connectors, and instructions. Supplied standard on all models rated 8 Amps and above.	KBWC-15K
L	Adds auxiliary lead (3-wire control).	KBWC-15L
4L	Adds DPDT On/Off Switch (4-wire control) (Model KBWC-25 only).	KBWC-25 (4L)
NS	Omits On/Off Switch.	KBWC-15NS
R	Reverses control output from standard rotation. Standard: Controls with On/Off Switch – Off to High to Low. Controls without On/Off Switch (suffix "NS") – Low to High.	KBWC-15R

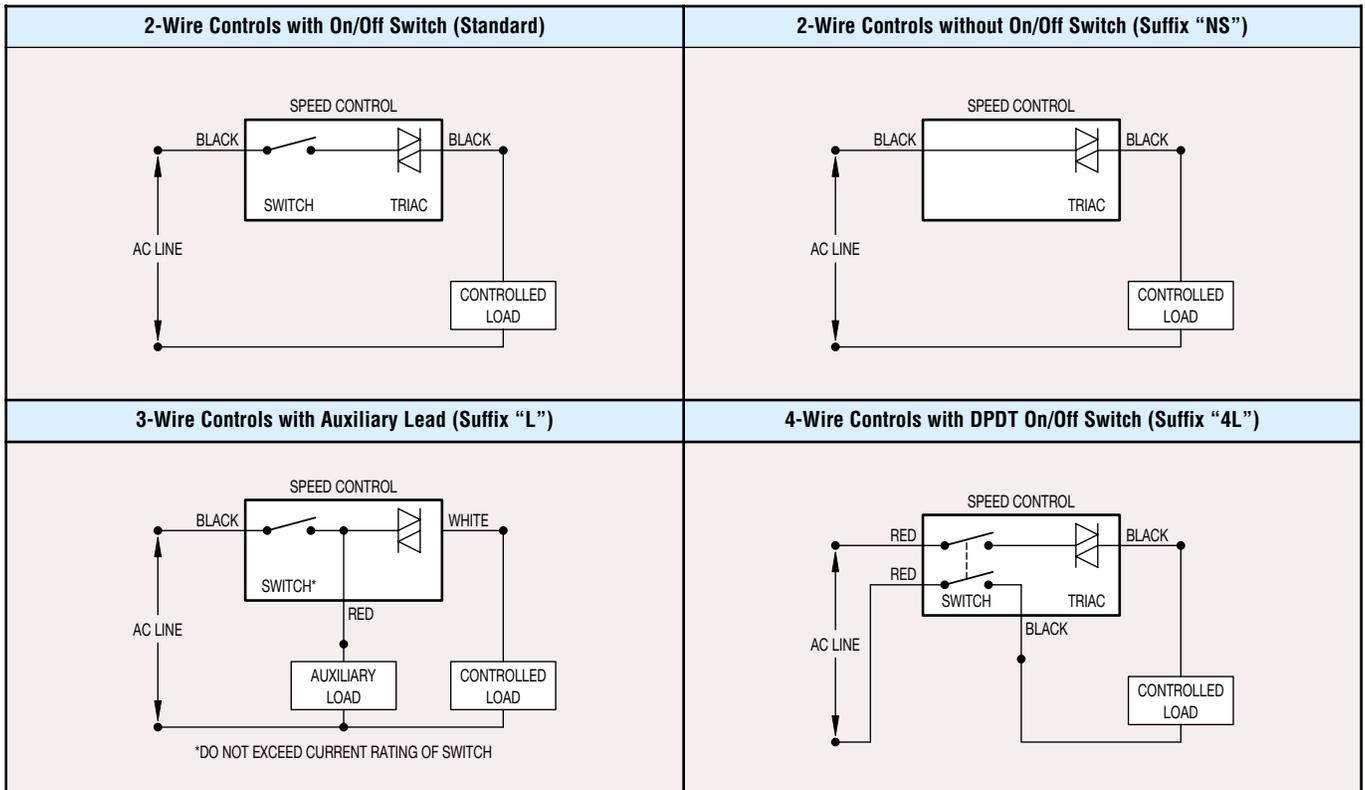
Note: *See Electrical Ratings table for agency approvals by Model No.

ELECTRICAL RATINGS AND AGENCY APPROVALS

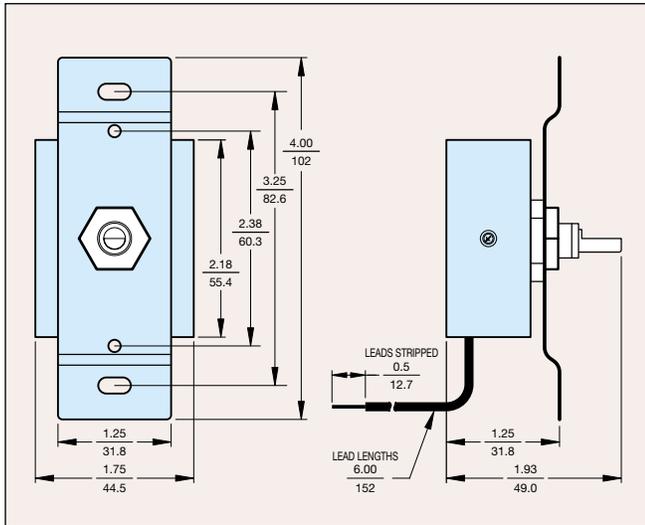
Model No.	AC Line Input Voltage (Volts AC – 50/60 Hz)	Maximum Current Rating (Amps RMS)	Ambient Temperature (°C)	Agency Approvals			Package Type
							
KBWC-13	115	2.5	25	✓		✓	B
KBWC-15	115	5	40		✓	✓	C
KBWC-16	115	6	25	✓			C
KBWC-18K ¹	115	8	40		✓	✓	D
KBWC-110K ¹	115	10	25	✓		✓	D
KBWC-110K ¹	115	10	40		✓	✓	E
KBWC-112K ¹	115	12	40				E
KBWC-115K ¹	115	15	25	✓			E
KBWC-23 ²	230	2.5	25	✓			B
KBWC-25 ³	230	5	40	✓			C
KBWC-26	230	6	25				C
KBWC-28K ¹	230	8	40			✓	D
KBWC-210K ¹	230	10	40				E
KBWC-212K ¹	230	12	40				E
KBWC-215K ¹	230	15	25				E
KBWC-35	277	5	25	✓			C
KBWC-36	277	6	25				C
KBWC-38K ¹	277	8	25				D
KBWC-310K ¹	277	10	25				D
KBWC-312K ¹	277	12	25				E
KBWC-315K ¹	277	15	25				E

Notes: 1. Models rated 8 Amps and above include Mounting Kit (suffix "K"). 2. Only model containing suffix "NS" is UL Recognized. 3. Only Model KBWC-25 (4L) is UL Recognized. 4. The maximum Locked Rotor current for UL listed controls is 6 times the Maximum Current Rating.

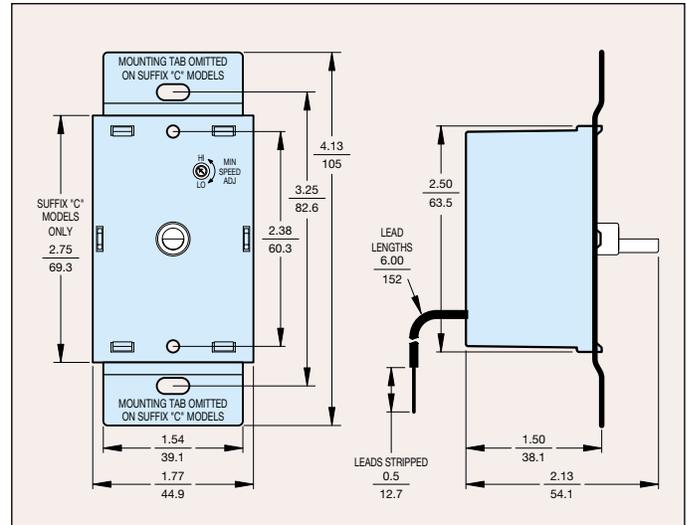
CONNECTION DIAGRAMS



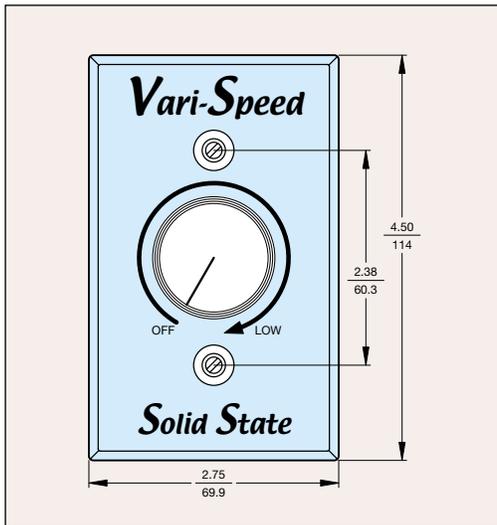
KBWC-13, 23 (Pkg. B)
Mechanical Specifications (Inches/mm)



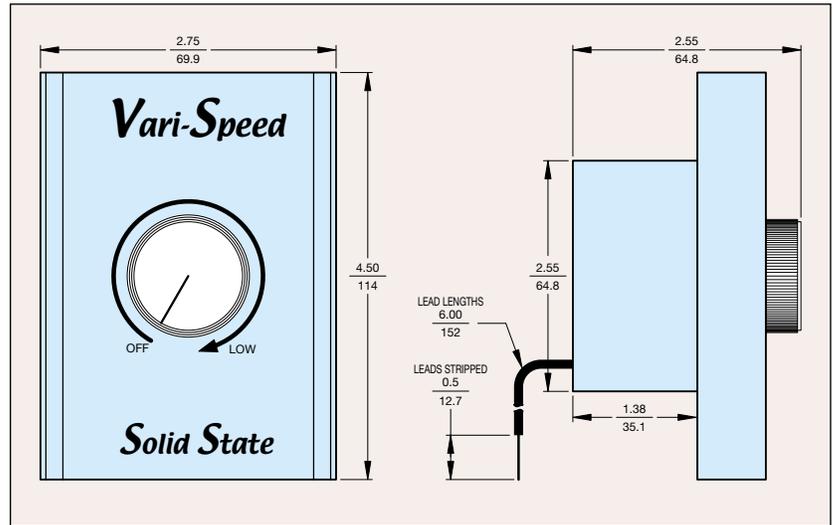
KBWC-15, 16, 25, 26, 35, 36 (Pkg. C)
Mechanical Specifications (Inches/mm)



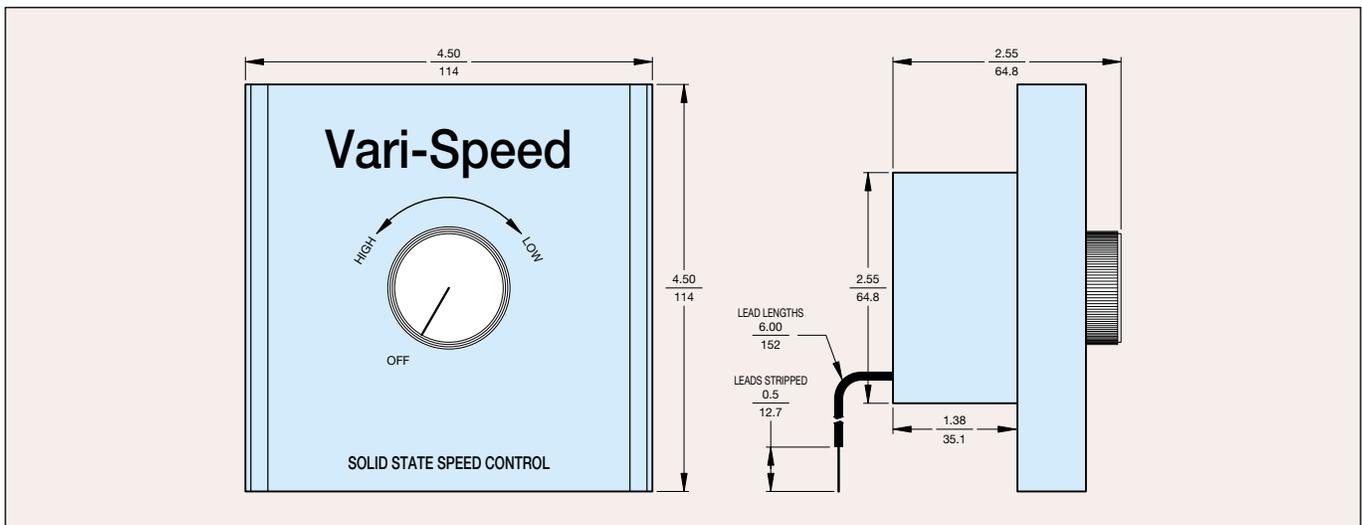
Dial Plate and Knob Kit (Suffix "K")
Mechanical Specifications (Inches/mm)



KBWC-18K, 110K, 28K, 38K, 310K (Pkg. D)
Mechanical Specifications (Inches/mm)



KBWC-110K, 112K, 115K, 210K, 212K, 215K, 312K, 315K, (Pkg. E)
Mechanical Specifications (Inches/mm)



CHAPTER

4

FILTER SELECTION CODE

<p>MEDIA GRADE: H - HEPA U - ULPA</p> <p>FILTER WIDTH & LENGTH: WxL 12X12 12X18 12X24 18X24 24X24 24X30 24X36 24X48 24X60 24X72 30X30 30X36 30X48 30X60 30X72 36X36 36X48 36X60 36X72</p> <p>FILTER DEPTH: A - 3 B - 3-1/2 C - 5-7/8</p> <p>FILTER WIDTH & LENGTH DECIMAL: 0 - 0 1 - 1/8 2 - 1/4 3 - 3/8 4 - 1/2 5 - 5/8 6 - 3/4 7 - 7/8 8 - 5/16 9 - 3/16</p> <p>PACK DEPTH: A - 2 B - 2-3/4 C - 4</p>	<p>H 12x12 A O O B A A A A B A</p>	<p>TYPE OF FILTER: A - Panel</p> <p>FACE GRILL TYPE: A - None B - White expanded d/s C - Anodized Perforated d/s</p> <p>CENTER BOARD & PORTS: A - None B - 1 Center board C - 1 C/B with ports D - 2 Center boards</p> <p>SEAL TYPE: A - Downstream gasket B - Upstream gasket C - Up & downstream gasket D - Knife edge E - Gel seal F - None</p> <p>TYPE OF FRAME: A - Extruded Aluminum B - Wood C - Galvanneal D - Stainless</p> <p>PAPER EFFICIENCY: A - 99.99% C - 99.9995%</p>
--	--	---

FILTER SPECIFICATIONS:

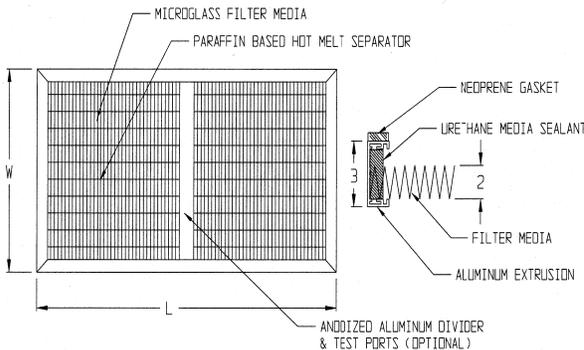
The HEPA-"High Efficiency Particulate Air" filter is tested for efficiency and certified to be 99.99% efficient in 0.3 micron particles in size.

The ULPA-"Ultra Low Penetration Air" filter is tested for efficiency and certified to be 99.9995% efficient in .12 micron particles in size.

Rolls of borosilicate micro fiber filter medium are pleated with continuous narrow beads of hot melt compound to create the filter media pack. The miniplet type media pack provides for a lighter, more compact, more efficient filter. Each filter is factory tested and certified for efficiency and airflow resistance at the test flow rate. All filters can be scan tested for leak detection in accordance with IES-RP-CC-001.3.

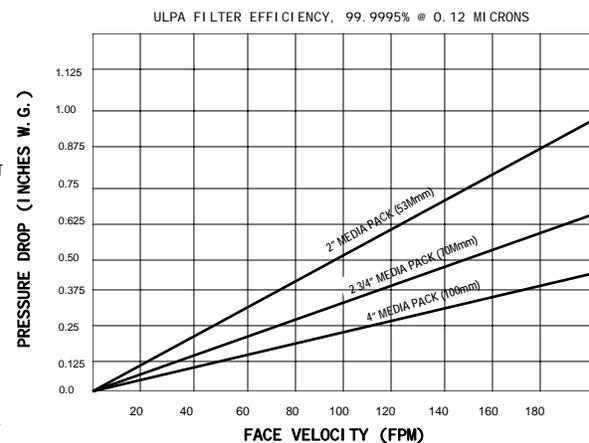
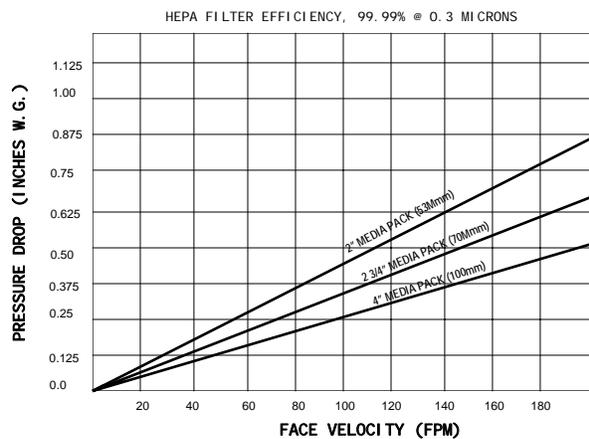
Various types of framing are including extruded anodized aluminum, wood (particleboard), galvanneal steel and stainless steel. Frames are available with a closed-cell neoprene gasketing, gel or a knife-edge seal. Face grills are available to protect the filter media from damage.

Centerboards with an air sampling port are available when the static pressure and contamination levels of the filter need to be monitored.



NOTES:
-FILTER MANUFACTURED TO MEET I.E.S. SPECIFICATIONS
-FILTER IS CHALLENGED WITH POLYSTYRENE LATEX SPHERES ("PSL")

PRESSURE DROP VS. FACE VELOCITY



CHAPTER

5



HALCO PRODUCTS COMPANY

100 N. Gordon St. Elk Grove Village, IL 60007-1193
Phone (847) 956-1600 Fax (847) 956-0595
E-mail: info@halco-products.com
Website: www.halco-products.com

WARRANTY

HALCO PRODUCTS COMPANY warrants that the workmanship, materials, and construction of this item is free of manufacturing defects. This item and its associated systems are such that if operated and maintained in accordance with the manual supplied by **HALCO PRODUCTS COMPANY**, it will meet all contract specifications for a period of one (1) year from date of delivery. This warranty shall not apply to replaceable items such as filters or light bulbs, or if the equipment is subject to misuse, accident, negligence, or lack of proper maintenance. Electrical motors and blowers and pre-manufactured items are subject to manufacturers' guarantees.

CUSTOMER: _____

ADDRESS: _____

P.O. # : _____ INVOICE # : _____ SERIAL # : _____

MODEL #: _____ SIZE: _____

START-UP DATE: _____ INSPECTED BY: _____ DATE: _____

WARRANTY REGISTRATION CARD

Please return this card within 30 days of delivery

Customer: _____

Address: _____

P.O.#: _____ Invoice #: _____ Serial #: _____

Model #: _____ Start-Up Date: _____

Sizes: _____ Customer Inspector: _____ Date: _____