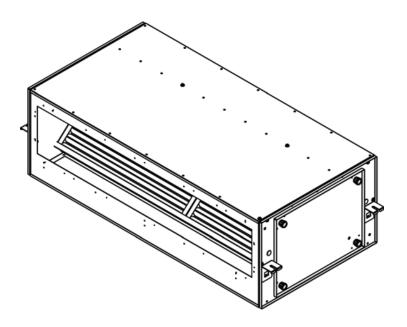


MICROMETL HIGH EFFICIENCY FILTER BOX ENGINEERING MANUAL



For LG High Static Ducted Indoor Units

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Variable Refrigerant Flow (VRF) Technology

In the early 1980s, VRF technology was introduced to the world as an alternative method of cooling and heating in commercial structures designed to minimize energy consumption. VRF systems have become the system of choice for designers internationally because these systems offer better comfort at substantially lower operating costs when compared to traditional HVAC systems. Older

systems are being replaced with newer more efficient systems making VRF a viable option. Today, VRF is gaining popularity in the United States. LG air-source systems offer the opportunity to eliminate ductwork in the same configuration. The systems offer zoning without the need for zone damper systems. The advanced controls provide exceptional building dehumidification and temperature control and can rapidly adapt system operating parameters to the ever changing building load.

Quality Commitment

LG is committed to the success of every Multi V project by providing the best industry technical support during project engineering, installation, and commissioning. LG offers a variety of classes designed for engineers, architects, installers, and servicers on Multi V installation. Classes are conducted at LG's training centers and in field locations at various times throughout the year and upon special request.





MULTI V.



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FEATURES & BENEFITS

Air Technology Products

- Washable/Reusable Filters
- MicroMetl High Efficiency Filter Boxes
- Air Cleaners

Washable/Reusable Filters

LG provides washable, long life, resin-mesh filters from the factory on all high static ducted indoor units.

MicroMetl High Efficiency Filter Boxes

Choose the quality particulate removal that is right for you. LG's line of high capacity filter boxes manufactured by MicroMetl are engineered to accept any brand of standard MERV rated particulate filters. Filter boxes are designed for use with LG's line of high static ducted indoor units.

Air Cleaners

Lead the industry's move from simple filtration to state-of-the-art air cleaning.

When simple medium - large size particulate filtration is not enough, LG offers two models of low profile high performance air cleaners. Going beyond MERV 13 performance, with Environmental Dynamics, Ltd., LG has raised the bar and set a new standard for delivering clean air for VRF applications. In addition to removing MERV 13 size particulate, LG's air cleaners also capture ultra fine $0.1 \ \mu m - 0.3 \ \mu m$ particulate and dangerous gas-phase contaminants such as volatile organic compounds, vehicle exhaust, smoke, and various biological contaminants.

With a nearly negligible air pressure drop over the life of the filter the air cleaner will provide years of service between media changes.

For more information on our all our air technology products go to www.lg-vrf.com, select Multi-V Products and then select Air Technologies.

Filter Box Features

Generous filter surface area

- Extends filter life
- · Quiet low face velocity
- · Minimizes fan energy consumption

Quality construction

- · 20-gauge galvanized steel
- · Gasketed panel construction
- Gasketed access panel

Versatile Design

- Multiple configurations accommodate all ducted applications
- Horizontal Discharge engineered to connect directly to the indoor unit

Filter is field provided - you choose the MERV rating

- Engineered to accommodate all industry standard MERV rated filters
- Accepts standard size cartridge filters
- 1 or 2-inch deep on boxes less than 4-ton nominal capacity
- 2-inch deep for boxes ≥ 4-ton nominal capacity

Easy Installation

- Inlet flange connection
- · Four hanger brackets
- · Quick-mate connection with all High Static Ducted indoor units
- Pre-drilled matching holes accept field provided #8-#10 self-tap screws

Easy Filter Maintenance Access

- Door on the right side (standard), left side (optional)
- · Removable gasketed access panel with safety lanyard
- \bullet Quick release, tool-less, $1\!\!\!/_2$ turn thumb wheel catches
- Filter removal pull strip provides easy filter removal without disturbing captured particulate





UNIT NOMENCLATURE

	z	FBX	BH	01	Α
Family Z = Accessory	↑	Î	Î	1	Î
Type FBX = Filter Box					
Primary Descriptor (nominal size by indoor un BH = High Static Ducted 7 BG = High Static Ducted 1	-24 Mbh E	3R = High Static D 38 = High Static Du			
Design Number 01 - 99					
Product Revision — A-Z					

Configuration Options*

Right Side Filter Access Panel

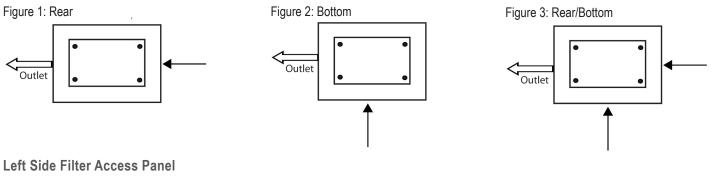
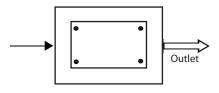
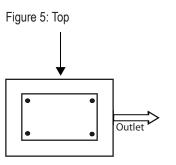


Figure 4: Rear



*All changes are applied in the field. No factory configuration options available.



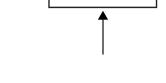
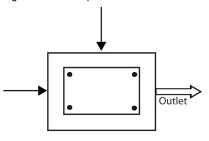


Figure 6: Rear/Top







High Efficiency Filter Box ZFBXBH01A, ZFBXBG01A, ZFBXBR01A, ZFBB801A

Table 1: MicroMetl High Efficiency Filter Box General Data

Туре				
	ZFBXBH01A	ZFBXBG01A	ZFBXBR01A	ZFBXB801A
Nom Dimensions W x D x H	40 x 22 x 13	45 x 22 x 14	47-9/16 x 31-1/16 x 17-1/2	57-7/8 x 28 x 20-5/8
Return Duct Connection (in)	1/2 Flange	1/2 Flange	1/2 Flange	1/2 Flange
Hanger Quantity	4	4	4	4
Net Weight (lbs)	43	50	63	72
Shipping Weight ¹ (lbs)	Not Available	Not Available	Not Available	Not Available
Air Flow Range (CFM)	247-646	915-1218	1176-1582	2260-2542
Nominal Face Velocity (FPM)	64-166	183-244	147-198	283-318
Filters	Field Supplied	Field Supplied	Field Supplied	Field Supplied
Nominal Depth ² (in)	1 & 2	1 & 2	2	2
Filter Quantity & Size (in)	2 -14 x 20	1 - 16 x 20 1- 16 x 25	2 - 24 x 24	2 - 24 x 24
Nominal Face Area (ft2)	3.89	5.0	8.0	8.0

¹Filter boxes are shipped in quantity by project. Individual box shipping weight is not available.

²The FBXBH01A and FBXBG01A models ship configured to accept 1-inch deep filter. Boxes are field convertible to accept 2-inch. Refer to the High Static Ducted Indoor Unit Installation Manual for conversion procedure.

Table 2: LG High Static Ducted Indoor Unit Match Matrix

Model	ARNU073BHA2	ARNU093BHA2	ARNU123BHA2	ARNU153BHA2	ARNU153BGA2	ARNU183BHA2	ARNU183BGA2	ARNU243BHA2	ARNU243BGA2	ARNU283BGA2	ARNU363BGA2	ARNU483BRA2	ARNU543BRA2	ARNU763B8A2	ARNU963B8A2
FBXBH01A	Х	Х	Х	Х		Х		Х							
FBXBG01A					Х		Х		Х	Х	Х				
FBXBR01A												Х	Х		
FBXB801A														Х	Х





Fan Setting Data

MERV-7 Filters

			High Mode/High Fan Speed			MERV-7							
Filter		Filter Box		e/migit Fai	i Speeu		1 Inch Deep		2 Inch Deep				
Box Model	Box LG Indoor		Total Static Pressure	Fan Setting Value¹	Design Airflow (CFM)	APD w/ Clean Filters	ESP available for field use	Dirty Filter Cond. ∆ APD	APD w/ Clean Filters	ESP available for field use	Dirty Filter Cond. ∆ APD		
	ARUN073BHA2	3.9	0.47	137	300	0.054	0.166	0.250	0.052	0.168	0.250		
₹	ARNU093BHA2	3.9	0.47	141	353	0.068	0.152	0.250	0.064	0.156	0.250		
H01	ARNU123BHA2	3.9	0.47	146	424	0.089	0.131	0.250	0.081	0.139	0.250		
FBXBH01A	ARNU153BHA2	3.9	0.47	150	477	0.105	0.115	0.250	0.094	0.126	0.250		
ш	ARNU183BHA2	3.9	0.47	150	547	0.128	0.092	0.250	0.112	0.108	0.250		
	ARNU243BHA2	3.9	0.47	150	646	0.163	0.057	0.250	0.139	0.081	0.250		
	ARNU153BGA2	5.0	0.62	139	487	0.083	0.287	0.250	0.048	0.322	0.250		
₹	ARNU183BGA2	5.0	0.62	141	537	0.093	0.277	0.250	0.055	0.315	0.250		
FBXBG01A	ARNU243BGA2	5.0	0.62	111	671	0.122	0.248	0.250	0.074	0.296	0.250		
BXE	ARNU283BGA2	5.0	0.55	160	915	0.178	0.122	0.250	0.114	0.186	0.250		
	ARNU363BGA2 ²	5.0	0.47	160	1141	0.241	0.000	0.229	0.158	0.062	0.212		
	ARNU423BGA2		No	ot Available	;	Not Available			0.174	0.000	0.000		
FBXBR01A	ARNU483BRA2		Not Ava	ilable			Not Available		0.138	0.392	0.000		
FBXE	ARNU543BRA2		Not Ava	ilable		Not Available			0.169	0.201	0.000		
FBXB801A	ARNU763B8A2		Not Ava	ilable		Not Available			0.198	0.472	0.000		
FBXE	ARNU963B8A2		Not Ava	ilable			Not Available			0.320	0.000		

Table 3: MicroMetl High Efficiency Filter Box Air Pressure Drop (in-wg) with MERV-7 Filters

¹ Modifying the fan speed may impact the cataloged sound rating. ² 0.00 in-wg external static pressure applications only. Air pressure drop information provided should not be used for system design. LG Electronics does not endorse any brand or model of particulate filter cartridges. Filters used during air pressure drop testing were chosen at random based on what was available at that time. Air pressure drop tests conducted using Air Handler brand filters - www.grainger.com manufactured for Dayton Electric Mfg. Company, Niles IL

1" and 2" MERV-7, MERV-11 Standard Capacity Model 1" and 2" MERV-13 Green Pleat Model

When specifying a brand or model of filter, always refer to the filter manufacturer's air pressure drop technical data to specify clean and change filter air pressure drop conditions.



Fan Setting Data

MERV-11 Filters

				I \	0/	MERV-11							
Filter	Iter Filter Box			de/High Fa	n Speed		1 Inch Deep)	2 Inch Deep				
Box Model	LG Indoor Unit Model	Face Area	Total Static Pressure	Fan Setting Value ¹	Design Airflow (CFM)	APD w/ Clean Filters	ESP available for field use	Dirty Fil- ter Cond. ∆ APD	APD w/ Clean Filters	ESP available for field use	Dirty Filter Cond. ∆ APD		
	ARUN073BHA2	3.9	0.47	137	300	0.048	0.172	0.250	0.036	0.184	0.250		
A	ARNU093BHA2	3.9	0.47	141	353	0.060	0.160	0.250	0.047	0.173	0.250		
3H0	ARNU123BHA2	3.9	0.47	146	424	0.078	0.142	0.250	0.064	0.156	0.250		
FBXBH01A	ARNU153BHA2	3.9	0.47	150	477	0.093	0.127	0.250	0.077	0.143	0.250		
LL L	ARNU183BHA2	3.9	0.47	150	547	0.115	0.105	0.250	0.095	0.125	0.250		
	ARNU243BHA2	3.9	0.47	150	646	0.148	0.072	0.250	0.121	0.099	0.250		
	ARNU153BGA2	5.0	0.62	139	487	0.065	0.305	0.250	0.036	0.334	0.250		
A	ARNU183BGA2	5.0	0.62	141	537	0.074	0.296	0.250	0.042	0.328	0.250		
FBXBG01A	ARNU243BGA2	5.0	0.62	111	671	0.099	0.271	0.250	0.058	0.312	0.250		
BXE	ARNU283BGA2	5.0	0.55	160	915	0.150	0.150	0.250	0.095	0.205	0.250		
LL L	ARNU363BGA2 ²	5.0	0.47	160	1141	0.205	0.000	0.265	0.137	0.083	0.250		
	ARNU423BGA2		1	Not Available	;	Not Available			0.153	0.000	0.237		
FBXBR01A	ARNU483BRA2		Not Av	ailable		Not Available			0.107	0.423	0.250		
FBXE	ARNU543BRA2		Not Available				Not Available			0.237	0.250		
FBXB801A	ARNU763B8A2		Not Available				Not Available			0.514	0.250		
FBXE	ARNU963B8A2		Not Av	ailable		Not Available			0.219	0.371	0.250		

Table 4: MicroMetl High Efficiency Filter Box Air Pressure Drop (in-wg) with MERV-11 Filters

¹ Modifying the fan speed may impact the cataloged sound rating.
² 0.00 in-wg external static pressure applications only.
Air pressure drop information provided should not be used for system design. LG Electronics does not endorse any brand or model of particulate filter cartridges. Filters used during air pressure drop testing were chosen at random based on what was available at that time. Air pressure drop tests conducted using Air Handler brand filters - www.grainger.com manufactured for Dayton Electric Mfg. Company, Niles IL

1" and 2" MERV-7. MERV-11 Standard Capacity Model

1" and 2" MERV-13 Green Pleat Model

When specifying a brand or model of filter, always refer to the filter manufacturer's air pressure drop technical data to specify clean and change filter air pressure drop conditions.

MULTI V.



Fan Setting Data

MERV-13 Filters

						MERV-13							
Filter	Filter			de/High Far	i Speed		1 Inch Deep)	2 Inch Deep				
Box Model	Box LG Indoor	Box Face Area	Total Static Pressure	Fan Setting Value ¹	Design Airflow (CFM)	APD w/ Clean Filters	ESP available for field use	Dirty Filter Cond. ∆ APD	APD w/ Clean Filters	ESP available for field use	Dirty Filter Cond. ∆ APD		
	ARUN073BHA2	3.9	0.47	137	300	0.077	0.143	0.250	0.048	0.172	0.250		
₹	ARNU093BHA2	3.9	0.47	141	353	0.094	0.126	0.250	0.060	0.160	0.250		
FBXBH01A	ARNU123BHA2	3.9	0.47	146	424	0.118	0.102	0.250	0.078	0.142	0.250		
BXB	ARNU153BHA2	3.9	0.47	150	477	0.137	0.083	0.250	0.093	0.127	0.250		
	ARNU183BHA2	3.9	0.47	150	547	0.163	0.057	0.250	0.115	0.105	0.250		
	ARNU243BHA2	3.9	0.47	150	646	0.202	0.018	0.250	0.148	0.072	0.250		
	ARNU153BGA2	5.0	0.62	139	487	0.090	0.280	0.250	0.053	0.317	0.250		
1⊳	ARNU183BGA2	5.0	0.62	141	537	0.101	0.269	0.250	0.060	0.310	0.250		
3G0	ARNU243BGA2	5.0	0.62	111	671	0.132	0.238	0.250	0.081	0.289	0.250		
FBXBG01A	ARNU283BGA2	5.0	0.55	160	915	0.192	0.108	0.250	0.123	0.177	0.250		
	ARNU363BGA2 ²	5.0	0.47	160	1141	0.258	0.000	0.212	0.169	0.051	0.250		
	ARNU423BGA2		1	Not Available	,	Not Available			0.186	0.000	0.204		
FBXBR01A	ARNU483BRA2		Not Av	ailable		Not Available			0.150	0.380	0.250		
FBXE	ARNU543B8A2		Not Av	ailable			Not Available	9	0.196	0.174	0.250		
FBXB801A	ARNU763B8A2		Not Av	ailable		Not Available			0.209	0.461	0.250		
FBXE	ARNU963B8A2		Not Av	ailable			Not Available			0.293	0.250		

Table 5: MicroMetl High Efficiency Filter Box Air Pressure Drop (in-wg) with MERV-13 Filters

¹ Modifying the fan speed may impact the cataloged sound rating.

² 0.00 in-wg external static pressure applications only. Air pressure drop information provided should not be used for system design. LG Electronics does not endorse any brand or model of particulate filter cartridges. Filters used during air pressure drop testing were chosen at random based on what was available at that time. Air pressure drop tests conducted using Air Handler brand filters - www.grainger.com manufactured for Dayton Electric Mfg. Company, Niles IL

1" and 2" MERV-7, MERV-11 Standard Capacity Model

1" and 2" MERV-13 Green Pleat Model

When specifying a brand or model of filter, always refer to the filter manufacturer's air pressure drop technical data to specify clean and change filter air pressure drop conditions.



PERFORMANCE DATA

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ZFBXBH01A, ZFBXBG01A

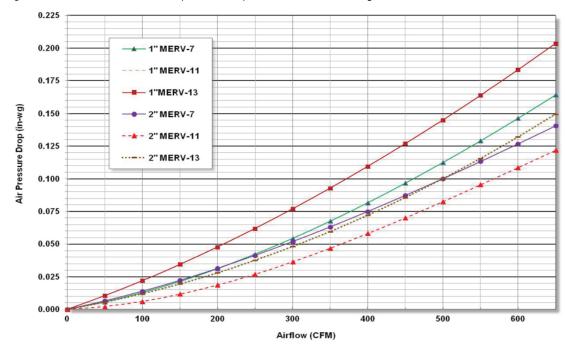
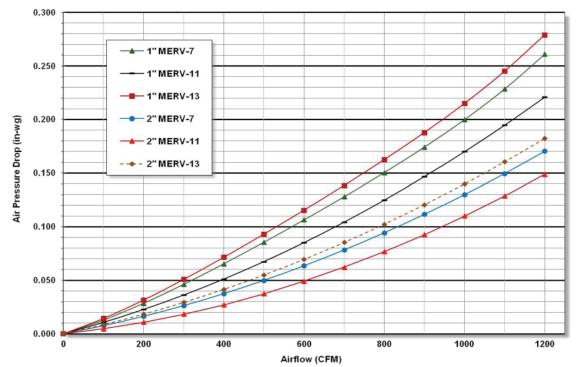


Figure 1: ZFBXBH01A Filter box air pressure drop with various filter cartridges

Figure 2: ZFBXBG01A Filter box air pressure drop with various filter cartridges



Air pressure drop information provided should not be used for system design. LG Electronics does not endorse any brand or model of particulate filter cartridges. Filters used during air pressure drop testing were chosen at random based on what was available at that time. Air pressure drop tests conducted using Air Handler brand filters - www.grainger.com manufactured for Dayton Electric Mfg. Company, Niles IL

1" and 2" MERV-7, MERV-11 Standard Capacity Model

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PERFORMANCE DATA

ZFBXBR01A, ZFBXB801A

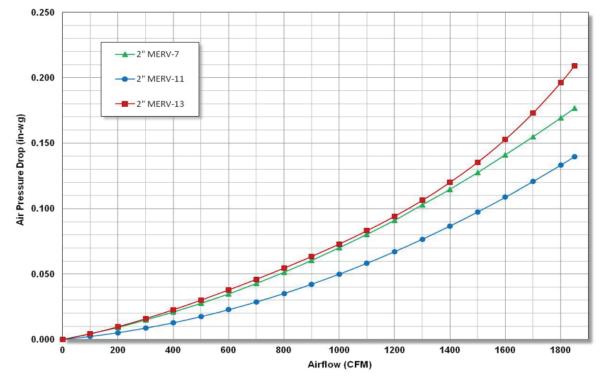
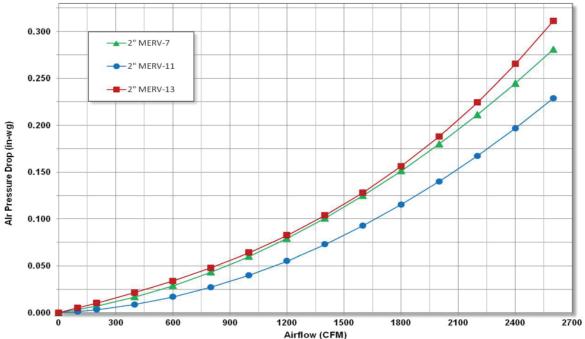


Figure 3: ZFBXBR01A Filter box air pressure drop with various filter cartridges

Figure 4: ZFBXB801A Filter box air pressure drop with various filter cartridges



Airflow (CFM) Air pressure drop information provided should not be used for system design. LG Electronics does not endorse any brand or model of particulate filter cartridges. Filters used during air pressure drop testing were chosen at random based on what was available at that time. Air pressure drop tests conducted using Air Handler brand filters - www.grainger.com manufactured for Dayton Electric Mfg. Company, Niles IL

1" and 2" MERV-7, MERV-11 Standard Capacity Model 1" and 2" MERV-13 Green Pleat Model

When specifying a brand or model of filter, always refer to the filter manufacturer's air pressure drop technical data to specify clean and change filter air pressure drop conditions.

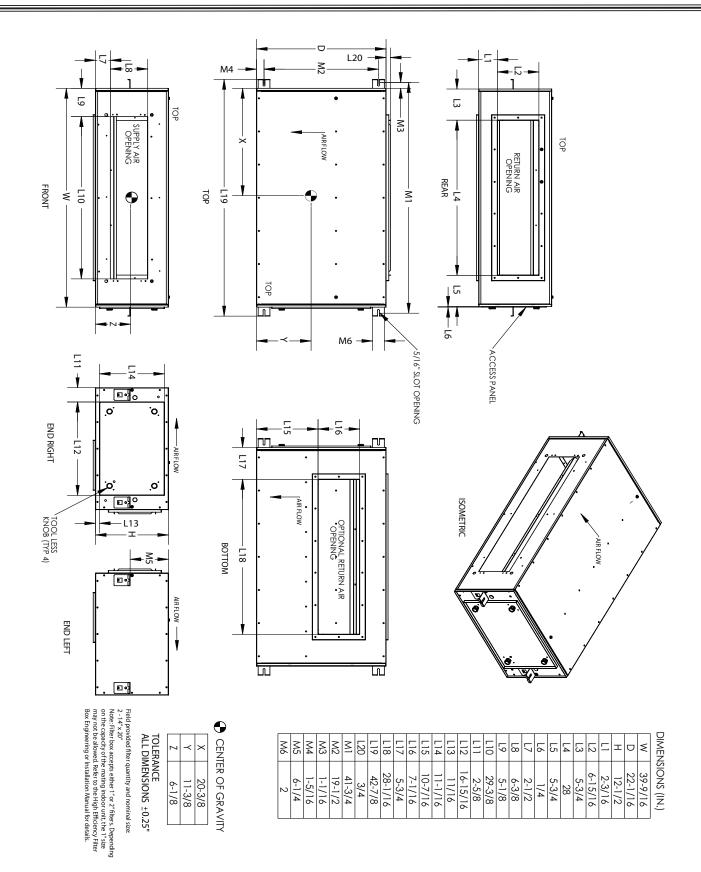
High Efficiency Filter Boxes





ZFBXBH01A

For Use with LG BH Chassis High Static Indoor Units

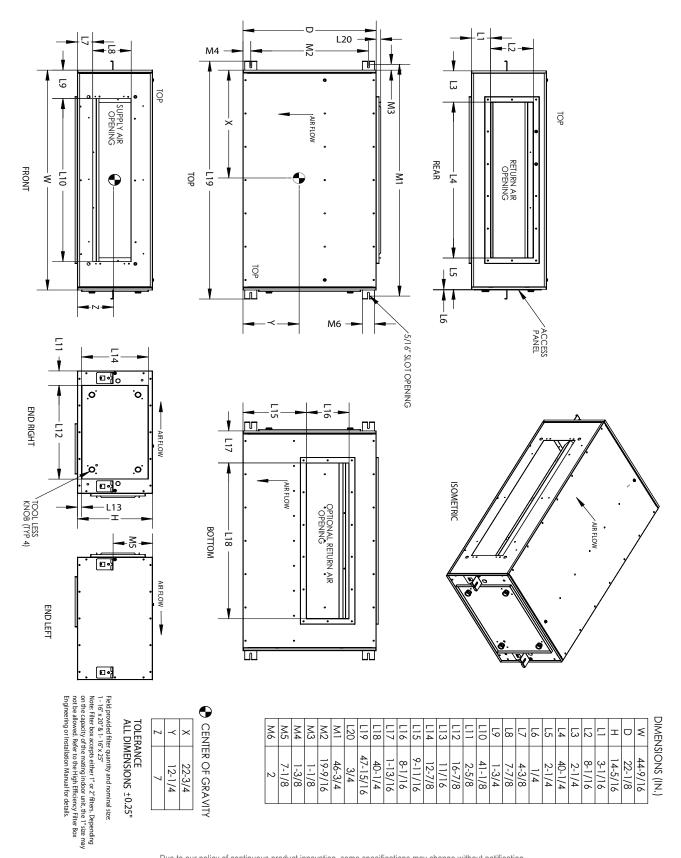






ZFBXBG01A

For Use with LG BG Chassis High Static Indoor Units

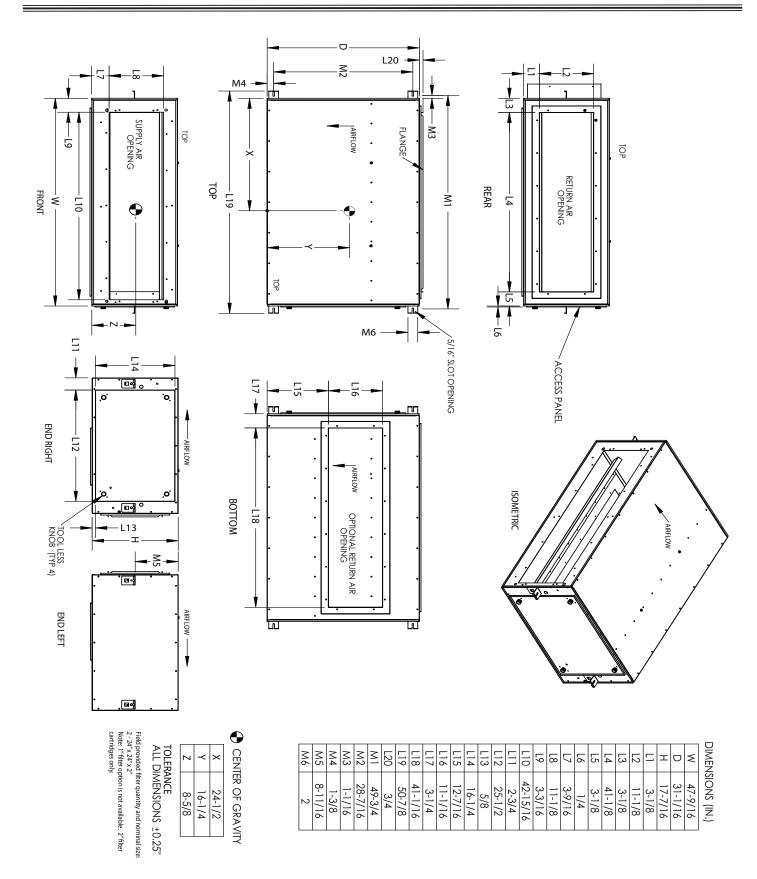






ZFBXBR01A

For Use with LG BR Chassis High Static Indoor Units

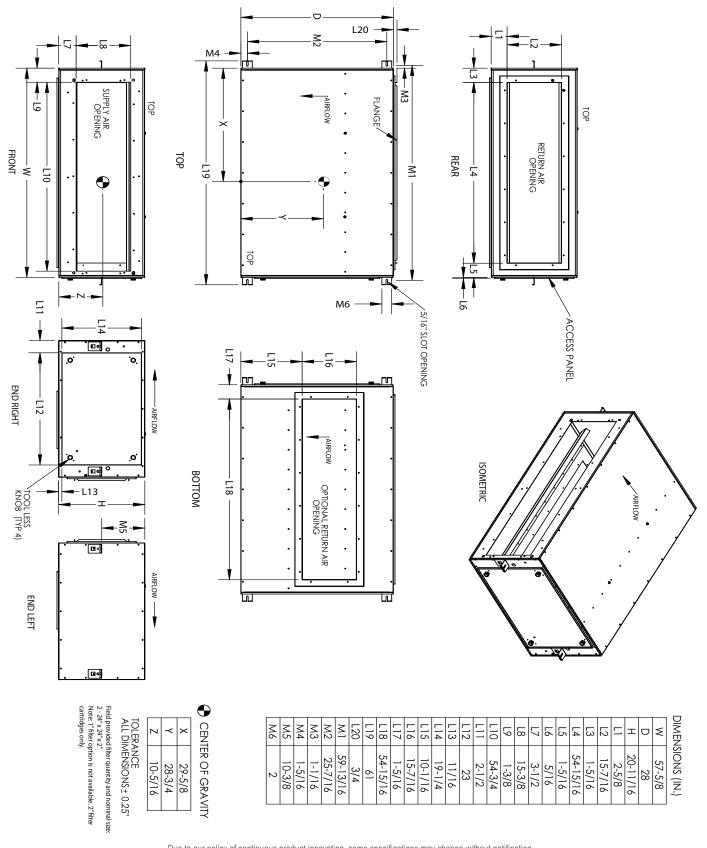






ZFBXB801A

For Use with LG B8 Chassis High Static Indoor Units



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General

MicroMetl High Efficiency Filter Boxes are manufactured at an ISO-9001 certified facility located in the United States. The boxes are engineered to mate directly to LG's High Static Ducted indoor units and ship fully assembled. Filter racks are sized to minimize the filter air pressure drop. The filter face velocity does not exceed 320 feet per minute.

Application Configurations

The filter box can be installed in an upright or inverted position. In the upright position, filter service access is from the side of the unit closest to the indoor unit control panel (right side). In the inverted position, filter access is from the side opposite the control panel (left side).

Housing

Structural components are single wall, constructed of heavy-gauge 20-gauge galvanized steel. Filter box side and end panels are directly attached to the top and bottom panels strengthening the entire unit assembly. The air inlet of the filter box shall be equipped with a duct flange connection. The filter box is configured with a canted filter rack at an angle of approximately 30-40 degrees from horizontal to maximize the dust holding capacity of the filter box minimizing the frequency of filter changes.

Gaskets and Seals

Factory provided gaskets are located on the inside surface of the access panel and the opposite end of the filter box to prevent air from bypassing the filter frame. Filter box models that use multiple filters in a single rack are engineered to slightly compress the filters end- to-end with the access panel closed to prevent air passing between filters.

Filter Access

The MicroMetl high efficiency filter box is provided with a filter retrieval tool. When pulled, easily extracts all filters from the mounting channel without the need to touch or pull soiled filters from the box minimizing the risk of disturbing captured particulate. Filters are accessed via a gasketed, removable access panel equipped with ½ turn, quick-release tool-less thumb knob catches. A factory mounted safety lanyard secures the access panel to the unit housing to prevent accidental dropping of the access panel while the box is being serviced.

Filter Condition Monitoring

The filter box is provided with two air pressure drop ports and plugs conveniently located next to the filter access panel designed to accept standard size pitot tubes provided by others. These ports are positioned to allow easy measurement of the filter air pressure drop using a field provided magnehelic gauge or inclined manometer. Optionally, filter cleanliness may be actively monitored. The two ports may be used to permanently mount field provided pitot tubes connected to a differential pressure meter.

Filter Media

Filters are not provided with the high capacity box. This feature provides the owner an opportunity to choose the MERV rating and brand of filter used in the box. Filter boxes accept standard-size filters. Filter box models are engineered to mate with LG High Static indoor units with a nominal cooling capacity range up to 3-1/2 tons (BH and BG chassis) and accept either one or two-inch deep filters. Filter boxes ship configured for 1-inch deep filters. Field conversion to accept 2-inch deep filters is required.

Models engineered to mate with LG High Static indoor units with a nominal cooling capacity range 4-tons and up (BR and B8 chassis) accept 2" deep filters.

Insulation

Filter Boxes are shipped without insulation. All insulation shall be field provided and externally applied.

Limited Warranty

All shipments are FOB manufacturing plant dock. Owner has the responsibility to receive and verify count and accuracy. All claims of shortages or damage must be made within 25 days by email to your LG sales representative. Products shall be warranted two years from date of shipment for any part found to be defective in material or workmanship. Warranty does not cover costs of labor for any adjustments or service calls, nor does it include the cost of labor for replacing defective parts or components. This warranty does not apply to any product or part thereof that has been subjected to misuse, abuse, neglect, accident or alteration.

Acronyms

Table 6: Table of Acronyms

BMS	Building Management System
CFM	Cubic Feet per Minute
FOB	Freight on Board
FPM	Feet Per Minute
MERV	Minimum Efficiency Reporting Value
VRF	Variable Refrigerant Flow









LG Electronics Commercial Air Conditioning Division 11405 Old Roswell Road Alpharetta, Georgia 30009 www.lg-vrf.com LG Electronics U.S.A., Inc. 1-888-865-3026 USA Follow the prompts for commercial A/C products.