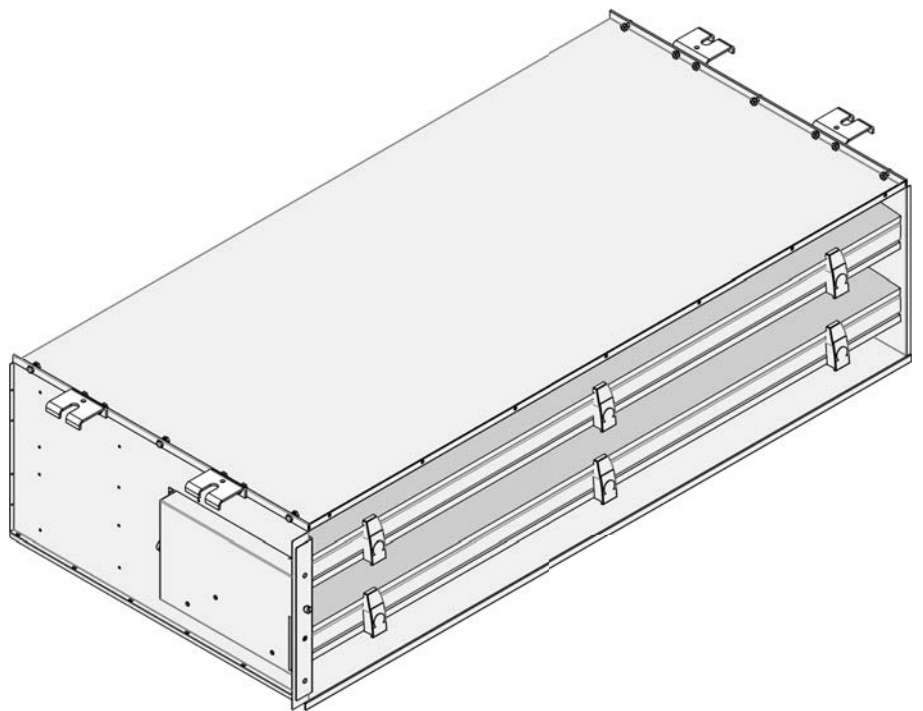




# **DYNAMIC V8® VL SERIES AIR CLEANER OWNER'S MANUAL**



For LG High Static Ducted Indoor Units



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# Introduction

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## LG Electronics

LG Electronics is a global leader and technology innovator in consumer electronics, mobile communications, and home appliances, employing over 213,000 people in over 115 operations worldwide. With global sales of \$136 billion in 2011, LG Electronics ranks among Fortune 500's list of largest companies. LG Electronics comprises four business units—Home Entertainment, Mobile Communications, Home Appliance, and Air Conditioning and Energy Solutions. LG Electronics is one of the world's leading producers of flat panel televisions, audio and video products, mobile handsets, air conditioners, and washing machines. LG's commercial air conditioning (CAC) business unit was established in 1968 and has built its lineup of residential and commercial products to include VRF, Flex multi, duct free split systems, PTACs, and room air conditioners. In 2011, the air conditioning and energy solutions business unit grew to include LED lighting and solar products. For more information, visit [www.lghvac.com](http://www.lghvac.com).

Figure 1: LG Commercial Air Conditioning in Atlanta Georgia.



## Commitment to Innovation

LG Commercial Air-conditioning is committed to providing a full line of products that employ state of the art technology and innovation, such as our award winning Art Cool™ Gallery, duct-free split systems, and the Multi V family of VRF heat pumps.

As part of our commitment to bringing innovation to the markets we serve, LG Electronics actively seeks partnerships with other innovation leaders. For air cleaning, we are excited to offer the technology developed and patented by Dynamic Air Quality Solutions. We introduce the Dynamic V8® VL series of air cleaning products specifically designed to work in harmony with LG Multi V III, Multi V Water, and Multi V Mini VRF high static-ducted indoor units.





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## About Dynamic Air Quality Solutions

In 1982, two university professors from Carleton University in Ontario, Canada developed a design for a residential air-cleaning application that provided a simple means of replacing dirty media. They started Engineering Dynamics, Ltd. (EDL) and began manufacturing 1" and 2" polarized-media electronic air cleaners, room console units, and overhead ceiling-mount units. All of the polarized-media air cleaners on the market today can be traced back to beginnings at EDL, although subsequent patents and refinements have created discernible differences in product designs and features.

EDL was acquired in 1993 by Environmental Dynamics Group, now known as Dynamic Air Quality Solutions, the manufacturer of Dynamic Air Cleaners. Initially the focus was residential, but there was a clear need for improved air quality in commercial and industrial applications. This resulted in a focus on technology enhancements, new configurations, and a complete line of commercial products that now dominate in some applications, such as casinos.

Although there were a number of different configurations that came before the Dynamic V8, all were based on polarizing (charging) fibers in a filter and particles in the air to generate an electric force between those fibers and particles. While the underlying principles have been around for many decades, only in recent years has the technology been fully understood and optimized to provide consistent, reliable performance.

As a result of this research and development, we proudly present the Dynamic V8 Air Cleaner. As the new standard in air cleaning, the Dynamic V8 VL Series delivers maximum performance using an insignificant energy volume. The Dynamic V8 outperforms all existing air cleaning and filtration products in the market. It controls contaminants and slashes filter-related maintenance costs, resulting in the lowest total cost of building ownership. The Dynamic V8 is designed to meet the rigorous requirements of green buildings, data centers, hospitals, and pharmaceutical and clean manufacturing.

## Dynamic V8 VL Series Air Cleaners

The Dynamic V8's patented technology has been commercially available for years in a heavy duty arrangement with eight media pads. The Dynamic V8 VL Series of air-cleaning modules are compact and designed to work specifically with LG Multi V line of High-Static-Ducted Indoor Units. They come in two configurations: The low-profile 4VL, model and the ultra-low-profile 2VL model.

## Getting Help

For technical assistance with the operation of the air cleaner, please contact Dynamic Air Quality Solutions (DAQS) at (609) 924-4489. For applications, system design and installation questions, please contact your LG CAC representative. For warranty issues and repair parts, see "DAQS Policies and Warranties" on page 84. For replacement media, please contact your LG CAC representative.





# Operations

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## Understanding Air Cleaner Operation

Each air cleaner is equipped with a green system-operational LED located on the entering-air side of the air cleaner. A field-installed transformer is provided and should be mounted near the LG indoor unit. It provides 24 volts AC which provides an electric charge to the filter media pads.

The pads are charged from the center outward via a carbon sheet sandwiched between two polyolefin media pads. The carbon sheet receives its power via a metal contact on its surface that touches a mating contact on the media's aluminum clamshell frame. With a continuous charge, the media will properly function, with or without airflow over the media.

## Testing Air Cleaner Media Pads

### General

With the Dynamic V8, the typical time between media changes has increased from a couple of months to multiple years. The actual time interval is directly related to the cleanliness of the environment. For example, if the air entering the media contains untreated outside air, expect more frequent changes.

Just because the media looks dirty, it does not mean it is time to change it. As particulate is captured by the media, it becomes discolored. Over time, the media becomes restricted and air has increasing difficulty passing through the media. At some point, this restriction causes an excessive air pressure drop at which time the airflow volume from the LG indoor unit begins to fall, reducing the effective capacity of the cooling and heating system.

In most applications, air is pulled through the media by a fan located in the LG Multi V Indoor Unit. These fans have a maximum air resistance, called external static pressure, they can overcome before their effectiveness declines. That is, if the external static pressure is too high, they can no longer operate at their designed airflow volume because they cannot “pump” against the excessive external static pressure.

System components, such as ductwork, plenums, grilles, and registers, cause external pressure drop by providing air resistance. Their cumulative pressure drop is predictable and nearly constant in a filtered system. On the other hand, as the media collects airborne contaminants, it causes the pressure drop across the media to increase over time. When the air pressure drop reaches a predetermined level (i.e. the change media air pressure drop), it is time to change the media.



## Testing the Media Air-Pressure Drop

Even though air cleaner media pads typically last a very long time, eventually they need replacement. The media has a recorded maximum acceptable pressure drop; beyond which, system efficiency declines. Therefore, you can test the pressure drop of the system to determine if the media needs replacement:

1. Access the inlet side of the air cleaner.
2. Find the media disconnect plate on the inlet side of the air cleaner. It should have a sticker on it that records the “clean” and “change” media air pressure drop.

**Note:** If the sticker or data is absent, please contact your HVAC commissioning agent.

3. Note the stated values. They are recorded in inches of water (in-wg).
4. Locate an air pressure testing hole on the ductwork between the air cleaner and indoor unit. The hole should be sealed with a rubber or plastic plug or perhaps a piece of duct tape. This is the outlet test hole.

**Note:** If this test hole does not exist, please contact the HVAC commissioning agent. He or she will need to create a test hole.

5. Locate another air pressure testing hole in the ductwork on the inlet side of the air cleaner. This is the inlet test hole.

**Note:** If this test hole does not exist, you can instead test the air pressure at the inlet of the air cleaner.

6. Ensure the indoor unit's fan speed is set to high. All measurements must be taken at this setting with the fan operating.
7. Test the current air pressure drop using an inclined manometer, analog pressure drop gauge, or digital air pressure drop meter:
  - a. Place one meter probe in the outlet test hole.
  - b. Ensure that the end of the probe is facing the incoming airstream. Air hitting the side of the probe will produce an inaccurate result.
  - c. If the inlet test hole exists, repeat the process using the other probe.
  - d. If the inlet test hole does not exist, open the return-air plenum grille, and place the other probe in the airstream in front of the air cleaner inlet. As before, be sure to aim the end of the probe at the incoming airstream.
8. Record the pressure difference between the two probes.

**Note:** Most commonly, meters measure in inches of water (in-wg). If yours measures in inches of mercury (in-hg), multiply the reading by 13.57037 to convert to in-wg.

9. The recorded value should fall between the clean and change media air pressure drop values on the sticker. If the tested pressure is at or above the dirty value, the media may need replacement.

**Note:** While not recommended, if the pressure measurement indicates dirty media but the indoor unit is able to maintain temperature without displaying an error, you may choose to delay replacing the media for a while.



10. Remove the probes.
11. Replace the outlet test hole plug.
12. Replace the inlet test hole plug or close the return-air plenum grille.

## Replacing Media Pads

### Prepare the Air Cleaner for Media Replacement

1. Turn the indoor unit off using the zone controller or building management system.

**Important:** Assuring the fan will not run during a media change minimizes the chance that captured particles are ingested into the return air duct system as the soiled media pads are removed.

2. Find the return air end of the Dynamic V8 Air-Cleaner. If the air cleaner is connected to a factory provided is served by a Return-Air Plenum, the media pads are accessed by opening the return air grille on the bottom of the plenum. The grille is mounted on two hinges and is held in place by easily opened retainers.
3. Turn the retainers 1/2 a turn on the grille panel to open the panel.
4. Disconnect the air-cleaner's power by removing the media charge disconnect plate on the left edge of the intake. When the media is electrically charged, a green LED is visible through a hole in the plate. Unscrew the thumbscrew that secures the plate to the air cleaner case and remove the plate. A lanyard connected to the air cleaner case will prevent the plate from falling to the ground and the thumbscrew is secured to the plate. When the media disconnect plate is removed, it opens an interlock switch and the LED goes out, indicating it is safe to remove the media pads.

### Remove the Media Pads

1. Locate the three thumb latches on the pointed end of each V-shaped media unit. Each set opens one media unit. Each unit in turn contains two clamshell frames, each with one media pad. Thus, a 2VL air cleaner contains one V-shaped media unit with two clamshells and a total of two media pads. A 4VL air cleaner contains two V-shaped media units with four clamshells and a total of four media pads.
2. Open the three thumb latches for one V-shaped media unit. Notice that two clamshells partially open and become loose. One half of each clamshell is fixed to the air cleaner box and the other freely moves. The media pad rests between the two. The media pad is surrounded by a plastic frame with a translucent white and red or blue flexible seal.
3. Lift up the moveable portion of the upper clamshell, exposing the media pad.
4. Gently pry up the media pad from the top portion of the fixed part of the clamshell. Note that the pad being removed has a blue or red frame and if the colored side of the frame faces up or down, When replacing the pad use a replacement pad with the same color mounted facing the same direction as when removed. Slide the media pad out of the unit. Be careful to support the media pad with your hand during removal to keep it from contacting the fixed clamshell half, reducing the likelihood of captured particulate falling from the media pad.



5. Properly dispose of the soiled media pad.
6. Pull down the moveable portion of the lower clamshell, exposing the other media pad.
7. Gently dislodge the media pad from the upper fixed part of the clamshell. Note that the pad being removed has a blue or red frame and if the colored side of the frame faces up or down. When replacing the pad use a replacement pad with the same color mounted facing the same direction as when removed. Slide the media pad out of the unit. Be careful to support the media pad with your hand during removal to keep it from contacting the movable clamshell half, reducing the likelihood of particulates falling from the media pad.
8. Properly dispose of the soiled media pad.

### Install the New Media Pads

1. On the upper clamshell, note the location of the metal electrical-connection button that provides power to the media pad.
2. Maneuver the new media pad with the colored side of the frame facing up (or down) as was found when the soiled pad was removed. Rotate and position the pad so the connection button will align with the clamshell's button once you push the pad in.
3. Gently push the media pad into the clamshell, ensuring that the flexible seal seats in the fixed side of the clamshell and the connection buttons line up.
4. Using the same procedure, place the bottom media pad into its clamshell.
5. Carefully close the moveable half of the upper clamshell, ensuring the media pad seats correctly.

**Important:** Do not force the clamshell closed. It should close without binding or bending. If binding occurs, the media pad's flexible seal is not properly seated into the fixed clamshell half. Reposition the flexible seal and the moveable half of the clamshell till the clamshell easily closes with very little pressure and the seal appears properly seated in the frame.

6. Carefully close the moveable half of the lower clamshell, ensuring the media pad seats correctly.
7. Latch the three thumb latches to secure both clamshells.
8. If you are working on a 4VL air cleaner, repeat the above procedures for the other V-shaped media unit.





## Return the Air Cleaner to Service

1. Reconnect the media's electrical charge by returning the media charge disconnect plate. When the plate is seated correctly the power LED will relight.
2. Turn the thumbscrew to fix the plate to the air cleaner box.
3. Close the return-air grille and turn its retainers to fix it in place.
4. Return the indoor unit to operational condition using the zone controller on/off button or via the building-management system.

## Troubleshooting Air Cleaner Operation

If the system-operational LED on the end of the air cleaner module is lit, the air cleaner is functioning correctly. If it is not lit, check the following to determine the problem:

1. Verify the indoor unit connected to the air cleaner module has power and its disconnect is in the on position.
2. Verify that the load side of the air cleaner's low-voltage transformer (usually located near the indoor unit) has 24 volts (AC) present.
3. Verify that the air cleaner's control box has 24 volts (AC) present.
4. Verify that the air cleaner's media charge disconnect plate is properly installed. One of the two metal pegs on the plate actuates an interlock switch in the control box through a hole in the air-cleaner frame. Verify the two pins are not bent.
5. Verify the media pads are properly installed. Review the media installation procedure on page 9.
6. Verify that the metal electrical connection buttons on the media pads are in contact with the mating buttons located on their clamshell frames.
7. If the LED remains off after checking or correcting all the above items, contact Dynamic Air Quality Solutions (DAQS) toll-free Monday through Friday, 9:00 AM to 5:00 PM ET at (800) 578-7873.

## Obtaining Parts and Replacement Media Pads

Order Dynamic V8 VL series air cleaners, accessories, and replacement media pads through your local LG Commercial Air-Conditioning manufacturer's representative.

All Dynamic V8 VL series air cleaners are custom ordered for each project. The production lead-time is approximately six weeks (subject to change). Replacement media pads are paired (one red and one blue frame per clamshell unit) for all Dynamic V8 VL Series products.

Depending on the nature of your need, either LG's local manufacturer's representative or DAQS may be the proper point of contact. Generally, LG manufacturer's representatives should be contacted for assistance with:

- Replacement media pads.





- Any items that are missing (short-shipped) from your original order.
- Any issues with the delivered items not matching your original order.
- Plenums and grille accessories that arrive damaged.

Generally, DAQS is responsible for:

- Air cleaners, discharge flanges, or control parts that arrive damaged or dead on arrival.
- Replacement control parts, such as wires and transformers.

**Note:** Lead time may vary as market conditions change. Please ask your Lg local manufacturer's representative for the current lead time.

Orders ship from:

Dynamic Air Quality Solutions  
PO Box 1258  
Princeton, NJ 08542  
Telephone: 800-578-7873  
Fax: 609-924-8524  
www.DynamicAQS.com

**Important:** Any shipping damage or discrepancies must be reported to your LG local manufacturer's representative within five (5) days of receipt.

Parts List

Table 1: Air Cleaner Kit (from LG Local Manufacturer's Representative<sup>1</sup>)

Item	Part Number
Dynamic V8 2VL Air Cleaner (low profile). Includes: <ul style="list-style-type: none"><li>• One Dynamic V8 2VL Air Cleaner (low profile) chassis</li><li>• Two Media Pads</li><li>• Three Media Unit Latches</li><li>• One 208 to 24 VAC transformer (VL-208T-FD)</li><li>• One Air-Cleaner Discharge Flange, low profile</li><li>• One Media Charge Disconnect Plate (VL-073)</li><li>• One Power Head (VL-055)</li><li>• One 30 ft. 24 VAC Power Wire (VL-180C-C)</li><li>• Two Media Clamshell Screens (outside)</li></ul>	ZFBXD201A



Item	Part Number
Dynamic V8 4VL Air Cleaner (low profile). Includes: <ul style="list-style-type: none"> <li>• One Dynamic V8 4VL Air Cleaner (low profile) chassis</li> <li>• Four Media Pads</li> <li>• Six Media Unit Latches</li> <li>• One 208 to 24 VAC transformer (VL-208T-FD)</li> <li>• One Air-Cleaner Discharge Flange, low profile</li> <li>• One Media Charge Disconnect Plate (VL-073)</li> <li>• One Power Head (VL-055)</li> <li>• One 30 ft. 24 VAC Power Wire (VL-180C-C)</li> <li>• Four Media Clamshell Screens (outside)</li> </ul>	ZFBXD402A
Louvered Plenum Grille	ZGRLRA01A
Egg-Crate Plenum Grille	ZGRLRA02A
Return-Air-Plenum, low profile	ZPLMV201A
Return-Air-Plenum, standard profile	ZPLMV402A

<sup>1</sup> To identify your local representative, call 888-865-3026 or visit [www.lg-vrf.com](http://www.lg-vrf.com).

Table 2: Replacement Parts from LG Local Manufacturer's Representative

Item	Part Number
Media Pad (pack of 4 - 2 blue frame and 2 red frame)	ZFLT1301A
Media Pad (pack of 24 - 12 blue frame and 12 red frame)	ZFLT1302A

Table 3: Replacement Parts from DAQS

Item	Part Number
Media Charge Disconnect (includes plate, thumbscrew, and retaining lanyard)	VL-073
Media Latch (black plastic)	VL-063
Power Head (low-current power source for Media Pads)	VL-055
24 Volt Power Wire, 30' with quick-connect plug	VL-180C-C
Transformer, 208 to 24 VAC	VL-208T-FD
Media Disconnect Interlock Switch	VL-06
Removable Media Clamshell Screen	VL-062.3



# DAQS Policies and Warranties

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Dynamic V8 VL Series Limited Warranty on page 14

Return-Air-Plenum Grille Limited Warranty on page 15

Warranty Procedures for Commercial Products on page 15



The Dynamic V8 is covered by the warranty and policies of Dynamic Air Quality Solutions (DAQS). The DAQS warranty and policies as of April 30th 2012 are listed verbatim below: DAQS reserves the right to modify these terms without notice.

## Return Policy

Requests to return new and unused products must be made within six weeks from date of purchase or eight weeks from the date of manufacture and should be directed to Heidi Birkland via email at [hbirkland@DynamicAQS.com](mailto:hbirkland@DynamicAQS.com) for a Return Authorization. Credits for returned goods are contingent upon inspection of the item(s) once received. A 15% restocking fee will be charged and the customer is responsible for freight. Non-standard sizes may only be returned if demand warrants. Do NOT return anything without a Return Authorization. All returned goods must have prior approval and be accompanied by a Return Authorization Number.

## Dynamic V8 VL Series Limited Warranty

All Dynamic Products come with a Limited Warranty on parts. This Limited Warranty provides that a replacement part will be furnished at no charge for any part of the product which fails due to defects in material or manufacture while in normal use and service during the applicable Warranty period. Replacement parts are warranted for the unexpired portion of the original Warranty. The Effective Date of the Warranty will be the earlier of the date of installation or three (3) months from the date of manufacture. The Warranty Periods and any specific exclusions for various commercial products are as described below:

4VL and 2VL Series Polarized Media Electronic Air Cleaners are warranted for FIVE (5) YEARS after the Effective Date. Use of any replacement media other than that manufactured by Dynamic will void the warranty.

Control Panel and Control Boxes for the 4VL and 2VL Air Cleaners are warranted for a period of FIVE (5) YEARS after the Effective Date.

All other parts and assemblies including motors are warranted against defects in material and workmanship for a period of ONE (1) YEAR after the Effective Date.

Exclusions from this Warranty include damage or failure arising from: wear and tear; corrosion, erosion, deterioration; modifications made by others to the Products; repairs or alterations by a party other than Company that adversely affects the stability or reliability of the Products; vandalism; neglect; accident; adverse weather or environmental conditions; abuse or improper use; improper installation; commissioning by a party other than Company; unusual physical or electrical or mechanical stress; operation with any accessory, Products or part not specifically approved by Company; and/or lack of proper maintenance as recommended by Company. Nor does the Warranty cover any repairs other than those provided by an authorized services facility, nor does it cover labor or transportation costs that the Dealer may charge. Dynamic Air Quality Solutions is not responsible or liable for indirect, special, or consequential damages arising out of or in connection with the use or performance



of the product or other damages with respect to any economic loss, loss of revenues or profit, or costs of removal, installation or reinstallation.

There may be charges rendered for shipping and repairs to the product made after the expiration of the aforesaid Warranty periods. Except as provided herein, Dynamic Air Quality Solutions makes no express or implied warranty of merchantability or fitness for a particular purpose. This Warranty gives specific legal rights and other rights may be available, which may vary from state to state.

## Return-Air-Plenum Grille Limited Warranty

Manufacturer warrants that their products shall be free from defects in material or workmanship appearing within 30 days from the date of shipment. This warranty is contingent upon buyer giving seller prompt notice of any defect appearing within the prescribed 30 day time period. Manufacturer's obligation under this warranty is limited to the repair or replacement at its factory of any of the products which are defective in material or workmanship and which are returned to the seller with transportation charges prepaid and is conditioned upon the buyer furnishing satisfactory evidence that the products alleged to be defective have been properly installed, maintained, and operated under normal conditions. This warranty shall not apply to goods which have been subjected to misuse, abuse, neglect or improper storage, handling or maintenance.

## Warranty Procedures for Air Cleaner Products

This information is provided as a guide regarding warranty claim procedures for Dynamic Air Quality Solutions commercial indoor air quality products.

1. Determine model number from the label on the unit.
2. For technical support, warranty information, warranty parts or replacement parts, contact Dynamic Air Quality Solutions, toll-free M-F, 9:00 AM-5:00 PM ET at (800) 578-7873. A Dynamic representative will help you troubleshoot and diagnose the problem. Warranty matters involving products sold through a manufacturer representative should be directed to the appropriate representative.
3. If the part is found to be defective, Dynamic will ship a new replacement part, freight prepaid, along with a Return Authorization / Return Label or envelope, if Dynamic wants the part returned.
4. Important: Do NOT return anything without a Return Authorization.
5. All returned parts are quality tested. If the returned part is found not to be defective, you may be invoiced for the new part and shipping costs.





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