

# LV Breaker To Vacuum Starter Replacement



## Match the Tool to the Task

When selecting power switching apparatus, it is important to choose the correct device for the application. For example, if one wants to stir a cup of coffee, a spoon is an excellent choice as a tool. If there is also a need to dig a 20-ft ditch, a spoon could be used, but a shovel is a much better choice. The best solution is to “match the tool to the task.”

Electric utility generation and process industries often apply power circuit breakers as motor starters. Many applications conveyors, crushers, fans, compressors, and pumps require high switching rates. High switching rates (1 or more per day) with inrush currents will drastically shorten the life of all power circuit breakers, regardless of the type mechanisms or interrupters utilized. Even the latest technology mechanisms will experience an “end of life” of the interrupters and electronic components far sooner than the mechanism and may provide less than expected ROI. A 600 A frame low voltage power circuit breaker has a no-load design life of 9,700 operations. This is reduced to 1,400 rated operations when subjected to inrush currents during motor starting (based on IEEE/ANSI C37.16-2000 Table 5). Power circuit breakers and their associated switchgear are engineered fault protection systems. Breakers are designed to close into and interrupt short circuit currents. They are not specifically designed for repetitive motor starting applications without regular maintenance and repair.

## Low Voltage Vacuum Starter Replacements

An excellent tool for starting Low Voltage class motors is a new line-up of fused vacuum contactors, but this requires an outage, new equipment, new cables, changes in the power switchgear coordination and often a loss of drawout and metal-enclosed switchgear features. To get the best of both types of apparatus, a combination, or hybrid, of a power circuit breaker and a vacuum contactor is a better solution. The hybrid device is a vacuum starter replacement (VSR) with the following features:

- Drawout capability
- Utilizes the same cell interface components for levering and interlocking
- Minimum cell modifications
- Current limiting fuses as primary fault protection
- Hundreds of thousands of switching operations
- Compatibility and testing to IEEE/ANSI C37.59, C37.13.1

## Value Solution

Eaton’s new LV-VSR products extend the useful life of metal-enclosed switchgear structures by as much as 20-30 years (depending on current switchgear condition and maintenance practices). Most new horizontal drawout LV-VSR designs come complete with racking systems that interface with the Eaton RPR-2 Remote Power Racking Device. This allows racking (insertion or removal) while the operators are outside the Arc Flash protection boundary. In addition, once the LV-VSR designs are installed and operational, they can save \$30,000 - \$75,000 in reconditioning, maintenance and outage costs, compared to metal-enclosed power circuit breakers. Experience longer, more reliable operating performance when you start your low voltage motors with an LV-VSR.

# EATON

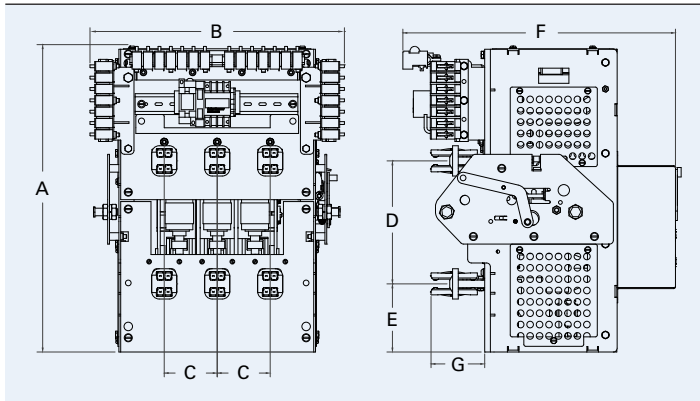
Powering Business Worldwide

**Eaton Type AK-2A Vacuum Starter Replacement Units for General Electric Type AK-2A**

LV-VSR Breaker to Motor Starter Replacement Unit	Rated Maximum Volts V	Maximum HP @ 480 V	Contactor Amps	Maximum Fuse Rating Amps	Fused Short Circuit Rating kA	Maximum Continuous Amps
<b>AK-2A-25-LV-VSR</b>						
425A ①	600 ②	300	540	600	200	425

① This design also increases the short-circuit capability to 200kA.

② 600V max rating for fused device.

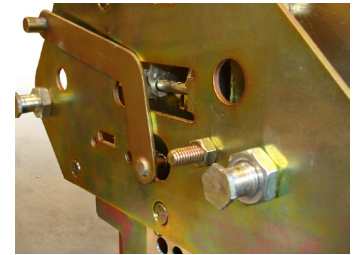


**Dimensional Data In Inches**

	AK-2A-25-LV-VSR 425A
A	20.19
B	16.81
C	3.50
D	8.13
E	4.50
F	18.01
G	3.55



**Heavy-Duty Steel Construction**



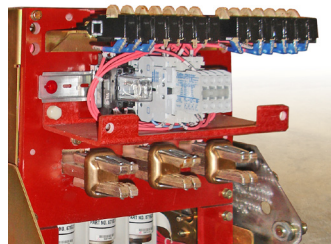
**New Cell Coding System**



**Reliable EATON Vacuum Technology**



**All New Power Conductors**



**Upgraded Control Components**



**Easily Accessible Fuses**



**Solid State Overload Relay**



**Quality is Designed-In**

Each LV-VSR is designed and manufactured in a facility that is ISO 9001:2000 certified.

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Printed in USA  
Publication No. PA02709121E  
November 2013

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