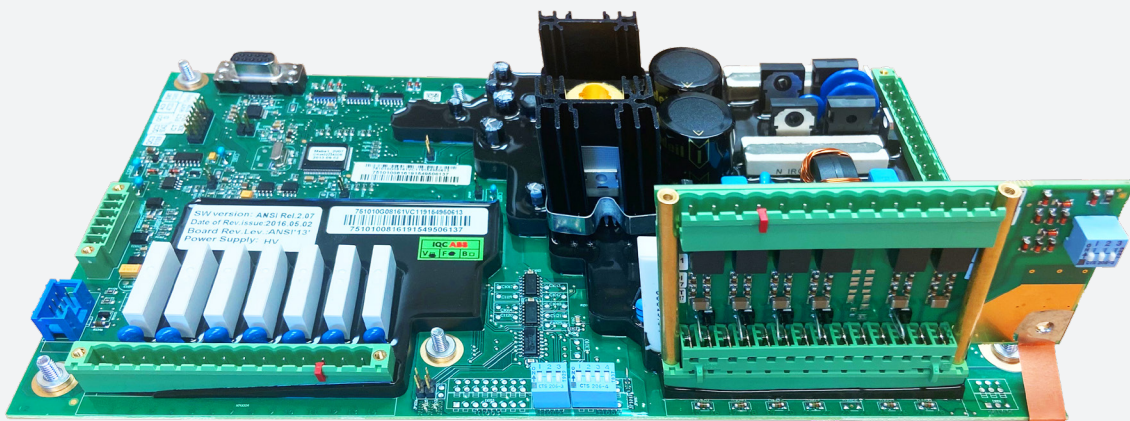


GUIDELINE

# Electrification Business

## Control Board and Capacitor Replacement Guideline





# Safe Practices

This guide should be read carefully and used accordingly during the inspection and replacement process.

When checking or observing breakers and switchgear, only qualified persons who are familiar with the installation and maintenance of medium voltage equipment should be permitted to work on these components. Be sure to use proper personal protective equipment.

**DO NOT** work on an energized circuit breaker.

**DO NOT** work on a circuit breaker unless all components are disconnected by means of a visible break and securely grounded.

**DO NOT** work on a circuit breaker with power supplied to the secondary control circuit.

**DO NOT** defeat safety interlocks. This may result in bodily injury, death and/or equipment damage.

**DO NOT** work on a closed circuit breaker.

**DO NOT** work on a circuit breaker with charged energy. (Springs, capacitors, etc.)

**DO NOT** use a circuit breaker by itself as the sole means of isolating a high voltage circuit.

**DO NOT** leave a circuit breaker in an intermediate position in a cell. Always place the circuit breaker in the Disconnect, Test or Connect position.

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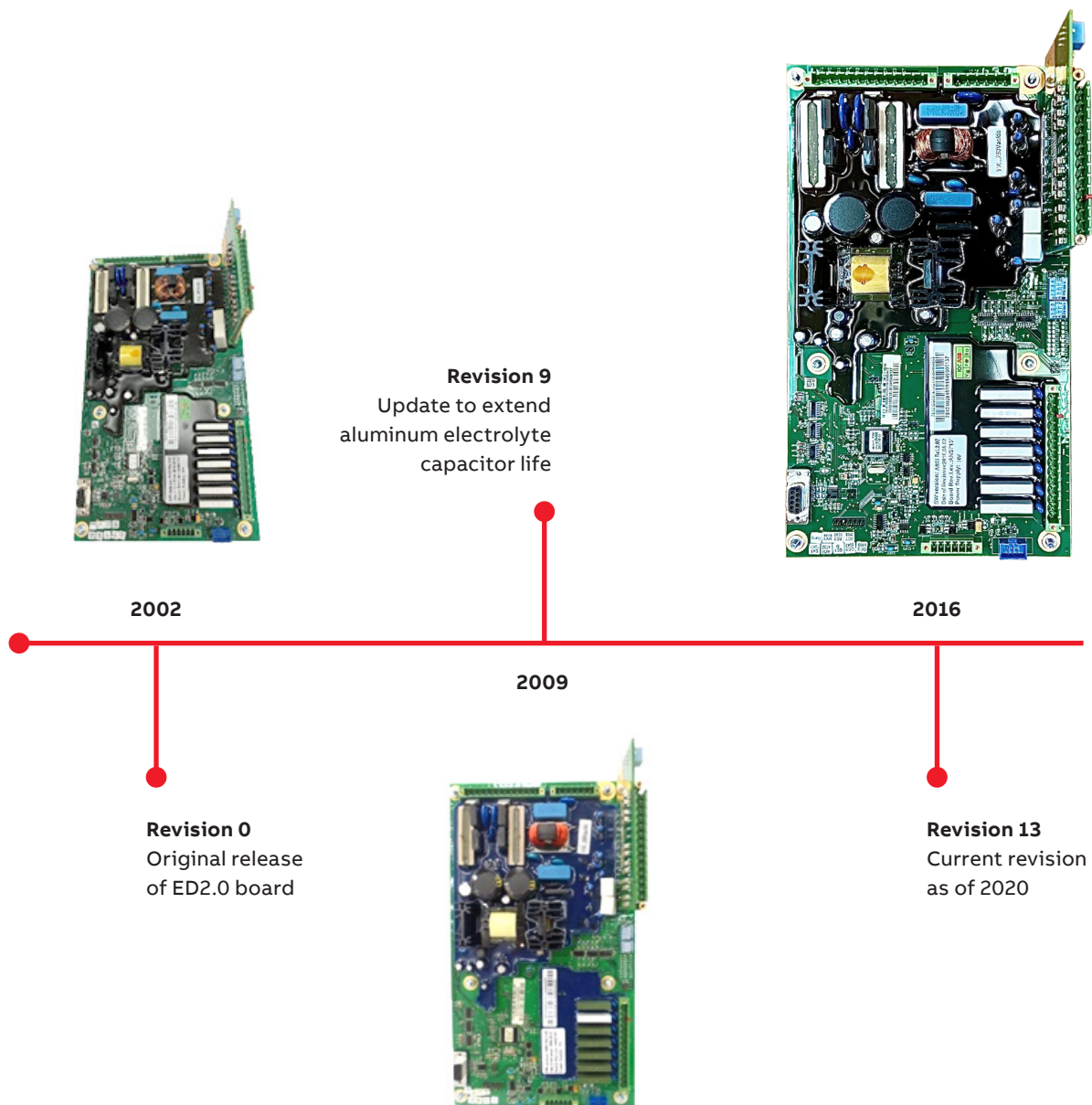
## DANGER!

Not adhering to these instructions may result in personal injury or DEATH, and permanent damage to the breaker and other equipment.

# Control Board History

The ED2.0 control board is an ABB global component used in various magnetically actuated breakers including AMVAC indoor breakers, R-MAG outdoor breakers, and Roll-in replacement breakers. Revisions occur over time to enhance product capabilities and performance and to substitute components that may no longer be

available or even to reflect the improvement in manufacturing capabilities. Below is a simplified control board revision timeline with emphasis on Revision 9 as this is when the important update to extend aluminum electrolyte capacitor life occurred.



# When to Consider Control Board Replacement

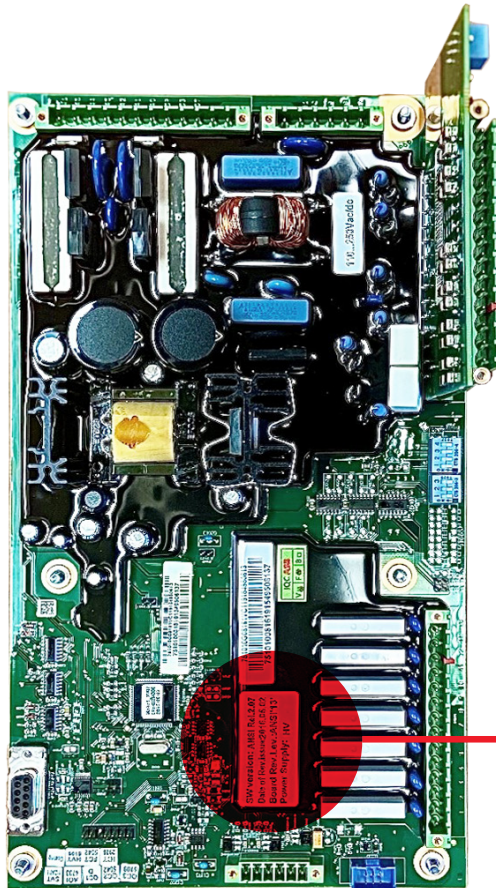
To maximize the reliability of your equipment ABB recommends proactively replacing the ED2.0 control board based on two criteria: revision level and age. These boards are readily available and can be replaced in the field with no special tools or equipment.

## Revision Level

If earlier than Revision 9, ABB recommends replacing the board immediately. To verify revision level, please check the label near the center of the board (see picture below).

## Age

Depending on environmental conditions, the control board life expectancy can range from 15-30 years. The decision to replace on age alone should take into consideration the site's specific environmental conditions. To verify age, please check the manufacturing date of the breaker. This date is located on the rating label on the front cover of the breaker. If no date is shown, contact the factory at 843-413-4700.



SW version: ANSI Rel.2.07  
Date of Rev.issue:2016.05.02  
Board Rev.Lev.:ANSI'13'  
Power Supply: HV

# When to Consider Capacitor Replacement

To maximize the reliability of your equipment ABB recommends proactively replacing capacitors based on two criteria: test results and age. These capacitors are readily available and can be replaced in the field with no special tools or equipment.



## Test Results

ABB recommends checking capacitor performance periodically and during scheduled maintenance. Follow the steps below to test:

1. Connect control power and wait for the capacitors to fully charge – the ready light on the pushbutton will stay illuminated when the breaker is charged.
2. Disconnect control power and note how long the ready light stays on.

If the ready light turns off immediately, the capacitors should be replaced as soon as possible.

If the ready light blinks within 4 seconds or less, the capacitors should be replaced on the next maintenance cycle.

## Age

Depending on environmental conditions, capacitors can have a life expectancy of 15-30 years. The decision to replace based on age alone should take into consideration the sites specific environmental conditions. To verify the capacitors age, please check the manufacturing date of the breaker. This date is located on the rating label on the front cover of the breaker. If no date is shown, contact the factory at 843-413-4700.

# Replacement Parts

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Table 01: Replacement  
part numbers by  
breaker type.

AMVAC and Roll-in Replacement breakers should have two capacitors per breaker. The part numbers supplied below will provide the capacitors as well as the wiring bundle to plug the capacitors into the control board.

R-MAG breakers require different quantities of capacitors depending on the maximum voltage rating (15kV, 27kV, or 38kV). See Table 1 below.

Note: Complete replacement kits consisting of both the control board and capacitors are also available. Please contact the factory at 843-413-4700 to learn more about this option.



Description	AMVAC	R-MAG	Roll-in Replacements
Control Board LV (24-48 VAC, VDC)	19911P30, Model 2/3 1VCF339699S0042, Model 4	2RGA014458P0001	19911P30
Control Board HV (77-280 VAC, VDC)	19911P40, Model 2/3 1VCF339699S0041, Model 4	2RGA014458P0002	19911P40
Capacitor Standard Temp (-40 to 85C)	1VCF359899S0151 (Kit with 2 Caps and wire bundle)	2RGA014444A0001 15kV (Qty 2) 27kV (Qty 3) 38kV (Qty 4)	1VCF359899S0151 (Kit with 2 Caps and wire bundle)
Capacitor Extreme Temp (-55 to 105C)	-	2RGA014444A0002 15kV (Qty 2) 27kV (Qty 3) 38kV (Qty 4)	-