

Preventive Maintenance for SACE Emax 2 low voltage air circuit-breakers

In order to guarantee high levels of efficiency and reliability to your electrical plant, ABB suggests a regular Preventive Maintenance on your installed protection circuit-breakers. Preventive Maintenance includes the carrying-out of tests, measurements and any maintenance, repair or replacement activities, based on specially designed technical plans, aimed at reducing the probability of failure or the working deterioration of the apparatus.

ABB SACE Division, leader in the design and production of low voltage circuit-breakers, always pays particular attention to customer satisfaction. Thanks to its highly qualified organization, ABB SACE Division provides support to its customers during all phases of the product's life, from the selection to the after-sales assistance.

Benefits

Preventive Maintenance creates value over the long-term by:

- Providing the best management of maintenance costs, in particular
 - Less expensive direct costs of maintenance, by reducing the charges due to urgent situations
 - Less expensive indirect costs of plant shut-down, taking advantage of the scheduled stops
- Ensuring better efficiency and reliability of the plant
- Extending the circuit-breaker's life
- Guaranteeing the plant safety for a longer time.

Preventive Maintenance Program

ABB has designed its maintenance schedule for all circuit-breaker families, based on its technical knowledge of the products and on its experience in the field. The Preventive Maintenance Program has the following main targets:

- Check the preservation and the efficiency status of the apparatus
- Anticipate the trend of deterioration of the circuit-breakers, signalling the need of replacement for excessively worn out components, where available, or suggest alternative solutions for bringing them up to date
- Increase the life cycle of the plant, proposing the replacement of obsolete components with others belonging to the new generation, using specific designed CB replacement kits.

Emax 2 helps you: with the new Ekip trip units it is possible to set Date and Time of the last maintenance carried out; the Trip Units will estimate the next maintenance required and indicate if maintenance interval is expired.



LED



Message



Preventive Maintenance Indication

Provided Services

Considering the importance of the maintenance activity and the required technical know-how, ABB guarantees professional competence and interventions performed only by chief skilled technicians.

After the inspection and measuring activities, ABB technicians give all the indications related to the future maintenance needs and any possible corrective actions, while releasing the final report according to the standards in force.

Maintenance Schedule

ABB draw up a systematic and functional Preventive Maintenance Program. Besides the ordinary maintenance activities described in the circuit-breaker manual, ABB proposes a maintenance intervention every three years directed

to extend the product's life. (Extraordinary Maintenance). Service intervals shall have to be suitably assessed in case of non-standard service and environmental conditions. The offer foresees the following maintenance schedule:

| EMAX 2 | Year from the production | | | | | | | | | | | | | | | | | | | | |
|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Mechanical Components | | | | | | | | | | | | | | | | | | | | | |
| Arcing Chambers | | | | (R) | | | (R) | | | (R) | | | (R) | | | (R) | | | (R) | | |
| Arcing and main contacts | | | | P | | | P | | | P | | | P | | | P | | | P | | |
| Operating Mechanism | | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I |
| Racking-in/out device (for withdrawable circuit-breakers) | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Jaw-type isolating contacts (only for withdrawable circuit-breaker) | | | | (R) | | | (R) | | | (R) | | | (R) | | | (R) | | | (R) | | |
| Jaw-type isolating contacts (for withdrawable UL circuit-breaker) | | I | I | (R) | I | I | (R) | I | I | (R) | I | I | (R) | I | I | (R) | I | I | (R) | I | I |
| Shutter for fixed part (for withdrawable IEC circuit-breakers) | | | | I | | | I | | | I | | | I | | | I | | | I | | |
| Main circuit - Busbars connections | | | | | | | | | | | | | | | | | | | | | |
| Terminals | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Auxiliary Connections | | | | | | | | | | | | | | | | | | | | | |
| Auxiliary Contacts | | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I |
| Electrical and mechanical accessories | | | | | | | | | | | | | | | | | | | | | |
| Geared motor | | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I |
| Undervoltage release | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Shunt opening release | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Shunt closing release | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Circuit-breaker locked in the open position (with key or padlocks) | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Circuit-breaker auxiliary contacts | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Locking devices for circuit-breakers connected and disconnected | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Interlocking devices between circuit-breakers mounted side by side and/or one on top of another | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Mechanical operation counter | | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| Optional Performances | | | | | | | | | | | | | | | | | | | | | |
| LEAP analysis and/or thermographic check | | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) | (P) |
| Insulating resistance | | | | (P) | | | (P) | | | (P) | | | (P) | | | (P) | | | (P) | | |
| Electronical components | | | | | | | | | | | | | | | | | | | | | |
| Protection trip unit | | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I | P | I | I |
| Legend | | | | | | | | | | | | | | | | | | | | | |
| I (Inspection) | Inspections and tests, corrective actions and, if required, replacement of the component | | | | | | | | | | | | | | | | | | | | |
| P (Performance) | Tests, measurements and any "maintenance", "repair" or "replacement" activity, if required, aimed at improving the product life | | | | | | | | | | | | | | | | | | | | |
| (R) (Replacement under condition) | Any replacement of component suggested by ABB qualified technician after Ordinary and/or Extraordinary Preventive Maintenance Inspections | | | | | | | | | | | | | | | | | | | | |
| (P) (Performance under condition) | Tests performed only if provided for contract and/or if deemed necessary by ABB qualified technician | | | | | | | | | | | | | | | | | | | | |
| R (Replacement) | Obligatory replacement of component during preventive maintenance activity (never provided for this circuit-breaker) | | | | | | | | | | | | | | | | | | | | |

Reference shall be made to the circuit-breaker manual "Installation, Service and Maintenance Instructions" for Ordinary Maintenance performance. Please contact ABB S.p.A. - ABB SACE Division for Extraordinary Maintenance.

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