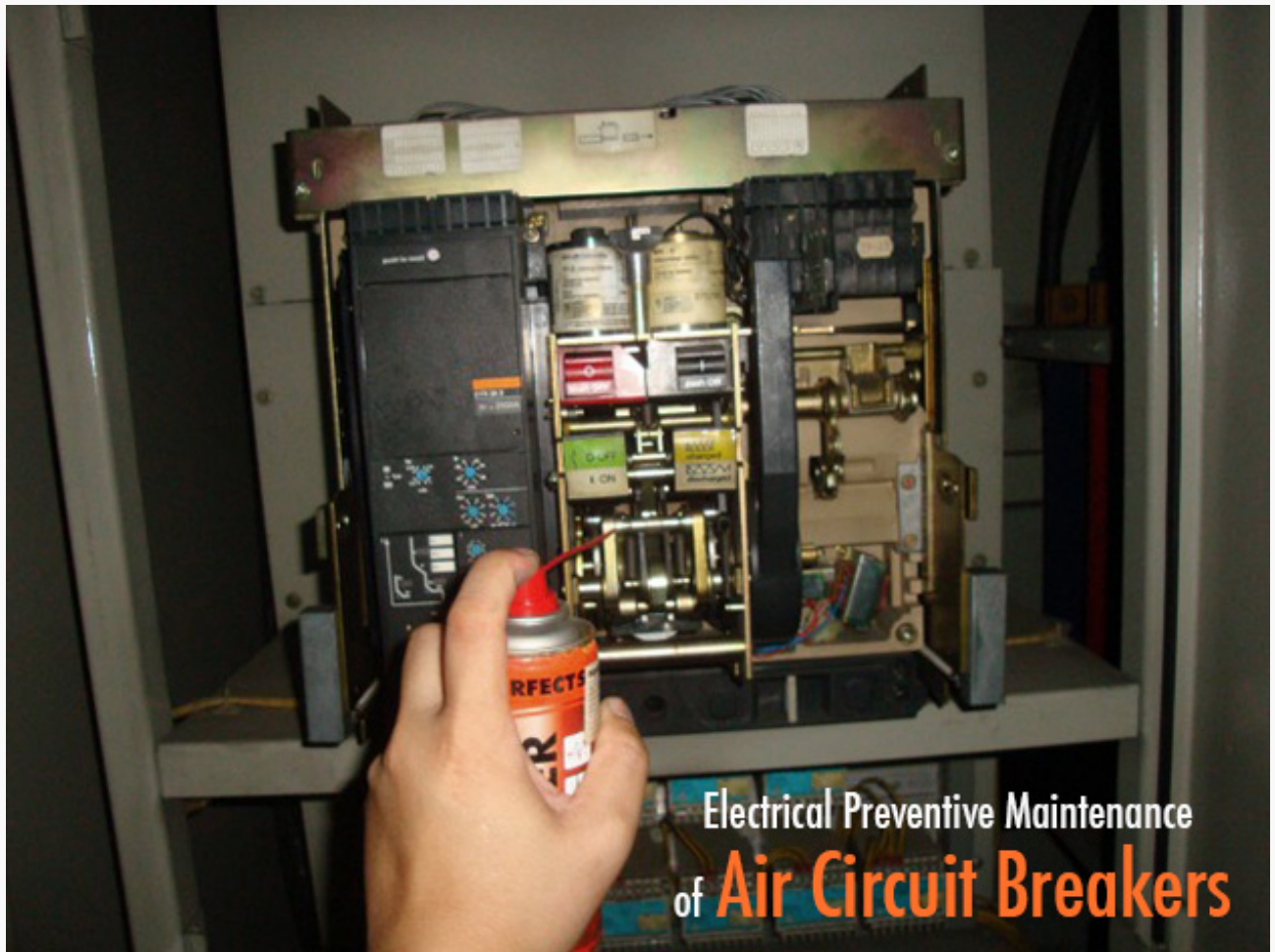


# Electrical Preventive Maintenance of Air Circuit Breakers

Edvard



Electrical Preventive Maintenance of Air Circuit Breakers

## Recommended minimum practice for preventive maintenance

### Insulation

**Remove and clean interphase barriers.** Clean all insulating materials with vacuum and/or clean lint free rags. If it is necessary to use cleaning solvents, use only solvents recommended by the manufacturer.

Inspect for (early) signs of **corona**, **tracking**, **arcing**, or **thermal or physical damage**.

**Ensure that insulation is left clean and dry.**

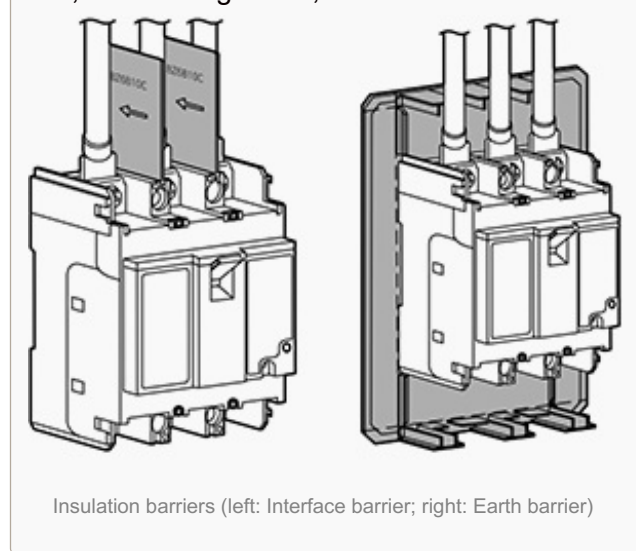
### Contacts

Ensure that **all contacts are clean**, **smooth**, and **in proper alignment**. Ensure that spring pressures are maintained according to manufacturer's specifications. On silver contacts, discoloration is not usually harmful unless caused by insulating deposits. Clean silver contacts with alcohol or silver cleaner using non-abrasive cloths.

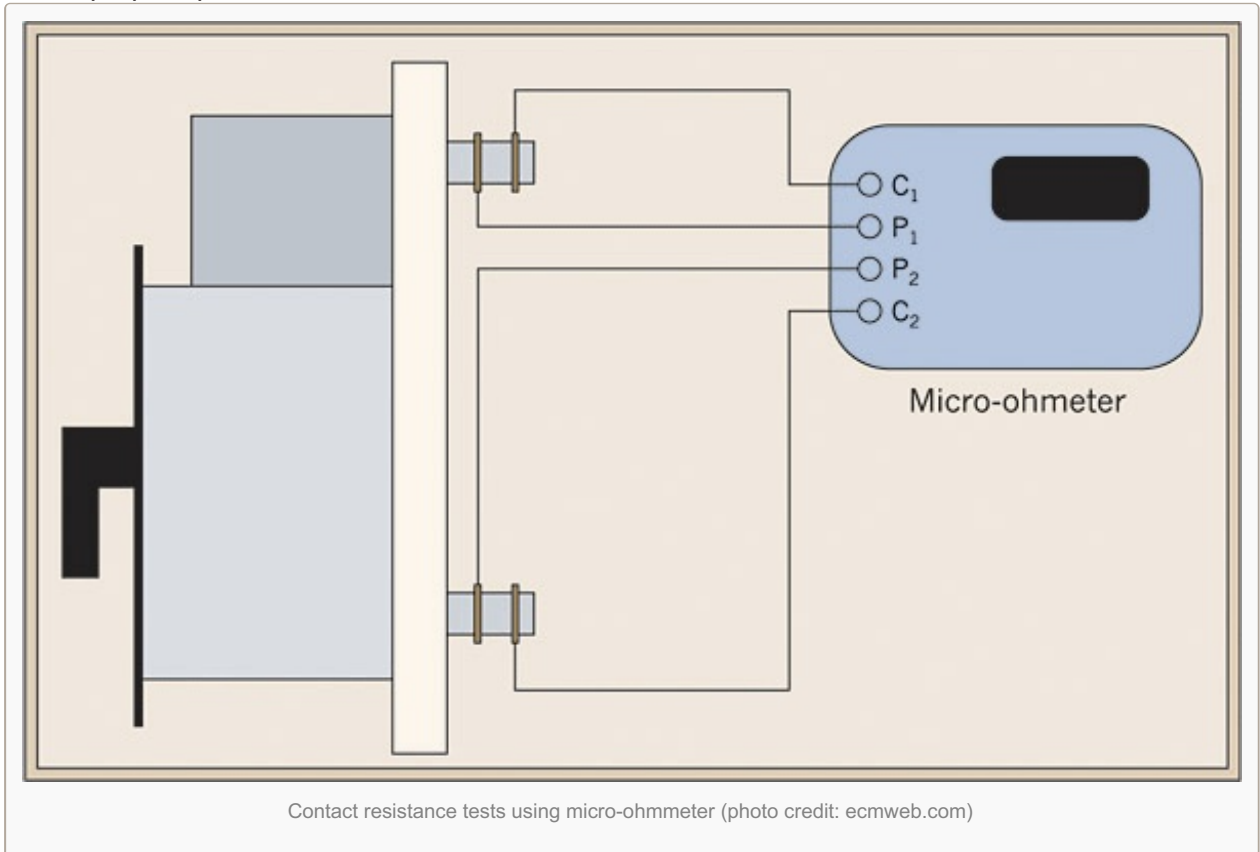
Manually close breaker to check for proper wipe, contact pressure, contact alignment, and to ensure that all contacts make at approximately the same time.

If possible, a **contact resistance test** should be performed to determine the quality of the contacts. Micro-ohmmeters, which are used to perform contact resistance tests, apply a DC current through the entire closed circuit breaker current path, including the contacts, pivot point, and stab connections of the circuit breaker. The test set read-out displays the contact resistance directly in micro-ohms.

Older breakers equipped with carbon contactors generally require very little maintenance. Examine for proper pressure, deterioration, or excessive dressing which may interfere with their proper operation.



**Draw-out contacts** on the circuit breaker and the



stationary contacts in the cubicle should be cleaned and inspected for overheating, alignment, and broken or weak springs. Coat contact surfaces with contact lubricant to ease mating (*see manufacturer's recommendations*).

## Arc Interrupters

Clean all ceramic materials of loose dirt and examine for signs of moisture, make sure the assemblies are clean and dry. Examine for cracked or broken pieces. Dirt and arcing deposits may be removed by light sanding — do not use emery cloth or wire brushes which may leave conductive residue behind. Repair or replace as necessary.

Examine arc chutes for dirt and/or dust accumulations and clean as necessary. **Dielectric testing of arc shields** may be recommended by the manufacturer. Check air puffer for proper operation.

## Operating Mechanism

Inspect for **loose, broken, worn, or missing parts** (consult manufacturer's schematics for required parts). Examine for excessive wear of moving parts. Observe that operating mechanisms function properly without binding, hanging, or without delayed action.

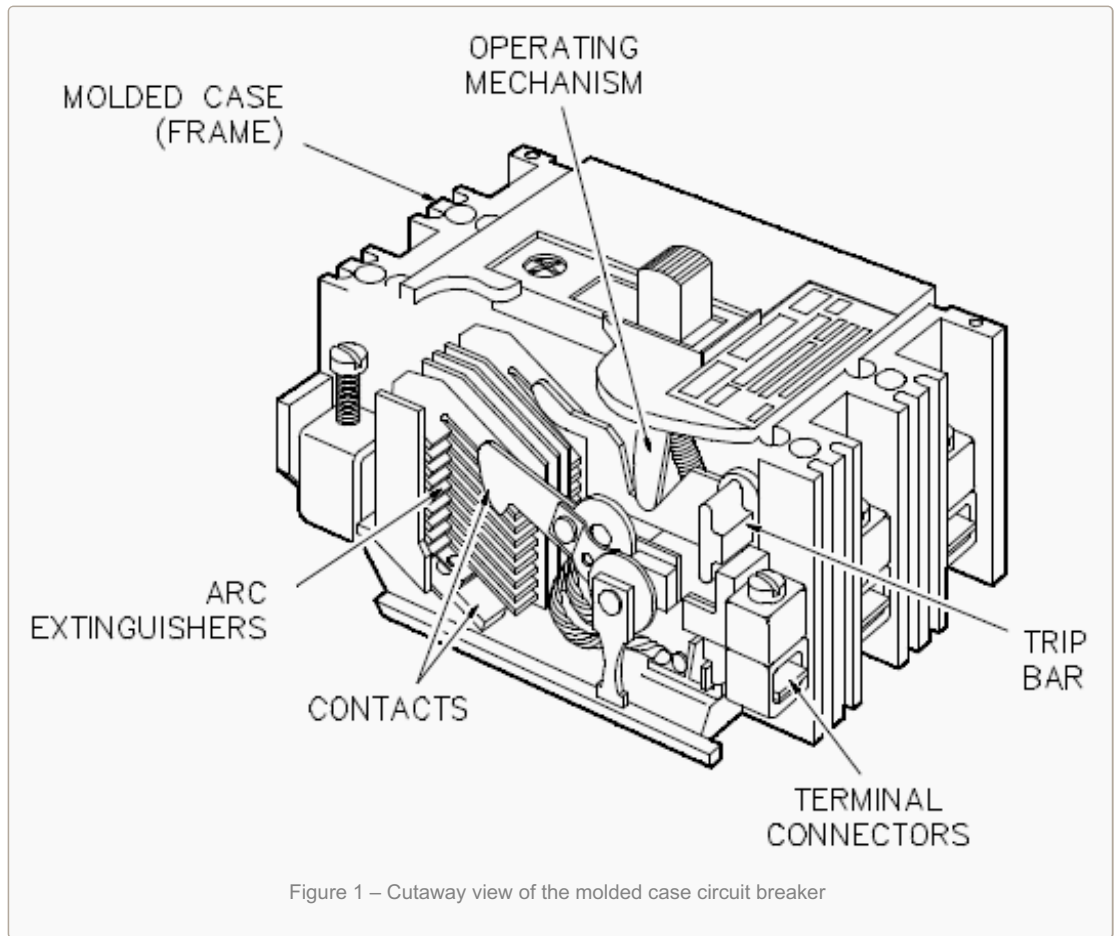
**Ensure any lubrication is done according to the manufacturer's specifications.**

Ensure mechanisms are clean, properly lubricated, and all bolts and screws are properly secured. Repair or replace as necessary.

## Auxiliary Devices

Inspect operating devices for proper operation and general condition. Ensure all indicating devices are fully functional and properly set.

Protective relays and circuit breaker trip devices should be inspected and tested



according to manufacturers' specifications and applicable industry standards such as those issued by the **Institute of Electrical and Electronics Engineers (IEEE)** and the **National Fire Protection Association (NFPA)**.

## References:

- Standard for and electrical preventive maintenance (EPM) program – The Hartford Steam Boiler Inspection and Insurance Company
- Fuji Electric FA Components & Systems Catalogue

Source:

<http://electrical-engineering-portal.com/electrical-preventive-maintenance-of-air-circuit-breakers>