

Detailed Instructions about Cleaning And Greasing



WARNING



**HAZARDOUS VOLTAGE
CAN SHOCK, BURN
OR CAUSE DEATH.**

Do not attempt to handle, install, use or service
this product before reading instruction book

- **READ THIS MANUAL CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS CIRCUIT BREAKER.**
- **File these instructions with other instruction books, drawings and descriptive data of the circuit breaker. Keep this manual available for the installation, operation and maintenance about this equipment. Use of these instructions will facilitate proper maintenance of the equipment and prolong its useful life.**
- **Install the Emax circuit breaker within the design limitations as described in the Installation and service instructions shipped with the circuit breaker. These circuit breakers are designed to operate within the current and voltage limitations on the switch nameplate. Do not apply these switches to systems with current and/or voltages that exceed these limits.**
- **Follow your company's safety procedures.**
- **Do not remove covers, open doors or work on equipment unless power has been turned off and all circuits de-energized.**



WARNING



- **Detailed descriptions of standard repair procedures, safety principles and service operations are not included. It is important to note that this document contains warnings and cautions against certain specific service methods that could cause personal injury to service personnel, damage equipment, or render it unsafe. These warnings do not cover all conceivable ways in which service, whether or not recommended by ABB, might be performed, or the possible hazardous consequences of each conceivable way, nor could ABB investigate all such ways. Anyone using service procedures or tools, whether or not recommended by ABB, must satisfy himself thoroughly that neither personal safety, nor equipment safety, will be jeopardized by the service method or tools selected. Should further information be required or specific problems arise that are not sufficiently covered, refer the matter to an ABB service representative.**
- **This publication is written only for qualified persons and is not intended to be a substitute for adequate training and experience in the safety procedures for this device.**
- **The purchaser, installer or ultimate user is responsible for ensuring that warning signs are attached and all access doors and operating handles are securely locked when the gear is left unattended, even momentarily.**
- **All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time and without prior notice**



WARNING

- This document does not substitute any instruction or information contained in the Installation and Service Instructions Manual, doc. number 1SDH000460R0002 (hereafter referred to as manual) shipped with the breaker.
- This document gives a more complete explanation of the maintenance activities described in section 8.3.5 or 8.4.5 of the above mentioned manual.
- The document is fitted on fixed circuit breakers. Withdrawable circuit breakers may have some differences.
- This document is suitable for all breakers of the Emax family, regardless of the frame size or the number of poles or the trip unit or the breaker version (Old Emax or New Emax)
- Use of substances (diluent, oils or greases) differing from those specified in the manual or in this document may jeopardize personal safety or damage the equipment. In case of doubt about such substances, contact ABB for explanations.
- Contact the ABB service organization if the breaker functions badly, is damaged, or fails to pass all the tests after the maintenance activities have been completed.

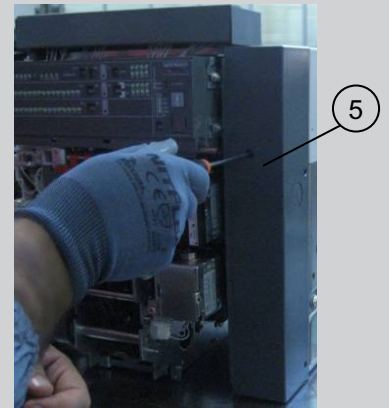
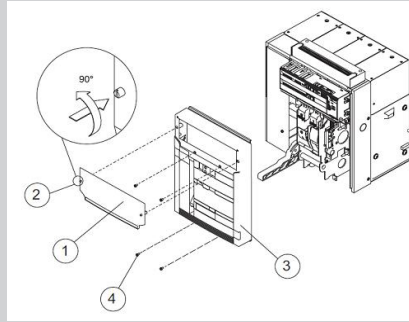
1- Before starting maintenance

- Follow all the steps in the manual in chapter 8 "Maintenance" up to paragraph 8.3.5 for first level maintenance or paragraph 8.4.5 for second level maintenance
-  **DISCONNECT MAIN CIRCUIT AND AUXILIARY CIRCUITS FROM THE POWER SOURCE**
-  **ENSURE THE BREAKER IS OPEN WITH CLOSING SPRING DISCHARGED**



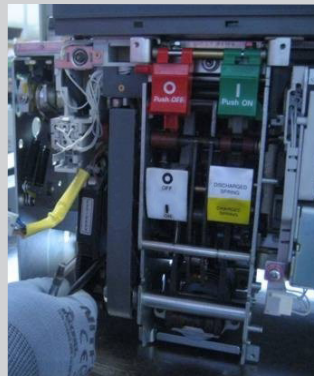
2 - Remove tab and cap

- Remove the tab (1) of the release by rotating the screws (2) as shown in figure.
- Remove the front cap (3) by loosening the four screws (4).
- Remove side guards (5) by loosening the front and side screws



3 - Remove the motorgear

- Loosen the hex screw which fixes the motorgear on the left side of the circuit-breaker (3A).
- Remove the motorgear sliding it to the left and then pulling it out (3B).



(3A)



(3B)

4 - Remove the coils support

- Loosen the screw on the right side of the circuit-breaker (4A).
- Remove the support pulling down the lever and then pulling out the support group (4B).
- If previously an under-voltage release was installed preventing main springs discharging, perform now a closing and opening operation to discharge main springs.



(4A)



(4B)

5 - Lift the opening button

- To have better access to breaker operating mechanism, lift up carefully the opening (red) button pulling it to the right (5A) and then turning it up (5B).



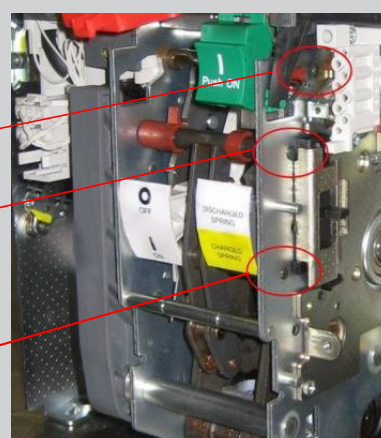
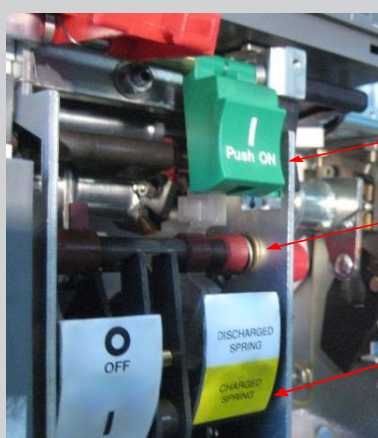
(5A)



(5B)

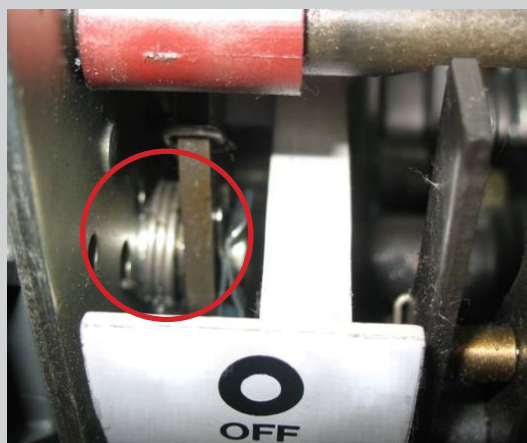
6 - Shafts cleaning (1)

- For cleaning purposes use diluent such as Henkel 273471
- Clean the seat of the three shafts shown in the picture on the outside and inside of the right shoulder
- Repeat the same operation, on the seat of the three shafts on the left shoulder, both inside and outside.
- Use a brush to help get old grease and dirt out. Make sure to operate all shown parts, while applying the cleaner.



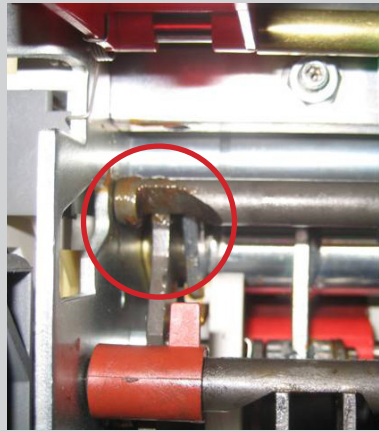
7 - Shafts cleaning (2)

- For cleaning purposes use diluent such as Henkel 273471
- Clean the hook in the point shown in the pictures
- Use a brush to help get old grease and dirt out. Make sure to operate all shown parts, while applying the cleaner.



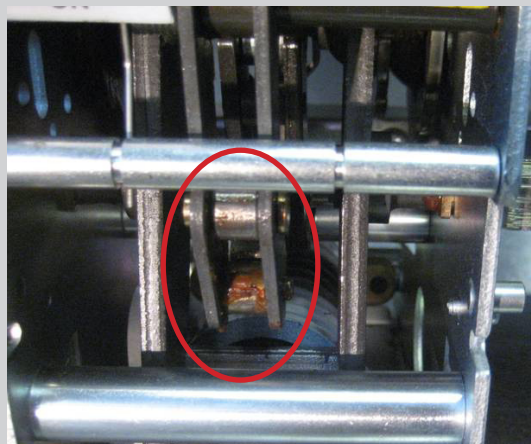
8 - Hooks cleaning (1)

- For cleaning purposes use diluent such as Henkel 273471
- Clean the hook in the point shown in the pictures
- Use a brush to help get old grease and dirt out. Make sure to move all shown parts, while applying the cleaner.



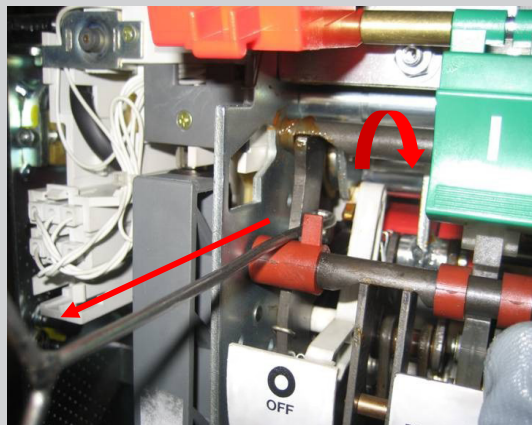
9 - Hooks cleaning (2)

- For cleaning purposes use diluent such as Henkel 273471
- Clean the hooks in the point shown in the pictures
- Use a brush to help get old grease and dirt out. Make sure to operate all shown parts, while applying the cleaner.



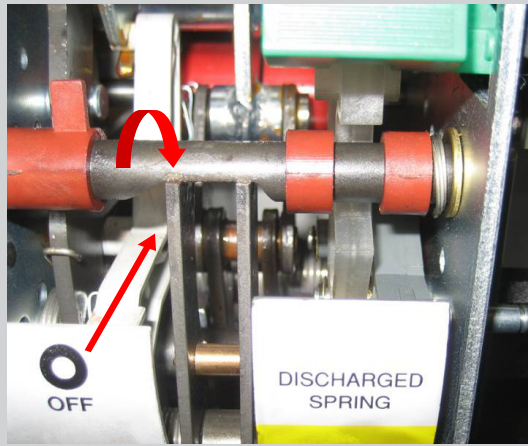
10 - Check effectiveness of cleaning (1)

- Turn the shaft as in the picture
- Pull the hook as in the picture
- Release the shaft
- Release the hook
- The cleaning is effective if the hook resets behind the shaft instantaneously without slow moving of either the shaft or the hook



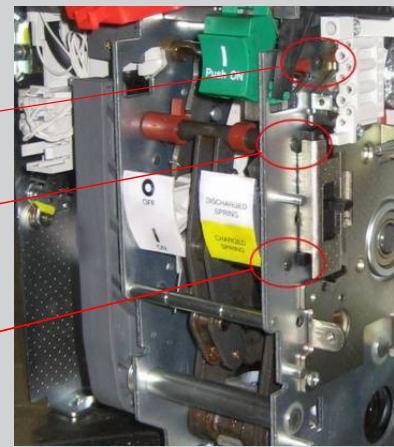
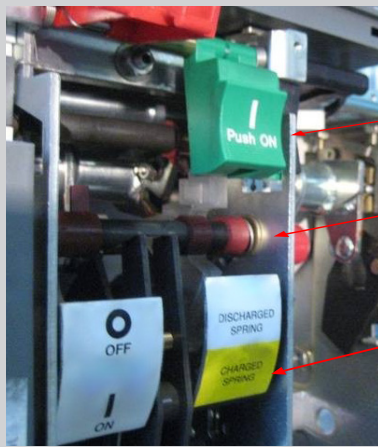
11 - Check effectiveness of cleaning (2)

- Turn the shaft as in the picture
- Push the hook as in the picture
- Release the shaft
- Release the hook
- The cleaning is effective if there is no slow moving of either the shaft or the hook



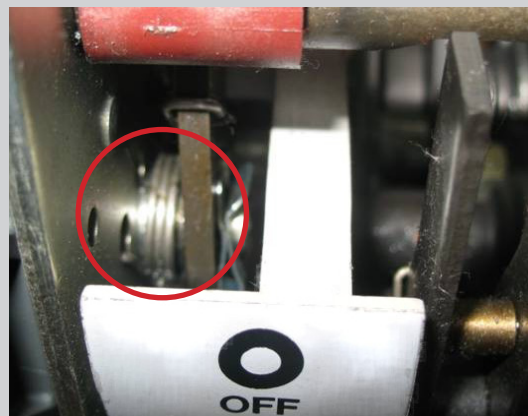
12 - Shafts lubrication (1)

- Lubricate the seat of the three shafts shown in the picture on the outside and inside of the right shoulder with a small amount of EXXON Mobil SHC 524 oil (eg 2 drops \approx 0,2 ml). Excessive oil needs to be cleaned up. Make sure to operate all moving parts while applying the oil.
- Repeat the same operation, on the seat of the three shafts on the left shoulder, both inside and outside.



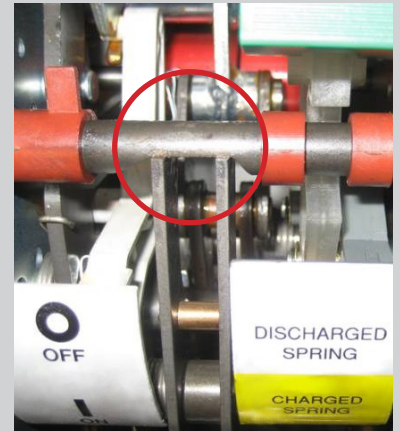
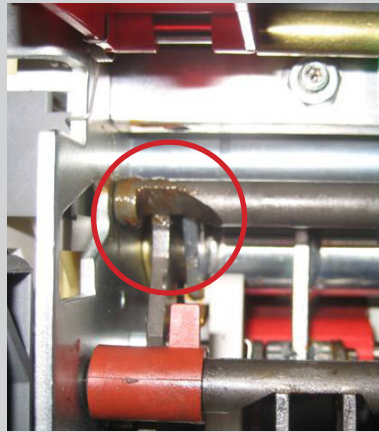
13 - Shafts lubrication (2)

- Lubricate the seat of hook shown in the picture with a small amount of EXXON Mobil SHC 524 oil (eg 2 drops \approx 0,2 ml). Excessive oil needs to be cleaned up. Make sure to operate the parts while applying the oil.



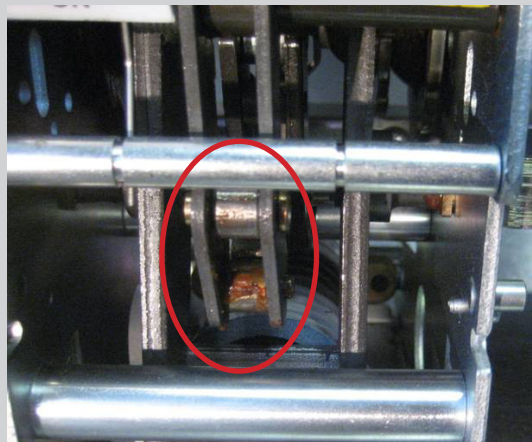
14 - Hooks greasing (1)

- Grease the hooks and the shafts in the shown points
- Use EXXON Mobil Mobilgrease28 for greasing



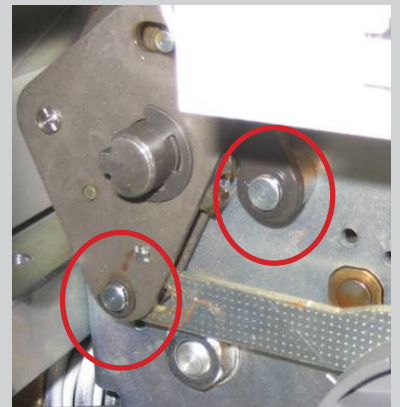
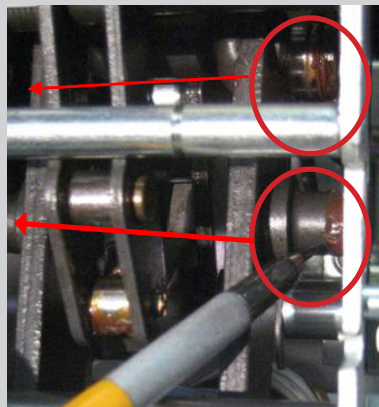
15 - Hooks greasing (2)

- Grease the hooks and the shafts in the shown point
- Use EXXON Mobil Mobilgrease28 for greasing



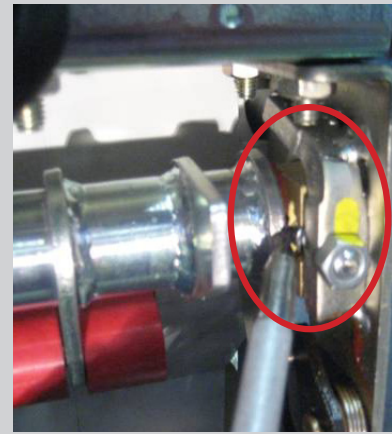
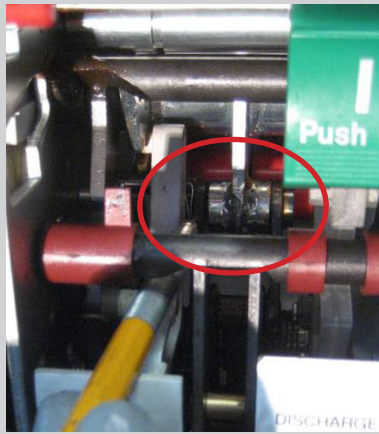
16 - Other operating mechanism parts greasing (1)

- Grease other parts of the operating mechanism in the shown point
- For picture on the left grease symmetrical points as well
- Use EXXON Mobil Mobilgrease28 for greasing



17 - Other operating mechanism parts greasing (2)

- Grease other parts of the circuit breaker in the shown point
- For picture on the right grease symmetrical points as well
- Use EXXON Mobil Mobilgrease28 for greasing



18 - Circuit breaker reassembly and testing

- Put the opening (red) button in its original position
- Reassemble circuit breaker using the following tightening torques:
 - Motorgear 9 Nm
 - Coils support 2 Nm
 - Covers 1,1 Nm
- Continue the maintenance following the manual chapter 8 "Maintenance" paragraph 8.3.6 for first level maintenance or paragraph 8.4.6 for second level maintenance
- Do not put the breaker in service if it fails to pass all the final tests after the maintenance activities have been completed. Please contact the ABB service organization.



DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

- There are no understandings, agreements, representations of warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose, other than those specifically set out by an existing contract between the parties. Any such contract states the entire obligation of the seller. The contents of this document shall not become part of or modify any prior or existing agreement, commitment or relationship.
- The information, recommendations, descriptions and safety notations in this document are based on ABB experience and judgment with respect to circuit breakers. This information should not be considered to be all inclusive or covering all contingencies.

For more information please contact:

ABB S.p.A.

ABB SACE Division

ABB Breakers & Switches Service.

www.abb.com

Power and productivity
for a better world™

