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User and Maintenance Manual

MODULO 250

Model 252 STD
Model 254 STD
Model 256 STD
Model 252 CR
Model 254 CR
Model 256 CR

ISO 9001 - Certificate N°0238

Translation of the original instructions
EN 130701 REV. 1

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1. Introduction

The purpose of this manual is to provide the user with all the information necessary to use the product properly, independently and safely.

This manual constitutes an integral part of the safety features and must be read in its entirety before installation and use of the product. It must therefore be kept in a safe place should future reference be necessary before proceeding with any kind of work.

The user is strongly advised to read it carefully and to follow the rules and procedures contained in it as these provide important information concerning safe use and maintenance.

If any doubt should arise concerning the correct interpretation of the instructions, contact our technical department for the necessary clarification.

It is prohibited for anyone to disclose or modify the content of this manual or to use it for personal purposes.

2. Manufacturer

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3. General information

Correct use of the product: In compliance with Italian Legislative Decree 17/2010 and DIRECTIVE 2006/42/EC the operating limits for ideal and safe use of the product are stated in this manual.

Design parameters: COREMO OCMEA brakes have been designed for use in conformity with the performance and conditions stated in the catalogue and Chapter 5.1 of this manual. t is advisable not to exceed these limitations.

Model selection: Selection of the correct model for a given application is of basic importance. The technical department of COREMO OCMEA can provide you with information, suggestions and assistance regarding correct application and use.

Use: Compliance with the assembly and maintenance instructions prevents not only costly down time but also accidents due to incomplete knowledge of the product.

Rotating parts: The MODULO brakes are coupled mainly with rotating parts. In this case the moving parts must be protected in conformity with the requirements of DIRECTIVE 2006/42/EC and Italian Legislative Decree 17/2010 or equivalent legislation in force in the countries in which they are used..

Power source for pneumatic brakes: Use air not contaminated with oil or water and a 25 micron filter with automatic condensation discharge.

Friction material: All COREMO OCMEA brakes are fitted with friction material which is absolutely free of asbestos and is declared as NON toxic/harmful in full observance of health and environment regulations and laws. In any case it is better not to inhale dust produced by them and to wash hands thoroughly before eating or drinking.

Oils, greases, lubricating components: These are used in extremely limited quantities. Personnel suffering from allergies to these substances are advised to wear gloves or use protective cream which must be washed off thoroughly before eating or drinking.

Product markings: All the data on the plates must always be kept legible. Use the data shown on the plates when contacting the manufacturer for spare parts, information or assistance for example.

Disposal: Worn brake lining pads and other materials of which brakes are made are classified as special NON toxic/harmful products and therefore must be disposed of in accordance with the laws in force in the countries in which they are used.

4. Warnings

Failure to follow the instructions in this manual and on any plates attached to the product exposes persons to risks and may cause damage to other equipment and machinery.

- The product must not be used at an ambient temperature lower than -20 °C.
- The self-ventilated disc associated with the MODULO brake consists of grey cast iron (UNI-ISO 185-250) and has a hardness of 180 ÷ 210 HB.

The technical department of COREMO OCMEA can provide additional information in order to ensure correct application and use of the product.

Dangers caused by a power failure: A power failure will cause the brakes to fail. It is therefore necessary to provide an uninterrupted power supply or, if the case requires, use suitable power failure warning systems as a brake failure may cause personal injury and damage to property.

Danger of breakage during operation: To reduce the risk of breakage during operation carry out the periodic inspections shown in this manual.

Risks connected with changes in operating conditions: The product is designed for the purposes stated in this user and maintenance manual therefore the power supply pressure required for the brake to work safely and reliably is indicated. The operating conditions also vary depending on the diameter of the brake disc used; this manual contains an equation to calculate the dynamic torque provided as a function of the disc diameter. Please note that an erroneous calculation may result in a braking torque different to the desired value which could compromise aspects of safety.

Residual risk: Residual risk can be attributed to the operator not following all the procedures stated in the user and maintenance manual and not giving due consideration to the warnings.

5. Technical data

5.1. Product performance

The MODULO brake is intended to be used for tensioning.

Use of the product for any purpose other than those indicated may represent a risk to any aspect of safety.

MODULO 250 brakes are basically different depending on the number of units installed (2, 4 or 6) and differ in the standard model (STD) and with the small chamber (CR); the table below shows the torques provided for each model depending on the minimum and maximum power pressure and considering a coefficient of friction of 0.4

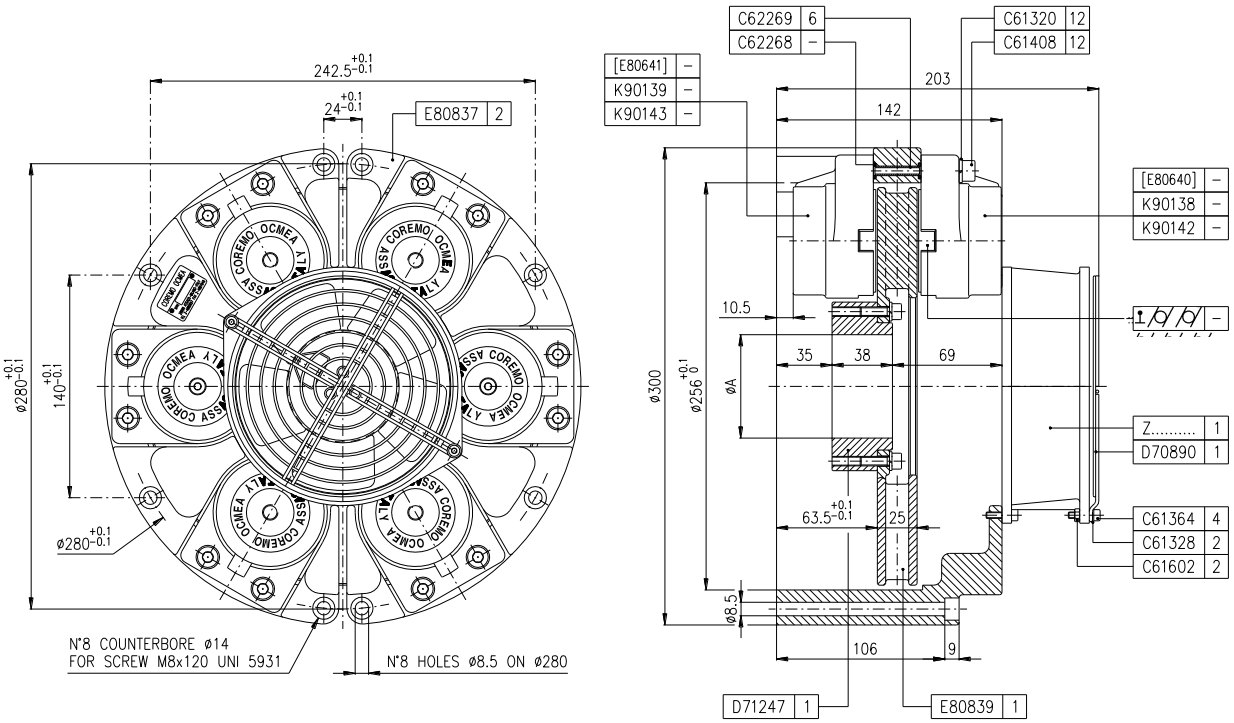
Warning: The value of the friction coefficient is purely theoretical as it depends on environmental conditions and on how the product is used.

TYPE	**Dynamic torque [Nm]**	
	6 bar	0,2 bar (*)
252 STD	280	4,6
254 STD	560	4,6
256 STD	840	4,6
252 CR	112	1,9
254 CR	224	1,9
256 CR	336	1,9

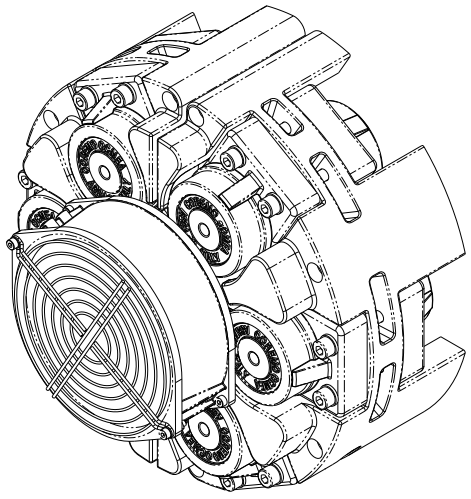
(*) The values of torque indicated for a power pressure of 0.2 bar are for a single brake unit.

Erroneous calculation of the braking torque in relation to the power pressure may jeopardize aspects of safety.
The technical department of COREMO OCMEA can provide information, suggestions and assistance for correct application and use of the product.

5.2. "MODULO 250" assembly



øA MAX = 65 mm (FIXING BY LOCKING BUSH)
øA MAX = 60 mm (FIXING BY KEY)



ITEM Z.....	
PART NUMBER	**DESCRIPTION**
Z50140	230VAC AXIAL FAN
Z50141	115VAC AXIAL FAN
Z50145	24VDC AXIAL FAN

5.3. Brake lining wear

The thickness of each single new lining is 10 mm. A maximum overall lining wear of 9 mm is allowed. Failure to remain within the above limit may represent a risk to aspects of safety.

5.4. Special note

During braking kinetic energy is converted into heat caused by friction between the surfaces of the brake linings and the brake disc. It is therefore fundamentally important to consider the amount of heat that can be dissipated.

Ignoring the heat produced during braking affects brake lining wear and may jeopardize the safety of the operators and the reliability of the product. Since a brake can be used for many applications, it is advisable to contact the technical department of COREMO OCMEA for further explanation in this regard.

6. Transport and storage

Personnel assigned to this work must wear suitable PPE such as gloves, safety footwear and take any other precautions necessary before proceeding with transport, handling and storage of the this part.

1. **Transport**: When handling it is important to bear in mind the dimensions and weight of each single type of product as shown in the product drawing enclosed with this manual and in the catalogue of the brake type in question.
2. **Storage**: When storing brakes it is important to bear in mind that a considerable weight is concentrated in a small space. Personnel assigned to this work must wear suitable PPE (safety footwear, gloves, and take any other appropriate precautions) in order to avoid the risk of injury.

7. Installation

THE BRAKE MUST BE INSTALLED WITH THE MACHINE OFF.

Personnel assigned to this work must wear suitable PPE such as gloves, safety footwear and take any other appropriate precautions to ensure adequate protection and avoid the risk of injury.

1. Check that any parallel offset between the shaft and centre for installing the brake is no greater than 0.05 mm.
2. If the drilling of the hole in the hub is not the responsibility of COREMO OCMEA, it is advisable to do this by centering on the outside diameter of the self-ventilating disc. To anchor the disc/hub using a shrink disc, the maximum distance of the hole is 65 mm, while for anchoring using a key the maximum distance is 60 mm..
3. Install the hub, complete with self-ventilating disc, on the shaft of the machine. Lock it in position axially to prevent slipping on the shaft (Figure 1). Check that the distance between the shoulder of the machine and the disc/hub is as specified in the assembly drawing of Chapter 5.2. Also make sure that between the machine shoulder and the disc the gap is not greater than 0.1 mm, as indicated in Figure 1.

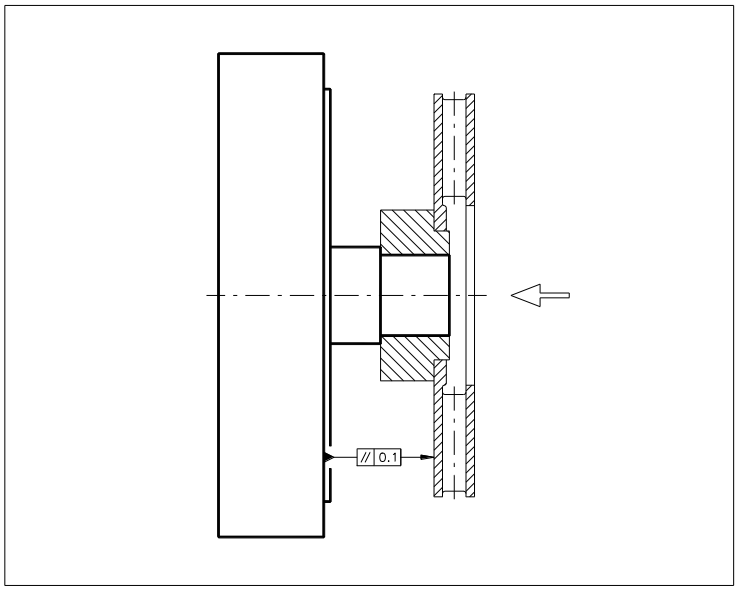


Figure 1

4. Make sure that the shoulder of the machine has a centering part of dimensions suitable for correctly coupling with the two mounting brackets. The centering dimensions are shown in the assembly diagram in Chapter 5.2.

5. Mount the first mounting bracket, complete with brake unit, anchoring it to the flange of the machine with 4 screws (UNI 5931 M8x120) with tightening torque of 23 Nm (Figure 2).

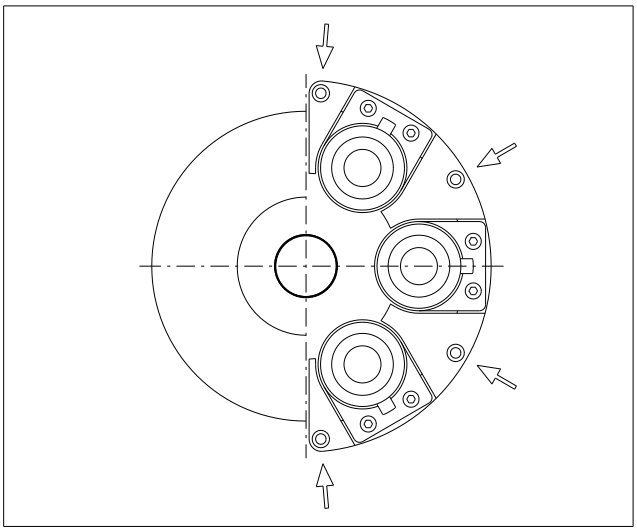


Figure 2

6. Make sure that the self-ventilating disc is centered and rotates freely between the lining pads of the brake unit (Figure 3).

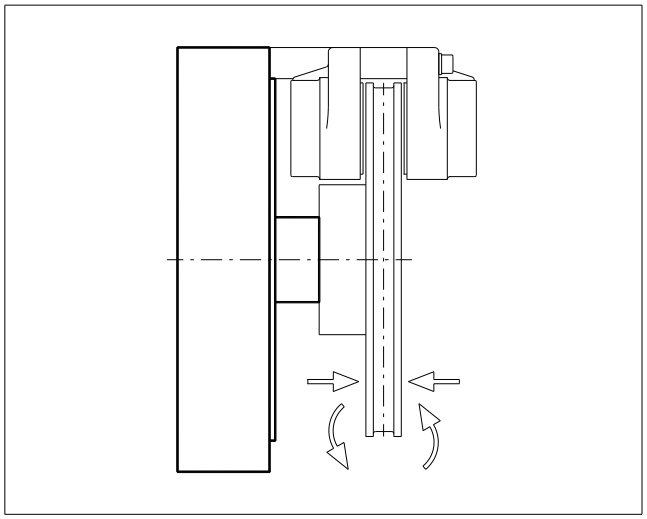


Figure 3

7. Mount the second mounting bracket as explained in point 5 (Figure 4).

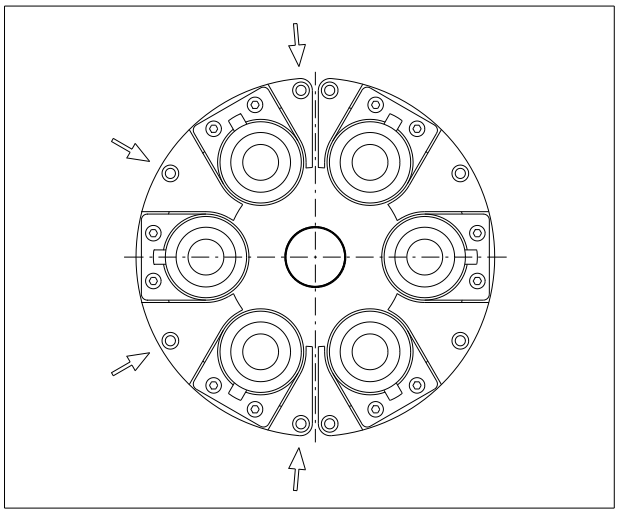


Figure 4

8. Anchor the ventilator to the two mounting brackets using 2 M4 screws, and a n.3 Allen wrench. Then anchor the finger guard grid to the ventilator with the other 2 M4 screws and 2 nuts, using a n. 7 wrench (Figure 5). **NOTE**: Make sure that the flow direction arrow indicated on the ventilator points towards the brake.

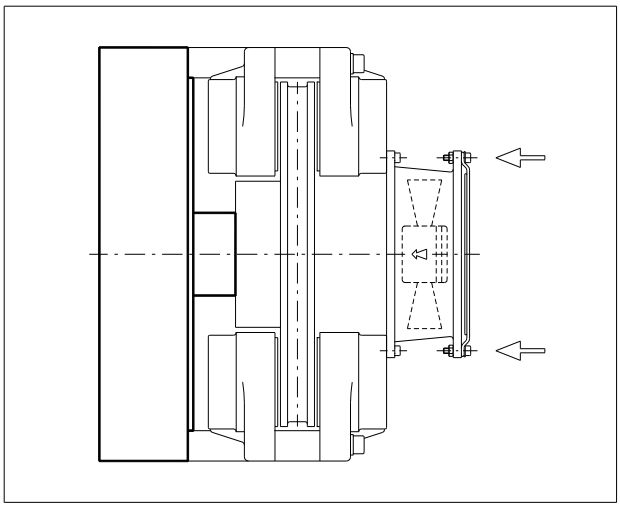


Figure 5

9. **Only for the version with ventilator cover**: the ventilator is supplied already installed on the ventilator cover on which an electrical connector is also mounted. Anchor the ventilator cover to the two mounting brackets using 4 M4 screws and a n.2.5 Allen wrench (Figure 6). **NOTE**: Position the two apertures on the ventilator cover at the level of the air feed fittings.

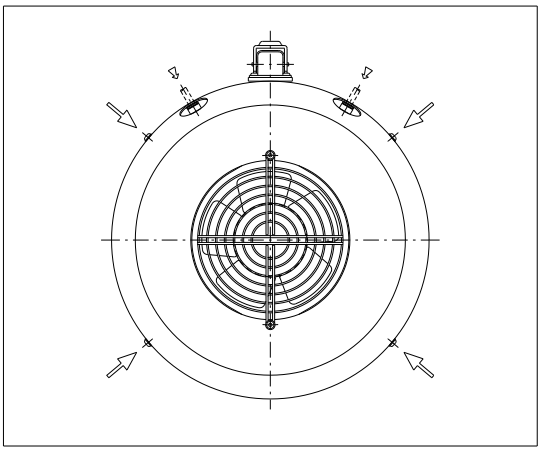


Figure 6

10. **Only for the version with ventilator cover**: Connect the electrical cables to the socket of the connector as shown in Figure 7.

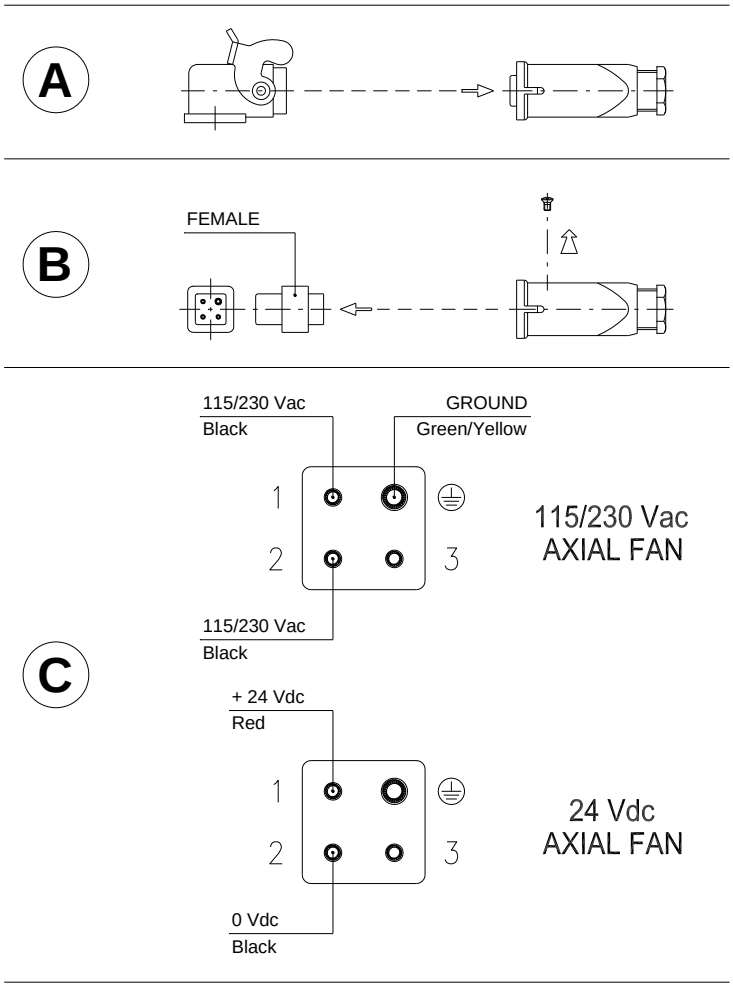


Figure 7 - Removal of connector (A-B) and electrical cable connection (C)

11. Connect the braking units to the power line using a 1/8” gas fitting e and a flexible hose of sufficient length.
12. On request the brake can be supplied complete with feed unit already mounted (feed unit with on/off valve also available); in this case connect the fittings to the air feed line using pipes Ø 6x4 mm.
13. The version of the MODULO 250 brake with ventilator cover is supplied complete with fittings for pipes Ø 6x4 mm as a standard feature.
14. The control pressure must not exceed 6 bar. The air must not be contaminated with oil or water, therefore a 25 micron filter with automatic condensate discharge should be used.
15. **BEDDING-IN:** The initial braking torque may be from 30% to 50% less than the rated value until the brake lining adjusts to the disc.

8. Operation

8.1. Power supply of the product

A table is shown in Chapter 5.1 containing the dynamic torques for each single type of product. The control pressure must not exceed 6 bar.
The technical department of COREMO OCMEA can provide information, suggestions and assistance for correct application and use of the brake.

An erroneous feed pressure produces a braking torque different from the desired value and jeopardizes aspects of safety.

8.2. Improper use

The products considered here must be used exclusively as described in Chapter 5 of this manual. Any other use is to be considered improper. The manufacturer declines all responsibility for damage caused by erroneous or unreasonable use of the product.

Use of the product for purposes other than those stated in this manual may compromise any aspect of safety.

9. Maintenance and cleaning

ALL TYPES OF WORK ON THE BRAKE MUST BE DONE WITH THE MACHINE OFF.

Staff assigned to this work must wear suitable PPE such as gloves and safety footwear and take any further precautions necessary to ensure adequate protection and prevent injury. Failure to follow the instructions given for maintenance and cleaning of the product may compromise personal safety and cause damage to equipment and machinery.

High temperatures may be produced after braking on the surfaces of the disc brake and the brake linings. Personnel must therefore wait for parts subject to overheating to cool down and wear suitable protective gloves and PPE.

9.1. Changing the lining pads

1. Switch off the air circuit and disconnect the power line.
2. Remove the fan.
3. Remove the two mounting brackets from the machine.
4. Remove the brake linings, anchored by slotting into the thruster with a catch spring (C61082), using a screwdriver. Proceed as follows: insert the screwdriver in the slit in the body of each pincer unit; push the screwdriver all the way in under the lining pad and lever it until the pin that keeps it anchored comes out of its housing.
5. Insert the new lining pad using a gentle pressure until the anchor pin reaches the bottom of its housing.
6. Remount the brake as described from point 5 to point 8 of Chapter 7.
7. Reconnect the power line and switch the air line back on.

9.2. Cleaning the friction surfaces

1. Switch off the air circuit and disconnect the power line
2. Remove the fan.
3. Remove the two mounting brackets from the machine.
4. Remove the brake linings, anchored by slotting into the thruster with a catch spring (C61082), using a screwdriver. Proceed as follows: insert the screwdriver in the slit in the body of each pincer unit; push the screwdriver all the way in under the lining pad and lever it until the pin that keeps it anchored comes out of its housing.
5. Remove any oil or grease from the surface of the disc using a non-pollutant detergent.

6. If the lining pads are contaminated only superficially it is better to clean them using fine emery cloth. If the contamination of the linings is deep or at the maximum wear limit as indicated in Chapter 5.3 and stated in the catalogue, replace them with new linings.
7. Put back the lining pad by applying a gentle pressure until the anchor pin reaches the bottom of its housing.
8. Remount the brake as described from point 5 to point 8 of Chapter 7.
9. Reconnect the power line and switch the air line back on.

9.3. Changing the sealing rings and/or the springs (standard braking unit)

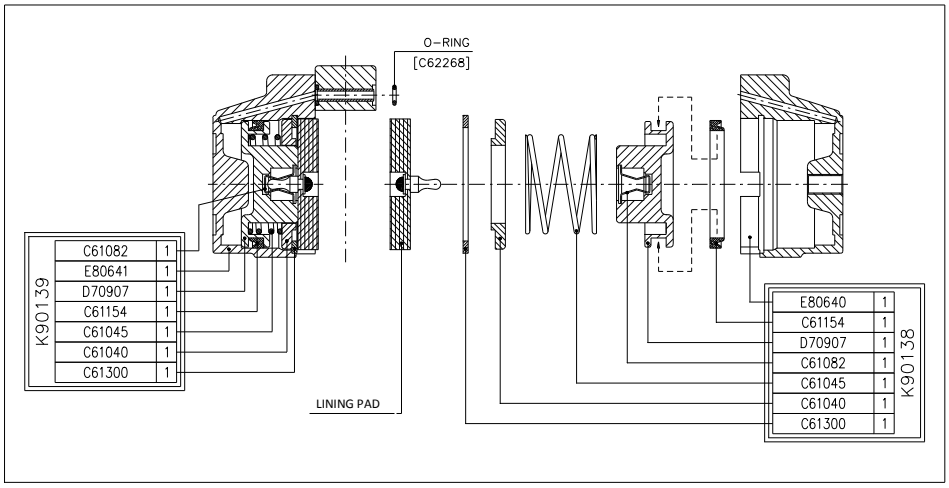


Figure 8 - Brake unit with STD pincers and related codes

1. Switch off the air line and disconnect the power line.
2. Remove the fan.
3. Remove the two mounting brackets from the machine.
4. Remove the brake units from the mounting brackets by unscrewing the M8 screws (C61408) using a n.6 Allen wrench.
5. Remove the brake linings, anchored by slotting into the thruster with a catch spring (C61082), using a screwdriver. Proceed as follows: insert the screwdriver in the slit in the body of each pincer unit; push the screwdriver all the way in under the lining pad and lever it until the pin that keeps it anchored comes out of its housing.
6. Remove the seeger ring (C61300), pull out the spring retainer disc (C61040) and the thruster (D70907).
7. Replace the sealing ring (C61154) and/or the spring (C61045). Before placing the new gasket and/or the spring in their seats, lubricate with lithium soap grease, mineral oil and solid lubricants. Grease the seat of the thruster also, in other words the internal part of the pincer body, before remounting the pincer unit.
8. Remount the thruster (D70907) in its seat, insert the spring retainer disc (C61040) and lock the seeger ring (C61300) in its seat.

9. Put back the lining pad by applying a gentle pressure until the anchor pin reaches the bottom of its housing.
10. Mount the brake units back on the mounting brackets. Make sure that the o-rings (C62268) are correctly housed in their seats. The tightening torque of the M8 screws is 23 Nm.
11. Remount the brake as described from point 5 to point 8 of Chapter 7.
12. Reconnect the power line and switch on the air line.

9.4. Changing the sealing rings (brake unit with small chamber)

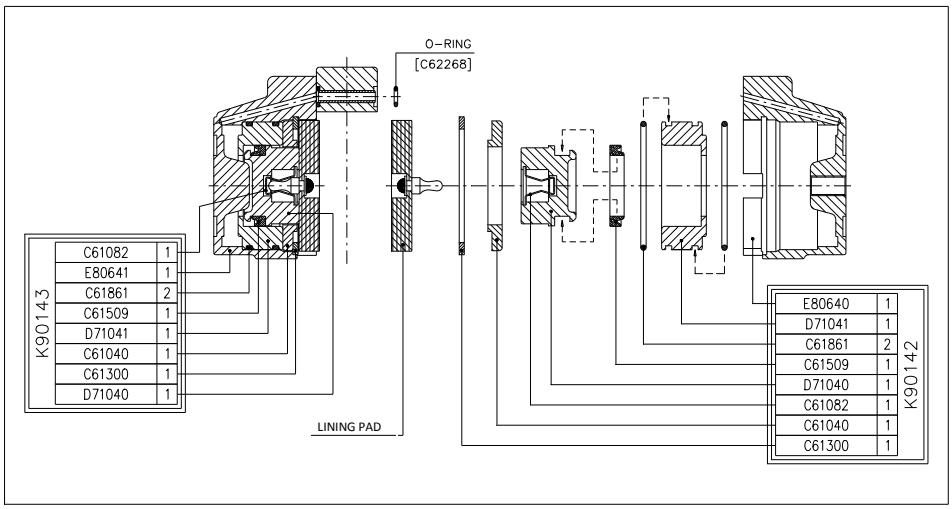


Figure 9 - Brake unit with CR pincers and related codes

1. Switch off the air line and disconnect the power line.
2. Remove the fan.
3. Remove the two mounting brackets from the machine.
4. Remove the brake units from the mounting brackets by unscrewing the M8 screws (C61408) using a n.6 Allen wrench.
5. Remove the brake linings, anchored by slotting into the thruster with a catch spring (C61082), using a screwdriver. Proceed as follows: insert the screwdriver in the slit in the body of each pincer unit; push the screwdriver all the way in under the lining pad and lever it until the pin that keeps it anchored comes out of its housing.
6. Remove the seeger ring (C61300), pull out the spring retainer disc (C61040), the thruster (D71040) and relative chamber (D71041).
7. Replace the sealing ring (C61509) and the o-ring (C61861). Before placing the new gasket and/or the spring in their seats, lubricate with lithium soap grease, mineral oil and solid lubricants. Apply grease also to the seat of the chamber, in other words the internal part of the pincer body, and the seat of the thruster, the interior of the chamber, before remounting the pincer unit.

8. Remount the chamber (D71041) in its seat, insert the thruster (D71040), the spring retainer disc (C61040) and lock the seeger ring (C61300) in its seat.
9. Put back the lining pad by applying a gentle pressure until the anchor pin reaches the bottom of its housing.
10. Mount the brake units back on the mounting brackets. Make sure that the O-rings (C62268) are correctly housed in their seats. The tightening torque of the M8 screws is 23 Nm.
11. Remount the brake as described from point 5 to point 8 of Chapter 7.
12. Reconnect the power line and switch on the air line.

9.5. Periodic maintenance

All inspections must be done with the machine switched off.
Anche se la periodicità di queste operazioni dovrebbe scaturire dalla frequenza d'uso del freno, è necessario effettuarle comunque ogni 3 mesi al fine di non compromette tutti gli aspetti inerenti la sicurezza.

1. Check that the play between each lining pad and the disc does not exceed 5 mm. If the play is too large replace the lining pads as described in Chapter 9.1.
2. Check that the surfaces of the linings and the disc are not contaminated with grease, oil or similar substances as these prevent the brake from working effectively.
3. Check that the anchoring screws of the brake and the brake units are correctly tightened.
4. Check the condition of the flexible hoses.
5. Apply the brake a number of times to check the condition of the gaskets, the operation of the springs and correct sliding of the stem.

10. Spare parts list

To avoid costly down time we recommend keeping a stock of spare parts adequate for the number of brakes as listed below:

Lining pads: Cod. Z50038

O-Ring: Cod. C62268

STD Pincer Unit

Sealing rings: Cod. C61154
Springs: Cod. C61045

CR Pincer Unit

Sealing rings: Cod. C61509
O-Ring: Cod. C61861

These spare parts must be kept in a place that is preferably dark, cool and far from substances that could reduce their functionality.