combirex

pneumatic tension brake

CX 250

CE

mounting and maintenance manual

renova
WE NEVER LOSE CONTROL

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MANCXENGA40121

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introduction

The following manual is intended for installers and users of the product and provides descriptions and explanations on the combirex CX 250 brake (installation and maintenance) and on all its parts and / or options available from Renova.

inside the manual you will find:

- Assembly instructions for the CX 250 brake machine and its maintenance
- Assembly instructions for our cover and related electrical wiring diagrams
- Description of the calipers to be used on our CX 250 brakes with all possible variants.

Since the product and Renova itself are constantly changing in order to improve the quality and performance of our products, Renova reserves the right to update the manuals without obligation to update the products already marketed and / or any previous manuals.

warning

READ THE INSTRUCTIONS AND WARNINGS PRESENT IN THIS MANUAL CAREFULLY AND KEEP THEM FOR FURTHER REFERENCES FOR THE DURATION OF THE PRODUCT. IN THIS MANUAL THERE ARE IMPORTANT INSTRUCTIONS CONCERNING OPERATIONS AND SAFETY FOR INSTALLATION, USE AND MAINTENANCE OF THE PRODUCT

WE STRONGLY RECOMMEND THAT THE DEVICE IS ASSEMBLED AND CHECKED BY A QUALIFIED TECHNICAL STAFF IN ORDER TO AVOID ANY RISK OF DAMAGE TO PERSONS OR THE PRODUCT ITSELF.

IN THE EVENT OF ANY PRODUCT BREAK, THE OPERATOR SHOULD KNOW THIS MANUAL AND THE INFORMATION INSIDE IT, KNOWING HOW TO AVOID ANY RISKS AND / OR DANGERS, BEFORE AN INTERVENTION BY OUR SPECIALIZED TECHNICIAN.

assistance

Renova is present worldwide with its agents and distributors.

To contact the Renova support service write to:
support@renova-srl.it

general information

These instructions are an integral part of the product and must be accessible to personnel. Personnel must carefully read and understand these instructions before starting any work on the machine. Compliance with all safety and handling instructions contained in this manual is a fundamental requirement for working safely

Explanation of symbols

In the following manual you may find the following symbols:

DANGER!

This symbol and the word “DANGER” indicate an immediate and dangerous situation that could lead to serious injury or death.

WARNING!

This symbol and the word “WARNING” indicate a potentially and dangerous situation that could lead to serious injury or death If not avoided

CAUTION!

This combination of symbol and word indicates a possible hazardous situation that can result in property damage or environmental damage if not avoided.

protective equipment for personnel

- For any jobs use:

Protective clothing

Protective clothing is heat-resistant and tight-fitting with low tear resistance, tight sleeves and no protruding parts that could get caught during various operations

Safety shoes

Safety shoes protect feet from being crushed by parts that could fall and prevent slipping on slippery surfaces

- For special works, use:

Protective gloves

Protective gloves protect your hands and forearms from contact heat and sharp objects

Safety glasses

Saefty glasses protect the eyes from any flying objects that can be thrown by the system's pressurized air

description

The **combirex** CX 250 brake, made entirely by Renova in its factory, is integrated to be compact, efficient and economic, able to adapt to various systems in an optimal way. With a modular caliper system (up to 6 calipers), the **combirex CX 250 pneumatic brake** reaches a maximum torque of 960 Nm and a heat dissipation of 4.5kW. In addition, Renova is able to provide some options that allow the CX 250 to adapt to any type of system.

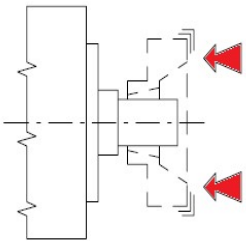
- Customizable configuration of the calipers
- Cast iron disc 250 mm
- Lightweight aluminum structure
- Pads with highly performing compounds
- Different models of pads available
- Pads compliant with RoHs regulation

The compact and simple design also allows the product to be easily disassembled in order to perform the various periodic maintenance operations which will be illustrated in detail in this manual.

mounting procedures

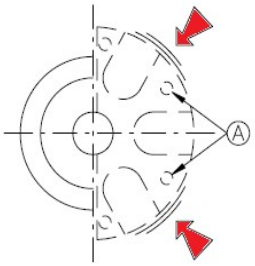
One of the main qualities of our combirex CX 250 product is ease of assembly. The brake can be assembled and ready for use in just five simple steps.

1



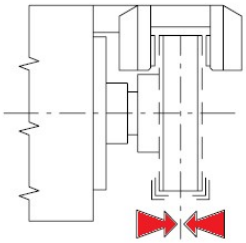
With the machine off and the shaft bare, fit the central brake disc without locking it.

2



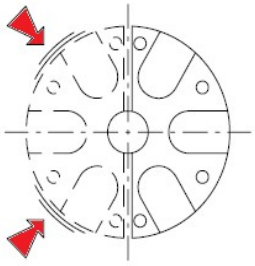
Assemble the half housing, fixing it to the machine flange in the 4 points indicated by A as shown in the drawing. Be sure to tighten the fixing screws with a force of 2.2 DaNm.

3



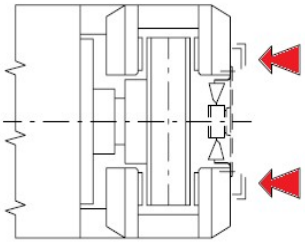
Center the disc between the two surfaces of the pads using a caliper and then proceed to fix the central disc. Carry out a disk rotation test to verify that there are no errors in the parallelism of the disk with respect to the flange greater than ± 0.1mm.

4



Install in the same way for the other half-bell as indicated in point 2.

5



Fasten the brake cover using the 4 screws inside the cover kit.

Once all the assembly steps have been performed and the various electrical parts in the brake have been wired, the brake is ready for use.

For correct use and maintenance of the brake, you must

CAUTION!
Check the correct assemble of it on the machine

CAUTION!
Periodically check the wear of the pads and replace them when necessary
(rif. page 16)

CAUTION!
Periodically check the wear of the central disc and replace when necessary
(rif. page 19)

WARNING!
Use pressurized air for the supply without the presence of lubricants or other external components

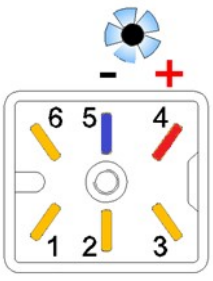
DANGER!
NEVER exceed the maximum brake supply capacity of 6 bar.

electrical parts wiring procedure

Once the cover is fixed to the brake with the 4 screws in the kit, the electrical parts in the brake must be wired as per your configuration.

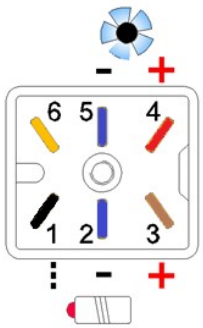
Renova offers two possibilities which include the fan (of various powers) and the RPM counter

Connector wiring in presence of fan



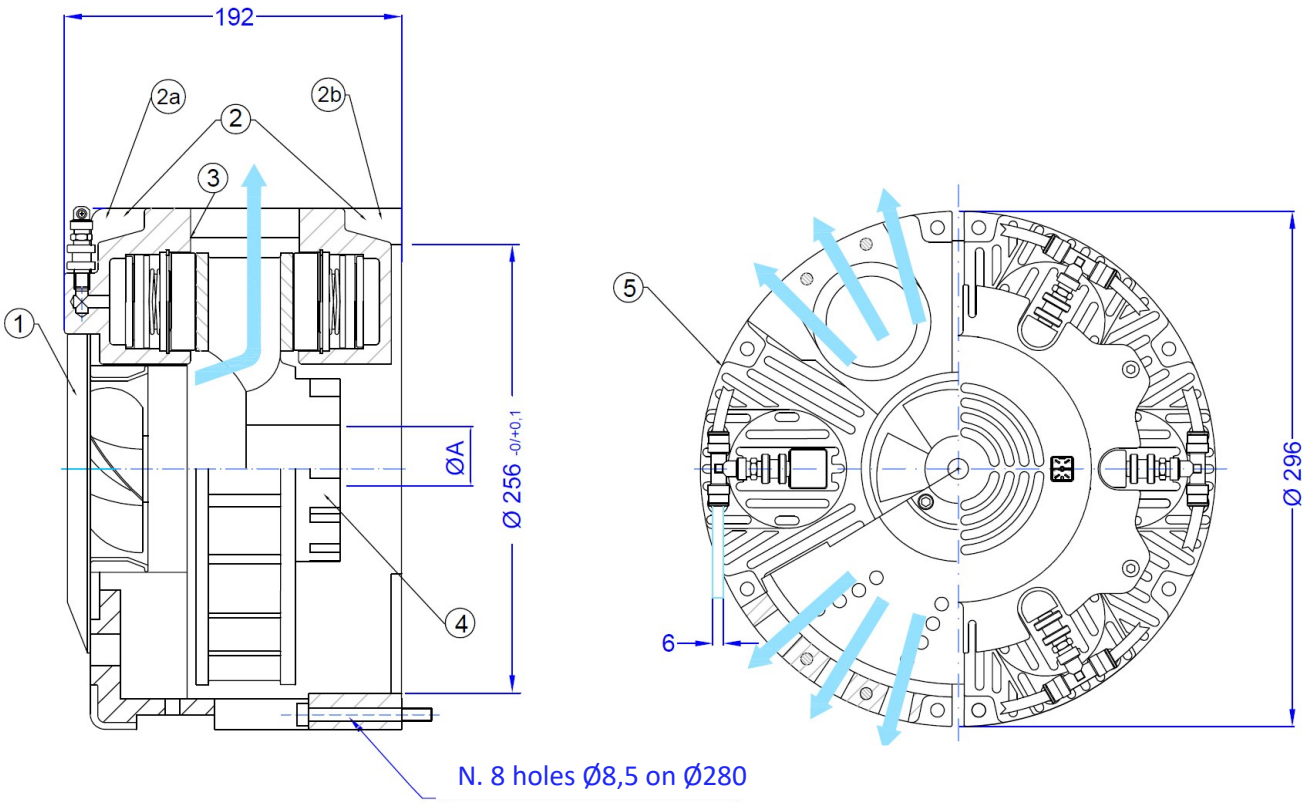
1) Not wired (NW)
2) Not wired (NW)
3) Not wired (NW)
4) Red – Positive fan
5) Blue – Negative fan
6) Not wired (NW)

Connector wiring in presence of fan + RPM counter



1) Black proximity sensor
2) Blue – negative RPM
3) Brown – Positive RPM
4) Red – Positive fan
5) Blue – Negative fan
6) Not wired (NW)

assembly and composition of CX 250

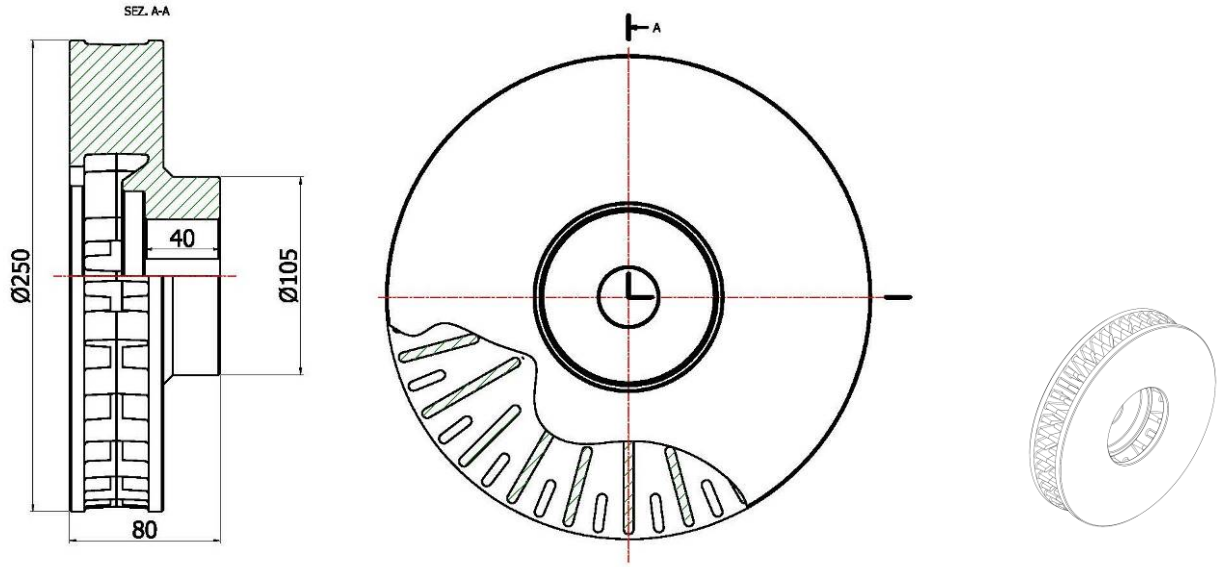


Variable ØA dimension: min 35mm - max 70mm with key / max 45mm with locking device.

Pos.	Q.ty	Code	Description
1	1	CXKxxxx	Kit cover and fan (ref pag. 12)
2	X	CXC001A	Caliper brake CX250 with pads KPCXAR15A
2a	X	CXP0010	Front caliper carter CX
2b	X	CXP0011	Back caliper carter CX
3	2x caliper	ORTX180	O-ring NBR 70.00-01 ID 6.00x2.00mm
4	1	CXD25000000	Central disk CX250 – Hole Ø30mm
5	2	CXP0001	Half-housing CX250

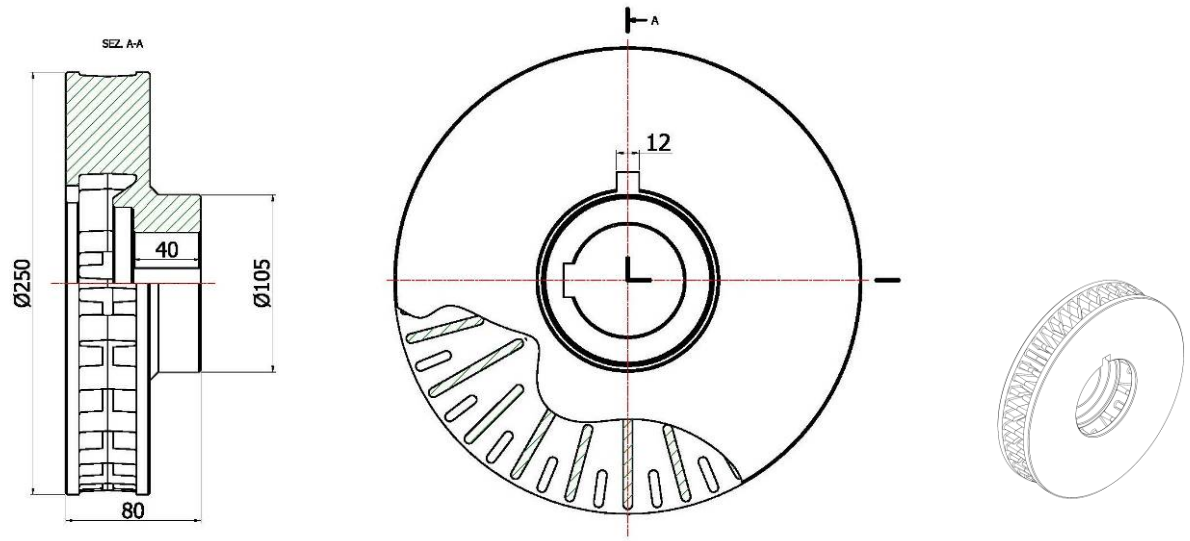
Central disk CX 250

standard central disk (cod.**CXD25000000**)



Dimension A standard Ø35mm, diameters available up to a maximum of Ø70mm with the possibility of adding a keyway and Ø45mm with locking device.

Central disk with notch for rpm counter (cod.**CXD25000001**)



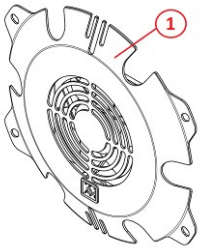
Dimension A standard Ø35mm, diameters available up to a maximum of Ø70mm with the possibility of adding a key.

cover and fans

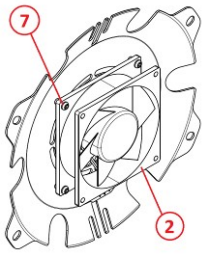
Il The CX 250 brake has three possible carter / fan mounting variants.

Group cover + fan standard assembly

(front side)

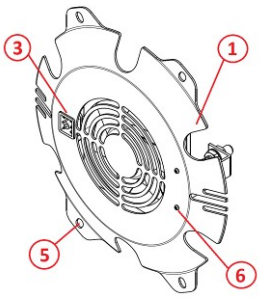


(back side)

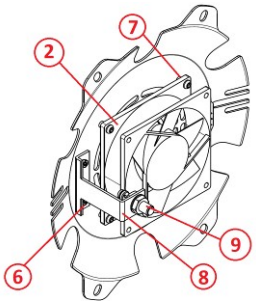


Group cover + fan assembly with RPM

(front side)



(back side)

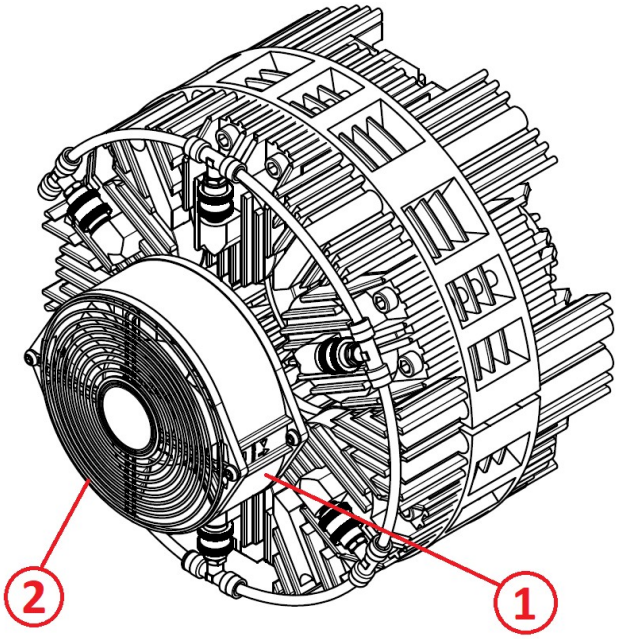


Pos.	Cod.	Description	P. Supply	Absor.	Assor. power
1	**CXP0012**	Cover fan CX250	-	-	-
2	**VT90038024CNL**	Standard fan HP1	24 Vdc	0.38 A	9 W
	VT900380H3L	High power fan HP2	24 Vdc	1.2 A	30 W
	VT900380H4L	High power fan HP3	24 Vdc	2.08 A	50 W
3	**E50-0077**	Male connector 6 pin	-	-	-
4	**E50-0076**	Female connector 6 pin	-	-	-
5	**VITCM60300**	Cylindrical head screw M6x16	-	-	-
6	**V50-0060**	Cylindrical head screw M3x8	-	-	-
7	**V50-0008**	Cylindrical head screw M4x10	-	-	-
8	**CXP0014**	RPM bracket for cover CX250	-	-	-
9	**CG00000000**	RPM counter N/O - PNP	-	-	-

Table kit pre-assembled cover + fan and optional

Code	Description
CXK0001-A	Kit fan CX250 – HP1 – 24V – 9W
CXK0002-A	Kit fan CX250 – HP2 – 24V – 30W
CXK0003-A	Kit fan CX250 – HP3 – 24V – 50W
CXK0004-A	Kit fan CX250 – HP1 – 24V – 9W – with RPM

External assembly fan with protection grid

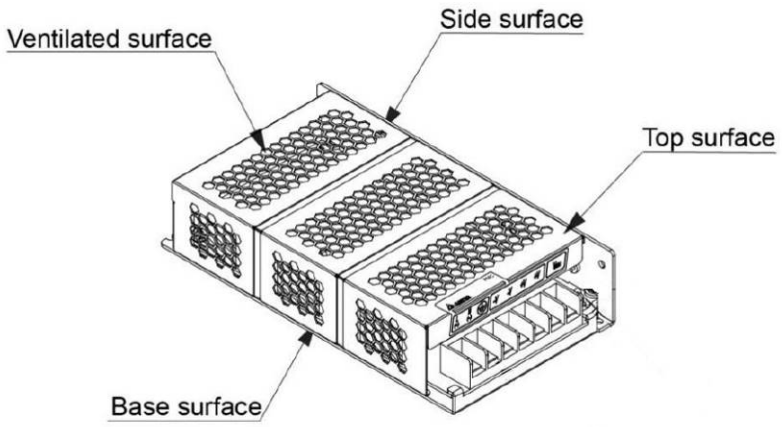


Pos.	Code	Description	Power Supply	Absorption	Pow. Absor.
1	**V30-0009**	Grid VT150 – finger guard	-	-	-
2	**VT15000024**	Standard fan 150mm	24 Vdc	0.5 A	12 W
	VT15000110	Standard fan 150mm	24 Vdc	50/60 Hz	41/38 W
	VT15000220	Standard fan 150mm	230 Vdc	50/60 Hz	45/38 W

*** The fans that have a 115 / 230Vdc power supply are supplied on request with our transformers as well.**

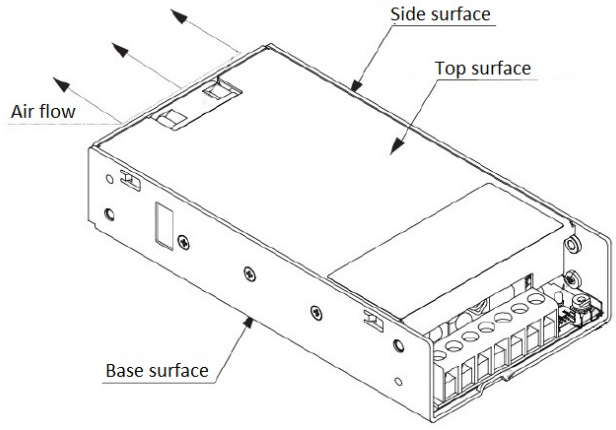
transformers

TRTX150W24: transformer 150W input 110/220AC output 24Vdc



Input values		Output values	
Rated tension	100-240 Vac	Rated voltage	24 Vdc
Rated current	< 3.1A @ 115 Vac	Output current	6.25 A
	< 2.0A @ 230 Vac		
Rated frequency	50-60 Hz	Output power	150 W

TRTX300W24: trasformer 300W imput 110/220AC output 24Vdc



Input values		Output values	
Rated tension	100-240 Vac	Rated voltage	24 Vdc
Rated current	< 4.0A @ 115 Vac	Output current	12.5 A
	< 2.0A @ 230 Vac		
Rated frequency	50-60 Hz	Output power	120 W

*** For further technical data, please consult the data sheet relating to the transformer in your possession.**

pads

Our CX 250 brakes are fitted with standard AR15 pads. However, there are also other versions of pads that adapt to different uses.

Listed below are the types of pads available and which you may have mounted on your brake

Code	Descriptions
KPCXAR15	Antirotation pads mod. AR15
KPCXSMT	Antirotation pads mod. SMT (smooth)
KPCXR15HP	Antirotation pads mod. HP (high performance)
KPCXAR15K	Antirotation pads mod. KEVLAR
KPCXAR15A	Antirotation pads mod. AR15 – with antivibrant
KPCXSMTA	Antirotation pads mod. SMT – with antivibrant
KPCXR15HPA	Antirotation pads mod. HP – with antivibrant
KPCXAR15KA	Antirotation pads mod. KEVLAR – with antivibrant

Standard pads AR15

Our pads are made in asbestos-free friction material based on phenolic resins with NBR rubber bonding system, containing friction modifying agents, short fibers and fillers and in accordance with RoHS directives, therefore free of lead, mercury, cadmium, hexavalent chromium (chromium VI), biphenyls, polybrominated (PBB), polybrominated diphenyl ether. The mixture has been designed to have more efficiency in the duration / performance ratio.

NOTE: all our pads for the CX 250 brake are supplied already included with anti-vibration mountings to guarantee greater working precision

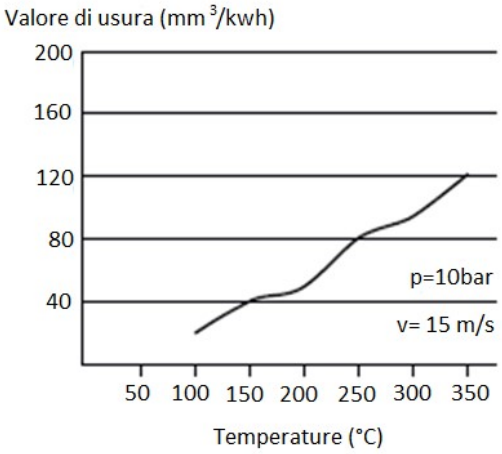
In the next page all the technical information about our pads AR15

Recommended operating value	Value
Temperature (intermittent max allowed)	< 350° C
Temperature (continuous max. allowed)	< 250° C

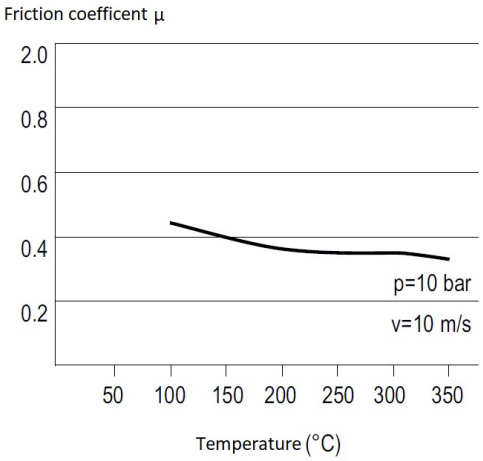
Physical properties	Value
Density (specific gravity)	1.8 ± 0.05 g/cm3
Hardness (shore D)	85 ± 5
Thermal conduction	0.44 ± 0.01 W/mK

Technical characteristics of friction	Value
Static coefficient of friction μ (15bar, 100°C)	0.50 ± 0.05
Fade temperature	> 350° C

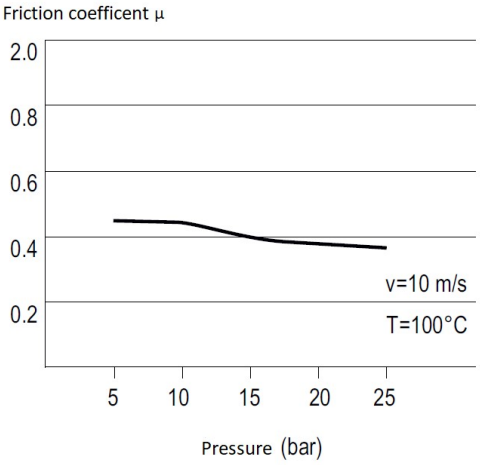
Wear value / temperature of use



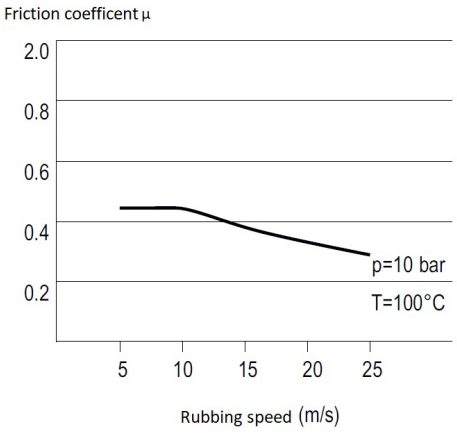
Friction/operating system



Friction/coating pressure



Friction/rubbing speed



Pads replacement

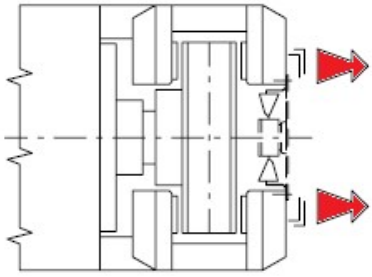
AR15 brake pads are produced with asbestos-free material and if used correctly they will last between 10,000 and 40,000 hours. However, the duration of the pads can undergo considerable variations due to the high operating temperatures and it is useful to check the correct application of the brake.

Furthermore, it is recommended to check the thickness of the pads: **the brake pads must be replaced if the thickness reaches 5 mm.**

NOTE: the pads can also have an uneven wear on the thickness. For correct use, measure the higher thickness and replace the latter **when the higher thickness is 6.5 mm**

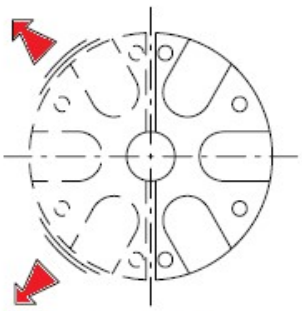
The replacement procedure is simple and can be performed in simple 4 steps:

1



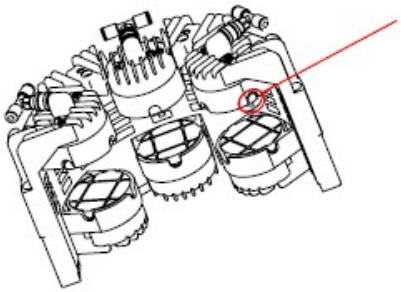
Remove the fan, if present, or the cover (if the fan is provided with the cover).

2



Remove the first half housing, and then the second half.

3

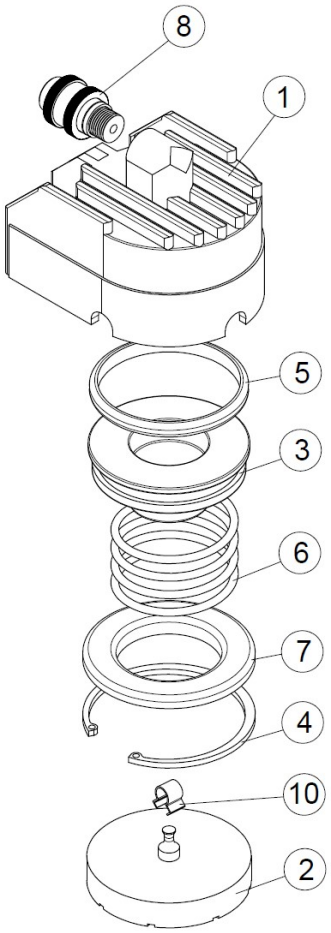


Dismount the pads fixed to the piston with a retaining spring (code 00CXMO9010) using a screwdriver. Replace it inserting new pads and press them until they are seated.

4

Re-assemble both of the half-housings, then attach the fan, following the procedure on page 1(Mounting the Combirex brake on your machine).

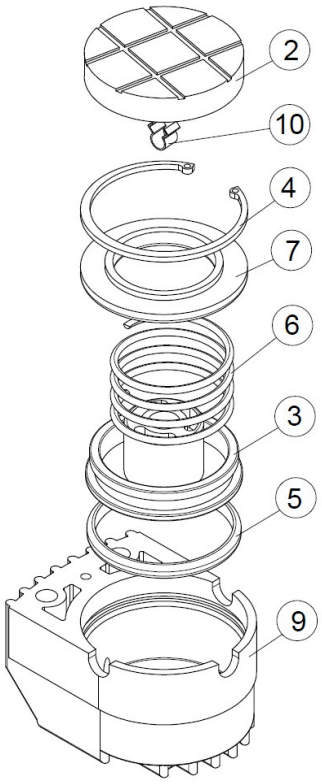
complete caliper group



Complete caliper with standard pads with antivibrant **CXC001A**

Front caliper

Pos.	Q.ty	Code	Description
1	1	CXP0002	Front caliper casing
2	1	The caliper code changes according to the chosen pad (ref. page 14 pads codes)	
3	1	CXP0008	Piston
4	1	CXP0006	Seeger ring
5	1	CXP0007	Viton seal DEM 63
6	1	CXP0004	Piston return compression spring
7	1	CXP0005	Teflon ring
8	1	00CXDIS610-G1/8	Air distributor – G1/8”
10	1	CXP0009	Pad sealing spring

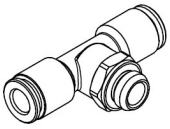


Back caliper

Pos.	Q.ty	Code	Description
2	1	The caliper code changes according to the chosen pad (ref. page 14 pads codes)	
3	1	CXP0008	Piston
4	1	CXP0006	Seeger ring
5	1	CXP0007	Viton seal DEM 63
6	1	CXP0004	Piston return compression spring
7	1	CXP0005	Teflon ring
9	1	CXP0003	Back caliper casing
10	1	CXP0009	Pad sealing spring

complete replacement caliper brake group and fittings

Fitting form T and/or L **(Not included in complete caliper brake, sold separately)**



Code	Description
I40-0048	Fitting “L” form 1/8G – Pipe Ø6mm
I40-0049	Fitting “T” form 1/8G – Pipe Ø6mm

If you need spare parts of calipers complete below the list of codes with which Renova can provide you with the chosen article.

ATTENTION: as previously indicated the fittings **are NOT part of the caliper assembly complete and are sold separately**. If there was need to order spare parts for fittings please use the codes in the table

CXC0000	Caliper brake CX250 without pads
CXC0010	Caliper brake CX250 with pads KPCXAR15
CXC001A	Caliper brake CX250 with pads KPCXAR15A
CXC0020	Caliper brake CX250 with pads KPCXR15KHP
CXC002A	Caliper brake CX250 with pads KPCXR15KHPA
CXC0030	Caliper brake CX250 with pads KPCXSMT
CXC003A	Caliper brake CX250 with pads KPCXSMTA
CXC0040	Caliper brake CX250 with pads KPCXAR15K
CXC004A	Caliper brake CX250 with pads KPCXAR15KA

caliper disassembly and troubleshooting

In order to maintain correct brake operation, Renova recommends checking the movement and any leaks that may occur due to non-specific working conditions.

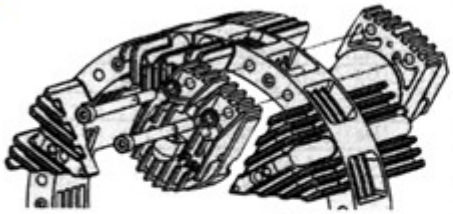
Checking for proper operation is quick and easy and can be done by anyone. Renova recommends checking each caliper change or during the first machine stop.

With the brake braided and positioned on a table, it is necessary to introduce air inside it to check that **all the pads move moving forward**. Once the air has been removed, **it must be ensured that all the pads return to their seat without problems**. Otherwise, it will be necessary to proceed with the removal of the caliper in order to find the fault in it. The most common causes can be varied, but the most common are:

- Broken DEM rings
- Shrinking of the return spring

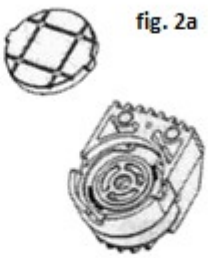
In both cases it will not be necessary to replace the brake in its entirety.
Here is the replacement procedure in a few simple step

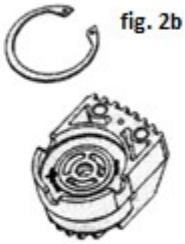
1



disassemble the caliper by removing the 2 screws from M8

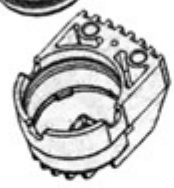
2





Once the two caliper bodies are disassembled, remove the pad (2a) and the seeger (2b) in order

3



Remove the ring (3a) and replace it if damaged. If the gasket is damaged, remove the piston (3b) and replace the DEM

4

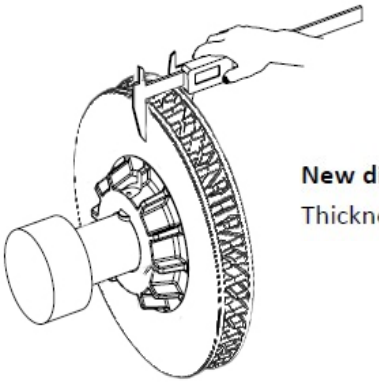
Reassemble all the brake components

NOTE:
1) When the caliper bodies are reassembled, tighten the two M8 screws with a torque of 2 DaNm
2) Grease the gasket with high temperature grease

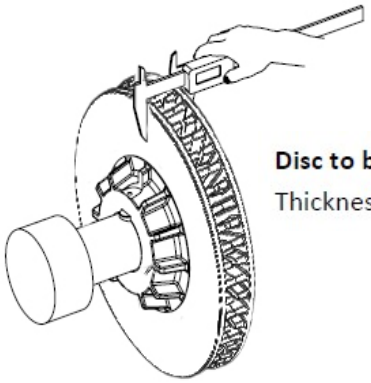
Central disc replacement

The central disc of the CX 250 brake does not require any special checks.

However, Renova still recommends checking the thickness of the disc periodically. It is a very easy operation to carry out that can be completed during the brake pad change with the brake disassembled. Measuring the thickness, **if the thickness reaches a measure of 46 mm, it will be replaced with a new disc**. Furthermore, if the surfaces of the disc are not sufficiently smooth, you can turn both sides of the disc, **making sure that the thickness does not reach 46 mm.**



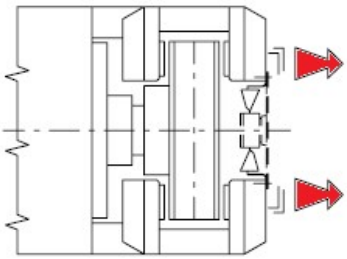
New disc:
Thickness = **50mm**



Disc to be replaced:
Thickness = **46mm**

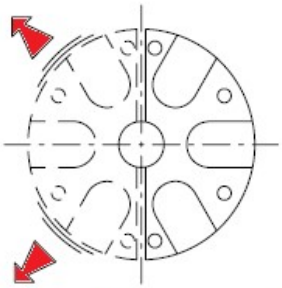
Replacing procedure:

1



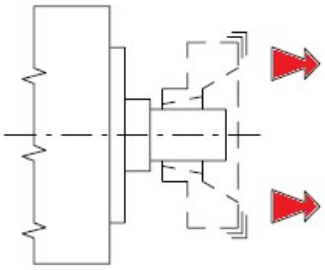
Remove the fan, if present, or the cover (if the fan is provided with the cover).

2



Remove the first half housing, and then the second half.

3



Dismount the brake disc from the shaft.

4

Mount the new disc, both of the half-housings, then attach the fan, following the procedure on page 4 (*Fans connection diagrams - CX.250*).

warranty

Renova srl guarantees this device from any defect related to materials and manufacturing for a period of 12 months from the delivery date of the brake itself.

In the event that, during the period covered by the warranty, the device has defects in operation, please contact the representative of the company in the country of origin, or, in the absence of these, directly Renova srl.

The warranty includes spare parts and labor, but shipping costs for delivery or collection of the device are exempted.

The warranty loses its validity in the following cases:

- Improper use of the product
- Incorrect installation
- Deficiencies in the maintenance
- Modifications or interventions with non-original components or with personnel not authorized by Renova srl
- Total or partial non-compliance with the instructions
- Exceptional events

Once the warranty period has ended, technical support will be carried out by the assistance network which will repair it according to the rates in force.

Index of manual revision

Rev. n.	Data revision	Description of changes made
01	16/10/2020	Revised codes and drawing of the central disc, new design
02	23/01/2021	Added new revised code and new manual design

note