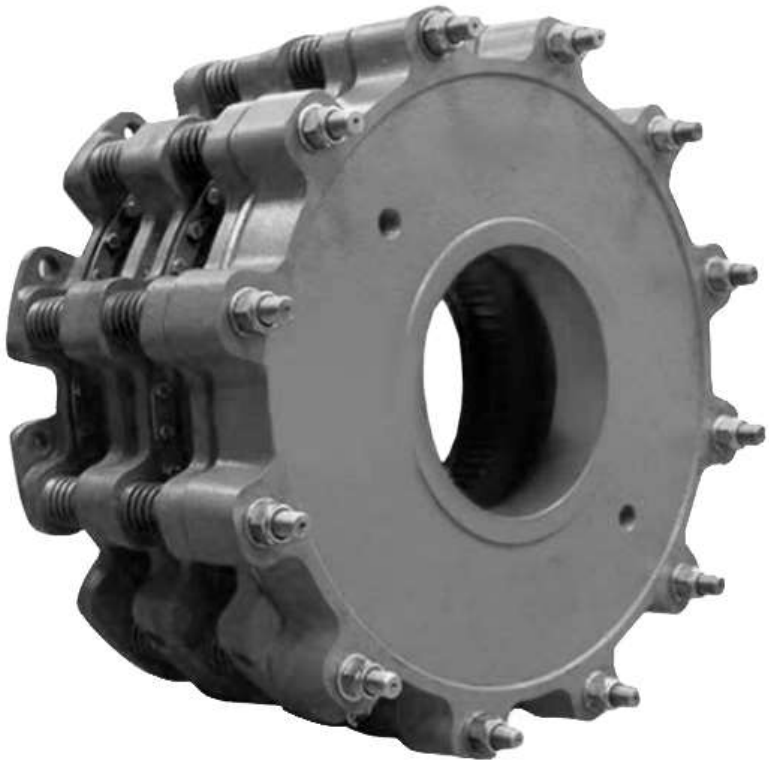
brakematic

# water-cooled brake

## CBW

CE

# operating instructions



renova
WE NEVER LOSE CONTROL

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Questo prodotto è conforme alla Direttiva 2006/42/CE relativa alle macchine

# index

# introduction

The following manual is intended for installers and users of the product and provides descriptions and explanations on the Brakematic brake CB in its water-cooled version (CBW).

Inside there will be:

- Instructions for transporting our CBW brakes
- Instructions for the assembly and storage of our brakes and related maintenance
- Power supply and lubrication of our brakes
- Dimensions and technical data of our brakes

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

# warnings

**CAREFULLY READ THE INSTRUCTIONS AND WARNINGS CONTAINED IN THIS MANUAL AND KEEP THEM FOR FURTHER REFERENCE FOR THE WHOLE LIFE OF THE PRODUCT. THIS MANUAL INCLUDES IMPORTANT OPERATION AND SAFETY INSTRUCTIONS FOR THE INSTALLATION, USE AND MAINTENANCE OF THE PRODUCT.**

**WE STRONGLY RECOMMEND THAT THE DEVICE BE ASSEMBLED AND INSPECTED BY QUALIFIED TECHNICAL PERSONNEL IN ORDER TO AVOID ANY RISK OF DAMAGE TO PERSON OR TO THE PRODUCT ITSELF.**

**IN THE EVENT OF THE PRODUCT BREAKAGE, THE OPERATOR MUST BE AWARE OF THIS MANUAL AND THE INFORMATION CONTAINED IN IT, KNOWING AND KNOWING TO AVOID ANY RISK AND / OR DANGER BEFORE AN INTERVENTION BY OUR SPECIALIZED TECHNICIAN**

# assistance

Renova is present all over the world through its agents and distributors.

**To contact the Renova service, please write to:**
**support@renova-srl.com**

# general informations

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.

**CAUTION!**
This combination of symbol and word indicates a pssible hazardous situation that can result in property damage or enviormental damage if not avoided.

# protective equipment for personnel

- For any jobs use:

**Protecting 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

**Saefty 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

**Saefty glasses**

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

# functioning

Our CBW are air operated brakes that are released by an external spring under pressure. As air is introduced into the cylinder through the inlet holes, the piston moves axially, pushing the friction plates and pressure plates together engaging the brake. The braking torque is directly proportional to the air pressure supplied to the piston. When the air pressure is released, the pressure from the outer springs pushes the compression disc and piston back into their normal position allowing the friction and pressure discs to separate, disengaging the brake. High heat dissipation is guaranteed by the passage of water through floating discs with wear plates in copper alloy.

**NOTE: brakes with three or more transmission plates should have additional support at the end of the actuator**

# transport

The brake is supplied partially assembled to minimize the risk of damage to the individual parts during transport.

**CAUTION!**
**During transport, avoid strong blows which could damage the brake and render it inoperable**

Any spacers, screws, washers and dowel pins are packed separately to avoid possible damage.

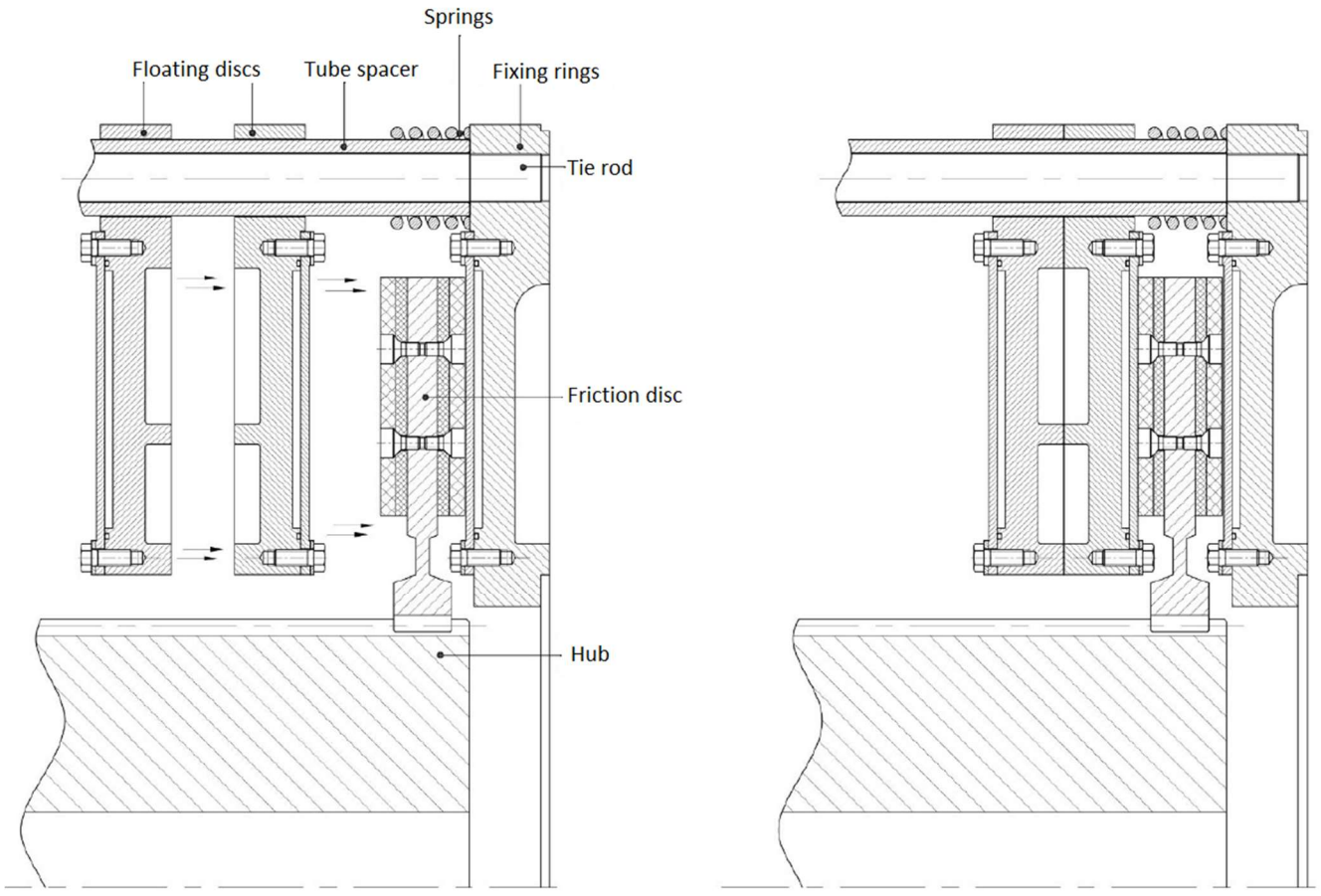
# installation

## notes and wanings for assembling brakes on machines

- Apply strong Loctite to all bolts that are not self-locking
- All screws must be tightened with a torque wrench with the nominal torque for their type and class.
- On initial start-up, run the equipment at 50% of rated power to align all contact faces.

## Assembly and disassembly of the brake on the machine

1. Install the hub on the machine shaft and secure it to prevent movement.
2. Position the fastenting ring supplied on the machine using 12 tie rods using cylindrical head screws (not included).
3. Insert a tube spacer on each tie rod and make sure it is in contact with the fixing ring.
4. On each tube spacer insert an external spring..
5. To install the friction material disc on the hub and move it against the retaining ring, it is necessary to ensure alignment and that the brake works correctly.
6. To install the floating discs on the tube spacer, note that tey must be mounted as shown in the image below; the copper disc must face the friction material. Make sure the inlet and outlet water connections are in the correct position.



7. Repeat steps 4-5-6 according to the quantity of spare parts, depending on the Brakematic CBW model purchased.
8. The actuator consisting of cylinder, pistons and seals can now be mounted.

**CAUTION!**
**Pay attention that the lower air inlet should be facing down (six o'clock) to facilitate the removal of moisture that can accumulate in the air system.**

Align the actuator assembly on the tie rods and gradually tighten the nuts with the washer following a crisscross sequence, repeat it with the self-locking nuts. They must be tightened evenly with a torque indicated in the table. In this way, it will overcome the thrust of the springs and move closer to the actuator assembly. It is also possible to introduce air into the brake chamber in order not to exceed the thrust of the springs with the tightening.

| Size Ø11" | | Size Ø18" | |
|---|---|---|---|
| External tie rod | 63 Nm | External tie rod | TBD |
| Flat head screw M6x12 | 3.5 Nm | TBD | TBD |

9. Insert the shims between the tube spacer and the actuator unit before fully tightening. Shims are provided to compensate wear from friction and copper faces

**To carry out the disassembly it is necessary to proceed in reverse order to what is described above**

## Assembly with brake already assembled

If the unit is to be mounted while fully assembled:

1. Make sure the grooves on the friction plates line up with the grooves on the hub
2. Center the hub and friction disc in the brake and apply and maintain 1.7 bar (25 PSIG) air pressure to engage the piston and hold pressure until installation is complete.
3. Slide the unito onto the rail on the mounting bracket. Install the brake hub on the machine and secure it to prevent axial movement.
4. The water inlets must be at the lowest level of the water chamber and the water outlets at the highest level. This is necessary to always ensure a chamber full of water.

Always remember that:

- The flexible tube must be used for water connections to the unit to be sure that all floating discs are free to move
- Parallel flow through each brake section is recommended to maintain countinous cooling

**WARNING!**
**Series flow can overheat the brake and cause damage to both the brake and operators**

- Avoid any reductions in the diamater of the line to avoid excessive pressure
- Make sure there is the reccomended cooling water flow before turning the brake (see table below).

**WARNING!**
**The water discharge temperature must not exceed 65.5° C (150° F)**

If the brake works without a water cooling system there will be a curvature of the copper wear plates and consequent damage to the internal gasket

## security of assembly

For this assembly and related operations to be performed on these products, renova always reminds and advises to use the appropriate protective equipment:

Heat resistant protective clothing for any brake leaks or overheating.

Heat resistant protective gloves for any brake leaks or overheating.

Protective goggles for any hot steam vents or to prevent small details under pressure from hitting the eyes.

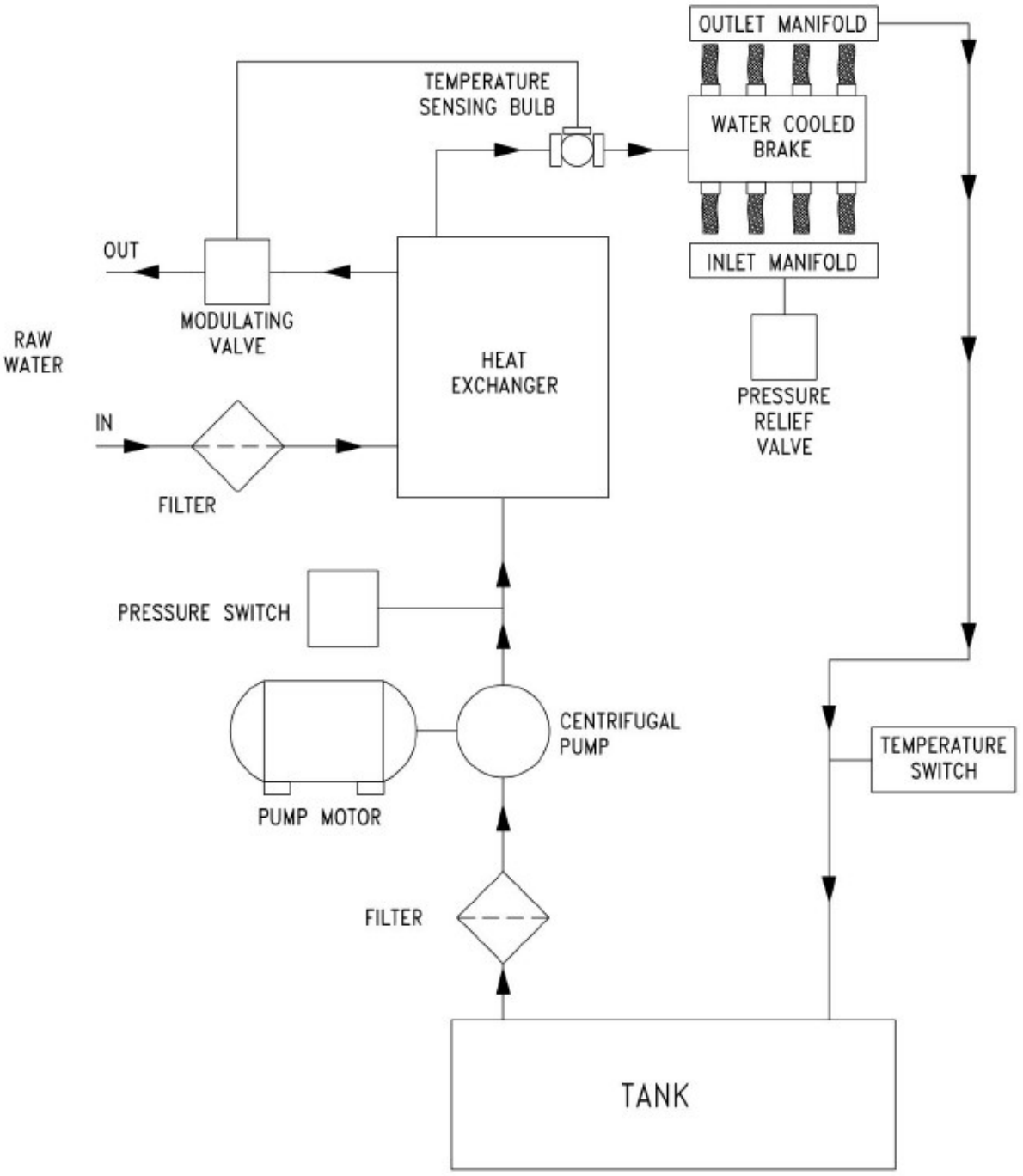
Scarpe di sicurezza dato il peso del freno e dei suoi particolari

| **Model** | **Heat dissipation** | | **Minimum water flow** *(water)* | | **Minimum water flow** *(50/50 water + ethylene glycol)* | |
|---|---|---|---|---|---|---|
| CBW | HP | KW | GPM | L/m | GPM | L/m |
| 111 | 53 | 40 | 5 | 20 | 7 | 26 |
| 211 | 105 | 78 | 11 | 40 | 14 | 52 |
| 311 | 158 | 118 | 16 | 60 | 20 | 75 |
| 118 | 120 | 89.5 | 12 | 45 | 15 | 57 |
| 218 | 240 | 179 | 24 | 91 | 30 | 114 |
| 318 | 360 | 268.6 | 36 | 136 | 45 | 170 |
| 418 | 480 | 358.1 | 48 | 182 | 60 | 227 |

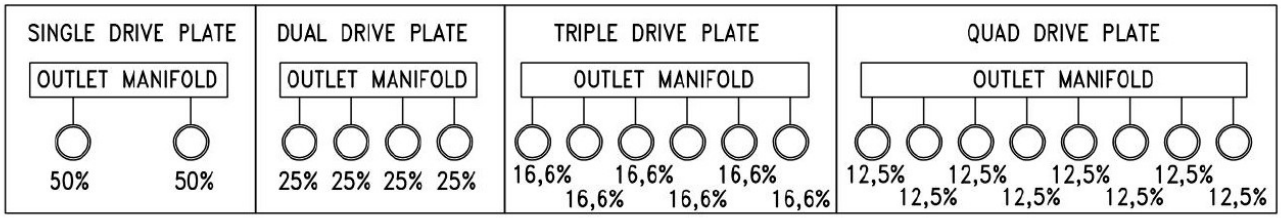
Usage notes:

- The **maximum ambient** temperature is 43° C (143° F).
- The **minimum ambient temperature for a closed loop water** system using ethylene glycol based antifreeze is -18 ° C. (0 degrees).
- For an **open-loop** water system that uses water as coolant, the **minimum ambient** temperature is 7° C. (45° F.).
- Protect from freezing by using an antifreeze (ethylene glycol). The antifreeze will also provide a measure of corrosion protection. A 50/50 mixture of water and ethylene glycol has about 80% of the heat carrying capacity of pure water. **If used, increase water flow accordingly. The ethylene glycol used should comply with the SEA J1034 standard**
- For operation at temperatures below zero, **it is necessary to add ethylene glycol-based antifreeze to the water**. The content of the antifreeze mixture is **essential and must not exceed 50% by volume**. Excessive amounts of antifreeze will reduce cooling capacity and can cause coolant leakage due to overheating

# power supply and lubrication




FLOW CONTROL SETTINGS



# maintenance

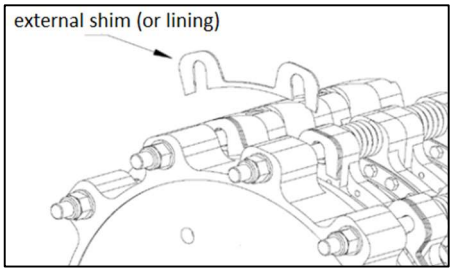
**WARNING!**
**Before carrying out any type of inspection or maintenance, make sure that:**

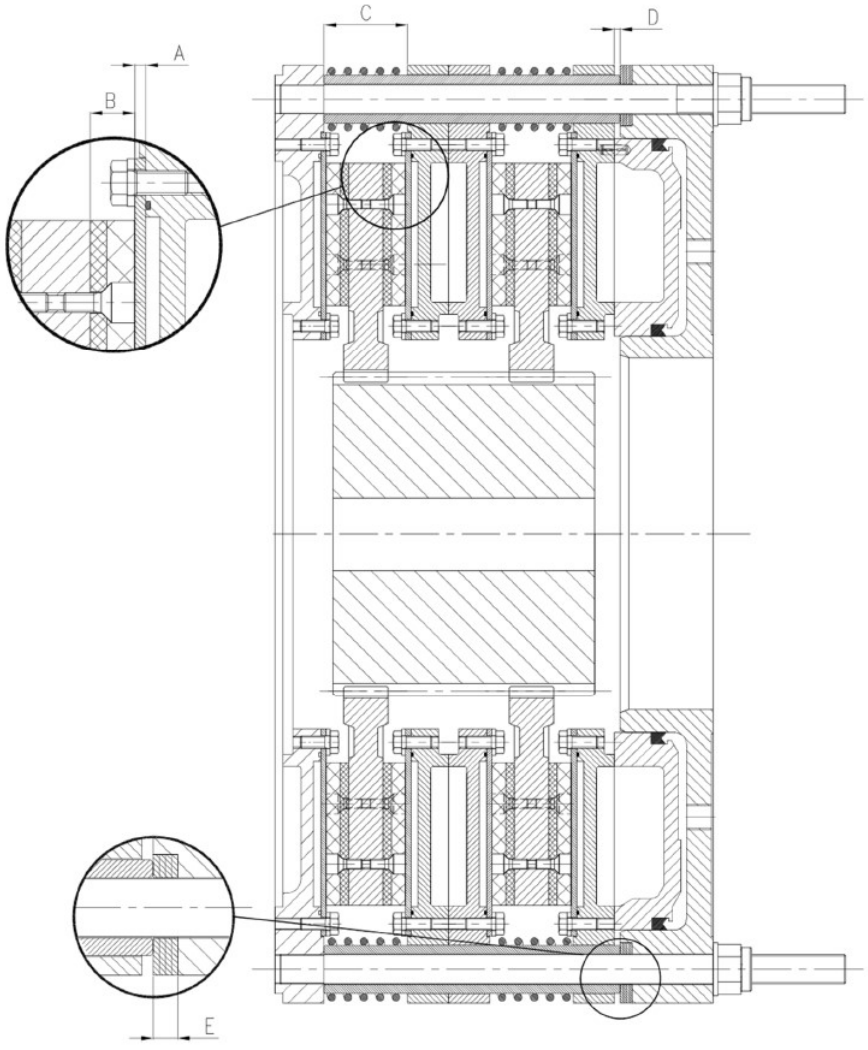
- **The machine is completely stopped**
- **The electricity has been removed correctly**
- **The brake temperature is not too high and could harm the operators**

Futhermore, we always remember to use the appropriate protection devices to perform any type of operation.

## wear check and compensation

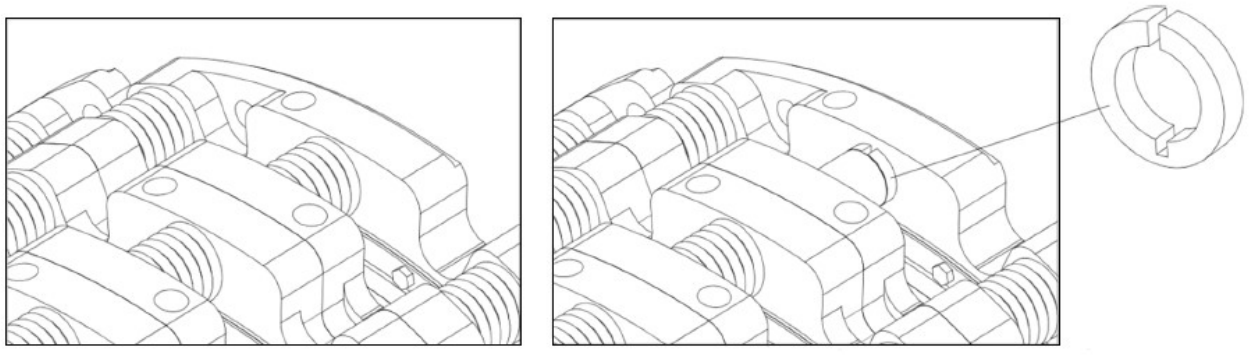
Wear of the friction linings implies a decline in brake performance. Then check the thickness of the friction linings and copper discs from time to time (see table 1 below). The original brake play can be restored by removing the outer shims.



| *Table 1* | | | |
|---|---|---|---|
| Size | | CBW11 (Ø11”) | CBW18 (Ø18”) |
| | | [mm] | [mm] |
| A (new) | | 4 | 4 |
| A (min) | | 3,2 | 3,2 |
| B (new) | | 10,5 | 12,5 |
| B (min) | Single disc | 4,2 | 9,6 |
| | Double discs | 5,3 | 9,6 |
| | Triple discs | 5,8 | 9,6 |
| | Qudruple discs | 7,1 | 9,6 |
| C (new) | | 34 | 47,4 |
| C (min) | Single disc | 19,4 | 36,2 |
| | Double discs | 21,5 | 36,2 |
| | Triple discs | 22,7 | 36,2 |
| | Quadruple discs | 25,3 | 36,2 |
| D | Single disc | 2 | 2,4 |
| | Double discs | 4 | 4,8 |
| | Triple discs | 6 | 7,2 |
| | Quadruple discs | 8 | 9,6 |
| N° shims | | 24 | 24 |
| E | | 8 | 8 |

Brakes with three or four discs have wear adjustments. These spacer rings are slotted to allow for easy removal with a chisel (see image below). Attention: on each there is a spacer ring for each tube spacer.



After replacing the friction material, a minimum period of wear is recommended. It is recommended to run the brake at 50% of the rated power for a period of four hours so that the friction disc can reach the desired rated torque.

## note

# Index of manual revisions

| Rev. n. | Date revision | Description of the changes made |
|---|---|---|
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