Copper Alloy Brake
Model CAB

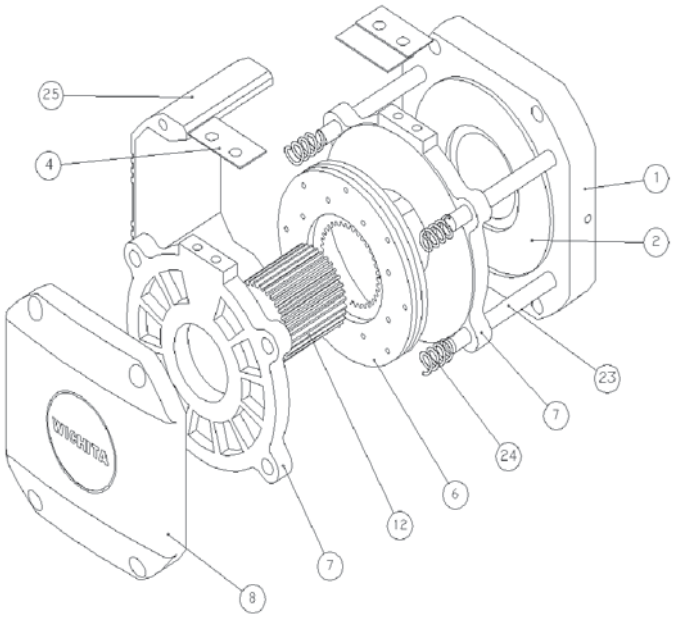
Installation and Maintenance Instructions

EDS 1.1.18

Wichita® Clutch

An Altra Industrial Motion Company

INSTALLATION AND MAINTENANCE INSTRUCTIONS
Copper Alloy Brake model CAB



D DESCRIPTION OF ITEM NUMBERS

1. Back Casing
2. Piston
3. Guard Screw
4. Guard Top
5. Washer
6. Drive Plate Assembly
7. Water Jacket Assembly
8. Front Casing
9. Piston OD Seal
10. Piston ID Seal
11. Hub Locking Screw
12. Hub
13. Guard Bottom
14. Copper Alloy Plate
15. Bolt
16. Nut
17. Water ID Seal
18. Water OD Seal
19. Side Bolt Back
20. Side Bolt Front
21. Brass Screw
22. Friction Material
23. Torque Pins
24. Springs
25. Side Casing

See also page 3 for more details

C.1 UNPACKING

1 Remove the lid and sides of the no nail packing case to reveal the brake lying on its pallet. Remove the 4 off front casing securing cap screws (20) and remove the front casing (8).

2 Lift out the first water jacket assembly (7) then drive plate assembly (6), remove the separation springs (24) from the torque pins (23). Continue to withdraw water jackets, drive plates and springs until all have been removed. The water jackets will need to be replaced in the reverse order to removal to ensure that the wear indicator plates function correctly on final installation, therefore note their relative positions on dismantling.

3 Unbolt the brake hub (12) from the packing pallet and put aside.

4 The brake is now in a condition suitable for machine mounting to commence.

C.2 ALIGNMENT

1 In order to ensure smooth running of the brake it is important that it is mounted with the minimum or parallel and angular misalignment.

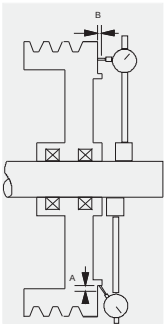
2 The maximum allowable total indicator readings are given in table - 1.
They relate to checks carried out on the machine brake mounting face and should be checked as follows:-

3 Parallel - with the dial indicator connected to the shaft and positioned to follow the male spigot location on the machine brake mounting face, rotate the shaft through 360° and compare the reading to the specified maximum allowable value.

4 Angular - re-position the dial indicator plunger to follow a circular path just inside the pitch circle diameter of the brake mounting holes, rotate the shaft through 360° and check against the specified maximum allowable value.

TABLE 1 **ALIGNMENT VALUES** Parallel = A, Angular = B
All values are total indicator readings on clock when clock is rotated.

BRAKE SIZE	A mm	B mm
230	0.10	0.10
310	0.15	0.15
450	0.25	0.25
590	0.30	0.30



3 INSTALLATION

1 The Copper Alloy Brake can be mounted such that water connections can be made at either the top, bottom, left or right side. This decision needs to be made prior to the drilling of the brake mounting holes, as on certain sizes of brake the mounting holes are spaced such that positioning at 90^{o} intervals is not possible.

Refer to the specific unit assembly drawing for individual brake mounting hole details.

2 The brake back casing (1), side casings (25) and 4 off torque pins (23) should be mounted to the machine as a sub assembly and secure using suitable cap screws through the back casing mounting holes, ensuring that the back casing is correctly centred on its spigot location and that it has been orientated correctly to permit the desired water connection point. Bolt tightening torques are specified in table 2.

Do not over tighten screws.

3 Fit the brake hub (12) into its correct axial position on the shaft as indicated on the respective brake assembly drawing and tighten set screw (11) to prevent axial movement. If the hub is not finish bored and keywayed by Wichita then the setscrew and its tapping in the hub are of customer supply.
An alternative and more positive method of hub retention is to locate the hub against a shaft shoulder and lock its axial position with the use of a shaft locknut or shaft end keeper plate, making sure that either does not interfere with any of the brake internal moving parts.

4 Locate the first water jacket (7) on the 4 off torque pins (23) and slide home against the piston (2).

5 Locate drive plate assembly (6) onto the hub (12) and slide home. Continue by installing the remaining water jackets, drive plates and springs (24), ensuring that the guard/wear indicator plates (4) engage with one another correctly. Note that on two plate brakes there are two water jackets placed back to back in the central position.

6 Slide the bottom guard (13) into position between the side casings.

7 With all water jackets and drive plates installed in the correct sequence, locate the brake front casing (8) over the torque pins (23) and alignment dowels positioned in the side casings and secure using the 4 off cap screws (20), torque tightened in accordance with the specified value.

8 Connect the air supply to the brake at the preferred side on the back casing (1). **DO NOT OVER TIGHTEN FITTINGS**

9 Connect the water flow and return hoses to the water jackets. Details relating to the water connection options are covered in the "WU" " water piping arrangement" drawing supplied with each brake.

C.4 WATER CIRCULATION

1 It is essential for the correct operation and life of the copper alloy brake that the necessary cooling water flow is present at the brake.

2 The most effective cooling system is a closed circuit arrangement incorporating a tank, pump and heat exchanger. Wichita can provide a quotation for such a system upon request.

3 The following considerations should be given to any associated water cooling system.

4 The maximum permissible water pressure inside the water jackets is 2.7 bar. Exceeding this pressure will result in damage to the Copper Alloy Plates (14).

5 All systems should have pipe work of minimum length with the minimum number of bends and adequate pipework bore.

6 The pump should be capable of the minimum water flow rate as specified on the brake assembly drawing and at the total back pressure of the system. Typically, the back pressure will be less than 1 Bar for a well designed system. Wichita can advise on expected back pressures.

7 The water inlet temperature should not be below $10^{o}C$ ($50^{o}F$) in order to prevent condensation on the friction surfaces and in normal circumstances not above $50^{o}C$ ($122^{o}F$).

8 Check that the required water flow rate as stated on the brake assembly drawing and serial plate is available at the water outlet of the brake.

9 A flow alarm is essential, it must be situated in the water return line of the brake, electrically wired to shut down the machine if the flow drops below the required minimum level. Wichita can supply a quotation for a manifolded assembly which contains a flow switch, temperature switch and dial indicating thermometer.

10 **ON NO ACCOUNT** should the machine be started without sufficient water flow through the brake.

TABLE 2
BOLT TIGHTENING TORQUES

Bolt Size	Nm	Bolt Size	Nm
M4	2	M16	115
M5	4	M20	230
M6	6	M24	400
M8	14	M30	800
M10	25	M36	1250
M12	50	M48	2500

C.5 LUBRICATION

1 Although not essential, a very light smear of molycote or equivalent graphite grease may be applied to gear teeth, to assure axial movement under all circumstances.

2 The piston seals associated with either the full circle piston, or the smaller "multi range" individual pistons, should, in the event of a seal change be smeared with a highly refined mineral oil based lubricating grease, such as Century Oils - Litmol No. 2 or equivalent.

C.6 WEAR INDICATION

1 Each brake incorporates visual wear indication which is located adjacent to the water connection point and takes the form of a green (good condition) operating band, which becomes progressively obscured by the sliding top guard as the brake friction linings and copper alloy plates wear. When the green operating band is completely covered, friction lining and possibly Copper Alloy Plates renewal is required.

C.7 CLEANING

1 Since 1988 all Wichita friction material is asbestos free. Cleaning of a worn brake must not be done by blowing out the dust. Use either vacuum extraction or a damp cloth.

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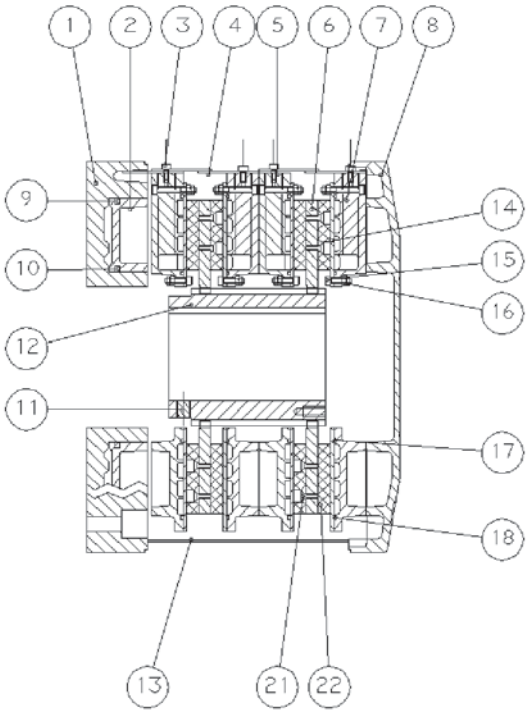

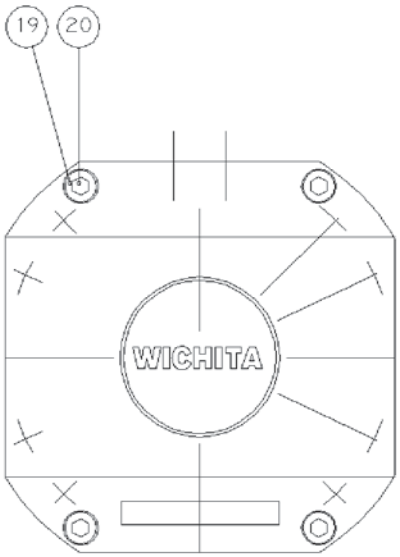

TAKE CARE WHEN HANDLING ALUMINIUM COMPONENTS

8.1 FRICTION LININGS (22)

1 Friction linings should be replaced when full brake wear has been achieved.

2 **IMPORTANT** - Disconnect air supply to brake before any dismantling takes place.

3 Switch off water flow through the brake and disconnect the hoses at the swivel fitting ends, adjacent to the inlet and outlet tee pieces.

4 Remove cap screws (20) and remove the front casing (8).

5 Slide out the first water jacket (7).

6 Slide out the drive plate assembly (6).

7 Remove the seperation springs (24).

8 For a two plate unit continue by removing the two back to back central water jackets (7) in order to gain access to the second drive plate assembly (6).

9 Once removed unscrew the old friction material and replace using new screws and the screwlock as supplied in the friction lining renewal kit.

10 Re-assemble brake in reverse order.

11 Tighten cap screws (20) to the specified torque level.

8.2 COPPER ALLOY PLATES (14).

1 Follow steps 2 to 7 above.

2 Remove the copper alloy plate retaining screws and nuts (15 & 16). To free the copper alloy plate (A) invert the water jacket and tap the rear with a mallet.

3 Remove the inner and outer "O" rings from their respective grooves.

4 Clean "O" ring grooves by brushing to remove any corrosion, taking care not to damage the friction plate seating areas.

5 Brush away any scale/corrosion from the spiral water channels.

6 Fit new "O" rings into their grooves, smearing the "O" rings with a light grease will aid correct seating during assembly.

7 Fit the new copper alloy plate (14) using new screws and nuts (15 & 16) and torque tighten to the table specified value.

8 Re-assemble the brake in reverse order.

9 Tighten cap screws (20) to the specified torque level.

8.3 PISTON SEALS (9 & 10)

1 To replace piston seals (9 & 10) dis-assemble the brake following steps 2 to 7 of section 8.1.

2 In order to remove the piston (2) from its housing within the brake backplate, insert two screws into the tapped holes in the exposed piston underside and use these to pull the piston from the backplate. Remember to remove these screws during re-assembly. TAKE CARE NOT TO DAMAGE SEAL AND SLIDING FACES.

3. Fit new piston seals (9 & 10) and lubricate with Litmol No.2 or equivalent.

4. Re-fit piston(s) into the backplate.

5. Re-assemble in reverse order.

6. Tighten cap screws (20) to the specified torque level.

C.9 RECOMMENDED SPARES

1 Stocking Spares

Although spares would normally be available from stock at either Wichita or our agents warehouses, normal recommended spares should be held by the customer to greatly reduce costly "down time".

2 Parts Lists

To ensure that correct parts are identified when ordering spares, refer to the individual brake parts list, quoting also the brake serial number. For general guidance the normal recommended spares are as follows:

3 Renewal Kits

Two types of Renewal Kit are available for each brake.

i) Drive plate renewal kit - comprising of the friction material and associated retaining screws.

ii) Copper Alloy Plate Renewal Kit - comprising of the copper alloy plates, retaining screws and the "O" ring seals.

(The components contained within each renewal kit are also available as individual items)

4 Piston Seals

These are available as individual items for either the annular of multi range piston option.

Twiflex standard Terms and Conditions apply and are available upon request

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