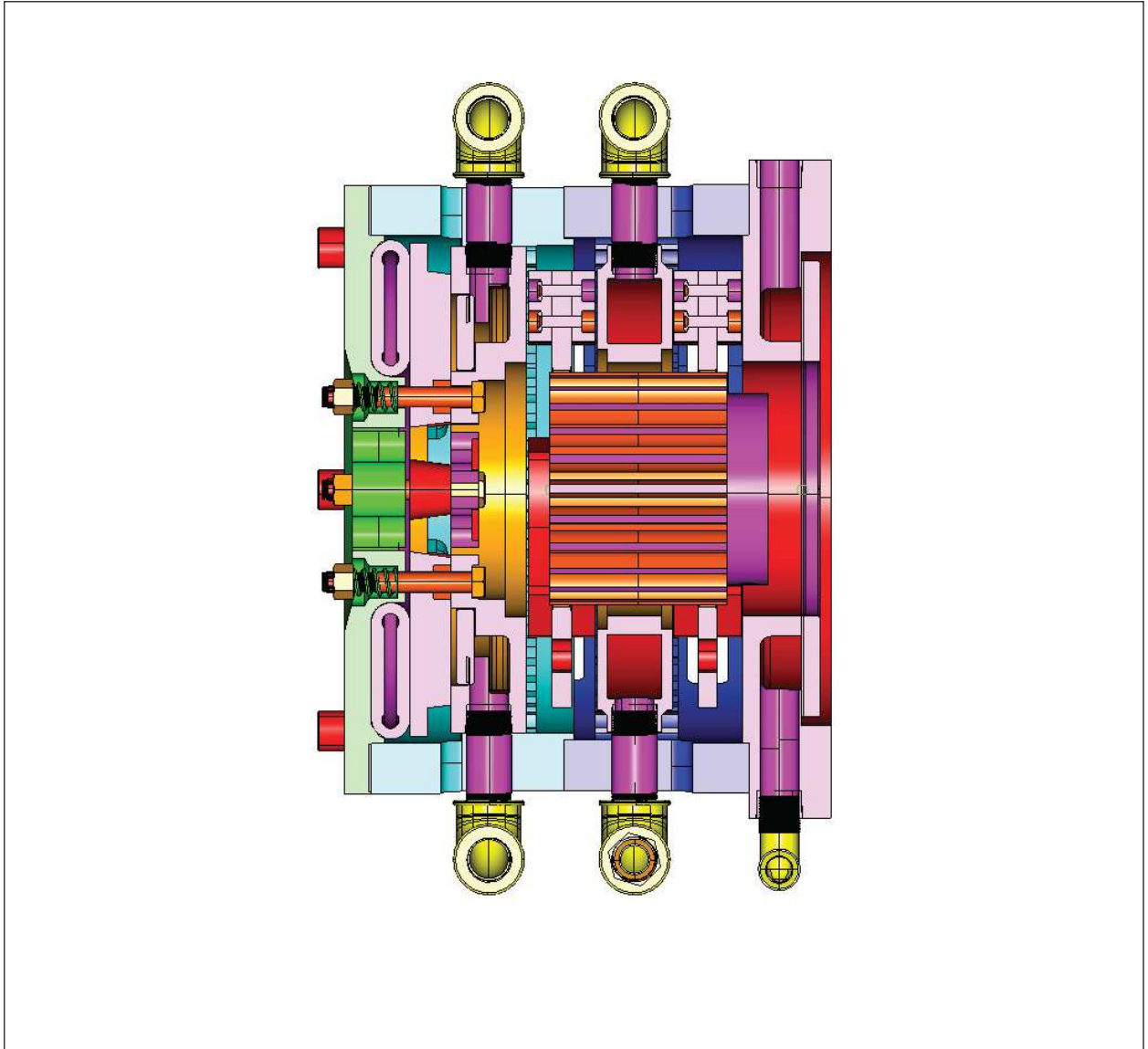


# Water Cooled Clutch and Brake Model WC and WCM

## Installation and Maintenance Instructions

EDS 1.7.1



 **Wichita**<sup>®</sup>  
Clutch

An Altra Industrial Motion Company

# INSTALLATION AND MAINTENANCE INSTRUCTIONS

## Water Cooled Clutch and Brake Model WC and WCM

### W.1 INSTALLATION

Place brake mounting bracket, clutch pulley, gear or equivalent in correct axial position and check alignment as shown in Table 1. Slide hub (12) into correct position on shaft and tighten setscrew (26) to prevent axial movement of hub.

- a) If clutch/brake is to be mounted as an assembled unit.
    1. Slide the unit over the hub (12) ensuring that the teeth on the centre plates (6) (22) register on the teeth of the hub (12).
    2. Insert mounting bolts in backplate (15) and tighten.
    3. Connect air supply to clutch/brake using a flexible hose. Ensure that on the 3-way roto coupling (31) the lower hole in each row of 4 holes at each end of the roto is unrestricted.
    4. Although clutches/brakes are correctly set before leaving our factory the clearances should be checked before being put into operation, See Table 1 for maximum/minimum limits.
    5. The amount of clearance may be established by applying and releasing air from the airtube (3) and measuring the total axial movement of the pressure plate (9).
    6. If clearance needs to be adjusted, this can be achieved by the removal or addition of shims (5). Shims are in segments or half circles.
    7. To modify thickness, unscrew all capscrews (4) by 2-3 turns only, then completely remove the minimum of capscrews (4) sufficient to remove a circle segment of shims (5).
- Modify shim thickness and replace capscrews Repeat with other part of shim (5).
8. Check that shims are of equal thickness all round and tighten capscrews (4) (Tightness values given in Table 2).
  9. Ensure that on a brake the water outlet is VERTICALLY ABOVE the water inlet.
  10. Connect supply and waste pipes to clutch/brake using flexible hoses. DO NOT use rigid piping for floating plate (8) (30)
  11. The water inlet temperature should not be below 10°C (50°F) to prevent condensation on the friction surface, and in normal circumstances not above 38°C(100°F)
  12. Check that the required water flow rate as stated on assembly drawing is available at the outlet of the clutch/brake
  13. ON NO ACCOUNT start machine without sufficient water flow through clutch/brake. See also Section W.5.

- b) ON CERTAIN SIZES OF CLUTCH/BRAKE, the bore of the backplate (15) is smaller than the outside diameter of the hub (12). In these cases, the clutch/ brake must be installed dis-assembled as follows:
  - Disconnect water hoses
  - Remove capscrew (4)
  - Remove as a sub-assembly airtube holding plate (10) airtube (3) pressure plate (9) and front floating plate (8).
  - Remove centre plate (6) with friction segments (1) attached.
  - With ring (16) still attached to the backplate (15) mount backplate (15) onto brake mounting bracket/clutch pulley and tighten mounting bolts (on a brake ensure water outlet is vertically above inlet).
  - Slide hub (12) into correct position on shaft and tighten setscrews (26) to prevent any axial movement).
  - Place the centre plate (6) with friction segment (1) attached on to the hub (12).

- Re-assemble airtube sub-assembly items (1) (3) (9) and (8) on to clutch/ brake, ensuring that the teeth on the front floating plate (8) register correctly in the teeth of the ring (16) such that the inlet and outlet connections of floating plate (8) do not foul the ring (16).
- Tighten capscrews (4). (Correct tightness as stated in Table 2).
- Check and, if necessary, adjust clearance as described in steps W. 1 a3 to 8.
- Complete installation following steps W1a 9 to 12.

### W.2 GUARDING

1. CLUTCHES  
It is essential that personnel are fully protected from the rotating casing of clutches. The clutch must be fully guarded or be in an inaccessible position Do not restrict the flow of cooling air. Use mesh or slotted guards.

2. BRAKES  
These have ventilation slots in the casing that must be guarded if the position of the brake makes access to the rotating parts possible. Do not restrict the flow of cooling air. Use mesh or slotted guards.

### W.3 LUBRICATION

1. CLUTCH OR BRAKE  
No lubrication is required although a very light smear of molybdate or equivalent graphite grease may be applied to gear teeth if felt desirable to assure axial movement under all circumstances.

2. ROTO COUPLING  
Any good bearing oil (or depending on type of nipple, grease) can be used, but care should be taken not to over-lubricate. Minimum lubrication approx every 60 days on water roto couplings  
The micro-lapped sealing faces are lubricated by the water or air passing through the coupling and for this reason should not be run dry for long periods of time.

### W.4 AIR SUPPLY CONTROLS

See Bulletin EDS 4.3.4 (Airtube volume)  
a. ( Use flexible hose between control valve and clutch/brake  
b. When fast engagement/disengagement is required, use ample diameter pipe and valves and always use bends, rather than elbows to ensure good air flow. Keep length of pipe as short as possible to gain filling time.

### W.5 WATER CIRCULATION

- The most effective system is a closed circuit incorporating a tank, pump and a heat exchanger. Wichita can supply names and addresses of manufacturers on request.
- All systems should have pipework of minimum length with the minimum number of bends and an adequate bore.
- The pump should be capable of the minimum flow as stated on the assembly drawing 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 if requested.
- A flow alarm, wired to shut down the machine if the flow drops, is essential.
- See also W 1 a 10 to 13.

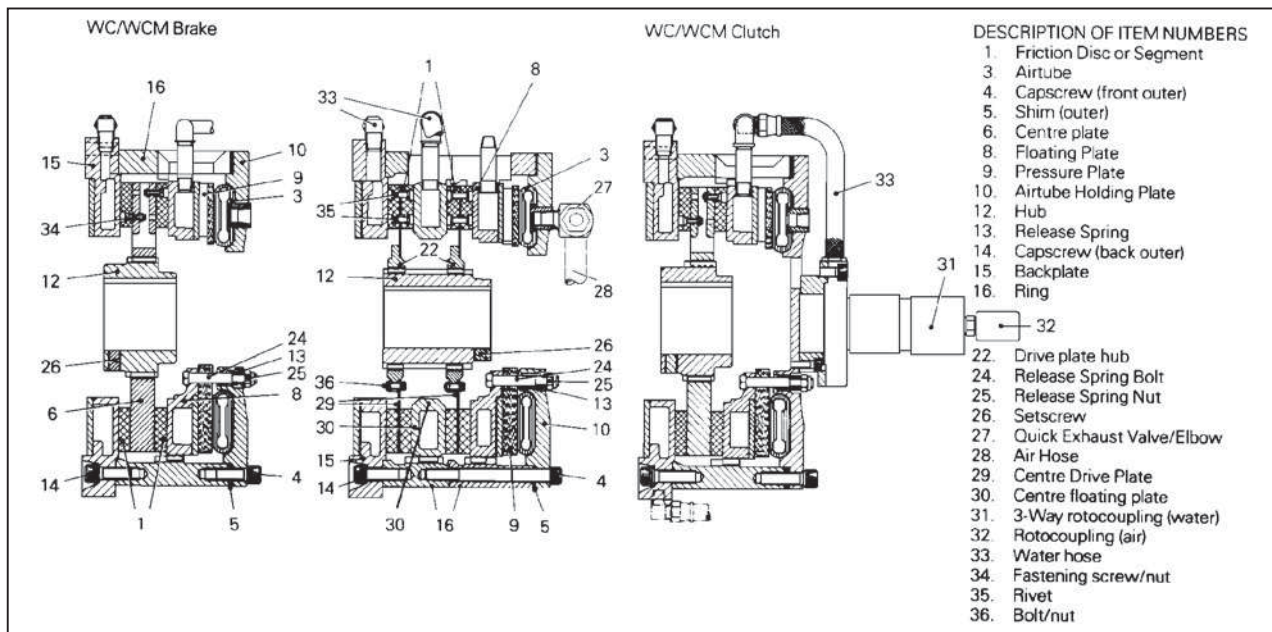


TABLE 1  
OPERATING CLEARANCES

AIRTUBE SIZE	Minimum Clearance		Maximum Clearance (independent of quantity of discs) mm
	one disc mm	two or more discs mm	
4, 6/9 (6/B)	0.8		3
6/15,(6/A)	1.2		6
6,8	1.5	2.2	10
11, 14, 16, 18	2.3	3.4	13
21,24, 24H, 27 30, 30H	3	4.5	16
36, 42, 48	5	7.5	19

1 mm = 0.0394"

To check clearance, apply and release air to airtube (3) and measure the total axial movement of pressure plate (9). TABLE 2

**RECOMMENDED TIGHTENING TORQUE FOR CAPSCREWS**

SIZE (inches)	1/4	5/16	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	1 3/4	2
TORQUE (Nm)	10	25	40	100	210	370	760	1500	2600	4000	6000

SIZE (Metric)	M4	M5	M6	M8	M10	M12	M16	M20	M24	M30
TORQUE (Nm)	3	7	11	27	50	100	230	460	800	1600

**W.6 CLEANING**

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

**W.7 MAINTENANCE**

- 1. FRICTION SEGMENTS (1)**
  - Replace friction segments when maximum clearance stated in Table 1 has been reached.
  - Remove old friction segments (1) from centre plate (6) (29) and replace using new rivets or screws/nuts.
  - If friction segments (1) are bonded to centre plate (6) (29) replace centre plate (6) (29) complete with segments (1) attached.
  - Where friction segments (1) are screwed on to centre plate (6) it is important that the screws are not fastened too tightly, as this can cause cracking of the friction segments (1). Use only a screwdriver for tightening, and a spanner to prevent turning of the nut.
- Linings, fastening items and release springs are supplied as a renewal kit.
- Re-assemble in reverse order.
- Re-connect water and air hoses.
- Check clearance and tighten cap screws as described in W.1a 4 to W.1a 8.

**W.8 WATER JACKETS (8) (15) (30)**

- It is advisable to clean the water jackets and associated pipe work every 6 months with a good solvent to prevent internal scaling, especially when hard water is used.

**W.9 RECOMMENDED SPARES**

**1. STOCKING SPARES**

Although spares are held in stock at our's and our agent's warehouse normal recommended spares should be held by customer to greatly reduce costly "DOWNTIME".

**2. PARTS LISTS**

Due to the many variations obtainable in a basic type and size of clutch/brake, spare parts lists are issued against specific serial numbers. However, for general guidance, the normal recommended spares are as follows:

**3. FRICTION LININGS (1).**

Friction segments should be replaced when the maximum clearance, as stated on Table 1, has been reached.

Segments should be kept clean, dry, free from oil or grease and stored flat to prevent warping. Keep renewal kit containing segments, fastening items and springs in stock.

**4. RELEASE SPRINGS (13).**

It is strongly recommended that release springs are renewed every time the friction segments are replaced.

**5. AIRTUBE (3)**

Failures, although infrequent, may occasionally occur if the airtube becomes excessively hot, saturated by lubrication oil, or over-expanded. The latter is usually caused by excessively worn friction linings. Working pressure up to 8.5 bar. dependant on application. Airtubes are tested at a max. pressure of 14 bar. Store airtubes flat in cool, dark place.

**6. QUICK EXHAUST VALVES**

If quick exhaust valves are fitted, they should be dismantled and cleaned about every 6 months.

**TO DISMANTLE:**

- Hold valve body with spanner and disconnect air hose.
- Unscrew valve from airtube.
- Place body of valve in a vice and remove end cap. Do not attempt to remove end cap while valve is fitted to airtube, as valve may break at thread neck. Keep spare complete valves in stock.

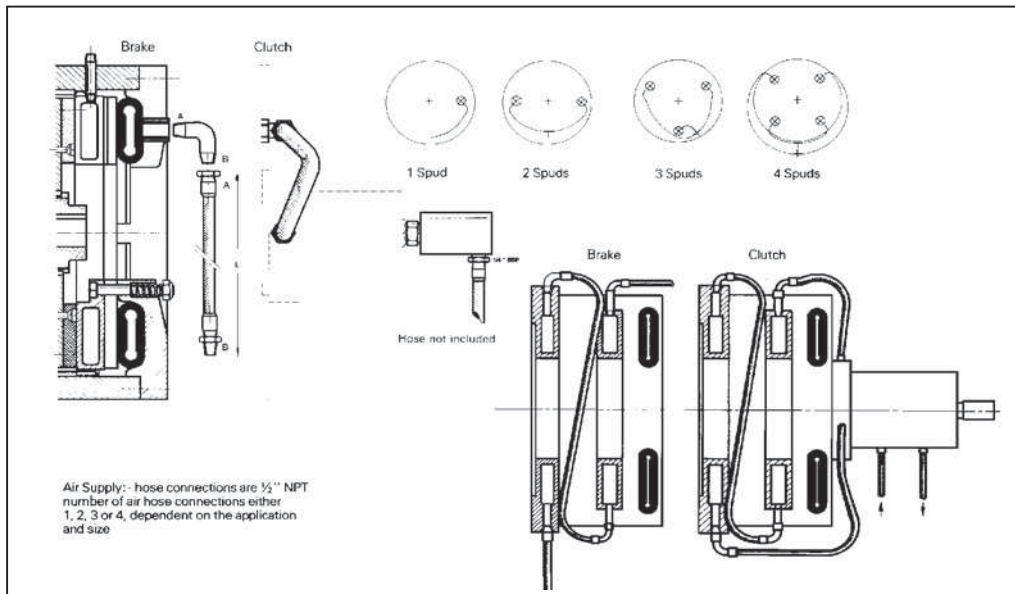
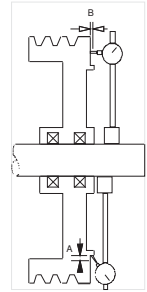
**7. ROTO COUPLING**

Roto couplings seldom fail, but are sometimes damaged by an external blow or can wear prematurely if restrained by non-flexible hose connections. Keep complete replacement air and water units in stock.

TABLE 1 **ALIGNMENT VALUES** Parallel = A, Angular = B

All values are total indicator readings on clock when clock rotated.

BRAKE SIZE	A mm	B mm
6	0.08	0.08
8	0.10	0.10
11	0.15	0.15
14	0.18	0.18
16	0.20	0.20
18	0.23	0.23
21	0.28	0.28
24	0.30	0.30
27	0.36	0.36
30	0.38	0.38



Twiflex standard Terms and Conditions apply and are available upon request

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