

WICHITA CLUTCH™

Wichita Clutch™ Mistral II Installation & Maintenance Manual

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1. Introduction

1.1. Description

Wichita Mistral II pneumatic tension brake is attuned to the needs of the corrugating market for which it was originally designed. It is also a versatile product which is finding favor in additional tensioning applications. Wichita designers and engineers consulted extensively with mill roll stand manufacturers and users to offer a tension brake ideally suited to the needs of this particular market. The result is a compact, high performance, versatile brake capable of handling the tensioning needs of the latest machine designs, as well as existing equipment. The Mistral paves the way for increasing line speeds by 5.4 ft./sec. from 810 ft./min. (or slower) to 1,134 ft./min.

The Mistral II has integral guarding that eliminates the cost and effort of installing external guards. Operator safety is further enhanced by quick release air and electric disconnects when the front cover is removed.

Air and electrical connections are easily accessible for fast, simple installation and maintenance.

Mistral II brakes are compact at only 11.6" or 295mm in diameter and the modern industrial styling enhances the appearance of any machine on which they are used. Their size facilitates the pickup of small, part reels used in short batch runs. For automatic reel loading machines, Mistral II can be combined with optional infrared and speed sensors

Each brake may be specified with a varying number of pneumatic actuators, allowing precise selection of brake torque capacity for optimum tension control.

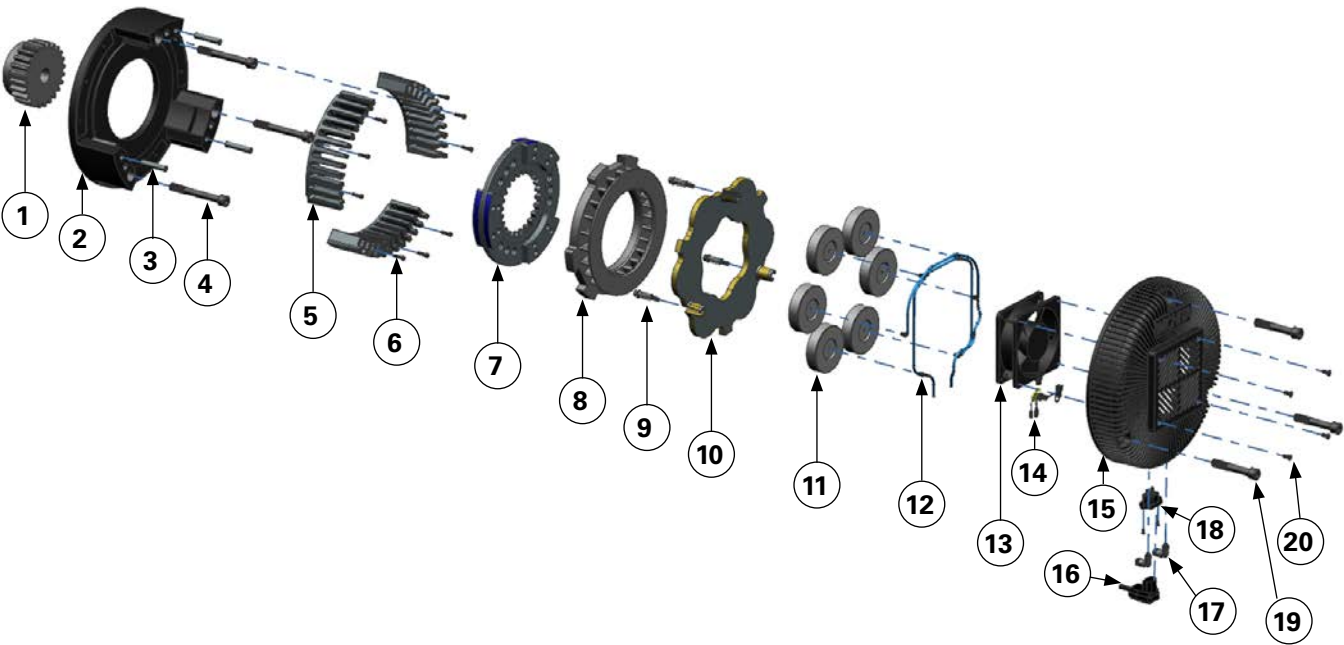
A rugged, high performance, low energy usage fan is housed within the brake for high heat dissipation — a must for increased productivity through controlled tension at many roll speeds.

By removing just three cap screws and the quick release air and electricity connections, the Mistral II's front cover can be detached for easy and fast access to internal parts.

1.2. How it Works

Up to six pneumatic actuators (11) are contained within the cover of the Mistral brake. When air pressure is applied to these actuators, through the quick release push fittings (17), the force generated is transmitted through the Pressure Plate (10) on to the Floating Plate (8) which, in turn, is pressed against the Drive Plate assembly (7). The Drive Plate assembly is made up of a Centre plate and six Friction Segments that are riveted to securely fix them in place. The applied force from the pneumatic actuators press the Floating Plate against the Drive Plate assembly producing a clamping force up against the back plate integrated into the Ring (2). This clamping force is transmitted through the Drive Hub (1) creating the desired tension into the attached machine.

1.3. Parts Diagram



Parts List

Item No#	Description	Item No#	Description
1	Drive Hub	11	Pneumatic Actuator
2	Ring / Backplate	12	Pneumatic Tube / Elbows / Tee's
3	Dowel	13	Fan
4	Ring / Backplate Mounting Screws	14	Wiring Assembly
5	Heat Sinks	15	Cover
6	Heat Sink Screws	16	Female Electric Input Plug
7	Drive Plate Assembly	17	Quick Release Pneumatic input (6mm)
8	Floating Plate	18	Male Electric Input Plug
9	Release Spring / Screw / Washer	19	Cover Mounting Bolts
10	Pressure Plate	20	Fan Mounting Screws

2. Installation

NOTE!

No additional guarding is required as the Mistral has been designed with full safety guarding.

No lubrication is required, although a very light smear of molycote or equivalent graphite grease may be applied to the gear teeth and sliding keyways if desired.

Air supply should be clean and dry and filtered to 25 microns. Maximum air pressure 5.5 Bar (80 PSI). See certified drawing for details.

- A template is available on request for marking out mounting holes in machine mounting bracket.
- Dismantle brake by removing bolts (19).
- Slide hub (1) into correct axial position on shaft and tighten integral set screw to prevent axial movement of hub. An end plate may also be used, if required, to retain hub. Take care that end plate does not foul internal parts of the brake.
- Position Ring / Back Plate (2) onto machine mounting bracket and insert bolts (4) and torque tighten to values given in table 1. Check alignment as shown in fig. 3.



Fig 3a
Face Alignment

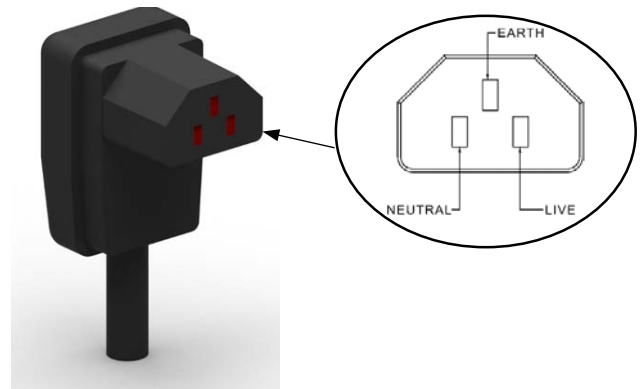


Fig 3b
Diametrical Alignment

Facial alignment to be within 0.1mm and diametrical alignment to be within 0.25mm.

- Slide centreplate assembly (7) onto the hub (1) locating on the splines.
- Slide the floating plate (8) into the Ring / Backplate (2) locating the keyways onto the keys.

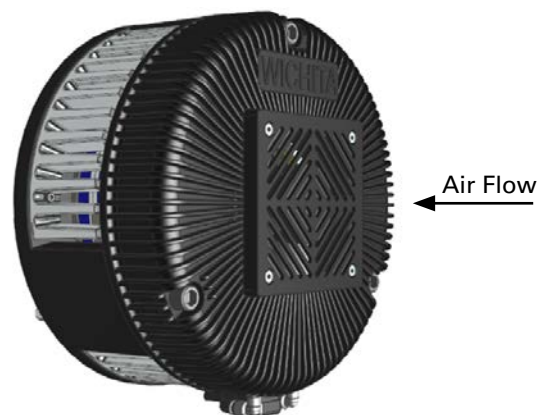
- Mount front cover (15) containing the remaining components onto ring/backplate (2) using the locating pins (3) in the back casing.
- Insert fixing bolts (19) into front casing (15). Tighten bolts to torque values given in table 1.
- Connect air supply to Pneumatic inlets (17).
- Unplug female plug (16) from male socket (18).
- Wire electric supply to female plug (16) as shown in image below.



Ensure wiring is carried out by suitably qualified personnel.

See certified drawing or Rating plate for electrical data, ENSURE unit is earthed and has external fuse.

- Before operating brake ensure that fan (23) is in operation and blowing into brake.



3. Maintenance

WARNING!

Only qualified personnel should undertake any work on these products. Faulty workmanship may result in serious injury or equipment damage.

Ensure the machinery is in a safe condition before any maintenance is undertaken to minimise risk of personal injury.

CAUTION!

Only genuine Wichita parts should be used to maintain this unit.

3.1. Periodic Inspection

NOTE!

The following items may be inspected without disassembly of the elements.

3.1.1. Friction Assembly Segment Wear

CAUTION!

Operation of the unit with a friction segment thickness below the recommended value will result in damage to the unit.

The MISTRAL brake requires no adjustment for wear until the wear limit is reached then the drive plate assembly should be replaced

When the friction material is 1mm away from the rivet face, replace the drive plate assembly.

Always wear appropriate PPE when working with any friction material.

- Drive plate assembly thickness should be checked and compared with the given values in the table below.
- Friction material that shows signs of glazing may be lightly sanded to remove the surface glaze.
- The drive plate assembly should be replaced when approaching the minimum thickness defined.

Original Drive plate assembly Thickness, (mm)	Minimum Allowable Drive plate assembly Thickness, (mm)
31	24

3.1.2. Contamination of Friction Segments

CAUTION!

Solvent based cleaners should not be used to remove oil or grease from the unit whilst still assembled. Failure to follow this instruction may cause a fire as heat from operation is generated.

Always wear appropriate PPE when working with any friction material.

Surface contamination of the friction material from oil or grease may be removed with a solvent based cleaner, only upon disassembly of the unit. If contamination through oil or grease has soaked into the friction material saturating the pad, then they must be replaced. Drive Plate assembly must also be replaced where charring is present from excessive heat damage.

- The developed torque of the unit will be reduced if the friction faces or drum are contaminated by oil or grease, Disassembly will be required to remove any oil or grease built up in the unit.
- Dust accumulations may be removed with a vacuum.

3.1.3. Air Control components

A check of all pressure containing connections is to be undertaken to identify any leak paths.

Any air leaks are to be repaired.

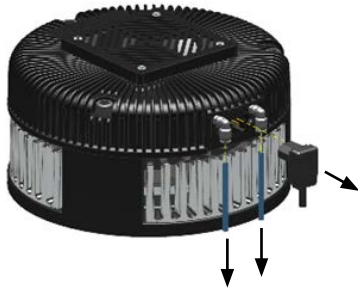
3.1.4. Release Springs

Release Springs are to be inspected periodically for any signs of wear. If there are any signs of damage replace the release springs.

3.2. Disassembly of the unit

The process defined below is to be followed for full disassembly of the Mistral brake:

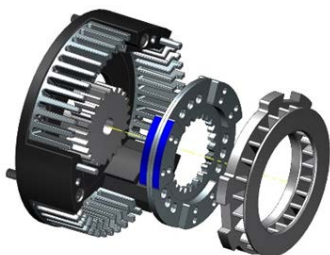
- Remove electric and pneumatic supply to brake by disconnecting plug connector (16) and releasing tubes from pneumatic input (17), ensure the plug and tubes are kept free from debris and protected from damage during any maintenance undertaken.



- Unscrew the three cover bolts (19) and remove the Cover (15) and components assembled within, placing top face down on a clean flat surface.
- Alignment Dowels (3) can be left located in the Ring (2).



- Slide the Floating Plate (8) off the Ring/backplate (2) and store on a clean flat surface.
- Slide the Drive plate assembly (7) from the Splined Hub (1) and store on a clean flat surface.



- Unscrew the release spring retaining screws and remove the Screw, Washer and Release spring (9).



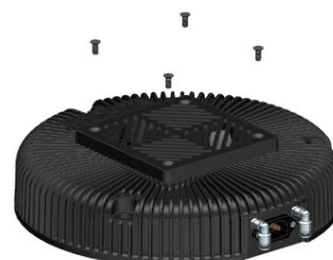
- Remove the Pressure Plate (10) and store on a clean flat surface.



- Lift the two piston assemblies (11) highlighted in the below image to allow removal of the pneumatic tubes from the barbed connectors attached to the cover (15), once these tubes are free all of the piston assemblies can be lifted out along with the connected tubes and fittings.



- The air tubes and fittings (12) can now be removed from the piston assemblies by unscrewing.
- Disconnect the Fan (13) from the Wiring Assembly (14).
- Remove the countersunk screws (20) to release the Fan (13) from the Cover (15).



3.3. Friction Lining Replacement

NOTE!

Only use genuine Wichita components in the repair or maintenance of these units.

All parts should be thoroughly cleaned to remove any debris before fitting a new friction assembly.

- Remove electric and pneumatic supply to brake by disconnecting plug connector (16) and releasing tubes from pneumatic input (17), ensure the plug and tubes are kept free from debris and protected from damage.
- Unscrew the three cover bolts (19) and remove the Cover (15) and components assembled within, placing top face down on a clean flat surface.
- Alignment Dowels (3) can be left located in the Ring (2).
- Slide the Floating Plate (8) off the Ring/backplate (2) and store on a clean flat surface.
- Slide the Drive plate assembly (7) from the Splined Hub (1).
- Ensure the contact face of the Ring/back plate (2) is clean and free from damage.
- Slide the New Drive plate assembly (7) onto the Splined Hub (1).
- Slide the Floating Plate (8) back into position, locating on the drive keys on the Ring/backplate.

Upon replacing the Drive plate assembly, the release springs should also be replaced.

To replace Release Springs (9).

- Unscrew the release spring retaining screws and remove the Screw, Washer and Release spring (9).
- Whilst these springs are removed the remaining components under the Pressure plate (10) should be visually checked for any signs of damage / wear, if any signs of damage / wear is detected the parts should be replaced before re-assembling.
- Replace the Release springs (9) and refit the retaining screw and washer, screwing in place until the top of the cap screw is flush with the top face of the Pressure plate (10).

- The Cover and all components contained within shall be located back on the Ring/back plate (2) using the location Dowels (3).
- Replace the cover Bolts (19) and torque to values given in table 1.

3.4. Actuator Replacement

NOTE!

Only use genuine Wichita components in the repair or maintenance of these units.

All parts should be thoroughly cleaned to remove any debris before fitting a new friction assembly.

- Remove electric and pneumatic supply to brake by disconnecting plug connector (16) and releasing tubes from pneumatic input (17), ensure the plug and tubes are kept free from debris and protected from damage.
- Unscrew the three cover bolts (19) and remove the Cover (15) and components assembled within, placing top face down on a clean flat surface.
- Unscrew the release spring retaining screws and remove the Screw, Washer and Release spring (9).
- Remove the Pressure Plate (10) and store on a clean flat surface.
- Lift the two piston assemblies (11) nearest to the input connections to allow removal of the pneumatic tubes from the barbed connectors attached to the cover (15), once these tubes are free all of the piston assemblies can be lifted out along with the connected tubes and fittings.
- The air tubes and fittings (12) can now be removed from the piston assemblies by unscrewing.
- Replace actuator and screw fittings back in using a thread sealant around fitting.
- Replace actuators and air tubes back into cover taking care not to damage the air tubes & connect air tubes onto internal barbed connectors.
- Assemble Pressure plate back into position and replace Release springs, retaining screws & washers, ensuring the top of the cap screw sits flush with top face of pressure plate.

Continued on next page

- Reassemble cover on to ring/back plate using dowels to locate & screw in cover bolts, tightening to torque value given in table1.

3.5. Fan Replacement

NOTE!

Only use genuine Wichita components in the repair or maintenance of these units.

All parts should be thoroughly cleaned to remove any debris before re-assembly.

- Remove electric and pneumatic supply to brake by disconnecting plug connector (16) and releasing tubes from pneumatic input (17), ensure the plug and tubes are kept free from debris and protected from damage.
- Loosen countersunk screws holding fan to cover, do not remove screws at this stage.
- Unscrew the three cover bolts (19) and remove the Cover (15) and components assembled within, placing top face down on a clean flat surface.
- Unscrew the release spring retaining screws and remove the Screw, Washer and Release spring (9).
- Remove the Pressure Plate (10) and store on a clean flat surface.
- Lift the piston assemblies (11) out of their housings to create space for the fan to be removed, no need to disconnect air tubes from the barbed connector to do this.
- Disconnect fan power connector.
- Tilt cover assembly up and remove countersunk screws, Lift fan out and replace.
- Align with screw holes and replace countersunk screws by hand.
- Reconnect fan.
- Visually check the air tubes for any signs of damage and replace if necessary.
- Reseat the actuator assemblies in their respective housings.
- Assemble Pressure plate back into position and replace Release springs, retaining screws

& washers, ensuring the top of the cap screw sits flush with top face of pressure plate.

- Tighten countersunk screws to torque value given in table1.
- Reassemble cover on to ring/back plate using dowels to locate & screw in cover bolts, tightening to torque value given in table1.

4. Recommended Spares

4.1. Stocking Spares

Although spares are held at our and our agent's warehouses, normal recommended spares should be held by the customer to reduce costly downtime.

4.2. Parts Lists

Due to the many variations obtainable in a basic type and size of brake, spare parts lists are issued against specific serial numbers. However, for general guidance, the normal recommended spares are Friction segments, Springs and Actuators.

4.3. Drive Plate Assembly

These are supplied together, with springs, as a Wichita spare parts kit. Friction segments (14) should be kept clean, dry and free from oil or grease. Segments should be replaced when the allowable wear limit has been reached.

4.4. Actuators

Failures, although infrequent, may occasionally occur if the actuator becomes excessively hot, saturated by oil or over expanded. Store actuators with care. Actuators can only be replaced as complete assemblies.

5. Bolting Torques

Table 1, Bolting Torques

Description	Torque (Nm)
M3 (Countersink)	1
M4 (Caphead)	3
M6 (Countersink / Button)	7
M12 (Caphead)	86

Note, Torque values in table above are based upon the use of Grade 12.9 bolting.

6. Contact Details

NOTE!

The information on the products nameplate should be quoted during any enquiry made regarding these units.

Regal Rexnord
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Bedford
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MK42 9RD
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This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form small squares across the entire surface. There are no margins, text, or other markings on the paper.

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WICHITA CLUTCH™

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