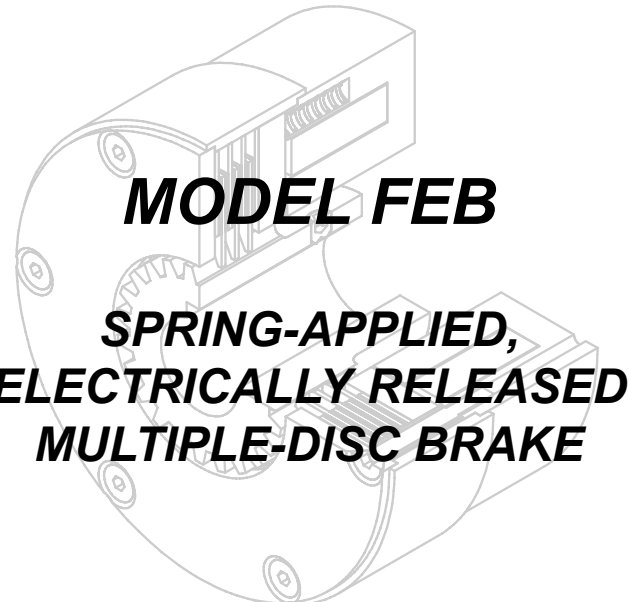




**CARLYLE JOHNSON
MAXITORQ®**



**MODEL FEB
SPRING-APPLIED,
ELECTRICALLY RELEASED
MULTIPLE-DISC BRAKE**

**MAINTENANCE
REPAIR
TROUBLESHOOTING
MANUAL**

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SAFETY WARNING

**ALWAYS DISCONNECT POWER
AND PLACE EQUIPMENT IN REST POSITION
(WITH NO STORED ENERGY)
BEFORE PERFORMING SERVICE
OR REMOVING/REINSTALLING BRAKE**

**WHEN ON-EQUIPMENT
ELECTRICAL READINGS ARE REQUIRED,
INSTRUMENTS / METERS
MUST BE ATTACHED
PRIOR TO RECONNECTING LEADS
AND INTRODUCING POWER TO SYSTEM**

**A SUITABLE FUSED POWER SOURCE
RATED FOR THE SAME VOLTAGE
AND CURRENT DRAW AS THE CLUTCH COIL
- WITH MANUAL ON-OFF CONTROL -
IS REQUIRED FOR ASSEMBLY
AND DISASSEMBLY**

**WHEN ASSEMBLING
OR DISASSEMBLING BRAKE,
STRONG SPRING FORCES ARE PRESENT
AND POWER IS NECESSARY.
USE OF APPROVED SAFETY GLASSES
IS MANDATORY**

**CAREFULLY FOLLOW INSTRUCTIONS
TO PREVENT INJURY TO
MAINTENANCE PERSONNEL**

CONTENTS

Safety Warning	Inside Cover
Contents	1
Assembly Diagram (Figure 1)	2
Brake Sectioned View (Figure 2)	3
Brake Cut Away View (Figure 3)	3
Brake Installation	
Locating Diameters	4
Alignment of Hub to Brake Bore	4
Shaft to Brake Alignment	4
Attachment of Hub to Shaft	5
Brake Mounting	5
Brake to Mounting Surface Perpendicularity	5
Brake Maintenance	
Brake Inspection	6
Cleaning the Brake	7
Disc and Spring Replacement	7
Brake Disassembly	8
Brake Assembly	
Preliminary Brake Assembly	9
Brake Air Gap (Figure 4)	10
Checking Armature Plate Air Gap	11
Final Brake Assembly	12
Troubleshooting	
Brake will not engage or slips	13
Brake will not disengage or high neutral drag	14
Performing a Hi-Pot Test	16
Checking Coil Resistance	16
Checking Voltage	16
Blown or Incorrect Fuse	16
Brake Assembly Specifications	17
Brake Mechanical Specifications (Table 1)	18
Brake Electrical Specifications (Table 2)	19
Contacting Carlyle Johnson	
Contacting the Factory	20
Returning Products for Repair	20
Purchasing Replacement Parts	20

ASSEMBLY DIAGRAM

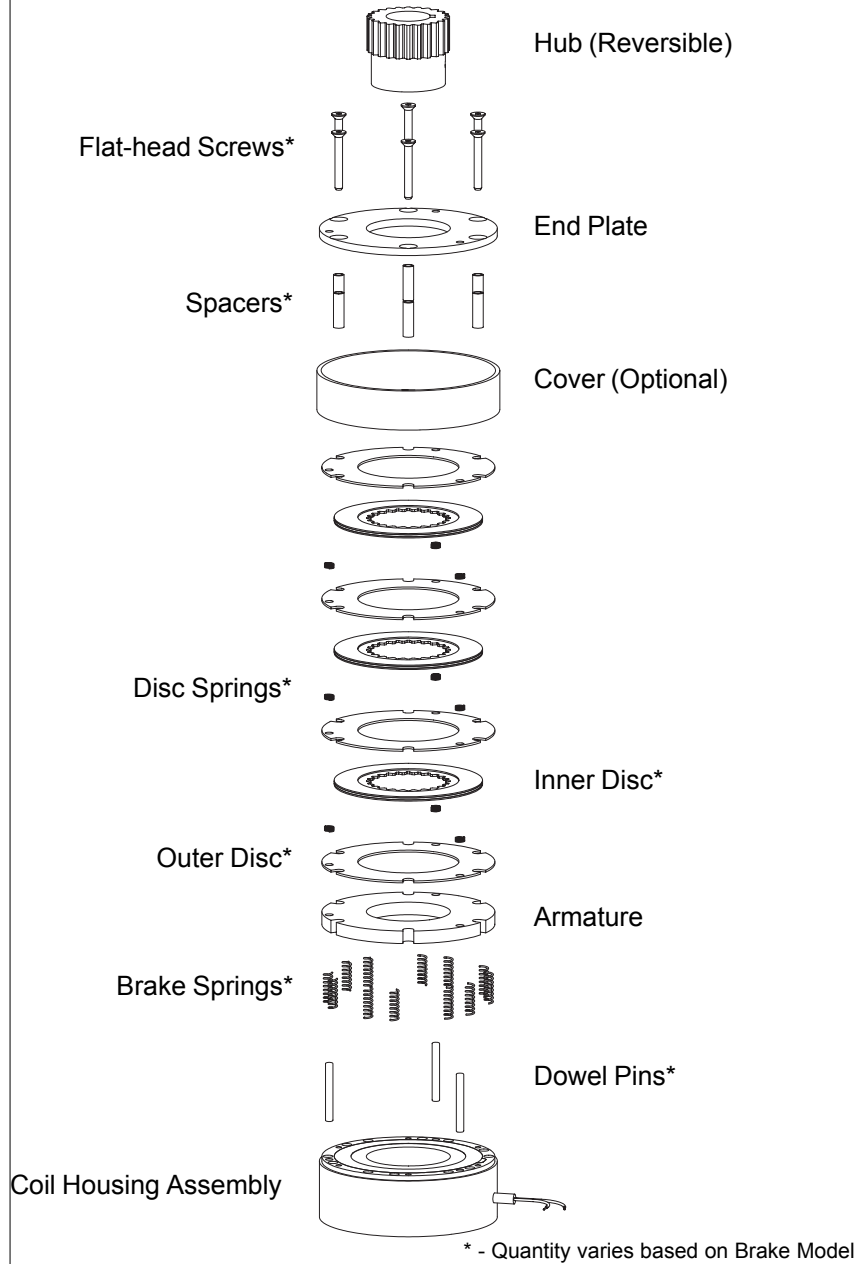


Figure 1

BRAKE SECTIONED VIEW

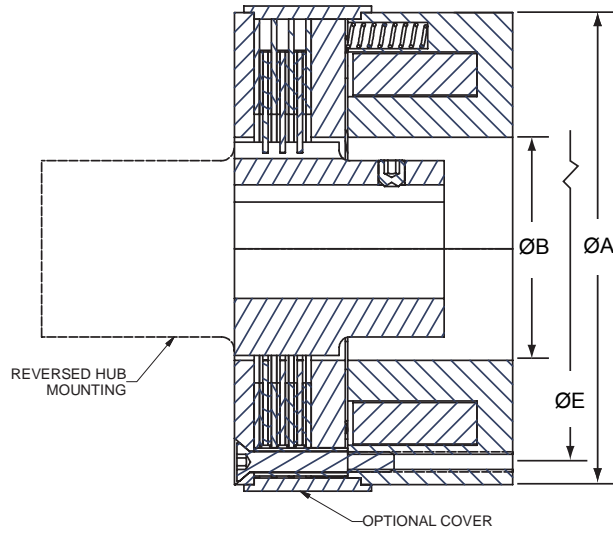


Figure 2

BRAKE CUT-AWAY VIEW

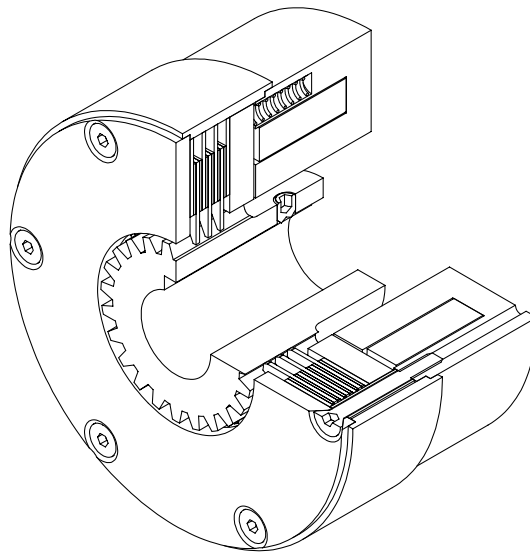


Figure 3

BRAKE INSTALLATION

Model FEB brakes must be correctly installed and accurately aligned to give satisfactory performance. Most performance problems are the result of incorrect installation or brake/shaft misalignment.

Premature wear, damage, or failure of Model FEB brakes due to improper installation, alignment, or use is not covered by warranty.

LOCATING DIAMETERS

The brake may be piloted on the O.D. ($\varnothing A$ in Figure 2) or on the Bore Diameter ($\varnothing B$ in Figure 2).

Dimensions for the different FEB brakes are shown in "***BRAKE MECHANICAL SPECIFICATIONS***" on Page 18, together with the diameter of the Bolt Circle ($\varnothing E$ in Figure 2).

ALIGNMENT OF HUB TO BRAKE BORE

When the brake is tested at the factory prior to shipment, the Hub is accurately aligned with the brake bore, and discs are centered in the brake. If this setting is disturbed before or during installation, it must be restored or proper brake operation will not be possible.

Prior to starting installation, check that the Hub is centered in the bore, and that the centerline of the hub is coincident with the centerline of the bore. Make this determination with the Hub inserted with the spline end "up" toward the cover end (away from the Coil Housing Assembly end) of the brake.

Place the brake "face down" (with the Coil Housing Assembly up) on a flat surface. Observe the relationship of the Hub to the bore. If it is centered, the brake can be installed. If adjustment is needed, do the following:

Obtain a suitable power supply (**Read the SAFETY WARNING inside the front cover**). Apply power to the brake to disengage it and allow free movement of the discs.

Using pins or a spacer, adjust the location of the hub until it is centered in the brake bore

Remove the power, which will engage the brake. The Hub can be removed, and the discs will stay aligned, so that when installed the Hub will be accurately centered.

SHAFT TO BRAKE ALIGNMENT

After attaching the Hub to a drive shaft, the Hub and brake must be held concentric within .005 TIR. Misaligned shaft/hub and brake will result in unsatisfactory brake wear, and may prevent the brake from engaging when power is removed.

BRAKE INSTALLATION, con't

ATTACHMENT OF HUB TO SHAFT

The brake Hub is intended to be mounted on a finished shaft with a square key to transmit torque. It is important that after the hub is attached, the relationship of the hub and shaft is inspected carefully.

The hub must fit securely on the shaft and be centered. There can be no eccentric motion of the outer spline of the hub when the shaft is rotated. Any such "wobble" due to improper attachment, bent shaft, or lack of shaft support will result in incorrect brake performance and premature brake failure.

BRAKE MOUNTING

Model FEB brakes contain 6 or 8 threaded holes (depending on brake model - see "***BRAKE MECHANICAL SPECIFICATIONS***" in this manual) for mounting. To achieve proper performance at rated torque, all holes must be used for attachment to a stationary location, utilizing the specified size attaching bolt or screw. Failure to correctly install the brake may result in poor operation, brake failure, and injury to personnel.

Screws must be tightened to torque levels with minimum thread engagement as specified (see "***BRAKE MECHANICAL SPECIFICATIONS***"), and in applications with high vibration levels, screws must be coated with Loctite or a similar sealant. Refer to "***BRAKE ASSEMBLY SPECIFICATIONS***" in this manual.

We recommend using Loctite 272 sparingly in ALL applications for mounting screws.

BRAKE TO MOUNTING SURFACE PERPENDICULARITY

In addition to the shaft/brake alignment, the brake must be mounted to a surface which is precisely perpendicular to the axis of the driving shaft. The maximum deviation cannot exceed .005", measured across the diameter of the brake.

There is no provision within the brake design to compensate for any brake misalignment. As with alignment of rotating centers above, lack of perpendicularity will result in accelerated wear, damage, and possible injury to operating personnel, since the brake may be unable to fully engage, stop, or hold the rotating device to which it is attached.

BRAKE MAINTENANCE

Model FEB brakes are designed for long service with minimum maintenance. Periodically, discs should be cleaned as outlined below.

Brakes with optional covers are protected from external contamination and require only occasional tear-down and cleaning. An annual inspection and cleaning is sufficient unless degradation of performance is noted. When such an event is observed, the brake should be thoroughly cleaned and parts inspected for wear or damage before returning the brake to service.

Open brakes - without covers - are subject to contamination from adjacent equipment. Careful attention must be paid to the condition of the exposed discs to make sure no such foreign material compromises the brake's performance. Frequently blow out any contaminants with compressed air, and verify the brake operation before continuing its use. If performance is not restored, disassemble and thoroughly clean the brake, as well as inspect all parts for wear or damage before returning to service.

The use of kerosene for cleaning is NOT RECOMMENDED. Kerosene leaves a lubricating film which will compromise the properties of the synthetic friction surfaces on the discs, reducing the capability of the brake and exposing operators to injury and equipment to possible damage.

Brake Inspection

Disassemble the brake following the section "**BRAKE DISASSEMBLY**" in this manual.

Inspect parts for unusual wear or damage. Pay particular attention to disc surfaces. Some wear of friction surfaces is not a problem, provided a significant amount of the friction material is remaining, and wear is uniform.

Uneven wear may indicate improper installation of brake, improper assembly, misalignment during installation, or mounting surface irregularities. Simply replacing worn parts without determining and correcting the root cause of the wear will give only temporary performance improvement. Correct all alignment and mounting problems before reusing brake. See the section "**BRAKE ASSEMBLY**" for information.

Check the Spacers for grooves and damage. Outer Discs must be free to move during engagement and disengagement, and require smooth surfaces on the Spacers to do so.

Check the outer surface of the spline on the Hub carefully. If there are grooves or notches worn into the teeth of the spline, the Inner Discs will not be free to 'float' and proper brake performance will not be achieved. Obtain replacement parts for all worn items before reusing brake.

While the brake is disassembled, it is a good idea to clean it as outlined below.

Reassemble brake following "**BRAKE ASSEMBLY**" section of this manual.

BRAKE MAINTENANCE, con't

Cleaning the Brake

Disassemble the brake following the section **"BRAKE DISASSEMBLY"** in this manual.

Wipe down the Coil Housing Assembly (which contains the lead wires) with a soft cloth. Do not immerse the Coil Housing Assembly in any cleaning fluid.

Wash the Inner Discs, Outer Discs and Disc Springs in denatured alcohol.

It is not necessary to wash the other parts unless they contain foreign material or contamination. Wiping them down with a soft cloth should suffice.

Dry the washed parts with compressed air, and observe each part for unusual wear or damage. Do not reuse damaged or badly worn parts or brake will not function properly.

Reassemble brake following **"BRAKE ASSEMBLY"** section of this manual.

Disc and Spring Replacement

After extended use, friction surfaces on the discs will become worn to the point where replacement is necessary.

When the synthetic friction material wears down, the brake will be unable to operate to its full torque rating. This may also increase the "Air Gap" to the point where brake disengagement is erratic. New discs will decrease the "Air Gap", allowing for full torque when engaged and rapid positive disengagement.

It is advisable to replace disc springs and spacers at the same time as discs. Springs eventually become fatigued and brake operation - particularly neutral drag - will be adversely affected. Disc and spring sets can be purchased from the factory to restore like-new performance to the brake.

Disassemble the brake following the section **"BRAKE DISASSEMBLY"** in this manual.

Discard the Inner Discs, Outer Discs, Spacers and Disc Springs.

Clean the other parts as noted above under **"Cleaning the Brake"**.

Carefully inspect the remaining parts for any wear. Review the section above titled **"Brake Inspection"** and replace any damaged parts.

Reassemble brake following **"BRAKE ASSEMBLY"** section of this manual.

BRAKE DISASSEMBLY

SAFETY WARNING!

We strongly recommend that Model FEB brakes be returned to the factory for service and repair. We have the necessary tools, parts and experience to restore brakes to like-new performance. If you decide to undertake field disassembly, read the warning inside the cover of this manual carefully!

Assemble the required safety equipment, power supply, and tools before starting disassembly. A small torch or heat source may be required to remove the flat-head screws without damage (they are assembled using Loctite 272).

1. Check the coil resistance (See **"BRAKE ELECTRICAL SPECIFICATIONS"**) and perform a "hi-pot" test. The procedure for this test is shown on Page 16.
2. Connect a power supply to the leads of the brake. Set the voltage to the proper setting for the rating of the brake, 24v or 100v (or special voltage if applicable). Either lead can be considered positive - there is no polarity to the brake.
3. Energize the brake by turning the power supply ON. There will be a definite "click" as the brake disengages. This will compress the Brake Springs and remove pressure from the End Plate.
If, due to wear, the coil is unable to pull the Armature "in", momentarily apply 150% of the rated voltage to the coil. When the Armature is pulled "in", immediately reduce voltage to the rated value. If this action will still not disengage the brake, place the brake in a press or install clamps (at least 3 required), clamping the End Plate and the Coil Housing Assembly. Continue disassembly. Release pressure SLOWLY on the brake after the Flat Head Screws are removed, until the spring force is relieved. It is extremely dangerous to disassemble a brake with uncontrolled Brake Spring pressure on the internal parts!
4. Apply heat to the Coil Housing Assembly where the Flat-head Screws are inserted, while applying pressure to remove the screws. DO NOT REMOVE POWER FROM THE BRAKE UNTIL ADVISED TO DO SO. STRONG SPRING FORCES CAN CAUSE INJURY!
5. When all Flat-head Screws are removed, remove the End Plate,
6. Remove the Cover (if equipped), Spacers, Outer Discs, Inner Discs, and Disc Springs.
7. Place a folded cloth on the table. Turn the brake over and rest it on its Dowel Pins on the folded cloth.
8. Place a heavy cloth over the brake, and press down firmly on the Coil Housing Assembly. While holding the Coil Housing Assembly firmly, turn the power off to the clutch. The armature will be driven into the folded cloth on the table.
9. Turn the brake back over, and remove the Armature Plate and Brake Springs.
10. The Dowel Pins are pressed into the Coil Housing Assembly and are not normally removed during maintenance or repair.
11. Carefully inspect all parts which are going to be reused during reassembly. Wash the discs as outlined in **"BRAKE MAINTENANCE"** and wipe down the other parts being reused.

PRELIMINARY BRAKE ASSEMBLY

SAFETY WARNING!

Read the warning inside the cover of this manual carefully! Assemble the required safety equipment, power supply, and tools before starting assembly. Loctite 272 is not used in Preliminary Brake Assembly

1. If the Dowel Pins have been removed, press them into the holes on the Coil Housing Assembly, being careful to not press pins into any threaded holes.
2. Place the Coil Housing Assembly on a flat work surface with the Dowel Pins facing UP.
3. Place the Brake Springs into the holes in the Coil Housing Assembly.
4. Place the Armature over the Dowel Pins and allow it to rest on the Brake Springs.
5. Connect an appropriate power supply to the leads of the brake. Either lead can be considered positive - there is no polarity to the brake.

For Models FEB 250 and FEB 350

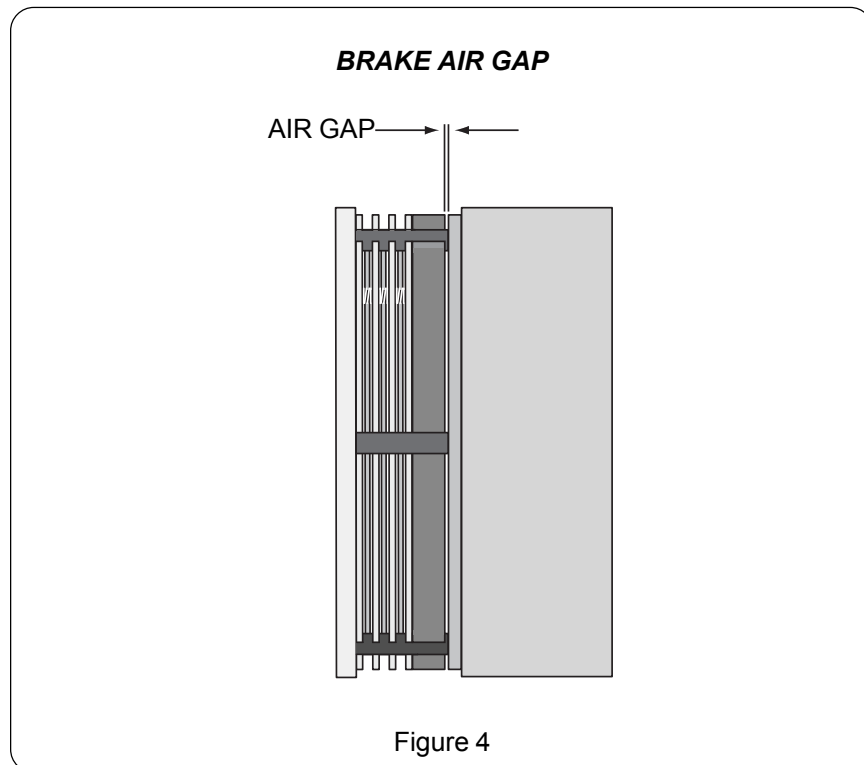
- 6a. Energize the brake with the proper coil voltage. Press down firmly on the Armature. This should allow the coil to pull the Armature tight against the Coil Housing Assembly, permitting the remaining parts to be assembled. **DO NOT REMOVE POWER FROM THE ASSEMBLY AS IT MAY CAUSE INJURY DUE TO STRONG SPRING FORCES.** Proceed to Step 7 (if it is not possible to get the coil to pull in the Armature when pressing down, use Step 6b).

For Models FEB 450 and larger

- 6b. Place the brake in a press, or put clamps (3 required) evenly spaced, around the Armature and Coil Housing. Avoid damaging or marking any parts by using a piece of wood or similar protection for the coated parts. Energize the brake by turning the power supply ON. Tighten the clamps or apply pressure with the press, until the coil is able to pull the Armature tight against the Coil Housing Assembly. When the coil has control of the Armature, the clamps or press may be carefully removed. **DO NOT REMOVE POWER FROM THE ASSEMBLY AS IT MAY CAUSE INJURY DUE TO STRONG SPRING FORCES.** Proceed to Step 7.
7. Place an Outer Disc over the Dowel Pins. Outer Discs have notches and holes. The notches are for the Spacers to be inserted later. Use the holes for the Dowel Pins.
8. Place Disc Springs over each Dowel Pin.
9. Place an Inner Disc on the Outer Disc. Inner Discs have a synthetic friction material bonded to the disc, and an internal spline.

PRELIMINARY BRAKE ASSEMBLY, con't

10. Repeat Steps 7 through 9 until the last Outer Disc is placed on the assembly.
11. Place the End Plate over the Dowel Pins. Do not install the Cover at this time.
12. Insert Spacers in the slots of the Outer Discs between the End Plate and the Armature and insert Flat-head Screws through the End Plate and Spacers. **DO NOT APPLY LOCTITE AT THIS TIME!**
13. Tighten the Flat-head Screws securely, using the torque settings noted under **"BRAKE MECHANICAL SPECIFICATIONS"** in this manual.
14. Turn off the power to the clutch. The Brake Springs will drive the Armature against the friction discs, engaging the brake.
15. Preliminary Assembly is complete at this time. Now it is necessary to determine the amount of "Air Gap", and make sure it is within specification. "Air Gap", the space between the Armature and the Coil Housing Assembly, must be correct, or brake performance will be affected.



CHECKING ARMATURE PLATE AIR GAP

SAFETY WARNING!

Read the warning inside the cover of this manual carefully! Assemble the required safety equipment, power supply, and tools before starting assembly.

1. With the brake assembled and power disconnected, there should be a gap between the Armature Plate and the Coil Housing Assembly. The amount of gap is different for each FEB brake model. Refer to Figure 4 on the opposite page.
2. Determine the air gap specification for the brake being checked. These specifications are shown under **"BRAKE MECHANICAL SPECIFICATIONS"** in this manual.
3. If the gap is within specifications, proceed to **"FINAL BRAKE ASSEMBLY"** in this manual.
4. If the gap is not within specifications, then measure the actual air gap to determine how far out of spec the air gap is, and whether the air gap is too large or too small.
5. If the air gap is TOO LARGE, a spacer or "shim" will have to be placed under the End Plate. The appropriate shim stock must be cut to a shape which will not interfere with the Hub during operation, and must not be any larger than the diameter of the Inner Discs. The factory can supply shims of the correct size.

Another possible cause of excessive air gap is worn discs. When the disc surfaces (particularly the synthetic friction surfaces of the Inner Discs) are worn beyond their service life, the Armature Plate will have a larger distance to travel during engagement. Beyond the upper limit of the air gap specification, the brake performance and spring force may be compromised. The correct solution in this case is to replace the Inner Discs, Outer Discs, Spacers and Disc Springs with new parts from the factory.

If shimming is being used to reduce air gap, disassemble the brake following the **"BRAKE DISASSEMBLY"** instructions, Step 2 through Step 5.

Insert the appropriate thickness shim, replace the End Plate, tighten the Flat-head Screws, and repeat this section **"CHECKING ARMATURE PLATE AIR GAP"**.

6. An air gap which is TOO SMALL may indicate improper assembly, damaged parts, or an incorrect quantity of discs. Check the assembly carefully. If no errors or damaged parts can be discovered, contact the factory for technical assistance. **DO NOT INSTALL A BRAKE WITH AN AIR GAP WHICH IS BELOW SPECIFICATIONS.** The brake will not fully disengage, resulting in damage and failure.

FINAL BRAKE ASSEMBLY

SAFETY WARNING!

Read the warning inside the cover of this manual carefully! Assemble the required safety equipment, power supply, and tools before starting assembly.

1. Connect a power supply to the leads of the brake. Set the voltage to the proper setting for the rating of the brake, 24v or 100v (or special voltage if applicable). Either lead can be considered positive - there is no polarity to the brake.
2. Energize the brake by turning the power supply ON. This will compress the Brake Springs and remove pressure from the End Plate (see the illustration on Page 2).
3. Remove the Flat-head Screws. **DO NOT REMOVE POWER FROM THE BRAKE UNTIL ADVISED TO DO SO. STRONG SPRING FORCES CAN CAUSE INJURY!**
4. If the optional Cover is to be installed, remove the End Plate. Otherwise if no cover is used, skip to Step 7.
5. Slide the optional Cover over the brake. It should fit down firmly into the "notch" on the Coil Housing as shown in Figure 2.
6. Place the End Plate over the Dowel Pins.
7. Place a small amount of Loctite 272 on the ends of the Flat-head Screws and insert each screw through the End Plate, Spacer, and into the Coil Housing.
8. Tighten the Flat-head Screws securely, using the torque settings noted under "**BRAKE MECHANICAL SPECIFICATIONS**" in this manual.
9. Turn off the power to the clutch. The Brake Springs will drive the Armature against the friction discs, engaging the brake.
10. Refer to the section "**ALIGNMENT OF HUB TO BRAKE BORE**" on Page 4, and center the Hub in the bore as instructed.
11. Insert the Hub into the bore of the brake.
12. Test the brake - with power "ON" the Hub should turn freely with minimal friction. With the power "OFF" the Hub should not turn at all.
13. Install the brake following installation instructions in this manual. It may be necessary to realign the Hub to the bore of the brake after the test above. Test the brake again after installation to insure it will perform as required.

TROUBLESHOOTING

BRAKE WILL NOT ENGAGE OR SLIPS (when power removed)

- **Discs assembled in wrong order** (See Page 2)

Discs which have been used in an incorrectly installed or assembled brake may not provide full torque when the brake is engaged. All of the synthetic friction surfaces must bear against metal outer discs when the brake is engaged.
- **Contaminated Discs** (See Pages 6 and 7)

Discs in brakes without covers are subject to contamination from outside sources, which can compromise the properties of the friction material.

Discs in brakes with covers may, over time, become coated with particles of friction material which have been shed during normal operation.
- **Missing or damaged Brake Springs** (See Page 6)

To achieve full rated torque, the proper quantity and number of brake springs must be used.
- **Missing or damaged Spacers** (See Page 2)

The proper number and size of spacers is required to keep the brake internally “square” and permit smooth action of the brake.

The surface of the spacers must be smooth and free of score marks or abrasion from the discs - if wear is evident, they must be replaced.
- **Damaged Hub** (See Page 6)

The inner discs must be free to move along the hub on the spline. Any interference due to damage to the hub may compromise brake performance.
- **Incorrect Installation** (See Pages 4 - 5)

Alignment, perpendicularity, and proper fastening are critical to brake performance.
- **Excess Air Gap** (See Page 11)

Disc wear over time may cause air gap to increase to the point where the brake springs cannot apply full pressure.
- **Damaged or Worn Discs** (Page 7)

Slipping discs may result in disc warping which makes full engagement impossible.

TROUBLESHOOTING, con't

BRAKE WILL NOT DISENGAGE or HIGH NEUTRAL DRAG (when power applied)

NOTE: A small amount of torque is transmitted in the neutral “disengaged” position. This is normal with multi-disc devices. At very low speeds, up to 2% of the static torque may be transmitted. At high neutral speeds, this value will fall to 1% or less. If significant torque transmission is evident when the brake is disengaged, then it should be repaired.

- **Check for worn discs** (See Page 7)

The friction material must be thick enough to maintain an Air Gap which is within specifications.
- **Incorrect Voltage applied to coil** (See Page 16)

Voltage applied to the brake coil must be within 10% of the rated voltage to disengage the brake.
- **Blown Fuse** (if equipped - See Page 16)

The proper fuse as specified by the equipment manufacturer must be used. If no fuse is specified, the fuse must be able to handle an inrush current of 135% of the coil rating.
- **Damaged Hub** (See Page 6)

Improper alignment during assembly may result in “grooves” in the hub spline, preventing the inner discs from “floating” and achieving a free neutral position.
- **Incorrect Installation** (See Pages 4 - 5)

Alignment, lack of shaft support or bent shaft, non-perpendicularity or incorrect mounting may result in a brake which does not disengage smoothly.
- **Incorrect Assembly** (See Pages 9 -12)

Improper assembly, damaged parts, or an incorrect number of discs may create a brake which cannot smoothly disengage.
- **Damaged Discs** (See Page 6)

Discs which have been used in an incorrectly installed or assembled brake may not disengage properly.

Discs warped as a result of slipping and overheating will neither fully engage and/or disengage and must be replaced.

TROUBLESHOOTING, con't

- **Contaminated Discs** (See Pages 6 and 7)

Discs in brakes without covers are subject to contamination from outside sources, which can compromise the properties of the friction material.

Discs in brakes with covers may, over time, become coated with particles of friction material which have been shed during normal operation.

- **Damaged or missing Disc Springs** (See Page 6)

Disc springs are required to evenly space the discs when in "neutral" or disengaged.

- **Missing or damaged Spacers** (See Page 6)

Spacers are required to hold the dimension from the End Plate to the Coil Housing, maintain the Air Gap, and help locate the Outer Discs.

Wear over time may cause grooves in the surface of the spacers, preventing proper engagement and disengagement - requiring replacement of spacers.

TROUBLESHOOTING, con't

Performing a Hi-Pot Test

WARNING! Both brake electrical leads must be disconnected before performing this test. Twist the two coil leads together before proceeding!

Connect one lead of a Hi-Pot meter to the twisted bare coil wires.

Attach the other meter lead to any metal location on the brake.

Set the meter to 500 volts AC and check the resistance - it should be greater than 10 MegOhms.

If lower resistance is recorded, coil is shorted and must be replaced by the factory.

Checking Coil Resistance

With the brake disconnected, attach an ohmmeter to the two coil leads.

Refer to the "Coil Resistance" data under "***BRAKE ELECTRICAL SPECIFICATIONS***".

Measured resistance readings should be within 15% of the table values for any model brake. If an open or shorted coil is observed, the coil must be replaced. This repair must be performed at the factory.

Checking Voltage

Voltage applied to the brake coil must be within 10% of the coil rating to properly energize the coil and disengage the brake. Verify that no less than 90% of the coil rated voltage is available when brake is energized (disengaged).

Blown Fuse

If the power circuit is fused, verify that the fuse is not blown, and that the fuse is rated for the brake being used. Any fuse in the brake circuit protects upstream equipment, not the brake, and therefore must be specified by the equipment manufacturer.

However, the fuse must be able to tolerate an inrush current not less than 135% of the coil current rating. If questions about proper fusing exist, the nature and type of upstream equipment must be considered.

The minimum fuse size recommended for an FEB brake circuit (if there is no upstream manufacturer recommendation) is shown in "***BRAKE ELECTRICAL SPECIFICATIONS***" on Page 19. Buss AGC series fuses or equivalent are suggested.

BRAKE ASSEMBLY SPECIFICATIONS

LUBRICATION:

No lubricants are used in Model FEB brakes

SEALANTS / ADHESIVES:

FLAT-HEAD SCREWS: Loctite 272

MOUNTING SCREWS: In high-vibration applications, use of Loctite 272 is required

We recommend using Loctite 272 sparingly in ALL applications for mounting

TORQUE VALUES:

See "Brake Mechanical Specifications"

ELECTRICAL CONNECTIONS

Either lead may be connected to the positive (+) terminal of the power source. There is no polarity to the coil leads

CLEANING FLUIDS

Discs/Springs - use denatured alcohol

DO NOT USE KEROSENE for cleaning friction surfaces

DO NOT use any cleaning fluids on Coil Housing Assembly

MOUNTING HARDWARE

All attachment hardware must be Grade 5 equivalent or better

Thread engagement must meet minimums shown in "Brake Mechanical Specifications"

We recommend using Loctite 272 sparingly in ALL applications for mounting

BRAKE MECHANICAL SPECIFICATIONS

Model	Static Torque (Lb. Ft.)	Locating \varnothing (in.)			Bolt Circle \varnothing (in.)		Mounting Bolts ²		Air Gap (in) (\pm .005)
		A ⁴	B ⁴	E ⁴	Qty/Size	Minimum Thread Engagement (in)	Torque Required ^{1,3}		
FEB 250	15	2.50	0.82	2.188	6 x #8-32	3/8	15 Lb-In	0.023	
FEB 350	35	3.50	1.50	3.125	6 x #10-24	7/16	27 Lb-In	0.023	
FEB 450	75	4.50	2.13	4.063	6 x #10-24	7/16	27 Lb-In	0.023	
FEB 600	175	6.00	2.88	5.500	6 x 1/4-20	1/2	64 Lb-In	0.028	
FEB 800	300	8.00	3.88	7.500	8 x 1/4-20	1/2	64 Lb-In	0.034	
FEB 1000	550	10.00	4.88	9.375	8 x 5/16-18	5/8	125 Lb-In	0.035	

NOTES:

- 1 #6 and #8 screws - use Grade 5 equivalent or better fasteners
1/4" and 5/16 bolts - use min Grade 5 fasteners
- 2 In applications with high vibration levels, use of Loctite or similar thread sealant is required
We recommend use of Loctite sparingly in ALL applications
- 3 Use same torque specifications for brake assembly when tightening flat-head screws
- 4 See Figure 2

Table 1

BRAKE ELECTRICAL SPECIFICATIONS

Model	Power (Watts)	Current (amps)		Recommended Fuse ¹ (amps)		Coil Resistance (ohms)		Minimum voltage to energize (volts)		Minimum holding voltage ²		Maximum overenergizing voltage ³	
		24-volt	100-volt	24-volt	100-volt	24-volt	100-volt	24-volt	100-volt	24-volt	100-volt	24-volt	100-volt
FEB 250	30	1.25	0.30	1.75	0.50	19	330						
FEB 350	40	1.67	0.40	2.25	0.75	14	250						
FEB 450	50	2.08	0.50	3.00	0.75	12	200	22	90	14	60	36	150
FEB 600	55	2.29	0.55	4.00	1.00	10	180						
FEB 800	60	2.50	0.60	4.00	1.00	10	166						
FEB 1000	75	3.13	0.75	5.00	1.25	8	133						

NOTES:

- 1 Always follow manufacturer's recommendations - fuse is intended to protect upstream equipment
Use this table ONLY if no fuse specified
- 2 Recommendations are based on Buss Type AGC fuse
- 3 After applying full voltage for one second, voltage may be reduced to these values to hold brake disengaged
- 3 For rapid disengagement, or during maintenance/disassembly, coil may be overenergized for not more than one second

Table 2

CONTACTING THE FACTORY

Carlyle Johnson is located in the Eastern Time Zone of the United States, and may be reached on normal workdays from 8:00 AM to 5:00 PM local time.

By Telephone: 1-(860) 643-1531 Option "3" for Sales then Option "2" for Application Engineering (Main Number)

1-(888) MAXITORQ (629-4867) Option "3" for Sales then Option "2" for Application Engineering (Toll Free in the USA)

By FAX: 1-(860) 646-2645

By EMail: maxitorq@cjmco.com

Internet: www.cjmco.com

Mail: 291 Boston Turnpike
P O Box 9546
Bolton, Connecticut 06043-9546 USA

RETURNING PRODUCTS FOR REPAIR

Contact Carlyle Johnson as above, and request a Returned Material Authorization (RMA) Number. Package the brake securely, and write the RMA number on the outside of the package.

Ship the package prepaid and insured to the above address.

Your brake will be evaluated and you will be contacted before repairs begin. If the product is within its warranty period and warranty coverage applies, it will be repaired and returned to you prepaid without charge.

If your brake is outside its warranty coverage, we will advise you as to the cost to restore it to like-new condition. If you decide to have the unit returned without repair, an evaluation charge may apply.

PURCHASING REPLACEMENT PARTS

You may reach our Replacement Parts professionals by calling Carlyle Johnson at the above numbers. Select Option "3" for SALES and then Option "1" for SPARE PARTS.

Have the model number and serial number of your brake available for the Customer Service representative, who will assist you in obtaining parts.

You may also write, fax, or EMail our Sales Department for quotations on parts.

NOTES



The Carlyle Johnson Machine Company, LLC
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