



**CARLYLE JOHNSON  
MAXITORQ®**

**MODEL FEA**

**CLUTCH, SPRING APPLIED -  
ELECTRICALLY RELEASED**

**MAINTENANCE  
REPAIR  
TROUBLESHOOTING  
MANUAL**

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## **SAFETY WARNING**

**ALWAYS DISCONNECT  
ELECTRICAL POWER,  
PLACE EQUIPMENT IN REST POSITION  
(WITH NO STORED ENERGY)  
AND LOCK OUT / TAG OUT MACHINE  
BEFORE PERFORMING SERVICE  
OR REMOVING/REINSTALLING CLUTCH**

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

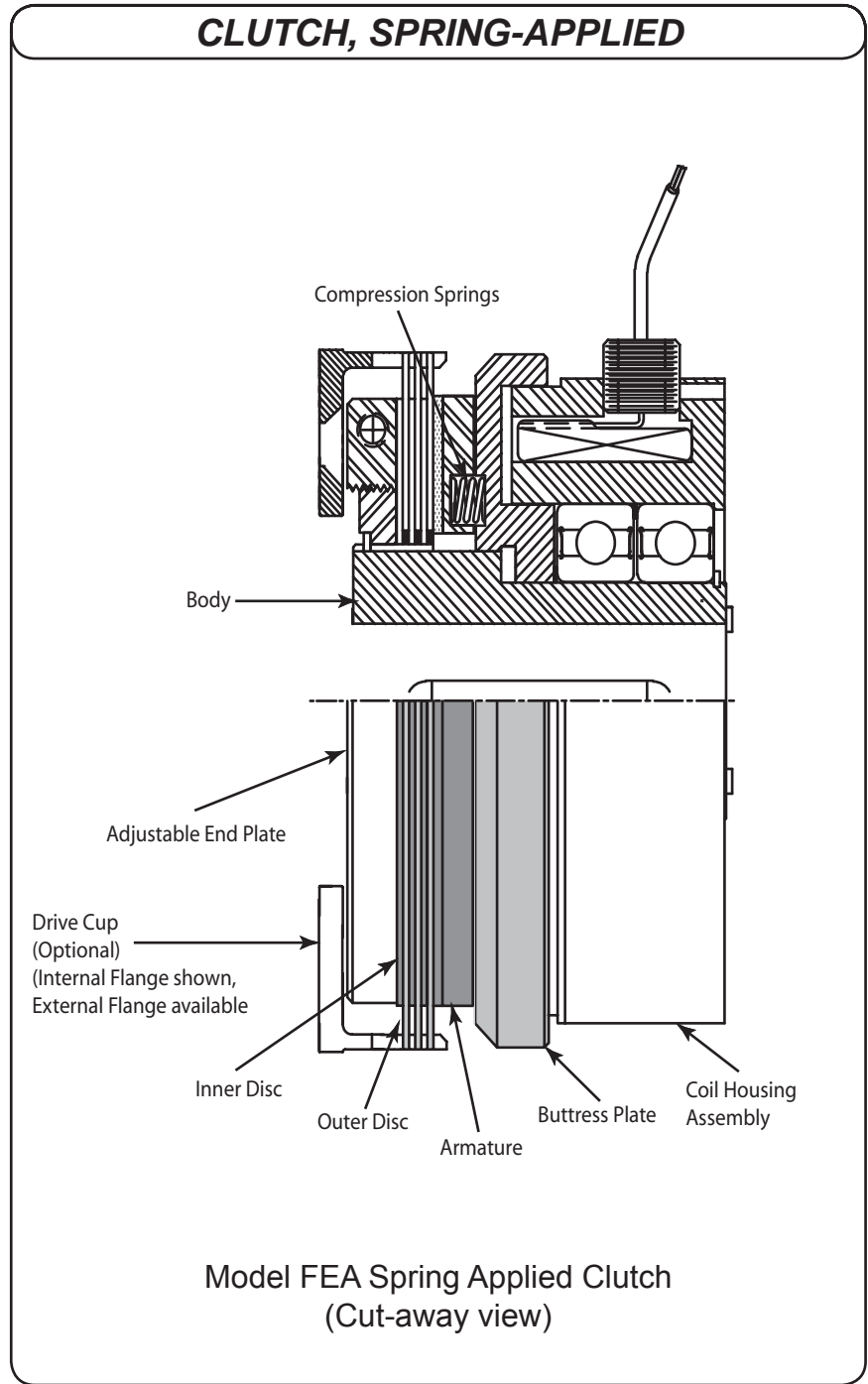
**A SUITABLE FUSED DC POWER SOURCE  
RATED FOR THE SAME VOLTAGE  
AND CURRENT DRAW AS THE CLUTCH COIL  
- WITH MANUAL ON-OFF CONTROL -  
IS REQUIRED FOR ASSEMBLY  
AND DISASSEMBLY**

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

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# CLUTCH, SPRING-APPLIED



## **THEORY OF OPERATION**

The Carlyle Johnson Maxitorq® Model FEA Spring-Applied / Electrically Released Clutch is held in an engaged state by the force of coil springs internal to the unit. This force acts to compress the friction discs, thereby allowing the device to transmit torque. Either the body or the drive cup can be the driving element.

When electrical power, at the proper voltage, is introduced to the coil, an armature is drawn toward the buttress plate, compressing the springs, and separating the friction discs. Once separated, the body and drive cup are no longer mechanically linked, and the clutch is disengaged - that is torque can no longer be transmitted from the driving to the driven element.

The clutch requires no lubrication during normal operation. Both bearings are permanently lubricated.

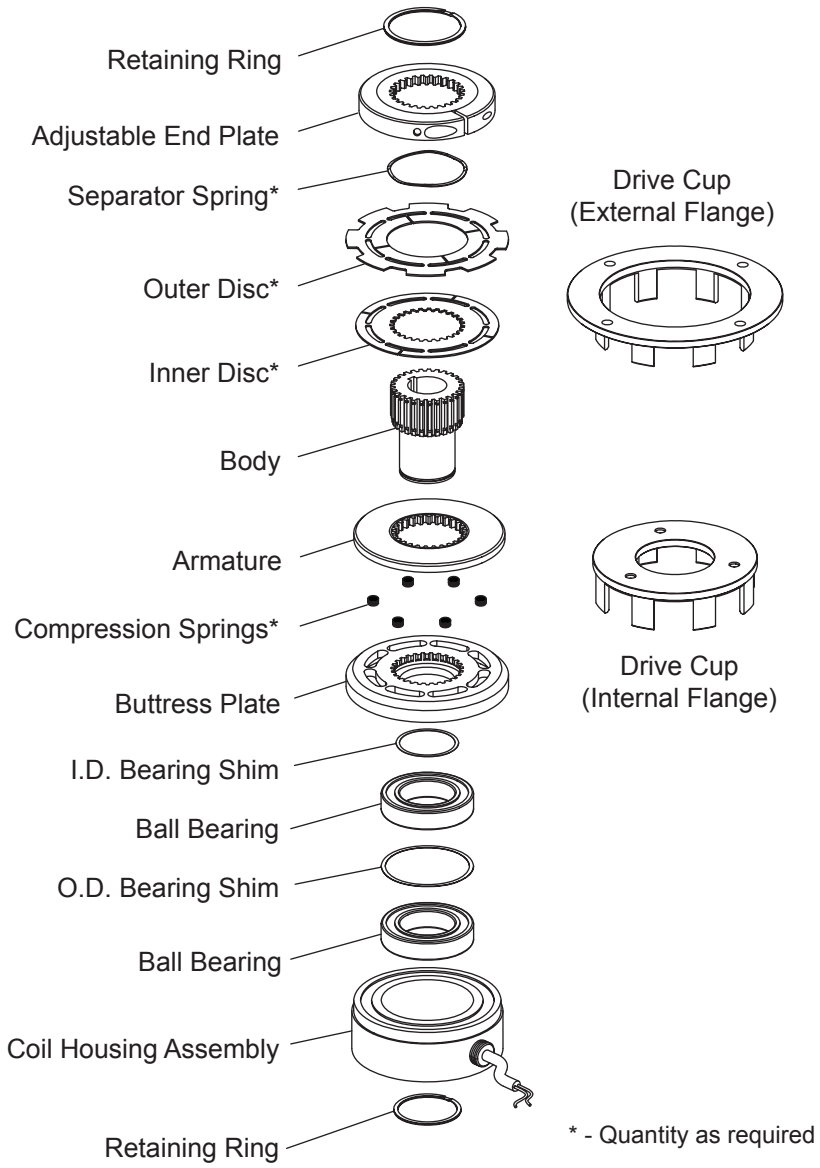
An adjustable end plate is used to compensate for normal component wear. This adjustment gives the ability to maintain a proper relationship between the spring forces used to engage the clutch, and the electrical forces used to disengage it. The dimension measured to define this relationship is called an "air gap" and is defined as the distance from the armature to the buttress plate when electrical power is "OFF".

The torque range of the clutch is fixed. The adjustable end-plate is not designed to vary the torque handling capability of the clutch. Attempting to change the torque capability of the clutch in this manner will result in the inability to handle torque at the clutch rating due to partial engagement, or partial disengagement causing drag, which will accelerate wear and cause premature failure.

Internal tolerances are extremely tight and proper orientation of parts during assembly is necessary to assure safe clutch operation. Incorrect assembly of this unit may cause the clutch to fail to actuate, exposing personnel to injury and damaging the unit.

***IF AT ANY TIME IMPROPER PERFORMANCE OF THE CLUTCH IS SUSPECTED, PERFORM THE TESTS IN THIS MANUAL. IF PROPER OPERATION CANNOT BE RESTORED BY FOLLOWING THE INSTRUCTIONS FOR REPLACEMENT OF WEAR PARTS, RETURN THE UNIT TO THE FACTORY FOR REPAIR.***

## CLUTCH, SPRING-APPLIED



Model FEA Exploded Parts Breakdown

## **INSTALLATION**

Model FEA clutches must be correctly installed and accurately aligned to give satisfactory service. Most performance problems are the result of incorrect installation or drive cup / body / shaft misalignment.

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

### **ALIGNMENT**

The drive cup and clutch body must be held concentric within .005 TIR. If an alignment bearing is not used, care must be taken during installation to maintain both the cup-to-buttress plate dimension, as well as their concentricity and angular displacement.

### **MOUNTING ON SHAFT**

Model FEA clutches are normally mounted on a finished shaft with a key to transmit torque. There is no provision within the clutch itself to secure it to the shaft. Typically, the end is set against either a shoulder in the shaft, a spacer, a retaining ring, a shaft collar, or a clamping screw.

### **ANTI-ROTATION STRAP**

The stationary coil housing assembly contains an NPT nipple which is to be used both as an attachment for electrical conduit, and an anti-rotation strap. All models have 1/2" NPT straight threads.

The electrical lead wires are not capable of serving as an anti-rotation device.

Rigid conduit is not recommended as an anti-rotation device. In addition, the conduit must not load the bearings on the clutch, as this may lead to accelerated wear and interference with operation, particularly neutral drag.

Install an anti-rotation strap and fasten it to a secure surface, making sure no eccentric loading of the clutch occurs. The strap should ideally have a precise 90° bend and be anchored to a surface which is precisely perpendicular to the center line of the clutch.

### **DRY vs. OIL BATH**

Model FEA devices can be run dry or in an oil bath. If oil is used, it cannot contain any extreme pressure (EP) additives, which would degrade clutch performance.

The use of ATF oils such as Dexron® are recommended for oil-bathed applications.

### **DRIVING AND DRIVEN ELEMENTS**

Either the drive cup or the clutch body may be the driving element. Normally the cup is the driven element, but system considerations may require the drive cup to be the driving element.

## ***INSTALLATION, con't***

### **DRIVE CUP TO BUTTRESS PLATE RELATIONSHIP**

The relationship of the drive cup “fingers” to the buttress plate (see Page 7) must be maintained evenly around the entire circumference of the clutch. Any misalignment during installation will be obvious if this dimension is not the same at any measuring point.

### **AXIAL POSITION**

Measure the Axial Position (defined as the distance from the outer edge of the Drive Cup to the end of the clutch Body - see Page 7).

If the measurement exceeds the recommended value, the Drive Cup fingers may not fully engage all of the Outer Discs. See Table 1 for correct dimensions.

If the position is below the correct value, insufficient clearance between the Drive Cup and the Buttress Plate may result in contact and damage during operation.

### **DRIVE CUP TO OUTER DISCS**

The drive cup “fingers” must engage all of the tabs on the outer discs. Observe carefully the position of the cup and be sure all discs are contained within the fingers.

DO NOT OPERATE THE CLUTCH if all outer disc tabs are not engaged by drive cup “fingers.”

Risk of injury to operating personnel and damage to equipment are likely results of bent or distorted discs due to improper installation.

### **ELECTRICAL INSTALLATION**

When making electrical connections, follow NEC standards or other governing electrical codes.

Either of the two protruding electrical leads may be connected to the positive power source. There is no polarity to the leads.

Rigid conduit is recommended however note the information on Page 5 regarding anti-rotation straps. The conduit should not be used as an anti-rotation device, and must be installed such that it does not load the bearings of the clutch. This can be realized by first anchoring the clutch firmly with an anti-rotation strap before attaching conduit.

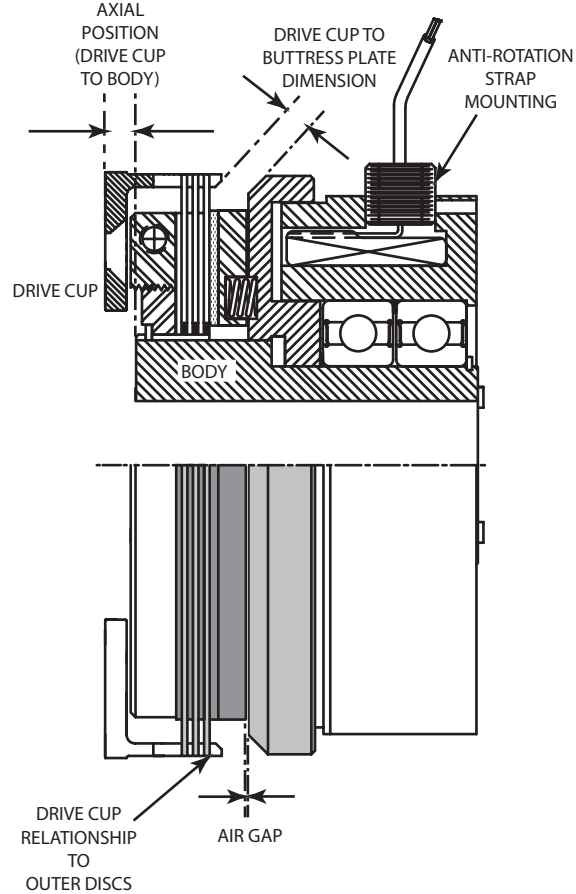
### **PRELIMINARY TESTING**

To confirm proper installation, test the clutch by energizing it, and checking that the clutch will rotate freely without transmitting torque.

When power is removed, the clutch must engage fully to allow torque to be transmitted.



## INSTALLATION, con't



FEA Spring-Applied Clutch Installation  
(See Table 1 for correct dimensions by model)

### **Alignment of Outer Discs during Installation**

When shipped from the factory, the outer disc tabs are properly aligned so that the Drive Cup can be inserted over the discs without further adjustment.

If the discs have been disturbed, it is necessary to realign them prior to completing installation of the clutch. This can only be accomplished when the clutch is under power (disengaged).

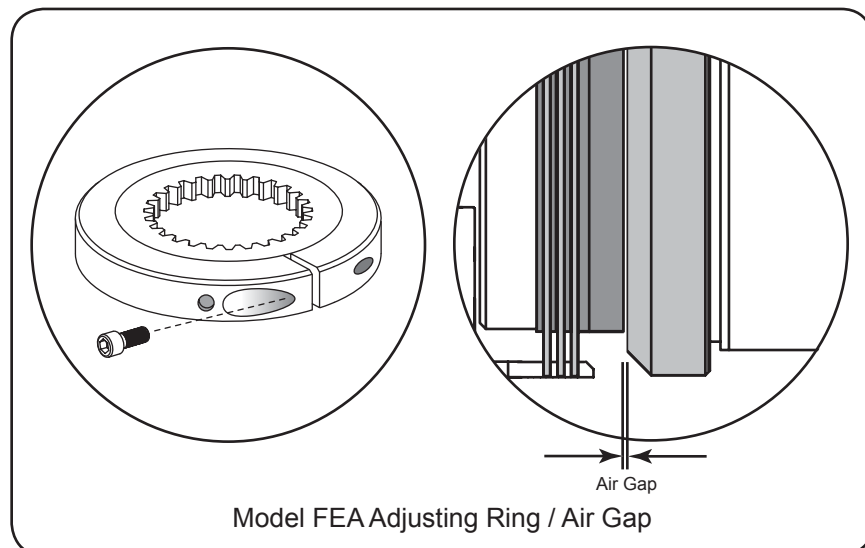
Using a suitable power supply, energize the clutch, and use the Drive Cup to align the outer tabs. With the tabs aligned, remove the power before removing the Drive Cup. The clutch can now be installed correctly.

## MAINTENANCE AND REPAIR

### ADJUSTING AIR GAP

The “air gap” is the space between the armature and the buttress plate (see diagram below). Air gap is set at the factory when the clutch is new, and can be adjusted in the field to compensate for normal wear.

1. Using a feeler gauge, check the existing air gap with the clutch engaged (no power present). The acceptable range for air gap is shown in Table 1. If the air gap is above or below this level, it must be adjusted.
2. Apply power to the clutch to disengage the compression springs.
3. Loosen the cap screw (it is not necessary to remove it) on the Adjustable End Plate with a suitable wrench (see diagram below).
4. Turn the adjusting ring in the proper direction to adjust the air gap - CLOCKWISE to decrease it, or COUNTERCLOCKWISE to increase it. Approximately 8° of rotation will result in .001 change in the air gap.
5. Tighten the cap screw on the Adjustable End Plate.
6. Remove the power and verify the setting with a feeler gauge. Repeat steps 2 through 5 if further adjustment is necessary.
7. Energize the clutch and check that the clutch is fully disengaged and rotates smoothly. Remove the power and confirm that the clutch engages fully and transmits torque without slippage. **IF THE CLUTCH WILL NOT OPERATE PROPERLY WHEN THE AIR GAP IS WITHIN ITS SPECIFIED RANGE, THE DISCS ARE WORN BEYOND USE AND MUST BE REPLACED.**



## ***MAINTENANCE AND REPAIR, con't***

### **REPLACEMENT OF DISCS AND SPRINGS**

After extended use, the discs on the FEA clutch will become worn to a point where replacement is necessary. Warping or galling of discs, contamination or damage due to misalignment, and inability to achieve full disengagement and full engagement by adjusting the air gap (see Page 8) are indications that discs should be replaced.

You can order new discs and springs from the factory. Always order a complete set of outer discs, inner discs, and disc springs.

DO NOT MIX OLD AND NEW SPRINGS AND DISCS ON A CLUTCH.

**WARNING! THE CLUTCH MUST BE REMOVED FROM ITS MOUNTING TO REPLACE DISCS AND SPRINGS. A SUITABLE DC POWER SUPPLY MUST BE AVAILABLE TO ENERGIZE THE CLUTCH DURING DISASSEMBLY AND REASSEMBLY.**

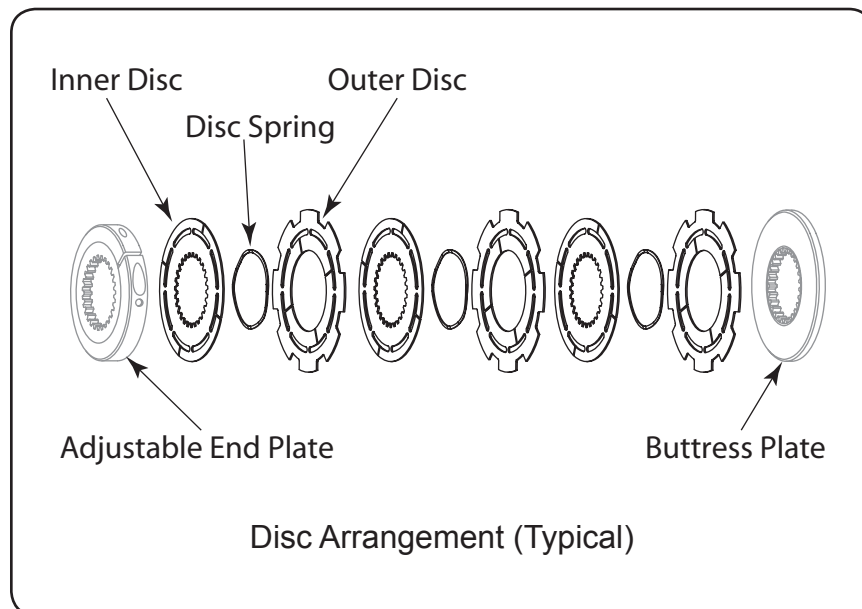
**DO NOT REMOVE POWER FROM THE CLUTCH ONCE DISASSEMBLY IS STARTED. STRONG SPRING FORCES ARE PRESENT FROM THE COMPRESSION SPRINGS AND INJURY MAY OCCUR! THE USE OF APPROVED EYE PROTECTION IS MANDATORY.**

1. Remove the clutch from its mounting. Disconnect electrical leads and place the clutch on a workbench with the coil housing assembly facing down
2. Attach a power supply rated for the voltage of the clutch coil. Apply power to the clutch to disengage the clutch and compress the springs. **DO NOT REMOVE POWER FROM THE CLUTCH UNTIL REASSEMBLY IS COMPLETED!**
3. Remove the Retaining Ring from the upper groove on the Body.
4. Remove the Adjustable End Plate.
5. Remove the Inner Discs, Separator Springs and Outer Discs.
6. Blow clean any residue in the clutch assembly from the old discs, before beginning reassembly.
7. Install a new Outer Disc (Outer Discs have tabs to engage the Drive Cup - see drawing on Page 10) on the Body.
8. Install a new Disc Spring over the Body and locate it inside the I.D. of the Outer Disc.

## **MAINTENANCE AND REPAIR, con't**

### **REPLACEMENT OF DISCS AND SPRINGS, con't**

9. Install a new Inner Disc over the Body (Inner Discs have an internal spline to engage the teeth on the Body spline - see below).
10. Repeat Steps 6 through 8 until all Outer Discs, Disc Springs, and Inner Discs have been installed.
11. Install the Adjustable End Plate over the Body.
12. Press down on the Adjustable End Plate and install the Retaining Ring. If the adjusting ring on the End Plate had previously been set such that it is not possible to install the Retaining Ring, loosen the cap screw on the adjusting ring (see Page 8) and thread the adjusting ring COUNTER CLOCKWISE until sufficient clearance is present to permit installation of the Retaining Ring.
13. MAKE SURE THE RETAINING RING IS PROPERLY SEATED AND FULLY INSERTED. Remove the power from the clutch.
14. Discard old discs and springs.
15. Once new discs and springs have been installed, it is necessary to recheck the Air Gap, following instructions on Page 8.



## ***MAINTENANCE AND REPAIR, con't***

### **CLEANING DISCS**

Over time, discs may become contaminated from external sources, or wear of the bronze facing on the inner discs. Routine flushing of these discs will extend their life and provide better clutch performance.

On a regular basis (depending on clutch use), it is a good idea to flush the discs following the instructions below.

1. Remove the clutch from its mounting.
2. Attach a power supply rated for the voltage of the clutch coil. Apply power to the clutch to disengage the clutch and compress the springs.
3. Flush the discs with kerosene thoroughly. Avoid flooding the unit with kerosene to prevent the solvent from reaching the internal bearings.
4. Air dry the discs fully.
5. Check that the clutch turns freely with power applied.
6. Remove the power and confirm that the clutch will transmit torque.
7. Measure the air gap (see Table 1 for specifications) and, if necessary, perform the Air Gap Adjustment per the instructions on Page 8.
8. IF THE CLUTCH WILL NOT OPERATE PROPERLY WHEN THE AIR GAP IS WITHIN ITS SPECIFIED RANGE, THE DISCS ARE WORN BEYOND USE AND MUST BE REPLACED.
9. Reinstall the clutch, reattach electrical connections, and test the clutch in its installed location in both its disengaged and engaged conditions.

## ***TROUBLESHOOTING***

### **CLUTCH FAILS TO ENGAGE WHEN POWER IS REMOVED FROM COIL** **or** **CLUTCH SLIPS UNDER LOAD WHEN ENGAGED**

#### **Check Air Gap**

Follow the procedure on Page 8 to check the air gap between the Armature and the Buttress Plate when the clutch is engaged (de-energized). Table 1 shows the acceptable air gap range for each model of FEA clutch.

If the clutch does not perform properly when the air gap is within specifications, both in its neutral (disengaged) and engaged positions, discs are worn beyond their useful life and should be replaced following the procedure on Page 9.

#### **Clean Discs**

Follow the procedure on Page 11 for cleaning of discs. Check air gap after cleaning (see Page 8).

Verify proper operation after cleaning and air gap check. If normal clutch operation cannot be restored, discs and springs should be replaced.

#### **Worn Discs**

After extended use, the disc surfaces may become worn beyond use. Try cleaning the discs with kerosene and checking the air gap (following procedures in this manual). Worn discs and springs must be replaced if proper operation cannot be restored.

Do not mix old and new discs on a clutch.

#### **Improper Assembly**

Reassembly of clutch after disc/spring replacement may have been done incorrectly. Check the arrangement of discs (see illustration on Page 10).

An Inner Disc must be the first disc under the Adjustable End Plate, followed by an Outer Disc, then an Inner Disc, and so on. The last disc in the stack against the Armature Plate must be an Outer Disc.

Separator springs fit inside the I.D. of the Outer Discs. One Separator Spring is required for each Outer Disc. Separator Springs should not contact the Outer Discs.

If the discs are not in the correct order, or if the proper quantity is not used, the clutch will not perform correctly. If disc order must be corrected, follow the disassembly/reassembly instructions on Page 9.

## ***TROUBLESHOOTING, con't***

### **CLUTCH FAILS TO ENGAGE WHEN POWER IS REMOVED FROM COIL or CLUTCH SLIPS UNDER LOAD WHEN ENGAGED (con't)**

#### **Improper Disassembly**

During disassembly for disc/spring replacement power may have been removed from clutch, allowing the compression springs between the Armature and the Buttress Plate to be lost or misaligned. If this condition is suspected, follow the instructions below.

**WARNING: WE RECOMMEND FACTORY SERVICE FOR CLUTCHES OTHER THAN DISC/SPRING REPLACEMENT. THESE STEPS SHOULD NOT BE ATTEMPTED UNLESS EXPERIENCED PERSONNEL WITH PROPER EQUIPMENT ARE AVAILABLE. PROPER EYE PROTECTION IS REQUIRED!**

Repeat the disassembly steps 1 to 5 on Page 9.

- 5a Put a heavy cloth over the clutch, and apply pressure with your hand over the cloth and against the Armature. While applying heavy pressure, turn off the power to the clutch. The Armature will 'jump' upward as the compression springs are released.
- 5b Remove the cloth and the Armature, and place the Armature on a table with the spring holes facing up. Arrange some blocks under the armature to raise it off the table far enough to allow the body to be fully inserted during reassembly.
- 5c Insert springs into the spring holes, making sure the proper number is used (see Table 1 for standard FEA clutches, or the paperwork supplied with special clutch designs).
- 5d Invert the Coil Housing/Buttress Plate/Body assembly, holding the Buttress Plate so it does not slip off the Body.
- 5e Insert the assembly into the Armature. NOTE: In some FEA models the Buttress Plate has spring holes which must be carefully aligned with the springs in the Armature during assembly. In these models, springs must be fully seated on both the Buttress Plate and the Armature.
- 5f Verify that all springs are seated in the Armature (and Buttress Plate if applicable) and are properly aligned.
- 5g Place a heavy cloth over the Coil Housing assembly, and apply heavy downward pressure.
- 5h Energize the coil with the rated voltage. The Armature should "snap" into a compressed state as the coil overcomes the pressure of the springs. If a "snap" is not observed, apply more pressure while increasing the voltage momentarily to no more than 150% of the rated coil voltage. DO NOT APPLY EXCESS VOLTAGE FOR MORE THAN ONE (1) MINUTE.

## ***TROUBLESHOOTING, con't***

### **CLUTCH FAILS TO ENGAGE WHEN POWER IS REMOVED FROM COIL** or **CLUTCH SLIPS UNDER LOAD WHEN ENGAGED (con't)**

#### **Improper Disassembly (con't)**

- 5i If the Armature still does not “snap” into position, the use of “C” clamps may be necessary. Use a minimum of three (3) clamps around the circumference of the assembly (using a cloth or strips of wood to protect the finish on the clutch), and alternately tighten them while the coil is energized until the Armature snaps into position.
- 5j If the coil has been over-energized, immediately reduce the voltage to no more than 100% of the rating for the coil, but do not release the hand pressure on the coil until the voltage is reduced. If reduction of the voltage to the 100% value results in a release of the Armature, contact the factory for technical assistance.
- 5k Turn the clutch over (with the Armature facing up), and continue assembly starting with Step 6 on Page 9.

#### **Improper Installation**

Installation notes on Pages 5 and 6 must be followed strictly to assure good clutch operation. Misalignment of components, distorted mounting surfaces, and the like can lead to unpredictable or erratic operation.

If clutch is new and is not performing correctly, check the mounting and component alignment carefully and insure that all installation parameters in this manual have been met.

Verify that the Drive Cup properly engages all the Outer Discs and that the clearance of the Drive Cup to the Armature is within specification and uniform about its entire circumference.

#### **Torque Load Exceeds Clutch Capability**

The torque capability of standard FEA clutches is shown in Table 1. Verify that over time the downstream load has not increased due to drag from worn bearings, worn gear boxes, and other components.

#### **Worn Bearings**

Sealed Bearings may have been contaminated from adjacent surfaces, or soaked with kerosene during cleaning. Check for free movement of clutch when energized (disengaged).

Worn bearings must be factory-replaced.



## **TROUBLESHOOTING, con't**

### **CLUTCH FAILS TO DISENGAGE WHEN POWER IS APPLIED TO THE COIL**

#### **Check Air Gap**

Follow the procedure on Page 8 to check the air gap between the Armature and the Buttress Plate when the clutch is engaged (de-energized). Table 1 shows the acceptable air gap range for each model of FEA clutch.

If the clutch does not perform properly when the air gap is within specifications, both in its neutral (disengaged) and engaged positions, discs are worn beyond their useful life and should be replaced following the procedure on Page 9.

#### **Check Voltage being applied to Coil**

Voltage must be within 10% of the rated value of the coil to obtain proper clutch performance. Verify voltage at the coil when the clutch is energized (disengaged), and repair of necessary.

Check for blown fuses, incorrect wiring, and other electrical faults which may prevent clutch disengagement.

#### **Check Clutch Coil**

With Coil lead wires disconnected from the power source, use an ohmmeter to check the coil resistance. Table 1 shows the nominal resistance of standard FEA clutch coils.

If the coil is open or shorted, it must be replaced. Contact the factory for instructions. Coil replacement cannot be done in the field.

#### **Improper Installation**

Installation notes on Pages 5 and 6 must be followed strictly to assure good clutch operation. Misalignment of components, distorted mounting surfaces, and the like can lead to unpredictable or erratic operation.

If clutch is new and is not performing correctly, check the mounting and component alignment carefully and insure that all installation parameters in this manual have been met.

Verify that the Drive Cup properly engages all the Outer Discs without distortion or binding and that the clearance of the Drive Cup to the Armature is within specification and uniform about its entire circumference.

#### **Check Drive Cup Fingers**

After extreme service, or in the event of prior improper maintenance or disassembly, Drive Cup fingers may have "grooves" worn into the inner surfaces, which cause the Outer Discs to "hang" and not move freely when the clutch is disengaged.

Replace the Drive Cup if this wear is evident.

## ***TROUBLESHOOTING, con't***

### **CLUTCH FAILS TO DISENGAGE WHEN POWER IS APPLIED TO THE COIL (con't)**

#### **Improper Disassembly**

If improper disassembly during routine maintenance is suspected, including disassembly beyond the recommended level described in this manual for routine maintenance, then review the item covering Improper Disassembly on Page 13.

DO NOT ATTEMPT THESE REPAIRS IF PROPER SAFETY EQUIPMENT, TOOLS, AND EXPERIENCED MAINTENANCE PERSONNEL ARE NOT AVAILABLE.

#### **Improper Assembly**

Reassembly of clutch after disc/spring replacement may have been done incorrectly. Check the arrangement of discs (see illustration on Page 10).

An Inner Disc must be the first disc under the Adjustable End Plate, followed by an Outer Disc, then an Inner Disc, and so on. The last disc in the stack against the Armature Plate must be an Outer Disc.

Separator springs fit inside the I.D. of the Outer Discs. One Separator Spring is required for each Outer Disc.

If the discs are not in the correct order, or if the proper quantity is not used, the clutch will not perform correctly. If disc order must be corrected, follow the disassembly/reassembly instructions on Page 9.

# MAINTENANCE SPECIFICATIONS

## MODEL FEA SPRING-APPLIED CLUTCH Maintenance / Installation Specifications

Model	Axial Position (in. ± .005)	Air Gap (.in)		Coil Resistance (Ω) *		Torque (lb. ft.)		Compression Springs (qty.)	Outer Discs (qty.)	Inner Discs (qty.)
		Min	Max	24 v DC Coil	100 v DC Coil	Dynamic	Static			
FEA-375	0.3750	0.012	0.015	14	220	6	12	4	2	2
FEA-425	0.3125	0.017	0.021	14	227	12	25	6	2	2
FEA-475	0.4375	0.017	0.021	10	158	25	50	6	3	3
FEA-625	0.5000	0.017	0.021	11	160	50	100	10	3	3
FEA-800	0.5000	0.020	0.025	9	132	120	240	9	3	3

\* Nominal resistance value taken from samples at the factory.

Table 1 - Model FEA Specifications

## **FACTORY SERVICE**

### **Contacting the Factory.**

The Maxitorq® Multiple-Disc Spring-Applied Clutch is manufactured by:

The Carlyle Johnson Machine Company, LLC  
291 Boston Turnpike • P O Box 9546  
Bolton, Connecticut USA 06043-9546

Carlyle Johnson is located in the Eastern Time Zone of the United States and can be reached by telephone at the following numbers:

Main Number : 1 – (860) 643-1531

Toll-free within the USA : 1 – (888) 629-4867

FAX : 1 – (860) 646-2645

Additional manuals are available free of charge. Model and serial number are required to order.

Technical help is available between 8:00 AM and 5:00 PM local time, Mondays to Fridays, excluding holidays.

Spare Parts may be ordered by calling the above number. Please have Serial Number and Model of Clutch available for our representative.

The company can also be reached via the internet at the e-mail address

[maxitorq@cjmco.com](mailto:maxitorq@cjmco.com)

### **Returning Equipment for Repairs or Maintenance**

Contact the factory prior to any returns to obtain a Return Material Authorization number (RMA). Be sure to have the model number and serial number of the unit requiring service available when you call. This will speed the handling of your Maxitorq® product when it is received.

Ship the unit prepaid to the above address in Bolton, Connecticut.

If the equipment is within its warranty period and our analysis shows that the repair is due to a manufacturer's defect, we will repair or replace the clutch at no cost to you and return it prepaid to your location.

If our technicians determine that the unit needs parts which are not covered by the warranty or are outside the warranty period, you will be contacted with cost and schedule information prior to having the repairs undertaken. If you direct us to return the device without repair, an evaluation charge may apply.

We recommend that any time the clutch is disassembled for service at the factory, a complete set of wear parts (discs, springs, bearings, seals, O-rings) be installed to restore the device to like-new performance.

## **CLUTCH SPECIFICATIONS**

### OPERATING ENVIRONMENT:

Dry, or Oil-bathed. Oil-bathed, use of ATF such as Dexron® recommended

### OPERATING SPEED (Standard Models):

Dry: FEA-375, FEA-425: 5,000 RPM  
FEA-475, FEA-625, FEA-800: 3,600 RPM

### ELECTRICAL REQUIREMENTS:

Standard coils 24 v DC or 100 v DC. Other voltages shown in clutch documentation

### LUBRICATION:

BEARINGS: Permanently lubricated

### SEALANTS / ADHESIVES:

No sealants or adhesives used in clutch construction

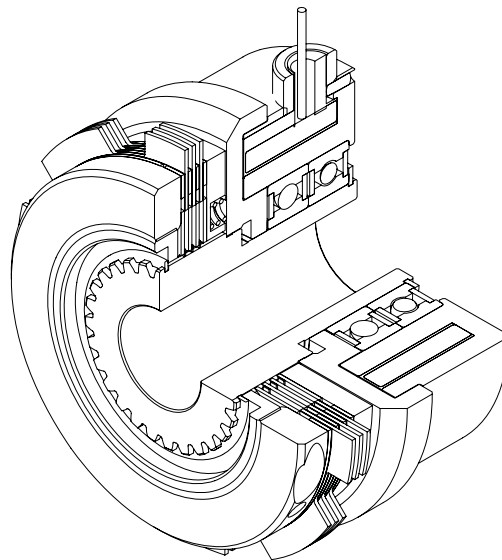
### TEMPERATURE LIMITS:

Coil - 500° F  
Bearings - 300° F

### RELATED PUBLICATIONS (Available from factory or internet - free of charge)

Technical Bulletin: Design Guidelines, Model FEA Spring-Applied Multiple Disc Electric Clutches

Technical Brochure: Maxitorq® Electric Clutches and Brakes Model FEA



Clutch, Spring-applied, Model FEA

**NOTES**

**NOTES**



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