Boston Gear®
ORC-F Series Trig-O-Matic

Installation and Operation

P-3002-BG

ORC-F Series

BOSTON GEAR™

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I. Introduction

A. Operating Principle

The ORC Series, Model F Overload Release Clutch consists of three basic components: the rotor, the housing assembly and the limit switch actuating mechanism assembly. The clutch rotor is keyed and secured to a shaft with a locking collar (Models FJ or FG), or with a setscrew (Model FR).

The housing assembly includes a drive pawl and a reset pawl which pivot within the clutch housing.

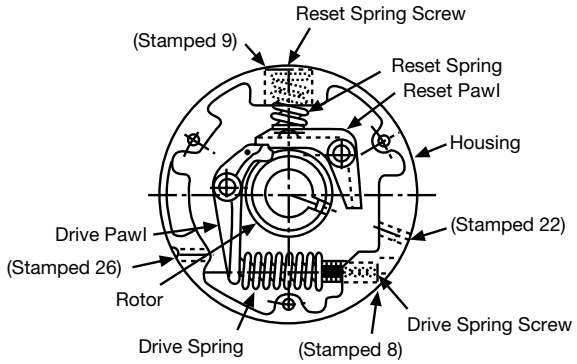


Figure 1

The drive pawl is held in its engaged position by the combined compression of the drive and reset springs. (See Figure 1) The combined compression of these two springs determines the maximum torque which is transmitted without overload. With the clutch in its engaged position, the rotor and the housing are held together and the entire unit rotates with the drive shaft at the same speed.

When an overload occurs, the rotor rotates from its normal position within the housing. At this instant, the combined compression of the drive and reset springs is overcome. The drive pawl is forced out of its engaged position from the rotor and as it pivots up, the reset pawl applied pressure to the top of the drive pawl holding it in contact with the rotor.

After one revolution, the drive pawl will automatically re-engage. For a manual reset clutch the drive pawl is forced out of its engaged position from the rotor and as it pivots up, the reset pawl lifts and locks the drive pawl out of contact with the rotor. See Section B2 for resetting instructions.

The automatic limit switch actuating mechanism assembly consists of five basic components: the actuating plate, the cam plate, the liftout buttons, the return pins and return springs. Upon overload, the rotation of the rotor causes the cam plate, which is keyed to the rotor, to exert a force on the liftout buttons forcing them to move the actuating plate axially away from the clutch housing. (See Figure 3) When the clutch is re-engaged, the actuating mechanism will automatically return to its original position by the force of the return springs on the return pins.

B. Resetting Instructions

1. Automatic Reset (Models FJ, FG, FR) - To re-engage the clutch after an overload has been cleared, jog the drive until the clutch re-engages. At this point the rotor keyway will line up with the index line on housing and the limit switch plate will retract to its original position.

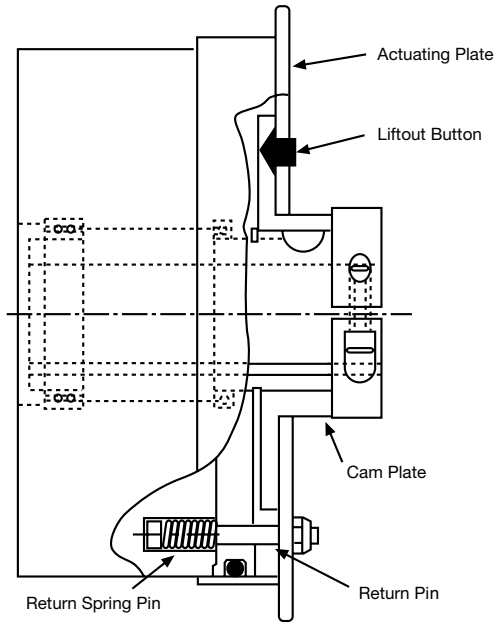


Figure 3

2. Manual Reset (Models GJ, GG, GR)

Note: Be sure not to use a powered wrench as it may cause damage to the reset pawl and/or reset spring!

   a. After the overload condition has been corrected, rotate the drive until the rotor keyway is in alignment with the hole stamped 22 located on the outside diameter of the housing (See Figure 4).

   b. Reset the clutch by inserting a hex wrench into the reset screw (Stamped 20) shown in Figure 4, and turn the screw clockwise until the reset pawl releases the drive pawl. Refer to Table 5 for the proper wrench size.

   c. After the drive pawl enters the rotor notch, turn the wrench counterclock wise until the reset screw has stopped at its original position, which is approximately flush with the O.D. of the clutch housing. **This is essential to restore the torque to its original setting.**

   d. Reducing the clutch torque setting may make the reset procedure easier if the clutch is near the maximum torque.

C. Torque Adjustment

The clutch is supplied with a torque selector dial. This dial makes torque adjustments on the clutch possible. There are mill marks on the housing near the hole stamped 9 on the outside diameter of the housing. The mill marks have stamped values indicating a set, or minimum and maximum torque. (See Figure 4A) If a drastic change in torque is desired, it may be necessary to change springs. See Section VI for spring replacement.

1. Increasing the Torque

   a. Make sure the clutch is engaged.

   b. Turn the torque adjustment screw clockwise until it is flush with the milled depth of the desired torque setting or until nuisance trips are eliminated.

   c. Check its operation.

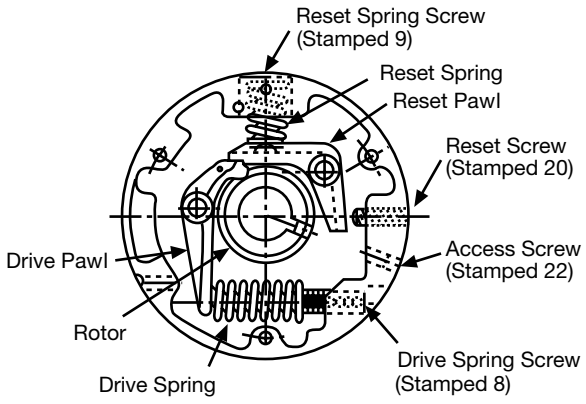


Figure 4

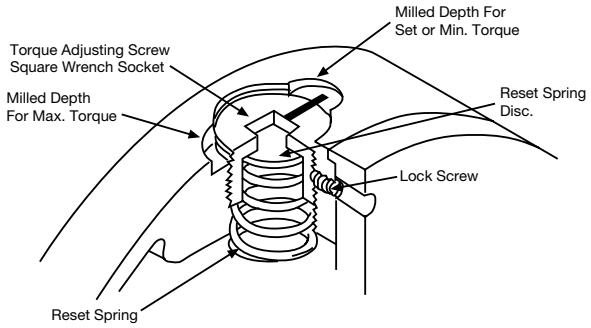


Figure 4A

II. Mounting Sprockets Or Sheaves To Clutch.

A. Type "T" Housing

1. Inspect mating pilots on clutch and sprocket or sheave for nicks or burrs and remove as required.
2. Position sprocket or sheave on housing and align dowel pin holes.
3. Attach sprocket or sheave to housing with mounting bolts and high collar lock washers. Refer to Table 1 for recommended seating torques.
4. Finish ream sprocket or sheave for dowel pins. Refer to Table 1 for dowel pin and recommended ream sizes.
5. Install dowel pins to a point where they bottom in housing.

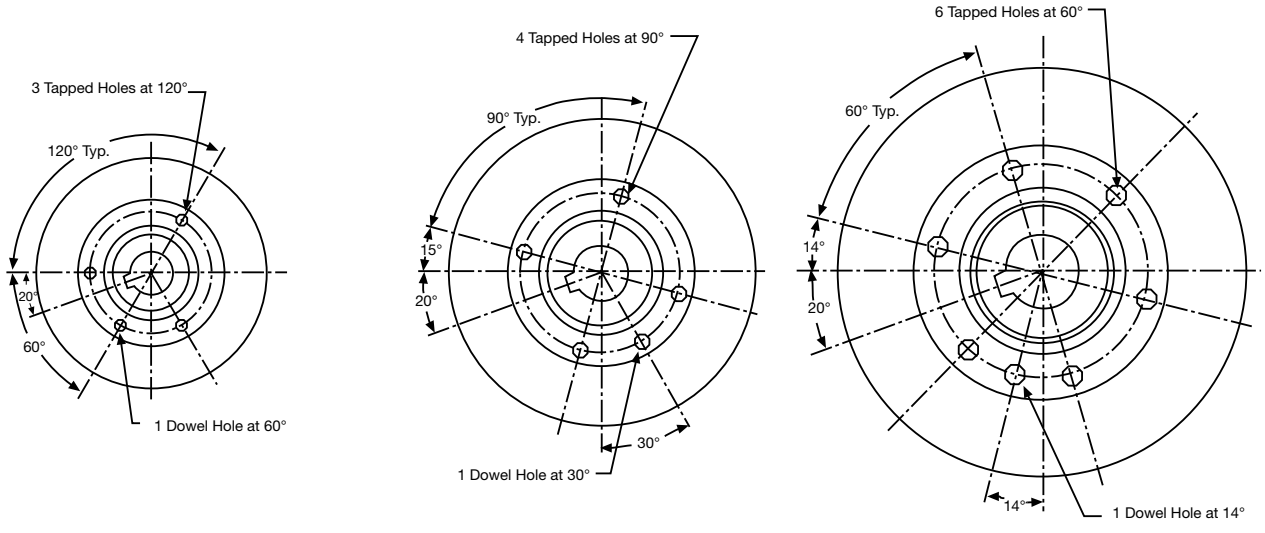
Size	Screw Size	Qty	Dowel Size	Qty	Seating Torque	Ream Size
1	1/4-20	3	1/4	1	150 in.lb.	.2495
2	5/16-18	3	5/16	1	305 in.lb.	.3120
3	3/8-16	4	3/8	1	545 in.lb.	.3745
4	1/2-13	4	1/2	1	1,300 in.lb.	.4995
5	5/8-11	6	5/8	1	2,530 in.lb.	.6245

Table 1 - Mounting Hardware Information

Size	Thread	Depth	Bolt Circle	Pilot Dia. +.000 - .002
1	1/4-20	.50	2.375	1.875
2	5/16-18	.50	3.000	2.250
3	3/8-16	.62	4.125	3.250
4	1/2-13	.87	5.000	3.203
5	5/8-11	1.00	6.250	4.125

Table 2 - Type "T" Mounting Hole Patterns

Notes:
1. Mounting bolts must be minimum 160,000 PSI tensile, Rc 36-43.
2. Dowel pins must be minimum 150,000 PSI shear. Rc 50-58 core hardness.



Sizes 1 and 2 Mounting Hole Pattern

Sizes 3 and 4 Mounting Hole Pattern

Sizes 5 and 6 Mounting Hole Pattern

Figure 5 - Type "T" Standard Mounting Hole Patterns

Clutch Size	Chain Size and Pitch										
	#25 1/4 Pitch	#35 3/8 Pitch	#40 1/2 Pitch	#41 1/2 Pitch	#50 5/8 Pitch	#60 3/4 Pitch	#80 1 Pitch	#100 1-1/4 Pitch	#120 1-1/2 Pitch	#140 1-3/4 Pitch	#160 2 Pitch
1	40	28	22	22	18	——	——	——	——	——	——
2	54	36	28	28	22	19	——	——	——	——	——
3	X	45	34	36	28	25	19	——	——	——	——
4	X	X	42	45	36	30	23	19	——	——	——
5	X	X	X	X	42	36	30	22	19	17	——

Table 3 - Minimum Number Of Teeth Of Standard Plate Sprockets Adaptable To Type “T” Clutch

Notes:
1. X-On Application Only
2. For smaller sprockets, consult factory. As in most cases, a design modification can be made.

B. Type “B” Housing

A Type “B” clutch is a basic unit and is sold without any mounting hole arrangement. It is modified by the customer for special applications.

Size	A	B	C	D	E	F +.000 -.002	G
1	.81	.81	1.06	.11	.31	1.500	.69
2	.90	1.25	1.37	.18	.37	1.875	.81
3	1.25	1.62	1.94	.29	.50	2.750	.94
4	1.56	2.12	2.37	.43	.56	2.828	1.48
5	1.94	2.62	3.00	.58	.69	4.000	1.62

Table 4 - Type “B” Housing Dimensions

Notes: The “E” dimension on Table 4 shows pawl trunnion holes. These holes are not through holes and they should be avoided when mounting a coupling, sprocket, etc. to the clutch.

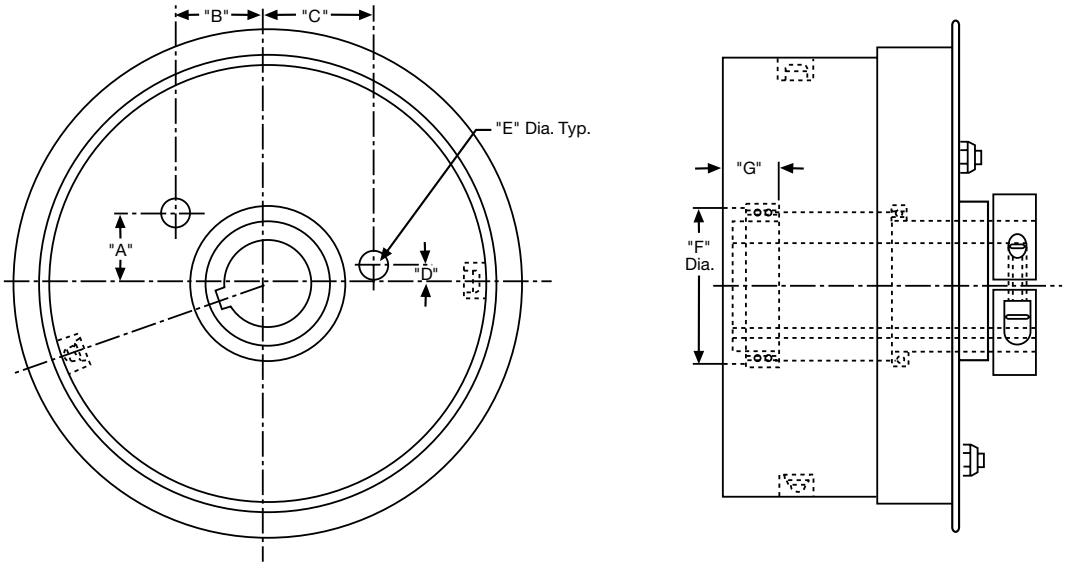


Figure 6 - Type “B” Housing Configuration

III. Locating And Mounting Clutch And Couplings To Shaft

A. Location

The clutch should always be located as close as possible to the source of an overload condition. Figures 7 through 10 indicate both preferred and not preferred locations for mounting a ORC Series, Model F Overload Release Clutch.

Note: Clutch mounted sprockets, etc. and couplings should be positioned as close to a supporting bearing as possible to minimize overhung loads. A minimum shaft engagement of 1-1/2 times the shaft diameter is recommended for clutch and coupling flange installation.

1. Direct Drives

   a. Figure 7 shows the preferred location for mounting in a direct drive application. The clutch is mounted on the low speed side of the reducer, and transmits power from its housing, through its rotor to the driven shaft.

   b. Locating the clutch as shown in Figure 8 is not preferred. Here the clutch is mounted on the high-speed side of the reducer. Generally, mounting in this manner requires the clutch to be too hypersensitive to perform satisfactory.

2. Indirect Drives

   a. Either location of the clutch shown in Figure 9 is preferred in indirect drive applications.

   b. The mounting location in Figure 10 is not preferred for the same reasons as those for Figure 8. Always consult the factory when a mounting of this type is necessary.

B. Mounting Basic Clutch

1. Inspect shaft and key for any nicks or burrs and remove any that may be present.

2. If the clutch is a Model FJ or FG, loosen the clamp collar on the rotor of the clutch. If the clutch is a Model FR, remove the screw from the hole stamped 22 outside of the housing. Make sure that the clutch is engaged where the rotor keyway is in line with the hole stamped 22.

3. Position shaft key and slide clutch onto shaft.

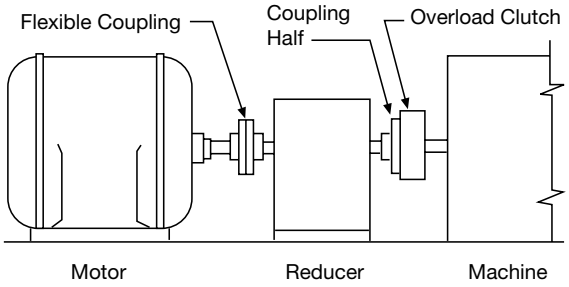


Figure 7

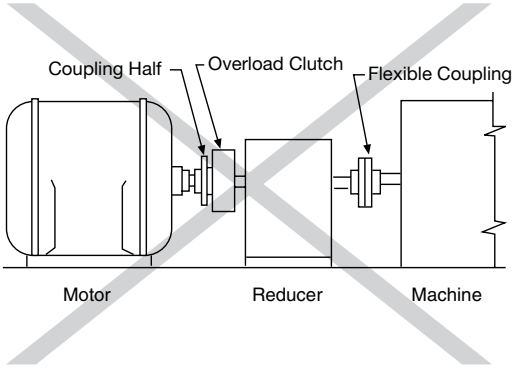


Figure 8

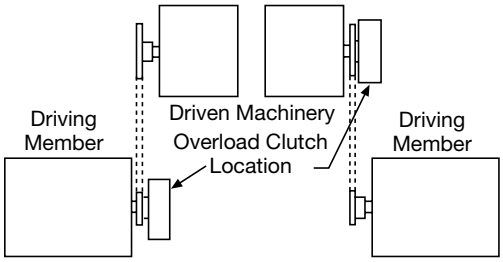


Figure 9

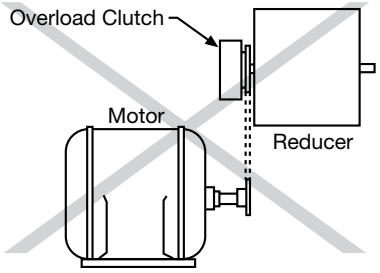


Figure 10

Clutch Size	Drive Spring Screw Hex Wrench	Reset Spring Screw Square Wrench	Manual Reset Screw Hex Wrench	Rotor Setscrew Hex Wrench	Access Screws Hex Wrench	Locking Screw Hex Wrench	Adjustment Screw Hex Wrench	Locking Collar Capscrew Hex Wrench
1	3/16	3/8	3/16	3/32	1/8	3/32	1/16	3/16
2	1/4	3/8	1/4	1/8	5/32	3/32	5/64	3/16
3	5/16	1/2	5/16	3/16	3/16	1/8	1/8	1/4
4	5/16	1/2	3/8	1/4	5/16	1/8	1/8	5/16
5	3/8	1/2	1/2	5/16	5/16	1/8	1/8	5/16

Table 5 - Wrench Size Chart

4. Align sprocket or sheave mounted to clutch with mating sprocket or sheave in drive train. Refer to installation and alignment instructions furnished with sprocket or sheave.

5. For a Model FR, select the correct hex wrench from Table 5 and insert it through the hole stamped 22 in the housing. Tighten the rotor setscrew securing the clutch to the shaft.

Note: Turn wrench clockwise only! Do not remove setscrew from rotor!

Refer to Table 6 for recommended setscrew seating torques.

6. Remove the hex wrench and replace access screw in the hole stamped 22 on the housing.

7. If the clutch is a Model FJ or FG, secure the clutch to the shaft by tightening the clamp collar screw to the recommended torque in Table 7.

C. Mounting Type "C" Flexible Coupling

1. After the clutch has been mounted on its shaft as explained in Section III, inspect the coupling shaft and key for any nicks or burrs and remove any that are present.

2. Make sure that the coupling shaft keyway is in alignment with the clutch shaft keyway. Position shaft key and slide coupling onto the appropriate shaft.

3. Slide the coupling flange onto the coupling studs. The coupling flange and adapter should be separated by a gap of 1/8".

4. Secure the coupling to drive shaft by tightening the two setscrews located in the hub of the flange. Refer to Table 8 for recommended coupling setscrew seating torques.

5. Parallel Alignment

   a. Place a straightedge across the clutch housing and coupling flange as shown in Figure 11.

   b. Measure the offset around the periphery of these two components without rotating the shafts.

   c. If the difference in offset from any two points 180 degrees apart exceeds the maximum value shown in Table 9, the shafts must be realigned.

Size	Screw Size	Seating Torque
1	10-32	36 in.lb.
2	1/4-28	87 in.lb.
3	3/8-24	290 in.lb.
4	1/2-20	620 in.lb.
5	5/8-18	1,325 in.lb.

Table 6 - Rotor Setscrew Seating Torques

Size	Collar Screw	Seating Torque
1	1/4-28	190 in.lb.
2	1/4-28	190 in.lb.
3	5/16-24	435 in.lb.
4	3/8-24	750 in.lb.
5	3/8-24	750 in.lb.

Table 7 - Clamp Collar Screw Seating Torques

Size	Collar Screw	Seating Torque
1	5/16-18	165 in.lb
2	3/8-16	290in.lb
3	3/8-16	290 in-lb
4	1/2-13	620 in.lb
5	1/2-13	620 in.lb

Table 8 - Coupling Setscrew Seating Torques

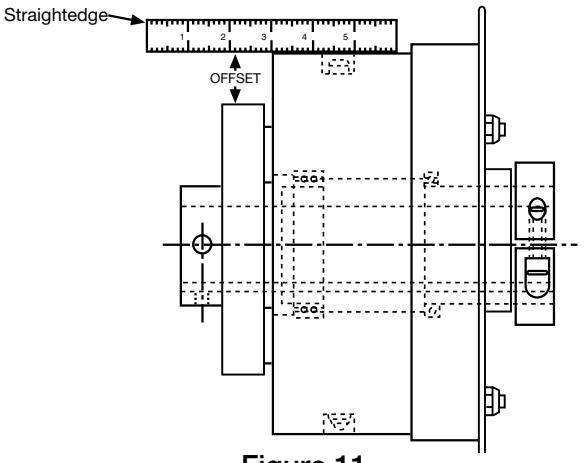


Figure 11

6. Angular Alignment

   a. Measure the gap around the periphery between the coupling flange and the clutch housing without rotating the shafts. (See Figure 12)

   b. If the difference between any two points 180 degrees apart exceeds the maximum angular misalignment shown in Table 9, the shafts must be realigned.

   c. If a correction is required to satisfy angular alignment requirements, then recheck the parallel alignment.

Size	Maximum Allowable Misalignment	
	Parallel	Angular
1	.012”	.074”
2	.015”	.091”
3	.016”	.102”
4	.027”	.159”
5	.031”	.183”

Table 9 - Type “C” Misalignment

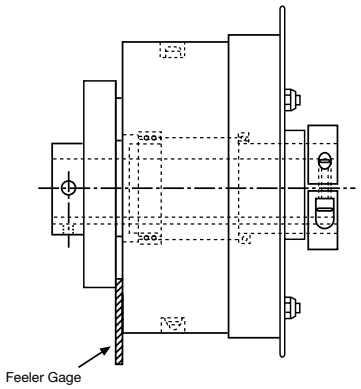


Figure 12

D. Mounting the “N” Index Coupling and Type “R” Rigid Coupling

1. After the clutch has been mounted as explained in Section III, inspect mating pilots of clutch and coupling for any nicks or burrs and remove any that are present.

2. Inspect coupling shaft and key for any nicks or burrs and remove any that are present.

3. In the case of a “R”, make sure that the coupling shaft keyway is in alignment with the clutch shaft keyway. Position the shaft key and slide the coupling flange onto the shaft.

4. Slide the coupling onto the clutch housing making sure that the coupling pilot fits into the housing pilot and that the mounting holes are aligned. In the case of a “N” index coupling, make sure that the desired mounting slots are aligned with the clutch housing mounting holes.

5. Secure the coupling to the drive shaft by tightening the two setscrews located in the hub of the flange. Refer to Table 8 for recommended coupling setscrew seating torques.

6. Parallel Alignment

   a. Place a straightedge across the clutch housing and coupling flange as shown in Figure 11.

   b. Measure the offset around the periphery of these two components without rotating the shafts.

   c. The shafts must be aligned until no offset exists or is equal at all points around the periphery.

7. Angular Alignment

   a. Measure the gap around the peripery between the coupling flange and clutch housing without rotating the shafts. (See Figure 12)

   b. The shafts must be aligned until no gap exists or is equal at all points around the periphery.

   c. If a correction is required to satisfy angular alignment requirements, then recheck the parallel alignment.

Note: The Type “N” and “R” coupling connection is rigid and does not allow for forgiveness of parallel or angular misalignment. To eliminate unnecessary bearing loads, both shafts must be in near perfect alignment.

8. Loosen the coupling setscrews and attach coupling to clutch with hex head bolts and flat washers. Refer to Table 10 for recommended bolt seating torques. Secure coupling to drive shaft by tightening the setscrews. (Refer to Table 8)

Size	Bolt Size	Seating Torque
1	5/16-18	170 in.lb.
2	3/8-16	300 in.lb.
3	1/2-13	750 in.lb.
4	5/8-11	1,270 in.lb.
5	5/8-11	1,270 in.lb.

Table 10 - Coupling Mounting Bolt Seating Torques

IV. Limit Switches

Figure 13 shows a typical use of a limit switch to detect an overload condition. The switch should be able to operate within the travel of the limit switch plate. Upon overload, the limit switch plate will move to actuate the limit switch and shut down the drive.

The switch should be wired in parallel with a jog circuit so that the drive can be indexed for re-engagement. After the clutch has been re-engaged, the limit switch will be reset and the drive can be restarted.

V. General Maintenance

A. Lubrication

The ORC Series, Model F Overload Release Clutch is prelubricated at the factory and is also equipped with a grease pack fitting. For optimum performance and wear resistance it is suggested that the clutch be lubricated with a Bentone type, NLGI grade 0 grease. The lubrication schedule should be in accordance with good operating practices for the equipment on which the clutch is mounted. The clutch is also supplied with a grease relief fitting. When there is enough grease in the clutch any excess grease will be extruded through the relief fitting.

B. Annual Inspection

The ORC Series, Model F Overload Release Clutch is constructed of heavy duty materials. Under reasonably clean conditions the unit will operate with a minimum of maintenance. A scheduled annual inspection of bearings, pawls, rotor, springs, actuating plate, cam plate and other internal components is suggested. However, the actual frequency should be in accordance with good operating practices for the equipment on which the clutch is installed.

VI. Repair Instructions

A. General Disassembly

1. All item numbers in parenthesis will refer to clutch exploded view drawing and parts identification table.

2. Place the clutch preferable in a three-jaw chuck with the actuating plate facing up.

3. Remove the return pin nuts (32) from the return pins. This is accomplished by holding the return pin steady with a screwdriver while turning the return pin nut counter-clockwise with a box or open end wrench.

4. Lift off the actuating plate (26) from the clutch.

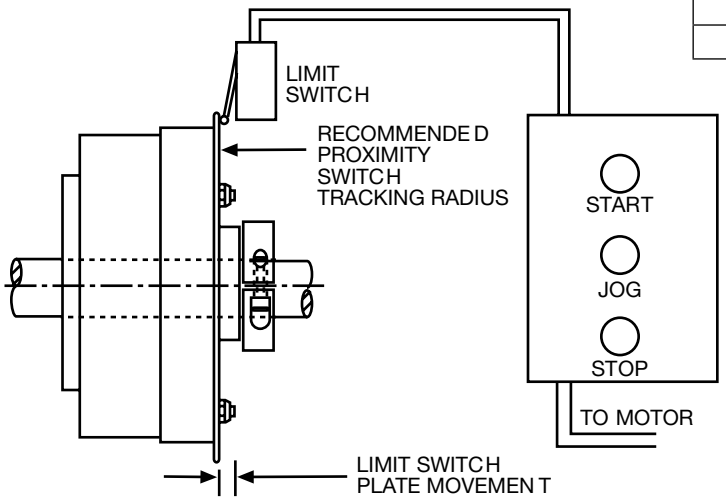
5. There are two locking screws (24) located on the face of the cover which lock down the reset spring screw (15) and the drive spring screw (20). Loosen these screws to relive the pressure on the drive spring screw and reset spring screw.

6. Turn the reset spring screw (15) counter-clockwise to relieve the compression on the reset spring (18).

7. Remove the sealing wax from the drive spring screw (20) and turn the screw counterclockwise to relieve the compression on the drive spring (17).

8. Remove the cam plate (36) from the face of the cover (8). Be sure not to pry on the outer edge of the cover as the outer lip may break. (See Figure 14)

Clutch Size	Movement Inch	Tracking Radius Inch
1	.18	2.38
2	.18	3.25
3	.18	4.18
4	.18	5.25
5	.18	6.25



Note: The limit switch actuating plate supplied with the Model F Overload Release Clutch is furnished with a mild steel plate, suitable for use with a proximity sensor switch and has a 1.0 Normal Sensor Range.

Figure 13 - Limit Switch Layout

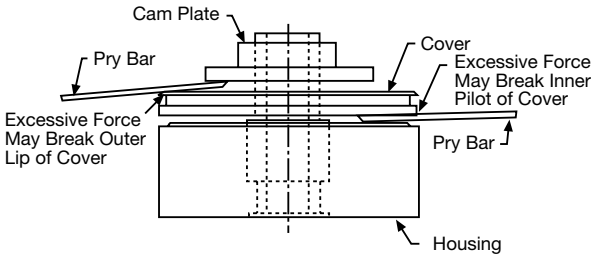


Figure 14

9. Remove the Woodruff key (37).

10. Remove the snap ring (33) from the rotor (12).

11. Remove the cover screws (23).

12. Pry off the cover (8). Use care not to break the inner pilot of the cover. (See Figure 14)

13. Remove the return pin snap rings (33) from the face of the cover (8), then remove the return pins (31) and the return pin springs (34).

14. Remove the reset spring screw (15) and take out the reset spring (18), and the ball thrust (19) through the hole stamped 9.

15. Remove the reset pawl (11) by simply lifting out.

16. Remove the drive pawl (10) and the drive spring (17). This will require a little more effort because of the slight pressure on the drive spring.

17. Press out the rotor (12).

18. If clutch is manual reset, remove the reset screw (See Figure 4A) by turning clockwise into the housing.

19. Inspect hardened bushings (3) in housing (1) and cover (8) for excessive wear (sizes 2 through 5 only).

20. Replace any worn or broken parts.

B. Basic Unit Assembly

1. If clutch is manual reset, install the reset screw from the inside of the housing turning counterclockwise until the reset screw pin stops the screw from turning.

2. Press the rotor (12) into the housing bearing. If the rotor is a Model FJ or Model FG, press the shorter end of the rotor into the housing bearing. If the rotor is a Style 2, then press the sawcut section of the rotor into the housing bearing.

3. This step is for manual reset only. Go to next step for automatic reset. Install the drive pawl (10) into the appropriate hole in the housing (1), and the reset pawl (11) into its appropriate hole in the housing. Check the fit of the reset pawl into the notch of the drive pawl with the clutch disengaged. The reset pawl should fit approximately one-third of the way into the notch. Grinding the nose of the reset pawl may be necessary to obtain the proper fit.

4. The drive pawl (10) and the drive spring (17) will have to be installed simultaneously. If a drastic change in torque is desired, use this step to change the drive spring. Place one end of the drive spring over the drive spring thrust washer. Insert the knob of the drive pawl into the other end of the drive spring. Insert the trunnion of the drive pawl into the hardened bushing in the housing, while the nose of the drive pawl fits into the notch of the rotor (12). Install the reset pawl (11) into its appropriate hole in the housing. (See Figure 15)

5. Coat the inside of the housing and all components with a quality all-purpose grease. A Bentone type, NLGI grade 0 or equivalent recommended.

6. Insert the reset spring disc (16) inside the reset spring screw (15). Apply grease to the surface of the disc.

7. If a drastic change in torque is desired, use this step to change the reset spring. Place the reset spring (18) on the surface of the reset spring disc. Apply grease to the end of the ball thrust (19) and insert ball thrust into the reset spring.

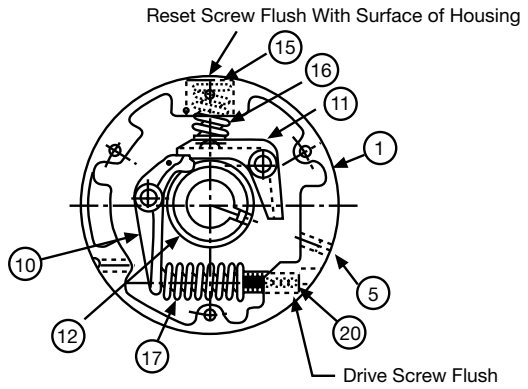


Figure 15 - Clutch Internal Components

8. Apply grease to the threads of the reset spring screw (15) and insert the assembly of the reset spring screw, reset spring disc (16), reset spring (18), and ball thrust (19) through the hole stamped 9 on the housing. Tighten the reset spring screw until it is flush with the surface of the housing. (See Figure 15)

9. Fill the entire housing cavity with grease to ensure a proper grease packing.

10. Install a return pin spring (34) over each return pin (31). Locate the return pin holes in the cover by placing the cover over the housing assembly.

11. Once the return pin hole locations have been established, insert the return pins and springs through the appropriate holes in the cover.

12. Install a snap ring (33) into the groove on the end of each return pin (31).

13. Press the cover assembly onto the housing assembly. Make sure that the trunnion holes and the cover screw holes line up.

14. Install the cover screws (23) and tighten to the suggested torques in Table 12.

Clutch Size	Screw Size	Qty	Seating Torque
1	1/4-20	3	100 in.lb.
2	5/16-18	3	200 in.lb.
3	3/8-16	3	350 in.lb.
4	1/2-13	4	850 in.lb.
5	5/8-11	4	1,700 in.lb.

Table 12 - Cover Screw Seating Torques

15. Install the rotor snap ring (38) into the groove of the rotor. The unit is now ready for testing.

C. Torque Verification

1. Place the clutch in a chuck or vise with the cover facing upward.

2. Insert the appropriate size arbor and key into rotor. (See Figure 16)

3. If the unit is a Model FJ or FG, place the locking collar (13) onto the sawcut section of the rotor and tighten. If the clutch is a Model FR, remove the access screw from the hole stamped 22 on the housing. Insert hex wrench through this hole and tighten the rotor setscrew. Replace the access screw.

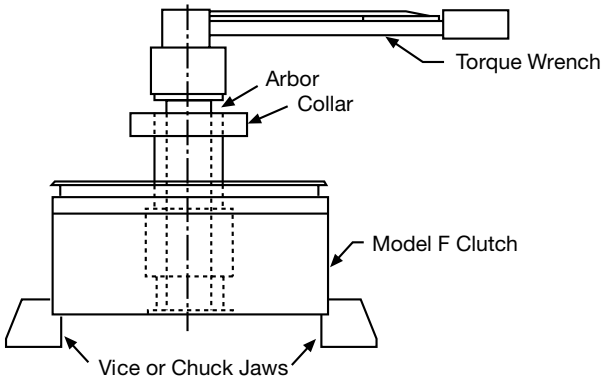


Figure 16

4. Turn the drive spring screw (20) clockwise until it is flush with the surface of the housing. (See Figure 15)

5. The clutch is supplied with a torque selector dial. The torque selector dial is the two or three mill marks located at the hole stamped 9 on the housing. If a drive spring (17), reset spring (18), and/or a reset spring screw (15) were replaced, chances are that the stamped torque values on the dial are no longer valid. It may be necessary to grind the old numbers off and to stamp new numbers.

6. Tighten the reset spring screw (15) until it reaches the limit stop pin (4). this will be the maximum torque position. If the maximum torque is not desired, tighten the reset spring screw to one of the locations on the torque selector dial.

7. Disengage the clutch with a torque wrench. Fine tune the torque by turning the drive spring screw (20) until the desired release torque is obtained.

8. Once the desired release torque is obtained, tighten the locking screws (24) located over the drive spring and reset spring screws to ensure that they will not move.

D. Final Assembly

1. Remove the torque wrench, locking collar (for Model FJ and FG), and arbor. For Model FR, remove the access screw from the hole stamped 22 on the housing, loosen the rotor setscrew and replace access screw. Then remove the clutch from chuck or vise.

2. Apply a thin coat of grease to the “O”-ring (39) and place it into groove on the outer edge of the cover. Be sure not to twist the “O”-ring.

3. Insert the Woodruff key (37) into the keyslot of the rotor. The Woodruff key may require a gentle tap with a hammer.

4. Press the cam plate (36) onto the rotor.

5. Place the actuating plate (26) over the rotor and cover. There is an arrow on the actuating plate which should point to the keyway in the rotor when properly installed. The return pins should fit through the proper holes in the actuating plate. (See Figure 17)

6. Install the return pin nuts (32) onto the end of the return pins. This is accomplished by holding the return pin steady with a screwdriver while turning the return pin nut clockwise with a box or open end wrench.

7. If the clutch is a Model FJ or FG, install the locking collar (13) onto the sawcut section of the rotor. Do not tighten the collar until the clutch is installed on the shaft. Refer to Section III for installation of the basic clutch.

E. Limit Switch Actuating Plate Assembly (Sizes 1 and 5)

1. Push liftout buttons (27) through appropriate holes in the actuating plate (26). Secure each liftout button with a snap ring (28).

2. Push holdout buttons (29) through appropriate holes in the actuating plate (26). Secure each holdout button with a snap ring (30).

⚠CAUTION Rotating equipment is potentially dangerous and could cause injury or damage if not properly protected. Follow all applicable codes and regulations.

In accordance with our established policy to constantly improve our products, the specifications contained herein are subject to change without notice.

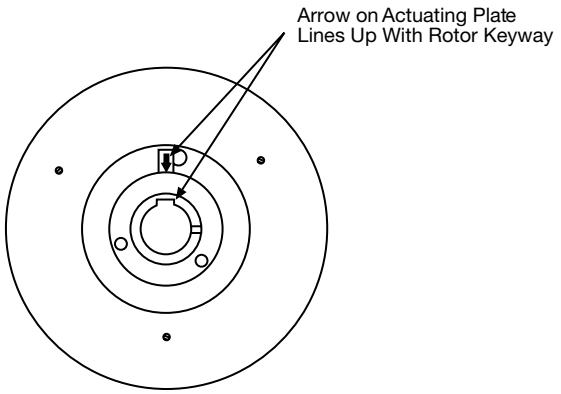


Figure 17 - Keyway Location

VII. Troubleshooting

	Check Load	Increased Clutch Torque Setting	Check Pawl And Rotor For Excessive Wear	Check Actuating Plate Liftout/Holdout Buttons For Excessive Wear	Relocate Or Adjust Proximity Sensor	Jog Clutch Into Re-Engagement
Excessive Clutch Overload	X	X	X			
Excessive Clutch Backlash	X	X	X			
Limited Actuating Plate Movement				X		
Clutch Will Not Re-Engage			X			X
Proximity Sensor Detecting False Overloads		X			X	

ORC Model F Series Part Numbering System

ORC **2** **FG** **C** **L** **P16** **P16**

Series
Overload Release Clutch

Size
1
2
3
4
5

Model
FJ- Model F, Full Available Shaft Length
FG- Model F, Limited Available Shaft Length
FR- Model F, Overall Limited Space

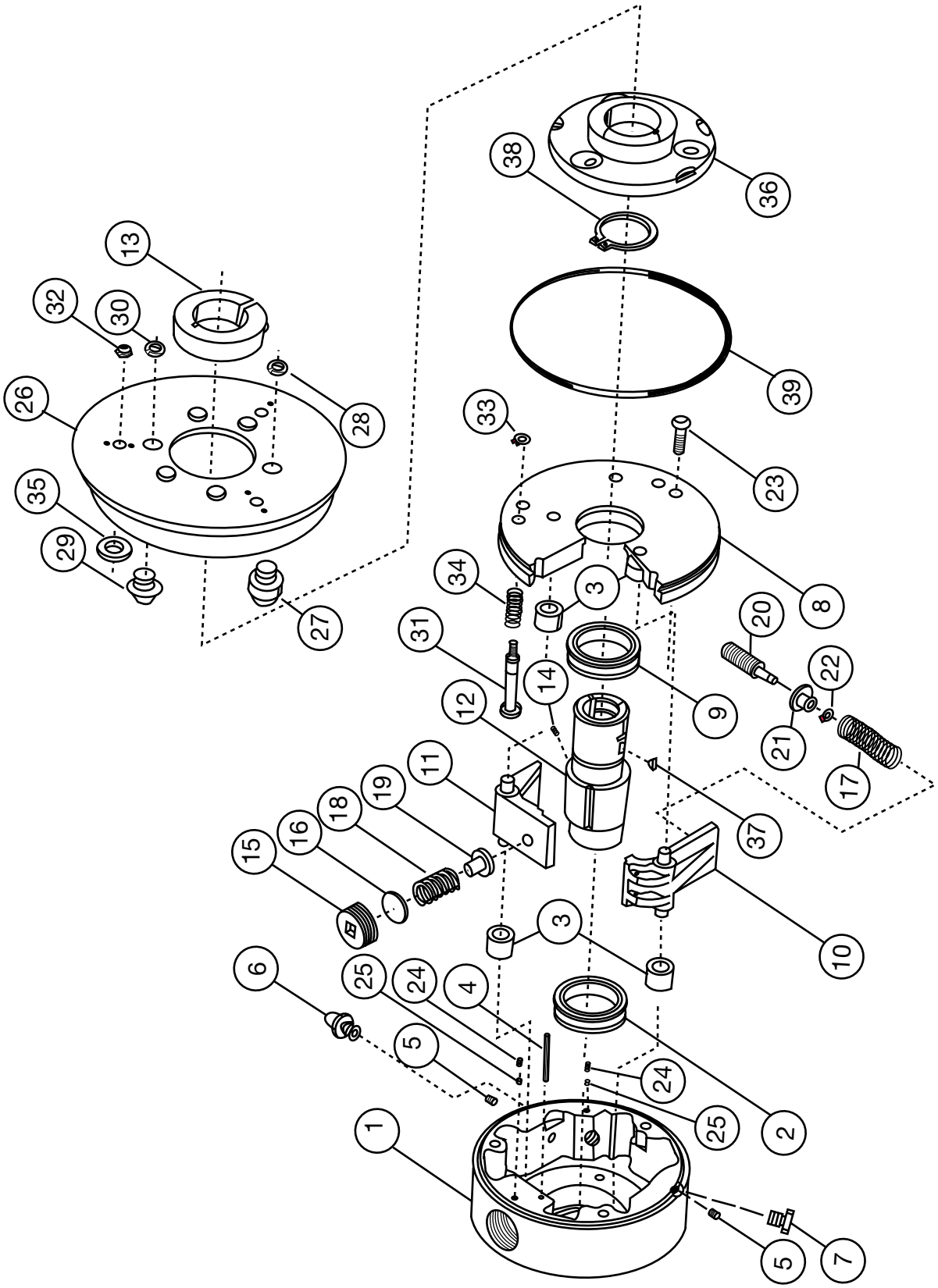
Type
B- Basic
C- Flexible Coupling
N- Indexing Coupling
R- Rigid Coupling
T- Sprocket

Torque Range
L - Light
M - Medium
H - Heavy

Unit Bore
P- Bored to Size (in 1/16")
M- Metric Bored to Size (mm)

Coupling Bore (Type C, N or R Only
P- Bored to Size (in 1/6")
M - Metric Bored to Size (mm)

(Leave Blank for Non-Coupled Units)



ORC Series, Model F

Part Identification - ORC Series, Model F

Key No.	Name	Size 1 (Qty.)	Size 2 (Qty.)	Size 3 (Qty.)	Size 4 (Qty.)	Size 5 (Qty.)
	T Housing Ass'y., or ***	711257-XXX (1)	711148-XXX (1)	711180-XXX (1)	711223-XXX (1)	711238-XXX (1)
1	B Housing Ass'y, or ***	711258-XXX (1)	711149-XXX (1)	711181-XXX (1)	711224-XXX (1)	711239-XXX (1)
	C Housing Ass'y.,or ***	711259-XXX (1)	711150-XXX (1)	711182-XXX (1)	711225-XXX (1)	711240-XXX (1)
	N/R Housing Ass'y.***	711260-XXX (1)	711151 -XXX (1)	711183-XXX (1)	711226-XXX (1)	711241-XXX
2	Housing Bearing	039273-041 (1)	039273-043 (1)	039273-044 (2)	039273-038 (1)	711900-006 (1)
3	Hardened Bushing	—	730634-002 (2)	730634-003 (2)	730634-004 (2)	730634-005 (2)
4	Limit Stop Pin	730422-001 (1)	730422-001 (1)	730422-002 (1)	730422-002 (1)	730422-003 (1)
5	Access Screws	040940-031 (2)	040940-042 (2)	074102-003 (2)	074102-078 (2)	074102-078 (2)
6	Grease Fitting	034186-029 (1)	034186-029 (1)	034186-029 (1)	034186-029 (1)	034186-029 (1)
7	Relief Fitting	034186-028 (1)	034186-028 (1)	034186-028 (1)	034186-028 (1)	034186-028 (1)
8	Cover Assembly	711263-001 (1)	710487-001 (1)	711103-001 (1)	711220-001 (1)	711244-001 (1)
9	Cover Bearing	039273-040 (1)	039273-042 (1)	039273-045 (1)	039273-038 (1)	711900-005 (1)
3	Hardened Bushing	—	730634-002 (2)	730634-003 (2)	730634-004 (2)	730634-005 (2)
10	Drive Pawl, or	730429-001 (1)	730430-001 (1)	730431-001 (1)	730432-001 (1)	730433-001 (1)
	Drive Pawl L.H., or	730468-001 (1)	730549-001 (1)	730551-001 (1)	730553-001 (1)	730555-001 (1)
	Drive Pawl R.H.	730649-001 (1)	730550-001 (1)	730552-001 (1)	730554-001 (1)	730556-001 (1)
11	Reset Pawl**	730637-XXX (1)	730638-XXX (1)	730639-XXX (1)	730370-XXX (1)	730371-XXX (1)
12*	Rotor Model FJ, or	730470-001 (1)	730471-001 (1)	730472-001 (1)	730473-001 (1)	730474-001 (1)
	Rotor Model FJ, L.H., or	730517-001 (1)	730518-001 (1)	730519-001 (1)	730520-001 (1)	730521-001 (1)
	Rotor Model FJ, R.H,. or	730522-001 (1)	730523-001 (1)	730524-001 (1)	730525-001 (1)	730526-001 (1)
	Rotor Model FG, or	730475-001 (1)	730476-001 (1)	730477-001 (1)	730478-001 (1)	730479-001 (1)
	Rotor Model FG, L.H., or	730527-001 (1)	730528-001 (1)	730529-001 (1)	730530-001 (1)	730531-001 (1)
	Rotor Model FG, R.H., or	730532-001 (1)	730533-001 (1)	730534-001 (1)	730535-001 (1)	730536-001 (1)
	Rotor Model FR, or	710357-001 (1)	710357-002 (1)	710357-003 (1)	710357-004 (1)	710357-005 (1)
	Rotor Model FR, L.H., or	710968-001 (1)	710968-002 (1)	710968-003 (1)	710968-004 (1)	710968-005 (1)
	Rotor Model FR, R.H., or	710969-001 (1)	710969-002 (1)	710969-003 (1)	710969-004 (1)	710969-005 (1)
13	Locking Collar (FJ & FG)	730094-013 (1)	730094-014 (1)	730094-015 (1)	730094-016 (1)	730094-017 (1)
14	Rotor Setscrew (FR)	043243-012 (1)	043243-022 (1)	043243-041 (1)	* (1)	043243-058 (1)
15	Reset Spring Screw	730382-001 (1)	730382-002 (1)	730382-003 (1)	730382-004 (1)	730382-005 (1)
16	Reset Spring Disc	730383-001 (1)	730383-002 (1)	730383-003 (1)	730383-004 (1)	730383-005 (1)
17	Drive Spring - Low Torque Range (L)	730385-001 (1)	730385-007 (1)	730385-014 (1)	730385-020 (1)	730385-026 (1)
18	Reset Spring - Low Torque Range (L)	730385-005 (1)	730385-011 (1)	730385-018 (1)	730385-024 (1)	730385-030 (1)
17	Drive Spring - Medium Torque Range (M)	730385-001 (1)	730385-007 (1)	730385-015 (1)	730385-020 (1)	730385-026 (1)
18	Reset Spring - Medium Torque Range (M)	730385-006 (1)	730385-012 (1)	730385-019 (1)	730385-025 (1)	730385-031 (1)
17	Drive Spring - High Torque Range (H)	730385-001 (1)	730385-009 (1)	730385-015 (1)	730385-021 (1)	730385-027 (1)
18	Reset Spring - High Torque Range (H)	730385-006 (1)	730385-013 (1)	730385-019 (1)	730385-025 (1)	730385-031 (1)
19	Ball Thrust	—	730386-001 (1)	730386-002 (1)	730386-003 (1)	730387-001 (2)
20	Drive Spring Screw	730379-001 (1)	730379-002 (1)	730379-003 (1)	730379-003 (1)	730380-001 (1)
21	Drive Spring Washer	730388-001 (1)	730388-002 (1)	730388-003 (1)	730388-003 (1)	730388-004 (1)
22	Snap Ring	—	040682-029 (1)	040682-030 (1)	040682-030 (1)	040682-030 (1)
23	Cover Screw	041315-048 (3)	041315-062 (3)	041315-077 (3)	041315-106 (3)	041315-121 (3)
24	Locking Screw	074102-015 (2)	074102-015 (2)	074102-031 (2)	074102-031 (2)	074102-027 (2)
25	Locking Insert	730389-001 (2)	730389-001 (2)	730389-002 (2)	730389-002 (2)	730389-003 (2)
	Actuating Plate Ass'y.	710307-001 (1)	710308-001 (1)	710309-001 (1)	710310-001 (1)	710311-001 (1)
26	Actuating Plate	730485-001 (1)	730486-001 (1)	730487-001 (1)	730488-001 (1)	730489-001 (1)
27	Liftout Button	730490-001 (3)	—	—	—	730490-001 (4)
28	Snap Ring	040682-030 (3)	—	—	—	040682-030 (4)
29	Holdout Button	730491-001 (3)	—	—	—	730491-001 (3)
30	Snap Ring	040682-035 (3)	—	—	—	040682-035 (3)
	Return Pin Ass'y.	710312-001 (3)	710313-001 (3)	710313-001 (3)	710314-001 (4)	710315-001 (4)
31	Return Pin	730498-001 (3)	730498-001 (3)	730498-001 (3)	730498-002 (4)	730498-002 (4)
32	Return Pin Nut	730499-001 (3)	730499-001 (3)	730499-001 (3)	730499-002 (4)	730499-002 (4)
33	Snap Ring	040682-036 (3)	040682-036 (3)	040682-036 (3)	040682-030 (4)	040682-030 (4)
34	Return Pin Spring	730500-001 (3)	730500-001 (3)	730500-001 (3)	730500-002 (4)	730500-002 (4)
35	Return Pin Washer	730501-001 (3)	—	—	—	730501-002 (4)
	Cam Plate Ass'y.	710316-001 (1)	710317-001 (1)	710318-001 (1)	710319-001 (1)	710320-001 (1)
36	Cam Plate	730502-001 (1)	730503-001 (1)	730504-001 (1)	730505-001 (1)	730506-001 (1)
37	Woodruff Key	730263-001 (1)	730263-001 (1)	730263-002 (1)	730263-002 (1)	730263-003 (1)
38	Snap Ring	040682-037 (1)	040682-038 (1)	040682-039 (1)	—	040682-040 (1)
39	O- Ring	023750-056 (1)	023750-336 (1)	023750-096 (1)	023750-163 (1)	023750-098 (1)
	C Coupling Ass'y.	710296-001 (1)	710297-001 (1)	710298-001 (1)	710299-001 (1)	710300-001 (1)
	Coupling Bushing	730275-001 (3)	730275-002 (3)	730275-003 (4)	730275-004 (4)	—
	Setscrew	040940-041 (2)	040940-003 (2)	040940-003 (2)	040940-067 (2)	—
	Coupling Pin	730278-001 (3)	730278-002 (3)	730278-003 (4)	730278-004 (4)	—
	N/C Coupling Ass'y.	710301-001 (1)	710302-001 (1)	710303-001 (1)	710334-001 (1)	O/A
	Mounting Screw	074118-062 (3)	074118-077 (3)	074118-093 (4)	074118-110 (4)	—
	Flat Washer	074117-004 (3)	074117-006 (3)	074117-013 (4)	074117-013 (4)	—
	Setscrew	040940-041 (2)	040940-003 (2)	040940-003 (2)	040940-067 (2)	—
	Manual Reset Screw Ass'y.	710356-001 (1)	710356-002 (1)	710356-003 (1)	710356-004 (1)	710356-005 (1)

* Dependent upon bore - include bore size and complete clutch part number.
** -001 Automatic; -003 Manual
*** -001 Automatic; -002 Manual
Note: Please include clutch catalog number when ordering any spare parts.

Warranty

Boston Gear warrants that products manufactured or sold by it shall be free from defects in material and workmanship. Any products which shall within two (2) years of delivery, be proved to the Company's satisfaction to have been defective at the time of delivery in these respects will be replaced or repaired by the Company at its option. Freight is the responsibility of the customer. The Company's liability under this limited warranty is limited to such replacement or repair and it shall not be held liable in any form of action for direct or consequential damages to property or person. THE FOREGOING LIMITED WARRANTY IS EXPRESSLY MADE IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY AND INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

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