

# INSTALLATION—OPERATING & MAINTENANCE INSTRUCTIONS

SPRING-O-MATIC SERIES [REDACTED] G, H, M

## BASIC SAFETY

### 1. ELECTRICAL WARNINGS

- (a) This equipment should be properly grounded in accordance with the National Electric Code and local codes and ordinances.
- (b) Always disconnect or remove the power from the cable reel before attempting to perform any service function.
- (c) Do not use this cable reel with electrical loads greater than the rated current and voltage of the collector ring. The current and voltage shall not be greater than that rated for the flexible cord with which this reel is equipped. Rated ampacity of the flexible cord should be in accordance with the National Electric Code.

### 2. OPERATIONAL AND MAINTENANCE WARNINGS

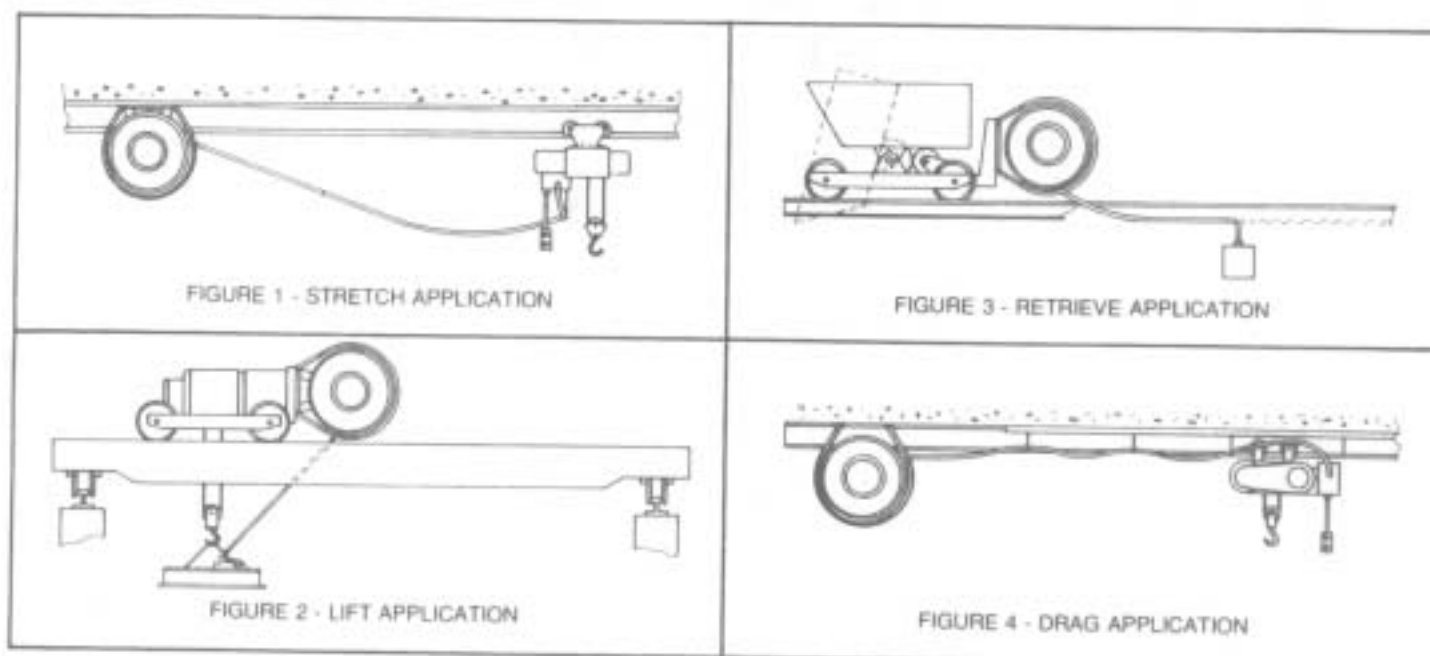
- (a) This cable reel is equipped with power springs under tension. Do not disassemble spring motor before consulting Maintenance Section. (Paragraph 3)
- (b) This cable reel has a rotating spool powered by springs under tension. Care should be exercised when handling the cable reel while servicing, adjusting or during normal operation.
- (c) Do not use flexible cord or cable different than that which is supplied with this reel. Changes in diameter, weight per foot and length of cord can affect the operation of the reel.
- (d) All fasteners or hardware should be checked periodically to assure tightness. All mounting fasteners or hardware should be installed to maintain tightness under vibration and checked periodically to assure tightness especially if people are around or below the cable reel assembly after it is installed. We recommend that a safety chain or cable be attached to all reels mounted overhead to prevent the possibility of falling.
- (e) WARNING: Modification of this equipment may cause excessive wear and void Warranty. Contact Manufacturer regarding changes or modifications of equipment which could affect reliability or safety.

## A. INSTALLATION INSTRUCTIONS

### 1. TYPE OF APPLICATIONS

- (a) **General** — There are four basic types of cable reel applications which are described and illustrated below.
- (b) **Stretch Applications** — A stretch application is one where the cable is suspended horizontally in air without any intermediate support. (See Figure 1) Generally these stretch reels require a line pull equal to two times the weight of the cable, which will allow approximately 6 to 7% sag. On long stretches or applications where sag cannot be tolerated, it is sometimes desirable to put supports at intervals of 5-10 feet. If stretch reels are used with devices which can not hold against the line pull of the reel, the reel should be equipped with a ratchet lock which is released manually.
- (c) **Lift Applications** — A lift application is one where the cable is lifted vertically. (See Figure 2) The reel is normally designed to handle only the total weight of the cable. Some lift applications may require ratchet locks and ball stops.
- (d) **Retrieve Applications** — A retrieve application is one where the reel is mounted on the moving machine and merely winds up or plays out the cable as the machine approaches or moves away from the power source. (See Figure 3)
- (e) **Drag Applications** — A drag application is one where the reel is mounted on the stationary object and is required to drag the cable over the surface to the reel. (See Figure 4)





## 2. MOUNTING

(a) **Standard Mounting** — Reels are mounted correctly when the center line of the reel is in line with the center of the run. For mounting hole sizes and dimensions, see the sheets enclosed with the reel.

(b) **Pivot Base Mounting** — All SPRING-O-MATICS can be furnished with a pivot base mounting. This type mounting is used where the reel must turn and follow the hoist or crane as it moves through 330° arc of an open loop track. Reel should be mounted according to Instructions in Paragraph 2. (a).

## 3. CABLE GUIDES

(a) **General** — All SPRING-O-MATIC reels are furnished with a Type A Four-Roller Cable Guide and Guide Rails unless special conditions require separately mounted guides. On standard reel installations, it is important that cable is pulled in a direction tangent to the drum and that the cable is not pulled to one side of the reel. Cable should not be served around the small diameter roller.

(b) **Separately Mounted Guides** — These guides are generally recommended by the factory in applications where cables are served in two directions with the free end of the cable terminated at the center of total travel. Attachment of the free end of the cable must be in the same vertical plane as the cable guide to provide straight line takeup.

## 4. RATCHET

(a) **Operation** — The ratchet on the Spring-O-Matic is operated by gravity. It is designed to function whether the reel is mounted with base down, base up or wall mounted. Spring tension holds the reel against the ratchet. A sharp tug on the cable releases the ratchet dog, allowing the reel to retract the cable.

(b) **Ratchet Weight** — Each ratchet dog is supplied with a counter balance weight. When mounted base down or wall mounted, the counter balance must be left attached to the ratchet as it comes from the factory. When the reel is mounted base up, the ratchet counter balance must be removed.

## 5. INSTALLATION OF CABLE

(a) **Spring-O-Matic Powereels** — The extension cable on Spring-O-Matic Powereels enters the Collector Ring Enclosure through a rubber grommet in a water-tight connector. The cable must be inserted between the reel flanges and out through the opening in the outer flange so it will pass under the strain relief clamps before entering the water-tight connector. Enough of the outer jacket must be removed from the cable No. 5 to make wire connections No. 3 without exerting tension on or interfering in any way with the brush spring. Tighten the water-tight connector and replace the collector ring cover. All Spring-O-Matic reels are equipped with a spring release catch which permits rotating the reel to wind on the cable. The catch will engage as the cable is drawn from the reel. (See Figure 5)

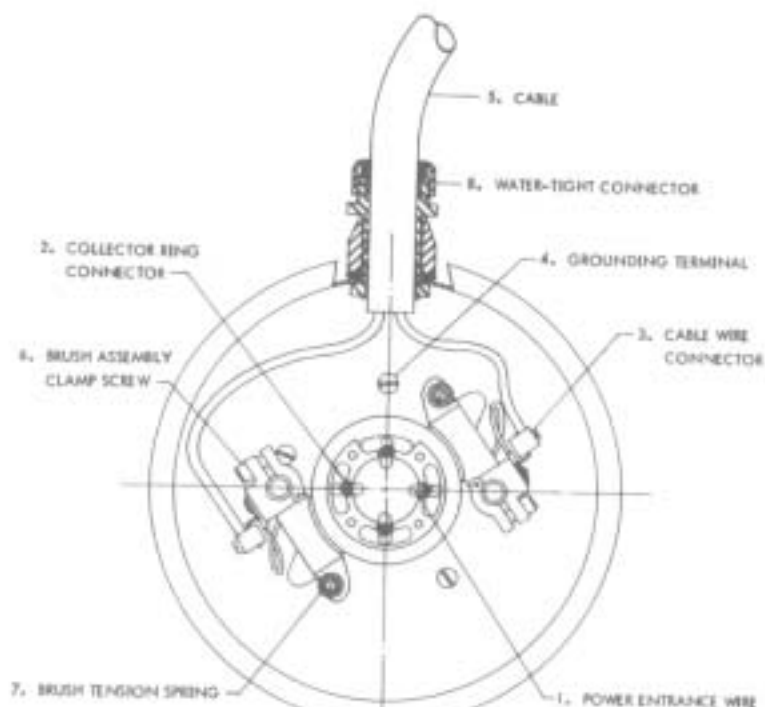


FIGURE 5

## 6. COLLECTOR RING

(a) **Explosion Proof Reels** — Explosion-Proof Spring-O-Matics collector rings are connected at the factory. Cable enters the reel through a water-tight connector into a junction box where the wires are stripped and splice connections are made. All connections are tapped and the screw cover is replaced. The strain relief clamp is then tightened down and reel is ready for operation.

(b) **Standard Reels** — Collector Rings on Spring-O-Matic Reels are connected as shown (Figure 5). Enough wire length to avoid exerting tension or interfering in any way with the brush springs must be allowed. Brushes should be checked to see that they are free floating in the brush boxes. Brush tension springs should operate freely also. These items are adjusted and aligned at the factory and should need only to be checked at the time of installation.

## 7. POWER CONNECTIONS

(a) **Explosion Proof Reels** — Explosion-Proof Spring-O-Matics are provided with junction box on the reel stand. All reel connecting leads are brought out into the junction box from the collector rings where splices to the power wires are made and insulated. The junction box cover is replaced on the reel which is ready for service.

(b) **Standard Reels** — All Spring-O-Matic reels have hollow shafts. Connection of the reel to the line may be through rigid, flexible conduit or flexible cable with fittings threaded into the reel shaft at the back end of the reel. The shafts are threaded with various sized pipe threads to accept standard fittings. Power wires are pushed through the hollow shaft and connected to the collector ring bus leads. (Figure 5, No. 1)

## B. ADJUSTMENTS

### 1. COLLECTOR RING

(a) **Adjustments** — All adjustments and alignment of collector ring brushes are made at the factory before shipment is made. The reel can be jostled in shipping. Before installation, the reel brushes should be checked to see that they are free flowing in the brush holders, that the spring operates properly and that the brush does not ride against the insulator rings of the collector ring. Check the brush surface for full contact seating on the collector ring surface.

### 2. REEL SPRING TENSION

(a) **Set Up Turns** — After the cable is installed on the reel it is operated to see that it performs the job. If the torque is too light, the cable may be grasped with the hand and a clockwise turn of the reel made. On reels equipped with guide rails, hold the reel still and wrap on one additional turn of cable. This sets up the reel one turn. Additional turns are set up in a like manner — test each time to see if reel operates properly.

**CAUTION:** Never set up turns enough that the spring is worked to its end. The end of the wind can definitely be felt, but should be approached with a good deal of caution. If the reel does not perform after all adjustment length is used, consult the factory.

## C. STORAGE

When not in use, the cable reel should be kept in a clean, dry place, protected and preferably at room temperature. Collector Ring Enclosures should be opened periodically to check for condensation. It is recommended that a self-contained or bagged absorbent material be placed in the Collector Ring Enclosure during extended periods of storage. Remove absorbent material before putting reel into operation.

## D. MAINTENANCE

### 1. LUBRICATION

(a) **Reel Springs** — All springs and bearings are lubricated for life at the factory. No additional lubrication is required, except when installing new parts.

(b) **Cable Guides** — Rollers on cable guides should be checked periodically to keep them free running.

### 2. INSPECTION

(a) **Collector Ring** — A periodic inspection — depending on the duty cycle — should be made to check the brushes on the collector ring. See Paragraph 6. (a) (3). Dirt, oxidation or other contaminants should be removed from the collector ring and brush surfaces.

### 3. REMOVING REEL SPRINGS

**CAUTION:** BE SURE ALL SPRING TENSION HAS BEEN RELEASED BEFORE STARTING DISASSEMBLY PROCEDURES.

(a) **Removal of Springs — Series D, E, F — Standard (Figure 6.)**

- (1) Remove Band No. 1, Gasket No. 2 and Cover No. 3.
- (2) Disconnect all wires leading through center Shaft No. 4 and to Brush Holders No. 5.
- (3) Remove Brush Holders with Brushes No. 5 from Studs No. 6.
- (4) Remove two Brush Studs No. 6.
- (5) Remove two Set Screws No. 7 on Collector Ring Collar No. 8 with  $\frac{3}{32}$  Allen Head wrench and remove Collector Ring Core No. 9 from shaft.
- (6) Remove Spacer No. 10 now exposed on Shaft.
- (7) Remove five Screws No. 11 from Entrance Ring No. 12 and remove Ring.
- (8) Remove Gasket No. 13 located between Entrance Ring No. 12 and End Bell No. 14.
- (9) Remove six  $\frac{1}{4}$  x  $\frac{1}{4}$  Flat Head Screws No. 15 from End Bell No. 14.
- (10) Remove six  $\frac{1}{4}$ " Assembly Studs No. 16 from outer edge of End Bell No. 14 and remove End Bell from Shaft No. 4.
- (11) Remove Spacer No. 17 from Shaft.
- (12) Remove three #8-32 x  $\frac{1}{4}$  Spring Release Screws No. 18 and remove Spring Retainer No. 19.

(13) Remove Spring Ring Housing No. 20 and Spring No. 21 TOGETHER.

CAUTION: SPRING MUST RELEASE FROM NEXT SPRING HOUSING DURING REMOVAL.

(14) Remaining Spring Housings No. 22 with Bearing No. 23 and Spring No. 24 must be removed with the same caution. NOTE: There are Spacers No. 17 between each of the Housings — these may vary in width and must be replaced in the same location as originally installed.

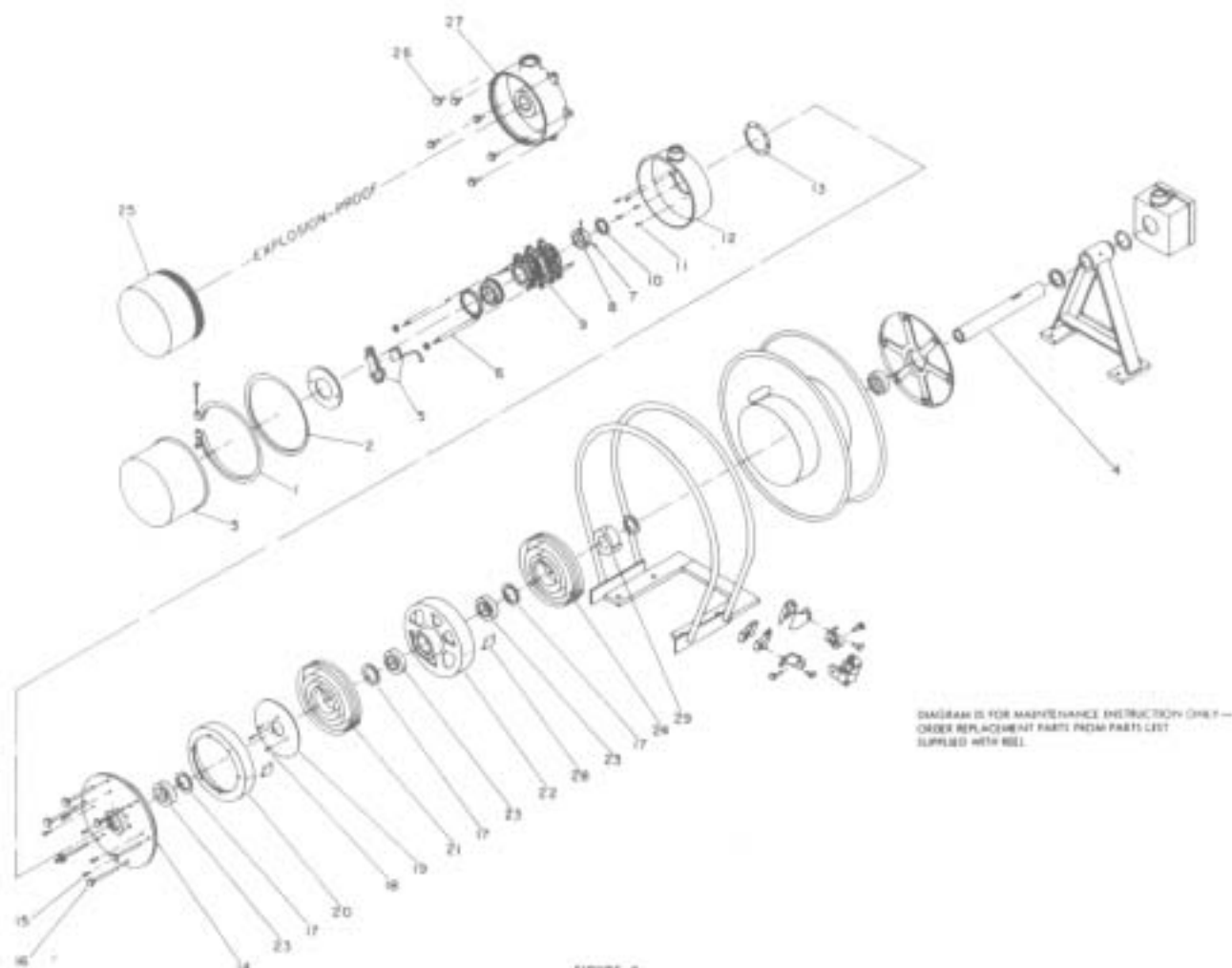


FIGURE 6

(b) **Removal of Springs — Series D, E, F — Explosion Proof (Figure 6)**

- (1) Remove Cover No. 25.
- (2) Disconnect all wires.
- (3) Remove Brush Holders, Studs, Set Screws and Collector Ring Core according to Paragraph 3. (b)—Steps 3 through 5.
- (4) Remove six bolts No. 26 and Entrance Ring No. 27.
- (5) Follow instructions in Paragraph 3. (a)—Steps 11 through 14.

(c) **Removal of Springs — Series G, H, M — Standard (Figure 7)**

- (1) Remove Chain Cover No. 1 and Screws No. 2.
- (2) Remove Chain No. 3.

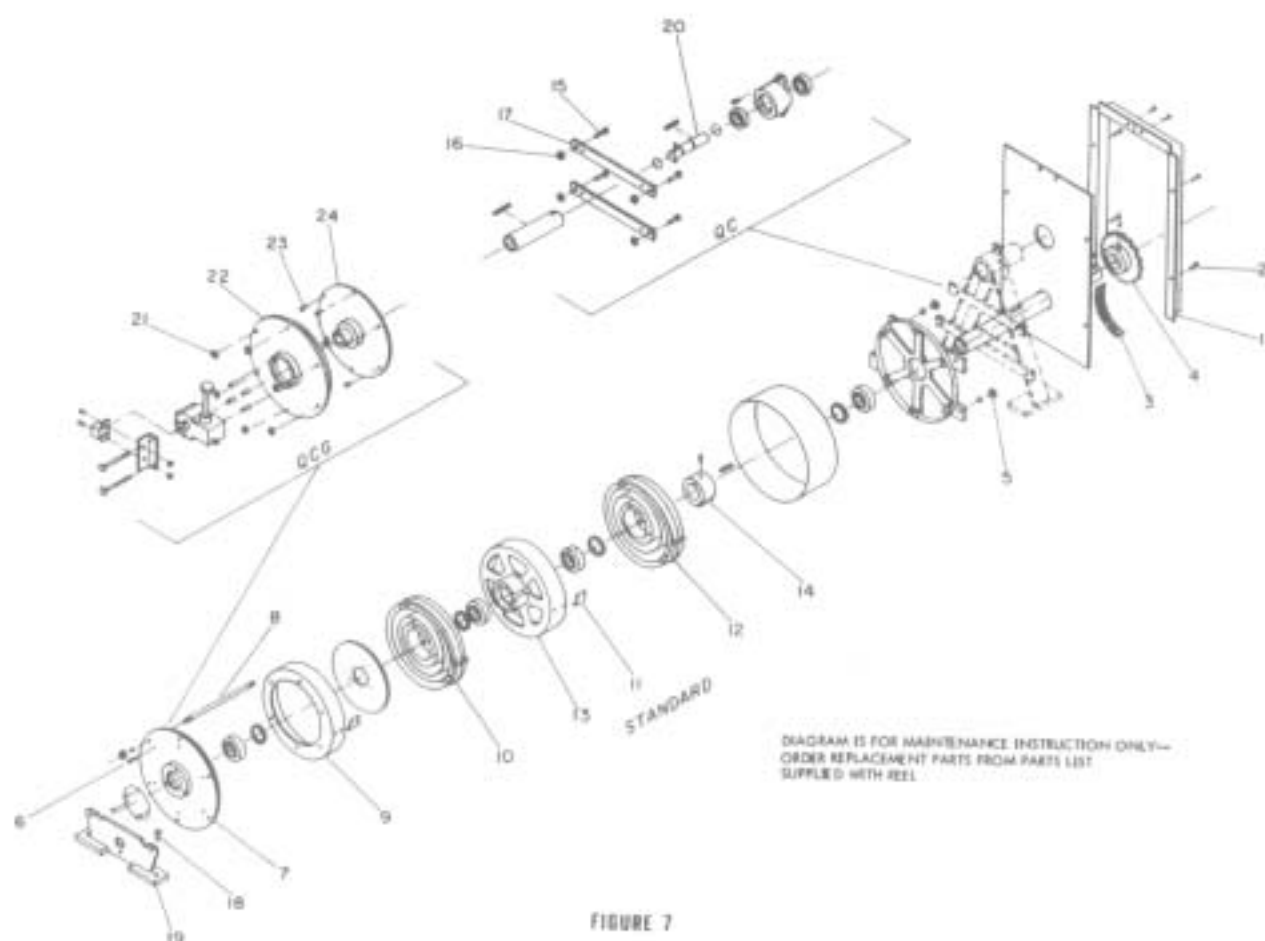


FIGURE 7

- (3) Loosen Set Screw in Sprocket No. 4.
- (4) Remove four Nuts No. 5 and pull Spring Motor from reel.
- (5) Remove six Screws No. 6 from End Bell No. 7.
- (6) Remove six Assembly Studs No. 8 and remove End Bell No. 7.  
CAUTION: Be sure Spring Housing Ring No. 9 does not come out of the motor when End Bell is removed.
- (7) Remove Spring Housing No. 9 intact with Spring No. 10.  
CAUTION: Always handle the Springs in Housing. See Paragraph 4. (a) (1) for further precaution.
- (8) Remove Spring Housing No. 13 intact with Spring No. 12 from Release Collar No. 14.

(d) **Removal of Springs — Series G, H, M — with QC or QCG (Figure 7)**

- (1) Remove four Bolts No. 15 and Nuts No. 16 from Mounting Bars No. 17.
- (2) Remove two Bolts No. 18 from Bracket No. 19 and pull Spring Motor from Stub Shaft No. 20.
- (3) Remove six Nuts No. 21 and End Bell No. 22.
- (4) Remove six Flat Head Screws No. 23 and Plate No. 24.
- (5) Follow instructions in Paragraph 3. (c)—Steps 5 through 8.

#### 4. INSTALLATION OF SPRINGS

NOTE: Replacement Springs are shipped with a narrow Safety Band to keep the Spring from uncoiling. This band may be left in place during and after installation. The Springs are also provided with two wires wrapped around the outer coils. These wires should remain in place during installation but must be removed after Spring is in the Housing.

(a) **Installation of Springs — Series D, E, F (Figure 6)**

- (1) CAUTION: Slip a wire in and secure it around the coils (from the center to the outside) so that it does not slip out of its coiled position.

- (2) Carefully pry Spring up from two sides until it is free of Housing.
- (3) Install new Spring in Housing, making sure that it engages Spring Catch No. 28 and Spring Hub No. 29.
- (4) Thoroughly coat Spring with Dow Corning Molykote BR2S or equal.
- (5) Reassemble remaining Springs and Reel in reverse order of Paragraph 3. (a).

(b) **Installation of Spring — Series G, H, M (Figure 7)**

- (1) Follow instructions in Paragraph 4. (a)—Steps 1 through 4.
- (2) Reassemble Spring Motor and Reel by reversing steps in Paragraph 3. (c).

## 5. INSTALLATION OF REPLACEMENT CABLE

(a) **Installation of Cable — Series D, E & F (Figure 5)**

- (1) Remove Collector Ring Cover.
- (2) The cable enters the Collector Ring Enclosure through the watertight Connector No. 8 located on the Entrance Ring. Insert cable between reel flanges and out through opening so it will pass under the cable clamp before entering the watertight Connector.
- (3) Remove enough of outer jacket on cable to make connections without exerting tension on or interfering in any way with the Brush Springs.
- (4) These reels are equipped with a Spring Release Catch which permits rotating the reel to wind the cable. The Catch will engage as cable is drawn from the reel.

## 6. INSTALLATION OF REPLACEMENT COLLECTOR RING OR BRUSHES

(a) **Replacement of Collector Ring Core — Series D, E & F Standard**

- (1) Follow Steps 1 through 3, Paragraph 3. (a) if Brushes only are to be replaced. Install new brushes and check according to Paragraph 3 below.
- (2) Follow Steps 4 & 5, Paragraph 3. (a) if Collector Ring Core is also to be replaced. Install new Core and reassemble in reverse order.
- (3) Be sure reel brushes are free flowing on the Holders, that Brush Spring operates properly and that the Brush does not ride against the insulators of the Collector Ring. Check the Brush surface for full contact seating on the Collector Ring surface.

(b) **Replacement of Collector Ring Core — Series D, E & F — Explosion Proof**

- (1) Follow Steps 1 through 2, Paragraph 3. (b) if Brushes only are to be replaced. Install new Brushes and check per Paragraph 6. (a) (3).
- (2) If core is to be removed, follow Steps 3 through 5, Paragraph 3. (a). Install new Core and reassemble in reverse order.

- (c) Refer to Industrial Electric Reels, Inc. Form 1-A Rev. 6-79 for complete instructions on Collector Ring Maintenance.

## E. RECORD

It is imperative that the following information is available when ordering replacements parts or discussing the reel with the factory. Please record the information now in the spaces provided below.

CATALOG NO. OF REEL \_\_\_\_\_ SERIAL NUMBER M- \_\_\_\_\_