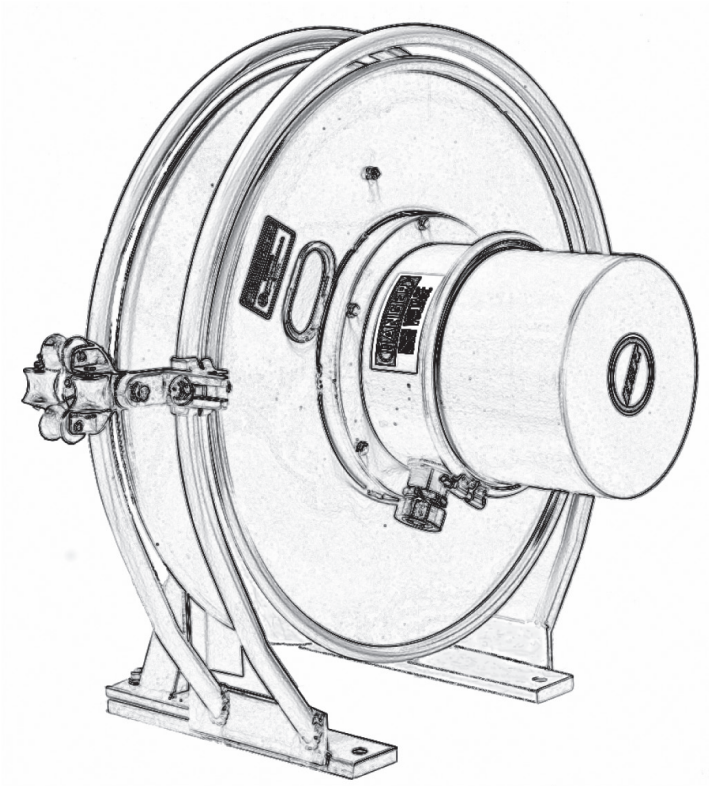
Spring Cable Reel Manual
Series D, E & F



CONDUCTIX wampfler

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- **Troubleshooting** to get you up and running.
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Call 1.800.521.4888 for further details.

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SECTION 1 - SAFETY

Safety Information Responsibility

All owner, operator, and maintenance personnel must read and understand all manuals associated with this product before installation, operation, or maintenance.

The manual provides information on the recommended installation, operation, and maintenance of this product. Failure to read and follow the information provided could cause harm to yourself or others and/or cause product damage. No one should install, operate, or attempt maintenance of this product prior to familiarizing themselves with the information in this manual.

Safety Messages

The following safety messages are used in this manual to alert you to specific and important safety related information.

CAUTION

- CAUTION indicates unsafe actions or situations that have the potential to cause injury, and/or minor equipment or property damage.

DANGER

- DANGER indicates hazards that have the potential to cause severe personal injury or death.

WARNING

- WARNING indicates unsafe actions or situations that have the potential to cause severe injury, death, and/or major equipment or property damage.

NOTE

- NOTE is used to alert you to installation, operation, programming, or maintenance information that is important, but not hazard related.

SECTION 1 - SAFETY

Electrical Warnings

This equipment should be properly grounded before use, in accordance with both the National Electric Code and local codes and ordinances.

The electrical power should be disconnected from the cable reel before any service functions are performed.

This cable reel must not be used for loads greater than the voltage and current rating of the cable. The ampacity rating of the cable reel shall be in accordance with the National Electric Code.

Operational Warnings

Exercise care when handling the cable reel during normal operation. This cable reel has a rotating spool powered by springs under tension.

Do not use cable different from that for which the reel is intended. Changes in diameter, weight per foot, length of cable or flexibility will affect the operation of the reel.

Mounting hardware and fasteners should be installed to maintain tightness under vibration and checked periodically to assure tightness.

Overhead installation mountings should be such that the reel is not supported by bolts in tension. A safety chain or cable is strongly recommended to minimize damage and/or possible injury in the event of mounting failure.

Maintenance Warnings

⚠ WARNING

- Modification of this equipment may cause excessive wear or malfunction]and will void the warranty. Contact the manufacturer regarding changes or modifications of equipment which could affect reliability or safety.

DO NOT DISASSEMBLE THE SPRING MOTOR FOR ANY REASON. Serious personal injury could result. This cable reel is equipped with springs under tension. Contact the factory for assistance.

US: 1-800-521-4888

Canada: 1-800-667-2487

Specifications & Listings

The following specifications apply to all D, E, & F Series Cable Reels:

D, E, & F Series Reels are intended for heavy commercial / industrial use and are provided with a permanent mounting base.

D, E, & F Series Reels are built to NEMA 4 specifications and are suitable for indoor/outdoor use.

Spring Motors for the D, E, & F Series are sealed for safety and weather-tight for long-life.

Standard ampere capacity of the D, E, & F Series Reels range from 10 to 150 amperes at 600 volts. Standard reels are available in 3 to 36 conductor configuration.

Electrical Ratings

Reels Not Equipped with Cable

Reels not equipped with flexible cable are rated in Amperes and volts. Consult Table for appropriate cable/conductor combinations.

The rating of the cable should not be greater than the ampacity of the slip ring circuit (see Slip Ring Replacement Chart). The voltage rating should not be higher than 600 volts. Consult Table for appropriate cable/conductor combinations.

Reels Equipped with Cable

Reels equipped with flexible cable should not be used at voltages and/or amperages above the rating of the reel or the cable.

SECTION 1 - SAFETY

Labels & Markings

The cable reel is marked with a label on the outer spool flange by the cable entrance which includes the Conductix-Wampfler name and logo, the product catalog number and the individual product serial number.

Reels Equipped with Cable

The marking on reels equipped with a flexible cable includes the current and voltage ratings based on factory installed cable.

Reels Not Equipped with Cable

The rating of the reel not equipped with cable is based on the maximum amperage and voltage rating of the slip ring shown on the Conductix-Wampfler Identification label. Actual rating is determined by the installed cable, wire size and number of conductors, and is not to exceed the indicated maximum rating of the slip ring.

The cable reel is designed to handle cable with a temperature rating of up to 105°C, which is marked on the cable.

Type W (90°C)	
Cable	**Ampacity**
W 8/2	50
W 8/3	50
W 8/4	45
W 6/2	65
W 6/3	65
W 6/4	55
W 4/2	90
W 4/3	85
W 4/4	75
W 2/2	120
W 2/3	115
W 2/4	100
W 1/2	140

Type G (90°C)	
Cable	**Ampacity**
G 8/3	50
G 6/3	65
G 4/3	85
G 2/3	115

Type SOW-A, SOOW-A (90°C)			
Cable	**Ampacity**	**Cable**	**Ampacity**
16/2	10	12/2	20
16/3	10	12/3	20
16/4	8	12/4	16
16/5	8	12/5	16
16/6	8	12/6	16
16/7	7	12/7	14
16/8	7	12/8	14
16/10	7	12/10	14
16/12	7	12/12	14
16/14	7	12/14	14
16/16	7	12/16	14
16/20	7	12/20	14
16/24	6	12/24	14
16/30	6	12/30	12
16/36	6	12/36	12
14/2	15	10/2	25
14/3	15	10/3	25
14/4	12	10/4	20
14/5	12	10/5	20
14/6	12	10/6	20
14/7	10.5	10/7	17.5
14/8	10.5	10/8	17.5
14/10	10.5	10/10	17.5
14/12	10.5	10/12	17.5
14/14	10.5	10/14	17.5
14/16	10.5	10/16	17.5
14/20	10.5	10/20	17.5
14/24	10.5	10/24	17.5
14/30	9	-	-
14/36	9	-	-

Color Code Chart			
Cond. No.		Base Color	Tracer Color
Pre-1998	Post-1998		
4	1	Green	-
1	2	Black	-
2	3	White	-
3	4	Red	-
5		Orange	-
6		Blue	-
7		White	Black
8		Red	Black
9		Green	Black
10		Orange	Black
11		Blue	Black
12		Black	White
13		Red	White
14		Green	White
15		Blue	White
16		Black	Red
17		White	Red
18		Orange	Red
19		Blue	Red
20		Red	Green
21		Orange	Green
22		Black	-
23		White	-
24		Red	-
25		Green	-
26		Orange	-
27		Blue	-
28		White	Black
29		Red	Black
30		Green	Black
36		Orange	Black

Table 8-1 Allowable Ampacities for Flexible Cord and Cable

Application Types

Stretch Applications

The cable is suspended without any intermediate support. Stretch reels generally require a line pull equal to two times the weight of the cable, which allows approximately 10% sag at full extension. On long applications where sag cannot be tolerated, it is sometimes desirable to put supports at intervals of 5 to 10 feet. See **Figure 9-1.**

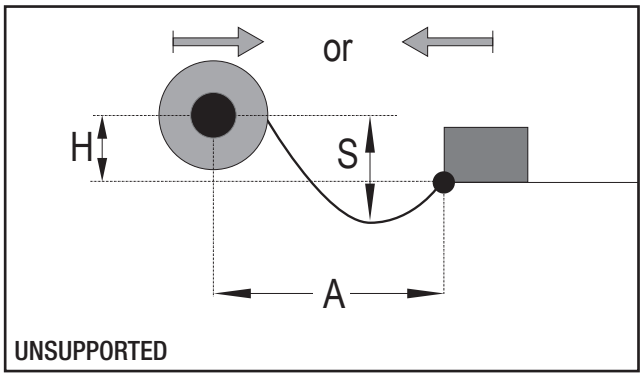


Figure 9-1 Stretch Application

Lift Applications

The cable is lifted vertically in lift applications. The reel is normally designed to handle only the total weight of the cable. Some lift applications may require ball stops to control the length of cable to be retracted. See **Figure 9-2.**

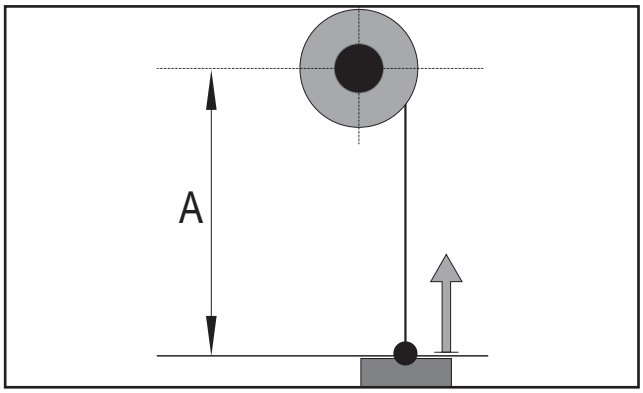


Figure 9-2 Lift Application

Drag Applications

The reel is mounted on a stationary object and is required to drag the cable over the surface to the reel. The cable is supported by the ground or some type of cable tray. A ball stop may be required. See **Figure 9-3.**

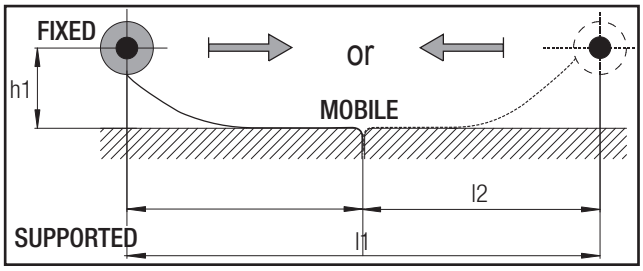


Figure 9-3 Drag Application

Retrieve Applications

The reel is Mounted on the moving object and winds up or pays out the cable as the machine approaches or moves away from the fixed end. Retrieve applications can be elevated up to 4 feet from the cable support surface. See **Figure 9-4.**

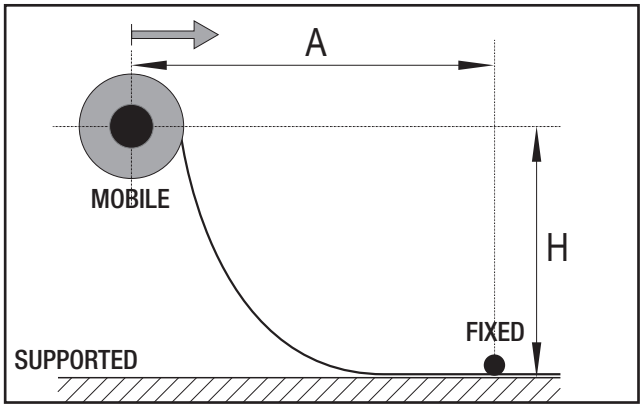


Figure 9-4 Retrieve Application

SECTION 2 - INSTALLATION

Mounting

Standard Mounting

- Mount the base of the reel to any flat surface which is structurally sound enough to support the reel and the forces of winding and unwinding the cable.
- Series D, E, & F Reels are mounted using four (4) 1/2" Bolts.
- See **Figure 10-1 and Table 10-1** to determine spacing for mounting holes.
- Contact the factory for space requirements for specific reel applications.

Table 2.2.1.3 Mounting Hole Dimensions		
Flange Diameter	Dimension A	Dimension B
19 Inch	4.00	9.50
24, 32, 36, 42 Inch	6.00	11.50

Table 10-1

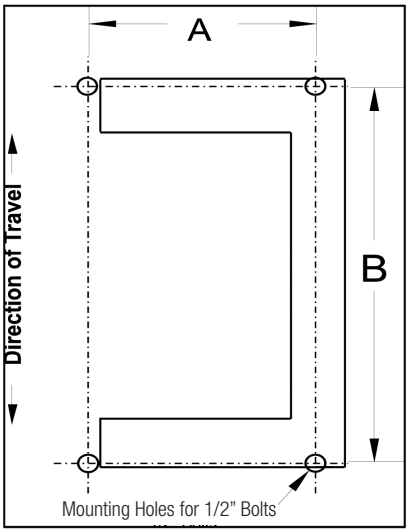


Figure 10-1

All D,E, & F Series Reels are supplied with a Type A Four-Roller Cable Guide and Guide Rails unless special conditions require separately mounted guides.

- Separately mounted guides are generally recommended by the factory in applications where cables are served in two directions. The free end of the cable must be in the same vertical plane as the cable guide to provide straight line take-up.
- The reel is mounted correctly when the center line of the spool is in line with the center of the cable run.
- Spools must be mounted perpendicular to the application. The cable should extend perpendicular to the rotation of the spool. The cable deflection should not exceed 15° to either side of the center line of the spool. See **Figure 10-2.**
- If deflection is constant to either side of the reel and operation is impaired, adjust mounting of the reel.
- If the total angle of deflection exceeds 30°, a Pivot Base should be used, otherwise excessive cable wear and unreliable operation will result.
- A safety chain is recommended for all overhead installations.

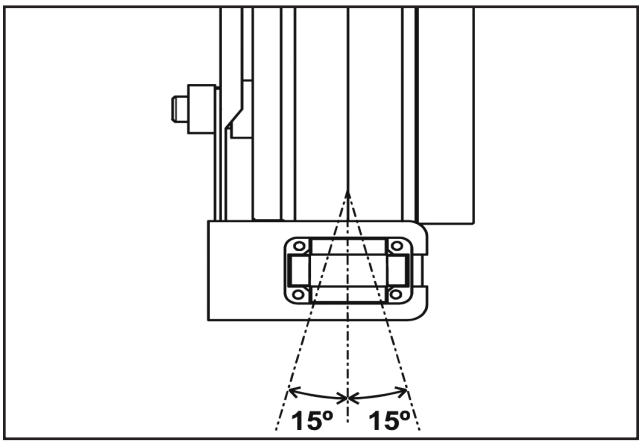


Figure 10-2

P2 Pivot Base Mounting

All D,E, & F Series Reels can be furnished with a pivot base mounting.

- This mounting will allow the reel to turn and follow an operation in an arc of up to 330°.
- The P2 Pivot Base requires four (4) 1/2" mounting bolts (reel to pivot base mounting hardware included).
- See **Figure 10-3** for hole spacing requirements for the P2 Pivot Base.
- The P2 Pivot Base MUST be floor or ceiling mounted. It cannot be wall mounted.
- A pivot base will not allow the cable to twist during cycling when properly installed.
- The cable guide MUST be positioned to pay out cable perpendicular to the swivel axis.

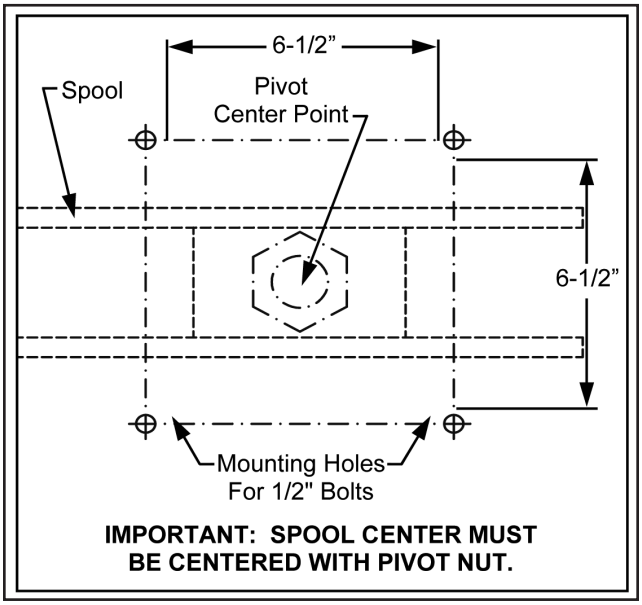


Figure 10-3 Pivot Base Mounting Hole Spacing

SECTION 2 - INSTALLATION

Ratchet

Ratchet Configuration

There are two variations of the optional ratchet: the original Gravity Ratchet (discontinued--consult factory for servicing) and the current Spring Ratchet design.

Use of a ratchet is typically restricted to manually operated lift and drag applications.

Automated applications typically require constant tension on the cable and use of a ratchet is not recommended.

Gravity Ratchet Operation

The gravity ratchet is designed to function whether the reel is mounted with the base down, base up, or wall mounted. The weight of the ratchet pawl holds the pawl against the ratchet detents.

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.

Spring Ratchet

Spring tension holds the reel against the ratchet. A short pull on the cable releases the ratchet pawl, allowing the reel to retract the cable.

SECTION 2 - INSTALLATION

Cable Installation & Replacement

Cable Removal

If an existing cable is being replaced you must first remove the old cable.

1. Disconnect all power as per Lock-Out/Tag-Out procedures as outlined in OSHA section 1910.147.
2. Remove the Slip Ring Cover.
3. Mark existing cable connections .
4. Disconnect wires at the Slip Ring Brush Terminals.
5. Loosen the cable clamp and release the cable.
6. Loosen strain relief/watertight in the recessed Inlet Box on the spool.
7. Pull out and discard the old cable.

Cable Installation

1. Prepare the cable to be loaded onto the reel. Support the cable as shown, or lay the full length of cable out in the direction of travel. Make sure the cable will lay flat by removing any twist from the cable. See **Figure 12-1.**
2. Insert the end of the cable to be connected to the slip ring through the guide arm and through the kidney slot on the spool flange. Pull enough cable through the watertight flange and cable clamp to allow unstrained connections to the slip ring.
3. Unscrew the two parts of the strain relief/watertight and slide both sections and the neoprene grommet over the end of the cable as shown. Be sure to keep the fastening end last. See **Figure 12-2.**

Cable Connections

1. Connect the cable to the Slip Ring terminals. Verify that the cable leads do not interfere with the free running of the slip ring brushes. For additional information on wiring see Slip Ring Installation & Replacement Section.
2. Secure the watertight connector. Jacketed cable should intrude 2-3 inches into the Ring Enclosure.

Cable Loading

1. Wind the cable onto the spool by rotating the spool counterclockwise (except for left-hand option), as viewed from the slip ring cover.
2. Follow Spring Tension Adjustment to adjust the spring tension as required by the application.
3. Verify all connections before initiating or restoring electrical power to the cable reel.
4. Visually inspect both reel and cable after initial electrification.

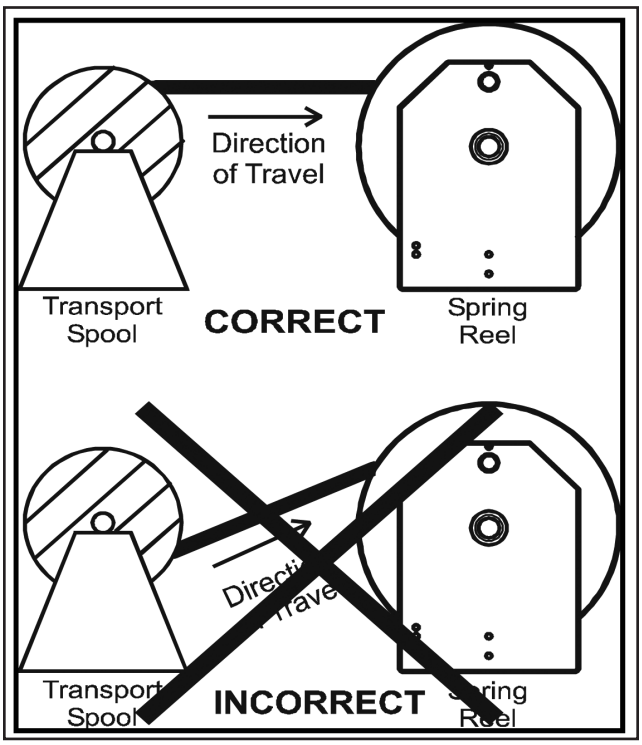


Figure 12-1

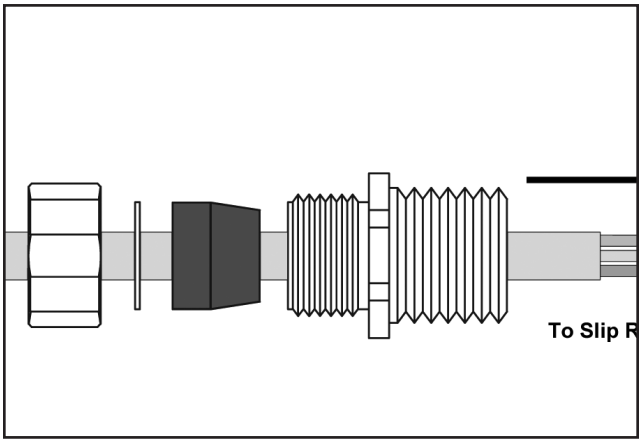


Figure 12-2

Spring Tension Adjustment

Spring Tension Warnings

The number of required setup turns (spring pre-loading spool revolutions) and the maximum number of available spool turns vary by application, reel, and spring configuration. Exceeding the maximum number of setup turns will reduce the number of available spool turns which may adversely affect the ability of the reel to perform the job. Contact the factory if you encounter difficulty with this procedure.

CAUTION

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

This adjustment may require mechanical assistance in more demanding applications and installations.

WARNING

- Do not allow cable to retract without restraining the retraction speed. Walk the cable back to the reel during the spring tension adjusting process.

Spring Cycling

The spring should be cycled after mounting but before terminating the free end to assure that the cable will retract properly and operate under the correct tension.

This is accomplished by pulling the cable out the required distance and walking the cable back to the reel. Mechanical assistance may be required. This procedure should be performed five to ten (5-10) times. See **Figure 13-1**.

Spring Pre-Tensioning

The proper pre-tensioning required for effective operation varies by cable diameter and cable weight. Trial and error is the most effective means of setting the proper spring pre-tension. Pre-tensioning is achieved by pre-loading the spring with setup turns.

1. Relieve the spring of all tension before putting on setup turns. Grasp the end of the cable and the spool and rotate both spool and cable together in the payout direction until the spring engages. See **Figure 13-2**.
2. Begin with 2 setup turns. Warning: Add no more than 1 setup turn per spring without consulting the factory. See **Figure 13-3**.
3. Feed the end of the cable through the roller guide (if present) and test the Spring Tension. Pull the cable out the required distance and walk the cable back to the reel.

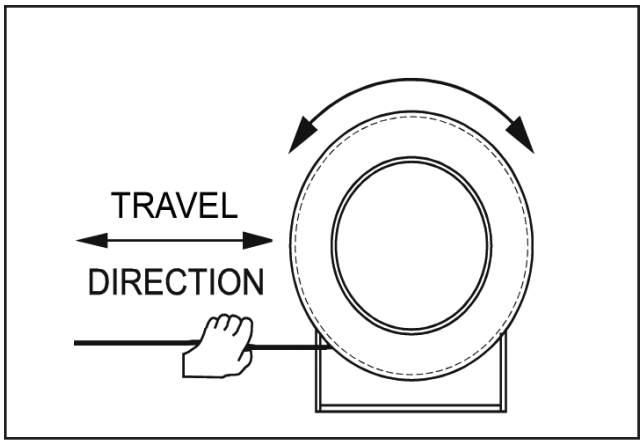


Figure 13-1

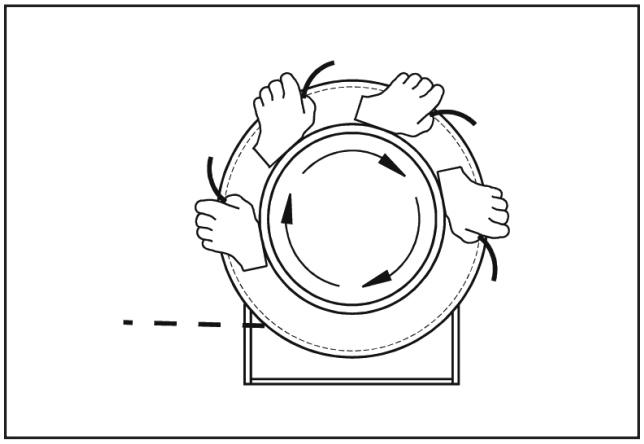


Figure 13-2

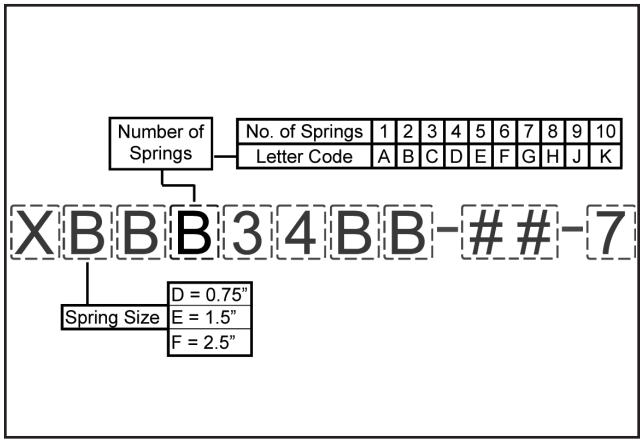


Figure 13-3

Adjusting Spring Tension

One additional setup turn may be added to provide increased tension if the pre-tension is less than the maximum available turns. One setup turn can be removed if the torque is too high. See **Figure 14-1.**

Do not add or remove setup turns on the reel after the cable has been terminated. The resulting twist may kink the cable and shorten cable life.

Secure the end of the cable using the appropriate clamping mechanism and terminals.

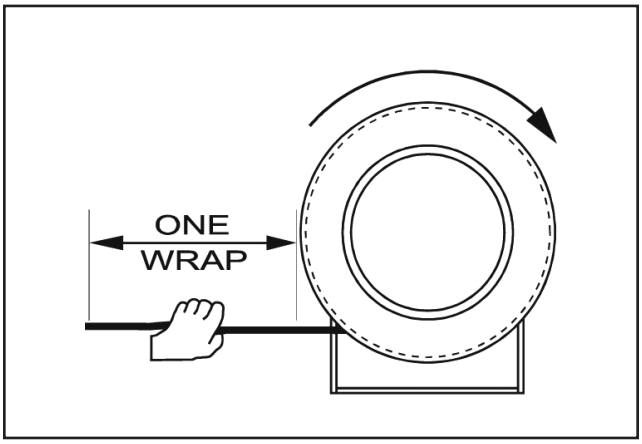


Figure 14-1

Slip Ring Replacement

1. Disconnect and secure the electrical power as per Lock-Out/ Tag-Out procedure outlined in OSHA 1910.147, Appendix A.
2. Remove the Slip Ring cover.
3. Disconnect the Spool Cable Connections from the Slip Ring Brush Terminals. Mark/Note the existing cable connections. See **Figure 14-2.**

CAUTION

- Keep Spool Cable Connections clear of Slip Ring Brushes.

4. Disconnect the Slip Ring Core Leads from the Junction Box terminals or, if there is no Junction Box, cut the wire as close as possible to the crimp connector allowing wire length for new connector.
5. Loosen the two 1/4-20 Set Screws in the drive collar using a 1/8" Hex (Allen) Wrench.
6. Remove the Slip Ring from the end of the spool shaft.
7. After removing the Slip Ring use sand paper to remove the set screw burrs from the spool shaft. If the burrs are not removed, the Slip Ring may not properly slide back on the shaft.
8. Install the new Slip Ring on the shaft.

NOTE

- Be sure the hole in the Slip Ring Outboard Bearing closest to Brush #2 fits over the Drive Stud. The Drive Stud must completely engage the hole.

9. Secure Set Screws to 7 ft-lbs.
10. Connect the new Slip Ring to both the Spool Cable and Feeder Cable Connections.

- See drawing on the following page.

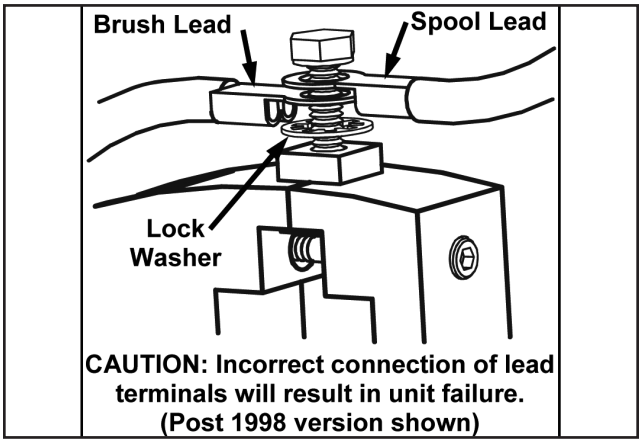


Figure 14-2

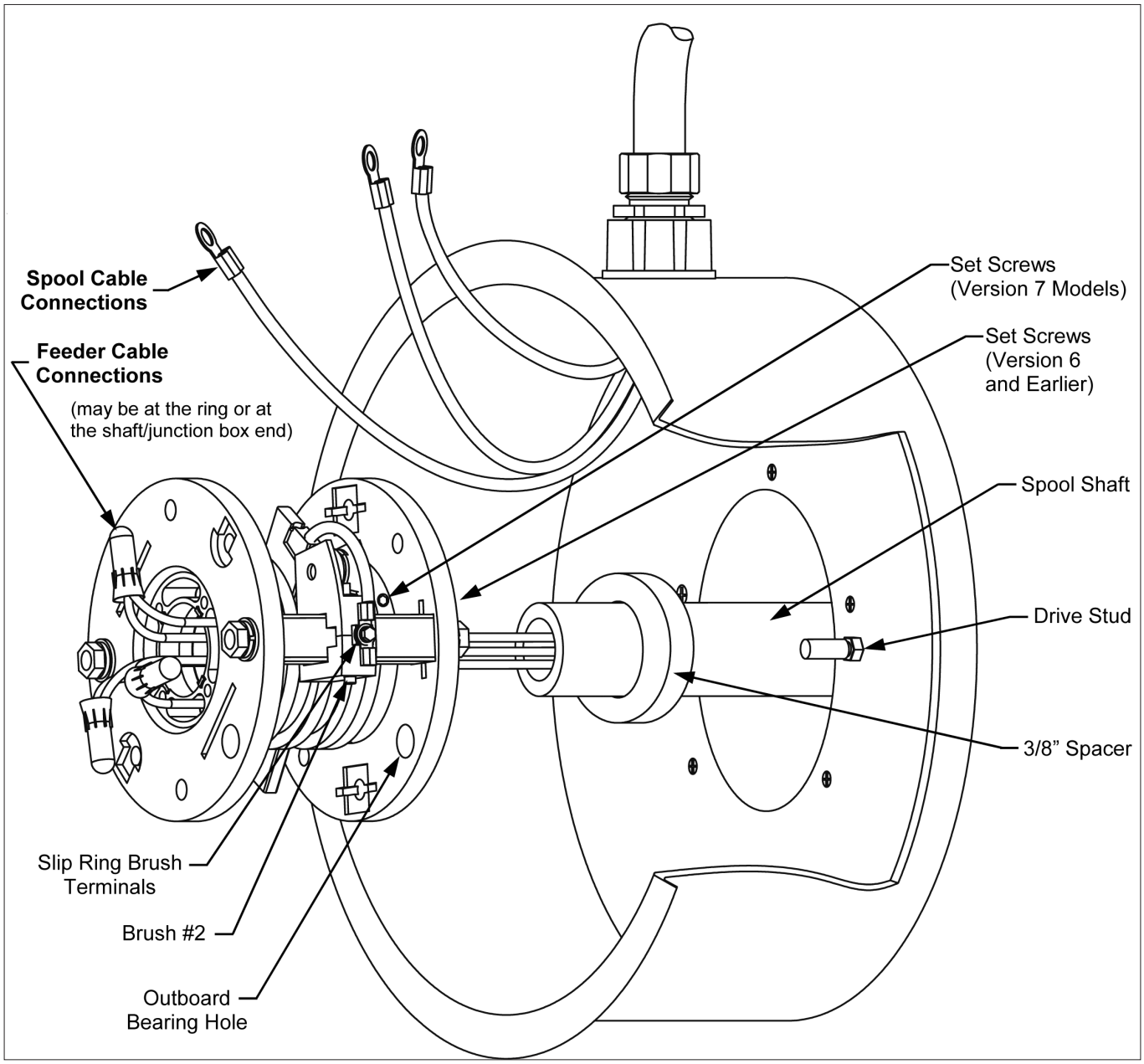

Spool Cable Connections
Feeder Cable Connections
(may be at the ring or at the shaft/junction box end)
Set Screws (Version 7 Models)
Set Screws (Version 6 and Earlier)
Spool Shaft
Drive Stud
3/8” Spacer
Slip Ring Brush Terminals
Brush #2
Outboard Bearing Hole

Figure 15-1

SECTION 2 - INSTALLATION

Electrical Connections

Electrical Warnings

- Electrical connections are determined by the requirements of the application and the configuration of the reel.
- All electrical work should be performed by a qualified electrician.
- Factory installed cable is wired with ring one (the ring closest to the drive collar) designated as ground, wired with the green cable conductor.
- A continuity check should be performed prior to energizing the reel to verify electrical connections.

Spool Cable Connections

See Slip Ring Replacement Section for information on connecting the cable from the spool to the slip ring.

Supply Cable Connections

Reels without Junction Boxes

- Supply cable connections are generally made at the Junction Box with terminals or bolted/crimped connectors.
- Connections made at the slip ring require adequate clearance.
- After making all connections, wire leads should be bent to clear both the brush post screw thread and the inside of the slip ring cover. See **Figure 16-1.**

Reels with Junction Boxes

- NEMA 12 rated junction boxes are standard for the D, E, & F Series Cable Reels. Overall dimensions vary depending on AWG wire size and number of conductors and rating classification.
- Junction Box Terminals are numbered from the top-down, left to right. Variations may exist in models prior to 1998.
- Terminal 1 is designated as Ground.
- Slip Ring conductors are wired to the inside of the terminals. See **Figure 16-2**.
- Torque terminal screws to 25-30 in-lbs.

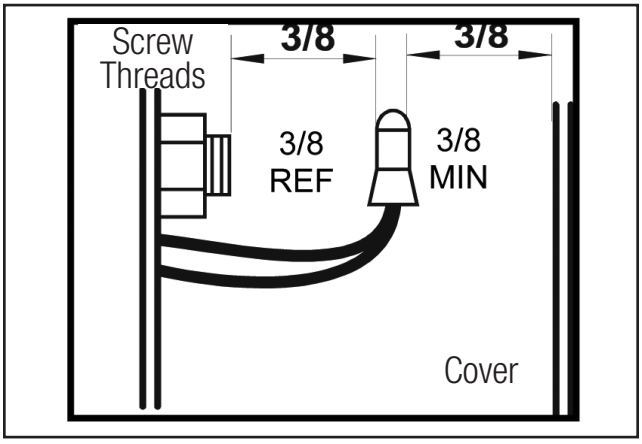


Figure 16-1

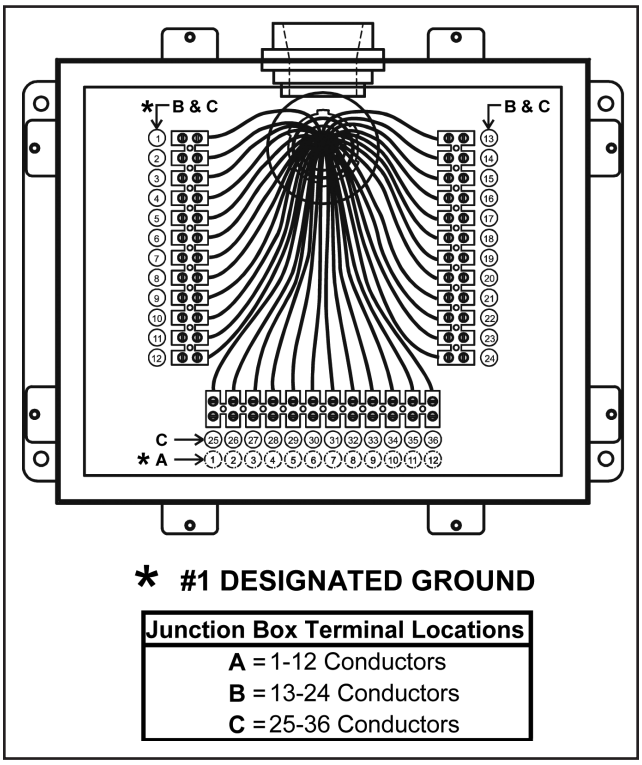


Figure 16-2

SECTION 3 - OPERATION

- Do not exceed the voltage or ampere rating of the reel. Overheating, fire, damage to equipment or personal injury could result. Do not allow cable to retract without restraining the retraction speed.
- Operate the reel within the cable size and length and spring tensioning limits for which it was intended.
- Two wraps of cable should remain on the reel at maximum extension to avoid excessive tension on the cable entrance watertight and slip ring terminations.
- The spring should not be wound to the last two turns at maximum payout. This prevents over-stressing the spring(s), thus reducing its life or damaging the reel and cable.
- Keep the reel and cable clean to avoid excessive wear and damage.
- Arrange for maintenance service if damage is found on the cable or reel.
- To maximize spring life, cable should be fully retracted when not in use.

SECTION 4 - MAINTENANCE

Maintenance Warnings

- Be sure the power is off for maintenance.
- Do not apply any lubricants or solvent cleaning agents to the slip ring, brush, or insulator surfaces.
- Follow lock-out/tag-out procedures as outlined in OSHA section 1910.147.

Lubrication

All springs and bearings are lubricated for life at the factory (moly graphite grease is used). Additional lubrication should not be required.

Inspections

Periodically check the reel for any loose or missing fasteners. Tighten or replace as necessary.

The slip ring assembly should be checked periodically as follows:

1. Clean to remove any accumulated dust or dirt from the slip ring housing area.

WARNING

- Chemicals will damage rings, Scotch Brite Pads are recommended.

2. Check all brush and ring surfaces in the slip ring assembly and remove any accumulated dust.
3. Brushes should be centered on the slip rings and brush springs should be seated in the slot on top of the brush. Terminal screw connections should be tight.
4. Replace Brushes when the brush spring is within 0.09” of the ring insulator. See **Figure 18-1.**
5. Inspect cable for damage or wear which would make it unsafe to use.

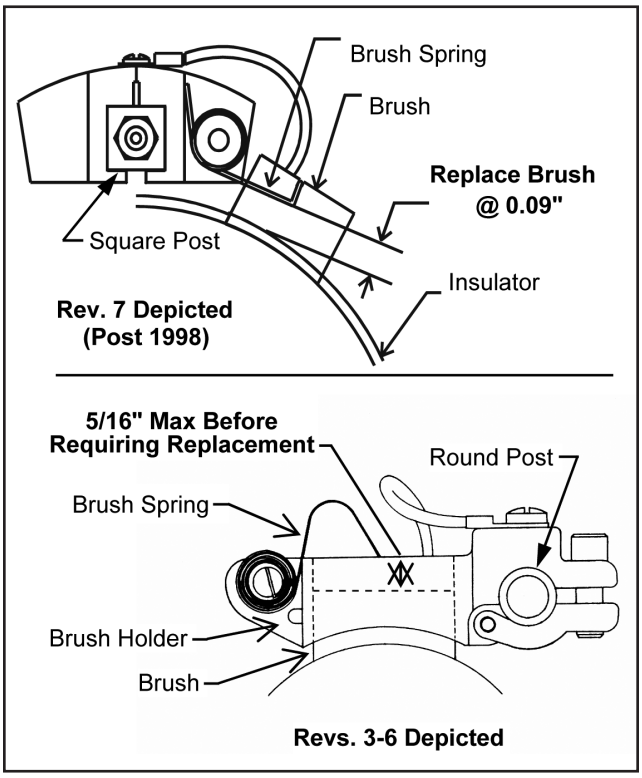


Figure 18-1

Spring Motor Replacement

(Standard Reels Only)

CAUTION

- Disconnect all power, wrap all cable on reel, and remove reel (cable disconnection or removal may be required or desired).

NOTE

- Spacer sizes may vary per unit and actual size and placement should be noted and followed during re-assembly.

Slip Ring Removal

See Slip Ring Removal Section.

Spool Assembly Removal

1. Lay reel on junction box & stabilize.
2. Remove cable entrance ring enclosure.
3. Remove six bolts and six screws holding end bell (spool center cap) onto spool under slip ring enclosure and remove end bell.
4. Remove (lift off) spool assembly.

CAUTION

- Cable weight may make removal of spool assembly difficult. A hoist may be required.

SECTION 4 - MAINTENANCE

Spring Removal

WARNING

- Springs are under tension and extreme caution is required to prevent uncoiling.

1. Remove three screws fastening spring retainer plate and remove plate. Remove spacer noting the size.
2. Wire tie springs in spring housings. Cautiously lift assembly off of shaft, taking care that spring does not uncoil.
3. Repeat procedure for remaining springs. Note spacer sizes and locations.

Rule of thumb: Space each spring assembly with an appropriate spacer between each housing, two 0.030" spacers for "E" reels, one 0.125" spacer for "F" reels, and one 0.030" spacer for "D" reels. Add two 0.30" spacers on each side of release collar and one 0.375" spacer on top with spring retainer plate. Note: The final spring goes in spring ring housing and each spring assembly must be greased with Moly graphite type or equal.

Springs are normally purchased without housing. **NEVER** remove outer steel banding. Old springs need secondary banding or coils welded to prevent uncoiling during removal from housing and when discarding. New springs come already wire tied together. Do not remove at this time. Once spring is in housing, remove ties and then wire tie spring to housing for spring assembly replacement.

Spring Replacement

1. Remove all foreign material before reassembly.
2. Reverse step to replace spring and housing assembly. Once spring is in place on shaft, remove wire tie.

NOTE

- The main drive spring (first spring) must engage and release in reverse rotation from stationer release collar attached to shaft. Confirm before stacking remaining springs and check for free rotation in one direction and engagement in opposite direction on following spring assemblies.

Spool Installation

1. Temporarily screw in a piece of all-thread rod (minimum 6" longer than spool drum) in one of the holes in the end bell to guide spool assembly during replacement.
2. Put the spool over the spring assemblies and onto the end bell on the bottom. Make sure the kidney hole in the spool flange is centered with the all-thread rod in the end bell. Make sure the spool is flat against the end bell machined step on the bottom. Take care not to push end bell off of pressed-in bearing. The total stack height of spring needs to be below spool drum surface to prevent rotational binding (check with a straight edge).
3. Add two more approximately 4" long all-thread rods to the spring housing ring for timing and guiding of screws when fastening the front end bell.
4. Put the front end bell in the correct position (timed) in relation to tap holes and spool kidney slot. See **Figure 20-1.**
5. Tighten down the end bell with the original hardware or exact replacement. Add gasket and mount the entrance ring onto the end bell in time with the kidney slot. See **Figure 20-1.**
6. During slip ring replacement, check for brush wear, centering of brushes on the rings, and that brush contact is flat on the ring surface. Replace or make adjustments when required. A blue plastic insulator is provided for shaft entrances to protect the lead wires.
7. Reverse steps for slip ring installation. For version 3 or 4 or models before 1998, brush installation and alignment is required during assembly. Reconnect wires to terminals where required.
8. Check continuity before installing ring cover and supplying power.

SECTION 4 - MAINTENANCE

Explosion Proof Reels

On explosion proof reels use approved explosion proof Junction Box, Cable Entrance Ring, and Collector Ring Cover.

All procedures are the same except for the following: Slip ring removal requires chiseling out the Chico Compound. The electrical covers are screwed on and secured with set-screws. Torque down entrance ring in alternating pattern to prevent distortion.

Check continuity before and after next step. Be sure to add 1" of non-flammable cotton and a minimum of 1" Chico Compound around the wires at both ends of spool shaft and at cable entrance to ring enclosure.

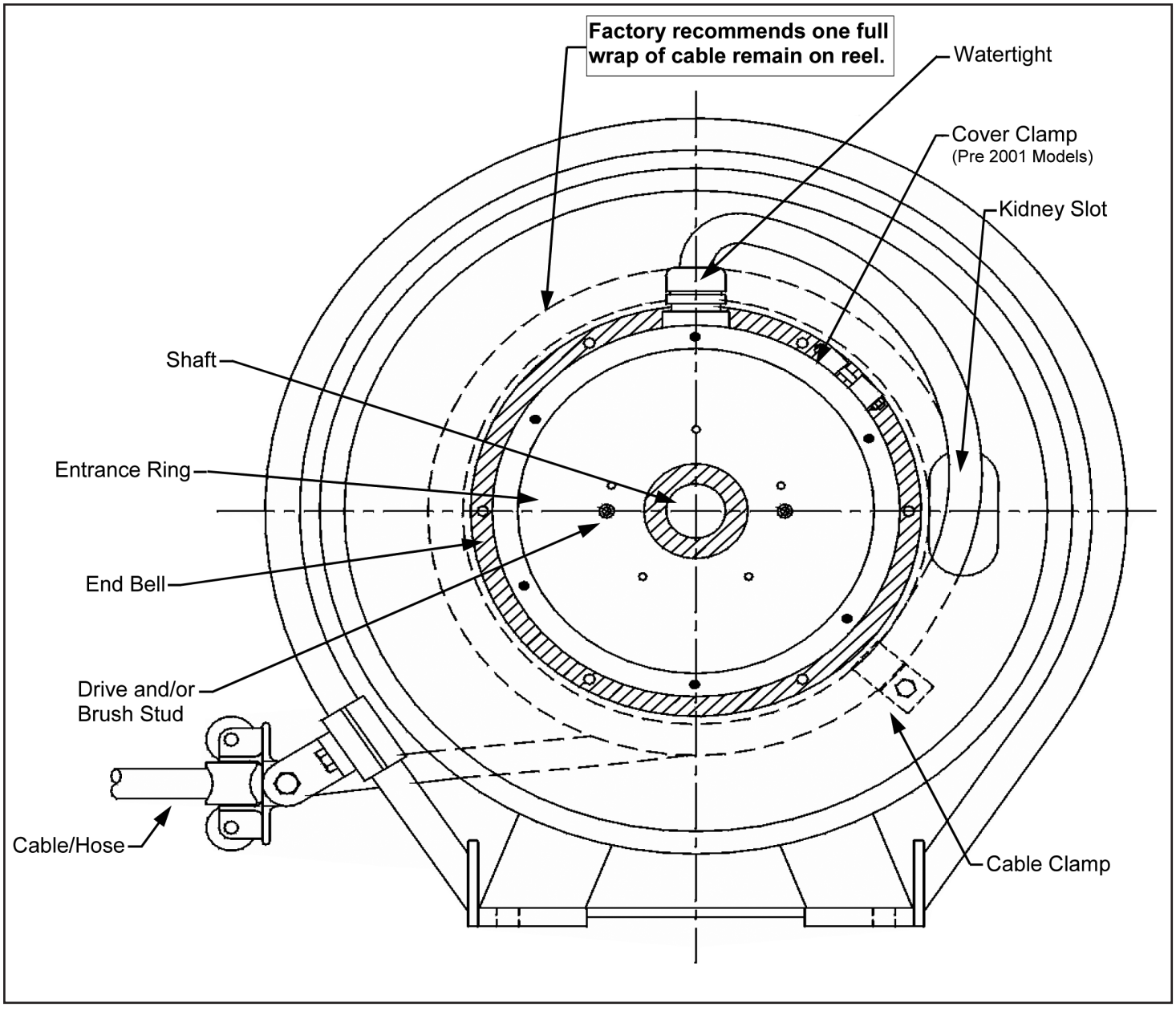


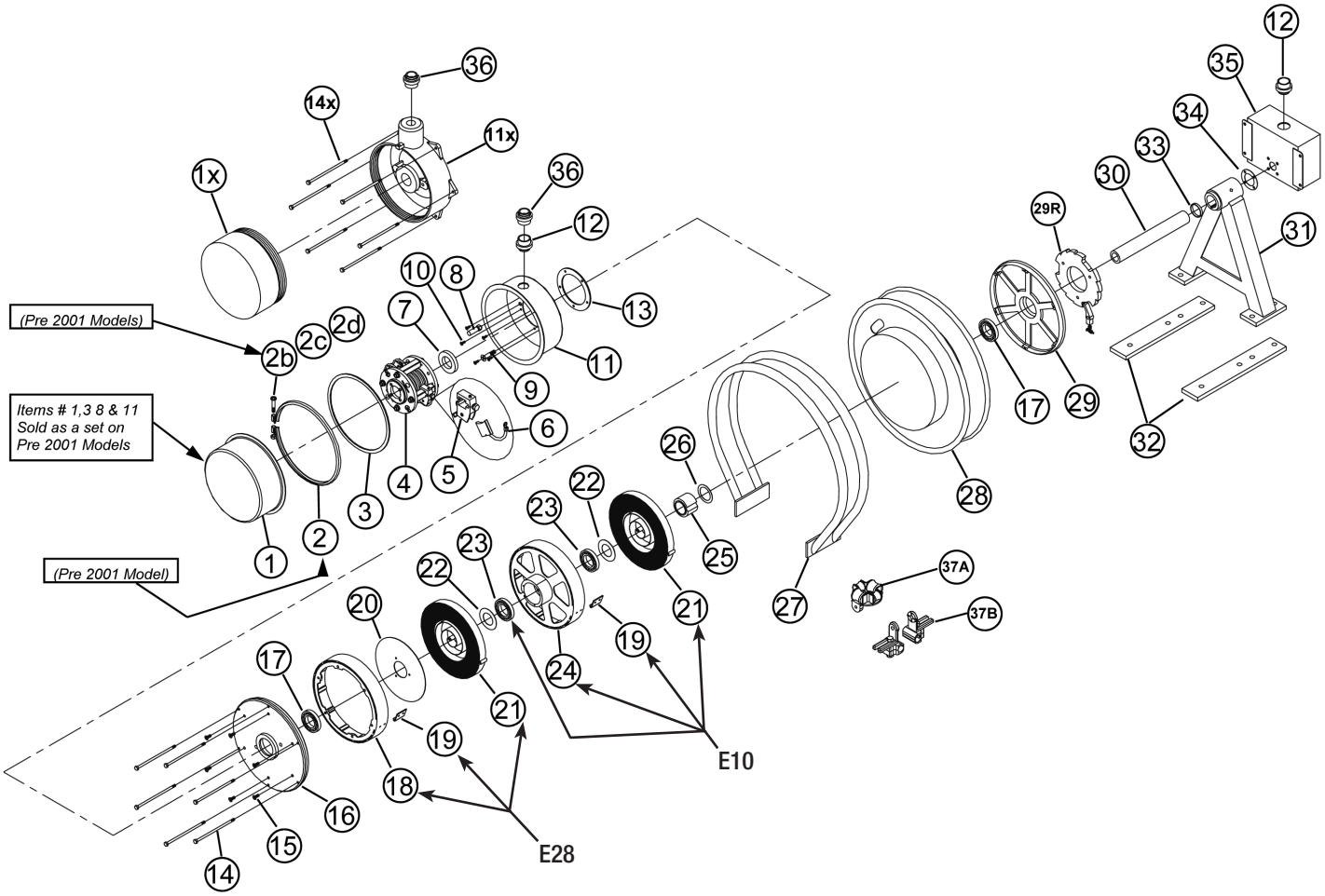
Figure 20-1

SECTION 5 - TROUBLESHOOTING

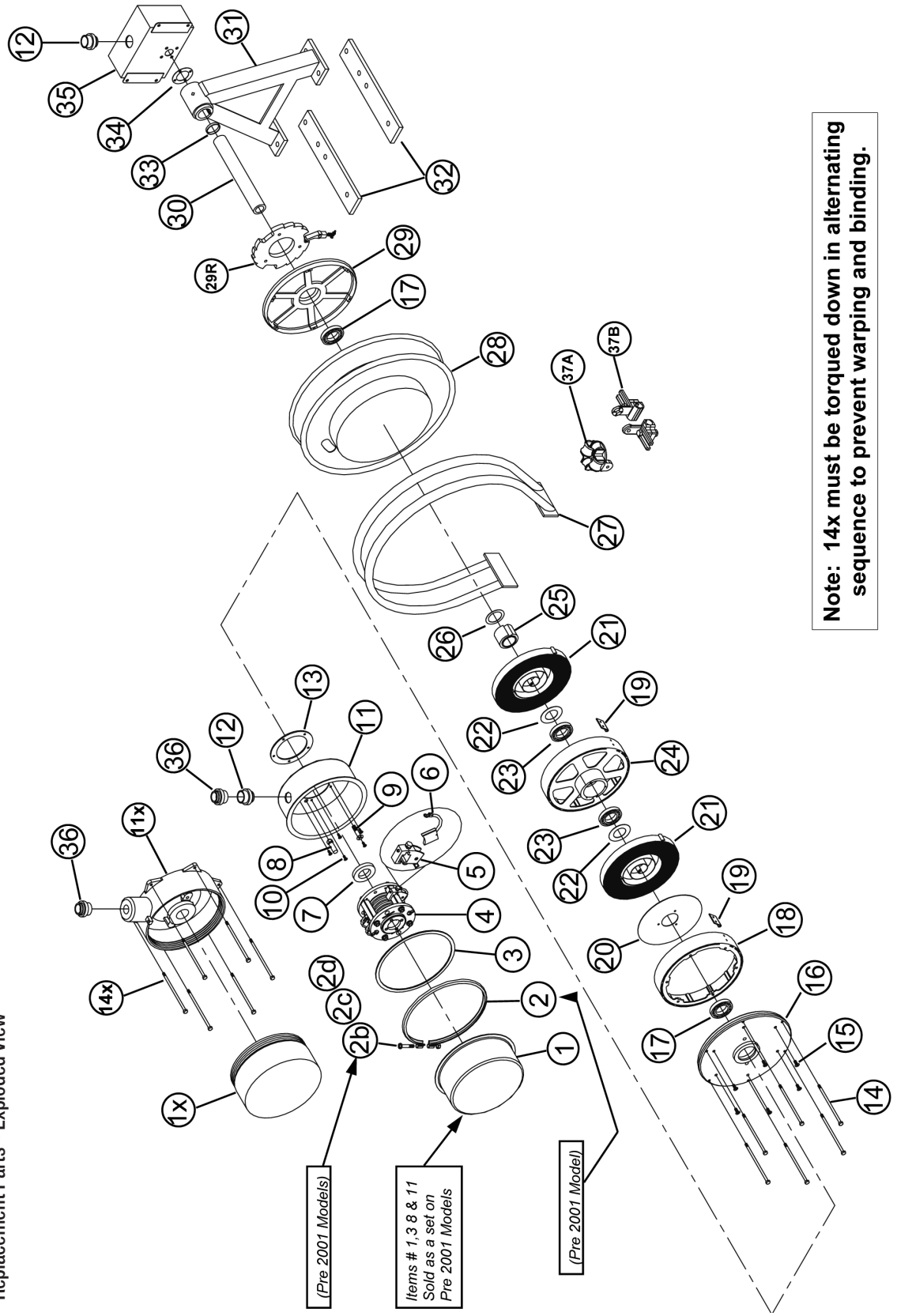
PROBLEM	POSSIBLE CAUSE	SOLUTION
Reel will not retract cable but has some tension.	1) Improper pretension. 2) Incorrect reel for application (lift vs. stretch) 3) Improper cable or cable length installed. 4) Cable guide adjustment.	1) See Spring Tension Adjustment. 2) Verify Application vs. reel selection. 3) Install correct cable type and length. 4) Check guide alignment.
Reel does not have any spring tension.	1) Broken spring.	1) Verify application and duty cycle. Replace spring motor assembly.
Ratchet will not activate.	1) Broken ratchet pawl spring. 2) Lock-out option arm deactivated.	1) Replace ratchet pawl spring. 2) Activate lock-out arm.
Ratchet will not deactivate.	1) Over-extension of reel.	1) Manually rotate reel spool to deactivate ratchet. Do not over-extend (guide adjustment may prevent lock-up when over-extended).
Cable wraps improperly (uneven wrapping, wraps above or jumps flange).	1) Reel mounting not level. 2) Cable retraction rate too high. 3) Cable guide out of adjustment. 4) Improper cable or cable length installed	1) Mount reel on level surface. 2) Maintain steady retraction rate. 3) Properly adjust cable guide 4) Install correct cable type and length
Cable twisting or knotting.	1) Improperly installed cable. 2) Cable rubbing on or bending around fixed object. 3) Excessive spring tension. 4) Inadequate anchoring of cable.	1) See Cable Installation. 2) Check roller guide for function and cable payout path. 3) Verify application vs. reel selection. Also check pretension. 4) Adjust anchoring method i.e. and strain relief.
Open or intermittent circuit.	1) Inadequate connection. 2) Loss of brush contact to slip ring. 3) Cable defective.	1) Check all termination points. 2) Check brush wear, spring tension & alignment. 3) Perform continuity check on cable termination points.
Circuit trips and/or pitted burned rings or brushes.	1) Inadequate amp rating of reel selection.	1) Verify application requirements vs. reel & cable rating.
Circuit arcing.	1) Amp or voltage above rating of reel. 2) Excessive carbon dusk accumulation. 3) Water or moisture in slip ring. 4) Loss of brush to ring contact.	1) Verify application requirements vs. reel & cable rating. 2) Clean dust from inside slip ring. 3) Check gasket seal. 4) Replace brush and/or brush spring.

SECTION 6 - REPLACEMENT PARTS

- **Conductix-Wampfler no longer offers individual spring for the Spring-O-Matic line of cable reels. ALL springs now come in a housing to improve consumer safety, ease of maintenance, and continuous product improvement.**



Model of Reel	Individual Replacement spring no longer available	Replacement spring assembly with housing	
	Item No. 21 in above diagram	E28-_A includes all of these parts (Each reel contains only 1 of these assemblies	E10-_A includes all of these parts (Each reel contains at least 1 assembly) Consult factory for the number of springs required.
D	**Discontinued**	**Discontinued**	**Discontinued**
E	**E8M-9-2**	**E28-8A**	**E10-8A**
F	**E2M-9-2**	**E28-2A**	**E10-2A**



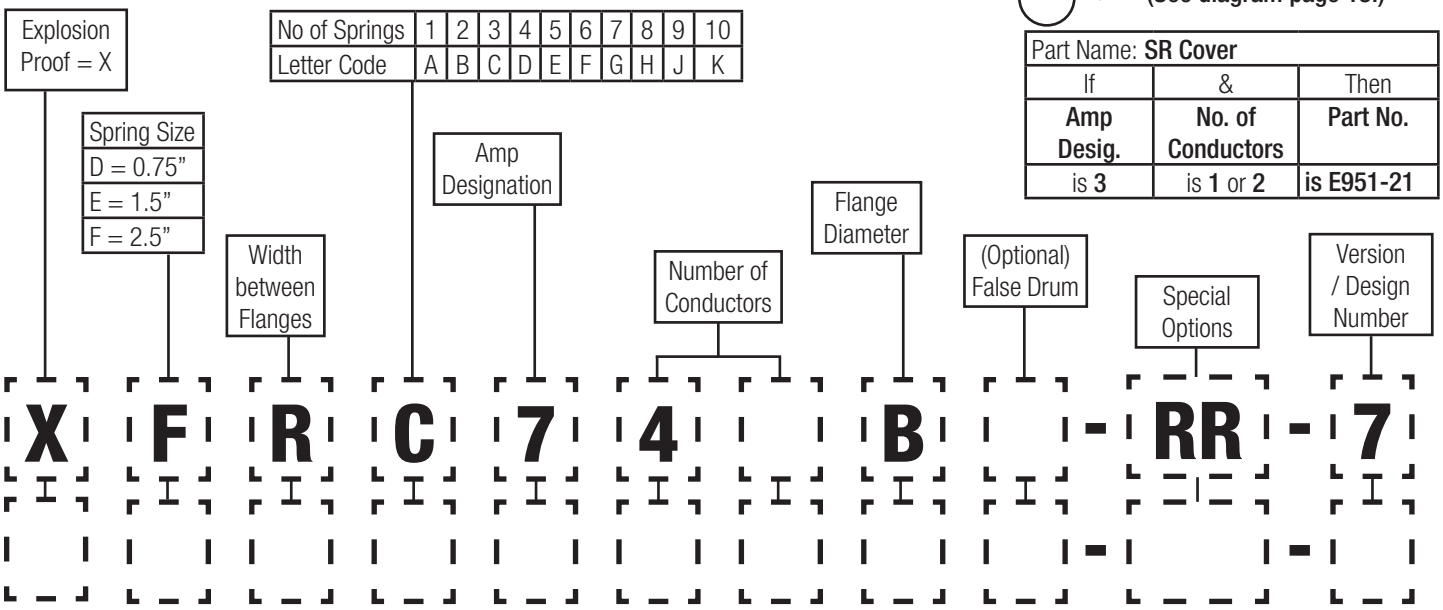
Replacement Parts - Exploded View

Note: 14x must be torqued down in alternating sequence to prevent warping and binding.

NOTE: 14x must be torqued down in alternating sequence to prevent warping and binding.

SECTION 6 - REPLACEMENT PARTS

Replacement Parts Decoder for Reel Number
(Example Number Shown) CF= Consult Factory



Part Position Number (See diagram page 13.)

Part Name: **SR Cover**		
If	&	Then
Amp Desig.	**No. of Conductors**	**Part No.**
is **3**	is **1** or **2**	**is E951-21**

Fill in your reel number in blank boxes here. If special, CA, or number does not work, consult factory.

1x

X-SR Cover			
X-Proof	**Amp Desig.**	**No. of Cond.**	**Part No.**
X	3	1-6	**X967A-5.2-M**
X	3	7-12	**X967A-8.5-M**
X	3	13-16	**X967-102-THD**
X	3	17-20	**X967-127-THD**
X	3	21-24	**X967-152-THD**
X	3	30-36	**X967-177-THD**
X	7	1 or 2	**X967A-5.2-M**
X	7	3 or 4	**X967A-8.5-M**

1

SR Cover - Des 7 includes #11			
Amp Desig.	**No. of Cond.**	**Pre 2001 Models**	**2001 Models**
3	1 or 2	**04531**	**41695**
3	3 to 6	**04532**	**41696**
3	7 to 9	**04533**	**41697**
3	10 to 12	**04534**	**41698**
3	14 to 16	**04535**	**41698**
3	20	**04536**	**C/F**
3	24	**04737**	**C/F**
3	30 to 36	**04538**	**C/F**
7	1 or 2	**04532**	**41696**
7	3 or 4	**04534**	**41697**

	Description		**Part No.** *Pre 2001*	*2001*
2	**Retainer Clamp**	Non-X Reels	**E946**	**N/A**
2b	**Bolt** 1/4-20 x 3"	Non-X Reels	**100240**	**N/A**
2c	**Lock Washer** 1/4" ZP	Non-X Reels	**09730**	**N/A**
2d	**Nut** 1/4-20ZP	Non-X Reels	**09729**	**10363**
3	**Gasket Cover**	Non-X Reels	**E950**	**101743B**

6	**Brush**	**5**	**Brush Holder**
Amp Desig.	**Part No.**	**Design Number**	**Part No.**
3	**30068A**	4 or 6	**RA3-4**
7	**30069A**	6	**RA3-8**
3	**30068A**	7	**02801**
7	**30069A**	7	**02802**

7

Spacer		
X-Proof	**Spring Size**	**Part No.**
*	D, E, or F	**E84-2**
X	D, E, or F	**E83**

8	**9**
Drive Stud	**Bolt 3/8-16 x 1/2"**
Design No.	**Part No.**	**Part No.**
3 & 4	**C/F**	*
6	**06501**	**100086**
7	**41332**	**100086**

11 **11x**

Entrance Ring				
X-Proof	**Amp Desig.**	**No. of Cond.**	**Part. No.** *Pre 2001*	*2001*
*	3 or 7	1-36	**E949-35-HP**	**41696A**
X	All X-Proof Models		**X966-SR-T**	**N/A**

Other cable reel configurations may exist. Consult factory with any questions.

X Proof	Spring Size	End Bells / Plate (Includes #17) **16**	Spring Ring & Spring (Includes #19) **18**	Spring & Spring Housing (Includes 19 and 23's) **21** **21**	Release Collar **24** **25**
X	DEF	E916SRXF	Q	Q	Q
Q	D	E916SRF	Q	Q	Q
Q	E	E916SRF	E28-8A	E10-8A	E915-8-PB
Q	F	E916SRF	E28-2A	E10-2A	E915-8-PB

SECTION 6 - REPLACEMENT PARTS

Description			Part No.
(10) Screw	10-24 x 1/2"	All Models Except X-Proof	09622
(12) Hub	Cable OD of	0.5" - 0.99"	ST3
		0.99" - 1.2"	ST4
		1.2" - 1.53"	ST5
		1.63" - 1.93"	ST6
(13) Gasket E-Ring	Non-X Reels		E948
(14) (14x) Bolt	1/4-20 x ?"	All Reels	C/F
(15) Screw	1/4-20 x 5/8"	All Reels	09954
(17) Bearing Sealed	All Reels		E23
(20) Spring Retainer	All Reels		E86A
(22) Spacers	All Reels		C/F
(23) Bearing Open	All Reels		E11
(26) Spacer	All Reels		E84-1
(27) Guide Rails	All Reels		C/F
(28) Spool	All Reels		C/F
(30) Shaft	All Reels		C/F
(34) Gasket J-Box	Non-X Reels		E984-1500
(36) Watertight	Cable OD of	0.38" to 0.5"	03656
		0.50" to 0.62"	03657
		0.63" to 0.74"	03658
		0.75" to 0.88"	03659
		0.88" to 1.0"	03660
		1.06" to 1.2"	03662
		1.2" to 1.3"	03672
		1.3" to 1.5"	03673

(4)

Slip Ring (Includes Brush Holder (5) & Brush (6))				
		Part Number		
Amp Desig.	No. of Cond.	Ver 4 OBS	Ver 6 OBS	Ver 7
		Part No.		
3	2	UC24-1500	*	RA-D02-PR
3	3	UC34-1500	*	RA-D03-PR
3	4	UC44-1500	*	RA-D04-PR
3	5	C54-1500	*	RA-C05-PR
3	6	C64-1500	*	RA-C06-PR
3	7	C74-1500	*	RA-C07-PR
3	8	C84-1500	*	RA-C08-PR
3	10	*	C104-1500SC	RA-C10-PR
3	12	*	C124-1500SC	RA-C12-PR
3	14	*	C144-1500SC	RA-C14-PR
3	16	*	C164-1500SC	RA-C16-PR
3	20	*	C204-1500SC	RA-C20-PR
3	24	*	C244-1500SC	RA-C24-PR
3	30	*	C304-1500SC	RA-C30-PR
3	36	*	C364-1500SC	RA-C36-PR
7	2	C28-1500	*	RA-E02-PR
7	3	C38-1500	*	RA-E03-PR
7	4	C48-1500	*	RA-E04-PR

(29)

Special Options	Part No.
Blank = Standard	E916SRB
RR = Spring Ratchet	E916SRB-RR
LH = Left Hand	E916SRBLH
LS = Limit Switch	E916SRBLS
(29R) Ratchet Assembly	C/F

(31) Flange Diameter	(31) Stand w/o RR or LS	(32) Mounting Feet	(33) Spacer
A	E1A-CW*	Included w/(31)	E84-3
B	G1A-8-PW	G235B	*
C	G1A-8-PW	G235C	*
D	G1A-8-PW	G235B	*
E	G1A-8-PW	G235C	*

(35)

Junction Box-Includes 12 & 34		
X-Proof	No. of Cond.	Part No.
Blank	1-4 (16-8AWG)	40297-G
Blank	1-4 (6-2AWG)	40298-G
Blank	5-12c	40299-G
Blank	13-24c	40921-G
Blank	25-36c	40922-G
X-Proof	All	C/F

Roller Guide		(37A) (37B) Part No.	
Width Bet. Flanges	Cable OD		
*	0.25" to 1.25" Max.	A2	*
*	1.26" to 2.0" Max.	A3A	*
C-O & R-Z	*	*	AA
A, B, P, or Q	*	*	08939Z

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