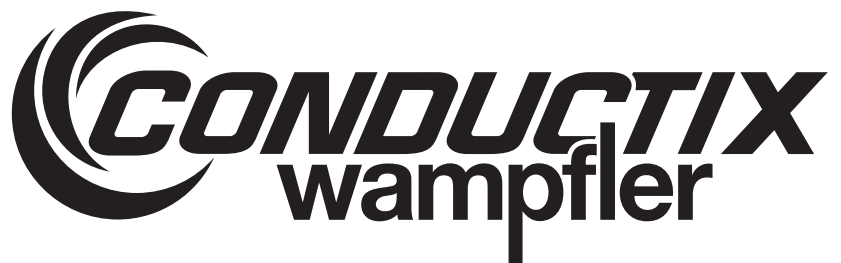


Spring Cable Reel

1400 Series Manual

(Including 1400 Series Welding & Grounding Reels)



CONDUCTIX INCORPORATED

The technical data and images which appear in this manual are for informational purposes only. **NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE CREATED BY THE DESCRIPTIONS AND DEPICTIONS OF THE PRODUCTS SHOWN IN THIS MANUAL.** Conductix Inc. makes no warranty (and assumes no liability) as to function of equipment or operation of systems built according to customer design or of the ability of any of its products to interface, operate or function with any portions of customer systems not provided by Conductix Inc.

Seller agrees to repair or exchange the goods sold hereunder necessitated by reason of defective workmanship and material discovered and reported to Seller within one year after shipment of such goods to Buyer.

Except where the nature of the defect is such that it is appropriate, in Seller's judgment, to effect repairs on site, Seller's obligation hereunder to remedy defects shall be limited to repairing or replacing (at Seller's option) FOB point of original shipment by Seller, any part returned to Seller at the risk and cost of Buyer. Defective parts replaced by Seller shall become the property of Seller.

Seller shall only be obligated to make such repair or replacement if the goods have been used by Buyer only in service recommended by Seller and altered only as authorized by Seller. Seller is not responsible for defects which arise from improper installation, neglect, or improper use or from normal wear and tear.

Additionally, Seller's obligation shall be limited by the manufacturer's warranty (and is not further warranted by Seller) for all parts procured from others according to published data, specifications or performance information not designed by or for Seller.

Seller further agrees to replace or at Seller's option to provide a refund of the sales price of any goods that do not conform to applicable specifications or which differ from that agreed to be supplied which non-conformity is discovered and forthwith reported to Seller within thirty (30) days after shipment to the Buyer. Seller's obligation to replace or refund the purchase price for non-conforming goods shall arise once Buyer returns such goods FOB point of original shipment by Seller at the risk and cost of Buyer. Goods replaced by Seller shall become the property of Seller.

There is no guarantee or warranty as to anything made or sold by Seller, or any services performed, except as to title and freedom from encumbrances and, except as herein expressly stated and particularly, and without limiting the foregoing, there is no guarantee or warranty, express or implied, of merchantability or of fitness for any particular purpose or against claim of infringement or the like.

Seller makes no warranty (and assumes no liability) as to function of equipment or operation of systems built to Buyer's design or of the ability of any goods to interface, operate or function with any portions of Buyer's system not provided by Seller.

Seller's liability on any claim, whether in contract, tort (including negligence), or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair, replacement or use of any products or services shall in no case exceed the price paid for the product or services or any part thereof which give rise to the claim. In no event shall Seller be liable for consequential, special, incidental or other damages, nor shall Seller be liable in respect of personal injury or damage to property not the subject matter hereof unless attributable to gross misconduct of Seller, which shall mean an act or omission by Seller demonstrating reckless disregard of the foreseeable consequences thereof.

Seller is not responsible for incorrect choice of models or where products are used in excess of their rated and recommended capacities and design functions or under abnormal conditions. Seller assumes no liability for loss of time, damage or injuries to property or persons resulting from the use of Seller's products. Buyer shall hold Seller harmless from all liability, claims, suits and expenses in connection with loss or damage resulting from operation of products or utilization of services, respectively, of Seller and shall defend any suit or action which might arise there from in Buyer's name - provided that Seller shall have the right to elect to defend any such suit or action for the account of Buyer. The foregoing shall be the exclusive remedies of the Buyer and all persons and entities claiming through the Buyer.

Need Field Service for our products? We Can Handle It!

Ask us for a quote on expert system installations, inspections, preventative maintenance, and repairs/retrofits.

As the world's largest single source manufacturer of mobile electrification products, Conductix-Wampfler has the unique ability to offer a degree of service not found anywhere else. Conductix-Wampfler's team of highly qualified service technicians and engineers have years of experience servicing our complete line of products.

We can provide:

- **Annual Service contracts**
- **Installation**
- **Commissioning**
- **Installation supervision** to ensure your installers avoid common mistakes.
- **Troubleshooting** to get you up and running.
- **Pre-planned inspections** to complement your preventive maintenance program.

Call 1-800-521-4888 for further details.



TABLE OF CONTENTS

SECTION 1 - SAFETY	5
1.0 Safety Information Responsibility	5
1.1 Safety Messages	5
1.2 Limitation of Liability	5
1.3 Personnel Requirements-Qualifications	6
1.4 Personnel Requirements-Unauthorized Personnel	6
1.5 Personnel Requirements - Training	7
1.6 Personnel Protective Equipment	7
1.7 Electrical Warnings	7
1.8 Operational Warnings	7
1.9 Maintenance Warnings	8
1.10 UL/CSA Listings	8
1.11 Electrical Ratings	8-9
1.12 Labels/Markings	9
SECTION 2 - PRODUCT DISPOSAL	10
2.0 Product Disposal & Recycling	10
SECTION 3 - INSTALLATION	11
3.0 Cable Reel Application Types	11
3.1 Standard Mounting	12
3.2 Pivot Base Mounting	12
3.3 Roller Guide	13
3.4 Flop-Over Guide Arm Kit (Part Number FGK)	13
3.5 Ratchet	14
3.6 Cable Installation	14-15
3.7 Spring Tension Adjustment	16
3.8 Power Connections	17
SECTION 4 - MAINTENANCE	18
4.0 Operation	18
4.1 Lubrication	18
4.2 Inspections	18
4.3 Slip Ring Replacement	19
4.4 Cable Replacement	20
4.5 Spring Motor Replacement	21
SECTION 5 - REELSAFE BRAKE	22
5.0 Operation / Location	22
5.1 Retraction Speed Adjustment	22
5.2 Drive Chain Tension Adjustment	22
5.4 REELSAFE Installed View	22
SECTION 6 - TROUBLESHOOTING	23
SECTION 7 - REPLACEMENT PARTS	24
NOTES	25
CONTACT INFORMATION	26

SECTION 1 - SAFETY

1.0 Safety Information Responsibility

- 1.0.1 All owner, operator, and maintenance personnel must read and understand all manuals associated with this product before installation, operation, or maintenance.
- 1.0.2 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.

1.1 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.

1.2 Limitation of Liability

- 1.2.1 All data and information in this mounting instructions have been compiled in compliance with the applicable standards and regulations, best practice and our many years of experience and knowledge.
- 1.2.2 The manufacturer accepts no liability for damages resulting from:
- Failure to comply with this document
 - Improper use
 - Use by untrained personnel
 - Unauthorized modifications
 - Technical changes
 - Use of unauthorized replacement parts and accessories
 - The actual scope of delivery may differ from the explanations and descriptions provided here if the model in question is a special one, if additional equipped has been ordered or due to recent technical changes.
- 1.2.3 The obligations agreed upon in the delivery agreement and our General Terms and Conditions of business apply, as do the delivery conditions of the manufacturer and the legal regulations applicable at the time the contract was concluded.
- 1.2.4 All products are subject to technical modifications in the context of improvement of function and further development.

SECTION 1 - SAFETY

1.3. Personnel Requirements-Qualifications

WARNING

Inadequately trained persons are at risk of injury!

Improper use can result in serious personal injury or material damage. All activities must only be performed by qualified personnel.

1.3.1 Only persons who can be expected to perform their work reliably are acceptable personnel. People whose reactions are impaired by drugs, alcohol or medications, for example, are not authorized.

1.3.2 When selecting personnel, follow all age- and occupation-specific guidelines applicable at the location of use.

1.3.3 The following qualifications are specified in the operating instructions for certain fields of activity.

1.3.4 Trained personnel and operators

- Will have participated in a training session, given by the owner, on the tasks assigned to them and the potential hazards in case of improper conduct.
- The owner of the machine or system must document that the appropriate training has taken place.

1.3.5 Specialist personnel

- Will consist of persons capable of performing assigned tasks and independently identifying and avoiding potential hazards based on their specialist training, knowledge and experience as well as their knowledge of the applicable regulations. Persons are deemed to be technically qualified if they have successfully completed training as a master electrician, apprentice electrician, electrical engineer or electrical technician. Persons are also considered technically qualified if they have been employed in an appropriate capacity for several years, receiving theoretical and practical training in that line, and their knowledge and skills have been tested by a specialist in the appropriate field of training.
- The machine or system owner must document that the appropriate certificates or other proofs of qualification have been or are being provided.

1.4 Personnel Requirements-Unauthorized Personnel

WARNING

Danger due to unauthorized personnel!

Unauthorized persons who do not meet the requirements described here are not acquainted with the dangers in the working area. Keep unauthorized personnel away from the working area. In case of doubt, address the person and direct them away from the working area. Stop working, as long as unauthorized persons are in the working area.

SECTION 1 - SAFETY

1.5 Personnel Requirements-Training

1.5.1 Before commissioning the equipment, personnel must be trained by the owner. Log the implementation of training for better traceability.

Example of a training log:

Date	Name	Training Type	Training Instructor	Signature
11/5/2019	John Doe	First safety training for personnel	Dave Miller	

1.6 Personal Protective Equipment

1.6.1 For every task, always use:

Safety helmet: For protection against falling or flying parts and materials.

Protective gloves: For the protection of hands against friction, scrapes, puncture or deeper wounds, as well as against contact with hot surfaces.

Protective work clothing: Primarily for protection against entrapment by moving machine parts. Work clothing must be close fitting with a low resistance to tearing; it must have close-fitting sleeves and no protruding parts.

Protective footwear: For protection against heavy falling parts and slipping on slippery floors.

For special tasks, specific protective equipment is required when executing particular tasks:

Safety eye wear: For eye protection against harmful influences such as strong light, chemicals, dust, splinters or weather effects.

Hearing protection: For protection against loud noises and to prevent acoustic trauma.

Breathing mask (FFP-3 - according to country-specific requirements): For protection against materials, particles, and organisms. In this case, for protection against the dust produced by the abrasion of carbon brushes and the PVC insulation of the conductor rail.

1.7 Electrical Warnings

- Properly ground equipment before use in accordance with both the National Electrical Code and local electrical codes and ordinances.
- Disconnect electrical power from the cable reel before performing any service functions.
- Do not use cable reel for loads greater than the current rating listed on the label and voltage greater than 600V. The ampacity (current rating of the cable must be in accordance with the National Electric Code.
- Electrical wiring on the reel must be done by a qualified electrician.

1.8 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 allow the cable to retract without restraining the retraction speed.
- 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: In the US call: +1 402-339-9300 or +1-800-521-4888 In Canada call: +1-800-667-2487**

SECTION 1 - SAFETY

1.9 Maintenance Warnings

- 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.
- Install mounting hardware/fasteners to maintain tightness under vibration and checked periodically to assure tightness.
- Overhead installation mountings should be such that the reel is not suspended 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.

WARNING

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

1.10 UL/CSA Listings

1.10.1 Reels that are Listed UL/CSA NEMA 4 are indicated in the catalog. The following requirements apply for UL/CSA listed POWEREEL products:

- Listed cable reels are intended for commercial/industrial use and are provided with permanent mounting means. They must be wired by a qualified electrician. These cable reels are not provided with a full Feeder Cable and connector.
- UL listed type SOW-A or SOOW-A, 600V, rated 90°C or 105°C must be used for the supply cable (if flexible cable is used) and for the load end cable (active cable).
- Any requests for changes to “standard” reels removes the third party listing from the reel. For instance, a ‘smart part number’ of XA-142120405011 is third party listed. However, if a custom SKU is created that is not consistent with the configurable smart number scheme, then it is not third party listed (even though it is built to third party specification). Contact Conductix-Wampfler’s Product Manager with questions.



1.11 Electrical Ratings

1.11.1 All 1400 Series reels with or without cables are rated and should not be used at voltages and or amperes above the rating on the reel, **see Table 11-1**. Please consult the factory prior to making any changes in volts and amps of cable, as change could affect reliability or safety.

SECTION 1 - SAFETY

1.11 Electrical Ratings

1.11.1 All 1400 Series reels with or without cables are rated and should not be used at voltages and or amperes above the rating on the reel, **see Table 11-1**. Please consult the factory prior to making any changes in volts and amps of cable, as change could affect reliability or safety.

SOW-A (90°C) or SOOW-A (105°C)									
Cable AWG / # of Cond.	Ampacity	Cable AWG / # of Cond.	Ampacity	Cable AWG / # of Cond.	Ampacity	Cable AWG / # of Cond.	Ampacity	Cable AWG / # of Cond.	Ampacity
16/2	10.0	14/2	15.0	12/2	20.0	10/2	25.0	*6/1	*95
16/3	10.0	14/3	15.0	12/3	20.0	10/3	25.0	*4/1	*150
16/4	8.0	14/4	12.0	12/4	16.0	10/4	20.0	*2/1	*200
16/5	8.0	14/5	12.0	12/5	16.0	10/5	20.0	*1/1	*250
16/6	7.0	14/6	12.0	12/6	16.0	10/6	20.0	*1/0/1	*350
16/7	7.0	14/7	10.5	12/7	14.0			*2/0/1	*450
16/8	5.0	14/8	10.5	12/8	14.0				
16/10	5.0	14/10	7.5						
16/12	5.0	14/12	7.5						

Table 1-1

1.12 Labels/Markings

- 1.12.1 Every cable reel is marked with a label on the base which includes the Conductix-Wampfler name and logo, the product catalog number and the individual product serial number, NEMA rating, Amps, Volts, Watts and Cable Footage.
- 1.12.2 The UL/CSA marks are applied to reels that comply with the applicable requirements and are identified with the authorizing mark.
- 1.12.3 The maximum cable footage, amperage and voltage rating for every cable reel supplied without cable is marked on the Conductix Identification label. The actual cable installed should not differ from what is indicated on the Conductix-Wampfler label. If the cable must be different please consult the factory prior to installing the cable to ensure the change will not affect the reliability of the reel or the safety of the people working with the reel.



SECTION 2 - PRODUCT DISPOSAL

2.0 Product Disposal and Recycling

2.0.1 Once the product has reached its end of life it must be disassembled and disposed of in accordance with local and regional environmental requirements.

2.0.2 In the absence of a return and disposal agreement, disassembled components must be recycled as follows:

- All metallic parts must be sorted and recycled by material type
- All plastic components must be sorted and recycled by material type
- All other components are to be disposed of in accordance with their material composition. Take care with items identified as Substances of Concern.

2.0.3 Local authorities or special disposal companies can provide information about environmentally appropriate disposal.

SECTION 3 - INSTALLATION

3.0 Cable Reel Application Types

3.0.1 Stretch

3.0.1.1 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 3-1

3.0.2 Drag

3.0.2.1 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 3-2.

3.0.3 Retrieve

3.0.3.1 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 3-3.

3.0.4 Lift

3.0.4.1 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 3-4.

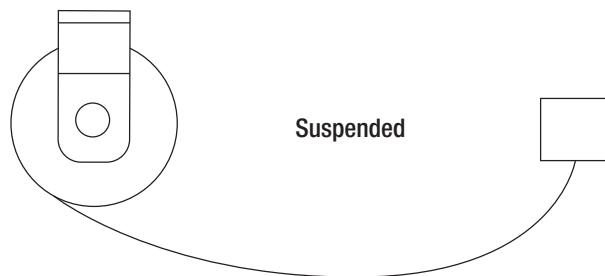


Figure 3-1

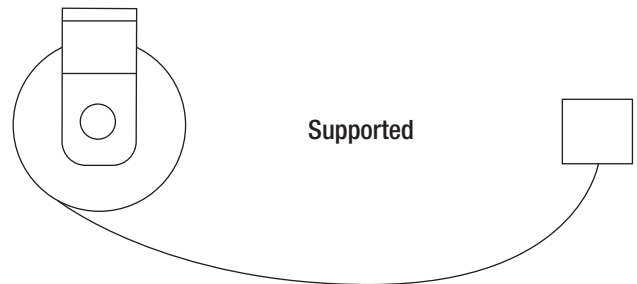


Figure 3-2

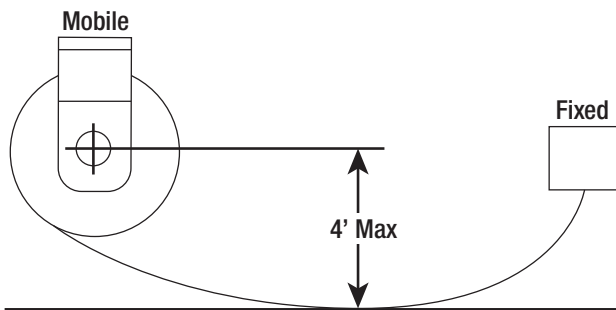


Figure 3-3

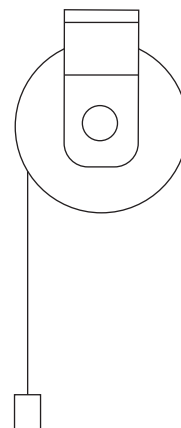


Figure 3-4

SECTION 3 - INSTALLATION

3.1 Standard Mounting

- 3.1.1 The reel may be mounted by bolting the base to any flat surface which is structurally sound enough to support it and the forces of winding and unwinding the cable.
- 3.1.2 The spool drum must rotate on a level horizontal axis.
- 3.1.3 Position the guide arm so that cable payout is perpendicular to the face of cable roller guide. The total cable deflection should not exceed 15° to either side of the center line of the spool (see Figure 3-5). If deflection is constant to either side of the reel and operation is impaired re-mount the reel.
- 3.1.4 If the angle of deflection exceeds 15° a Pivot Base should be used, otherwise excessive cable wear and unreliable operation will result.
- 3.1.5 A safety chain or cable is recommended for all overhead installations. Attach the safety chain using the 0.39 hole provided in the base (See Section 3.2 Pivot Base Mounting).

3.2 Pivot Base Mounting

- 3.2.1 All 1400 Series Cable Reels can be furnished with a pivot base to allow the reel to rotate and keep the extended cable perpendicular to the application.
- 3.2.2 The PVB Pivot Base has the ability to rotate up to 345° . Travel can be limited to 90° , 180° , or 270° by installing an additional roll pin in the appropriate available hole (see Figure 3-6).

NOTE: This Pivot Base is not suitable for applications requiring continuous rotation.

- 3.2.3 A pivot base is required in carousel or loop-track applications.
- 3.2.4 When a pivot base is used, the reel must be mounted horizontally (either ceiling or floor mounted).
- 3.2.5 The Roller Guide should be mounted so the cable will travel perpendicular to the axis of rotation. This will guard against the cable twisting and ensure effective swivel action from the pivot base.
- 3.2.6 Selection of mounting holes should be such that the spool center is in line with the center point of the pivot base. The description on the Conductix-Wampfler label will show if the reel is PA, PB, or PC.

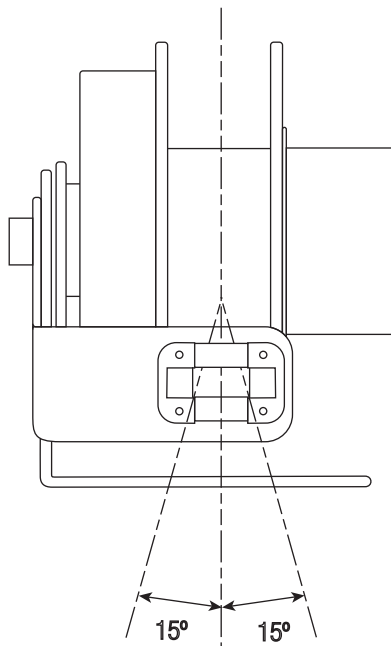


Figure 3-5

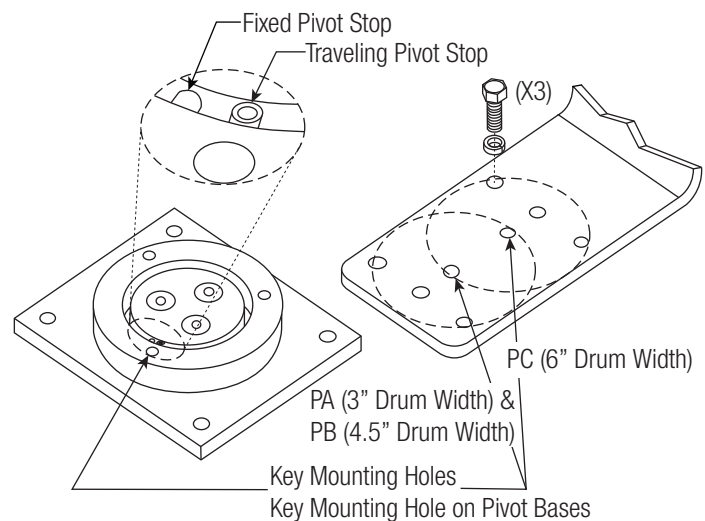


Figure 3-6

SECTION 3 - INSTALLATION

3.3 Roller Guide

- 3.3.1 All 1400 Series units are equipped with a roller guide (PR87-#). The function of the guide is to center the cable on the spool and to help the reel wrap cable more evenly.
- 3.3.2 The cable should not bear against either end of the spool during winding as this will tend to inhibit level winding of the cable.
- 3.3.3 The guide should be secured at the best of twelve possible positions so that a minimum change of direction occurs at the guide; otherwise, cable life will be reduced. **(See Image 3-7)**
- 3.3.4 The guide is shipped installed on the reel. The guide must be aligned per application and secured prior to making any electrical connections.
- 3.3.5 Mount the roller guide to the reel over the entrance coupling on the frame. Secure using the provided 5/16-18 hex head cap screw, including the spring-type lock washer. Torque this screw to 15 ft-lbs.

3.4 Flop-Over Guide Arm Kit (Part Number FGK)

- 3.4.1 The Flop-Over Guide Arm Accessory Kit is appropriate for 2-way payout applications requiring a roller guide when a pivot base is not appropriate.
- 3.4.2 Before installing, be sure the power is off. Refer to **Figure 3-8** for parts overview.
 - 3.4.2.1 Disconnect the cable that provides power to the reel, if installed.
 - 3.4.2.2 Remove the original shaft coupling (PR47) and replace with the grooved shaft coupling (PR47B).
 - 3.4.2.3 Make sure the grooved side of the shaft coupling is nearest the base.
 - 3.4.2.4 Tighten the shaft coupling to 30-40 ft-lbs. torque.
 - 3.4.2.5 Place one thrust washer (05453) on the shaft coupling and locate it flush against the base.
 - 3.4.2.6 Position the guide arm (PR87-X), on the shaft coupling.
 - 3.4.2.7 Slip the radial bearing strip (PR50D-1) between the shaft coupling and the guide arm. Trimming may be required.
 - 3.4.2.8 Locate the second thrust washer (05453), on the shaft coupling.
 - 3.4.2.9 Secure the assembly with the snap ring (5100-150).
 - 3.4.2.10 Re-connect the supply cable.

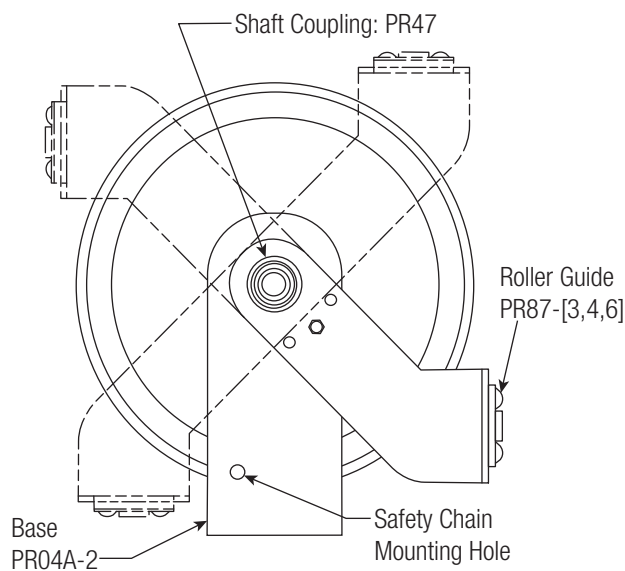


Figure 3-7

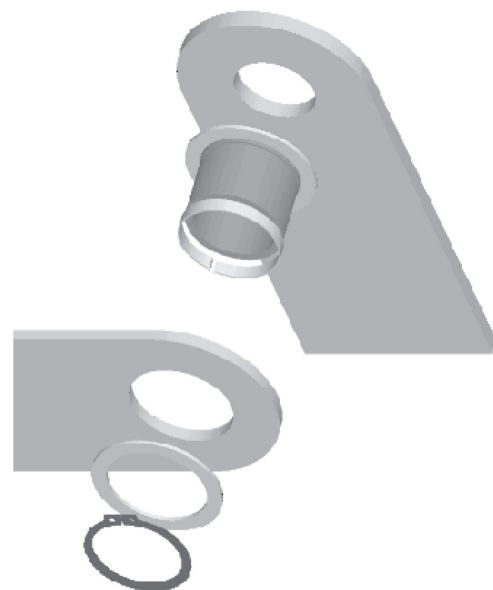


Figure 3-8

SECTION 3 - INSTALLATION

3.5 Ratchet

3.5.1 The ratchet lock can be engaged or disengaged, depending upon the application.

3.5.1.1 Operation with Ratchet: The ratchet pawl is spring loaded. It is designed to function in all acceptable mounting configurations. A slight pull on cable will disengage the ratchet. (See Figure 3-9)

3.5.1.2 Operation without Ratchet: Disengage the ratchet by pivoting the lock-out bar to the lower position. This will remove the ratchet pawl from the path of the ratchet plate. Locate the dimple on the lock-out bar in the hole provided.

WARNING

Do not engage the ratchet abruptly. Sudden engagement may cause excessive shock loads to the ratchet pawl.

3.6 Cable Installation

3.6.1 Either of two methods for installing cable on the reel may be used.

The first method is to simply lay the cable out straight along the path of travel and wrap onto the reel. The second method requires using a support for the cable being wrapped. In either method, it is important that the cable not twist or loop.

3.6.2 Remove the (6) nuts securing the slip ring cover. Remove cover and gasket. Reinstall (2) nuts finger tight to hold the flange in place. Loosen the set screw (1/8" Allen Wrench) at the base of the slip ring stack and remove the slip ring.

3.6.3 Strip the cable jacket back approximately 10" from end of cable and thread it through the cable entrance watertight into the drum of the reel. We recommend a cable-tie on 16 AWG, 2 and 3 conductor cable. Install the rubber grommet, gripper ring, and the watertight nut. Tighten the nut to secure the cable.

3.6.4 Extend the conductors out of the drum. Reinstall the slip ring stack, being sure to engage the drive pin making sure point of set screw engages 1 of the 2 holes on the shaft and tighten the set screw. On 6" deep spool drums, we recommend connecting the 1-6 leads to the brush post terminal before installing the ring on the shaft. Strip and insert cable leads into the appropriate brush post terminals and torque screws to 5in-lbs. All weld cable lead ends should be tinned for optimal performance.

CAUTION

The green conductor MUST be connected to (GND) Ring (ring closest to the brush post base) in order to ground the reel. Be sure that the bottom brush (dedicated ground) and the green wire at the top terminal block have continuity. (On Welding Reels, all conductor welding cable ends require tinning per NEC.)

Damaged gaskets affect UL listing of reel.

3.6.5 Perform a continuity check to verify circuits. Replace the cover gasket if damaged.

3.6.6 Remove (2) nuts. Install gasket and cover. Re-install and tighten nuts (6). Wrap new cable on drum spool. Adjust spring tension by following the procedure in **Section 3.7 Spring Tension Adjustment section.**

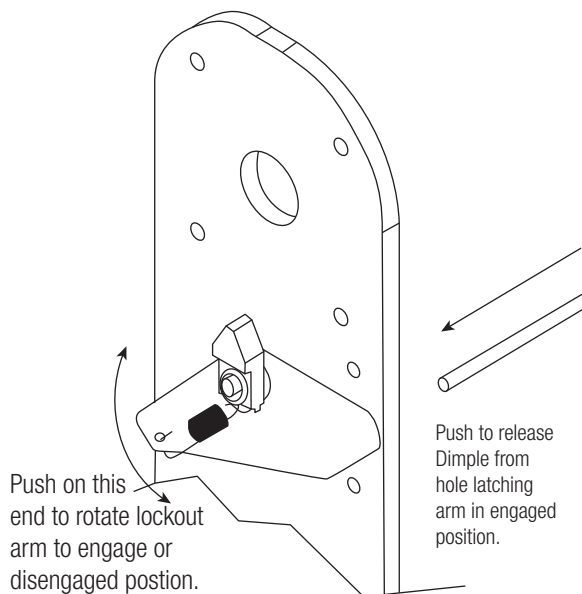


Figure 3-9

SECTION 3 - INSTALLATION

Color Code Chart					
Cond. No.	Base Color	Tracer Color	Cond. No.	Base Color	Tracer Color
1	Green	--	7	White	Black
2	Black	--	8	Red	Black
3	White	--	9	Green	Black
4	Red	--	10	Orange	Black
5	Orange	--	11	Blue	Black
6	Blue	--	12	Black	White

Table 3-1

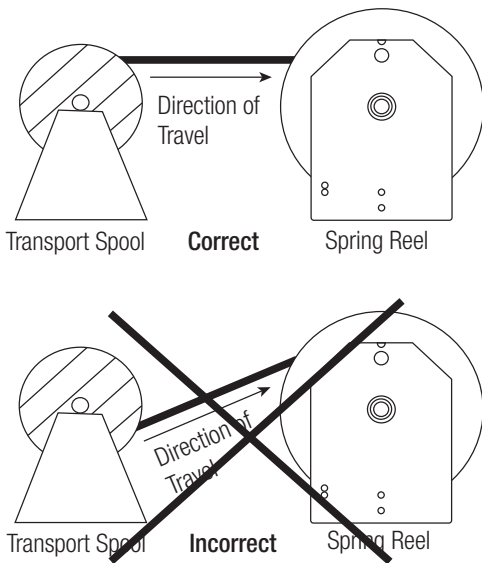


Figure 3-11

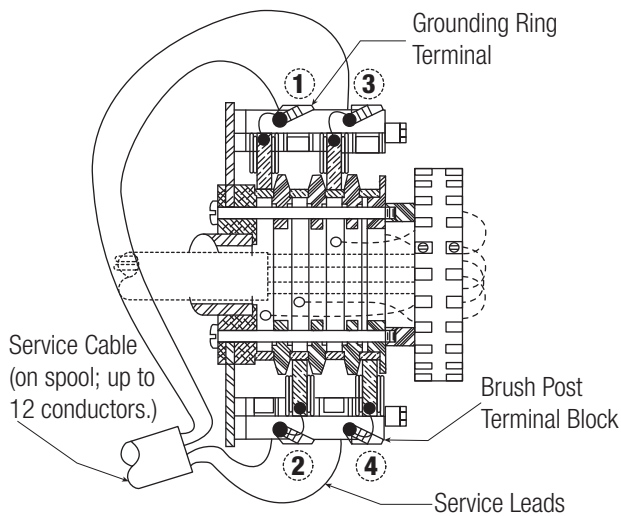


Figure 3-13 Cable Reel Ring

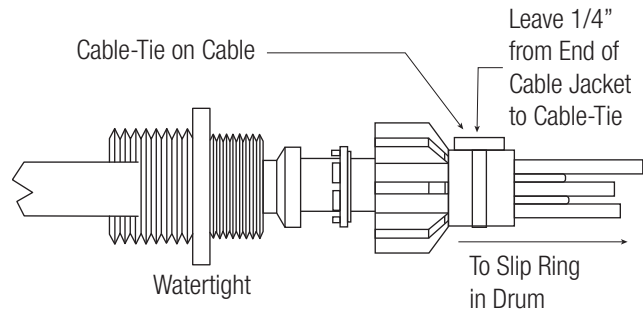


Figure 3-10

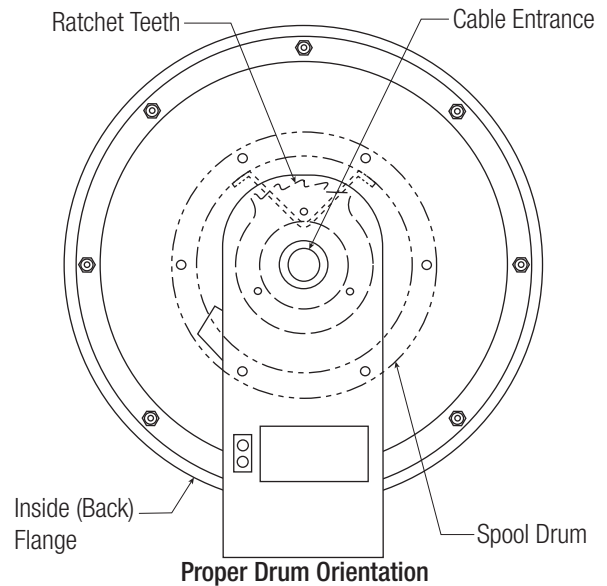


Figure 3-12

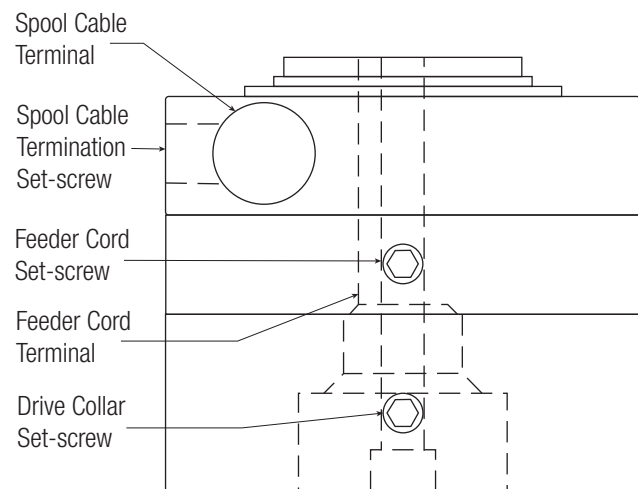


Figure 3-14 Welding Reel Ring

SECTION 3 - INSTALLATION

3.7 Spring Tension Adjustment

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. Always maintain two full cable wraps on drum at maximum cable extension, size cable length accordingly.

- 3.7.1 To assure that the cable will retract properly and operate under the correct tension, the reel should be tested. Install cable on drum but do not connect the free end of cable. Securely mount reel before testing.
- 3.7.2 Pull the cable out the intended travel distance and allow it to rewind. This procedure should be repeated five (5) to ten (10) times in order to set the spring. Walk the cable back to the reel during the spring tension adjusting process.
- 3.7.3 With all the cable wound on the reel, grasp the end of the cable and rotate the drum and cable together in a clockwise direction in order to pre-tension the spring. The number of pre-tension turns is determined by cable size and footage. Usually, two to three turns is sufficient, but additional turns may be used if testing indicates that the cable will not fully retract as desired with just two turns.
- 3.7.4 Feed the end of the cable through the cable guide and pull the cable out the required length. Note: Total number of spool revolutions, including pre-tension turns, must not exceed the limits in the following table:

Spring model designation stated in reel description on invoice and packing slip.					
No. of Turns	Models w/#	Motor #	No. of Turns	Models w/#	Motor #
23	J	PR89	30	K	35001
23	JP	PR89P	60	KS	35002
46	JS	PR89S	30	KP	35003

Consult the factory or your representative if number of spool turns is not within parameter.

- 3.7.5 Repeat steps 2 through 4 if necessary, to add tension. To decrease tension, rotate drum and cable counterclockwise.

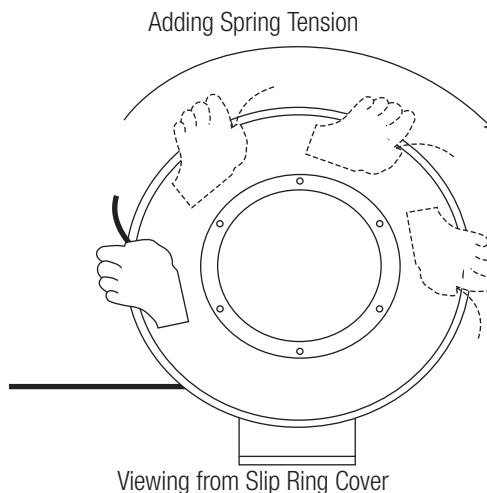


Figure 3-15

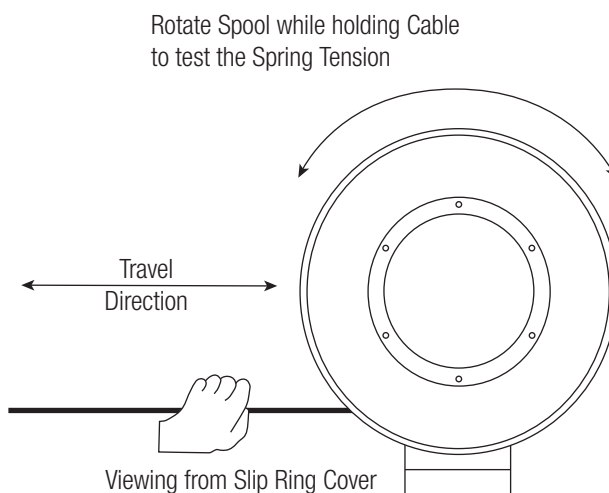


Figure 3-16

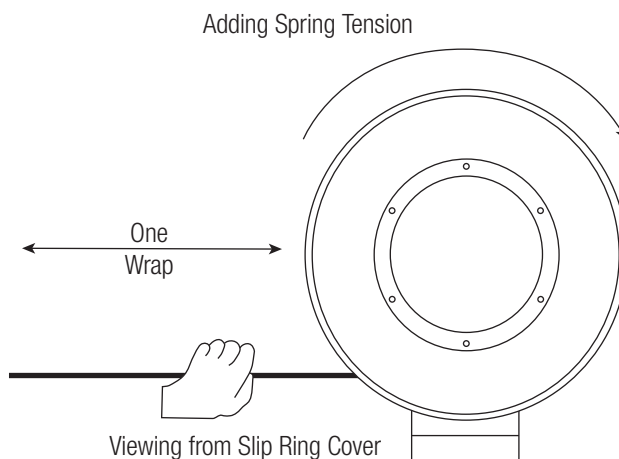


Figure 3-17

SECTION 3 - INSTALLATION

3.8 Power Connections

- 3.8.1 Provide power source with over-current protection to prevent overheating of the reel and cable.
- 3.8.2 Connect the supply cable to the terminal ring at the top of the slip ring. Wire according to Color Code Chart in the **Cable Installation** section. Be sure the GREEN (ground) wire is connected to the green wire slip ring using the top terminal block.
- 3.8.3 Slide the supply cable back through the shaft to eliminate excess slack at the terminal block. Failure to do so may cause Ring to short out due to excessive wear on insulation of the supply lead(s).
- 3.8.4 Be sure the supply leads will not come in contact with the slip ring cover or the reel shaft.
- 3.8.5 If a supply cable entrance watertight is used, be sure gland size is correct for cable diameter. Tighten to seal and to prevent cable pullout. The watertight needs to have 1" NPT thread.

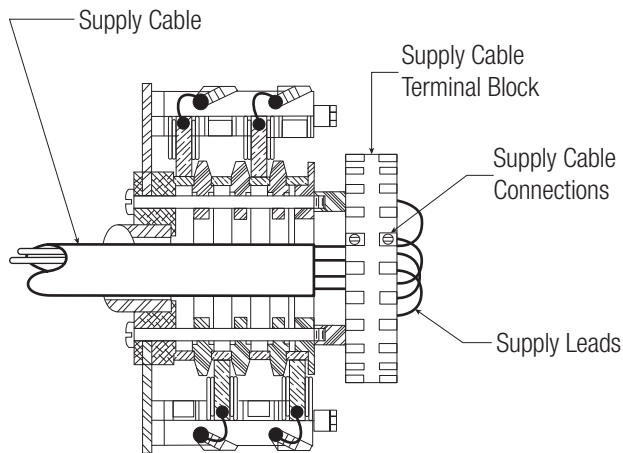


Figure 3-18

SECTION 4 - MAINTENANCE

4.0 Operation

- 4.0.1 Do not exceed the voltage or amperage rating of the cable. Overheating, fire, damage to equipment or personal injury could result.
- 4.0.2 Do not allow cable to retract without restraining retraction speed.
- 4.0.3 Operate the reel within the cable size and length and spring tensioning limits for which it was intended. Keep two wraps of cable on the reel at maximum extension to avoid excessive tension on the cable and to prevent pullout of cable from entrance watertight. The spring should not be wound to the last two turns at maximum payout to avoid over-stressing the spring(s), thus reducing its life or damaging the reel.
- 4.0.4 Keep the reel and cable clean to avoid excessive wear and damage.
- 4.0.5 Arrange for maintenance service if damage is found on the cable or reel.
- 4.0.6 Cable should be fully retracted when not in service to maximize spring life.

4.1 Lubrication

WARNING

Be sure power is off for maintenance.

- 4.1.1 All components requiring lubrication are lubricated for life at the factory. Additional lubrication is not required.
- 4.1.2 Do not apply any lubricants or solvent cleaning agents to slip ring, brush or insulator surfaces.

4.2 Inspections

- 4.2.1 Periodically check the reel for any loose or missing fasteners. Tighten or replace as necessary.
- 4.2.2 The slip ring assembly should be checked periodically as follows:
 - Clean to remove dust and dirt from the slip ring housing area and all slip ring assembly and brush surfaces.
 - Brushes should be centered on slip rings and brush springs should be seated in terminal post grooves. Terminal screw connections should be tight. Check for excessive brush wear. Replace brushes as necessary.
 - Inspect cable for damage or wear which would make it unsafe to use.

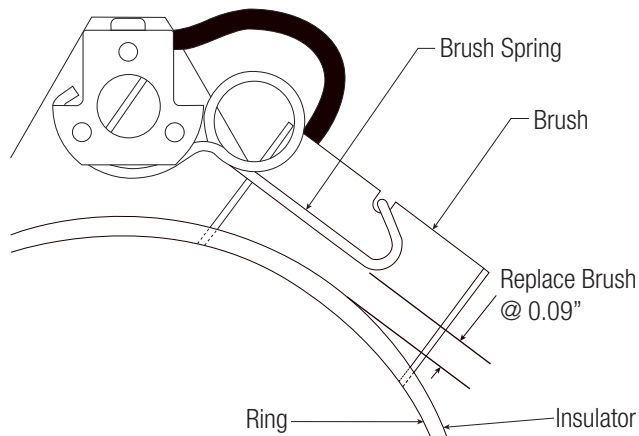


Figure 4-1

SECTION 4 - MAINTENANCE

4.3 Slip Ring Replacement

4.3.1 The slip ring assembly should be replaced, not rebuilt, if it becomes damaged.

4.3.2 Follow steps 5-8 under Cable Replacement to remove the slip ring assembly.

4.3.3 Carefully and thoroughly clean the inside of the reel drum and the slip ring cover.

4.3.4 Follow steps 5-8 under Cable Replacement in reverse order to install the new slip ring stack. Replace cover gasket if damaged.

CAUTION

Damaged gaskets affect UL rating of the reel.

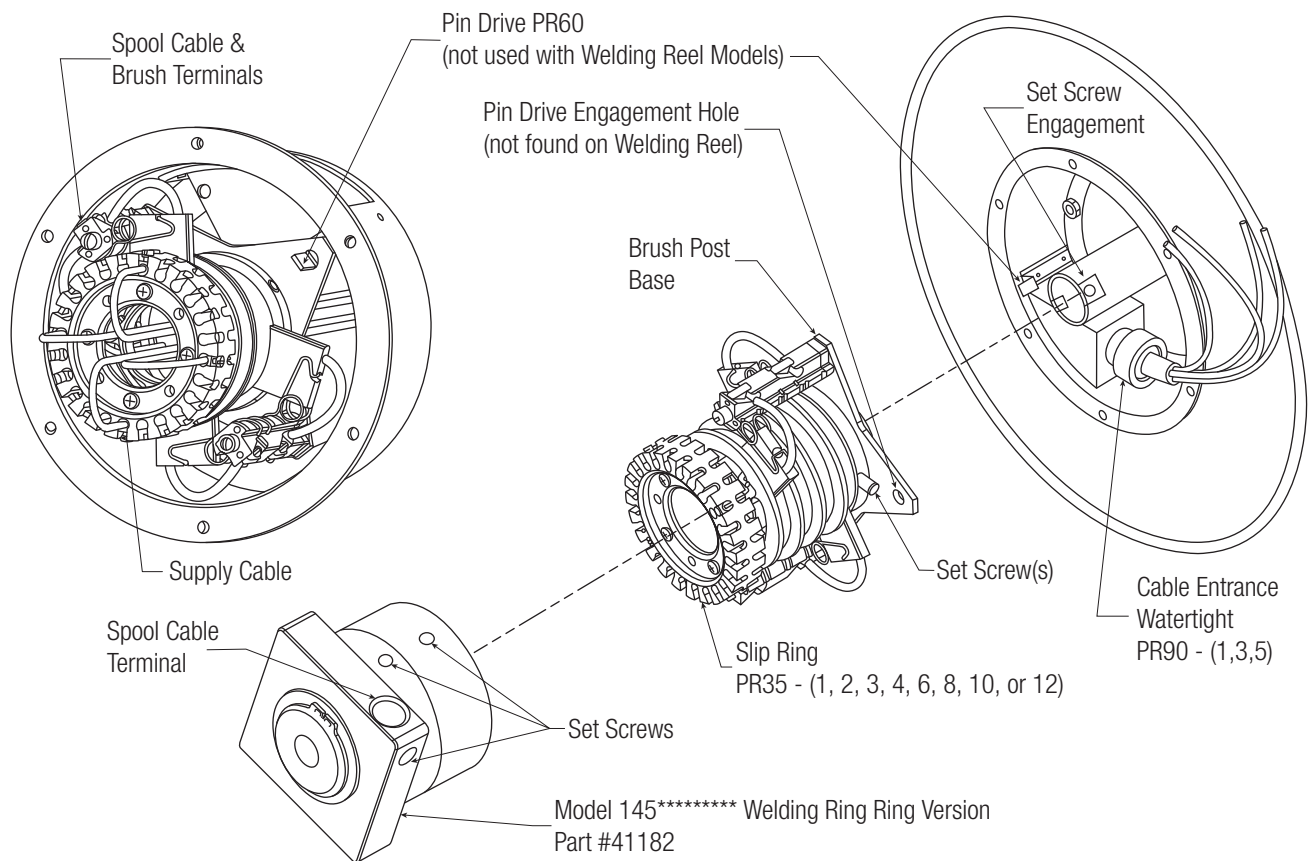


Figure 4-1

SECTION 4 - MAINTENANCE

4.4 Cable Replacement

- 4.4.1 Replacement cable should be the same size and length as existing cable. Any variations to cable specifications should be pre-approved by the factory.
- 4.4.2 Disconnect all electrical service to the reel before replacing the cable. Follow Lock-Out/Tag-Out procedures as outlined by OSHA.
- 4.4.3 Disconnect the terminal outboard end of the cable and allow cable to retract onto spool. Ensure all spring tension is off by manually rotating the spool.
- 4.4.4 Remove the cable from the spool by looping it over the spool flange and slip ring cover. Make sure the cable end is through the cable guide.
- 4.4.5 Remove the six (6) nuts holding the slip ring cover. Remove cover and gasket. Reinstall (2) nuts finger tight to hold the flange in place.
- 4.4.6 Loosen the supply cable terminal screws (set-screws on Welding Reel Ring) and release the supply cable leads from the terminal block of slip ring.
- 4.4.7 Loosen the brush post terminal screws (set-screws on Welding Reel Ring) and release the cable leads.
- 4.4.8 Use 1/8" Allen Wrench to loosen the set screw and remove the slip ring stack.
- 4.4.9 Remove the watertight nut, gripping ring, bushing and the cable to be replaced.
- 4.4.10 Obtain the replacement cable of the correct size and length and strip the cable end to match the old cable.
- 4.4.11 Carefully and thoroughly clean the inside surfaces of both flanges and the drum.
- 4.4.12 Follow steps 4-13 in the **Cable Installation** section to install the replacement cable, taking care to avoid twisting the cable while winding it onto the reel. Care should also be taken to match the color coded cable leads. (For additional information on wiring, see **Power Connections** section.)

SECTION 4 - MAINTENANCE

4.5 Spring Motor Replacement

CAUTION

Do not open the spring motor or personal injury may result.

- 4.5.1 The spring replacement process is determined by the spring configuration and cannot be performed in the field. The entire spring motor assembly must be replaced as a unit. Read description on Conductix-Wampfler label to identify spring (see image below).
- 4.5.2 Disconnect all electrical power to the reel before beginning any maintenance or service.
- 4.5.3 Remove the slip ring from the shaft by following the procedure outlined in the **Slip Ring Replacement** section.
- 4.5.4 Remove the (4) nuts in the bottom of the drum. This may require removing the watertight in order to access all nuts. Lift the cable, drum, and front flange together and set aside.
- 4.5.5 Remove the shaft coupling.
- 4.5.6 Remove the spring motor by unscrewing the shaft from the mounting base.
- 4.5.7 Remove packing material from the replacement spring motor and attach it to the mounting base.
- 4.5.8 Re-assemble spring reel in reverse order with the new spring motor. Note the following:
- Replace gaskets as needed.
 - Ratchet must be in the deactivated position.
 - Shaft must be fully seated on base before installing coupling and watertight.
 - Reactivate ratchet to ensure proper alignment.
 - Verify drum and ratchet teeth orientation (see **Ratchet** section).
- 4.5.9 Reassemble the reel (see steps 6-11 in the **Cable Installation** section); refer to Color Code chart on page 8.
- 4.5.10 Adjust spring tension by following the procedure in the **Spring Tension Adjustment** section.

RECORD

The catalog number of the reel and the serial number of the reel are required when ordering replacement parts or discussing the reel with the factory. Please record this information now in the spaces provided below.

CATALOG NO. OF REEL _____

SERIAL NO. _____

DATE INSTALLED _____

SECTION 5 - REELSAFE BRAKE

NOTE: For any troubleshooting issues encountered during the operation of the REELSAFE brake, please contact Conductix-Wampfler for assistance.

5.0 Operation/Location

5.0.1 The REELSAFE brake limits a spring-powered reel's retraction speed where it will not damage personnel or property should an accidental uncontrolled retraction occur. The REELSAFE comes with a preset retraction speed, but it is fully adjustable to a user's preference after reel installation. Some variation in retraction rate will be noticeable during large temperature variations such as seasonal temperature change and minor adjustments may be desired accordingly.

5.0.2 The REELSAFE brake can be found on the guide arm. The brake device is a 4-inch by 3-inch by 2 5/8-inch box, with six (6) bolts in the face and an adjusting screw in the top.

5.1 Retraction Speed Adjustment

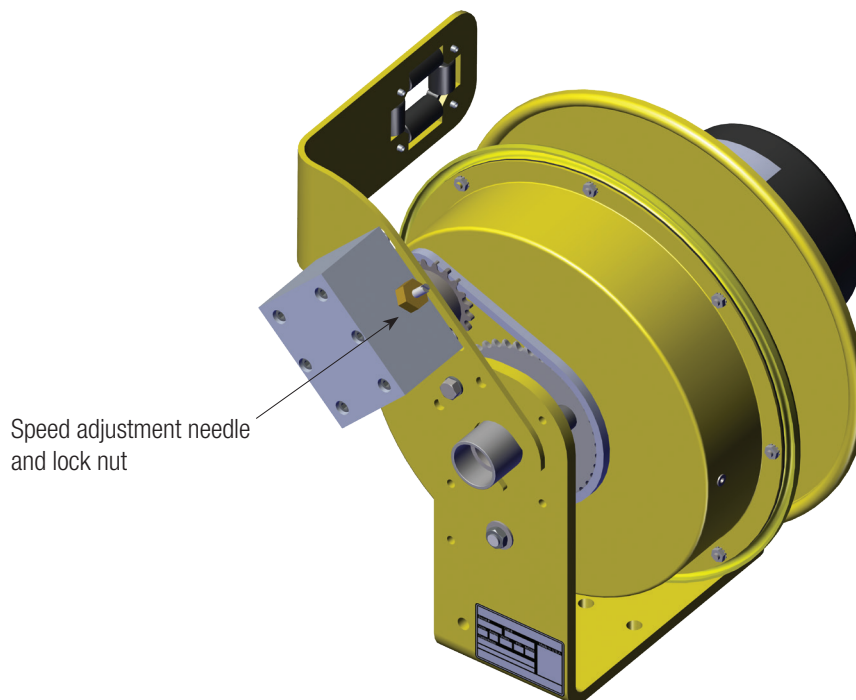
5.1.1 A 7/16" end wrench and a straight bit screwdriver are required to make the following adjustments.

1. Loosen the lock nut on the top of the brake box using the 7/16" end wrench.
2. To slow the retraction speed of the reel, turn the adjusting screw in the clockwise direction (counter clockwise rotation will increase the retraction speed). A small amount of adjustment can make a large difference in the reel retraction speed. Make adjustments in 45° to 90° increments until desired speed is reached. Warning: Always use extreme caution if uncontrolled retraction is the means by which retraction speed is tested.
3. After the desired retraction speed is reached, retighten the adjusting screw lock nut being careful not to allow the adjusting needle to move.

5.2 Drive Chain Tension Adjustment

5.2.1 The REELSAFE brake is mounted to the guide arm with four (4) 1/4" flat head screws. To adjust the chain tension, loosen the four (4) 1/4" hex head mounting bolts and slide the entire brake in the slotted holes to achieve the desired chain tension. Retighten the mounting bolts.

5.3 REELSAFE Installed View



SECTION 6 - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Reel will not retract cable but has some tension.	<ol style="list-style-type: none"> 1) Improper pretension. 2) Incorrect Reel for application (lift vs. stretch) 3) Improper cable or cable length installed. 4) Cable guide adjustment. 	<ol style="list-style-type: none"> 1) See Section 3.7 Spring Tension Adjustment. 2) Verify application vs. reel selection. 3) Install correct cable type and length. 4) Check guide alignment (see Section 2.2 and 2.3)
Reel does not have any spring tension	<ol style="list-style-type: none"> 1) Broken spring. 	<ol style="list-style-type: none"> 1) Verify application and duty cycle. Replace spring motor assembly (Section 5.6)
Ratchet will not activate	<ol style="list-style-type: none"> 1) Broken ratchet pawl spring. 2) Lock-out option arm deactivated. 	<ol style="list-style-type: none"> 1) Replace ratchet pawl spring. 2) Activate lock-out arm (See Section 3.4)
Ratchet will not deactivate	<ol style="list-style-type: none"> 1) Over-extension of reel. 	<ol style="list-style-type: none"> 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).	<ol style="list-style-type: none"> 1) Reel mounting not level. 2) Cable retraction rate too high. 3) Cable guide out of adjustment. 4) Improper cable or cable length installed 	<ol style="list-style-type: none"> 1) Mount reel on level surface. 2) Maintain steady retraction rate. 3) Properly adjust cable guide (See Section 3.2 and 3.3). 4) Install correct cable type and length (See Section 2.5 and 3.5).
Cable twisting or knotting.	<ol style="list-style-type: none"> 1) Improperly installed cable. 2) Cable rubbing on or bending around fixed object. 3) Excessive spring tension. 4) Inadequate anchoring of cable. 	<ol style="list-style-type: none"> 1) See Section 3.5 Cable Installation. 2) Check roller guide for function and cable payout path (See Section 3.3). 3) Verify application vs. reel selection. Also check pretension. 4) Adjust anchoring method i.e. and strain relief.
Open or intermittent circuit.	<ol style="list-style-type: none"> 1) Inadequate connection. 2) Loss of brush contact to slip ring. 3) Cable defective. 	<ol style="list-style-type: none"> 1) Check all termination points. 2) Check brush wear, spring tension and alignment. 3) Perform continuity check on cable termination points.
Circuit trips and/or pitted burned rings or brushes.	<ol style="list-style-type: none"> 1) Inadequate amp rating of reel selection. 	<ol style="list-style-type: none"> 1) Verify application requirements vs. reel and cable rating (see Section 2.5).
Circuit arcing.	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1) Verify application requirements vs. reel and cable rating (see Section 2.5). 2) Clean dust from inside slip ring. 3) Check gasket seal. 4) Replace brush and/or brush spring.

SECTION 7 - REPLACEMENT PARTS

Parts Description

Reel Catalog Number:

Recommended Spare Parts:

② ⑦ ③
⑩ ⑫

③

Gaskets	
PR55	
PR57	

⑫ **Brush Replacement Kit**
PR95 (1 Brush & 1 Spring)

①

Cover Selection				
Spool Drum Size				
	PA	PB	PC	
Slip Ring Size	01	PR13-3	PR13-3	PR13-3
	02	PR13-4	PR13-3	PR13-3
	03	PR13-4	PR13-3	PR13-3
	04	PR13-4	PR13-3	PR13-3
	06	PR13-6	PR13-4	PR13-3
	08	PR13-8	PR13-6	PR13-4
	10	N/A	PR13-8	PR13-6
	12	N/A	PR13-8	PR13-6
	WI	PR13-3	PR13-3	PR13-3

⑭ **Cap Plug**
03688
B & C Only

④

Drum Width	Cable Drum	⑧ Guide Arm	
A = 3.0	PR86-3		PR87-3
B = 4.5	PR86-4		PR87-4
C = 6.0	PR86-6	PR87-6	

②

Slip Ring	
PR35-01	PR35-06
PR35-02	PR35-07
PR35-03	PR35-08
PR35-04	PR35-10
PR35-05	PR35-12
W1 = 41182	

POWEREEL Component Code: **P B J S - 12 03 - 60**

Installed Cable

Blank = No Cable Installed

= Length of Cable (ft.)

3/32 = Length of Grounding Cable

⑦

SPRING MOTOR	
J Only =	PR89 = 1 Spring
JP =	PR89P = 2 / Parallel
JS =	PR89S = 2 / Series
K Only =	35001 = 1 Spring
KP =	35003 = 2 / Parallel
KS =	35002 = 2 / Series

Wire Gauge
Reel with Cable Only

Number of Conductors

Cable Gauge

= Wire/Cable Gauge

3/32 = Jacketed Aircraft Cable

Requires two (2) additional feet of cable:
e: 60 = 62

⑬ **Cable Kit/Waterlight**

AWG	No. of Conductors		
16 AWG	26	7-12	-
14 AWG	23	4-8	9-12
12 AWG	-	24	6-8
10 AWG	-	24	5&6
PN	PR90-1	PR90-3	PR90-6
Cable Range	0.31-0.56	0.5-0.75	0.7-0.95

⑪

Base Assembly	
PR04A-2	
(Item 10: pr91 included)	

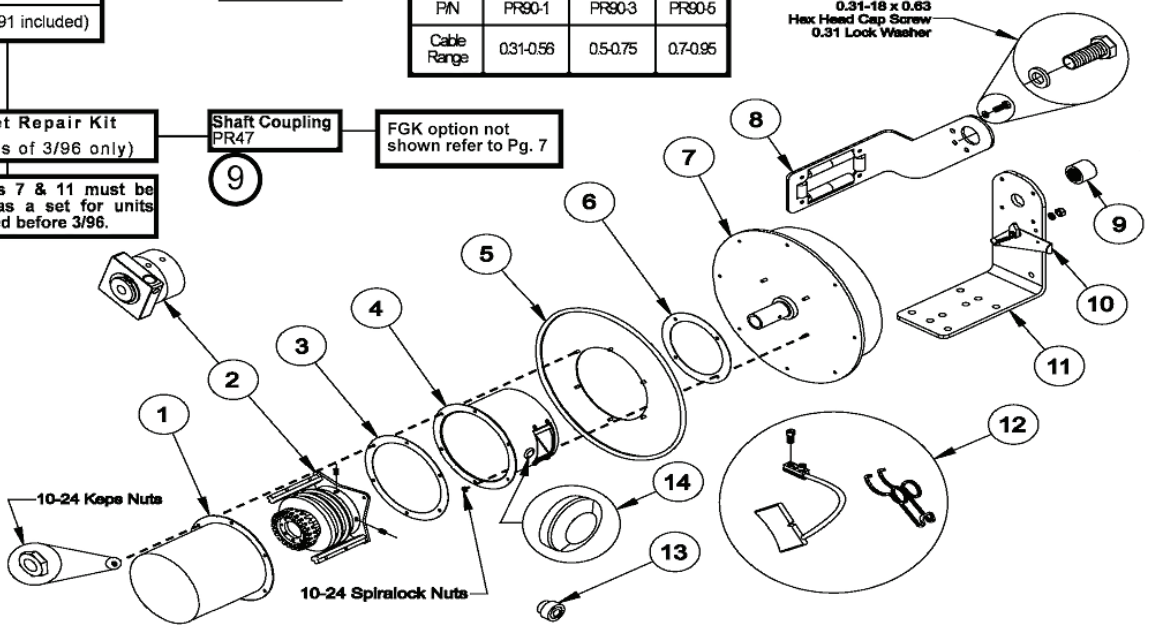
⑤ **Outer Flange**
PR08

⑩ **Ratchet Repair Kit**
PR 91 (as of 3/96 only)

⑨ **Shaft Coupling**
PR47

FGK option not shown refer to Pg. 7

Note: Items 7 & 11 must be purchased as a set for units manufactured before 3/96.



0.31-18 x 0.63
Hex Head Cap Screw
0.31 Lock Washer

Consult the Factory for Custom Application Part Numbers

NOTES

www.conductix.us

USA / LATIN AMERICA

10102 F Street
Omaha, NE 68127

Customer Support
Phone +1-800-521-4888

Phone +1-402-339-9300
Fax +1-402-339-9627

info.us@conductix.com
latinamerica@conductix.com

CANADA

1435 Norjohn Court
Unit 5
Burlington, ON L7L 0E6

Customer Support
Phone +1-800-667-2487

Phone +1-450-565-9900
Fax +1-450-951-8591

info.ca@conductix.com

MÉXICO

Calle Treviño 983-C
Zona Centro
Apodaca, NL México 66600

Customer Support
Phone (+52 81) 1090 9519
(+52 81) 1090 9025
(+52 81) 1090 9013

Fax (+52 81) 1090 9014

info.mx@conductix.com

BRAZIL

Rua Dois, 493
Itu, São Paulo, Brasil
CEP: 13312-820

Customer Support
Phone (+55 11) 4813 7330

Fax (+55 11) 4813 7330

info.br@conductix.com

Contact us for our Global Sales Offices

