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# VL-Series Slip Ring



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## INSUL-8 CORPORATION

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# 1.0 SAFETY

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**1.0.1 ATTENTION:** Read this entire booklet prior to attempting any installation and/or maintenance.

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## 1.1 Electrical Warnings

1.1.1 Install and ground the slip ring and the entire unit in accordance with the National Electric Code and local codes and/or ordinances.

1.1.2 **DANGER:** Hazard of electrical shock or burn. Always disconnect the power from the collector ring before attempting to perform any service function.

Follow lock-out/tag-out procedures as outlined in OSHA section 1910.147 where appropriate.

1.1.3 Do not use this slip ring with electrical loads greater than the rated current and voltage.

1.1.4 Information regarding the current and voltage rating of each slip ring is recorded on a tag permanently fastened to the ring assembly.

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## 1.2 Operational Warnings

1.2.1 Slip rings must be enclosed and protected from any contact by personnel. Means for the provision of this protection is the responsibility of the user. Various enclosure styles are available from Insul-8.

1.2.2 **WARNING:** Modification of this equipment may cause excessive wear or failure and will void the warranty.

1.2.3 **WARNING:** Modification may cause safety and fire hazards. Contact the manufacturer regarding any modifications which could affect safety or reliability.

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## 1.3 Maintenance Warnings

1.3.1 Exercise care while servicing, adjusting, and operating the slip ring.

1.3.2 Periodically check all fasteners and hardware to assure tightness.

1.3.3 Install all mounting fasteners and hardware so as to maintain tightness under vibration.

1.3.4 If you have any questions about the use or the installation of VL-Series Slip Rings that are not answered in this document contact the factory for assistance.

US: 1-800-521-4888  
Canada: 1-800-667-2487

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## 1.4 Specifications & Listings

1.4.1 VL-Series Slip Ring products are built to UL specifications but are not generally certified or listed by any independent certifying or regulatory body.

1.4.2 The following specifications apply to all VL-Series Slip Rings:

1.4.2.1 VL-Series Slip Rings are intended for industrial use and require a permanent mounting means.

1.4.2.2 Maximum RPM is 125.

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## 1.5 Temperature & Ampere/Voltage Ratings

1.5.1 VL-Series Slip Rings withstand a maximum ambient temperature of 220° F.

1.5.2 The model number of the slip ring assembly indicates the ampacity and voltage rating of each type

of ring and brush included on the assembly. **Note: the actual ampacity may be affected by the type and size of the core lead wire (refer to NEC Table 310-16, 17,18, 19 and applicable notes).**

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## 1.6 Markings

1.6.1 Every slip ring is marked with a label on the out-board bearing (or enclosure) which includes the Insul-8/ IER name and logo, the product catalog number and the individual product serial number.

1.6.2 The marking on slip rings includes the maximum amperage and voltage.

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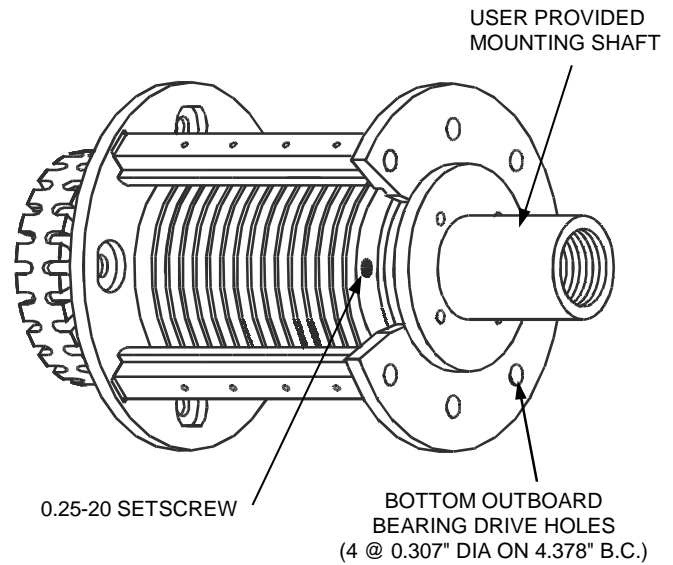
## 2.0 INSTALLATION

### 2.1 Mounting

2.1.1 Mount the VL assembly on the end of a 1.5" OD hollow shaft. Two 0.25-20 setscrews on the top side of the drive collar secure the assembly to the shaft. If voltage exceeds 250V, the shaft should not intrude inside the slip ring core unless special insulating modifications are made at the factory.

2.1.2 The bearings should turn easily when the center core is rotated. Some friction is expected inside the brush assembly, but it should be evenly distributed with no tight spots.

2.1.3 Install VL Slip Rings with either the brush assembly or the slip ring core rotating. One of these two elements should be stationary. Locate a torque arm or bracket to use the available holes in the bottom outboard bearing. It is not recommended to drive the unit from the top outboard bearing.



### 2.2 Wiring & Connections

2.2.1 Perform all wiring according to National Electrical Code guidelines and any applicable local codes.

2.2.2 Make electrical connections to 15 amp and 35 amp brushes through the barrel connectors in the provided terminal strips. See Section 5.3.2.

2.2.3 The barrel connectors in the terminal blocks will accommodate up to 10 GA wire and require 5/16 inch of stripped insulation.

2.2.4 The optional circular outboard terminal block may provide connections to the rings. Use the appropriate crimp connectors if the terminal block is not supplied.

2.2.5 Screws must be tight to achieve the designed current rating.

2.2.6 Make connections with stranded wire whenever possible.

### 2.3 Brush Installation

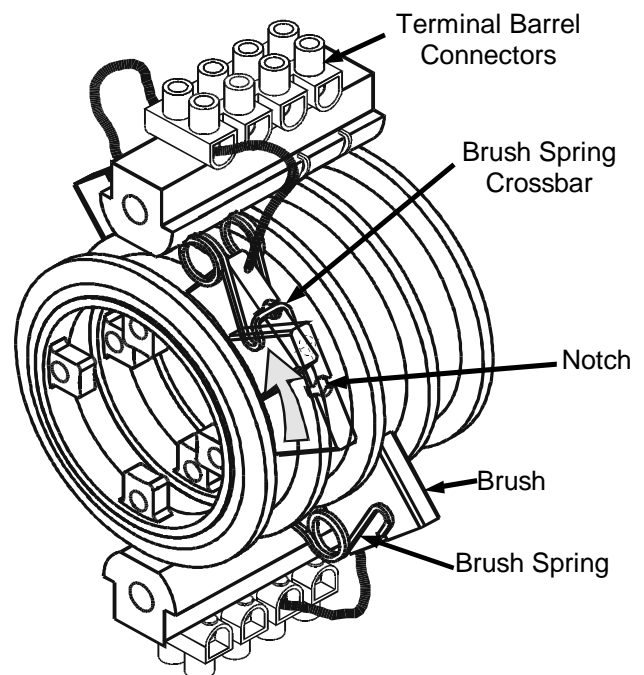
2.3.1 Brush installation consists of attaching the springs, locating the brushes, and connecting the wires.

2.3.2 Snap both rear legs of the spring on the brush posts (see Sec. 3.2.4.4) and center the spring. Lift the spring at the cross bar and start the brush under it. Position the brush so the notch fits under the brush spring crossbar.

2.3.3 Remove brushes by lifting the spring crossbar and rotating the brush free of the spring.

2.3.4 Terminal barrel connectors require 5/16 of stripped wire. Insert the stripped lead into the barrel connector and tighten the screw.

2.4 **CAUTION:** Do not lift the spring crossbar more than 1/8" inch above the top of the brush. Keep the brush flat on the ring at all times. Over-extension of the brush spring will cause a reduction in spring pressure.



# 3.0 MAINTENANCE

## 3.1 Lubrication

3.1.1 All bearings are lubricated for life at the factory. Additional lubrication should not be required.

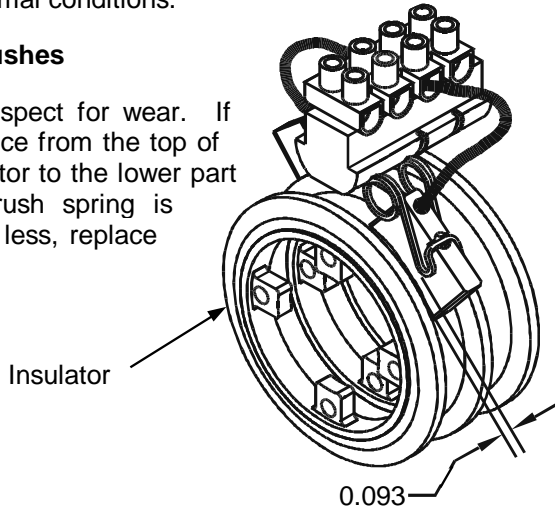
3.1.2 Do not apply any lubricants or solvent cleaning agents to any part of the slip ring.

## 3.2 Inspections

3.2.1 Make the first inspection shortly after installation and before operation. Make continuing inspections on a regular basis after every 200-400 hours of operation under normal conditions.

### 3.2.2 Brushes

3.2.2.1 Inspect for wear. If the distance from the top of the insulator to the lower part of the brush spring is 0.093" or less, replace the brush.



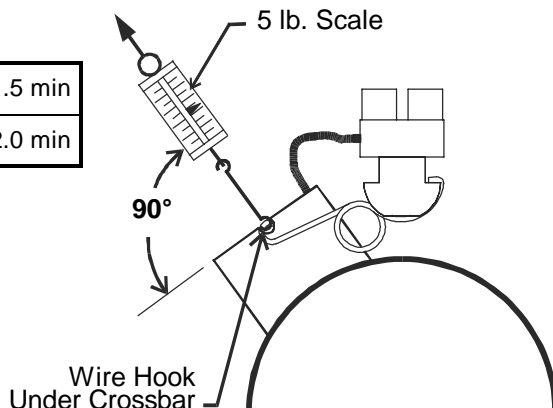
3.2.2.2 Inspect brush contact surface by removing the brush. Remove surface dirt, oxidation, pitting, or other contaminants (with a wire brush).

3.2.2.3 Replace springs when brushes require replacement to assure proper spring pressure.

### 3.2.3 Brush Springs

3.2.3.1 Inspect and test brush springs to assure uniform brush pressure. Replace if brush springs fall below recommended pressure. The spring tension, as measured at the top center of the brush, should be as follows:

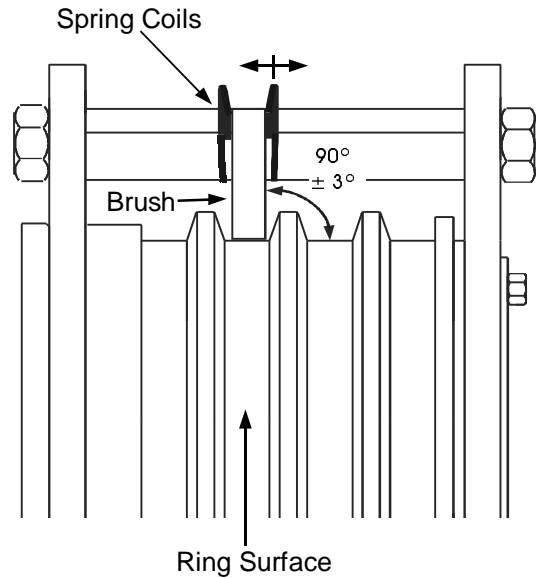
15 amp	1.5 min
35 amp	2.0 min



**CAUTION: Do not lift more than 1/8" or spring pressure will be affected.**

### 3.2.4 Brush Fit Inspection

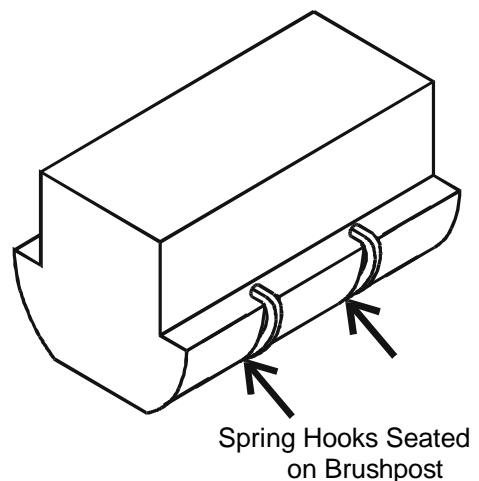
3.2.4.1 Brushes must run at  $90^\circ \pm 3^\circ$  square on the rings. If brush is not square, adjust to vertical by moving the coil of the spring.



3.2.4.2 Brushes need not run on the center of the rings, but there should be no forceful friction against the insulators.

3.2.4.3 The brush spring crossbar must be seated in the brush slot.

3.2.4.4 Spring hooks must seat securely on brushposts.



### 3.2.5 Rings

3.2.5.1 Inspect the ring surface for dirt, oxidation, or other contaminants. A properly operating ring will have a film that appears burnished in color with a darker surrounding color where the brushes track. If the ring requires cleaning, order Slip Ring Polishing Kit #41286.

### 3.2.6 Electrical Connections

3.2.6.1 Inspect all electrical connections for corrosion and tightness. Clean corroded parts with a wire brush and/or muriatic acid. Loose and/or corroded terminations will cause a concentration of excessive heat.

### 3.3.7 Brush Rigging

3.3.7.1 Brush posts are supported between two outboard bearings. The brush posts extend to the outboard bearings and are secured by a notch in the outboard bearing. The notch prevents rotation of the brush post.

3.3.7.2 Spacing between the outboard bearings is critical to assure the free rotation of the brush rigging. The brush posts are cut to an exact length in order to provide the proper spacing. Locate the outboard bearings against the insulator and have a 0.20"

clearance without deformation of the material. **CAUTION:** Do not over-tighten the outboard brush post jam nuts. Make a final check to assure there is no binding of the outboard brush rigging or binding of brushes with insulator barriers.

### 3.3.8 Enclosure Inspection

3.3.8.1 Moisture is a major cause of slip ring deterioration. Water will corrode parts and breakdown insulation. Dust and dirt present within the enclosure will effect the proper operation of the assembly. Most dusts cause excessive brush and slip ring wear, and conductive dust, if allowed to accumulate, will form a path for short circuiting.

3.3.8.2 A properly designed NEMA 4 enclosure will be dust tight and watertight. However, NEMA 4 enclosures do not eliminate internal condensation. Condensation can be eliminated with the addition of a breather, drain, and a thermostatically controlled heater.

3.3.8.3 Periodically perform an inspection by removing the enclosure and checking for condensation, water and dust collection. If contaminants are found, wipe the enclosure and the assembly with a lint free cloth. If the problem persists, take steps to remedy the leakage or condensation problem.

## 4.0 STORAGE

4.1 When storing the slip ring, keep it at room temperature in a clean, dry, protective place. Place self-contained or bagged absorbent material in the

collector ring enclosure during extended periods of storage. Remove absorbent material before putting collector ring into operation.

## 5.0 SERIAL NUMBER RECORD

5.1 Make the following information available when ordering replacement parts or discussing the slip ring with the factory by recording the information in the spaces provided here. This information is located on your packing slip, factory invoice, and serial number tag.

Catalog No. Slip Ring: \_\_\_\_\_

Serial No.: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

## 6.0 TROUBLESHOOTING

6.1 Some possible problems are addressed in the table here, otherwise, contact the factory at the numbers provided on the back page.

Problem	What to Check
Intermittent Signal or Loss of Signal	Verify brush wear per Section 3.2.2.
	Check spring pressure per Section 3.2.3
	Check contact surfaces for cleanliness (Ring Polishing Kit available. See Replacement Parts below.)
	Visually check for spring fit and function. Adjust or replace as necessary.
	Check core wiring for short circuit.





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