

R-SERIES SLIP RING



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INSUL 8

CONDUCTIC DIVISION

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Disclaimer/General Warranty

INSUL-8 CORPORATION

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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 judgement, 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.

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Additionally, Seller's obligation shall be limited by the manufacturer's warranty, (and shall be 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.

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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, 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 entitles claiming through the Buyer.

1.0 Safety

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

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. (See page 8).

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.

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 manufacture regarding any modifications which could affect safety or reliability.

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 hard ware 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 your R-Series Slip Ring that are not answered in this documentation contact the factory for assistance.

U.S. 1-800-521-4888
Canada: 1-800-667-2487

1.4 Specifications & Listings

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

1.4.2 The following specifications apply to all R- Series Slip Rings.

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

1.4.2.2 Maximum RPM for units with out ball bearings is 125. Maximum for units with ball bearings is 500 RPM.

1.5 Temperature & Ampere / Voltage Ratings

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

1.5.2 The actual ampacity of the Slip Ring assembly 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).

1.6 Markings

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

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

2.0 Installation

2.1 Handling

2.1.1 Carry unit by core attachment or through core rod for vertical support.

2.1.2 Carry unit by horizontally supporting outboard bearings.

2.2 Application Types

2.2.1 Slip ring assemblies can be purchased without an enclosure. User must enclose the ring appropriately to meet safety codes and to protect the ring.

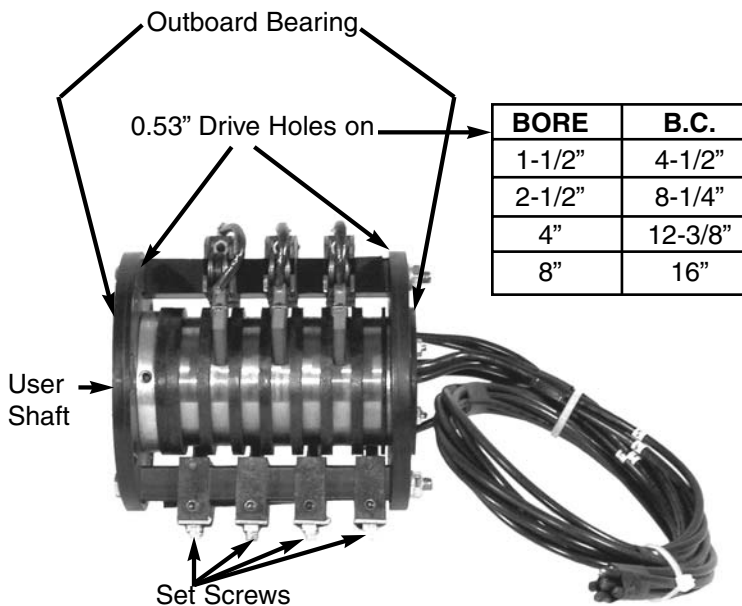
2.3 Mounting & Connections

2.3.1 Slip Rings w/o Enclosure or with Wrap Around Shroud (R-U)

2.3.1.1 Install the slip ring assembly on the shaft and lock it into place with set screws on the drive collar.

2.3.1.2 Make connections at lugs on the brush holders and ends of core lead wires or buss bars. Be sure connections on the brush assemblies do not interfere or exert tension on the brush holders. We recommend using flexible wire for brush and core terminations. All wire sizes and types must be appropriate to the required ampacity and voltage (refer to NEC Table 310-16, 17, 18, 19 and applicable notes).

2.3.1.3 Bring a pin, bolt, torque arm, or suitable member to hold the brush carriage stationary (or rotate it) into the 0.53" dia. holes provided on the outboard bearing. To avoid putting strain on the bearings, the drive connection is to be a loose link or floating type connection.



2.1.3 **NOTE: NEVER SUPPORT UNIT BY CORE LEADS.**

- ◆ wrap around shroud
- ◆ revolving enclosure with shaft flange
- ◆ stationary enclosure with rotating elbow

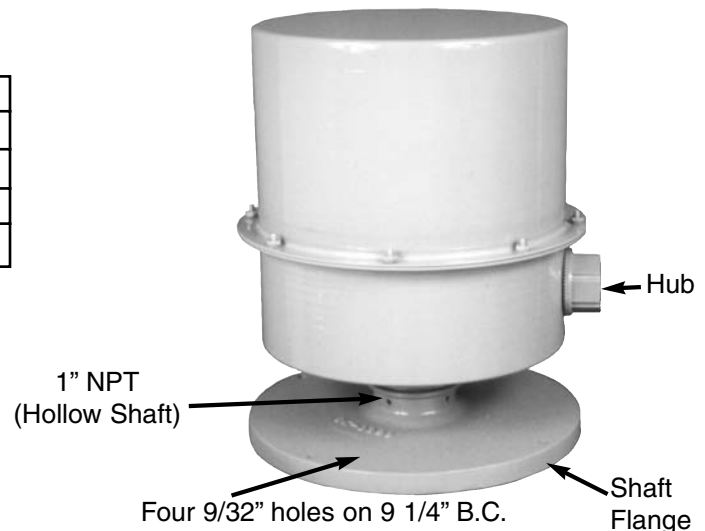
2.3.2 **Warning: During installation of slip ring with enclosure, maintain minimum 3/8" air space between enclosure and uninsulated terminal connections.**

2.3.3 Slip Ring in Revolving Enclosure (RAR)

2.3.3.1 Mount shaft flange or internal thread on shaft to rotating or stationary point. Incoming core leads pass up through hollow of shaft and connect to slip ring core leads using crimp connections.

2.3.3.2 Incoming leads to brush carriage of slip ring come through NPT hub provided and connect to screw connectors on brush holders (see 2.2.1.2).

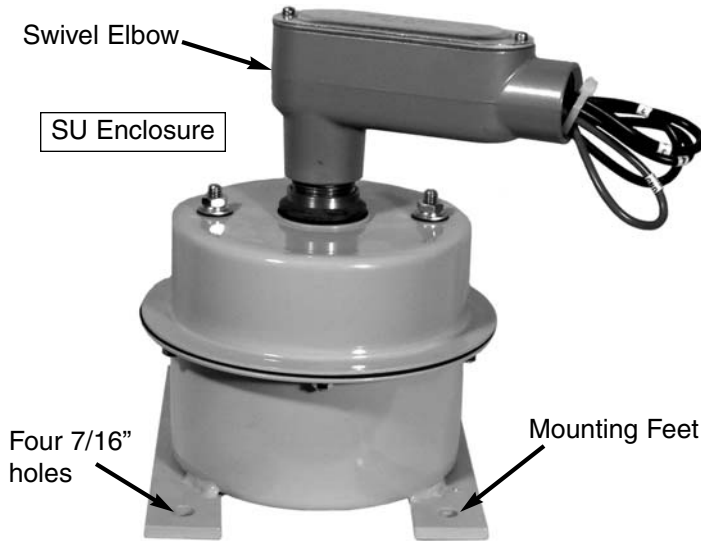
2.3.3.3 Enclosure can be held stationary (or rotated) by means of the incoming brush cable or flexible conduit. Larger enclosures may require user provided drive arm connected in a flexible manner to the enclosure.



2.3.4 Slip Ring in Swivel Enclosures (RAQ/RBQ)

2.3.4.1 Mount enclosure using the mounting straps or mounting feet provided.

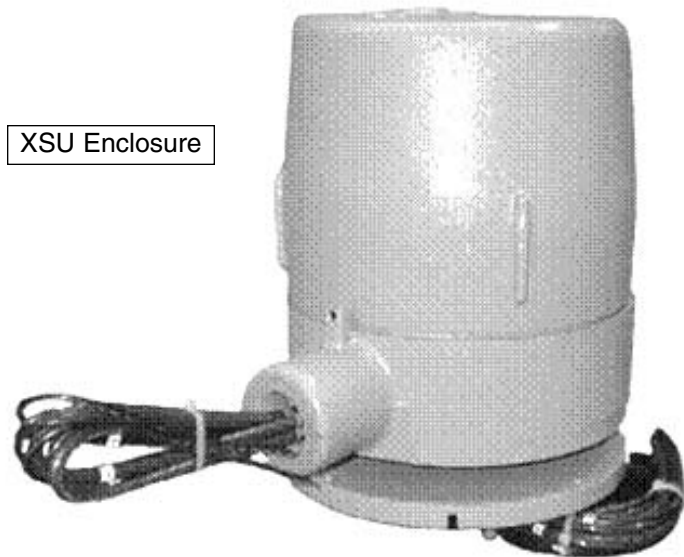
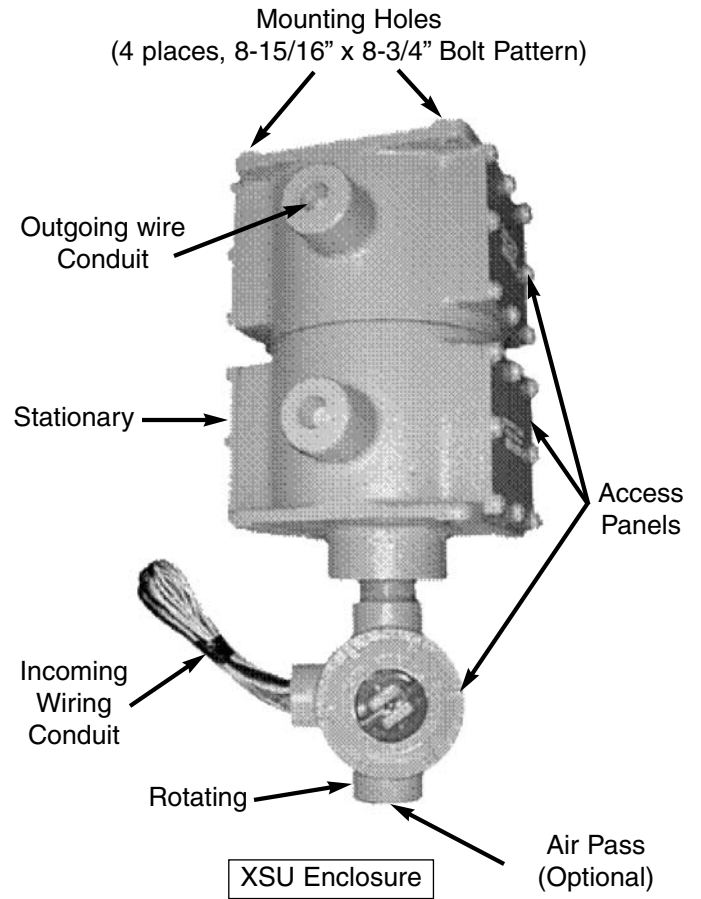
2.3.4.2 Connect incoming core leads through the swivel elbow provided and onto ring core leads using crimp connectors. Swivel elbow is either held stationary or rotated with incoming cable or flexible conduit.



2.3.5 Explosion Proof Enclosures (XRU, XSU, and XSU with Optional Air Pass)

2.3.5.1 For all explosion proof enclosures, user must seal incoming and outgoing electrical conduit according to the National Electric Code.

2.3.5.2 **Note: Loose connection required for rotating part on XSU with Optional Air Pass.**



3.0 Maintenance

3.1 Lubrication

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

3.2 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 Brush Holders

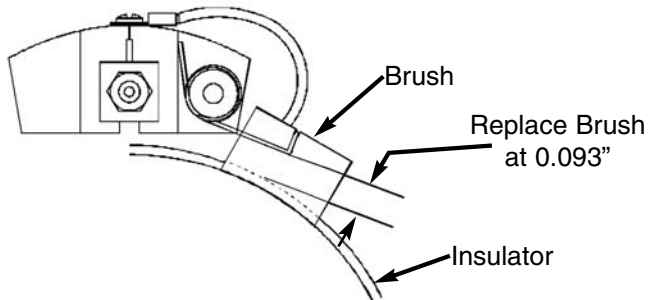
3.2.2.1 Inspect brush holders for proper alignment. Locate brush holders so that the entire brush contact surface rides squarely on the ring with the brush moving freely in the brush holder. Position brush holders so the brush makes contact with the middle of the conductor and is not offset.

3.2.2.2 Check brush holder clamps for tightness. Set clamp bolts at 10 in-lb. max.

3.2.2.3 Inspect brush terminations at the holder to assure that no external force is imposed on the holder. We recommend flexible or soft wire leads for these terminations. Use external clamps to support the entire weight of the leads.

3.2.3 Brushes

3.2.3.1 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.



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

3.2.3.3 To remove and replace brush:

- 1) Remove the clamp screw from the brush holder
- 2) Remove the screw from the brush lead
- 3) Remove the brush holder
- 4) Replace the brush
- 5) Reassemble

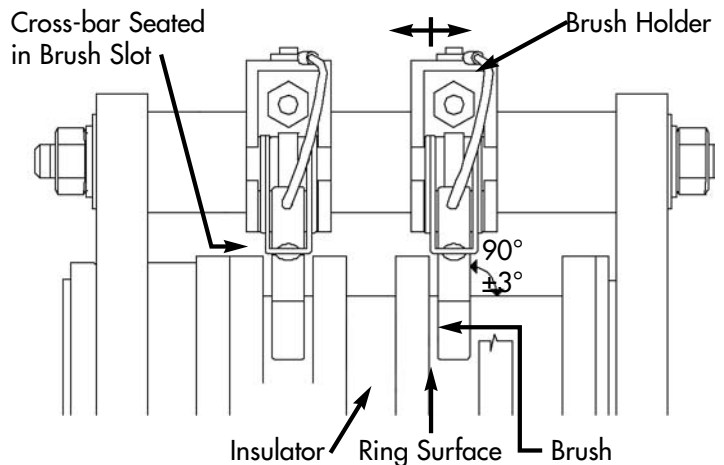
3.1.2 **CAUTION: Do not apply any lubricants or solvent cleaning agents to any part of the slip ring.**

3.3.5 Brush Fit Inspection

3.3.5.1 Brushes must run at $90^\circ \pm 3^\circ$ square on the rings. If brush is not square, adjust position of brush holder on brush post.

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

3.3.5.3 The brush spring cross-bar must be seated in the brush slot.

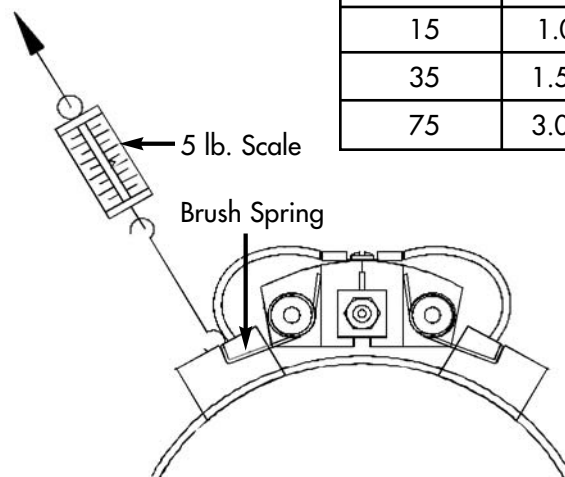


3.2.4 Brush Springs

3.2.4.1 Inspect and test brush springs to assure uniform brush pressure. If brush springs fall below recommended pressure, replace entire brush holder.

Table 3.3.3 Brush Spring Tension

Brush	Spring
15	1.0 lb. min
35	1.5 lbs. min
75	3.0 lbs. min



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 Part No. 41286.

3.2.6 Electrical Connections

3.2.6.1 Inspect all electrical connections for corrosion and tightness. Loose and/or corroded terminations will cause a concentration of excessive heat.

3.2.7 Brush Rigging

3.2.7.1 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 overtighten the outboard brush post jam nuts. Make a final check to assure there is no binding of the outboard brush rigging or binding of the 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

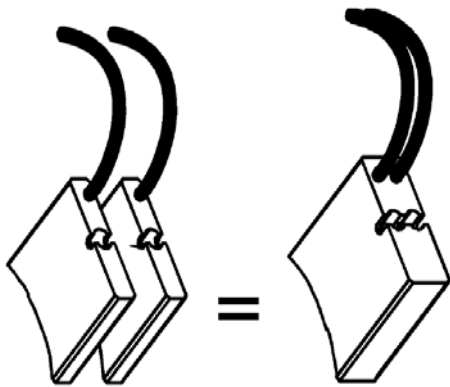
6.1 Some possible problems are addressed in the table here, otherwise, contact the factory at the numbers provided on the back page.

Problem	What to Check
Intermittent Signal or Loss of Signal	Verify brush wear per Section 3.2.3
	Check spring pressure per Section 3.2.4
	Check contact surfaces for cleanliness. (Ring Polishing Kit available. See Replacement Parts.)
	Visually check for spring fit and function. Adjust or replace as necessary
	Check core wiring for short circuit

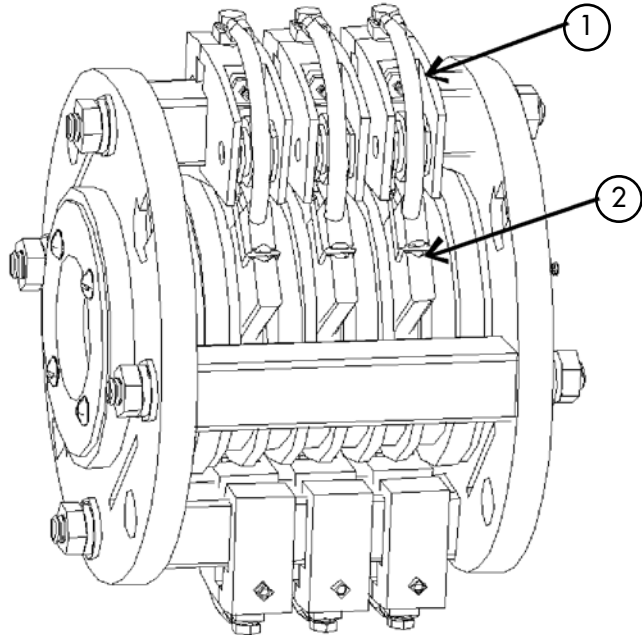
7.0 Replacement Parts

	Slip Ring Bore Size				Amp / Volts	Brush Holders	
	1.50"	2.5", 3.0" 3.5"	4.0", 4.5", 5.0", 6.0"	8.0", 10.0"		Single	Double
Brushes	30067A	30067B	30067C	30067D	15 / 250	02800	02807
	30066A	30066B	30066C	30066D	15 / 250	28000	02807
	30068A	30068B	30068C	30068D	35 / 250	02801	02808
	30068A	30068B	30068C	30068D	35 / 600	02801	02808
	30069A	30069B	30069C	30069D	75 / 600	02802	02809
	02840	02845	02850	02855	110 / 600	02803	02810
	02841	02846	02851	02856	150 / 600	02804	02811
	02842	02847	02852	02857	225 / 600	02805	02805 (x2)
	02843	02848	02853	02858	300 / 600	02806	02806 (x2)
	N/A	DRA3-20A-2500	DRA3-20A-4000	DRA3-20A-8000	200 / 600	Brushes & Holders Sold as a unit in this Amp / Volt Range	
	N/A	03309	03247	03247	400 / 600		
	N/A	03248	03248	03248	600 / 600		

*** Consult the Factory for Custom Application Configurations**



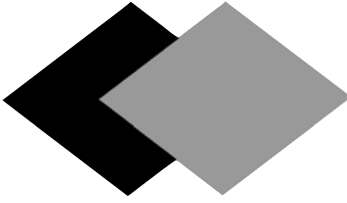
Two 35 Amp Brushes replace one 75 Amp Brush



Notes

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