

## Bead Chain Electrodes



Bead chain electrodes are the most common type of electrode for round wire applications. They provide excellent coverage across a wide range of product diameters, are long wearing and somewhat tolerant of knots, splices and surface aberrations.

They are widely accepted by Specifications and Norms, such as IEC and UL (UL allows only bead chain electrodes for round-wire applications).

The new split bead chain assemblies from Clinton offer the first real advance in bead chain design in fifty years, offering automatic centering of the product, unmatched electrode coverage and robust design.

They are offered as standard in all Clinton "B" Series spark testers and can be retrofitted into many of our older Models. See Note Below.

### Bead Chain Electrodes 0 – 2 inch throughput diameter- New Split Electrodes

Bead Chain Electrodes are typically used with High Frequency Spark Testers, DC-Spark Testers when the test voltage is above 1000VDC and Impulse (IT) Spark Testers.

0 – 1-inch capacity: Models: BD-12S, BD-13S, BD-14S, BD-15S, BD-16S

0 – 2-inch capacity: Model: BD-22S

Electrode Model No.	Throughput Capacity	Test Length	Max HF Line Speed (UL)	Max DC Line Speed (UL)	Max HF Line Speed (IEC) mpm
BD-12S	1-inch/25mm	2-inch/50mm	3333 fpm	N/A	3600 mpm
BD-13S	1-inch/25mm	3-inch/75mm	5000 fpm	N/A	5400 mpm
BD-14S	1-inch/25mm	4-inch/100mm	6666 fpm	Unlimited	7200 mpm
BD-15S	1-inch/25mm	5-inch/125mm	8333 fpm	Unlimited	9000 mpm
BD-16S	1-inch/25mm	6-inch/150mm	9999 fpm	Unlimited	10800 mpm
BD-22S	2-inch/50mm	2-inch/50mm	3333 fpm	N/A	3600 mpm

### NOTE: Retrofitting Older Clinton Electrodes with the BD-12S Split Trough Electrode

Given the advantages of the new BD-12S electrode over previous bead chain electrode designs, customers have expressed a desire to retrofit older equipment with the BD-12S. It can be directly installed into some of CIC's older equipment. The mounting holes for the BD-12S are the same size and configuration as the standard BD-12 (CIC Part No. 25002) electrode, however the depth of the BD-12S is larger and the unit will not fit into the HF-20E series and earlier electrode containments. It will fit into the G-Series chassis, (HF-20G02 and HF-20G02A models). It will also fit into newer HF-15AC and HF-15AR units. For older HF-15AC and HF-15AR units the BD-12S can still be retrofitted. In this case the electrode cover and end guards must be replaced to accommodate the increased depth of the split trough design. For more information, contact the factory or [support@clintoninstrument.com](mailto:support@clintoninstrument.com).

## Bead Chain Electrodes 2 – 8 inch throughput diameter

These electrodes are typically used with AC Mains Frequency Spark Testers and occasionally DC-Spark Testers when the test voltage is above 20kVDC.

Bead Chain Electrodes 0 – 2-inch, capacity, BD-A230, BD-A236

Bead Chain Electrodes 0 – 4-inch capacity, BD-A406, BD-A412, BD-A418, BD-A424

Bead Chain Electrodes over 4-inch capacity, BD-A506, BD-A512, BD-A806, BD-A812

Electrode Model No.	Throughput Capacity	Test Length	Max AC Line Speed (UL)	Max DC Line Speed (UL)	Max Line Speed (IEC)
BD-A230	2-inch/50mm	30-inch/762mm	1000 fpm	N/A	900 mpm
BD-A236	2-inch/50mm	36-inch/914mm	1200 fpm	N/A	1080 mpm
BD-A406	4-inch/100mm	6-inch/152mm	200 fpm	Unlimited	180 mpm
BD-A412	4-inch/100mm	12-inch/304mm	400 fpm	N/A	360 mpm
BD-A418	4-inch/100mm	18-inch/457mm	600 fpm	N/A	540 mpm
BD-A424	4-inch/100mm	24-inch/609mm	800 fpm	N/A	720 mpm
BD-A506	5-inch/125mm	6-inch/152mm	200 fpm	Unlimited	180 mpm
BD-A512	5-inch/125mm	12-inch/304mm	400 fpm	N/A	360 mpm
BD-A806	8-inch/200mm	6-inch/152mm	200 fpm	Unlimited	180 mpm
BD-A812	8-inch/200mm	12-inch/304mm	400 fpm	N/A	360 mpm

## Brush Electrodes

Brush electrodes are used for several reasons; often they are employed when test voltages are below 1000 volts, due to dielectric weakness of the tested insulation. They are also used on flat products, such as ribbon and tape cable as well as rectangular wire and coated buss bars. Occasionally they are used when the product path is angled or vertical making bead chain electrodes impractical or impossible to use.

Brush electrodes are often used when testing multiple conductors in parallel, prior to cabling operations.

Brush electrodes can be used with both high frequency and DC test equipment, and are available with bristles in several different types of materials. Brushes supplied with AC spark testers (both mains frequency as well as high frequency) are phosphor bronze. Brushes supplied with DC spark testers are stainless steel.

### Brush Electrodes Up to 3-inch throughput diameter for round products

#### Model: BR-1A

With top and bottom spring-loaded brushes, the BR-1A is used for round wire products up to 1-inch in diameter. It is also used for rectangular wire and flat products up to 1-inch in the largest dimension.



Model: BR-1A

## Brush Electrodes Up to 3-inch throughput diameter for round products (Continued)

### Model: BR-3A

With two sets of opposing spring-loaded brushes at 90-degree angles, the BR-3A can cover the full circumference of round products up to 3-inches in diameter. Pictured at Right.



Model: BR-3A

### Model: BRTC-2222

With four sets of fixed top and bottom stainless steel brushes, the BRTC-2222 is used for round wire products up to 1-inch in diameter. It can also be used for rectangular wire and flat products up to 1-inch wide. This electrode is supplied for DC applications where the maximum output voltage is 1000 volts or less. Similar electrodes can be supplied with different brush materials. Pictured at Right.

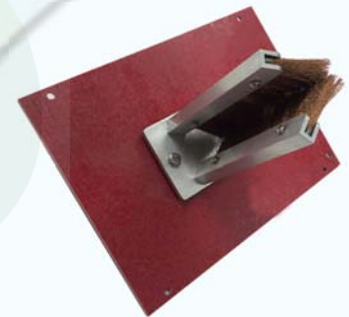


Model: BRTC-2222

## Brush Electrodes for Flat Products and Specialty Electrodes

### Models: BRTC-6 and BRTC-12

With top and bottom fixed phosphor bronze brushes, the BRTC brush electrodes are used for flat or rectangular products no more than ¼-inch (6 mm) thick and up to 6-inches (150mm) in width for the BRTC-6 and up to 12-inches [300mm] in width for the BRTC-12. They can also be used for the testing of multiple small conductors or twisted pairs in a parallel array. BRTC-6 is Pictured at Right.



Model: BRTC-6

### Model: R-46 Roller Electrode

The R-46 is designed for thin tape and ribbon cables, and uses 4 rollers. The infeed and outfeed rollers are grounded, and are arranged to bear against the product, tangent to the electrode centerline. In the center, there are two charged rollers, bearing on the top and the bottom of the product, mounted on a rotating plate to adjust for product thickness or to allow the product to wrap around, making an S-bend, to vary the contact surface and therefore the test length. Not Pictured.

### Model: BR-0.3-2HV

The BR0.3-2HV is used for round wire or twisted pairs no more than ¼-inch (6 mm) in diameter, with a test length of 2.0 inches. Designed primarily for use within rotating machinery, the BR-0.3-2HV can be used in any application where space is limited. The customer is responsible for guarding the electrode when it is accessible to operators during use. Pictured at Right.



## Custom Electrodes

The Clinton Instrument Company has been spark test specialists in the Wire and Cable Industry for well over 50 years. During this time, we have designed and manufactured equipment for nearly every possible spark test application, and have a large knowledge base as well as a library of designs for special electrodes. We are prepared to assist you when your test requirements grow beyond what standard equipment can offer.

## Accessories

### Floor Stand Model: FS-4

Clinton Instrument Company's Floor Stand model FS-4 offers a convenient, sturdy, and adjustable mounting platform for all Clinton HF and DC Spark Testers.

It is designed to be mounted permanently to the factory floor and is height adjustable to accommodate wire line heights from 27.75 to 42.25-inches. It is constructed from heavy cast iron and tubular steel. Some assembly is required. Floor mounting hardware is not included. Pictured at Right.



**Model:  
HF-15B/BD-12S  
Mounted to FS-4**

**Model: FS-4  
Mounted to  
HF-15B/BD-12S**



### Horn Light Tower Model: X3-B and X3-A

Clinton Instrument Company's Horn Light Tower, Model X3-B can be mounted directly to all "B" series (X3-B) and "A" series (X3-A) spark testers.

The light stack has a red warning lamp that lights when the unit is producing high voltage and an amber fault alarm that lights when the process control relay responds to an insulation fault. A second set of relay terminals, mirroring the spark tester's process control relay is provided on the horn light tower to control downstream processes. Pictured at Left.

### Model: RC/RM B- Series Rack Mount Adaptor

The RC Controller can be mounted directly to the spark test module chassis, or located up to 200 feet away using the provided mounting bracket. For situations where it is necessary to adapt the RC controller to a standard rack mount, the RC/RM will allow mounting into a standard 3 - 1/2 x 19-inch Rack Mount. Pictured Below.



### Mounting Adapter Plate: G- to A/B Series

When an HF-20G series electrode is to be replaced with either an HF-15B or an HF-15A this adapter plate facilitates an easy changeover, utilizing the hole pattern of the HF-20G electrode and adapting either the HF-15B or HF-15A. The new unit will then maintain the same wire center in both directions as the G-series electrode, so there's no need to change the mounting to accommodate the dimensions of the new equipment. Heavy gauge steel construction, mounting hardware is not included. Pictured Below.

