

General

Intrinsic's BR series of heat shrinkable metal rings are used to clamp cable shielding braids onto specially designed connector backshells.

See Intrinsic PD BR for the ring dimensional specifications.

See Intrinsic PD012 for the backshell dimensional requirements.

These rings are most commonly used with tin plated copper braids per U.S. DLA specification A-A-59569.

See Intrinsic PD013 for information on which braids can be used with particular rings.

Handling and Storage:

BR rings are supplied in the expanded condition. They begin to shrink in diameter when heated to a temperature above 45°C (113°F). Handling and storage procedures should insure that the rings are kept below this temperature prior to installation. The rings have an unlimited shelf life.

Installation:

The braid should be cut oversize on length so that it can be manipulated during the connector assembly process and still remain braided in the area where the ring will clamp it to the adapter.

Thread the ring over the cable and braid.

Either push back the braid or fold it back over itself to allow room for the adapter and working space to pin the connector.

Pin the connector and torque the adapter onto the connector.

Pull the braid up onto the termination barrel of the adapter. The braid must remain braided in the termination area. Do not try to make the braid end flush with the shoulder at the end of the termination barrel. Just let it ride up over the shoulder.

Push the ring up over the braid onto the termination barrel. Use a rocking motion to work the ring on.

The ring should be far enough on that you can feel the end of the barrel under the braid on the outboard side of the ring.

Heating the ring

The ring is now ready to be shrunk onto the braid. This requires heating to 165°C (330°F). The ring is marked with two spots of thermochromic paint which change color from blue/green to brown/black at this temperature.

The ring must be heated to change the color of both spots. There is no advantage to heating above this point.

There are two methods to choose from, hot air gun or direct electrical resistance heating. Hot air is slower and puts much more heat into all of the parts.

Safety

The primary hazard is that the ring and adapter, parts of the hot air gun and electrodes of the resistance heater will be hot after a ring is installed. Another possible hazard with resistance heating is that if there is a short to the braid, sparks or bits of hot braid may be ejected. This is not likely, but wear eye protection and be aware of this potential fire hazard.

Hot Air

Any hot air gun that produces discharge temperatures above 200°C may be used. Master Appliance models HG301A or HG301D would be good choices. Heating times can vary from 10 seconds to several minutes depending on the entry size and the braid size. A reflector, sized to encircle the assembly, can reduce the heating time substantially.

Direct Electrical Resistance

The rings can be rapidly heated by passing electricity through the rings at high amperage and low voltage. This is done by contacting the ring at two points, diametrically opposed, and passing current around the circumference of the ring from one contact point to the other. The dielectric coating on the ring ID forces the current to run around the ring rather than short circuiting through the braid and adapter.

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Product Document

BR Installation Procedure

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We recommend the kit offered by American Beauty Tools. See their webpage:
<https://americanbeautytools.com/Tinel-Lock-Ring-Systems>

Set the power supply to the maximum setting. The output voltage will be about 2.75 volts AC. Close the two electrodes of the handpiece over the ring such that the round wire of the ring fits into the V-grooves of the electrodes. The electrodes are insulated, except for the V-grooves, so the electrodes can be pushed against the braid against the inboard shoulder of the adapter without shorting to the braid. Do not grip the ring on the paint spots. It is ok to grip on the weld bead of the ring.

While maintaining a firm grip on the ring, depress the footswitch to turn on the power supply. Release the footswitch when both paint spots have turned color. Heating will be slower for larger rings and should take less than 15 seconds. Release the footswitch before relaxing your grip on the handpiece to avoid drawing an arc between the ring and the electrodes.

If one paint spot turns color, but the other does not, it is usually because the electrodes are not touching the ring at 180 degrees apart. This makes the electrical current path shorter on one side than the other. Rotate the cable or the handpiece 180 degrees and reheat.

If the heating is slow, check the V-grooves of the electrodes to be sure they are clean. Also be sure the ring is seated in the V-grooves of the electrodes. Check that the twist pins on the handpiece cables are firmly seated in the receptacles of the power supply.

If you have arcing between the electrodes and the braid, inspect the coating on the electrodes to be sure it is covering the electrode tips entirely, except for the V-grooves. American Beauty sells replacement electrodes.

After the ring is shrunk

The excess braid can now be trimmed on the inboard side of the ring. Alternately, the extra braid can be folded back over the ring and tied down with a tape wrap.

Ring Removal

If a ring must be removed, there are 3 methods to consider.

Insert the tip of a flat blade screwdriver between the ring and the shoulder of the adapter. Put it directly against the ring, so any braid is between the screwdriver blade and the adapter shoulder. Twist the screwdriver to force the ring off the adapter. This will require alternating from side to side, working the ring toward the end of the adapter a bit at a time. Once the ring is off the adapter, it can be cut with a pair of dykes for complete removal.

Cut the ring off with a pair of dykes. This is feasible unless the ring is pressed up very close to the inboard shoulder of the adapter.

Cut the ring with a small abrasive wheel using a die grinder. This is probably the most difficult to do without marring the adapter.