Innovating tomorrow’s solutions today

Morgan Advanced Materials offer Morganite & National Carbon Brushes Material Grades you can trust.

Surface appearance of brushes and patina

Understanding Brush Dimensions

Brushes usually fit on slip rings & commutators (collectors) as arranged below.

![Dimensions Diagram]

Typical Standard Information

![Inlay Table]

Fitting Brushes and Holders - General points

**Bedding in Brushes**

Fine (light) pressure must be applied to the collector in order to seat the brushes. The pressure should be adjusted to ensure that a good contact is made without damaging the brushes or commutator. The application of pressure should be light in order to prevent damage to the brushes or commutator.

**Pressure on Brushes**

The pressure on all the brushes fitted on a collector should be the same. Periodically brushes and holders should be checked and pressure checked by means of a spring balance (see figure 4) on a Morgan electrical device.

**Force**

Simple pressure on most brush grades on industrial machines is generally between 180gcm⁻² (2.5lbin⁻²) and 210gcm⁻² (3lbin⁻²). The higher pressure enables improved contact and reduced electrical wear of the brushes.

**Brush grade and current**

The applied pressure of most brush grades on industrial machines is generally between 180gcm⁻² (2.5lbin⁻²) and 210gcm⁻² (3lbin⁻²). However, certain grades of brushes are designed for higher pressures. For example, grade 105 is designed for pressures up to 300gcm⁻² (4lbin⁻²).

**Clearance**

After bedding, the holders and brushes must be thoroughly cleaned. Brushing and or vaccuming is recommended. Using a compressed air line is not recommended.

**Chequre**

After bedding and cleaning, check that the brushes are free to move easily in their boxes. Morgan Advanced Materials brushes are all manufactured to dimensional tolerances of ±2% ±0.0005 inches.

**Chequre between Brush Holder and Collector**

Set the holder so that the distance between its lower edge and the collector is approximately 5.5mm. This distance may be less than, close to, or more than 5mm. Set the holder using the adjustment provided in the holder/cusp assembly, or by adjusting the brush arm.

**Angle at which Brush Holder meets the Collector**

Care should be taken to set the brush holder at the angle for which it is designed.

**Spring Pressure**

The pressure on all the brushes fitted on a collector should be the same. Periodically brushes and holders should be checked and the pressure checked by means of a spring balance (see figure 4) on a Morgan electrical device.

**Pressure on Brushes**

The applied pressure of most brush grades on industrial machines is generally between 180gcm⁻² (2.5lbin⁻²) and 210gcm⁻² (3lbin⁻²). Certain (sterilized) grades can be used at higher pressures up to 280gcm⁻² (4lbin⁻²). Higher pressure enables improved contact and reduced electrical wear of the brushes.

**How to measure spring pressure. Reference Fig. 4**

Attach a spring balance to the top of the finger and pull in a direction at right angles to the brush top until the finger just has the top of the brush. The spring point can be confirmed by placing it under the paper from beneath the brush box.

**Constant Force (CF) Springs**

The characteristics of CF springs varies from the brush box to the brush (see figure 5). This is due to the frictional forces experienced, and the difference in the frictional force at the brush box and the brush. The pressure on the brush box must be increased to compensate for this difference. Once these forces are equal the pressure on the brush box will be equal to the pressure on the brush.

**Care and handling of the C.F. spring unit**

1. To release spring unit (fig 6) apply pressure on the latching hole (see sketch). This will release the spring unit from the brush box. It should be tightened by applying force to the latching plate.
2. When applying pressure, ensure that the spring does not swell and expand in the brush box. The spring must be free to move in the brush box.
3. Check the flexibility of the spring (fig 6) by ensuring that the spring unit is not damaged. Care should be taken not to exceed the manufacturer's specifications.
4. Check that the spring unit is free from debris or other foreign matter. The spring unit should be clean and free from foreign matter.
5. Do not clean the spring unit by hand and allow it to become wet before use.

**Technical training courses available**

For more comprehensive training in carbon brushes, contact Morgan Advanced Materials. Further information and technical seminars are available from Morgan Advanced Materials.

www.morganelectricalmaterials.com