



## E5TPK Series

Rotating Disk Electrode  
Product Guide

Part # Style: AFE5T050XXPK

(XX = disk electrode material, e.g. AU = gold, PT = platinum, GC = glassy carbon, etc.)

### Warnings



Caution:

Maximum Rotation Rate 3000 RPM



Caution:

Use care when electrode is rotating over 2000 RPM



Thermal Stability:

Electrode may only be used from 10°C to 80°C. Extreme temperatures will damage the electrode seal.



Chemical Compatibility:

The polyether ether ketone (PEEK) shroud will dissolve in concentrated nitric and sulfuric acids.

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### Description

The E5 PEEK Series rotating disk electrode (RDE) tips are designed for use with ASR and MSR model rotators. The tip has a protective shroud made from polyether ether ketone (PEEK), a polymer with excellent high temperature properties. The shroud is resistant to most solvents; however, it will dissolve in concentrated acid solutions, and it may be discolored by more dilute acid solutions. The mounting threads for this tip and the outer diameter of the shroud (15 mm) are the same as a variety of other RDE and RRDE tips offered by Pine Research. This tip will fit on to the appropriate shaft for the ASR rotator (shaft number AFE6A) or the MSR rotator (shaft number AFE6MB).

### Mounting the Electrode Tip

Before mounting the RDE tip on to the rotator shaft, ensure that the shaft is securely mounted in the rotator. For the MSR rotator, the appropriate shaft should be securely mounted into the MSR motor coupling. For the ASR rotator, the appropriate shaft should be securely mounted using the ASR draw bar.

The electrode is narrow enough to fit through a 24/25 center port on an electrochemical cell. Care should be taken to prevent the rotating electrode from rubbing against surfaces (such as the inner wall of the cell). When threading the RDE tip on to the shaft, do not apply excessive force to the shroud as this may damage the seal between the shroud and the electrode surface. A properly mounted tip will have a small gap (~1.3 mm) between the shaft and tip.

gap between  
shaft and tip

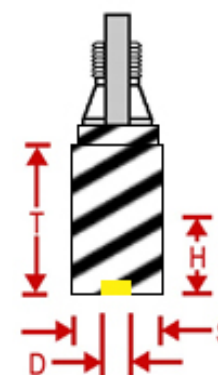


When the rotating electrode tip is placed in a solution, the electrode surface should be approximately 5 to 12 mm below the solution level. The gap between the shaft and the tip should never be immersed in the solution because the solution may enter the gap and cause corrosion of the metal threads and inner parts of the tip.

### Leak Testing

The shroud is tightly sealed around the circumference of the working electrode material. The electrode is guaranteed to be leak-free at the time of shipment (each electrode is shipped with a copy of the factory leak test results). Such leak testing is typically performed at ~25°C and ~80°C. Exposing the electrode to temperatures less than 15°C or greater than 80°C may cause a leak between the electrode and the shroud.

### Diagram



Disk Diameter (D): 5.0 mm

Shroud Diameter (S): 15.0 mm

Tip Shroud Length (T): 25.4 mm

Maximum Immersion (H): 12.0 mm

Additional shaft and tip dimensions are provided on the next page.

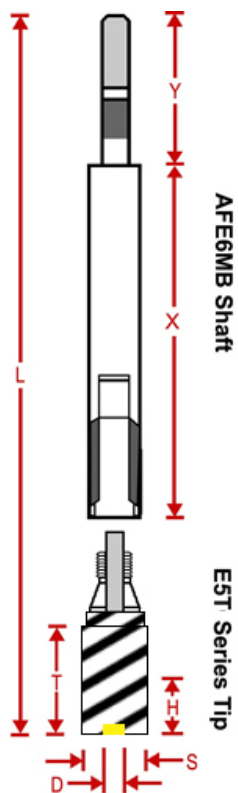
### Maintenance

After using the electrode, clean it with distilled water and replace the protective cover to prevent scratching the electrode surface. The electrode surface will need to be polished periodically. A polishing kit which includes various alumina slurries and polishing pads is available separately. Note that the PEEK shroud is resilient and can be difficult to polish by hand. In some cases, it may be necessary to use a mechanical polisher to assure the shroud is coplanar with the electrode surface.

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### MSR Rotator Shaft with Tip

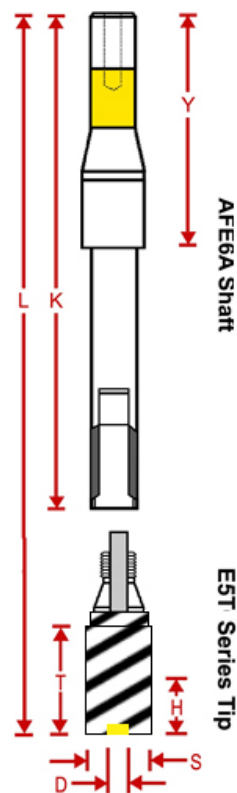


AFE6MB Shaft

EST Series Tip

Disk Diameter (D):	5.0 mm
Shroud Diameter (S):	15.0 mm
Tip Shroud Length (T):	25.4 mm
Overall Length (L):	197.4 mm
Shaft/Tip Gap (X):	1.3 mm
Shaft Length (K):	170.7 mm
Concealed part (P):	68.0 mm
Exposed metal (Q):	1.9 mm
Ridge Location (W):	18.3 mm
Upper Shaft OD (Y):	6.35 mm

### ASR Rotator Shaft with Tip

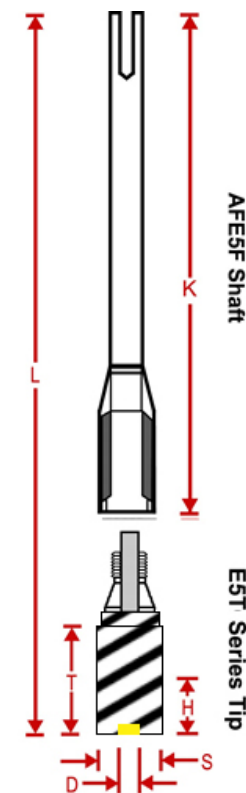


AFE6A Shaft

EST Series Tip

Disk Diameter (D):	5.0 mm
Shroud Diameter (S):	15.0 mm
Tip Shroud Length (T):	25.4 mm
Overall Length (L):	184.7 mm
Shaft/Tip Gap (X):	1.3 mm
Shaft Length (K):	158.0 mm
Concealed part (P):	61.0 mm
Exposed metal (Q):	37.0 mm

### Stationary Use



AFE5F Shaft

EST Series Tip

Disk Diameter (D):	5.0 mm
Shroud Diameter (S):	15.0 mm
Tip Shroud Length (T):	25.4 mm
Overall Length (L):	184.7 mm
Shaft/Tip Gap (X):	1.3 mm
Shaft Length (K):	158.0 mm
Upper Shaft OD (Y):	6.35 mm

The RDE tip can be used as a non-rotating electrode. The tip can be mounted on a special stationary shaft (part number AFE5F).