



E7R8 ThinGap Series

Rotating Ring-Disk Working Electrode Product Guide

Part # Style: AFE7R8XXYY

(XX = disk electrode material, e.g. AU = gold or PT = Platinum; YY = ring electrode material, e.g. AU = gold or PT = platinum)

Warnings



Caution:

Maximum Rotation Rate **3000 RPM**.



Caution:

Use care when rotating over **2000 RPM**.



Thermal Stability:

Use electrode from **10°C to 25°C**. Extreme temperatures damage electrode seals.

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Description

The single-piece E7R8 ThinGap series rotating ring-disk electrode (RRDE) is designed for use in rapid electrode kinetic studies. Since the disks and rings of E7R8 ThinGap RRDE tips are metallic, they can be manufactured to smaller dimensions than fragile glassy carbon RRDE tips (part number E7R9). The finely tuned **180 μm** gap between the disk and ring of the E7R8 RRDE tips makes them well-suited for kinetic studies involving short-lived intermediates which must transit the ring-disk gap as rapidly as possible.

The E7R8 RRDE tip is designed for use with both ASR and MSR rotators, with respective shaft part numbers AFE6A and AFE6MB. The lower portion of the tip is protected by a shroud of polytetrafluoroethylene (PTFE). This fluoropolymer is compatible with a wide range of organic solvents, acids, and bases.

Mounting the RRDE Tip

Before mounting the RRDE tip on to the rotator shaft, make certain that the shaft is securely mounted in the rotator. When threading the RRDE 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.

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 the RRDE tip is placed in 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.

Maintenance

After using the electrode, clean it with distilled water and replace the protective cover to prevent the electrode surface from being scratched. Periodically, the electrode surface will need to be polished. An electrode polishing kit with various alumina slurries and polishing pads is available (sold separately).

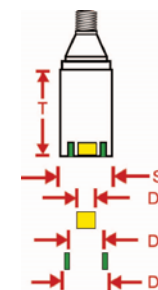
Leak Testing

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). Leak testing is performed at ambient (room) temperature. Exposing the electrode to temperatures less than 10°C or above 25°C may create a leak between the electrode material and the shroud.

Photographs



Diagram



Tip Shroud Length (T): 25.4 mm

Shroud Diameter (S): 15.0 mm

Disk Diameter (D1): 4.57 mm

Ring ID (D2): 4.93 mm

Ring OD (D3): 5.38 mm

Collection Efficiency: 22 %

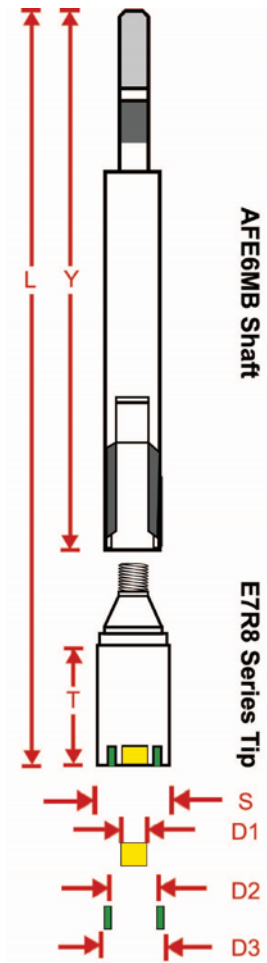
Disk Area: 0.1642 cm²

Ring Area: 0.0370 cm²

Ring-Disk Gap: 180 μm

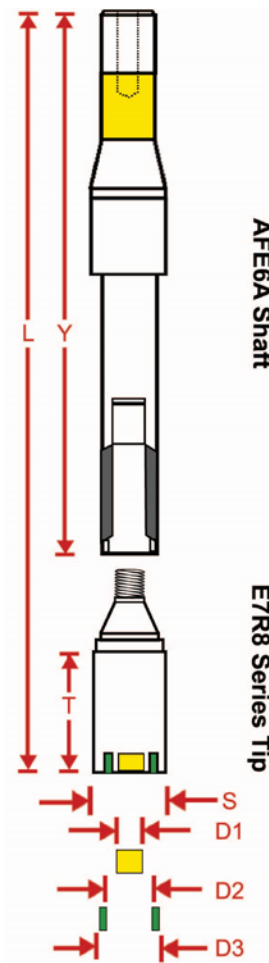
Additional shaft and tip dimensions are provided on the next page.

MSR Rotator Shaft with Tip



Disk Diameter (D1):	4.57 mm
Ring ID (D2):	4.93 mm
Ring OD (D3):	5.38 mm
Shroud Diameter (S):	15.0 mm
Tip Shroud Length (T):	25.4 mm
Overall Length (L):	196.9 mm
Shaft Length (Y):	170.7 mm
Collection Efficiency:	22%

ASR Rotator Shaft with Tip



Disk Diameter (D1):	4.57 mm
Ring ID (D2):	4.93 mm
Ring OD (D3):	5.38 mm
Shroud Diameter (S):	15.0 mm
Tip Shroud Length (T):	25.4 mm
Overall Length (L):	184.2 mm
Shaft Length (Y):	158.0 mm
Collection Efficiency:	22%