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## BASi Controlled Growth Mercury Electrode



Mercury drop working electrodes are invaluable for certain applications due to their high overpotential for hydrogen ion reduction and the high reproducibility of the electrode surface.

Mercury drop electrodes are generated by the BASi Controlled Growth Mercury Electrode (CGME) in three modes:

1. **DME** (Dropping Mercury Electrode) - mercury is allowed to flow freely from the reservoir down the capillary and so the growth of the mercury drop and its lifetime is controlled by gravity. (The optional 100  $\mu\text{m}$  capillary is recommended for this mode.)
2. **SMDE** (Static Mercury Drop Electrode) - the drop size is determined by the length of time for which the fast-response capillary valve is opened, and the drop is dislodged by a drop knocker. The dispense/knock timing is microprocessor-controlled and is typically coordinated with the potential pulse or square-wave waveform. This mode can also be used to generate the Hanging Mercury Drop Electrode required for stripping experiments.
3. **CGME** (Controlled Growth Mercury Electrode) - the mercury drop is grown by a series of pulses that open the capillary valve. The number of pulses, their duration, and their frequency can be varied by PC control, providing great flexibility in both the drop size and its rate of growth. This CGME mode can be used for both polarographic and stripping experiments.

The CGME mode is available only on the BAS 100B/W and the CV-50W, whereas the SMDE mode is available with any PC- or microprocessor-controlled potentiostat (including the [EC epsilon](#)). The dispense and knock functions can also be manually controlled, so a Hanging Mercury Drop Electrode can be generated manually (e.g., for stripping experiments using the CV-27).

A built-in gas control allows purging or blanketing of the sample prior to or during analysis, and there is a magnetic stirrer for experiments requiring convection, such as stripping voltammetry. The cell arm with detachable cell top allows easy access to the electrodes for rinsing and cleaning, and the cell top is also compatible with BASi [voltammetry working electrodes](#). The stir motor/cell vial base pivots for easy removal and replacement of the cell vial.

Please note that mercury is not included with the CGME due to shipping regulations. Please purchase triply- or quadruply-distilled mercury from a company that is licensed to ship mercury.

### Features

- Wide range of drop sizes
- Programmable drop growth with the BAS 100B/W and CV-50W
- DME, SMDE, and CGME modes
- HMDE available in SMDE and CGME modes
- Good electrical contact minimizes electrode resistance
- Fast response time
- Rapid drop stabilization
- Small volume glass cell vials
- Water-jacketed cell vial
- Cell top compatible with [BASi voltammetry electrodes](#)

- Standard addition port
- *Quick-connect* input gas line connector
- Easy maintenance
- Minimal metal contact reduces metal contamination
- Self-contained power supply
- Mounted magnetic stirrer with 50-800 rpm
- Manual and remote control of mercury dispense, drop knock, stirrer on/off, inert gas purge/blanket
- Minimal chance of mercury spills
- Standard package:
  - Cell stand with magnetic stirrer and gas purge utilities
  - 150  $\mu\text{m}$  ID glass capillary
  - Platinum **auxiliary electrode**
  - Ag/AgCl **reference electrodes** (3)
  - Standard glass cell vials (12)
  - Stir bar
  - Startup kit (vacuum degas kit, mercury loading syringe, blunt needle, tubing)
  - Mercury pickup tool (plastic rod with silver tip) and plastic spill tray
  - Manual

## Specifications

<b>Cell Modes</b>	CGME, SMDE, and DME
<b>Operations</b>	Manual and remote control of mercury dispense; drop knocker; stir on/off; gas purge/blanket
<b>Magnetic Stirrer</b>	16 selectable rates from 50-800 rpm
<b>Mercury Reservoir</b>	Sealed reservoir minimizes opportunity for mercury spills. Minimal use of metal parts within reservoir or capillary to avoid metal contamination.
<b>Mercury Degassing</b>	Mercury degassing kit is included with purchase and includes a hand-actuated vacuum pump and accessories
<b>Spill Management</b>	Spill tray and mercury pickup tool are included in the standard package
<b>Standard Capillary</b>	150 $\mu\text{m}$ (0.006 ") ID. Large diameter reduces plugging and loss of electrode contact. Beveled tip design
<b>Gas Purging</b>	5 psi max. Needle valve controlled.
<b>Cell Top</b>	Separate port in cell top for dispensing sample or reagents. Accommodates <b>BASi voltammetry electrodes</b> for use as a cell stand for voltammetry experiments.
<b>Options</b>	100 $\mu\text{m}$ ID capillary Faraday cage Small volume and water-jacketed cell vials
<b>Physical</b>	42 x 18 x 23 cm (H x W x D), 6 kg



## BASi Accessories

<b>EF-1400</b>	Controlled Growth Mercury Electrode
<b>MR-1208</b>	Glass Cell Vials, 12/pkg.
<b>MF-1084</b>	Low Volume Cell Vial, 6/pkg.
<b>ER-9132</b>	Magnetic Stir Bar, 1 ea.
<b>MW-4601</b>	Mercury Trap, 1 ea.
<b>MF-2090</b>	Beveled Capillary Assembly, 150 $\mu\text{m}$ ID, 1 ea.
<b>MF-2092</b>	Beveled Capillary Assembly, 100 $\mu\text{m}$ ID, 1 ea.
<b>MF-2069</b>	Mercury Collector Rod, 1 ea.
<b>MF-7150</b>	Vacuum Prime Pump, 1 ea.
<b>MR-1205</b>	Teflon Cell Vial
<b>MR-1212</b>	Water-Jacketed CGME Cell Vial, 1 ea.

<b>MF-2093</b>	CGME Septum, 1 ea.
<b>MF-1028</b>	CGME Valve Seal, 1 ea.
<b>MF-2052</b>	RE-5B Reference Electrode, 1 ea.
<b>MF-2079</b>	RE-5B Reference Electrode, 3/pkg.
<b>MW-1032</b>	Auxiliary Electrode, 1 ea.
<b>MR-2052</b>	2" Blunt Tip Needle, 1 ea.
<b>MW-1034</b>	Cell Top Plug, Kel-F, 1 ea.
<b>MR-1241</b>	O-ring for working electrode contact
<b>EF-1425</b>	Faraday Cage
<b>MR-3850</b>	Spill Tray, 19" x 12" x 1.25"
<b>MR-3818</b>	Teflon Cell Top
<b>MF-2048</b>	CGME O-ring Replacement Kit
<b>EW-4366</b>	Replacement Gas Solenoid Assembly
<b>MR-5023</b>	Syringe, 5 mL, plastic

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