V2 Pen Operating Protocol

LABORATORY REFERENCE & CARTRIDGE DEVICE GUIDANCE (3 ML SYSTEM)

DEVICE COMPATIBILITY	CONSUMABLE SPEC	DIAL CALIBRATION
V2 Reusable Pen	**Standard Pen Needle**	**1 Dial Click = 1 Unit**
3 mL Glass Cartridge System	31G–32G / 4 mm Threaded	0.01 mL per Click Increment

STEP-BY-STEP DEVICE OPERATING PROTOCOL

01 Disassemble & Reset Lead Screw — *Prepare pen mechanism for new cartridge*

Unscrew the clear cartridge holder from the main pen body. Mechanically reset the threaded lead screw (plunger rod) by pushing or rotating it back fully into the housing until it rests flush.

02 Load Cartridge & Reassemble — *Seat glass cartridge securely*

Insert a reconstituted 3 mL glass cartridge into the cartridge holder, rubber septum facing forward. Screw the pen body back onto the cartridge holder until hand-tight.

03 Attach Fresh Pen Needle — *Ensure sterile seal and axial alignment*

Wipe the exposed rubber septum with an alcohol swab. Peel the paper tab off a new sterile pen needle. Push and screw the needle outer casing straight onto the threaded tip of the cartridge holder until firm. Remove the outer shield and inner needle cap.

04 Prime Device (Air Shot) — *Purge trapped air & confirm flow*

Turn the dose selector knob to dial **1 to 2 units**. Hold the pen vertically with needle pointing upward. Lightly tap the cartridge holder so air bubbles rise. Depress the injection button fully. **Repeat until a steady droplet of liquid appears at the needle tip.**

05 Dial Target Volumetric Units — *Set mechanical dosage window*

Rotate the dose selector knob to match the desired volumetric units on the digital or mechanical display window. If you dial past the intended mark, turn the knob backward to correct without wasting solution.

06 Dispense & Hold Depressed — *Ensure complete volume transfer*

Depress the push-button steadily and completely until the dose counter resets to '0'. **Maintain pressure on the button and hold in place for 6–10 seconds** before withdrawing to allow full volumetric dispersion and prevent backflow.

07 Safely Remove Needle & Store — *Preserve reagent and device integrity*

Carefully replace the outer needle cap, unscrew the used needle assembly, and dispose of it in a biohazard sharps container. **Never store the pen with a needle attached.** Replace the pen cap and store the unit in a controlled environment at **2°C–8°C (36°F–46°F)**.

V2 PEN DIAL UNIT CALIBRATION SCALE

PEN DIAL SETTING (CLICKS/ UNITS)	VOLUMETRIC OUTPUT (ML)	MASS @ 10 MG/ML RATIO	MASS @ 5 MG/ML RATIO
1 Unit	0.01 mL	0.10 mg (100 mcg)	0.05 mg (50 mcg)
2 Units	0.02 mL	0.20 mg (200 mcg)	0.10 mg (100 mcg)
5 Units	0.05 mL	0.50 mg (500 mcg)	0.25 mg (250 mcg)
10 Units	0.10 mL	1.00 mg (1,000 mcg)	0.50 mg (500 mcg)
15 Units	0.15 mL	1.50 mg (1,500 mcg)	0.75 mg (750 mcg)
20 Units	0.20 mL	2.00 mg (2,000 mcg)	1.00 mg (1,000 mcg)
25 Units	0.25 mL	2.50 mg (2,500 mcg)	1.25 mg (1,250 mcg)
30 Units	0.30 mL	3.00 mg (3,000 mcg)	1.50 mg (1,500 mcg)
40 Units	0.40 mL	4.00 mg (4,000 mcg)	2.00 mg (2,000 mcg)
50 Units	0.50 mL	5.00 mg (5,000 mcg)	2.50 mg (2,500 mcg)

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