

**BUEHLER®**

# NelsonZimmer® 2000 & 3000 HIGH VOLUME PRINTED CIRCUIT BOARD PREPARATION SYSTEMS

- Cross-Sectioning Systems for the Printed Wiring Board (PWB) Industry
- Precise Cross-Sectioning of PWB Through-Holes
- Accuracy for Microvia Holes
- High Volume Capacity
- Coupons are Cast Directly in the Accessory
- Touch Pad Controls
- Ability to Interface with Modular Dispensing Systems



**BUEHLER**



  
**EMERSON**  
Industrial Automation

# Accuracy & Productivity In One System



Buehler continues to meet requirements of the electronics industry with its NelsonZimmer® System. This system is a complete preparation package for cross-sectioning printed wiring board plated through-holes, which incorporates the EcoMet® 4000 and AutoMet® 2000 grinder-polisher with two different precision accessories.

The NelsonZimmer® 2000 features a PC Met® Precision High Volume Printed Wiring Board Accessory with reproducible accuracy for cross-sectioning of through-holes down to 0.008" (200µm) in diameter. This fixture will prepare up to 36 coupons at one time, 1" (25.4mm) long in 6 separate cavities. Six tungsten carbide stops, three for grinding and three for polishing, eliminate undercutting which ensures viewing of the through-hole center line.

For cross-sectioning microvia through-holes down to 0.004" (100µm) in diameter Buehler offers the NelsonZimmer® 3000 System which includes the EcoMet® 4000 and AutoMet® 2000 grinder-polisher with a PWB Met™ Small Hole Accessory. This accessory will prepare up to 18 coupons at one time, 1" (25.4mm) long in 6 cavities. Each coupon is pinned separately eliminating any stress caused by pins and proper alignment is ensured for cross-sectioning microvia through-holes. Six polycrystalline diamond stops prevent grinding-polishing beyond the target plane.

Both NelsonZimmer® Systems offer high volume preparation while maintaining accuracy required for targeting the center line of a through-hole. Calibration is maintained with a dial

indicator (included). Each system comes with the appropriate pin loader and pins. Mounted coupons can be viewed at any time without effecting its alignment. An optional PWB Met® Sample Extractor is recommended for removing polished mounts from the PWB Met™ Small Hole Accessory without inducing scratches to your finished sample.

Adding one or more PriMet® Modular Dispensing Satellites to the AutoMet® 2000 Power Head increases your productivity, provides sample consistency, and maximizes consumable usage.



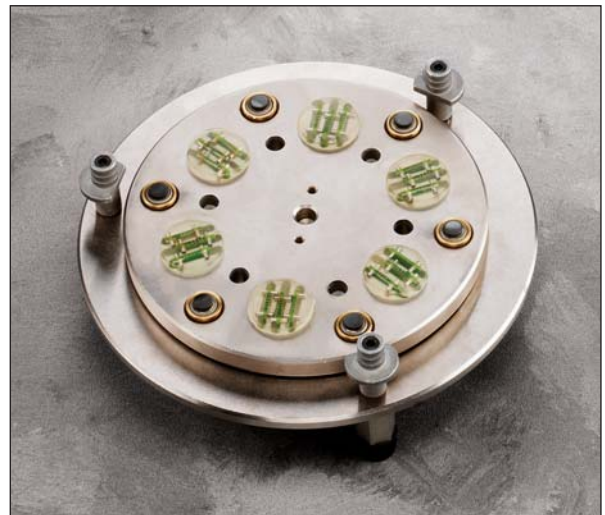
PWB Met™ Router routes out a coupon from a printed wiring board without damaging the plated through-hole.



The precision components of the Nelson-Zimmer System are protected by a custom-made wood case.



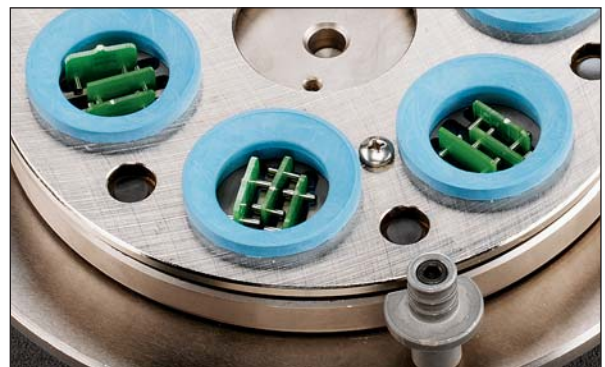
PWB Met™ Digital Alignment Drill aligns and drills holes for mounting pins.



Mounted samples in the PWB Met™ Small Hole Accessory.



PWB Met™ Extractor (60-5185) removes polished samples from the PWB Met™ Small Hole Accessory.



Printed wiring board coupons ready for molding compound in the PWB Met Small Hole Accessory.

## Specifications

**49-1792-160 NelsonZimmer® 2000 System** is for precision, high volume cross-sectioning of printed wiring board through-holes to  $\geq 0.008''$  (200 $\mu$ m) in diameter. It includes the EcoMet® 4000 which features a 12'' (305mm) platen, table-top unit, variable speed from 10-500 rpm in 10 rpm increments, digital LED speed display, LED bar graph motor indicator, touch-pad controls including illuminated power on/off switch, motor speed, motor run/stop switch with built in memory, water on/off switch, cover and removable splash ring. The AutoMet® 2000 Power Head with RIM cabinetry features controlled application of force from 5 to 60 pounds in 1 pound increments, touch pad control of time, force head direction, and fluid selection. Operational time is variable from 0 to 99 minutes, 59 seconds in 1 second increments. The PC Met® Precision High Volume Printed Wiring Board Accessory (60-5090) offered only with the NelsonZimmer® 2000 system contains 6 cavities each capable of holding 6 (0.125'' or 3.175mm thick) printed wiring board coupons up to 1'' (25.4mm) long. It comes complete with top mold plate, magnetic mold base, 6 quick-set flat tungsten carbide stops, coupon loader, lift chuck drive adapter, silicon mold spray, 1000 indexing pins, dial indicator calibration gauge, gauge blocks and operating instructions. For 85-264V/50-60Hz/1 phase operation.

**49-1794 NelsonZimmer® 3000 System** is the same as above for the EcoMet® 4000 and AutoMet® 2000 but includes the PWB Met™ Small Hole Accessory (60-5175) for cross-sectioning through-holes to  $\geq 0.004''$  (100 $\mu$ m) in diameter. This accessory will prepare up to 18 coupons at one time, 1'' (25.4mm) long, in 6 cavities. It comes complete with top mold plate, magnetic mold base, 6 quick-set flat polycrystalline diamond stops, coupon loader, lift chuck drive adapter, silicon mold spray, 3000 indexing pins, dial indicator calibration gauge, gauge blocks and operating instructions. For 85-264V/50-60Hz/1 phase operation.

## Accessories

**60-5061 Cup for Upper Plate**, quantity 6

**60-5062 Bottom Pad for Lower Plate**, quantity 6

**20-3046 Silicon Mold Release Spray**, 6 oz. (0.17kg)

**60-5069 Alignment Hole Drill Fixture**,  $\frac{3}{4}''$  & 1'' coupons for use with PC Met® and PWB Met™ Systems

### PWB Met™ Accessories:

**60-5185 PWB Met™ Sample Extractor for the PWB Met™ Small Hole Accessory**

**60-5173 PWB Met™ Polycrystalline Diamond Stop**

**60-5093 PWB Met™ Polycrystalline Diamond Long Stop Assembly with Brass Knob**

**60-5094 PWB Met™ Polycrystalline Diamond Short Stop Assembly with Brass Knob**

**60-5184 PWB Met™ Coupons Pins  $\frac{3}{8}''$  (9.525mm) long**, 3000 per jar

### PC Met® Accessories:

**60-5091 PC Met® Tungsten Carbide Grinding Stops**, quantity 3 (without brass holder)

**60-5092 PC Met® Diamond Polishing Stops**, quantity 3 (without brass holder)

**60-5095 PC Met® Precision Holder Only with 6 Stops**

**60-5053 PC Met® Coupon Pins 1'' (25.4mm) long**, 1000 per jar

### Related Equipment:

**60-5070 PC Met® JR. Handheld Coupon Cross-sectioning Accessory for 1'' (25.4mm) wide coupons**

**60-5180-115 PWB Met™ Router (220V Available)**

**60-5215 PWB Met™ Digital Alignment Drill w/Color Monitor**

Grinding Steps	Time	Pressure	Wheel Speed
1. 120 Grit CarbiMet® Paper	120 sec.	30 lbs.	240 rpm
2. 240 Grit CarbiMet® Paper	Until Course Stops Touch	30 lbs.	120 rpm
Polishing Steps	Time	Pressure	Wheel Speed
3. 600 or 800 Grit CarbiMet® Paper	Until Fine Stops Touch	30 lbs.	120 rpm
4. 3 $\mu$ m MetaDi® on TexMet® 1500	60-120 sec.	30 lbs.	120 rpm
5. 0.05 $\mu$ m MasterPrep® on MicroCloth®	40-60 sec.	30 lbs.	120 rpm

*Note: Procedure will vary based on board thickness, composition and good laboratory practice.*

For a complete listing of consumables, please refer to our Consumables Buyer's Guide. Buehler continuously makes product improvements; therefore, technical specifications are subject to change without notice.



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