



BUEHLER

Sectioning

AbrasiMet | AbrasiMatic | IsoMet



 **Wilson®**



BUEHLER

Solutions for Materials Preparation, Testing and Analysis





Welcome To Buehler

Buehler is a division of Illinois Tool Works (ITW), and is based in Lake Bluff, Illinois. ITW is a global, Fortune 200 company and global industrial manufacturer of value-added consumables and specialty equipment with related service businesses. Buehler is a premier manufacturer of scientific equipment and supplies for use in materials analysis with offices in nine countries, sales distribution in over 100 countries, and over 45 Expert Solutions Centers.

Buehler was founded in 1936 by Swiss immigrant, Adolph I. Buehler, who saw a need for metallographic sample preparation equipment and optical inspection instruments for the steel and automotive industries in the Midwest USA. Eighty years later Buehler is well established as the world's leading supplier of materials preparation and analysis instruments, equipment, consumable supplies and application solutions.

For more than 100 years Reichert, Wolpert, Rockwell and Wilson have designed and manufactured innovative and unique hardness testers. Today Buehler continues in their path with new designs and technologies to meet growing demands. In 2011, Wilson Hardness was combined with Buehler to provide a more robust product offering.

Buehler employees and operations are committed to delivering quality and environmentally responsible products guided by ISO 9001 Quality Management Principles and ISO 14001 Environmental Managements Systems. Buehler innovates solutions and offers expert service and support throughout the materials preparation and analysis market.



Home of the hardness testing legacy brands:



Wilson Instruments

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SECTIONING TECHNICAL INFORMATION

Specimen preparation for microstructural examination involves a series of operations, the ease and success of each depends on the preceding step. The first cut impacts all subsequent steps and the impact can be quite detrimental if too much damage is induced during sectioning. In some cases, very large parts are initially cut with torch or plasma cutters, or band saws and then resectioned with abrasive or precision equipment. The proper equipment selection and technique will minimize the deformation. A key component in the sectioning technique is firm and stable vising of the part. If the vise is loose or clamped improperly, the cut may be stalled, the abrasive wheel damaged, or the part itself may undergo deformation.

Comparison Chart



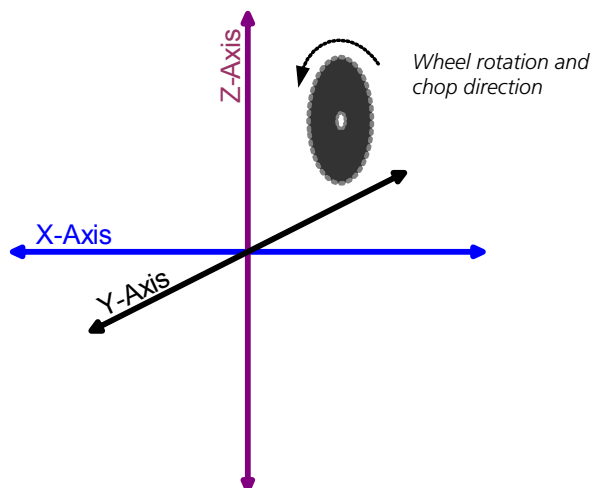
	AbrasiMet™ 250	AbrasiMatic™ 300	Delta (Medium)	AbrasiMatic 450
Wheel Diameter	10in [254mm]	12in [305mm]	12in [305mm] 14in [356mm]	18in [455mm]
Cut Types	Chop	Chop Saw	Chop Orbital	Chop Saw, Planer
Manual Movement	Z-axis	X-axis*, Y-axis, Z-axis		
Automated Movement		Y-axis	X-axis*, Z-axis	X-axis, Y-axis, Z-axis
Maxium Part Size in Chamber	9 x 12 x 3.5in [229 x 305 x 89mm]	16 x 6 x 3.75in [406 x 152 x 95mm]	24 x 12 x 5.25in [609 x 305 x 133mm]	36 x 22 x 8in [914 x 559 x 203mm]
Cutting Capacity	3.5in [89mm]	2.75* x 6 x 3.75in [70 x 152 x 95mm]	2.95* x 5.25in [75 x 133mm]	24 x 12 x 6.75in [609 x 305 x 171mm]

*Optional Items

Did You Know?

SmartCut automatically lowers the cutter's feed rate when the cutting motor reaches its maximum load to minimize sample damage.

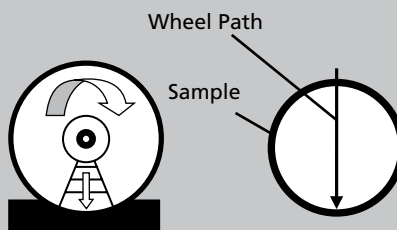
SmartPulse activates the pulse action of the cutting arm. The arm will move downward for a short amount of time and then stop for the same amount of time in a cycle. This pause in cutting allows more coolant into the cutting area to minimize sample damage.



CUTTING STYLE AND WHEEL PATH

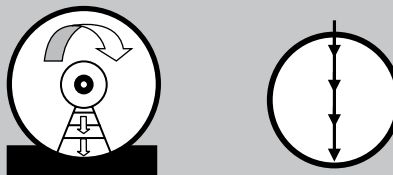
Chop Cutting

The traditional form of machine operation. Wheel contact arc is governed by sample size. Generally a struggle with large/difficult parts.



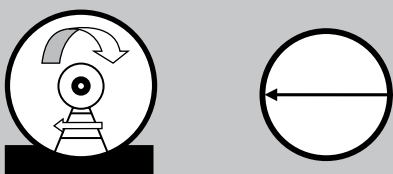
Chop Cutting with Pulsing

Wheel contact still governed by sample size. The pulsing action pauses the feed rate in short intervals enabling coolant to wash away swarf and dissipate heat.



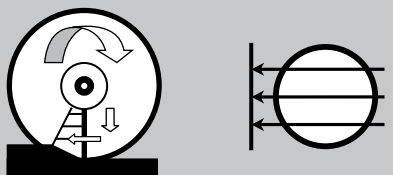
Y-Feed Cut

The abrasive wheel is stationary and the cutting table moves forward completing a one time cut into the sample. Wheel contact arc is governed by sample size.



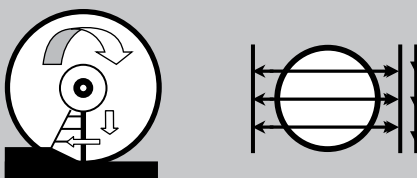
Planer Cut

The abrasive wheel lowers into the sample at an incremental rate before the cutting table moves in the forward motion. Wheel contact arc is determined by cut depth.



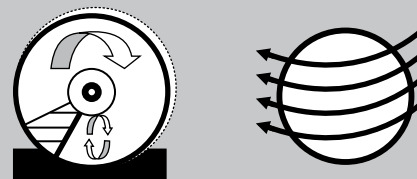
Saw Cut

The wheel contact arc can be precisely controlled via depth increment. The traverse stroke must always exceed the part length to avoid a change in wheel contact arc area. Machine needs to be set for each part.



Orbital

Similar in action to Saw Cut but on a curved path. Simpler and quicker in operation. Part size is irrelevant as the orbital action produces a minimum contact arc area during cutting.



Did You Know?

MACC (Minimal Area of Contact Cutting) offers advantages in comparison to the traditional chop cut. Orbital, Saw, and Planer cut types minimize the contact area between the abrasive wheel and sample allowing you to obtain a quality surface on large and difficult samples. Cooling efficiency is also increased resulting in a sample with little to no deformation.



ABRASIVE CUTTERS

The most commonly used sectioning device in the microstructural analysis laboratory is the abrasive cutter. Selecting the correct wheel for a specific application, including abrasive type, size, bond strength and overall wheel thickness is essential to achieving a good cut. In addition, abrasive sectioning should be performed wet, with an ample flow of coolant that includes both corrosion protection and lubrication. Proper technique will minimize surface damage and provide adequate cutting rates. There are many different abrasive cutters, accessories and consumables available. When selecting an abrasive cutter, consider the sample size, volume of sectioning required and the variety of parts.

AbrasiMet™ 250 Abrasive Cutter

- Manual operation, 4Hp
- 10in [254mm] wheel capacity
- 12mm T-Slot stainless steel bed
- Includes mechanical brake

(Recirculating system and vising not included)

Part Number	Voltage/Frequency	Compatible Recirculating System (not included)
10-10106-260	200-240VAC, 60Hz	10-2165-260
10-10106-460	440-480VAC, 60Hz	10-2165-460
10-10106-250	200-240VAC, 50Hz	10-2165-250
10-10106-400	380-400VAC, 50Hz	10-2165-400



Approx. Weight: 300 lbs [136kg]

Accessories

10-10106-000 PetroCut™ Vise Table and Rock Clamp Kit

10-10106-001 Rock Clamp Kit

See page 7 for Vises with 12mm T-Nuts.

AbrasiMatic™ 300 Abrasive Cutter

- Manual or automatic operation, 5Hp
- 12in [305mm] wheel capacity
- 12mm T-Slot stainless steel bed
- Optional X-axis motion
- SmartCut™ feedback system included
- Touchscreen

(Includes SuperAlloy Abrasive Wheels. Recirculating System and vising not included)

	Part Number	Voltage/Frequency	Compatible Recirculating System (not included)
Y & Z-axis	10-2190-260	200-240VAC, 60Hz	10-2332-260
	10-2190-460	440-480VAC, 60Hz	10-2332-460
	10-2190-250	200-240VAC, 50Hz	10-2332-250
	10-2190-400	380-400VAC, 50Hz	10-2332-400
Y & Z-axis	10-2193-260	200-240VAC, 60Hz	10-2332-260
	10-2193-460	440-480VAC, 60Hz	10-2332-460
	10-2193-250	200-240VAC, 50Hz	10-2332-250
X, Y & Z-axis	10-2193-400	380-400VAC, 50Hz	10-2332-400



Approx. Weight: 350 lbs [165kg]

Accessories

00-10096 Protective Film for touchscreen

See page 7 for Vises with 12mm T-Nuts.

Delta Orbital and Chop Cutter – Medium

- Automatic operation
- 12in [305mm] or 14in [356mm] wheel capacity
- 12mm T-Slot black anodized aluminum bed
- Includes electronic brake
- SmartCut™ feedback system included on Orbital cutters
- SmartPulse™ feedback system included on Chop cutters
- Optional Serial Cutting Capability

(Transit frame, selection of abrasive wheels and 2 T-Slot beds included. Base cabinets, Recirculating System and vising not included)

	Part Number	Voltage/Frequency/Hp	Compatible Recirculating System (not included)
	12in[305mm] 14in [356mm]		
Orbital	10-2219B-260	200-240VAC, 60Hz, 7.5Hp	10-2332-260
	10-2219B-460	440-480VAC, 60Hz, 7.5Hp	10-2332-460
	10-2219B-400	380-415VAC, 50Hz, 7.5Hp	10-2332-400
Chop	10-2216B-260	200-240VAC, 60Hz, 7.5Hp	10-2332-260
	10-2216B-460	440-480VAC, 60Hz, 7.5Hp	10-2332-460
	10-2216B-400	380-415VAC, 50Hz, 7.5Hp	10-2332-400



Approx. Weight: 800 lbs [365kg]

Accessories

- 10-2227 T-Slot Bed, X & Y-axis
 - 10-2228 Base Cabinet, 1 door
 - 10-2230 Premium Cabinet, 2 doors
- See page 7-8 for Vises with 12mm T-Nuts.

AbrasiMatic™ 450

- Automatic operation, 15Hp
- 18in [455mm] wheel capacity
- 12mm T-Slot black anodized aluminum bed
- Four different cut types: Chop, Saw, Planer, and Y-Feed
- 36 W x 22 D x 8in H [914 x 558 x 203mm] maximum part size
- 24 W x 12 D x 6.75in H [609 x 305 x 171mm] maximum cutting capacity
- SmartCut and SmartPulse Feedback system included

(Recirculating tank and T-slot tables included. Vising and mist extractor not included.)

Part Number	Voltage/Frequency
10-10050-250	210-250VAC, 50Hz
10-10050-450	380-420VAC, 50Hz
10-10050-260	200-240VAC, 60Hz
10-10050-460	440-480VAC, 60Hz

Accessories

- 10-30000 Mist Extractor to remove mist, oil, and smoke from machinery

See page 7 for Vises with 12mm T-Nuts.



Approx. Weight: 2600 lbs [1179kg]



ABRASIVE CUTTERS

Vises with 12mm T-Nuts

12mm T-Nuts fit AbrasiMet™ 250, AbrasiMatic™, Delta Family 300 and AbrasiMatic 450.

Speed Vise Kit, small



10-3531

Riser Block Kit, small
for Speed Vise Kit



10-3532 for 10-3531

Medium
Sliding Vise Kit



10-3540 (left)
10-3541 (right)

Fastener Vise



95-C1702
*Must be held by another
vise such as MetKlamp™*

MetKlamp VII Cam-Lock Vise



95-C1821 (left) shown
95-C1822 (right) shown

Universal Clamping Kit



10-3570

PetroCut™ Vise Table &
Rock Clamp Kit
for use with AbrasiMet™ 250



10-10106-000 PetroCut
Vise Table and Rock Clamp Kit

10-10106-001 Rock Clamp
Kit

Medium Speed
Clamping Vise



10-3544 (left)
10-3545 (right)

Large Vises with 12 T-Nuts

12mm T-Nuts fit AbrasiMet 250, AbrasiMatic 300, Delta Family and AbrasiMatic 450.

Speed Vise Kit, large



10-3523

Riser Block Kit, large
for Speed Vise Kit



10-3528

Chain Clamping Vise



46-0030

Speed Clamping Vise



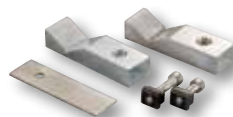
10-3546 (left)
10-3547 (right)

Horizontal Clamp
for Speed Vise



10-3526

Vee Block Clamp Kit



10-3527

Adjustable Vee Blocks



10-3525

Sliding Vise



10-3542 (left)
10-3543 (right)

Vises with 14mm T-Nuts

14mm T-Nuts fit Delta™ Manual and Delta Orbital and Chop Cutters only.

MetKlamp™ VII Cam-Lock Vise



10-2245 (left)
10-2246 (right)

Recirculating Systems & Fume Extractors

Filter Conveyor Swarf Removal System



10-2333-260 [200-220VAC, 60Hz]
10-2333-460 [440-480VAC, 60Hz]
10-2333-400 [380-400VAC, 50Hz]

(for Delta Orbital & Chop cutters)

Recirculating System 7 gal [27ℓ]



10-2165-260 [200-240VAC, 60Hz]
10-2165-460 [440-480VAC, 60Hz]
10-2165-250 [200-240VAC, 50Hz]
10-2165-400 [380-400VAC, 50Hz]

(for AbrasiMatic™ 250)

Recirculating System 22 gal [90ℓ]



10-2332-260 [200-240VAC, 60Hz]
10-2332-460 [440-480VAC, 60Hz]
10-2332-250 [200-240VAC, 50Hz]
10-2332-400 [380-400VAC, 50Hz]

(for AbrasiMatic 300 and Delta Orbital & Chop cutters)

Recirculating System

10-30002 23.7gal [90ℓ] Recirculating tank for
AbrasiMatic 450
560023 60ℓ with filter for AbrasiMet 250
102431400 160ℓ with sloped filter for AbrasiMatic 300
560024 160ℓ for Delta Series 23xx

Fume Extractor

10-2342-400 Fume Extractor
10-2342-030 Smoke Filter Kit for Fume Extractor
10-2342-031 Fume Filter Kit for Fume Extractor
10-2342-032 Wall Vent Kit for Fume Extractor

Base Cabinet

80-10001 For Preparation Equipment; 36 W x 30 D x 36in H [910 W x 760 D x 910mm H]



80-10001 Cabinet Table



Abrasive Cutter Consumables

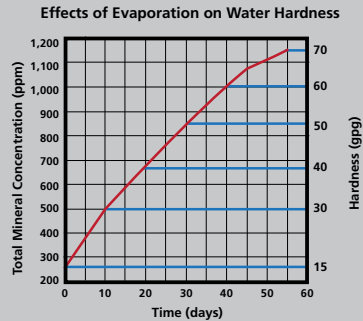
Cool 3 Fluid

Water miscible fluid concentrate.
Dilute coolant to 1:25 to 2:25, with water.

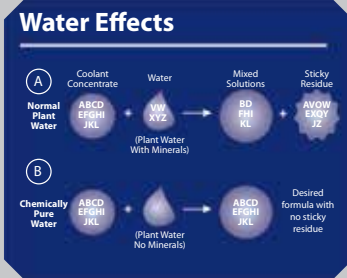


10-6001	33.8oz [1ℓ]
10-6004	1gal [4ℓ]
10-6010	2.6gal [10ℓ]

Coolant Care: Maintaining Your Recirculating System



As water in the coolant tank evaporates, the remaining water becomes harder, reducing the effectiveness of the coolant. This graph shows that the hardness of the water will double in only ten days. This can be eliminated by using distilled or other chemically pure water.



In this illustration, the elements of the coolant (represented by A-L) combine with the minerals in hard water (represented by V-Z), resulting in reduced coolant efficiency and a sticky residue. When mixed with chemically pure water, the coolant formula remains intact and performs as designed.

Abrasive Cutting Troubleshooting Guide

Issue	Possible Cause	Suggested Remedy
Burning (bluish discoloration)	Overheated specimen	Increase coolant flow rate Reduce cutting pressure Select a wheel with softer bonding (faster breakdown)
Rapid wheel wear	Wheel bonding breaks down too rapidly	Select a wheel with harder bonding Reduce cutting pressure
Frequent wheel breakage	Uneven coolant distribution	Adjust coolant flow to be even on both sides of the wheel
	Loose specimen fixturing	Clamp the specimen more securely
	Abrupt contact with specimen	Start cut contact carefully
	Wheel was previously cracked at start up	Handle carefully
Resistance to cutting	Slow wheel bond breakdown	<ul style="list-style-type: none">Select a wheel with softer bondingUse a "pulse" cutting modeUse cutter with orbital motion or with Minimal Area of Contact Cutting* (MACC) ability
Stalled wheels	Inadequate cutter capacity	<ul style="list-style-type: none">Use cutter with greater horsepowerReduce pressure or feed rateUse with cutter orbital motion or with MACC ability
	Pinched blade due to movement of specimen	Tighten the vise on one side less than on the other side

*Minimal Area of Contact Cutting as on the Delta™ Orbital Abrasive Cutter

Abrasive Wheel Choices for Select Buehler® Cutters, 1.25in [31.75mm] Arbor (qty 10)

[Part Number / Blade Thickness]

Recommended Use	9in [229mm] for SampleMet™		10in [254mm] for AbrasiMet™ Family		12in [305mm] for Delta™ Orbital Family		12in [305mm] for Chop & AbrasiMatic 300 Family		14in [356mm] for Delta Manual Cutter		14in [356mm] for Delta Orbital Family		16in [406mm] for Delta Orbital Family		18in [455mm] for Delta Orbital Family AbrasiMatic™ 450*	
	12-4205-010 0.055in [1.4mm]	10-4210-010 0.07in [1.8mm]	10-4210-010 0.07in [1.8mm]	12-4410-010 0.105in [2.7mm]	12-4405-010 0.055in [1.4mm]	12-4110-010 0.105in [2.7mm]	10-4412-010 0.07in [1.8mm]	10-4310-010 0.075in [1.9mm]	12-4305-010 0.063in [1.6mm]	12-4310-010 0.105in [2.7mm]	12-5605-010 0.075in [1.9mm]	12-5805-010 0.1in [2.4mm]	12-5610-010 0.125in [3mm]	12-5810-010 0.153in [3.8mm]	12-5612-010 0.125in [3mm]	12-5816-010 0.153in [3.8mm]
SuperAlloys and General Steel, Non-ferrous																
Ferrous materials >HRC60																
Ferrous materials HRC50-60																
Ferrous materials HRC35-50																
Ferrous materials HRC 15-35																
Delicate Cutting																
Ductile materials, Ti & Ti-alloys, Zr & Zr-alloys																
Non-ferrous materials, (Al, Cu, Brass)																
AcuThin™ rubber bonded, general use ≤HRC45																
AcuThin rubber bonded, ferrous materials ≥HRC45																

*Arbor size for AbrasiMatic 450 Abrasive Cutter is 1.26in [32mm]

Abrasive Wheel Choices for Select Buehler® Cutters, 32mm Arbor (qty 10)



[Part Number / Blade Thickness]

Recommended Use	Blade Type	AbrasiveMatic™ Families					
		229mm & 230mm for Cuto 10, SamplMet™	250mm & 254mm for Cuto 20, AbrasiveMatic™	300mm & 305mm for AbrasiveMatic™ 300, PowerMet™ 1000, Cuto 35	300mm & 305mm for PowerMet 2000 or 3000	400mm for PowerMet™ 5000, Cuto 75	
High speed steel, stainless steel, carburized steel	08P	102308P 1.5mm	102508P 1.5mm	103008P 2mm	103508P 2.5mm		
Ferrous and hard materials >HRC60	09P	102309P 1.5mm	102509P 1.5mm	103009P 2mm	103509P 2.5mm	104009P 3mm	
Ferrous materials ≥HRC60	HHH	95B2101 1.7mm	95B2201 1.8mm	95B2301 1.8mm	95B2401 2.3mm		
Ferrous materials HRC50-60	HH	95B2102 1.7mm	95B2202 1.8mm	95B2302 1.8mm	95B2402 2.3mm		
General use, medium hard steel, non-ferrous materials	10P	102310P 1.5mm	102510P 1.5mm	103010P 2mm	103510P 2.5mm	104010P 3mm	
Ferrous materials HRC35-50	H	95B2103 1.7mm	95B2203 1.8mm	95B2303 1.8mm	95B2403 2.3mm		
Ferrous materials HRC15-35	11P		102511P 1.5mm	103011P 2mm	103511P 2.5mm		
Very soft steel, non-ferrous materials, plastics	12P		102512P 1.5mm	103012P 2mm	103512P 2.5mm		
General use of soft materials	FS	95B2104 1.7mm	95B2204 1.8mm	95B2304 1.8mm	95B2404 2.3mm		
Ductile materials, Ti & Ti-alloys, Zr & Zr-alloys	07P	102307P 1.5mm	102507P 1.5mm	103007P 2mm	103507P 2.5mm		
Super alloys	HHA	95B2112 1.7mm	95B2212 1.8mm	95B2312 1.8mm	95B2412 2.3mm		
AcuThin™, rubber bonded, general use ≤HRC45	01	102301 0.8mm	102501 1mm	103001 1mm	103501 1.6mm		
AcuThin, rubber bonded, ferrous materials ≥HRC45	02	102302 1.6mm	102502 1.6mm	103002 1.6mm	103502 2.7mm		
Adapter ring for 22mm arbor machines		810134					

Diamond and CBN Blades for Abrasive Cutters, 32mm Arbor (qty 1)

[Part Number / Blade Thickness]

Recommended Use	Blade Type	200mm for Cuto 10, SamplMet™	250mm for Cuto 20, AbrasiMet™ & AbrasiMatic™ Families	300mm for AbrasiMatic 300, PowerMet™ 1000, Cuto 35	350mm for PowerMet 2000, Delta™ Family, Cuto 75A	400mm for Delta Family, Cuto 75A	450mm for Delta Family
General Use	Diamond	114608E 1.2mm	114610 1.3mm				
Hard Materials	Diamond	114808E 1.2mm	114810E 1.2mm	103056 1.4mm	114814E 1.5mm	104056 2mm	
Ceramic and Petrographic samples	Diamond	114709E* 1.2mm	114710E 1.2mm	103053 2.2mm	114714E 1.5mm		
Plastics and Polymers	Diamond		102557 1.25mm				
General use, hardened steel, HRC55 and Up	CBN	102050 1.3mm	102551 1.2mm	103051 1.9mm	103551 2mm	104050 1.7mm	104556 2mm

* 230mm Ø

PRECISION CUTTERS

When sectioning small, delicate, or extremely hard materials, precision cutters are a must. These cutters primarily use thin, metal bonded diamond wafering blades which allow for more precise cuts, less material (kerf) loss and less induced deformation. Very thin abrasive wheels can also be used on larger models. Blade selection is based on the material type. The goal is to find a blade that will create the best surface finish while providing a suitable cut time for the operator. In order to have optimum cut times and minimal deformation, it is essential to use ample coolant. This will provide adequate coolant to keep the sample and blade cool, remove any debris from the cutting area and enable the abrasive to provide the best cutting action.



	IsoMet™ Low Speed	IsoMet 1000	IsoMet 4000	IsoMet 5000	PetroThin™ Thin Sectioning System
Maximum Wheel Diameter	5in [127mm]	7in [178mm]	8in [203mm]	8in [203mm]	8in [203mm]
Controls	Manual	Manual	Manual	Manual or Auto	Manual
Cut Style	Gravity Fed	Gravity Fed	Auto Feed or SmartCut™	Auto Feed, SmartCut Grinding	Thin Sectioning
Sample Movement	Z-axis	Z-axis	X-axis	X-axis	X-axis, Z-axis
Wheel Movement			Y-axis	Y-axis	
Maximum Cutting Capacity*	1.77in [45mm]	2.5in [64mm]	3in [76mm]; 2 x 6.5 x 1in [51 x 165 x 25mm]	3in [76mm]; 2 x 6.5 x 1in [51 x 165 x 25mm]	Petrographic Glass Slides: 1.06 x 1.81in [27x46mm] or 3 x 1in [76.2 x 25.4mm]

*Maximum cutting capacity assumes largest size blade with smallest flange.



IsoMet™ Low Speed Cutter

- Compact cutter uses gravity feed system to provide constant feed rate
- Produces minimum deformation
- $\pm 5\mu\text{m}$ or $\pm 0.0001\text{in}$ positioning via manual micrometer
- 0.02Hp motor
- 0-300rpm

(Includes 4in [102mm] IsoMet Blade for general sectioning, assorted weights, dressing stick, IsoCut™ Fluid, flanges and the following chucks: single saddle, irregular specimen and wafer)

Part Number	Voltage/Frequency
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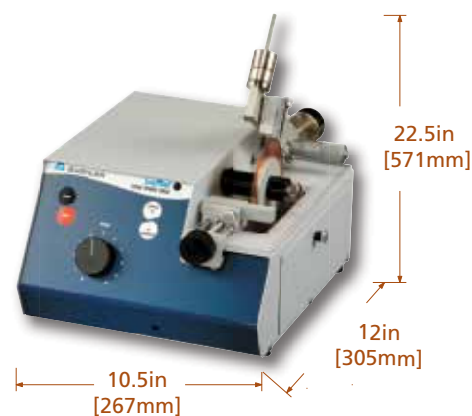
11-1280-160*	115VAC, 50/60Hz
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11-1280-250†	230VAC, 50/60Hz
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11-1280-170†	115VAC, 50-60Hz
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* Micrometer in inches

† Micrometer in millimeters



Approx. Weight: 25 lbs [11.3kg]

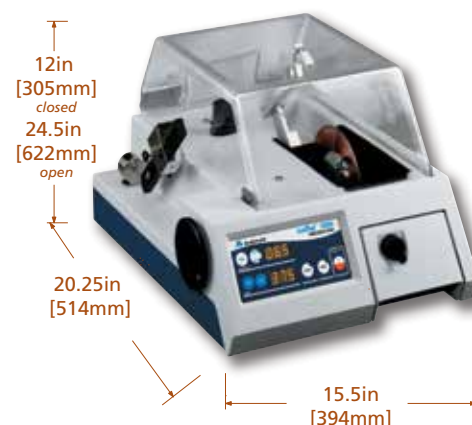
IsoMet 1000

- Simple to operate, gravity fed membrane panel controls
- Rotating vise for larger samples
- Optional table saw attachment
- 0.17Hp motor
- 100-975rpm

(Includes 6in [152mm] IsoMet Blade for sectioning electronic substrates, assorted weights, dressing stick, Cool 2 Fluid, flanges and the following chucks: single saddle, irregular specimen and wafer)

Part Number	Voltage/Frequency
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11-2180	85-264VAC, 50/60Hz
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Approx. Weight: 56 lbs [25kg]

Did You Know?

Many of the vises for abrasive cutting can also be used on the IsoMet 4000 and 5000 Precision Cutters by adding an 8mm T-Nut (part number 2680S249). See pages 7-8 for vise selections.

IsoMet™ Low Speed Cutter Accessories

Goniometer

Rotates specimen along 3 axes



11-2381

Manual Feed Control Dressing Chuck

Enables blade dressing without removing the sample fixture



11-1196

Splash Guard Kit

Prevents lubricant from splashing out of saw



11-1199

IsoMet Low Speed Cutter & 1000 Accessories

Swivel Arm Assembly

Swivels to position specimen cutting surface perpendicular to blade *(replaces support arm provided with cutter)*



11-1181

Small, Double Saddle Chuck

Securely holds specimen up to 0.875in [22mm] from 2 points



11-1183

Bar & Tube Chuck

Securely holds end of a bar tube up to 2in [50mm] long and 0.5in [13mm] in diameter



11-1184

Irregular Specimen Chuck

Adjusts to hold irregular shaped specimens up to 1in [25mm] in diameter



11-1185

Wafer Chuck

Use mounting wax, 40-8150 or 40-8145 (pg. 34) to glue specimens to wafer chuck. 1.125 x 2in [29 x 51mm]



11-1186

Single Saddle Chuck

Holds specimens up to 0.75in [19mm] in diameter



11-1187

Vacuum Chuck for Glass Slides

Holds specimens mounted to glass slides to chuck to chuck with vacuum force



11-1188 27 x 46mm

Mount Chuck

Aluminum chuck holds mounted samples



11-1189 1-1.25in [25-32mm]

Small Bone Chuck

Ideal for clamping bone, plastics, or other semi-rigid solids up to 1.5in [32mm] in diameter



11-1194



IsoMet™ 1000 Accessories

Rotating Chuck Assembly

Rotates specimen chuck to increase the maximum cutting depth of the blade



11-2181

Table Saw Attachment

Transforms gravity fed IsoMet 1000 into convenient table saw



11-2182

800 gram Weight Set

Additional weights for gravity fed saws



11-2183

Swivel Arm Accessory

Swivels to position specimen cutting surface perpendicular to blade *(replaces provided support arm)*



11-2184

Goniometer

Rotates specimen along 3 axes



11-2185

Table Saw Splash Guard

Catches splashing lubricant when used in conjunction with the Table Saw Attachment (11-2182)



11-2186

Fastener Chuck

Holds specimen up to 2in [50mm] for longitudinal sectioning



11-2482

Large, Double Saddle Chuck

Securely holds specimen up to 1.5in [38mm] from 2 points



11-2483

Glass Slide Chuck

Holds 27 x 46mm, 1 x 2in, or 1 x 3in glass slides



11-2484

Wafer Chuck

Use mounting wax (40-8150) to glue specimens to wafer chuck



11-2486 1.75 x 2.5in
[44 x 64mm]

Medium, Single Saddle Chuck

Holds up to 1in [25mm] specimen



11-2487

Glass Slide Chuck

Holds 2 x 3in glass slides



11-2488

Mount Chuck

Holds mounted samples



11-2489 1.5in [40mm]

PRECISION CUTTERS

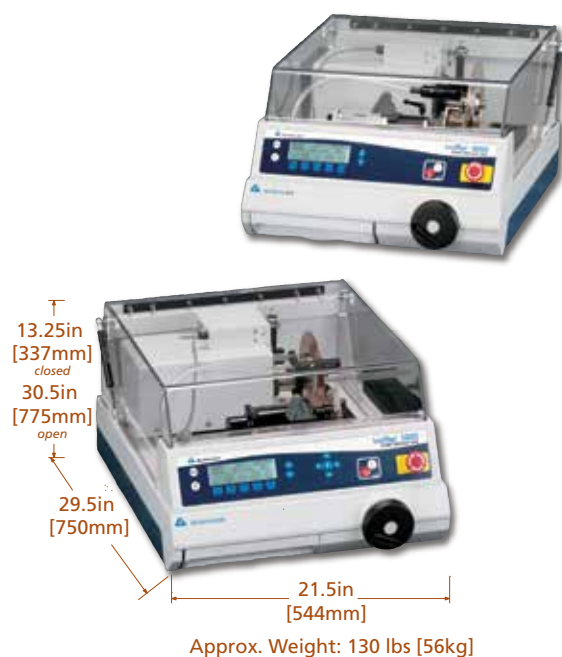
IsoMet™ 4000 and 5000

- Simple to operate, automatic precision cutter
- SmartCut™ adjusts feed rate to eliminate damage to system or sample
- Rotating vise for larger samples
- IsoMet 5000 includes cup grinding capabilities, 35 preprogrammed and 20 customizable methods
- Compatible with external recirculating system
- 1.25Hp motor

(Includes 7in [178mm] IsoCut™ Blade for sectioning ferrous alloys and superalloys, 7in abrasive wheels, T-slot table, automatic dressing system, dressing stick, Cool 2 Fluid, 1 set of flanges and the following chucks: irregular specimen, single saddle and 1.25in [32mm] round specimen)

IsoMet 4000	Voltage/Frequency
11-2680 with internal recirculation system	85-264VAC, 50/60Hz
11-2675 with external recirculation system	85-264VAC, 50/60Hz

IsoMet 5000	Voltage/Frequency
11-2780 with internal recirculation system	85-264VAC, 50/60Hz
11-2775 with external recirculation system	85-264VAC, 50/60Hz



IsoMet 4000 & 5000 Accessories

Double Saddle Chuck

Securely holds specimens up to 0.875in [22mm] from 2 points



11-2682

Single Saddle Chuck

Holds specimens up to 0.875in [22mm] in diameter



11-2683

Mount Chuck

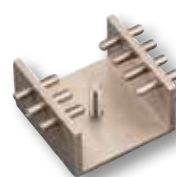
Stainless steel chuck holds mounted samples



11-2684 1.25in [32mm]
11-2685 1.5in [38mm]

Irregular Specimen Chuck

Adjusts to hold irregular shaped specimens up to 1in [25mm] in diameter



11-2686

Fastener Chuck

Holds specimens up to 2in [50mm] for longitudinal sectioning



11-2687

Sliding Vise

Attaches to T-slot table and holds specimens up to 2.5in [65mm]



11-2691

Large, Single Saddle Chuck

Holds specimens up to 2in [50mm] from 2 points



11-2285

Large Bone Chuck











Ideal for clamping bone, plastics, or other semi-rigid specimens up to 2in [50mm] in diameter



11-2494



IsoMet™ 4000 & 5000 Accessories

<p>Slotted Vise</p> <p>Adjusts in vertical direction to enable operator to cut a slot at a constant depth</p>  <p>11-2692</p>	<p>Goniometer</p> <p>Rotates specimen along 3 axes</p>  <p>11-2693</p>	<p>Rotating Vise</p> <p>Rotates specimen chuck to increase the maximum cutting depth of the blade</p>  <p>11-2695</p>	<p>Automatic Dressing System</p> <p>Dresses blade prior to and during operation to optimize sectioning conditions</p>  <p>11-2696</p>
<p>Precision Positioning System, 1µm</p> <p>For manual sample positioning via precision micrometer</p>  <p>11-2699</p>	<p>Angle Vise</p> <p>Precisely holds specimen for cutting at an angle with the chuck rotating left and right</p>  <p>11-2698</p>	<p>T-slot Y-axis bed</p> <p>Additional T-slot for positioning vises</p>  <p>11-2701</p>	<p>T-slot X-axis bed</p> <p>Additional T-slot for positioning vises</p>  <p>11-2702</p>
<p>Sliding Vise</p> <p>6in [152mm] maximum opening, use requires flange to be 2in [50mm] or less</p>  <p>11-2703</p>	<p>Vise for solar cells or delicate flat parts</p> <p>160 W x 160 D x 2mm capacity</p>  <p>11-2706</p>	<p>Small Speed Vise</p> <p>Clamps specimens up to 58mm in height</p>  <p>460022</p>	

IsoMet™ 4000 & 5000 Accessories

External Recirculating System Kit

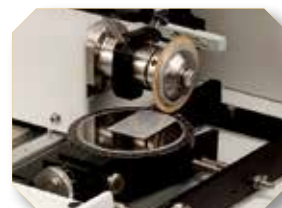
Increases cutting fluid capacity to 7gal [26.5ℓ]
at 1.25gal/min [4.7ℓ/min]



11-2711

Precision Table

Precisely aligns specimen forward,
backward, up and down



11-2694-160 [115VAC, 50/60Hz]
11-2694-250 [230VAC, 50/60Hz]

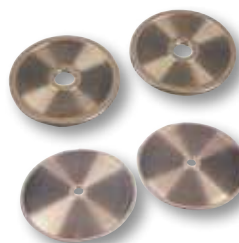
IsoMet Precision Cutter Accessories

Aluminum Flange Set



11-1192	1.38in [35mm]
11-1191	1.75in [44mm]
11-2679	2.5in [64mm]
11-2282	3in [76mm]
11-2283	4in [102mm]
11-2284	5in [127mm]

Stainless Steel Flange Set



11-2688	3in [76mm]
11-2689	4in [102mm]
11-2690	5in [127mm]
11-2697	6in [152mm]

Chuck Padding



11-2496

Dressing Sticks



11-1190	3 x 0.5 x 0.5in [76 x 13 x 13mm] for 20HC, 15HC, 20LC, 15LC, CBN LC and CBN HC precision blades
11-2490	3 x 1 x 1in [76 x 25 x 25mm] for 20HC, 15HC, 20LC, 15LC, CBN LC and CBN HC precision blades
11-1290 ^{SO}	3 x 0.5 x 0.5in [76 x 13 x 13mm] for 10LC and 5LC precision blades

SO - Special Order. Items may have long lead times and minimum orders.

Tips, Tricks & Techniques:

For the best performance from your Precision Cutter System:

- Always tightly clamp your sample
- Use double saddle chucks for long parts such as rods
- Do not hand dress blades
- Mount spheres, unusual shapes and friable materials
- Use the largest flange for your blade and specimen
- Soft, gummy materials can build up on the blade during the cut

PRECISION SECTIONING CONSUMABLES

Precision Sectioning Blades for IsoMet™ Cutters, 0.5in [12.7mm] Arbor (qty 1)

[Part Number / Blade Thickness]



Recommended Use	3in [76mm]	4in [102mm]	5in [127mm]	6in [152mm]	7in [178mm]	8in [203mm]	Dressing Stick*
Use with Saws	Best on IsoMet Low Speed Cutter or 4000/5000 with Precision Table	All	All	1000 2000 4000 5000	1000 2000 4000 5000		
IsoMet 30HC - Polymers Rubber, Soft Gummy Materials			11-4239 0.030in [0.76mm]		11-4241 0.03in [0.76mm]	11-4242 ^{SO} 0.035in [0.9mm],	Blade should not be dressed
IsoMet 20HC - Aggressive Sectioning of Metals			11-4215 0.020in [0.5mm]		11-4237 0.025in [0.6mm]	11-4238 0.035in [0.9mm]	11-1190 11-2490
IsoMet 15HC - Metal Matrix Composite, PCBs, Bone, Ti, TSC	11-4243 0.006in [0.15mm]	11-4244 0.012in [0.3mm]	11-4245 0.015in [0.4mm]	11-4246 0.02in [0.5mm]	11-4247 0.025in [0.6mm]	11-4248 0.035in [0.9mm]	11-1190 11-2490
IsoMet 20LC - Hard tough Materials, Structural Ceramics			11-4225 0.02in [0.5mm]		11-4227 0.025in [0.6mm]	11-4228 0.035in [0.9mm]	11-1190 11-2490
IsoMet 15LC - Hard Brittle Materials, Glass, Al ₂ O ₃ , Zr ₂ O ₃ , Concrete	11-4253 0.006in [0.15mm]	11-4254 0.012in [0.3mm]	11-4255 0.015in [0.4mm]	11-4276 0.02in [0.5mm]	11-4277 0.025in [0.6mm]	11-4279 0.045in [1.1mm]	11-1190 11-2490
IsoMet 10LC - Medium to Soft Ceramics, Glass Fiber Reinforced Composites	11-4283 0.006in [0.15mm]		11-4285 0.015in [0.4mm]		11-4287 0.02in [0.5mm]	11-4288 ^{SO} 0.045in [1.1mm]	11-1290 ^{SO}
IsoMet 5LC - Soft, Friable Ceramics, Composites with Fine Reinforcing, CaF ₂ , MgF ₂ , Carbon Composites	11-4293 0.006in [0.15mm]		11-4295 0.015in [0.4mm]				11-1290 ^{SO}
IsoCut™ CBN LC - Fe, Co, Ni based alloys and superalloys	11-4263 0.006in [0.15mm]	11-4264 0.012in [0.3mm]	11-4265 0.015in [0.4mm]	11-4266 0.02in [0.5mm]	11-4267 0.025in [0.6mm]	11-4268 0.035in [0.9mm]	11-1190 11-2490
IsoCut CBN HC - Fe, Co, Ni based alloys and superalloys		11-5264 0.012in [0.3mm]	11-5265 0.015in [0.4mm]	11-5266 0.02in [0.5mm]	11-5267 0.025in [0.6mm]	11-5268 0.035in [0.9mm]	11-1190 11-2490
Cup Grinder for Ferrous Material (IsoMet 5000 only)				11-2720 ^{SO}			
Cup Grinder for Non-Ferrous Material (IsoMet 5000 only)				11-2730 ^{SO}			
Cup Grinder for Ceramic & Geological Materials (IsoMet 5000 only)			11-2740				

^{SO} - Special Order. Items may have long lead times and minimum orders.

* All Blades come with a Dressing Stick included. The Part Numbers shown in the table can be used for re-ordering the Dressing Sticks.

AcuThin™ Abrasive Wheels for IsoMet™ 2000, 4000 and 5000 Precision Cutters, 0.5in [12.7mm] Arbor (qty 10)

[Part Number / Blade Thickness]



Recommended Use	5in [127mm]	7in [178mm]	150mm*	200mm*
Tool Steel, hard steel, HRC45 & Up	10-4060-010 0.019in [0.48mm]			
Medium hard, soft steel, HRC45 & Below	10-4061-010 0.019in [0.48mm]			
Steel, Stainless Steel		11-4207-010 0.030in [0.76mm]		
Hard, soft non-ferrous materials		11-4217-010 0.030in [0.76mm]		
Soft materials			101520 0.50mm	102020 0.50mm
Tough materials and general use			1015998E 1mm	1020998E 1.5mm

Precision Cutter Consumables

IsoCut™ Fluid

Oil based coolant only for use with the IsoMet Low Speed Saw or any saw with a maximum speed of 500rpm



11-1193-032 1qt [0.95ℓ]
11-1193-128 1gal [3.8ℓ]

Cool 3 Fluid

Water miscible fluid concentrate. Dilute coolant to 1:25 to 2:25, with water.



10-6001 33.8oz [1ℓ]
10-6004 1gal [4ℓ]
10-6010 2.6gal [10ℓ]

Glossy

Clear paste for keeping cutter windows clear



109003 60ml

ReciClean™

Cleaner for recirculating systems



109004 5kg

AddiCool™

Additive to prevent galvanic corrosion when cutting Cu and Cu-alloys



109006 1ℓ



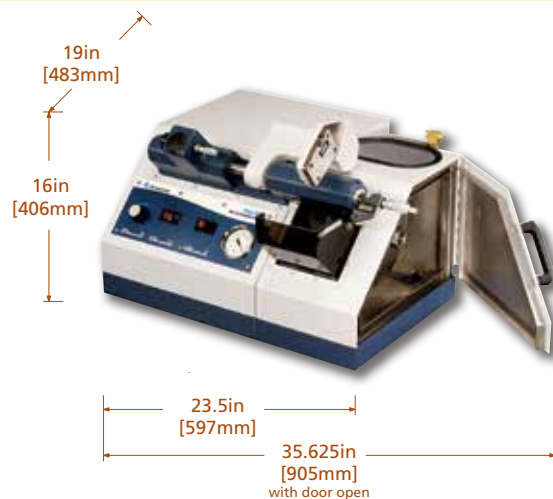
PetroThin™ Thin Sectioning System

- Resections and grinds material within $\pm 5\mu\text{m}$
- Single spindle design ensures parallelism of sample edges by eliminating the need to remove glass slide between steps

Part Number	Voltage/Frequency
-------------	-------------------

38-1450-160	115VAC, 60Hz
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38-1450-250	220VAC, 50Hz
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Approx. Weight: 94 lbs [43kg]

Consumables

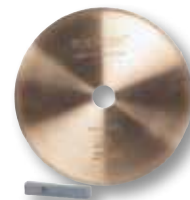
Part Number	Description
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11-4278	Continuous Rim Diamond Blade 8 x 0.045 x 1in [203 x 1 x 25mm]
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11-4280	Continuous Rim Cubic Boron Nitride Blade 8 x 0.055 x 1in [203 x 1 x 25mm] <i>(recommended for cutting ferrous metals)</i>
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40-4508	Diamond Cup Grinding Wheel 8 x 0.25 x 1in [203 x 6 x 25mm]
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40-4510	Dressing Stick 0.5 x 0.5 x 4in [13 x 13 x 102mm]
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