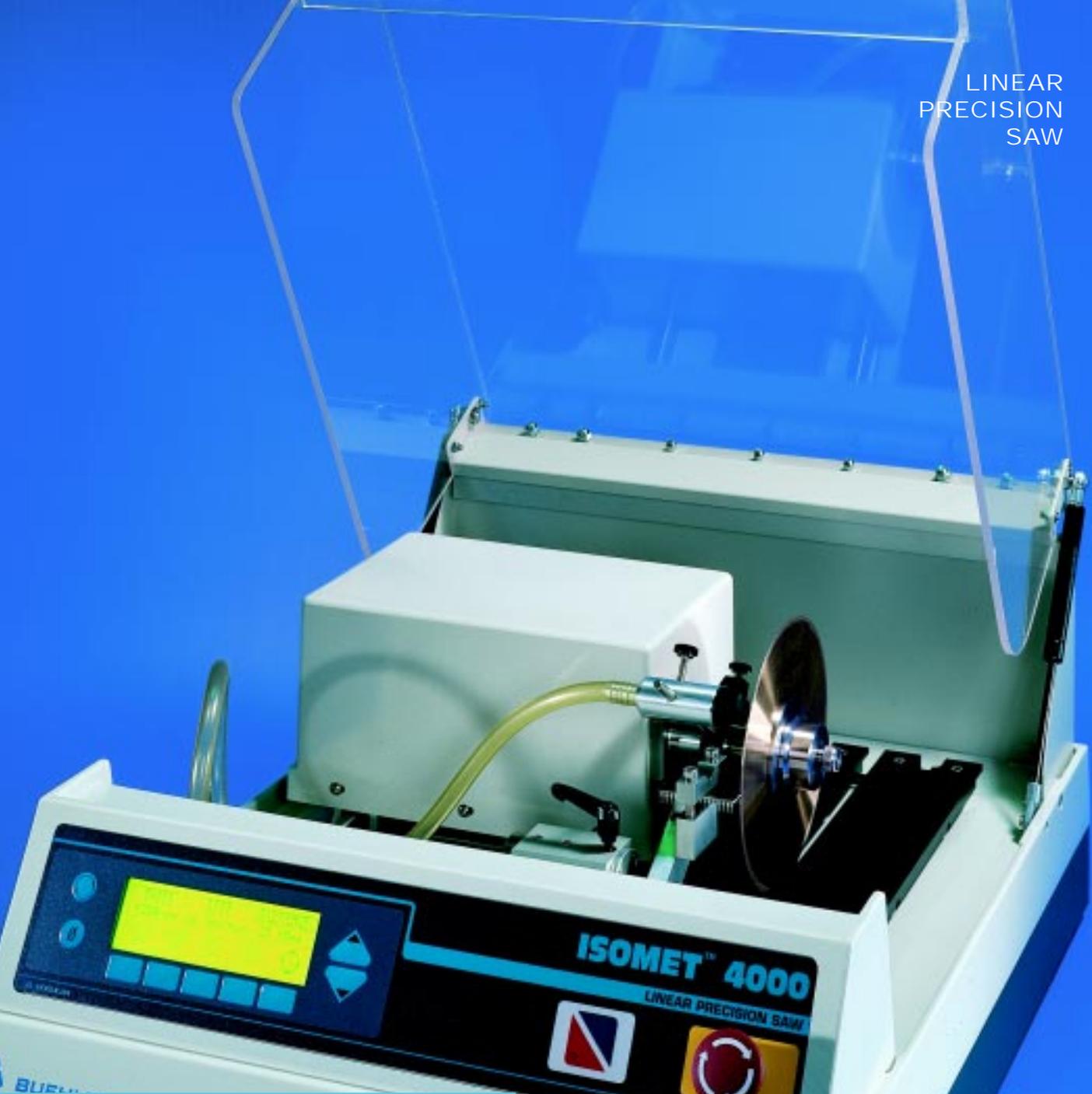


LINEAR
PRECISION
SAW

BUEHLER® **ISOMET® 4000**



Easy-To-Use Automatic
Linear Precision Saw

SMARTCUT System
Prevents Sample and
Machine Damage

Designed to Maximize
Precision, Productivity,
and Versatility

2 μ m Sample Positioning,
Precision Bearings,
Durable Hood and
Aluminum Cast Base



Precision Cutting and Versatility Combined



Easy-to-Use Automatic System

- Automatic System means start and walk away, saw completes cut without operator assistance
- SMARTCUT system automatically adjusts feed rate to eliminate sample, machine, and blade damage; thereby giving consistently good cuts for multiple operators and materials
- Simple operation Liquid Crystal Display (LCD) and controls with last settings retained programmability
- Ergonomically designed and easy maintenance

Precise and Durable

- 2 μ m sample positioning for highest precision applications
- Linear feed mechanism with constant feed rate cutting

- User selectable feed rate allows even the most delicate samples to be cut without deformation
- Heavy duty aluminum casting provides stable, vibration resistant base for precision components and linear bearings

Productive

- Powerful 1.25HP (950 Watt) motor, full 5000 rpm and 8" (200mm) blades for quickest cut
- Select the feed rate and SMARTCUT system automatically adjusts to give fastest cut without deformation
- Operator can change the feed rate and blade speed during operation
- Manual blade positioning handle provides quick blade set up and retraction

Versatile

- Precision saw combined with longer sample sectioning capability
- Can be used for highest precision applications and for general low deformation, low kerf loss sectioning
- Large workspace with removable T-slot beds maximizes cutting envelope and provides versatile sample positioning
- Most comprehensive selection of sample fixturing, flanges and blades:
 - Precision stainless steel chucks and flanges
 - Standard ISOMET® series chucks and flanges
 - Long sample and application specific vising
 - Diamond, ISOCUT® and abrasive blades



Durable Liquid Crystal Display (LCD) and intuitive touch panel controls provide unrivaled ease-of-use. The Emergency Stop enhances safety.



All main controls are located on the first programming screen: Blade Speed, Feed Rate, Distance Remaining (Cutting Length), Cutting Cycle, Blade Motor On/Off, Pump Motor On/Off, and Feed Motor On/Off. When the cutting cycle is activated the LCD displays the total Distance Remaining until end of cut. Feed Rate and Blade Speed can be changed by the operator during the cutting cycle at any time.



The second screen can activate the cutting cycle, change the cutting parameters, and activate the accessory rotating vise. Soft Start and Soft Stop automatically reduce the feed rate at the beginning and end of cut for delicate and spherical samples.



Language selection, blade dressing and units of measure are selected from the third screen. The ability to change the cutting parameters, start the ISOMET 4000 from all three programming screens, and the user friendly screen icon, maximize convenience.

Applications

Ferrous & Non-Ferrous Metals:

Plain Carbon Steels	Electronic Packages
Stainless Steels	Plastics
Tool Steels	Fasteners
Aluminum	Refractories
Copper Base Alloys	Integrated Circuits
Magnesium	Thermal Spray Coatings
Titanium	Metal Matrix Composites
Biomedical	Wafers
PCB's	Ceramics
Petrographic	

Precision Longitudinal Cuts and Slot Cutting on Long Samples:

Implants	Bones
Tubing	Aircraft Fasteners
Turbine Blades	
Cutting and Notching Ceramic and Plastic Specimens	

Accessories

Stainless Steel Chucks and Flanges:

- 11-2682 Stainless Steel Double Saddle Chuck, for bar and tube stock up to 1¼" (32mm) diameter
- 11-2683 Stainless Steel Single Saddle Chuck, for bar and tube stock up to 1¼" (32mm) diameter
- 11-2684 Stainless Steel Specimen Chuck, for 25mm, 30mm, 1", and 1¼" diameter mounted samples
- 11-2685 Stainless Steel Specimen Chuck, for 1½" and 40mm diameter mounted samples
- 11-2686 Stainless Steel Chuck, for irregularly shaped samples
- 11-2687 Stainless Steel Fastener Chuck, for longitudinal sectioning of fasteners, tubes and solid cylinders from 1½" to 2½" (29mm-54mm) in length
- 11-2704 Stainless Steel Thermal Spray Coating Chuck
- 11-2688 Stainless Steel Precision Flanges, 3" (75mm) diameter, one set
- 11-2689 Stainless Steel Precision Flanges, 4" (100mm) diameter, one set
- 11-2690 Stainless Steel Precision Flanges, 5" (125mm) diameter, one set
- 11-2697 Stainless Steel Precision Flanges, 6" (150mm) diameter, one set

Chucks require 11-2699, or 11-2700 Sample Positioning Systems or 11-2691 General Usage Vise.

Longer Sample Vises

- 11-2691 General Usage Vise, holds up to 1¼" H x 2" D (45mm x 50mm) sample
- 11-2703 General Usage Vise, holds up to 1¼" H x 6" D (45mm x 150mm) sample
- 11-2692 Slotting Vise for Cutting Slots in Samples, holds up to 1½" H x 4" D (38mm x 100mm) sample
- 11-2698 Angle Vise for Cutting Samples on Angle, holds up to 2" (50mm) sample. 0-90 degree angle cuts in 2 degree increments.

Additional Accessories

- 11-2693 Precision Goniometer with 3-Axis Control, in 5 degree increments
- 11-2694 Precision Table, for sectioning thin materials and wafers. 180 degree rotation in 1 degree increments. ¼" (6mm) Z-axis control. Maximum 4" (100mm) wafer diameter (select 160 or 250 voltage extension according to your local voltage requirements)
- 11-2695 Rotating Vise, for ISOMET 4000. For use with 11-2683, 11-2684, and 11-2685 chucks.
- 11-2696 Automatic Dressing System, for use with 11-1190 and 11-1290 Dressing Sticks
- 11-2699 Precision 2µm Sample Positioning System, for use with stainless steel ISOMET 4000 and standard ISOMET vises
- 11-2700 Precision 0.001" Sample Positioning System, same as 11-2699 except Imperial units
- 11-2701 T-Slot Bed Kit, includes one Y-axis bed and fasteners
- 11-2702 T-Slot Bed Kit, includes one X-axis bed and fasteners
- 11-2705 Manual Dressing Vise
- 11-2496 Chuck Padding, three 1" x 6" (25mm x 150mm) adhesive backed strips, for clamping delicate samples in ISOMET chucks

Technical Data

Operation:

Automatic with constant feed rate
SMARTCUT process control

Cutting Action:

Linear blade feeds into workpiece

Motor Power:

1.25 HP, 950 Watt

Feed Rate:

0.05-0.75 inch/min 0.01" increments
(1.2-19mm/min, 0.2-0.3mm increments)

Blade Speed:

200-5000 rpm in 50 rpm increments
Programmable Cutting Length with Auto Shut-off 0.01-8", 0.01" increments
(0.25-200mm, 0.25mm increments)

Electronics: Microprocessor Controlled

64 x 240 Pixel LCD Display

Touch Pad Controls

Programming:

Retains last settings used
CAN Port (Fall 1999)

Process Prompts:

"Warning Hood Open"
"Blade Pinched"

"Distance Remaining"

"End of Cut"

"Emergency Stop"

Languages:

English, French, German, Portuguese,
Spanish, (Chinese, Japanese, Korean Fall
1999)

Blades:

Wafering Blade Diameters:

3-8" (75-200mm)

Abrasive Blade Diameters:

5-7" (125-180mm)

Coolant Systems:

Built-in Recirculating System

Capacity: 0.9 gal (4l)

Flow Rate: 0.7 gal/min (3l/min)

Main Power:

85-264V/50-60Hz/1 phase

VOLTS	AMPS	WATTS
85	8	690
120	5	180
240	2.3	570
255	2.4	595

Safety Features:

Emergency Stop

Magnetic Safety Interlock

Other Features:

Cutting chamber clean-out hose

Manual Blade Positioning Handle

Shipping Weight:

130 lb. (59kg)

Cutting Envelope:

Maximum Diameter of Sample 2"
(50mm)

Maximum Rectangular Sample
6" L x 2" D x 1/2" H (150mm x 50mm
x 13mm) with 8" (200mm) blade

Dimensions:

21 1/2" L x 29 1/2" D x 13 1/4" H
(546mm x 750mm x 337mm)

X-axis Working Space

16" L x 4" D x 4" H
(406mm x 100mm x 100mm)

Y-axis Working Space

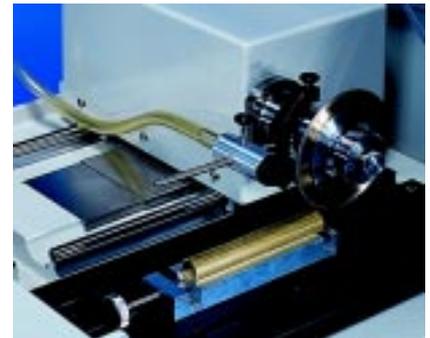
10" L x 8" D x 4" H
(250mm x 200mm x 100mm)



Samples can be positioned with 2µm accuracy with the 11-2699 Precision 2µm Sample Positioning System. The 11-2683 stainless steel single saddle chuck, 11-2690 flange, and 11-2496 Chuck Padding shown.



Stainless steel fastener vise 11-2687 allows longitudinal sectioning for examination of thread machining and heat treat.



The ISOMET 4000 has vises to hold longer samples for applications such as slot cutting 11-2692 (shown) and cutting samples on angle.



The 11-2694 Precision Table for sectioning thin materials rotates in 180° in 1° increments to facilitate sectioning along a line of features on a die.



Accessory rotating vise 11-2695 with Minimal Area of Contact Cutting (MACC) reduces cut time, doubles sectioning capacity and maximizes sample cooling.



(a) 11-2693 Goniometer for positioning samples at precise angles, (b) 11-2694 Bone Chuck, (c) 11-2488 Glass Slide Chuck, (d) 11-2684 Mounted Specimen Chuck, (e) 11-2288 Double Saddle Chuck, (f) 11-1132 Chuck for Bar and Tube Stock

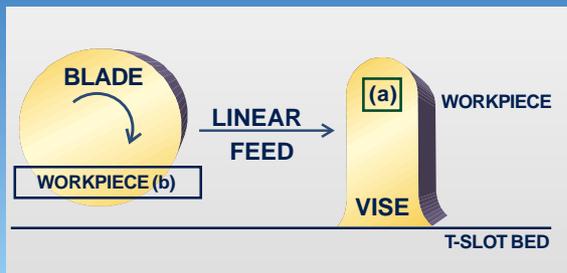


The ISOMET 4000 features a spacious interior, versatile sample fixturing, and easy sample retrieval. Manual Blade Positioning Handle provides quick setup. The ISOMET 4000's precision is a result in its superior mechanical design, precision linear bearings, and vibration dampening aluminum casting.



Removable X and Y-axis T-slot beds allow sample positioning on either axis. 11-2691 General Usage Vise illustrated.

Linear Feed Mechanism



The ISOMET 4000's blade feeds into the fixed workpiece on precision linear bearings. The linear travel provides constant feed rate cutting and allows sectioning of longer and irregular shaped samples. The workpiece can be positioned at the top (a) center or underneath the blade (b).



The 11-2696 Automatic Dressing System dresses the blade prior to and during operation to optimize cutting conditions, prolong blade life, and give the best cut surface.



For easy maintenance the coolant hose can be used as a clean-out hose and the recirculating system tank can be cleaned without removing the blade.



Since adequate coolant volume and positioning is critical for good cutting, the ISOMET 4000 provides a full 0.7gal/min (3l/min) presented to both sides of the blade. The coolant tracks with the blade for long cuts.

Specifications

11-2680 ISOMET 4000 Linear Precision Saw, includes one 11-4267 ISOCUT Wafering Blade, 7" x 0.025" x 1/2" (180mm x 0.6mm x 13mm), 11-2689 Flanges, 11-2699 2µm Precision Sample Positioning System, 11-2683, 11-2684, 11-2686 chucks, 11-2696 Dressing System, sample of ISOCUT® PLUS Cutting Fluid, operating instructions and 2000 hour or two year warranty. For worldwide operation on 85-264V/50-60Hz/1 phase.

11-2681 ISOMET 4000 Linear Precision Saw, same as above except no accessories or blade included. Purchase accessories to meet individual application.

Wafering Blades and Cut-Off Wheels 1/2" (13mm) Arbor

Type and Use	Diameter and Thickness					
	3" x 0.006" (75mm x 0.2mm)	4" x 0.012" (100mm x 0.3mm)	5" x 0.015" (125mm x 0.4mm)	6" x 0.020" (150mm x 0.5mm)	7" x 0.025" (180mm x 0.6mm)	8" x 0.035" (200mm x 0.9mm)
BLADE SERIES						
Diamond Wafering Blades						
Series 30HC Diamond , for use with plastics, polymers, and rubber			11-4239**		11-4241**	11-4242
Series 20HC Diamond , for aggressive general sectioning of ferrous and non-ferrous materials including titanium alloys			11-4215*		11-4237	11-4238
Series 15HC Diamond , for general use with ferrous and non-ferrous alloys, copper, aluminum, metal matrix, composites, PC boards, thermal spray coatings, and titanium alloys	11-4243	11-4244	11-4245	11-4246	11-4247	11-4248
Series 20LC Diamond , for use with hard/tough materials, structural ceramics, boron carbide, boron nitride, and silicon carbide			11-4225*			11-4228
Series 15LC Diamond , for use with hard/brittle materials structural ceramics, boron carbide, boron nitride, and silicon carbide	11-4253	11-4254	11-4255	11-4276	11-4277	11-4279
Series 10LC Diamond , for use with medium to soft ceramics, electronic packages, unmounted integrated circuits, GaAs, AlN and glass fiber reinforced composites	11-4283		11-4285		11-4287*	11-4288
Series 5LC Diamond , for use with soft friable ceramics, electronic packages, unmounted integrated circuits, composites with fine reinforcing media, CaF ₂ , MgF ₂ , and carbon composites	11-4298		11-4295			
ISOCUT Wafering Blades						
Cubic Boron Nitride (CBN) abrasive blades work well for many tough materials giving significantly shorter cut times						
For iron, carbon steels, high alloy steels, cobalt alloys, nickel super alloys, and lead alloys	11-4263	11-4264	11-4265	11-4266	11-4267	11-4268
General Usage Abrasive Cut-Off Wheels 0.03" (0.8mm) thick, 10 per package	Bond/ Abrasive					
For ferrous materials, stainless steels, cast irons, and thermal spray coatings	R/Al ₂ O ₃				11-4207-010	
For tough non-ferrous metals, aluminum, copper, titanium, uranium, zirconium	R/SiC				11-4217-010	
ACU-THIN™ Abrasive Cut-off Wheels 0.019" (0.5mm) thick	Bond/ Abrasive					
For sectioning small, delicate specimens or where minimal deformation and kerf loss is the primary concern						
Tool, hard steel, Rc45 and above	R/Al ₂ O ₃		10-4060-010			
Medium hard, soft steel Rc45 and below	R/Al ₂ O ₃		10-4061-010			

*Alternate blade thickness of 0.020" (0.5mm)

**Alternate blade thickness of 0.030" (0.8mm)

Consumables

11-2293-016 ISOCUT PLUS Cutting Fluid, 1pt. (0.47l)

11-1190 Dressing Stick, 1/2" x 1/2" x 3" (13mm x 13mm x 76mm) for ISOCUT and Series 30, 20, and 15 blades

11-1290 Dressing Stick, 1/2" x 1/2" x 3" (13mm x 13mm x 76mm) for Series 10 and 5 blades

For a complete listing of Buehler consumable supplies for use with the ISOMET 4000, please refer to Buehler's Consumables Buyers Guide.

Buehler continuously makes product improvements: therefore, technical specifications are subject to change without notice.

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BUEHLER ANALYST®
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1



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