

*Ultra-precision Wire EDM*

# ***MEX15***

***Seibu***



***Seibu***

# CONQUER THE IMPOSSIBLE

Introducing the Seibu MEX15

“The Worlds’ Most Accurate Wire EDM”



New type AWF



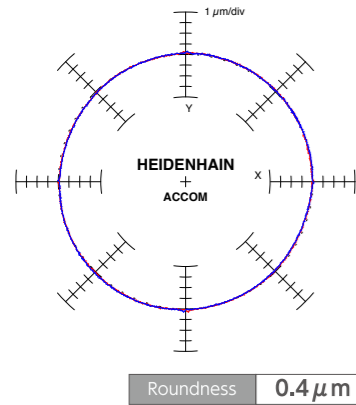
Traditional scraping technique "Kisage"



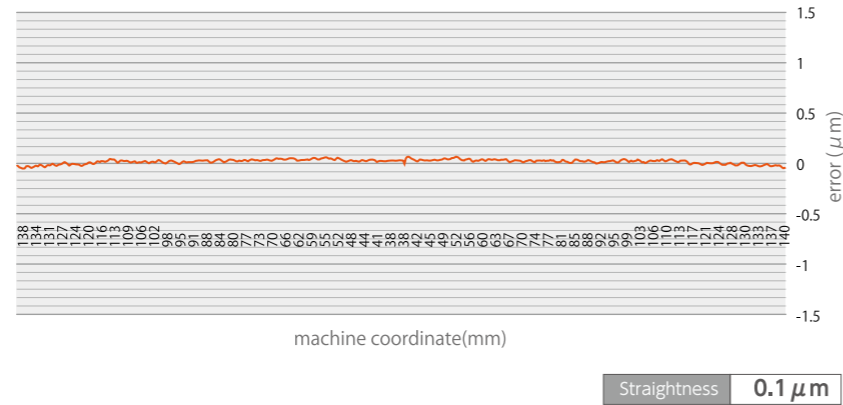
# FEATURE

## Static accuracy

### Roundness



### Straightness

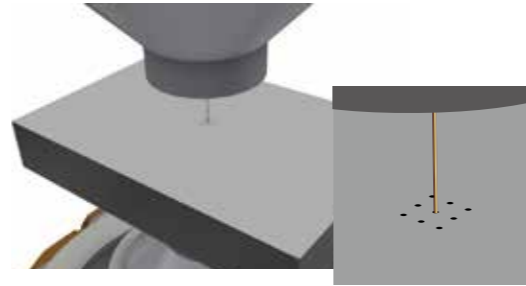


Submicron static accuracy has been achieved by seal-less structure due to virtual cross table (Patent pending).

## Automatic Wire Feeding Device [AWF]

### Feeding example of narrow pitch hole

·Wire dia. : φ0.05(SSY※)	·Lower hole dia. : φ0.12mm
·Thickness : 5mm	·Pitch among lower holes : 0.5mm(9 points)
·Nozzle position : upper close lower open(5mm)	·Rate of feeding : 1st time 95%, 100% after retry
	·Feed and cutting time : 1 minute and 40 seconds



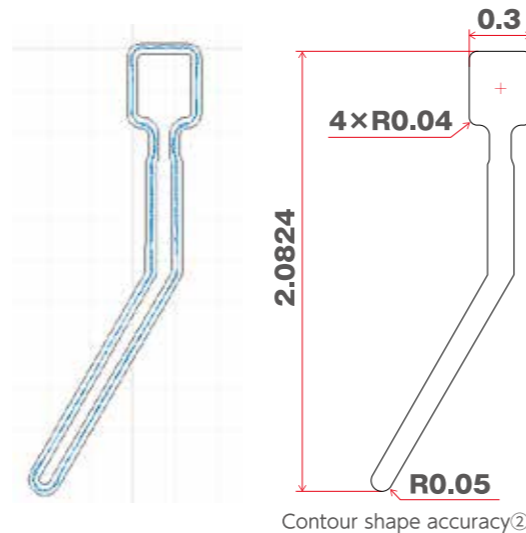
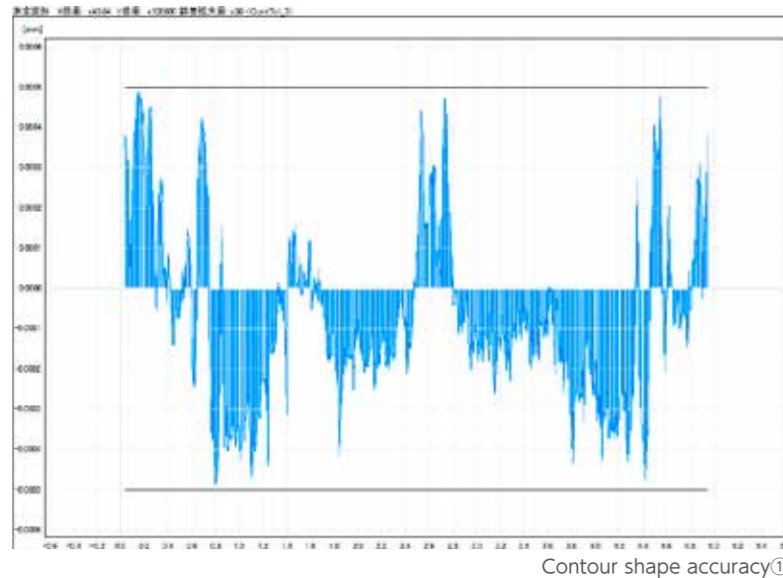
## Cutting accuracy

### Leadframe cutting(Cutting by oil type machine ) accuracy

#### Cutting Condition

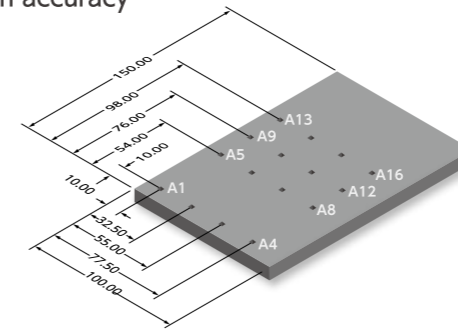
·Material : WC	·Number of cuts : 9th
·Thickness : 5mm	·Cutting time : 40M
·Wire dia. : φ0.05(SSY※)	·Surface finish : Ra 0.05μm Rz 0.35μm

Shape accuracy **±0.5 μm**



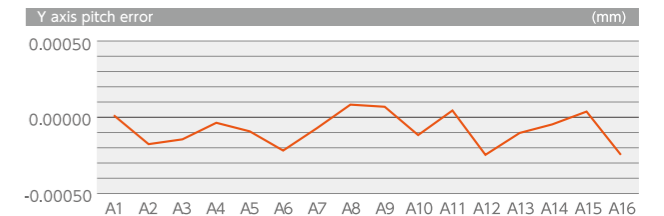
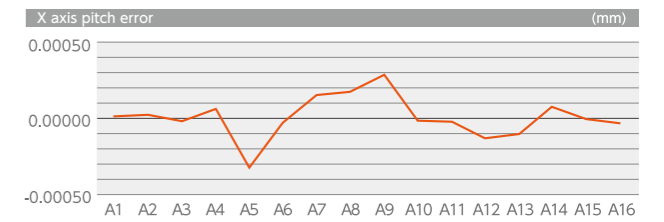
## Cutting accuracy

### Pitch accuracy



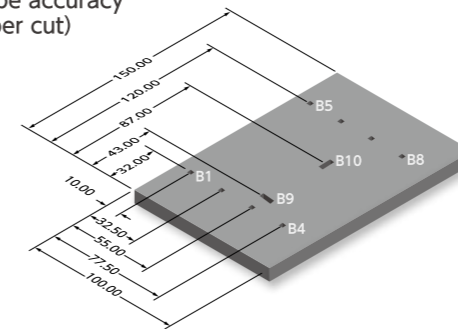
·Material : WC	·Number of cuts : 8th
·Thickness : 8mm	·Cutting shape : Square 3.2mm×16
·Wire dia. : φ0.10	·Model : MEX15 (Oil spec.)

Accuracy within ±0.5 μm has been achieved, that was the result by measuring the part 4mm below from the top surface of workpiece.



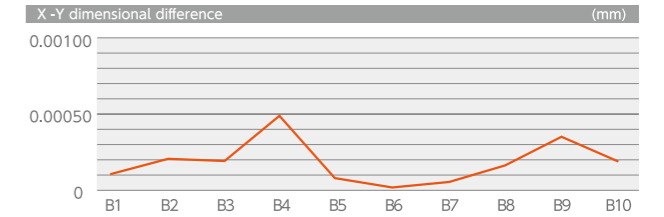
Accuracy **within ±0.5 μm**

### Shape accuracy (taper cut)



·Material : WC	·Wire dia. : φ0.10	·Cutting shape : Square 3.2×9.2mm×2 (taper angle 8 minutes)	·Surface finish : Ra 0.10μm Rz 0.85μm	·Model : MEX15 (Oil spec.)
·Thickness : 8mm	·Number of cuts : 8th	·Cutting shape : Square 3.2×3.2mm×8 (taper angle 8 minutes)		

Accuracy within 0.5 μm has been achieved, that was the result by measuring the part 1mm below from the top surface of workpiece.

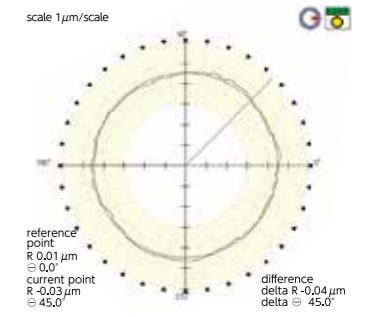


Accuracy **within 0.5 μm**

### Roundness

·Material : WC	·Nozzle position : upper close lower open(5mm)
·Thickness : 8mm	·Hole dia. : φ10mm
·Wire dia. : φ0.07	·Number of cuts : 8th
	·Model : MEX15 (Oil spec.)

Roundness 0.4 μm has been achieved by stable table feed.



Roundness **0.4 μm**

## Cutting Samples

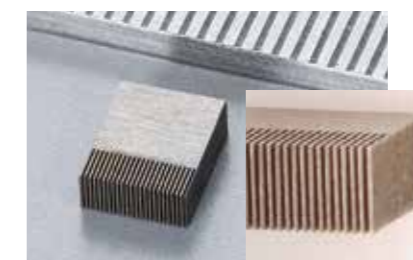
### Leadframe cutting



·Material : SKD11	·Number of cuts : 5th
·Thickness : 3mm	·Cutting time : 1H
·Wire dia. : φ0.03	·Surface finish : Ra 0.10μm Rz 0.90μm

Shape accuracy **±1.0 μm**

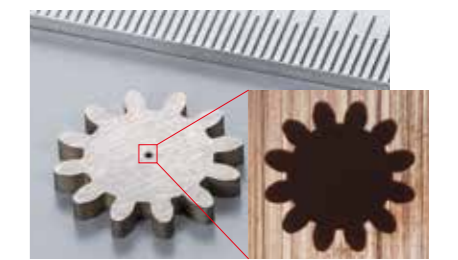
### Comb cutting



·Material : WC	·Number of cuts : 5th
·Thickness : 1mm	·Cutting time : 4H
·Wire dia. : φ0.03	·Surface finish : Ra 0.10μm Rz 0.91μm

Shape accuracy **±2.0 μm**

### Micro-gear cutting



·Material : WC	·Number of cuts : 3rd
·Thickness : 1mm	·Cutting time : 12M
·Wire dia. : φ0.03	·Surface finish : Ra 0.09μm Rz 0.81μm

Shape accuracy **±1.0 μm**

# SPECIFICATION

## Specifications

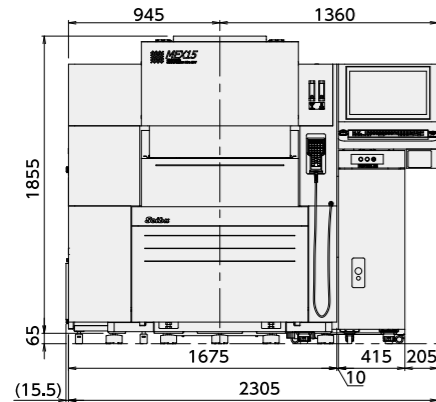
Machine body	[MEX15]	Max. workpiece dimensions [W×D×H]	180 × 165 × 60 mm	※Should not exceed the max. workpiece weight.
		Max. workpiece weight	12 kg	※Including the weight of jig or the like
		Axis travel range [ X×Y×Z ]	150 × 150 × 120 mm	
		Wire diameter	φ0.03~φ0.15mm (φ0.10mm is standard.)	
		Dimensions [W×D×H]	1,730 × 1,735.5 × 1,855 mm	
		Weight	3,250 kg	
Control device	[Smart NC]	Max. taper angle	±10° (Thickness 60mm Conical cutting)	
		Input system	MDI, Ethernet, USB	
		Display	21.5 inch TFT multi-touch screen	
		Axes controlled	5 axes (simultaneously 4 axes)	
		Least input increment	0.01 μm	
		Least command increment	0.01 μm	
		Program memory capacity	1Gbyte	
Cutting power supply	[MPSC-20]	Input power source	3phase, 200V/220V±10%, 11kVA, 50/60Hz	
		Weight	160 kg	
Filtration device	[MF300]	Working fluid	Oil spec./Oil (Class 4 Petroleum No.3) Water spec./Ion-exchanged water	
		Filter element	Paper filters (internal-pressure type)×2	
		Tank capacity	300 ℓ	

## Operating environment

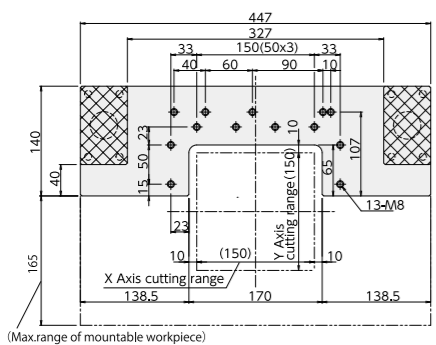
Electrical equipment	Primary power supply	3phase 200/220V±10%
	Frequency	50/60Hz±1%
	Connection terminals	M5 (5.5 mm <sup>2</sup> ~14 mm <sup>2</sup> )
	Electric capacity(EDM machine)	11kVA
Earth	Electric capacity(cooling system)	1.43kW
	One C-type earth for every EDM system (connection resistance 10Ωmax,flexible copper cable·14 mm <sup>2</sup> or larger)	
Compressed air equipment	Pressure	0.5MPa min.
	Flow rate	100 ℓ /min(ANR)※minimum
	Connector	Nylon or urethane hose,8-mm dia coupling
Operating location	Operating temperature supply	10°C~40°C
	Recommended operating temperature	20°C (±1°C)
	Humidity	30%~75%RH (no condensation)
	Atmosphere	Free of corrosive gases, acid mist,etc.,and dust particles
	Elevation	1,000m or lower
	Foundation	Concrete thickness 400 mm min.
	Floor inclination (difference in level)	within 5mm/m (5mm inclination or difference in level per meter)
	Permissible vibration	Acceleration 0.5 m/s <sup>2</sup> , amplitude 2 μm max
	EMI	If EMI generated by wire EDM system operation is unacceptable, a shielded room may be required
	Thermal output	Power supply
EDM machine		Max:955Kcal/h
Working fluid cooling device(Water spec.)		Max:3,829Kcal/h
Working fluid cooling device(Oil spec.)		Max:2,752Kcal/h

※ANR:Standard reference atmospheric conditions (temperature20°C,relative pressure 101.3 kPa (760 mmHg),RH 65%)

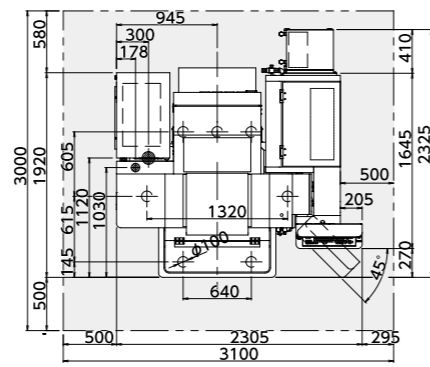
## Dimension



## Work Table



## Layout



# OPTION

## Options

	Oil spec.	Water spec.	◎ Standard   ○ Option (available after shipment)   ● Option (not available after shipment)   × Not available
X-Y linear scale	◎	◎	
U-V linear scale	◎	◎	
Insulation table spec.	◎	◎	
Suction unit of wire take-up for thin wire	◎	◎	Wire can be easily taken-up when using thin wire ( 0.03 to 0.1).
Jet feed unit for thin wire	◎	◎	Wire feeding can be helped by water jet when using thin wire
Height adjustment jig	○	○	Jig for adjusting flatness when plate cutting.
Automatic vertical square jig	○	○	Wire verticality can be automatically measured.
Pallet	○	○	SSP-160AJLX
Working fluid cooling device	◎	◎	Inverter working fluid cooling device
Deionizer	×	○	Including ion exchange resin 10L×2
Rust-proof unit	×	○	Rust prevention
Unit for filter replacement	○	○	Auxiliary device for filter replacement
Specified color	●	●	
Exterior signal light	◎	◎	Integrated LED on the work tank front door enables operator to view the machine's operating status.
Internal lamp	◎	◎	LED lamp
SSV	○	○	Vision measuring device using a CCD camera
Unit for mounting SSV	○	○	SSV can be used. The main unit is not included.
SF Unit	◎	◎	Unit for finish cut
Safety system	◎	×	Automatic Fire Extinguisher,Fluid temperature detector (for oil type machine)
EL coating	×	○	
Power off unit	○	○	Power can be automatically cut off by the command of NC program.
External alarm output unit	○	○	This is an I/O unit for external signal.
Signal lamp (3 lamps)	○	○	Status display light
Core stitch	×	●	
Core stitch conversion soft	×	○	Program conversion software for PC
Thermal 24	●	●	Monitors the temperature of machine inside and the ambient temperature.
Inclination compensation software	◎	◎	Can correct the pitch error of X,Y axes.
Straightness compensation software	◎	◎	Straightness of X,Y axes can be corrected.
Virus infection prevention	◎	◎	
CAM-Station	○	○	Integrated CAM software (2D data:CAD/CAM 3D data:CAM)
Optional tool set	○	○	
Suspension rods (two)	○	○	
<b>CAD format CAM-Station</b>			<b>DXF,DWG,2D/3D-IGES</b> <b>Parasolid,STL,SOLIDWORKS,STEP,IDI,BMI</b>

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