

At your side.
brother®

Wire EDM

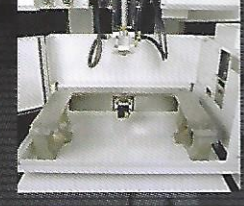
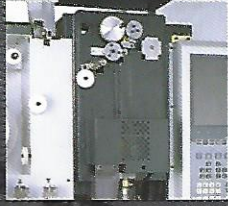
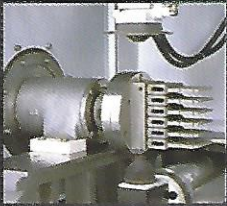
HS-70A



ROSS

Machine Tools & Accessories
212 North Plains Industrial Rd
Wallingford, CT 06492

Entering a New Frontier in Wire EDM



Brother enters a "New Frontier" in wire EDM

The Brother HS-70A was developed for unsurpassed excellence in quality, performance, and productivity - All for the affordable price that you have come to expect from Brother. The HS-70A combines all the functions and capabilities required to meet today's demanding customer needs and is backed with world class support.

The Brother HS-70A: Where quality, high capabilities, and attractive price combine to form the "New Frontier" in wire EDM.

Customers' requirements



Reduced cost



Short lead time



Improved accuracy



Simple operation



Additional applications

Innovative solutions that meet the most demanding Customer Requirements



Large workpiece machining

- Table stroke 16.1 x 10.2 inch
- Max. workpiece weight 770 lbs



Enhanced standard equipment

- 0.1 μ m pitch optical linear scale (X, Y)
- Z-axis motor control



Non-electrolysis cutting



- Max. machining speed 28 sqin/hr (t50)
- Surface roughness 0.01 μ inch Ra (t40)



New user/ machine interface

- 12.1-inch large color display
- 3D graphic display
- 10 MB memory (25,400 m)



Space and energy saving

- Most compact body in its class
- No air supply required
- Utilization of Inverter pump



Fast automatic wire threading

- Threading time 15 seconds
- Annealing treatment
- Submerged wire threading



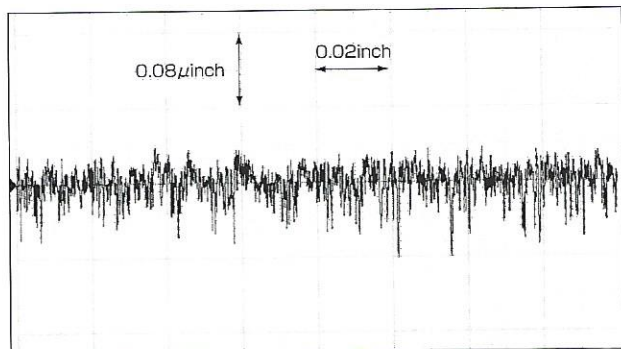
Additional application

- Index table for multi-face machining (optional)

Equipped for all-around machining flexibility

Equipped with our original high-end non-electrolysis generator and discharge control system, the HS-70A delivers high-speed, high-accuracy, and consistent high-quality machining. (Subject to our test specifications)

■ Surface roughness

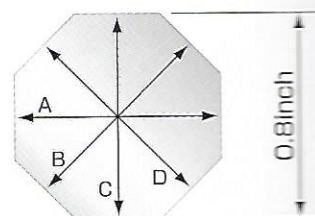


Ra=0.01 μinch Material : Alloy steel
 Ry=0.10 μinch Thickness : 1.6inch
 Rz=0.08 μinch No. of cuttings: 4

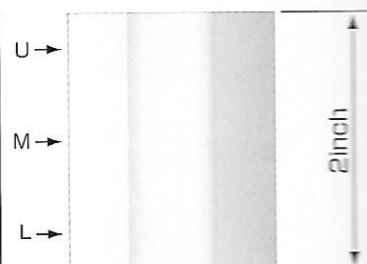
The standard fine finish power supply achieves a surface roughness of 0.01 μinchRa

■ Mutual error face-to-face

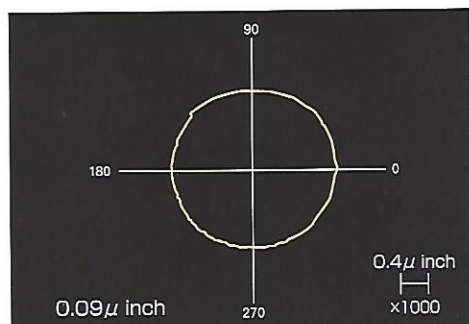
Material : Alloy steel
 No. of cuttings : 3



	A	B	C	D
U	0	-0.04	0	0
M	0.04	0	0.04	0.12
L	0	-0.08	0	0.08



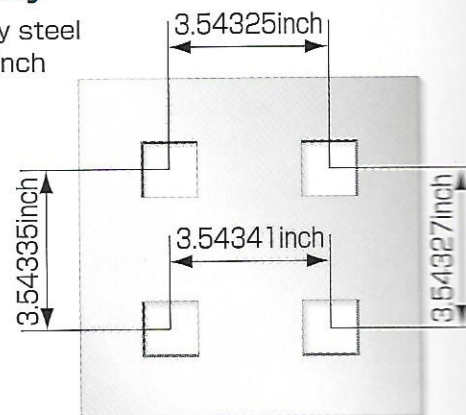
■ Circularity 0.12 μinch



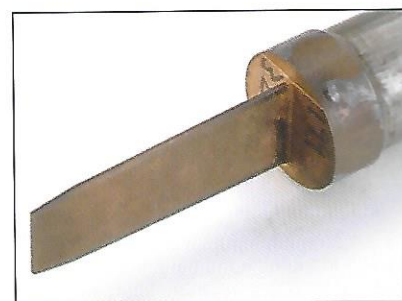
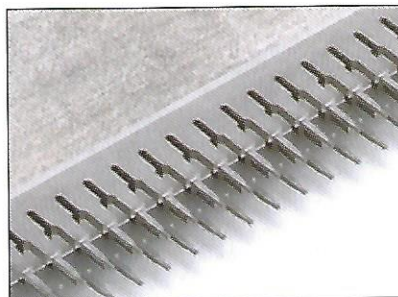
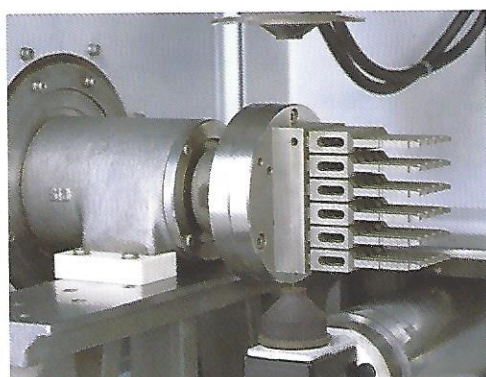
Material : Alloy steel
 Thickness : 0.4inch
 No. of cuttings : 4

■ Pitch accuracy

Material : Alloy steel
 Thickness : 0.4inch
 No. of cuttings : 3



■ Index table for multi-face machining (optional)

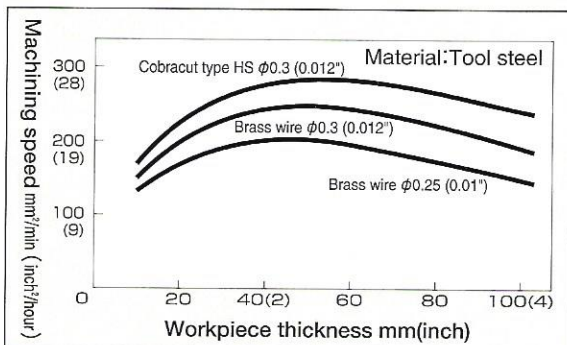


With a minimum command increment of 0.00072 degrees, complicated 3D forms can be easily and accurately machined with one set-up.



High-speed machining

Brother's original high-end power supply and discharge control circuitry provide a maximum machining speed of 28in/per hour.



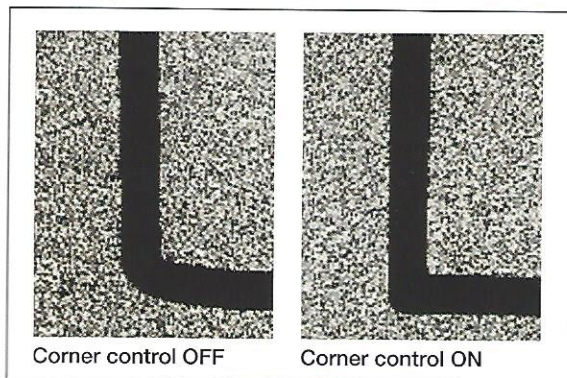
Speed, thickness, and wire breakage prevention controls

The automatic speed and thickness controls automatically regulate the machining speed and conditions according to changes in the shape and thickness of the workpiece, while monitoring machining in real time. Combining this with a new wire breakage prevention control system allows any workpiece to be machined reliably and efficiently.

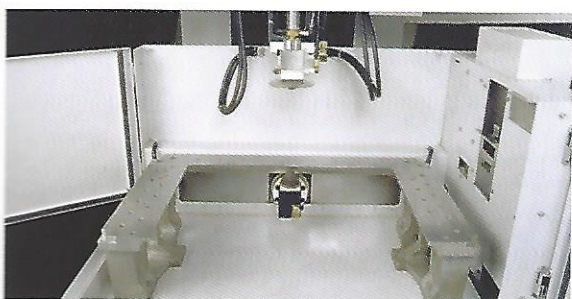
Automatic corner control

Corner rounding is automatically controlled during high-speed machining.

Tool steel
Thickness 100mm(4")
Center section



Flat table



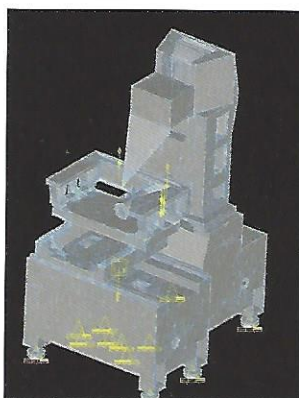
The U-shaped flat table and double doors open outward from the work tank ensuring easy set-up.

Stable Performance

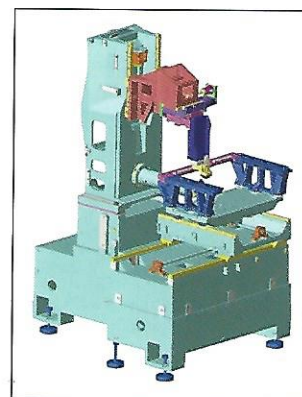


Highly rigid machine construction

The machine's structure, developed through CAE analysis, provides more distance between guides, more rigid machine base, and a larger diameter ball screw, resulting in highly accurate table movement.



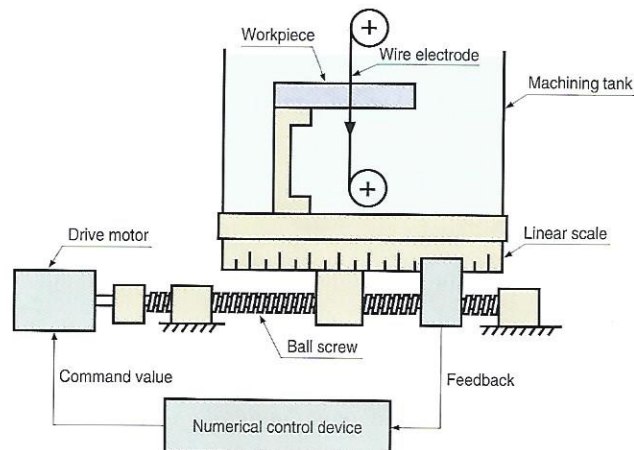
CAE analysis



Machine structure

0.1 μm pitch optical linear scale

The machine is equipped with a fully closed loop control that directly reads the position of the table. This maintains high positioning accuracy over the life of the machine.



Z-axis motor control

This control feature ensures outstanding Z-axis machine position repeatability for superior taper cutting.

Design for Maximum Efficiency



Space saving

Compact design with integrated mechanical and power units allows for effective use of your facilities floor space.

No air supply required

Unmanned operation, even during nights and holidays

Inverter pump

Highly economical with reduced power consumption

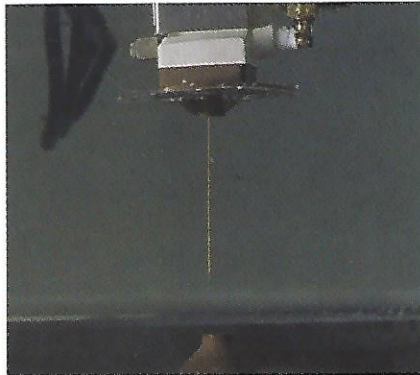
Fast Automatic Wire Threading



Annealing and high heat cutting functions have been added to our fast and reliable automatic wire threader; featuring a simple mechanism composed of diamond guides and a water jet.

Fast automatic wire threading : 15 seconds

A thorough review of the wire threading route and jet stream has produced a more reliable threader; even in submerged conditions. These features greatly reduce the total machining time.



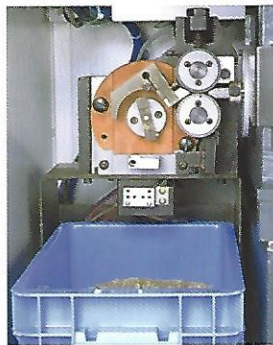
Submerged threading

Threading coated wire is possible

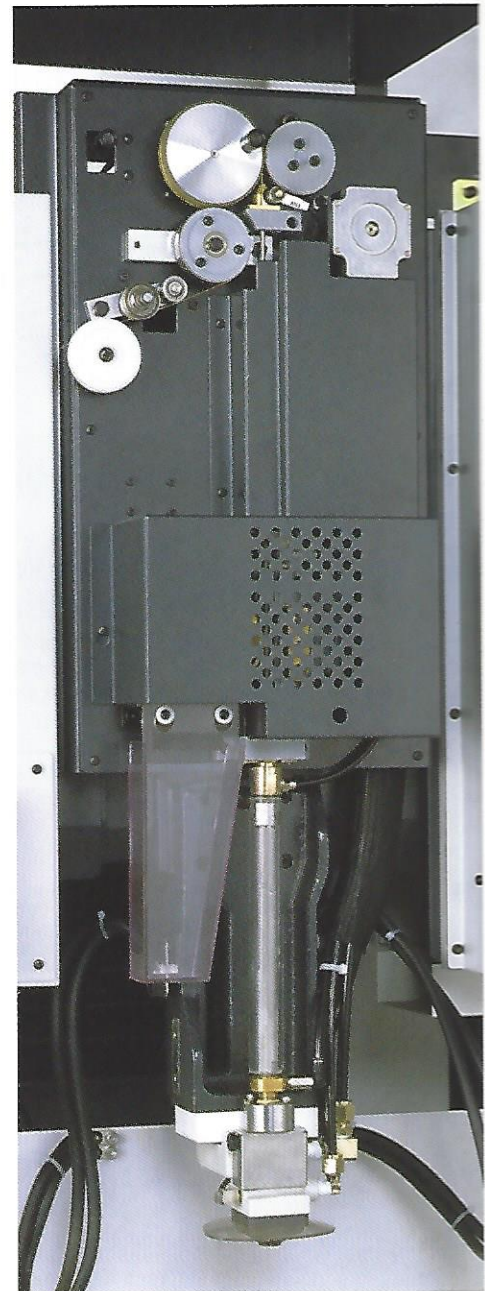
Annealing and high heat cutting functions straighten the curled wire and forms the perfect wire tip, to successfully thread coated wire.

Long-period unmanned operation

The used wire is cut to a length of 0.2 in. and collected in the bucket set in the machine. This bucket can store up to 20 kg of used wires.



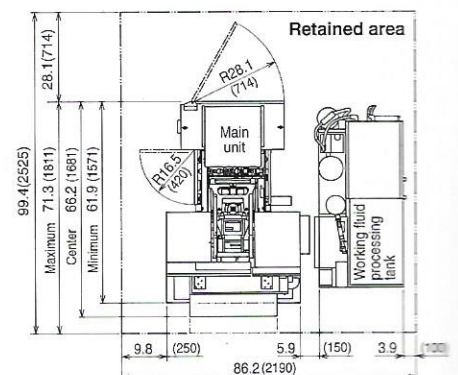
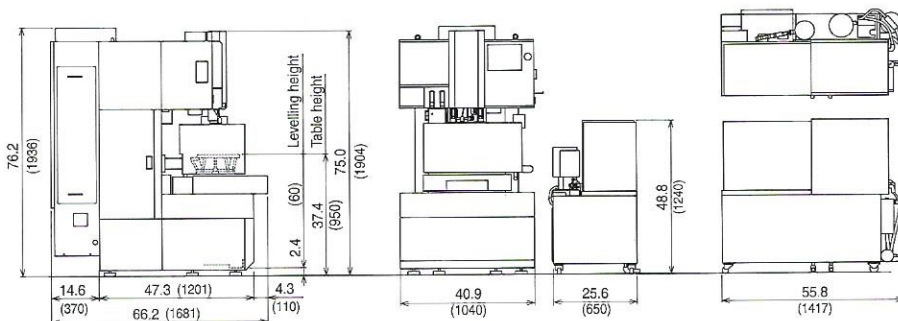
Used wire collector



Automatic wire threader

External dimension drawing

inch(mm)

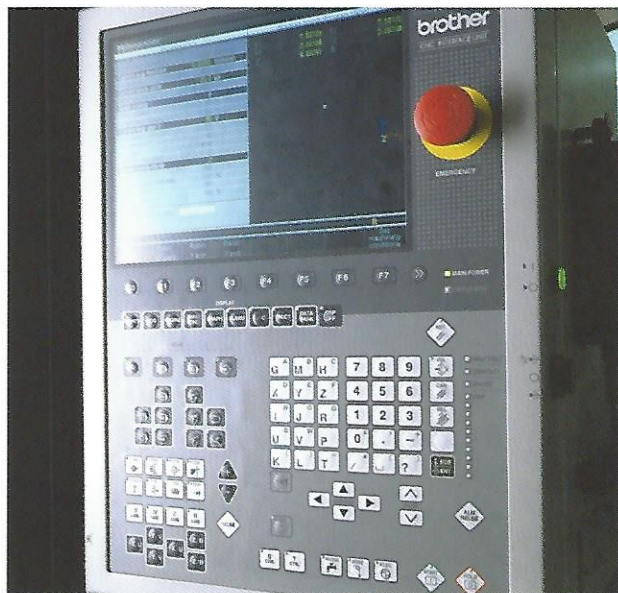


New User/Machine Interface



The new NC unit features a simple and improved user-friendly interface. This new NC is equipped with an easy-to-view and easy-to-understand visual color display that maximizes machine performance.

New NC unit



A large color LCD (12.1-inch) is provided for a better view of cutting conditions, programs, graphics and integrated help messages.

Simple machining condition setting

TECHNO list				
Item	Current mach cond	Normal A	Normal B	Normal C
TECHNO No	10000100	10000100	10000101	10000200
Machining feedrate	0.09330	0.09330	0.09335	0.05708
Spark cycle	17.0	17.0	17.0	14.0
Generator mode	AE std.	AE std.	AE std.	AE std.
Spark energy	6	6	5	6
Open / Target gap voltage	85 / 40	85 / 40	85 / 40	85 / 40
Wire speed / Tension	18 / 4	18 / 4	15 / 4	18 / 4
Flow rate / Conductivity	Large / 3	Large / 3	Large / 3	Large / 3
S-control max feedrate	0.11811	0.11811	0.07874	0.11811
S-T / Stability control	ON-OFF/2	ON-OFF/2	ON-OFF/2	ON-OFF/2
Offset	0.00000	0.00201	0.00275	0.00295
Material	Tool steel	Tool steel	Tool steel	Tool steel
Thickness	0.39370	0.39370	0.39370	0.78740
Wire type	Hard	Hard	Hard	Hard
Wire diameter	0.0040	0.0040	0.0040	0.0040
Wire tilt angle	0.00000	0.00000	0.00000	0.00000
Machining type	Sealed	Sealed	Sealed	Sealed
Roughness / Finish	0.43 / 0.80	0.43 / 0.80	0.39 / 0.72	0.39 / 0.80
Upper / Lower nozzle	0.0 / 0.0	/	/	/
Comment				
TECHNO No: _____				
Set machining conditions Search for TECHNO Display built-in TECH First Make user TECHNO Change user TECHNO Copy to user TECHNO Delete user TECHNO Select TECHNO				

The machine is equipped with a variety of built-in machining conditions, from rough cutting to finish cutting. Simply selecting the material and thickness sets the optimal machining conditions. The results can then be further searched by surface roughness. Material: Alloy steel, carbon steel, stainless steel, copper, aluminum, cemented carbide, graphite. Thickness: 0.2, 0.4, 0.8, 1.2, 1.6, 2.0, 2.4, 2.8, 3.2, 4.0, 6.0inch

Machining monitor display

Machining monitor		Operating in dry run mode	
Program (1234)		Absolute coord (Program plane)	
Machining feedrate	0.09330 inch/min	X1	2.20000 X2 2.20000
Current avg. feedrate	0.00000 inch/min	Y1	0.30000 Y2 0.30000
Spark cycle	17.0 μ s	Z	0.00000 B 0.00000
Current spark cycle	17.0 μ s		
Generator mode	AE std.		
Spark energy	6		
Open voltage	85 V		
Target gap voltage	40 V		
Current avg. gap V	0 V		
Wire speed	18		
Wire tension	4		
Flow rate	Large		
Target conductivity	3		
Current conductivity			
Corner control	OFF	000001 G1000.001	
Corner deceleration rate	100 %	000002 G1000.000	
Section control	OFF	000003 G0000.000	
Section speed	100 %	000004 X1.0	
		000005 Y1.0	
		000006 X1.0	
		000007 Y1.0	
		000008 X0.1	
		000009 Y0.1	
Machining feedrate _____ inch/min			
Reset XY axis Reset X axis Reset Y axis Reset B axis Set machining conditions			

Machining path, speed, current position, gap voltage, and program can be displayed simultaneously for real time checking.

Easy set-up

New and improved user friendly functions such as 3D graphics, workpiece rotation, additional user set points, and improved measuring cycles allow for easy machine set-ups.

Graphic drawing

Graphic drawing		Program 1234 3D Scale 0.2	
Absolute coord		Z 4.99900	
Program plane I(J)		X 4.00000	
Y 2.00000		Program plane 2(D)	
X 4.00000		Y 2.00000	
Program		I(J) 0.00100	
2(D) 5.00100		TECHNO No	
U		Offset	
G 40		B 0.01250	
Block No 27			
Draw all blocks Draw single block Display path length Zoom Set drawing 2D Operation drawing Delete			

Graphics can be displayed two-dimensionally or three-dimensionally. The remaining machining time of the current program or the graphics of the next program can be checked while machining.

Expanded memory

With 10 MB of storage space the HS-70A can store up to 1000 programs. These programs as well as machining conditions can be externally input and output via serial communication or floppy disk unit (optional). Increasing storage memory to 128 MB is also available as an option.

SPECIFICATIONS

■ Main unit

Item	inch (mm)
Maximum workpiece dimensions	22.8×15.3×6.7 (580×390×170)
Maximum workpiece weight	770lbs (350kg)
X and Y axis stroke	16.1×10.2 (410×260)
Z axis stroke	6.7 (170)
Maximum machining speed	28inch ² /hour (300mm ² /min)
Optimum surface roughness	0.01μinchRa (0.26μmRa)
Maximum table feed speed	36inch/min (900mm/min) : positioning 12inch/min (300mm/min) : machining
Wire diameter	0.004, 0.006, 0.008, 0.01, 0.012 (0.1, 0.15, 0.2, 0.25, 0.3)
Wire guide system	Round diamond
Wire feed speed	1.57-9.84inch/sec (40-250mm/sec)
Wire tension	3-25 N
Maximum wire spool	DIN 160 / P10 (13.5 lbs & 10 kg)
Wire recovery method	Mechanical cutting with rotating blade
Wire recovery bucket capacity	44lbs (20kg)
U and V axis stroke	±1.28×±1.28 (±32.5×±32.5)
Maximum taper angle	15 deg – Workpiece Thickness: 4 (100)
Taper mode	Sharp corner taper, Cylindrical taper, Conical taper, Independent U/V 4 axes programming
Dielectric fluid feed system	Submerged type/ Flushing type
Main unit dimensions	40.9×66.2×76.2 (1040×1681×1936)
Main unit weight	3080 lbs (1500 kg)
Installation area	86.2×99.4 (2190×2525) Including maintenance area
Power supply	3-phase AC V ±10% 50/60Hz ±1Hz
Total input	13.5kVA Includes dielectric fluid cooling system

■ Automatic Wire Threader

System	Water jet
Applicable wire electrode	0.008, 0.01, 0.012 (0.2, 0.25, 0.3)
Minimum initial hole diameter	0.08 (2)
Maximum feed thickness	5.9 (150)
Re-thread	Included
Skip function	Included

■ Other option

- Dielectric fluid cooler • Vertical alignment gauge • Auxiliary base • Wire guide (0.004 – 0.012) • Indication light (single/triple)
- I/O interface board • Manual pulse emitter • lower cover • Auxiliary power supply device • Expansion memory (256 Mbyte)
- Removable data storage unit (FDD) • Task light

■ NC unit

Item	inch (mm)
Controllable Axes	X • Y • Z • U • V • B
Minimum setting unit	0.00001 (0.001)
Minimum drive unit	0.000004 (0.0001)
Maximum command value	± 999.99999 (± 9999.999)
Interpolation functions	Linear, Arc
Positioning command functions	Relative, Absolute
Input	Keyboard, RS-232C, Ethernet
Display	12.1" color LCD (SVGA)
Memory	1,000,000inch (25,400m) Number of programs 1000
Operating modes	Program, Back, Trace, Jog, Step, Breakpoint return, Centering, Edge find, Zero-point return
NC-Functions	Machine lock, Dry run, Single block, Optional stop, Metric/Inch select, Stored stroke limit, Subprogram, 2D/3D (surface / wire-frame) graphics, Machining time display, Correction of pitch error, Automatic condition setting, Servo feed & thickness corner control

■ Dielectric fluid supply tank

Dielectric tank supply	360 L
Filter system	2 internal pressure filters
Ion exchanger capacity	7.5 L
External dimensions	25.6×55.8×48.8 (650×1417×1240)
Weight (empty)	473 lbs (215 kg)

■ B-axis index table (option)

Setting unit	0.00001 deg
Minimum movement unit	0.00072 deg
Maximum rotation speed	20 min ⁻¹
Load weight	18 lbs (8 kg)



brother®

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