



Makino Products

Vertical Machining Centres



Vertical Machining Centre

V33i



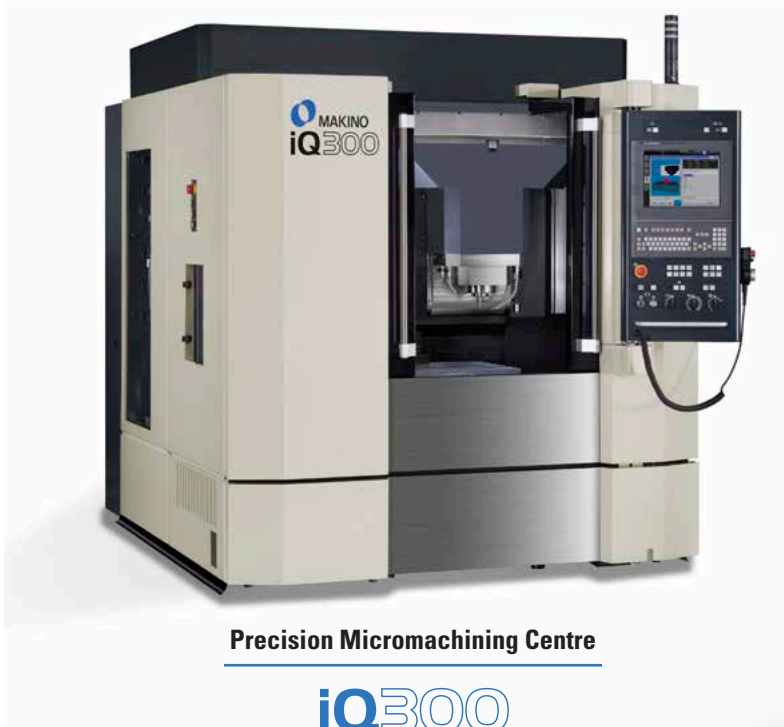
Vertical Machining Centre

V56i



Model	Travel X x Y x Z (mm)	Table size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
V33i	650 × 450 × 350	750 × 450	20,000	HSK-A63	15, 25, 40, 60
			30,000	HSK-E50, HSK-F63	
			40,000	HSK-E32	20, 40, 120
V56i	900 × 550 × 450	1,050 × 550	12,000	HSK-A63 BT40	15, 25, 40, 60
			20,000	HSK-A63	
			30,000	HSK-E50, HSK-F63	

Precision Micromachining Centres



Mirror Surface Finish Option (iQ300, iQ500)



Machining example "Fly-eye lens mould"

Material: stainless steel (STAVAX, 52HRC)
 Size : $\varnothing 16 \times 30$ mm
 Ra: 17.47 nm
 Finishing tool: ball end mill, R0.2 PCD
 (polycrystalline diamond)

Model	Travel X x Y x Z (mm)	Table size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
iQ300	400 x 350 x 200	600 x 400	45,000	HSK-E32	20, 40
iQ500	600 x 500 x 300	800 x 500			

Vertical Machining Centres



Vertical 5-axis Machining Centre

V80S · V90S

Vertical Machining Centre

V99 · V99L



Model	Travel X x Y x Z (mm)	Table size (mm)	Travel A · C	Spindle speed (min ⁻¹)	ATC
V80S	1,300 × 1,000 × 600	1,300 × 700	±30° · ±60°	20,000	40
V90S	2,000 × 1,300 × 800	2,000 × 1,300	±30° · ±60°	20,000	40

Model	Travel X x Y x Z (mm)	Table size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
V99/V99L	1,500 / 2,000 × 1,000 × 800	1,800 / 2,300 × 1,000	12,000	HSK-A100	20, 30, 40, 60
			18,000	HSK-A100	
			20,000	HSK-A63	20, 30, 40, 80
			30,000	HSK-F63	

Vertical 5-axis Machining Centres



Vertical 5-axis Machining Centre

D300



Vertical 5-axis Machining Centre

D500



Vertical 5-axis Machining Centre

D200Z



Vertical 5-axis Machining Centre

DA300



Vertical 5-axis Machining Centre

D800Z

Model	Travel X x Y x Z (mm)	Travel A · C/B · C	Table size (mm)	Spindle speed (min ⁻¹)	ATC
D300	300 × 500 × 350	240° (±120°) · 360° (A · C Axis)	∅ 300 ¹	15,000, 20,000, 30,000	40, 60, 124
			∅ 200, ∅ 300 ²		
D500	550 × 1,000 × 500	150° (-120° to +30°) · 360° (A · C Axis)	∅ 500, ∅ 630 ¹	14,000, 20,000, 30,000	40, 60, 80, 113, 155 197, 239, 281, 323
			400 × 400, 500 × 500 ²		
D800Z	1,200 × 1,100 × 650	180° (-180° to 0°) · 360° (B · C Axis)	∅ 800 ¹ , 630 × 630 ²	(HSK-A63) 14,000, 20,000	40, 80
				(HSK-A100) 12,000, 18,000	48, 117
DA300	450 × 620 × 500	150° (-120° to +30°) · 360° (A · C Axis)	∅ 300 ¹	20,000	60
D200Z	350 × 300 × 250	180° (+180° to 0°) · 360° (B · C Axis)	∅ 300 ¹	30,000	20

1 Table specification. 2 Pallet specification.

Vertical Machining Centres



Vertical Machining Centre

F5



Vertical Machining Centre

F8



Vertical Machining Centre

PS105



Interface for hydraulic fixtures / rotary / tilt axis for PS Serie

Model	Travel X x Y x Z (mm)	Table size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
F5	900 × 500 × 450	1,000 × 500	20,000, 30,000	HSK-A63, HSK-F63	20, 30, 60
F8	1,300 × 800 × 650	1,550 × 800	10,000, 20,000	HSK-A100, HSK-A63	30, 48, 60
F9	1,600 × 800 × 650	1,850 × 800	10,000, 20,000	HSK-A100, HSK-A63	30, 48, 60

Model	Travel (mm)	Table size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
PS 105	1,050 × 510 × 460	1,300 × 510	14,000	HSK-A63 / taper #40	30, 60

Graphite Machining Centres



Vertical Machining Centre

V33i Graphite



V56i Graphite Machining Centre

Model	Travel X x Y x Z (mm)	Table size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
V33i Graphite	650 x 450 x 350	750 x 450	20,000	HSK-A63	15, 25, 40, 60
			30,000	HSK-E50, HSK-F63	
			40,000	HSK-E32	20, 40, 120
V56i Graphite	900 x 550 x 450	1,050 x 550	12,000	HSK-A63 BT40	15, 25, 40, 60
			20,000	HSK-A63	
			30,000	HSK-E50, HSK-F63	

Sinker EDM



Sinker EDM for micromachining

EDAC1



Fine Hole Sinker EDM

**EDAF-FH
Option**



High-performance EDM drilling machine

**EDBV3
EDBV8**



High-precision Sinker EDM

EDAF2 · EDAF3



EDAF3 EROWA Robot Compact 80

**Machining cell with EDAF3 Sinker EDM
and tool and electrode switching via robot.
Numerous configurations available.**

Model	Travel X x Y x Z (mm)	Table size (mm)	Work tank (mm)	Max payload (kg)	Electrode changer
EDAC1	220 x 180 x 220	350 x 250	450 x 350 x 200	50	8, 16
EDAF2	350 x 250 x 250	550 x 350	700 x 500 x 300	500	8, 16, 32
EDAF3	450 x 350 x 350	700 x 500	850 x 650 x 400	800	

Model	Travel X x Y x Z (mm)	Travel A · B	Table chuck	Max payload (kg)	Electrode diameter (mm)
EDBV3	370 x 270 x 500	360° (cont.) · 140° (-110° to +30°)	EROWA ITS Chuck 50	5, 15	0.2 - 3.0
EDBV8	800 x 600 x 500		EROWA Power Chuck P	50, 150	



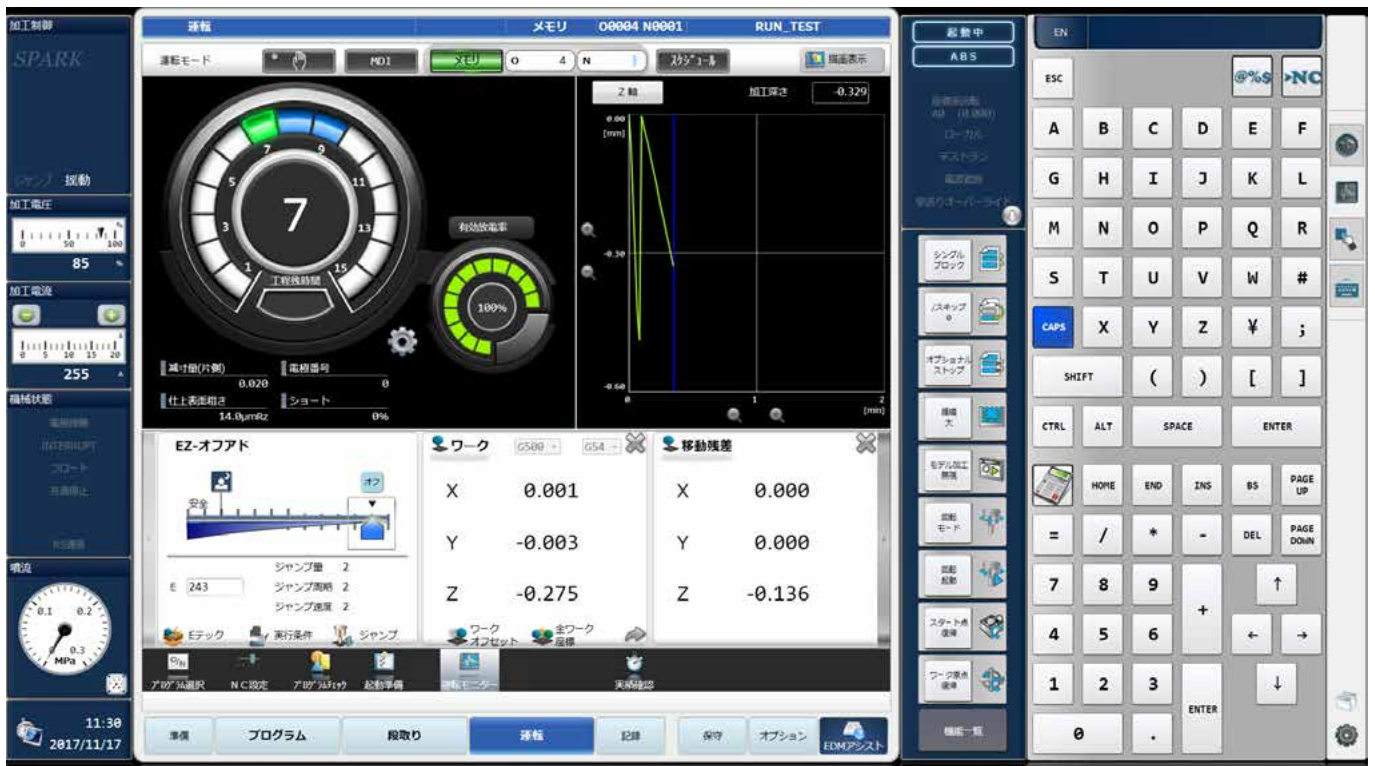
Sinker EDM

EDNC5



Sinker EDM

EDNC8



The Hyper i control system is intelligent, interactive and intuitive. It is very quick and easy to master thanks to a revolutionary operating concept.

Model	Travel X x Y x Z (mm)	Table size (mm)	Work tank (mm)	Max payload (kg)	Electrode changer
EDNC6	650 x 450 x 350	800 x 550	1,100 x 750 x 450	1,500	5, 8, 16, 32
EDNC8	800 x 500 x 400	1,100 x 700	1,400 x 900 x 500	3,000	5, 8, 16, 32

Wire EDM



High-precision Wire EDM

U32j · U53j



Wire EDM for large workpieces

U86



Ultra-high-precision Wire EDM

UPN-OI

High-precision Wire EDM

U3 · U3i



Efficient Wire EDM

U6i · U6H.E.A.T.



Model	Travel X x Y x Z (mm)	Travel U x V (mm)	Max workpiece size (mm)	Max fill level, dielectric (mm)	Max payload (kg)
U32j	370 x 270 x 220	±50 x ±50	780 x 590 x 220	250	600
U53j	550 x 370 x 220		960 x 690 x 220		1,500
U3/U3	370 x 270 x 220	±50 x ±50	770 x 590 x 220	255	600
U6i/ U6 H.E.A.T.	650 x 450 x 420	±75 x ±75 (with restrictions)	1,000 x 800 x 400	455	1,500
U86	800 x 600 x 520	±101 x ±101 (with restrictions)	1,220 x 910 x 500	530	3,000

Model	Travel X x Y x Z (mm)	Travel U x V (mm)	Max workpiece size (mm)	Wire diameter (mm)	Max payload (kg)
UPN-01	160 x 160 x 50	±7 x ±7	150 x 150 x 40	0.02 - 0.10	8

Horizontal Machining Centres



Horizontal Machining Centre

a51nx



Horizontal Machining Centre

a61nx

Horizontal Machining Centre



Horizontal Machining Centre

a120nx

Model	Travel X x Y x Z (mm)	Pallet size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
a51nx	560 × 640 × 640	400 × 400	14,000, 20,000	taper #40 HSK-A63	60, 133, 218
a61nx	730 × 730 × 800	500 × 500			60, 136
a71nx	800 × 750 × 830	500 × 500	10,000	taper #50 HSK-A100	60, 80, 136, 187, 299
a81nx	900 × 900 × 1,020	630 × 630	8,000, 10,000		204
a120nx	1,900 × 1,600 × 1,700	1,000 × 1,000	8,000		



Horizontal Machining Centre

a40



Horizontal Machining Centre

a92



Flexible Manufacturing System

PZ1

MAKINO Machining Complex

Module MMC2



Model	Travel X x Y x Z (mm)	Pallet size (mm)	Spindle speed (min ⁻¹)	Spindle taper	ATC
a40	560 × 640 × 640	400 × 400	12,000	taper #40 · HSK-A63	40
a92	1,520 × 1,250 × 1,350	800 × 1,000	8,000, 10,000, 20,000	taper #50 · HSK-A100	40, 60, 92, 148, 204, 316

Model	Machines	Number of machines	Pallet size (mm)	Number of pallets	Max load incl. pallet
PZ1	a51nx/a61nx a500Z/D500	1–4	400 x 400/500 x 500	8–60	870 kg

Horizontal 5-axis Machining Centres



Horizontal 5-axis Machining Centre

a6Inx-5XR



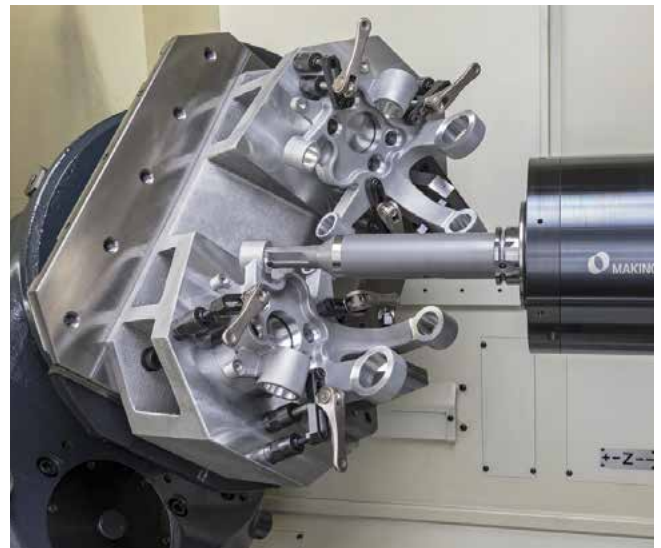
Horizontal 5-axis Machining Centre

a6Inx-5E



Horizontal 5-axis Machining Centre

a500Z



Horizontal 5-axis Machining Centre

a5Inx-5XU · a6Inx-5XR
a8Inx-5XR · a92-5XR

Model	Travel X x Y x Z (mm)	Travel B · C	Table size (mm)	Spindle speed (min ⁻¹)	ATC
a500Z	730 × 750 × 500	360° · 180°	500 × 500 ^{*1}	14,000, 20,000	60, 133, 218
a5Inx-5XU	580 × 640 × 500	270° (-90° to +180°) · 360°	∅ 300 × 300 / ∅ 200 × 300 (max. work space size)	14,000, 15,000, 20,000, 30,000	313
a6Inx-5E	730 × 730 × 680	290° (-110° to +180°) · 360°	400 × 400 ¹	14,000, 15,000, 20,000, 24,000, 30,000	40, 60, 133, 218, 313

Model	Travel X x Y x Z (mm)	Travel B · C	Table size (mm)	Spindle speed (min ⁻¹)	ATC
a6Inx-5XR	730 × 730 × 800	210° (-60° to +150°) · 360°	∅ 325 (Disc plate spec.) ²	14,000, 20,000	60, 133, 218
a8Inx-5XR	900 × 900 × 1020	210° (-60° to +150°) · 360°	∅ 500 (Disc plate spec.) ²	8,000, 10,000	60
a92-5XR	1,520 × 1,250 × 1,350	210° (-90° to +120°) · 360°	∅ 635 (Disc plate spec.) ²	8,000, 10,000, 20,000	40, 60, 92, 148, 204, 316

¹ Table specification. ² Pallet specification.

Machining Centres for high volume production



Horizontal Machining Centre

J3 · J3R



Horizontal Machining Centre

J4



Horizontal Machining Centre

J5



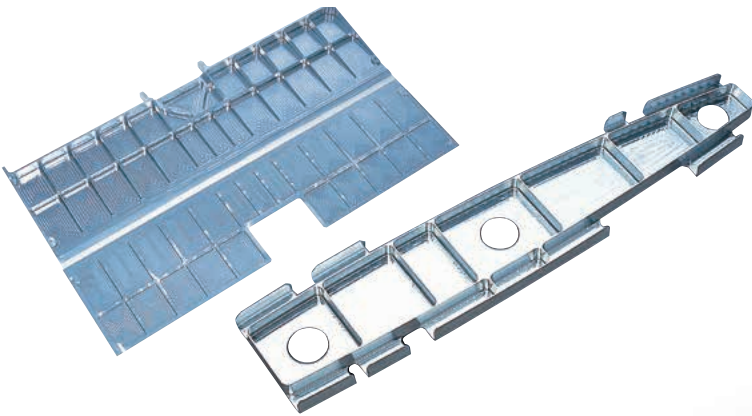
Vertical 5-axis Machining Centre

L2

Model	Travel X x Y x Z (mm)	Spindle speed (min ⁻¹)	Spindle taper	Rapid feed (mm/min)	ATC
J3 FORMULA	400 × 400 × 400	8,000, 12,000, 16,000	HSK-A50	60,000	15, 26, 27, 28, 30
	630 × 400 × 400				
J3	400 × 400 × 400	8,000, 12,000, 16,000	HSK-A50	60,000	15, 26, 27, 28, 30
	630 × 400 × 400		HSK-A63		15, 30
			630 × 550 × 550		HSK-A50
	630 × 500 × 400		HSK-A63		15, 30
			630 × 550 × 400		HSK-A50
J3R	400 × 400 × 400	8,000	HSK-A63	60,000	15, 26, 27, 28, 30
J4	550 × 520 × 550	14,000, 20,000	HSK-A63	62,000	30
	750 × 520 × 550				
	750 × 470 × 550				
J5	800 × 650 × 650	10,000, 14,000, 15,000	HSK-A100	60,000	15, 16, 30, 40
	1,100 × 650 × 650		HSK-A63		

Model	Travel X x Y x Z (mm)	Spindle speed (min ⁻¹)	Spindle taper	Rapid feed (mm/min)	ATC
L2 5-Axis Index	400 × 300 × 300	16,000	HSK-A50	48,000	15, 30
L2 5-Axis Impeller	400 × 300 × 300	16,000	HSK-A50	30,000	15, 30

5-axis Machining Centres



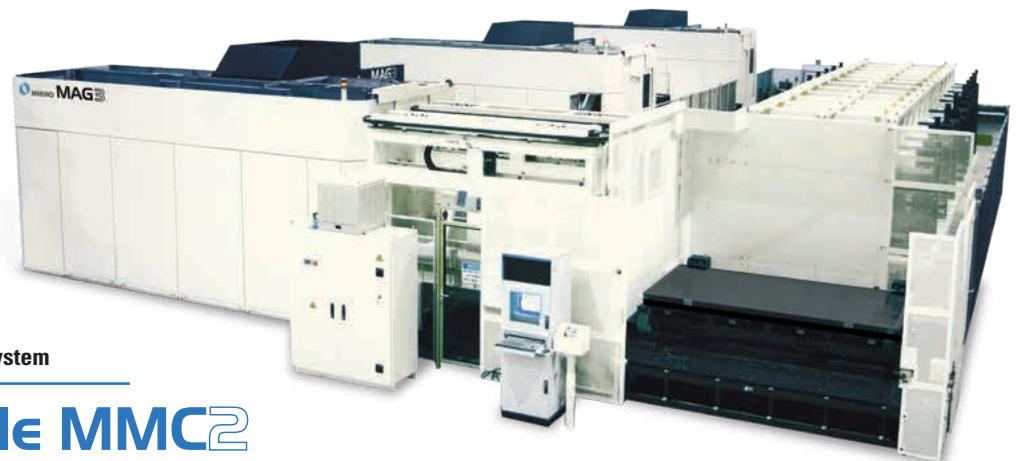
5-axis Machining Centre

MAGI



5-axis Machining Centre

MAG3.EX



Pallet Transfer System

MAG3 Module MMC2



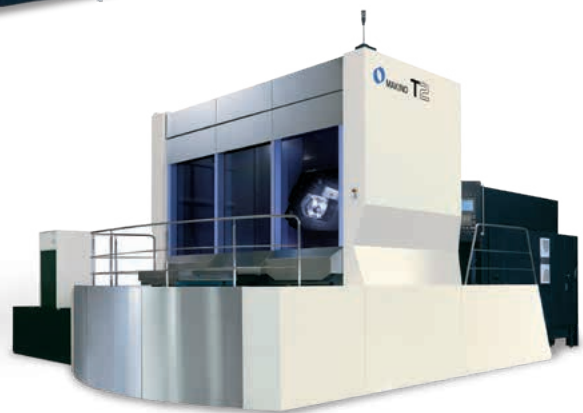
5-axis Machining Centre

A7



5-axis Machining Centre

T1



5-axis Machining Centre

T2



5-axis Machining Centre

T4



T4 Spindle

Model	Travel X × Y × Z (mm)	Travel A · B/C	Pallet size (mm)	Spindle speed (min ⁻¹)	Rapid feed (mm/min)
MAG1	1,520 × 1,100 × 1,350	210° (-110° to +100°) · 360° (B)	800 × 1,000	33,000	50,000
MAG3	3,000 × 1,500 × 1,000	220° (-110° to +110°) · 360° (C)	3,000 × 1,500	33,000	25,400
MAG3.H	3,000 × 1,800 × 1,000		3,000 × 1,500		
MAG3.EX	4,000 × 1,500 × 1,000		3,500 × 1,500		
MAG3.W	4,000 × 1,800 × 1,000		3,500 × 1,500		
A7	7,200 × 2,700 × 1,000	220° (-110° to +110°) · 360° (C)	7,000 × 3,000	33,000	40,000 (X, Z), 32,000 (Y)
T1	1,500 × 1,300 × 2,000	155° (-110° to +45°) · 360° (B)	1,000 × 1,000	12,000	25,000
T2	2,000 × 2,000 × 1,800	220° (-110° to +110°) · 360° (B)	1,000 × 1,250	4,000	16,000
T4	4,200 × 2,000 × 1,000	220° (-110° to +110°) · 360° (C)	4,000 × 1,500		

Our Technology Centres



Makino Technology Centre (Kirchheim unter Teck, Germany)



Makino Asia Pte Ltd (Singapore)



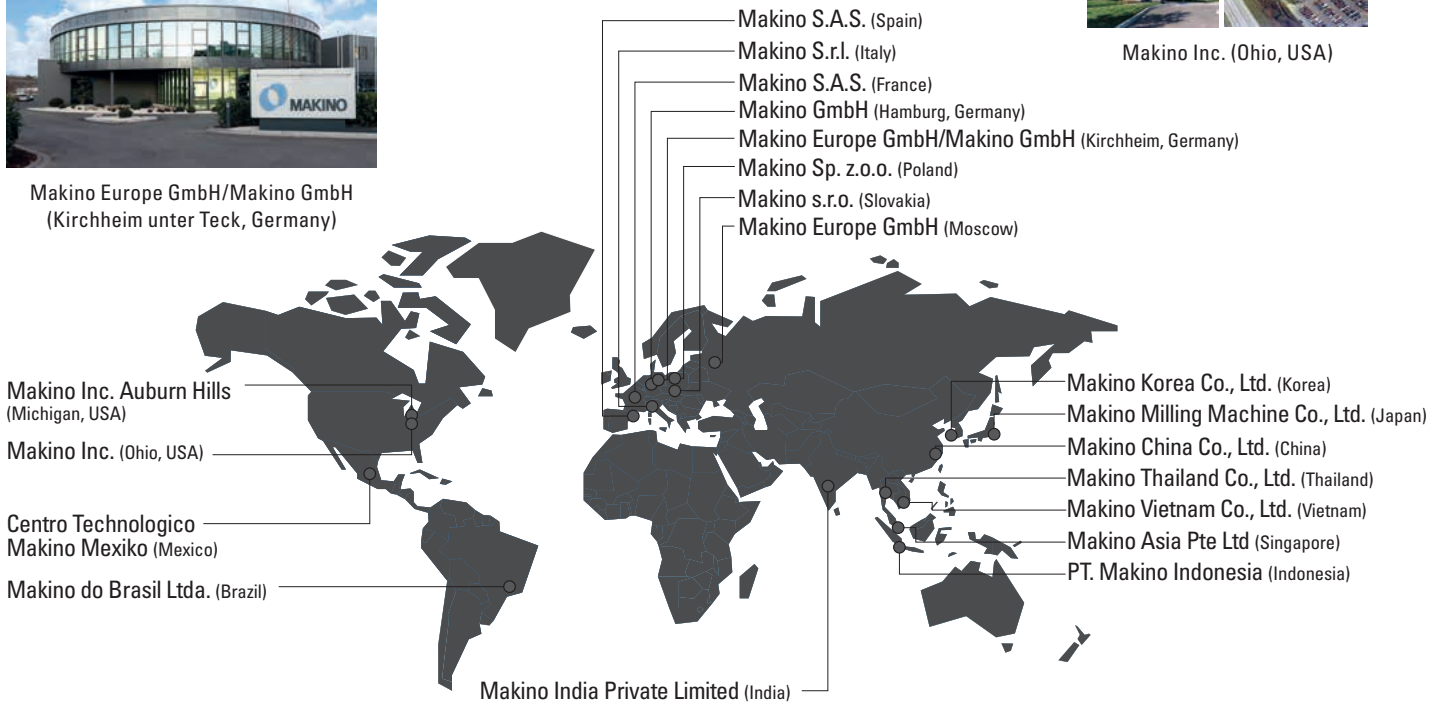
Makino Inc. Auburn Hills (Michigan, USA)



Makino Europe GmbH/Makino GmbH (Kirchheim unter Teck, Germany)



Makino Inc. (Ohio, USA)



Makino India Private Limited



Makino Asia Pte Ltd (Singapore)



Makino China Co., Ltd.

Our production locations



Machining spindle parts in Atsugi (production area)

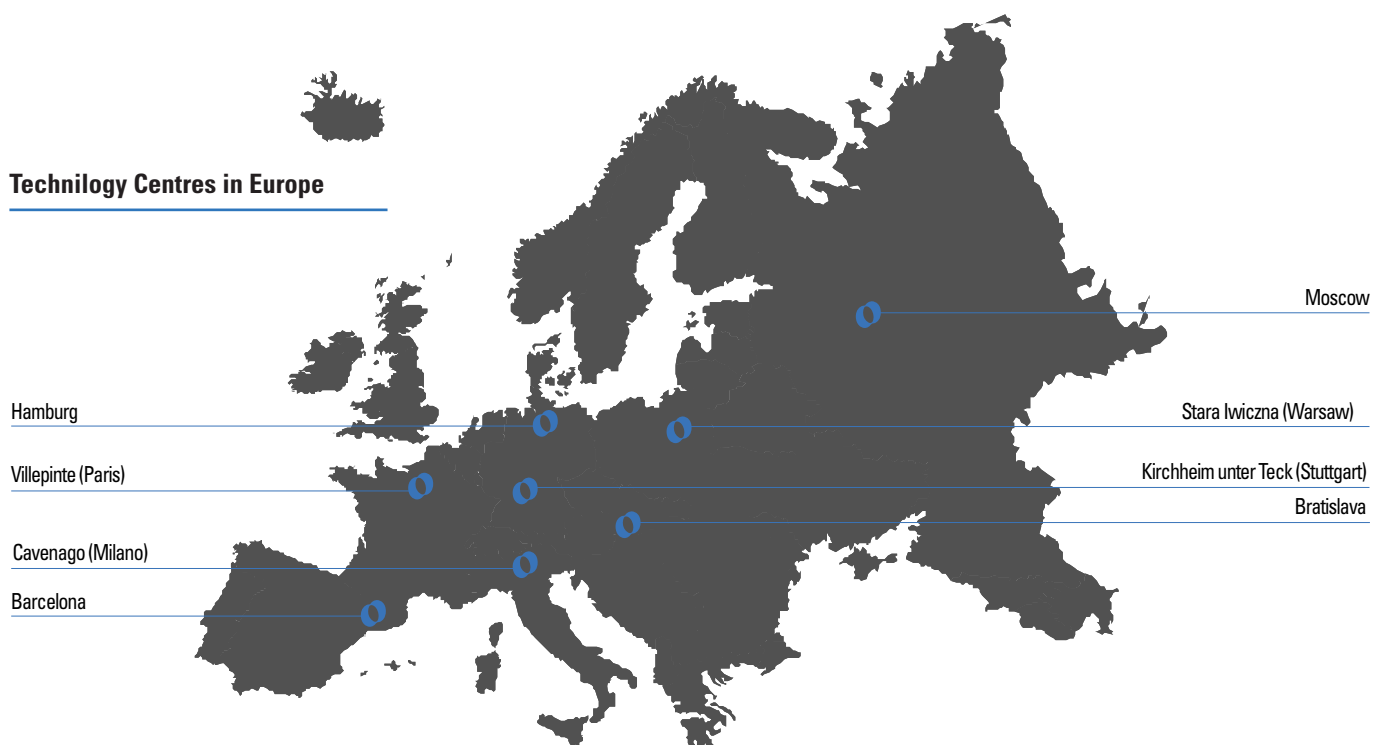


Machining large components



Assembly line for horizontal machining centres

Technology Centres in Europe



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