

Precision Machining Equipment

Machine type	Manufacturer	Model	Number of unit	Range x-axis	Range y-axis	Range z-axis	Clamping surface	Flatness	Posn repeatability accuracy in mm (ISO 10791-4)	Pallet changing	Thru Coolant
Multi Axis CNC Turn Mill Centre	Mori Seiki	NT4250 DCG/1500Z	1	520 mm	+229mm/-198mm	1500 mm	Ø 620 mm	0.005 ~ 0.01	0.003	No	Yes
Multi Axis CNC Turn Mill Centre	Mazak	INTEGREX i200ST (1500U)	1	615 mm	260 mm	1585 mm	Ø 200 mm	0.005 ~ 0.01	0.003	No	Yes
Five Face Machining Centre	V-Tech	NF-3230AH	1	3200 mm	2400 mm	1150 mm	2000 x 3000 mm	0.015 ~ 0.03	0.02	No	No
Five Face Machining Centre	V-Tech	SE1612	1	1600 mm	1200 mm	800 mm	1500 x 1000 mm	0.005 ~ 0.01	0.003	No	Yes
5-Axis Vertical CNC Milling	Makino	S33-5XA	3	650 mm	500 mm	450 mm	500 x 400 mm	0.005 ~ 0.01	0.003	No	No
5-Axis Vertical CNC Milling	DMG	DMU60	1	630 mm	560 mm	450mm	1000 x 600 mm	0.005 ~ 0.01	0.003	No	No
5-Axis Vertical CNC Milling	DMG	DMU80	1	800 mm	630 mm	500 mm	1250 x 700 mm	0.005 ~ 0.01	0.003	No	No
5-Axis Vertical CNC Milling	Mazak	VARIAXIS i600	1	510 mm	910 mm	510 mm	600 x 500 mm	0.005 ~ 0.02	0.005	Yes	Yes
4-Axis Horizontal CNC Milling	Makino	A51	3	560 mm	560 mm	600 mm	400 x 400 mm	0.005 ~ 0.01	0.003	Yes	Yes
4-Axis Horizontal CNC Milling	Makino	A61nx	1	730 mm	650 mm	800 mm	500 x 500 mm	0.005 ~ 0.01	0.003	Yes	Yes
4-Axis Horizontal CNC Milling	Hyundai KIA	KH63G	1	950 mm	825 mm	760 mm	630 x 630 mm	0.005 ~ 0.01	0.006	Yes	Yes
4-Axis Horizontal CNC Milling	Toyoda	FH630SX	1	1000 mm	800 mm	850 mm	630 x 630 mm	0.005 ~ 0.01	0.003	Yes	Yes
4-Axis Horizontal CNC Milling	Doosan	NHM8000	1	1400 mm	1050 mm	1200 mm	800 x 800 mm	0.005 ~ 0.01	0.006	Yes	Yes
4-Axis Vertical CNC Milling	Makino	Slim3n	2	500mm	400mm	400mm	600 x 400 mm	0.005 ~ 0.01	0.005	Yes	No
4 Axis Vertical CNC Milling	Fanuc Robodril	Alpha-D21MiB	3	500 mm	400 mm	330 mm	650 x 400 mm	0.005 ~ 0.01	0.005	No	No
4 Axis Vertical CNC Milling	Fanuc Robodril	Alpha-T21Ee	3	500 mm	400 mm	330 mm	650 x 400 mm	0.005 ~ 0.01	0.005	No	No
3-Axis Vertical CNC Milling	Neutron	NV-500	2	500 mm	380 mm	400 mm	650 x 380 mm	0.005 ~ 0.01	0.006	No	No
3-Axis Vertical CNC Milling	Neutron	NV-500	1	500 mm	380 mm	400 mm	650 x 380 mm	0.005 ~ 0.01	0.006	Yes. Offline Auto Pallet Changer	No
High Speed 3-Axis Vertical CNC Milling	Datron	M10 Pro	1	1020 mm	830 mm	240 mm	1020 x 830 mm	0.005 ~ 0.01	0.00004	No	Yes
3-Axis Vertical CNC Milling	Makino	S33-PC	1	650 mm	500 mm	450 mm	600 x 400 mm	0.005 ~ 0.01	0.003	Yes	No
3-Axis Vertical CNC Milling	Hartford	S-Plus 8	3	800 mm	520 mm	550 mm	950 x 520 mm	0.005 ~ 0.01	0.006	No	No
3-Axis Vertical CNC Milling	Makino	PS105	1	1050 mm	510 mm	460 mm	1300 x 510 mm	0.005 ~ 0.01	0.0025	No	No
3-Axis Vertical CNC Milling	Makino	S56	2	900 mm	500 mm	450 mm	1000 x 500 mm	0.005 ~ 0.01	0.003	Yes. Offline Manual Pallet Changer	No
3-Axis Vertical CNC Milling	Makino	S56	1	900 mm	500 mm	450 mm	1000 x 500 mm	0.005 ~ 0.01	0.003	No	No
3-Axis Vertical CNC Milling	YCM	NMV-106A	1	1020 mm	600 mm	600 mm	1120 x 600 mm	0.005 ~ 0.01	0.005	No	No
3-Axis Vertical CNC Milling	YCM	NXV1020A	1	1020 mm	520 mm	540 mm	1120 x 520 mm	0.005 ~ 0.01	0.005	No	No
3-Axis Vertical CNC Milling	Neutron	NV1500L3	1	1500 mm	510 mm	510 mm	500 x 1570 mm	0.005 ~ 0.01	0.005	No	No
3-Axis Vertical CNC Milling	Hartford	HCMC-18AG	1	1800 mm	920 mm	700 mm	2000 x 920 mm	0.01 ~ 0.015	0.01	No	No
3-Axis Vertical CNC Milling	Hartford	HCMC-1892AG	1	1800 mm	920 mm	810 mm	1950 x 920 mm	0.01 ~ 0.015	0.01	No	Yes
Conventional Milling	Tai Zheng	4E	2	700 mm	300 mm	300 mm	1200 x 250 mm	0.02 ~ 0.05	0.03	-	-
Conventional Grinding	Neutron	MP6-200H	1	150 mm	350 mm	320 mm	350 x 150 mm	0.001 ~ 0.003	0.003	-	-
Conventional Grinding	Neutron	NPG-84AHD	1	400 mm	800 mm	500 mm	1000 x 400 mm	0.002 ~ 0.005	0.005	-	-
Wire Cut	Tai Zhou	DK7740	2	500 mm	400 mm	500 mm	600 x 500 mm	0.02 ~ 0.05	0.03	-	-

Machine type	Manufacturer	Model	Number of unit	Max clamp diameter	Max diameter	Distance between centers	Accuracy	Range x-axis	Range z-axis	Remarks
CNC Turning	Doosan	PUMA 480L	1	500 mm	550 mm	2000 mm	+/- 0.006	+400 mm/-50 mm	2000 mm	-
CNC Turning	Doosan	LYNX 235	1	200 mm	280 mm	600 mm	+/- 0.006	+250 mm/-40 mm	550 mm	-
CNC Turning	Doosan	PUMA 215 II	1	200 mm	250 mm	600 mm	+/- 0.006	+250 mm/-40 mm	500mm	-
CNC Turning	Aero Turn	BT-300	1	280 mm	400 mm	500 mm	+/- 0.006	+300 mm/-40 mm	600 mm	-
CNC Turning	Mazak	QT 300L	1	254 mm	420 mm	662 mm	+/- 0.006	240 mm	710 mm	-
CNC Universal Cylindrical Grinder	SMTW	MK1432/2000-H	1	200 mm	330 mm	2000 mm	+/- 0.001	160 mm	2000 mm	Surface roughness: Ra0.8 µm
Convention Turning	Ma Ann	C6232A	1	254 mm	350 mm	1000 mm	+/- 0.025	+30 mm/-180 mm	1000 mm	-

Sheetmetal Fabrication Equipment

Machine type	Manufacturer	Model	Number of unit	Clamping surface	Height	Max thickness	Accuracy	Repeatability
Laser Cutter	Bystronic	Bystar 3015 w 4.4kW CO2 Laser	1	3000 x 1500 mm	170 mm	Steel: 20 mm SUS & Alu: 10 mm	+/- 0.1 mm/m	+/- 0.05 mm

Machine type	Manufacturer	Model	Number of unit	Clamping surface	Height	Max pressure
Folding Machine	Amada	FDB III 1025 NT	1	2500 mm	150 mm	100 tons
Folding Machine	Amada	FDB III 1253 NT	1	3000 mm	150 mm	125 tons

Machine type	Manufacturer	Model	Number of unit	Min reach	Max reach	Power Source	Repeatability	Weldability
Robotic MIG Welding	Panasonic	TA-1400	1	352 mm	1374 mm	400 W	+/- 0.1 mm	Steel, SUS, Alu

Equipment for other processes	Manufacturer	Model	Number of unit	Range	Remarks
TIG Welding	-	-	10	-	-
MIG Welding	-	-	6	-	-
Spot Welding Machine	-	-	2	-	-
PEM Inserter	Pemserter	Series 4	1	-	-
Hairline Machine	-	HD-415	1	Max part size: 1000 mm(width) x 150 mm(thk)	-
Sand Blasting Machine	BaiTong	9060 E	1	Booth size: 800 x 500 x 400 mm	-
Sand Blasting Machine	BaiTong	9080 A-B	1	Booth size: 1400 x 700 x 500 mm	-
Wet Paint Coating Booth	-	-	1	Booth size: 2700 x 2000 x 1800 mm	-
Powder Coating Booth	-	-	1	Booth size: 6000 x 1500 x 1800 mm	-
Pretreatment Line	-	-	1	Tank size: 2500 x 1000 x 1300 mm	Phosphate-free conversion coating using Henkel Bonderite NT-1
Ultrasonic Cleaning Line	-	-	1	Tank size: 1200 x 700 x 300 mm	2 x ultrasonic tanks, 4 x water tanks, 1 x oven

QA Equipment

Measurement equipment	Manufacturer	Model	Number of unit	Range x-axis	Range y-axis	Range z-axis	Accuracy	Remarks
Coordinate Measuring Machine	Brown & Sharpe	Global Status 12.15.10	1	1200 mm	1500 mm	1000 mm	(3.9+4.0*L/1000) µm	CNC
Coordinate Measuring Machine	Brown & Sharpe	Global Performance 07.10.07	1	700 mm	1000 mm	700 mm	(1.9+3L/1000) µm	CNC
Coordinate Measuring Machine	Brown & Sharpe	Global Silver Performance 12.15.	1	1200 mm	1500 mm	1000 mm	(2.7+4.0*L/1000) µm	CNC
Coordinate Measuring Machine	Tesa	Tesa MH 3D Reflex	1	460 mm	510 mm	420 mm	(4.5+3.0*L/1000) µm	Manual
Profile Projector	Mitutoyo	PJ-A3010F-200	1	100 mm	200 mm	-	3+L/25 µm	Manual
Height Gauge	Tesa	Micro-Hite 600	2	-	-	600 mm	(2+3*L) µm, (L in mm)	Manual
Height Gauge	Tesa	Micro-Hite 400	1	-	-	400 mm	(2.5+4*L) µm, (L in mm)	Manual
Portable Measuring Arm	Faro Arm	Pro Edge 2.7m Taxis measureme	1	2700 mm Sphere			Single point: 0.029 mm Volumetric: +/- 0.041 mm	Manual
Surface Hardness Tester	Insize	ISH-MR150	1	Max. workpiece height: 170 mm Max. workpiece depth: 165 mm(from center)			+/- 0.5 HR	Manual
Surface Hardness Tester	Times	TH170	1	170 ~ 960 HLD			Relative error: +/- 0.8 % Repeatability error: 0.8 (HLD = 800)	Manual
Surface Roughness Tester	Mitutoyo	SJ-201	1	0.01 ~ 350 µm			0.01 µm	Manual
Gloss Meter	XGP	20-60-85	1	Range gloss: 0 ~ 199.9 Gs			Gloss repeatability: +/- 0.4 Gs Gloss reproducibility: +/- 1.0 Gs	Manual
Colorimeter	3NH	NR60CP	1	Color Space: CI E L AB, XYZ, LCh, CI E RGB, CI E LUV Color Diff Formula: ΔE*ab, ΔE(h), ΔE*uv, ΔE*94, ΔE*cmc (2: 1), ΔE*cmc (1: 1), ΔE*00 Observer: CI E 10° Illuminant: D65, A, C, D50, F2, F6, F7, F8, F10, F11, F12			Standard deviation(ΔE*ab): 0.03 Spectrum repeatability: 0.01ΔE, 16 Spectrum reproducibility: 0.2ΔE, 16	Manual
Spectrophotometer	BYK-Gardner	6801 Spectro-guide 45/0 gloss	1	Range spectrum: 400 ~ 700 nm Interval spectrum: 10 nm Range gloss: 0 ~ 180 GU			Gloss repeatability: 0.2 GU Gloss reproducibility: 1.0 GU	Manual
Coating Thickness Meter	Fischer	DUALSCOPE MPO	1	0 ~ 2000 µm			0 ~ 75 µm: +/- 1.5 µm 75 ~ 1000 µm: +/- 2 % of the measured results 1000 ~ 2000 µm: +/- 3 % of the measured results	Manual
Coating Thickness Meter	ElektroPhysik	Minitest 600B N2	1	0 ~ 2000 µm			+/- 2 µm or +/- 2 ~ 4 %	Manual
Coating Thickness Meter	AiSen	AS-5800	1	0 ~ 1250 µm			+/- (1.5 ~ 3 %) or +/- 2 µm	Manual
Drop Ball Impact Tester	YongLiDa	QCJ	1	Range height: 0 ~ 500 mm Weight of impact ball: 1000 +/- 1 g Impact ball diameter: Ø8 mm			-	Manual
Surface Resistance Meter	Prostat	PRS-812	1	Resistance measurements: 0.1 ~ 1.0 X 10 ¹² Ω Variable voltage: 0.1 mv ~ 9.99 V Constant test voltages: 10 V and 100 V			+/- 5 %	Manual
PH Meter	Ruosull	PHS-3C	1	pH: 0 ~ 14.00 mV: 0 ~ +/- 1999 mV			pH: ≤ 0.01 pH mV: 0.1 %	Manual
Conductivity Meter	Ohaus	Starter 300C	1	Cond: 0.0 us/cm ~ 199.9 mS/cm TDS: 0.1 mg/L ~ 199.9 g/L Temp: 0 ~ 100 °C			Measured value: +/- 0.5 % Temp: +/- 0.3 °C	Manual
Sonic Tension Measurement Meter	Unita	U-508	1	Tension values: 0.01 ~ 99900 N Frequency range: 10 ~ 5000 Hz			+/- 1 %	Manual
Portable Oscilloscope	Fluke	ScopeMeter® 190-202	1	Bandwidth: 200 MHz on 2 channels Timebase range: 2 ns ~ 2 min/div			Input sensitivity: 2 mV ~ 100 V/div	Manual
Helium Leak Test Detector	Oerlikon	PHOENIXL 300	1	Vacuum: 5 x 10 ⁻¹² mbar l/s Sniffer: 1 x 10 ⁻⁷ mbar l/s			+/- 15 %	Manual
Tensile Testing Machine	HaiDa	HD-B604-S	1	Max Force: 2000kg (20KN) Test Stroke: 1200 mm Test Width: ≤ 400 mm Test Speed: 0.1 ~ 500 mm/min			Load accuracy: ≤ 0.5 %	Manual
Portable XRF Analyzer	ThermoFisher	NITON XL2 700S	1	Alloy Modes: Metal Alloy, Electronics Alloy, Precious Metals Plastic Modes: RoHS Plastics, Toy & Consumer Goods Plastics, TestAll™, Painted Products			>25 elements from S to U	Manual