

**KL Machining Equipment**

Machine type :	Manufacturer	Model	Number of unit	Range x-axis	Range y-axis	Range z-axis	Clamping surface	Flatness	Positioning accuracy	Pallet changing
5-face vertical CNC milling	SNK	RB-4VM	1	4250 mm	2400 mm	1500 mm	4000X2000 mm	0.005 ~ 0.01	0.005	-
5-axis vertical CNC milling	Mazak	VRX 630-5X 11	1	510 mm	510 mm	460 mm	-	-	-	-
5-axis vertical CNC milling	Mitsui Seiki	Vertex 550-5X	1	550 mm	600 mm	550 mm	-	-	-	-
5-axis vertical CNC milling	Makino	S33-5XA	7	650 mm	500 mm	450 mm	500 X 400 mm	0.005 ~ 0.01	0.003	-
4 axis vertical CNC milling	Fanuc Robodrill	Alpha-T21iEe	2	500 mm	400 mm	330 mm	650X400 mm	0.005 ~ 0.01	0.006	-
3-axis vertical CNC milling	Makino	S56	7	900 mm	500 mm	450 mm	1000X500 mm	0.005 ~ 0.01	0.003	-
3-axis vertical CNC milling	Makino	S33 -PC	3	650 mm	450 mm	450 mm	600X400 mm	0.005 ~ 0.01	0.003	yes
3-axis vertical CNC milling	Yamara	V-650	4	770 mm	400 mm	500 mm	770X490 mm	0.005 ~ 0.01	0.005	-
3-axis vertical CNC milling	Yamara	V-860	1	860 mm	510 mm	500 mm	960X500 mm	0.005 ~ 0.01	0.005	-
3-axis vertical CNC milling	Yamara	VMC-1100S	1	1100 mm	610 mm	500 mm	1100X600 mm	0.005 ~ 0.01	0.005	-
3-axis vertical CNC milling	Hartfort	HCHC-15	1	1500 mm	800 mm	550 mm	1600 X 850 mm	0.005 ~ 0.01	0.01 ~ 0.015	-
3-axis vertical CNC milling	Makino	S33	2	650 mm	500 mm	450 mm	600X400 mm	0.005 ~ 0.01	0.005	-
3-axis vertical CNC milling	Hartford	HCMC-15AP	1	1500 mm	820 mm	700 mm	1650 X 820 mm	0.005 ~ 0.01	0.01 ~ 0.015	-
3-axis vertical CNC milling	Makino	Max 65S	1	650 mm	400 mm	400 mm	-	-	-	-
3-axis vertical CNC milling	Supermax	YCM-V116A	2	1100 mm	600 mm	630 mm	-	-	-	-
4-axis horizontal CNC milling	Mazak	HNC 5000	1	730 mm	730 mm	740 mm	-	-	-	-
4-axis horizontal CNC milling	Mori Seiki	NH 5000	2	630 mm	622 mm	670 mm	-	-	-	-
4-axis horizontal CNC milling	Makino	A51	2	560 mm	560 mm	600 mm	630X900 mm	0.005 ~ 0.01	0.003	yes
4-axis horizontal CNC milling	Mitsui Seiki	HU80A	1	1200 mm	950 mm	900 mm	800X800 mm	0.005 ~ 0.01	0.003	yes
4-axis horizontal CNC milling	Mori Seiki	NH6300DCG	1	1050 mm	900 mm	980 mm	630X630 mm	0.005 ~ 0.01	0.003	yes
4-axis horizontal CNC milling	Kiwa	KH45	2	640 mm	610 mm	680 mm	400X400 mm	0.005 ~ 0.01	0.003	yes
Conventional Milling	C.K.S	-	1	700 mm	400 mm	450 mm	1200 X 230 mm	0.015 ~ 0.03	0.03 ~ 0.05	no
Conventional Milling	EME	EME-16SS	1	700 mm	400 mm	400 mm	1350 X 250 mm	0.015 ~ 0.03	0.03 ~ 0.05	no
Conventional Milling	ABADI	-	1	700 mm	400 mm	450 mm	1350 X 250 mm	-	-	-
Conventional Grinding	Okamoto	350	1	350 mm	150 mm	-	350 X 150 mm	0.002 ~ 0.005	0.005	-
Conventional Grinding	Yamara	PEG-3060AHD	1	600 mm	300 mm	-	600 X 300 mm	0.002 ~ 0.005	0.005	-
Conventional Grinding	EME	PEG-2550AH	1	500 mm	250 mm	-	500 X 250 mm	0.002 ~ 0.005	0.005	-

Machine type :	Manufacturer	Model	Number of unit	Max clamp diameter	Max diameter	Distance between centers	Accuracy	Range x-axis	Range z-axis	Repeatability
CNC Turn mill	Mori Seiki	NT4250	1	350 mm	660 mm	1500 mm	0.005	750 mm	1550 mm	-
CNC Turn mill	Mazak	QTN250MY	1	10"	300 mm	504 mm	0.02	230 mm	575 mm	-
CNC Turn mill	Victor	V Turn 26	2	300 mm	300 mm	510 mm	0.02	190+50	610	-
CNC Turning	Aeroturn	BT300	3	260 mm	280 mm	500 mm	0.01	230 mm	600 mm	0.005
CNC Turning	Aeroturn	BT380	2	320 mm	350 mm	750 mm	0.01	290 mm	1000 mm	0.005
CNC Turning	Leadwell	LTC-20F	1	150 mm	150 mm	200 mm	0.01	17.5+25 mm	600 mm	0.005
CNC Turning	Takamaz	XY120	1	120 mm	120 mm	170 mm	0.005	175 mm	330 mm	0.001
CNC Turning	Takamaz	X150	1	150 mm	170 mm	250 mm	0.005	175 mm	330 mm	0.001
CNC Turning	DOOSAN	PUMA 400B	1	380 mm	550 mm	1000 mm	0.005	362 mm	1105 mm	-
CNC Turning	Victor	V Turn 16	1	200 mm	200 mm	410 mm	0.02	115+20	600	-
Conventional Turning	WIN HO	WH 480 X 1000G	1	150 mm	150 mm	500 mm	0.02	1000 mm	-	-

**KL Sheetmetal Equipment**

Machine type :	Manufacturer :	Model :	Number of unit :	Clamping surface :	Height :	Max. thickness:	Accuracy:	Repeatability:
Laser Cutter	Trumpf	TL3030 -4KW CO2 Laser	1	3000 mm x 1500 mm	115 mm	15mm (SS & AL : 8mm)	+/- 0.1 mm/m	+/- 0.05 mm

Machine type :	Manufacturer :	Model :	Number of unit :	Clamping surface :	Height :
Bending machine	Muratec Toyo		1	8 ft	
Rolling machine	Mastika	PP-0405H	1	6 ft	9 in ~ 20 in

Equipment for other Processes	Manufacturer :	Model :	Number of unit :	Clamping surface :	Height :
Drilling machine	West Lake	J2S-16	1	-	-
Circular Saw Machine	-	IMT 275	1	-	60 mm
tig welding	-	-	6	-	-

Machine type :	Manufacturer	Model	Number of unit	Range x-axis	Range y-axis	Range z-axis	Clamping surface	Flatness	Positioning accuracy	Pallet changing
Conventional Milling	Bridgeport	-	1	600 mm	300 mm	400 mm	1200 X 230 mm	0.015 ~ 0.03	0.03 ~ 0.05	no

Machine type :	Manufacturer :	Model :	Number of unit :	Range x-axis :	Range y-axis :	Range z-axis :	Accuracy :	Remarks :
Coordinate Measuring Machine	Brown & Sharp	Global Status 7.10.7	1	660 mm	1000 mm	700 mm	(2.0 +3L/1000) micron	CNC
Coordinate Measuring Machine	Brown & Sharp	Global Status 7.10.7	1	700 mm	1000 mm	660 mm	(2.5+4L/1000) $\mu$ m	CNC
Coordinate Measuring Machine	Brown & Sharp	Global Status 05.07.05	1	500 mm	700 mm	500 mm	(2.0 +3L/1000) micron	CNC
Portable Coordinate Measuring	FARO	Gage Plus	1	1.2m (48") sphere	-	-	MPE ( $\mu$ m) 5+8L/1000	Manual
Portable Coordinate Measuring	FARO	Platinum	1	3.0m (10ft) sphere	-	-	Single point 0.052mm (0.002)	Manual
Profile measuring projector	Mitutoyo	PJ-A3000 series	1	100 mm	200 mm	-	0.001	Manual
Profile Projector	Mitutoyo	PJ-R3000	1	200mm	100mm	-	(6+0.04Lmm) $\mu$ m	Manual
Height gauge	Mitutoyo	Series 192 (192-613)	1	-	-	450 mm	0.001	Manual
Height gauge	Trimos	Z-CAL	1	-	-	370 mm	3.0 + L/200 micron	Manual
Linear Height Gauge	: TESA SA	Micro-Hite 600	2	-	-	0-600 mm	(2+3xL) $\mu$ m, where L is in	Manual
Linear Height Gauge	: TESA SA	Micro-Hite 400	1	-	-	0-400 mm	(2+3xL) $\mu$ m, where L is in	Manual
3D-measuring machine	: TESA SA	Tesa Micro-hite	1	460 mm	510 mm	420 mm	0.003	Manual