



Hybrid Sphere CNC Lathe

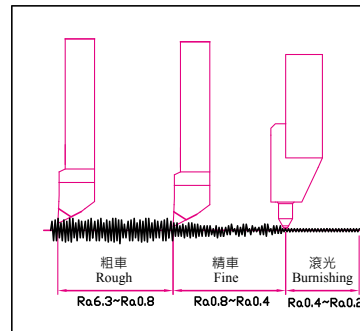
CNC球頭複合加工車床

FEATURE
特色

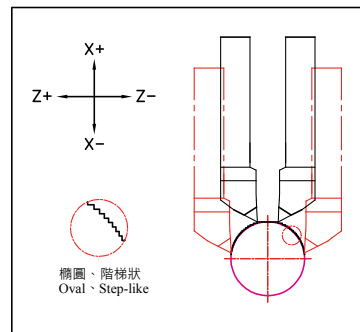
B axis – Ideal solution for great roundness
B軸 - 最接近真球的結構設計

The trajectory of B axis can be closed to ball shape. The result of roundness can achieve to $\pm 0.005\text{mm}$ which will be better than conventional lathe, X and Z axis simultaneously running.

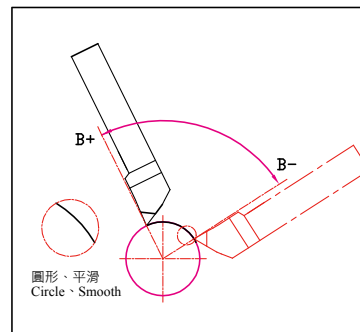
B軸軌跡是旋轉軸設計，加工球體時可以跟隨球體外型，不同於傳統的CNC車床加工，僅X與Z軸同動加工；B軸加工球體真圓度可達 $\pm 0.005\text{mm}$ 。



加工流程與表面粗糙度(Ra)
Processing and surface roughness (Ra)



傳統球形加工
Traditional spherical processing



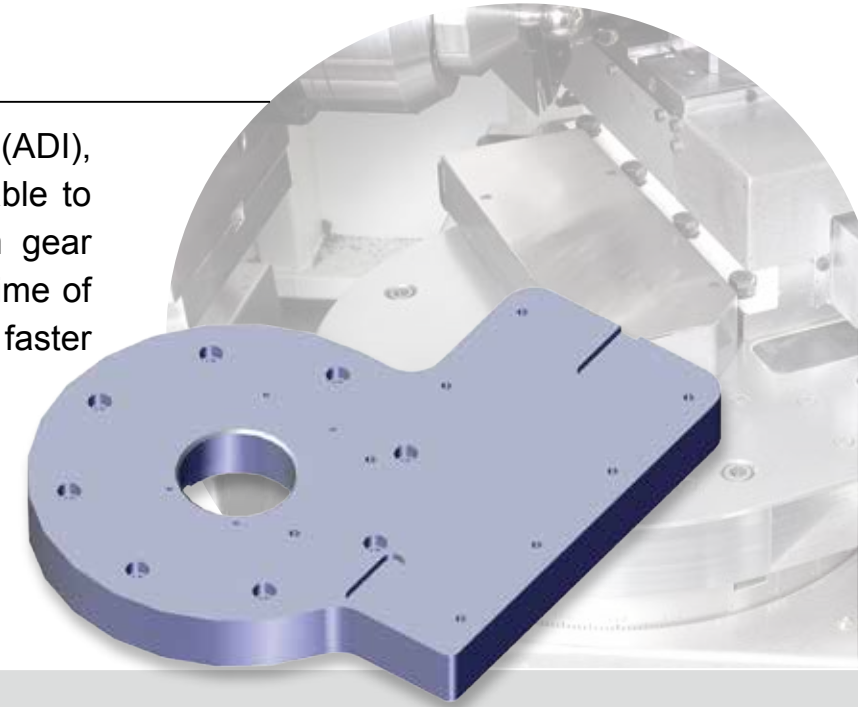
完美球形加工
Ideal spherical processing

Lightweight of B axis rotary table

B軸轉盤輕量化

With help of austempered ductile iron (ADI), a lightweight B axis rotary table is able to decrease the consumption of worm gear and shaft in order to expand the lifetime of the B axis rotary table, and have faster movement, better accuracy, and more stable performance.

輕量化的轉盤能減少蝸桿蝸輪磨耗使轉盤使用壽命延長，移動更迅速、精度更好、表現更穩定。

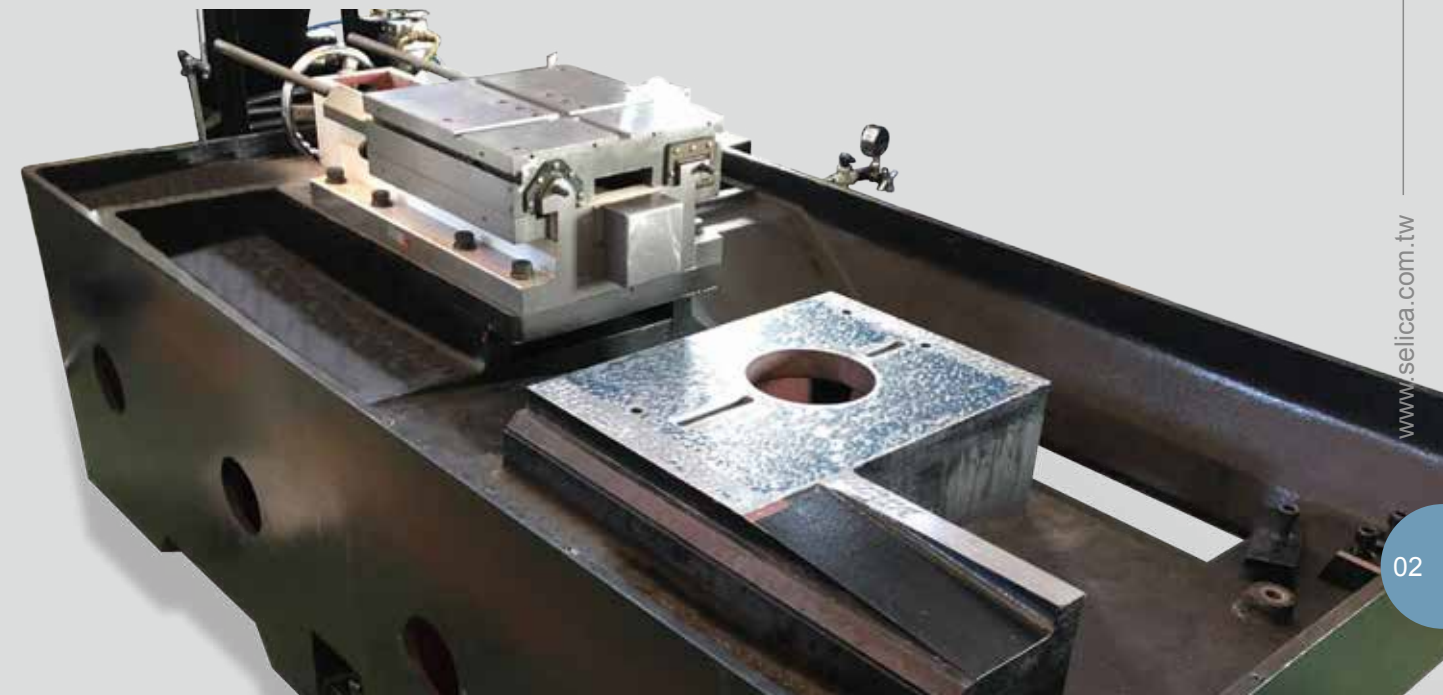


One piece cast base

一體成型鑄鐵

The machine base is made from one-piece construction which is annealed and stress released to ensure rigidity and stability. One-piece cast base structure can provide great and stable machining accuracy.

機器底座整體採用高品質鑄鐵製造，一體成型床身相較於一般銲接之底座具有更好的穩定性與剛性，使得機器使用上精度更好。



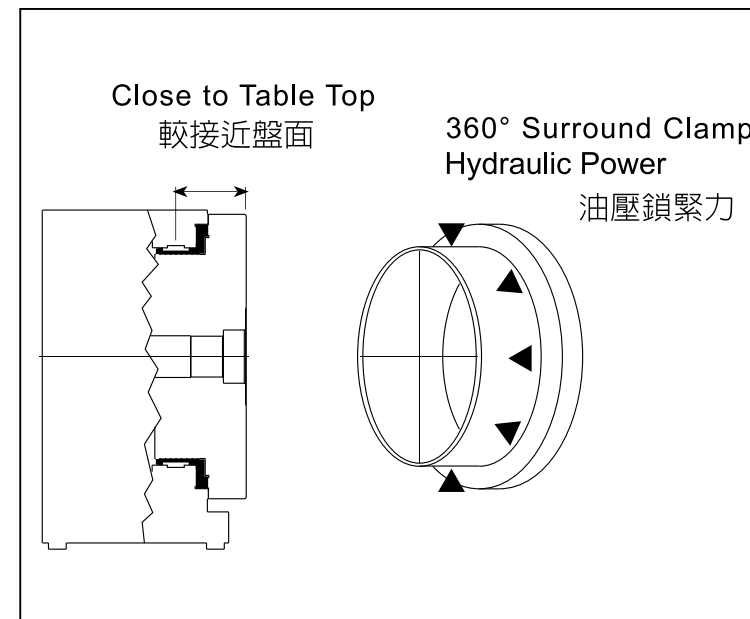
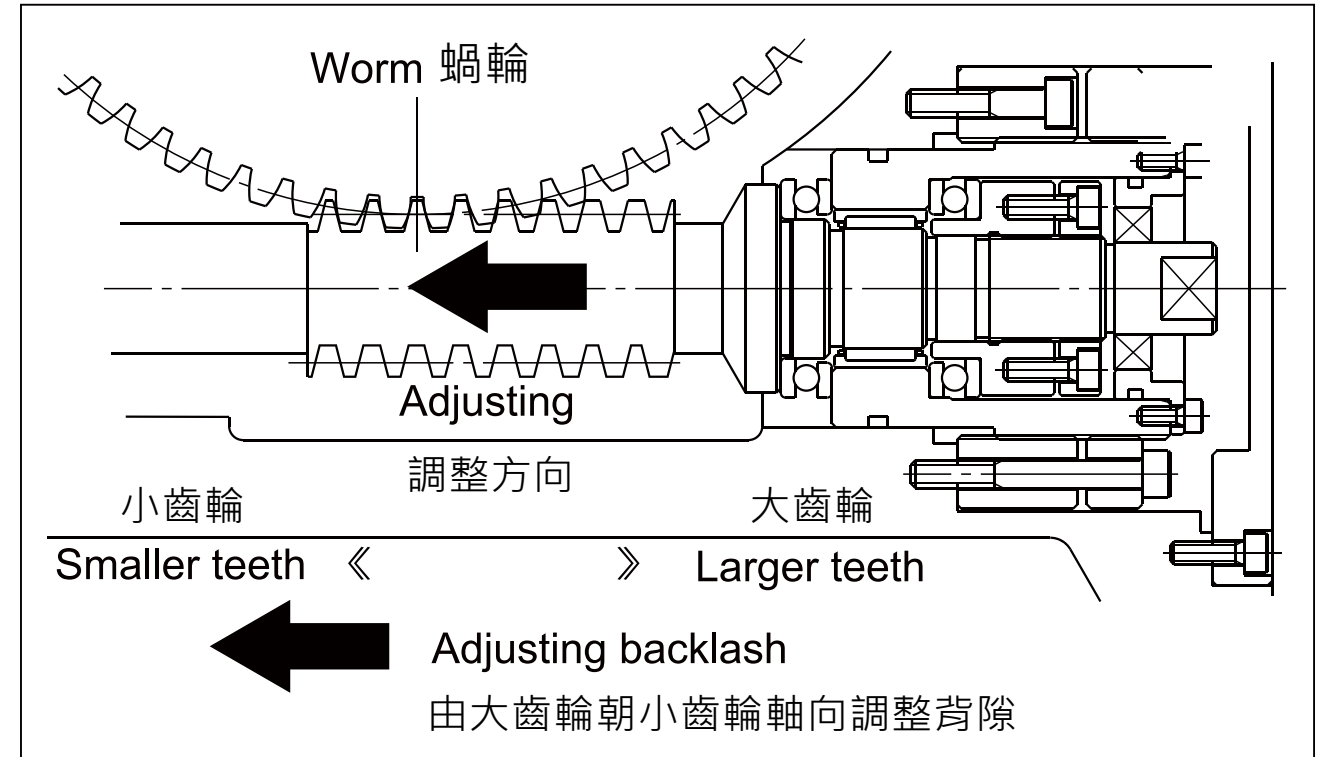
FEATURE
特色

Sliding head spindle – Maximize turning range
走心式主軸 - 最長的工件容納，最小的干涉範圍

Sliding head design allows spindle move forward and backward. Especially in limit space, the sliding structure can achieve maximum B axis motion (-60°~+95°) without extended configuration from spindle to collet chuck, which will keep the best rigidity while machining. If the machine combines with three jaw chuck and hardening jaws, the stability and rigidity will be enhanced again. Moreover, the heat radiation rib structure of spindle housing can quickly remove the heat which caused by spindle running or machining, which will maintain the spindle stability.

Furthermore, the spindle can be used with bar puller for the second operation and flexible machining.

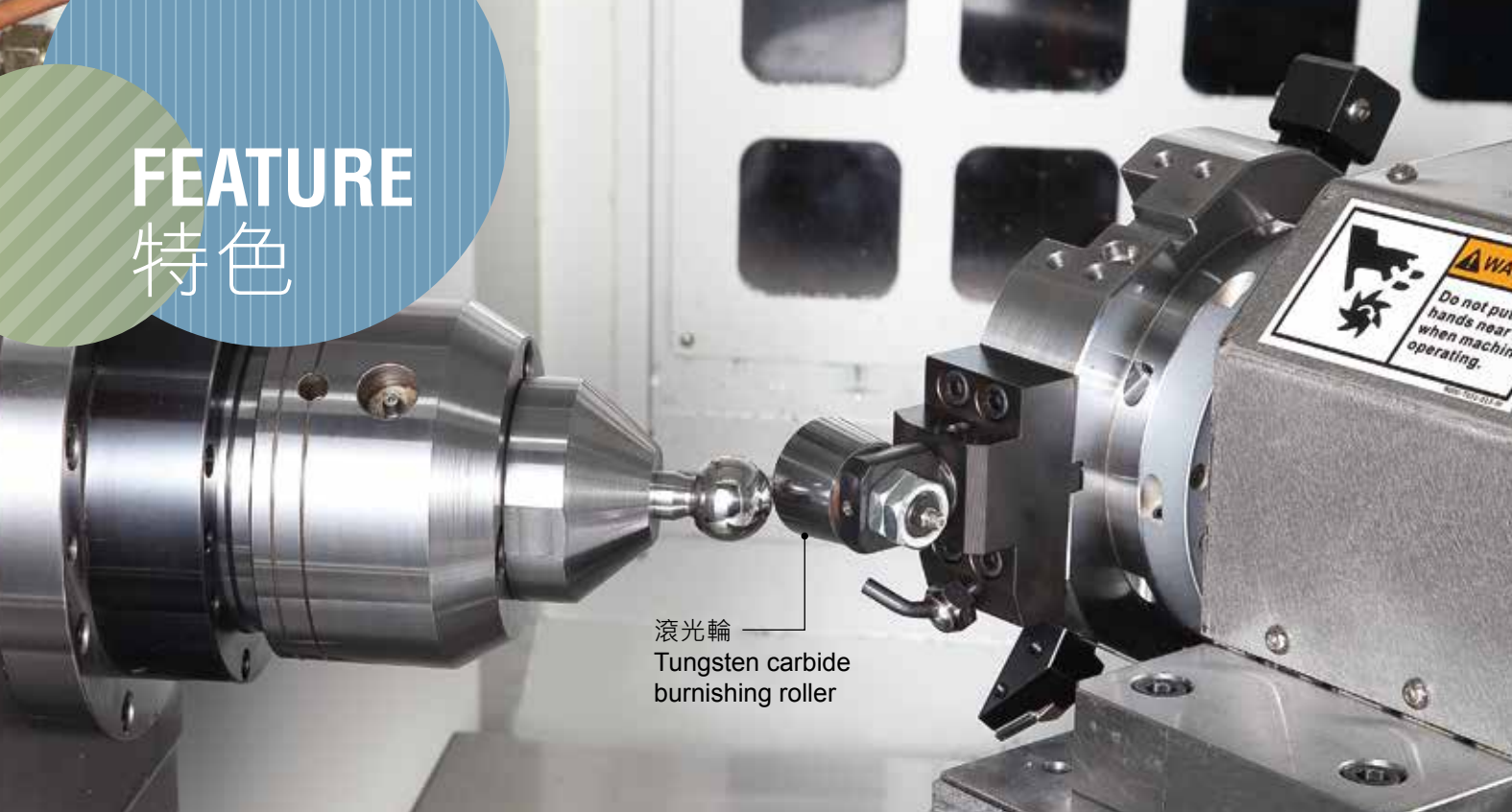
走心式主軸設計，主軸可前後移動，在有限的空間內，可以取得最大的運動角度(-60°~+95°)，不需延長主軸前端置放夾頭的距離，以維持最佳的加工剛性，如搭配三爪夾頭和硬爪，將再次提高加工的穩定性與剛性，且前端主軸座散熱肋板設計，可穩定移除加工中產生的熱能，進一步維持主軸的穩定性。此外，主軸還能搭配拉料器作二次加工，提升自動化的彈性。



Worm gear and shaft – Adjustable backlash
蝸輪蝸桿結構 - 背隙可調式耐久性最佳化

Worm gear with large pitch diameter creates a large engagement area and less pressure on the contact surface, resulting in resistance against wear.

利用蝸輪蝸桿的設計，預留在長時間使用下齒隙的調整可能性，並且降低單一表面的承受壓力藉以提升產品的耐久度。



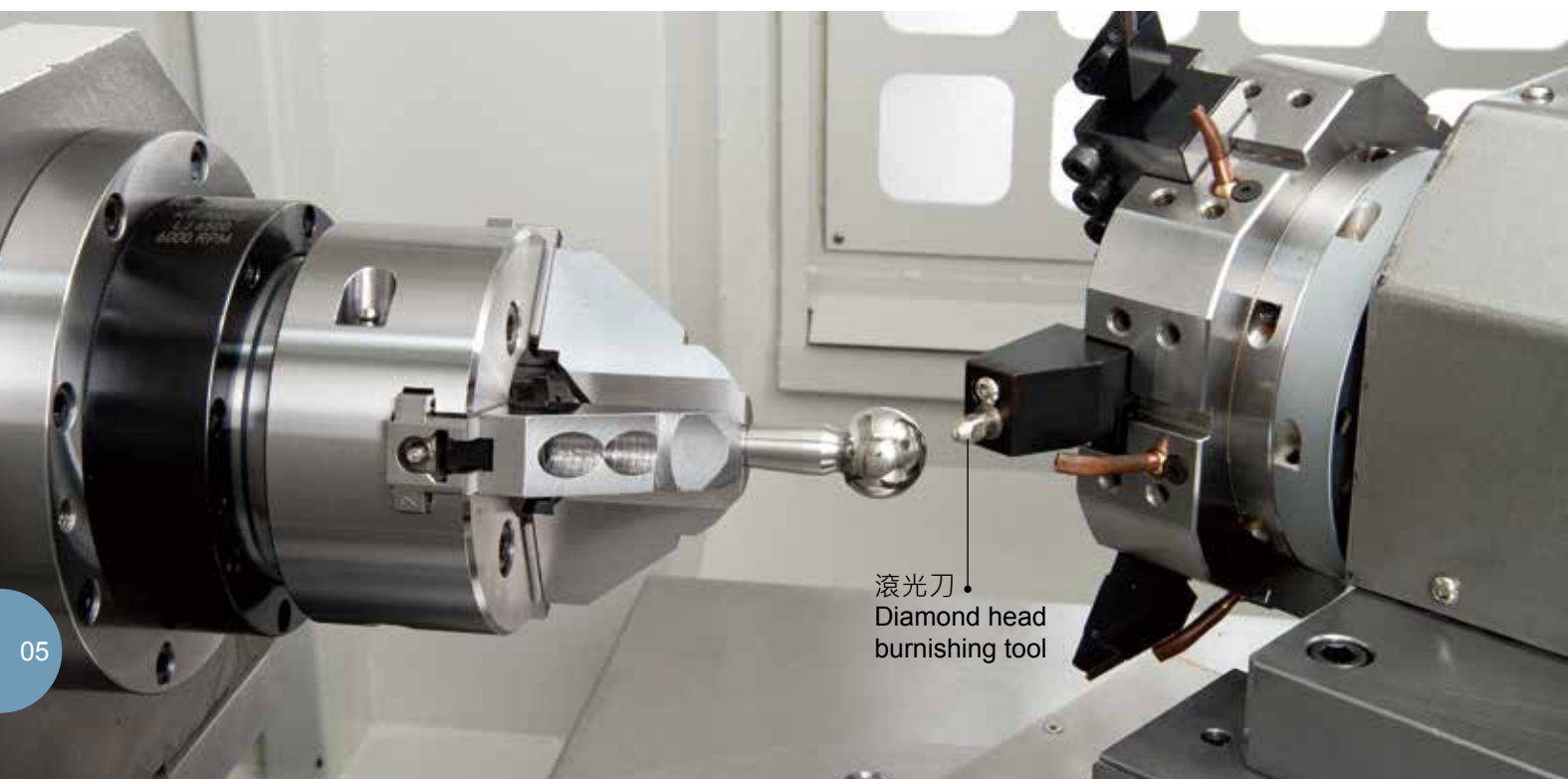
滾光輪
Tungsten carbide
burnishing roller

Burnishing function – Brightness surface

長效型鎢鋼滾光輪 - 滾光工序

Burnishing is the process to extrude the surface by pressure, which will not consume the material as grinding. Instead of modifying the dimension of workpiece, burnishing will re-rank the metal molecules to remove the machining trace so that the surface can be strengthened and enhanced 10% to 30%. The roughness can achieve to Ra 0.1 ~ 0.2 μ m.

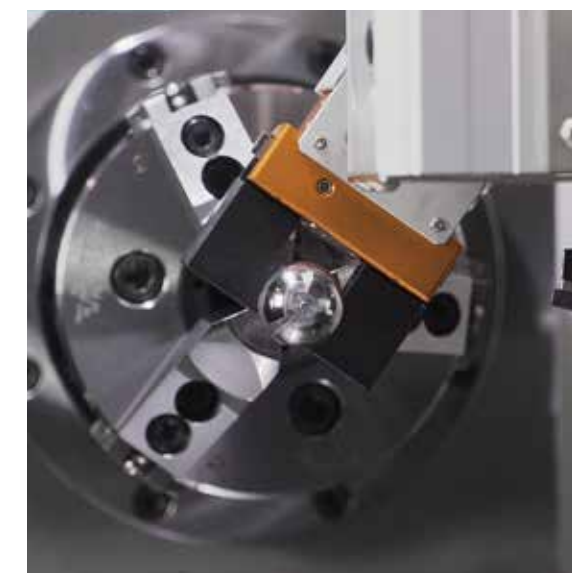
滾光工序利用壓力擠壓工件表面，有別於磨削工序會影響產品最終加工尺寸，滾光工序不會改變工件的尺寸，僅將工件表面金屬因子推擠排列，藉此將表面的加工痕跡消除，以達到最佳化表面與提升金屬表層的強度10%~30%，表面粗糙度同時可達Ra 0.1 ~ 0.2 μ m。



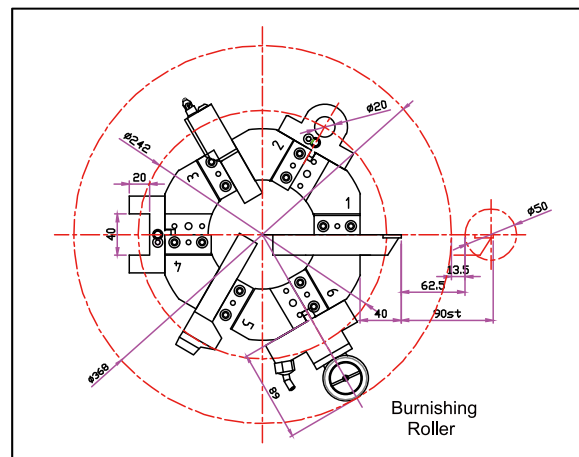
滾光刀
Diamond head
burnishing tool

Auto loading / unloading System (Opt.) 自動上下料系統(選配)

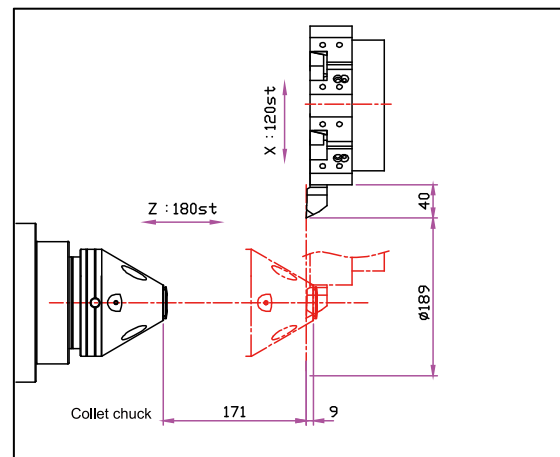
A gantry loading / unload system provides an automatic operation for chucking operations. 門型機械手的選擇提供客戶自動化生產的可能性。



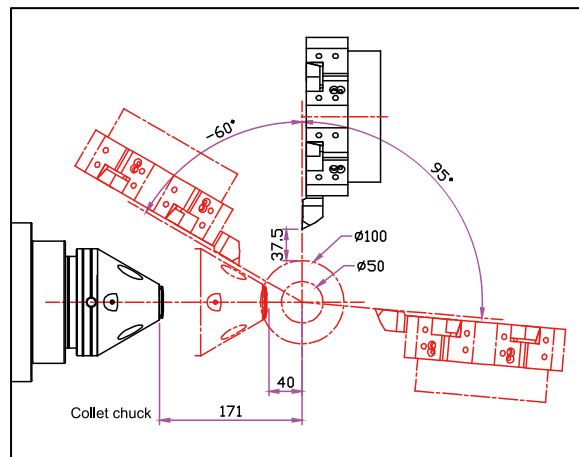
FEATURE 特色



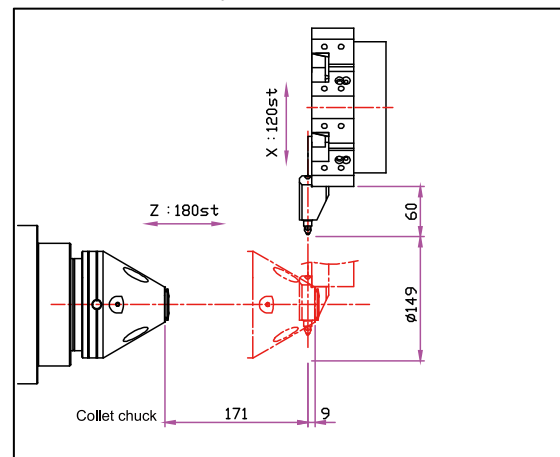
刀塔干涉圖
Turret interferogram (with Burnishing roller)



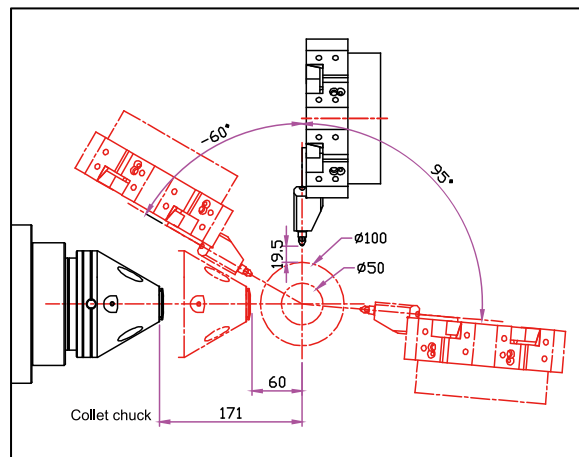
L型刀座
L-type tool holders



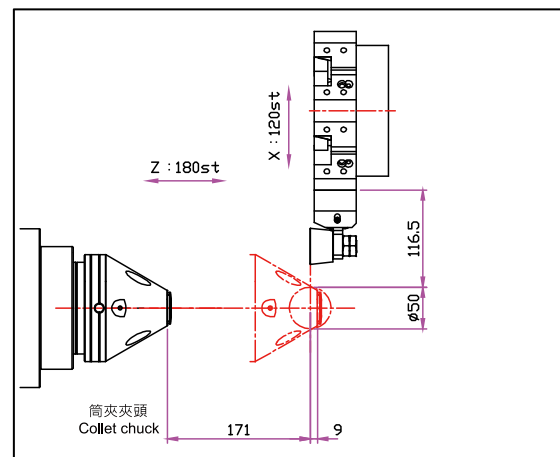
B軸旋轉角度
B-axis Turning angle (L-Tool)



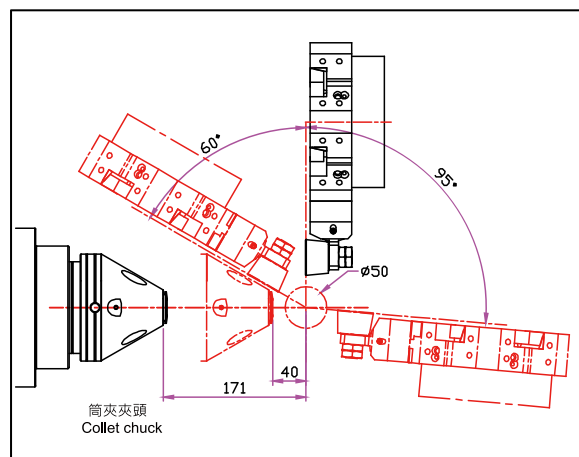
滾光
Burnishing



B軸滾光角度
Burnishing angle in B-axis



滾光輪
Burnishing Roller



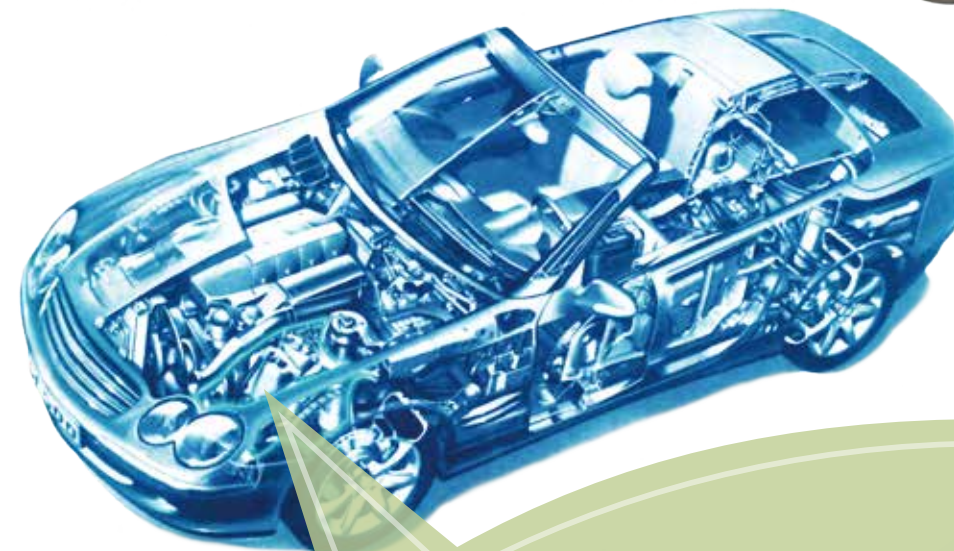
B軸滾光輪角度示意
Burnishing roller angle in B axis

FEMORAL HEAD 股骨頭



APPLICATION 應用

BALL VALVE 球閥



UPPER BALL JOINT 上球頭

LOWER BALL JOINT 下球頭

TIE ROD 轉向拉桿



STABILIZER LINK 穩定桿

CONTROL ARM 控制臂



Model 型號		SBL-100T	SBL-180T	SBL-250T
Turning diameter range (ball head) 外徑加工範圍(球頭)	mm	Ø10-100	Ø85-180	Ø110-250
Clamping diameter range (ball valve) 內徑夾持範圍(球閥)	inch	Ø 1/2"-2 1/2"	Ø 2"-4.5"	Ø 3"-6"
Spindle nose type 主軸鼻端形式	ASA	A2-4	A2-8	A2-11
Spindle chuck type (ball head) 主軸夾爪形式(球頭)		5" 3-Jaw chuck 5吋三爪夾頭	5" 3-Jaw chuck 5吋三爪夾頭	20" 3-Jaw chuck 20吋三爪夾頭
Spindle bore 主軸通孔徑	mm	Ø45	Ø92	Ø134
Spindle speed 主軸轉速	rpm	6,000	1,500	1,500
Spindle motor power 主軸馬達馬力	kw	7.5kw	10kw	15kw
X-axis motor power X軸馬達馬力	kw	1.8	1.8	1.8
Z-axis motor power Z軸馬達馬力	kw	1.8	1.8	2.5
B-axis motor power B軸馬達馬力	kw	3	3	3
X-axis travel X軸行程	mm	110	210	290
Z-axis travel Z軸行程	mm	170	290	440
B-axis travel B軸行程	degree	-60°/+95°	-60°/+95°	-60°/+95°
X-axis rapid traverse rate X軸快速進給	M/min	15	15	15
Z-axis rapid traverse rate Z軸快速進給	M/min	15	15	15
B-axis rapid traverse rate B軸快速進給	M/min	6	6	6
Number of tool station 刀具數	T	6 (Hydraulic turret 油壓刀塔)	6 (Hydraulic turret 油壓刀塔)	6/8 (Hydraulic turret 油壓刀塔)
Tool size 刀具尺寸	mm	□ 20x20	□ 20x20	□ 20x20
Machine dimensions (LxWxH) 機器尺寸	M	2.5x1.9x1.8	2.8x2.5x2.0	3.1x2.8x2.0
Voltage 電壓		220V/60HZ/3P	220V/60HZ/3P	220V/60HZ/3P
Power requirement 動力需求	kva	20	25	30
Weight 淨重	kg	3100	4500	6000

Standard accessories 標準配件

Model 型號	SBL-100T	SBL-180T	SBL-250T	Model 型號	SBL-100T	SBL-180T	SBL-250T
Collet chuck / 3-Jaw chuck 筒夾夾頭 / 3爪夾頭	5C / 5"	16C / 5"	16C / 20"	Air pressure system 空壓系統	○	○	○
Hydraulic cylinder 油壓缸	○	○	○	Three color warning light 警示燈	○	○	○
Hydraulic turret 油壓刀塔	○	○	○	Working lamp 工作燈	○	○	○
FANUC controller FANUC 控制器	○	○	○	Coolant system 切削水系統	○	○	○
Automatic lubrication system 自動潤滑系統	○	○	○	Tool and tool box 工具與工具箱	○	○	○
Full guard 全罩式板金	○	○	○	Wedge block 刀具墊塊	○	○	○
Machine base 機台本體	○	○	○	Leveling bolts and blocks 水平墊塊	○	○	○
Heat exchanger 熱交換器	○	○	○	Operation manual 操作手冊	○	○	○
Hydraulic system 油壓系統	○	○	○	Machine voltage: 220VAC / 60HZ / 3 phase 機器電壓: 220伏特 / 60赫茲 / 三相	○	○	○

Optional accessories 選配

▼ 5英寸油壓三爪夾頭
Hydraulic 5" 3-Jaw chuck

► 5英寸軟爪
5" Soft jaw



▲ 特製筒夾座含筒夾、夾頭與錐套 (5C, 16C)
Special made collet chuck w/collet and bush

▲ 鑽石滾光刀與刀桿
Diamond head burnishing tool holder and tool

► 鐵屑機
Chip conveyor



SELICA
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