QUALITY

Right Tool for your Job !

普慧刀把品質 Our Quality

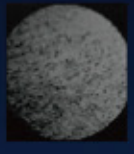
	材質 Material	硬度 Hardness	表面粗糙度 Surface Finish on Taper	深冷處理 Cryogenic Treatment	錐柄精度 Shank Quality	偏擺精度 Run-Out Tolerance	研磨設備 Grinding Machines	檢驗方式 Inspection	動平衡 Balancing
PARFAITE	Steep Taper NiCrMo HSK/ Premium Chucks Higher Grade	55~58 Hrc Depth of Min. 0.8 mm	Ra. 0.15 μm	-180 Degrees	AT3 or Better Than DIN69893	Same as Indicated in Catalogue	State of the Art from Swiss	100% Checked with Certified Gauge by Trained Technicians	Actual Balanced with Balanced Machines
Other	CrMo NiCrMo	50~55 Hrc Depth of Min. 0.6	Ra. 0.2 – 0.4 μm	Nil or Only Sub-Zero (-90)	AT4 or Out of DIN 69893	Often Different as Indicated in Catalogue	Normal Grinder	Radon Inspection with Non Certified Gaugeby Non Trained Employees	Only Pre-Balanced but Claimed Balanced

超冷處理 Cryogenic Treatment

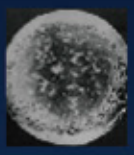
可將刀把內部殘留之沃斯田鐵 (AUSTENITE) 變成麻田散鐵 (MARTENSITE)，其可變態之組織可達97~98%。右圖為兩片同材質，但不同熱處理之金相圖。
刀把如經深冷處理, 其壽命及穩定度遠超過未處理之材質。
本公司產品經深冷處理之產品有 HY,CR,PFC 等。

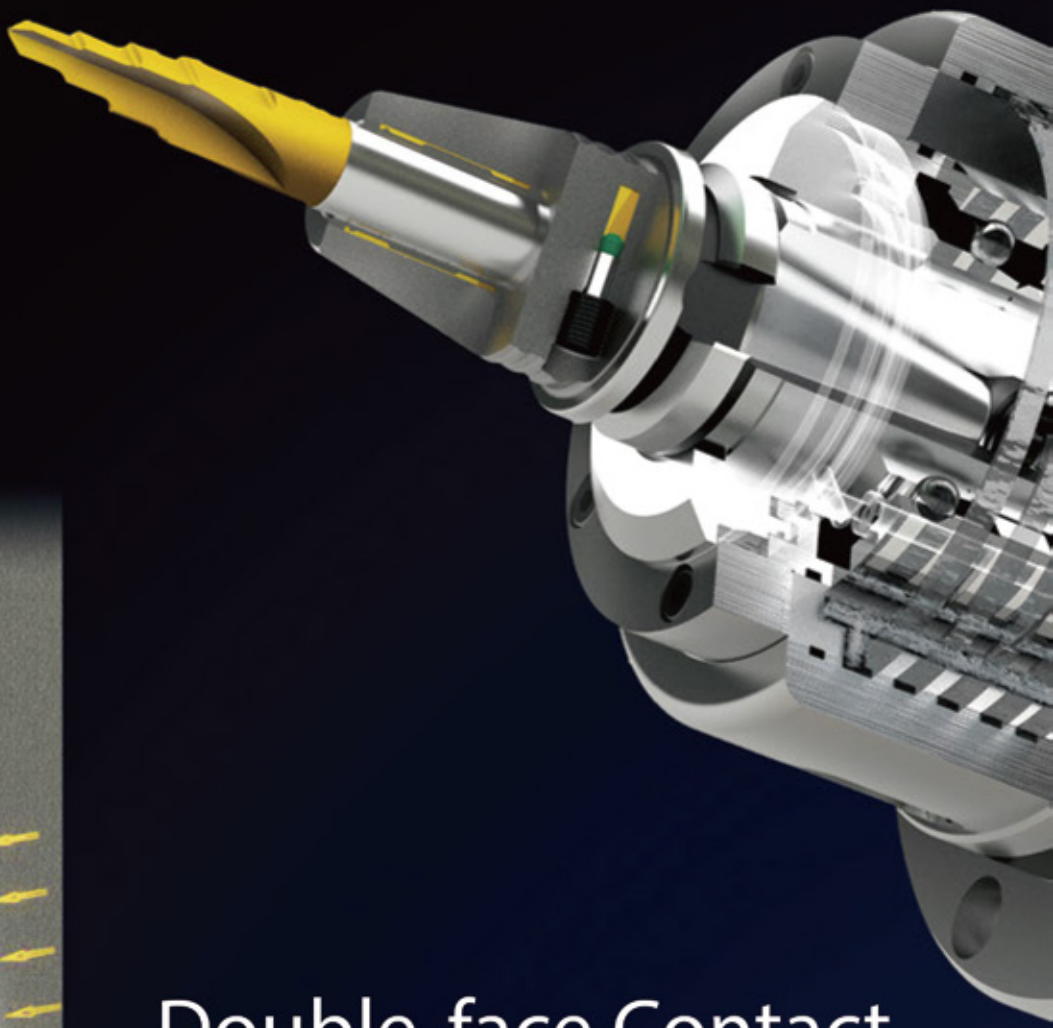
To eliminate the stress after quenching and machining,and also prevent thermal shock. The austenite almost fully transforms into martensite (around 97%~98%).Cryogenic treatment makes tool holders better wear resistance,no deformation,and no change in hardness over time to further improve the stability and life of tool holders.
Tool holders with cryogenic treatment are HY, CR, PFC etc.

經過超冷處理後金相圖
Constitution diagram after cryogenic treatment



未經過超冷處理之金相圖
Constitution diagram without cryogenic treatment





Double-face Contact

二面承靠系統

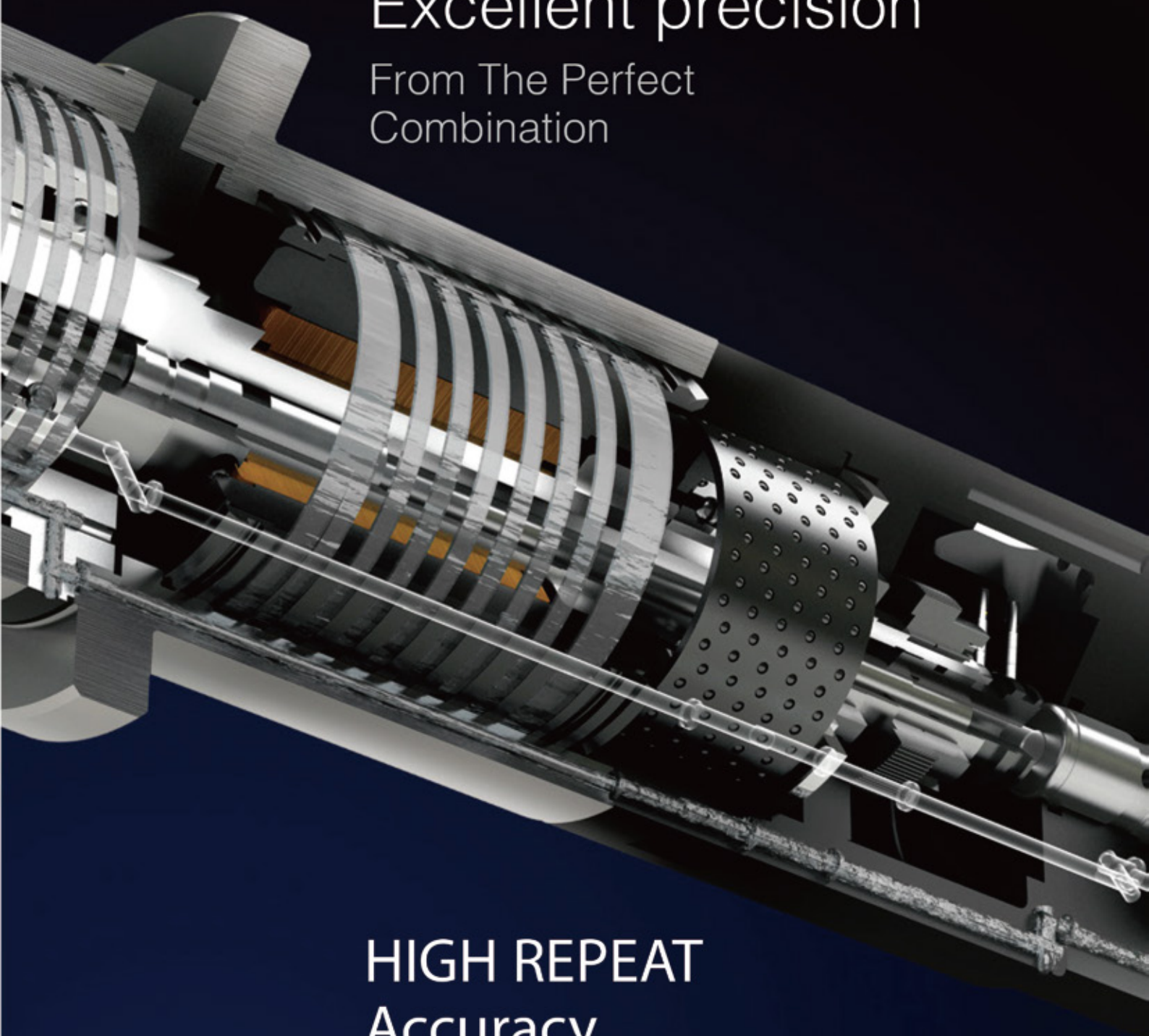
將刀把錐面與法蘭面兩面緊貼心軸，可提升刀把與心軸接觸率達114%，較一般刀把更適於高轉速的狀態，有利於獲得更穩定的軸向平行度和強化動態轉速下的剛性變化。

(選配細節歡迎來電洽詢)

卓越精度－源自完美結合

Excellent precision

From The Perfect Combination



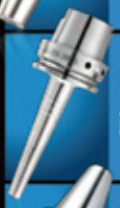
HIGH REPEAT Accuracy

高重複精度

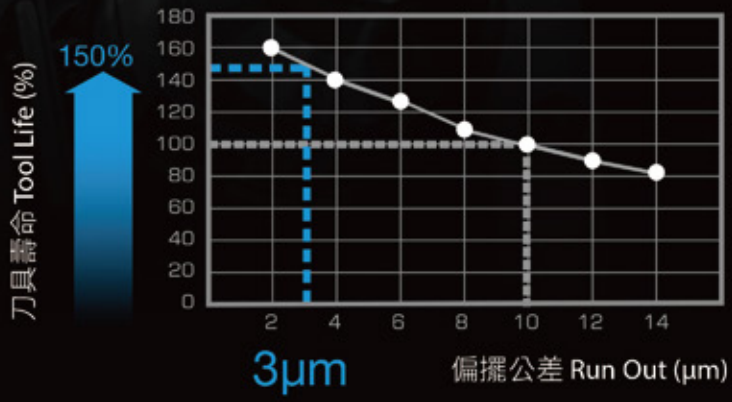
從旋轉件至刀具端的累積精度皆來自普慧的主軸與刀把，具有統一性的製造與檢測，相配件結合度高、品質穩定。
(高精度之選配組節歡迎來電洽詢)

PARFAITE

刀把特性比較表
Comparison Table

	精度 Run-Out	夾持力 Clamping Force	夾持範圍 Clamping Range	高速加工性 HSC	成本 Cost
 **HY** Hydraulic Chuck 油壓刀把	≦3μ	●●●	3-32mm	●●●●●	High 高
 **CR** Standard Shrink Fit Chuck 標準型熱縮刀把	≦3μ	●●●◖	4-32mm	●●●●●	Holder:Middle 刀把:中等 Equipment:High 週邊:高
 **SR** Slim Type Shrink Fit Chuck 細長型熱縮刀把	≦3μ	●●●◖	4-12mm	●●●●●	Holder:Middle 刀把:中等 Equipment:High 週邊:高
 **HER** HER Collet Chuck HER 筒夾式刀把	≦5μ	●●●●	1-20mm	●●●●●	Fair 合理
 **PFK** PFK Collet Chuck PFK 筒夾式刀把	≦5μ	●●●	1-25mm	●●●◖	Fair 合理
 **ERB / ERBR** ER Collet Chuck (Ball Bearing Nut) ER 筒夾式刀把 (鋼珠螺帽)	≦5μ	●●●	1-26mm	●●●◖	Fair 合理
 **PFC** Milling Chuck 強力銑刀刀把	≦10μ	●●●●◖	4-32mm	●	Middle 中等
 **SLE** Side Lock Chuck 側固式刀把	≦10μ	●●●●●	6-42mm	●	Low 低

刀把精度與刀具壽命比較表
Comparison Chart
Of Tool Holder Run-out To Tool Life



如上圖所示，以偏擺精度10μ為基準100%，當偏擺精度提昇至3μ時，相對的刀具壽命將可提昇為150%以上。

As the chart shows, if the run-out of 10μm with 100% tool life is used as the reference point, 150% increase of tool life will be the result if the run-out of tool holder has improve to 3μm.

高速加工在精加工時，建議使用有減震功能之刀把，且選擇短刃具圓角之刀具，並減少刀長伸出量，以傾斜角度和最少量潤滑(MQL) 加工來獲得最佳效果。

For finishing in HSM, we recommend to use the tool holder with vibration damping characteristic and also the cutting tool that has a shorter length with corner radius with shorter overhang to machine with inclination of the cutter in the feed direction together with Min. Quantity Lubrication to have the best performance.

高速加工相較於傳統加工，有著低切削深度但高轉速、高進給之特性。來達到高金屬移除率(減少生產時間、提高生產效率)之目標。因切削負荷較低，夾持力要求也也相對較小。故選擇高速加工用之刀柄時應注重其動平衡性及精度。

High Speed Machining has the characteristics of low depth of cut but high feed rate and high spindle r.p.m. to reach high material remove rate compares to conventional machining. The cutting load is also lighter. Therefore, the selection focus of tool holder for HSM is balancing and accuracy.

3μm
RUN-OUT

熱縮刀把

實現全方位超高精密加工夢想

SHRINK FIT CHUCK

SR 細長型
Slim Type

克服干涉加工！

PARFAITE

柄部 / Shank Type	
HSK-A	33
HSK-E	47
BT	57
SK	92

CR 標準型
Standard Type

刀具偏擺 ≤ 3μ
減少刀具磨耗，降低刀具費用
大幅提升面粗度

Run Out ≤ 3μ
Reduce tooling costs.
Better surface finish.

超強夾持力
粗加工或精加工皆可
Strong Clamping Force
Cood Roughing and Finish

一體肉厚式
剛性佳提高刀具壽命
High Rigidity
Longer tool life

超冷處理
防止變形保持精度
Cryogenic Treatment
Minimise the deformation and maintain the accuracy.

特殊材質
超長壽命
Special Material
Longer tool life

加熱機規格
Heater Specification

GTS-9000

Model / 規格	GTS-9000
Output / 加熱出力	10kw
Diameter / 刀具柄徑	≤ ø32mm（鎢鋼Carbide）
Size / 尺寸	W380xD405xH655mm
Weight / 重量	15.1kg
Electric current supply / 電壓	3相220v x 30A / 50 / 60Hz

3μm RUN-OUT

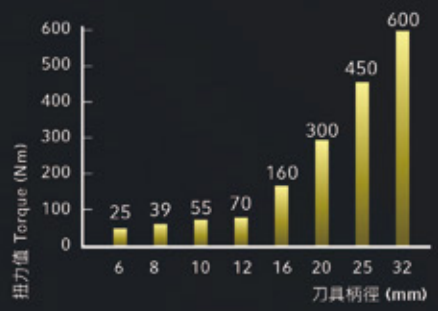
油壓刀把

無需昂貴設備亦能達到 3μ 加工夢想

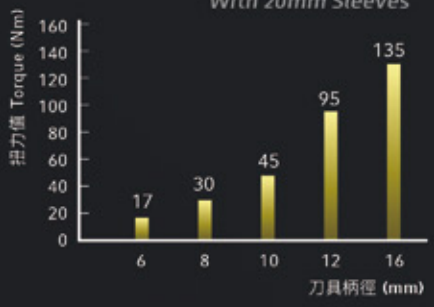
Hydraulic Chuck

夾持扭力
Clamping Torque

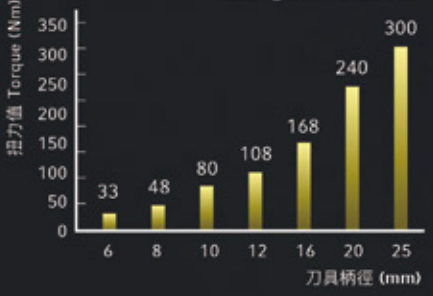
直接挾持
Direct clamping

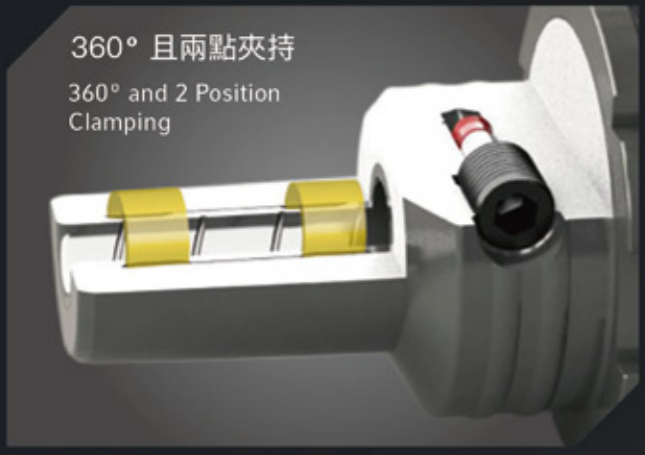


使用20mm筒夾挾持刀具
With 20mm Sleeves

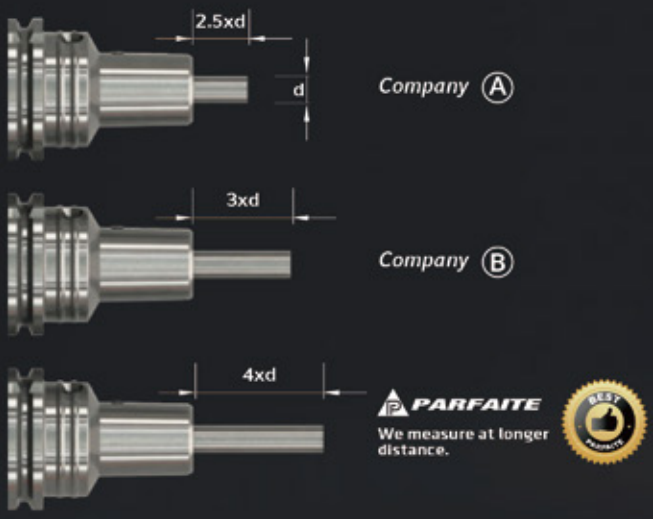


使用32mm筒夾挾持刀具
With 32mm Sleeves





同樣是3μ，但長度就是不同
The new difinition of 3μm at 4d



PARFAITE

刀具偏擺 ≤ 3μ
Run Out ≤ 3μ

減少刀具磨耗，降低刀具費用
大幅提升面粗度
刀具柄徑四倍長精度（最大80mm）
Raduce tooling casts.
Better surface finish
4 x dø (max.80mm)

重複精度佳
High Repeat Accuracy

節省校刀時間
Reduce the down-times to set the tool to required accuracy compare to collet chuck.

含油壓油具減震功能
Vibration Dampening

提升面粗度
Significantly increase the surface quality.

夾刀操作簡單
Rapid and Tool Changing

約10秒內完成達到3μ精度
大幅降低精加工或需換刀之準備
不需昂貴複雜的周邊設備
10 sec to reach the accuracy of 3μ.
Reduce setup time for finishing or the process the needs to change cutting tool oftenly.
No need of peripheral equipment.

超冷處理
Cryogenic Tratment

降低變形，保持精度
To minimize the deformation of tool holder and attain the accuracy.

柄部 / Shank Type

HSK-A	32
HSK-E	46
BT	56
SK	91
ISO	104

5μm RUN-OUT

HER刀把 PAT.

梯形螺牙的威力

精度
偏擺 ≤ 5μ

Precise
Run Out ≤ 5μ

防塵
結合防水墊圈（選配）

Dust /Chip Free
Together with Sealingg Disk (option)

全圓螺帽
高速時風切聲低

Fully Round Nut
Low Noise in High r.p.m.

-195°C 超冷處理
防止變形保持精度

-195°c Cryogenic Treatment
Minimise deformation and maintain the accuracy.

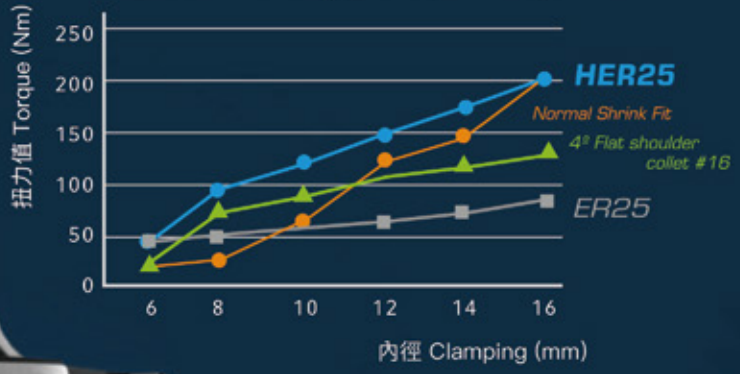
可中心出水及端面出水

Coolant Through
Jet coolant through

高扭力、夾持力強
比4°筒夾刀把約大1.45倍
比一般ER筒夾刀把約大2.3倍
（內徑12mm，如右表）

Strong Clamping Force
145% Stronger than 4°
For ø12, 230% Stronger than ER colllet chuck (as the right graph)

刀把夾持扭力比較
Transferable Torque of the HER System



如上圖以HER25為例所示，HER25夾持力優於熱縮、單邊4°平肩筒夾及傳統一般ER筒夾系統。
以HER25為例：
在內徑12mm時，夾持力比4°筒夾約大145%、比一般熱縮約大130%、比一般ER刀把約大230%。

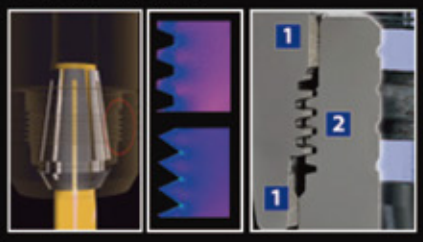
HER has a larger clamping forces compare to normal shrink fit chuck , 4° flat shoulder collet chuck and traditional ER collet chuck.
In the case of HER25:
For ø12, HER is 145% better than 4° flat shoulder collet chuck, 130% better than normal shrink fit chuck, and 230% better than ER25.

PARFAITE

HER COLLET CHUCK

柄部 / Shank Type	
HSK-A	36
HSK-E	49
BT	60
SK	93
ISO	105

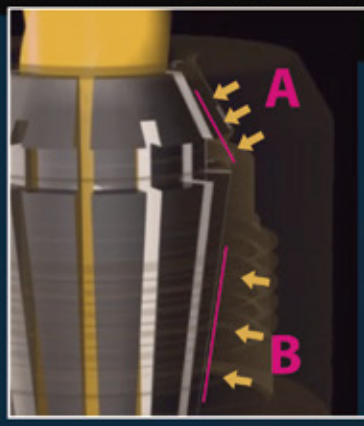
超完美精度 Unmistakable Precise



2倍長的超長導軌之特殊的構造 [1] 及梯形螺牙 [2] 可形成較大之傳導力，也大幅降低了摩擦力，因此，在鎖緊時，也確保螺帽在刀把的中心有完美的負載。還有其他高夾持力、高同心度、高重複精度優點，同時短螺紋的設計也節省組裝刀把的時間。

The special mechanism of extra long double-length guide (2) with trapezoidal thread (1) delivers a stronger torque transmitting power but reduces frictional force when tightening and also ensures the perfect centering of the nut on the chuck. Other then the benefits of high concentricity and repeatability with stronger clamping force, the design of shorter thread further reduces the time needed to assembly the chuck.

穩定性 / 三點兩面夾持的優勢 Stable



三點兩面夾持

• 夾持力平均分布在刀具柄徑
The distribution of clamping force on the gripped area of the cutting tool shank Even Distribution of clamping force on the gripped area

• HER系統的夾持力平均分布於A、B面。
The clamping force of HER system distributes evenly on A, B points

單面夾持

• 夾持力只分布在B面
Point B has clamping forces.

• A面夾持力較小，刀具在筒夾內發生斷刀進而造成整組刀把及筒夾損壞。
Point A has less clamping force. Cutting tool breaks easily inside the collet and resulting in total damage of the chuck.

耐久性 Durable

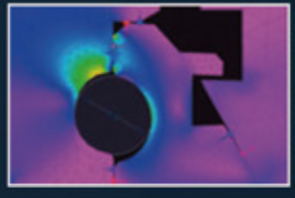
正常狀態
Normal type

長時間使用後
After long-time operation

鋼珠為自由排列，會有不規則現象，在高速迴轉時，不平衡現象會顯現出來，有轉速上的限制。
The ball bearing nut can lose its balance during high speed rotation because the steel balls inside it are not fixed; therefore, there is a limitation of the rotation speed.

鋼珠或螺帽本體其一硬度較高，長時間下鋼珠或螺帽本體易變形，而造成精度變差。
Because the hardness of steel balls is higher than the nut body, the steel ball can cause of the nut to deform which leads to inaccuracy and vibration during the operation after the nut has been used for a period of time, or improperly locked.

螺帽之組裝件會留有間隙，細微之切屑會從此隙縫侵入，造成螺帽損害。
There are small gaps among parts in ball bearing nut units, and during machine operation, small pieces of chips or dirt may fall in and cause the nut to be unstable or damaged.



螺帽本體為組合式，在鋼珠之部位為剛性最差處，在過度或長時間使用下，會產生崩裂現象。
Ball bearing nut is made up of individual parts, and the weakest part is where the steel balls located. This part may chip or crack after a long period of time or excessive of use.

HP 3μ級系列筒夾 / 扳手 / 螺帽

Grade HP = 3μ

替換接頭
Roller Bearing Head

扭力板手
Torque Setting Wrench

一體式全圓板手
Roller Bearing Wrench

出水型刀把選用說明
COOLANT TYPE TOOL HOLDER SELECTION

HSK 中心出水
Center-Through Coolant Type for HSK Shank

Coolant Pipe
出水管

HSK form A

HSK form E

BT 中心出水
Center-Through Coolant Type for BT Shank

Type C 拉桿
Pull Stud

Type RC 拉桿
Pull Stud

BT/ MAS 403 Form AD

BT 法蘭出水
Flange-Through Coolant Type for BT Shank

Type F 拉桿
Pull Stud

BT/ MAS 403 Form B

SK 中心出水
Center-Through Coolant Type for SK Shank

Type A 拉桿
Pull Stud

Type AR 拉桿
Pull Stud

SK/ DIN69871 Form AD

SK 法蘭出水
Flange-Through Coolant Type for SK Shank

Type BR 拉桿
Pull Stud

SK/ DIN69871 Form B

拉桿型式對照表 Comparison table of pull stud

	BT 刀把			SK 刀把		
	C	RC	F	A	AR	BR
中心出水孔 Coolant Hole	■	■		■	■	
附 O-Ring		■	■		■	■
BT30/SK40		■		■		■
BT40/SK40	■	■	■	■	■	■
BT50/SK50	■	■		■		■

HER 筒夾式刀把
HER Collet Chuck

ER/HER
出水型調整螺絲
Coolant Type Screw for ER/HER

HER 標準筒夾
HER Collet

HER用止水環
Sealing Disk for HER

HER 止水型螺帽
HER coolant type nut

HER止水筒夾
HER Sealing Collet

HER 標準型螺帽
Standard HER Nut

HER端面出水筒夾
HER Jet Coolant Collet

HER 標準型螺帽
Standard HER Nut

ER 系列筒夾式刀把
ER Collet Chuck

ER/HER
出水型調整螺絲
Coolant Type Screw for ER/HER

ER止水筒夾
ER Sealing Collet

ERB/ERBR/ER
螺帽
ERB/ERBR/ER Nut

PFC 強力銑刀刀把
Power Milling Chuck

PFC 出水型螺絲
Coolant Type Screw for PFC

PFC 出水型筒夾
Coolant Type Collet for PFC

HY 油壓刀把
Hydraulic Chuck

HY 出水型螺絲
Coolant Type Screw for HY

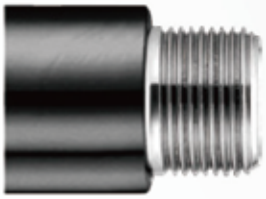
HY 出水型筒夾
Coolant Type Collet for HY

BT 中心出水
Center-Through Coolant Type for BT Shank

BT 法蘭出水
Flange-Through Coolant Type for BT Shank

螺帽選用說明
Description For Choosing Nut

Standard type ER collet chuck body



標準ER刀柄本體
Standard ER collet chuck body

ER-BR
Ball bearing nut for high speed

高速用鋼珠螺帽

Ball bearing nut are special machined and therefore suitable for high speed application.

鋼珠及螺帽皆經過特殊加工，可適用於高速加工

ER-B
Ball bearing nut

鋼珠螺帽

Better clamping force and accuracy thus more suitable for very precise machining.

可提昇夾持力及精度，適用於高精度加工

ER
Standard type

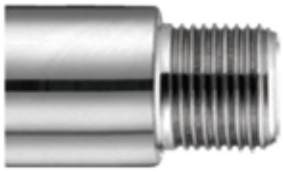
一般標準螺帽

Suitable for general machining.

一般場合使用

Run out ≤ 5μ can be obtained by yes of the PARFAITE HP grade 3μ collet.
配合PARFAITE HP級3μ 筒夾，偏擺可達≤5μ

Mini type ER collet chuck body



小徑ER刀柄本體
Mini type ER collet chuck body

ER-MS
Small outer diameter for high speed

高速用小徑螺帽

The outer diameter is same as ERM nut but the immersion is symmetrical. It is suitable for high speed machining.

外徑尺寸與ER–M相同，但尺寸對稱，可適用於高速加工

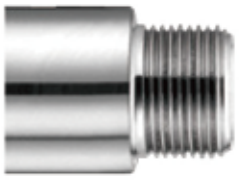
ER-M
Small outer diameter

小徑螺帽

The outer diameter of nut is smaller than standard nut. It is suitable in the situation of interference.

外徑尺寸較標準螺帽小，適用於有干涉之場合

Standard PFK collet chuck body



標準PFK刀柄本體
Standard PFK collet chuck body

PFK-S
High speed fully round nut

高速全圓螺帽

Better run-out and low noise when rotating thus more suitable for high speed application.

全圓結構風切聲小且偏擺較佳，適合高速加工

PFK
Standard type

一般標準螺帽

suitable for general machining.

一般場合使用

Run out ≤ 5μ can be obtained by yes of the PARFAITE P grade 3μ collet.
配合PARFAITE 3μ P筒夾，偏擺可達≤5μ

precision for professionals

PF-Clamp

The new tool assembly device

鎖刀座

主要特點

- 刀具組裝與分解過程極其穩定、安全。
- 使用輕巧，僅需較小的鎖緊力即可完成刀具裝卸。
- 不需其他工具，即可輕鬆完成各種規格更換。
- 可對應多種錐柄型式DIN、BT、CAT、HSK、CAPTO、KM、VDI。
- 採用更換式黃銅套來保護刀把的柄部。
- 鎖刀座採小體積設計，佔用面積僅140mmX100mm。

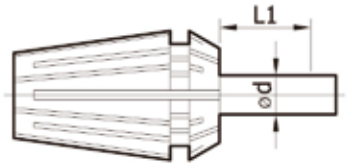
PF-Clamp

Sensationally simply – simply sensationally

The new tool assembly device

- Secure tool assembling
- minimum locking force needed
- Quick-change function for different taper interfaces - w/o additional tooling
- Accident free assembling of cutting tools
- Spring-loaded locking pin
- Mechanical security pin
- Better tool clamping thanks to optimum ergonomics
- Replaceable brass tool pots protect taper surface
- Required space 140 x 100 mm

ＥＲ筒夾偏擺精度
ER Collet Concentricity Charts



øD	L1	一般級 Normal	A 級
1.0-1.5	6	0.015	0.01
1.5-3.0	10	0.015	0.01
3.0-6.0	16	0.015	0.01
6.0-10.0	25	0.015	0.01
10.0-18.0	40	0.02	0.015
18.0-27.0	50	0.02	0.015
27.0-35.0	60	0.025	0.02

øD	L1	AA 級	HP 級
1.0-1.6	2-3	0.006	0.003
1.6-3.0	10	0.006	0.003
3.0-7.0	16	0.006	0.003
7.0-10.0	25	0.006	0.003
10.0-18.0	40	0.006	0.003
18.0-26.0	50	0.006	0.003
26.0-34.0	60	-	-

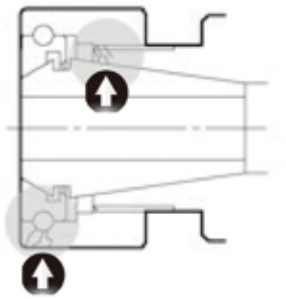
• 精度以筒夾整數為準

鎖緊力的限制

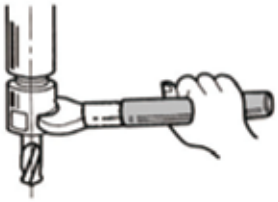
控制鎖緊力的大小，是正確使用刀把的重要關鍵，太大或太小都應盡量避免；鎖緊扭力太大會造成螺帽與刀把的損壞，太小則無法適當鎖緊刀具；鎖緊扭力大小可由扭力扳手去控制。

Tightening Force

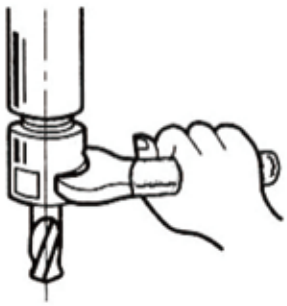
Controlling the tightening force is important when assembling tool holder. Over tightening force damages nut and tool holder; but, less force can not clamp the tool tightly. Torque wrench can adjust the tightening force to ensure the best result.



可能會產生裂痕的部位
Position can be cracked.



自行將扳手加長，造成鎖緊扭力過大
Standard with an extension lever causes the over tightening force.



正確方式(使用標準扳手)
Recommended as with a standard wrench.

ER刀把螺帽建議鎖緊扭力

Recommended tightening force for ER Collet Chuck

ER 刀把配合螺帽型式 (一般 / B,BR / M,MS)	kgf.cm 公制單位	N.m 牛頓單位
ER11 / B,BR / M,MS	200 / 200 / 120	19.6 / 19.6 / 12
ER16 / B,BR / M,MS	400 / 300 / 180	39.2 / 29.4 / 18
ER20 / B,BR / M,MS	600 / 360 / 230	58.8 / 35 / 23
ER25 / B,BR	600 / 410	58.8 / 40
ER32	700	68.6
ER40	800	78.4

PFC刀把螺帽建議鎖緊扭力
Recommended tightening force for PFC Collet Chuck

Specification PFC 刀把規格	kgf.cm 公制單位	N.m 牛頓單位
PFC20	420	41.2
PFC32	650	63.7

PFK刀把螺帽建議鎖緊扭力
Recommended tightening force for PFK Collet Chuck

Specification PFK 刀把規格	(ID) 內徑尺寸	kgf.cm 公制單位	N.m 牛頓單位
PFK6	3 / 4~6	100~200 / 200~300	10~20 / 20~30
PFK10	3 / 4~6 / 8~10	200~300 / 300~400 / 450~550	20~25 / 30~40 / 45~55
PFK16	4~6 / 8~10 / 12	400~500 / 550~650 / 650~750	40~50 / 55~65 / 65~75
PFK25	8~10 / 12	600~700 / 700~850	60~70 / 70~85

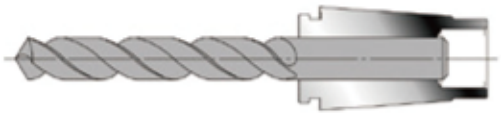
HER刀把螺帽建議鎖緊扭力
Recommended tightening force for HER Collet Chuck

Specification HER 刀把規格	(ID) 內徑尺寸	kgf.cm 公制單位	N.m 牛頓單位
HER16	1.0*	100	10
HER16	1.5~3.5*	250~300	25~30
HER16	4.0~10.0	500~550	50~55
HER20	1.0~3.0*	150~200	15~20
HER20	3.5~5.5*	300~350	30~35
HER20	6.0~9.0	500~550	50~55
HER20	9.5~13.0	700~750	70~75
HER25	1.0~3.0*	250~300	25~30
HER25	3.5~6.5*	350~400	35~40
HER25	7.0~10.0	550~600	55~60
HER25	10.5~16.0	800~900	80~90
HER32	2.0~3.0*	300~350	30~35
HER32	3.5~6.5*	550~600	55~60
HER32	7.5~15.5	1100~1200	110~120
HER32	16.0~20.0	1300~1400	130~140

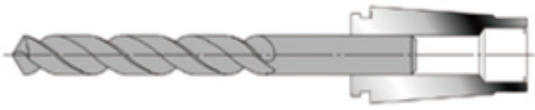
* 標記的夾持直徑是帶有較短夾持孔的夾緊直徑，其他夾持直徑均為通孔。

Clamping diameter with * mark have a shorter clamping length, the rest are full length clamping.

ER/PFK刀把使用注意事項
Caution for using ER / PFK Collet Chuck

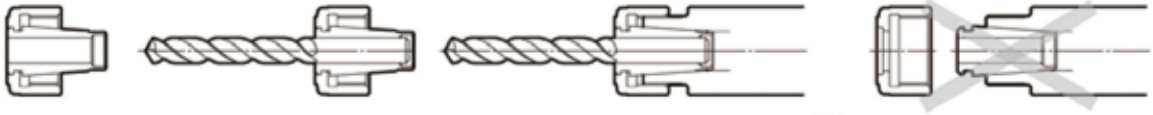


正確方式
OK !



刀具未能確實裝入筒夾中
Not OK ! (Tool is not inserted into bottom.)

ER/PFK筒夾正確安裝方法
Instruction for setting ER/PFK Collet



①.將筒夾裝入螺帽
Set PFK Collet into PFK Nut

②.置入刀具
Put tool into PFK Collet

③.再鎖入刀把中
Screw them into tool holder

錯誤!!
不可先將筒夾裝入刀把再鎖入螺帽
ERROR!!
Do not set PFK Collet into tool holder first and then screw the nut.

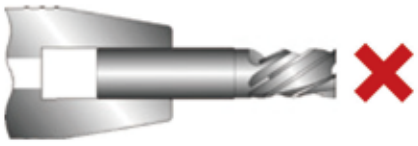
PFK筒夾正確取出方法
Instruction for disassembling PFK Collet

①.將塑膠套套入筒夾中
Put the puller in PFK Collet

②.取出筒夾
Take out PFK Collet

油壓刀把使用注意事項
Caution for using Hydraulic Chuck

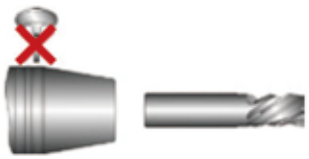
正確使用情形 Correct



刀具必須推到底，不可有間隙
Please insert the tool to the bottom.

刀具柄徑公差必須是h6
The tolerance of tool shank must be H6.

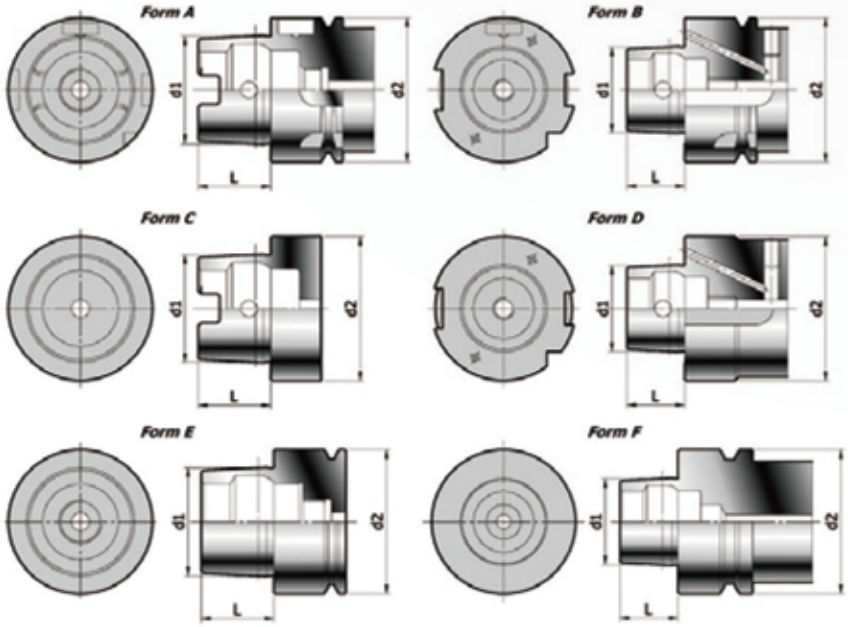
刀具柄徑必須是全圓周，不可有缺口
The tool shank must be fully cylindrical.



當刀具取出後，請勿作鎖緊的動作，否則將導致內襯因油壓擠壓而變形。
Do Not operate clamp bolt without tool in the chuck, or the chuck will be damaged.

DIN 69893 規格

DIN 69893



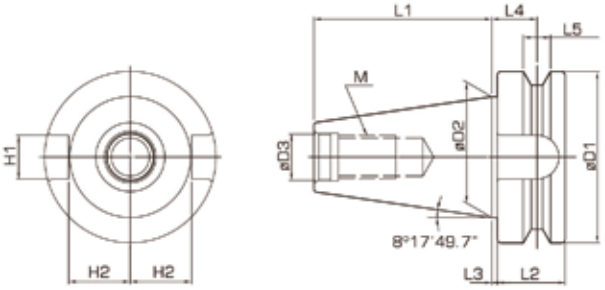
規格 Model	d2 mm	d1 mm	L mm
HSK25 A/C/E	25	19	13
HSK32 A/C/E	32	24	16
HSK40 A/C/E	40	30	20
HSK50 A/C/E	50	38	25
HSK63 A/C/E	63	48	32
HSK80 A/C/E	80	60	40
HSK100 A/C/E	100	75	50

規格 Model	d2 mm	d1 mm	L mm
-	-	-	-
-	-	-	-
HSK40 B/D/F	40	24	16
HSK50 B/D/F	50	30	20
HSK63 B/D/F	63	38	25
HSK80 B/D/F	80	48	32
HSK100 B/D/F	100	60	40

HSK	應用 Typical Applications	存在規格 Exist									DIN文件 DIN
		25	32	40	50	63	80	100	125	160	
A	General machining, high bending loads and moderate torque, automatic tool change. 一般加工、高扭力承載、中等轉速、自動換刀		★	★	★	★	★	★	★	★	DIN 69893-1 DIN 69063-1
B	Stationary application, moderate bending loads, high torque, special applications, automatic tool change. 固定的應用方式、中扭力承載、高等轉速、自動換刀			★	★	★	★	★	★	★	DIN 69893-2 DIN 69063-2
C	General machining, high bending loads and moderate torque, manual tool change (Ref. Tape A). 一般加工、高扭力承載、中等轉速、手動換刀		★	★	★	★	★	★			DIN 69893-1 DIN 69063-1
D	Stationary application, moderate bending loads, high torque, special applications, manual tool change. (Ref. Tape B) 固定的應用方式、中扭力承載、高等轉速、手動換刀			★	★	★	★	★	★		DIN 69893-2 DIN 69063-2
E	High speed application, light and fast spindles, low bending moments and torque, automatic tool change, easy balance. 高等轉速、高速量切削、低扭力承載、自動換刀、易平衡	★	★	★	★	★					DIN 69893-5 DIN 69063-5
F	Moderate speed application, machining of soft materials low bending moments and torque, automatic tool change, easy balance. 中等轉速、加工軟質材料、低扭力、自動換刀、易平衡				★	★	★				DIN 69893-6 DIN 69063-6

BT 錐柄規格尺寸

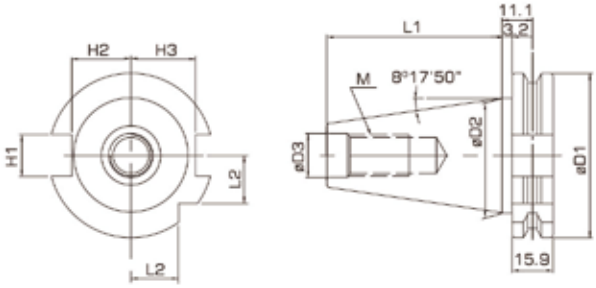
JIS B6339 (MAS 403 BT)



BT NO.	ØD1	ØD2	ØD3	L1	L2	L3	L4	L5	H1	H2	M
BT30	46	31.75	12.5	48.4	20	2	13.6	8	16.1	16.3	M12
BT40	63	44.45	17	65.4	25	2	16.6	10	16.1	22.6	M16
BT50	100	69.85	25	101.8	35	3	23.2	15	25.7	35.4	M24

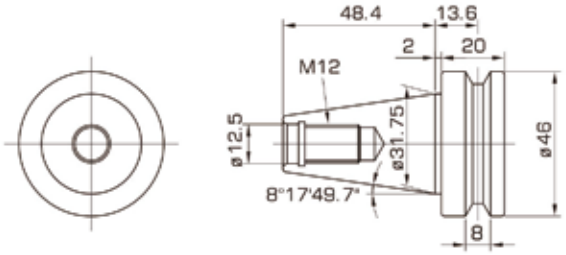
SK 錐柄規格尺寸

DIN 69871

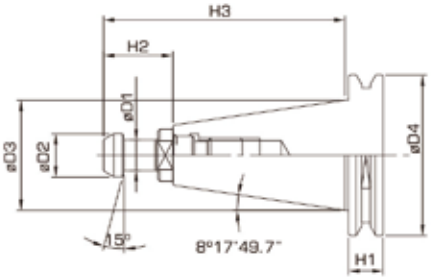


SK NO.	ØD1	ØD2	ØD3	L1	L2	H1	H2	H3	M
SK40	63.55	44.45	17	68.4	18.5	16.1	22.8	25	M16
SK50	97.5	69.85	25	101.75	30	25.7	35.5	37.7	M24

BT30N 錐柄規格尺寸



ISO 錐柄規格尺寸



ISO.NO	D1	D2	D3	D4	H1	H2	H3
ISO20	6	9	22.225	33	8	12	45.3
ISO25	7	10	25.4	37	8	16	55.7
ISO30	9	13	31.75	50	15.9	24	71.8