



shaping your dreams



螺紋規系列

Vol.1

# GAUGE



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#### ⚠ 安全使用注意事項

- 使用工具時，工具可能有破損的風險，請務必使用上蓋、護目鏡、安全鞋等等防護物品，以策安全。
- 請勿空手碰觸切屑與切刃。
- 工具切刃銳利度下降時，請停止使用。
- 發生異音、異常震動時，請立刻停止使用。
- 請勿修改工具樣式。
- 加工前，請確認工具尺寸。

#### ⚠ Safe use of cutting tools

- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges and chips with bare hands.
- Stop cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any abnormal cutting sounds.
- Do not modify tools.
- Please use appropriate tools for the operation. Check dimensions to ensure proper selection.

#### 大寶精密工具代理店

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Tool specifications are subject to change without notice.
- 本目錄內容請勿任意轉載及複製。

2020.06.2000



■ 量規介紹 TYPE OF GAUGES

螺紋用限界規 LG ( Limit Gauges for Screw Threads )



- ▶ 螺紋用限界規由通端 (GO) 及止端 (NO GO) 檢查螺紋。  
Screw threads are inspected according to two limits defined by GO and NO GO gauges.
- ▶ 檢查時不另外施加過大的力氣，使得通端旋入通過製品螺紋全長，止端僅能旋入不超過2圈，即為合格螺紋(ANSI規格旋入3圈以內)。  
Screw threads pass the inspection if the GO gauge, when screwed by hand without using excess force on the thread goes over the entire thread length, and if the NO GO gauge, when screwed by hand without using excess force, enter on both sides by not more than two turns of thread (not more than three turns of thread in ANSI).
- ▶ 在舊JIS規格內，依使用目的分為：  
The Previous JIS gauge system provides two categories of NO GO gauges depending on the purpose of usage:
  - 工作用 (記號為 GPWP、GRWR)  
For machine work (The symbols are GPWP, GRWR)
  - 檢查用 (記號為 GPIIP、GRIR)  
For inspection (The symbols are GPIIP, GRIR)
- ▶ ISO導入後的JIS (ISO等級)則無區分使用目的 (記號為 GPNP、GRNR)。  
The JIS (ISO) has no purpose of usage. (The symbols are GPNP, GRNR)

限界無牙栓規 PG ( Plain Limit Gauges )



- ▶ 確保下孔 (孔徑) 與軸之互換性所必要之栓規。  
Plain limit gauges are used to inspect hole or shaft dimensions.
- ▶ 該量規以孔和軸的上公差和下公差為測量基準。  
The inspection of gauge is based on the upper and lower tolerances of holes or shafts

標準螺紋規 SG ( Standard Screw Thread Gauges )



- ▶ 以螺紋標準牙形及標準尺寸，製成之螺紋規。  
Standard screw thread gauges are constructed correctly to the basic thread and dimensions.
- ▶ 螺紋栓規、螺紋環規可以不另外施加過大的力氣，毫無間隙嵌合搭配為1組。也稱為：螺紋有效徑基準規。  
One set of standard screw thread gauges comprises a screw thread plug gauge and a screw thread ring gauge that fits each other without using excess force and play. Also called "pitch diameter gauge".

管用螺紋規 LG、TG ( Gauges for Pipe Threads )



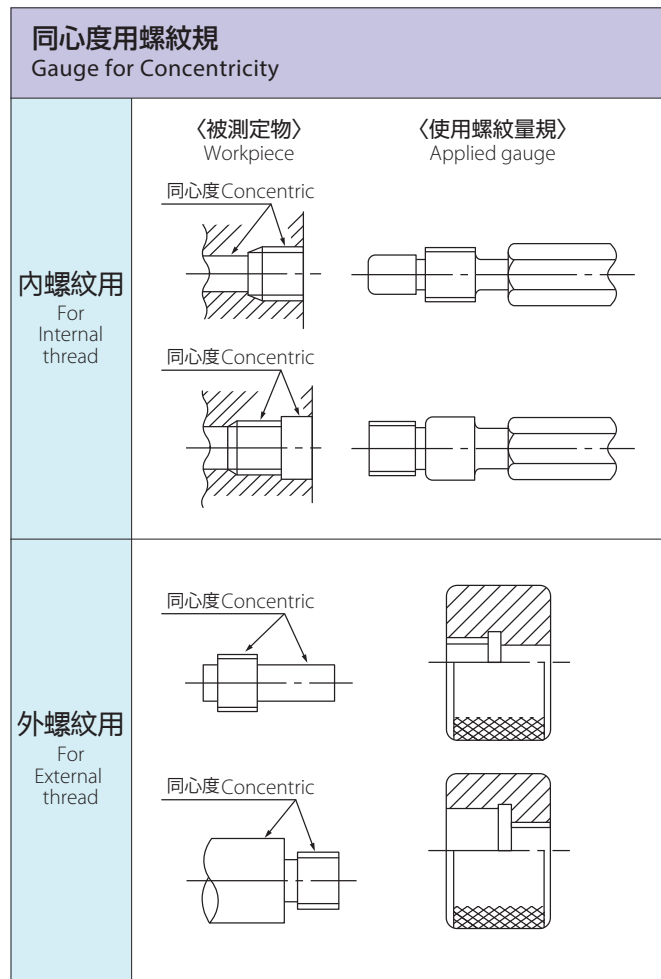
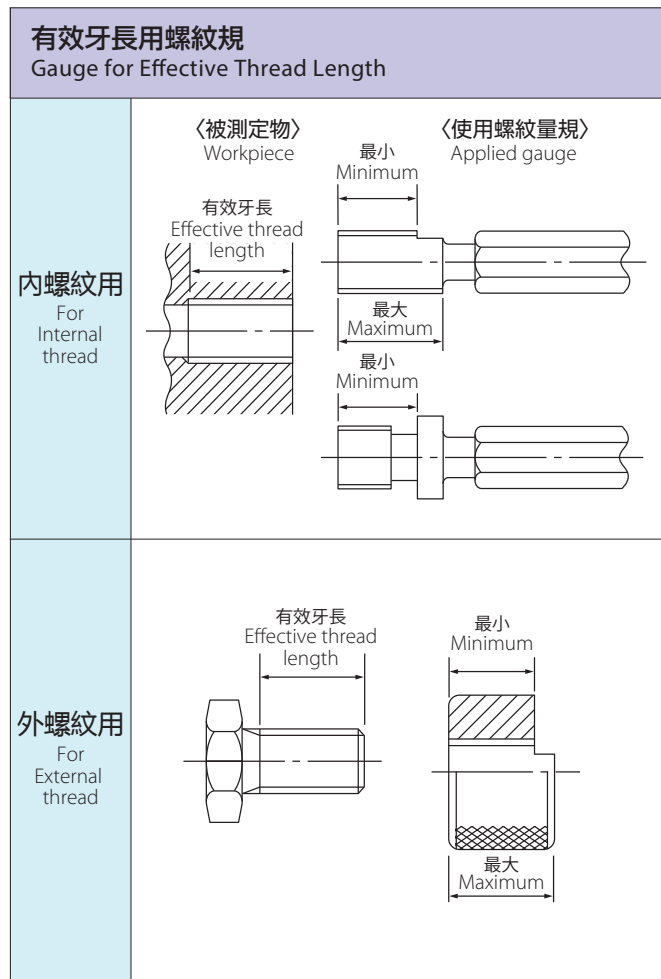
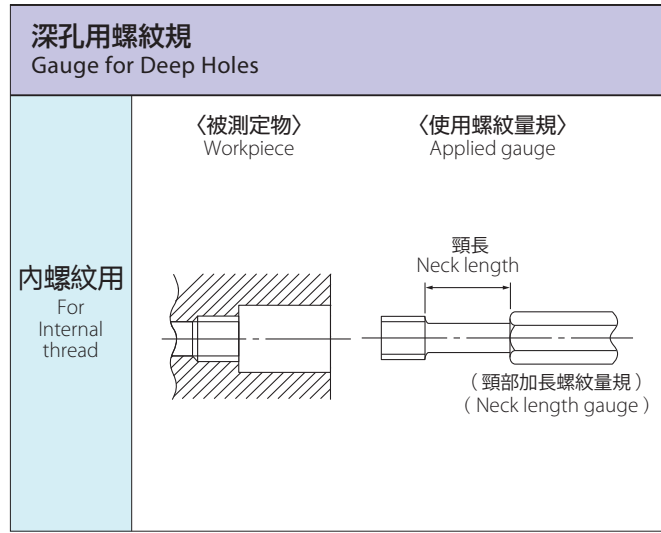
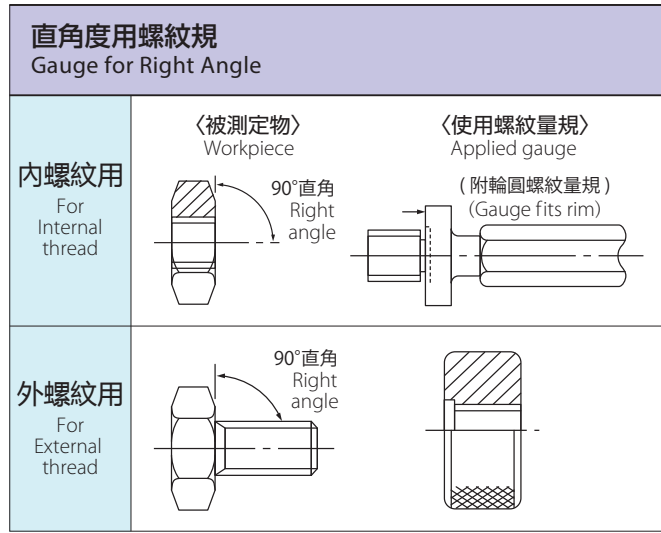
- ▶ 管用螺紋規分為管用平行螺紋及管用錐形螺紋2種。  
There are two types of pipe thread gauges: parallel pipe threads and taper pipe threads.
- ▶ 管用平行螺紋規的使用方法與螺紋用限界規相同。  
Parallel pipe thread gauge is used in the same way as limit gauges for screw threads.
- ▶ 管用錐形螺紋規在端面的地方有缺口，檢測螺紋的末端停在缺口範圍內即為合格。  
The notch in the end of a taper thread is mentioned below. When a taper thread plug or ring gauge is screwed up into or on an internal or external taper thread by hand, the pipe or pipe fitting passes the inspection if its end is within the range defined by the notch.
- ▶ 在ANSI規格中為了更精確表示基準尺寸的位置，故有3段或4段缺口。(如 NPT、NPTF)  
In the ANSI, in order to more accurately indicate the position of the reference size, there are 3 or 4-step notches. (E.g. NPT, NPTF)

基準規 PG-M ( Standard Gauges )、RG-M ( Master Gauges )



- ▶ 使用於量規或比較測定器 (例如：氣缸規、指針測微器、空氣分厘卡、指針規等測定機器) 的尺寸設定或點檢管理的尺寸基準。  
Standard gauges are used as a reference for dimensioning and maintenance of other gauges and comparators (cylinder gauges, microindicators, air micrometers, and dial gauge-based measuring instruments).
- ▶ 基準規有標準栓規及標準環規，不直接使用於製品上。  
※PG-M為特殊品  
Standard gauges include master plug and master ring gauges. These gauges are not to be directly used with products (parts).  
※PG-M: Special order item

■ 特殊量規介紹 Special Gauges



■ 螺紋用限界規之種類與記號 Symbols of Limit Gauges for Screw Threads

檢查之螺紋 Screw thread to be inspected	ISO 導入 JIS 規格之量規 ISO		舊 JIS 規格之量規 JIS		
	種類 Gauge type	記號 Symbol	種類 Gauge type	記號 Symbol	
外螺紋 External thread 	有效徑 Pitch diameter	通端螺紋環規 GO screw ring gauge	GR	通端螺紋環規(工作用、檢查用) GO screw ring gauge	GR
		止端螺紋環規 NO GO screw ring gauge	NR	工作用止端螺紋環規 NO GO screw ring gauge for machine work	WR
	外徑 Major diameter	外徑用通端環規 Plain GO ring gauge for major diameter	PR 通 PR go	—	—
		外徑用止端環規 Plain NO GO ring gauge for major diameter	PR 止 PR not-go	—	—
		外徑用卡規 Plain calliper gauge for major diameter	PC	工作用限界卡規 Limit snap gauge for machine work	WS
	內螺紋 Internal thread 	有效徑 Pitch diameter	通端螺紋栓規 GO screw plug gauge	GP	通端螺紋栓規 (工作用、檢查用) GO screw plug gauge
止端螺紋栓規 NO GO screw plug gauge			NP	工作用止端螺紋栓規 NO GO screw plug gauge for machine work	WP
內徑 Minor diameter		內徑用栓規 Plain plug gauge for minor diameter	PP	工作用限界栓規 Limit plug gauge for machine work	WM
				檢查用限界栓規 Limit plug gauge for inspection	IM

■ 點檢用量規之種類與記號 Symbols of Gauges for Check

點檢之螺紋用量規 Limit gauges for screw threads to be inspected	ISO 導入 JIS 規格之量規 ISO		舊 JIS 規格之量規 JIS	
	種類 Gauge type	記號 Symbol	種類 Gauge type	記號 Symbol
通端螺紋環規 GO screw ring gauge	通端點檢螺紋栓規 GO check plug for GO screw ring gauge	GRGF	—	—
	止端點檢螺紋栓規 NO GO check plug for GO screw ring gauge	GRNF	—	—
	—	—	通端嵌合點檢螺紋栓規 Screw plug gauge for checking fit of GO side	GF
止端螺紋環規 NO GO screw ring gauge	磨耗點檢螺紋栓規 Wear check plug for GO screw ring gauge	GW	通端磨耗點檢螺紋栓規 Screw plug gauge for checking wear of GO side	GW
	通端點檢螺紋栓規 GO check plug for NO GO screw ring gauge	NRGF	—	—
	止端點檢螺紋栓規 NO GO check plug for NO GO screw ring gauge	NRNF	—	—
	—	—	工作用止端螺紋栓規 Screw plug gauge for checking fit of NO GO side for machine work	WF
磨耗點檢螺紋栓規 Wear check plug for NO GO screw ring gauge	NW	—	檢查用止端嵌合點檢螺紋栓規 Screw plug gauge for checking fit of NO GO side for inspection	IF
		—	—	—

■ 管用螺紋記號說明 Symbols of Pipe Threads

一般常見的管用螺紋及基本的組合方式上，可分為以下：(以英式為例)  
Pipe threads and basic combination as below: (Take Old UK standard as an example)

種類 Type	外螺紋 External thread	內螺紋 Internal thread
耐密結合作 For pressure-tight joints (Taper pipe)	R (PT)	Rc (PT)
		Rp (PS)
機械結合作 For mechanical joints (Parallel pipe)	G (PF)	G (PF)

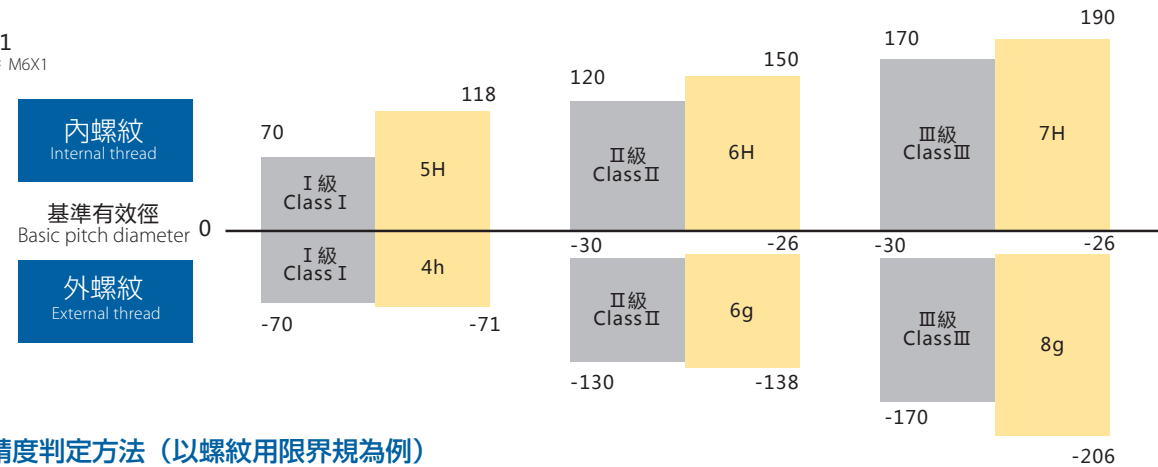


※ ( ) 內為舊 JIS ( ) Previous JIS  
 ※ 目前 Rc、Rp、G 所使用的規範為 ISO 導入 JIS；而 PT、PS、PF 所使用的舊 JIS 也沒有消失、可稱為前 JIS、或 JIS 附屬書。  
 ※ Thread symbols "Rc" "Rp" and "G" used in JIS (ISO). "PT" "PS" and "PF" used in the previous JIS edition are specified in the Appendix to the standard.

■ JIS (ISO 等級) 與舊 JIS 之差異與對應關係 Differences between JIS (ISO) and previous JIS

	JIS (ISO)	舊 JIS Previous JIS
外螺紋 External thread	4h	Class I
	6g	Class II
	8g	Class III
內螺紋 Internal thread	5H	Class I
	6H	Class II
	7H	Class III

例：M6X1  
For example: M6X1



■ 螺紋精度判定方法 (以螺紋用限界規為例)

How to Inspect Thread Limit (Take Limit Gauges for Screw Threads for example)

通常螺紋用限界規是由通端及止端所組成一組的量具。  
Limit gauges for screw threads are commonly formed with GO and NO GO side as a set.

**通端 GO side**  
 ▶ 檢測時，不另外施加過大的力氣，使通端全部旋入，通過螺紋全長。  
 When screwed by hand without using excess force, goes over the entire thread length.

**止端 NO GO side**  
 ▶ **【JIS (ISO 等級)】**  
 檢測時不另外施加過大的力氣，僅能旋入不超過 2 圈即停止。  
 When screwed by hand without using excess force, enter on both sides by not more than two turns of thread.  
**【舊 JIS】**  
 檢測時不另外施加過大的力氣，僅能旋入 2 圈以內即停止。  
 When screwed by hand without using excess force, enter on both sides by within two turns of thread.

■ 氮化鈦處理 螺紋用限界規 TIN Coated Limit Gauges for Screw Threads

TIN-LG

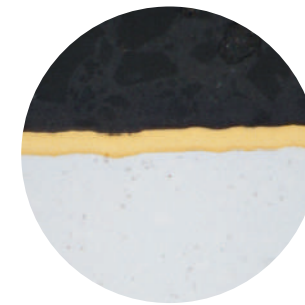


■ 採用高品質 TiN 表面處理  
Adoption of High Quality TiN Coating

- 廠內專用 PVD 表面處理設備加工。  
Exclusive PVD coating machine.
- 完整掌控鍍膜品質與螺紋精度。  
Precisely controlled quality of coating and thread limit.

鍍膜表面平滑度 Surface roughness	
TOSG	他牌 OTHERS
表面平滑 SMOOTHNESS	液滴較多 MORE DROPLET

■ 耐磨性提升、增加量具壽命 Better Wear Resistance, Longer Tool Life



- TiN 後牙山面表面更光滑，並且提升表面硬度，耐磨效果更顯著。  
TiN coating produces smoother surface, also increases surface hardness and wear resistance.
- 壽命比沒有表面處理的一般牙規高 2 倍以上。  
Tool life increases two times longer and more compare to usual gauge.

鍍膜種類 Coating Type	鍍膜顏色 Coating Color	硬度 (Hv) Hardness	摩擦係數 Coefficient of Friction	表面粗度 (Ra) Surface Roughness	標準膜厚 (μm) Coating Thickness
TiN 單層 TiN single-layered	金色 Gold	2000	0.4	0.15~0.30	2~4

■ 磨耗狀態可直接目視判斷 Wear Condition can be Analyzed Visually

- 長期間檢驗後，螺紋可以明顯看出鍍層剝落。  
After long times of use, the flaking of coating can be seen clearly.
- 依照剝落程度的多寡，提早進行牙規精度校正，避免發生不良。  
Based on the amount of flaking, gauge can be calibrated beforehand to avoid any defectives.
- ※ TIN-LG 可依照客戶指定螺紋規種類、精度、形狀進行客製化生產。  
TIN-LG can be customized according to customers' needs of thread gauge types, thread limits, and dimensions.

新品·無磨耗 Unused, no flaking	使用磨耗·鍍層剝落 Coating flaked after use



關於TAF認證大寶校正實驗室 About TAIHO Calibration Laboratory

TAF財團法人全國認證基金會  
Taiwan Accreditation Foundation (TAF)

所謂『TAF全國認證基金會Taiwan Accreditation Foundation』，其主要任務即是為全國各工商業界建立符合國際規範以及公正、獨立、透明之認證機制，並建構符合評鑑制度之發展環境，以滿足顧客(政府、工商業、消費者等)之需求，提供全方位認證服務。而本公司之TAF長度校正實驗室所保有之量測、校正等技術皆已達到TAF機構的各項評鑑認證與要求，因此技術水平已至國家級實驗室標準。

Taiwan Accreditation Foundation (TAF) is founded to promote economic and social development, and provide impartial, objective and independent third party accreditation service in compliance with international standards. The mission of TAF is establishing conformity assessment bodies accreditation schemes suit the country and the industries, as well as to develop a comprehensive and coherent conformity assessment accreditation system in Taiwan. TAIHO calibration laboratory have reached the various assessment certifications and requirements of the TAF, so the technical level has reached national laboratory standards.

注意事項 Caution

1. 校正時間：  
一般件：8~14天(不含休假日)  
急件：4天以內  
Calibration time:  
General condition: 8~14 days (Excluding holidays)  
Urgent dispatch: Within 4 days
2. 送件請保持功能正常及清潔並包裝妥善，以免震動與外觀破損。  
Please keep the condition of products normal, clean and well-packed to avoid vibration and damage to the appearance.
3. 送件必須無碰傷、腐蝕或銹斑等不良現象。  
The products must be free from bumps, corrosion or rust spots.

服務項目 Service Items

無牙栓規、螺紋栓規之校正。  
Calibration of plain gauge and plug gauge for screw threads.

無牙栓規校正 Calibration of Plain Gauge

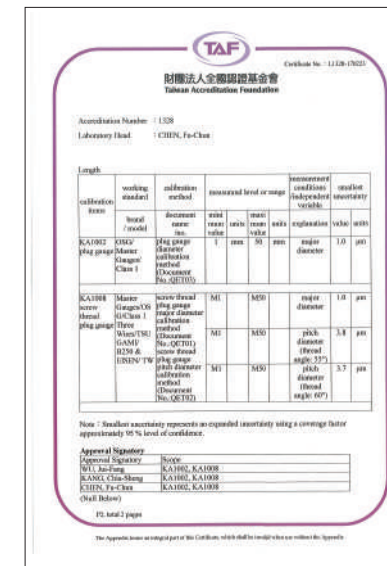
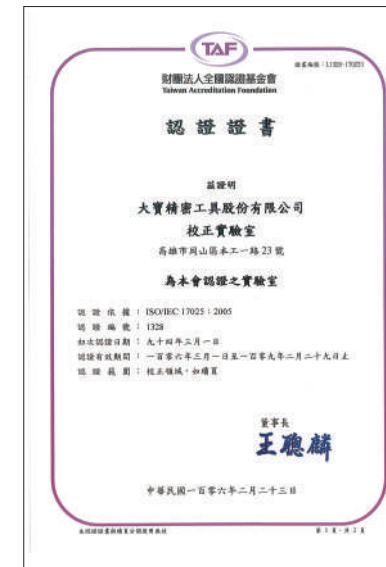
類型 Type	校正項目 Calibration item	校正範圍 Calibration range(mm)	擴充不確定度 Expanded uncertainty(μm)
無牙栓規 Plain gauge	外徑 Major diameter	1~50(mm)	1.0(μm)

螺紋栓規校正 Calibration of Plug Gauge for Screw Threads

類型 Type	校正項目 Calibration item	校正範圍 Calibration range(mm)	擴充不確定度 Expanded uncertainty(μm)
螺紋栓規 Plug gauge for screw threads	外徑 Major diameter	1~48(mm)	1.1(μm)
	有效徑 Pitch diameter	1~50(mm)	牙山角度 55°: 4.0(μm) Thread angle 55°: 4.0(μm) 牙山角度 60°: 3.8(μm) Thread angle 60°: 3.8(μm)

國際級校正品質與認證 International Calibration Quality and Certification

- 本公司秉持品質第一的一貫政策，以提供客戶良好品質的產品及服務為使命。  
TAIHO adheres to the consistent policy of quality first, with the mission of providing customers with good quality products and services.
- 本公司所製作及販賣的無牙栓規、螺紋栓規、螺紋環規，規格齊全，在庫存完備，敬請選用。  
The specifications of plain gauges, plug and ring gauges for screw threads produced and sold by our company are complete in the warehouse.
- 本公司設有栓規及螺紋栓規的校正實驗室並取得TAF國家級認證資格。  
TAIHO has a calibration laboratory for plain gauges and plug gauges for screw threads, and has obtained TAF national certification.



校正報告書樣本  
Sample of calibration report



### ■ 螺紋量規之正確使用及保養方法

#### Correct Use and Maintenance Method of Gauges for Screw Threads

#### ■ 使用方法 Instructions

**新品** 由密封袋取出螺紋規，並洗滌附著之防銹油，再用乾淨之乾布擦乾後，檢視螺紋部是否有傷痕或生銹，經確認完好後再使用。

New Products Take out the gauge from its sealing bag, wipe anti-rust oil off the gauge by a clean wiper, check whether the thread part is damaged or rusted, and use it after confirming that it is intact.

**使用過產品** 如果發現有碰傷或生銹，可用細油石修整後再使用。同時檢查工件螺紋，也應該洗滌乾淨除去切屑、毛邊或灰塵後，再使用螺紋規檢查。

Used Products If any bump or rust were founded on the products, it can be reused after polished by microstone. Meanwhile, the thread to be inspected should also be cleaned to remove chips, burrs or dust, and then inspected by the gauge.

#### ■ 螺紋規區分 Distinction of Gauges for Screw Threads

- 通常螺紋栓規通端(GO)螺紋較長，而止端(NO GO)較短，且柄部有辨識用的溝槽。  
In general, the GO side of plug gauge for screw thread is longer, NO GO side is shorter and the handle has a groove for identification.
- 而螺紋環規通端(GO)較厚，止端(NO GO)較薄，同時也有辨識用的溝槽。  
The GO side of ring gauge for screw thread is thicker, NO GO side is thinner, and it has a groove for identification.
- 因為有記號區分，因此螺紋規的通端、止端，很容易區分。  
Therefore, it's easy to distinguish between GO side and NO GO side of the limit gauge for screw threads.

#### ■ 使用上注意事項 Caution

1. 螺紋規使用時，應注意洗滌防銹油及灰塵雜物。  
Before using gauge, clean away anti-rust oil or dust.
2. 被測定物也應洗滌乾淨，去除附著切屑、毛邊及雜物。  
Workpiece should also be cleaned to remove chips, burrs and debris.
3. 螺紋規使用時應輕輕地，並很順暢地旋入。不可用力、勉強旋入。  
Limit gauge for screw threads should be gently and smoothly screwed in when used. Do not screw in with force.
4. 使用時應注意放置位置，以防掉落及碰傷。  
Pay attention to the location when using to prevent falling and injury.

#### ■ 使用後之處理 After Use

1. 清洗切屑雜物後，塗抹防銹油。  
After cleaning the chips, be sure to smear over anti-rust oil.
2. 放回包裝袋(盒)，以期安全保存。  
Put back in the package bag(box) in order to preserve it safety.
3. 請存放於濕氣、溫度變化較少的場所。  
Store in a place with little humidity and temperature changes.