

FREE QUALITY GUIDE · 2026 EDITION

Thread Gauge Selection Guide & Tolerance Chart

Choose the right GO/NO-GO thread gauge every time — tolerance classes, gauge types by thread standard, how to read thread designations, use and calibration, plus an ordering checklist.

By the engineering team at **GageTools**

gagetools.com · MOQ 1 piece · stock sizes ship in 72 hours

Inside

Plug vs ring gauges · Metric 4H-7H / 6g-6e chart · Fundamental deviations · Unified 2A/2B vs 3A/3B · Gauges by standard (ISO, UN, BSP, NPT, ACME, DIN 513) · Use & calibration · Ordering checklist

01 Which Thread Gauge Do You Need?

GO/NO-GO thread gauges check whether a thread is within its tolerance zone — fast, without measuring every dimension.

Gauge	Checks	How it works
Thread plug gauge (GO / NO-GO)	Internal threads (nuts, tapped holes)	GO end must screw in fully; NO-GO end must not enter more than about 2 turns
Thread ring gauge (GO / NO-GO)	External threads (bolts, studs, shafts)	GO ring screws on fully; NO-GO ring must not pass more than about 2 turns
Setting plug (check plug)	Adjustable ring gauges	Used to set and verify ring gauges, not parts
Taper pipe gauges (NPT L1 / BSPT)	Taper pipe threads	Gauging position is read against the step / notch on the gauge
Thread gauge sets	Mixed sizes on one line	Plug + ring sets in a case, often per standard

Taylor's principle in one line

The GO gauge checks the full form at maximum material (it must assemble); the NO-GO gauge checks one dimension at minimum material (pitch diameter must not be oversize/undersize).

Rule of thumb: order the gauge class that matches the thread class on the drawing — a 6H tapped hole needs a 6H plug gauge, a 2A bolt needs a 2A ring gauge.

02 Metric Thread Tolerance Classes (ISO 965)

Metric tolerance classes combine a number (tolerance grade — size of the zone) and a letter (position of the zone). Capital letters = internal threads, lowercase = external.

Class	Thread	Fit quality	Typical use
4H / 5H	Internal	Fine (tight)	Precision instruments, aerospace
6H	Internal	Medium — standard	Most nuts and tapped holes
7H	Internal	Coarse	Long engagement, plated parts, easy assembly
6G	Internal	Medium, with allowance	Internal threads before plating
4h / 6h	External	Fine / medium, no allowance	Precision fits
6g	External	Medium — standard	Most bolts and screws
6e / 6f	External	Medium, larger allowance	Threads to be plated or coated
8g	External	Coarse	Rough or fast assembly

Fundamental deviations for external threads (µm)

Pitch (mm)	e	f	g	h
0.5	-50	-36	-20	0
0.8	-60	-38	-24	0
1.0	-60	-40	-26	0
1.25	-63	-42	-28	0
1.5	-67	-45	-32	0

Internal G deviation equals +g value (e.g. +26 µm for P = 1.0); H = 0. Values per ISO 965-1 for reference — check the current standard for production use.

Standard fit: 6H/6g. For parts that will be zinc plated, specify 6g before plating or 6e/6f to leave room for the coating.

03 Unified Thread Classes (ASME B1.1)

Class	Thread	Allowance	Typical use
1A / 1B	Ext. / Int.	Large	Quick assembly, dirty or damaged threads
2A / 2B	Ext. / Int.	Normal (2A has allowance)	Standard commercial fasteners
3A / 3B	Ext. / Int.	None	Aerospace, precision, high strength

Thread series

Series	Meaning	Example
UNC	Coarse — general use	1/4-20 UNC-2A
UNF	Fine — higher strength, thin walls, vibration	1/4-28 UNF-2B
UNEF	Extra fine — thin-wall tubes, fine adjustment	1/4-32 UNEF-3A
UNS	Special diameter/pitch combinations	Custom gauges required
UNJ	Controlled root radius (aerospace)	Requires UNJ gauges

How to read a thread designation

Designation	Read as	Gauges needed
M10 × 1.5 – 6H	Metric coarse, internal, class 6H	M10×1.5 6H plug gauge
M12 × 1.25 – 6g	Metric fine, external, class 6g	M12×1.25 6g ring gauge
3/8-16 UNC-2B	3/8", 16 TPI, coarse, internal, class 2B	3/8-16 UNC 2B plug gauge
G 1/2	BSP parallel (ISO 228-1), 14 TPI	G 1/2 plug / ring
R 1/4 / Rc 1/4	BSP taper external / internal (ISO 7)	R / Rc taper gauges
1/2-14 NPT	US taper pipe, 14 TPI	NPT L1 plug / ring

04 Gauges by Thread Standard

Thread type	Typical standard	Gauge types
ISO metric (M)	ISO 965 / ISO 1502	GO/NO-GO plug, ring, setting plugs
Unified (UNC/UNF/UNEF/UNS)	ASME B1.1 / B1.2	GO/NO-GO plug, ring, setting plugs
BSP parallel (G)	ISO 228-1	Plug and ring (classes A/B for external)
BSP taper (R / Rc / Rp)	ISO 7 / BS 21 / EN 10226	Taper plug and ring with gauge step
NPT / NPTF	ASME B1.20.1 / B1.20.3	L1 plug and ring, L2/L3 for NPTF
NPSM / NPSC	ASME B1.20.1	Straight pipe plug and ring
ACME / Stub ACME	ASME B1.5 / B1.8	GO/NO-GO plug and ring
Trapezoidal (Tr)	ISO 2903 / DIN 103	GO/NO-GO plug and ring
Buttress (S)	DIN 513	GO/NO-GO plug and ring
Special / customer drawing	Your specification	Custom gauges made to drawing

Mixing BSP and NPT is the most common gauge-ordering mistake: they have different thread angles (55° vs 60°) and pitches in several sizes.

Also available

- Gap and flush gauges for panel and assembly inspection
- Custom gauges and fixtures made to your drawing
- Thread gauge sets in cases for incoming inspection

05 Using, Storing & Calibrating Gauges

Correct use

- Clean the part and gauge — chips and oil cause false rejects.
- Screw gauges by hand only; never force with a wrench.
- GO must pass the full thread length; NO-GO may enter up to about 2 turns but not further.
- Check the whole thread length on long or blind threads.
- Gauge at room temperature — warm parts gauge differently.

Storage and care

- Wipe after use and apply a light rust-preventive oil.
- Store in the original case; keep plugs and rings apart from loose tools.
- Replace worn GO members — they wear first because they are used most.

Calibration intervals (typical)

Usage	Suggested interval
Production line, daily use	3–6 months
Incoming inspection, weekly use	6–12 months
Occasional / reference	12 months

Set intervals by usage, wear history and your quality system. Calibration certificates (ISO 17025 / CNAS) are available on request — a third-party certificate usually takes about 3 working days.

06 Ordering Checklist

Send these details and we can quote — and ship stock sizes — fast.

- ☐ Full thread designation (e.g. M8×1.25-6H, 1/2-13 UNC-2A, G 3/4, 1/2-14 NPT)
- ☐ Internal or external thread → plug or ring gauge
- ☐ GO, NO-GO or GO/NO-GO pair (or a complete set)
- ☐ Setting plugs needed for ring gauges?
- ☐ Quantity per size
- ☐ Calibration certificate required? (ISO 17025 / CNAS on request)
- ☐ Special threads: drawing or thread data sheet
- ☐ Delivery address and target date

Good to know

Item	GageTools
Minimum order	1 piece
Stock catalogue sizes	Ship within 72 hours
Starting prices (standard sizes)	Plug gauge from USD 20 · Ring gauge from USD 30 · Gap & flush gauge from USD 80
Custom / special gauges	Made to drawing — quoted per project
Quality issues	Return or exchange within 7 days of receipt

Need thread gauges?

Send your thread list for a fast quote. Standard sizes ship from stock; special threads are made to your drawing.

- Metric, UNC/UNF/UNEF, BSP, NPT, ACME, trapezoidal and buttress gauges
- GO/NO-GO plug and ring gauges, setting plugs and sets
- Gap and flush gauges and custom gauges
- Calibration certificates on request

Request a quote: gagetools.com/request-thread-gauge-quote

WhatsApp: +86 173 1689 5054

Thread charts: gagetools.com/thread-charts

Reference data in this guide is provided for selection and planning. Always confirm requirements against the current edition of the applicable standard and your drawing.