



**THE No. 1 System  
for Solvent Safety**

# Thread Types and Identification

- Thread identification of containers, assistance in determining suitable SCAT safety caps
- Thread type overview - technical data



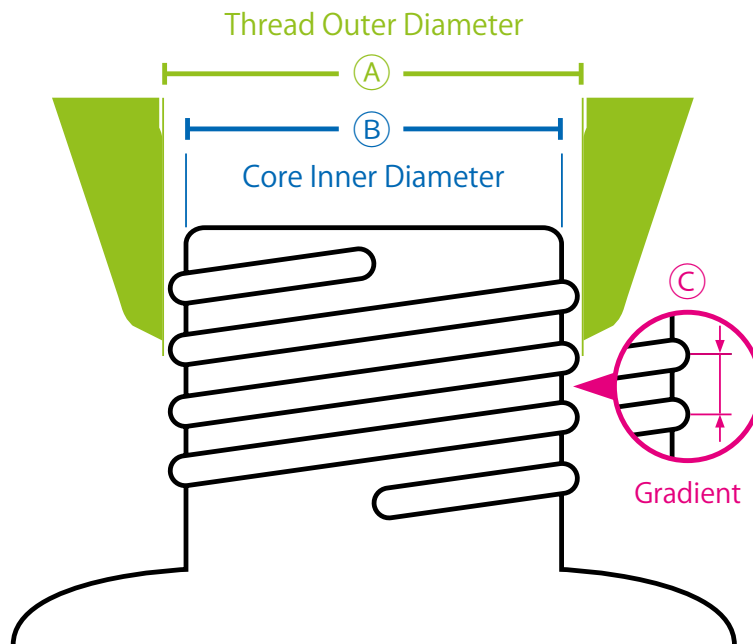
# Thread Identification

## Container Threads

SCAT safety caps are available for a wide variety of differing container threads. On the following pages you will find tables for determining thread sizes, together with a helpful overview of typical thread types. It is best to use a slide gauge.

## Instructions

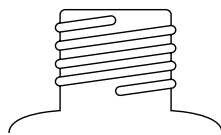
Use the measured distances below to determine the outer diameter of the thread (A) or the core inner diameter of the container opening (B).



## Round Thread

For example:

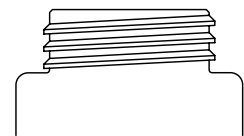
- Bottle thread (GL or GLS)
- Common standard for laboratory bottles



## Saw Thread

For example:

- Canisters (S-Thread)
- Nalgene containers
- Barrels (Mauser, Trisure, BCS-Threads)
- GPI Standard (Glass Packaging Institute)
- Other plastic containers



# Thread Identification

## Container Threads

Ø A mm max.	Ø A mm min.	Ø B mm max.	Gradient C in mm	Norm	Thread	Comments (also re. brand names, trademarks)
28.00	27.50	25.98	3.00	DIN 168-1	GL 28	Chromsystems®, Recipe®, 500 ml Buffer from Sigma®
32.00	31.30	29.30	4.00	DIN 168-1	GL 32 (glass)	For containers of the brand Duran®
32.00	31.50	29.00	3.00		S 32 (plastic)	-
37.49	36.88	35.10	4.23	GPI / SPI	GL 38 / GPI 38-400 (glass) (short)	For containers of the brands Wheaton® and Nalgene®
38.00	37.50	35.00	3.00	DIN 6063-2	GL 38 short (foldable canister)	4 L BDH bottle, Fulltime® Reagents
38.00	37.50	35.00	3.00	DIN 6063-1	S 38 (plastic)	2.5 L canister from Recipe®, HPLC-P Water, 1 litre Biosolve®, Fresenius Kabi® 10 L
37.49	36.88	35.10	4.23	GPI / SPI	GPI 38-430 (glass) (long)	Wheaton®, Nalgene® 4-edge 500 ml plastic bottle
40.00	39.30	37.30	4.00	DIN 168-1	GL 40 (glass)	For containers of the brand Merck®
41.00	39.50	37.00	3.50	DIN 6063-1	S 40 / S 41 (plastic)	Due to the tolerances involved, a GL 40 cap will often fit on to an S 40 container of the brand Metrohm® / Merck®
42.00	41.50	38.00	4.00		S 42	The designation DIN42 is often written on the cap, Agro Paris Tech 51, Polimoon™, Nalgene®
45.00	44.30	42.30	4.00	DIN 168-1	GL 45	The most common thread for laboratory glass bottles
45.00	44.30	41.00	4.00	DIN 6063-1 DIN 6063-2	S 45	Due to the tolerances involved, a GL 45 cap will fit on to an S 45 thread
44.30	39.70	40.80	4.00	DIN45	DIN45	-
50.00	49.30	46.00	4.00	DIN 6063-1	S 50	Space-saving canister
51.00	49.00	47.00	4.00		S 51	Almost identical to S 50, but the outer diameter of the container thread (OD=Ø) is significantly different. The designation DIN50 is written on the cap.
54.00	53.50	47.50	6.35	53B	B 53	For containers of the brands Nalgene® and Polimoon™
53.80	53.20	49.50	5.00	DIN51	S 55	The designation 51 / DIN51 / HP51 is often written on the cap
60.00	59.20	54.00	6.00	DIN 6063-1	S 60 / S 61	The designation 61, Mauser® 13, RPC Containers® C59PP / DIN61 is often written on the cap
62.51	61.62	60.12	4.23	GPI / SPI	B 63 / GPI 63-415	For containers of the brand Nalgene®
65.00	64.30	59.00	6.00		S 65	For containers of the brand Kautex® (round canisters)
71.00	69.30	65.00	6.00	DIN71	S 70 / S 71	The designation 71, Rieke® 70 mm is often written on the cap
80.00	79.00	77.00	5.50	(DIN 168-1) short	GLS 80	Typical laboratory bottle with wide neck, short thread with 3 thread ends
89.18	88.29	79.00	12.70	83B	B 83	For containers of the brands Nalgene®, Kautex®, Foxx® and Carboy 80 mm
90.00	89.30	84.00	6.00		S 90	The designation D90 is often written on the cap
95.00	93.50	89.00	7.00		S 95	-
106.00	104.00	95.00	6.00		105x 6	Hünersdorff

NOTE: All the measurements and values given here can vary up to 0.5 mm, dependent upon the manufacturer involved (due to manufacturing tolerances). Brand names and trademarks are the property of the respective owners. The brand names and protected trademarks mentioned here are simply of descriptorial nature.

# Thread Types

## NPT

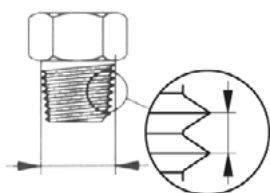


Thread Information

### NPT (National Pipe Thread) Conical, American Tubular Thread

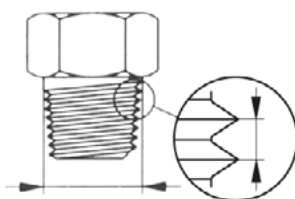
Very easily recognizable due to the conical outer and/or inner diameters, which are self-sealing. NPT is therefore also described as the "sealed thread" or as having a "sealed connection within the thread".

NPT 1/8" – Outer-Ø = 9.9 mm



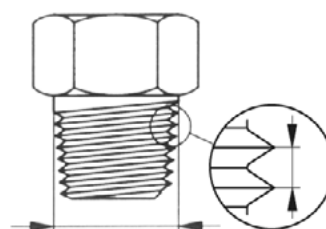
Gradient 27 on 1" = 0.94 mm

NPT 1/4" – Outer-Ø = 13.2 mm



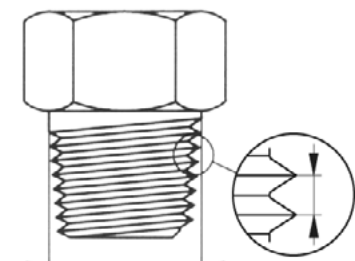
Gradient 18 on 1" = 1.41 mm

NPT 3/8" – Outer-Ø = 16.6 mm



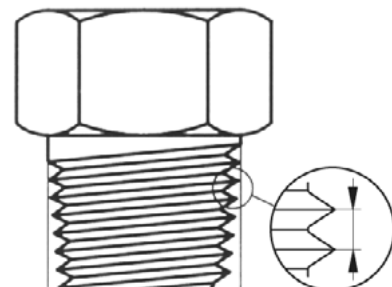
Gradient 18 on 1" = 1.41 mm

NPT 1/2" – Outer-Ø = 20.6 mm



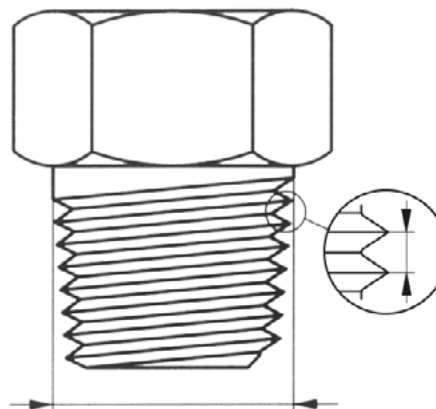
Gradient 14 on 1" = 1.81 mm

NPT 3/4" – Outer-Ø = 26 mm



Gradient 14 on 1" = 1.81 mm

NPT 1" – Outer-Ø = 32.5 mm



Gradient 11.5 on 1" = 2.21 mm



### SCAT Products with NPT 1/8" Threads

NPT 1/8" - "tube connector" on Safety Waste Caps. Flexible like no other, with countless tube connections, dividers, collectors etc.



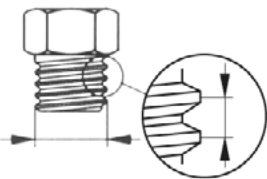
Drawings are of Scale 1:1

# Thread Types G or R and BSP

## G or R (Whitworth Tubular Thread) and BSP (British Standard Pipe)

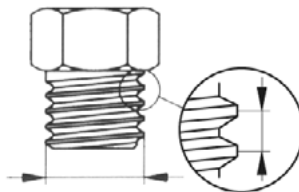
Cylindrical tubular threads are mainly used in english-speaking countries. The measurements, e.g. R 3/4", do not allow for recognition of diameters, the corresponding dimension must be obtained from tables.

G 1/8" – Outer-Ø = 9.6 mm



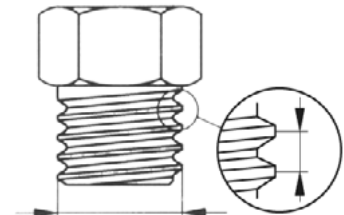
Gradient 28 on 1" = 0.91 mm

G 1/4" – Outer-Ø = 13 mm



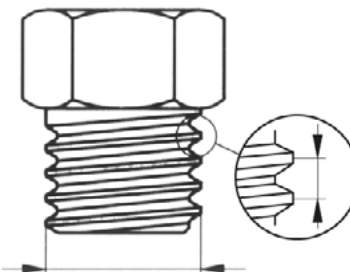
Gradient 19 on 1" = 1.34 mm

G 3/8" – Outer-Ø = 16.5 mm



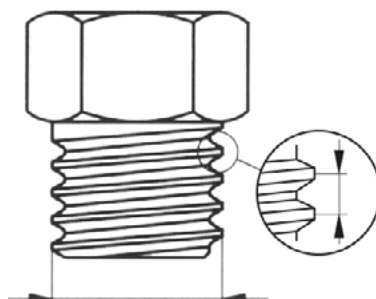
Gradient 19 on 1" = 1.34 mm

G 1/2" – Outer-Ø = 20.8 mm



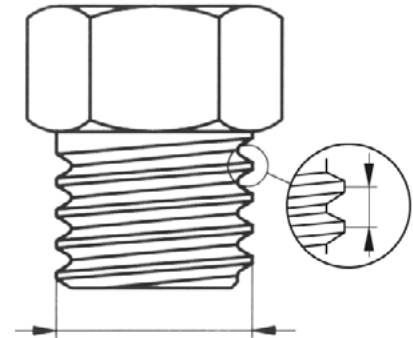
Gradient 14 on 1" = 1.81 mm

G 5/8" – Outer-Ø = 22.8 mm



Gradient 14 on 1" = 1.81 mm

G 3/4" – Outer-Ø = 26.3 mm



Gradient 14 on 1" = 1.81 mm



Drawings are of Scale 1:1



### SCAT Products with G Threads

e.g. thread adapters



# Thread Types

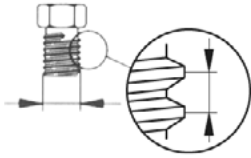
## M



### M (Metric ISO-Thread) - Standard in the European Region

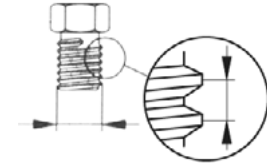
Cylindrical outer and inner diameters, accurate to the very millimetre. Forces are particularly well absorbed, due to the extremely small gradient of the metric thread. The designations begin with an "M", followed by the nominal diameter, e.g. M 10. If there is a gradient that differs from that of the norm, this is given in an addendum, e.g. M 10 x 0.75.

M5 – Outer-Ø = 5 mm



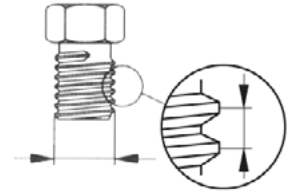
Gradient 0.80 mm

M6 – Outer-Ø = 6 mm



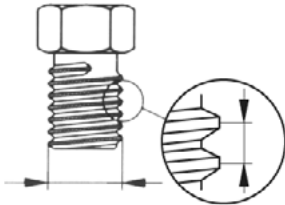
Gradient 1.00 mm

M8 – Outer-Ø = 8 mm



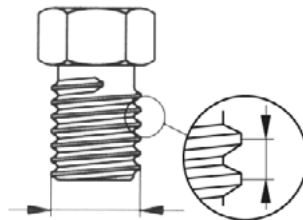
Gradient 1.25 mm

M10 – Outer-Ø = 10 mm



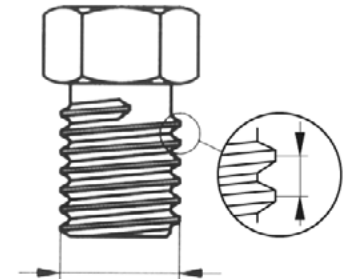
Gradient 1.50 mm

M12 – Outer-Ø = 12 mm



Gradient 1.75 mm

M16 – Outer-Ø = 16 mm



Gradient 2.00 mm



### SCAT Products with M Threads

e.g. SymLine Pipe Connectors



Drawings are of Scale 1:1

# Thread Types

## UNF 1/4"-28G

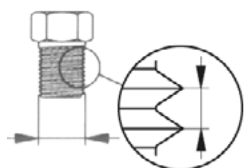
### UNF 1/4"-28G

From the USA. Mainly employed in chromatography/HPLC. Standard sizes are UNF 1/4"-28G and UNF 10-32G. The numbers 28G and 32G refer to the number of thread "steps" taken, over a vertical distance of one inch (25.4 mm).

### UNF 1/4"-28G kontra M 6

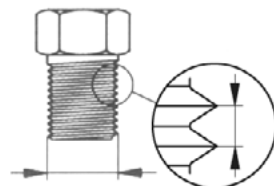
Our HPLC fittings are exclusively constructed with the most typically-used UNF 1/4"-28G HPLC-thread. There also exist fittings and dividers with the very similar thread M6. The two can only be differentiated by exact measurement of the outer diameter, or by using a special test ring or test cap. (It is e.g. therefore possible, to screw the one hollow screw type into the converse piece of the other thread type, at least for 2-3 revolutions). The UNF 1/4" thread has an outer diameter of 6.35 mm, the thread M6 has one of exactly 6.0 mm (production-related tolerances may apply). We recommend the exclusive use of the UNF thread 1/4"-28G, in order to avoid confusion, mistakes being made, or unnecessary double stocking.

UNF 1/4"-28G – Outer-Ø = 6.2 mm



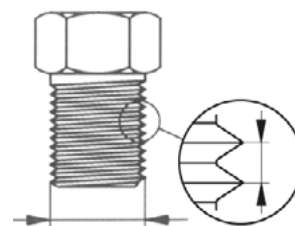
Gradient 28 on 1" = 0.91 mm

UNF 3/8"-28G – Outer-Ø = 9.4 mm



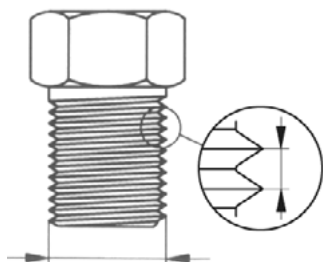
Gradient 24 on 1" = 1.06 mm

UNF 1/2"-28G – Outer-Ø = 12.6 mm



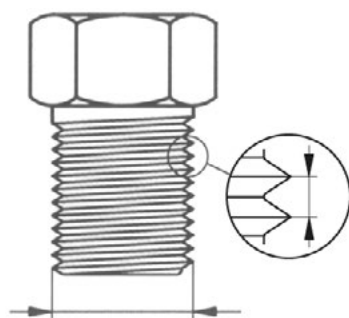
Gradient 20 on 1" = 1.27 mm

UNF 5/8"-18G – Outer-Ø = 15.7 mm



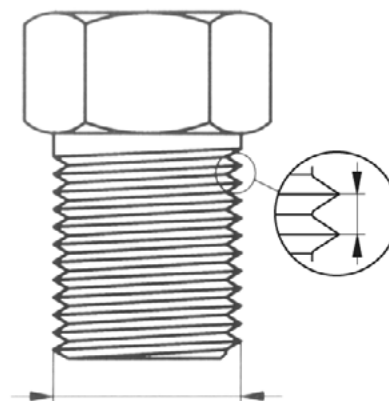
Gradient 18 on 1" = 1.41 mm

UNF 3/4"-16G – Outer-Ø = 18.9 mm



Gradient 16 on 1" = 1.59 mm

UNF 1"-12G – Outer-Ø = 25.2 mm



Gradient 12 on 1" = 2.12 mm



Drawings are of Scale 1:1

[www.scatt-europe.com](http://www.scatt-europe.com)



### SCAT Products with UNF 1/4"-28G Threads

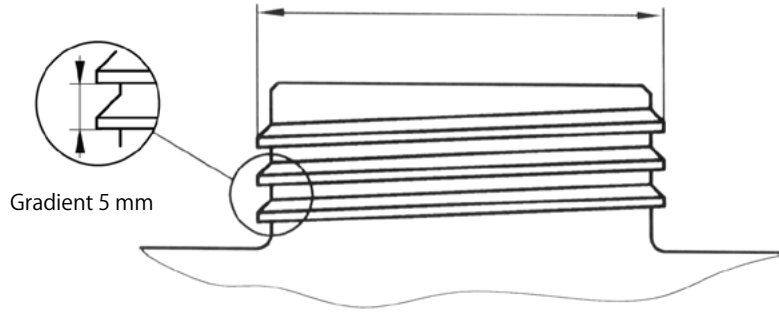
e.g. fittings, dividers, blind plugs and air valves



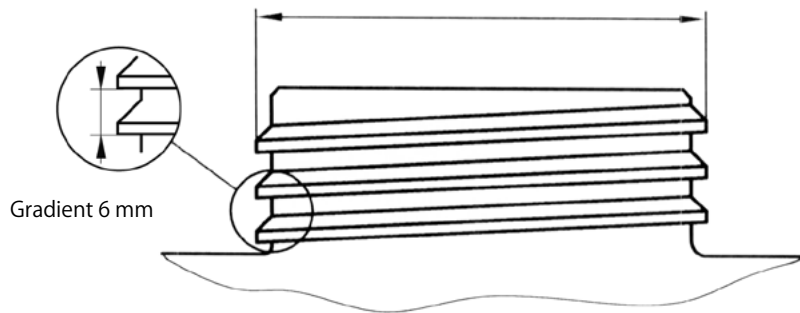


# Thread Types Canisters

S 55 – Outer-Ø = 53.5 mm



S 60 – Outer-Ø = 59.5 mm



## SCAT Products with S Threads

Safety Waste Caps



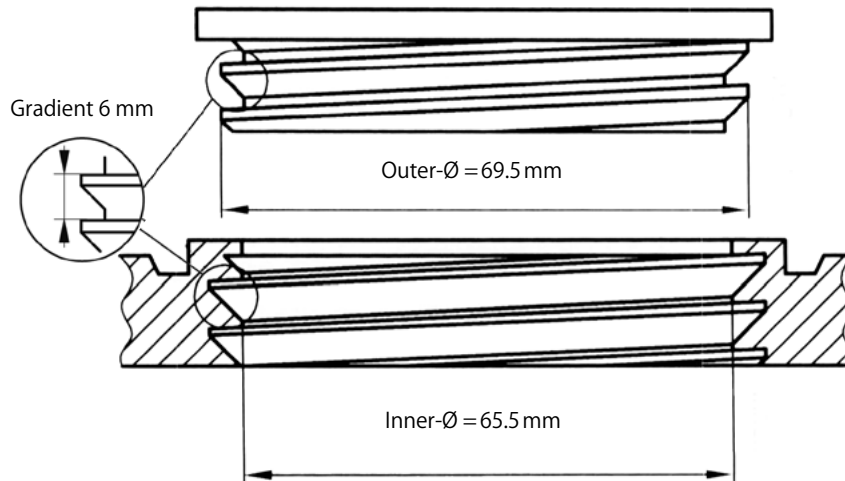
Drawings are of Scale 1:1

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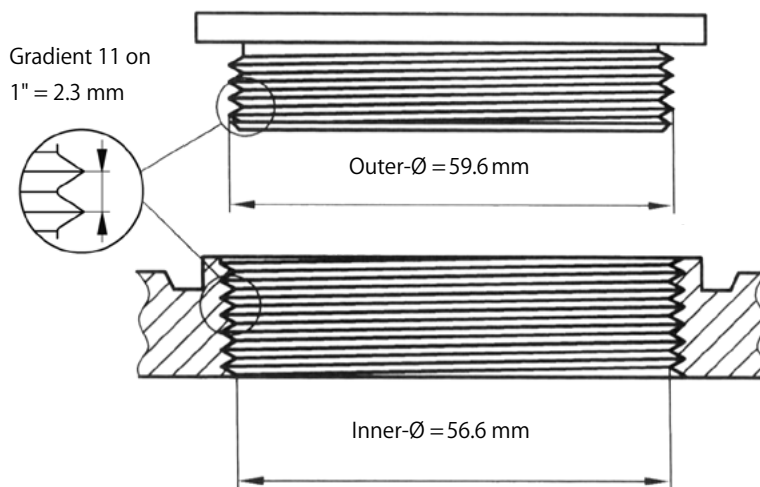


# Thread Types Barrels

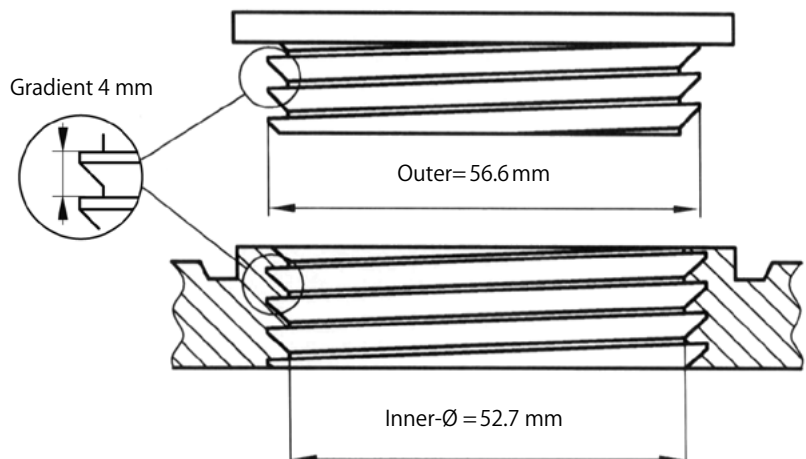
BCS 70x6 e.g. MAUSER 2"®



G2"/R 2"/BSP 2"



BCS 56x4 e.g. Tri Sure2"®



## SCAT Products with Barrel Threads

e.g. exhaust  
filters for  
barrels



Drawings are of Scale 1:1

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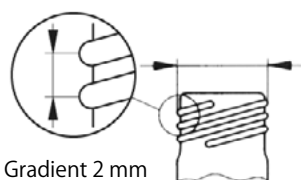
# Thread Types

## Glass Threads

### GL Threads

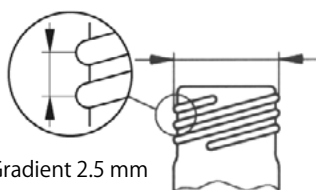
Glass threads are round threads, i.e. the surface of the thread lines is always rounded. The simple form and the rounded surface allow them to be easily constructed on glass bottle necks. The relatively large gradient and the wide edges give it great carrying capacity.

GL 12 – Outer-Ø = 12 mm



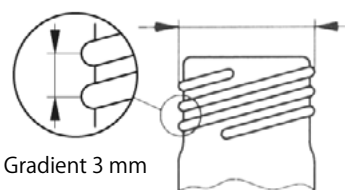
Gradient 2 mm

GL 14 – Outer-Ø = 14 mm



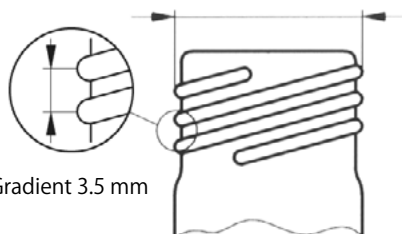
Gradient 2.5 mm

GL 18 – Outer-Ø = 18 mm



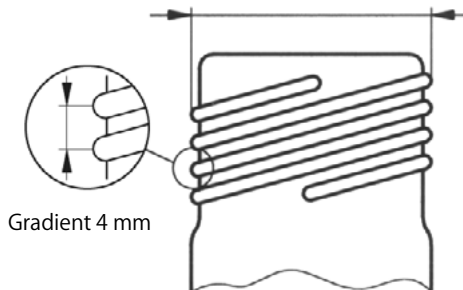
Gradient 3 mm

GL 25 – Outer-Ø = 25 mm



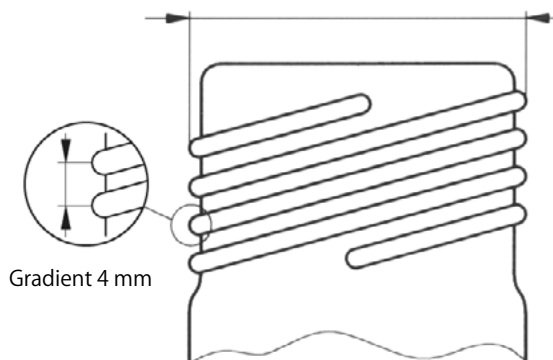
Gradient 3.5 mm

GL 32 – Outer-Ø = 32 mm



Gradient 4 mm

GL 45 – Outer-Ø = 45 mm



Gradient 4 mm

Drawings are of Scale 1:1



### SCAT Products with GL Threads

GL14 - "The Exhaust Filter Connection", e.g. for exhaust filters and blind plugs

GL 28, GL 38, GL 40, GL 45, SCAT Safety Cap and Safety Waste Cap threads



# Thread Types

## Glass Threads

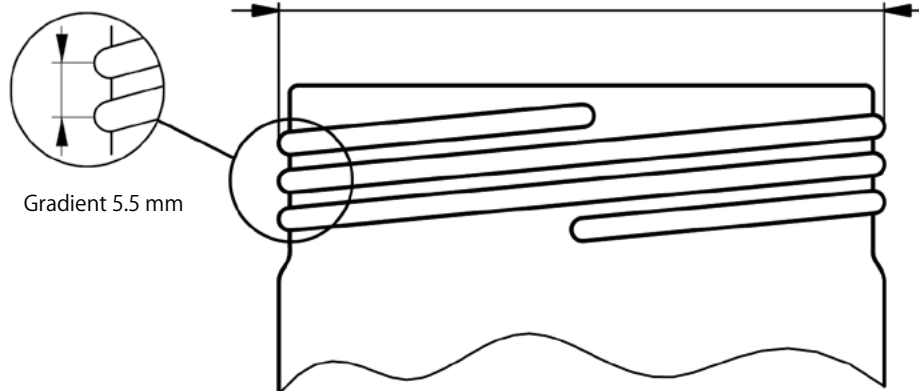
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### SCAT Products with GLS 80

e.g. GLS 80 Safety Caps, Safety Waste Caps and bottle rinsing caps



GLS 80 – Outer-Ø = 80 mm

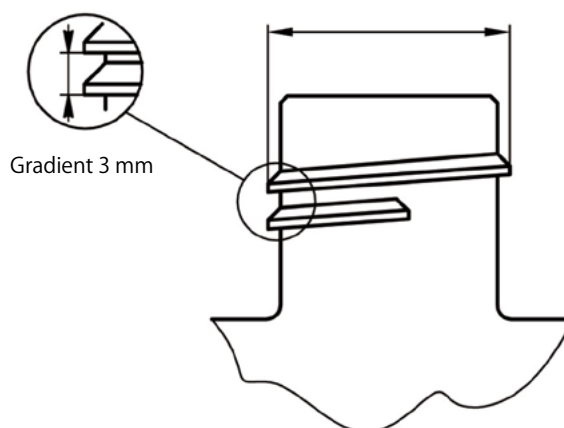


Thread Information

### GPI Thread

The abbreviation GPI stands for Glass Packaging Institute, in which the North American manufacturers of glass bottles of every type are represented. The GPI norms are voluntary standards, which serve as the basis for compatibility and exchange regarding glass receptacles and their caps.

GPI 33 – Outer-Ø = 31.8 mm



Drawings are of Scale 1:1

[www.scatt-europe.com](http://www.scatt-europe.com)



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