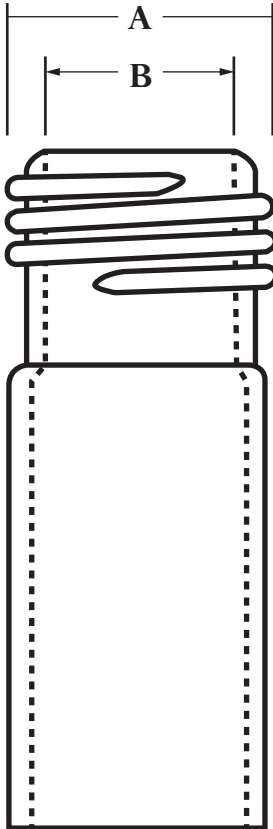
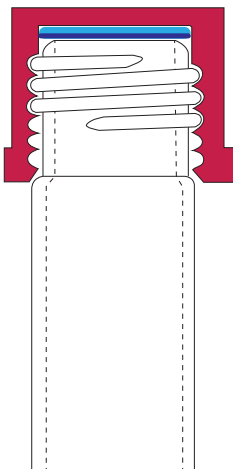


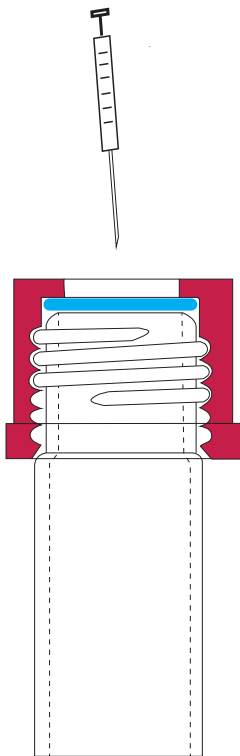
GLASS THREADS - GL STYLE



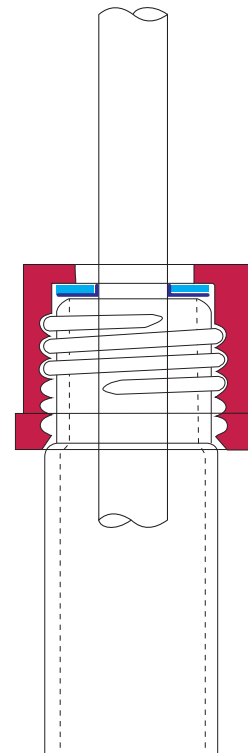
GL SIZE	*A* OUTSIDE THREAD DIA _{mm}	*B* INSIDE DIA, mm
14	13.75	8.45
18	17.5	11
25	24.5	18
32	31.5	23
45	44.5	34.5



Screw Cap with PTFE/silicone gasket



Screw Cap with Aperature with silicone septa for use with syringe needles

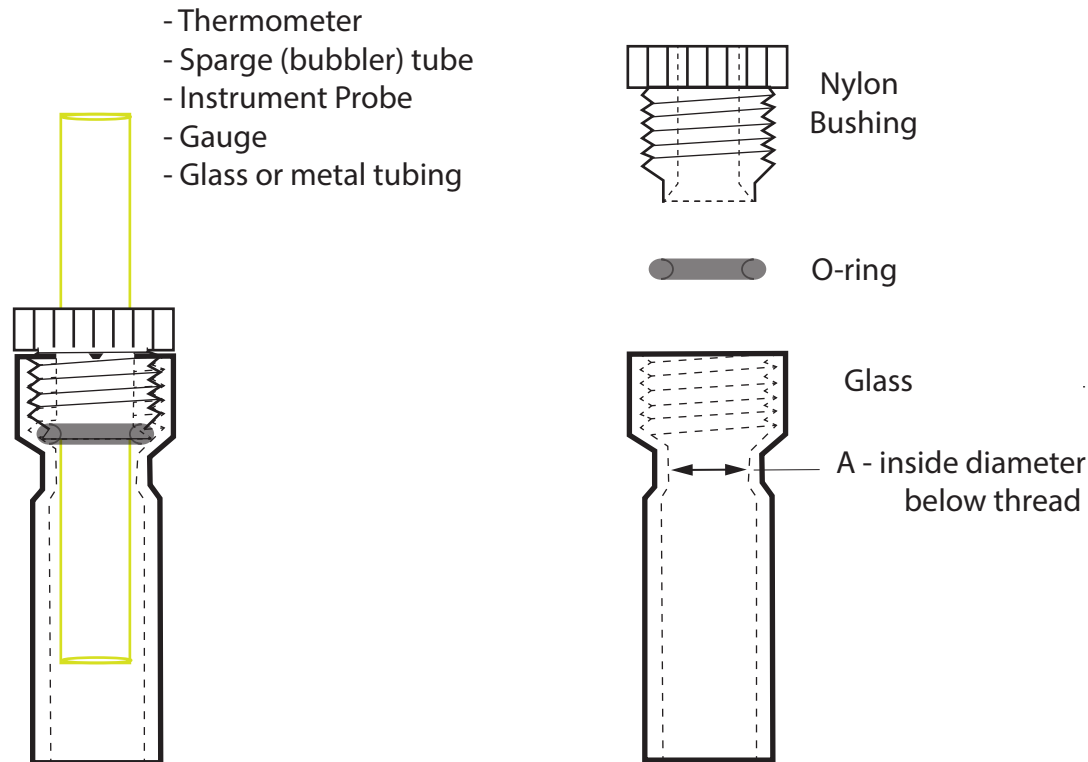


Screw Cap with Aperature with PTFE/silicone compression ring for sealing tubing through the GL opening.

Screw Cap w/ Aperature

GL SIZE	Aperature Opening, mm	Fits Tubing, mm
14	9.5	5.5 - 6.5
18	11	5.5 - 6.5 or 9 - 11
25	15	7.5 - 9 or 11 - 13
32	20	11 - 13
45	34	25 - 27

GLASS THREADS - ACE TYPE



ACE thread Size	A Inside Diameter, mm	Bushing, Accepts Tubing, mm
7	7	5-6.5
11	11	9-10.5
15	15	12.5-14
18	18	16-17
25	25	24-25
36	36	34-35
50	50	47-48
80	80	80

Capillary glass tubing with bushing and silicone-rubber septum allows for sealing small diameter probes

Capillary glass tubing, Inside Diameter, mm	Bushing, thru-hole size, mm
1.5-2	0.5
1.5-2	1.0
1.5-2	1.5
1.5-2	2.5

As you screw in the bushing, the O-ring compresses against the glass seat, and makes a vacuum-tight seal against the through tube.

NOTE: The bushing is sold separately from the glass threads

The capillary glass Ace thread can be an alternative to a glass-to-metal seal.

Below are tables of available ground standard taper joints - including international standard tapers.

Standard Dimensions for **Full Length** Interchangeable Ground Glass Taper Joints

Joint Size Number	*A* Approximate Diameter At Large End of Taper, mm	*B* Approximate Length Of Ground Zone, mm	Approximate Diameter at Small End of Taper, mm
7/25	7.5	25	5.0
10/30	10.0	30	7.0
12/30	12.5	30	9.5
14/35	14.5	35	11.0
19/38	18.8	38	15.0
24/40	24.0	40	20.0
29/42	29.2	42	25.0
34/45	34.5	45	30.0
40/50	40.0	50	35.0
45/50	45.0	50	40.0
50/50	50.0	50	45.0
55/50	55.0	50	50.0
60/50	60.0	50	55.0
71/60	71.0	60	65.0
103/60	103.0	60	97.0

*

Standard Dimensions for **Medium Length** Interchangeable Ground Glass Taper Joints

Joint Size Number	*A* Approximate Diameter At Large End of Taper, mm	*B* Approximate Length Of Ground Zone, mm	Approximate Diameter at Small End of Taper, mm
5/12	5.0	12	3.8
7/15	7.5	15	6.0
10/18	10.0	18	8.2
12/18	12.5	18	10.7
14/20	14.5	20	12.5
19/22	18.8	22	16.6
24/25	24.0	25	21.5
29/26	29.2	26	26.6
34/28	34.5	28	31.7
40/35	40.0	35	36.5

*

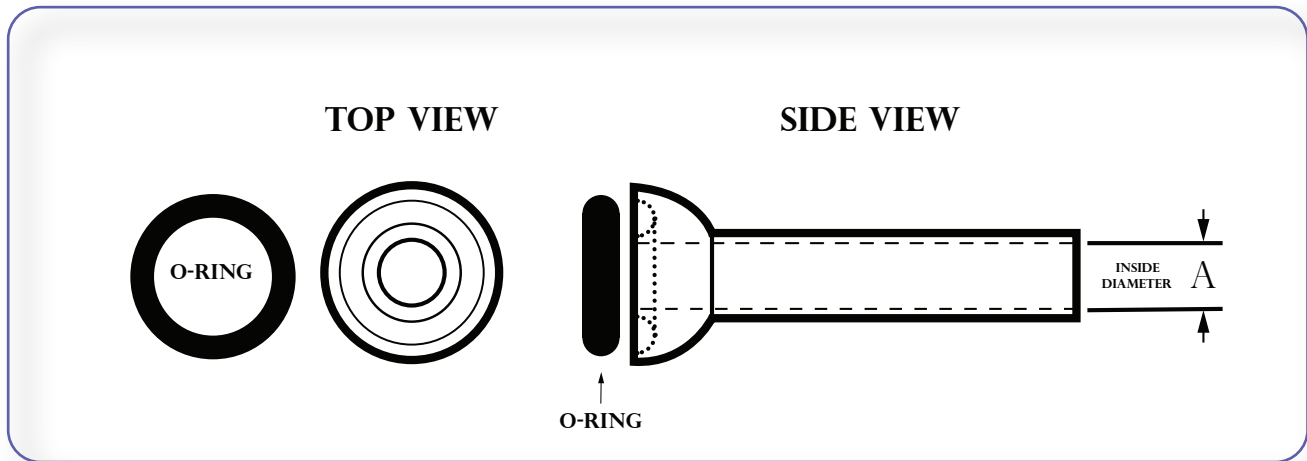
Standard Dimensions for **Short Length** Interchangeable Ground Glass Taper Joints

Joint Size Number	*A* Approximate Diameter At Large End of Taper, mm	*B* Approximate Length Of Ground Zone, mm	Approximate Diameter at Small End of Taper, mm
5/8	5.0	8	4.2
7/10	7.5	10	6.5
10/7	10.0	7	9.3
10/10	10.0	10	9.0
12/10	12.5	10	11.5
14/10	14.5	10	13.5
19/10	18.8	10	17.8
24/12	24.0	12	22.8
29/12	29.2	12	28.0
34/12	34.5	12	33.3
40/12	40.0	12	38.8
45/12	45.0	12	43.8
50/12	50.0	12	48.8
55/12	55.0	12	53.8
60/12	60.0	12	58.8
71/15	71.0	15	69.5

Standard Dimensions for **International Length** Interchangeable Ground Glass Taper Joints

Joint Size Number	*A* Approximate Diameter At Large End of Taper, mm	*B* Approximate Length Of Ground Zone, mm	Approximate Diameter at Small End of Taper, mm
5/13	5.0	13	3.7
7/16	7.5	16	5.9
10/19	10.0	19	8.1
12/21	12.5	21	10.4
14/23	14.5	23	12.2
19/26	18.8	26	16.2
21/28	21.5	28	18.7
24/29	24.0	29	21.1
29/32	29.2	32	26.0
34/35	34.5	35	31.0
40/38	40.0	38	36.2
45/40	45.0	40	41.0
50/42	50.0	42	45.8
60/46	60.0	46	55.4
71/51	71.0	51	65.9
85/55	85.0	55	79.5
100/60	100.0	60	94.0

O - RING JOINT

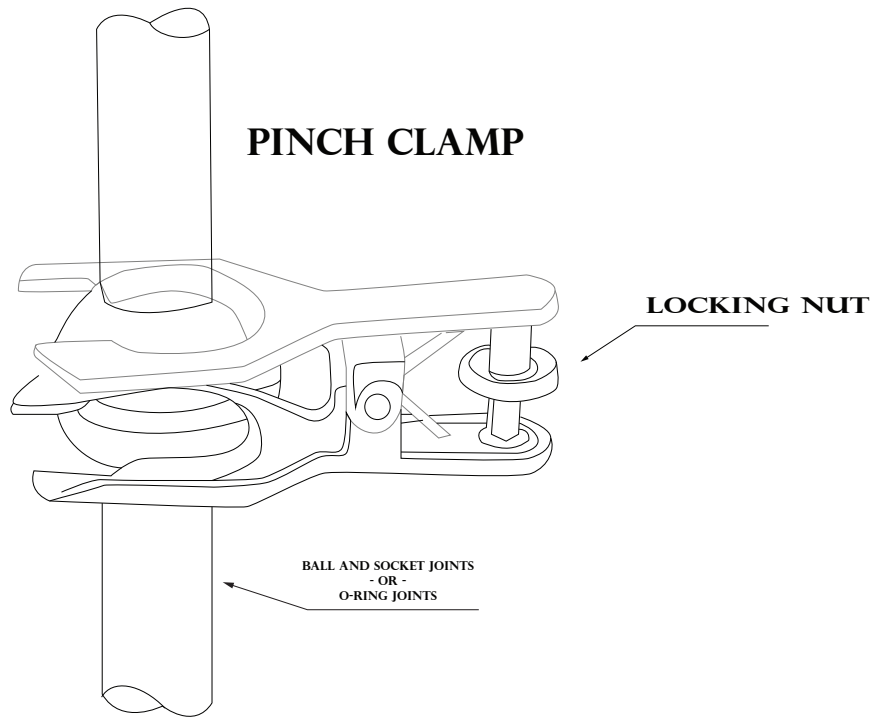


O - RING JOINT

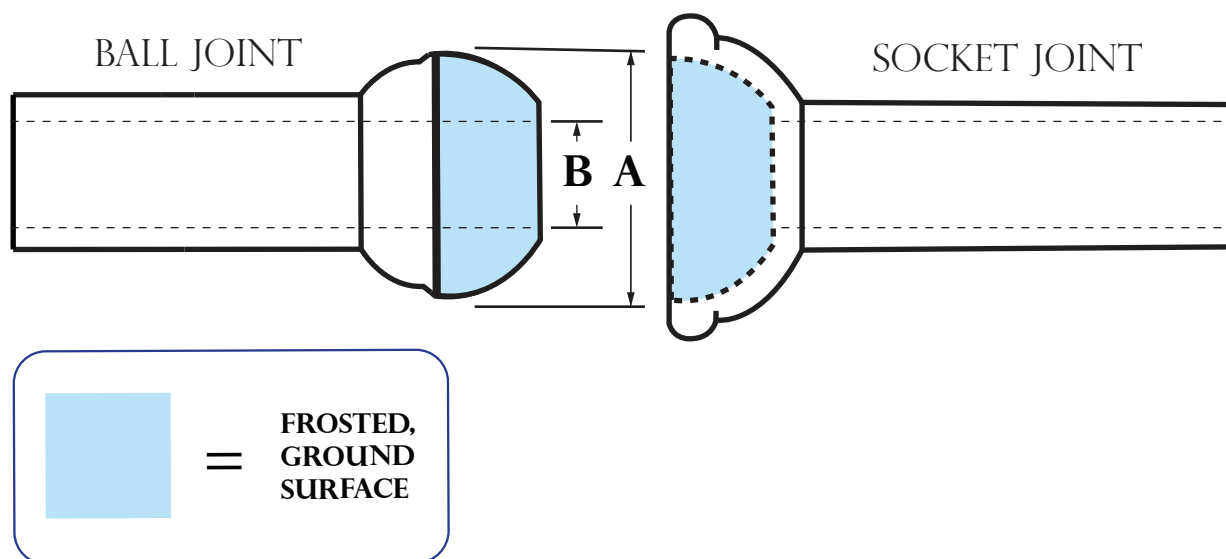
JOINT SIZE	*A* INSIDE DIAMETER, mm	PINCH CLAMP SIZE	O-RING SIZE
5	5	12	110
7	7	18	111
9	9	18	112
15	15	28	116
20	20	35	214
25	25	35	217
30	30	50	223
40	40	65	226
50	50	75	229
75	75	102	341

O-rings joints are best suited to applications using a vertical orientation, for example, a cold trap.

O-ring joints are held together with a pinch clamp.



SPHERICAL GROUND GLASS BALL AND SOCKET, § JOINTS



§ is the symbol designating interchangeable Spherical Joints, complying with ASTM standards. This means that for any given size, standard Spherical Joints are interchangeable between manufacturers.

Standard Spherical Joints are identified with a 2-part number after the § designation, and then whether it is a ball or socket joint.

A generic example based on the drawing above is §*A* / *B* ball joint, or, §*A* / *B* socket joint.

A common example is a §18/9 Ball joint. 18 millimeters is the approximate diameter of the outer ball (A) and the approximate inside diameter of the tube is 9mm (B).

Note: Any ball or socket is interchangeable if the dimension *A* is the same. So, a 12/1 ball joint will fit into a 12/1, 12/2, 12/3, or 12/5 socket joint - since all of their outside ball dimensions are the same.

The 2 most common ball and socket joints used in the chemistry department are §18/9, and §28/15. These, and other glassblowing components are available in the 5th floor research stockroom.

Ground glass surfaces require grease to prevent sticking. Use a grease such as Apiezon brand.

A pinch clamp is used to hold the ball and socket joints together.

Ground glass spherical ball/socket joints are manufactured in accordance to ASTM standard E677-94.

Below is a table of standard dimensions for interchangeable spherical ground ball and socket joints.

Standard Dimensions for Interchangeable Ground **Ball/Socket** Joints

Joint Size Number	*A* Approximate Diameter of Ball, mm	*B* Approximate Internal Tube Diameter, mm	Pinch Clamp Size
7/1	7	1	-
12/1	12	1	12
12/2	12	2	12
12/3	12	3	12
12/5	12	5	12
18/7	18	7	18
18/8	18	8	18
28/12	28	12	28
28/15	28	15	28
35/20	35	20	35
35/25	35	25	35
40/25	40	25	40
50/30	50	30	50
65/40	65	40	65
75/50	75	50	75
102/75	102	75	102

PINCH CLAMP

