SRI LANKA STANDARD 282 : 1974
UDC 621.882.082.22

SPECIFICATION FOR PIPE THREADS FOR TUBES WHERE PRESSURE TIGHT JOINTS ARE MADE ON THE THREADS

BUREAU OF CEYLON STANDARDS

SPECIFICATION FOR PIPE THREADS FOR TUBES AND FITTINGS WHERE PRESSURE-TIGHT JOINTS ARE MADE ON THE THREADS

SLS 282:1974

Gr.9

BUREAU OF CEYLON STANDARDS
53, Dharmapala Mawatha,
Colombo 3,
Sri Lanka.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This Standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR PIPE THREADS FOR TUBES AND FITTINGS WHERE PRESSURE-TIGHT JOINTS ARE MADE ON THE THREADS

FOREWORD

This Sri Lanka Standard Specification was prepared by the Drafting Committee on Pipe Threads. It was approved by the Mechanical Engineering Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 1974-08-28.

This standard is based on ISO/R7, Recommendation for Pipe Threads issued by the International Organization for Standardization. The nominal size of the threads is given in inch units, while the other thread details are expressed in metric units.

A recommended gauging system for jointing threads (Part 1) is given in the Appendix A and the method of using the gauges referred to in Appendix A is given in Appendix B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, shall be rounded

off in accordance with CS 102*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

This standard specifies pipe threads as follows:

Part 1 : Jointing threads

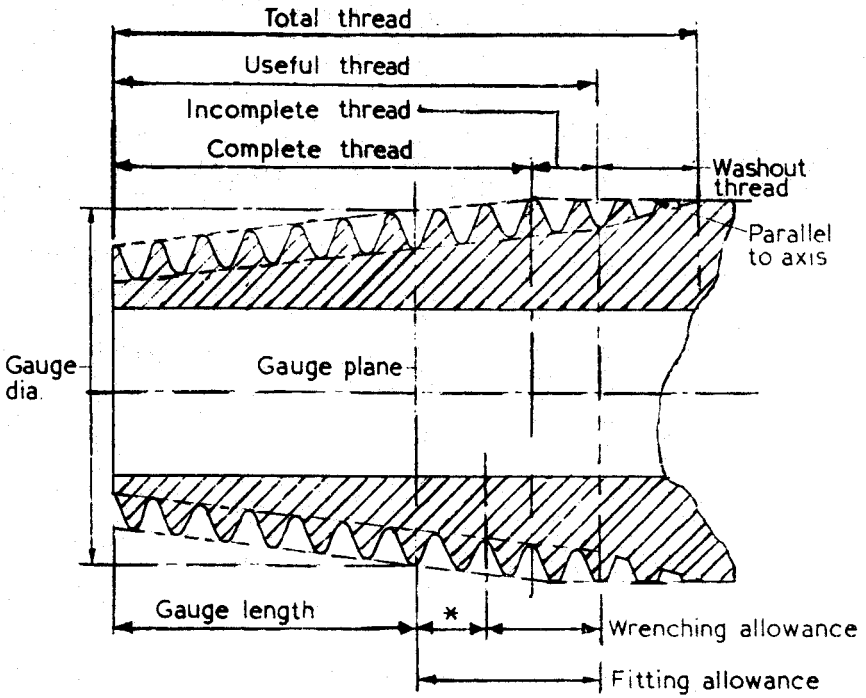
These relate to pipe threads for joints made pressure-tight by the mating of the threads; they include taper external threads for assembly with either taper or parallel internal threads (parallel external pipe threads are not suitable as jointing threads).

Part 2 : Longscrew threads

These relate to parallel external pipe threads used for longscrews, where a pressure-tight joint is achieved by the compression of a soft material on to the external thread by tightening a back nut against a socket.

Details of thread forms, dimensions and tolerances are given, together with the method of designating each type of thread.

**CS 102 Presentation of numerical values.*



* This length is equivalent to the positive tolerance on the internal thread. Taper shown exaggerated.

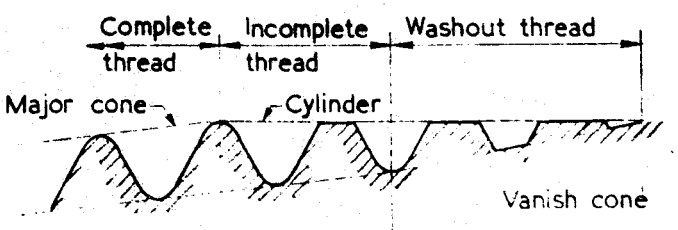


FIGURE 1 - Terms relating to pipe threads

2 DEFINITIONS

For the purpose of this standard the following definitions shall apply. For terms and definitions relating to screw threads in general SLS 207* shall be consulted.

2.1 gauge diameter: The basic major diameter of the thread, whether external or internal.

2.2 gauge plane: The plane, perpendicular to the axis, at which the major cone has the gauge diameter.

NOTE - The gauge plane is theoretically located at the face of the internal thread or at a distance equal to the basic gauge length from the small end of the external thread.

2.3 gauge length: On an external thread, the distance, parallel to the axis, from the gauge plane to the small end of the thread.

2.4 complete thread: That part of the thread which is fully formed at both crest and root.

NOTE - When there is a chamfer at the start of the thread not exceeding one pitch in length, it is included in the length of complete thread.

2.5 incomplete thread: That part of the thread which is fully formed at the root but truncated at the crest by its intersection with the cylindrical surface of the work.

2.6 washout thread (vanish thread): That part of the thread which is not fully formed at the root.

---

* *SLS 207 Definitions for use in mechanical engineering.*

NOTE - The washout thread is produced by the bevel at the start of the threading tool.

2.7 vanish cone: An imaginary cone the surface of which would pass through the roots of the washout thread.

2.8 major cone: An imaginary conical surface which just touches the crests of an external thread or the roots of an internal thread.

2.9 useful thread: This comprises both the complete thread and the incomplete thread, but excludes the washout thread.

2.10 total thread: This comprises the complete thread, the incomplete thread and the washout thread.

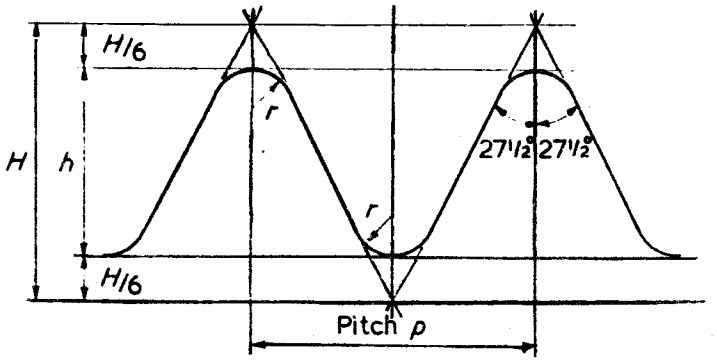
2.11 fitting allowance: The total length of useful thread beyond the gauge plane on the pipe end, required to provide for assembly with the maximum permitted size of internal thread.

2.12 wrenching allowance: The length of useful thread which is provided to accommodate the relative movement between the pipe end and the internally threaded part required for wrenching beyond the position of hand engagement.

3 BASIC FORMS OF PIPE THREADS

The basic forms of the Standard taper and parallel pipe threads are based on that of the Whitworth thread form. The basic dimensions of the standard forms are given in Columns 2, 3 and 4 of Table 1.

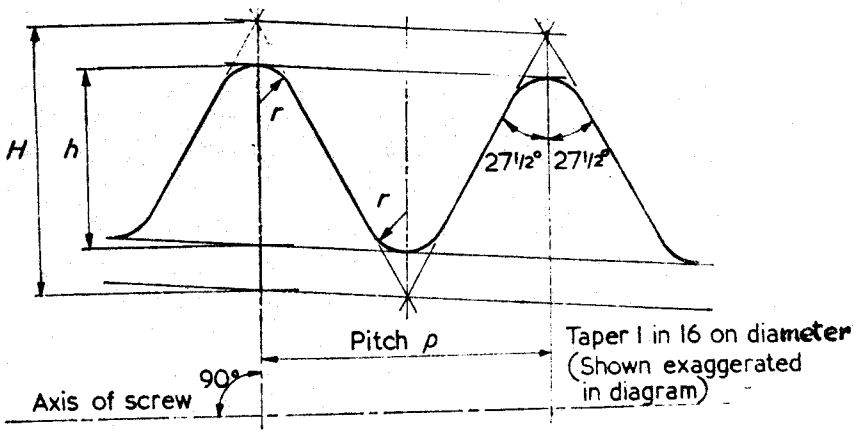
**It is common practice to apply a jointing compound to the threads before assembly.*



$H = 0.960\,491 \times p$
$h = 0.640\,327 \times p$
$r = 0.137\,329 \times p$

FIGURE 2 - Basic Whitworth form

The basic Whitworth form (see Fig. 2) is that of a symmetrical V-thread in which the angle between the flanks measured in an axial section, is 55°, one sixth of this sharp V is truncated at the top and the bottom, the threads being rounded equally at crests and roots by circular arcs blending tangentially with the flanks, the theoretical depth of thread being 0.640 327 times the nominal pitch. The basic thread depth, calculated from the above definition, is rounded off to the nearest 0.001 mm.



$H = 0.960\,237 \times p$
$h = 0.640\,327 \times p$
$r = 0.137\,278 \times p$

FIGURE 3 - Basic form of taper pipe threads

The basic form of the standard taper pipe thread is shown in Fig. 3. This thread has also an angle of 55°, the flanks making equal angles with the axis. The crests and roots are rounded off symmetrically in such a manner as to give the same basic differences between major, effective and minor diameters, as in the Standard Whitworth thread of the same nominal pitch. The taper is 1 in 16 measured on diameter.

The basic form of the standard parallel internal pipe thread and the standard parallel external longscrew thread is the basic Whitworth form (see Fig. 2).

PART 1 JOINTING THREADS

*(For joints where the pressure-tight seal is made by the mating of the threads themselves)**

4 TAPER EXTERNAL AND TAPER INTERNAL PIPE THREADS

4.1 Basic thread form

Basic form of the standard taper pipe thread is shown in Fig. 3.

4.2 Dimensions and tolerances

The dimensions and tolerances of taper external threads shall be in accordance with those given in Table 1.

The basic diameters of taper internal threads shall be in accordance with Columns 5, 6 and 7 of Table 1 and the tolerances shall be in accordance with Column 17 of Table 1.

Typical designs of internally threaded parts are shown in Fig. 4.

4.3 Designation

Sri Lanka Standard taper pipe threads shall be designated by the letters R or R_C, together with the thread size.

---

* *It is common practice to apply a jointing compound to the threads before assembly.*

It is recommended that these screw threads should be referred to on drawings and related documents in the following manner:

Internal taper : R_C 1/2

External taper : R 1/2

5 PARALLEL INTERNAL PIPE THREADS

5.1 Basic thread form

The basic form of the standard parallel internal pipe thread is the basic Whitworth form (see Fig. 2).

5.2 Dimensions and tolerances

The basic diameters of parallel internal threads shall be in accordance with Columns 5, 6 and 7 of Table 1 and the tolerances shall be in accordance with Column 18 of Table 1.

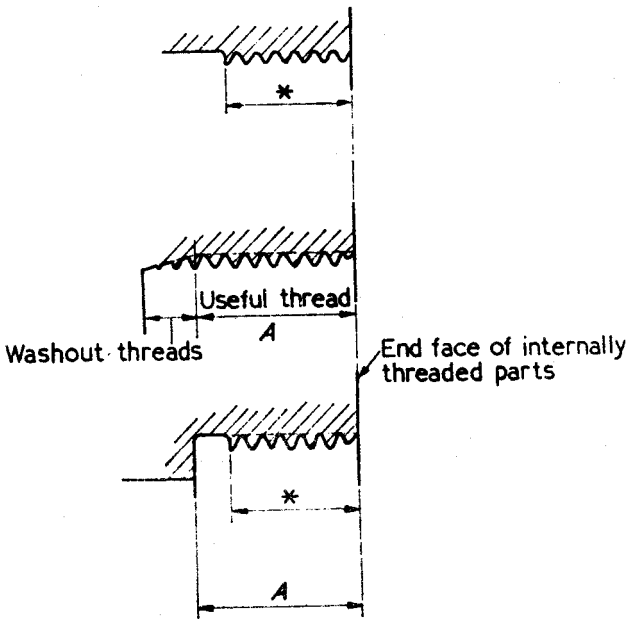
Typical designs of internally threaded parts are shown in Fig. 4.

5.3 Designation

Sri Lanka Standard parallel internal threads shall be designated by the letters R_P together with the thread size.

It is recommended that these screw threads should be referred to on drawings and related documents in the following manner:

R_P 1/2



** Useful thread not less than 80 per cent of Column 14 (Table 1).*

FIGURE 4 - Typical designs for Part 1 internal taper or parallel pipe threads *(for dimension A see Table 2)*

TABLE 1 - Dimensions and limits of size for pipe threads (jointing threads)

*Basic gauge lengths and limits of size are based on turns of thread; linear equivalents are given in parentheses

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Nominal size	No. of threads per inch	Pitch	Depth of thread	Basic diameter at gauge plane			Gauge length				Length of useful thread on pipe end not less than			Fitting allowance	Wrenching allowance	Tolerance on position of gauge plane relative to face of internally taper threaded parts (plus and minus)	Diametral tolerance on parallel internal threads (plus and minus)
				Major (gauge diameter)	Effective	Minor	Basic	Tolerance plus and minus	Max.	Min.	For basic gauge length	For max. gauge length (see Note 1)	For min. gauge length (see Note 1)				
				*			*	*	*	*	*	*	*	*	*	*	
		mm	mm	mm	mm	mm											mm
1/8	28	0.907	0.581	9.728	9.147	8.566	4 3/8 (4.0)	1 (0.9)	5 3/8 (4.9)	3 3/8 (3.1)	7 1/8 (6.5)	8 1/8 (7.4)	6 1/8 (5.6)	2 3/4 (2.5)	1/2 (1.4)	4 (1.1)	0.071
1/4	19	1.337	0.856	13.157	12.301	11.445	4 1/2 (6.0)	1 (1.3)	5 1/2 (7.3)	3 1/2 (4.7)	7 1/4 (9.7)	8 1/4 (11.0)	6 1/4 (8.4)	2 3/4 (3.7)	1 1/2 (2.0)	1 1/4 (1.7)	0.104
3/8	19	1.337	0.856	16.662	15.806	14.950	4 3/4 (6.4)	1 (1.3)	5 3/4 (7.7)	3 3/4 (5.1)	7 1/2 (10.1)	8 1/2 (11.4)	6 1/2 (8.8)	2 3/4 (3.7)	1 1/2 (2.0)	1 1/4 (1.7)	0.104
1/2	14	1.814	1.162	20.955	19.793	18.631	4 1/2 (8.2)	1 (1.8)	5 1/2 (10.0)	3 1/2 (6.4)	7 1/4 (13.2)	8 1/4 (15.0)	6 1/4 (11.4)	2 3/4 (5.0)	1 1/2 (2.7)	1 1/4 (2.3)	0.142
3/4	14	1.814	1.162	26.441	25.279	24.117	5 1/4 (9.5)	1 (1.8)	6 1/4 (11.3)	4 1/4 (7.7)	8 (14.5)	9 (16.3)	7 (12.7)	2 3/4 (5.0)	1 1/2 (2.7)	1 1/4 (2.3)	0.142
1	11	2.309	1.479	33.249	31.770	30.291	4 1/2 (10.4)	1 (2.3)	5 1/2 (12.7)	3 1/2 (8.1)	7 1/4 (16.8)	8 1/4 (19.1)	6 1/4 (14.5)	2 3/4 (6.4)	1 1/2 (3.5)	1 1/4 (2.9)	0.180
1 1/4	11	2.309	1.479	41.910	40.431	38.952	5 1/2 (12.7)	1 (2.3)	6 1/2 (15.0)	4 1/2 (10.4)	8 1/4 (19.1)	9 1/4 (21.4)	7 1/4 (16.8)	2 3/4 (6.4)	1 1/2 (3.5)	1 1/4 (2.9)	0.180
1 1/2	11	2.309	1.479	47.803	46.324	44.845	5 1/2 (12.7)	1 (2.3)	6 1/2 (15.0)	4 1/2 (10.4)	8 1/4 (19.1)	9 1/4 (21.4)	7 1/4 (16.8)	2 3/4 (6.4)	1 1/2 (3.5)	1 1/4 (2.9)	0.180
2	11	2.309	1.479	59.614	58.135	56.656	6 7/8 (15.9)	1 (2.3)	7 7/8 (18.2)	5 7/8 (13.6)	10 1/8 (23.4)	11 1/8 (25.7)	9 1/8 (21.1)	3 1/4 (7.5)	2 (4.6)	1 1/4 (2.9)	0.180
2 1/2	11	2.309	1.479	75.184	73.705	72.226	7 9/16 (17.5)	1 1/2 (3.5)	9 1/16 (21.0)	6.1/16 (14.0)	11 9/16 (26.7)	13 1/16 (30.2)	10 1/16 (23.2)	4 (9.2)	2 1/2 (5.8)	1 1/2 (3.5)	0.216
3	11	2.309	1.479	87.884	86.405	84.926	8 15/16 (20.6)	1 1/2 (3.5)	10 7/16 (25.7)	7 7/16 (18.7)	12 5/16 (31.4)	14 7/16 (34.9)	11 7/16 (27.9)	4 (9.2)	2 1/2 (5.8)	1 1/2 (3.5)	0.216
3 1/2	11	2.309	1.479	100.330	98.851	97.372	9 5/8 (22.2)	1 1/2 (3.5)	11 1/8 (25.7)	8 1/8 (18.7)	13 5/8 (31.4)	15 1/8 (34.9)	12 1/8 (27.9)	4 (9.2)	2 1/2 (5.8)	1 1/2 (3.5)	0.216
4	11	2.309	1.479	113.030	111.551	110.072	11 (25.4)	1 1/2 (3.5)	12 1/2 (28.9)	9 1/2 (21.9)	12 1/2 (35.8)	17 (39.3)	14 (32.3)	4 1/2 (10.4)	3 (6.9)	1 1/2 (3.5)	0.216
5	11	2.309	1.479	138.430	136.951	135.472	12 3/8 (28.6)	1 1/2 (3.5)	13 7/8 (32.1)	10 7/8 (25.1)	17 3/8 (40.1)	18 7/8 (43.6)	15 7/8 (36.6)	5 (11.5)	3 1/2 (8.1)	1 1/2 (3.5)	0.216
6	11	2.309	1.479	163.830	162.351	160.872	12 3/8 (28.6)	1 1/2 (3.5)	13 7/8 (32.1)	10 7/8 (25.1)	17 3/8 (40.1)	18 7/8 (43.6)	15 7/8 (36.6)	5 (11.5)	3 1/2 (8.1)	1 1/2 (3.5)	0.216

NOTES 1 *The design of internally threaded parts (see Fig. 4) shall make allowance for receiving pipe ends up to the lengths in Column 13 and the minimum lengths of useful thread shall be not less than 80 per cent of the values in Column 14.*

2 *Taper threads have a taper of 1 in 16 measured on diameter.*

TABLE 2 - Lengths for dimension A, Fig. 4

Nominal Size	Minimum lengths A in turns of thread (see Note below) for		
	Internal thread with extreme plus tolerance (maximum diameter)	Internal thread of basic size (gauge diameter)	Internal thread with extreme minus tolerance (minimum diameter)
1/16	8 1/8 (7,4)	6 7/8 (6,2)	5 5/8 (5.1)
1/8	8 1/8 (7,4)	6 7/8 (6,2)	5 5/8 (5.1)
1/4	8 1/4 (11.0)	7 (9.3)	5 3/4 (7.7)
3/8	8 1/2 (11.4)	7 1/4 (9.7)	6 (8.0)
1/2	8 1/4 (15,0)	7 (12.7)	5 3/4 (10.4)
3/4	9 (16.3)	7 3/4 (14.1)	6 1/2 (11.7)
1	8 1/4 (19.0)	7 (16.2)	5 3/4 (13.3)
1 1/4	9 1/4 (21.4)	8 (18.5)	6 3/4 (15.6)
1 1/2	9 1/4 (21.4)	8 (18.5)	6 3/4 (15.6)
2	11 1/8 (25.7)	9 7/8 (22.8)	8 5/8 (19,9)
2 1/2	13 1/16 (30,1)	11 9/16 (26.7)	10 1/16 (23.2)
3	14 7/16 (33,3)	12 15/16 (29.9)	11 7/16 (26.4)
4	17 (39.3)	15 1/2 (35.6)	14 (32.3)
5	18 7/8 (43.6)	17 3/8 (40.1)	15 7/8 (36.6)
6	18 7/8 (43,6)	17 3/8 (40,1)	15 7/8 (36,6)

Note - Linear values are given in parentheses.

TABLE 3 - Dimensions of taper full-form screw plug and ring gauges for system A

Taper 1 in 16 on diameter.
Dimensions in millimetres.

1	2	3	4	5	6	7
Nominal size	Basic diameters at gauge plane			Taper screw plug gauge		Taper screw ring gauge
				Small end of plug gauge plane step	Overall length of thread	Overall length of gauge
	major	pitch	minor	*a*	*b*	*a*
1/16	7.723	7.142	6.561	4.0	6.6	4.0
1/8	9.728	8.147	8.566	4.0	6.6	4.0
1/4	13.157	12.301	11.445	6.0	9.9	6.0
3/8	16.662	15.806	14.950	6.4	10.4	6.4
1/2	20.955	19.793	18.631	8.2	13.7	8.2
3/4	26.441	25.279	24.117	9.5	15.0	9.5
1	33.249	31.770	30.291	10.4	17.3	10.4
1 1/4	41.910	40.431	38.952	12.7	19.6	12.7
1 1/2	47.803	46.324	44.845	12.7	19.6	12.7
2	59.614	58.135	56.656	15.9	22.9	15.9
2 1/2	75.184	73.705	72.226	17.5	24.4	17.5
3	87.884	86.405	84.926	20.6	27.7	20.6
4	113.030	111.551	110.072	25.4	32.3	25.4
5	138.430	136.951	135.472	28.6	35.6	28.6
6	163.830	162.351	160.872	28.6	35.6	28.6

TABLE 4 - Dimensions of taper screw and taper plain plug and ring gauges for system B

Nominal taper 1 in 16 on diameter
Dimensions in millimetres

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Nominal size	Basic diameters at gauge plane			Taper screw plug gauge			Taper screw ring gauge			Taper plain plug gauge (see Note 1)			Taper plain ring gauge (see Note 2)			
				overall length of thread	gauge plane to + face datum	depth of step	overall length of thread	gauge plane to + face datum	depth of step	overall length	gauge plane to + face datum	depth of step	overall length	gauge plane to + face datum	depth of step	depth of counterbore
	major	pitch	minor	*c*	*d*	*e*	*f*	*g*	*h*	*j*	*k*	*l*	*f*	*m*	*n*	*q*
1/16	7.723	7.142	6.561	7.4	1.1	2.2	6.7	4.9	1.8	4.2	1.6	2.8	6.7	5.3	2.2	4.2
1/8	9.728	9.147	8.566	7.4	1.1	2.2	6.7	4.9	1.8	4.2	1.6	2.8	6.7	5.3	2.2	4.2
1/4	13.157	12.301	11.445	11.0	1.7	3.4	10.0	7.3	2.6	6.2	2.5	4.2	10.0	8.0	3.2	6.3
3/8	16.662	15.806	14.950	11.4	1.7	3.4	10.4	7.7	2.6	6.2	2.5	4.2	10.4	8.4	3.2	6.7
1/2	20.955	19.793	18.631	15.0	2.3	4.6	13.6	10.0	3.6	8.4	3.4	5.7	13.6	10.9	4.5	8.6
3/4	26.441	25.279	24.117	16.3	2.3	4.6	15.0	11.3	3.6	8.4	3.4	5.7	15.0	12.2	4.5	9.9
1	33.249	31.770	30.291	19.1	2.9	5.8	17.3	12.7	4.6	10.7	4.3	7.2	17.3	13.8	5.8	10.9
1 1/4	41.910	40.431	38.952	21.4	2.9	5.8	19.6	15.0	4.6	10.7	4.3	7.2	19.6	16.2	5.8	13.3
1 1/2	47.803	46.324	44.845	21.4	2.9	5.8	19.6	15.0	4.6	10.7	4.3	7.2	19.6	16.2	5.8	13.3
2	59.614	58.135	56.656	25.7	2.9	5.8	23.4	18.2	4.6	11.8	4.3	7.2	23.4	19.3	5.8	16.4
2 1/2	75.184	73.705	72.226	30.2	3.5	7.0	27.3	21.0	7.0	14.4	5.2	8.7	27.3	22.7	8.7	19.2
3	87.884	86.405	84.926	33.3	3.5	7.0	30.4	24.1	7.0	14.4	5.2	8.7	30.4	25.8	8.7	22.3
4	113.030	111.551	110.072	39.3	3.5	7.0	35.8	28.9	7.0	15.6	5.2	8.7	35.8	30.6	8.7	27.1
5	138.430	136.951	135.472	43.6	3.5	7.0	39.5	32.1	7.0	16.7	5.2	8.7	39.5	33.8	8.7	30.3
6	168.830	162.351	160.872	43.6	3.5	7.0	39.5	32.1	7.0	16.7	5.2	8.7	39.5	33.8	8.7	30.3

For gauge tolerances, see Table 5
For illustration of gauges, see Figs. 7, 8, 9 and 10

NOTES

1 Taper plain plug gauge : The basic diameter at the gauge plane is the basic minor diameter of the screw thread (see Column 4).

2 Taper plain ring gauge : The basic diameter at the gauge plane is the basic major diameter of the screw thread (see Column 2).

PART 2 LONGSCREW THREADS

6 BASIC THREAD FORM

The basic form of the standard parallel external longscrew thread is the basic Whitworth form (Fig. 2)

7 DIMENSIONS AND TOLERANCES

The parallel threads on the longscrews shall be of such size that the socket (screwed in accordance with the requirements of 5.2 will run on the longscrew hand-tight without perceptible shake.

NOTE - For special gas appliance applications see Appendix C.

8 DESIGNATION

Sri Lanka Standard longscrew threads shall be designated by the letters R_L.

It is recommended that these screw threads should be referred to on drawings and related documents in the following manner:

$$R_L \ 1/2$$

APPENDIX A

RECOMMENDED GAUGING SYSTEMS FOR JOINTING THREADS

Appendix A gives details of alternative systems of gauging recommended for use in the control of threads intended to conform to the requirements of Part 1 Jointing threads. To ensure complete compliance with the standard would require very elaborate methods of inspection which are not regarded as necessary or even practicable. It is considered that under appropriate conditions, gauging by either of the recommended systems, coupled with visual inspection, should suffice to ensure satisfactory products which will make sound joints. The use of either recommended system is not mandatory: the recommendations are given only for guidance in the hope that they will be of service to both makers and users.

System A is intended for use where additional production control methods are employed to ensure the general accuracy of the threads.

System B is intended for use where the adequacy of production control is not otherwise established.

The taper plug gauges in Systems A and B may be used for gauging both taper and parallel internal pipe threads.

A.1 SYSTEM A

A.1.1 Description of gauges

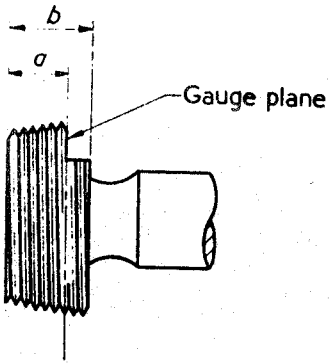
System A comprises the following types of gauges:

a) A taper full-form screw plug gauge (Fig. 5): This gauge has a step at the gauge plane; the length of the thread from the gauge plane step to the small end of the plug is equal to the basic gauge length. The length of the thread from this gauge plane step to the large end is approximately 3 pitches; and

b) A taper full-form screw ring gauge (Fig. 6): This gauge has a length of thread equal to the basic gauge length and the large end diameters are equal to the basic diameters at the gauge plane.

A.1.2 Dimensions and tolerances

The dimensions for gauges in System A are given in Table 3 and the tolerances for gauges are given in Table 5.



For dimensions, see Table 3.
For gauge tolerances, see Table 4.

FIGURE 5 - Taper full-form screw plug gauge (system A)

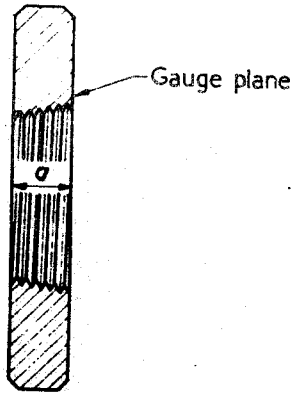


FIGURE 6 - Taper full-form screw ring gauge (system A)

A.2 SYSTEM B

A.2.1 Description of gauges

System B comprises the following types of gauges:

a) A taper full-form screw plug gauge (Fig. 7): This gauge has a total length of thread equal to the length of useful thread for maximum length, and incorporates a step equal to the total tolerance on the position of the gauge plane. The upper face of the step is marked positive (+) and the lower face is marked negative (-).

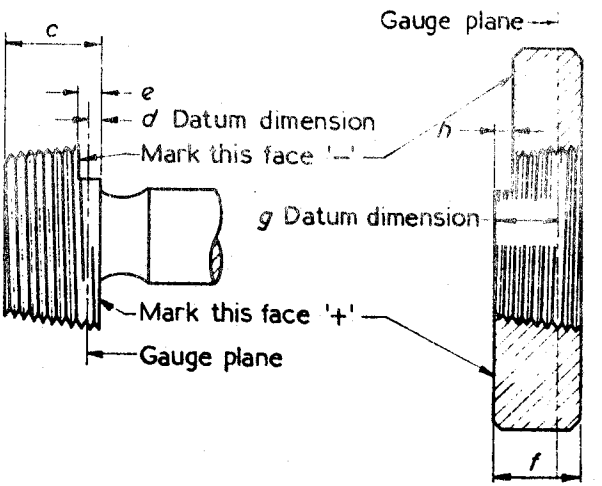
b) A taper full-form screw ring gauge (Fig. 8): This gauge has a total length of thread equal to the length of useful thread for maximum gauge length minus half the wrenching allowance, and incorporates a step equal to the total tolerance on the gauge length. The upper face of the step is marked positive (+) and the lower face is marked negative (-).

c) A taper plain plug gauge (Fig. 9): This gauge has an overall length equal to the fitting allowance plus 3/4 of the total tolerance on the position of the gauge plane, and incorporates a step equal to 1 1/4 times the total tolerance on the position of the gauge plane. The distance *k* from the gauge plane to the upper face of the step is equal to 1 1/2 times the positive tolerance on the internal thread (Table 1, Column 17). The upper face of the step is marked positive (+) and the lower face is marked negative (-), but this marking may be omitted where space does not allow for it. The gauge will accept internal threads having small errors of taper and thread depth.

d) A taper plain ring gauge (Fig. 10): This gauge has an overall length equal to the length of useful thread for maximum gauge length minus half the wrenching allowance. It incorporates a step at the small end of the taper equal to 1 1/4 times the total tolerance on the gauge length and having the upper face marked positive (+) and the lower face marked negative (-). The distance *m* from the gauge plane to the upper face of the step is equal to the minimum gauge plus the height of the step. The gauge is recessed at the small end to a distance representing the negative (-) tolerance for an internal thread measured from the gauge plane. This gauge will accept external threads having small errors of taper and thread depth.

A.2.2 Dimensions and tolerances

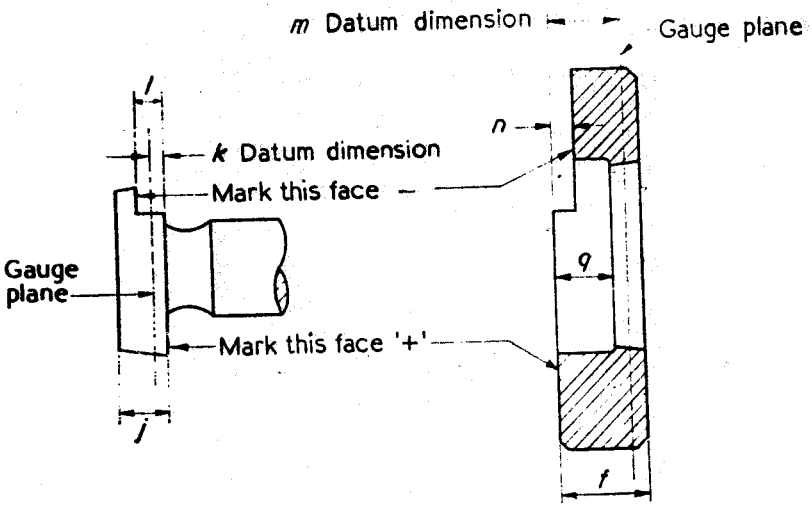
The dimensions for gauges in System B are given in Table 4 and the tolerances for gauges are given in Table 5.



For dimensions, see Table 4.
For gauge tolerances, see Table 5.

FIGURE 7 - Taper full-form screw plug gauge (system B)

FIGURE 8 - Taper full-form screw ring gauge (system B)



For dimensions, see Table 4.
For gauge tolerances, see Table 5.

FIGURE 9 - Taper plain plug gauge (system B)

FIGURE 10 - Taper plain ring gauge (system B)

APPENDIX B

METHOD OF USE OF GAUGES REFERRED TO IN APPENDIX A

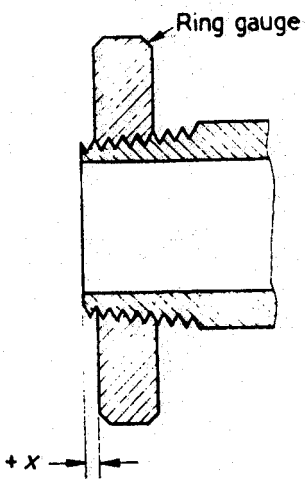
B.1 SYSTEM A

B.1.1 Gauging taper external pipe threads

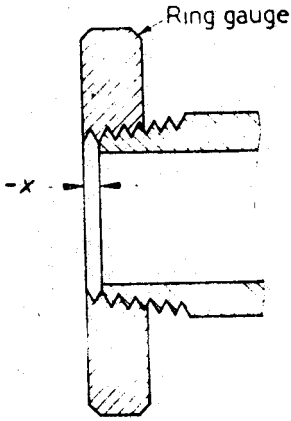
The taper screw ring gauge (Fig. 6) is screwed hand-tight on to the external thread. The thread is within the permissible tolerance if the small end of the thread lies within the plus and minus tolerance *x* (Table 1, Column 9) of the face of the small end of the ring gauge (see Fig. 11)

B.1.2 Gauging taper or parallel internal pipe threads

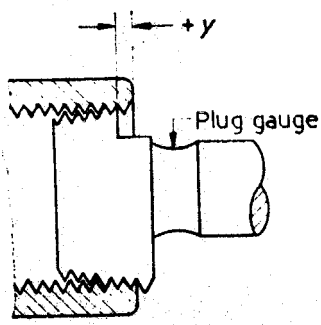
The taper screw plug gauge (Fig. 5) is screwed hand-tight into the internal thread. The thread is within the permissible tolerance if the end of the thread lies within the plus and minus tolerance *y* (Table 1, Column 17) from the gauge plane step of the plug gauge (see Fig. 11).



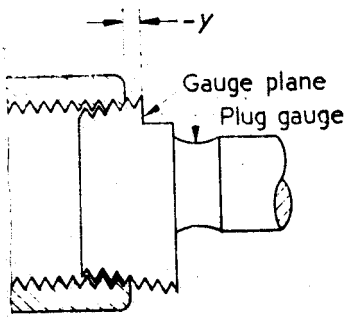
External thread of maximum gauge length



External thread of minimum gauge length



Internal thread (parallel or taper) of maximum size



Internal thread (parallel or taper) of minimum size

Parallel thread is illustrated.
Taper of gauge is shown exaggerated in the diagram.

FIGURE 11 - System A screw gauges assembled respectively with threads of maximum and minimum sizes

NOTES

1 Values of x are given in Table 1, Column 9.
Values of y are given in Table 1, Column 17.

2 The taper screw plug gauges are used in a similar manner for gauging internal taper threads.

B.2 SYSTEM B

B.2.1 Gauging taper external pipe threads

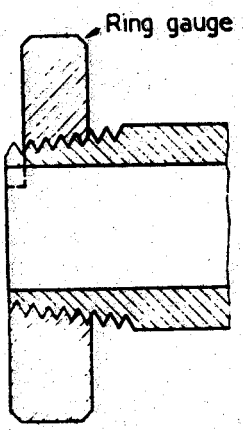
B.2.1.1 The taper screw ring gauge (Fig. 8) is screwed hand-tight on to the external thread. The thread is within the permissible tolerance if the small end of the thread lies between the faces, or flush with either face of the step on the gauge (see Fig. 12).

B.2.1.2 The taper plain ring gauge (Fig. 10) is assembled by hand with the external threads, care being taken not to use an excessive amount of force. The thread is within the permissible tolerance if the small end of the thread lies between the faces, or flush with either face of the step on the gauge.

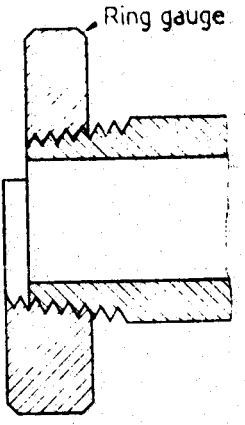
B.2.2 Gauging taper or parallel internal pipe threads

B.2.2.1 The taper screw plug gauge (Fig. 7) is screwed hand-tight into the internal thread. The thread is within the permissible tolerance if the end of the thread lies between the faces, or flush with either face of the step on the gauge (see Fig. 12).

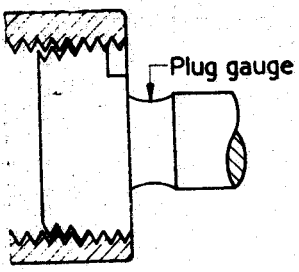
B.2.2.2 The taper plain plug gauge (Fig. 9) is assembled by hand with the internal thread, care being taken not to use an excessive amount of force. The thread is within the permissible tolerance if the end of the thread lies between the faces, or flush with either face of the step on the gauge.



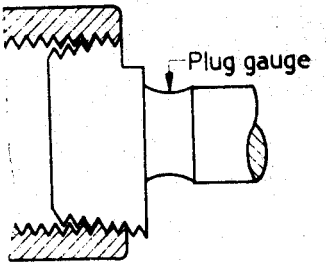
External thread of maximum gauge length



External thread of minimum gauge length



Internal thread (parallel or taper) of maximum size



Internal thread (parallel or taper) of minimum size

Parallel thread is illustrated.
Taper of gauge is shown exaggerated in the diagram.

FIGURE 12 - System B screw gauges assembled respectively with threads of maximum and minimum sizes

NOTES

1 The taper plain plug and plain ring gauges are used in a similar manner to that illustrated for screw plug and ring gauges.

2 The taper screw plug gauges are used in a similar manner for gauging internal taper threads.

TABLE 5 - Manufacturing tolerances for gauges for systems A and B

Dimensions in micrometres unless otherwise stated.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Nominal size	No. of threads per inch	Diameter measured at gauge plane								*Maximum pitch error between any two threads				Maximum flank angle errors (±)		Maximum taper error on diameter** over length of taper				
		taper screw plug			taper screw ring			taper plain gauge	taper plain ring	taper screw plug		taper screw ring		taper screw plug	taper screw ring	taper screw plug	taper screw ring		taper plain plug	taper plain ring
		Figs. 5 and 7			Figs. 6 and 8															
		Major	pitch	minor	major	pitch	minor	Fig.9	Fig.10	Fig.5	Fig.7	Fig.6	Fig.8	Figs.5 and 7	Figs.6 and 8	Figs.5 and 7	Fig.6	Fig.8	Fig.9	Fig.10
1/16	28	±10	±5	+5-13	+15-8	±8	±13	±5	±8	5	8	8	10	25'	30'	+8	-10	-15	+5	-8
1/8	28	±10	±5	+5-13	+15-8	±8	±13	±5	±8	5	8	8	10	25'	30'	+8	-10	-15	+5	-8
1/4	19	±10	±5	+5-13	+15-8	±8	±13	±5	±8	5	8	8	10	20'	25'	+10	-13	-18	+8	-10
3/8	19	±10	±5	+5-13	+15-8	±8	±13	±5	±8	5	8	8	10	20'	25'	+10	-13	-18	+8	-10
1/2	14	±13	±8	+8-15	+20-10	±10	±15	±8	±10	5	8	8	10	15'	20'	+15	-15	-23	+10	-10
3/4	14	±13	±8	+8-15	+20-10	±10	±15	±8	±10	5	8	8	10	15'	20'	+15	-15	-23	+10	-10
1	11	±13	±8	+8-15	+20-10	±10	±15	±8	±10	8	10	10	15	10'	15'	+20	-20	-30	+13	-13
1 1/4	11	±13	±8	+8-15	+20-10	±10	±15	±8	±10	8	10	10	15	10'	15'	+20	-20	-30	+13	-13
1 1/2	11	±13	±8	+8-15	+20-10	±10	±15	±8	±10	8	10	10	15	10'	15'	+20	-20	-30	+13	-13
2	11	±13	±8	+8-15	+20-10	±10	±15	±8	±10	8	10	10	15	10'	15'	+20	-20	-30	+13	-13
2 1/2	11	±15	±10	+10-20	+30-15	±15	±20	±10	±15	10	13	13	15	10'	15'	+20	-25	-38	+15	-15
3	11	±15	±10	+10-20	+30-15	±15	±20	±10	±15	10	13	13	15	10'	15'	+20	-25	-38	+15	-15
4	11	±18	±13	+13-25	+36-18	±18	±23	±13	±18	10	13	13	15	10'	15'	+25	-25	-38	+15	-15
5	11	±18	±13	+13-25	+36-18	±18	±23	±13	±18	10	13	13	15	10'	15'	+25	-25	-38	+15	-15
6	11	±18	±13	+13-15	+36-18	±18	±23	±13	±18	10	13	13	15	10'	15'	+25	-25	-38	+15	-15

Length tolerances:

Dimensions *a*, *e*, *h*, *l* and *n* + 0
(see Tables 1 and 3) - 25 for sizes below 1
and + 0
- 50 for sizes 1 and above.

Dimensions *b*, *c*, *f*, *j* and *q* + 125 for sizes below 1
(see Tables 1 and 3) - 0
and + 250 for sizes 1 and above.
- 0

End faces of plug and ring gauges to be square to the axis of taper to within 0.001 (25.4+D) full indicator movement, measured as close as possible to the screw thread where D = Basic major diameter of thread in mm.

* *Maximum allowable error in pitch between any two threads whether adjacent or separated by any amount not exceeding the full length of thread less one full thread at each end.*

** *The maximum taper error on diameter over the length of taper of a screw gauge should be measured over the full length of thread less one full thread at each end of gauge.*

APPENDIX C

SPECIAL EXTERNAL THREADS FOR GAS APPLIANCES WHERE PRESSURE-TIGHT SEALS ARE MADE ON MACHINED FACES

TABLE 6 - Special metric external parallel threads for gas appliances and components where pressure-tight seals are made on machined faces

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Nominal size	No. of threads per inch	Pitch	Depth of thread	Major diameter (gauge diameter)				Pitch diameter				Minor diameter			
				basic	tol.	max.	min.	basic	tol.	max.	min.	basic	tol.	max.	min.
1/8	28	0.907	0.581	9.728	(-0.089 (-0.284	9.639	9.444	9.147	(-0.089 (-0.196	9.038	8.951	8.566	(-0.089 (and over	8.477	
1/4	19	1.337	0.856	13.157	(-0.124 (-0.353	13.033	12.804	12.301	(-0.124 (-0.249	12.177	12.052	11.445	(-0.124 (and over	11.321	
3/8	19	1.337	0.856	16.662	(-0.124 (-0.353	16.538	16.309	15.806	(-0.124 (-0.249	15.682	15.557	14.950	(-0.124 (and over	14.826	
1/2	14	1.814	1.162	20.955	(-0.168 (-0.427	20.787	20.528	19.793	(-0.168 (-0.310	19.625	19.483	18.631	(-0.168 (and over	18.463	
3/4	14	1.814	1.162	26.441	(-0.168 (-0.427	26.273	26.014	25.279	(-0.168 (-0.310	25.11	24.969	24.117	(-0.168 (and over	23.949	
1	11	2.309	1.479	33.249	(-0.211 (-0.541	33.038	32.708	31.770	(-0.211 (-0.391	31.559	31.379	30.291	(-0.211 (and over	30.080	

NOTE - Parallel internal threads for use with the above threads shall accept a parallel length of screwed pipe-end in accordance with those specified in Column 13 of Table 1.

BUREAU OF CEYLON STANDARDS

The Bureau of Ceylon Standards (BCS) is the national standards organization of Sri Lanka and was established by the Hon. Minister of Industries & Fisheries, as provided for by the Bureau of Ceylon Standards Act. No. 38 of 1964.

The principal objects of the Bureau as set out in the Act are to promote standards in industry and commerce, prepare national Standards Specifications and Codes of Practice and operate a Standardization Marks Scheme and provide testing facilities, as the need arises.

The Bureau is financed by Government grants and the sale of its publications. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The detailed preparation of Standard Specifications is done by Drafting Committees composed of experts in each particular field assisted by permanent officers of the Bureau. These Committees are appointed by Divisional Committees, which are appointed by the Council. All members of the Drafting and Divisional Committees render their services in an honorary capacity. In preparing the Standard Specifications, the Bureau endeavours to ensure adequate representation of all view points.

In the international field the Bureau represents Sri Lanka in the International Organization for Standardization (ISO) and will participate in such fields of Standardization as are of special interest to Sri Lanka.

Printed at Bureau of Ceylon Standards, 53, Dharmapala Mawatha, Colombo 3, Sri Lanka.