COMPRESSIBLE-WASHER-TYPE DIRECT TENSION INDICATORS FOR USE WITH STRUCTURAL FASTENERS [METRIC]

12. Test Methods

12.1 Direct tension indicators shall be tested in accordance with Annex A1 of this specification.

13. Inspection

14. Rejection

15. Certification

(Refer to the complete specification for Paras. 13, 14, and 15.)

16. Responsibility

16.1 The party responsible for the direct tension indicator shall be the organization that supplies the direct tension indicator to the purchaser and certifies that the direct tension indicator was manufactured, sampled, tested, and inspected in accordance with this specification and meets all of its requirements.

17. Product Marking

17.1 Each direct tension indicator shall be marked to identify the lot number, manufacturer or private label distribution, as appropriate, and type (see Para. 1.2).

17.2 All markings shall be depressed on the same face of the direct tension indicators as the protrusions. Raised markings are prohibited.

17.3 All direct tension indicators shall have circumferential indentations spaced equally around the outside circumference, corresponding to and in alignment with each feeler gage entry space. Indentations shall be clearly visible but not so large as to interfere with the function of the direct tension indicator. (See Fig. 1.)

17.3.1 The circumferential indentations indicate where the feeler gage must be inserted.

18. Packaging and Package Marking

18.1 *Packaging:*

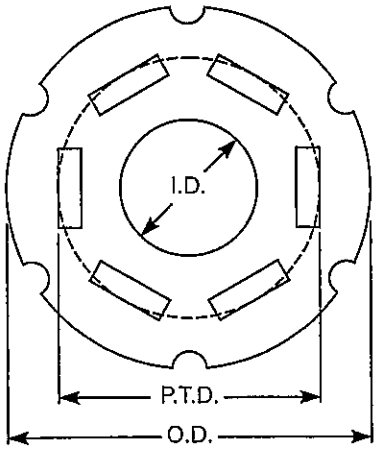
18.1.1 Unless otherwise specified, packaging shall be in accordance with Practice D3951.

18.1.2 Packaging shall be performed as soon as practical following final testing.

Table 4 Dimensions of Direct Tension Indicators

Direct Tension Indicator Size (Nominal Diameter, mm)[A]	Type 8.8					Type 10.9					All Types		
	Outside Diameter (OD), mm		Number of Protrusions (Equally Spaced)	Thickness, mm		Outside Diameter (OD), mm		Number of Protrusions (Equally Spaced)	Thickness, mm		Inside Diameter (ID), mm		Protrusion Tangential Diameter (PTD), Max, mm (see Fig. 1)
	Min	Max		Without Protrusion, Min	With Protrusion, Max	Min	Max		Without Protrusion, Min	With Protrusion Max	Uncoated Min	Uncoated Max	
M16	35.2	36.8	4	3.2	5.5	35.2	36.8	4	3.6	6.0	16.75	16.85	25
M20	44.0	46.0	5	3.6	6.0	44.0	46.0	6	3.6	6.0	20.95	21.05	29
M22	48.4	50.6	5	3.6	6.0	48.4	50.6	6	4.0	7.0	23.05	23.15	33
M24	52.8	55.2	5	4.0	7.0	52.8	55.2	6	4.0	7.0	25.15	25.25	38
M27	59.4	62.1	6	4.0	7.0	59.4	62.1	7	4.0	7.0	28.30	28.40	43
M30	66.0	69.0	7	4.0	7.0	66.0	60.0	8	4.8	7.5	31.45	31.55	46.5
M36	79.2	82.8	8	4.8	7.5	79.2	82.8	9	4.8	7.5	37.75	37.85	56

[A] Nominal direct tension indicator sizes are intended for use with fasteners of the same nominal diameter.



DIRECT TENSION INDICATOR

Fig. 1 **Direct Tension Indicator Protrusion Tangential Diameter (PTD)**

18.1.3 When special packaging requirements are required, they shall be defined at the time of the inquiry and order.

18.2 *Packaging Marking:*

18.2.1 Each shipping unit shall include or be marked plainly with the following information:

18.2.1.1 ASTM designation and type,

18.2.1.2 Size,

18.2.1.3 Name and brand or trademark of the manufacturer or private label distributor,

18.2.1.4 Number of pieces,

18.2.1.5 Purchase order number,

18.2.1.6 Name of product,

18.2.1.7 Lot identification number, and

18.2.1.8 Finish,

18.2.1.9 Country of origin.

19. Storage

19.1 The direct tension indicators shall be stored in an environment that preserves the surface condition supplied by the manufacturer.

20. Key Words

20.1 compressible washers; direct tension indicators; DTI; indicators; washers