



Load Indicator Washer (DTI F959)

STANDARDS		BS EN 14399-9 DTI / LOAD INDICATOR WASHER (System HR or HV)							
Nominal Dia		M12	M16	M20	M22	M24	M27	M30	M36
Internal Diameter d1	Min	12.75	16.75	20.95	23.05	25.15	28.30	31.45	37.75
	Max	12.85	16.85	21.05	23.15	25.25	28.40	31.55	37.85
External Diameter d2	Min	26.0	35.0	41.0	46.5	50.0	54.0	59.0	78.0
	Max	32.5	36.8	46.0	50.6	55.2	62.1	69.0	83.0
Material Thickness	h1	2.5 min	3.0 min	3.5 min	4.0 min	4.0 min	4.0 min	4.0 min	4.0 min
Height Over Protrusions	h2	5.50 max	6.0 max	6.5 max	7.0 max	7.0 max	7.0 max	7.0 max	7.5 max
Height Over Protrusions	h3	0.8 min	0.8 min	0.8 min	0.8 min	0.8 min	0.8 min	0.8 min	0.8 min
Protrusion tangential diameter	d3	20 max	25 max	29 max	33 max	38 max	43 max	46.5 max	56 max
Protrusion internal diameter	d4	13.85 min	17.85 min	22.05 min	24.15 min	26.25 min	29.40 min	32.55 min	38.85 min

BS EN 14399-9 DTI COMPRESION LOADS AT SPECIFIED GAP

Designated H8	Min	47	88	137	170	198	257	314	458
	Max	56	106	164	204	238	308	377	550
Designated H10	Min	59	110	172	212	247	321	393	572
	Max	71	132	206	254	296	385	472	688

BS EN 14399-9 DTI WASHER FEELER GAUGE REQUIRMENT

Direct Tension Indicator Positions	Under Bolt Head when nut is rotated	Under Nut when bolt is rotated	Under Nut when nut is rotated	Under bolt Head when bolt is rotated
Designation H8 and H10 and Thickness of feeler gauge	0.40		0.25	

Product Characteristic	Standard
Material	Steel
General Requirement	EN 14399-1
Heat Treatment	Hardened and tempered or controlled rolled and tempered
Maximum Hardness	380 HV
Surface Finish	As Processed
	EN 13811
	As agreed
Associated bolt & nuts	EN 14399-3 / 4 / 7 / 8
Associated washers	EN 14399-5 / 6
Acceptability	For acceptance procedure see EN ISO 3269

The direct tension indicators shall not be electroplated or subjected to any process that could result in hydrogen embrittlement

Sherardizing is considered to provide corrosion protection equivalent to hot dip galvanizing. As processed means the normal finish resulting from manufacture with oil coating. Other coating may be negotiated between the purchaser and the manufacturer providing they do not impair the mechanical properties of functional characteristics. Coating of cadmium or cadmium alloys are not permitted. For acceptance ariteria use 0.65 AQL, Ac No 0; see EN ISO 3269:2000, Tables 5 and 6

LUBRICATION

Lubrication is one of the most critical features of a preloaded bolting assembly; DTI assemblies require sufficient lubrication to achieve the minimum preload and the further rotation