

3.6 Marking of the direct tension indicator

Direct tension indicators shall be marked with the identification mark of the manufacturer of the bolting assembly, and H8 or H10 as appropriate.

The marking shall be indented into the direct tension indicator face from which the protrusions project.

It is recommended to stamp lot number on the face of the direct tension indicator.

3.7 Designation of the direct tension indicator

When designating for the purpose of an enquiry or order, the following information shall be given:

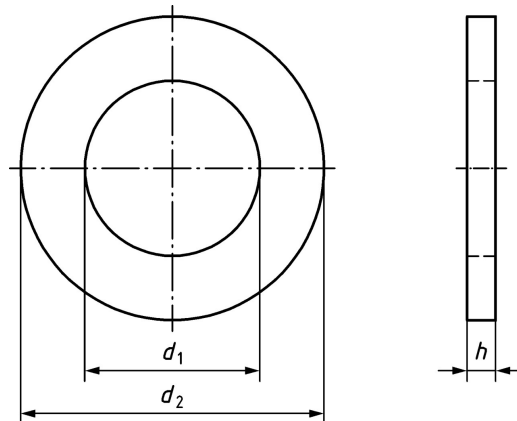
- general product description for direct tension indicators, DTI;
- the associated nominal bolt diameter (M12, etc.);
- DTI property designation “H8” or “H10” as appropriate;
- the number of this European Standard, EN 14399-9;
- the coating, if any, and the relevant European Standard.

EXAMPLE DTI EN 14399-9 — M12 – sherardized EN ISO 17668, class 30

4 Nut face washers (HN) and bolt face washers (HB)

4.1 Dimensions

The dimensions and tolerances of nut face washers (HN) and bolt face washers (HB) shall be as specified in Table 6 and Table 7 and Figure 5 and Figure 6.



Key

- d_1 internal diameter
- d_2 external diameter
- h thickness

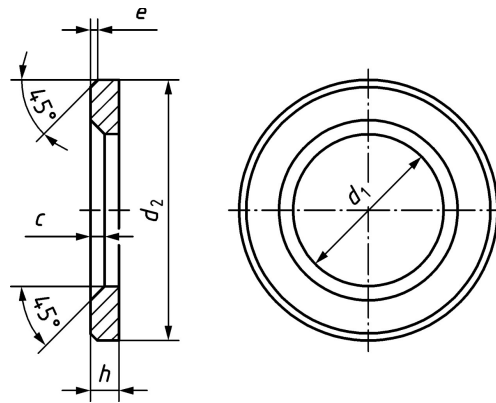
Figure 5 — Dimensions of nut face washers (HN)

Table 6 — Dimensions of nut face washers (HN)

Dimensions in millimetres

Nominal size <i>d</i> (nominal thread diameter of associated bolt)	Internal diameter		External diameter		Thickness	
	min.	max.	min.	max.	min.	max.
M12	12,1	12,35	22,7	24	2,7	4,3
M16	16,1	16,35	27,7	29	3,7	4,3
M20	20,1	20,40	34,4	36	3,7	4,3
M22	22,3	22,60	37,4	39	3,7	4,3
M24	24,2	24,50	41,4	43	3,7	4,3
M27	27,2	27,55	46,4	48	4,4	5,6
M30	30,2	30,55	50,1	52	4,4	5,6
M36	36,2	36,55	60,1	62	5,4	6,6

NOTE The washers are intended to fit over the threaded portion of the shank only. In some cases the washer internal diameter, d_1 , is less than the bolt shank maximum diameter specified in EN 14399-3 and EN 14399-4.



Key

- d_1 internal diameter
- d_2 external diameter
- h thickness
- c inside chamfer
- e outside chamfer

Figure 6 — Dimensions of bolt face washers (HB)

Table 7 — Dimensions of bolt face washers (HB)

Dimensions in millimetres

Nominal size <i>d</i> (nominal thread diameter of associated bolt)	Internal diameter		External diameter		Thickness		Inside chamfer		Outside chamfer	
	<i>d</i> ₁		<i>d</i> ₂		<i>h</i>		<i>c</i>		<i>e</i>	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
M12	13	13,27	23,48	24	2,7	3,3	1,6	1,9	0,50	1,0
M16	17	17,27	29,48	30	3,7	4,3	1,6	1,9	0,75	1,50
M20	21	21,33	36,38	37	3,7	4,3	2,0	2,5	0,75	1,50
M22	23	23,33	38,38	39	3,7	4,3	2,0	2,5	0,75	1,50
M24	25	25,33	43,38	44	3,7	4,3	2,0	2,5	0,75	1,50
M27	28	28,52	49	50	4,4	5,6	2,5	3,0	1,0	2,0
M30	31	31,62	54,80	56	4,4	5,6	2,5	3,0	1,0	2,0
M36	37	37,62	64,80	66	5,4	6,6	2,5	3,0	1,25	2,50

4.2 Specifications and reference standards for nut face washers (HN) and bolt face washers (HB)

The specifications and reference standards specified in Table 8.