



Westfield Fasteners Product Specification:

ISO 7089 - Plain Washers, Normal Series

This product guide contains the specification for metric normal sized flat washers, available from Westfield Fasteners. The basis of this specification is the ISO standard ISO 7089.

Product Description

A flat washer of normal size and function. Manufactured to ISO 7089, a standard that replaces type A from the DIN standard 125. These washers have a choice of hardness class, either 200 HV or 300 HV.

The 200 HV are suitable for hex head bolts, screws and nuts in property classes up to and including grade 8.8. They are also suitable for case-hardened thread rolling screws.

The 300 HV are suitable for hex head bolts, screws and nuts in property classes up to and including grade 10.9. They are also appropriate for through hardened socket head cap screws, bolts and nuts.

Flat washers are generally used in nut and bolt assemblies to improve stress distribution on the bearing surface and to span large clearance holes.

Scope of the ISO standard.

ISO 7089 specifies the characteristics for normal series plain washers in the 200 HV and 300 HV hardness classes, for sizes ranging from M1.6 to M64 inclusively.

Class 200 HV: HV 200 - 300 (Rockwell B 91.5 - C 29.8)

Class 300 HV: HV 300 - 400 (Rockwell C 29.8 - 40.8)

In this standard 200HV and 300HV hardness classes apply to carbon steel (i.e. non stainless) washers; stainless steel washers to ISO 7089 are specified to 200HV only.

Table 1 below defines the dimensions and tolerances for these normal series washers. Please note that nominal sizes in brackets are non preferred sizes.

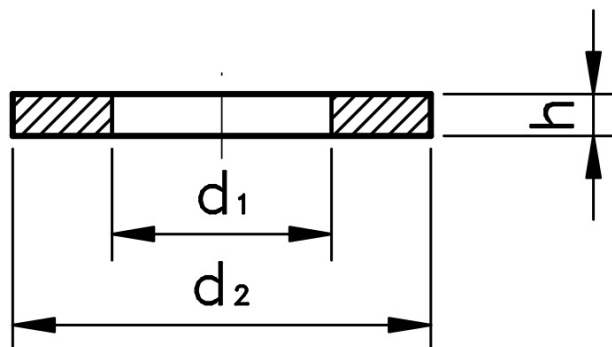


Figure 1: Plain Washer - Normal Series

Table 1: Dimensions & Tolerances according to ISO 7089

Nominal Size, d	Clearance Hole, d ₁		Outside Diameter, d ₂		Thickness, h		
	nom	max	nom	min	nom	max	min
1.6	1.70	1.84	4.00	3.7	0.3	0.35	0.25
2	2.20	2.34	5.00	4.7	0.3	0.35	0.25
2.5	2.70	2.84	6.00	5.7	0.5	0.55	0.45
3	3.20	3.38	7.00	6.64	0.5	0.55	0.45
(3.5)	3.70	3.88	8.00	7.64	0.5	0.55	0.45
4	4.30	4.48	9.00	8.64	0.8	0.9	0.7
5	5.30	5.48	10.00	9.64	1	1.1	0.9
6	6.40	6.62	12.00	11.57	1.6	1.8	1.4
8	8.40	8.62	16.00	15.57	1.6	1.8	1.4
10	10.50	10.77	20.00	19.48	2	2.2	1.8
12	13.00	13.27	24.00	23.48	2.5	2.7	2.3
(14)	15.00	15.27	28.00	27.48	2.5	2.7	2.3
16	17.00	17.27	30.00	29.48	3	3.3	2.7
(18)	19.00	19.33	34.00	33.38	3	3.3	2.7
20	21.00	21.33	37.00	36.38	3	3.3	2.7
(22)	23.00	23.33	39.00	38.38	3	3.3	2.7
24	25.00	25.33	44.00	43.38	4	4.3	3.7
(27)	28.00	28.33	50.00	49.38	4	4.3	3.7
30	31.00	31.39	56.00	55.26	4	4.3	3.7
(33)	34.00	34.62	60.00	58.80	5	5.6	4.4
36	37.00	37.62	66.00	64.80	5	5.6	4.4
(39)	42.00	42.62	72.00	70.80	6	6.6	5.4
42	45.00	45.62	78.00	76.80	8	9	7
(45)	48.00	48.62	85.00	83.60	8	9	7
48	52.00	52.74	92.00	90.60	8	9	7
(52)	56.00	56.74	98.00	96.60	8	9	7
56	62.00	62.74	105.00	103.60	10	11	9
(60)	66.00	66.74	110.00	108.60	10	11	9
64	70.00	70.74	115.00	113.60	10	11	9

For further details, please refer to the original ISO/DIN standard document for this item.