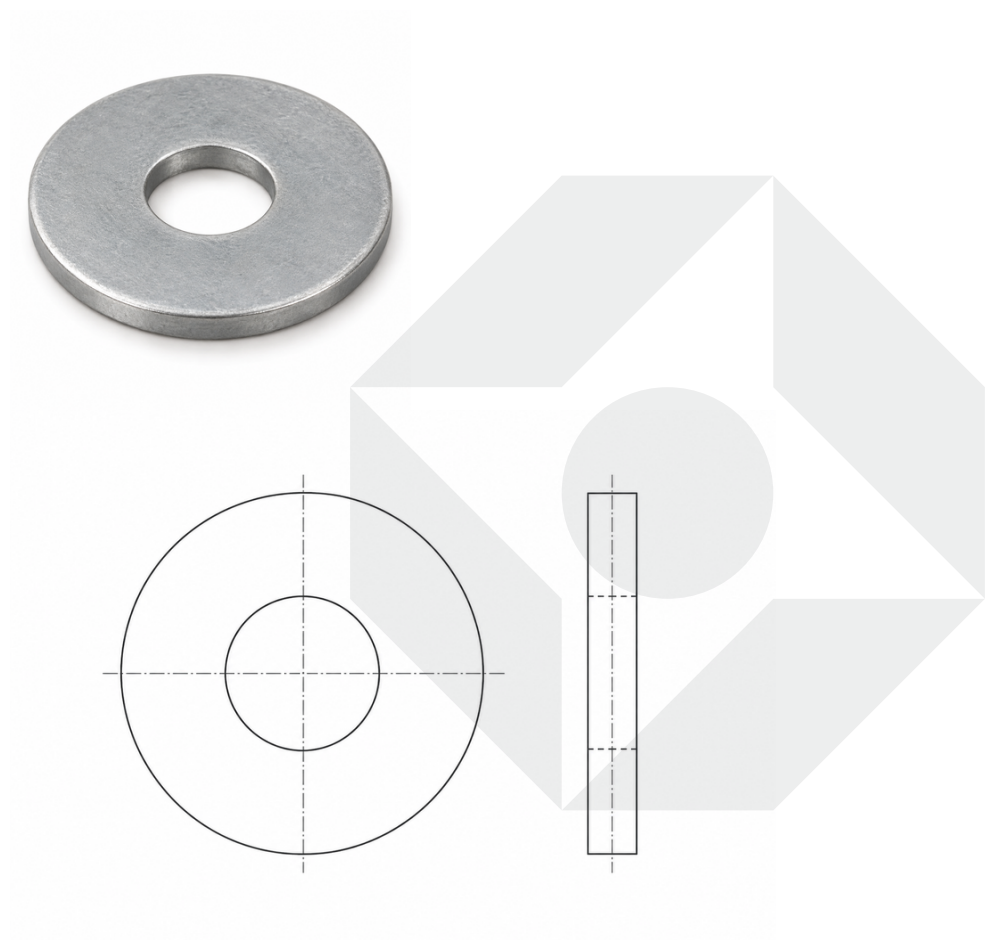


ISO 7093-1:2000

Large-series plain washer

A broad bearing surface spreads clamping force over soft materials or large clearance holes. Check thickness and actual support: a larger outside diameter alone does not establish the joint capacity.

Large series, product grade A, nominal sizes 3–36 mm. The nominal size identifies the mating screw; bore, outside diameter and thickness are separate dimensions. Enquire about other sizes and geometries.



d1: bore diameter · d2: outside diameter · s: thickness (also designated h in technical references)

Identification drawing, not a manufacturing drawing.

Dimensional range

Dimensions in millimetres.

M	d1 min.	d2 max.	s
3	3.2	9	0.8
3.5	3.7	11	0.8
4	4.3	12	1
5	5.3	15	1
6	6.4	18	1.6
8	8.4	24	2
10	10.5	30	2.5
12	13	37	3
14	15	44	3
16	17	50	3
18	19	56	4
20	21	60	4
22	23	66	5
24	25	72	5
27	30	85	6
30	33	92	6
33	36	105	6
36	39	110	8

Dimensional limits

M	d1 max.	d2 min.	s min.	s max.
3	3.38	8.64	0.7	0.9
3.5	3.88	10.57	0.7	0.9
4	4.48	11.57	0.9	1.1
5	5.48	14.57	0.9	1.1
6	6.62	17.57	1.4	1.8
8	8.62	23.48	1.8	2.2
10	10.77	29.48	2.3	2.7
12	13.27	36.38	2.7	3.3
14	15.27	43.38	2.7	3.3
16	17.27	49.38	2.7	3.3
18	19.33	55.26	3.7	4.3
20	21.33	59.26	3.7	4.3
22	23.52	64.8	4.4	5.6
24	25.52	70.8	4.4	5.6
27	30.52	83.6	5.4	6.6
30	33.62	90.6	5.4	6.6
33	36.62	103.6	5.4	6.6
36	39.62	108.6	7	9

Materials and classes

Material	Class / hardness	M	Supply
Steel to mechanical specification	200 HV	M3–M36	On request
Steel to mechanical specification	300 HV	M3–M36	On request
A2 stainless steel	200 HV	M3–M36	On request
A4 stainless steel	200 HV	M3–M36	On request

Finishes and treatments

Finish	Material	Class	M
Plain / as manufactured	Steel to mechanical specification	200 HV	M3–M36
Plain / as manufactured	Steel to mechanical specification	300 HV	M3–M36
Plain / as manufactured	A2 stainless steel	200 HV	M3–M36
Plain / as manufactured	A4 stainless steel	200 HV	M3–M36

Select the finish for the material/property-class combination. Hydrogen relief and lubrication are separate process requirements, not certificates and not implied by the coating name.

Standards, documents and enquiry

Hardness is expressed in HV, not as a bolt property class. Steel: 200 HV or 300 HV; A2/A4 stainless: 200 HV. For large holes or yielding supports, also assess bending and bearing pressure.

The standard associates 200 HV with hexagon bolts up to 8.8 and nuts up to 8; 300 HV with bolts up to 10.9 and nuts up to 10. These are mating criteria, not a certified joint load rating.

DIN 9021

Related commercial reference. Neither 100 HV versions nor non-series sizes become ISO 7093-1 merely through resemblance: check dimensions, hardness and specification.

Supply documentation

Declaration of conformity; Material certificate; EN 10204 2.2 test report; EN 10204 3.1 inspection certificate; Dimensional inspection report; Coating report; Other documentation

Documents are subject to order agreement; no batch certificate is automatically included.

Related components

DIN 9021, ISO 7089, ISO 4014, ISO 4017, ISO 4032. Check bore size, bearing surface, hardness and materials throughout the connection.

Request a quote

Specify standard, diameter, pitch and length where applicable, material, property class or hardness, finish, quantity and documents. Other sizes and dedicated production can be assessed on request, with agreed minimum quantities.

Reference technical configurations: these do not represent stock quantities.

Other materials and specifications

For requirements beyond the tabulated combinations, enquire about aluminium, brass, nylon, duplex, superduplex or an ASTM specification. Alloy or grade, dimensions, mechanical requirements and finish are defined for the enquiry; the geometric reference does not automatically imply conformity with the product standard.