Data sheet washers — DIN 125A / 9021 / 7349 / 433, spring washers DIN 127B / 6798A, choice of lock washers

Dimensions in mm (inside diameter d1 = hole size, outside diameter d2, thickness h). DIN 125A was superseded by ISO 7089, DIN 9021 by ISO 7093, DIN 433 by ISO 7092. A washer spreads the clamping force and protects the surface; it does not lock against vibration. Which lock washer or lock nut does work is in the selection table.

Dimension table

size	d1	DIN 125A d2 / h	DIN 9021 d2 / h	DIN 7349 d2 / h	DIN 433 d2 / h	DIN 127B d2 / s	DIN 6798A d2 / h
M3	3.2	7 / 0.5	9 / 0.8	7 / 1	6 / 0.5	6.2 / 0.8	6 / 0.4
M4	4.3	9 / 0.8	12 / 1	9 / 1	8 / 0.5	7.6 / 0.9	8 / 0.5
M5	5.3	10 / 1	15 / 1.2	10 / 1.5	9 / 1	9.2 / 1.2	10 / 0.6
M6	6.4	12 / 1.6	18 / 1.6	17 / 3	11 / 1.6	11.8 / 1.6	11 / 0.7
M8	8.4	16 / 1.6	24 / 2	21 / 4	15 / 1.6	14.8 / 2	15 / 0.8
M10	10.5	20 / 2	30 / 2.5	25 / 4	18 / 1.6	18.1 / 2.2	18 / 0.9
M12	13	24 / 2.5	37 / 3	30 / 6	20 / 2	21.1 / 2.5	20.5 / 1
M14	15	28 / 2.5	44 / 3	36 / 6	24 / 2.5	24.1 / 3	24 / 1
M16	17	30 / 3	50 / 3	40 / 6	26 / 2.5	27.4 / 3.5	26 / 1.2
M20	21	37 / 3	60 / 4	50 / 8	33 / 3	33.6 / 4	33 / 1.4
M24	25	44 / 4	72 / 5	60 / 8	38 / 4	40 / 5	38 / 1.5
M30	31	56 / 4	92 / 6	68 / 10	48 / 4	48.2 / 6	48 / 1.6

Which locking works

locking	action	locks at	reuse	remark
spring washer DIN 127B	spring force of the split ring	low preload, light joints	yes	flattened at class 8.8 and higher: hardly any locking
serrated washer DIN 6798	teeth bite into nut and surface	light joints, electrical contact	no	marks paint; earthing
serrated conical washer NFE 25-511	high spring force + serrations	medium joints, settling	no	keeps preload when the joint settles
wedge lock washer pair (Nord-Lock type)	wedges raise the preload on unscrewing	heavy vibration, dynamic load	yes	strongest locking without a lock nut; do not separate the pair
lock nut DIN 985 (nylon ring)	grip of the nylon ring	vibration up to 120 °C	a few times	the most common locking
all-metal lock nut DIN 980V	deformed thread	vibration, heat up to 300 °C	more often	on clean, undamaged thread

Material choice

zinc plated steel	indoors and under cover; rusts in permanent moisture
hot-dip galvanised	outdoors; matches hot-dip galvanised bolts and nuts
stainless A2 (AISI 304)	outdoors, damp rooms; spring washers in A1 (AISI 301) spring better
stainless A4 (AISI 316)	coast, pools, marine, food
brass / plastic	decorative, insulating or non-magnetic; low strength