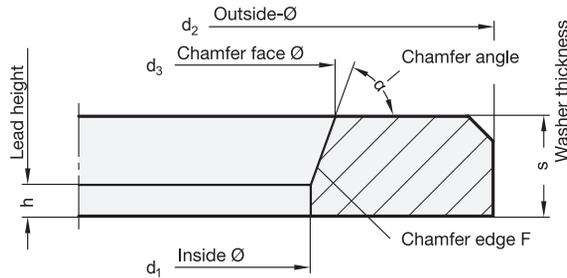


Technical information



Outside diameter d_2

The outside diameter d_2 of the lower type refers to washers DIN 125 / ISO 7089, and the higher type to washers DIN 7349.

Chamfer face diameter d_3

This dimension is, together with the chamfer angle α 70° and the inside diameter d_1 , the most important dimension of these heavy duty washers. Diameter d_3 is actually, even in the lower tolerance range, larger than the max. contact under head diameter on a bolt.

This will ensure that the chamfer of d_3 of the hardened washer will not be pressed into the underhead radius causing an indentation on the bolt which would damage the bolt.

Inside diameter d_1

The inside diameter d_1 is kept as small as possible ensuring that the bolt is inserted centrally into the washer. The choice of a matching pair of bolt and washer with least radial clearance is important in order to avoid a mismatch between chamfer diameter d_3 and the max. contact area diameter of the bolt head.

Chamfer angle $\alpha = 70^\circ \pm 2^\circ$

This relatively large angle is necessary when using hexagon headed bolts, which usually have a tapered transfer from shank to head (the so-called trumpet) to avoid fouling of the washer.

Chamfer edge F

The extended chamfer side F as seen from d_3 creates with d_1 an edge the so-called trumpet of the transfer from shank to head of the bolt, so that the smallest radial clearance prevails. Even with the smallest angle of 68° and the lower dimension of d_3 and d_1 the radial clearance of all bolts to DIN EN is still sufficient.

Lead height h

This is the height of the cylindrical part of the internal diameter d_1 , h should be as high as possible in relation to the pitch of the thread of the bolt.

Washer thickness s

Washers GN 6339 are higher when compared with DIN washers (exception: DIN 7439 which is equal to the high type).

A larger thickness leads to a stronger washer. As a result, bearing in mind the chamfer d_3 , a minimum height is established which ensures that the bolt thread will not be damaged when the bolt is tightened.