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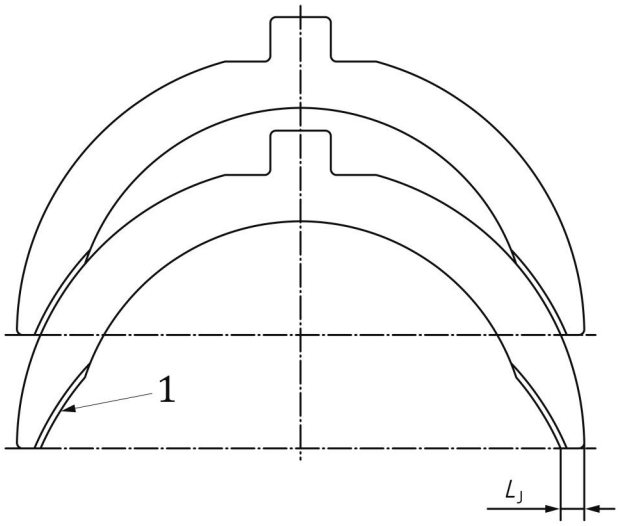

Key

1 blanking fall-away

Figure 2 — Blanking fall-away for scalloped toe thrust washers

5 General tolerances

For dimensions without tolerance indication, the following values apply:

— linear dimensions: ±0,25 mm;

— angular dimensions: ±5°.

6 Tolerances for diameters and for heights

Tolerances for the outside diameter, D, and the inside diameter, d, are shown in Tables 1 and 2. The difference $D - d$ should be greater than $7 \cdot e_T$.

Tolerances for heights H_D and F_D are shown in Table 3.

Table 1 — Tolerance for the outside diameter, D

D		Tolerance
Above	Up to and including	
—	120	0 −0,25
120	160	0 −0,35

Table 2 — Tolerance for the inside diameter, d

D		Tolerance for d
Above	Up to and including	
—	120	+0,25 0
120	160	+0,35 0

Table 3 — Tolerances for heights H_D and F_D

D		Tolerance for H_D	Tolerance for $F_D = H_{Dmin} - (r_{2max} + 0,5)$
Above	Up to and including		
—	120	0 −0,20	0 −0,5
120	160	0 −0,25	

7 Total thickness

Total thickness, e_T, is shown in Table 4.

For over-sizes, it is recommended to increase the total thickness by a 0,10 step to which the same tolerance as for the corresponding original size is applied.

Table 4 — Total thickness, e_T

D		e_T Preferred dimensions (original size)				Tolerance for e_T
Above	Up to and including	1,75	2	2,5	3	
—	80	x	x			0 −0,05
80	120		x	x		0 −0,06
120	160			x	x	0 −0,07

8 Locating lug

8.1 Lug width

Lug width, A, is shown in Table 5.

Table 5 — Lug width, A

D		A	
Above	Up to and including	Preferred dimension	Tolerance
—	80	8	−0,25 −0,50
80	120	10	
120	160	12	

8.2 Notch recess

The notch recesses should be mostly manufactured with a tolerance JS13 in accordance with ISO 286-2.

8.3 Lug length

The length of the lug is determined by dimension E_D given in Table 6.

NOTE Lug design is usually as shown in Figure 1 b), but washers can also be provided with an offset locating lug in order to avoid incorrect assembly.

Table 6 — Length of the lug

D		E_D
Above	**Up to and including**	**Preferred dimension**[a]
—	80	$H_D + 5$
80	160	$H_D + 8$

[a] Dimension E_D is left without a tolerance because it is the difference of two dimensions for which the normal tolerance of ±0,25 mm would apply.

9 Grooves

9.1 Groove width

Groove width, G_W, is shown in Table 7.

Table 7 — Groove width, G_W

D		G_W	
Above	**Up to and including**	**Preferred dimension**	**Tolerance**
—	60	3,5	+0,50
60	160	4,5	0

9.2 Wall thickness at the back of the groove

The tolerance for wall thickness at the back of the groove, G_E, is $G_E : {}^{0}_{-0,30}$.

9.3 Groove position (with respect to the axis)

Tolerance of groove position (with respect to the axis), G_X, is shown in Table 8.

Table 8 — Tolerance of groove position (with respect to the axis), G_X

D		**Tolerance for G_X**
Above	**Up to and including**	
—	60	±1,5
60	160	±2,5

10 Joint faces

Joint face forms are shown in Figure 1, and also in Figure 2 for scalloped toe where $L_{Jmin} = \frac{D-d}{4}$ or 3 mm whichever is the wider.

11 Fillet radii and chamfers

11.1 Radius on lug and joint faces and lug fillet radius

Radius on lug and joint faces and lug fillet radius, r_2, are shown in Table 9.

Table 9 — Radius on lug and joint faces and lug fillet radius, r_2

e_T		Preferred maximum radius
Above	Up to and including	r_{2max}
—	2,59	1
2,59	—	1,5

11.2 Joint face relief

Joint face relief can be either a blanking radius or a relief the depth of which, t_1 and t_2, should not exceed 30 % of the total thickness e_T. Another design is shown in Figure 1 c) (centre, cross section D–D).

The angle β should not exceed 30°.

11.3 Chamfer or radius between the sliding surface and side faces

Chamfer or radius between the sliding surface and side faces, r_3, is shown in Table 10.

Table 10 — Chamfer or radius between the sliding surface and side faces, r_3

e_T		Maximum width of chamfer or radius on sliding surface
Above	Up to and including	r_{3max}
—	2,59	$0,1 \cdot \frac{(D-d)}{2}$
2,59	—	$0,15 \cdot \frac{(D-d)}{2}$

11.4 Chamfer or radius between back and external side face

Chamfer or radius between back and external side face, r_1, can be either a blanking radius or a chamfer whose sharp edges shall be free of burrs. The latter can be at 45° and its width range can be $0,3 \leq r_1 \leq 0,6$ with a tolerance of ±0,20.

Tool scoring due to chamfering operation is permissible on the lug and its depth can be equal to 0,15 mm over the maximum chamfer height.

The chamfer between the back and the inside face is not specified. It shall only be free of burrs.

12 Flatness

Half washers shall slide (under gravity) between parallel plates set at $e_{Tmax} + p$ where p is given in Table 11.

Table 11 — Flatness

D		Flatness limit
Above	**Up to and including**	*p*
—	80	0,10
80	120	0,12
120	160	0,15

13 Surface roughness

No mention is made of surface roughness due to the wide range of materials used.