

## Spherical Washers / Conical Seats • DIN 6319

EH 23050.



### Product Description

Spherical washers / Conical seats are used as washers in a screw connection to compensate non-parallel surfaces.

### Material

#### Conical seat

- Case-hardened steel, case-hardened, manganese phosphated
- Heat-treated steel, tempered, manganese phosphated

#### Spherical washer

- Case-hardened steel, case-hardened, manganese phosphated

### Assembly

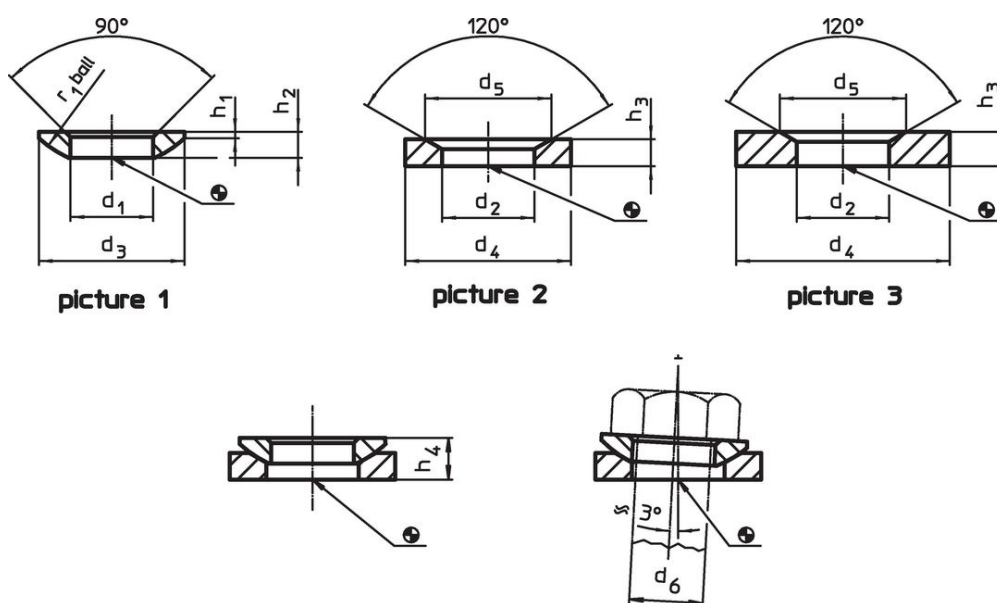
Conical seats form D are to be used only for plain, closed round areas.  
For larger holes only use form G!

### More information

### Further products

- Spherical Washers / Conical Seats, similar to DIN 6319, stainless steel
- Fixture Nuts, DIN 6330 (height 1,5 d)

### Drawing




### Order information

Dimensions										For pin d <sub>6</sub>	For screws d <sub>6</sub>	Load capacity for static load max.	Torque for screwed connections max.	[g]	Art. No.	
d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>								r <sub>1</sub>
H13	H13								with conical seat form D ~	with conical seat form G ~						
[mm]										[mm]	[mm]	[kN]	[Nm]	[g]		
<b>spherical washers from case-hardened steel, form C – picture 1</b>																
6.4	–	12	–	–	0.7	2.3	–	4.2	5.4	9.0	6	M 6	9	10 <sup>1)</sup>	1.0	23050.0006
8.4	–	17	–	–	0.6	3.2	–	5.6	7.1	12.0	8	M 8	17	25 <sup>1)</sup>	2.8	23050.0008
10.5	–	21	–	–	0.8	4.0	–	6.5	7.3	15.0	10	M10	26	46 <sup>1)</sup>	5.1	23050.0010
13.0	–	24	–	–	1.1	4.6	–	8.0	9.0	17.0	12	M12	38	82 <sup>1)</sup>	8.0	23050.0012
15.0	–	28	–	–	1.4	5.0	–	8.5	9.5	22.0	14	M14	53	130 <sup>1)</sup>	12.0	23050.0014
17.0	–	30	–	–	1.3	5.3	–	9.6	10.4	22.0	16	M16	73	206 <sup>1)</sup>	13.0	23050.0016
21.0	–	36	–	–	2.0	6.3	–	11.7	12.2	27.0	20	M20	117	407 <sup>1)</sup>	23.0	23050.0020

<sup>1)</sup> Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction  $\mu_{total}$  0.14.

<sup>2)</sup> DIN standards do not include these dimensions.

<sup>3)</sup> Values are determined by calculation.

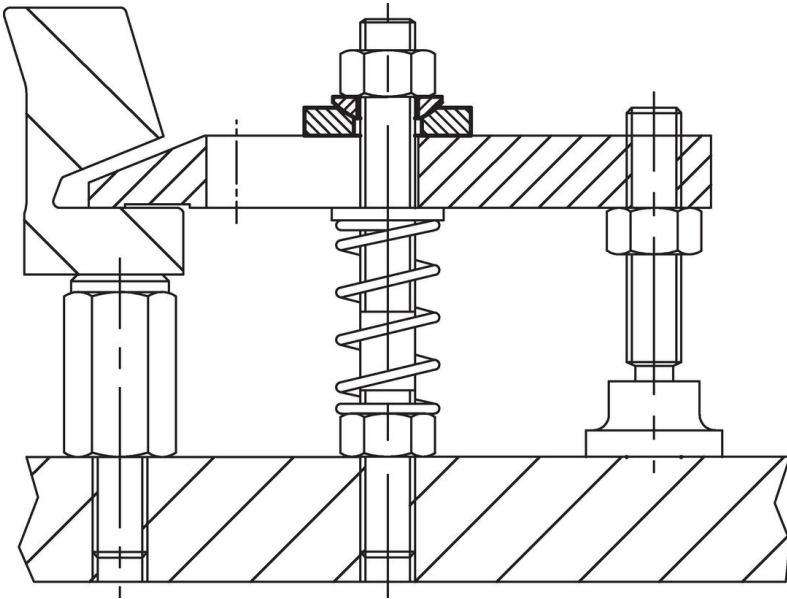
d <sub>1</sub> H13	d <sub>2</sub> H13	d <sub>3</sub>	d <sub>4</sub>	Dimensions						r <sub>1</sub>	For pin d <sub>6</sub>	For screws d <sub>6</sub>	Load capacity for static load max.	Torque for screwed connections max.		Art. No.
				d <sub>5</sub>	h <sub>1</sub>	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>								
23.0	-	40	-	-	2.5	7.6	-	13.5	-	29.5	22	M22	146	542 <sup>1)</sup>	35.0	23050.0022 <sup>2)</sup>
25.0	-	44	-	-	2.4	8.2	-	15.2	15.7	32.0	24	M24	168	698 <sup>1)</sup>	43.0	23050.0024
28.0	-	50	-	-	3.3	10.2	-	17.0	-	36.0	27	M27	221	1021 <sup>1)</sup>	74.0	23050.0027 <sup>2)</sup>
31.0	-	56	-	-	3.6	11.2	-	19.2	19.7	41.0	30	M30	269	1355 <sup>1)</sup>	103.0	23050.0030
34.0	-	62	-	-	4.4	13.0	-	21.8	-	45.0	33	M33	326 <sup>3)</sup>	1969 <sup>3) 1)</sup>	150.0	23050.0033 <sup>2)</sup>
37.0	-	68	-	-	4.6	14.0	-	23.5	-	50.0	36	M36	394	2372 <sup>1)</sup>	193.0	23050.0036
40.0	-	75	-	-	5.6	16.0	-	26.8	-	54.0	39	M39	460 <sup>3)</sup>	3276 <sup>3) 1)</sup>	280.0	23050.0039 <sup>2)</sup>
43.0	-	78	-	-	6.5	17.0	-	29.0	-	58.0	42	M42	542	3802 <sup>1)</sup>	310.0	23050.0042
50.0	-	92	-	-	8.0	21.0	-	35.5	-	67.0	48	M48	714	5730 <sup>1)</sup>	549.0	23050.0048
54.0	-	96	-	-	9.3	22.0	-	38.3	-	72.0	52	M52	832 <sup>3)</sup>	7876 <sup>3) 1)</sup>	610.0	23050.0052 <sup>2)</sup>
58.0	-	103	-	-	9.8	23.0	-	39.3	-	79.0	56	M56	960 <sup>3)</sup>	9793 <sup>3) 1)</sup>	760.0	23050.0056 <sup>2)</sup>
62.0	-	112	-	-	11.0	25.0	-	43.6	-	86.0	60	M60	1122 <sup>3)</sup>	12219 <sup>3) 1)</sup>	990.0	23050.0060 <sup>2)</sup>
66.0	-	120	-	-	12.0	27.0	-	46.6	-	93.0	64	M64	1269 <sup>3)</sup>	14762 <sup>3) 1)</sup>	1220.0	23050.0064 <sup>2)</sup>
<b>conical seats from case-hardened steel, form D – picture 2</b>																
-	7.1	-	12	11.0	-	-	2.8	-	-	-	6	M 6	9	10 <sup>1)</sup>	1.3	23050.0106
-	9.6	-	17	14.5	-	-	3.5	-	-	-	8	M 8	17	25 <sup>1)</sup>	3.7	23050.0108
-	12.0	-	21	18.5	-	-	4.2	-	-	-	10	M10	26	46 <sup>1)</sup>	13.0	23050.0110
-	14.2	-	24	20.0	-	-	5.0	-	-	-	12	M12	38	82 <sup>1)</sup>	10.0	23050.0112
-	16.5	-	28	24.8	-	-	5.6	-	-	-	14	M14	53	130 <sup>1)</sup>	15.0	23050.0114
-	19.0	-	30	26.0	-	-	6.2	-	-	-	16	M16	73	206 <sup>1)</sup>	18.0	23050.0116
-	23.2	-	36	31.0	-	-	7.5	-	-	-	20	M20	117	407 <sup>1)</sup>	31.0	23050.0120
-	26.0	-	40	34.0	-	-	8.5	-	-	-	22	M22	146	542 <sup>1)</sup>	44.0	23050.0122 <sup>2)</sup>
-	28.0	-	44	37.0	-	-	9.5	-	-	-	24	M24	168	698 <sup>1)</sup>	61.0	23050.0124
-	31.5	-	50	43.0	-	-	10.5	-	-	-	27	M27	221	1021 <sup>1)</sup>	87.0	23050.0127 <sup>2)</sup>
-	35.0	-	56	49.0	-	-	12.0	-	-	-	30	M30	269	1355 <sup>1)</sup>	125.0	23050.0130
-	38.5	-	62	55.0	-	-	14.0	-	-	-	33	M33	326 <sup>3)</sup>	1969 <sup>3) 1)</sup>	180.0	23050.0133 <sup>2)</sup>
-	42.0	-	68	60.0	-	-	15.0	-	-	-	36	M36	394	2372 <sup>1)</sup>	230.0	23050.0136
-	45.0	-	75	67.0	-	-	17.0	-	-	-	39	M39	460 <sup>3)</sup>	3276 <sup>3) 1)</sup>	330.0	23050.0139 <sup>2)</sup>
-	49.0	-	78	70.0	-	-	18.0	-	-	-	42	M42	542	3802 <sup>1)</sup>	360.0	23050.0142
-	56.0	-	92	82.0	-	-	22.0	-	-	-	48	M48	714	5730 <sup>1)</sup>	640.0	23050.0148
-	60.0	-	96	85.0	-	-	24.0	-	-	-	52	M52	832 <sup>3)</sup>	7876 <sup>3) 1)</sup>	740.0	23050.0152 <sup>2)</sup>
-	65.0	-	103	93.0	-	-	25.0	-	-	-	56	M56	960 <sup>3)</sup>	9793 <sup>3) 1)</sup>	900.0	23050.0156 <sup>2)</sup>
-	70.0	-	112	102.0	-	-	28.0	-	-	-	60	M60	1122 <sup>3)</sup>	12219 <sup>3) 1)</sup>	1160.0	23050.0160 <sup>2)</sup>
-	75.0	-	120	110.0	-	-	30.0	-	-	-	64	M64	1269 <sup>3)</sup>	14762 <sup>3) 1)</sup>	1430.0	23050.0164 <sup>2)</sup>
<b>conical seats from heat-treated steel, form G – picture 3</b>																
-	7.1	-	17	11.0	-	-	4.0	-	-	-	6	M 6	9	10 <sup>1)</sup>	5.6	23050.0206
-	9.6	-	24	14.5	-	-	5.0	-	-	-	8	M 8	17	25 <sup>1)</sup>	14.0	23050.0208
-	12.0	-	30	18.5	-	-	5.0	-	-	-	10	M10	26	46 <sup>1)</sup>	22.0	23050.0210
-	14.2	-	36	20.0	-	-	6.0	-	-	-	12	M12	38	82 <sup>1)</sup>	39.0	23050.0212
-	16.5	-	40	24.8	-	-	6.0	-	-	-	14	M14	53	130 <sup>1)</sup>	47.0	23050.0214
-	19.0	-	44	26.0	-	-	7.0	-	-	-	16	M16	73	206 <sup>1)</sup>	65.0	23050.0216
-	23.2	-	50	31.0	-	-	8.0	-	-	-	20	M20	117	407 <sup>1)</sup>	93.0	23050.0220
-	28.0	-	60	37.0	-	-	10.0	-	-	-	24	M24	168	698 <sup>1)</sup>	165.0	23050.0224
-	35.0	-	68	49.0	-	-	12.0	-	-	-	30	M30	269	1355 <sup>1)</sup>	235.0	23050.0230

<sup>1)</sup> Torques of screws with standard thread, eventual pre-loads to be considered, coefficient of friction  $\mu_{total}$  0.14.

<sup>2)</sup> DIN standards do not include these dimensions.

<sup>3)</sup> Values are determined by calculation.

Application example



Compliance

For detailed compliance information please select the desired article number.