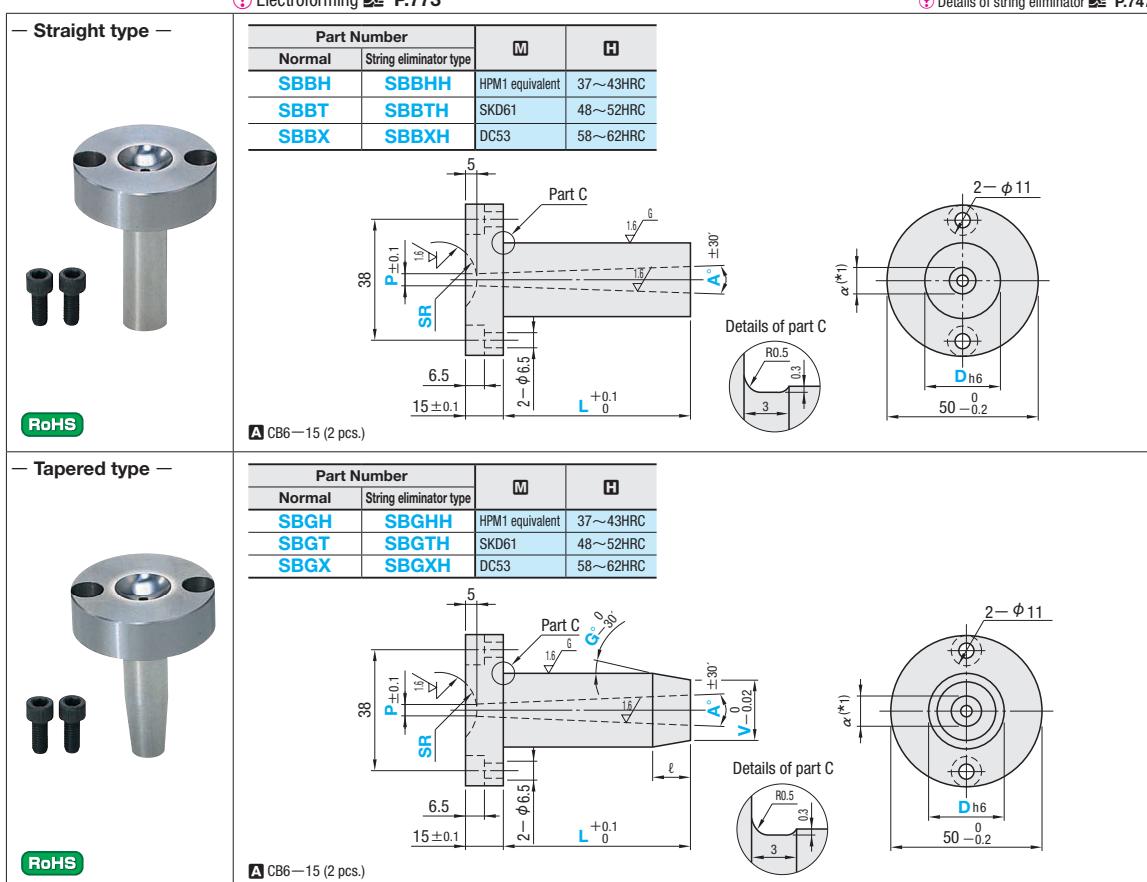


# SPRUCE BUSHINGS

NORMAL BOLT TYPE • FLANGE THICKNESS 15mm

Non JIS material definition is listed on P.1351 - 1352



Dh6		Part Number		L <sup>(*)2</sup>	0.1mm increments	SR	P	0.5° increments	V	G° increments
		Type	D							
16	-0.011	Normal (HPM1 equivalent) (SKD61) (DC53)	String eliminator type	16	30.0~150.0	0 <sup>(*)6</sup>	2 <sup>(*)3,4</sup>			
						10.5	2.5 <sup>(*)3</sup>			
						11	3.5			
20	0	Normal (HPM1 equivalent) (SKD61) (DC53)	String eliminator type	20	30.0~200.0	12	4			
						13	4.5	1~4	D>V≥α+2	1~10
						16	5.5		Available for tapered type only	Available for tapered type only
25	-0.013	Normal (HPM1 equivalent) (SKD61) (DC53)	String eliminator type	25		20	6			
						21	6.5			
						23	7			
							8			

(\*)1 The value of  $\alpha$  is set in accordance with L dimension.  
 (\*)2 L dimension is restricted by P, V and A.  
 Similarly, G is restricted by L dimension.  
 (\*3) Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)4 Not available for products with string eliminator. L dimension limit 50 ~ 150

(\*)5 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)6 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of ℓ value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)7 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)8 Not available for products with string eliminator. L dimension limit 50 ~ 150

(\*)9 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)10 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of ℓ value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)11 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

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(\*)13 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)14 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)15 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)16 Not available for products with string eliminator. L dimension limit 50 ~ 150

(\*)17 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)18 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)19 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)20 Not available for products with string eliminator. L dimension limit 50 ~ 150

(\*)21 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)22 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)23 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

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(\*)25 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

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P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)27 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
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(\*)29 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

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P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)31 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)32 Not available for products with string eliminator. L dimension limit 50 ~ 150

(\*)33 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)34 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
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 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)35 Working limits  
 • Straight type  
 $D - \alpha \geq 2$  (Calculation of  $\alpha$  value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)36 Not available for products with string eliminator. L dimension limit 50 ~ 150

(\*)37 L dimension is up to 100.0 for SBBX · SBBXH · SBGX · SBGXH.

(\*)38 SRO cannot be designated for SBBX · SBBXH · SBGX · SBGXH.

P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

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 • Straight type  
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 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

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P 2 2.5 3 3.5~4.5  
 A 1 1.5~4.0 1 1.5~4.0 1~1.5 1~1.5

D - α ≥ 2 (Calculation of α value)  $\alpha = P + 2(L + U) + 10\tan\frac{A}{2}$   
 U with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$   
 ≈ 0.25 is a value that takes G tolerance into account.

(\*)43 Working limits  
 • Straight type  
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 • Tapered type  
 $U$  with ZC alteration  
 $V - \alpha \geq 2$   
 $L - \ell \geq 3$  (Calculation of  $\ell$  value)  $\ell = \frac{D - V}{2\tan(G - 0.25)}$