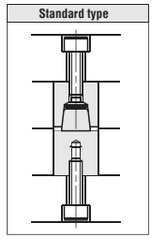
TAPERED PIN SETS
—STANDARD TYPE—

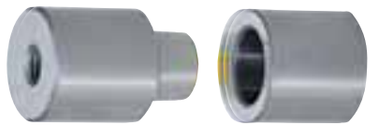
MORE ITEMS　SGP Stock　Printed in Red

The volume discount rate is also applicable to alteration cost.
All price & lead time are to be quoted.

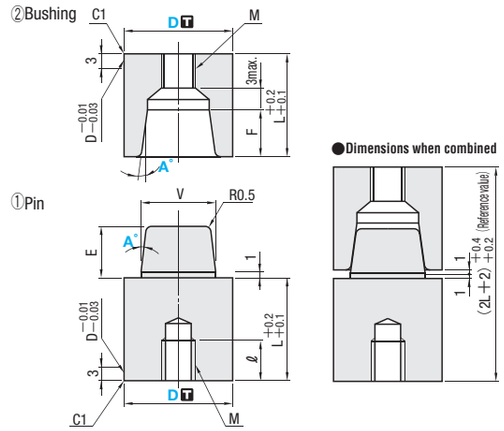
Standard type



RoHS



Group	Catalog No. Set	Pin only	Bushing only	T	Components concentricity of tapered section to the diameter of pin and bushing	M	H
Standard	TPN	—	—	D_{k6}	(Match mark type)	SKD11 comparable	58～62HRC
	TPNV	TPNVP	TPNVB		0.01 or less		
Precision	VTPN	VTPNP	VTPNB	$D^{+0.005}_{0}$	0.005 or less		
Extra Precision	ZTPN	ZTPNP	ZTPNB		0.003 or less		



●Dimensions when combined

D	L	V	E	F	① Pin M	① Pin ℓ	② Setting tap for bushing
8	13	5	6	5	M 3	7.5	M 3
10	14	7	6	5	M 4	10	M 4
13	14	7	6	5	M 4	10	M 4
16	14	10	6	5	M 5	10	M 5
20	19	13	9	8	M 6	12	M 6
25	24	16	12	11	M 8	16	M 8
30	29	20	15	14	M10	20	M10
32	29	20	15	14	M10	20	M10
35	34	24	18	17	M12	24	M12
42	39	30	24	23	M12	24	M12

■ Standard D_{k6} · match mark type

D_{k6}	Catalog No. Type	D	A°	U／Price 1～9 sets
13 +0.012 +0.001	TPN	13	1	Quotation
16		16		
20 +0.015 +0.002		20	3	
25		25		
30		30	5	
32 +0.018 +0.002		32	10	
35		35		
42		42		

■ Standard D_{k6} · component concentricity 0.01 or less

D_{k6}	Catalog No. Type	D	A°	U／Price for 1～9 (①+②)Set	U／Price for 1～9 ①Pin②Bushing
10 +0.010 +0.001	TPNV (①+②Set)	10	1	Quotation	
13 +0.012	TPNVP (①Pin)	13	3		
16 +0.001	TPNVB (②Bushing)	16	5		
20 +0.015		20			
25 +0.002		25			
30		30			
32 +0.018		32			
35 +0.002		35			

■ Precision $D^{+0.005}_{0}$ · component concentricity 0.005 or less

D tolerance	Catalog No. Type	D	A°	U／Price for 1～9 (①+②)Set	U／Price for 1～9 ①Pin②Bushing
+0.005 0	VTPN (①+②Set)	8	1	Quotation	
		10	1		
	VTPNP (①Pin)	13			
		16	3		
	VTPNB (②Bushing)	20			
		25	5		
		30			

■ Extra precision $D^{+0.005}_{0}$ · component concentricity 0.003 or less

D tolerance	Catalog No. Type	D	A°	U／Price for 1～9 (①+②)Set	U／Price for 1～9 ①Pin②Bushing
+0.005 0	ZTPN (①+②Set)	8	1	Quotation	
		10	※(0.5)		
	ZTPNP (①Pin)	13	1		
		16	3		
	ZTPNB (②Bushing)	20	5		
		25			

※A°(0.5) is only available for the set (ZTPN) sale.

- Before using a TPN(match mark type), align the match marks.
- When selecting a pin independently, use a combination of a pin and bushing of the same accuracy.

Order　Catalog No. — A　例 TPN16 — 3

■Quantity discount rate

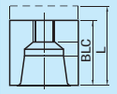
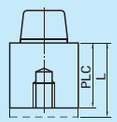
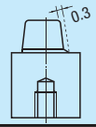
Quantity	1～9	10～19	20～29	30～50
Rate	—	5%	10%	15%

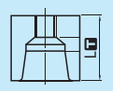
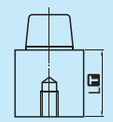
Delivery　● Printed in Red　SGP Stock　● TPNV　3 Days　● VTPN(VTPNP・VTPNB)・ZTPN(ZTPNP・ZTPNB)　5 Days　Express A

For area out of Singapore please refer to P.i.

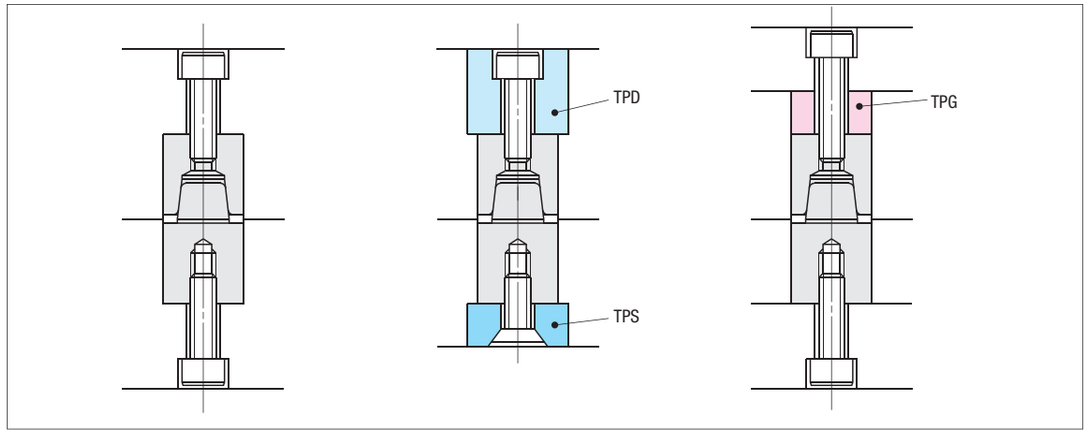
Alterations　Catalog No. — A — (BLC・PLC・AC・BLK・PLK)　例 TPN16 — 3 — BLC12.0—PLC12.0—AC—BLK—PLK　5 Days　Express A

For area out of Singapore please refer to P.i.

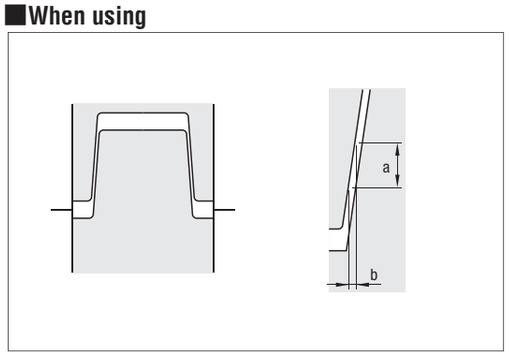
Alterations	Code	Spec.	Price
	BLC	Shortens the bushing's L dimension. BLC=0.1mm increments L−2≦BLC＜L The tap depth becomes shorter by (L−BLC). Available also for a set. To change the pin length as well, combine with PLC.	Quotation
	PLC	Shortens the pin's L dimension. PLC=0.1mm increments L−5≦PLC＜L The tap depth becomes shorter by (L−PLC). Available also for a set. To change the bushing length as well, combine with alteration BLC.	
	AC	Air vent processing (single) A 0.3mm deep flat cutting is performed in parallel to the cone angle.	

Alterations	Code	Spec.	Price
	BLK	Changes the bushing's L dimension tolerance. $L^{+0.2}_{+0.1}$ ⋯▸ $L^{+0.02}_{0}$ Available also for a set. To change the pin length (L) tolerance as well, combine with alteration PLK. Not applicable to the L dimension tolerance (reference valve) for a set.	Quotation
	PLK	Changes the pin's L dimension tolerance. $L^{+0.2}_{+0.1}$ ⋯▸ $L^{+0.02}_{0}$ Available also for a set. To change the bushing length (L) tolerance as well, combine with alteration BLK. Not applicable to the L dimension tolerance (reference valve) for a set.	

■How to Mount



■When using



When the matching cone angle is large, the height of tapered pin and bushing must be adjusted so that they fit more tightly. On the other hand, it is necessary to take possible sticking of the pin and bushing into consideration when the angle is small. At 0.5° and 1° taper (also 3° taper in some cases), sticking can be avoided by setting them slightly afloat as shown in the figure. When the angle is small, the creep of the height (a in the left drawing) against the width (b in the left drawing) is also small so that there is no need to worry about positioning inaccuracies.

Value b to error a　＊For 0.5°, slightly afloat setting is especially recommended.

Angle \ a	0.1	0.3	0.5
0.5°	0.0009	0.0026	0.0044
1°	0.0018	0.005	0.009
3°	0.005	0.016	0.026