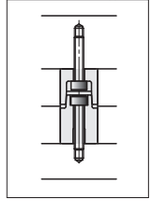
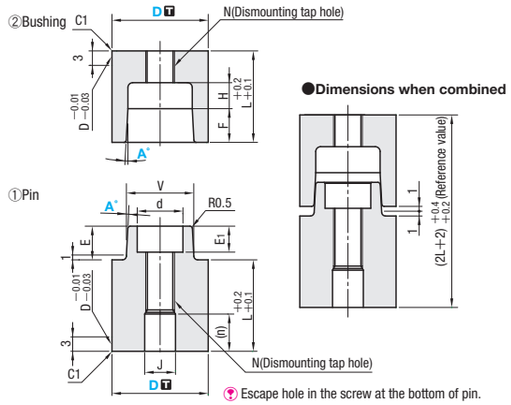
TAPERED PIN SET
—PIN • BUSHING PL INSTALLATION TYPE—

PL installation type



RoHS

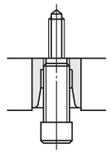
Group	Part Number			T D	Components concentricity of tapered section to the diameter of pin and bushing	M	H
	Set	Pin only	Bushing only				
Standard	TPVX	TPVXP	TPVXB	D_{k6}	0.01 or less	SKD11 equivalent	58～62HRC
Precision	VTPVX	VTPVXP	VTPVXB	$D^{+0.005}_{0}$	0.005 or less		



Escape hole in the screw at the bottom of pin.

●Dimensions when combined

● About N dimension



As shown in the figure, the bushing can be easily removed by screwing a bolt into its tap (N) and extracting it.

D	L	V	E	F	H	①Pin d	①Pin E_1	Bolt for mounting Pin・Bushing	N	(n) Escape hole on pin bottom	J Escape hole diameter on pin bottom
13	14	10	6	5	3.3	6.5	3.3	M 3	M 4	8.7	4.4
16	14	12	6	5	4.4	8	4.4	M 4	M 5	5.6	5.4
20	19	14	7	7	5.4	9.5	5.4	M 5	M 6	8.6	6.4
25	24	16	10	10	7	11	6.5	M 6	M 8	11.5	8.6
30	29	22	13	13	9	14	8.6	M 8	M10	13.4	11
35	34	24	16	16	11	17.5	10.8	M10	M12	15.2	13
42	39	30	21	21	13	20	13	M12	M14	19	15

■ **Standard** D_{K6} • component concentricity 0.01 or less

D_{k6}		Part Number Type	D	A°	U/Price 1～9 (①+②) Set	①Pin ②Bushing
13	+0.012 +0.001	TPVX (①+②Set) TPVXP (①Pin) TPVXB (②Bushing)	13	1 3 *5	Quotation	
16			16			
20	+0.015 +0.002		20			
25			25			
30			30			
35	+0.018 +0.002		*35			
42			42			

A° 5 is not available for *D35

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

D tolerance	Part Number Type	D	A°	U/Price 1～9 (①+②) Set	①Pin② Bushing
+0.005 0	VTPVX (①+②Set) VTPVXP (①Pin) VTPVXB (②Bushing)	13	1 3 5	Quotation	
		16			
		20			
		25			
		30			

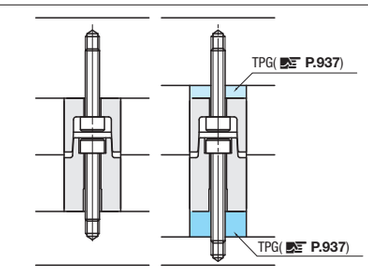
- When selecting a pin independently, use a combination of a pin and bushing of the same accuracy.
- Note: TPVX and VTPVX are not available to change combination of TPV and VTPV, PL Installation Type of Tapered Pin Set, due to different V dimension.

Order — Part Number — A
TPVX16 — 3

Days to Ship: Quotation

Price: Quotation

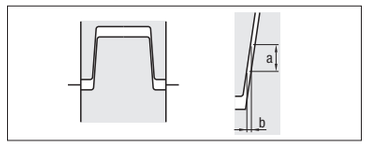
■How to Mount



■Characteristics

- Makes the maintenance easier because it can be installed and removed from PL side.
- It is capable of preventing wear and damage in core pins, since it can be positioned before core pins are inlayed.

■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 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 above drawing) against the width (b in the above drawing) is also small so that there is no need to worry about positioning inaccuracies.

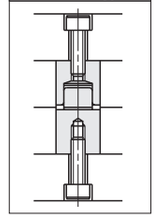
Value b to error a

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

POSITIONING STRAIGHT PIN SETS
—STANDARD TYPE—

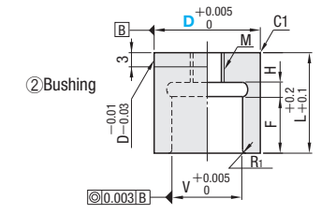
Non JIS material definition is listed on P.1351 - 1352

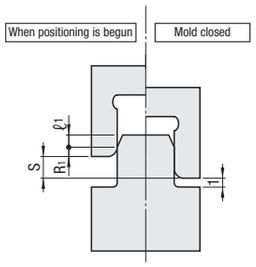
Standard type



RoHS

TPNF (Set)
TPNFP (Pin only)
TPNFB (Bushing only)





M SKD11 equivalent
H 58～62HRC

Installation bolt size	M	ℓ	V	ℓ1	R1	R2	H	F	L	S (Effective holding amount)	D	E
M 4	4	10	5	1.0	0.5	0.8	2.5	5	14.5	4.5	10	7
							8.5		19.5			13
			7				2.5	11	14.5	10.5	13	7
									24.5			13
							5.5					16
M 5	5		10				2.5	5	14.5	4.5	16	7
								11	24.5	10.5		13
							5.5					16
M 6	6	12	13	2.0	1.0	1.5	2.5	6	14.5	5.5	20	8
								9	19.5	8.5		11
							6.5	14	29	12.0		16
									29.5			20
M 8	8	16	16	1.0	0.5	0.8	2.5	9	19.5	8.5	25	11
								11	24.5	10.5		13
				2.0	1.0	1.5	7.5	18	34	16.0		20
									39			25
M10	10	20	20				2.5	23		21.0	30	25

Part Number: TPNF (①+②Set), TPNFP (①Pin), TPNFB (②Bushing)

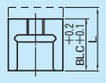
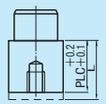
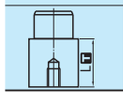
U/Price 1～9: Quotation

Order — Part Number — E
TPNF13 — 7

Days to Ship: Quotation

Price: Quotation

Alterations — Part Number — E — (BLC···etc.)
TPNF16 — 7 — BLC14.0—BLK
Quotation

Alterations	Code	Spec.	1Code
	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 BLC.	
	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.	
	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.	

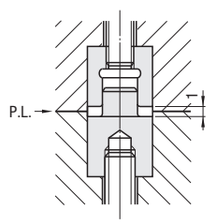
■Characteristics

- Suitable for positioning in precision molds such as connector and electronic device.
- It is capable of preventing wear and damage in core pins, since it can be positioned before core pins are inlayed.

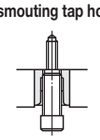
■When using

- Contacting the pin and bushing when mold is closed may cause damage. Please leave a clearance of about 1mm on PL.
- Use precision leader pins since clearance is fairly small.

■How to Mount



• About N dimension (Dismouting tap hole)



As shown in the figure, the bushing can be easily removed by screwing a bolt into its tap (M) and extracting it.