

Locating Pins (Selectable Pilot Shape)

Material No.	Round		Diamond	Material	Surface Treatment	Hardness
	d Tolerance m6	d Tolerance p6	d Tolerance m6			
(1)	LPEJ	LPPEJ	LPDEJ	01 Tool Steel Equivalent	—	Treated Hardness: 55-60 HRC min.
(2)	LPEG	LPPEG	LPDEG	01 Tool Steel Equivalent	Hard Chrome Plating	Hardness: 50-55 HRC min. Plating Hardness 750 HV min.
(3)	LPE	LPPE	—	1045 Carbon Steel Equivalent	—	Treated Hardness: 45-50 HRC min.
(4)	LPEB	LPPEB	LPDEB	1045 Carbon Steel Equivalent	Black Oxide	Treated Hardness: 45-50 HRC min.
(5)	LPER	LPPEP	—	1045 Carbon Steel Equivalent	Hard Chrome Plating	Treated Hardness: 45-50 HRC min. Plating Hardness 750 HV min.
(6)	LPES	LPPEP	LPDES	304 Stainless Steel Equivalent	—	—
(7)	LPED	LPPEP	—	304 Stainless Steel Equivalent	Hard Chrome Plating	Plating Hardness 750 HV min.
(8)	LPEC	LPPEC	LPDEC	440C or 420 Stainless Steel	—	Treated Hardness: 50-55 HRC min.

Tip Shape

A Shape

$$\ell_1 = R - \sqrt{R^2 - \frac{P^2}{4}}$$

$$R \geq P/2$$

B Shape

$$\ell_2 = \frac{P-G}{2 \tan 30^\circ}$$

Reference: $2 \tan 30^\circ = 1.15$

$G \leq P$

When $G=P$, add about C0.2 chamfering.

C Shape

$$\ell_3 = \frac{P}{2} \tan 30^\circ + R \cdot (R/\sin 30^\circ)$$

$R \leq P/2$

Reference: $\tan 30^\circ = 0.577$, $\sin 30^\circ = 0.5$

Round

Diamond

① 440C or 420 Stainless Steel has an identification groove on D part.

② Polished, centering hole is sometimes not available for 304 Stainless Steel.

Type	Part Number			P 0.01 mm Increment	B 0.1 mm Increment	R 1 mm Increment	G 1 mm Increment	L 1 mm Increment	C	ℓ	(W)		
	Tip Shape	D Tolerance m6	D Tolerance p6										
Round m6 LPEJ LPEG LPE LPEB LPER LPES LPED LPEC	A	2	+0.008	+0.012	2.50-4.00	2.0-25.0 (10.0)	A Shape R ≥ P/2	B Shape G ≤ P	2-6	0.5	0	1.2	
		3	+0.002	+0.006	3.50-6.00	2.0-25.0 (10.0)			3-6			1.5	
		4	+0.012	+0.020	4.50-9.00	2.0-25.0 (10.0)			4-8			1.8	
		5	+0.004	+0.012	5.50-10.00	2.0-30.0 (10.0)			5-10			2.2	
		6	+0.015	+0.024	6.50-12.00	2.0-40.0 (12.0)			6-12			3	
		8	+0.006	+0.015	8.00-15.00	2.0-40.0 (15.0)			8-16			3.5	
	Diamond m6 LPDEJ LPDEG LPDEB LPDEP LPDES LPDEP LPDES	C	10	+0.018	+0.029	13.00-20.00	3.0-50.0 (20.0)	C Shape R ≤ P/2	B Shape G ≤ P	10-20	1	1	4
			12	+0.007	+0.018	17.00-25.00	5.0-50.0 (20.0)			12-24			5
			16	+0.021	+0.035	21.00-30.00	5.0-50.0 (20.0)			16-32			7
			20	+0.008	+0.022	21.00-30.00	5.0-50.0 (20.0)			20-40			9

① B dimension in () is for the Diamond Type.

Part Number Example

Part Number - P - B - R - G - L

LPEA5 - P10.00 - B12.0 - R6 - L5

LPPEJB10 - P15.00 - B27.0 - G12 - L10

Part Number Alterations

Part Number - P - B - R - G - L - (SC, LAC, LTE)

LPEA5 - P10.0 - B12.0 - R6 - L5 - LTE

⊗ Alteration is not available for P Selectable Type.

Alterations	Width Across Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)
Code	SC	LAC	LTE
Spec.	SC=1 mm Increment ① When B ≤ 11, adds width across flats on the tip. ② P-3 ≤ SC ≤ P-1, SC ≥ D	Adds a Ø3.5 hole. ① Applicable when B ≥ 10 and P ≥ 8.	Adds a Ø2.5 hole. ① Applicable when B ≥ 8 and 7 ≤ P ≤ 15.

Locating Pins (Selectable Pilot Shape)

with Tapped Shank

Material No.	Round	Diamond	Straight	Material	Surface Treatment	Hardness
(2)	LPGG	LPDGG	LPCG	01 Tool Steel Equivalent	Hard Chrome Plating	Hardness: 50-55 HRC min. Plating Hardness 750 HV min.
(3)	LPG	LPDG	LPC	1045 Carbon Steel Equivalent	—	Treated Hardness: 45-50 HRC min.
(4)	LPGB	—	LPCB	1045 Carbon Steel Equivalent	Black Oxide	Treated Hardness: 45-50 HRC min.
(5)	LPGR	—	LPCR	1045 Carbon Steel Equivalent	Hard Chrome Plating	Treated Hardness: 45-50 HRC min. Plating Hardness 750 HV min.
(6)	LPGS	LPDGS	LPCS	304 Stainless Steel Equivalent	—	—
(7)	LPGD	—	LPCD	304 Stainless Steel Equivalent	Hard Chrome Plating	Plating Hardness 750 HV min.
(8)	LPGC	LPDGC	LPCC	440C or 420 Stainless Steel	—	Treated Hardness: 50-55 HRC min.

Round

Diamond

Straight

① 440C or 420 Stainless Steel has an identification groove on D part.

② Polished, centering hole is sometimes not available for 304 Stainless Steel.

Tip shape

A Shape

$$R \geq P/2$$

$$\ell_1 = R - \sqrt{R^2 - \frac{P^2}{4}}$$

B Shape

$$\ell_2 = \frac{P-G}{2 \tan 30^\circ}$$

Reference: $2 \tan 30^\circ = 1.15$

$G \leq P$

When $G=P$, add about C0.2 chamfering.

C Shape

$$\ell_3 = \frac{P}{2} \tan 30^\circ + R \cdot (R/\sin 30^\circ)$$

$R \leq P/2$

Reference: $\tan 30^\circ = 0.577$, $\sin 30^\circ = 0.5$

Round, Diamond

Type	Tip Shape	Part Number		P 0.01 mm Increment	B 0.1 mm Increment	R 1 mm Increment	G 1 mm Increment	L 1 mm Increment	M (Coarse)	(W)	
		D	D Tolerance g6								
Round LPGJ LPGG LPG LPGB LPGR LPGS LPGD LPGC	A	6	-0.004	6.50-12.00	2.0-40.0 (12.0)	A Shape R ≥ P/2	B Shape G ≤ P	6-12	M3	3	
		6T	-0.012	9.00-15.00	2.0-40.0 (15.0)			8-16	M2.6	3.5	
		8	-0.005	11.00-20.00	3.0-50.0 (20.0)			10 (12)-20	M4	4	
		10	-0.014	13.00-20.00	3.0-50.0 (20.0)			6 (12)-16	M5	5	
		10T	-0.006	17.00-25.00	5.0-50.0 (20.0)			12-24	M4	7	
		12	-0.017	21.00-35.00	5.0-50.0 (20.0)			8 (12)-18	M8	9	
	Diamond LPDGG LPDG LPDGB LPDGR LPDGS LPDGD LPDGC	C	12T	-0.006	21.00-35.00	5.0-50.0 (20.0)	C Shape R ≤ P/2	B Shape G ≤ P	10 (14)-24	M6	7
			16T	-0.007	21.00-35.00	5.0-50.0 (20.0)			20-40	M6	9
			20	-0.020	26.0-30.0	5.0-50.0 (20.0)			12 (18)-30	M6	9

① Pins with D value ending in T (ex. 10T) have one size smaller thread diameter and larger wall thickness. (Actual D dimension is the number without "T").

② B dimensions in () and L dimensions in () are for Diamond Shape. ③ Note the strength of under-head part. P.1542 ④ Please confirm pilot hole depth on P.1542. Holes may go through.

Straight

Type	Tip Shape	Part Number		M	P 0.1 mm Increment	B 0.1 mm Increment	R 1 mm Increment	G 1 mm Increment
		D	D Tolerance g6					
LPCJ LPCG LPC LPCB LPCR LPCS LPCD LPCC	A	3	-0.004	3	6.0-10.0	10.0-25.0	A Shape R ≥ P/2	B Shape G ≤ P
		4	-0.012	4	7.0-12.0	11.0-25.0		
		5	-0.005	5	8.0-16.0	13.0-30.0		
		6	-0.014	6	9.0-20.0	15.0-40.0		
		8	-0.006	8	11.0-20.0	19.0-50.0		
		10	-0.017	10	14.0-20.0	23.0-50.0		
	B	12	-0.006	12	18.0-25.0	28.0-60.0		
		16	-0.007	16	22.0-30.0	35.0-60.0		
		20	-0.020	20	26.0-30.0	44.0-60.0		

Part Number Example

Part Number - P - B - R - G - L

LPGA6 - P10.0 - B25.0 - R6 - L6

LPGB10 - P16.0 - B50.0 - G13 - L16

LPCA6 - P10.0 - B25.0 - R6

Part Number Alterations

Part Number - P - B - R - G - L - (SC, LAC, LTE)

LPCA6 - P10.0 - B25.0 - R6 - LAC

Alterations	Wrench Flats	Wrench Hole (Ø3.5)	Wrench Hole (Ø2.5)
Code	SC	LAC	LTE
Spec.	SC=1 mm Increment ① For Round Type: P-3 ≤ SC ≤ P-1, SC ≥ D ② For Straight Type: M+3 ≤ SC ≤ P-1 ③ When B ≤ 11, adds width across flats on the tip.	Adds a Ø3.5 hole. ① Applicable when B ≥ 10 and P ≥ 8.	Adds a Ø2.5 hole. ① Applicable when B ≥ 8 and 7 ≤ P ≤ 15.