

# Locating Pins - Tip Shape Selectable

## Threaded

For products uncovered by e-Catalog Standard, see P.131.

Features: Tip shape is selectable and L=0 is available.

(Alteration SC)

| Material No. | Material                  | Surface Treatment   | Hardness   | Round | Diamond |
|--------------|---------------------------|---------------------|--|-------|---------|
| (1)          | SKS3 Equivalent           | -                   | Treated Hardness: 55~60HRC                             | LPAJ  | LPDAJ   |
| (2)          | SKS3 Equivalent           | Hard Chrome Plating | Treated Hardness: 50~55HRC<br>Plating Hardness: 750HV~ | LPAG  | LPDAG   |
| (3)          | S45C Equivalent           | -                   | Treated Hardness: 45~50HRC                             | LPA   | LPDA    |
| (4)          | S45C Equivalent           | Black Oxide         | Treated Hardness: 45~50HRC                             | LPAB  | LPDAB   |
| (5)          | S45C Equivalent           | Hard Chrome Plating | Treated Hardness: 45~50HRC<br>Plating Hardness: 750HV~ | LPAR  | LPDAR   |
| (6)          | SUS304                    | -                   | -  | LPAS  | LPDAS   |
| (7)          | SUS304                    | Hard Chrome Plating | Plating Hardness: 750HV~                               | LPAD  | LPDAD   |
| (8)          | SUS440C or 13Cr stainless | -                   | Treated Hardness: 50~55HRC                             | LPAC  | -       |

•Round

•Diamond

**Tip Shape**

⊕  $l_1 = R \sqrt{\frac{P^2}{4}}$

⊕  $R \geq P/2$

**Tip Shape**

⊕  $l_2 = \frac{P-G}{2 \tan 30^\circ}$  Reference:  $2 \tan 30^\circ \approx 1.15$

⊕  $G \leq P$

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

**Tip Shape**

⊕  $l_3 = \frac{P}{2} / \tan 30^\circ + R - (R / \sin 30^\circ)$

⊕  $R \leq P/2$

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

⊕ When  $L < \text{Pitch} \times 2$ , the incomplete threaded portion (Pitch x 2) is included in  $M \times 1.5$ . For Coarse Thread Pitch Dims., see P.2360.

⊕ Fully Threaded Type of  $L=0$  w/o Pilot is available. P.1661

⊕ Polished, centering hole is sometimes not available for SUS304.

| Part Number |           | D dim. Tolerance |                  | P                | B                | R                | G              | L             | M        | * Tightening | (W) |
|-------------|-----------|------------------|------------------|------------------|------------------|------------------|----------------|---------------|----------|--------------|-----|
| Type        | Tip       | D                | gb               | 0.01mm Increment | 0.1mm Increment  | 1mm Increment    | 1mm Increment  | 1mm Increment | (Coarse) | Torque N·cm  | (W) |
| (Round)     | (Diamond) | 3                | -0.002<br>-0.008 | 4.00~ 8.00       | 3.5~25.0(10.0)   | Shape A<br>R=P/2 | Shape B<br>G=P | 0~10          | M3       | 98           | 1.5 |
| LPAJ LPDAJ  | 4         | -0.004           | 5.00~ 9.00       | 3.5~25.0(10.0)   | M4               |                  |                |               | 225      | 1.8          |     |
| LPAG LPDAG  | 5         | -0.012           | 6.00~10.00       | 3.5~30.0(10.0)   | Shape C<br>R=P/2 | 0~20             | M5             | 461           | 2.2      |              |     |
| LPA LPDA    | 6         | -0.005           | 7.00~12.00       | 3.5~40.0(12.0)   |                  |                  | M6             | 784           | 3        |              |     |
| LPAB LPDAB  | 8         | -0.014           | 9.00~15.00       | 3.5~40.0(15.0)   | 0~25             | M8               | 1911           | 3.5           |          |              |     |
| LPAR LPDAR  | 10        | -0.006           | 11.00~20.00      | 5.0~50.0(20.0)   |                  | M10              | 3783           | 4             |          |              |     |
| LPAS LPDAS  | 12        | -0.017           | 13.00~20.00      | 5.0~50.0(20.0)   | M12              | 6605             | 5              |               |          |              |     |
| LPAD LPDAD  | 16        | -0.026           | 17.00~27.00      | 5.0~50.0(20.0)   | M16              | 16366            | 7              |               |          |              |     |
| LPAC        | 20        | -0.026           | 21.00~30.00      | 5.0~50.0(20.0)   | M20              | 32928            | 9              |               |          |              |     |

⊕ B dimension in ( ) is for Diamond Shape. ⊕ For full thread, specify L = 0 and alteration NNC.

\* The tightening torque (ref. value) for hardened products is strength class 8.8. (See technical data on P.2365.) Not applicable when using locking materials or lock washers.

Ordering Example: **Part Number** - P - B - R - G - L

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

LPAJB10 - P15.00 - B17.0 - G10 - L10

| D  | Round Shape Unit Price |                   |             |                          |                   |                |                     | Diamond Shape Unit Price          |                       |                    |              |                           |                    |                 |                      |
|----|------------------------|-------------------|-------------|--------------------------|-------------------|----------------|---------------------|-----------------------------------|-----------------------|--------------------|--------------|---------------------------|--------------------|-----------------|----------------------|
|    | (1)Treated SKS3 LPAJ   | (2)Hard SKS3 LPAG | (3)S45C LPA | (4)S45C Black Oxide LPAB | (5)Hard S45C LPAR | (6)SUS304 LPAS | (7)Hard SUS304 LPAD | (8)SUS440C or 13Cr stainless LPAC | (1)Treated SKS3 LPDAJ | (2)Hard SKS3 LPDAG | (3)S45C LPDA | (4)S45C Black Oxide LPDAB | (5)Hard S45C LPDAR | (6)SUS304 LPDAS | (7)Hard SUS304 LPDAD |
| 3  |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 4  |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 5  |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 6  |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 8  |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 10 |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 12 |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 16 |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |
| 20 |                        |                   |             |                          |                   |                |                     |                                   |                       |                    |              |                           |                    |                 |                      |

Alterations **Part Number** - P - B - R - G - L - (SC, DRC -- etc.)

LPAAS - P10.00 - B12.0 - R6 - L5 - MC3

| Alterations | Wrench Flats   | Wrench Flats (Ø3.5)  | Wrench Hole (Ø2.5)   | Screwdriver Slot         | Thread Dia.   | Relief   |
|-------------|--|--|--|--------------------------|---|--|
|             |  |  |  |                          |   |  |
| Code        | SC   | LAC  | LTE  | DRC                      | MC  | NNC  |
| Spec.       | SC = 1mm increment<br>⊕ When B ≤ 11, adds wrench flats on the tip.<br>⊗ Not applicable to Diamond Shape.<br>⊕ P-3 ≤ SC ≤ P-1, SC ≥ D | Adds a Ø3.5 hole.<br>⊕ Applicable when B ≥ 10 and P ≥ 8.<br>⊗ Not applicable to Diamond Shape. | Adds a Ø2.5 hole.<br>⊕ Applicable when B ≥ 8 and 7 ≤ P ≤ 15.<br>⊗ Not applicable to Diamond Shape. | Width 0.8mm<br>Depth 1mm | ⊕ D/3 ≤ MC < D<br>⊕ MC ≥ 3<br>[Ordering Code] MC4<br>⊕ The incomplete threaded portion (Pitch x 2) is included. | Adds a relief at the thread end.<br>⊕ Applicable when L = 0. |