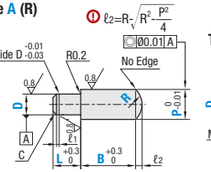
# Locating Pins - Hardened Stainless Steel - Large Flat Head
## - Pressfit / Tapped / Threaded -

**Features:** R and Taper R Types have been newly added to the Hardened Stainless Steel Locating Pin product line-up.

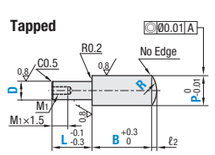
| Material | Hardness | Pin Shape | Press Fit | | | | Tapped | | Threaded | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | m6 | p6 | g6 | h7 | g6 | h7 | g6 | h7 |
| Hardened Stainless Steel | 35HRC~ | Round | APE | APPE | APGE | APHE | APG | APHG | APA | APHA |
| | | Diamond | APDE | APPDE | APGDE | APHDE | APDG | APHDG | APDA | APHDA |

**Tip Shape A (R)** ⓘ $\ell_2=R-\sqrt{R^2-\frac{P^2}{4}}$ ⓘ When the diameter exceeds Ø10, the center hardness may become 30HRC or more.

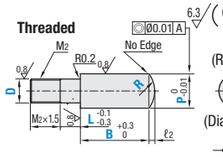
**Pressfit** *Insertion Guide D -0.01 -0.03



**Tapped**



**Threaded**



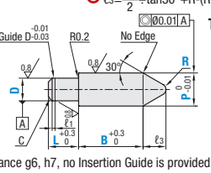
(Round)

(Diamond)

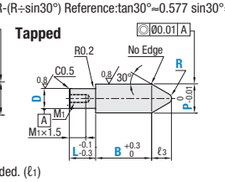
(60°)

**Tip Shape C (TaperR)** ⓘ $\ell_3=\frac{P}{2}\div\tan30°+R-(R\div\sin30°)$ Reference:tan30°≈0.577 sin30°=0.5

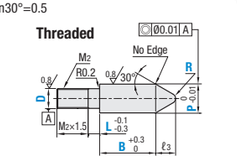
**Pressfit** *Insertion Guide D -0.01 -0.03



**Tapped**



**Threaded**



## Tolerance

| D or P | m6 | p6 | g6 | h7 |
|---|---|---|---|---|
| 1.00–3.00 | +0.008 +0.002 | +0.012 +0.006 | -0.002 -0.008 | 0 -0.010 |
| 3.01–6.00 | +0.012 +0.004 | +0.020 +0.012 | -0.004 -0.012 | 0 -0.012 |
| 6.01–10.00 | +0.015 +0.006 | +0.024 +0.015 | -0.005 -0.014 | 0 -0.015 |
| 10.01–18.00 | +0.018 +0.007 | +0.029 +0.018 | -0.006 -0.017 | 0 -0.018 |
| 18.01–25.50 | +0.021 +0.008 | +0.035 +0.022 | -0.007 -0.020 | 0 -0.021 |

ⓘ When B>20mm, the P dim. tolerance is 0-0.02. * For D Tolerance g6, h7, no Insertion Guide is provided. ($\ell_1$)

## Pressfit

| Part Number: Type | Tip Shape | D | P 0.01mm Increment | L 1mm Increment | B 0.1mm Increment | R 1mm Increment | C | $\ell_1$ | (W) |
|---|---|---|---|---|---|---|---|---|---|
| <Round> APE(m6) APPE(p6) APGE(g6) APHE(h7) | A | 2 | 2.50–8.00 | 3(4)–16 | 1.0–20.0 | Shpae A R≥P/2 | 0.5 | 0.0 | 1.2 |
| | | 3 | 3.50–8.00 | | | | | 1.0 | 1.5 |
| | | 4 | 4.50–8.00 | | | | | | 1.8 |
| | | 5 | 5.50–8.00 | | 1.0–40.0(20.0) | | 1.0 | | 2.2 |
| | | 6 | 6.50–12.00 | | | | | | 3.0 |
| | | 7 | 7.50–13.00 | | | | | | |
| | | 8 | 8.50–15.00 | 4(5)–16 | | | 1.5 | | 3.5 |
| <Diamond> APDE(m6) APPDE(p6) APGDE(g6) APHDE(h7) | C | 9 | 9.50–15.00 | | | | | | |
| | | 10 | 10.50–16.00 | | | Shape C R≤P/2 | 2.0 | | 4.0 |
| | | 11 | 11.50–17.00 | | | | | | |
| | | 12 | 12.50–17.50 | | | | | | 5.0 |
| | | 13 | 14.00–20.00 | 7(12)–26 | | | | | |
| | | 15 | 16.00–22.50 | 8(14)–23 | | | | | |
| | | 16 | 17.00–25.50 | 8(15)–24 | | | 3.0 | 2.0 | 7.0 |
| | | 18 | 19.00–25.50 | 8(15)–27 | | | | | |
| | | 20 | 22.00–25.50 | 10(15)–30 | | | | | 9.0 |

ⓘ L dimension and B dimension in ( ) are applicable to Diamond Shape. ⓘ When L=3, C=0.5, $\ell_1$=1.

## Tapped

| Part Number: Type | Tip Shape | D | P 0.01mm Increment | L 1mm Increment | B 0.1mm Increment | R 1mm Increment | M1 (Coarse) | *Tightening Torque N·cm | (W) |
|---|---|---|---|---|---|---|---|---|---|
| <Round> APG(g6) APHG(h7) | A | 6 | 6.50–12.00 | 6(9)–16 | 1.0–40.0(20.0) | Shape A R≥P/2 | M3 | 147 | 3.0 |
| | | 8 | 8.50–15.00 | 8(12)–16 | | | M4 | 333 | 3.5 |
| | | 10 | 10.50–16.00 | 10(13)–20 | | | M5 | 676 | 4.0 |
| | | 12 | 12.50–17.50 | 12(15)–20 | | | | | 5.0 |
| <Diamond> APDG(g6) APHDG(h7) | C | 13 | 14.00–20.00 | 12(15)–20 | | Shape C R≤P/2 | M6 | 1156 | 5.5 |
| | | 16 | 17.00–25.50 | 17–24 | 5.0–30.0(27.0) | | | | 7.0 |
| | | 20 | 22.00–25.50 | 17(18)–30 | | | | | 9.0 |

ⓘ L dimension and B dimension in ( ) are applicable to Diamond Shape. ⓘ Note the strength of under-head part >>[Tech Info] Tab. ⓘ Please confirm Pilot Hole Depth (**'19 P.1542**). Holes may go through.

* For Tightening Torque (Reference Value), see Tightening Torque Strength Class (10.9) of Technical Data on >>'19 P.4015. Not applicable when using Locking Agents or Spring Washers.

## Threaded

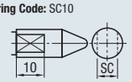
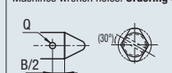
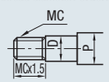
| Part Number: Type | Tip shape | D | P 0.01mm Increment | L 1mm Increment | B 0.1mm Increment | R 1mm Increment | M2 (Coarse) | *Tightening Torque N·cm | (W) |
|---|---|---|---|---|---|---|---|---|---|
| <Round> APA(g6) APHA(h7) | A | 3 | 3.50–8.00 | 0–10 | 1.0–20.0 | Shape A R≥P/2 | M3 | 147 | 1.5 |
| | | 4 | 4.50–8.00 | | | | M4 | 333 | 1.8 |
| | | 5 | 5.50–8.00 | | 1.0–40.0(20.0) | | M5 | 676 | 2.2 |
| | | 6 | 6.50–12.00 | | | | M6 | 1156 | 3.0 |
| | | 8 | 8.50–15.00 | | | | M8 | 2803 | 3.5 |
| <Diamond> APDA(g6) APHDA(h7) | C | 10 | 10.50–16.00 | | | Shape C R≤P/2 | M10 | 5557 | 4.0 |
| | | 12 | 12.50–17.50 | | | | M12 | 9702 | 5.0 |
| | | 16 | 17.00–25.50 | | | | M16 | 24108 | 7.0 |
| | | 20 | 22.00–25.50 | | | | M20 | 46942 | 9.0 |

ⓘ B dimension in ( ) is applicable to Diamond Shape. ⓘ When L<Pitchx2, the incomplete threaded portion (Pitchx2) is included in M≥x1.5. Coarse Thread Pitch Dims. >>'19 P.4010

* For Tightening Torque (Reference Value), see Tightening Torque Strength Class (10.9) of Technical Data on >> '19 P.4015. Not applicable when using Locking Agents or Spring Washers.

**Part Number Example** Part Number - P - L - B - R: APEA6 - P10.00 - L5 - B12.0 - R6

**Part Number Alterations** Part Number - P - L - B - R - (SC / LAC / RDC etc): APDAC8 - P12.00 - L5 - B10.0 - R6 - MC6

| Alterations | Wrench Flats | Wrench Hole Machining | Screwdriver Slot | Thread Dia. | Relief |
|---|---|---|---|---|---|
| Code | SC | LAC | DRC | MC | NNC |
| Spec. | **Ordering Code:** SC10  SC = 1mm Increment ⓘ When B≤11, adds wrench flats on the tip. ⊗ Not applicable to Diamond Shape. ⓘ P-3≤SC≤P-1,SC≥D | Machines wrench holes. **Ordering Code:** LAC  ⓘ Diamond Shape Hole is drilled on the diamond head vertically but with arbitrary orientation of its diamond surfaces against those of the diamond head. ⓘ Applicable when D≥6 | **Ordering Code:** DRC  Width 0.8mm Depth 1mm ⓘ Applicable to Threaded Type only. | Changes the thread diameter. **Ordering Code:** MC4  D/3≤MC<D MCmin3 ⓘ The incomplete threaded portion (Pitch x 2) is included. | Adds a relief at the thread end. **Ordering Code:** NNC  ⓘ Applicable when L=0. |

| Applicable Dimension P | Applicable Dimension B | Wrench Hole Dimensions Q |
|---|---|---|
| ~9.99 | 5.0~ 9.9 | 2 |
| | 10.0~40.0 | 2.5 |
| 10.00~ | 5.0~ 7.9 | 2 |
| | 8.0~11.9 | 2.5 |
| | 12.0~40.0 | 3.5 |





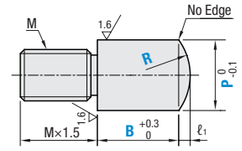
# Locating Pins - Hardened Stainless Steel - Spherical, Tapered, R Tapered
## - Full Threaded -

**Features:** Fully threaded types are added to hardened stainless steel product lines.

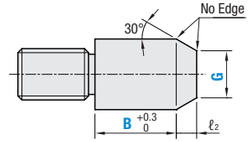
| Material | Hardness | Type |
|---|---|---|
| Hardened Stainless Steel | 35HRC~ | AJPNG |

ⓘ When the diameter exceeds Ø10, the center hardness may become 30HRC or more.

**Tip Shape A (R)** ⓘ $\ell_1=R-\sqrt{R^2-\frac{P^2}{4}}$



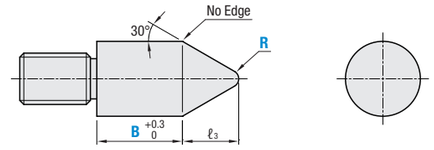
**Tip Shape B (Tapered)** ⓘ $\ell_2=\frac{P-G}{2\tan30°}$ ⓘ When G=P, add about C0.2 chamfering.



ⓘ For Tip Shapes B and C, unless described otherwise on the drawing, the spec. design is the same as for Tip Shape A.

| M | (a) | (d) |
|---|---|---|
| 3 | 1.3 | 2.2 |
| 4 | 1.8 | 2.9 |
| 5 | 2.0 | 3.7 |
| 6 | 2.5 | 4.4 |
| 8 | 3.1 | 6.0 |
| 10 | 3.7 | 7.7 |
| 12 | 4.4 | 9.4 |
| 16 | 5.0 | 13.0 |
| 20 | 6.3 | 16.4 |

**Tip Shape C (Taper R)** ⓘ $\ell_3=\frac{P}{2}\div\tan30°+R-(R\div\sin30°)$ Reference: tan30°≈0.577 sin30°=0.5



ⓘ The dimensions are reference only. Not guaranteed.

ⓘ For Tip Shapes B and C, unless described otherwise on the drawing, the spec. design is the same as for Tip Shape A.

| Part Number: Type | End Shape | M (Coarse) | *Tightening Torque N·cm | P 0.01mm Increment | B 0.1mm Increment | R 1mm Increment: A Shape and C Shape Only | G 1mm Increment: B Shape Only |
|---|---|---|---|---|---|---|---|
| AJPNG | A B C | 3 | 147 | 3.50–6.00 | 1.0–10.0 | A Shape R≥P/2 C Shape R≤P/2 | B Shape G≤P |
| | | 4 | 333 | 4.50–7.00 | | | |
| | | 5 | 676 | 5.50–8.00 | | | |
| | | 6 | 1156 | 6.50–12.00 | 1.0–12.0 | | |
| | | 8 | 2803 | 8.50–15.00 | 1.0–15.0 | | |
| | | 10 | 5557 | 10.50–16.00 | 3.0–20.0 | | |
| | | 12 | 9702 | 12.50–17.50 | | | |
| | | 16 | 24108 | 17.00–25.50 | | | |
| | | 20 | 46942 | 21.00–25.50 | | | |

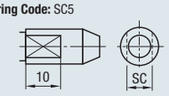
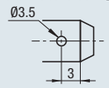
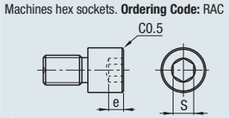
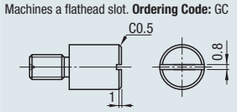
* Tightening Torque (Reference Value) is Strength Class (10.9) in the technical page **(2019 p.4015)**. The values do not apply when lock-tight or spring washers are used.

**Part Number Example**

| Part Number | P | B | R | G |
|---|---|---|---|---|
| Spherical and R Tapered: RAJPNGA5 | P6.50 | B8.0 | R4 | |
| Tapered: AJPNGB8 | P9.80 | B4.0 | | G3 |

**Part Number Alterations** Part Number - P - B - R - G - (SC / LAC / RDC / GC): AJPNGA3 - P6.00 - B4 - R4 - SC5

ⓘ Alteratoins cannot be combined.

| Alterations | Wrench Flats | Wrench Hole | Hex Socket Machining | Flathead Slot |
|---|---|---|---|---|
| Code | SC | LAC | RAC | GC |
| Spec. | **Ordering Code:** SC5  SC = 1mm Increment ⓘ When B≤11, adds wrench flats on the tip. ⓘ P-3≤SC≤P-1,SC≥M | Machines wrench holes. **Ordering Code:** LAC  ⓘ Applicable when M≥6. | Machines hex sockets. **Ordering Code:** RAC  ⓘ Applicable for Tip Shape B only (Tip: C0.5) ⓘ C0.5 is included with B. ⓘ With RAC selection, G=P and G does not match with specified G dimension. ⓘ S+3≤P-1 | Machines a flathead slot. **Ordering Code:** GC  Width 0.8mm Depth 1mm ⓘ Applicable for Tip Shape B only (Tip: C0.5) ⓘ C0.5 is included with B. ⓘ With GC selection, G=P and G does not match with specified G dimension. |

| Applicable Dimension P | Applicable Dimension B | Wrench Hole Dimensions Q |
|---|---|---|
| ~9.99 | 5.0~ 9.9 | 2 |
| | 10.0~20.0 | 2.5 |
| 10.00~ | 5.0~ 7.9 | 2 |
| | 8.0~11.9 | 2.5 |
| | 12.0~20.0 | 3.5 |

| M | Applicable Dimensions B | Hex Hole Dimensions S | Hex Hole Dimensions e |
|---|---|---|---|
| 3 | 6.5~ | 2 | 2 |
| 4 | | 2.5 | |
| 5 | | 3 | |
| 6 | | | |
| 8 | 7.0~ | 4 | 2.5 |
| 10 | 8.0~ | 5 | 3 |
| 12 | 9.0~ | 6 | 4 |
| 16 | 10~ | 6 | 5 |
| 20 | 11~ | 6 | 5 |