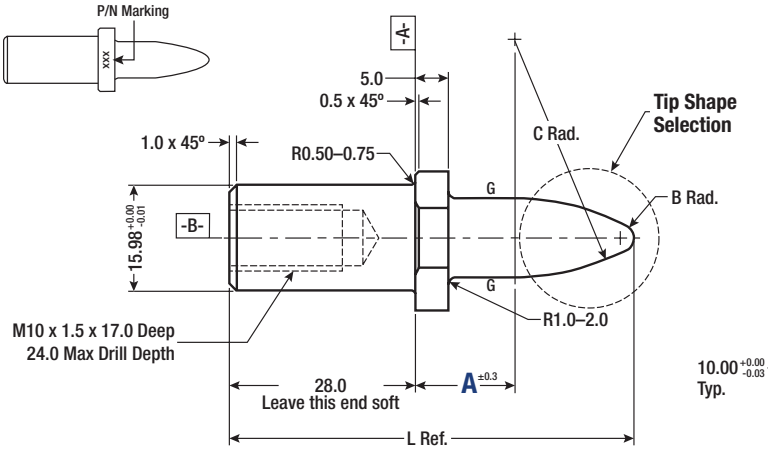
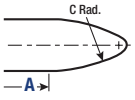
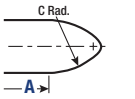
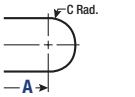
# CONFIGURABLE & STANDARD LOCATING PINS

# Locating Pins

## APS STANDARD / A CONFIGURABLE SMALL HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| **A** Shape | Bullet |  |
| **B** Shape | Half Bullet |  |
| **C** Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| **APS** | Standard NAAMS | None - Plain<br>**T** - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| **APSS** | **A** Configurable | **P** - Plain<br>**T** - TiN<br>**R** - Rainbow DLC | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | D Head Dia. Callout (Actual) | A Lead Length 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | Coating | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APS** (Hole -0.15) | **06** (5.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | — | — | — | — | None - Plain<br>**T** - TiN | 1.0 | 18.0 |
| | **08** (7.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | — | — | | 1.0 | 24.0 |
| | **10** (9.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 2.0 | 30.0 |
| | **12** (11.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 2.0 | 36.0 |
| | **13** (12.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 2.0 | 39.0 |
| | **16** (15.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 2.0 | 48.0 |
| | **19** (18.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 2.0 | 38.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | D Head Dia. Callout (Actual) | A Lead Length (1 mm Inc.) | B Rad | C Rad Tip A | C Rad Tip B | C Rad Tip C |
|---|---|---|---|---|---|---|---|---|
| **APSS** (Hole -0.15) | **P** - Plain<br>**T** - TiN<br>**R** - Rainbow DLC | **A** | **6** (5.85) | **10~60** | 1.0 | 18.0 | 9.0 | D/2 |
| | | | **8** (7.85) | **10~80** | | 24.0 | 12.0 | |
| | | | **10** (9.85) | **10~100** | 2.0 | 30.0 | 15.0 | |
| | | **B** | **12** (11.85) | | | 36.0 | 18.0 | |
| | | **C** | **13** (12.85) | | | 39.0 | 19.5 | |
| | | | **16** (15.85) | | | 48.0 | 24.0 | |
| | | | **19** (18.85) | | | 38.0 | 19.0 | |

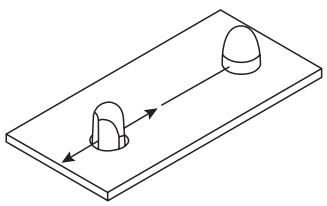
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | D | A | Coating |
| **APS** | **19** | **2M** | |
| **APS** | **08** | **4M** | **T** |

**P/N Example (Configurable NAAMS):**

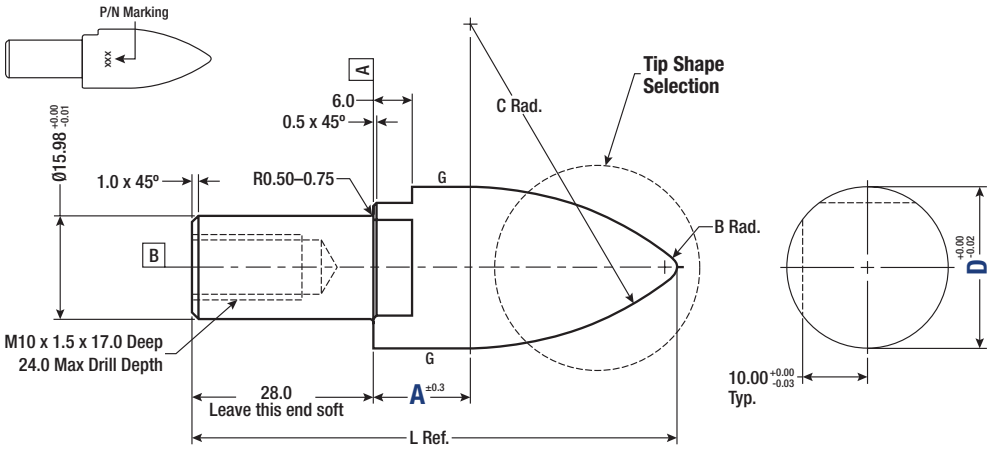
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| **APSS** | **P** | **B** | **16** | – | **A95** |
| **APSS** | **T** | **A** | **8** | – | **A25** |

**Application Example**

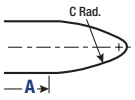
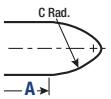
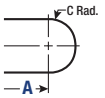


# Locating Pins

## APS STANDARD / A CONFIGURABLE LARGE HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| **A** Shape | Bullet |  |
| **B** Shape | Half Bullet |  |
| **C** Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| **APS** | Standard NAAMS | None - Plain<br>**T** - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| **APSL** | **A** Configurable | **P** - Plain<br>**T** - TiN<br>**R** - Rainbow DLC | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | D Head Dia. Callout (Actual) | A Lead Length | | | | | | | | | | Coating | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | | | |
| **APS** (Hole -0.15) | **25** (24.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | None- Plain<br>**T** - TiN | 2.0 | 50.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | D Head Dia.Callout (Actual) | A Lead Length (1 mm Inc.) | B Rad | C Rad | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tip A | Tip B | Tip C |
| **APSL** (Hole -0.15) | **P** - Plain<br>**T** - TiN<br>**R** - Rainbow DLC | **A**<br>**B**<br>**C** | **25** (24.85) | **10~100** | 2.0 | 50.0 | 25.0 | D/2 |

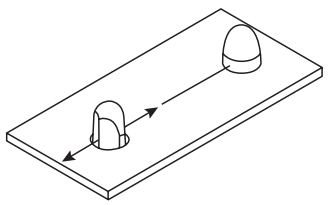
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | D | A | Coating |
| **APS** | **25** | **6M** | |
| **APS** | **25** | **4M** | **T** |

**P/N Example (Configurable NAAMS):**

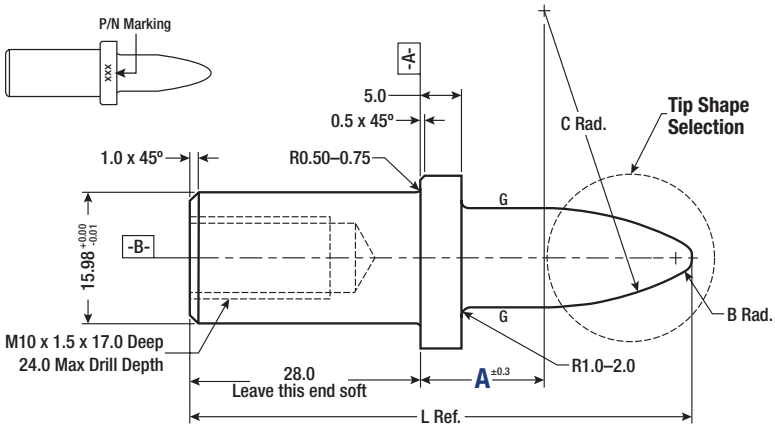
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| **APSL** | **P** | **A** | **25** | – | **A42** |
| **APSL** | **T** | **C** | **25** | – | **A79** |

**Application Example**

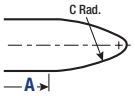
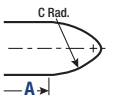
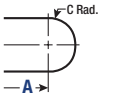


# Respot Pins

## ARP STANDARD / A CONFIGURABLE SMALL HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| ARP | Standard NAAMS | None - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| ARPS | A Configurable | P - Plain<br>T - TiN<br>R - Rainbow DLC | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | D Head Dia. Callout (Actual) | A Lead Length 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | Coating | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARP (Hole -0.28) | 06 (5.72) | 1M | 2M | 3M | 4M | 5M | 6M | — | — | — | — | None - Plain<br>T - TiN | 1.0 | 18.0 |
| | 08 (7.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | — | — | | 1.0 | 24.0 |
| | 10 (9.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | | 2.0 | 30.0 |
| | 12 (11.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | | 2.0 | 36.0 |
| | 13 (12.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | | 2.0 | 39.0 |
| | 16 (15.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | | 2.0 | 48.0 |
| | 19 (18.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | | 2.0 | 38.0 |

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**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | D Head Dia. Callout (Actual) | A Lead Length (1 mm Inc.) | B Rad | C Rad Tip A | Tip B | Tip C |
|---|---|---|---|---|---|---|---|---|
| ARPS (Hole -0.28) | P - Plain<br>T - TiN<br>R - Rainbow DLC | A | 6 (5.72) | 10~60 | 1.0 | 18.0 | 9.0 | D/2 |
| | | | 8 (7.72) | 10~80 | | 24.0 | 12.0 | |
| | | | 10 (9.72) | 10~100 | 2.0 | 30.0 | 15.0 | |
| | | B | 12 (11.72) | | | 36.0 | 18.0 | |
| | | C | 13 (12.72) | | | 39.0 | 19.5 | |
| | | | 16 (15.72) | | | 48.0 | 24.0 | |
| | | | 19 (18.72) | | | 38.0 | 19.0 | |

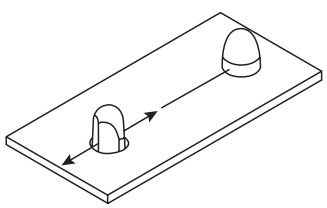
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | D | A | Coating |
| ARP | 19 | 2M | |
| ARP | 10 | 9M | T |

**P/N Example (Configurable NAAMS):**

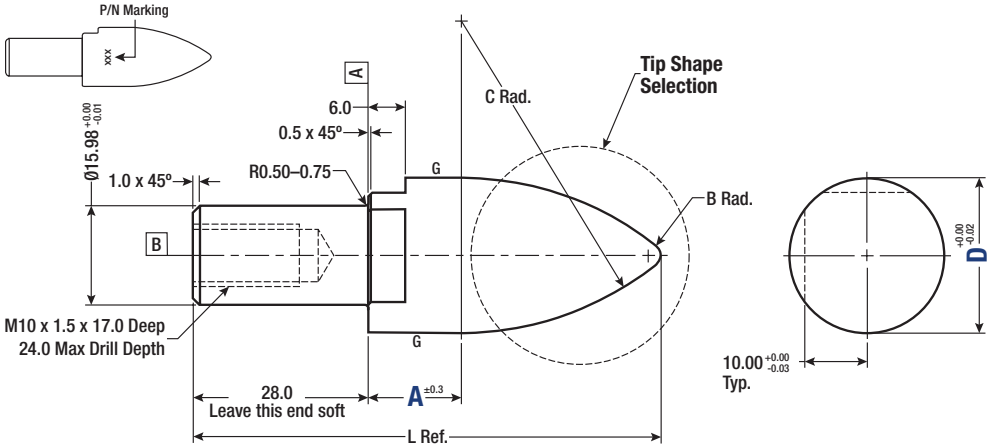
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| ARPS | P | B | 6 | – | A59 |
| ARPS | T | A | 16 | – | A69 |

**Application Example**

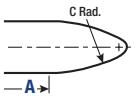
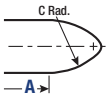
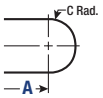


# Respot Pins

## ARP STANDARD / A CONFIGURABLE LARGE HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| ARP | Standard NAAMS | None - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| ARPL | A Configurable | P - Plain<br>T - TiN<br>R - Rainbow DLC | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | D Head Dia. Callout (Actual) | A Lead Length | | | | | | | | | Coating | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | | | |
| ARP (Hole -0.28) | 25 (24.72) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | None- Plain<br>T - TiN | 2.0 | 50.0 |

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**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | D Head Dia. Callout (Actual) | A Lead Length (1 mm Inc.) | B Rad | C Rad | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tip A | Tip B | Tip C |
| ARPL (Hole -0.28) | P - Plain<br>T - TiN<br>R - Rainbow DLC | A<br>B<br>C | 25 (24.72) | 10~100 | 2.0 | 50.0 | 25.0 | D/2 |

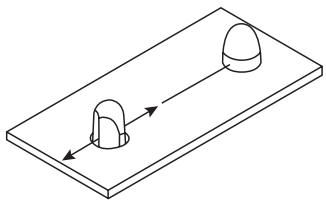
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | D | A | Coating |
| ARP | 25 | 6M | |
| ARP | 25 | 4M | T |

**P/N Example (Configurable NAAMS):**

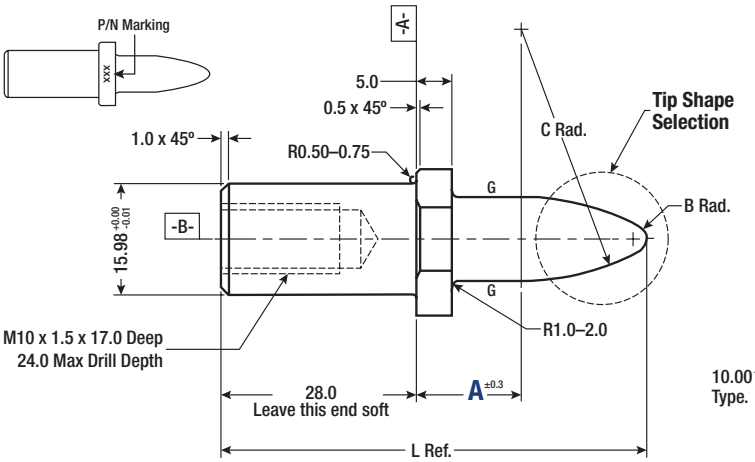
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| ARPL | P | A | 25 | – | A42 |
| ARPL | T | B | 25 | – | A67 |

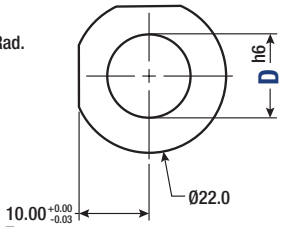
**Application Example**



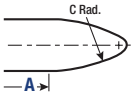
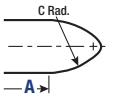
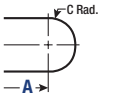
# Locating Pins

## APQ STANDARD / A CONFIGURABLE SMALL HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| APQ | Standard NAAMS | None - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| APQS | A Configurable | P - Plain<br>T - TiN<br>R - Rainbow DLC | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | D Head Dia. | A Lead Length 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | Coating | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APQ (Hole - h6) | 08 | 1 | 2 | 3 | 4 | 5 | 6 | — | — | None - Plain<br>T - TiN | 1.0 | 24.0 |
| | 10 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 1.0 | 30.0 |
| | 13 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 2.0 | 30.0 |
| | 16 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 2.0 | 48.0 |
| | 18 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 2.0 | 38.0 |
| | 20 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 2.0 | 38.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | D Head Dia. | A Lead Length (1 mm Inc.) | B Rad | C Rad Tip A | Tip B | Tip C |
|---|---|---|---|---|---|---|---|---|
| APQS (Hole - h6) | P - Plain<br>T - TiN<br>R - Rainbow DLC | A<br>B<br>C | 8 | 10~80 | 1.0 | 24.0 | 12.0 | D/2 |
| | | | 10 | 10~100 | | 30.0 | 15.0 | |
| | | | 13 | | 2.0 | 30.0 | 15.0 | |
| | | | 16 | | | 48.0 | 24.0 | |
| | | | 18 | | | 38.0 | 19.0 | |
| | | | 20 | | | 38.0 | 19.0 | |

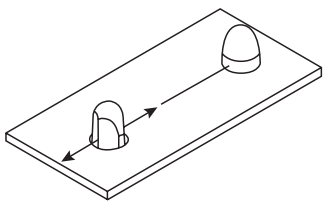
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | D | A | Coating |
| APQ | 18 | 2 | |
| APQ | 08 | 4 | T |

**P/N Example (Configurable NAAMS):**

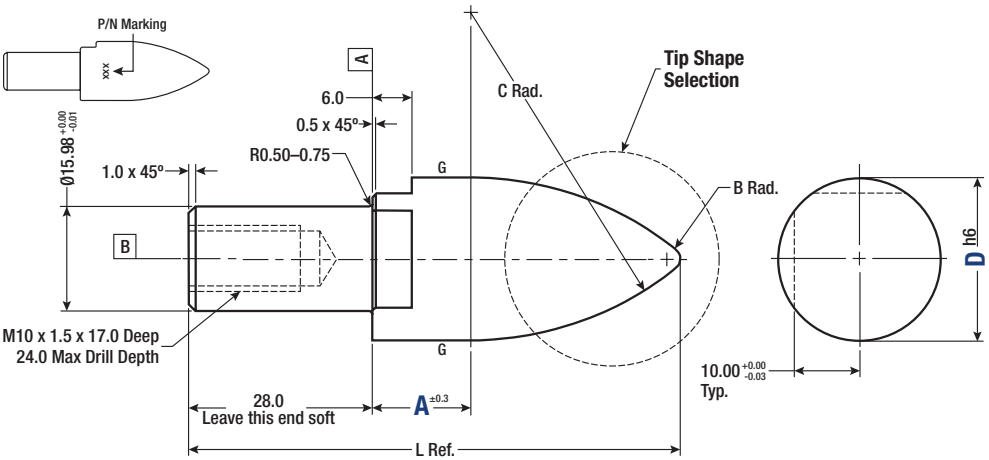
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| APQS | P | B | 16 | – | A42 |
| APQS | T | A | 20 | – | A75 |

**Application Example**

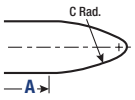
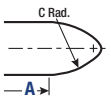
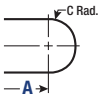


# Locating Pins

## APQ STANDARD / A CONFIGURABLE LARGE HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| APQ | Standard NAAMS | None - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| APQL | A Configurable | P - Plain<br>T - TiN<br>R - Rainbow DLC | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

### Standard NAAMS

| Type | D Head Dia. | A Lead Length | | | | | | | | Coating | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | | | |
| APQ (Hole - h6) | 25 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | None - Plain | 2.0 | 50.0 |
| | 30 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 2.0 | 50.0 |
| | 35 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | T - TiN | 2.0 | 50.0 |
| | 40 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | 2.0 | 50.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

### Configurable NAAMS (A Configurable)

| Type | Coating | Tip Shape | D Head Dia. | A Lead Length (1 mm Inc.) | B Rad | C Rad | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tip A | Tip B | Tip C |
| APQL (Hole - h6) | P - Plain<br>T - TiN<br>R - Rainbow DLC | A<br>B<br>C | 25<br>30<br>35<br>40 | 10~100 | 2.0 | 50.0 | 25.0 | D/2 |

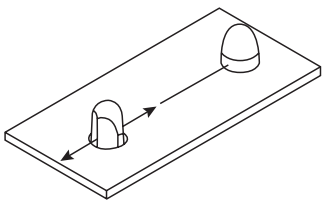
### P/N Example (Standard NAAMS):

| Part Number | | | |
|---|---|---|---|
| Type | D | A | Coating |
| APQ | 30 | 05 | |
| APQ | 25 | 04 | T |

### P/N Example (Configurable NAAMS):

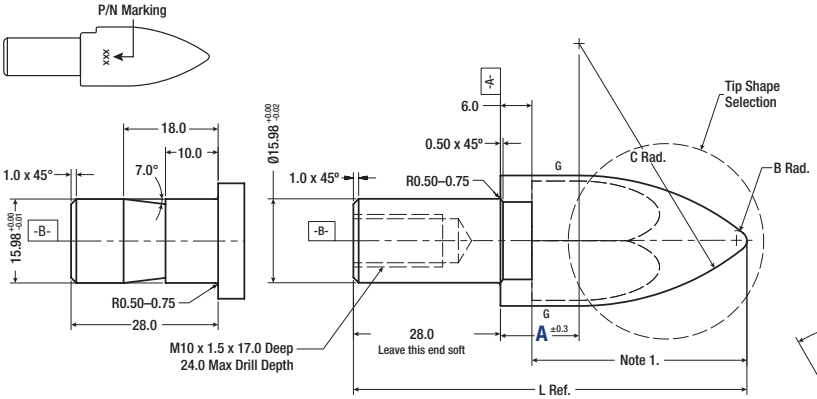
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| APQL | P | A | 25 | – | A42 |
| APQL | T | B | 30 | – | A65 |

### Application Example



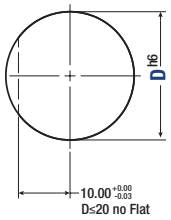
# Locating Pins

## APFL CONFIGURABLE LARGE HEAD

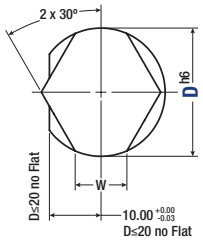



$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

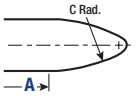
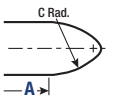
Round




Diamond




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |



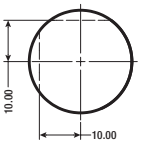
| Type | Coating | Head Shape | Material | Hardness |
|---|---|---|---|---|
| APFL | P - Plain<br>T - TiN | Round | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| APFLD | R - Rainbow DLC | Diamond | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

| Configurable NAAMS (A & D Configurable) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Type | Coating | Shank Style | Tip Shape | D (0.01 mm Inc.) | | A Lead Length (0.1 mm Inc.) | W | B Rad | C Rad |
| | | | | Dia. | Tol. H6 | | | | |
| APFL Round<br>APFLD Diamond | P - Plain<br>T - TiN<br>R - Rainbow DLC | B - Screw Mount<br>T - Setscrew | A<br>B<br>C | 19.00~30.00 | +0.000 -0.013 | 10.0~100.0 | 8.0 | 2.0 | Tip A<br>C = D x 3.0 (Ø≤16)<br>C = D x 2.0 (Ø>16)<br>Tip B<br>C = D x 1.5 (Ø≤16)<br>C = D x 1.0 (Ø>16)<br>Tip C<br>C = D x 0.5 |
| | | | | 30.01~40.00 | +0.000 -0.016 | | 8.0–9.0 | | |

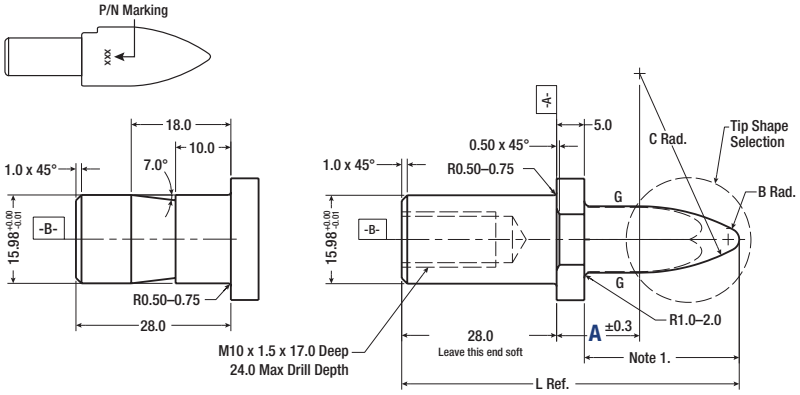
When D≤20 there is no Flat.
Note1: Diamond is machined 50mm only from the tip of the head.

| P/N Example (Configurable NAAMS): | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Part Number | | | | – | D | – | A | – | Alteration (KE) |
| Type | Coating | Shank Style | Tip Shape | | | | | | |
| APFLD | P | T | C | – | D37.15 | – | A12.0 | – | |
| APFL | T | B | A | – | D19.05 | – | A42.0 | – | KE |

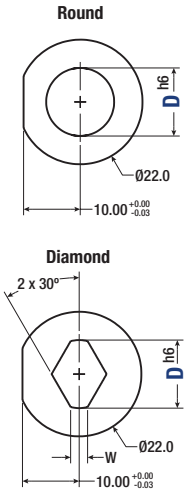
| Alternations | | |
|---|---|---|
| Code | KE |  |
| Description | Add 2nd Flat to the shoulder | |
| Spec | 10 mm +0.00 / -0.03 | |

# Locating Pins

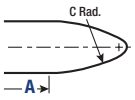
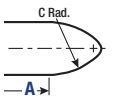
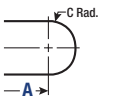
## APFS CONFIGURABLE SMALL HEAD




$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

| Type | Coating | Head Shape | Material | Hardness |
|---|---|---|---|---|
| APFS | P - Plain<br>T - TiN | Round | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| APFSD | R - Rainbow DLC | Diamond | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

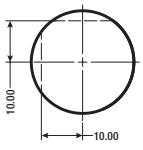
**Configurable NAAMS (A&D Configurable)**

| Type | Coating | Shank Style | Tip Shape | D (0.01 mm Inc.) Dia. | D (0.01 mm Inc.) Tol. h6 | A Lead Length (0.1 mm Inc.) | W | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|
| APFS Round<br>APFSD Diamond | P - Plain<br>T - TiN<br>R - Rainbow DLC | B - Screw Mount<br>T - Setscrew | A | 6.00~6.99 | +0.000 -0.009 | 10.0~60.0 | 2.0 | 1.0 | Tip A<br>C = D x 3.0 (Ø≤16)<br>C = D x 2.0 (Ø>16) |
| | | | A | 7.00~7.99 | | 10.0~70.0 | 2.0 | | |
| | | | A | 8.00~8.99 | | 10.0~80.0 | 3.0 | | |
| | | | B<br>C | 9.00~9.99 | | 10.0~90.0 | 3.0 | | Tip B<br>C = D x 1.5 (Ø≤16)<br>C = D x 1.0 (Ø>16) |
| | | | | 10.00~17.99 | +0.000 -0.011 | 10.0~100.0 | 4.0–5.0 | 2.0 | Tip C<br>C = D x 0.5 |
| | | | | 18.00~20.00 | +0.000 -0.013 | | | | |

Note1: Diamond is machined 50 mm only from the tip of the head.

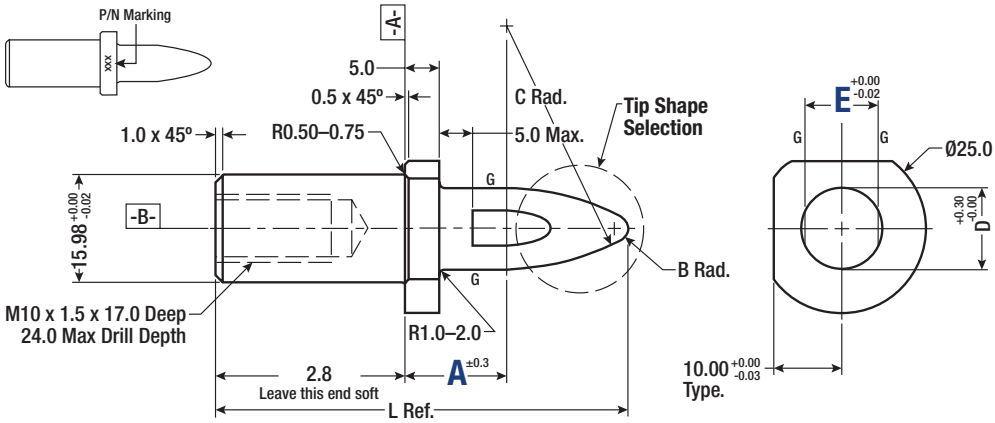
**P/N Example (Configurable NAAMS):**

| Part Number | | | | – | D | – | A | – | Alteration (KE) |
|---|---|---|---|---|---|---|---|---|---|
| Type | Coating | Shank Style | Tip Shape | | | | | | |
| APFSD | P | T | C | – | D6.05 | – | A25.0 | – | |
| APFS | T | B | A | – | D16.05 | – | A69.0 | – | KE |

| Alternations | | |
|---|---|---|
| Code | KE |  |
| Description | Add 2nd Flat to the shoulder | |
| Spec | 10 mm +0.00 / -0.03 | |

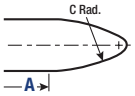
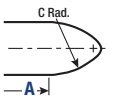
# Locating Pins

## APE STANDARD / A CONFIGURABLE SMALL HEAD




3D CAD is available online.

**Tip Shape Selection**

| | | |
|---|---|---|
| **A** Shape | Bullet |  |
| **B** Shape | Half Bullet |  |
| **C** Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| **APE** | Standard NAAMS | None - Plain<br>**T** - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| **APES** | **A** Configurable | **P** - Plain<br>**T** - TiN | | |

**Tolerance**

| Dim. | Tol. | Finish (Ra) | Geometric | |
|---|---|---|---|---|
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | E Flat Callout (Actual) | A Lead Length 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | Coating | For Slot | D Diameter | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **APE** (Slot -0.15) | **06** (5.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | — | — | — | — | None - Plain<br>**T** - TiN | 6 x 12 | 7.09 | 1.0 | 18.0 |
| | **08** (7.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | — | — | | 8 x 14 | 8.81 | 1.0 | 24.0 |
| | **10** (9.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 10 x 16 | 10.63 | 2.0 | 30.0 |
| | **12** (11.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 12 x 18 | 12.50 | 2.0 | 36.0 |
| | **13** (12.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 13 x 19 | 13.46 | 2.0 | 39.0 |
| | **16** (15.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 16 x 22 | 16.35 | 2.0 | 48.0 |
| | **19** (18.85) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 19 x 25 | 19.27 | 2.0 | 38.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

**Configurable NAAMS (A & E Configurable)**

| Type | Coating | Tip Shape | E Flat Callout (Actual) | A Lead Length (1 mm Inc.) | For Slot | D Diameter | B Rad | C Rad Tip A | C Rad Tip B | C Rad Tip C |
|---|---|---|---|---|---|---|---|---|---|---|
| **APES** (Slot -0.15) | **P** - Plain<br>**T** - TiN | **A** | **6** (5.85) | **15~60** | 6 x 12 | 7.09 | 1.0 | 18.0 | 9.0 | D/2 |
| | | | **8** (7.85) | **15~80** | 8 x 14 | 8.81 | | 24.0 | 12.0 | |
| | | **B** | **10** (9.85) | **15~100** | 10 x 16 | 10.63 | 2.0 | 30.0 | 15.0 | |
| | | | **12** (11.85) | | 12 x 18 | 12.50 | | 36.0 | 18.0 | |
| | | **C** | **13** (12.85) | | 13 x 19 | 13.46 | | 39.0 | 19.5 | |
| | | | **16** (15.85) | | 16 x 22 | 16.35 | | 48.0 | 24.0 | |
| | | | **19** (18.85) | | 19 x 25 | 19.27 | | 38.0 | 19.0 | |

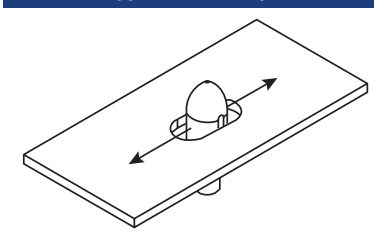
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | E | A | Coating |
| **APE** | **12** | **2M** | |
| **APE** | **19** | **4M** | **T** |

**P/N Example (Configurable NAAMS):**

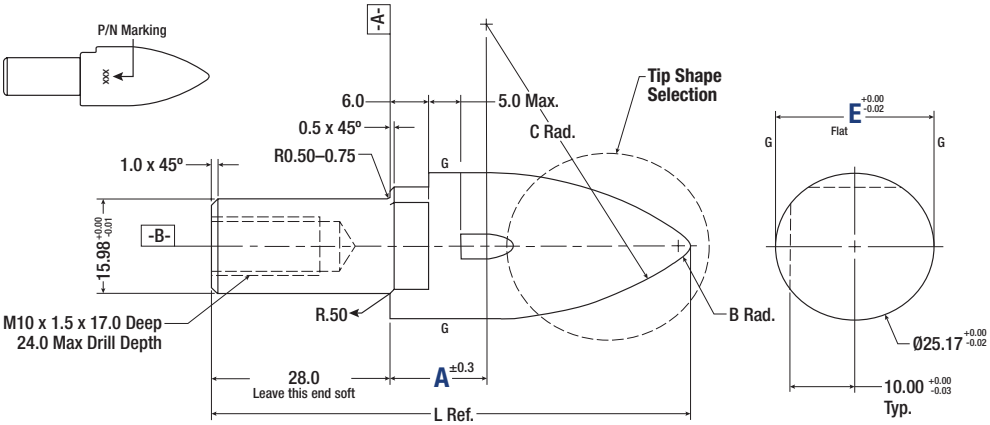
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | D | | |
| **APES** | **P** | **A** | **19** | – | **A42** |
| **APES** | **T** | **C** | **6** | – | **A15** |

**Application Example**

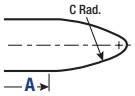
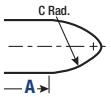
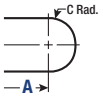


# Locating Pins

## APE STANDARD / A CONFIGURABLE LARGE HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| APE | Standard NAAMS | None - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| APEL | A Configurable | P - Plain<br>T - TiN | | |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | E Flat Callout (Actual) | A Lead Length | | | | | | | | | | Coating | For Slot | D Diameter | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | | | | | |
| APE (Slot -0.15) | 25 (24.85) | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 8M | 9M | 0M | None - Plain<br>T - TiN | 25 x 31 | 25.17 | 2.0 | 50.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | E Flat Callout (Actual) | A Lead Length (1 mm Inc.) | For Slot | D Diameter | B Rad | C Rad | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tip A | Tip B | Tip C |
| APEL (Slot -0.15) | P - Plain<br>T - TiN | A<br>B<br>C | 25 (24.85) | 15~100 | 25 x 31 | 25.17 | 2.0 | 50.0 | 25.0 | D/2 |

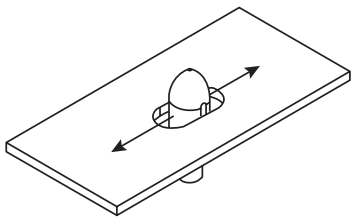
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | E | A | Coating |
| APE | 25 | 1M | |
| APE | 25 | 4M | T |

**P/N Example (Configurable NAAMS):**

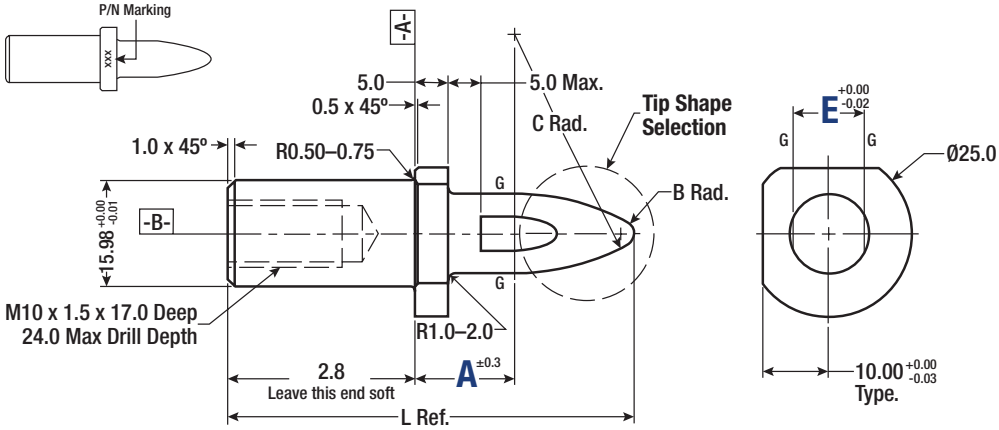
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | E | | |
| APEL | P | A | 25 | – | A42 |
| APEL | T | B | 25 | – | A25 |

**Application Example**



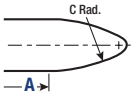
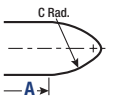
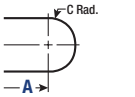
# Respot Pins

## ARE STANDARD / A CONFIGURABLE SMALL HEAD




3D CAD is available online.

**Tip Shape Selection**

| | | |
|---|---|---|
| **A** Shape | Bullet |  |
| **B** Shape | Half Bullet |  |
| **C** Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | | Coating | Material | Hardness |
|---|---|---|---|---|
| **ARE** | Standard NAAMS | None - Plain<br>**T** - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |
| **ARES** | **A** Configurable | **P** - Plain<br>**T** - TiN | | |

**Tolerance**

| Dim. | Tol. | Finish (Ra) | Geometric | |
|---|---|---|---|---|
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Standard NAAMS**

| Type | E Flat Callout (Actual) | A Lead Length 15 mm | 20 mm | 30 mm | 40 mm | 50 mm | 60 mm | 70 mm | 80 mm | 90 mm | 100 mm | Coating | For Slot | D Diameter | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ARE** (Slot -0.28) | **06** (5.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | — | — | — | — | None - Plain<br>**T** - TiN | 6 x 12 | 7.09 | 1.0 | 18.0 |
| | **08** (7.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | — | — | | 8 x 14 | 8.81 | 1.0 | 24.0 |
| | **10** (9.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 10 x 16 | 10.63 | 2.0 | 30.0 |
| | **12** (11.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 12 x 18 | 12.50 | 2.0 | 36.0 |
| | **13** (12.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 13 x 19 | 13.46 | 2.0 | 39.0 |
| | **16** (15.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 16 x 22 | 16.35 | 2.0 | 48.0 |
| | **19** (18.72) | **1M** | **2M** | **3M** | **4M** | **5M** | **6M** | **7M** | **8M** | **9M** | **0M** | | 19 x 25 | 19.27 | 2.0 | 38.0 |

Standard NAAMS specifications are controlled by the NAAMS organization and the latest version of these products will be produced in compliance to: **www.naamsstandards.org**.

**Configurable NAAMS (A Configurable)**

| Type | Coating | Tip Shape | E Flat Callout (Actual) | A Lead Length (1 mm Inc.) | For Slot | D Diameter | B Rad | C Rad Tip A | C Rad Tip B | C Rad Tip C |
|---|---|---|---|---|---|---|---|---|---|---|
| **ARES** (Slot -0.28) | **P** - Plain<br>**T** - TiN | **A**<br>**B**<br>**C** | **6** (5.72) | **15~60** | 6 x 12 | 7.09 | 1.0 | 18.0 | 9.0 | D/2 |
| | | | **8** (7.72) | **15~80** | 8 x 14 | 8.81 | | 24.0 | 12.0 | |
| | | | **10** (9.72) | **15~100** | 10 x 16 | 10.63 | 2.0 | 30.0 | 15.0 | |
| | | | **12** (11.72) | | 12 x 18 | 12.50 | | 36.0 | 18.0 | |
| | | | **13** (12.72) | | 13 x 19 | 13.46 | | 39.0 | 19.5 | |
| | | | **16** (15.72) | | 16 x 22 | 16.35 | | 48.0 | 24.0 | |
| | | | **19** (18.72) | | 19 x 25 | 19.27 | | 38.0 | 19.0 | |

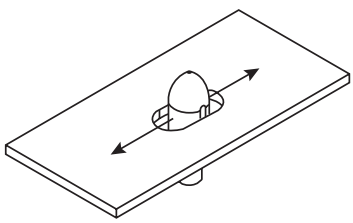
**P/N Example (Standard NAAMS):**

| Part Number | | | |
|---|---|---|---|
| Type | E | A | Coating |
| **ARE** | **19** | **2M** | |
| **ARE** | **10** | **9M** | **T** |

**P/N Example (Configurable NAAMS):**

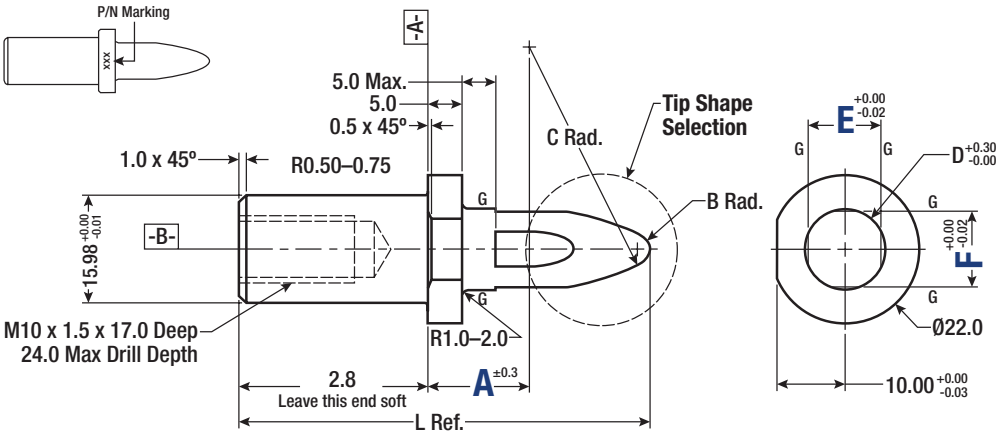
| Part Number | | | | – | A |
|---|---|---|---|---|---|
| Type | Coating | Tip Shape | E | | |
| **ARES** | **P** | **B** | **16** | **–** | **A89** |
| **ARES** | **T** | **C** | **6** | **–** | **A55** |

**Application Example**

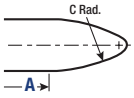
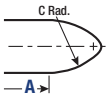
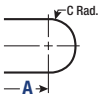


# Locating Pins

## A & E CONFIGURABLE SMALL HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | Coating | Material | Hardness |
|---|---|---|---|
| APFES | P - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5–0.7 after Grinding) |

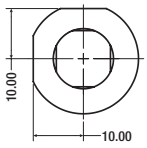
| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Configurable NAAMS (A & E Configurable)**

| Type | Coating | Tip Shape | E Flat (0.01 mm Inc.) | F Flat (0.01 mm Inc.) | A Lead Length (1 mm Inc.) | D Diameter | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|
| APFES | P - Plain<br>T - TiN | A<br>B<br>C | 6.00~10.00 | 6.00~19.00 | 15~100 | D = E/F + 1.0 | 2.0 | Tip A<br>C = D x 3.0 (Ø≤16)<br>C = D x 2.0 (Ø>16)<br>Tip B<br>C = D x 1.5 (Ø≤16)<br>C = D x 1.0 (Ø>16)<br>Tip C<br>C = D x 0.5 |
| | | | 10.01~19.00 | | | D = E/F + 0.75 | | |

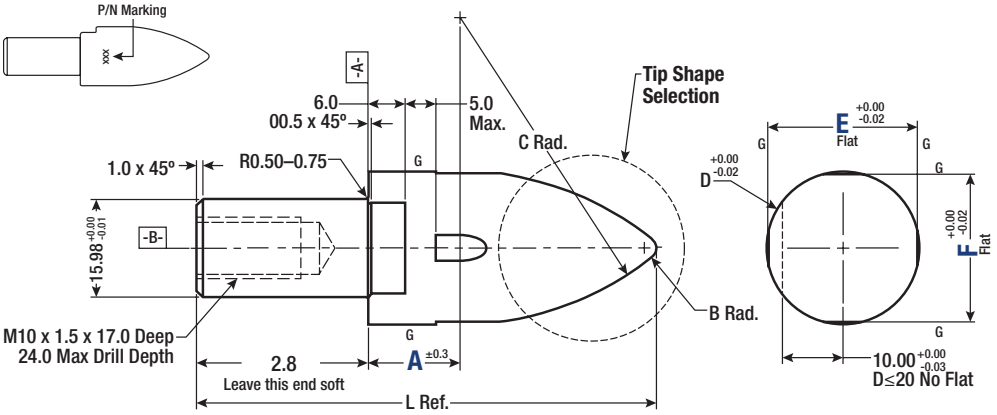
**P/N Example (Configurable NAAMS):**

| Part Number | | | – | E | – | F | – | A | – | Alteration (KE) |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | Coating | Tip Shape | | | | | | | | |
| APFES | P | A | – | E6.05 | – | F9.56 | – | A25 | – | |
| APFES | T | B | – | E12.01 | – | F11.57 | – | A72 | – | KE |

| Alternations | | |
|---|---|---|
| Code | KE |  |
| Description | Add 2nd Flat to the shoulder | |
| Spec | 10 mm +0.00 / -0.03 | |

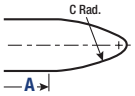
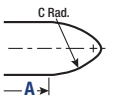
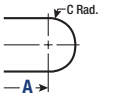
# Locating Pins

## A & E CONFIGURABLE LARGE HEAD




3D CAD is available online.

**Tip Shape Selection**

| | | |
|---|---|---|
| **A** Shape | Bullet |  |
| **B** Shape | Half Bullet |  |
| **C** Shape | Sphere |  |



$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

| Type | Coating | Material | Hardness |
|---|---|---|---|
| APFEL | P - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding) |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

**Configurable NAAMS (A & E Configurable)**

| Type | Coating | Tip Shape | E Flat (0.01 mm Inc.) | F Flat (0.01 mm Inc.) | A Lead Length (1 mm Inc.) | D Diameter | B Rad | C Rad |
|---|---|---|---|---|---|---|---|---|
| APFEL | P - Plain<br>T - TiN | A<br>B<br>C | 19.00~25.00 | 19.00~25.00 | 15~100 | D= E/F+0.40 | 2.0 | **Tip A**<br>C = D x 3.0 (Ø≤16)<br>C = D x 2.0 (Ø>16)<br>**Tip B**<br>C = D x 1.5 (Ø≤16)<br>C = D x 1.0 (Ø>16)<br>**Tip C**<br>C = D x 0.5 |

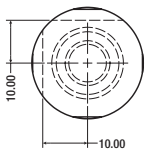
Note: D Diameter is calculated on E or F Flat size (whichever is larger). When D≤20 there is no Flat.

**P/N Example (Configurable NAAMS):**

| Part Number | | | – | E | – | F | – | A | – | Alteration (KE) |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | Coating | Tip Shape | | | | | | | | |
| APFEL | P | B | – | E21.58 | – | F20.8 | – | A95 | – | |
| APFEL | T | B | – | E19.05 | – | F19.05 | – | A12 | – | KE |

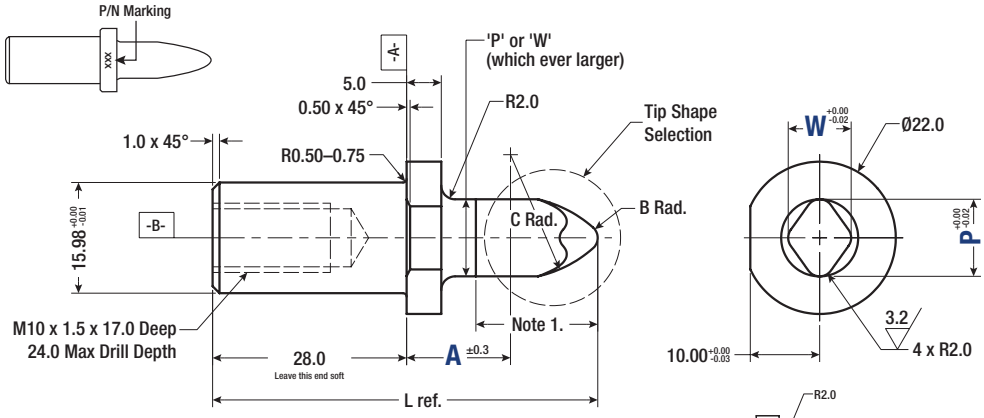
**Alternations**

| | |
|---|---|
| Code | KE |
| Description | Add 2nd Flat to the shoulder |
| Spec | 10 mm +0.00 / -0.03 |



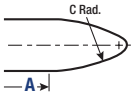
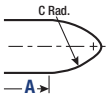
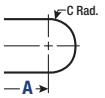
# Locating Pins

## TWO DIAMETER SMALL HEAD




$$L\ ref. = 28 + A + \sqrt{D\left(C - \frac{D}{4}\right)}$$

3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| A Shape | Bullet |  |
| B Shape | Half Bullet |  |
| C Shape | Sphere |  |

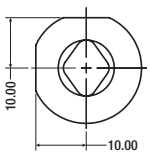
| Type | Coating | Material | Hardness |
|---|---|---|---|
| APFSS | P - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding) |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

| Configurable NAAMS (P, W, A Configurable) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Type | Coating | Tip Shape | P (0.01 mm Inc.) | W (0.01 mm Inc.) | A (1 mm Inc.) | B Rad | C Rad |
| APFSS | P - Plain<br>T - TiN | A | 6.00~6.99 | 6.00~20.00 | 10~60 | 2.0 | Tip A<br>C = P/W x 3.0 (Ø≤16)<br>C = P/W x 2.0 (Ø>16) |
| | | B | 7.00~7.99 | | 10~70 | | Tip B<br>C = P/W x 1.5 (Ø≤16)<br>C = P/W x 1.0 (Ø>16) |
| | | C | 6.00~8.99 | | 10~80 | | Tip C<br>C = P/W x 0.5 |
| | | | 9.00~9.99 | | 10~90 | | |
| | | | 10.00~20.00 | | 10~100 | | |

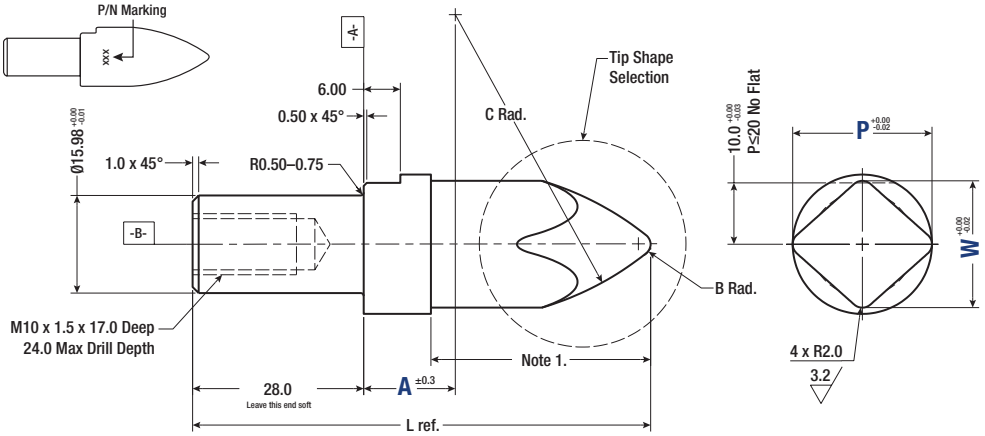
Note1: P/W dimensions are machined 50mm only from the tip of the head.
C radius is calculated based on P or W (which ever is larger).
D = P/W (whichever is larger)

| P/N Example (Configurable NAAMS): | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Part Number | | | – | E | – | F | – | A | – | Alteration (KE) |
| Type | Coating | Tip Shape | | | | | | | | |
| APFSS | P | A | – | P12.22 | – | W8.40 | – | A95 | – | |
| APFSS | T | C | – | P6.05 | – | W16.75 | – | A25 | – | KE |

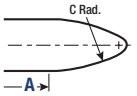
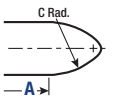
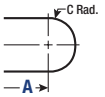
| Alternations | | |
|---|---|---|
| Code | KE |  |
| Description | Add 2nd Flat to the shoulder | |
| Spec | 10 mm +0.00 / -0.03 | |

# Locating Pins

## TWO DIAMETER LARGE HEAD




3D CAD is available online.

| Tip Shape Selection | | |
|---|---|---|
| **A** Shape | Bullet |  |
| **B** Shape | Half Bullet |  |
| **C** Shape | Sphere |  |

$$L\ ref.= 28+A+\sqrt{D\left(C-\frac{D}{4}\right)}$$

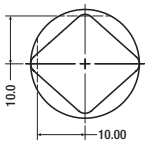
| Type | Coating | Material | Hardness |
|---|---|---|---|
| APFSL | P - Plain<br>T - TiN | 8620 Alloy Steel (JIS SNCM220) | Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding) |

| Tolerance | | | | |
|---|---|---|---|---|
| Dim. | Tol. | Finish (Ra) | Geometric | |
| 0.0 | ±0.3 | 6.0 µm | ⊥ | 0.015 T.I.R to Datum A & B |
| 0.00 | ±0.03 | 3.0 µm | // | |
| 0.000 | ±0.015 | 1.6 µm | ◎ | 0.03 T.I.R |

| Configurable NAAMS (P, W, A Configurable) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Type | Coating | Tip Shape | P (0.01 mm Inc.) | W (0.01 mm Inc.) | A (1 mm Inc.) | B Rad | C Rad |
| APFSL | P - Plain<br>T - TiN | A<br>B<br>C | 19.00~40.00 | 12.00~40.00 | 10~100 | 2.0 | **Tip A**<br>C = P/W x 3.0 (Ø≤16)<br>C = P/W x 2.0 (Ø>16)<br>**Tip B**<br>C = P/W x 1.5 (Ø≤16)<br>C = P/W x 1.0 (Ø>16)<br>**Tip C**<br>C = P/W x 0.5 |

Note1: P/W dimensions are machined 50mm only from the tip of the head.
C radius is calculated based on P or W (which ever is larger).
When P/W≤20 there is No Flat (Based on which ever is larger dimension). Check CAD for details.
D = P/W (whichever is larger)
A Tip only available for P/W≤30.

| P/N Example (Configurable NAAMS): | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Part Number | | | – | E | – | F | – | A | – | Alteration (KE) |
| Type | Coating | Tip Shape | | | | | | | | |
| APFSL | P | A | – | P35.07 | – | W39.98 | – | A25 | – | |
| APFSL | T | C | – | P19.56 | – | W22.55 | – | A72 | – | KE |

| Alternations | | |
|---|---|---|
| Code | KE |  |
| Description | Add 2nd Flat to the shoulder | |
| Spec | 10 mm +0.00 / -0.03 | |