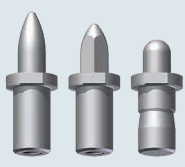


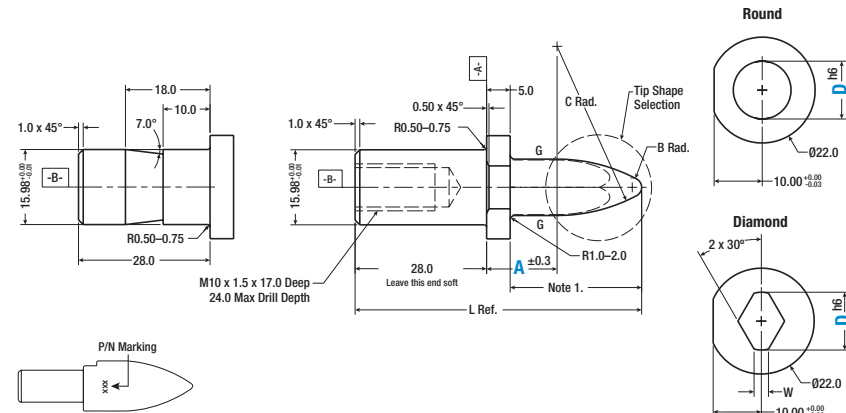
Locating Pins

APFS Configurable Small Head



Type	Coating	Head Shape	Material	Hardness
APFS	P - Plain	Round	8620 Alloy Steel (JIS SNCM220)	Carburized 58 - 62HRC (Depth 0.5-0.7 after Grinding)
APFSD	T - TiN	Diamond		
M2APFS	P - Plain	Round	M2 Tool Steel (JIS SKH51)	Thru hardened 58-65 HRC (with drawn shank >35 HRC)
M2APFSD	R - Rainbow DLC	Diamond		

3D CAD is available online.



Tolerance			
Dim.	Tol.	Finish (Ra)	Geometric
0.0	±0.3	6.0 μm	\perp 0.015 T.I.R to Datum A & B
0.00	±0.03	3.0 μm	\parallel
0.000	±0.015	1.6 μm	\odot 0.03 T.I.R

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

$$L \text{ ref.} = 28 + A + B + \sqrt{(C-B)^2 - \left(C - \frac{D}{2}\right)^2}$$

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				
APFS Round	P - Plain	B - Screw Mount	A	5.00-6.99	+0.000 -0.009	10.0-60.0	2.0	1.0	Tip A C = D x 3.0 (Ø≤16) C = D x 2.0 (Ø>16)
				7.00-7.99		10.0-70.0			
APFSD Diamond	T - TiN (not available on M2 Pins)	T - Setscrew	B	8.00-8.99	+0.000 -0.011	10.0-80.0	3.0	2.0	Tip B C = D x 1.5 (Ø≤16) C = D x 1.0 (Ø>16)
M2APFS Round	R - Rainbow DLC		C	9.00-9.99		10.0-90.0			
M2APFSD Diamond				10.00-17.99	+0.000 -0.013	10.0-100.0	4.0-5.0		Tip C C = D x 0.5
				18.00-20.00					

Note 1: Diamond is machined 50 mm only from the tip of the head.

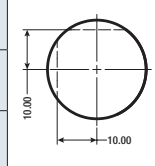
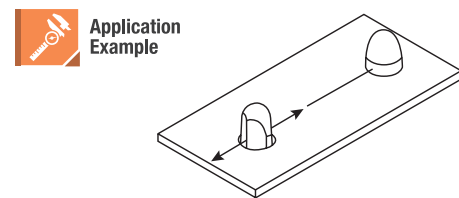
Part Number Example

Configurable

Type	Coating	Shank Style	Tip Shape	D Head Dia.	A	Alteration (KE)
APFS	P	T	C	D6.05	A25.0	
APFSD	T	B	A	D16.05	A69.0	KE
M2APFS	R	T	B	D19.16	A38.2	KE
M2APFSD	P	B	B	D8.7	A52.1	


Part Number Alterations

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

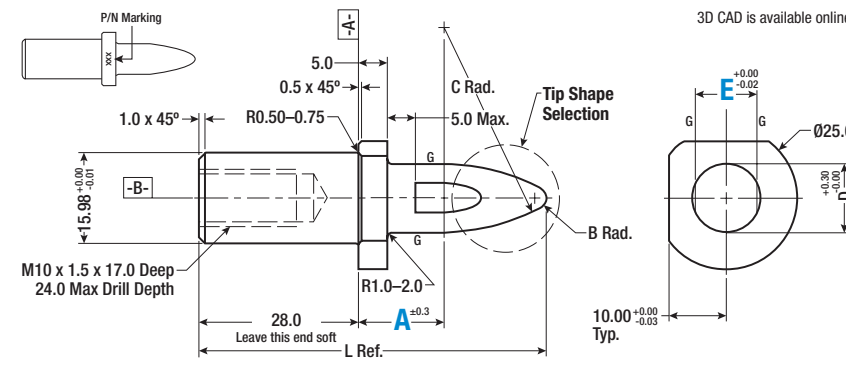
Locating Pins

APE Standard / A Configurable Small Head



Type	Coating	Material	Hardness
APE	Standard NAAMS	None - Plain	Carburized 58 - 62HRC (Depth 0.5-0.7 after Grinding)
APES	A Configurable	P - Plain T - TiN R - Rainbow DLC	
M2APE	Standard NAAMS	None - Plain D - Rainbow DLC	
M2APES	A Configurable	P - Plain R - Rainbow DLC	Thru hardened 58-65 HRC (with drawn shank >35 HRC)

3D CAD is available online.



Tolerance			
Dim.	Tol.	Finish (Ra)	Geometric
0.0	±0.3	6.0 μm	\perp 0.015 T.I.R to Datum A & B
0.00	±0.03	3.0 μm	\parallel
0.000	±0.015	1.6 μm	\odot 0.03 T.I.R

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

$$L \text{ ref.} = 28 + A + B + \sqrt{(C-B)^2 - \left(C - \frac{D}{2}\right)^2}$$

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 M2APE (Slot - 0.15)	06 (5.85)	1M	2M	3M	4M	5M	6M	—	—	—	—	None - Plain T - TiN (not available on M2 Pins) D - Rainbow DLC (Only for M2 Pins)	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
	16 (15.85)	1M	2M	3M	4M	5M	6M	7M	8M	9M	0M		13 x 19	13.46	2.0	39.0
19 (18.85)	1M	2M	3M	4M	5M	6M	7M	8M	9M	0M	16 x 22	16.35	2.0	48.0		
													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	Tip B	Tip C
APES M2APES (Slot - 0.15)	P - Plain T - TiN (not available on M2 Pins) R - Rainbow DLC	A B C	06 (5.85)	15-60	6 x 12	7.09	1.0	18.0	9.0	D/2
			08 (7.85)	15-80	8 x 14	8.81		24.0	12.0	
			10 (9.85)	15-100	10 x 16	10.63		30.0	15.0	
			12 (11.85)		12 x 18	12.50		36.0	18.0	
			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						

Part Number Example

Standard

Type	E	A	Coating
APE	12	2M	
APE	19	4M	T
M2APE	08	4M	
M2APE	19	8M	D

Configurable

Type	Coating	Tip Shape	D	A
APES	P	A	19	A42.0
APES	T	C	6	A15
M2APES	P	C	16	A85
M2APES	R	A	8	A30

