

CONFIGURABLE & STANDARD RETRACTABLE LOCATING PINS

Round Head Shape

38–43

APS-R Small Head

38

APS-R Large Head

39

ARP-R Small Head

40

ARP-R Large Head

41

APQ-R Small Head

42

APQ-R Large Head

43

Flat Head Shape

44–47

APE-R Small Head

44

APE-R Large Head

45

ARE-R Small Head

46

ARE-R Large Head

47

Bullet Head Shape: Retractable Fully Configurable

48–51

ARFS Small Head

48

ARFL Large Head

49

ARFERS Small Head

50

ARFERL Large Head

51

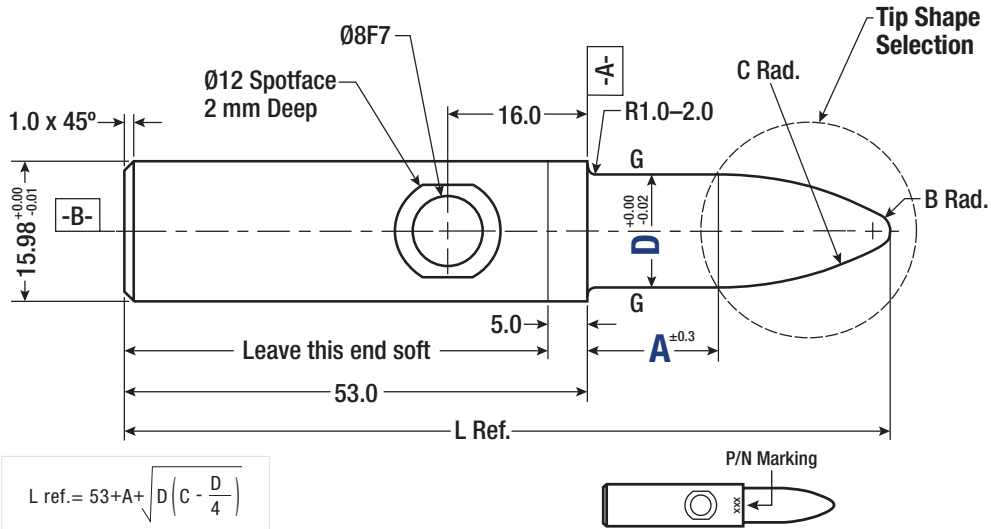


Locating Pins

APS-R SMALL HEAD



3D CAD is available online.



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

Type	Coating	Head Shape	Material	Hardness
APS	Standard NAAMS	Round	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding)
APSR	A Configurable			
	P - Plain 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

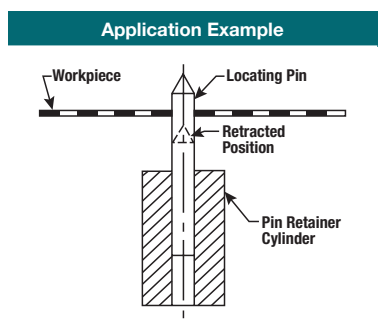
Standard NAAMS Pins													
Type	D Head Dia. Callout (Actual)	A Lead Length										Retractable	Coating
		10 mm	15 mm	25 mm	35 mm	45 mm	55 mm	65 mm	75 mm	85 mm	95 mm		
APS (Hole -0.15)	06 (5.85)	1	2	3	4	5	6	—	—	—	—	R - Retractable	None - Plain T - TiN
	08 (7.85)	1	2	3	4	5	6	7	8	—	—		
	10 (9.85)	1	2	3	4	5	6	7	8	9	0		
	13 (12.85)	1	2	3	4	5	6	7	8	9	0		
	16 (15.85)	1	2	3	4	5	6	7	8	9	0		
													B Rad.
													C Rad.

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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
APSR (Hole -0.15)	P - Plain T - TiN	A	6 (5.85)	5-55	1.0	18.0	9.0	D/2
			8 (7.85)	5-75		24.0	12.0	
		B	10 (9.85)	5-100	2.0	30.0	15.0	
			13 (12.85)			39.0	19.5	
		C	16 (15.85)			48.0	24.0	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
APS	08	4	R	T
APS	13	0		

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	—	A
APSR	P	B	8	—	A35

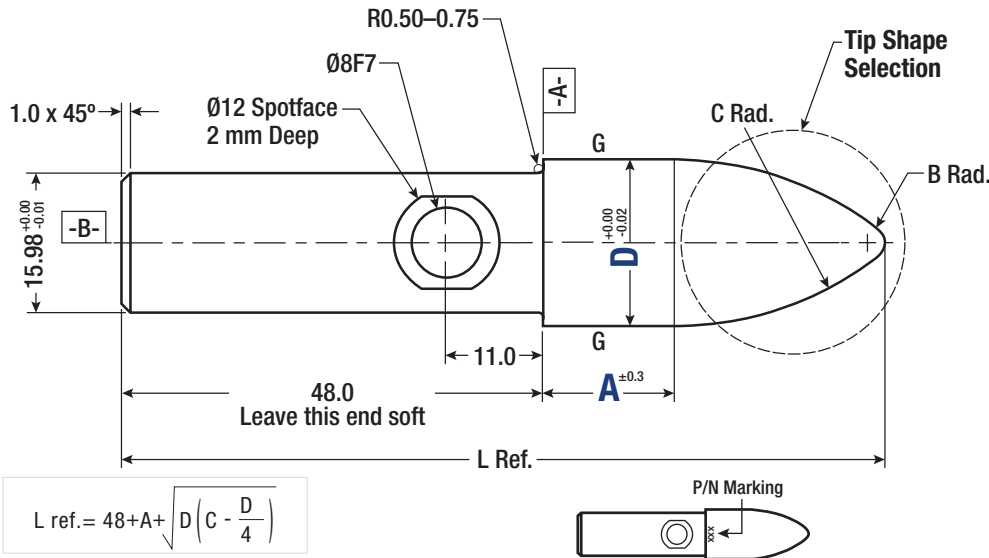




Locating Pins

APS-R LARGE HEAD

3D CAD is available online.



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

Type	Coating	Material	Hardness
APS	Standard NAAMS None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
APSRL	A Configurable P - Plain T - TiN		

Tolerance			
Dim.	Tol.	Finish (Ra)	Geometric
0.0	±0.3	6.0 µm	⊥
0.00	±0.03	3.0 µm	∥
0.000	±0.015	1.6 µm	⊙

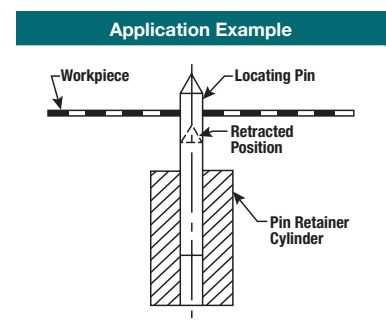
Standard NAAMS Pins													
Type	D Head Callout	A Lead Length										Retractable	Coating (Optional)
		15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm		
APS (Hole -0.15)	19 (18.85)	1	2	3	4	5	6	7	8	9	0	R - Retractable	None - Plain T - TiN
	25 (24.85)	1	2	3	4	5	6	7	8	9	0		

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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
APSRL (Hole -0.15)	P - Plain T - TiN	A B C	19 (18.85)	5~100	2.0	38.0	19.0	D/2
			25 (24.85)			50.0	25.0	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
APS	19	4	R	T

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	-	A
APSRL	T	A	19	-	A42

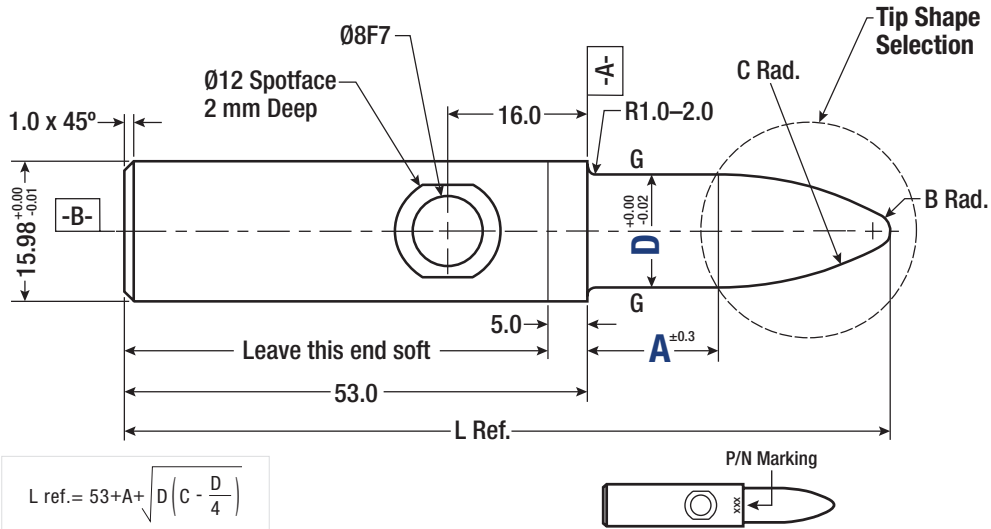


Respot Pins

ARP-R SMALL HEAD



Retractable Locating Pins



3D CAD is available online.

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

Type	Coating	Material	Hardness
ARP	Standard NAAMS None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding)
ARPRS	A Configurable P - Plain 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		0.03 T.I.R
0.000	±0.015	1.6 µm		0.03 T.I.R

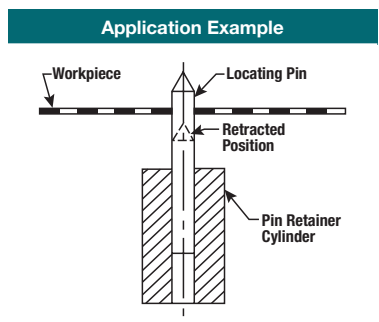
Standard NAAMS Pins															
Type	D Head Dia. Callout (Actual)	A Lead Length										Retractable	Coating	B Rad	C Rad
		10 mm	15 mm	25 mm	35 mm	45 mm	55 mm	65 mm	75 mm	85 mm	95 mm				
ARP (Hole -0.28)	06 (5.72)	1	2	3	4	5	6	—	—	—	—	R - Retractable	None - Plain T - TiN	1.0	18.0
	08 (7.72)	1	2	3	4	5	6	7	8	—	—				24.0
	10 (9.72)	1	2	3	4	5	6	7	8	9	0			30.0	
	13 (12.72)	1	2	3	4	5	6	7	8	9	0			39.0	
	16 (15.72)	1	2	3	4	5	6	7	8	9	0			48.0	

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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
ARPRS (Hole -0.28)	P - Plain T - TiN	A	6 (5.72)	5 ~ 55	1.0	18.0	9.0	D/2
			8 (7.72)	5 ~ 75		24.0	12.0	
		B	10 (9.72)	5 ~ 100	2.0	30.0	15.0	
			13 (12.72)			39.0	19.5	
		C	16 (15.72)			48.0	24.0	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
ARP	08	4	R	
ARP	08	4	R	T

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	—	A
ARPRS	T	A	8	—	A42

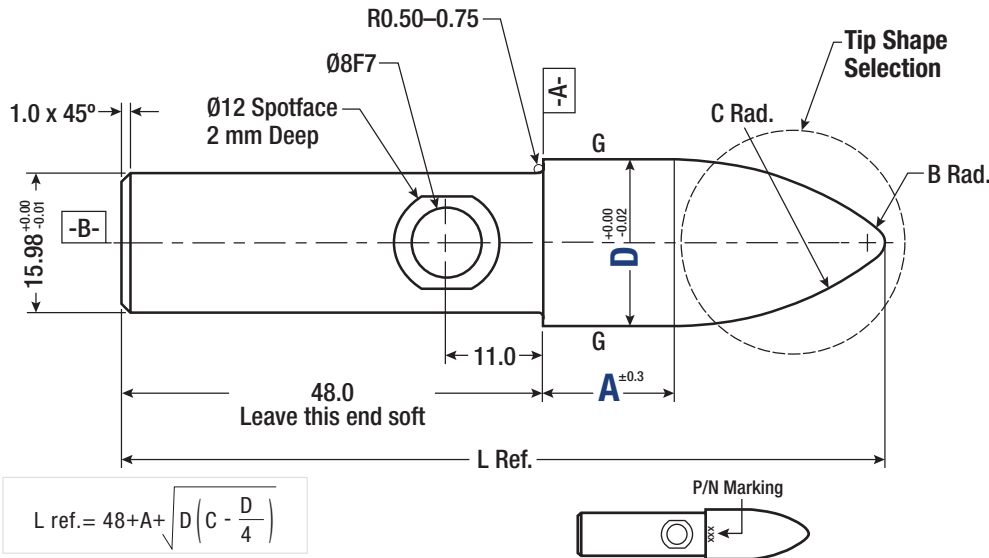




Respot Pins

ARP-R LARGE HEAD

3D CAD is available online.



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

Type	Coating	Material	Hardness
ARP	Standard NAAMS	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding)
ARPL	A Configurable		

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

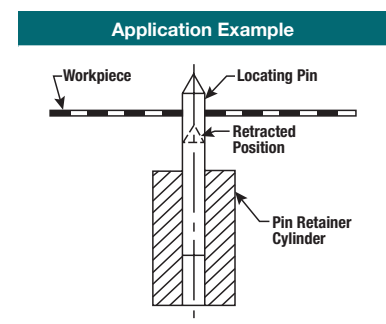
Standard NAAMS Pins															
Type	D Head Callout	A Lead Length										Retractable	Coating (Optional)	B Rad	C Rad
		15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm				
ARP (Hole -0.28)	19 (18.72)	1	2	3	4	5	6	7	8	9	0	R - Retractable	None - Plain	2.0	38.0
	25 (24.72)	1	2	3	4	5	6	7	8	9	0		T - TiN		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	A	19 (18.72)	5 ~ 100	2.0	38.0	19.0	D/2
	T - TiN	B C	25 (24.72)			50.0	25.0	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
ARP	19	4	R	T
	25	0		

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	-	A
ARPL	P	A	19	-	A42
	T	C	25	-	A99

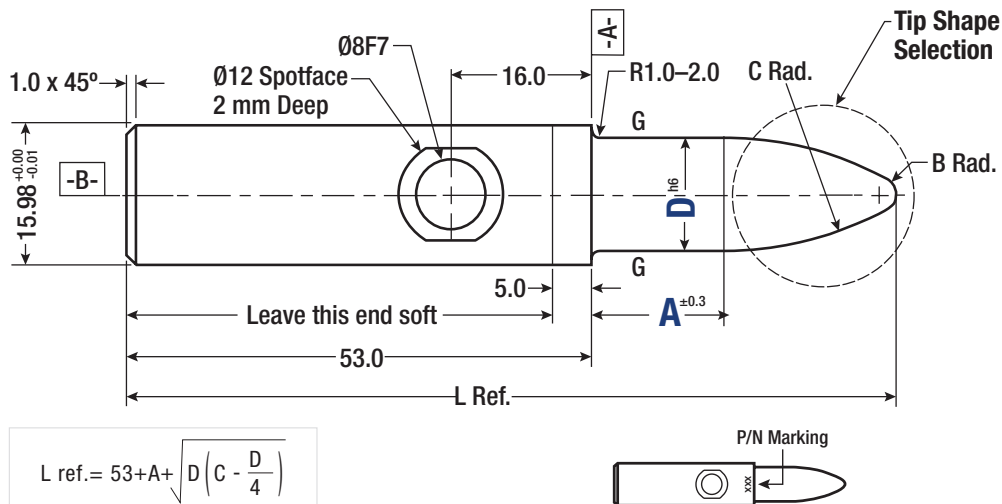


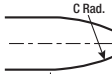
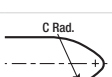
APQ-R SMALL HEAD



Retractable Locating Pins

3D CAD is available online.



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

	Type	Coating	Material	Hardness
APQ	Standard NAAMS	None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
APQRS	A Configurable	P - Plain 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

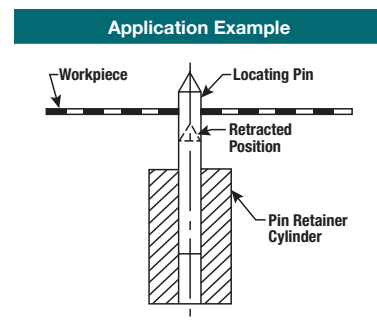
Standard NAAMS Pins													
Type	D Head Callout	A Lead Length								Retractable	Coating (Optional)	B Rad	C Rad
		10 mm	15 mm	25 mm	35 mm	45 mm	55 mm	65 mm	75 mm				
APQ (Hole h6)	08	1	2	3	4	5	6	7	8	R - Retractable	None - Plain T - TiN	1.0	24.0
	10	1	2	3	4	5	6	7	8			30.0	
	13	1	2	3	4	5	6	7	8			39.0	

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Configurable NAAMS (A Configurable)								
Type	Coating	Tip Shape	D Head Callout	A Lead Length (1 mm Inc.)	B Rad	C Rad		
						Tip A	Tip B	Tip C
APQRS (Hole h6)	P - Plain	A	8	5~100	2.0	24.0	12.0	D/2
	T - TiN	B	10			30.0	15.0	
		C	13			39.0	19.5	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
APQ	08	4	R	T

P/N Example (Configurable NAAMS):					
Part Number				–	A
Type	Coating	Tip Shape	D		
APQRS	T	A	8	–	A42

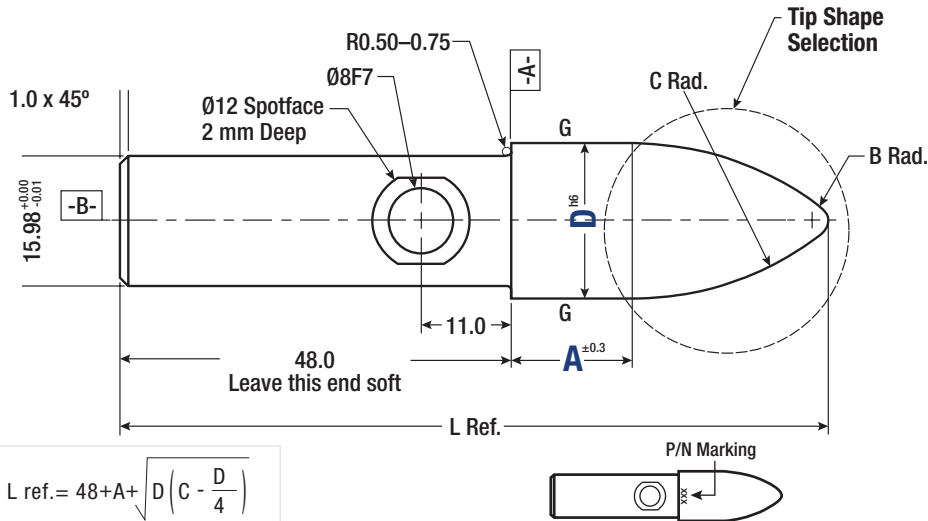




Locating Pins

APQ-R LARGE HEAD

3D CAD is available online.



$$L \text{ ref.} = 48 + A + \sqrt{D \left(C - \frac{D}{4} \right)}$$

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

Type	Coating	Material	Hardness
APQ	Standard NAAMS None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
APQRL	A Configurable P - Plain 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

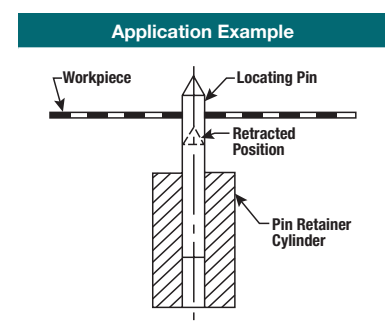
Standard NAAMS Pins													
Type	D Head Callout	A Lead Length								Retractable	Coating	B Rad	C Rad
		10 mm	15 mm	25 mm	35 mm	45 mm	55 mm	65 mm	75 mm				
APQ (Hole h6)	16	1	2	3	4	5	6	7	8	R - Retractable	None - Plain T - TiN	2.0	48.0
	18	1	2	3	4	5	6	7	8				38.0
	20	1	2	3	4	5	6	7	8				38.0
	25	1	2	3	4	5	6	7	8				38.0
	30	1	2	3	4	5	6	7	8				38.0
	35	1	2	3	4	5	6	7	8				38.0
	40	1	2	3	4	5	6	7	8				50.0

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Configurable NAAMS (A Configurable)								
Type	Coating	Tip Shape	D Head Callout	A Lead Length (1 mm Inc.)	B Rad	C Rad		
						Tip A	Tip B	Tip C
APQRL (Hole h6)	P - Plain T - TiN	A B C	16	5~100	2.0	48.0	24.0	D/2
			18			38.0	19.0	
			20			38.0	19.0	
			25			38.0	19.0	
			30			38.0	19.0	
			35			38.0	19.0	
			40			50.0	25.0	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
APQ	18	4	R	T

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	—	A
APQRL	T	A	19	—	A42

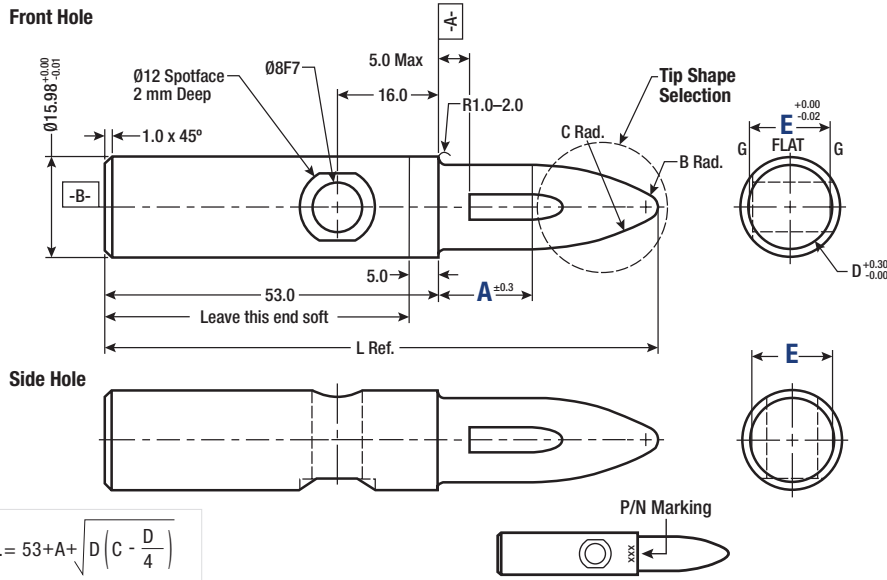


Locating Pins

APE-R SMALL HEAD



3D CAD is available online.



Tip Shape Selection

A Shape	Bullet	
B Shape	Half Bullet	
C Shape	Sphere	

Type	Retractable	Coating	Material	Hardness
APE	Standard NAAMS	R - Front Hole S - Side Hole	None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220)
APERS	A Configurable	Front Hole	P - Plain	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
APESS		Side Hole	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										Retractable	Coating (Optional)	D Diameter	B Rad	C Rad
		10 mm	15 mm	25 mm	35 mm	45 mm	55 mm	65 mm	75 mm	85 mm	95 mm					
APE (Slot -0.15)	06 (5.85)	1	2	3	4	5	6	—	—	—	—	R - Front Hole	None - Plain	7.09	1.0	18.0
	08 (7.85)	1	2	3	4	5	6	7	8	—	—			8.81		24.0
	10 (9.85)	1	2	3	4	5	6	7	8	9	0	S - Side Hole	T - TiN	10.63	2.0	30.0
	13 (12.85)	1	2	3	4	5	6	7	8	9	0			13.46		39.0

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Configurable NAAMS (A Configurable)

Type	Coating	Tip Shape	E Flat Callout (Actual)	A Lead Length (1 mm Inc.)	D Diameter	B Rad	C Rad		
							Tip A	Tip B	Tip C
APERS (Front Hole)	P - Plain	A	6 (5.85)	10~55	7.09	1.0	18.0	9.0	D/2
APESS (Side Hole)		B	8 (7.85)	10~75	8.81		24.0	12.0	
APESS (Side Hole)	T - TiN	C	10 (9.85)	10~100	10.63	2.0	30.0	15.0	
			13 (12.85)		13.46		39.0	19.5	

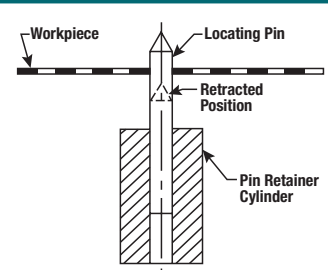
P/N Example (Standard NAAMS):

Part Number				
Type	D	A	Retractable	Coating
APE	08	4	R	T

P/N Example (Configurable NAAMS):

Part Number				
Type	Coating	Tip Shape	D	
APERS	P	C	10	A22
APESS	T	A	8	A42

Application Example

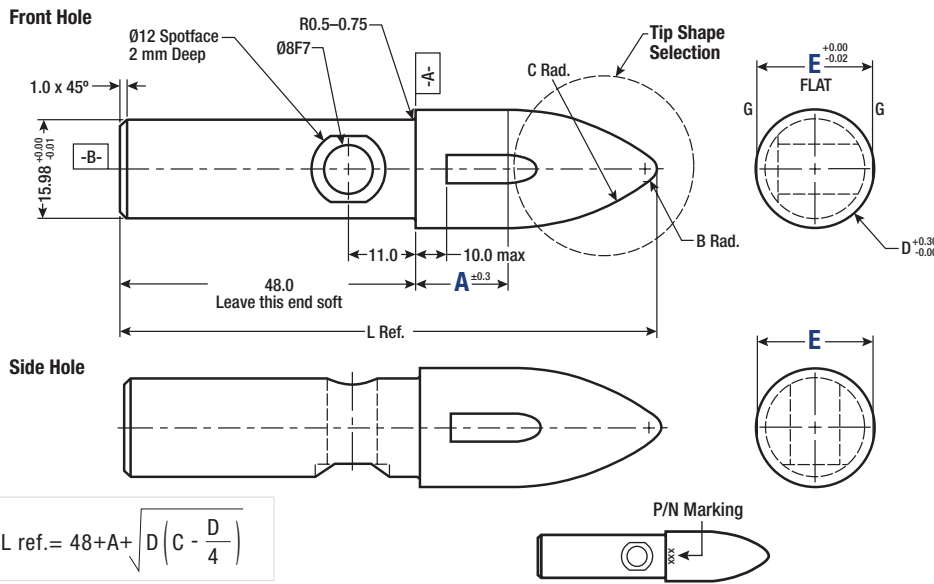




Locating Pins

APE-R LARGE HEAD

3D CAD is available online.



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

Type	Retractable	Coating	Material	Hardness
APE	Standard NAAMS	R - Front Hole S - Side Hole	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding)
APERL	A Configurable	Front Hole		
APESL		Side Hole		
		P - Plain 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

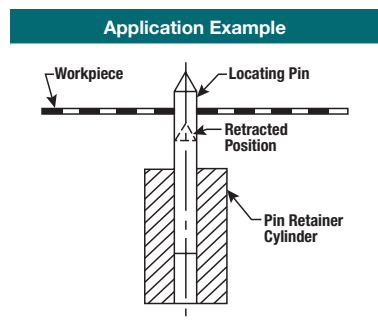
Standard NAAMS													
Type	E Flat Callout (Actual)	A Lead Length										Retractable	Coating (Optional)
		15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm		
APE (Slot -0.15)	16 (15.85)	1	2	3	4	5	6	7	8	9	0	R - Retractable Front Hole S - Retractable Side Hole	None - Plain T - TiN
	19 (18.85)	1	2	3	4	5	6	7	8	9	0		
	25 (24.85)	1	2	3	4	5	6	7	8	9	0		
													D Diameter
													B Rad
													C Rad

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Configurable NAAMS (A Configurable)									
Type	Coating	Tip Shape	E Flat Callout (Actual)	A Lead Length (1 mm Inc.)	D Diameter	B Rad	C Rad		
							Tip A	Tip B	Tip C
APERL (Front Hole)	P - Plain T - TiN	A	16 (15.85)	10~100	16.35	2.0	48.0	24.0	D/2
APESL (Side Hole)		B	19 (18.85)		19.27		38.0	19.0	
		C	25 (24.85)		25.17		50.0	25.0	

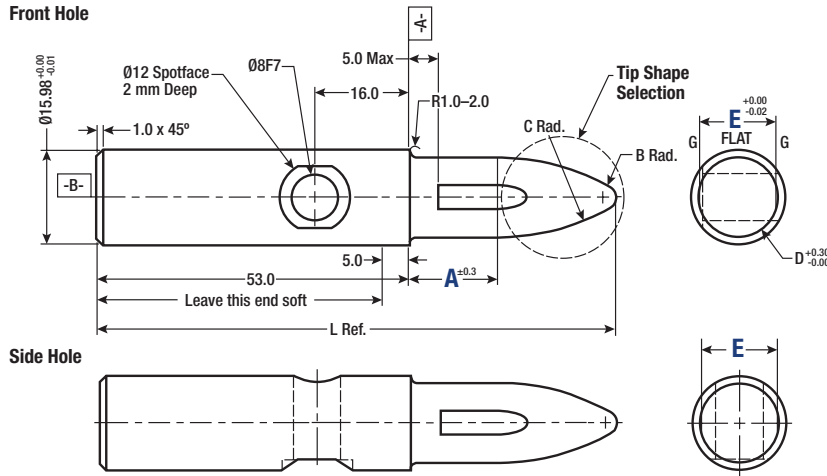
P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
APE	19	4	R	T

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	-	A
APERL	T	A	19	-	A42



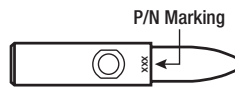
Respot Pins

ARE-R SMALL HEAD



3D CAD is available online.

$$L_{ref.} = 53 + A + \sqrt{D \left(C - \frac{D}{4} \right)}$$



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

Type	Retractable	Coating	Material	Hardness
ARE	Standard NAAMS	R - Front Hole S - Side Hole	None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220) Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
ARERS	A Configurable	Front Hole	P - Plain	
ARESS		Side Hole	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

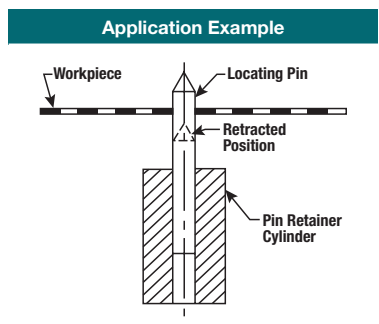
Standard NAAMS														
Type	E Flat Callout (Actual)	A Lead Length										Retractable	Coating	For Slot
		10 mm	15 mm	25 mm	35 mm	45 mm	55 mm	65 mm	75 mm	85 mm	95 mm			
ARE (Slot -0.28)	06 (5.72)	1	2	3	4	5	6	—	—	—	—	R - Front Hole	None - Plain	6 x 12
	08 (7.72)	1	2	3	4	5	6	7	8	—	—			8 x 14
	10 (9.72)	1	2	3	4	5	6	7	8	9	0	S - Side Hole	T - TiN	10 x 16
	13 (12.72)	1	2	3	4	5	6	7	8	9	0			13 x 19
														D Diameter
														B Rad
														C Rad

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
ARERS (Front Hole)	P - Plain	A	6 (5.72)	10~55	6 x 12	7.09	1.0	18.0	9.0	D/2
			8 (7.72)	10~75	8 x 14	8.81		24.0	12.0	
ARESS (Side Hole)	T - TiN	B	10 (9.72)	10~100	10 x 16	10.63	2.0	30.0	15.0	
			13 (12.72)		13 x 19	13.46		39.0	19.5	
(Slot -0.28)		C								

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
ARE	08	4	R	
ARE	13	0	S	T

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D		
ARERS	P	A	6	—	A42
ARESS	T	C	10	—	A99

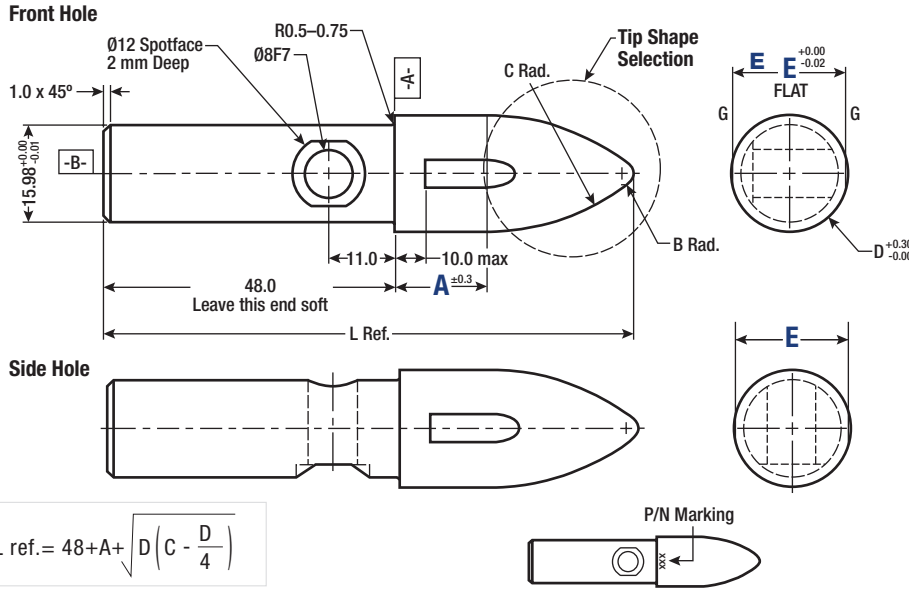




Respot Pins

ARE-R LARGE HEAD

3D CAD is available online.



$$L \text{ ref.} = 48 + A + \sqrt{D \left(C - \frac{D}{4} \right)}$$

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

Type	Retractable	Coating	Material	Hardness
ARE	Standard NAAMS	R - Front Hole S - Side Hole	None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220) Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding)
ARERL	A Configurable	Front Hole	P - Plain	
ARESL		Side Hole	T - TiN	

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

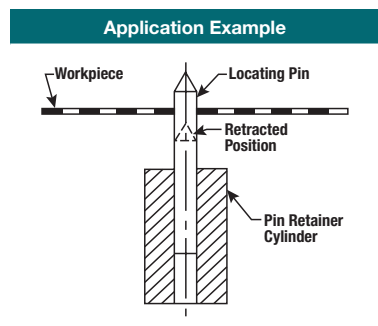
Standard NAAMS																	
Type	E Flat Callout (Actual)	A Lead Length										Retractable	Coating	For Slot	D Diameter	B Rad	C Rad
		15 mm	20 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm						
ARE (Slot -0.28)	16 (15.72)	1	2	3	4	5	6	7	8	9	0	R - Retractable Front Hole S - Retractable Side Hole	None - Plain T - TiN	16 x 22	16.35	2.0	48.0
	19 (18.72)	1	2	3	4	5	6	7	8	9	0			19 x 25	19.27		38.0
	25 (24.72)	1	2	3	4	5	6	7	8	9	0			25 x 31	25.17		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
ARERL (Front Hole)	P - Plain T - TiN	A B C	16 (15.72)	10-100	16 x 22	16.35	2.0	48.0	24.0	D/2
ARESL (Side Hole)			19 (18.72)		19 x 25	19.27		38.0	19.0	
ARESL (Slot -0.28)			25 (24.72)		25 x 31	25.17		50.0	25.0	

P/N Example (Standard NAAMS):				
Part Number				
Type	D	A	Retractable	Coating
ARE	19	4	R	T
ARE	16	9	S	

P/N Example (Configurable NAAMS):					
Part Number					
Type	Coating	Tip Shape	D	-	A
ARERL	P	A	25	-	A42
ARESL	T	C	16	-	A99

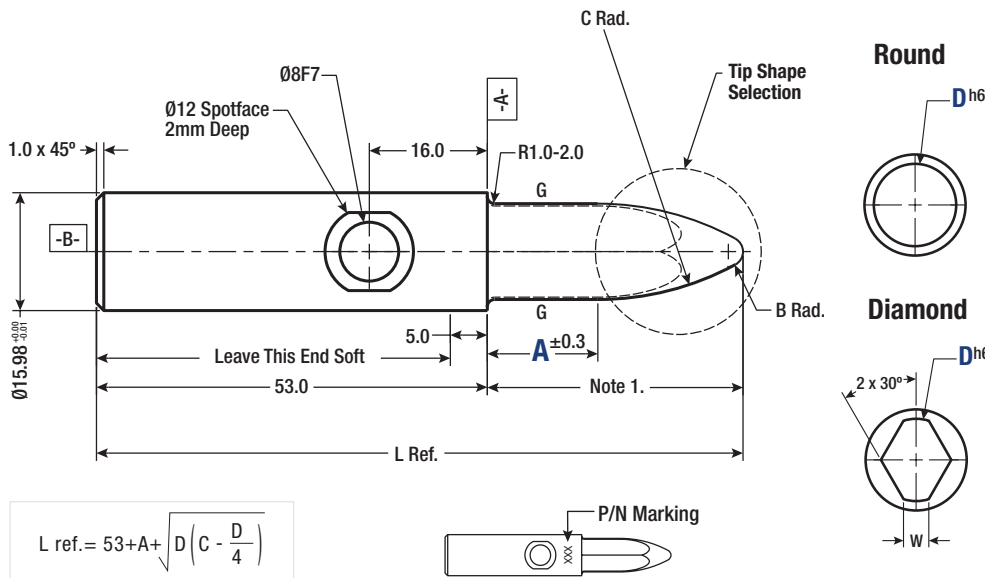


Locating Pins

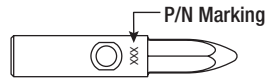
ARFS SMALL HEAD



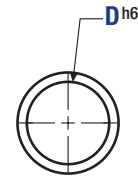
3D CAD is available online.



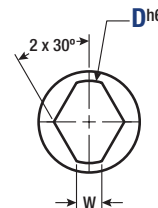
$$L \text{ ref.} = 53 + A + \sqrt{D \left(C - \frac{D}{4} \right)}$$



Round



Diamond



Tip Shape Selection

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

Type	Retractable	Coating	Material	Hardness
ARFS	Round	P - Plain	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
ARFSD	Diamond	T - TiN		

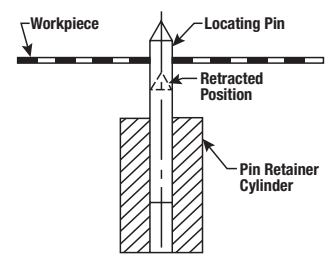
Tolerance				
Dim.	Tol.	Finish (Ra)	Geometric	
0.0	±0.3	6.0 μm		0.015 T.I.R to Datum A & B
0.00	±0.03	3.0 μm		
0.000	±0.015	1.6 μm		0.03 T.I.R

Configurable NAAMS (A & D Configurable)								
Type	Coating	Tip Shape	D Head Dia. (0.01 mm Inc.)	D Tol.	A Lead Length (0.1 mm Inc.)	B Rad	W	C Rad
ARFS (Round)	P - Plain	A	6.00~6.99	+0.000 -0.009	5.0~55.0	1.0	2.0	Tip A C = D x 3.0 (0 ≤ 16) C = D x 2.0 (0 > 16)
			7.00~7.99		5.0~75.0			
ARFSD (Diamond)	T - TiN	B	8.00~8.99		5.0~80.0			
		C	9.00~9.99	+0.000 -0.011	5.0~100.0	2.0	3.0	Tip B C = D x 1.5 (0 ≤ 16) C = D x 1.0 (0 > 16)
			10.00~16.00				4.0~5.0	

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

P/N Example (Configurable NAAMS):						
Part Number			-	D	-	A
Type	Surface Finish	Tip Shape				
ARFSD	P	C	-	D8.55	-	A42.1
ARFS	T	A	-	D8.55	-	A42.1

Application Example

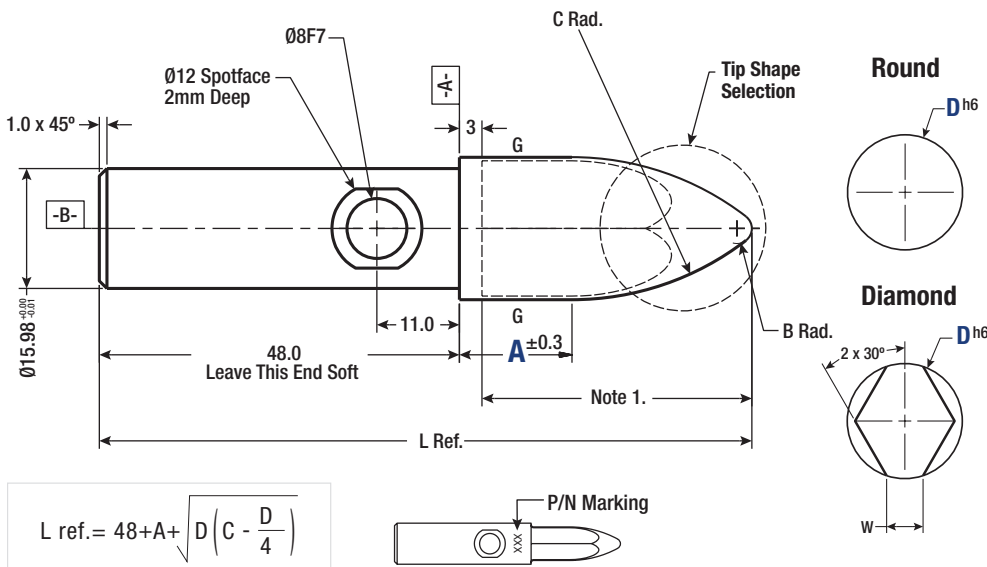




Locating Pins

ARFL LARGE HEAD

3D CAD is available online.



$$L \text{ ref.} = 48 + A + \sqrt{D \left(C - \frac{D}{4} \right)}$$

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

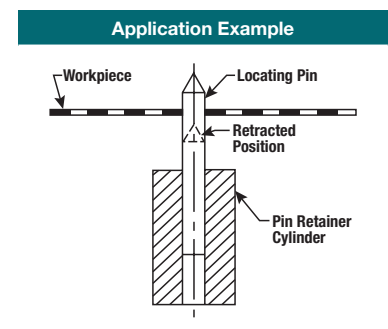
Type	Retractable	Coating	Material	Hardness
ARFL	Round	P - Plain	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
ARFLD	Diamond	T - TiN		

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		

Configurable NAAMS (A & D Configurable)								
Type	Coating	Tip Shape	D (0.01 mm Inc.)	D Tol.	A Lead Length (0.1 mm Inc.)	W	B Rad	C Rad
ARFL (Round)	P - Plain	A	16.10~25.00	h6	5.0~100.0	6.0	2.0	Tip A C = D x 3.0 (Ø≤16) C = D x 2.0 (Ø>16)
		B	25.01~40.00			7.0~9.0		Tip B C = D x 1.5 (Ø≤16) C = D x 1.0 (Ø>16)
		C						Tip C C = D x 0.5
ARFLD (Diamond)	T - TiN							

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

P/N Example (Configurable NAAMS):						
Part Number			-	D	-	A
Type	Surface Finish	Tip Shape				
ARFL	P	A	-	D17.78	-	A42.0
ARFLD	T	C	-	D31.78	-	A42.0

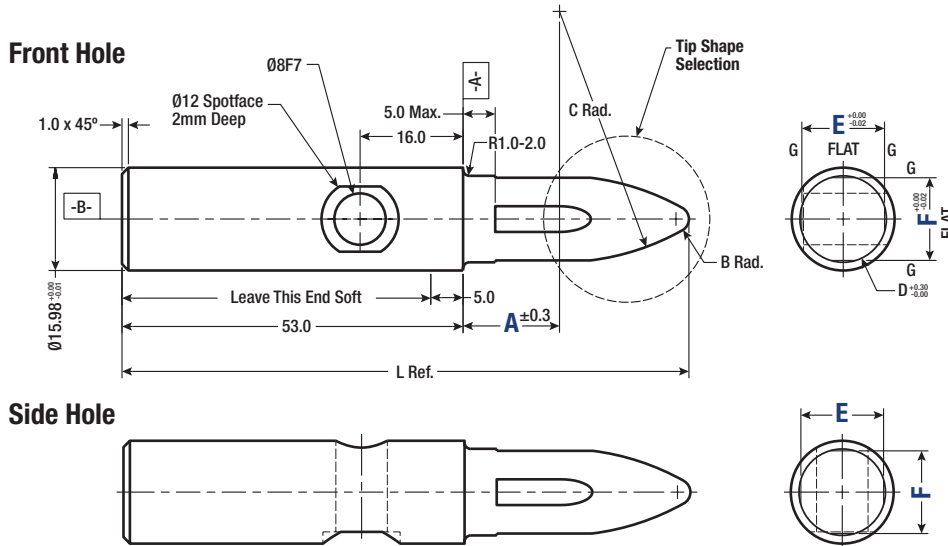


Locating Pins

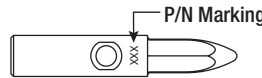
ARFERS SMALL HEAD



3D CAD is available online.



$$L \text{ ref.} = 53 + A + \sqrt{D \left(C - \frac{D}{4} \right)}$$



Tip Shape Selection

A Shape	Bullet	
B Shape	Half Bullet	
C Shape	Sphere	

Type	Retractable	Coating	Material	Hardness
ARFERS	Front Hole	None - Plain T - TiN	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5~0.7 after Grinding)
ARFESS	Side Hole	P - Plain 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

Configurable NAAMS (A & D Configurable)

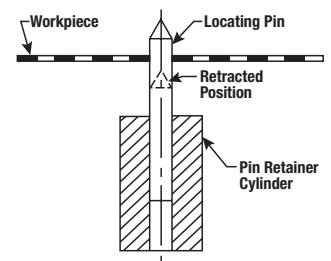
Type	Coating	Tip Shape	E Flat (0.01 mm Inc.)	F Flat (0.01 mm Inc.)	D Diameter	A Lead Length (1 mm Inc.)	B Rad	C Rad
ARFERS (Front Hole)	P - Plain	A	6.00~10.00	6.00~16.00	D = E/F + 1.0	10 ~ 100	2.0	Tip A C = D x 3.0 (Ø≤16) C = D x 2.0 (Ø>16)
		B	10.01~16.00	10.01~16.00	D = E/F + 0.75			Tip B C = D x 1.5 (Ø≤16) C = D x 1.0 (Ø>16)
		C						Tip C C = D x 0.5

Note: D Diameter is calculated on E or F Flat size (whichever is larger).

P/N Example (Configurable NAAMS):

Part Number			-	E	-	F	-	A
Type	Surface Finish	Tip Shape						
ARFESS	P	C	-	E12.01	-	F11.01	-	A42
ARFERS	T	A	-	E8.06	-	F11.01	-	A42

Application Example



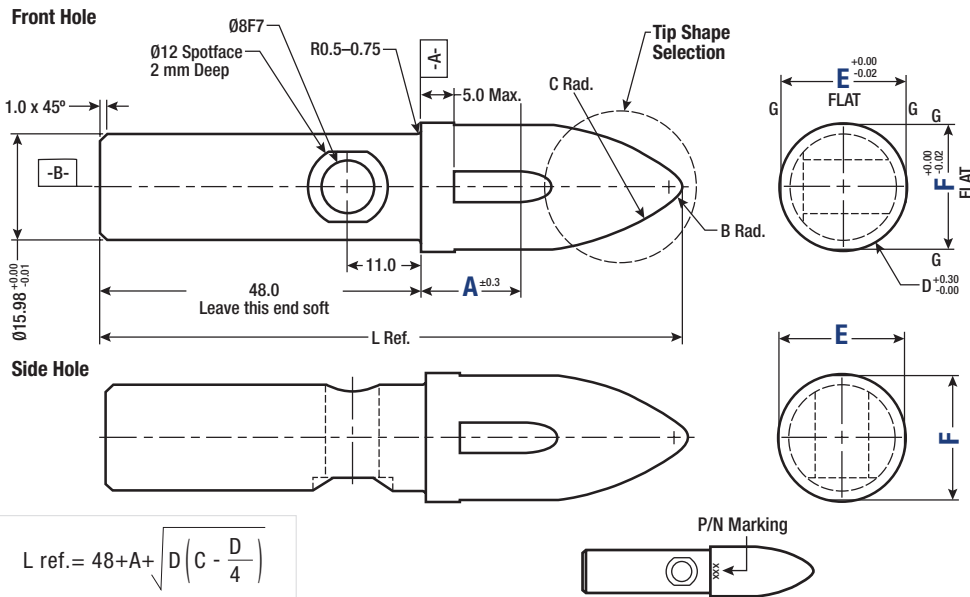
For square holes.



Locating Pins

ARFERL LARGE HEAD

3D CAD is available online.



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

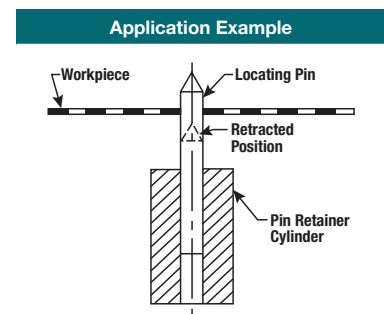
Type	Retractable	Coating	Material	Hardness
ARFERL	Front Hole	P - Plain	8620 Alloy Steel (JIS SNCM220)	Carburized 58 ~ 62HRC (Depth 0.5-0.7 after Grinding)
ARFESL	Side Hole	T - TiN		

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

Configurable NAAMS (A & D Configurable)								
Type	Coating	Tip Shape	E Flat (0.01 mm Inc.)	F Flat (0.01 mm Inc.)	D Diameter	A Lead Length (1 mm Inc.)	B Rad	C Rad
ARFERL (Front Hole) ARFESL (Side Hole)	P - Plain T - TiN	A	16.10~20.00	16.10~25.00	D = E + 0.45	10.0~100.0	2.0	Tip A C = D x 3.0 (Ø≤16) C = D x 2.0 (Ø>16)
		B	20.01~25.00	16.10~25.00	D = E + 0.35			Tip B C = D x 1.5 (Ø≤16) C = D x 1.0 (Ø>16)
		C						Tip C C = D x 0.5

Note: D Diameter is calculated on E or F Flat size (whichever is larger).

P/N Example (Configurable NAAMS):								
Part Number			-	E	-	F	-	A
Type	Surface Finish	Tip Shape						
ARFESL	P	A	-	E21.05	-	F17.50	-	A42
ARFERL	T	A	-	E16.70	-	F20.01	-	A42



For square holes.

