

Alumina Coated Pins

Locating Pins for Fixtures Height Adjusting Pins

Features: Suitable for spot welding since alumina coating excels in abrasion resistance and insulation. Polishing Relief Groove is smaller than the conventional products to avoid a workpiece getting stuck.

Alumina Coated Pins

Threaded	Set Screw	Shape	Material	Surface Treatment	Hardness
Z-LANA	Z-LATA	Round	Special Stainless (KCF)	Alumina Coating	Approx. 1300HV (Inside: Approx. 200HV)
Z-LAND	Z-LATD	Diamond			

Threaded

Set Screw

Surface Finish: $32 \sqrt{(\frac{1.6}{\sqrt{A}})}$

Tip Shape: $6.3 \sqrt{(\frac{3.2}{\sqrt{A}})}$, $1.6 \sqrt{(\frac{G}{\sqrt{A}})}$

Part Number	Type	D _{h8}	P	B	L Selection	L ₁	L ₂	L ₃	H	d	R	Applicable Set Screw	W	Unit Price			
														Z-LANA	Z-LAND		
8	Threaded (Round)	0	3.0~9.0	5~30	5	12	15	10	8	8	11	5	1.5	M5	1~2		
10	Set Screw (Round)	-0.022	5.0~12.0		10	12	15	12	10	8	13	7	2	M6	2~3		
10T	Z-LATA (Diamond)		5.0~12.0		10	12	15	18	5	8	13	7	2	M6	2~3		
12	Z-LAND (Diamond)		9.0~13.0		12	15	18	15	12	10	15	9	3	M8	4		
16	Z-LATD (Diamond)	-0.027	13.0~16.0		15	18	20	18	12	10	19	13	4	M8	5		

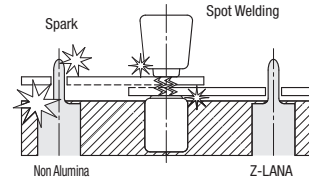
W Dimension: D₈: W=2 when P>5.0, D₁₀, D_{10T}: W=3 when P>7.0

Ordering Example

Part Number: Z-LANA 10 - P7.8 - B6 - L10

Part Number: Z-LATD 10 - P11.5 - B20

ex Example



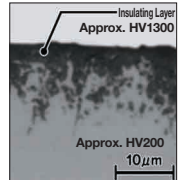
Suited for locating pins in spot welding. Pins prevent current from causing sparks during welding. Prevents pin wear from sparks and reduces the causes of positioning problems and workpiece appearance degradations.

Alterations

Part Number: Z-LANAS - P7.8 - B10 - L12 - SC

Alterations	Flat Position	Flat Machining	Wrench Flats	Tip Angle Change	Thread Dia.	Upper Relief Radius Change
	Code	KC	KD	SC	RC	MC
Spec.	Ordering Code KC: Changes the flat position to 90° from the standard position 0°. Applicable to Diamond Shape Type only.	Ordering Code KD: Machining on one side. Applicable to Round Shape Type only.	Ordering Code SC: Adds wrench flats. Selection: H 11 13 15 19, H 8 11 13 17. Applicable to Round Shape Type only.	Ordering Code RC6: Changes the tip angle. Selection: 60°, 90°, 120°.	Ordering Code MC8: Changes the thread diameter. Selection: D/3-M-DM min 3. Applicable to Threaded only.	Ordering Code RTC0.2: Changes R1 to R of the Selection below. Selection: R1 R2 R3. RTC≤(H-P)/2.

Alumina Coated Pin (Material: KCF) Cross Section View



Insulating layer with depth of 5 ~ 10µm (approx. HV1300) is formed. Alumina coating excels in abrasion resistance and insulation compared to metal coating. *Contacts with pointed objects may cause conduction.

Characteristic Comparison (Reference)

	Special Stainless KCF (Alumina Coated)	Stainless SUS304	Ceramic A1203	Nylon	Bakelite (Paper Base)	Bakelite (Cloth Base)
Natural Resistance (Ω)	2x10 ⁸	72x10 ⁶	10 ¹⁴	5x10 ¹²	10 ¹⁰	10 ¹²
Insulation Breakdown Voltage (V)	150	-	10 ⁴	1.9x10 ⁴	-	-
Tensile Strength (MPa)	421	520	-	88	80	100
Elongation (%)	10	40	-	50	2	2
Flexural Strength (MPa)	-	-	350	103	180	160
Vickers Hardness (HV)	Front 1300 Inside 200	200	1400	-	-	-
Insulation Properties	○	×	○	○	○	○
Heat Resistance	○	○	○	×	○	○
Machinability	○	○	×	○	○	○
Cost	○	○	×	○	○	○

Features: Locating of workpiece in both vertical and horizontal directions is possible.

Threaded

Type	Shape	Material	Hardness
HUPNA	Round	SCM435	Hardened 35~40HRC
HUPND	Diamond		
THUPNA	Round	SCM415	Carburized 55HRC~ (Depth: 0.7~0.8) Anti-carburizing on Threads
THUPND	Diamond		

Reference: $\sin 15^\circ = 0.259$, $\sin 45^\circ = 0.707$, $\tan 15^\circ = 0.267$, $\tan 45^\circ = 1$
 $\sin 30^\circ = 0.5$, $\sin 60^\circ = 0.866$, $\tan 30^\circ = 0.577$, $\tan 60^\circ = 1.732$

Tip Shape: $6.3 \sqrt{(\frac{3.2}{\sqrt{A}})}$, $1.6 \sqrt{(\frac{G}{\sqrt{A}})}$

* For T 5.0 ~ 7.0, detent width is 3mm. For T 7.1 ~ 20.0, detent width is 5mm.
 * No relief at P dimension. For Diamond Shape, a step of 0.25 max. will be engraved at the bottom of P dimension.

Part Number	Type	Tip Shape	D _{h7}	P	B	L Selection	T	H	A	E	L ₁	L ₂	L ₃	d	R	W	Unit Price			
																	HUPNA	HUPND	THUPNA	THUPND
6	Hardened (Round)	A	0	3.0~7.0	2~50	5 8 10	5.0~20.0	9~20	30	1~15	8	8	4	1	M5	1~2				
8																				
10	Carburized (Round)	A	0	7.1~12.0	(B≤Px4)	(5) (8) 10 12 15	5.0~20.0	9~20	60	1~15	8	8	4	1	M5	1~2				
10T																				
12	(Diamond)	B	0	12.1~20.0	(B≤Px4)	(5) (8) 10 12 15	5.0~20.0	13~25	90	1~15	10	8	7	2	M6	1~3				
12T																				
16	Carburized (Diamond)	B	0	12.1~20.0	(B≤Px4)	(5) (8) 10 12 15	5.0~20.0	13~25	120	1~15	12	10	9	3	M8	4				
16T																				

W Dimension: D₆, D₈: W=2 when P>5.0, D₁₀, D_{10T}: W=1 when P<5.0, W=3 when P>7.0. L dimension in () is applicable to Round Shape only. P+2≤H≤Px5.

Set Screw

Type	Shape	Material	Hardness
HUPTA	Round	SCM435	Hardened 35~40HRC
HUPTD	Diamond		
THUPTA	Round	SCM415	Carburized 55HRC~ (Depth: 0.7~0.8) Anti-carburizing on Threads
THUPTD	Diamond		

Reference: $\sin 15^\circ = 0.259$, $\sin 45^\circ = 0.707$, $\tan 15^\circ = 0.267$, $\tan 45^\circ = 1$
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																	HUPTA	HUPTD	THUPTA	THUPTD
6	Hardened (Round)	A	0	3.0~7.0	2~50	5 8 10	5.0~20.0	9~20	30	1~15	8	8	4	1	M5	1~2				
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10	Carburized (Round)	A	0	7.1~12.0	(B≤Px4)	(5) (8) 10 12 15	5.0~20.0	9~20	60	1~15	8	8	4	1	M5	1~2				
10T																				
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16T																				

W Dimension: D₆, D₈: W=2 when P>5.0, D₁₀, D_{10T}: W=1 when P<5.0, W=3 when P>7.0. L dimension in () is applicable to Round Shape only. P+2≤H≤Px5.

Ordering Example

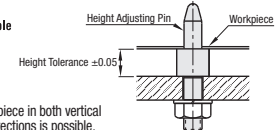
Part Number: HUPTA 10 - P4.8 - B10 - L10 - T20.0 - H20 - A60 - E5

Alterations

Part Number: HUPTAB10 - P6.0 - B10 - T10.0 - H15 - A30 - KD (Set Screw Shape B)

Alterations	Flat Position	Flat Machining	Wrench Flats	Thread Dia.
	Code	KC	KD	SC
Spec.	Ordering Code KC: Changes the flat position to 90° from the standard position 0°. Applicable to Diamond Shape Type only.	Ordering Code KD: Machining on one side. For 15.0 ~ 7.0: 3mm For 17.1 ~ 20.0: 5mm. Applicable to Round Shape Type only.	Ordering Code SC10: Adds wrench flats. Selection: SC-D, SC-P, SC-S, SC-H2. Applicable to Round Shape Type only.	Ordering Code MC8: Changes the thread diameter. Selection: D/3-M-DM min 3. Relief at thread end is available. Applicable to Threaded only.

ex Example



Locating of workpiece in both vertical and horizontal directions is possible.