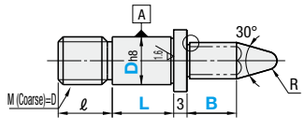
Alumina Coated Pins

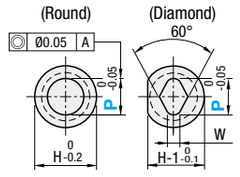
Feature: Suitable for locating pins in spot welding since alumina coating excels in abrasion resistance and insulation.

■Alumina Coated Pins RoHS10

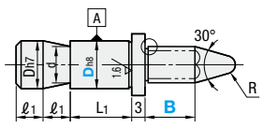
Threaded	Set Screw	Shape	M Material	S Surface Treatment	H Hardness
Z-LANA	Z-LATA	Round	Special Stainless (KCF)	Alumina Coating	Approx. 1300HV (Inside: Approx. 200HV)
Z-LAND	Z-LATD	Diamond			

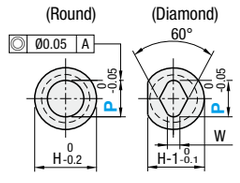
· Threaded





· Set Screw





Surface Finish Relief

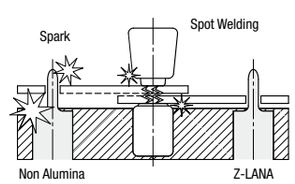
Part Number Type	Part Number Dh8	P 0.1mm Increment	B 1mm Increment	L	ℓ	L1	ℓ1	H	d	R	Applicable Set Screw	W
Z-LANA Z-LAND Z-LATA Z-LATD	8 (0 -0.022)	3.0~9.0	5~30 (B≤Px4)	5 12 15	10	8	8	11	5	1.5	M5	1(2)
	10 (0 -0.022)	5.0~12.0		10 12 15	12	10		13	7	2	M6	2(3)
	10T (0 -0.022)				18	5						
	12 (0 -0.027)	9.0~13.0		12 15 18	15	12	10	15	9	3	M8	4
	16 (0 -0.027)	13.0~16.0		15 18 20	18			19	13	4		5

(P)W Dimension D8: W=2 when P>5.0 D10, 10T: W=3 when P>7.0

Ordering Example

Part Number					
Type	D	P	B	L	
Z-LANA	10	P7.8	B6	L10	
Z-LATD	10	P11.5	B20		

Example



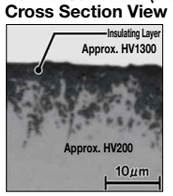
Suited for locating pins in spot welding.
Pins prevent current from causing sparks during welding.
Prevents pin wear from sparks and reduces the causes of positioning problems and work piece appearance degradations.

Alterations

Part Number	P	B	L	(SC, RC…etc.)
Z-LANA8	P7.8	B10	L12	SC

Alterations	Flat Position	Flat Machining	Wrench Flats	Tip Angle Change	Thread Dia.	Upper Relief Radius Change
	Shouldered / No Shoulder	Shouldered (P)H-P≥2 / No Flange				
Code	KC	KD	SC	RC	MC	RTC
Spec.	Ordering Code KC Changes the flat position to 90° from the standard position 0°. (P)Applicable to Diamond Shape Type only.	Ordering Code KD Machining on one side. (P)Applicable to Round Shape Type only.	Ordering Code SC Adds wrench flats. H: 11 13 15 19 H1: 8 11 13 17 (P)Applicable to Round Shape Type only.	Ordering Code RC6 Changes the tip angle. Selection 60°, 90°, 120°	Ordering Code MC8 Changes the thread diameter. (P)D/3<M<D M min 3 (P)Applicable to Threaded Type only.	Ordering Code RTC0.2 Changes R1 to R of the Selection below. Selection 0.2 R2 R3 (P)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	○	◎	×	○	○	○

Detecting Pins

Sensor Embedded Units / Work Detecting Units

Feature: Fiber sensor is inserted into a detecting pin, and the sensor light is used to detect the presence of work piece.

■Sensor Embedded Units RoHS10

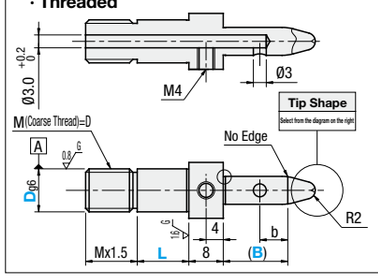
Type Threaded	Type Notch	M Material	H Hardness
NUTFN	NUTFT	SCM435	Treated Hardness 35~40HRC
TNUTFN	TNUTFT	SCM415	Carburized Treated Hardness: 55HRC~ (Depth 0.7~0.8) / Anti-carburizing on Threads

Dg6		H
8	-0.005 -0.014	11
10		13

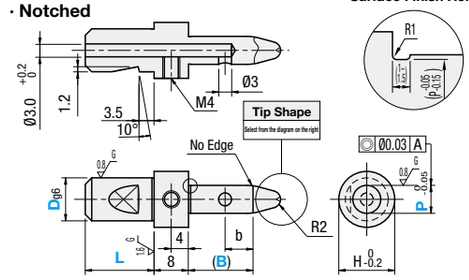
P	b	Applicable Nut
4.5~5.9	4	M6
6.0~7.9	5	M8
8.0~9.9	6	M10
10.0~11.0	7	M12

Reference: sin15°≈0.259 sin30°=0.5 sin45°≈0.707 sin60°≈0.866
tan15°≈0.267 tan30°=0.577 tan45°=1 tan60°≈1.732

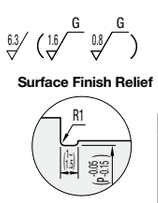
· Threaded



· Notched



Surface Finish Relief



Tip Shape (P)The center hole remains.

A Shape — Tapered
(P)P-2Etan(A/2)≥0.73

B Shape — Taper R
e=P/2/tan(A/2)+R-{R/sin(A/2)}

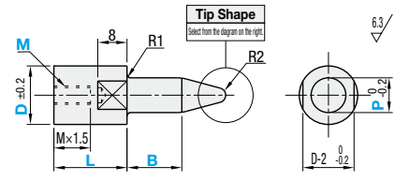
Part Number Type	Tip Shape	Dg6 Selection	P 0.1mm Increment	B 0.1mm Increment	L Threaded	L Notch	A	E (Shape A) 1mm Increment
Threaded NUTFN TNUTFN	A	8	4.5~5.9	14.0~30.0 (B≤Px4)	5 8 10 12	12 16 19	30 60 90 120	1~10
Notch NUTFT TNUTFT	B	10	6.0~7.9					
			8.0~11.0					

(P)When P≤5.9, there is no hardening due to thin thickness in order to prevent damage. (Material: SCM435) (P)D8 is applicable up to P dimension 9.0mm.

■Work Detection Units RoHS10

Type	M Material	H Hardness	S Surface Treatment
NUTK	S45C	-	-
BNUTK		Treated Hardness: 45~50HRC	Black Oxide

(P)P1490 Can be used in combination with Work Detecting Units and Cylinders.



MxPitch Fine Thread	MxPitch Coarse
5x0.5	5x0.8
6x0.75	6x1.0
8x0.75	8x1.25

Reference: sin15°≈0.259 sin30°=0.5 sin45°≈0.707 sin60°≈0.866 tan15°≈0.267 tan30°=0.577 tan45°=1 tan60°≈1.732

Tip Shape (P)The center hole remains.

A Shape — Tapered
(P)P-2Etan(A/2)≥0.73

B Shape — Taper R
e=P/2/tanA/2+R-{R/sin(A/2)}

C Shape — Spherical

Part Number Type	Tip Shape	D	P 0.1mm Increment	B 1mm Increment	L 1mm Increment	A	E (Shape A) 1mm Increment	M Coarse	M Fine Thread
NUTK BNUTK	A	12	5.0~10.0	5~30 (B≤Px4)	15~20	30 60 90 120	1~10	5	5S
	B	16	10.1~12.0					5 6	5S 6S
	C		12.1~14.0					5 6 8	5S 6S 8S

Ordering Example

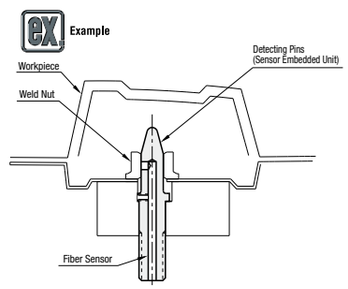
Part Number										
Type	Tip Shape	D	P	B	L	A	E	M		
NUTFN	B	10	P4.6	B15	L10	A60				(Sensor Embedded Unit: Shape B)
NUTK	A	12	P6.0	B10	L20	A30	E2	M5		(Work Detecting Unit : Shape A)
NUTK	C	16	P10.5	B15	L20			M6		(Work Detecting Unit : Shape C)

Alterations

Part Number	P	B	L	A	E	M	(TC, KD, CD)
NUTFNB10	P6.0	B10	L10	A30			KD

Alterations	Shoulder Thickness	Flat Machining	Flat Position
	TC 4	0 -0.1 H1	Current position 1 2 3
Code	TC	KD	CD
Spec.	Ordering Code TC8.5 Changes shoulder thickness from 8mm. TC=0.5mm Increment TC:8.5~12.0 (P)Applicable to Sensor Embedded Notch Shape only.	Ordering Code KD Machining on one side. (P)Applicable to Sensor Embedded Threaded Type only.	Ordering Code CD1 Changes the position of Notch from the current position to one of the above 1, 2 or 3. (P)Applicable to Sensor Embedded Notch Shape only.

Example



Fiber sensor is inserted into a detecting pin, and the sensor light is used to detect the presence of a weld nut.