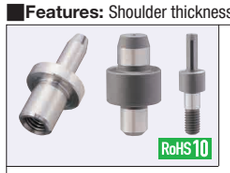
Locating Pins - Shouldered

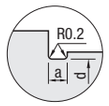
Tapered - Shoulder Thickness Configurable

For products uncovered by e-Catalog Standard, see P.131.

Features: Shoulder thickness of the Shouldered Type configurable in 0.5 mm increment.

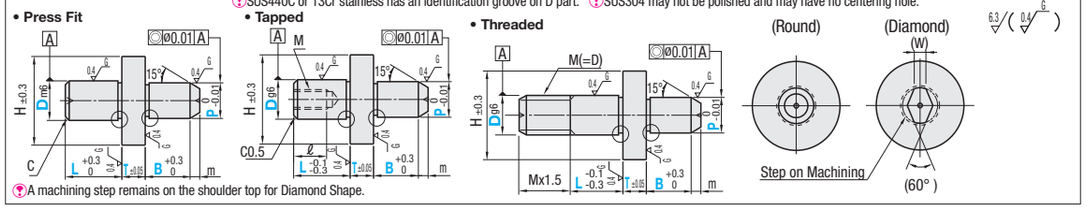


Material No.	M Material	S Surface Treatment	H Hardness	Type: Press Fit	Type: Tapped	Type: Threaded	Shape Code
(1)	SKS3 Equivalent	-	Treated Hardness: 60~63HRC	FPJ	FPU	FPN	AT (Round) DT (Diamond)
(2)	SKS3 Equivalent	Hard Chrome Plating	Treated Hardness: 50~55HRC Plating Hardness: 750HV ~	GFPJ	GFPU	GFPN	
(3)	SUS304	-	-	SFPJ	SFPU	SFPN	
(4)	SUS304	Hard Chrome Plating	Plating Hardness: 750HV ~	HFPJ (Round only)	-	HFPN	
(5)	SUS440C or 13Cr stainless	-	Treated Hardness: 50~55HRC	CFPJ	CFPU	CFPN	



When D (P) ≥ 3: a=1.0, d=D(P)-0.2
When D(P)<3: a=0.5, d=D(P)-0.1
Relief dimension is a reference value.

SUS440C or 13Cr stainless has an identification groove on D part. SUS304 may not be polished and may have no centering hole.



A machining step remains on the shoulder top for Diamond Shape.

Press Fit

Part Number: Type	Shape	D	D dim. Tolerance m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.5mm Increment	H	C	m	(W)	Unit Price Round Shape (1) FPJAT	(2) GFPJAT	(3) SFPJAT	(4) HFPJAT	(5) CFPJAT	Unit Price Diamond Shape (1) FPJDT	(2) GFPJDT	(3) SFPJDT	(4) HFPJDT	(5) CFPJDT
FPJ GFPJ SFPJ HFPJ CFPJ	AT (Round) DT (Diamond)	2	+0.008 +0.002	1.00~2.00	2~4	2.0~10.0	1.0~10.0	7	0.5	0.5	-						-	-	-	-	-
		3		2.00~4.00	3~6	2.0~10.0		8		1	1.0									-	
		4		2.00~5.00	4~8	2.0~10.0		9	1		1.2									-	
		5	+0.012 +0.004	3.00~6.00	5~10	2.0~15.0(10.0)		10		2	1.5									-	
		6		4.00~7.00	5~12	2.0~15.0		11			1.8									-	
		8	+0.015 +0.006	5.00~9.00	5~16	2.0~20.0(15.0)		13	1.5	3	2.2									-	
		10		7.00~11.00	8(10)~20	3.0~30.0(25.0)		15	2		3									-	
		12	+0.018 +0.007	7.00~12.00	10~24	3.0~30.0(25.0)		17			3.2									-	
		13		8.00~13.00	13~26	5.0~30.0(25.0)		18	3	4	3.5									-	
		16		13.00~16.00	16~32	5.0~30.0		21			4									-	
		20	+0.021 +0.008	16.00~20.00	20~40	5.0~30.0		25	5	5	5.5									-	

L, B dimensions in ( ) are applicable to Diamond Shape.

Tapped

Part Number: Type	Shape	D	D dim. Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.5mm Increment	H	m	(W)	M Coarse	*Tighten. Torque N·cm	ℓ	Unit Price Round Shape (1) FPUAT	(2) GFPUAT	(3) SFPUAT	(4) HFPUAT	(5) CFPUAT	Unit Price Diamond Shape (1) FPUDT	(2) GFPUDT	(3) SFPUDT	(4) HFPUDT	(5) CFPUDT
FPU GFPU SFPU CFPU	AT (Round) DT (Diamond)	5	-0.004 -0.012	3.00~6.00	7~10	2.0~15.0(10.0)	1.0~10.0	10	2	1.5	M2	-	3				-					-	
		6		4.00~7.00	6(9)~12	2.0~15.0		11		1.8	M3	98	5				-					-	
		8	-0.005 -0.014	5.00~9.00	8(12)~16	2.0~20.0(15.0)		13	3	2.2	M5	461	8				-					-	
		10		7.00~12.00	10(12)~20	2.0~30.0(25.0)		15		3							-					-	
		12	-0.006 -0.017	7.00~12.00	12~24	3.0~30.0(25.0)		17		3.2							-					-	
		13		8.00~13.00	13(14)~26	3.0~30.0(25.0)		18	4	3.5	M8	1911	10				-					-	
		16		13.00~16.00	16~32	5.0~30.0		21		4			12				-					-	
		20	-0.007 -0.020	16.00~20.00	20~40	5.0~30.0		25	5	5.5							-					-	

L, B dimensions in ( ) are applicable to Diamond Shape. Note the strength of under-head part. P.1618 Please confirm pilot hole depth on P.1618. Holes may go through.
* The tightening torque (ref. value) for hardened products is strength class 8.8. (See technical data on P.2365.) Not applicable when using locking materials or lock washers.

Threaded

Part Number: Type	Shape	D	D dim. Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.5mm Increment	H	m	(W)	*Tighten. Torque N·cm	Unit Price Round Shape (1) FPNAT	(2) GFPNAT	(3) SFPNAT	(4) HFPNAT	(5) CFPNAT	Unit Price Diamond Shape (1) FPNDT	(2) GFPNDT	(3) SFPNDT	(4) HFPNDT	(5) CFPNDT
FPN GFPN SFPN HFPN CFPN	AT (Round) DT (Diamond)	3	-0.002 -0.008	2.00~4.00	2~6	2.0~10.0	1.0~10.0	8	1	1.0	98										
		4	-0.004 -0.012	2.00~5.00	2~8	2.0~10.0		9		1.2	225										
		5		3.00~6.00	3~10	2.0~15.0(10.0)		10	2	1.5	461										
		6		4.00~7.00	3~10	2.0~15.0		11		1.8	784										
		8	-0.005 -0.014	5.00~9.00	5~10	2.0~20.0(15.0)		13	3	2.2	1911										
		10		7.00~11.00	5~15	3.0~30.0(25.0)		15		3	3783										
		12	-0.006 -0.017	7.00~12.00	6(8)~15	3.0~30.0(25.0)		17		3.2	6605										
		16		13.00~16.00	8~20	5.0~30.0		21	4	4	16366										
		20	-0.007 -0.020	16.00~20.00	10~20	5.0~30.0		25	5	5.5	32928										

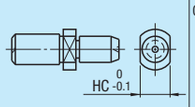
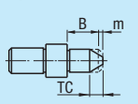
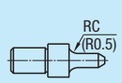
L, B dimensions in ( ) are applicable to Diamond Shape. * The tightening torque (ref. value) for hardened products is strength class 8.8. (See technical data on P.2365.) Not applicable when using locking materials or lock washers.

Ordering Example

Part Number								
Type	Shape	D	- P	- L	- B	- T		
FPJ	AT	10	- P6.03	- L10	- B4.0	- T5.0		

Alterations

Part Number							
FPJAT8	- P5.03	- L9	- B6.3	- T8.5		(HC, TC, RC, TKC)	RC

Alterations	Wrench Flats Alteration	Length of Tapered Point	Sphere Tip	Shoulder Thickness Tolerance
Code	HC	TC	RC	TKC
Spec.	 HC = 0.5mm Increment; HC>DHC>P; Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm increment)  B+m≥TC+2 (Straight Section min. 2mm); Applicable when P≥2.00. P/2 - TC x tan15° (≈0.27) > 0.5 (Tip Ø1.0min.); B dimension changes when TC is specified. (Changed B dimension = B+m-TC)	Changes the relief to R0.5. Ordering Code RC  Applicable when H-P≥2.	Changes shoulder thickness tolerance T±0.05 to $^{+0.02}_{0}$. Ordering Code TKC

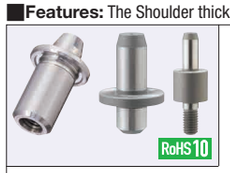
D	TC	D	TC	D	TC
2	1	6	3~11	13	5~22
3	2~5	8	4~14	16	
4	2~7	10	4~18	20	6~23
5	3~9	12	4~20		

Locating Pins - Shouldered

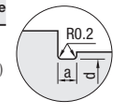
Tapered - Shoulder Diameter and Thickness Configurable

For products uncovered by e-Catalog Standard, see P.131.

Features: The Shoulder thickness is configurable in 0.1 mm increment and the Shoulder diameter is configurable in 0.5 mm increment for the Shouldered type.

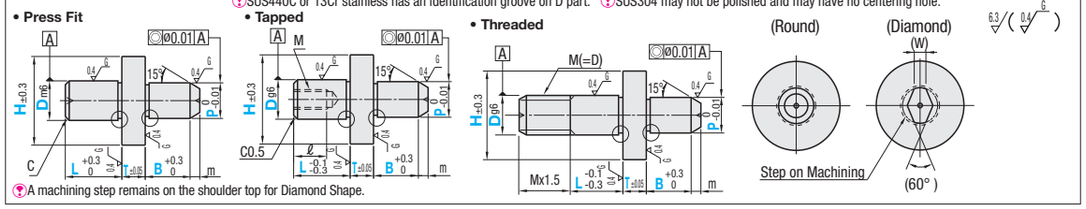


Material No.	M Material	S Surface Treatment	H Hardness	Type: Press Fit	Type: Tapped	Type: Threaded	Shape Code
(1)	SKS3 Equivalent	-	Treated Hardness: 60~63HRC	FPJ	FPU	FPN	ATD (Round) DTD (Diamond)
(2)	SKS3 Equivalent	Hard Chrome Plating	Treated Hardness: 50~55HRC Plating Hardness: 750HV ~	GFPJ	GFPU	GFPN	
(3)	SUS304	-	-	SFPJ	SFPU	SFPN	
(4)	SUS304	Hard Chrome Plating	Plating Hardness: 750HV ~	-	HFPU	HFPN	
(5)	SUS440C or 13Cr stainless	-	Treated Hardness: 50~55HRC	CFPJ	CFPU	CFPN	



When D (P) ≥ 3: a=1.0, d=D(P)-0.2
When D(P)<3: a=0.5, d=D(P)-0.1
Relief dimension is a reference value.

SUS440C or 13Cr stainless has an identification groove on D part. SUS304 may not be polished and may have no centering hole.



A machining step remains on the shoulder top for Diamond Shape.

Press Fit

Part Number: Type	Shape	D	D dim. Tol. m6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.1mm Increment	H 0.5mm Increment	C	m	(W)	Unit Price Round Shape (1) FPJATD	(2) GFPJATD	(3) SFPJATD	(5) CFPJATD	Unit Price Diamond Shape (1) FPJDTD	(2) GFPJDTD	(3) SFPJDTD	(5) CFPJDTD
FPJ GFPJ SFPJ CFPJ	ATD (Round) DTD (Diamond)	2	+0.008 +0.002	1.00~2.00	2~4	2.0~10.0	1.0~15.0	5.0~10.0	0.5	0.5	-					-	-	-	-
		3		2.00~4.00	3~6	2.0~10.0		6.0~12.0		1	1.0								
		4	+0.012 +0.004	2.00~5.00	4~8	2.0~10.0		7.0~13.0	1		1.2								
		5		3.00~6.00	5~10	2.0~15.0(10.0)		8.0~14.0		2	1.5								
		6		4.00~7.00	5~12	2.0~15.0		9.0~15.0			1.8								
		8	+0.015 +0.006	5.00~9.00	5~16	2.0~20.0(15.0)		11.0~17.0	1.5	3	2.2								
		10		7.00~11.00	8(10)~20	3.0~30.0(25.0)		13.0~19.0	2		3								
		12	+0.018 +0.007	7.00~12.00	10~24	3.0~30.0(25.0)		13.0~20.0			3.2								
		13		8.00~13.00	13~26	5.0~30.0(25.0)		15.0~21.0		4	3.5								
		16		13.00~16.00	16~32	5.0~30.0		18.0~24.0	3		4								
		20	+0.021 +0.008	16.00~20.00	20~40	5.0~30.0		21.0~27.0		5	5.5								

L, B dimensions in ( ) are applicable to Diamond Shape.

Tapped

Part Number: Type	Shape	D	D dim. Tol. g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.1mm Increment	H 0.5mm Increment	m	(W)	M Coarse	*Tighten. Torque N·cm	ℓ	Unit Price Round Shape (1) FPUATD	(2) GFPUATD	(3) SFPUATD	(4) HFPUATD	(5) CFPUATD	Unit Price Diamond Shape (1) FPUDTD	(2) GFPUDTD	(3) SFPUDTD	(4) HFPUDTD	(5) CFPUDTD
FPU GFPU SFPU HFPU CFPU	ATD (Round) DTD (Diamond)	5	-0.004 -0.012	3.00~6.00	7~10	2.0~15.0(10.0)	1.0~15.0	8.0~14.0	2	1.5	M2	-	3										-
		6		4.00~7.00	6(9)~12			9.0~15.0		1.8	M3	98	5										
		8	-0.005 -0.014	5.00~9.00	8(12)~16	2.0~20.0(15.0)		11.0~17.0	3	2.2	M5	461	8										
		10		7.00~12.00	10(12)~20	2.0~30.0(25.0)		13.0~19.0		3													
		12	-0.006 -0.017	7.00~12.00	12~24	3.0~30.0(25.0)		13.0~20.0		3.2													
		13		8.00~13.00	13(14)~26	3.0~30.0(25.0)		15.0~21.0	4	3.5	M8	1911	10										
		16		13.00~16.00	16~32	5.0~30.0		18.0~24.0		4			12										
		20	-0.007 -0.020	16.00~20.00	20~40	5.0~30.0		21.0~27.0	5	5.5													

L, B dimensions in ( ) are applicable to Diamond Shape. Note the strength of under-head part. P.1618 Please confirm pilot hole depth on P.1618. Holes may go through.
* The tightening torque (ref. value) for hardened products is strength class 8.8. (See technical data on P.2365.) Not applicable when using locking materials or lock washers.

Threaded

Part Number: Type	Shape	D	D dim. Tol. g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	T 0.1mm Increment	H 0.5mm Increment	m	(W)	*Tighten. Torque N·cm	Unit Price Round Shape (1) FPNATD	(2) GFPNATD	(3) SFPNATD	(4) HFPNATD	(5) CFPNATD	Unit Price Diamond Shape (1) FPNDTD	(2) GFPNDTD	(3) SFPNDTD	(4) HFPNDTD	(5) CFPNDTD
FPN GFPN SFPN HFPN CFPN	ATD (Round) DTD (Diamond)	3	-0.002 -0.008	2.00~4.00	2~6	2.0~10.0	1.0~15.0	6.0~12.0	1	1.0	98										
		4	-0.004 -0.012	2.00~5.00	2~8	2.0~10.0		7.0~13.0		1.2	225										
		5		3.00~6.00	3~10	2.0~15.0(10.0)		8.0~14.0	2	1.5	461										
		6		4.00~7.00	3~10	2.0~15.0		9.0~15.0		1.8	784										
		8	-0.005 -0.014	5.00~9.00	5~10	2.0~20.0(15.0)		11.0~17.0	3	2.2	1911										
		10		7.00~11.00	5~15	3.0~30.0(25.0)		13.0~19.0		3	3783										
		12	-0.006 -0.017	7.00~12.00	6(10)~15	3.0~30.0(25.0)		13.0~20.0		3.2	6605										
		16		13.00~16.00	8~20	5.0~30.0		18.0~24.0	4	4	16366										
		20	-0.007 -0.020	16.00~20.00	10~20	5.0~30.0		21.0~27.0	5	5.5	32928										

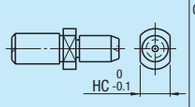
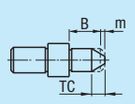
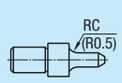
L, B dimensions in ( ) are applicable to Diamond Shape. * The tightening torque (ref. value) for hardened products is strength class 8.8. (See technical data on P.2365.) Not applicable when using locking materials or lock washers.

Ordering Example

Part Number								
Type	Shape	D	- P	- L	- B	- T	- H	
FPU	ATD	12	- P9.98	- L15	- B5.5	- T12	- H13	

Alterations

Part Number							
GFPJATD12	- P8.50	- L20	- B10.0	- T13.0	- H16.0	(HC, TC, RC, TKC)	RC

Alterations	Wrench Flats Alteration	Length of Tapered Point	Sphere Tip	Shoulder Thickness Tolerance
Code	HC	TC	RC	TKC
Spec.	 HC = 0.5mm Increment; HC>D HC>P H>HC; Ordering Code HC10.0	Changes the m dimension. Ordering Code TC8 (1mm increment)  B+m≥TC+2 (Straight Section min. 2mm); Applicable when P≥2.00. P/2 - TC x tan15° (≈0.27) > 0.5 (Tip Ø1.0min.); B dimension changes when TC is specified. (Changed B dimension = B+m-TC)	Changes the relief to R0.5 Ordering Code RC  Applicable when H-P≥2.	Changes shoulder thickness tolerance T±0.05 to $^{+0.02}_{0}$. Ordering Code TKC

D	TC	D	TC	D	TC
2	1	6	3~11	13	5~22
3	2~5	8	4~14	16	
4	2~7	10	4~18	20	6~23
5	3~9	12	4~20		