

Locating Pins - Sphere Small Head

D and P Selectable Tolerance

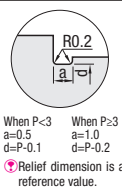
For products uncovered by e-Catalog Standard, see P131.

Features: Sphere Small Head with each dimension configurable. The tolerances on both ends are also configurable.



Material No.	Material	Surface Treatment	Hardness	Type	Shape Code
(1)	SKS3 Equivalent	-	Treated Hardness: 60~63HRC	Press Fit	A (Round) D (Diamond)
(2)	SKS3 Equivalent	Hard Chrome Plating Plating Thickness: 3µm or more	Treated Hardness: 50~55HRC Plating Hardness: 750HV~	Tapped	
(3)	SUS304	-	-	Press Fit	
(4)	SUS40C Equivalent	-	Treated Hardness: 50~55HRC	Tapped	

SUS40C Equivalent has an identification groove at any position on D part.
Polished, centering hole is sometimes not available for SUS304.
When the P dimension is small, a centering hole will cause the sphere section to become small.



When P<3
a=0.5
d=P-0.1

When P≥3
a=1.0
d=P-0.2

When D=P,
(1) Round Shape has no relief.
(i) When D=P and tolerances are different

(ii) When D=P and tolerances are the same

(L+B) is general tolerance.

(2) Diamond Shape has a relief.

Straight Sphere Type for which D=P is standardized is also available. P1690

Tolerance Selection

D or P	Standard Grade	Precision Grade
M	P	G
1.00	+0.008	+0.012
3.00	+0.002	+0.006
6.00	+0.012	+0.020
10.00	+0.004	+0.012
18.00	+0.015	+0.024
20.00	+0.006	+0.015
10.01	+0.018	+0.029
18.01	+0.007	+0.016
20.01	+0.021	+0.035
10.02	+0.008	+0.022
18.02	+0.017	+0.020
20.02	+0.021	+0.021

The unit price of Precision Type is the price of Standard Type multiplied by 1.1.
Hard Chrome Plating products are not available with Precision Grade Tolerance.

Press Fit

Type	Shape	D Tolerance	P Tolerance	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	C	(W)	Unit Price Round Shape	Unit Price Diamond Shape
KFQS GKFQS SKFQS CKFQS	A (Round) D (Diamond)	M P G H A B	S M P G H A B	2	1.00-2.00	2-5	2.0-10.0	0.3	-	KFQSA GKFQSA SKFQSA CKFQSA	KFQSD GKFQSD SKFQSD CKFQSD
				3	1.00-3.00	3-10	2.0-10.0	0.5	1.0		
				4	1.50(2.00)-4.00	4-10	2.0-10.0	1.0	1.0		
				5	2.00-5.00	5-10	2.0-15.0(10.0)	1.2	1.2		
				6	2.00-6.00	5-17	2.0-15.0	1.5	1.5		
				8	3.00-8.00	8-21	2.0-20.0(15.0)	1.8	1.8		
				10	3.00-10.00	10-23	3.0-20.0	2.2	2.2		
				12	5.00-12.00	12-24	3.0-30.0(25.0)	2.5	2.5		
				13	6.00-13.00	13-26	5.0-30.0(25.0)	3	3		
				16	10.00-16.00	16-32	5.0-30.0	4	4		
				20	13.00-20.00	20-40	5.0-30.0	5	5		

P, B dimensions in () are applicable to Diamond Shape. Hard Chrome Plating products are not available with * marked Precision Grade Tolerance.

Tapped

Type	Shape	D Tolerance	P Tolerance	D	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	(W)	M (Coarse)	*Tightening Torque N·cm	ℓ	Unit Price Round Shape	Unit Price Diamond Shape
KFQST GKFQST SKFQST	A (Round) D (Diamond)	M P G H	S M P G H	6	4.00-6.00	8(9)-17	2.0-15.0	1.5	M3	147	5	KFQSTA GKFQSTA SKFQSTA	KFQSTD GKFQSTD SKFQSTD
				8	6.00-8.00	11(12)-21	2.0-20.0(15.0)	1.8	M4	176	8		
				10	7.00-10.00	11(12)-23	3.0-20.0	2.2	M5	676	8		
				12	7.00-12.00	12-24	3.0-30.0(25.0)	2.5	M5	676	8		
				13	8.00-13.00	13(14)-26	5.0-30.0(25.0)	3	M6	1156	12		
				16	10.00-16.00	16-32	5.0-30.0	4	M8	2803	12		
				20	13.00-20.00	20-40	5.0-30.0	5	M8	2803	12		

L, B dimensions in () are applicable to Diamond Shape. Note the strength of under-head part. P1618 Please confirm pilot hole depth on P1618. Holes may go through.
Tightening torque (reference) is of Tightening Torque Strength Class (10.9) indicated on Technical Data P2365. Not applicable when using locking materials or lock washers.

Precision Grade Price
When A, B tolerance is selected, multiply by 1.1 to the above unit price.

 Ordering Example	Part Number								
	Type	Shape	D Tol.	P Tolerance	D	P	L	B	
	KFQS	A	G	S	10	P8.00	L10	B8.0	



Alterations



Part Number

P

L

B

(GDC, RC, AC, LAC)

KFQSAGS10

P8.00

L10

B8.0

RC

Alterations	Insertion Guide	Sphere Tip	Air Vent	Wrench Hole Machining
Code	GDC	RC	AC	LAC
Spec.	Adds the insertion guide. (Ordering Code) GDC Insertion Guide D-0.03 D 3-6 1 8-20 2 Not applicable when D≤2	Changes the relief to R0.5. (Ordering Code) RC RC (R0.5) Applicable when D>P.2	Adds an air vent. (Ordering Code) AC D-0.15 D=P (Round)	Machines wrench holes. (Ordering Code) LAC Machines wrench holes. (30°) P dimension in () is applicable to Diamond Shape. Round Shape is applicable to D≥8, and Diamond Shape is applicable to D≥10. Diamond Shape Hole is drilled on the diamond head vertically but with arbitrary orientation of its diamond surfaces against those of the diamond head. Applicable when Q+1.5≤B. Not applicable to Press Fit Type.

Locating Pins - Sphere Large/Small Head

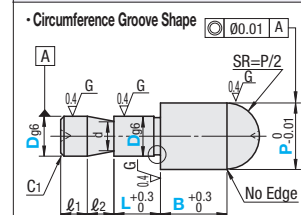
Set Screw

For products uncovered by e-Catalog Standard, see P131.

Features: Sphere Large Head/Small Head - Set Screw. Selectable from Circumference Groove, Notched and Set Screw Flat Shapes.



Material No.	Material	Surface Treatment	Hardness	Type	Shape Code
(1)	SKS3 Equivalent	-	Treated Hardness: 60~63HRC	Circumference Groove	S (Round) D (Diamond)
(2)	SKS3 Equivalent	Hard Chrome Plating Plating Thickness: 3µm or more	Treated Hardness: 50~55HRC Plating Hardness: 750HV~	Notched	
(3)	SUS304	-	-	Set Screw Flat	
(4)	SUS40C Equivalent	-	Treated Hardness: 50~55HRC	Set Screw Flat	



SUS40C Equivalent has an identification groove at any position on D part. ℓ3 is the recommended dimension of the position of set screw tip.

When D<P (Large Head)

When D=P (Straight)

When D>P (Small Head)

Diamond Shape end has a relief.

When the P dimension is small, a centering hole will cause the sphere section to become small.

Relief dimension is a reference value.

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

When D (P) ≥ 3
a=1.0
d=D(P)-0.2

When D(P)<3
a=0.5
d=D(P)-0.1

Circumference Groove Shape

Type	Part Number	D	D dim. Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	d	ℓ1	ℓ2	C1	(W)
JPGQ GJPGQ SJPGQ CJPGQ	S (Round) D (Diamond)	6	-0.004	2.00~10.00	3~12	2.0~20.0	4.5	5	5	1	When D<P 3
		6S	-0.012	2.00~10.00	2~12	2.0~20.0	4.5	5	5	1	When D≥P 1.5
		8	-0.005	3.00~13.00	4~16	2.0~20.0(15.0)	6.5	6	6	1.5	3.5
		8S	-0.014	3.00~13.00	3~16	2.0~20.0(15.0)	6.5	6	6	1.5	1.8
		10	-0.006	5.00~16.00	5~20	3.0~20.0	8	8	8	2	4
		10S	-0.014	5.00~16.00	4~20	3.0~20.0	8	8	8	2	2.2
		12	-0.006	5.00~16.00	6~24	3.0~30.0(25.0)	10	10	10	2	5
		12S	-0.017	5.00~16.00	5~24	3.0~30.0(25.0)	10	10	10	2	2.5
		16	-0.017	10.00~25.00	8~32	5.0~30.0	14	14	14	3	7
		16S	-0.025	10.00~25.00	7~32	5.0~30.0	14	14	14	3	4
		20	-0.025	13.00~30.00	10~40	5.0~30.0	18	18	18	3	9
		20S	-0.030	13.00~30.00	10~40	5.0~30.0	18	18	18	3	5

Notch Shape, Set Screw Flat Shape

Type	Part Number	D	D dim. Tolerance g6	P 0.01mm Increment	L 1mm Increment	B 0.1mm Increment	G 1mm Increment	A 0.1mm Increment	Flat Position	ℓ3	ℓ4	h	C	Applicable Set Screw	Tightening Torque N·cm	(W)
(Notched) JPCQ GJPCQ SJPCQ CJPCQ	S (Round) D (Diamond)	6	-0.004	5.00~10.00	12~20	5.0~20.0(15.0)	3~9	2.0~8.0	X	5.5	2.5	1	1	M4	333	3
		8	-0.005	5.00~13.00	14~22	5.0~30.0(15.0)	3~9	2.0~12.0	Y	7.5	3.5	1.2	1.5	M5	676	3.5
		10	-0.014	5.00~15.00	15~25	5.0~30.0(15.0)	3~9	2.0~16.0	Applicable to Diamond Shape Type only.	10.5	5.5	2	2	M6	1156	4
		12	-0.006	5.00~16.00	15~25	5.0~30.0(15.0)	3~9	2.0~20.0		13.5	8.5	2	3	M8	2803	5
		16	-0.017	10.00~25.00	24~35	5.0~30.0	3~9	2.0~28.0		13.5	8.5	2	3	M8	2803	7
		20	-0.025	13.00~30.00	27~40	5.0~30.0	3~9	2.0~36.0		13.5	8.5	2	3	M8	2803	9

B dimension in () is applicable to Diamond Shape. Applicable set screws in the table are the recommended sizes for Notch Shape.

Tightening torque (reference) is of Tightening Torque Strength Class (10.9) indicated on Technical Data P2365. Not applicable when using locking materials or lock washers.

Circumference Groove Shape

D	Unit Price Round Shape	Unit Price Diamond Shape
(1)Treated SKS3	(1)Treated SKS3	(1)Treated SKS3
JPGQS	JPGQS	JPGQS
GJPGQS	GJPGQS	GJPGQS
SJPGQS	SJPGQS	SJPGQS
CJPGQS	CJPGQS	CJPGQS
6		
6S		
8		
8S		
10		
10S		
12		
12S		
16		
16S		
20		

Set Screw Flat Shape

D	Unit Price Round Shape	Unit Price Diamond Shape
(1)Treated SKS3	(1)Treated SKS3	(1)Treated SKS3
JPDQS	JPDQS	JPDQS
JPDQD	JPDQD	JPDQD
6		
8		
10		
12		
16		
20		

Notch Shape

D	Unit Price Round Shape	Unit Price Diamond Shape
(1)Treated SKS3	(1)Treated SKS3	(1)Treated SKS3
JPCQS	JPCQS	JPCQS
GJPCQS	GJPCQS	GJPCQS
SJPCQS	SJPCQS	SJPCQS
CJPCQS	CJPCQS	CJPCQS
6		
8		
10		
12		
16		
20		

Part Number	P	L	B	G	A	Flat Position
JPGQS10	P12.00	L6	B3.5			
SJPCQD8	P5.05	L15	B10.1	G4	A8.0	Y