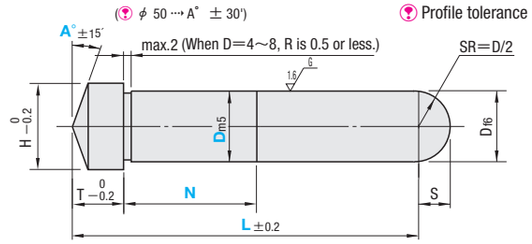
ANGULAR PINS

Non JIS material definition is listed on P.1351 - 1352

RoHS

D	M	H
4～ 8	SKD11	60～63HRC
10～50	SUJ2	58HRC～ (Induction hardening)

AP

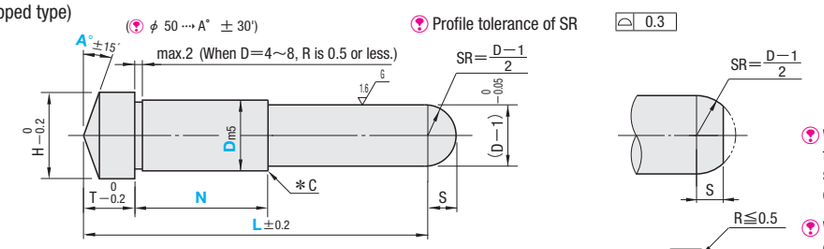


When D=25 or more, the pin tip becomes as shown in the drawing on the left.

When D=4～8, R is 0.5 or less.

Machining may leave a chuck keyhole on one end of the pin in case of D=20 or 25. Dimensions of the pins with chuck keyholes are values prior to machining of the holes. In case of D=30 or more, the both ends may have chuck keyholes.

APS (Stepped type)



When D=25 or more, the pin tip becomes as shown in the drawing on the left.

When D=4～8, R is 0.5 or less.

*For D4～25, C-chamfering is performed on the edges of the steps. (Recess of C-chamfering for assembling: about C0.3)

Machining may leave a chuck keyhole on one end of the pin in case of D=20 or 25. Dimensions of the pins with chuck keyholes are values prior to machining of the holes. In case of D=30 or more, the both ends may have chuck keyholes.

Order — Part Number — L — N — A

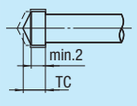
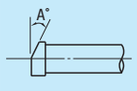
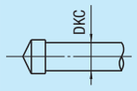
AP25 — 200.0 — N30.0 — A15
APS25 — 200.0 — N30.0 — A15

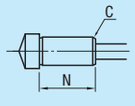
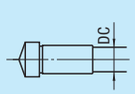
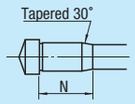
Price — Quotation

Days to Ship — Quotation

Alterations — Part Number — L — N — A — (TC・CM・DKC・DC・KAC・TM)

APS 25 — 200.0 — N30.0 — A15 — DC24.5 — DKC — KAC

Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments (Reduces the head thickness. The full length remains unchanged.) T TC≧H/2 tan A+2.0 TC min: Fractions are rounded up to the first decimal place. 例 TC = 13/2 tan 18° + 2.0 = 4.112 ⇨4.2	Quotation
	KAC	Single flat chamfering Changes the head shape from a cone to a single flat cut. Available when D≦30	
	DKC	Press-fit section tolerance alteration Changes $Dm_5 \rightarrow D^{+0.005}_{0}$ Available when D≦30 Available when N≦200	

Alterations	Code	Spec.	1Code
	CM	Performs C chamfering on the edge of the step. (Recess of C-chamfering for assembling: about C0.3) Available for APS when D≧30 Chamfering is performed as standard for D≦25.	Quotation
	DC	Changes (D−1) step by designation. DC=0.1mm increments Tolerance of the step's external diameter: $-^{0}_{0.05}$ D−0.1≧DC D−1 When DC is used SR=DC/2 Available for APS when D≦30	
	TM	Adds a 30° taper on the edge of step. (Taper for installation) Available for APS Combination with CM・DC not available	

D	m5	f6 (AP)	T	H	S AP	S APS	Part Number Type	Part Number D	0.1mm increments L	0.1mm increments N	A 1° increments	U/Price for 1～9 AP	U/Price for 1～9 APS
4	+0.009 +0.004	−0.010 −0.018	5	7	2	1.5	AP APS (Stepped type)	4	15.0～ 70.0	2≦N N≦L−T−1 or N=0 (No press-fit section)	0～30	Quotation	
									70.1～ 90.0				
5				8	2.5	2		5	15.0～ 70.0				
									70.1～ 90.0				
									90.1～100.0				
6				9	3	2.5		6	15.0～ 70.0				
									70.1～ 90.0				
									90.1～110.0				
8	+0.012 +0.006	−0.013 −0.022		11	4	3.5		8	15.0～ 80.0				
									80.1～110.0				
									110.1～130.0				
10			10	13	5	4.5		10	20.0～110.0				
									110.1～160.0				
									160.1～200.0				
12	+0.015 +0.007	−0.016 −0.027		15	6	5.5		12	20.0～110.0				
									110.1～160.0				
									160.1～200.0				
									200.1～250.0				
13				16	6.5	6		13	20.0～110.0				
									110.1～160.0				
									160.1～200.0				
									200.1～250.0				
15				18	7.5	7		15	20.0～110.0				
									110.1～160.0				
									160.1～200.0				
									200.1～250.0				
16			13	19	8	7.5		16	20.0～110.0				
									110.1～160.0				
									160.1～200.0				
									200.1～250.0				
20	+0.017 +0.008	−0.020 −0.033		23	10	9.5		20	40.0～130.0				
									130.1～200.0				
									200.1～300.0				
									300.1～350.0				
25				28				25	40.0～130.0				
									130.1～200.0				
									200.1～300.0				
									300.1～350.0				
									350.1～400.0				
30			15	35				30	60.0～160.0				
									160.1～220.0				
									220.1～300.0				
									300.1～400.0				
									400.1～500.0				
32				37	10	10		32	70.0～160.0				
									160.1～220.0				
									220.1～300.0				
									300.1～400.0				
									400.1～500.0				
35	+0.020 +0.009	−0.025 −0.041		40				35	100.0～160.0				
									160.1～220.0				
									220.1～300.0				
									300.1～400.0				
									400.1～500.0				
40				45				40	100.0～160.0				
									160.1～220.0				
									220.1～300.0				
									300.1～400.0				
									400.1～500.0				
50			20	55				50	200.0～260.0				
									260.1～320.0				
									320.1～400.0				
									400.1～500.0				

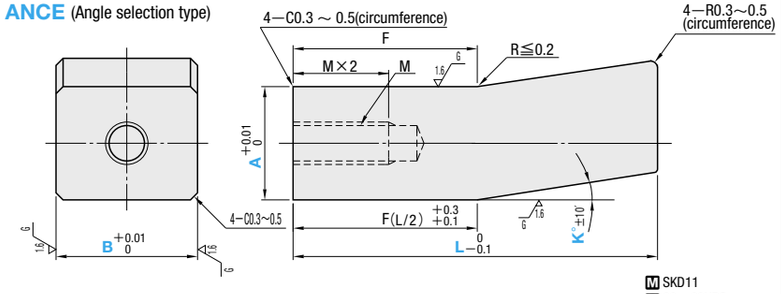
ANGULAR CAMS

—ANGLE SELECTION TYPE / ANGLE DESIGNATION TYPE—

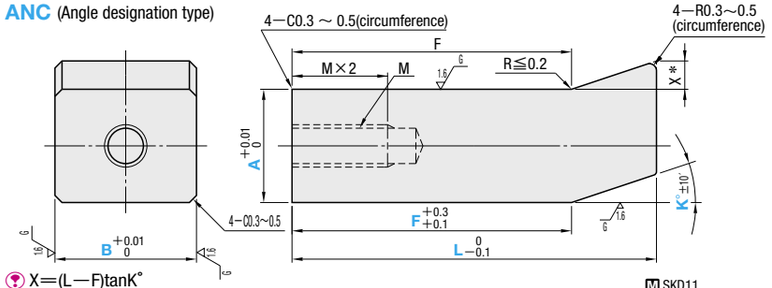
Non JIS material definition is listed on P.1351 - 1352

RoHS

ANCE (Angle selection type)



ANC (Angle designation type)



X=(L−F)tanK°

⊗ Manufacturing of X≧20 not possible.

■Angle Selection Type

M×Pitch	Part Number Type	A	B		L					K°		
M6×1.0	ANCE	10	10	15	30	40	60	80		15	18	20
M8×1.25		15	10	15	30	40	60	80	100			

■Angle Designation Type

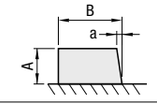
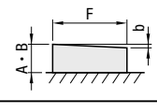
M×Pitch	Part Number Type	A	B					0.1mm increments L	0.1mm increments F	K° 1° increments
M6×1.0	ANC	10	10	15	20	25	30	20.0～ 80.0	15.0≦F≦L−10	10～25
M8×1.25		15	10					20.0～100.0		
				15				20.0～120.0		
					20	25	30	20.0～150.0		
		20		15				20.0～120.0		
					20	25	30	20.0～150.0		
		25			20	25	30			

Order

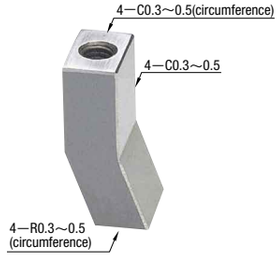
Part Number	B	L	F	K
ANCE10	B10	L30		K15
ANC10	B20	L50.0	F30.0	K20

Days to Ship: Quotation

■Precision Standard

Reference item	Outline	Allowable range
Squareness of A・B dimension		Squareness of B plane against the vertical direction of A plane. a≦0.02
Parallelism of A・B dimension		Parallelism between top and bottom planes in F direction referring to A or B plane. b≦0.02

■Finishing of corners

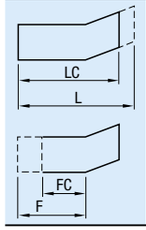


Price: Quotation

Alterations

Part Number	B	L	F	K	(GC・MC・LC・FC)
ANCE10	B10	L40		K20	LC38.6 — FC19.3
ANC15	B25	L80.0	F50.0	K20	GC25.0

Quotation

Alterations	Code	Spec.	1Code
	LC FC	Available for ANCE only. Cuts L and F dimension. LC and FC=0.1mm increments With FC, the overall length becomes shorter by (F−FC). However, the tap length remains unchanged. When LC is combined, the overall length becomes the same as LC.	Quotation

Designaton range of LC and FC

L	F	LC	FC
30	15	25.0～29.9	—
40	20	30.0～39.9	15.0～19.9
60	30	40.0～59.9	20.0～29.9
80	40	50.0～79.9	30.0～39.9
100	50	60.0～99.9	40.0～49.9

When LC and FC are combined :
LC≦L−(F−FC)
LC−FC≧10

Designation method
①When LC is used :
ANCE10—B10—L40—K20—LC38.6
②When FC is used :
ANCE10—B10—L40—K20—FC19.3
③When LC and FC are combined :
ANCE10—B10—L40—LC38.6—FC19.3

Alteration	Code	Spec.	1Code
	GC	Available for ANCE・ANC Adds a cut on the back. GC=0.1mm increments A≦GC≦{(L−F)tanK}+A	Quotation

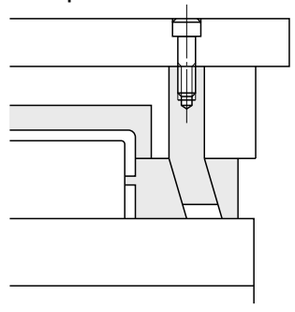
Alteration	Code	Spec.	1Code
	MC	Available for ANCE・ANC Changes the tap diameter from M8 to M6 for A dimensions of 15/20/25.	Quotation

■Features

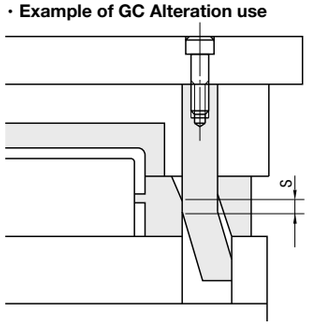
- Makes machining mold bases easier.
- Can also be used as a locking block when injection pressure is low.

Example

・Example of ANCE/ANC use



・Example of GC Alteration use



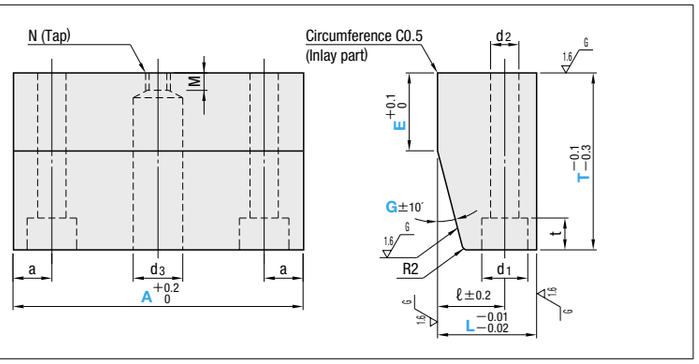
・Makes timing adjustment (S) for slide opening.

LOCKING BLOCKS

—INLAY • PL INSTALLATION TYPE—

Part Number	M	H
LBPS	SKS3	53～56HRC
LBPM	HPM2T equivalent	37～41HRC

RoHS



Tap N	M	a	ℓ	d1	d2	d3	t	Part Number Type	Part Number L	T	A	E 1mm increments	G° 1° increments	U/Price for 1～9 LBPS(SKS3)	U/Price for 1～9 LBPM (HPM2T equivalent)
M5	5	8	14	9.5	5.5	9.5 When A= 33, 5.5	6	LBPS (SKS3)	20	30	33 38 48 58	10～12	5～22		
												13～15	5～25		
												16～18	5～29		
												19～20	5～33		
										35		10～12	5～17		
												13～15	5～19		
												16～18	5～22		
												19～20	5～26		
										40	33 38 48 58 68 78	10～12	5～13		
												13～15	5～16		
												16～18	5～18		
												19～20	5～20		
										50		12	5～11		
												13～15	5～12		
												16～18	5～13		
												19～20	5～14		
												21～25	5～15		
												26～30	5～18		
M6 When A= 38, M5	6 When A= 38, 5	10	18	11.5	6.5	11 When A= 38, 5.5	7	LBPM (HPM2T equivalent)	25	35	38 48 58 68 78	12	5～26		
												13～15	5～27		
												16～18	5～30		
												19～20	5～33		
										40		12	5～21		
												13～15	5～22		
												16～18	5～25		
												19～20	5～28		
										50	48 58 68 78	12～15	5～16		
												16～18	5～17		
												19～20	5～19		
										60		12	5～12		
												13～15	5～13		
												16～20	5～14		
												21～25	5～15		
												26～30	5～17		

Quotation

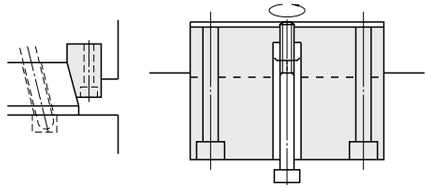
Order — Part Number: LBPS 20 — T: 30 — A: A33 — E: E15 — G: G10

Days to Ship: Quotation

Price: Quotation

Example

● This locking block can be easily removed by inserting a bolt and jacking up as shown in the figure.



LOCKING BLOCKS WITH ANGULAR HOLE PROCESS

—PL INSTALLATION • WIDTH SPACE SAVING TYPE—

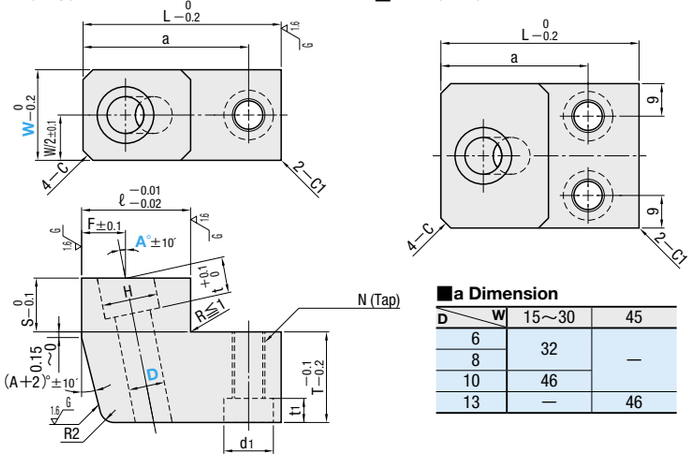
Non JIS material definition is listed on P.1351 - 1352

Part Number	M	H
ABPXE	SKS3	53～56HRC
ABPX	SKS3	53～56HRC

RoHS

■W=15～30

■W=40～70



■a Dimension

D \ W	15～30	45
6	32	—
8		
10	46	
13	—	46

D H7		H	t	Bolt hole d1	Bolt hole t1	Bolt	Tap N	L	T	F	ℓ	S	C	Part Number Type	Part Number D	W	A° (Selection)
8	+0.015 0	13	5	11	6.5	M6	M 8	40	10	10	20	10	3	ABPXE	8	15 20 25	10※
6	+0.012 0	11												ABPX (SKS3)	6	20	15
8	+0.015 0	13													8	15 20 25	18
10		16	10					55	25	12	30	15	5		10	25 30	
				14	8.6	M8	M10	50								40 45	20
13	+0.018 0	19						55		15	35				13	45 50 55 60 65 70	

※ A 10 is available for ABPX only.

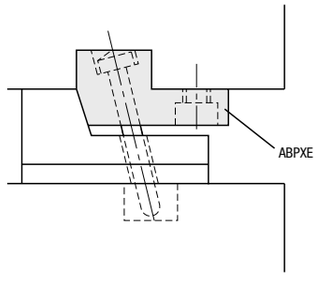
Order — Part Number: ABPXE 6 — W: 15 — A: A15

Days to Ship: Quotation

Price: Quotation

Example

• You can also use a tap to install the block from the plate side.
In this case, the size of the tap is the size of the mounting bolt.



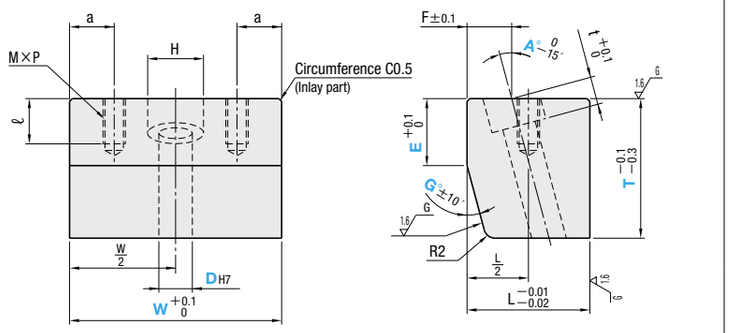
■Features

The S tolerance and (A+2)° tolerance of the ABPX on P.633 have been changed, and the price has been reduced.
If a high-precision type is necessary, please order in the conventional ABPX.

LOCKING BLOCKS WITH ANGULAR HOLES

Compact type P.628

RoHS



Part Number	M	H
ALBMS	SKS3	53～56HRC

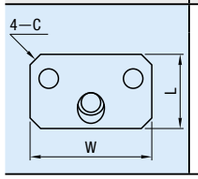
D_{H7}		H	F	ℓ	M×P	t	a	L	Part Number Type	Part Number D	T	W	E 1mm increments	1° increments A°	1° increments G°	U/Price 1～9
6	+0.012 0	10	6	8	4×0.7	5	5	20	ALBMS	6	20	38 48 58	10～13	10～20	G≧A+2 and G≦A+5	Quotation
								22			25		10～15			
								25			30		10～20			
8	+0.015 0	12	8	12	6×1.0	5	6	25		8	20	38 48 58	10～13			
								26			25		10～15			
								30			30		10～20			
10		14	10	16	8×1.25	10	7	32		10	30	38 48 58 68	10～20			
								35			35		10～25			
								36			40		10～30			
								40			50		10～40			
13	+0.018 0	17	12	16	8×1.25	10	8	40		13	35	48 58 68 78	10～25			
								40			40		10～30			
								45			50		10～40			
								50			60		10～50			

Order — Part Number — T — W — E — A — G
ALBMS6 — T25 — W48 — E11 — A15 — G17

Days to Ship: Quotation

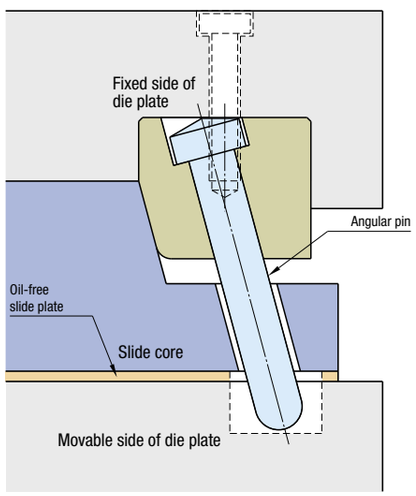
Price: Quotation

Alterations — Part Number — T — W — E — A — G — (CC)
ALBMS10 — T35 — W48 — E12 — A18 — G20 — CC

Alteration	Code	Spec.	1Code
	CC	C chamfering process on 4 outer corners (W・L)	D6・8 / D10・13: Quotation

D	C
6	3
8	
10	5
13	

Example



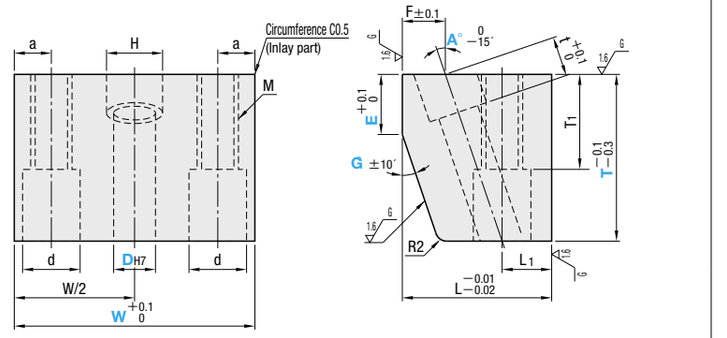
LOCKING BLOCKS WITH ANGULAR HOLES

—PL INSTALLATION TYPE—

Non JIS material definition is listed on P.1351 - 1352

Compact type P.628

RoHS



Part Number	M	H
ALBPS	SKS3	53～56HRC

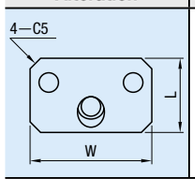
D_{H7}		H	F	t	T_1	d	M	a	L_1	L	Part Number Type	Part Number D	T	W	E 1mm increments	1° increments A°	1° increments G°	U/Price 1～9
10	+0.015 0	14	10	10	20	14	10	9	12	32	ALBPS	10	30	48 58 68	10～20	10～20	G≧A+2 and G≦A+5	Quotation
					25					35			35		10～25			
										36			40		10～30			
										40			50		10～40			
13		17	12	10	25	14 When W=48 11	10 8	9	14	40		13	35	48 58 68 78	10～25			
										40			40		10～30			
										45			50		10～40			
										50			60	58 68 78	10～50			
16	+0.018 0	20	15	13	25	17 When W=58 14	12 10	12 9	16	40		16	35	58 68 78	10～25			
					30					45			40		10～30			
										50			50		10～40			
										55			60		10～50			
20		24			30					45		20	40	58 68 78	10～30			
										50			50		10～40			
										55			60		10～50			

Order — Part Number — T — W — E — A — G
ALBPS10 — T30 — W58 — E12 — A15 — G17

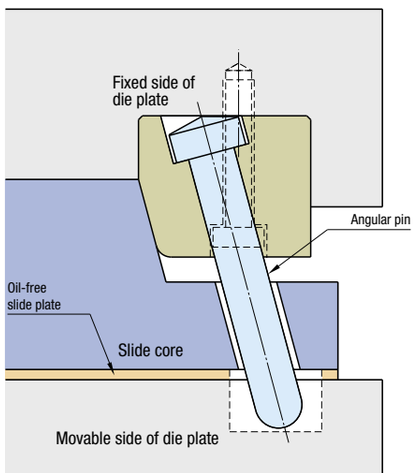
Days to Ship: Quotation

Price: Quotation

Alterations — Part Number — T — W — E — A — G — (CC)
ALBPS13 — T40 — W68 — E15 — A18 — G20 — CC

Alteration	Code	Spec.	1Code
	CC	C5 chamfering process on 4 outer corners (W・L)	Quotation

Example



MINI SLIDE CORE UNITS
—STANDARD TYPE—

Non JIS material definition is listed on P.1351 - 1352

Type	Angular cams M D H2F H 40±2HRC S Nitrided (1000HV～)	Guide rails Guide type M DH2F H 40±2HRC S Nitrided (1000HV～)	Guide rails Slide core retracting mechanism	Slide cores No processing M DH2F H 40±2HRC	Slide cores Inlay part processed M SKD11 H 58～60HRC	Slide cores Tapped M SKD11 H 58～60HRC	Slide stroke amount	Page
Standard Type		Combined type	Yes	MSCNB	MSCKB	MSCMB	3mm 6mm 10mm	P.634
		Separate type	No	MSCNG	MSCKG	MSCMG	3mm 6mm 10mm	
Slim type		Combined type	Yes	—	MSCSB	MSCSBM	3mm	P.638
							6mm	P.639
							10mm	P.640
			No		MSCSG	MSCSGM	3mm	P.637

■Characteristics

①Space saving
- Allows downsizing of the mold due to the special structure in which the angular cam and the locking block are combined.

②With slide core lock mechanism
- Ball plunger leads to stable operation of the slide core.

③Equipped with slide core retracting mechanism
- Is safe when using along the direction of the gravity due to the incorporation of the spring unit in the unit guide.

④Total cost reduction
- Simple structure and low-cost
- The angular cam, slide core and guide rail comes in a set, which does not require oblique hole boring, resulting in process cost savings. (Please procure the core part via in-house production.)
- Eliminates the complex calculation such as the slide stroke, etc.

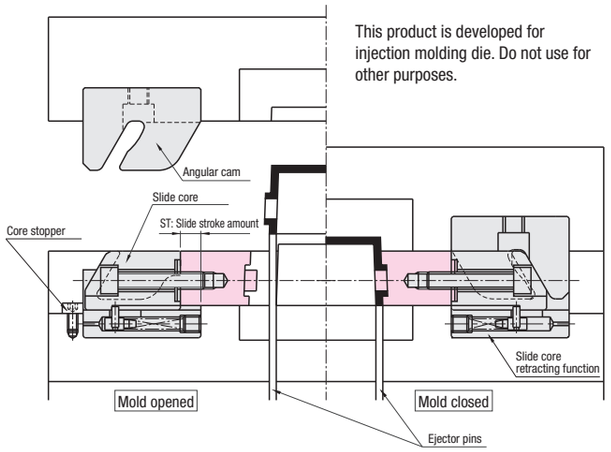
⑤Variation
- 3 options are available: amount of slide stroke ST=3・6・10mm.
- Categories of slide cores

No processing	: Free machining at core section is possibe
Inlay processed	: Big core handling is possible
Tapped	: Machining on core is easy

3 types are available.
- Guide rail types:Either separate type (compact) or combined type (no need to adjust guide rail) is available.

⑥Easy maintenance
- Easy to adjust the core part by plate processing as shown in the right figure.

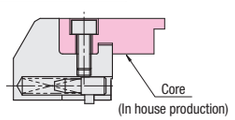
■Example



This product is developed for injection molding die. Do not use for other purposes.

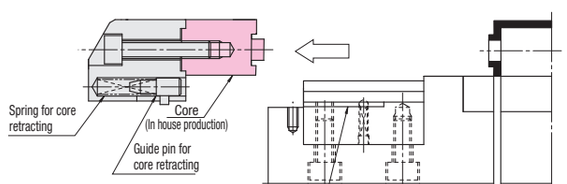
■Slide core retracting function (Patent Acquisition)

Screw cut



Due to the special structure, the core can be easily adjusted by pulling out the slide core without removing the guide rail.

Inlay part processed



* Be sure to use core stopper.

Mini Slide Core Units

Slide core type

MSCN No processing — RoHS

M DH2F
H 40±2HRC

MSCK Inlay part processed — RoHS

M SKD11
H 58～60HRC

MSCM Tapped — RoHS

M SKD11
H 58～60HRC

Guide type

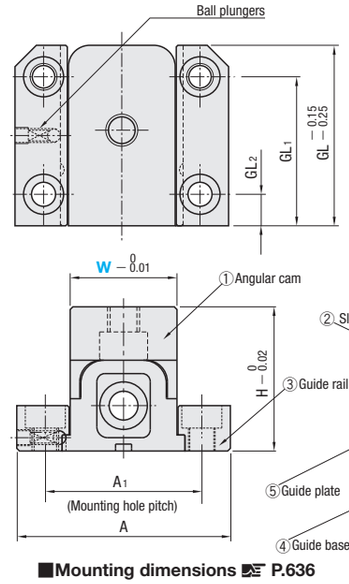
G Separate type — RoHS

M DH2F
H 40±2HRC
S Nitrided (1000HV～)

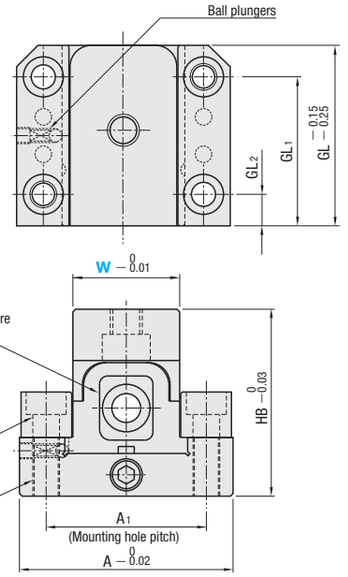
B Combined type (with slide core retracting mechanism) — RoHS

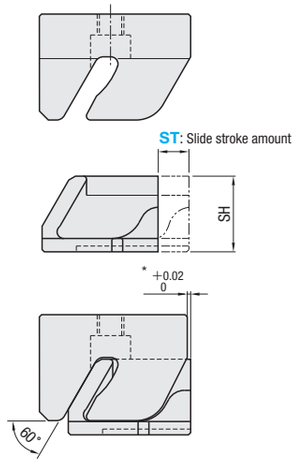
M DH2F
H 40±2HRC
S Nitrided (1000HV～)

■Guide type **G** separate type



■Guide type **B** combined type





*+0.02 0 is the precision of units. Note that the precision will change according to assembling.

■Component details and page

① Angular cams	P.635
② Slide cores	
③ Guide rails	P.636
④ Guide base	
⑤ Guide plate	

■Mounting dimensions P.636

A	A_1	GL	GL_1	GL_2	H	HB	SH	Part Number Type	Part Number Guide type	ST	W
28	22	20	15	5	18	24	10	MSCN (No processing)	G (Separate type)	3	12
40	30	34	28	6	27	35	17	MSCK (Inlay part processed)		6	20
42	32	50	40	10	40	50	25	MSCM (Tapped)	B (Combined type)	10	22
52	42										32

■Components (Single Items) (Be sure to carry out installation adjustment before use.)

Component	Part Number	ST	W
①Angular cams	MSCC	3	12
		6	20
		10	22
		10L	32

Order

Part Number Type	Guide type	ST		W
MSCK	B	6	—	20
MSCC		6	—	20

Days to Ship: Quotation

Price: Quotation

Alterations

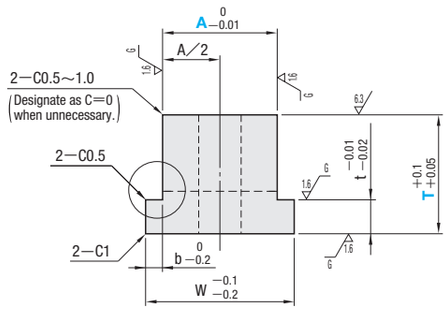
Part Number	ST		W		(SPC・BPW)
MSCKB	10	—	32	—	SPC

Alterations	Code	Spec.	1Code
Strengthening of core retracting spring	SPC	Alterations on spring (WLH→SWC) and core retracting guide pins Spring: WLH6—30 ⇨ SWC6—30 Load (N) min.: 4.3 ⇨ 7.7 Load (N) max.: 14.6 ⇨ 26.3 Only applicable to ST=10	Quotation
	BPW	Ball plungers are machined on both sides of the guide rail.	

SLIDE CORES WITH ANGULAR HOLE

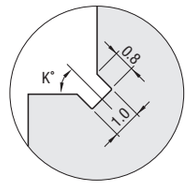
RoHS

Part Number	M		H	Flange thickness	Flange width	One side of flange
SLFK5A	NAK80	Prehardened steel	37～43HRC	t=5	W=A+6	b=3
SLFK8A	NAK80			t=8	W=A+8	b=4



About Recessing of Flange

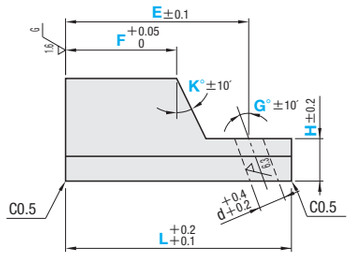
The neck of flange has a recess shown as the figure below.



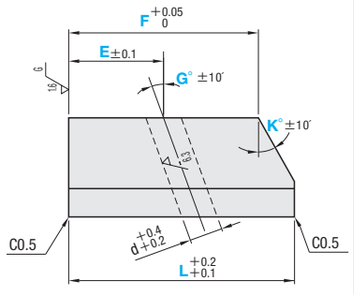
T≦50 K°=45°
51≦T≦60 K°=30°

Shape

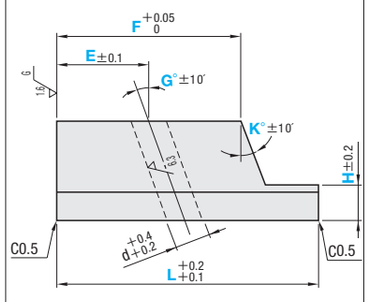
X



Y



Z



Non JIS material definition is listed on P.1351 - 1352

Part Number Type	Shape	1mm increments A	T	L	(*1) D Applicable angular pin dia.	E 0.1mm increments	G° 1° increments
Flange thickness 5mm SLFK5A (NAK80)	X	15～ 20	15～30	10～ 40	4 5 6 8	Shape X min. $E>F+(T-H)\tan K+3+\frac{d}{2}\times\frac{1}{\cos G}$	10～30
		21～ 30	15～40	10～ 60	6 8 10		
		31～ 40	20～50	10～ 80	8 10 12 13 15 16	Shape X max. $E<L-3-H\times\tan G-\frac{d}{2}\times\frac{1}{\cos G}$	
		41～ 50	20～60	10～100	10 12 13 15 16 20		
	Y	51～ 80	25～60	10～120	12 13 15 16 20 25	Shape Y min. $E>3+\frac{d}{2}\times\frac{1}{\cos G}$	
		81～100	30～60			Shape Y max. $E<L-3-T\times\tan G-\frac{d}{2}\times\frac{1}{\cos G}$	
Flange thickness 8mm SLFK8A (NAK80)	Z	30～ 40	20～50	20～ 80	8 10 12 13 15 16	Shape Z min. $E>3+\frac{d}{2}\times\frac{1}{\cos G}$	
		41～ 50	20～60	20～100	10 12 13 15 16 20		
		51～ 60	25～60	30～120	12 13 15 16 20 25	Shape Z max. $E<F-3-\frac{d}{2}\times\frac{1}{\cos G}$	
		61～ 80	25～60				
		81～100	30～60				

Part Number	F 0.1mm increments	K° 1° increments	H 1mm increments
Flange thickness 5mm SLFK5A (NAK80)	Shape X min. $F>\frac{L}{3}$ Shape X max. $F<E-(T-H)\tan K-3-\frac{d}{2}\times\frac{1}{\cos G}$ Shape Y min. $F>E+3+\frac{d}{2}\times\frac{1}{\cos G}$ $F>L-T\times\tan K$	10～30	T>H≧5
Flange thickness 8mm SLFK8A (NAK80)	Shape Y max. $F<L$ Shape Z min. $F>E+3+\frac{d}{2}\times\frac{1}{\cos G}$ Shape Z max. $F<L-(T-H)\tan K$	G≦K≦G+5	T>H≧8

D	d
4	4.5
5	5.5
6	6.5
8	9
10	11
12	13

D	d
13	14
15	16
16	17
20	21.5
25	26.5

(*1) D is the diameter of an angular pin to be used. The corresponding hole diameter (d) on the slide core will be as shown in the above table.

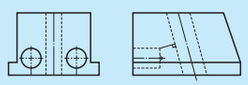
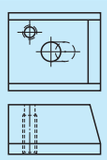
Order

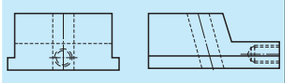
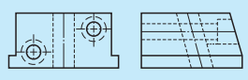
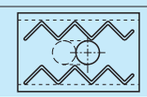
Part Number	A	T	L	D	E—G—F—K—(H)—(C0)
SLFK8MZ	A60	T48	L85	D20	E20—G15—F70—K17—H20—C0

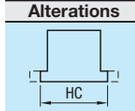
Days to Ship: Quotation

Price: Quotation

Alterations: Details of alterations other than HC P.649 Quotation

Alterations	Code	Spec.
	ZC	Spring hole machining Details P.649
	BP	Tapping Details P.649

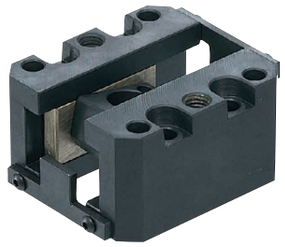
Alterations	Code	Spec.
	VC	Stop block processing Details P.650
	SC	Bolt hole boring Details P.650
	AM	Oil groove machining lower Details P.650

Alterations	Code	Spec.	1Code
	HC	Reduces the flange width. HC=1mm increments Standard size (W)>HC≧(A+3)	Quotation

OIL-FREE SLIDE UNITS FOR LOOSE CORE

—STANDARD • FIXING TYPE—

Non JIS material definition is listed on P.1351 - 1352



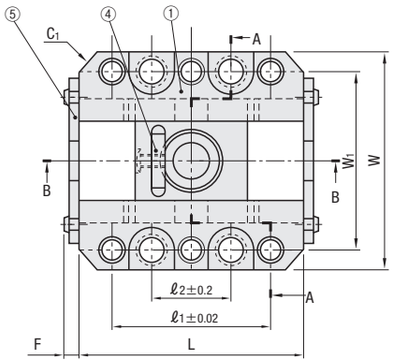
■Features of Oil-free Slide Units for Loose Core

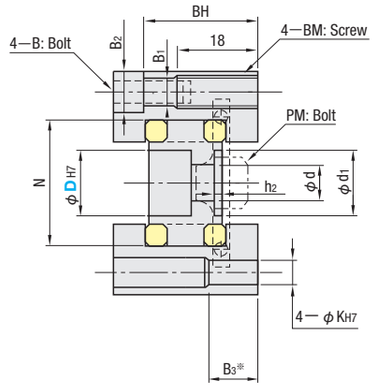
- Enables the inclined pin to slide smoothly when pushing out a loose core (including undercut) at an angle.
- The inclined pin holder slides within the range of θ, and the automatic center adjustment function reduces wear and scoring on the guide and slide plates.

Item	Components	Parts Name	M	Piece
①	**Slide base**	Slide Base	S55C	2
②	**Inclined pin holder**	Inclined Pin Holder	SCM440	1
③	**Slide plate**	Slide Plate	* CAC304+Solid lubricant	2
④	**Parallel Key**	Key	S45C	1
⑤	**Stopper**	Stopper	SS400	2

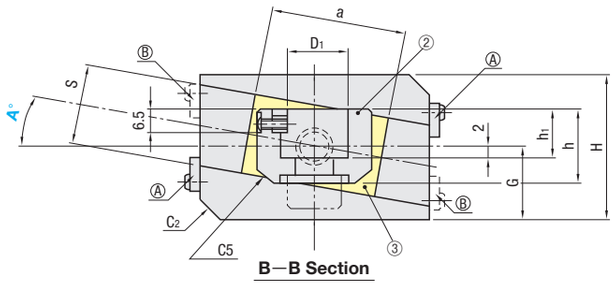
* High strength brass casting class 4 (Old JIS: HBsC4)

SCZN





A—A Section



B—B Section

Ⓐ and Ⓑ show the mounting position of the stopper. Refer to the angle of A°

You can specify the mounting angle of the slide plate in 1° -steps between 1° and 10° to match the angle of the undercut of the molded part.

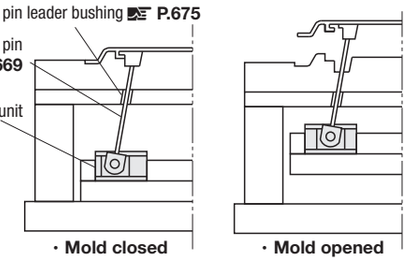
① Slide base					② Inclined pin holder							③ Slide plate		G	F	Part Number		Mounting angle of slide plate A° 1° Increments	U/Price A°	
W	L	H	C1	C2	D1	d	d1	h	h1	h2	N	S	a			Type	D		0	1~10
56	55	35	5	—	11	5.5	—	16	10	—	30	20	35	17.5	4.65	SCZN	12	0~10		
60	65	36	6	—	15	9	16	18	11	3	33	20	40	18	4.65		16	※2~4・6~10 are manufactured products, so they are shipped on the 12th days.	Quotation	
68	70	43	6	5	18	11	20	22	13	5.5	38	24	40	21.5	4.65		20			
75	80	45	6	5	22	11	20	26	15	5.5	45	26	45	22.5	4.65		25			
81	95	54	6	5	27.5	11	20	30	17	3.5	51	30	55	27	4.65		30			

Part Number		Bolt hole dimensions									Mounting position of stopper	
Type	D	ℓ1	ℓ2	W1	B1	B2	B3	BM	BH	K	Ⓐ	Ⓑ
SCZN	12	42	21	45	6.6	11	15	M 8	28.5	6	0° ~10°	—
	16	46	25	48	6.6	11		M 8	29.5	6	0° ~10°	—
	20	50	25	55	8.6	13.5		M10	34.5	8	4° ~10°	0° ~3°
	25	60	35	62	8.6	13.5	20	M10	36.5	8	4° ~10°	0° ~3°
	30	75	50	68	8.6	13.5		M10	45.5	8	0° ~10°	—

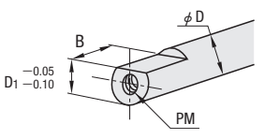
Order: Part Number — A° (e.g. SCZN20 — 0)

Days to Ship: Quotation

Example

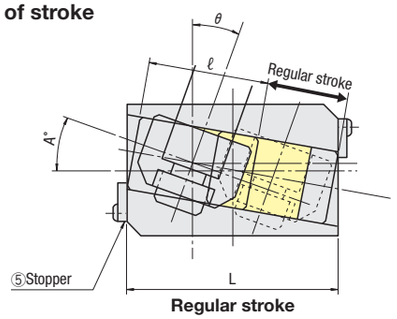


■Applicable inclined pin: Example of mounting dimension



D	D1	B	PM
12	11	13	M 5
16	15	14	M 8
20	18	16	M10
25	22	18	M10
30	27.5	20	M10

■List of stroke

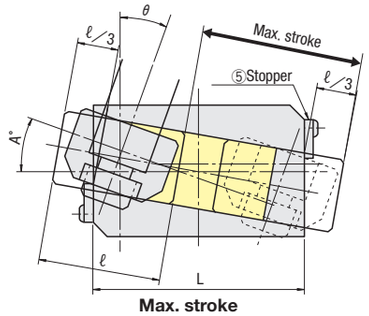


Regular stroke

Unit: mm

Part Number	Regular stroke (Distance through which the slide plate moves to the end face of the slide base.)										
	A=0	A=1	A=2	A=3	A=4	A=5	A=6	A=7	A=8	A=9	A=10
SCZN12	20.0	19.6	19.3	19.0	18.7	18.4	18.2	17.9	17.7	17.5	17.3
SCZN16	25.0	24.6	24.3	24.0	23.7	23.4	23.2	23.0	22.8	22.6	22.4
SCZN20	30.0	29.5	29.2	28.8	28.4	28.1	27.8	27.5	27.3	27.0	26.8
SCZN25	35.0	34.5	34.1	33.7	33.3	33.0	32.7	32.4	32.1	31.8	31.6
SCZN30	40.0	39.4	39.0	38.5	38.1	37.7	37.3	37.0	36.7	36.4	36.1

Range of angle θ : 0° ≦ θ ≦20°



Max. stroke

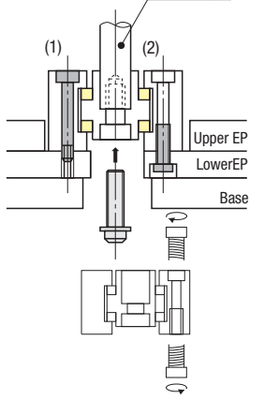
Unit: mm

Part Number	Max. stroke when taking the stopper ⑤ off (Standard stroke + 2ℓ/3; Note that this is the maximum value at which interference does not occur between the slide plate and the mounting face.)										
	A=0	A=1	A=2	A=3	A=4	A=5	A=6	A=7	A=8	A=9	A=10
SCZN12	43.3	42.9	42.6	42.3	42.0	41.7	41.5	41.2	41.0	40.8	40.6
SCZN16	51.6	51.3	51.0	50.7	50.4	50.1	49.9	49.6	49.4	49.3	49.1
SCZN20	56.6	56.2	55.8	55.5	55.1	54.8	54.5	54.2	53.9	53.7	53.5
SCZN25	65.0	64.5	64.1	63.7	63.3	63.0	62.7	62.4	62.1	61.8	61.6
SCZN30	76.6	76.1	75.6	75.2	74.8	74.4	74.0	73.6	73.3	73.0	72.8

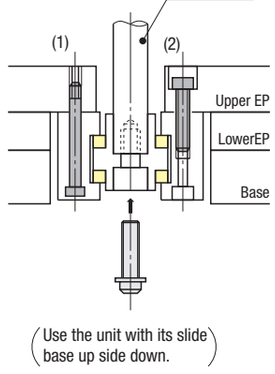
Range of angle θ : 0° ≦ θ ≦20°

■ Mounting examples

●Mounting examples A



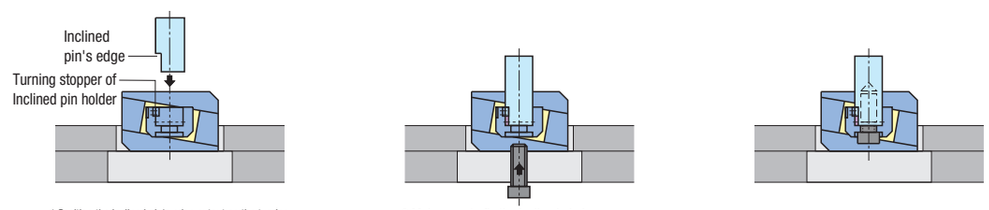
●Mounting examples B



(Use the unit with its slide base up side down.)

- Refer to the above table for dimensions of the inclined pin's edge cutout and screw size (PM). The counterbore in the inclined pin holder is made in a size that accommodates a socket head cap screw with a spring washer.
- The unit can be mounted on an ejector plate in two ways:(1) Screwing into the ejector plate, or (2) Screwing into the unit. For (2) use a socket head cap screw that corresponds to BM in the "Bolt Hole Dimensions" table. For (1) select a rank below the corresponding BM (i.e., M6 screw when BM is M8).
- Prior to mounting, apply * grease to the unit in order to protect it from wear during initial running-in.
- If the stroke is long, it is recommended that you use a bushing that supports the inclined pin. P.675

■ How to mount the inclined pin

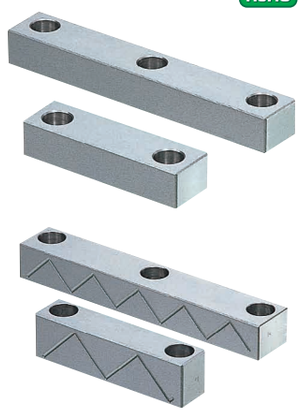


1.Position the inclined pin's edge cutout on the turning stopper of the inclined pin holder and insert it.

2.Make sure to fix the inclined pin by tightening it up using the socket head cap screws or socket low head cap screws.

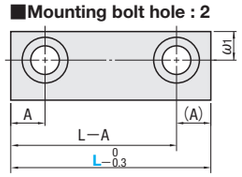
Non JIS material definition is listed on P.1351 - 1352

RoHS

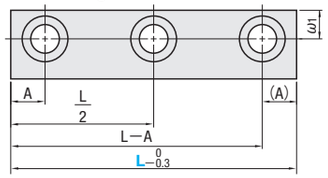


Part Number		M	H
Non-oil groove	Oil groove		
GRS	GRSM	SKS3	53～56HRC
GRM	GRMM	HPM2T equivalent	37～41HRC

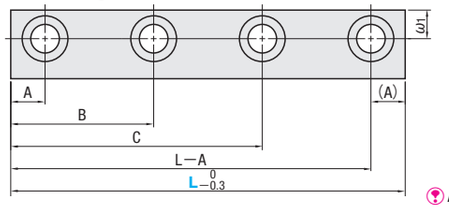
■Mounting bolt hole : 2



■Mounting bolt hole : 3



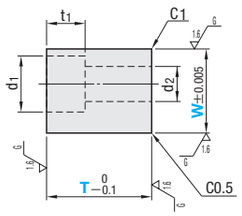
■Mounting bolt hole : 4



■Table for Bolt Hole Size

W	T	d1	d2	t1	ω1
10	5	8	4.5	3.5	4.5
	10・15			5	
12.5	5	8	4.5	3.5	5
	10・15・20			5	
15	5	8	4.5	3.5	6
	10・15・20・25	9.5	5.5	6	
20	15・20	11	6.5	7	9
	25・30	14	9	9	
25	20・25・30・35	14	9	9	10
30	30・35	17	11.5	11	11

Bolt hole dimension of T5 is available for Low Head Cap Screw (CBS). Note that standard socket head cap screw is too long to fit in.



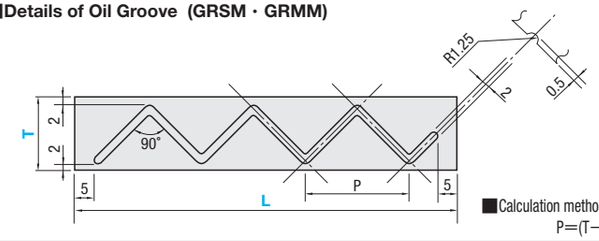
All corners C≦1 unless specified.

■Oil Groove Pitch

T	P
10	8
15	18
20	28
25	38
30	48
35	58

Please note that if L≦P+10, there is the possibility that 1 cycle (1 pitch) of oil groove can not be cut.

■Details of Oil Groove (GRSM・GRMM)



■Calculation method for oil groove pitch
P=(T−6)×2

Price Quotation

Part Number Type	W	T Selection	L	No. of bolt holes	A	B	C
Non-oil groove GRS (SKS3) GRM (HPM2T equivalent)	10	(5)	30 35 40	2	7.5	—	—
			50 60	3			
		10 15	*35 40	2			
			50 60 70	3			
			80	4		30	50
			90			32.5	57.5
			100			35	65
	12.5	(5)	30 35 40	2	7.5	—	—
			50 60	3			
		10	*35	2			
		10 15 20	40				
			50 60 70	3			
			80	4		30	50
			90			32.5	57.5
			100			35	65
Oil groove GRSM (SKS3) GRMM (HPM2T equivalent)	15	(5)	40 50 60	2	7.5	—	—
		10 15 20 25	40 50 60	2			
			70 80 90 100 110 120	3			
			130	4		40	90
			140			45	95
			150			53	97
	20	15 20 25 30	40 50 60 70 80 90	2	10	—	—
			100 110 120 130 140 150	3			
			160	4		55	105
			180			60	120
			200			70	130
	25	20 25 30	40 50 60 70 80 90	2	10	—	—
			100 110 120 130 140 150	3			
			160	4		55	105
			180			60	120
			200			70	130
		35	120 130 140 150	3		—	—
			160	4		55	105
			180			60	120
			200			70	130
	30	30 35	120 130 140 150	3	12	—	—
			160				
			180	4		60	120
			200			70	130

T5 is only applicable to GRS

L35 with * mark is only applicable to non-oil groove type, GRS and GRM.

Order: Part Number — T — L (e.g. GRS15 — 20 — 80)

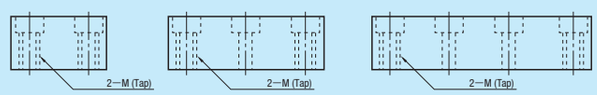
Days to Ship: Quotation

■GRSM List of sizes available for 3rd day shipment

Type	W	T	L
GRSM	12.5	15	40・50・60・70・80・90・100
	15	15・20	

Alterations: Part Number — T — L — (MC) (e.g. GRS15 — 20 — 80 — MC)

Quotation

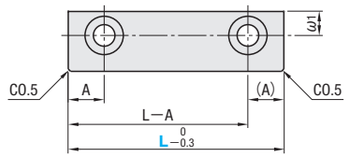
Alteration	Code	Spec.	1Code
	MC	Process 2 places of tapping (both ends) for removal. Applicable to W10～25 Not applicable to T5	Quotation

W	T	M
10	10・15	M5
12.5	10・15・20	
15	10・15・20・25	M6
20	15・20	M8
	25・30	M10
25	20・25・30・35	

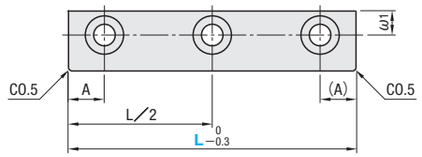
OIL-FREE PLAIN GUIDE RAILS
—HEAT RESISTANT 120℃ TYPE—

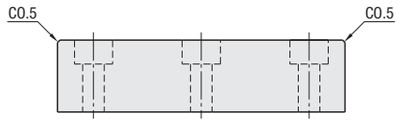
RoHS

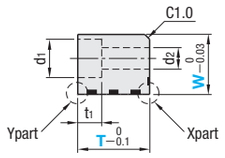
GRHZ ■Mounting bolt hole : 2

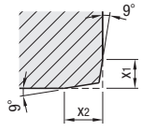


■Mounting bolt hole : 3

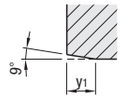








Details of X part



Details of Y part

Heat resistance temperature : 120℃ or lower
Ⓜ Special high strength brass
Special solid lubricant

X part x1	X part x2	Y part y1	d1	d2	t1	ω1	A	No. of bolt holes	Part Number Type	Part Number W	T Selection	L
1.5	2	2	8	4.5	5	5	7.5	3	GRHZ	12.5	15	50 60 70
2	2	2	9.5	5.5	6	6	7.5	2	GRHZ	15	10	50 60
								3				70 80
								2			15	50 60
								3				70 80 90 100
2	2.5	2.5						2			20	50 60 70 80 90
								3				100

Order — Part Number — T — L
GRHZ15 — 10 — 50

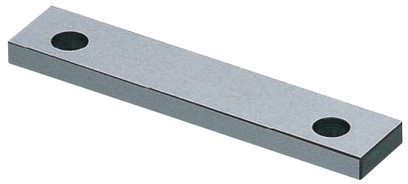
Days to Ship — Quotation

■**Feature :** It can be used under higher temperature than conventiona oil-free plain guide rails.

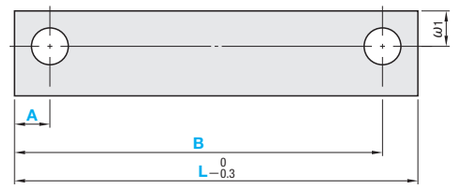
PLATE GUIDE RAILS
—L DIMENSION DESIGNATION TYPE—

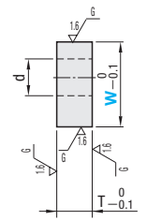
Non JIS material definition is listed on P.1351 - 1352

RoHS



Part Number	Ⓜ	Ⓗ
GRPTC (Thin type)	SKS3	53～56HRC
GRPT (Standard type)		





All corners C≦1 unless specified. Note : T=5 of GSR in page 815 is similar-shaped. Recheck carefully before using.

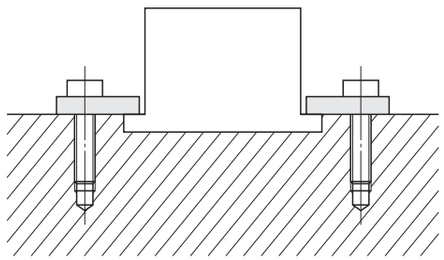
d	ω1	T	Part Number Type	Part Number W	L 5mm increments	0.5mm increments A	0.5mm increments B	U/Price 1～9
4.5	4.5	3.5	GRPTC (Thin type)	10	25～ 40	6≦A≦B−10	B≦L−6	Quotation
					45～ 60			
		4	GRPT (Standard type)	10	25～ 40			
					45～ 60			
6.5	6	5		15	30～ 55	7.5≦A≦B−13	B≦L−7.5	
					60～ 80			
	9			20	30～ 55			
					60～ 80			
					85～100			

Order — Part Number — L — A — B
GRPT15 — 70 — A13.0 — B57.0

Price — Quotation

Days to Ship — Quotation

Example



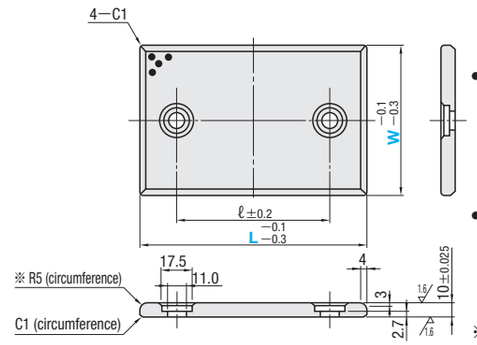
OIL-FREE SLIDE PLATES

—COPPER ALLOY 10mm • 2-BOLT TYPE/4-BOLT TYPE—

2-bolt type RoHS

STW W= 28～ 75

STWT W=100～150



- Sliding direction

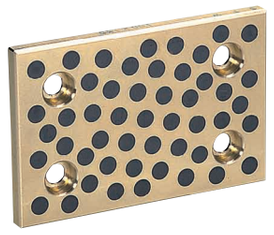
For W=28, 38, longitudinal (L) direction only.

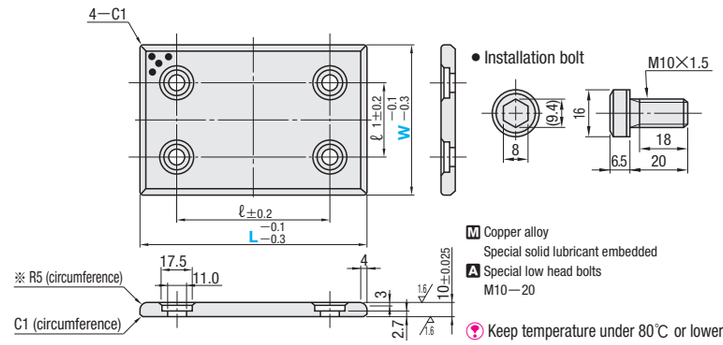
- Prior to use, apply initial running-in grease for better performance.

※For W=28, 38, R in the longitudinal direction is R2 instead of R5.

4-bolt type RoHS

STW W=100～150





- Installation bolt

M Copper alloy
Special solid lubricant embedded
A Special low head bolts
M10—20

Keep temperature under 80℃ or lower.

ℓ	Part Number	W	L	U/Price 1～19
45	2-bolt type STW	28	75	
50			100	
75			125	
100			150	
45		38	75	
50			100	
75			125	
100			150	
45		48	75	
50			100	
75			125	
100			150	
150			200	
45		58	75	
50			100	
100			150	
※ 25		75	75	
50			100	
75			125	
100			150	
150			200	
50	2-bolt type STWT	100	100	
75			125	
100			150	
150			200	
200			250	
100		125	150	
150			200	
200			250	
100		150	150	
150			200	

Quotation

ℓ	ℓ1	Part Number	W	L	U/Price 1～19
50	50	4-bolt type STW	100	100	
75				125	
100				150	
150				200	
200				250	
100	50		125	150	
150				200	
200				250	
100	100		150	150	
150				200	

Quotation

Order

Part Number	W	—	L
STW	75	—	100
STWT	100	—	200

Days to Ship: Quotation

Price: Quotation

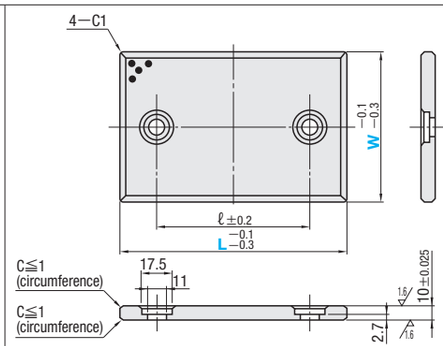
※ ℓ dimension of STW75—75 is 25.
Pitch (ℓ) between bolts is determined which is widely taken in press dies for cars.

OIL-FREE SLIDE PLATES／COMPACT OIL-FREE SLIDE PLATES

—SKS3 (53～56HRC) 10mm TYPE— —COPPER ALLOY 10mm TYPE—

Non JIS material definition is listed on P.1351 - 1352

STWSZ RoHS



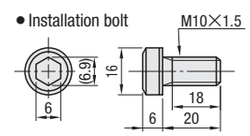
- Prior to use, apply initial running-in grease for better performance.

Keep temperature under 80℃ or lower.

- Sliding direction

For W=28, 38, longitudinal (L) direction only.

- Installation bolt

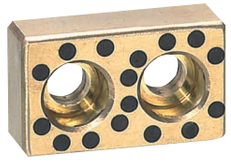


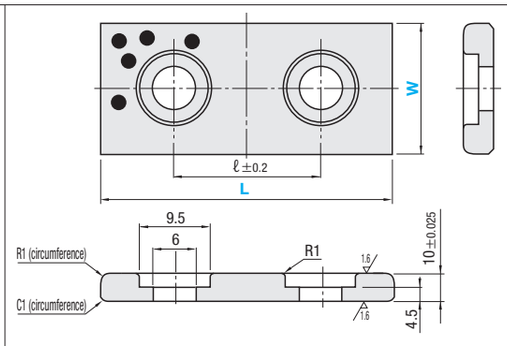
M SKS3
Special solid lubricant embedded
H 53～56HRC
A Low head bolts
M10—20

ℓ	Part Number	W	L	U/Price 1～19
45	STWSZ	28	75	
50			100	
100			150	
45		38	75	
50			100	
45		48	75	
50			100	
100			150	
45		58	75	
50			100	
100			150	

Quotation

STS RoHS



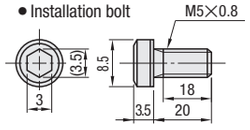


- Prior to use, apply initial running-in grease for better performance.

Keep temperature under 80℃ or lower.

- Sliding direction

- Installation bolt



M Grade-4 high strength brass (CAC304)
(Old JIS : HBsC4)
Special solid lubricant embedded
A Low head bolts
M5×20

ℓ	Part Number	W	L	U/Price 1～19
14	STS	15	30	
20			40	
30			50	
50			75	
14		18	30	
20			40	
30			50	
50			75	
14		22	30	
20			40	
30			50	
50			75	

Quotation

Order

Part Number	W	—	L
STWSZ	38	—	100
STS	18	—	50

Price: Quotation

Days to Ship: Quotation