


SKH51 equivalent  
Thin-wall  
Concentricity  $\odot 0.005$  Wall  
thickness 0.3mm~

# PRECISION SMALL DIAMETER · THIN-WALL STEPPED EJECTOR SLEEVES

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

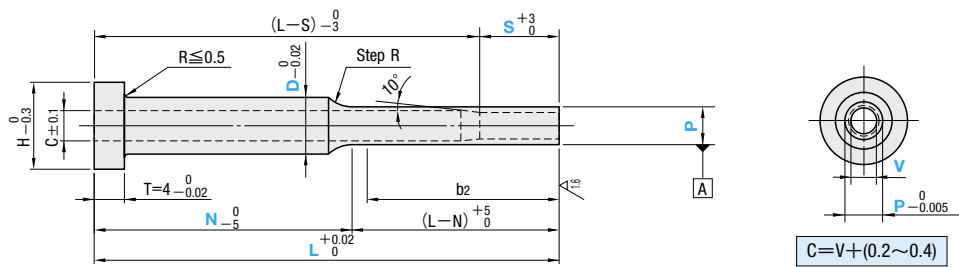


RoHS

Part Number		P	V	Concentricity of inner diameter (V) against (outer diameter P)	Applicable center pin shaft diameter tolerance
D selection type	D designation type				
ESVF	ESVFB	$\begin{matrix} 0 \\ -0.005 \end{matrix}$	$\begin{matrix} +0.005 \\ 0 \end{matrix}$		$\begin{matrix} 0 \\ -0.005 \end{matrix}$ (Details <a href="#">P.1309</a> )

Ⓜ Range of guaranteed shaft diameter precision (D) (Details [P.1305](#))  
Step R (Details [P.1306](#))  
Ⓜ Range of guaranteed tip-diameter precision (b2) (Details [P.1306](#))

Ⓜ SKH51 equivalent  
Ⓜ 58~60HRC  
Ⓜ Range of guaranteed base material hardness (Details [P.1307](#))  
Ⓜ Overall quenching (No annealing on head)



Ⓜ Note that the Stepped Center Pin's shaft diameter (D) is too large to fit in the recess (C). (Details [P.1310](#))

## D selection type

H	Part Number Type	D	0.01mm increments			N 1mm increments	S 0.5mm increments
			L	P	V		
5	ESVF	2.5	40.00~70.00	1.80~2.19 2.20~2.45	0.80~1.40 1.00~1.60	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~85.00	1.80~2.39 2.40~2.95	0.80~1.60 1.10~2.10		
6	ESVF	3	85.01~125.00	2.40~2.95 2.40~3.45	1.10~2.10 1.10~2.60	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~85.00	1.80~2.39 2.40~3.45	0.80~1.60 1.10~2.60		
			40.00~85.00	1.90~2.39 2.40~3.95	0.80~1.60 1.10~3.10		
			85.01~125.00	2.40~3.95 2.40~3.95	1.10~3.10 1.10~3.10		
7	ESVF	3.5	40.00~85.00	2.65~4.45 2.65~4.95	1.20~4.10 1.20~4.60	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~85.00	1.90~2.39 2.40~3.95	0.80~1.60 1.10~3.10		
			85.01~125.00	2.40~3.95 2.40~3.95	1.10~3.10 1.10~3.10		
8	ESVF	4.5	40.00~125.00	2.65~4.95 2.90~5.95	1.20~4.60 1.60~5.10	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~125.00	2.65~4.45 2.65~4.95	1.20~4.10 1.20~4.60		
9	ESVF	5.5	40.00~125.00	2.90~5.95 2.90~5.95	1.60~5.10 1.60~5.10	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~150.00	2.90~5.95 2.90~5.95	1.60~5.10 1.60~5.10		

Ⓜ Working limits for V D3~6 → V ≤ P-0.6 (L ≤ 85), V ≤ P-0.8 (L > 85) D2.5 → V ≤ P-0.6 Ⓜ Working limits for N D2.5 → Nmin. = 45 (60.01 ≤ L ≤ 70.00)

## D designation type

H	Part Number	D 0.1mm increments	0.01mm increments			N 1mm increments	S 0.5mm increments
			L	P	V		
6 (when D=3.0) (when D=3.1~3.5)	ESVFB	*3.0~3.5	40.00~70.00	1.80~2.39 2.40~2.80	0.80~1.60 1.10~2.20	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~85.00	1.80~2.39 2.40~3.40	0.80~1.60 1.10~2.60		
			85.01~125.00	2.40~3.40 2.40~3.40	1.10~2.60 1.10~2.60		
7	ESVFB	3.6~4.0	40.00~85.00	1.90~2.39 2.40~3.90	0.80~1.60 1.10~3.10	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~85.00	2.40~3.90 2.40~3.90	1.10~3.10 1.10~3.10		
8	ESVFB	4.1~4.5	40.00~125.00	2.65~4.40 2.65~4.90	1.20~4.10 1.20~4.60	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~125.00	2.65~4.40 2.65~4.90	1.20~4.10 1.20~4.60		
9	ESVFB	5.1~5.5	40.00~125.00	2.65~4.90 2.65~4.90	1.20~4.60 1.20~4.60	N ≥ L/2 and (L-N) ≥ 10	1.0 ≤ S ≤ (V×3)
			40.00~150.00	2.90~5.90 2.90~5.90	1.60~5.10 1.60~5.10		

Ⓜ Working limits for V D3.1 6 → V ≤ P-0.6 (L ≤ 85), V ≤ P-0.8 (L > 85) D2.6 3.0 → V ≤ P-0.6 Ⓜ Working limits for N D2.6 3.0 → Nmin. = 45 (60.01 ≤ L ≤ 70.00)

Ⓜ In the case where the wall thickness is 0.6 or more (V ≤ P-1.2), please refer to ESVFB(P.305) Ⓜ \*When D=3.0, H=6



Part Number	D	L	P	V	N	S
ESVF 4.5	—	121.52	P3.25	V2.45	N70	S7.0
ESVFB — 4.3	—	121.52	P3.25	V2.45	N70	S7.0



Quotation

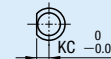



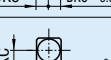
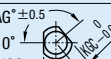

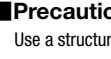


Quotation



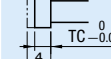


Part Number	D	L	P	V	N	S	(KC · WKC...etc.)
ESVF6	—	100.52	P3.55	V2.75	N65	S8.0	KC 3.5
ESVFB — 6.0	—	100.52	P3.55	V2.75	N65	S8.0	KC 3.5

Alteration details [P.275](#)

Alterations	Code	Spec.	1Code
	KC	Single flat cutting D/2 ≤ KC < H/2	
	WKC	Two flats cutting D/2 ≤ WKC < H/2	
	KAC KBC	Varied width parallel flats cutting D/2 ≤ KAC < H/2 KBC=0.1mm increments only KAC < KBC < H/2	
	RKC	Two flats (right angled) cutting D/2 ≤ RKC < H/2	
	DKC	Three flats cutting D/2 ≤ DKC < H/2	
	SKC	Four flats cutting D/2 ≤ SKC < H/2	
	KGC	Two flats (angled) cutting D/2 ≤ KGC < H/2 AG=1° increments 0 < AG < 360	
	KTC	Three flats cutting at 120° D/2 ≤ KTC < H/2	

About Designation Unit for Key Flat Cutting  
(1) To align the key flat with the shaft diameter  
(Unit of designation) 0.05mm increments possible  
(2) To designate arbitrary key flat dimensions  
(Unit of designation) 0.1mm

Quotation

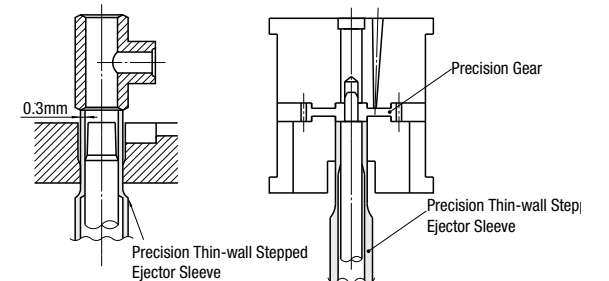
Alterations	Code	Spec.	1Code
	TC	TC=0.1mm increments 2.0 ≤ TC < 4.4 - TC ≤ Lmax. - L Ⓜ Dimensions L, N and (L-S) remain unchanged.	
	HC	HC=0.1mm increments Ⓜ D ≤ HC < H Ⓜ In relation to the diameter tolerance, alteration may create a straight piece with little diameter difference between the head and shaft.	
	HCC	HCC=0.1mm increments Ⓜ D+1 ≤ HCC < H-0.3	

Quotation



Example

Please use for molded products such as precision gears, which have narrow protruding part.



## Precautions for use

Use a structure that protects the sliding movement of ejector pins, such as precision ejector guide pins ([P.961](#)~) and bushings ([P.968](#)~).

Ejector Sleeves

High Speed Steel  
SKH51 equivalent