

# Metal Collars

Standard / Precision Grade with Fixed and Configurable L-Dimension

**Metal Collars – Standard / Precision Grade with Fixed and Configurable L-Dimension**

RoHS 10

Specification Type	Type		Material	Surface Treatment
	Standard Grade	Precision Grade		
L Dimension Selectable	KNCLB	—	1045 Carbon Steel or Equivalent	Black Oxide
	KNCLM	—		Electroless Nickel Plating
	KNCLSS	—	304 Stainless Steel	—
NCLC	ACSC	—		—
L Dimension Configurable	NCLB	ABSC	1045 Carbon Steel or Equivalent	Black Oxide
	NCLM	AMSC		Electroless Nickel Plating
	NCLA	AASC	2017 Aluminum Alloy	Clear Anodize
	NCLSS	SASC		—
	—	—	420 Stainless Steel	—

Standard Grade:  $L_{-0.1}$ ,  $V_{+0.1}$ ,  $D_{-0.2}$

Precision Grade:  $L_{\pm 0.01}$ ,  $V_{+0.1}$ ,  $D_{-0.2}$

\*D=16 or less C0.1-0.2  
D=20 or more C0.5 or less

## Selectable L-Dimension (Standard Grade)

Part Number Type	V	D										L Selection
		3	5	6	8	10	12	13	14	15	16	
Standard Grade KNCLB KNCLM KNCLSS	3	5	6	8	10	12						10 12 15 20 25 30 35
	4	6	8	10	12	13	14	15	16	20		
	5	8	10	12	13	14	15	16	20			
	6	8	10	12	13	14	15	16	20	25		
	8	10	12	13	14	15	16	20	25	30		
	10	12	13	14	15	16	20	25	30			
	12	12	13	14	15	16	20	25	30			
	15	20	25	30								
	16	20	25	30								
	20	25	30									
25	30											

## Configurable L-Dimension (Standard and Precision Grade)

Part Number Type	V	D										L 0.1mm Increment		
		4	5	6	8	10	12	13	14	15	16			
Standard Grade NCLC NCLB NCLM NCLA NCLSS	2	4	5	6	8	10						10.0-16.0		
	3	5	6	8	10	12								
	4 5 6	(6) 8 10 12 13 14 15 16											10.0-25.0 25.1-50.0	
		20 25												
	Precision Grade ACSC ABSC AMSC AASC SASC	8 10 12	(10) (12) (13) (14) (15) (16)										10.0-25.0 25.1-50.0 50.1-75.0 75.1-100.0	
			(10) → Applicable to V8. (12 13 14) → Applicable to V8, 10											
		20 25												
		30 35												
	Precision Grade	10 12	40 50 60										10.0-25.0 25.1-50.0 50.1-75.0 75.1-100.0	
		15 16 20	(20) 25											
(20) → Applicable to V15, 16.														
Precision Grade	25	30 35										10.0-25.0 25.1-50.0 50.1-75.0 75.1-100.0		
	25 30	30 35												

Part Number Example: **KNCLB3** - 5 - 10  
**NCLB3** - 5 - 10.5

# Metal Collars

Standard / Precision Grade with Configurable L-Dimension

**Metal Collars – Standard / Precision Grade with Configurable L-Dimension**

RoHS 10

Type				Material	Surface Treatment	Hardness
L Dimension Configurable		Dimension Configurable				
Standard Grade	Precision Grade	Standard Grade	Precision Grade	1045 Carbon Steel or Equivalent	Black Oxide Electroless Nickel Plating	45-50 HRC min.
NCLCH	ASH	FNCLCH	FAS			
NCLBH	ASC	FNCLBH	FASC			
NCLMH	PASC	FNCLMH	FPASC			
—	—	FNCSK	FASK	01 Tool Steel	Black Oxide Electroless Nickel Plating	55 HRC min.
		FNCSKB	FASKB			
		FNCSKM	FASKM			
NCLSSH	SASCH	FNCLSH	FSASCH	440C or 420 Stainless Steel	—	45-50 HRC min.

Standard Grade:  $L_{-0.1}$ ,  $V_{+0.1}$ ,  $D_{-0.2}$

Precision Grade:  $L_{\pm 0.01}$ ,  $V_{+0.1}$ ,  $D_{-0.2}$

\*D=16 or less C0.1-0.2  
D=16.5 or more C0.5 or less

(1) Depending on thickness and length, 1045 Carbon Steel or Equivalent Hardened Type may be less than 45 HRC min.  
 (2) Stainless Steel Hardened Type may be discolored due to hardening.

## Configurable L-Dimension (Standard and Precision Grade)

Type	Part Number		D										L 0.1mm Increment
	Type	V	4	5	6	8	10	12	13	14	15	16	
Standard Grade NCLCH NCLBH NCLMH NCLSSH	2	4 5 6 8 10											10.0-16.0
	3	5 6 8 10 12											
	4 5 6	(6) 8 10 12 13 14 15 16											
	(6) → Applicable when V4.												
Precision Grade ASH ASC PASC SASCH	8 10 12	(10) (12) (13) (14) 15 16											10.0-100.0
	(10) → Applicable to V8. (12 13 14) → Applicable to V8, 10												
	8 10 12 15 16 20	(20) 25											
	(20) → Not applicable to V20												
Precision Grade	8 10 12 15 16 20 25	30 35											10.0-100.0
	10 12 15 16 20 25 30	40 50 60											

## Configurable Dimensions (Standard and Precision Grade)

Part Number	V 0.5 mm Increment V/3 or more	D	L 0.1 mm Increment
Standard Grade FNCLCH FNCLBH FNCLMH FNCSK FNCSKB FNCSKM FNCLSH	Selection 2.0 2.6	4.0-10.0 0.5 mm Increment	10.0-100.0
		10.5-20.0 0.5 mm Increment	10.0-100.0
		21-30 1 mm Increment	10.0-100.0
		31-40 1 mm Increment	10.0-100.0
Precision Grade FAS FASC FPASC FASK FASKB FASKM FSASCH	0.5 mm Increment 3.0-90.0	41-50 1 mm Increment	10.0-100.0
		51-60 1 mm Increment	10.0-100.0
		61-80* 1 mm Increment	10.0-100.0
		81-100* 1 mm Increment	10.0-100.0

(1) Machining Limits of Collar Thickness and Overall Length  
 $10.0 \leq L \leq 50.0 \rightarrow (D-V)/2 \geq 1$   
 $50.5 \leq L \leq 100.0 \rightarrow (D-V)/2 \geq 3$

(2) Machining Limits of Collar Thickness and Overall Length (Material: 01 Tool Steel)  
 $4 \leq D \leq 10 \rightarrow V \leq D-2$   
 $10.5 \leq D \leq 30 \rightarrow V \leq D-4$   
 $31 \leq D \leq 60 \rightarrow V \leq D-6$   
 $61 \leq D \leq 80 \rightarrow V \leq D-8$   
 $81 \leq D \leq 100 \rightarrow V \leq D-10$

**Part Number Example**  
**Part Number** - **V** - **D** - **L**  
**NCLCH** - V6 - D12 - L25.5  
**FNCLCH** - V10.5 - D19.5 - L50.5

**Part Number Alterations**  
**Part Number** - **V** - **D** - **L** - **(VKC)**  
**FNCLBH** - V10.5 - D30 - L30.5 - VKC

Alterations	Code	Spec.										
I.D. Tolerance	VKC	Changes the I.D. Tolerance to H7. <b>Ordering Code:</b> VKC Machining Conditions (1) $6 \leq D \leq 40$ $V \geq 3$ $L \leq 40$ (2) When $V < 5$ , $L \leq V \times 4$ (3) When $V \geq 5$ , $L \leq V \times 3$ Thickness Conditions										
		<table border="1" style="font-size: x-small; border-collapse: collapse;"> <thead> <tr> <th>D</th> <th>D-V</th> </tr> </thead> <tbody> <tr><td>6-15</td><td>D-V<math>\geq</math>3</td></tr> <tr><td>15.5-18</td><td>D-V<math>\geq</math>4</td></tr> <tr><td>18.5-20</td><td>D-V<math>\geq</math>5</td></tr> <tr><td>21-40</td><td>D-V<math>\geq</math>6</td></tr> </tbody> </table>	D	D-V	6-15	D-V $\geq$ 3	15.5-18	D-V $\geq$ 4	18.5-20	D-V $\geq$ 5	21-40	D-V $\geq$ 6
D	D-V											
6-15	D-V $\geq$ 3											
15.5-18	D-V $\geq$ 4											
18.5-20	D-V $\geq$ 5											
21-40	D-V $\geq$ 6											

(1) Not available for FSASCH.  
 (2) D50.5-D75.0 are not available for FAS, FASC, FPASC, FASK, FASKB, FASKM, and FSASCH.  
 (3) D75.1-D100.0 are not available for FNCSK, FNCSKB, FNCSKM, FAS, FASC, FPASC, FASK, FASKB, FASKM, and FSASCH.