

Metal Collars

Flanged, Standard / Precision Grade with Configurable Dimensions

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RoHS10

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

Type		Material	Surface Treatment	Hardness
Standard	Configurable			
—	FTCLS	1018 Carbon Steel or Equivalent	—	—
—	FTCLC	1045 Carbon Steel or Equivalent	Black Oxide	—
—	FTCLMC		Electroless Nickel Plating	
TCLB	FTCLB	1045 Carbon Steel or Equivalent	Black Oxide	—
TCLM	FTCLM			
—	FTCLBB	C3604 Brass (JIS)	—	—
TCLA	FTCLA	2017 Aluminum Alloy	Clear Anodize	—
—	FTCLAB		Black Anodize	
TCLSS	FTCLSS	304 Stainless Steel	—	—
—	FTCLCH	1045 Carbon Steel or Equivalent	Black Oxide	45–50 HRC min.
—	FTCLBH		Electroless Nickel Plating	
—	FTCLSK	O1 Tool Steel	—	55 HRC min.
—	FTCLSH	440C or 420 Stainless Steel	—	45–50 HRC min.

Standard Type
Standard Grade

Dimension Configurable Type
Standard Grade

Precision Grade

Circumference C0.5 or less

Standard Flange (Standard Grade)

Part Number	Type	V	D Selection	L 0.1 mm Increment
2	TCLB TCLM TCLA TCLSS	5	6 8 10	10.0–16.0
3		5 6 8 10 12		
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 35 40 50		
12		15 16 20 25 30 35 40 50		
15		20 25 30 35 40 50 60		
16		20 25 30 35 40 50 60		
20	25 30 35 40 50 60			
25	30 35 40 50 60			
30	40 50 60			

Part Number	Type	V	L10.0–25.0	25.1–50.0	50.1–75.0	75.1–100.0
2	TCLB TCLM TCLA TCLSS	3	•	•	•	•
3		4	•	•	•	•
4		5	•	•	•	•
6		8	•	•	•	•
8		10	•	•	•	•
10		12	•	•	•	•
12		15	•	•	•	•
15		16	•	•	•	•
20		25	•	•	•	•
25		30	•	•	•	•

Part Number Example Part Number - D - L
 TCLB10 - 20 - 60.0

Configurable Dimensions (Standard Grade)

Part Number	V 0.5 mm Increment (V=3 or more)	D	H	T 1 mm Increment	L 0.1 mm Increment
FTCLS FTCLC FTCLB FTCLM FTCLBB FTCLA FTCLAB FTCLSS FTCLCH FTCLBH FTCLMH FTCLSK FTCLSH	Selection 2.0 2.6	4.0–10.0 0.5 mm Increment	6.0–20.0 0.5 mm Increment	1–20 T _s L-1 Ⓞ FTCLBB 2 _s T _s L-2	10.0–100.00
		10.5–20 0.5 mm Increment	12.5–30 0.5 mm Increment		
	21–30 1 mm Increment	23–40 1 mm Increment			
	31–40 1 mm Increment	33–50 1 mm Increment			
	41–50 1 mm Increment	43–60 1 mm Increment			
	51–60 1 mm Increment	53–70 1 mm Increment			
	0.5 mm Increment 3.0–55.0				

- Ⓞ D–V Machining Conditions
10.0≤L≤50.0 → (D–V)/2≥1
50.1≤L≤100.0 → (D–V)/2≥3V≤D–6
- Ⓞ D–V Machining Conditions Ⓞ H–D≥2 Ⓞ D/10≤L≤Vx8 (FTCLSK / FTCLBB)
4≤D≤10 → V_sD–2
10.5≤D≤30 → V_sD–4
31≤D≤60 → V_sD–6

Part Number Example Part Number - V - D - H - T - L
 FTCLB - V10.5 - D20 - H30 - T4 - L23.8

Metal Collars

Flanged, Standard / Precision Grade with Configurable Dimensions, *continued*

Configurable Dimensions (Precision Grade)

Part Number	V 0.5 mm Increment (V=3 or more)	D	H	T 0.5 mm Increment	L 0.1 mm Increment
FTCLMC FTCLMB FTCLMM FTCMSH	Selection 2.0 2.6 0.5 mm Increment 3.0–55.0	4.0–10.0 0.5 mm Increment	6.0–20.0 0.5 mm Increment	1.0–20.0	10.0–100.0
		10.5–20 0.5 mm Increment	12.5–30 0.5 mm Increment	2.0–20.0	
		21–30 1 mm Increment	23–40 1 mm Increment	3.0–20.0	
		31–40 1 mm Increment	33–50 1 mm Increment		
		41–50 1 mm Increment	43–60 1 mm Increment		
		51–60 1 mm Increment	53–70 1 mm Increment		

Ⓞ D–V Machining Conditions
4≤D≤10 → V_sD–2
10.5≤D≤30 → V_sD–4
31≤D≤60 → V_sD–6

Ⓞ H–D≥2

Ⓞ T_sL–1

Ⓞ D/10≤L≤Vx8

Part Number Example Part Number - V - D - H - T - L
 FTCLMB - V10.5 - D20 - H30 - T4 - L23.8

Standard Grade
Part Number Alterations Part Number - V - D - H - T - L - (TCB / TCC / TCD / TCE / CC / VM / (VMA) / MC / (WMC) / SLC / VKC)
 FTCLB - V10.5 - D20 - H30 - T4 - L23.8 - TCB

Precision Grade
Part Number Alterations Part Number - V - D - H - T - L - (TSA / TSB / TSC / TSD / TSE / CC / VM / (VMA) / MC / (WMC) / SLC / VKC)
 FTCLMB - V10.5 - D20 - H30 - T4 - L23.8 - TSB

Ⓞ Not available for Standard Type. Ⓞ Not available for Anodized Products. Ⓞ Not available for the Hardened Products. (Products with hardness indications)

Alterations	Negative Tolerance	Positive Tolerance	Zero Negative Tolerance	Zero Positive Tolerance
Code TCB Changes Shoulder Thickness Tolerance (T). T - 0.1 - 0.3 Ordering Code: TCB	Code TCC Changes Shoulder Thickness Tolerance (T). T + 0.3 + 0.1 Ordering Code: TCC	Code TCD Changes Shoulder Thickness Tolerance (T). T 0 - 0.2 Ordering Code: TCD	Code TCE Changes Shoulder Thickness Tolerance (T). T + 0.2 0 Ordering Code: TCE	

Alterations	Shoulder Thickness Tolerance	Negative Tolerance	Positive Tolerance	Zero Negative Tolerance	Zero Positive Tolerance
Code TSA Changes Shoulder Thickness Tolerance (T). T ± 0.025 Ordering Code: TSA	Code TSB Changes Shoulder Thickness Tolerance (T). T - 0.01 - 0.06 Ordering Code: TSB	Code TSC Changes Shoulder Thickness Tolerance (T). T + 0.06 + 0.01 Ordering Code: TSC	Code TSD Changes Shoulder Thickness Tolerance (T). T 0 - 0.05 Ordering Code: TSD	Code TSE Changes Shoulder Thickness Tolerance (T). T + 0.05 0 Ordering Code: TSE	

Alterations	C Chamfering (1-One Side)	Tapping	Set Screw Hole Alteration (1-Set 2-Set)	Slitting	Inner Diameter Tolerance																																																																																	
Code CC Chamfers C plane. Ordering Code: CC1.5 Ⓞ CC = 0.5 mm Increment Ⓞ CC < (D–V)/2–0.5	Code VM (Coarse) VMA (Fine) Adds a tapped hole (Through). Ordering Code: Specify VM4 V instead of VM / VMA. Ex.: FTCLS-VMA4-D10-H13-T18 Ⓞ L _s Mx8 <table border="1" style="font-size: small;"> <tr><th>Tapped Hole Dia. VM / VMA</th><th>VM Pitch (Coarse)</th><th>VMA Pitch (Fine)</th><th>L max</th></tr> <tr><td>4</td><td>0.7</td><td>0.5</td><td>20</td></tr> <tr><td>5</td><td>0.8</td><td>0.5</td><td>30</td></tr> <tr><td>6</td><td>1.0</td><td>0.75</td><td>35</td></tr> <tr><td>8</td><td>1.25</td><td>1.0</td><td>40</td></tr> <tr><td>10</td><td>1.5</td><td>1.0</td><td>50</td></tr> <tr><td>12</td><td>1.75</td><td>1.0</td><td>55</td></tr> <tr><td>16</td><td>2.0</td><td>1.5</td><td>90</td></tr> <tr><td>18</td><td>2.0</td><td>1.5</td><td>100</td></tr> <tr><td>20</td><td>2.5</td><td>1.5</td><td>100</td></tr> </table>	Tapped Hole Dia. VM / VMA	VM Pitch (Coarse)	VMA Pitch (Fine)	L max	4	0.7	0.5	20	5	0.8	0.5	30	6	1.0	0.75	35	8	1.25	1.0	40	10	1.5	1.0	50	12	1.75	1.0	55	16	2.0	1.5	90	18	2.0	1.5	100	20	2.5	1.5	100	Code MC / WMC Adds a tapped hole (coarse thread) at D part. Ordering Code: MC3 WMC5 Ⓞ Condition of thickness (D–V)/2: as table below. Ⓞ L–T≥MC / WMC + 2 Ⓞ MC / WMC=Select from table below. <table border="1" style="font-size: small;"> <tr><th>MC / WMC</th><th>(D–V)/2</th></tr> <tr><td>3 4</td><td>3 or More</td></tr> <tr><td>5 6 8</td><td>5 or More</td></tr> <tr><td>10 12</td><td>8 or More</td></tr> </table>	MC / WMC	(D–V)/2	3 4	3 or More	5 6 8	5 or More	10 12	8 or More	Code SLC Adds a slit. Ordering Code: SLC Ⓞ Condition of thickness (D–V)/2: as table below. Ⓞ Slit width is fixed. <table border="1" style="font-size: small;"> <tr><th>Outer Dia. D</th><th>SLC</th><th>(D–V)/2</th></tr> <tr><td>10.0–20.0</td><td>1</td><td>5 or Less</td></tr> <tr><td>20.5–40</td><td>2</td><td>10 or Less</td></tr> <tr><td>41–</td><td>3</td><td>20 or Less</td></tr> </table> Ⓞ D, V and L Dimension tolerances are the values before alteration. Ⓞ They may change after alteration depending on materials.	Outer Dia. D	SLC	(D–V)/2	10.0–20.0	1	5 or Less	20.5–40	2	10 or Less	41–	3	20 or Less	Code VKC Changes the inner diameter tolerance to H7. Ordering Code: VKC Machining Conditions Ⓞ D≥6 V≥3 L≤Vx5 <table border="1" style="font-size: small;"> <tr><th>D</th><th>D–V</th></tr> <tr><td>6–10</td><td>D–V_s2</td></tr> <tr><td>10.5–20</td><td>D–V_s3</td></tr> <tr><td>21–30</td><td>D–V_s6</td></tr> <tr><td>31–40</td><td>D–V_s8</td></tr> <tr><td>41–50</td><td>D–V_s10</td></tr> <tr><td>51–60</td><td>D–V_s12</td></tr> <tr><td>61–70</td><td>D–V_s14</td></tr> <tr><td>71–80</td><td>D–V_s16</td></tr> <tr><td>81–90</td><td>D–V_s18</td></tr> <tr><td>91–100</td><td>D–V_s20</td></tr> </table>	D	D–V	6–10	D–V _s 2	10.5–20	D–V _s 3	21–30	D–V _s 6	31–40	D–V _s 8	41–50	D–V _s 10	51–60	D–V _s 12	61–70	D–V _s 14	71–80	D–V _s 16	81–90	D–V _s 18	91–100	D–V _s 20
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