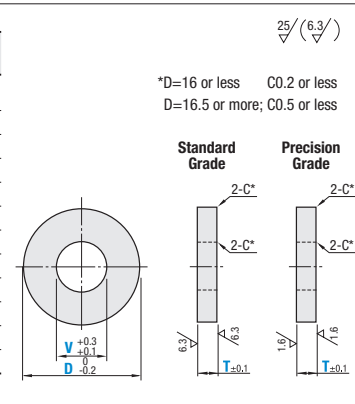


Metal Washers

Standard / Precision Grade with Configurable Dimensions



Part Number		Material	Surface Treatment
Standard Grade	Precision Grade		
FWS	FWAS	1018 Carbon Steel or Equivalent	—
FWSSC	FWASC	1045 Carbon Steel or Equivalent	—
FWSSB	FWASB		Black Oxide
FWSSM	FWASM		Electroless Nickel Plating
FWSSR	FWASR		Low Temp. Black Chrome Plating
FWSA	FWASA	2017 Aluminum Alloy	—
FWSSA	FWASSA		Clear Anodize
FWSSAB	FWASSAB		Black Anodize
FWSBB	FWASBB		—
FWSSS	FWASSS	Brass (JIS C36000 Brass)	—
FWSSSR	FWASSSR	304 Stainless Steel	—
FWSSSR	FWASSSR		Low Temp. Black Chrome Plating
FWSUS	FWASUS	316 Stainless Steel	—



Standard Grade

Part Number	D	V	T
		Select V0, 2.0, 2.6, or V3.0-90.0 in 0.5mm Increments	0.1 mm Increment
FWS FWSSC FWSSB FWSSM FWSSR FWSA FWSSA FWSSAB FWSBB FWSSS FWSSSR FWSUS	4.0-10.0 0.5 mm Increment	0 No Hole Machining	1.0-10.0
	10.5-20.0 0.5 mm Increment		
	21-30 1 mm Increment		
	31-40* 1 mm Increment		
	41-50* 1 mm Increment		
	51-60* 1 mm Increment		
	61-80* 1 mm Increment	2.0	5.0-10.0
81-100* 1 mm Increment	2.6		
		0.5 mm Increment 3.0-90.0	

- * Not available for FWSUS.
- Material: 2017 Aluminum Alloy, 316 Stainless Steel, Brass → T≥2
- D / V Machining Conditions
D≤60 → V≤D-2
D≥61 → V≤D-4
- D / V Machining Conditions of Material 2017 Aluminum Alloy
4≤D≤10 → V≤D-2
10.5≤D≤30 → V≤D-4
31≤D≤60 → V≤D-6
61≤D≤80 → V≤D-8
81≤D≤100 → V≤D-10

Part Number Example
FWSSC - D71 - V50.0 - T10.0

Metal Washers

Standard / Precision Grade with Configurable Dimensions, *continued*

Precision Grade

Part Number	D	V	T
		0.5 mm Increment (V 3 or more)	0.1 mm Increment
FWAS FWASC FWASB FWASM FWASR FWASA FWASSA FWASSR FWASU	4.0-10.0 0.5 mm Increment	0 No Hole Machining	1.0-10.0
	10.5-20.0 0.5 mm Increment		
	21-30 1 mm Increment		
	31-40* 1 mm Increment		
	41-50* 1 mm Increment		
	51-60* 1 mm Increment		
	61-80** 1 mm Increment		
81-100** 1 mm Increment	2.6	5.0-10.0	
		0.5 mm Increment 3.0-90.0	

- * Not available for FWASU
- ** Not available for FWASSA, FWASA, FWASB, FWASR, and FWASU.
- Material: 2017 Aluminum Alloy, 316 Stainless Steel → T≥2

Part Number Example
FWASB - D15.5 - V5.5 - T2.6

Part Number Alterations
FWASS - D20 - V10 - T5 - VKC

When both I.D./O.D. tolerance changes are specified, the concentricity is 00.02.

Alterations	Code	Spec.	Alterations	Code	Spec.	Alterations	Code	Spec.
Keyway Relief	KC	Adds a keyway relief. Ordering Code: KC Machining Conditions V≥8 Not available for D61-100	I.D. Tolerance	VKC	Changes the I.D. Tolerance to H7. Ordering Code: VKC Machining Conditions D≥6V≥3 Not applicable for FWSSAB	Outer diameter and inner diameter C chamfering additional machining (One location on each side)	CC WCC (OD) CV WCV (ID)	The C surface is added to the outer and inner diameters. Ordering Code: CC1.5/WCC2.5, CV1.5/WCV2.5 0.5mm Increments T-CC - 2WCC, CV - 2WCV≥5 D≤20 D≤16: (D-V)/2-0.7>CV · WCV, CC · WCC D≥16.5: (D-V)/2-1>CV · WCV, CC · WCC CC/WCC and CV/WCV cannot be used together.
One Flat	SC	Adds a flat. Ordering Code: SC10 SC = 1 mm Increment SC≤V/2+2 Not available for D4-8	O.D. Tolerance	DKC g6 HKC h7	Changes the O.D. Tolerance to g6 or h7. Ordering Code: DKC, HKC Machining Conditions When D≥43, T≥1.5. D≥6 Not applicable for FWSSAB	Inner diameter change (0.1mm unit Designation)	WVE	Ordering Code: WVE15.2 0.1mm Increments WVE>13 Cannot be used with VKC.
Two Flats	WSC	Adds two flats. Ordering Code: WSC10 WSC = 1 mm Increment WSC≥V+4 Not available for D4-8						