


Metal Washers

Standard / Precision Grade, Dimension Configurable



RoHS

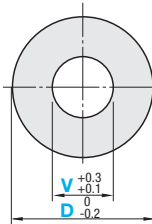
Part Number	Material	Surface Treatment
FWS	1018 Carbon Steel	-
FWSSC	1018 Carbon Steel	-
FWSSB	1045 Carbon Steel	Black Oxide
FWSSM	1045 Carbon Steel	Electroless Nickel Plating
FWSSR	1045 Carbon Steel	Low Temp. Black Chrome Plating
FWSSA	2017 Aluminum Alloy	Clear Anodize
FWSSAB	2017 Aluminum Alloy	Black Anodize
FWSBB	Brass (JIS C36000 Brass)	-
FWSSS	304 Stainless Steel	-
FWSSSR	304 Stainless Steel	Low Temp. Black Chrome Plating
FWStainless Steel	316 Stainless Steel	-

Ⓜ Hardened Type **P:102**

25 / (6.3 / 1.6)

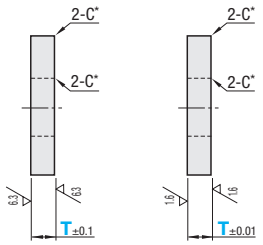
* D=16 or Less: C0.2 or Less
D=16.5 or More: C0.5 or Less

Standard Grade



V $\begin{matrix} +0.3 \\ 0 \\ +0.1 \end{matrix}$
D $\begin{matrix} +0.2 \\ 0 \end{matrix}$

Precision Grade



2-C°
2-C°
2-C°
T $\begin{matrix} +0.1 \\ 0 \end{matrix}$
T $\begin{matrix} +0.1 \\ 0 \end{matrix}$

Standard Grade

Part Number	D	V Select V0, 2.0, 2.6, or V3.0-90.0 in 0.5mm increments	T 0.1mm Increment	Unit Price																				
				FWS	FWSSC	FWSSB	FWSSM	FWSSR	FWSSA	FWSSAB	FWSBB	FWSSS	FWSSSR	FWStainless Steel										
FWS FWSSC FWSSB FWSSM FWSSR FWSSA FWSSAB FWSBB FWSSS FWSSSR FWStainless Steel	4.0~10.0 0.5mm Increment	0 (No Hole Machining) 2.0 (Selection) 2.6 (0.5mm Increment) 3.0 ? 90.0	1.0~2.0																					
			2.1~5.0																					
			5.1~10.0																					
	10.5~20.0 0.5mm Increment		1.0~2.0																					
			2.1~5.0																					
			5.1~10.0																					
	21~30 1mm Increment		1.0~2.0																					
			2.1~5.0																					
			5.1~10.0																					
	31~40 1mm Increment		1.0~2.0																					
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41~50 1mm Increment	1.0~2.0																							
	2.1~5.0																							
	5.1~10.0																							
51~60 1mm Increment	1.0~2.0																							
	2.1~5.0																							
	5.1~10.0																							
61~80 1mm Increment	5.0~10.0																							
81~100 1mm Increment	5.0~10.0																							

Ⓜ Material: 2017 Aluminum Alloy, 316 Stainless Steel, Brass → T≥2

Ⓜ / V Machining Conditions
D≤60 → V≤D-2
D≥61 → V≤D-4

Ⓜ / 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

Ordering Example **Part Number** - **D** - **V** - **T**
FWSSC - **D71** - **V50.0** - **T10.0**

Precision Grade

Part Number	D	V 0.5mm Increment (V3 or More)	T 0.1mm Increment	Unit Price												
				FWAS	FWASC	FWASB	FWASM	FWASR	FWASA	FWASS	FWASSR	FWASU				
FWAS FWASC FWASB FWASM FWASR FWASA FWASS FWASSR FWASU	4.0~10.0 0.5mm Increment	0 (No Hole Machining) 2.0 (Selection) 2.6 (0.5mm Increment) 3.0 ? 90.0	1.0~2.0													
			2.1~5.0													
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			5.1~10.0													
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			2.1~5.0													
			5.1~10.0													
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	2.1~5.0															
	5.1~10.0															
51~60 1mm Increment	1.0~2.0															
	2.1~5.0															
	5.1~10.0															
61~80 1mm Increment	5.0~10.0															
81~100 1mm Increment	5.0~10.0															

Ⓜ Material: 2017 Aluminum Alloy, 316 Stainless Steel → T≥2

Ⓜ / V Machining Conditions
D≤60 → V≤D-2
D≥61 → V≤D-4

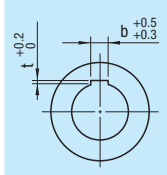

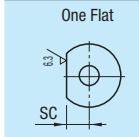

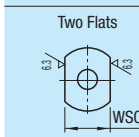
Ⓜ / V Machining Conditions of Material 2017 Aluminum Alloy
4≤D≤10 → V≤D-2
10.5≤D≤30 → V≤D-4
31≤D≤60 → V≤D-6
61≤D≤80 → V≤D-8
81≤D≤100 → V≤D-10

Ordering Example **Part Number** - **D** - **V** - **T** **Price** **Configure Online**
FWASB - **D15.5** - **V5.5** - **T2.6**

Days to Ship **Configure Online**

Alterations **Part Number** - **D** - **V** - **T** - **(KC, SC, WSC, VKC, DKC, HKC)** **Configure Online**
FWASS - **D20** - **V10** - **T5** - **VKC**

Ⓜ When both I.D. / O.D. tolerance changes are specified, the concentricity is 0.02.

Alterations	Code	Spec.	Price Adder	Alterations	Code	Spec.	Price Adder																						
	KC	Adds an keyway relief. [Ordering Code] KC Machining Conditions V≥8 Ⓜ Not available for D61~100.			VKC	Changes the I.D. Tolerance to H7. [Ordering Code] VKC Machining Conditions D≥6V≥3 Ⓜ Not applicable for FWSSAB																							
	SC	Adds a flat. [Ordering Code] SC10 SC=1mm Increment SC≥V/2+2 Ⓜ Not available for D4 ~ 8.			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																							
	WSC	Adds two flats. [Ordering Code] WSC10 WSC=1mm Increment WSC≥V+4 Ⓜ Not available for D4~8.				<table border="1"> <thead> <tr> <th>D</th> <th>D-V</th> </tr> </thead> <tbody> <tr><td>6-10</td><td>D-V2</td></tr> <tr><td>10.5-20</td><td>D-V3</td></tr> <tr><td>21-30</td><td>D-V6</td></tr> <tr><td>31-40</td><td>D-V8</td></tr> <tr><td>41-50</td><td>D-V10</td></tr> <tr><td>51-60</td><td>D-V12</td></tr> <tr><td>61-70</td><td>D-V14</td></tr> <tr><td>71-80</td><td>D-V16</td></tr> <tr><td>81-90</td><td>D-V18</td></tr> <tr><td>91-100</td><td>D-V20</td></tr> </tbody> </table>	D	D-V	6-10	D-V2	10.5-20	D-V3	21-30	D-V6	31-40	D-V8	41-50	D-V10	51-60	D-V12	61-70	D-V14	71-80	D-V16	81-90	D-V18	91-100	D-V20	
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