

Metal Washers

Hardened Type, Standard Grade / Precision Grade, T Dimension Selectable



Metal Washers

Hardened Type, Standard Grade / Precision Grade, Dimension Configurable

RoHS 10

Part Number		Material	Surface Treatment	Hardness
Standard Grade	Precision Grade			
WSSBH	WASBH	1045 Carbon Steel	Black Oxide	45~50HRC
WSSMH	WASMH		Electroless Nickel Plating	
WSSSH	WASSH	440C or 420 Stainless Steel	-	-

⚠ Depending on thickness and length, 1045 Carbon Steel Hardened Type may be less than 45HRC.
 ⚠ Stainless Steel Hardened Type (WSSSH, WASSH) may be discolored by hardening.

* For D=16 or Less: C0.2 or Less
D=20 or More: C0.5 or Less

Part Number	Type	D	V	T	Unit Price					
					Standard Grade			Precision Grade		
					WSSBH	WSSMH	WSSSH	WASBH	WASMH	WASSH
- Standard Grade - WSSBH WSSMH WSSSH	4	2		1 2						
	5	2 3		1 2						
	6	2 3 4		1 2						
	8	2 3 4 5 6		1 2 3 5						
	10	2 3 4 5 6 8		1 2 3 5						
	12	3 4 5 6 8 10		1 2 3 5						
	13	4 5 6 8 10		1 2 3 5						
	14	4 5 6 8 10		1 2 3 5						
	15	4 5 6 8 10 12		1 2 3 5						
	16	4 5 6 8 10 12		1 2 3 5						
- Precision Grade - WASBH WASMH WASSH	20	4 5 6 8 10 12 15 16		2 3 5						
	25	6 8 10 12 15 16 20		2 3 5						
	30	8 10 12 15 16 20 25		2 3 5						
	35	10 12 15 16 20 25		3 5 10						
	40	10 12 15 16 20 25 30		3 5 10						
	50	10 12 15 16 20 25 30		3 5 10						
	60	15 16 20 25 30		3 5 10						

Ordering Example: Part Number **WASBH14** - **V10** - **T5**

Days to Ship: [Configure Online](#)

Price: [Configure Online](#)

RoHS 10

Part Number		Material	Surface Treatment	Hardness
Standard Grade	Precision Grade			
FWSSCH	FWASCH	1045 Carbon Steel	-	45~50HRC
FWSSBH	FWASBH		Black Oxide	
FWSSMH	FWASMH	Electroless Nickel Plating	-	-
FWSSK	FWASK	O1 Tool Steel	-	55HRC~
FWSSKB	FWASKB		Black Oxide	
FWSSKM	FWASKM	Electroless Nickel Plating	-	-
FWSSSH	FWASSH	440C or 420 Stainless Steel	-	45~50HRC
FWSSSHR	FWASSHR		Low Temp. Black Chrome Plating	

⚠ Depending on thickness and length, 1045 Carbon Steel Hardened Type may be less than 45HRC.
 ⚠ Stainless Steel Hardened Type (FWSSSH, FWASSH) may be discolored by hardening.

* For D=16 or Less: C0.2 or Less
D=20 or More: C0.5 or Less

Part Number	D	V 0.5mm Increment (V3 or More)	T 0.1mm Increment	Unit Price						
				Standard Grade			Precision Grade			
				FWSSCH	FWSSBH FWSSMH	FWSSK FWSSKB FWSSKM FWSSSH	FWSSCH	FWSSBH FWSSMH	FWSSK FWSSKB FWSSKM FWSSSH	
- Standard Grade - FWSSCH FWSSBH FWSSMH FWSSK FWSSKB FWSSKM FWSSSH	4.0-10.0	0.5mm Increment	1.0-2.0							
			2.1-5.0							
			5.1-10.0							
	10.5-20.0	0.5mm Increment	0 (No Hole Machining)	1.0-2.0						
				2.1-5.0						
				5.1-10.0						
	21-30	1mm Increment	(Selection)	1.0-2.0						
				2.1-5.0						
	31-40	1mm Increment	2.0	1.0-2.0						
				2.1-5.0						
41-50	1mm Increment	2.6	1.0-2.0							
			2.1-5.0							
51-60	1mm Increment	3.0	1.0-2.0							
			2.1-5.0							
61-80	1mm Increment	90.0	1.0-2.0							
			2.1-5.0							
81-100	1mm Increment		5.0-10.0							

⚠ D / V Machining Conditions: D≤60 → V≤D-2, D≥61 → V≤D-4
 ⚠ D / V Machining Conditions of Material O1 Tool Steel: 4≤D≤10 → V≤D-2, 61≤D≤80 → V≤D-8, 10.5≤D≤30 → V≤D-4, 81≤D≤100 → V≤D-10, 31≤D≤60 → V≤D-6
 ⚠ No specification available for sizes without declaration of value.

Ordering Example: Part Number **FWSSKB** - **D71** - **V50.0** - **T10.0**

Days to Ship: [Configure Online](#)

Price: [Configure Online](#)

Alterations: Part Number **FWSSBH** - **D20** - **V10** - **T5** - **KC**

Alterations	Code	Spec.	Price Adder	Alterations	Code	Spec.	Price Adder																																				
Keyway Relief	KC	Adds a keyway relief. Ordering Code: KC Machining Conditions: V≥8 ⚠ Not available for D61-100.		One Flat	SC	Adds a flat. Ordering Code: SC10 SC=1mm increment SC≥V/2+2 ⚠ Not available for D4-8.																																					
		<table border="1"> <thead> <tr> <th>V</th> <th>b</th> <th>t</th> <th>D-V</th> </tr> </thead> <tbody> <tr><td>8-10.5</td><td>3</td><td>2.0</td><td>7 or More</td></tr> <tr><td>11-12.5</td><td>4</td><td>2.5</td><td>8 or More</td></tr> <tr><td>13-17.5</td><td>5</td><td>3.0</td><td>10 or More</td></tr> <tr><td>18-22.5</td><td>6</td><td>3.5</td><td>12 or More</td></tr> <tr><td>23-30.5</td><td>8</td><td>4.0</td><td>14 or More</td></tr> <tr><td>31-38.5</td><td>10</td><td>4.0</td><td>14 or More</td></tr> <tr><td>39-42.5</td><td>12</td><td>4.0</td><td>14 or More</td></tr> <tr><td>43-44.0</td><td>14</td><td>4.5</td><td>16 or More</td></tr> </tbody> </table>	V	b	t	D-V	8-10.5	3	2.0	7 or More	11-12.5	4	2.5	8 or More	13-17.5	5	3.0	10 or More	18-22.5	6	3.5	12 or More	23-30.5	8	4.0	14 or More	31-38.5	10	4.0	14 or More	39-42.5	12	4.0	14 or More	43-44.0	14	4.5	16 or More		Two Flats	WSC	Adds two flats. Ordering Code: WSC10 WSC=1mm increment WSC≥V+4 ⚠ Not available for D4-8.	
V	b	t	D-V																																								
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39-42.5	12	4.0	14 or More																																								
43-44.0	14	4.5	16 or More																																								
				Outer diameter and inner diameter C chamfering additional machining (One location on each side)	CC (WCC) (0D) CV (WCV) (0D)	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.																																					
				Inner diameter change (0.1mm unit Designation)	WVE	Ordering Code: WVE15.2 0.1mm Increments ⚠ WVE≥13 ⚠ T≥5 ⚠ Cannot be used with VKC.																																					