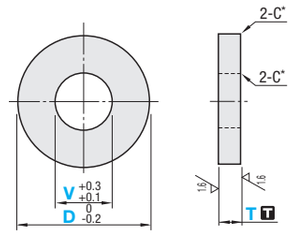
Metal Washer

Standard Grade / Precision Grade / High Precision Grade I.D. / O.D. Tolerance Selectable / Dimension Configurable

RoHS10

Part Number	M Material	S Surface Treatment	H Hardness
AWSC	S45C Equivalent	-	-
AWSB		Black Oxide	
AWSM		Electroless Nickel Plating	
AWSS	SUS304	-	
AWSH	SUS440C or 13Cr stainless	-	45~50HRC

Stainless Steel Hardened Type (AWSH) may be discolored due to hardening.



T	T Dimension Tolerance Selection Table		
A	±0.005	-	-
B	-0.1 -0.3	SB	-0.01 -0.03
C	+0.3 +0.1	SC	+0.03 +0.01
D	0 -0.2	SD	0 -0.02
E	+0.2 0	SE	+0.02 0

25 (1.6)

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

I.D./O.D. Tolerance Selectable, Dimension Configurable

Part Number	T Tolerance Selection	D	V 0.5mm Increment	T 0.1mm Increment	Unit Price: High Precision Grade - Tolerance A				Standard Grade - Tolerance B~E					Precision Grade - Tolerance SB~SE				
					AWSC	AWSB	AWSM	AWSH	AWSC	AWSB	AWSM	AWSS	AWSH	AWSC	AWSB	AWSM	AWSS	AWSH
AWSC AWSB AWSM AWSS AWSH	High Precision Grade A; Standard Grade B C D E; Precision Grade SB SC SD SE	5.0~10.0 0.5mm Increment	3.0~58.0	1.0~ 2.9														
				3.0~ 5.0														
				5.1~10.0														
		10.5~20.0 0.5mm Increment		1.0~ 2.9														
				3.0~ 5.0														
				5.1~10.0														
		21~30 1mm Increment		1.0~ 2.9														
				3.0~ 5.0														
				5.1~10.0														
		31~40 1mm Increment		1.0~ 2.9														
				3.0~ 5.0														
				5.1~10.0														
		41~50 1mm Increment		1.0~ 2.9														
				3.0~ 5.0														
				5.1~10.0														
		51~60 1mm Increment		1.0~ 2.9														
				3.0~ 5.0														
				5.1~10.0														

D≤60···V≤D-2 D≥61···V≤D-4 High Precision Grade (Tolerance A) is not available for AWSS.

Ordering Example

Part Number	-	T Tolerance Selection	-	D	-	V	-	T
AWSB	-	B	-	D20.0	-	V8.0	-	T5.0
AWSS	-	SB	-	D20.0	-	V8.0	-	T5.0

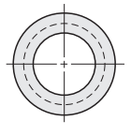
Metal Washer

Flanged

RoHS10

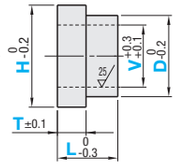
Part Number: Standard Grade	Part Number: Precision Grade	M Material	S Surface Treatment	H Hardness
FTCSS	-	Steel for General Structure	-	-
FTCC	FTCMC	S45C Equivalent	-	-
FTCB	FTCMB		Black Oxide	
FTCM	FTCMM		Electroless Nickel Plating	
FTCSK	-	SKS3 Equivalent	-	55HRC~
FTCSKB			Black Oxide	
FTCSKM			Electroless Nickel Plating	
FTCS	FTCMS	SUS440C or 13Cr stainless	-	45~50HRC

Stainless Steel Hardened Type (FTCS, FTCMS) may be discolored by hardening.



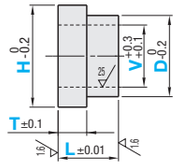
6.3 (1.6) (25)

Standard Grade



Circumference C0.5 or Less

Precision Grade



Circumference C0.5 or Less

Standard Grade / Precision Grade

Part Number: Standard Grade	Part Number: Precision Grade	D	H	V 0.5mm Increment (V3 or More)	T 0.1mm Increment	L 0.1mm Increment	Unit Price: Standard Grade FTCSS	FTCC	FTCB	FTCM	FTCSK	FTCSKB	FTCSKM	FTCS	Precision Grade FTCMC	FTCMB	FTCMM	FTCMS
FTCSS FTCC FTCB FTCM FTCSK FTCSKB FTCSKM FTCS	FTCMC FTCMB FTCMM FTCMS	5.0~9.0 (0.5mm Increment)	7.0~12.0 (0.5mm Increment)	(Selection) 2.0 2.6 (0.5mm Increment) 3.0~58.0	1.0~8.0	2.0~10.0												
		9.5~20.0 (0.5mm Increment)	11.5~25.0 (0.5mm Increment)															
		21~30 (1mm Increment)	23~40 (1mm Increment)															
		31~40 (1mm Increment)	33~50 (1mm Increment)															
		41~50 (1mm Increment)	43~60 (1mm Increment)															
		51~60 (1mm Increment)	53~70 (1mm Increment)															

Machining Conditions T≤L-1

D	H	V
For 5 ~ 20	D+2≤H≤Dx1.5	V≤D-2
For 21 ~ 40	D+2≤H≤Dx1.4	V≤D-4
For 41 ~ 60	D+2≤H≤Dx1.2	V≤D-6

Machining Conditions of Material SKS3 (FTCSK, FTCSKB, FTCSKM) 2≤T≤L-2

D	H	V
For 5 ~ 10	D+2≤H≤Dx1.4	V≤D-2
For 10.5 ~ 30		V≤D-4
For 31 ~ 60	D+2≤H≤Dx1.2	V≤D-6

Ordering Example

Part Number	-	D	-	H	-	V	-	T	-	L
FTCMS	-	D25	-	H30	-	V8.0	-	T2.0	-	L5.0

Alterations

Part Number	-	D	-	H	-	V	-	T	-	L	- (TCB, TCC, TCD, TCE, TSA, TSB, TSC, TSD, TSE, VKC, DKC, HKC)
FTCMM	-	D25	-	H30	-	V8.0	-	T2.0	-	L5.0	- TSC - VKC

When both I.D./O.D. tolerance changes are specified, the concentricity is Ø0.02. Not applicable to the Hardened Products.

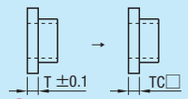
Alterations	Code	Spec.
I.D. Tolerance	VKC	Changes the I.D. Tolerance to H7. Ordering Code VKC. Machining Conditions: D≥6 V≥3

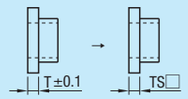
D	D-V
6~10	D-V≥2
10.5~20	D-V≥3
21~30	D-V≥6
31~40	D-V≥8
41~50	D-V≥10
51~60	D-V≥12

Alterations	Code	Spec.
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

D	D-V
6~10	D-V≥2
10.5~20	D-V≥3
21~30	D-V≥6
31~40	D-V≥8
41~50	D-V≥10
51~60	D-V≥12

Not applicable to the Hardened Products (FTCSK, FTCSKB, FTCSKM, FTCS, FTCMS).

Alterations	Code	Negative Tolerance	Positive Tolerance	Zero, Negative Tolerance	Zero, Positive Tolerance
Standard Grade T Tolerance		TCB	TCC	TCD	TCE
	 Applicable to Standard Grade.	Changes shoulder thickness tolerance (T). T -0.1 -0.3	Changes shoulder thickness tolerance (T). T +0.3 +0.1	Changes shoulder thickness tolerance (T). T 0 -0.2	Changes shoulder thickness tolerance (T). T +0.2 0
		Ordering Code TCB	Ordering Code TCC	Ordering Code TCD	Ordering Code TCE

Alterations	Code	Shoulder Thickness Tolerance	Negative Tolerance	Positive Tolerance	Zero, Negative Tolerance	Zero, Positive Tolerance
Precision Grade T Tolerance		TSA	TSB	TSC	TSD	TSE
	 Applicable to Precision Grade.	Changes shoulder thickness tolerance (T). T ±0.025	Changes shoulder thickness tolerance (T). T -0.01 -0.06	Changes shoulder thickness tolerance (T). T +0.06 +0.01	Changes shoulder thickness tolerance (T). T 0 -0.05	Changes shoulder thickness tolerance (T). T +0.05 0
		Ordering Code TSA	Ordering Code TSB	Ordering Code TSC	Ordering Code TSD	Ordering Code TSE