

Note that, for some of the types shown here, order might be unable to be received by the MISUMI Malaysia, Indonesia, and/or India offices.

Resin Washers / Resin Washer Bulk Packages

Standard / Dimension Configurable

When you need large quantities, Bulk Packages are more economical.

Pkg.	Type		Material	Color
	Dimension Selectable	Dimension Configurable		
PACK-WSJJ	WSJJ	FWSJJ	Polyacetal	White
-	WSJK	FWSJK		Black
PACK-WSJM	WSJM	FWSJM	MC Nylon Standard Grade	Blue
-	WSJW	FWSJW		Ivory
-	WSJD	FWSJD	MC Nylon Conductive Grade	Black
-	WSJT	FWSJT		CDR2 CDR6
-	WSJB	FWSJB	Bakelite	Paper Base Cloth Base
-	WSJN	FWSJN		Brown Light Brown
-	WSJF	FWSJF	Fluororesin	White
-	WSJP	FWSJP	PEEK	Gray
-	WSJE	FWSJE	Epoxy Glass	Green

RoHS Material Properties P.141

Sold by the package 1 package contains 10 pieces.

Part Number	Type	D	V Selection	T Selection	PACK-WSJJ				PACK-WSJM			
					Unit Price				Unit Price			
					1 ~ 4 pkg(s).	5-9	10-19	20-30	1 ~ 4 pkg(s).	5-9	10-19	20-30
PACK-WSJJ PACK-WSJM	4	2		2								
	5	2 3		2								
	6	2 3 4		2								
	8	3 4 5 6	2 3 5									
	10	3 4 5 6 8	2 3 5									
	12	4 5 6 8	2 3									
	15	6 8 10 12	2 3									
	20	6 8 10 12	2 3 5									

For package, minimum order unit is 1 pack.

For orders of 31 or more identical packages, please request a quotation.

Ordering Example **Part Number** - **V** - **T**
PACK-WSJJ4 - **2** - **2**

Dimension Selectable

No specification available for those without value.

Part Number	Type	D	V Selection	T Selection	Unit Price													
					WSJJ WSJK	WSJM WSJW	WSJD	WSJT	WSJB	WSJN	WSJF	WSJP	WSJE					
WSJJ WSJK WSJM WSJW WSJD WSJT WSJB WSJN WSJF WSJP WSJE	4	2		2														
	5	2 3		2														
	6	2 3 4		2														
	8	2 3 4 5 6	2 3 5															
	10	2 3 4 5 6 8	2 3 5															
	12	3 4 5 6 8 10	2 3 5															
	13	4 5 6 8 10	2 3 5															
	14	4 5 6 8 10	2 3 5															
	15	4 5 6 8 10 12	2 3 5															
	16	4 5 6 8 10 12	2 3 5															
	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** - **V** - **T**
WSJJ6 - **4** - **2**

Dimension Configurable

No specification available for those without value.

Part Number	D	V	T	Unit Price															
				FWSJJ FWSJK	FWSJM FWSJW	FWSJD	FWSJT	FWSJB	FWSJN	FWSJF	FWSJP	FWSJE							
FWSJJ FWSJK FWSJM FWSJW FWSJD FWSJT FWSJB FWSJN FWSJF FWSJP FWSJE	4.0-10 (0.5mm Increment)	0.5mm Increment (V3 or More)	0.5mm Increment	2.0- 5.0															
	10.5-20 (0.5mm Increment)			2.0- 5.0															
	21-30 (1mm Increment)			2.0- 5.0															
	31-40 (1mm Increment)			2.0- 5.0															
	41-50 (1mm Increment)			2.0- 5.0															
	51-60 (1mm Increment)			2.0- 5.0															
	61-80 (1mm Increment)			2.0- 5.0															
	81-100 (1mm Increment)			2.0- 5.0															

Ordering Example **Part Number** - **D** - **V** - **T**
FWSJN - **D10** - **V5** - **T5.5**

Alterations **Part Number** - **D** - **V** - **T** - **(VKC, TKC)**
WSJJ6 - **4** - **2** - **VKC**
FWSJM - **D10** - **V4** - **T2** - **TKC**

Alterations are applicable to WSJJ, WSJM, FWSJJ and FWSJM only.

Alterations	I.D. Tolerance Change	Thickness Tolerance Change
Code	VKC	TKC
Spec.	Changes the I.D. tolerance to $+0.1/0$. <small>Ordering Code</small> VKC When $D \leq 50$, $D-V \geq 6$ When $51 \leq D \leq 80$, $D-V \geq 10$ When $81 \leq D \leq 100$, $D-V \geq 16$	Changes the Thickness Tolerance to ± 0.05 . <small>Ordering Code</small> TKC When $D \leq 50$, $D-V \geq 6$ When $D \leq 80$, $D-V \geq 10$ When $D \leq 100$, $D-V \geq 16$

Extra Thin Resin Washers / Extra Thin Resin Washer Bulk Packages

Extra thin washer with excellent low friction and abrasion resistance.

Extra Thin Resin Washers- Abrasion Resistant

RoHS

SWSPS

Material: Polyslider® (Nylon Resin)
Polyslider® is a registered trademark of ASAHI POLYSLIDER COMPANY, LIMITED.

Part Number	Type	D	V				T	Unit Price	
			8	10	12	14			
SWSPS	8	0	3	4	5		0.13 0.25 0.5 1.0		
	10	0	4	5	6				
	12	0	4	5	6	8			
	14	0	5	6	8	10			
	15	0	5	6	8	10		12	
	16	0	6	8	10	12			
	20	0	6	8	10	12	15	16	
	25	0	6	8	10	12	15	16	20

Tolerance

Thickness (T) Tolerance	0.13	0.25	0.5	1.0
	±0.013	±0.025	±0.05	±0.1

Comparison Table

Item	Polyslider®	Fluororesin
Abrasion Resistance	○	○
Compression Strength	○	×
Sliding Properties	○	○
Characteristics	Crush and abrasion resistant.	Low friction and not crush resistant.

Property Data

Item	Unit	Value
Tensile Strength	MPa	98
Elongation	%	60
Friction Coefficient	μ	0.16~0.4
Insulation Resistance	kV/mm	45

Example

Extra Thin Resin Washers- Polyacetal, Fluororesin, Polycarbonate

RoHS

Type	Washer Washer Package	Material	Color	Thickness (T) Tolerance				
				0.1	0.2	0.3	0.5	1.0
SWSJJ	PACK-SWSJJ	Polyacetal	White	-	±0.03	±0.04	±0.07	
SWSPT	PACK-SWSPT	Fluororesin	White	±0.01	±0.02	±0.03	±0.05	±0.10
SWSPS	PACK-SWSPP	Polycarbonate	Transparent					

When you need large quantities, Bulk Packages are more economical. ● PACK-SWS□□ contains 10 pieces.

Part Number	Type	D	V Selection				T Selection	Unit Price			
			8	10	12	14		PACK-SWSJJ	PACK-SWSPT	SWSJJ	SWSPT
PACK-SWSJJ PACK-SWSPT SWSJJ SWSPT	8	0	3	4			*0.1 0.2 0.3 0.5 1.0				
	10	0	3	4	5	6					
	12	0	4	5	6	8					
	14	0	4	5	6	8		10			
	15	0	4	5	6	8		10	12		
	16	0	4	5	6	8		10	12		
	20	0	5	6	8	10		12	15	16	
	25	0	6	8	10	12		15	16	20	
	30	0	8	10	12	15		16	20	25	
	35	0	10	12	15	16		20	25	30	
40	0	10	12	15	16	20	25	30			
50	0	12	15	16	20	25	30	35	40		

*PACK-SWSJJ and SWSJJ are not available for T0.1.

Part Number	Type	D	V Selection				T Selection	Unit Price		
			8	10	12	14		PACK-SWSPP	SWSPS	
PACK-SWSPP SWSPS	8	0	3	4			0.1 0.2 0.3 0.5 1.0			
	10	0	3	4	5	6				
	12	0	4	5	6	8				
	15	0	5	6	8	10				
	16	0	5	6	8	10		12		
	20	0	6	8	10	12		15	16	
	25	0	6	8	10	12		15	16	
	30	0	8	10	12	15		16	20	
	35	0	10	12	15	16		20	25	30
	40	0	10	12	15	16		20	25	30
50	0	30	35	40						

For package, minimum order unit is 1 pack.

Ordering Example

Part Number	-	V	-	T
PACK-SWSJJ8	-	3	-	0.5
SWSPS8	-	3	-	0.5

Resin Washer

Flanged Solid / Flanged

RoHS

Flanged Solid	Flanged	Material	Color
FWNJJ	FWHJ	Polyacetal	White
FWNJK	FWHJK		Black
FWNJK	FWHJK	MC Nylon Standard Grade	Blue
FWNJM	FWHJM		Ivory
FWNJV	FWHJV	MC Nylon Conductive Grade	Black
FWNJD	FWHJD	CDR2	Brown
FWNJT	FWHJT	CDRE	Light Brown
FWNJB	FWHJB	Bakelite	Gray
FWNJV	FWHJV	Paper Base	Light Brown
FWNJV	FWHJV	Fluororesin	White
FWNJV	FWHJV	PEEK	Gray
FWNJE	FWHJE	Epoxy Glass	Green

Material Properties P.141

Flanged Solid

Flanged

Ordering Example

Part Number	-	D	-	V	-	H	-	T
FWNJV	-	D19.5	-	V11.5	-	H10.5	-	T25.0

Flanged Solid

Part Number	D	V 0.5mm Increment	H 0.5mm Increment	T 0.5mm Increment	Unit Price																			
					FWNJJ	FWNJK	FWNJV	FWNJD	FWNJT	FWNJB	FWNJV	FWNJV	FWNJV	FWNJE										
FWNJJ	6.0-10.0 (0.5mm Increment)	2.0-8.0		3.0-10.0																				
					10.5-20																			
					20.5-30																			
FWNJK	10.5-20 (0.5mm Increment)	4.0-18.0	2.0-28.0	3.0-10.0																				
					10.5-20																			
					20.5-30																			
FWNJV	21-30 (1mm Increment)	10.0-28.0		3.0-10.0																				
					10.5-20																			
					20.5-30																			
FWNJD	31-40 (1mm Increment)	15.0-38.0	2.0-38.0	5.0-10.0																				
					10.5-20																			
					20.5-30																			
FWNJT	41-50 (1mm Increment)	20.0-48.0		10.0-20.0																				
					20.5-30																			
					30.5-40																			
FWNJB	51-60 (1mm Increment)	30.0-58.0		10.0-20.0																				
					20.5-30																			
					30.5-40																			
FWNJV			2.0-48.0	40.5-50																				
					10.0-20.0																			
					20.5-30																			
FWNJV				40.5-50																				
					10.0-20.0																			
					20.5-30																			
FWNJE				40.5-50																				
					10.0-20.0																			
					20.5-30																			


Machining Conditions: V≤D-2, V×3≥T-H≥1, V≤2.5→T≤10, V=3.0→T≤20

Flanged

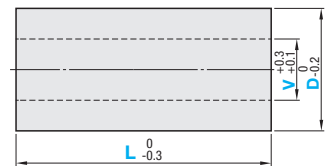
Part Number	D	H	V 0.5mm Increment (V3 or More)	T 0.5mm Increment	L 0.5mm Increment	Unit Price																		
						FWHJ	FWHJK	FWHJM	FWHJV	FWHJD	FWHJT	FWHJB	FWHJV	FWHJV	FWHJE									
FWHJ	4.0-10 (0.5mm Increment)	6.0-20 (0.5mm Increment)		1.0-8.0	2.0-5.5																			
						6.0-10.0																		
						2.0-5.5																		
FWHJK	10.5-20 (0.5mm Increment)	12.5-30 (0.5mm Increment)		1.0-8.0	2.0-5.5																			
						6.0-10.0																		
						2.0-5.5																		
FWHJM	21-30 (1mm Increment)	23-40 (1mm Increment)		1.0-8.0	6.0-10.0																			
						2.0-5.5																		
						6.0-10.0																		
FWHJV	31-40 (1mm Increment)	33-50 (1mm Increment)		1.0-8.0	2.0-5.5																			
						6.0-10.0																		
						2.0-5.5																		
FWHJD	41-50 (1mm Increment)	43-60 (1mm Increment)		1.0-8.0	6.0-10.0																			
						2.0-5.5																		
						6.0-10.0																		
FWHJT	51-60 (1mm Increment)	53-70 (1mm Increment)		1.0-8.0	2.0-5.5																			
						6.0-10.0																		
						2.0-5.5																		
FWHJB					6.0-10.0																			
						2.0-5.5																		
						6.0-10.0																		
FWHJV					2.0-5.5																			
						6.0-10.0																		
						2.0-5.5																		
FWHJV					6.0-10.0																			
						2.0-5.5																		
						6.0-10.0					</													

Resin Collar

Standard



Dimension Selectable	Dimension Configurable	Material	Color
CLJJ	FCLJJ	Polyacetal	White
CLJK	FCLJK		Black
CLJM	FCLJM	MC Nylon Standard Grade	Blue
CLJW	FCLJW		Ivory
CLJD	FCLJD	MC Nylon Conductive Grade	Black
CLJT	FCLJT		
CLJB	FCLJB	Bakelite	Brown
CLJN	FCLJN		Light Brown
CLJF	FCLJF	Fluororesin	White
CLJP	FCLJP		Gray
CLJE	FCLJE	Epoxy Glass	Green



6.3

Material Properties P.141

Part Number		D	L	Unit Price										
Type	V	Selection	0.5mm Increment	CLJJ	CLJK	CLJM	CLJW	CLJD	CLJB	CLJN	CLJT	CLJF	CLJP	CLJE
2	3	(4) 5 6 8 10 11 12	(4)→V2 only	10.0 - 25.0										
				25.5 - 30.0										
4	5	(6) 8 10 11 12 13 14 15 16 20	(6)→V4 only	10.0 - 25.0										
				25.5 - 50.0										
6		8 10 11 12 13 14 15 16 20 25		10.0 - 25.0										
				25.5 - 50.0										
8		10 11 12 13 14 15 16 20 25 30		10.0 - 25.0										
				25.5 - 50.0										
10		12 13 14 15 16 20 25 30		10.0 - 25.0										
				25.5 - 50.0										
12		15 16 20 25 30		10.0 - 25.0										
				25.5 - 50.0										
15		20 25 30		10.0 - 25.0										
				25.5 - 50.0										
16		30	(25)→V20 only	10.0 - 25.0										
				25.5 - 50.0										
20		35 40 50		10.0 - 25.0										
				25.5 - 50.0										
25		60		10.0 - 25.0										
				25.5 - 50.0										
30		40 50		10.0 - 25.0										
				25.5 - 50.0										
		60		10.0 - 25.0										
				25.5 - 50.0										

No specification available for those without value.

Ordering Example: Part Number - D - L
CLJJ10 - 16 - 20.0

Part Number	Dimension Configurable		Unit Price												
	V	D	L	FCLJJ	FCLJK	FCLJM	FCLJW	FCLJD	FCLJB	FCLJN	FCLJT	FCLJF	FCLJP	FCLJE	
FCLJJ FCLJK FCLJM FCLJW FCLJD FCLJT FCLJB FCLJN FCLJF FCLJP FCLJE	0 (No Hole Machining)	4.0-10 (0.5mm Increment)	10.0- 25.0												
		10.5-20 (0.5mm Increment)	25.5- 50.0												
	2.0	21-30 (1mm Increment)	10.0- 25.0												
			25.5- 50.0												
	2.6	31-40 (1mm Increment)	10.0- 25.0												
			25.5- 50.0												
0 (No Hole Machining)	3.0-55.0 (0.5mm Increment)	10.0- 25.0													
		25.5- 50.0													
	41-50 (1mm Increment)	10.0- 25.0													
		25.5- 50.0													
	51-60 (1mm Increment)	10.0- 25.0													
		25.5- 50.0													
61-80 (1mm Increment)	10.0- 25.0														
	25.5- 50.0														
3.0-90.0 (0.5mm Increment)	81-100 (1mm Increment)	10.0- 25.0													
		25.5- 50.0													

Machining Conditions: L ≤ Vx8. No specification available for those without value.

Ordering Example: Part Number - V - D - L
FCLJB - V20 - D30 - L18.5

Alterations: Dimension Selectable (Part Number - D - L - (CC, WCC, AC...etc.))
CLJJ12 - 30 - 45 - AC10 - Q15

Dimension Configurable (Part Number - V(VM, VMA) - D - L - (CC, WCC, AC...etc.))
FCLJP - VM10 - D35 - L60 - CC2.5

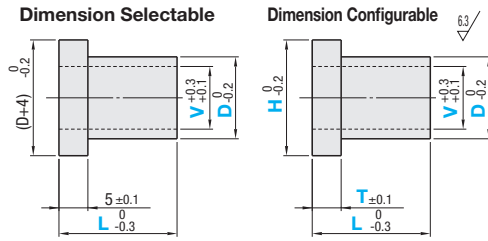
Alterations	Code	Spec.	Alterations	Code	Spec.
	VKC	Changes the I.D. tolerance to +0.1 / 0. Applicable to CLJJ, CLJM, FCLJJ and FCLJM only. Ordering Code: VKC L ≤ 50 When D ≤ 50, D-V ≥ 6 When D ≤ 80, D-V ≥ 10 When D ≤ 100, D-V ≥ 16		VM VMA	Adds a tapped hole (through). Ordering Code: VM4: V should be specified as VM or VMA. Ex) FCLJJ-VM4-D10-L18 For machining limits of tap diameter and full length (L), see the table on the right. Tap dia. ≤ D / 2
	LKC	Changes the overall length tolerance to ±0.05. Applicable to CLJJ, CLJM, FCLJJ and FCLJM only. Ordering Code: LKC L ≤ 50 When D ≤ 50, D-V ≥ 6 When D ≤ 80, D-V ≥ 10 When D ≤ 100, D-V ≥ 16		MC WMC	Adds a tapped hole (coarse thread) at D part. Ordering Code: MC3 WMC5 For the condition of thickness (D-V) / 2, see the table below. L ≥ MC, WMC × 3 MC, WMC = Select from the table below.
	CC WCC	Chamfers C plane. Ordering Code: CC1.5 WCC2.5 CC, WCC = 0.5mm Increment CC, WCC < (D-V) / 2		SLC	Adds a slit. Ordering Code: SLC For the condition of thickness (D-V) / 2, see the table below. Slit width is fixed. I.D. / O.D. tolerances are the values before alteration. They may change after alteration depending on materials.

Resin Collar

Flanged



Dimension Selectable	Dimension Configurable	Material	Color
CLJHJ	FCLJHJ	Polyacetal	White
CLJHK	FCLJHK		Black
CLJHM	FCLJHM	MC Nylon	Blue
CLJHW	FCLJHW	Standard Grade	Ivory
CLJHD	FCLJHD	MC Nylon	Black
CLJHT	FCLJHT	Conductive Grade	
CLJHB	FCLJHB	Bakelite	Brown
CLJHN	FCLJHN		Light Brown
CLJHF	FCLJHF	Fluororesin	White
CLJHP	FCLJHP	PEEK	Gray
CLJHE	FCLJHE	Epoxy Glass	Green



Material Properties P.141

Dimension Selectable

Part Number	Type	V	D Selection	L 0.5mm Increment	Unit Price								
					CLJHJ CLJHK	CLJHM CLJHW	CLJHD	CLJHB	CLJHN	CLJHT	CLJHF	CLJHP	CLJHE
2	3	(4) 5 6 8 10	(4)→V2 only	10.0-25.0									
				25.5-30.0									
4	5	(6) 8 10 11 12 13 14 15 16 20 25	(6)→V4 only	10.0-25.0									
				25.5-50.0									
6	8	8 10 11 12 13 14 15 16 20 25		10.0-25.0									
				25.5-50.0									
8	10	10 11 12 13 14 15 16 20 25 30		10.0-25.0									
				25.5-50.0									
10	12	12 13 14 15 16 20 25 30		10.0-25.0									
				25.5-50.0									
12	15	15 16 20 25 30		10.0-25.0									
				25.5-50.0									
15	16	20 25 30		10.0-25.0									
				25.5-50.0									
16	60	35 40 50		10.0-25.0									
				25.5-50.0									
18	60	35 40 50		10.0-25.0									
				25.5-50.0									
20	60	(25) 30 (25)→V20 only		10.0-25.0									
				25.5-50.0									
25	60	35 40 50		10.0-25.0									
				25.5-50.0									
30	60	40 50		10.0-25.0									
				25.5-50.0									
30	60	60		10.0-25.0									
				25.5-50.0									
30	60	60		10.0-25.0									
				25.5-50.0									

Material: Not applicable to Bakelite, Epoxy Glass and Fluororesin.

No specification available for those without value.

Ordering Example: Part Number - D - L
CLJHM10 - 16 - 20.0

Dimension Configurable

Part Number	V	D	H	T	L	Unit Price								
						FCLJHJ FCLJHK	FCLJHM FCLJHW	FCLJHD	FCLJHT	FCLJHB	FCLJHN	FCLJHF	FCLJHP	FCLJHE
FCLJHJ	0	4.0-10 (0.5mm Increment)	6.0-20 (0.5mm Increment)	2-20	10.0-25.0									
FCLJHK	2.0	10.5-20 (0.5mm Increment)	12.5-30 (0.5mm Increment)	L-T≥1	25.5-50.0									
FCLJHM	2.6	21-30 (1mm Increment)	23-40 (0.5mm Increment)	L-T≥1	50.5-75.0									
FCLJHD	3.0-58.0 (0.5mm Increment)	31-40 (1mm Increment)	33-50 (0.5mm Increment)	L-T≥1	75.5-100.0									
FCLJHT	10.0 ≤ L ≤ 50.0 → V ≤ D-2	41-50 (1mm Increment)	43-60 (0.5mm Increment)	L-T≥1	10.0-25.0									
FCLJHB	50.5 ≤ L ≤ 100 → V ≤ D-6	51-60 (1mm Increment)	53-70 (0.5mm Increment)	L-T≥1	25.5-50.0									
FCLJHN	58.5-90.0 V ≤ D-6	61-80 (1mm Increment)	63-90 (0.5mm Increment)	L-T≥1	50.5-75.0									
FCLJHF	58.5-90.0 V ≤ D-6	81-100 (1mm Increment)	83-110 (0.5mm Increment)	L-T≥1	75.5-100.0									

Machining Conditions: H=2, D4-5→Lmax=50, Lsvx8, Hs50 for FCLJHT, FCLJHF, FCLJHP and FCLJHE.

No specification available for those without value.

Ordering Example: Part Number - V - D - H - T - L
FCLJHM - V15 - D21 - H26 - T6 - L50.5

Alterations: Dimension Selectable
Part Number - D - L - (CC, SLC...etc.)
CLJHM15 - 35 - 75.5 - SLC

Dimension Configurable
Part Number - V (VM, VMA) - D - H - T - L - (CC, SLC...etc.)
FCLJHT - VMA18 - D25 - H28 - T5 - L15 - MC3

Material: Not applicable to Bakelite, Epoxy Glass and Fluororesin. Alteration is available from D10.

Alterations	C Chamfering (One Side - Both Sides)	Tapping	Set Screw Hole (1-set 2-set)	Slitting																																																												
Code	CC	VM (Coarse Thread) VMA (Fine Thread)	MC, WMC	SLC																																																												
Spec.	Chamfers C plane. Ordering Code CC1.5 CC=0.5mm Increment 0.5 ≤ CC < (D-V)/2	Adds a tapped hole (through). Ordering Code VM4: V should be specified as VM or VMA. Ex.) FCLJHJ - VM4 - D10 - H15 - T6 - L10 For the machining limits of tap dia. and overall length (L), see the table below. Tap dia. ≤ D/2 <table border="1"> <thead> <tr> <th>Tapped Hole Dia. VM, VMA</th> <th>VM Pitch (Coarse)</th> <th>VMA Pitch (Fine)</th> <th>L max</th> </tr> </thead> <tbody> <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>45</td></tr> <tr><td>10</td><td>1.5</td><td>1.0</td><td>60</td></tr> <tr><td>12</td><td>1.75</td><td>1.0</td><td>70</td></tr> <tr><td>16</td><td>2.0</td><td>1.5</td><td>90</td></tr> <tr><td>18</td><td>-</td><td>1.5</td><td>100</td></tr> <tr><td>20</td><td>2.5</td><td>-</td><td>-</td></tr> </tbody> </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	45	10	1.5	1.0	60	12	1.75	1.0	70	16	2.0	1.5	90	18	-	1.5	100	20	2.5	-	-	Adds a tapped hole (coarse thread) at D part. Ordering Code MC3 WMC5 For the condition of thickness (D-V) / 2, see the table below. L ≥ MC, WMCx3 MC, WMC=Select from table below. <table border="1"> <thead> <tr> <th>MC, WMC</th> <th>(D-V)/2</th> </tr> </thead> <tbody> <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> </tbody> </table>	MC, WMC	(D-V)/2	3, 4	3 or More	5, 6, 8	5 or More	10, 12	8 or More	Adds a slit. Ordering Code SLC For the condition of thickness (D-V) / 2, see the table below. Slit width is fixed. <table border="1"> <thead> <tr> <th>O.D. D</th> <th>SLC</th> <th>(D-V)/2</th> </tr> </thead> <tbody> <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>5</td><td>20 or Less</td></tr> </tbody> </table> O.D./O.D. tolerances are the values before alteration. They may change after alteration depending on materials.	O.D. D	SLC	(D-V)/2	10.0-20.0	1	5 or Less	20.5-40	2	10 or Less	41-	5	20 or Less
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	45																																																													
10	1.5	1.0	60																																																													
12	1.75	1.0	70																																																													
16	2.0	1.5	90																																																													
18	-	1.5	100																																																													
20	2.5	-	-																																																													
MC, WMC	(D-V)/2																																																															
3, 4	3 or More																																																															
5, 6, 8	5 or More																																																															
10, 12	8 or More																																																															
O.D. D	SLC	(D-V)/2																																																														
10.0-20.0	1	5 or Less																																																														
20.5-40	2	10 or Less																																																														
41-	5	20 or Less																																																														

Resin Collar

Counterbored / Tapped

Standard	Dimension Configurable	Material	Color
WZJJ	FWZJJ	Polyacetal	White
-	FWZJK	-	Black
WZJM	FWZJM	MC Nylon Standard Grade	Blue
-	FWZJW	-	Ivory
WZJD	FWZJD	MC Nylon Conductive Grade	Black
-	FWZJT	-	-
WZJB	FWZJB	Bakelite	Brown
-	FWZJN	-	Light Brown
-	FWZJF	Fluororesin	White
-	FWZJP	PEEK	Gray
-	FWZJE	Epoxy Glass	Green

Standard

Part Number	Type	D	T Selection	H	V	P	Unit Price
			6 8	4	6	3.5	
			8 10	5	8	4.5	
			10 12	6	10	5.5	
			12 15	8	11	6.5	
			15 20	8	11	6.5	
			20 30	10	14	9	
			30 40	12	18	11	
			40 50	12	18	11	
			50 60	12	18	11	

Dimension Configurable

Part Number	D	V	P	H	T	Unit Price
	10.0-20	5.0-55.0	3.0-53.0	1.0-48.0	3.0-10.0	
	21-30				10.5-20	
	31-40				20.5-30	
	41-50				30.5-40	
	51-60				40.5-50	

Ordering Example: Part Number - D - V - P - H - T
 FWZJJ - D25 - V10.5 - P6.5 - H5.0 - T15.5

Alterations

Code	Spec.	T-H Max
PM (Coarse Thread)	Adds a tapped hole on P Hole part.	20
PMA (Fine Thread)	Ordering Code PM4	30
	Specify PM instead of P.	35
	For machining limits of T-H, see the table on the right. Tap dia. $\leq D/2$	40
		50

Resin Collar-Tapped

Part Number	Type	M(xPitch)	D	L	Unit Price
			10.0-20.0	10.0-25.0	
			21-30	10.0-25.0	
			31-40	10.0-25.0	
			41-50	10.0-25.0	
			51-60	10.0-25.0	

Ordering Example: Part Number - D - L
 CLJTM10 - D30 - L30

Resin Collar

With Guide

Type	Material	Color
CLJGJ	Polyacetal	White
CLJGM	MC Nylon Standard Grade	Blue

Material Properties P.141

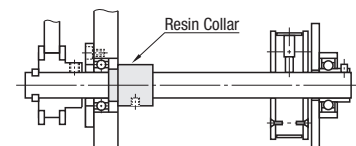
Part Number	Type	D	V	L	D1	T	Unit Price							
							CLJGJ L2-10	CLJGJ L10.5-20	CLJGJ L20.5-30	CLJGJ L30.5-40	CLJGJ L40.5-50	CLJGM L2-10	CLJGM L10.5-20	CLJGM L20.5-30
CLJGJ CLJGM	8			2-30		1								
	10			5-40		1.5								
	12			10-50		2								
	14			10-50		2								
15			10-50		2									
16			10-50		2									
20			10-50		2									
25			10-50		2									
30			10-50		2									

Ordering Example: Part Number - V - L
 CLJGJ15 - 8 - 20

Alterations Part Number - V - L - (VKC, MC, WMC, TC)
 CLJGM20 - 10 - 25 - TC5


Alterations	I.D. Tolerance	Set Screw Hole (1-set 2-set)	T Dimension Change
Code	VKC	MC, WMC	TC
Spec.	Changes the I.D. tolerance to ± 0.1 . Ordering Code: VKC \odot D-V \geq 6	Adds a tapped hole (coarse thread) at D part. Ordering Code: MC3 WMC5 \odot For the condition of thickness (D-V)/2, see the table below. \odot L-MC, WMCx3 \odot MC, WMC-Select from the table below.	Changes T dimension. Ordering Code: TC3 Specifiable Range: 0.5-10mm (Specify in 0.5mm increments.)

Example
 For Bearing Inner Ring Retention



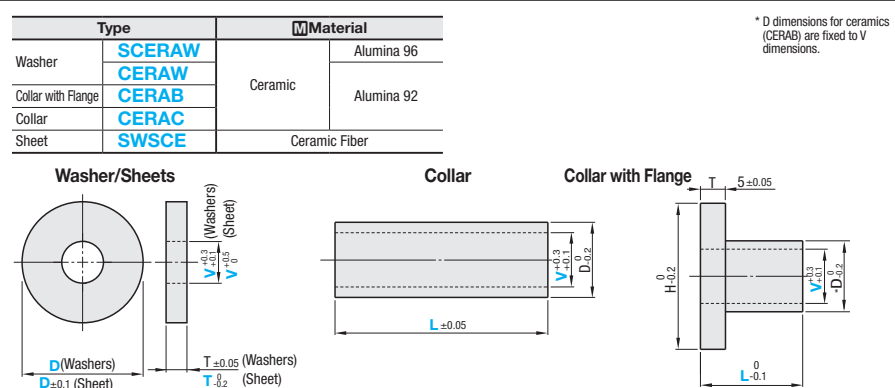
Ceramic Washers / Sheets / Collars

Thermal Insulation Washers / Collars



Type	Material
Washer	Alumina 96
Collar with Flange	Alumina 92
Collar	Ceramic Fiber
Sheet	Ceramic Fiber

* D dimensions for ceramics (CERAB) are fixed to V dimensions.



Washer (Alumina 92)

Part Number	D	V	T	Unit Price
10	3			
12	4			
15	5			
20	6			
25	8			
30	10			
35	12			
40	16			
45	20			

Ordering Example: Part Number CERAW10 - V - T

Bushings for Locating Pins - Ceramics Type (P1686), Ceramics Rods (P322), and Ceramics Circular Plates (P991) are also available.

Collar with Flange (Alumina 92)

Part Number	V	L Selection	H	D	Unit Price
3	8	10 15	10	6	
4	10	15 20	12	8	
5	12	20 25	15	10	
6	15	25 30	20	10	
8	20	30 35	25	12	
10	25	35 40	30	14	
12	30	40 45	35	20	
16	40	45 25	40	20	
20	45	25	45	25	

Ordering Example: Part Number CERAB6 - V - L

Collar (Alumina 92)

Part Number	V	L Selection	D	Unit Price
3	6		L5-29	
4	8		L30-54	
5	10		L55-79	
6	12		L80-100	
8	15			
10	20			
12	25			
16	30			
20	35			

Ordering Example: Part Number CERAC16 - V - L

Washer (Alumina 96)

Part Number	D	V Selection	T	Unit Price
10	3	4 5		
12	4	5 6		
15	5	6 8		
20	6	8		

Ordering Example: Part Number SCERAW10 - V

Sheet (Ceramic Fiber)

Part Number	D	V Selection	T	Unit Price
8	3	4		
10	4	5 6		
12	4	5 6 8		
15	5	6 8 10		
20	6	8 10 12		
25	8	10 12 15		
30	8	10 12 15 20		


Ordering Example: Part Number SWSCE10 - V - T

Property Values of Alumina 92 / Alumina 96 / Ceramic Fiber (Reference: The data in the table are the values of materials.)

Properties	Material Name	Alumina 92	Alumina 96	Ceramic Fiber
Dielectric Breakdown Parallel to Lamination	kV/mm	~10	10	-
Volume Resistance Force	Ω -cm	$\sim 10^{14}$	$\sim 10^{14}$	-
Bending Strength	kN/cm ²	24~34	33	-
Compression Strength	kN/cm ²	147~245	210	-
Tensile Strength	MPa	1000~1200	1500	0.6
Expansion Coefficient	1/°C	8×10^{-6}	7.6×10^{-6}	-
Thermal Conductivity	cal/cm · sec · °C	$3.6 \sim 5.0 \times 10^{-2}$	5.0×10^{-2}	1.7×10^{-4}
Heat Resistance	°C	1000~1200	1500	1300
Water Absorption Ratio	%	0	0	-
Specific Gravity	-	3.7	3.8	0.25
Main Material	-	Al ₂ O ₃ (92%)	Al ₂ O ₃ (96%)	-

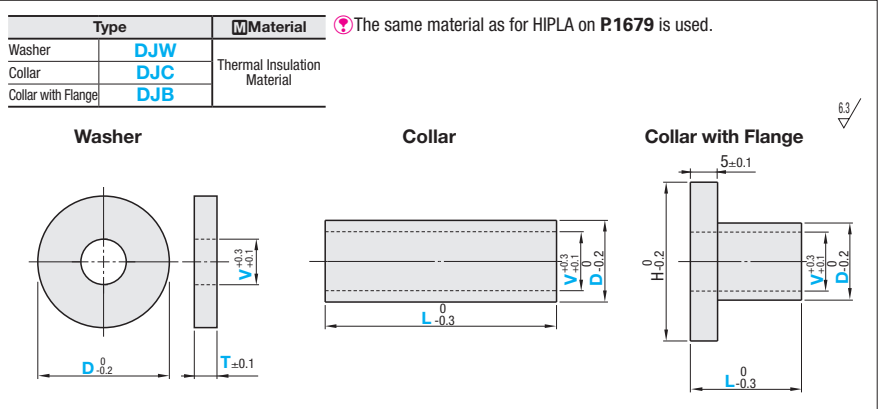
These materials are fragile. Please handle with care.

This material excels in insulation resistance as well as heat insulation.



Type	Material
Washer	Thermal Insulation Material
Collar	
Collar with Flange	

The same material as for HIPLA on P.1679 is used.



Washer (Heat Insulation Material)

Part Number	D	V Selection	T Selection	Unit Price
10	3	4 5	3 5	
12	4	5 6	3 5	
16	5	6 8	3 5	
20	5	6 8	3 5	
25	5	6 8 10	3 5	

Ordering Example: Part Number DJW10 - V - T

Collar (Heat Insulation Material)

Part Number	D	V Selection	L	Unit Price
8	3	4 5	10	
10	4	5 6	10	
12	4	5 6 8	30	
16	5	6 8		
20	5	6 8 10		

Ordering Example: Part Number DJC8 - V - L

Collar with Flange (Heat Insulation Material)

Part Number	D	V Selection	L Selection	H	Unit Price
3	8	10	12	12	-
4	8	10	10 15	14	-
5	10	12	10 15 20	15	
6	10	12	10 15 20	20	
8	12	10 15 20	25		
10	20	10 15 20	30		

Ordering Example: Part Number DJB4 - D - L

Properties of Heat Insulation Material (Values shown below are for reference only.)

Mechanical Properties		Thermal and Electrical Characteristics			
Tensile Strength	MPa	108	Deflection Temperature under Load (1.82Mpa)	°C	400~
Elongation	%	0.7	Linear Expansion Coefficient	1/°C	$2.6 \sim 3.5 \times 10^{-5}$
Bending Strength	Vertical	MPa	Thermal Conductivity	W/m · K (cal/cm · sec · °C)	0.24 (5.7x10 ⁻⁴)
			Dielectric Constant (1MHz)	-	3.8
Flexural Modulus		17900	Dissipation Factor (1MHz)	-	0.005
Compression Strength	Vertical	439~410 ¹⁾	Volume Resistivity	Ω · cm	1.0×10^{14}
	Parallel	98 ~ 90 ¹⁾	Dielectric Breakdown Strength (Breakdown Voltage)	kV/mm	15
Izod Impact Strength (Notched)	J/cm	2.9	Arc Resistance	sec	345
Rockwell Hardness	R	R113	Moisture Absorption (At 23°Cx24h)	%	0.05
Glass Fiber Content	-	Available	Ambient Operating Temperature	°C	~400
Specific Gravity	-	2.0			

¹⁾ Bending Strength maintains the minimum value even at 400 degrees Celsius.
²⁾ 2.6 = ambient temperature ~ 200°C, 3.5 = ambient temperature ~ 400°C.

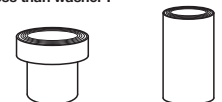
About Direction of Material Lamination

Laminated directions of washer and collar are different (Figure below). Therefore, mechanical strength varies depending on direction of the lamination.

Washers are laminated in the vertical direction.



Collar and Collar with Flange are laminated in the radial direction. Please note that the mechanical strength is less than washer¹⁾.



The above are reference images. Actual products may differ from the images.

Washers / Collars - Fluororesin / Epoxy Glass / PEEK

Square Resin Washers / Extra Thin Resin Sheets

Washer	Collar	Collar with Flange	Material
EPOW	EPOC	EPOB	Epoxy Glass
PTW	PTC	PTB	Fluororesin (Polytetrafluoroethylene)
PKW	PKC	PKB	PEEK

Material Properties P141

Washer

V_{+0.3}
D_{-0.2}
T±0.1

Collar

V_{+0.3}
D_{-0.2}
L_{-0.3}

Collar with Flange

H±0.2
T±0.1
L_{-0.3}
V_{+0.3}
D_{-0.2}

Washer

Part Number	Type	D	V Selection				T	Unit Price				
			EPOW	PTW	PKW							
10	12	14	15	16	20	25	30	35	40			

Ordering Example: Part Number - V
PTW10 - 3

Collar

Part Number	Type	V	D Selection				L 1mm Increment
			EPOC	PTC	PKC		
2	3	4	5	6	8	10	5~30

Ordering Example: Part Number - D - L
EPOC16 - 25 - 55

Material Properties P141

Part Number	Type	V	Unit Price											
			EPOC			PTC			PKC					
			L5~25	L26~50	L51~75	L76~100	L5~25	L26~50	L51~75	L76~100	L5~25	L26~50	L51~75	L76~100

Collar with Flange

Part Number	Type	V	L Selection		H	D	T	Unit Price		
			EPOB	PTB				PKB		
3	4	5	8	10 15 20	10	6	5			

Ordering Example: Part Number - L
PKB10 - 10

One Through Hole	Two Through Holes	Two Countersunk Holes	Two Counterbored Holes	Material	Color
WSRJ	WSRR	WSRP	WSRZ	Polyacetal	White
WSRJM	WSRRM	WSRPM	WSRZM	MC Nylon Standard Grade	Blue

Material Properties P141

One Through Hole

A±0.3
P±0.1
B±0.3
T±0.1

Two Through Holes

A±0.3
P1
P±0.1
B±0.3
T±0.1

Two Countersunk Holes

A±0.3
P1
P±0.1
B±0.3
T±0.1

Two Counterbored Holes

A±0.3
P1
P±0.1
B±0.3
T±0.1

One Through Hole

Part Number	Type	A	B 1mm Increment	P 0.5mm Increment (P≤B/2)	T	Screw Nominal Dia.	d	Unit Price			
								WSRJ	WSRJM		
6	8	10	12	15	20	25	30	35	40		

Two Through Holes

Part Number	Type	A	B 1mm Increment	P 0.5mm Increment (P≤B-2P1)	T	Screw Nominal Dia.	d	P1	Unit Price		
									WSRR	WSRRM	
6	8	10	12	15	20	25	30	35	40		

Two Countersunk Holes

Part Number	Type	A	B 1mm Increment	P 0.5mm Increment (P≤B-2P1)	T	Screw Nominal Dia.	d	d1	h	P1	Unit Price	
											WSRP	WSRPM
10	12	15	20	25	30	35	40	45	50	60		

Two Counterbored Holes

Part Number	Type	A	B 1mm Increment	P 0.5mm Increment (P≤B-2P1)	T	Screw Nominal Dia.	d	d1	h	P1	Unit Price	
											WSRZ	WSRZM
10	12	15	20	25	30	35	40	45	50	60		

Ordering Example: Part Number - B - P
WSRJ10 - 25 - 12.5

Alterations Part Number - B - P - (NA)
WSRJM20 - 60 - 150 - NA30

Slotted Hole

Code: NA

Spec: Changes the through hole to the slotted hole. (Applicable to One Through Hole and Two Through Holes Type only.)

Ordering Code (Specify in 0.5mm increments): NA15

Machining Conditions: One Hole 1≤NA≤B-P-d/2-1.25; Two Holes 1≤NA≤P-d-1.25

Extra Thin Resin Sheets

Type	Material	Color	Thickness (T) Tolerance			
			0.1	0.2	0.3	0.5
CIRAJ	Polyacetal	White	±0.03	±0.04	±0.07	±0.10
CIRAT	Fluororesin	White	±0.01	±0.02	±0.03	±0.05
CIRAP	Polycarbonate	Transparent	±0.01	±0.02	±0.03	±0.05

Ordering Example: Part Number - A - B
CIRAJ0.2 - 100 - 20

Part Number	Type	T	A	B	Unit Price											
					CIRAJ		CIRAT		CIRAP							
					T0.2	0.3	0.5	1.0	T0.1, 0.2	0.3	0.5	1.0	T0.1, 0.2	0.3	0.5	1.0

* CIRAJ is not available for T0.1.