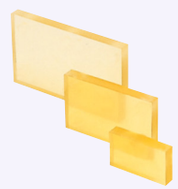
Urethane Sheets, Adhesives for Urethane

Square, Band

■For Configurable Type and Hole Type, see P.413 (?)For Urethane Gaskets, see P.453. For Urethane Blocks, see P.422

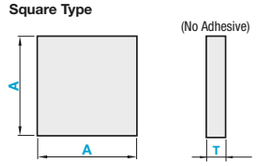
■Urethane Sheets



RoHS

■A Selectable Type

Square Type



Band Type

A Selectable Type		Material	Hardness	Color
No Adhesive	Adhesive			
UTSN	UTSNA	Ether Polyurethane	Shore A95	Natural Color
UTHN	UTHNA		Shore A90	
UTM	UTMA	Ester Polyurethane	Shore A70	
UTL	UTLA		Shore A50	

(?)Properties P.389

■Accuracy Standards

T Tolerance

T	Tolerance
1~4	±0.3
5~10	±0.4
15~30	±0.5

A Tolerance

A	Tolerance
200 or Less	±0.5
201~300	±1.0
301~400	±1.2
401~500	±1.5

(?)For Adhesive Type T4 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
(?)Temperature limit for seals is 80°C.

■Square Type

Part Number Type	T	A Selection
No Adhesive UTSN / Adhesive UTSNA (Shore A95)	(0.5)	100K
	1	
	2	
	3	
	4	
UTHN UTHNA (Shore A90)	5	300
	6	
UTM UTMA (Shore A70)	8	
	10	
UTL UTLA (Shore A50)	15	500
	20	
	25	
	30	

(?)T (0.5) is available for UTHN and UTHNA.

■Band Type

Part Number Type	T	A Selection
No Adhesive UTSN / Adhesive UTSNA (Shore A95)	(0.5)	3
	1	5
	2	10
UTHN UTHNA (Shore A90)	3	20
	4	30
UTM UTMA (Shore A70)	5	40
	6	50
UTL UTLA (Shore A50)	8	80
	10	100

(?)T (0.5) is available for UTHN and UTHNA.
(?)The length is 500mm.

Ordering Example

■A Selectable Type

Part Number	-	A
UTHN8	-	300

■Square Type (No Adhesive)

Part Number Type	T	Unit Price A100K				A300				A500			
		UTSN	UTHN	UTM	UTL	UTSN	UTHN	UTM	UTL	UTSN	UTHN	UTM	UTL
No Adhesive UTSN	(0.5)	-		-	-	-		-	-	-		-	-
	1												
	2												
	3												
UTHN	4												
	5												
	6												
UTM	8												
	10												
	15												
UTL	20												
	25												
	30												

■Square Type (Adhesive)

Part Number Type	T	Unit Price A100K				A300				A500			
		UTSNA	UTHNA	UTMA	UTLA	UTSNA	UTHNA	UTMA	UTLA	UTSNA	UTHNA	UTMA	UTLA
Adhesive UTSNA	(0.5)	-		-	-	-		-	-	-		-	-
	1												
	2												
	3												
UTHNA	4												
	5												
	6												
UTMA	8												
	10												
	15												
UTLA	20												
	25												
	30												

■Band Type (No Adhesive)

Part Number Type	T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive UTSN	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									
No Adhesive UTHN	(0.5)									
	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									
No Adhesive UTM	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									
No Adhesive UTL	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									

■Band Type (Adhesive)

Part Number Type	T	Unit Price A 3	5	10	20	30	40	50	80	100
Adhesive UTSNA	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									
Adhesive UTHNA	(0.5)									
	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									
Adhesive UTMA	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									
Adhesive UTLA	1									
	2									
	3									
	4									
	5									
	6									
	8									
	10									

■Adhesives for Urethane

RoHS

■Adhesives for Urethane

Part Number	Volume			Color	Mixture Ratio	Initial Hardening Time	Useable Duration	Main Component	Unit Price
	A Liquid	Main Component	100g	Transparent	1:1	1 Hour	6 min.	Epoxy	
	B Liquid	Hardener	100g	Light Yellow		(Room Temp. 20°C Assumed)		Amine, Polythiol	

■ Mix well in a container at 1:1 ratio.
Please read the included instructions thoroughly.
Use within 6 minutes of mixing the main component and the hardener.

■ Adhesive Strength: 180 Degree Peel Strength Test

URTB (Equiv. to adhesives for urethane)

Cure Condition		Delamination Resistance Strength (N/25mm Wide)
Temperature	Time	
Room temperature (23°C)	20 Minutes	1 or Less
	72 hours	20
80°C	48 Hours	40

Ordering Example | Part Number |

* For other Adhesive Tape and Adhesives, see P.489.

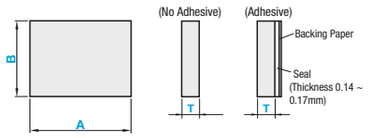
Urethane Sheets

A, B Configurable - Hole Type

■A, B Configurable Adhesive Type is now available. ■For Square and Band Types, see ☞ P.411
For Urethane Gaskets, see ☞ P.453. For Urethane Blocks, see ☞ P.422

■A, B Configurable Type

Standard

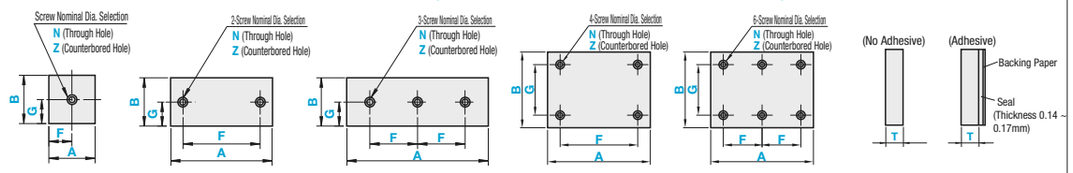


A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive			
UTSSN	UTSSNA	Ether Polyurethane	Shore A95	Natural Color
UTSHN	UTSHNA		Shore A90	
UTSM	UTSMA	Ester Polyurethane	Shore A70	
UTSL	UTSLA		Shore A50	
UTSLL	UTSLLA		Shore A30	

Properties ☞ P.389
For Adhesive Type T4 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
Temperature limit for seals is 80°C.

Hole Type

1-Hole 1H　2-Hole 2H　3-Hole 3H　4-Hole 4H　6-Hole 6H



Hole Machining Details

Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■Accuracy Standards

T Tolerance

T	Tolerance
1~4	±0.3
5~10	±0.4
15~30	±0.5

A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~400	±1.2
401~500	±1.5

■A, B Configurable - Standard Type

Part Number Type			T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive		(0.5)		
UTSSN	UTSSNA	(Shore A95)	1		
UTSHN	UTSHNA	(Shore A90)	2		
UTSM	UTSMA	(Shore A70)	3		
UTSL	UTSLA	(Shore A50)	4		
UTSLL	UTSLLA	(Shore A30)	5		
			6	10~500	10~500
			8		
			10		
			15		
			20		
			25		
			30		

T (0.5) is available for UTSHN and UTSHNA. A≥B≥T

Ordering Example

■A, B Configurable Type

Part Number - A - B - F - G - Screw Nominal Dia.

UTSHN8 - 300 - 200
UTSHN4H8 - 200 - 150 - F140 - G120 - N5

■A, B Configurable - Hole Type

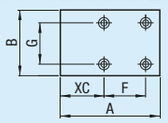
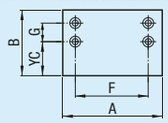
Part Number Type			Nominal	T	1mm Increment (A≥B≥T) A	B	0.5mm Increment F	G	Screw Nominal Dia. Selection N (Through Hole)	Z (Counterbored Hole)
No Adhesive	Adhesive			(0.5)						-
UTSSN	UTSSNA	(Shore A95)	1H	1						-
UTSHN	UTSHNA	(Shore A90)		2					3	-
UTSM	UTSMA	(Shore A70)	2H	3			5~495 (1H Type)		4	-
UTSL	UTSLA	(Shore A50)		4				5~495 (1H, 2H, 3H Types)	5	-
UTSLL	UTSLLA	(Shore A30)	3H	5			9~491 (2H, 4H Types)		6	-
				6	25~500	25~500			8	3
			4H	8				9~491 (4H, 6H Types)	10	3 4
				10			9~245 (3H, 6H Types)			4 5 6 8
			6H	15						4 5 6 8
				20						4 5 6 8 10
				25						4 5 6 8 10
				30						

Alterations

Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)

UTSM4H25 - 100 - 80 - F60 - G20 - Z5 - YC40

A≥B≥T
T (0.5) is available for UTSHN and UTSHNA.
Dimension F Specification Range: For 1H: d(d1)/2+2.5≤F≤A-d(d1)/2-2.5; for 2H, 4H: d(d1)+5≤F≤A-d(d1)-5, for 3H, 6H: d(d1)+5≤F≤A/2-d(d1)/2-2.5.
Dimension G Specification Range: For 1H, 2H, 3H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H, 6H: d(d1)+5≤G≤B-d(d1)-5. (d for through holes, d1 for counterbored holes.)

Alterations	Code	Spec.	Alterations	Code	Spec.
Hole Position from Left 	XC	XC=1mm Increment 5≤XC≤486 (2H, 4H Types) d(d1)/2+2.5≤XC≤A-F-d(d1)/2-2.5 (3H, 6H Types) d(d1)/2+2.5≤XC≤A-2F-d(d1)/2-2.5	Hole Position from Bottom 	YC	YC=1mm Increment 5≤YC≤486 d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5

■A, B Configurable Type

Part Number Type	T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
No Adhesive UTSHN(x1.0) Adhesive UTSHNA(x1.1) Shore A90 ( ) Material Multiplier	0.5	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	1	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
No Adhesive UTSSN Shore A95 (x1.0)	2	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
UTSHN Shore A90 (x0.7)	3	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
UTSM Shore A70 (x1.0)	4	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
UTSL Shore A50 (x1.0)	5	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
( ) Material Multiplier	6	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
Adhesive UTSSNA Shore A95 (x1.1)	8	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
UTSHNA Shore A90 (x0.8)	10	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
UTSMA Shore A70 (x1.1)	15	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
UTSLA Shore A50 (x1.1)	20	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
( ) Material Multiplier	25	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	30	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						

The price of this product is the unit price shown in the table multiplied by material multiplier.

■A, B Configurable Type

Part Number Type	T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
	1	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	2	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	3	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	4	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
No Adhesive UTSLL Shore A30 (x1.0)	5	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	6	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
Adhesive UTSLLA Shore A30 (x1.1)	8	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
( ) Material Multiplier	10	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	15	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	20	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	25	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	30	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						

■Hole Machining Charge The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

(Ex.)

Part Number - A - B - F - G - Screw Nominal Dia.

UTSHN4H10 - 500 - 400 - F240 - G160 - N8

>>

(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Ceramic Urethane Sheets

■These MISUMI original urethane sheets are unique mixture of ceramic particles. Excel in abrasion resistance against wire, and smooth in their machined surfaces though they are low in hardness.

Type	Type		Material	Hardness	Color
	No Adhesive	Adhesive			
Mold Surface Type	UTSCS	UTSCSA	Ceramic Urethane (Ether Polyurethane)	Shore A95	Natural Color (Gray)
	UTSCH	UTSCHA		Shore A90	
	UTSCM	UTSCMA	Ceramic Urethane (Ester Polyurethane)	Shore A70	
	UTSCL	UTSCLA		Shore A50	
Machined Surface Type	UTSCSK	UTSCSKA	Ceramic Urethane (Ether Polyurethane)	Shore A95	
	UTSCHK	UTSCHKA		Shore A90	
	UTSCMK	UTSCMKA	Ceramic Urethane (Ester Polyurethane)	Shore A70	
	UTSCLK	UTSCLKA		Shore A50	

Properties P.389

Mold Surface Type has glossy smooth surface but not slippery. Machined Surface Type has ground surface on one side improving sliding property.

■Accuracy Standards

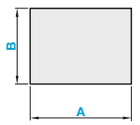
T Dimension Tolerance

T	Tolerance	
	Mold Surface Type	Machined Surface Type
2~4	±0.3	±0.5
5~10	±0.4	

A, B Tolerance

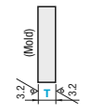
A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~400	±1.2
401~500	±1.5

Standard

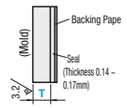


(Mold Surface)

No Adhesive

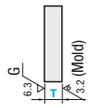


Adhesive

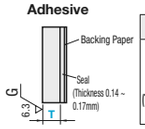


(Machined Surface)

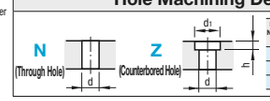
No Adhesive



Adhesive



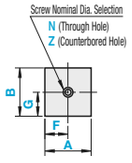
Hole Machining Details



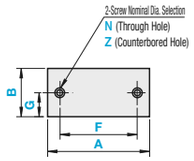
Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

Hole Type

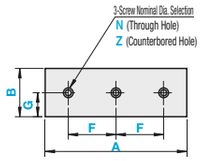
1-Hole **1H**



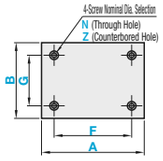
2-Hole **2H**



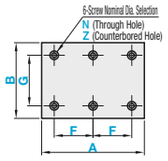
3-Hole **3H**



4-Hole **4H**



6-Hole **6H**



For Adhesive Type T4 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.

Temperature limit for seals is 80°C.

■Standard Type, Mold Surface

Part Number Type			T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive				
UTSCS	UTSCSA	(Shore A95)	2	10~500	10~500
UTSCH	UTSCHA	(Shore A90)	3		
UTSCM	UTSCMA	(Shore A70)	4		
UTSCL	UTSCLA	(Shore A50)	5		
			6		
			8		
			10		

■Standard Type, Machined Surface

Part Number Type			T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive				
UTSCSK	UTSCSKA	(Shore A95)	3	10~200	10~200
UTSCHK	UTSCHKA	(Shore A90)	4		
UTSCMK	UTSCMKA	(Shore A70)	5		
UTSCLK	UTSCLKA	(Shore A50)	6		
			8		
			10		

■Hole Type, Mold Surface

Part Number Type			Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)	
Mold Surface Type											
No Adhesive	Adhesive										
UTSCS	UTSCSA	(Shore A95)	1H	2	25~500	25~500	5~495 (1H)	5~495 (1H, 2H, 3H)	3	-	
UTSCH	UTSCHA	(Shore A90)	2H	3					4	-	
UTSCM	UTSCMA	(Shore A70)	3H	4			9~491 (2H, 4H)		5	-	
UTSCL	UTSCLA	(Shore A50)	4H	5				9~491 (4H, 6H)	6	-	
			6H	6			9~245 (3H, 6H)		8	3	
				8					10	3	4
				10							

■Hole Type, Machined Surface

Part Number Type			Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)	
Machined Surface Type											
No Adhesive	Adhesive										
UTSCSK	UTSCSKA	(Shore A95)	1H	3	25~200	25~200	5~195 (1H)	5~195 (1H, 2H, 3H)	3	-	
UTSCHK	UTSCHKA	(Shore A90)	2H	4					4	-	
UTSCMK	UTSCMKA	(Shore A70)	3H	5			9~191 (2H, 4H)		5	-	
UTSCLK	UTSCLKA	(Shore A50)	4H	6				9~191 (4H, 6H)	6	-	
			6H	8			9~95 (3H, 6H)		8	3	
				10					10	3	4

Ordering Example

■Standard

Part Number	-	A	-	B
UTSCLK5	-	100	-	30

■Hole Type

Part Number	-	A	-	B	-	F	-	G	-	Screw Nominal Dia.
UTSCMK2H5	-	100	-	50	-	F80	-	G25	-	N3

■Adhesive Charge: Adhesive Type Price = Unit Price + Adhesive Charge

Adhesive Charge A	B 10~50	51~100	101~200	201~300	301~400	401~500
10~50		-	-	-	-	-
51~100						
101~200						
201~300						
301~400						
401~500						

■Mold Surface Type

Part Number Type	T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
	2	10~50		-	-	-	-	-
		51~100						
		101~200						
	3	201~300						
		301~400						
		401~500						
No Adhesive	4	10~50		-	-	-	-	-
UTSCS Shore A95 (x1.0)		51~100						
		101~200						
		201~300						
UTSCH Shore A90 (x1.0)		301~400						
		401~500						
	5	10~50		-	-	-	-	-
Adhesive		51~100						
		101~200						
Price in the Table + Adhesive Charge		201~300						
		301~400						
UTSCSA Shore A95 (x1.0)		401~500						
	6	10~50		-	-	-	-	-
		51~100						
UTSCHA Shore A90 (x1.0)		101~200						
		201~300						
		301~400						
( ) Material Multiplier		401~500						
	8	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	10	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						

■Machined Surface Type

Part Number Type	T	A	Unit Price B 10~50	51~100	101~150	151~200
	3	10~50		-	-	-
No Adhesive		51~100				
UTSCSK Shore A95 (x1.0)	4	101~150				
		151~200				
UTSCHK Shore A90 (x1.0)	5	10~50		-	-	-
		51~100				
Adhesive	6	101~150				
Price in the Table + Adhesive Charge		151~200				
UTSCSKA Shore A95 (x1.0)	8	10~50		-	-	-
		51~100				
UTSCHKA Shore A90 (x1.0)	10	101~150				
( ) Material Multiplier		151~200				

■Hole Machining Charge (Ex.)

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

Part Number - A - B - F - G - Screw Nominal Dia. >>
UTSCMK2H5 - 100 - 50 - F80 - G25 - N3

(Machined Surface Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

(Ex.)

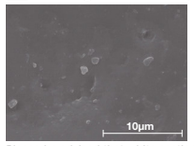
Part Number - A - B >>
UTSCLKA5 - 100 - 100

(Machined Surface Type Unit Price) + (Adhesive Charge) = (Adhesive Type Unit Price)

Part Number Type	T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
	2	10~50		-	-	-	-	-
		51~100						
		101~200						
	3	201~300						
		301~400						
		401~500						
No Adhesive	4	10~50		-	-	-	-	-
UTSCM Shore A70 (x1.0)		51~100						
		101~200						
		201~300						
UTSCL Shore A50 (x1.1)		301~400						
		401~500						
	5	10~50		-	-	-	-	-
Adhesive		51~100						
		101~200						
Price in the Table + Adhesive Charge		201~300						
		301~400						
UTSCMA Shore A70 (x1.0)		401~500						
	6	10~50		-	-	-	-	-
		51~100						
UTSCLA Shore A50 (x1.1)		101~200						
		201~300						
		301~400						
( ) Material Multiplier		401~500						
	8	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	10	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						

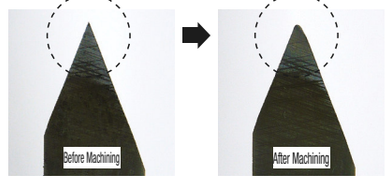
Part Number Type	T	A	Unit Price B 10~50	51~100	101~150	151~200
	3	10~50		-	-	-
No Adhesive		51~100				
UTSCMK Shore A70 (x1.0)	4	101~150				
		151~200				
UTSCLK Shore A50 (x1.1)	5	10~50		-	-	-
		51~100				
Adhesive	6	101~150				
Price in the Table + Adhesive Charge		151~200				
UTSCMKA Shore A70 (x1.0)	8	10~50		-	-	-
		51~100				
UTSCLKA Shore A50 (x1.1)	10	101~150				
( ) Material Multiplier		151~200				

■Enlarged Photo(x5,000)



Please be advised that white section seen on the photo is ceramic powder particles occurring during the manufacturing process. These micro-particles are very fine not to cause any surface roughness even when they fall off.

■Change after Ceramic Urethane is Machined



Change after ceramic urethane round bar is machined (Lathe: 600rev/min.) for 2 minutes

■Taber Abrasion Test Results

Test \ Material	Standard Urethane	Super Abrasion Resistant Vulkollan®	Abrasion Resistant Urethane	Ceramic Urethane
Abrasion Test (Taber Method) Abrasion Volume (mm³)	197.3	33.9	73.8	101

Abrasive wheels are applied to the sample using a fixed weight for a specified number of cycles. From the weight loss of the sample it is possible to measure the abrasion resistance of a material.

The above values are measured examples, not guaranteed ones.

Testing Method
JIS K 7204: 1999 "Plastics - Determination of Resistance to Wear by Abrasive Wheels"
Abrasive Wheel: H-22
Load: 9.8N
Number of Strokes: 1,000
Test Parameter: 1

The values are not guaranteed but measured ones.

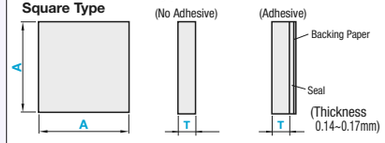
Highly Abrasion Resistant Sheets, Heat Resistant Urethane Sheets

Vulkollan® / Abrasion Resistant Urethane

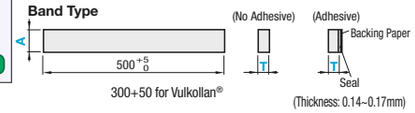
■Vulkollan® and Abrasion Resistant Urethane are 6 times and 2.5 times more abrasion-resistant than the standard urethane respectively, and Heat Resistant Urethane is capable of withstanding up to 120°C.
(?)A, B Configurable Adhesive Type is now available. (?)For heat resistant urethane gasket products, see P.453

■A Selectable Type

Square Type



Band Type



A Selectable Type		A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
VULHS	VULHSA	VULHSS	VULHSSA	Super Abrasion Resistant Urethane Vulkollan® (Ester Polyurethane)	Shore A92	Beige
VULMS	VULMSA	VULMSS	VULMSSA		Shore A68	
UTEXH	UTEXHA	UTEXHS	UTEXHSA	Abrasion Resistant Urethane (Ester Polyurethane)	Shore A90	Dark Brown
UTEXM	UTEXMA	UTEXMS	UTEXMSA		Shore A70	
UTHHS	UTHHSA	UTHHSS	UTHHSSA	Heat Resistant Urethane (Ester Polyurethane)	Shore A90	Brown

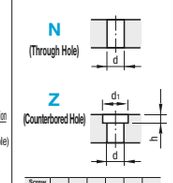
(?)Properties P.389

■Accuracy Standards

T Tolerance	
T	Tolerance
1~4	±0.3
5~10	±0.4
15~30	±0.5

A, B Tolerance	
A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~400	±1.2
401~500	±1.5

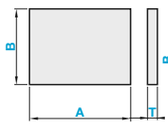
Hole Machining Details



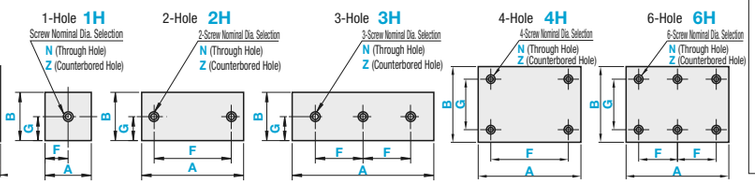
Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■A, B Configurable Type

Standard Type



Hole Type



(?)A, B dimension tolerance has been changed. Please refer to the accuracy standards on the right. (?)Vulkollan® may experience discoloration with time, but physical property and characteristics remain unchanged.
(?)For Adhesive Type T4 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
(?)Temperature limit for seals is 80°C.

■A Selectable - Square Type

Part Number Type			T	A Selection
No Adhesive	Adhesive		(1)	300
			(2)	
VULHS	VULHSA	(Shore A92)	3	
VULMS	VULMSA	(Shore A68)	4	
UTEXH	UTEXHA	(Shore A90)	5	
UTEXM	UTEXMA	(Shore A70)	6	
UTHHS	UTHHSA	(Shore A90)	8	
			*10	500
			*15	(?)Only 300 is available for Vulkollan®.
			*20	
			*25	
			*30	

(?)T (1) and (2) are available for Abrasion Resistant Urethane only.
(?)Vulkollan® is available for dimensions marked with * only.
(?)Vulkollan® (Shore A68) is available for T=10 or 15 only.

■A Selectable - Band Type

Part Number Type			T	A Selection
No Adhesive	Adhesive		(1)	3
			(2)	5
VULHS	VULHSA	(Shore A92)	3	10
VULMS	VULMSA	(Shore A68)	4	20
UTEXH	UTEXHA	(Shore A90)	5	30
UTEXM	UTEXMA	(Shore A70)	6	40
UTHHS	UTHHSA	(Shore A90)	8	50
			*10	80
				100

(?)L dimension is 500mm.
(?)Vulkollan® is only available for T=10 and the length is 300mm.

■A, B Configurable - Standard Type

Part Number Type			T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive		(1)	10~500 (10~300 for Vulkollan®)	10~500 (10~300 for Vulkollan®)
			(2)		
VULHSS	VULHSSA	(Shore A92)	3		
VULMSS	VULMSSA	(Shore A68)	4		
UTEXHS	UTEXHSA	(Shore A90)	5		
UTEXMS	UTEXMSA	(Shore A70)	6		
UTHHSS	UTHHSSA	(Shore A90)	8		
			*10		
			*15		
			*20		
			*25		
			*30		

(?)A≥B≥T
(?)Vulkollan® is available for dimensions marked with * only.
(?)Vulkollan® (Shore A68) is available for T=10 or 15 only.

■A, B Configurable - Hole Type

Part Number Type			Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive	Adhesive			(1)	25~500 (Vulkollan® 25~300)	25~500 (Vulkollan® 25~300)	5~495 (Vulkollan® 5~295) (1H Type)	5~495 (Vulkollan® 5~295) (1H, 2H, 3H Types)		-
				(2)						-
VULHSS	VULHSSA	(Shore A92)	1H	3					3	-
VULMSS	VULMSSA	(Shore A68)		4			9~491 (Vulkollan® 9~291) (2H, 4H Types)	9~491 (Vulkollan® 9~291) (4H, 6H Types)	4	-
UTEXHS	UTEXHSA	(Shore A90)	2H	5					5	-
UTEXMS	UTEXMSA	(Shore A70)		6					6	3
UTHHSS	UTHHSSA	(Shore A90)	3H	8					8	3 4
				*10					10	4 5 6 8
			4H	*15			9~245 (Vulkollan® 9~170) (3H, 6H Types)			4 5 6 8
				*20						4 5 6 8 10
			6H	*25						4 5 6 8 10
				*30						4 5 6 8 10

(?)T (1) and (2) are available for Abrasion Resistant Urethane only. T dim. For Vulkollan® is available with * sign only. (For Shore A68, only available with T=10 or 15.)
(?)A≥B≥T
(?)Dimension F Specification Range: For 1H: d(d1)/2+2.5≤F≤A-d(d1)/2-2.5; for 2H, 4H: d(d1)+5≤F≤A-d(d1)-5, for 3H, 6H: d(d1)+5≤F≤A/2-d(d1)/2-2.5.
(?)Dimension G Specification Range: For 1H, 2H, 3H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H, 6H: d(d1)+5≤G≤B-d(d1)-5. (d for through holes, d1 for counterbored holes.)

Ordering Example

■A Selectable Type

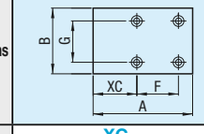
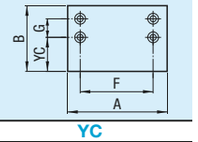
Part Number - A
VULHS10 - 300
UTHHS10 - 100

■A, B Configurable Type

Part Number - A - B - F - G - Screw Nominal Dia.
VULHSS10 - 300 - 200
UTEXHS3H5 - 200 - 150 - F140 - G120 - N5

Alterations

Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)
VULHSS4H25 - 100 - 80 - F60 - G20 - Z5 - YC40

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment (?)5≤XC≤486(up to 286 for Vulkollan®) (?)(2H, 4H Type) d (d1)/2+2.5≤XC≤A-F-d(d1)/2-2.5 (?)(3H, 6H Type) d (d1)/2+2.5≤XC≤A-2F-d(d1)/2-2.5	YC=1mm Increment (?)5≤YC≤486(up to 286 for Vulkollan®) (?)d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5

■A Selectable - Square Type

Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive Adhesive	1	10~100		-	-	-	-
		101~200					
UTEXHS UTEXHSA		201~300					
(x1.0) (x1.1)		301~400					
		401~500					
	2	10~100		-	-	-	-
		101~200					
UTEXMS UTEXMSA		201~300					
(x1.0) (x1.1)		301~400					
		401~500					
	3	10~100		-	-	-	-
		101~200					
UTHHSS UTHHSSA		201~300					
(x1.2) (x1.3)		301~400					
		401~500					
	4	10~100		-	-	-	-
( ) Material Multiplier		101~200					
		201~300					
		301~400					
		401~500					
	5	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	6	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

(?)T (1) and (2) are available for Abrasion Resistant Urethane UTEXHS and UTEXMS only.

■Hole Machining Charge

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

(?)The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

(Ex.) Part Number - A - B - F - G - Screw Nominal Dia.
UTHHSS3H5 - 500 - 400 - F240 - G160 - N8

>>

(Unit Price) x (Material Multiplier) = Unit Price of Standard Type

(Standard Type Unit Price) + (Hole Machining Charge) = Hole Type Unit Price

■A Selectable - Band Type

Part Number Type		T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive	Adhesive	8	10~100		-	-	-	-
			101~200					
UTEXHS	UTEXHSA		201~300					
(x1.0)	(x1.1)		301~400					
			401~500					
		10	10~100		-	-	-	-
UTEXMS	UTEXMSA		101~200					
(x1.0)	(x1.1)		201~300					
			301~400					
			401~500					
UTHHSS	UTHHSSA	15	15~100		-	-	-	-
(x1.2)	(x1.3)		101~200					
			201~300					
( ) Material Multiplier			301~400					
			401~500					
		20	20~100		-	-	-	-
			101~200					
			201~300					
			301~400					
			401~500					
		25	25~100		-	-	-	-
			101~200					
			201~300					
			301~400					
			401~500					
		30	30~100		-	-	-	-
			101~200					
			201~300					
			301~400					
			401~500					
No Adhesive	Adhesive	*10	10~100		-	-		
			101~200					
VULHSS	VULHSSA		201~300					
(x1.0)	(x1.1)	*15	15~100		-	-		
			101~200					
VULMSS	VULMSSA		201~300					
(x1.2)	(x1.3)	20	20~100		-	-	-	-
			101~200					
( )Material Multiplier			201~300					
		25	25~100		-	-		
			101~200					
			201~300					
		30	30~100		-	-		
			101~200					
			201~300					

(?)Vulkollan® shore A68 (VULMSS, VULMSSA) is available for dimensions marked with * only.
(?)The price of this product is the unit price shown in the table multiplied by material multiplier.

(Ex.) Part Number - A - B >>
VULMSS10 - 300 - 200
(Unit Price) x (Material Multiplier) = Unit Price of Standard Type

■A Selectable - Band Type

Part Number Type		T	A	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive	Adhesive											
VULHS	VULHSA	10										
VULMS	VULMSA	10										
			1									
			2									
			3									
UTEXH	UTEXHA		4									
UTEXM	UTEXMA		5									
			6									
			8									
			10									
			3									
			4									
UTHHS	UTHHSA		5									
			6									
			8									
			10									

Adhesive Charge: Adhesive Type = Unit Price + Adhesive Charge

Antistatic Urethane Sheets, Low Rebound Urethane Sheets

■General Urethane becomes statically charged due to its insulation property and collects dusts. Antistatic Urethane decreases charging.

RoHS

A, B Configurable Type No Adhesive	Material	Hardness	Color
UTSHNE	Antistatic Urethane (Ether Polyurethane)	Shore A90	Gray
UTSME	Antistatic Urethane (Ester Polyurethane)	Shore A70	
UTSLE		Shore A50	
LUTN	Low Rebound Urethane (Ester Polyurethane)	Shore A70	

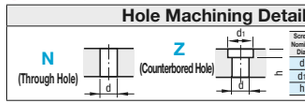
Properties of Low Rebound Urethane ☞P.389

■Characteristic Values of Antistatic Urethane

Specific Volume Resistivity	$2.1x10^8\Omega\cdot cm$
Surface Resistivity	$4.0x10^9\Omega$

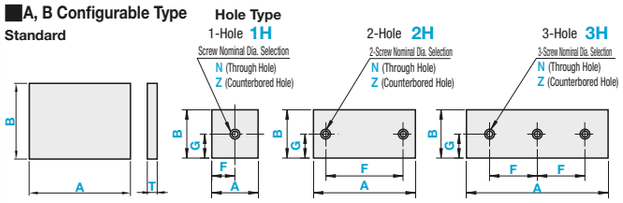
(Conditions: Temperature 30°C Humidity 60%)
All other properties are equal to those of urethane of the same hardness.

■Hole Machining Details



■A, B Configurable Type

Standard



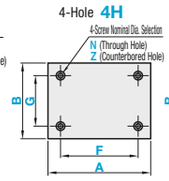
Hole Type

1-Hole 1H
Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbored Hole)

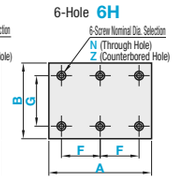
2-Hole 2H
2-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbored Hole)

3-Hole 3H
3-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbored Hole)

4-Hole 4H
4-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbored Hole)



6-Hole 6H
6-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbored Hole)



■Accuracy Standards

T Tolerance

T	Tolerance
1~4	±0.3
5~10	±0.4
15~30	±0.5

A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~400	±1.2
401~500	±1.5

■A, B Configurable - Standard Type

Part Number Type	T	1mm Increment A	1mm Increment B
	1		
	2		
	3		
UTSHNE (Antistatic, Shore A90)	4	10~500 (for LUTN 10~250)	10~500 (for LUTN 10~250)
UTSME (Antistatic, Shore A70)	*5		
UTSLE (Antistatic, Shore A50)	6		
LUTN (Low Rebound, Shore A70)	8		
	*10		
	*15		
	*20		
	*25		
	*30		

Ordering Example

■A, B Configurable Type

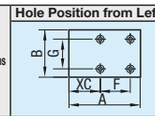
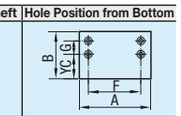
Part Number - A - B - F - G - Screw Nominal Dia.

UTSHNE8 - 300 - 200
UTSHNE4H8 - 200 - 150 - F140 - G120 - N5

Alterations

Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)

UTSHNE4H25 - 100 - 80 - F60 - G20 - Z5 - YC40

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment 5≤XC≤486 (2H, 4H Types) d(d1)/2+2.5≤XC≤A-F-d(d1)/2-2.5 (3H, 6H Types) d(d1)/2+2.5≤XC≤A-2F-d(d1)/2-2.5	YC=1mm Increment 5≤YC≤486 (Up to 236 for LUTN) d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5

T Dimensions of LUTN are * marked sizes only. A≥B≥T

■A, B Configurable - Hole Type

Part Number Type	Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
	1H	1			5~495 (for LUTN 5~245) (1H Type)	5~495 (for LUTN 5~245) (1H, 2H, 3H Types)		-
		2					3	-
	2H	3						-
UTSHNE (Antistatic, Shore A90)		4	25~500 (for LUTN 25~250)	25~500 (for LUTN 25~250)	9~491 (for LUTN 9~241) (2H, 4H Types)	9~491 (for LUTN 9~241) (4H, 6H Types)	4	-
UTSME (Antistatic, Shore A70)		*5					5	-
UTSLE (Antistatic, Shore A50)	3H	6					6	-
LUTN (Low Rebound, Shore A70)		8						3
	4H	*10			9~245 (for LUTN 9~120) (3H, 6H Types)		8	3 4
		*15					10	4 5 6 8
		*20						4 5 6 8
	6H	*25						4 5 6 8 10
		*30						4 5 6 8 10

■Hole Machining Charge

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

(Ex.) Part Number - A - B - F - G - Screw Nominal Dia.
UTSHNE4H10 - 500 - 400 - F240 - G160 - N8
>>

(Standard Type Unit Price) + (Hole Machining Charge) = Hole Type Unit Price

T Dimensions of LUTN are * marked sizes only. A≥B≥T
Dimension F Specification Range: For 1H: d(d1)/2+2.5≤F≤A-d(d1)/2-2.5; for 2H, 4H:d(d1)+5≤F≤A-d(d1)-5, for 3H, 6H: d(d1)+5≤F≤A/2-d(d1)/2-2.5.
Dimension G Specification Range: For 1H, 2H, 3H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H, 6H: d(d1)+5≤G≤B-d(d1)-5. (d for through holes, d1 for counterbored holes.)

■A, B Configurable Type

Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
	1	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	2	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
UTSHNE (x0.8)		401~500					
	3	10~100		-	-	-	-
UTSME (x1.2)		101~200					
		201~300					
		301~400					
UTSLE (x1.2)		401~500					
	4	10~100		-	-	-	-
LUTN (x1.3)		101~200					
		201~300					
		301~400					
( ) Material Multiplier		401~500					
	5	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	6	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
	8	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
UTSHNE (x0.8)		401~500					
	15	15~100		-	-	-	-
UTSME (x1.2)		101~200					
		201~300					
		301~400					
UTSLE (x1.2)		401~500					
	20	20~100		-	-	-	-
LUTN (x1.3)		101~200					
		201~300					
		301~400					
( ) Material Multiplier		401~500					
	25	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	30	30~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

The price of this product is the unit price shown in the table multiplied by material multiplier.

(Ex.) Part Number - A - B
UTSHNE10 - 500 - 400 >>

(Unit Price) x (Material Multiplier) = Unit Price of Standard Type

Urethane Sheets with Oil-Resistant Adhesives

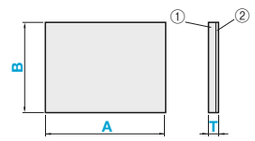
■Rubber sheets with peel-and-stick backing adhesives with good oily surface adhesion.

RoHS

Type A, B Selectable Type	Type A, B Configurable Type	Material ①M	Hardness H	Color	②Adhesive Surface
NTUS	NTUSF	Ether Type Polyurethane	Shore A95	Natural Color	Special Acrylic Adhesive
NTUH	NTUHF		Shore A90		
NTUM	NTUMF	Ester Type Polyurethane	Shore A70		
NTUL	NTULF		Shore A50		

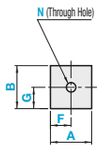
Properties ☞P.389
Equiv. to the urethane of the similar hardness.

■A, B Selectable / Configurable Standard

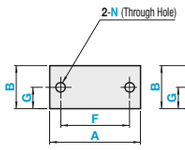


■A, B Configurable - Hole Type

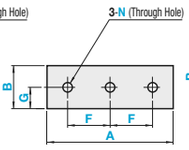
1-Hole 1H



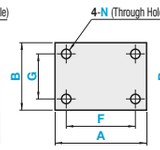
2-Hole 2H



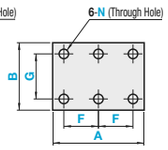
3-Hole 3H



4-Hole 4H



6-Hole 6H



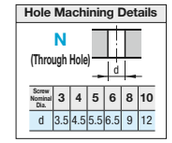
For Hole Type, specify nominal diameter.

■Accuracy Standards
・T Dimension Tolerance
±0.3 (including Adhesive Part 80μm)

A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~400	±1.2
401~500	±1.5

■Hole Machining Details



■A, B Selectable - Standard Type

Part Number Type	T	Selection A	Selection B
NTUS	1	100	100
NTUH		200	200
NTUM	2	300	300
NTUL		400	400
	3	500	500

■A, B Configurable - Standard / Hole Type

Part Number Type	Nominal	T	1mm Increment (A≥B) A	1mm Increment (A≥B) B	0.5mm Increment F	0.5mm Increment G	N
NTUSF	1H	1	10~500	10~500	5~495 (1H Type)	5~495 (1H, 2H, 4H Types)	3
NTUHF	2H						4
NTUMF	3H	2			9~491 (2H, 4H Types)		5
NTULF	4H					9~491 (3H, 6H Types)	6
	6H	3			9~245 (3H, 6H Types)		8
							10

■Adhesive Strength (180 Degree Peel Strength)

Item		Special Acrylic Adhesive	General Acrylic Adhesive (Reference Values)
Adhesive Strength (N)	Ordinary Condition	11	11
	* Oiled Surface	9	3

* Oiled Surface: Salad oil is coated on stainless steel plate using absorbent cotton, and measurement is taken after 2 hours.
Testing Method: 180° Peeling Test (25μm thick and 25mm wide PET film bonded to EN 1.4301 Equiv. plate)

Ordering Example

Part Number - A - B - F - G - N

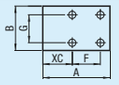
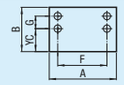
NTUS3 - 300 - 100
NTUH3 - 100 - 100
NTUSF4H2 - 150 - 100 - F140 - G40 - N3

Dimension F Specification Range: For 1H: d/2+2.5≤F≤A-d/2-2.5, for 2H, 4H:
d+5≤F≤A-d-5, for 3H, 6H: d+5≤F≤A/2-d/2-2.5.
Dimension G Specification Range: For 1H, 2H, 3H: d/2+2.5≤G≤B-d/2-2.5, for 4H, 6H:
d+5≤G≤B-d-5.
The upper limits of A and B are different between A, B Selectable Type and A, B Configurable Type.

Alterations

Part Number - A - B - F - G - N - (XC, YC)

NTUMF4H3 - 100 - 80 - F65 - G40 - N4 - YC30

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment 5≤XC≤486 (2H, 4H Types) d/2+2.5≤XC≤A-F-d/2-2.5 (3H, 6H Types) d/2+2.5≤XC≤A-2F-d/2-2.5	YC=1mm Increment 5≤YC≤486 d/2+2.5≤YC≤B-G-d/2-2.5

The price of this product is the unit price shown in the table multiplied by material multiplier.

(Ex.) Part Number - A - B
NTUS1 - 300 - 200 >>

(Unit Price) x (Material Multiplier) = Unit Price of Standard Type

■A, B Selectable - Standard Type

Part Number Type	T	A	Unit Price B 100	200	300	400	500
NTUS (x1.3)	1	100		-	-	-	-
NTUH (x1.0)		200			-	-	-
NTUM (x1.1)		300				-	-
NTUL (x2.0)		400					-
		500					
	2	100		-	-	-	-
		200			-	-	-
		300				-	-
		400					-
		500					
( ) Material Multiplier	3	100		-	-	-	-
		200			-	-	-
		300				-	-
		400					-
		500					

■A, B Configurable - Standard / Hole Type

Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
NTUSF (x1.3)	1	10~100		-	-	-	-
NTUHF (x1.0)		101~200			-	-	-
NTUMF (x1.1)		201~300				-	-
NTULF (x2.0)		301~400					-
		401~500					
	2	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
( ) Material Multiplier	3	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					

Metal-Plated Urethane Sheets

Urethane / Rubber Blocks

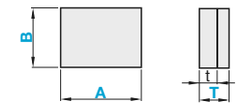
■Metal-Plated Urethane Sheets are available in short lead time.

RoHS

Type	Type	Material	Hardness	Color
A, B Selectable	UTPFS	Ether Polyurethane	Shore A95	Natural Color
	UTPFH		Shore A90	
	UTPFM	Ester Polyurethane	Shore A70	
	UTPFL		Shore A50	
A Configurable	UTPFSA	Ether Polyurethane	Shore A95	Natural Color
	UTPFHA		Shore A90	
	UTPFMA	Ester Polyurethane	Shore A70	
	UTPFLA		Shore A50	

Properties P.389
Material: EN 1.4301 Equiv.

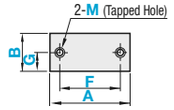
■Standard



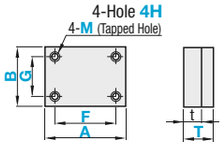
■Hole Type

1-Hole 1H

2-Hole 2H



4-Hole 4H



■Accuracy Standards

T Tolerance

T	Tolerance
10,15	±0.2

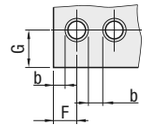
A, B Tolerance

A, B	Tolerance
50 or Less	±0.3
51~100	±0.5

■Machining Limits

(Distance between Holes, Thickness between Holes and Edges)

Should be b≥2.



Part Number			A		B	Plate Hole Position 0.5mm Increment		Tapped Hole M	t (Metal Plate Thickness)
Type		Nominal	T	A, B Selectable	A Configurable 1mm Increment	Selection	F	G		
A, B Selectable	A Configurable			10						
UTPFS	UTPFSA	1H	10	20	10~100	10 20 30 50	5~80	4~42	3 4 5 6 8 10	6
UTPFH	UTPFHA	2H		50						
UTPFM	UTPFMA	4H		100						
UTPFL	UTPFLA		15							10

Ordering Example

■Standard

Part Number - A - B

UTPFS10 - 50 - 50

■Hole Type

Part Number - A - B - F - G - M

UTPFSA2H10 - 20 - 30 - F10 - G15 - M4

The price of this product is the unit price shown in the table multiplied by material multiplier:

(Ex.) Part Number - A - B >> (Unit Price) x (Material Multiplier) = Unit Price of Standard Type

UTPFL10 - 10 - 10

■A, B Selectable

Part Number		B	Unit Price A			
Type	T		10	20	50	100
UTPFS (x1.0) UTPFH (x0.9) UTPFM (x1.0) UTPFL (x1.1)	10	10				
		20				
		30				
		50				
	15	10				
		20				
		30				
		50				

■A Configurable

Part Number		B	Unit Price A			
Type	T		10~25	26~50	51~75	76~100
UTPFSA (x1.0) UTPFHA (x0.9) UTPFMA (x1.0) UTPFLA (x1.1)	10	10				
		20				
		30				
		50				
	15	10				
		20				
		30				
		50				

■Tap Hole Machining Charge

Hole Type	Tapped Hole M
1H	
2H	
4H	

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

(Ex.) Part Number - A - B - F - G - M >>

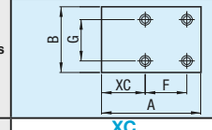
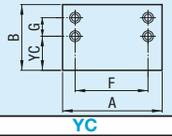
UTPFSA2H10 - 20 - 50 - F10 - G15 - M4

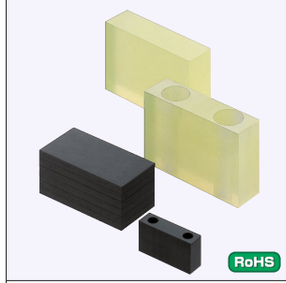
(Standard Type Unit Price) + (Hole Machining Charge) = Hole Type Unit Price

Alterations

Part Number - A - B - F - G - M - (XC, YC)

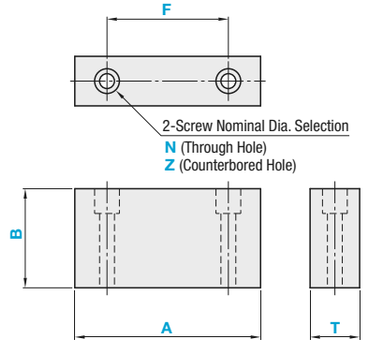
UTPFSA4H10 - 20 - 30 - F10 - G15 - M4 - YC10

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment For machining limits, see above.	YC=1mm Increment For machining limits, see above.



RoHS

Type	Material	Hardness	Color
BUTSN	Ether Polyurethane	Shore A95	Natural Color
BUTHN		Shore A90	Natural Color
BUTM	Ester Polyurethane	Shore A70	Natural Color
BUTL		Shore A50	Natural Color
BRBNM	Nitrile Rubber	Shore A70	Black
BRBCM	Chloroprene Rubber	Shore A65	Black
BRBFM	Fluororubber	Shore A80	Black
BRBSM	Silicon Rubber	Shore A70	Light Gray
BRBAM	Silicon Rubber	Shore A50	Milky White
BUNSE	Low Elasticity Rubber	Shore A32	Black



Type	Material	Tolerance			
BUTSN	Ether Polyurethane	T Dimension Tolerance	6 ~ 9	10 or More	
BUTHN			±0.3	±0.5	
BUTM	Ester Polyurethane	A, B Dimension Tolerance	30mm or Less	31 ~ 50	51 or More
BUTL			±0.5	±0.7	±0.8
BRBNM	Nitrile Rubber	T Dimension Tolerance	6 ~ 9	10 or More	
BRBCM	Chloroprene Rubber		±0.5	±0.8	
BRBFM	Fluororubber				
BRBSM	Silicon Rubber				
BRBAM	Silicon Rubber	A, B Dimension Tolerance	30mm or Less	31 ~ 50	51 or More
BUNSE	Low Elasticity Rubber		±0.8	±1.0	±1.5

5≤T-d(d1)

d(d1)+5≤F≤A-d(d1)-5

Hole Machining Details

Screw Nominal Dia.	3	4	5	6	8	10	12
d	3.5	4.5	5.5	6.5	9	12	14
d1	6.5	8	9.5	11	14	17.5	20.5
h	3.5	4.5	5.5	6.5	9	11	14

Part Number	1mm Increment				Screw Nominal Dia. Selection
Type	A	B	T	F	N (Through Hole), Z (Counterbored Hole)
BUTSN (Urethane A95)	25~150	25~100	6~30	9~141 (N=0 >> F=0)	0 3 4 5 6 8 10 12 (When B<30)
BUTHN (Urethane A90)					
BUTM (Urethane A70)					0 5 6 8 10 12 (When 30≤B<50)
BUTL (Urethane A50)					
BRBNM (Nitrile Rubber)					
BRBCM (Chloroprene Rubber)					0 10 12 (When 50≤B)
BRBFM (Fluororubber)					
BRBSM (Silicon Rubber A70)					(For No Hole) N=0
BRBAM (Silicon Rubber A50)					
BUNSE (Low Elasticity Rubber)					

Ordering Example

Part Number - A - B - T - F - Screw Nominal Dia. Selection

BUTSN - A100 - B100 - T21 - F53 - N12

BUNSE - A150 - B50 - T7 - F0 - N0

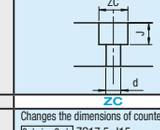
Part Number				Unit Price						
Type	A	B	T	BUTSN BUTM BUTL	BUTHN	BRBNM BRBCM	BRBFM	BRBSM BRBAM	BUNSE
BUTSN BUTHN BUTM BUTL BRBNM BRBCM BRBFM BRBSM BRBAM BUNSE	25~50	25~40	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		41~60	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		61~80	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		81~100	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
	51~100	25~40	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		41~60	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		61~80	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		81~100	6~10						
			11~15						
			16~20						
			21~25						
			26~30						

Part Number				Unit Price						
Type	A	B	T	BUTSN BUTM BUTL	BUTHN	BRBNM BRBCM	BRBFM	BRBSM BRBAM	BUNSE
BUTSN BUTHN BUTM BUTL BRBNM BRBCM BRBFM BRBSM BRBAM BUNSE	101~150	25~40	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		41~60	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		61~80	6~10						
			11~15						
			16~20						
			21~25						
			26~30						
		81~100	6~10						
			11~15						
			16~20						
			21~25						
			26~30						

Alterations

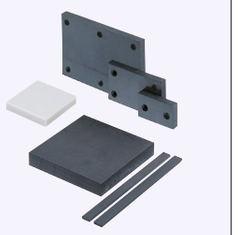
Part Number - A - B - T - F - Screw Nominal Dia. Selection - (ZC)

BUTSN - A100 - B100 - T30 - F53 - Z10 - ZC17.5~J16

Alteration	Counterbored Hole Detailed Dimensions
	
Code	ZC
Spec.	Changes the dimensions of counterbore hole. Ordering Code ZC17.5-J15 ZC, J=0.5mm Increment ZC-d≥4 B-J≥2

Nitrile Rubber Sheets

■Nitrile rubber excels in abrasion and oil resistance and is inexpensive. ■Oil-resistant adhesives are available as an alternative.
For Rubber Gaskets, see P.455. For Rubber Blocks, see P.422.



RoHS

A Selectable Type		A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
RBNM	RBNMA	RBNMF	RBNMFA	Nitrile Rubber (NBR)	Shore A70	Black
RBTM	RBTMA	RBTMF	RBTMFA		Shore A50	Black
RBNW	RBNWA	RBNWF	RBNWFA		Shore A65	White

Adhesive thickness is 0.14 ~ 0.2mm. For Adhesive Strength Data, see P.438 (ADTR).
Temperature limit for seals is 80°C. For oil-resistant adhesive strength, P.420

■Accuracy Standards

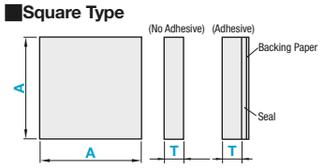
T Tolerance

T	Tolerance
0.5	±0.2
1~3	±0.3
5	±0.4
10	±0.6
15~30	+2.0 -0.5

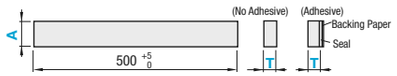
A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~500	±1.5

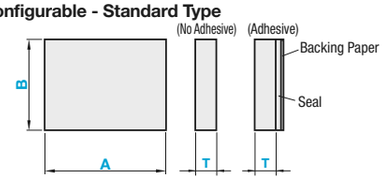
■Square Type



■Band Type

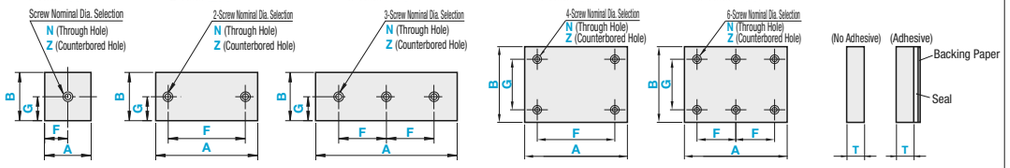


■A, B Configurable - Standard Type

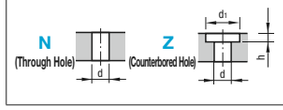


■A, B Configurable - Hole Type

1-Hole 1H / 2-Hole 2H / 3-Hole 3H / 4-Hole 4H / 6H



Hole Machining Details



Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

For Adhesive Type T5 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
A, B dimension tolerance has been changed. Please refer to the accuracy standards above.

■Square Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBNM	RBNMA	0.5	300 500
RBTM	RBTMA	*1	
*RBNW	*RBNWA	*2	
		*3	
		*5	
		*10	
		15	
		*20	
		*30	

Only * marked T dimensions are available for RBNW and RBNWA.

■Band Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBNM	RBNMA	0.5	3 5 10 20 30 40 50 80 100
RBTM	RBTMA	*1	
*RBNW	*RBNWA	*2	
		*3	
		*5	
		*10	

L dimension is 500mm.
Only * marked T dimensions are available for RBNW and RBNWA.

■A, B Configurable - Standard Type

Part Number Type		T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive			
RBNMF	RBNMFA	0.5	10~500	10~500
RBTMF	RBTMFA	*1		
*RBNWF	*RBNWFA	*2		
		*3		
		*5		
		*10		
		15		
		*20		
		*30		

Only * marked T dimensions are available for RBNWF and RBNWFA.
A≥B≥T

■A, B Configurable - Hole Type

Part Number Type		Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive	Adhesive	1H	0.5	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
RBNMF	RBNMFA		*1						-
RBTMF	RBTMFA	2H	*2					4	-
*RBNWF	*RBNWFA		*3			9~491 (2H, 4H Types)		5	-
		3H	*5					6	-
			*10				9~491 (4H, 6H Types)		3 4
		4H	15					8	4 5 6 8
			*20			9~245 (3H, 6H Types)		10	4 5 6 8
		6H	*30						4 5 6 8 10

Dimension F Specification Range: For 1H: d(d1)/2+2.5≤F≤A-d(d1)/2-2.5, for 2H, 4H: d(d1)+5≤F≤A-d(d1)-5, for 3H, 6H: d(d1)+5≤F≤A/2-d(d1)/2-2.5.
Dimension G Specification Range: For 1H, 2H, 3H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H, 6H: d(d1)+5≤G≤B-d(d1)-5. (d for through holes, d1 for counterbored holes.)
Only * marked T dimensions are available for RBNWF and RBNWFA. A≥B≥T

Ordering Example

■Square Type, Band Type
Part Number - A
RBNM5 - 100
RBTMA15 - 500

■A, B Configurable - Standard / Hole Type
Part Number - A - B - F - G - Screw Nominal Dia.
RBNMF10 - 110 - 65
RBTMF4H20 - 200 - 150 - F140 - G100 - Z5

■Square Type

Type	T	Unit Price NBR Black No Adhesive: RBNM RBTM	NBR Black Adhesive: RBNMA RBTMA	NBR White No Adhesive: RBNW	NBR White Adhesive: RBNWA	NBR Black No Adhesive: RBNM RBTM	NBR Black Adhesive: RBNMA RBTMA	NBR White No Adhesive: RBNW	NBR White Adhesive: RBNWA
T \ A		300				500			
	0.5			-	-			-	-
	1								
	2								
	3								
	5								
	10								
	15			-	-			-	-
	20								
	30								

■A Selectable - Band

Part Number Type	T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive	0.5									
RBNM (x1.0)										
RBTM (x1.0)	*1									
*RBNW (x1.2)										
	*2									
Adhesive										
RBNMA (x1.3)	*3									
RBTMA (x1.3)										
*RBNWA (x1.4)	*5									
( )Material Multiplier	*10									

Only * marked T dimensions are available for RBNW.

■A, B Configurable - Standard / Hole Type

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive RBNMF (x1.0) RBTMF (x1.0) *RBNWF (x1.4)	0.5	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	*1	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Adhesive RBNMFA (x1.3) RBTMFA (x1.3) *RBNWFA (x1.5)	*2	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	*3	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
( ) Material Multiplier	*5	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive RBNMF (x1.0) RBTMF (x1.0) *RBNWF (x1.4)	*10	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	15	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Adhesive RBNMFA (x1.3) RBTMFA (x1.3) *RBNWFA (x1.5)	*20	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
( ) Material Multiplier	*30	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

Only * marked T dimensions are available for RBNWF and RBNWFA.
Yellowing of White Rubber: Please note upon application that yellowing is more pronounced compared to black rubber.

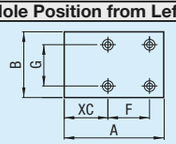
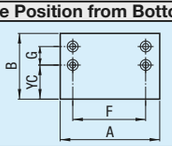
■Hole Machining Charge

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

(Ex.) Part Number - A - B - F - G - Screw Nominal Dia. >>
RBNMF4H10 - 200 - 180 - F160 - G140 - Z3

(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Alterations
Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC, KT2)
RBNMF4H5 - 100 - 80 - F65 - G40 - N4 - YC30
RBNMFA2 - 250 - 150 - KT2

Alterations	Hole Position from Left	Hole Position from Bottom	Adhesive Type Change
			Changes to oil-resistant adhesives.
Code	XC	YC	KT2
Spec.	XC=1mm Increment 5≤XC≤486 (2H, 4H Types) d(d1)/2+2.5≤XC≤A-F-d(d1)/2-2.5 (3H, 6H Types) d(d1)/2+2.5≤XC≤A-2F-d(d1)/2-2.5	YC=1mm Increment 5≤YC≤486 d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5	Not available for No Adhesive Type. Only available for T=1, 2, 3. Band Type A=3 or 5 is not selectable. RBNWA and RBNWFA are not available. Ordering Code KT2

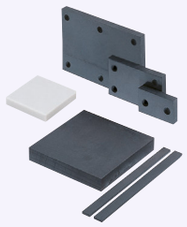
■Price of Urethane Sheets with Oil-Resistant Adhesives

KT2 (A dimension)
10~100
101~200
201~300
301~400
401~500

*Alteration Code for NTNR and NTNRF has changed to KT2.

Chloroprene / Non-Staining Chloroprene Rubber Sheets

■Chloroprene rubber excels in mechanical strength and alkali resistance. Non-staining chloroprene rubber which minimizes contamination from contacting materials is also available.
For Rubber Gaskets, see ☞P.455. For Rubber Blocks, see ☞P.422.

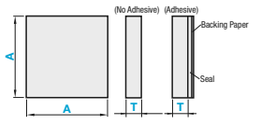


RoHS

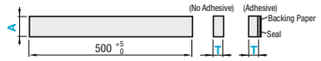
A Selectable Type		A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
RBCM	RBCMA	RBCMF	RBCMFA	Chloroprene Rubber (CR)	Shore A65	Black
RBOM	RBOMA	RBOMF	RBOMFA	Non-Staining Chloroprene Rubber (CR)	Shore A60	Gray
RBCW	RBCWA	RBCWF	RBCWFA	Chloroprene Rubber (CR)	Shore A60	White

Adhesive thickness is 0.14 ~ 0.2mm.
For Adhesive Strength Data, see ☞P.438 (ADTR).
Temperature limit for seals is 80°C.

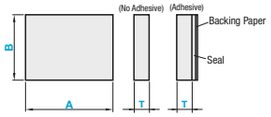
■Square Type



■Band Type



■A, B Configurable - Standard Type



■Accuracy Standards

T Tolerance

T	Tolerance
0.5	±0.2
1~3	±0.3
5	±0.4
10	±0.6
15~30	+2.0 -0.5

A, B Tolerance

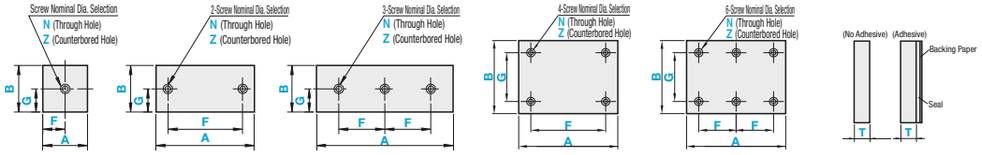
A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~500	±1.5

Hole Machining Details

Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■A, B Configurable - Hole Type

1-Hole 1H　2-Hole 2H　3-Hole 3H　4-Hole 4H　6-Hole 6H



For Adhesive Type T5 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
A, B dimension tolerance has been changed. Please refer to the accuracy standards above.

■Square Type

Part Number Type		T	A Selection
No Adhesive	Adhesive	1	300
		2	
RBCM	RBCMA	3	500
		5	
RBOM	RBOMA	10	T15 or more of RBOM and RBOMA, 300 Only
RBCW	RBCWA	15	
		20	
		30	

T dimension 15 is not available for RBCW and RBCWA.

■Band Type

Part Number Type		T	A Selection
No Adhesive	Adhesive	1	3 5 10 20 30 40 50 80 100
RBCM	RBCMA		
RBOM	RBOMA	2	
RBCW	RBCWA	3	
		5	
		10	

L dimension is 500mm.

■A, B Configurable - Standard Type

Part Number Type		T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive	1	10~500	10~500
		2		
RBCMF	RBCMFA	3		
		5		
RBOMF	RBOMFA	10	T15 or more of RBOMF and RBOMFA, 10~300 Only	T15 or more of RBOMF and RBOMFA, 10~300 Only
RBCWF	RBCWFA	15		
		20		
		30		

A≥B≥T
T dimension 15 is not available for RBCWF and RBCWFA.

■A, B Configurable - Hole Type

Part Number Type		Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive	Adhesive	1H	1	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
			2					4	-
RBCMF	RBCMFA	2H	3					5	-
			5			9~491 (2H, 4H Types)			
RBOMF	RBOMFA	3H	10	T15 or more of RBOMF and RBOMFA, 25~300 Only	T15 or more of RBOMF and RBOMFA, 25~300 Only		9~491 (4H, 6H Types)	6	3 4
RBCWF	RBCWFA	4H	15					8	4 5 6 8
			20			9~245 (3H, 6H Types)			
		6H	30					10	4 5 6 8 10

A≥B≥T
Dimension F Specification Range: For 1H: $d(d_1)/2+2.5\leq F\leq A-d(d_1)/2-2.5$, for 2H, 4H: $d(d_1)+5\leq F\leq A-d(d_1)-5$, for 3H, 6H: $d(d_1)+5\leq F\leq A/2-d(d_1)/2-2.5$.
Dimension G Specification Range: For 1H, 2H, 3H: $d(d_1)/2+2.5\leq G\leq B-d(d_1)/2-2.5$, for 4H, 6H: $d(d_1)+5\leq G\leq B-d(d_1)-5$. (d for through holes, d_1 for counterbored holes.)

Ordering Example

■Square Type, Band Type

Part Number - A

RBCM5 - 100
RBOM10 - 500

■A, B Configurable - Standard / Hole Type

Part Number - A - B - F - G - Screw Nominal Dia.

RBCMF10 - 110 - 65
RBCMF4H20 - 200 - 150 - F140 - G100 - Z5

■Square Type

Part Number Type		T	A	Unit Price A 300	Unit Price A 500
No Adhesive		1			
RBCM (x1.0)		2			
RBCW (x1.7)		3			
		5			
Adhesive		10			
RBCMA (x1.3)		15			
RBCWA (x1.9)		20			
		30			
No Adhesive		1			
RBOM (x1.0)		2			
		3			
		5			
Adhesive		10			
RBOMA (x1.1)		15			-
( ) Material Multiplier		20			-
		30			-

The price of this product is the unit price shown in the table multiplied by material multiplier.
(Ex.) Part Number - A - B >> (Unit Price) x (Material Multiplier) = Standard Type Unit Price
RBCMFA10 - 500 - 400

■Band Type

Part Number Type		T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive		1									
RBCM (x1.0)		2									
RBCW (x1.2)		3									
Adhesive		5									
RBCMA (x1.3)		10									
RBCWA (x1.3)											
No Adhesive		1									
RBOM (x1.0)		2									
Adhesive		3									
RBOMA (x1.1)		5									
( ) Material Multiplier		10									

T dimension 15 is not available for RBCW and RBCWA.

■A, B Configurable - Standard / Hole Type

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

Part Number Type		A	Unit Price B 10~100	101~200	201~300	301~400	401~500
	1	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
	2	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
No Adhesive	3	10~100		-	-	-	-
RBCMF (x1.0)		101~200			-	-	-
RBCWF (x1.6)		201~300				-	-
		301~400					-
		401~500					
	5	10~100		-	-	-	-
Adhesive		101~200			-	-	-
RBCMFA (x1.3)		201~300				-	-
RBCWFA (x1.7)		301~400					-
		401~500					
	10	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
( ) Material Multiplier	15	15~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
	20	20~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
	30	30~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					

Part Number Type		A	Unit Price B 10~100	101~200	201~300	301~400	401~500
	1	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
	2	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
No Adhesive	3	10~100		-	-	-	-
RBOMF (x1.0)		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
Adhesive	5	10~100		-	-	-	-
RBOMFA (x1.1)		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
( ) Material Multiplier	10	10~100		-	-	-	
		101~200			-	-	
		201~300				-	
		301~400					-
		401~500					
	15	15~100		-	-		
		101~200			-		
		201~300					
	20	20~100		-	-		
		101~200			-	-	-
		201~300					
	30	30~100		-	-		
		101~200			-		
		201~300					

T dimension 15 is not available for RBCWF and RBCWFA.
Yellowing of White Rubber: Please note upon application that yellowing is more pronounced compared to black rubber.

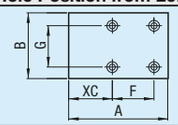
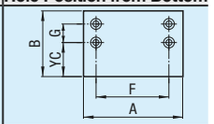
(Ex.) Part Number - A - B - F - G - Screw Nominal Dia. >>
RBCMF4H10 - 200 - 180 - F160 - G140 - Z3

■Hole Machining Charge

(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

Alterations　Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)
RBCMF4H5 - 100 - 80 - F65 - G40 - N4 - YC30

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment 5≤XC≤486 (Non-contaminating chloroprene rubber T15 or larger is available up to 286.) (2H, 4H Types) $d(d_1)/2+2.5\leq XC\leq A-F-d(d_1)/2-2.5$ (3H, 6H Types) $d(d_1)/2+2.5\leq XC\leq A-2F-d(d_1)/2-2.5$	YC=1mm Increment 5≤YC≤486 (Non-contaminating chloroprene rubber T15 or larger is available up to 286.) $d(d_1)/2+2.5\leq YC\leq B-G-d(d_1)/2-2.5$

Ethylene Rubber Sheets, Butyl Rubber Sheets, Amber Color Rubber Sheets

■Ethylene rubber excels in alkali, ketone and ozone resistance, especially in weather resistance.
■Butyl rubber excels in weather, chemical and gas permeability resistance. Inferior in oil and flame resistance.
■Amber color rubber excels in mechanical strength and abrasion resistance. Its elasticity and tensility help to fit well with workpiece shapes. Can be used as a floor plate in a place requiring air tightness.

A Selectable Type		A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
RBPM	RBPMA	RBPMF	RBPMFA	Ethylene Rubber (EPDM)	Shore A65	Black
RBEW	RBEWA	RBEWF	RBEWFA			White
RBRM	RBRMA	RBRMF	RBRMFA	Butyl Rubber (IIR)	Shore A65	Black
RBWM	RBWMA	RBWMF	RBWMFA			White
AMSE	AMSEA	AMSET	AMSETA	Amber Color Rubber	Shore A45	Amber Color

Adhesive thickness is 0.14 ~ 0.2mm. Temperature limit for seals is 80°C.
For Adhesive Strength Data, see P438 (ADTR).

■Accuracy Standards

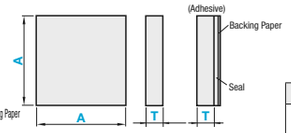
T Tolerance

T	Tolerance
0.5	±0.2
1~3	±0.3
5	±0.4
10	±0.6
15~30	-0.5~+2.0

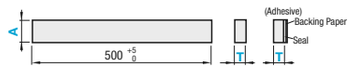
A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~500	±1.5

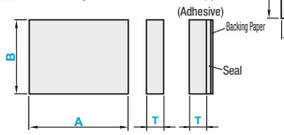
■Square Type



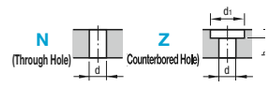
■Band Type



■A, B Configurable - Standard Type

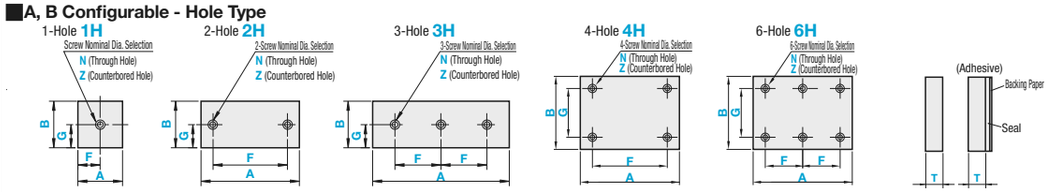


Hole Machining Details



Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■A, B Configurable - Hole Type



For Adhesive Type T5 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
A, B dimension tolerance has been changed. Please refer to the accuracy standards above.

■Square Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBPM	RBPMA	*1	300
*RBEW	*RBEWA	*2	500
RBRM	RBRMA	*3	
RBWM	RBWMA	5	
AMSE	AMSEA	10	
		15	
		20	
		30	

Only * marked T dimensions are available for RBEW and RBEWA.
T15 is not selectable for Butyl Rubber White, T30 is not selectable for Amber Color Rubber.

■Band Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBPM	RBPMA	*1	3
*RBEW	*RBEWA		5
RBRM	RBRMA		10
RBWM	RBWMA		20
AMSE	AMSEA		30
		*2	40
		*3	50
		5	80
		10	100

L dimension is 500mm. (300mm for White Rubber)
Only * marked T dimensions are available for RBEW and RBEWA.

■A, B Configurable - Standard Type

Part Number Type		T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive			
RBPMF	RBPMFA	*1	10~500	10~500
*RBEWF	*RBEWFA	*2		
RBRMF	RBRMFA	*3		
RBWMF	RBWMFA	5		
AMSET	AMSETA	10		
		15		
		20		
		30		

A≥B≥T
Only * marked T dimensions are available for RBEWF and RBEWFA.
T15 is not selectable for Butyl Rubber White, T30 is not selectable for Amber Color Rubber.

■A, B Configurable - Hole Type

Part Number Type		Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive	Adhesive		1	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
RBPMF	RBPMFA	1H	2					4	-
RBEWF	RBEWFA	2H	3					5	-
RBRMF	RBRMFA	3H	5			9~491 (2H, 4H Types)		6	3 4
RBWMF	RBWMFA	4H	10				9~491 (4H, 6H Types)	8	4 5 6 8
AMSET	AMSETA	6H	15			9~245 (3H, 6H Types)		10	4 5 6 8
			20						4 5 6 8 10
			30						

Dimension F Specification Range: For 1H: d(d1)/2+2.5≤F≤A-d(d1)/2-2.5, for 2H, 4H: d(d1)+5≤F≤A-d(d1)-5, for 3H, 6H: d(d1)+5≤F≤A/2-d(d1)/2-2.5.
Dimension G Specification Range: For 1H, 2H, 3H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H, 6H: d(d1)+5≤G≤B-d(d1)-5. (d for through holes, d1 for counterbored holes.)
For RBEWF and RBEWFA, T≤3. T15 is not selectable for Butyl Rubber White, T30 is not selectable for Amber Color Rubber. A≥B≥T

Ordering Example

■Square Type, Band Type
Part Number - A
RBPM5 - 300

■A, B Configurable - Standard / Hole Type
Part Number - A - B - F - G - Screw Nominal Dia.
RBPMF10 - 110 - 65
RBPMF4H20 - 200 - 150 - F140 - G100 - Z5

The price of this product is the unit price shown in the table multiplied by material multiplier.
(Ex.) Part Number - A - B >> RBPMFA10 - 500 - 400
(Unit Price) x (Material Multiplier) = Standard Type Unit Price

■Square Type

Part Number Type		T	Unit Price A 300	Unit Price A 500
No Adhesive		*1		
RBPM (x1.0)		*2		
*RBEW (x1.9)		*3		
RBRM (x1.3)		5		
RBWM (x1.4)		10		
AMSE (x1.5)		15		
Adhesive		20		
RBPMA (x1.3)		30		
*RBEWA (x2.0)				
RBRMA (x1.6)				
RBWMA (x1.5)				
AMSEA (x1.6)				
( ) Material Multiplier				

Only * marked T dimensions are available for RBEW and RBEWA.
T15 is not selectable for Butyl Rubber White, T30 is not selectable for Amber Color Rubber.

■Band Type

Part Number Type		T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive		*1									
RBPM (x1.0)		*2									
*RBEW (x1.3)											
RBRM (x1.0)		*3									
RBWM (x1.0)											
AMSE (x1.7)		5									
Adhesive											
RBPMA (x1.3)		10									
*RBEWA (x1.4)											
RBRMA (x1.2)											
RBWMA (x1.2)											
AMSEA (x1.8)											
( ) Material Multiplier											

Only * marked T dimensions are available for RBEW and RBEWA.

■A, B Configurable - Standard / Hole Type
The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

Part Number Type		A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive		10~100		-	-	-	-
RBPMF (x1.0)	*1	101~200			-	-	-
*RBEWF (x1.6)		201~300				-	-
RBRMF (x1.0)		301~400					-
RBWMF (x1.3)		401~500					
AMSET (x1.7)	*2	10~100		-	-	-	-
Adhesive		101~200			-	-	-
RBPMFA (x1.3)		201~300				-	-
*RBEWFA (x1.7)		301~400					-
RBRMFA (x1.3)		401~500					
RBWMFA (x1.4)	*3	10~100		-	-	-	-
AMSETA (x1.8)		101~200			-	-	-
( ) Material Multiplier		201~300				-	-
		301~400					-
		401~500					
	5	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					

Part Number Type		A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive		10~100					
RBPMF (x1.0)	10	101~200					
RBRMF (x1.0)		201~300				-	-
RBWMF (x1.3)		301~400					-
AMSET (x1.7)		401~500					
Adhesive	15	15~100		-	-	-	-
RBPMFA (x1.3)		101~200			-	-	-
RBRMFA (x1.3)		201~300				-	-
RBWMFA (x1.4)		301~400					-
AMSETA (x1.8)		401~500					
( ) Material Multiplier	20	20~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
	30	30~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					

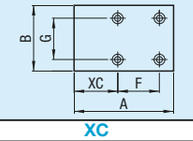
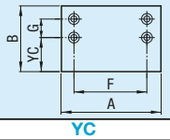
T15 is not selectable for Butyl Rubber White, T30 is not selectable for Amber Color Rubber.
Only * marked T dimensions are available for RBEWF and RBEWFA.
Yellowing of White Rubber: Please note upon application that yellowing is more pronounced compared to black rubber.

■Hole Machining Charge

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

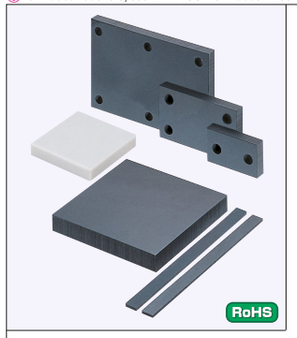
(Ex.) Part Number - A - B - F - G - Screw Nominal Dia. >>
RBPMF4H10 - 200 - 180 - F160 - G140 - Z3
(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Alterations
Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)
RBPMF4H5 - 100 - 80 - F65 - G40 - N4 - YC30

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment 5≤XC≤486 (Non-contaminating chloroprene rubber T15 or larger is available up to 286.) (2H, 4H Types) d(d1)/2+2.5≤XC≤A-F-d(d1)/2-2.5 (3H, 6H Types) d(d1)/2+2.5≤XC≤A-2F-d(d1)/2-2.5	YC=1mm Increment 5≤YC≤486 (Non-contaminating chloroprene rubber T15 or larger is available up to 286.) d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5

Fluororubber Sheets

■Fluororubber has excellent chemical resistance and the best heat resistance among rubbers. ■Oil-resistant adhesives are available as an alternative.
For Rubber Gaskets, see P.455. For Rubber Blocks, see P.422.



A Selectable Type		A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
RBFM	RBFMA	RBFMF	RBFMFA	Fluororubber (FPM)	Shore A80	Black
RBLM	RBLMA	RBLMF	RBLMFA	Fluororubber (FPM)	Shore A60	Black
RBFW	RBFWA	RBFWF	RBFWFA	Fluororubber (FPM)	Shore A70	White

Adhesive thickness is 0.14 ~ 0.2mm.
For Adhesive Strength Data, see P438 (ADTR).
For oil-resistant adhesive strength, see P.420
Temperature limit for seals is 80°C.

■Accuracy Standards

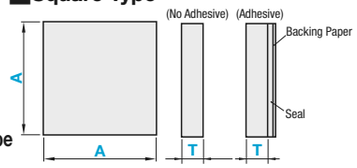
T Tolerance

T	Tolerance
0.5	±0.2
1~3	±0.3
5	±0.4
10	±0.6
15~30	-0.5~+2.0

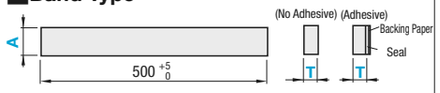
A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~500	±1.5

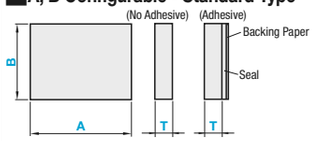
■Square Type



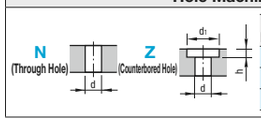
■Band Type



■A, B Configurable - Standard Type

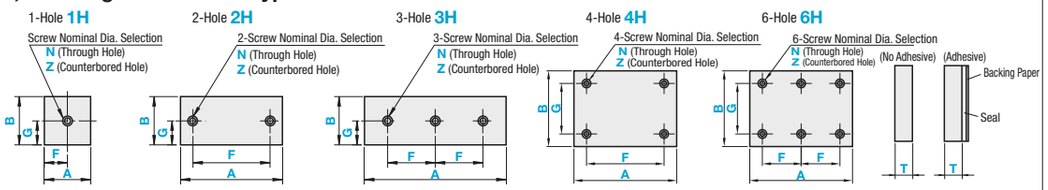


Hole Machining Details



Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d_1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■A, B Configurable - Hole Type



For Adhesive Type T5 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
A, B dimension tolerance has been changed. Please refer to the accuracy standards above.

■Square Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBFM	RBFMA	0.5	300
RBLM	RBLMA	1	300
RBFW	RBFWA	2	300
		3	300
		5	300
		10	RBFM, RBFMA of T15 or more 300 Only
		15	RBFM, RBFMA of T15 or more 300 Only
		20	RBFM, RBFMA of T15 or more 300 Only
		30	RBFM, RBFMA of T15 or more 300 Only

(For exceptions in T dimensions, see below.)

For RBLM and RBLMA, T=15, 20, 30 are not available.
For RBFW and RBFWA, only T=1, 2, 3, 5 are available.

■Band Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBFM	RBFMA	0.5	3
RBLM	RBLMA	0.5	5
RBFW	RBFWA	1	10
		2	20
		3	30
		5	40
		10	50
			80
			100

(For exceptions in T dimensions, see below.)

For RBFW and RBFWA, T=0.5, 10 are not available.

■A, B Configurable - Standard Type

Part Number Type		T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive			
RBFMF	RBFMFA	0.5	10~500	10~500
RBLMF	RBLMFA	1	10~500	10~500
RBFWF	RBFWFA	2	10~500	10~500
		3	RBFMF, RBFMFA of T15 or more 10~300 Only	RBFMF, RBFMFA of T15 or more 10~300 Only
		5	RBFMF, RBFMFA of T15 or more 10~300 Only	RBFMF, RBFMFA of T15 or more 10~300 Only
		10	RBFMF, RBFMFA of T15 or more 10~300 Only	RBFMF, RBFMFA of T15 or more 10~300 Only
		15	RBFMF, RBFMFA of T15 or more 10~300 Only	RBFMF, RBFMFA of T15 or more 10~300 Only
		20	RBFMF, RBFMFA of T15 or more 10~300 Only	RBFMF, RBFMFA of T15 or more 10~300 Only
		30	RBFMF, RBFMFA of T15 or more 10~300 Only	RBFMF, RBFMFA of T15 or more 10~300 Only

(For exceptions in T dimensions, see below.)

A≥B≥T
For RBLMF and RBLMFA, T=15, 20, 30 are not available.
For RBFWF and RBFWFA, only T=1, 2, 3, 5 are available.

■A, B Configurable - Hole Type

Part Number Type		Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive	Adhesive								
RBFMF	RBFMFA	1H	0.5	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
RBLMF	RBLMFA	1H	1	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
RBFWF	RBFWFA	1H	2	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
		2H	3	25~500	25~500	9~491 (2H, 4H Types)	9~491 (4H, 6H Types)	4	-
		3H	5	25~500	25~500	9~245 (3H, 6H Types)		5	-
		4H	10	25~500	25~500	9~291 (1H, 2H, 4H Types) 9~145 (3H, 6H Types)	5~295 (1H, 2H, 3H Types) 9~291 (4H, 6H Types)	6 8 10	3 4
		6H	15	25~500	25~500	9~291 (1H, 2H, 4H Types) 9~145 (3H, 6H Types)	5~295 (1H, 2H, 3H Types) 9~291 (4H, 6H Types)	6 8 10	4 5 6 8
		6H	20	25~500	25~500	9~291 (1H, 2H, 4H Types) 9~145 (3H, 6H Types)	5~295 (1H, 2H, 3H Types) 9~291 (4H, 6H Types)	6 8 10	4 5 6 8
		6H	30	25~500	25~500	9~291 (1H, 2H, 4H Types) 9~145 (3H, 6H Types)	5~295 (1H, 2H, 3H Types) 9~291 (4H, 6H Types)	6 8 10	4 5 6 8 10

(For exceptions in T dimensions, see below.)

For RBLMF and RBLMFA, T=15, 20, 30 are not available. For RBFWF and RBFWFA, only T=1, 2, 3, 5 are available. A≥B≥T
Dimension F Specification Range: For 1H: $d(d_1)/2+2.5\leq F\leq A-d(d_1)/2-2.5$, for 2H, 4H: $d(d_1)+5\leq F\leq A-d(d_1)-5$, for 3H, 6H: $d(d_1)+5\leq F\leq A/2-d(d_1)/2-2.5$.
Dimension G Specification Range: For 1H, 2H, 3H: $d(d_1)/2+2.5\leq G\leq B-d(d_1)/2-2.5$, for 4H, 6H: $d(d_1)+5\leq G\leq B-d(d_1)-5$. (d for through holes, d_1 for counterbored holes.)

Ordering Example

■Square Type, Band Type

Part Number - A
RBFM5 - 100

■A, B Configurable - Standard / Hole Type

Part Number - A - B - F - G - Screw Nominal Dia.
RBFMF10 - 110 - 65
RBFMF4H20 - 200 - 150 - F140 - G100 - Z5

The price of this product is the unit price shown in the table multiplied by material multiplier:
(Ex.) Part Number - A - B >>
RBLMF10 - 500 - 400
(Unit Price) x (Material Multiplier) = Unit Price of Standard Type

■Square Type

Part Number Type		T	Unit Price A 300	Unit Price A 500
No Adhesive		0.5		
RBFM (x1.0)		1		
RBLM (x1.1)		2		
RBFW (x2.5)		3		
Adhesive		5		
RBFMA (x1.1)		10		
RBLMA (x1.2)		15		-
RBFWA (x2.8)		20		-
( ) Material Multiplier		30		-

■Band Type

Part Number Type		T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive		0.5									
RBFM (x1.0)		1									
RBLM (x1.1)		2									
RBFW (x2.5)		3									
Adhesive		5									
RBFMA (x1.1)		10									
RBLMA (x1.2)		15									
RBFWA (x2.7)		20									
( ) Material Multiplier		30									

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

■A, B Configurable - Standard / Hole Type

Part Number Type		T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
No Adhesive		0.5	10~50		-	-	-	-	-
RBFMF (x1.0)		0.5	51~100						
RBLMF (x1.1)		0.5	101~200						
RBFWF (x2.5)		0.5	201~300						
Adhesive		0.5	301~400						
RBFMFA (x1.1)		0.5	401~500						
RBLMFA (x1.2)		1	10~50		-	-	-	-	-
RBFWFA (x2.7)		1	51~100						
( ) Material Multiplier		1	101~200						
		1	201~300						
		1	301~400						
		1	401~500						
		2	10~50		-	-	-	-	-
		2	51~100						
		2	101~200						
		2	201~300						
		2	301~400						
		2	401~500						
		3	10~50		-	-	-	-	-
		3	51~100						
		3	101~200						
		3	201~300						
		3	301~400						
		3	401~500						
		5	10~50		-	-	-	-	-
		5	51~100						
		5	101~200						
		5	201~300						
		5	301~400						
		5	401~500						

For RBLMF and RBLMFA, T=15, 20, 30 are not available.
For RBFWF and RBFWFA, only T=1, 2, 3, 5 are available.

Part Number Type		T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
No Adhesive		10	10~50		-	-	-	-	-
RBFMF (x1.0)		10	51~100						
RBLMF (x1.1)		10	101~200						
Adhesive		10	201~300						
RBFMFA (x1.1)		10	401~500						
RBLMFA (x1.2)		15	15~50		-	-	-	-	-
( ) Material Multiplier		15	51~100						
		15	101~200						
		15	201~300						
		20	20~50		-	-	-	-	-
		20	51~100						
		20	101~200						
		20	201~300						
		30	30~50		-	-	-	-	-
		30	51~100						
		30	101~200						
		30	201~300						

Yellowing of White Rubber: Please note upon application that yellowing is more pronounced compared to black rubber.

■Hole Machining Charge

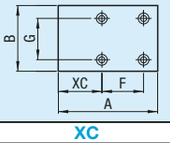
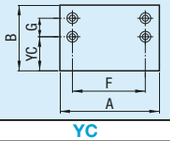
Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

(Ex.) Part Number - A - B - F - G - Screw Nominal Dia. >>
RBFMF4H10 - 200 - 180 - F160 - G140 - Z3

(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Alterations

Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC, KT2)
RBFMF4H5 - 100 - 80 - F65 - G40 - N4 - YC30
RBFMFA2 - 250 - 150 - KT2

Alterations	Hole Position from Left	Hole Position	Adhesive Type Change
			Changes to oil-resistant adhesives.
Code	XC	YC	KT2
Spec.	XC=1mm Increment 5≤XC≤486 (2H, 4H Types) $d(d_1)/2+2.5\leq XC\leq A-F-d(d_1)/2-2.5$ (3H, 6H Types) $d(d_1)/2+2.5\leq XC\leq A-2F-d(d_1)/2-2.5$	YC=1mm Increment 5≤YC≤486 $d(d_1)/2+2.5\leq YC\leq B-G-d(d_1)/2-2.5$	Not available for No Adhesive Type. Only available for T=1, 2, 3. Band Type A=3 or 5 is not selectable. Not available for RBFWA and RBFWFA. Ordering Code KT2

■Price of Urethane Sheets with Oil-Resistant Adhesives

KT2 (A dimension)	Machining Charge
10~100	
101~200	
201~300	
301~400	
401~500	

*Alteration Code for NTNF and NTNFF has changed to KT2.

Silicon Rubber Sheets, High Strength Silicon Rubber Sheets

■Silicon rubber excels in heat, low temperature and weather resistance. Compliant with Food Sanitation Act, Ordinance of the Ministry of Health and Welfare No. 85. ■High Strength Silicon Rubber has 3 - 5 times more tear strength than the ordinary silicon rubber which is inferior in mechanical strength.
For Rubber Gaskets, see ☞P.455. For Rubber Blocks, see ☞P.422.

A Selectable Type		A, B Configurable Type		M Material	H Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
RBSM	RBSMA	RBSMF	RBSMFA	Silicon Rubber (SI)	Shore A70	Light Gray
RBAM	RBAMA	RBAMF	RBAMFA	Silicon Rubber (SI)	Shore A50	Milky White
RBHSM	RBHSMA	RBHSMF	RBHSMFA	High Strength Silicon Rubber (SI)	Shore A50	Ivory

Adhesive thickness is 0.14 ~ 0.2mm.
For Adhesive Strength Data, see ☞P438(ADTS).
The milky white color of silicone rubber shore A 50 is translucent.
Temperature limit for seals is 80°C.

■Accuracy Standards

T Tolerance

T	Tolerance
0.5	±0.2
1~3	±0.3
5	±0.4
10	±0.6
15~30	-0.5~+2.0

A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~500	±1.5

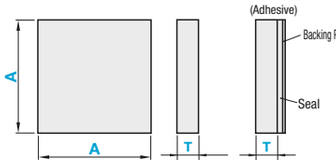
■Features of High Strength Silicon Rubber

Excels in tear strength compared with general silicon rubber.

Comparison of Tear Strength	(N/mm)
Silicon Rubber (Shore A70)	7
Silicon Rubber (Shore A50)	10
High Strength Silicon Rubber (Shore A50)	32
Nitrile Rubber (Shore A70)	20

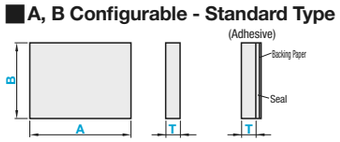
JIS K6252

■Square Type



■Band Type

■A, B Configurable - Standard Type

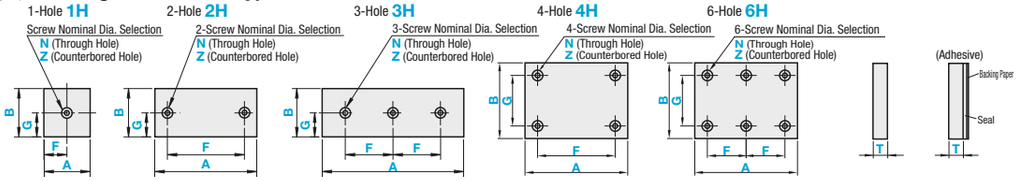


Hole Machining Details

Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■A, B Configurable - Hole Type

1-Hole 1H, 2-Hole 2H, 3-Hole 3H, 4-Hole 4H, 6-Hole 6H



For Adhesive Type T5 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
A, B dimension tolerance has been changed. Please refer to the accuracy standards above.

■Square Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBSM	RBSMA	0.5	300
RBAM	RBAMA	*1	
*RBHSM	*RBHSMA	*2	
		*3	
		*5	
		*10	500
		15	
		20	
		30	

* Only those * marked are available for T dimension of RBHSM and RBHSMA.

■Band Type

Part Number Type		T	A Selection
No Adhesive	Adhesive		
RBSM	RBSMA	0.5	3
RBAM	RBAMA	*1	5
*RBHSM	*RBHSMA	*2	10
		*3	20
		*5	30
		*10	40
		15	50
		20	80
		30	100

* Only those * marked are available for T dimension of RBHSM and RBHSMA.
L dimension is 500mm.

■A, B Configurable - Standard Type

Part Number Type		T	1mm Increment A	1mm Increment B
No Adhesive	Adhesive			
RBSMF	RBSMFA	0.5	10~500	10~500
RBAMF	RBAMFA	*1		
*RBHSMF	*RBHSMFA	*2		
		*3		
		*5		
		*10		
		15		
		20		
		30		

* Only those * marked are available for T dimension of RBHSMF and RBHSMFA. A≥B≥T

■A, B Configurable - Hole Type

Part Number Type		Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive	Adhesive	1H	0.5	25~500	25~500	5~495 (1H Type)	5~495 (1H, 2H, 3H Types)	3	-
RBSMF	RBSMFA		*1						-
RBAMF	RBAMFA	2H	*2			9~491 (2H, 4H Types)		4	-
*RBHSMF	*RBHSMFA		*3					5	-
		3H	*5						-
			*10				9~491 (4H, 6H Types)	6	3 4
		4H	15					8	4 5 6 8
			20			9~245 (3H, 6H Types)		10	4 5 6 8
		6H	30						4 5 6 8 10

* Only those * marked are available for T dimension of RBHSMF and RBHSMFA. A≥B≥T
Dimension F Specification Range: For 1H: $d(d_1)/2+2.5\leq F\leq A-d(d_1)/2-2.5$; for 2H, 4H: $d(d_1)+5\leq F\leq A-d(d_1)-5$, for 3H, 6H: $d(d_1)+5\leq F\leq A/2-d(d_1)/2-2.5$.
Dimension G Specification Range: For 1H, 2H, 3H: $d(d_1)/2+2.5\leq G\leq B-d(d_1)/2-2.5$, for 4H, 6H: $d(d_1)+5\leq G\leq B-d(d_1)-5$. (d for through holes, d_1 for counterbored holes.)

Ordering Example

■Square Type, Band Type

Part Number - A

RBSMA15 - 300

■A, B Configurable - Standard / Hole Type

Part Number - A - B - F - G - Screw Nominal Dia.

RBSMF10 - 110 - 65

RBHSMFA4H5 - 200 - 150 - F140 - G100 - N5

The price of this product is the unit price shown in the table multiplied by material multiplier:

(Ex.) Part Number - A - B >>

RBSMFA10 - 100 - 100

(Unit Price) x (Material Multiplier)= Standard Type Unit Price

■Square Type

Part Number Type	T	Unit Price A 300	Unit Price A 500
No Adhesive	0.5		
RBSM (x1.0)	1		
RBAM (x1.0)	2		
Adhesive	3		
RBSMA (x1.4)	5		
RBAMA (x1.4)	10		
( ) Material Multiplier	15		
	20		
	30		
No Adhesive	1		
RBHSM (x1.0)	2		
Adhesive	3		
RBHSMA (x1.2)	5		
( ) Material Multiplier	10		

■Band Type

Part Number Type	T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive	0.5									
RBSM RBAM (x1.0)	1									
Adhesive	2									
RBSMA RBAMA (x1.4)	3									
( ) Material Multiplier	5									
	10									
No Adhesive	1									
RBHSM (x1.0)	2									
Adhesive	3									
RBHSMA (x1.2)	5									
( ) Material Multiplier	10									

■A, B Configurable - Standard / Hole Type

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

Part Number Type	T	A	Unit Price B 10~50	51~100	101~200	201~300	301~400	401~500
No Adhesive RBSMF (x1.0) / Adhesive RBSMFA (x1.3) / ( ) Material Multiplier	0.5	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	1	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	2	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	3	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	5	10~50		-	-	-	-	-
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		401~500						
	15	10~50		-	-	-	-	-
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		101~200						
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	20	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						
	30	10~50		-	-	-	-	-
		51~100						
		101~200						
		201~300						
		301~400						
		401~500						

Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive RBHSMF (x1.0) / Adhesive RBHSMFA (x1.2) / ( ) Material Multiplier	1	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	2	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	3	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	5	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

■Hole Machining Charge

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

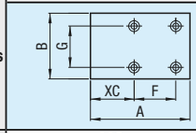
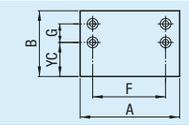
(Ex.) Part Number - A - B - F - G - Screw Nominal Dia. >>

RBSMF4H10 - 200 - 180 - F160 - G140 - Z3

(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Alterations Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)

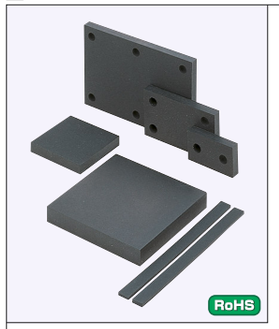
RBAMF4H5 - 100 - 80 - F65 - G40 - N4 - YC30

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1mm Increment 5≤XC≤486 (2H, 4H Types) $d(d_1)/2+2.5\leq XC\leq A-F-d(d_1)/2-2.5$ (3H, 6H Types) $d(d_1)/2+2.5\leq XC\leq A-2F-d(d_1)/2-2.5$	YC=1mm Increment 5≤YC≤486 $d(d_1)/2+2.5\leq YC\leq B-G-d(d_1)/2-2.5$

Low Elasticity Rubber Sheets

Hanenaito®

■Hanenaito® excels in shock and vibration resistance and absorbs energy without rebound. Best suited for receivers for workpieces. For property details, P.389



A Selectable Type		A, B Configurable Type		M Material	H Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
UNSE	UNSEA	UNSET	UNSETA	Low Elasticity Rubber (Hanenaito® GP-35L)	Shore A32	Black
UNLE	UNLEA	UNLET	UNLETA	Low Elasticity Rubber (Hanenaito® GP-60L)	Shore A57	Black

- Hanenaito® is a registered trademark of Naigai Rubber Industry Co., Ltd.
- Adhesive thickness is 0.14 ~ 0.2mm.
- Has slightly more stickness.

■Accuracy Standards

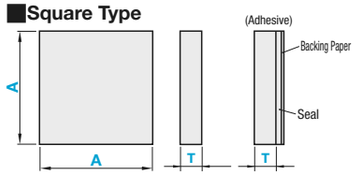
T Tolerance

T	Tolerance
1~3	±0.3
5, 10	±0.4
15~30	±0.5

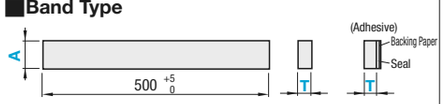
A, B Tolerance

A, B	Tolerance
200 or Less	±0.5
201~300	±1.0
301~500	±1.5

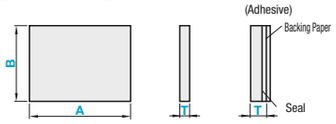
■Square Type



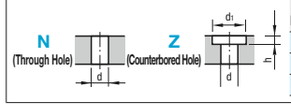
■Band Type



■A, B Configurable - Standard Type

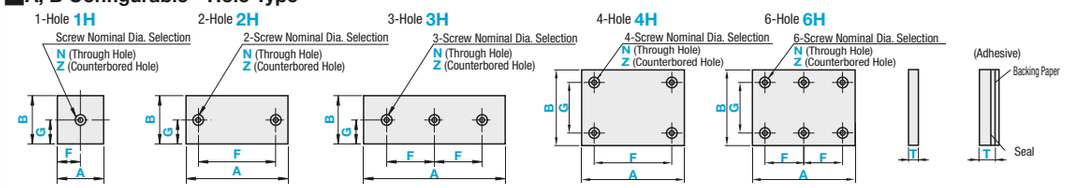


Hole Machining Details



Screw Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	12
d1	6.5	8	9.5	11	14	17.5
h	3.5	4.5	5.5	6.5	9	11

■A, B Configurable - Hole Type



- For Adhesive Type T5 or more, the adhesive tape may tear from the body. Please use it as temporary fixing, or in combination with bolt fixing.
- A, B dimension tolerance has been changed. Please refer to the accuracy standards above.

■Square Type

Part Number Type	T	A Selection
No Adhesive UNSE UNLE / Adhesive UNSEA UNLEA	15	250
	20	
	30	

■Band Type

Part Number Type	T	A Selection
No Adhesive UNSE UNLE / Adhesive UNSEA UNLEA	1	3
	2	5
	3	10
	5	20
	10	30
		40
		50
		80
		100

- L dimension is 500mm.

■A, B Configurable - Standard Type

Part Number Type	T	1mm Increment A	1mm Increment B
No Adhesive UNSET UNLET / Adhesive UNSETA UNLETA	1	10~350	10~350
	2		
	3		
	5		
	10		
	15	10~250	10~250
	20		
	30		

- A≥B≥T

■A, B Configurable - Hole Type

Part Number Type	Nominal	T	1mm Increment (A≥B≥T) A	1mm Increment (A≥B≥T) B	0.5mm Increment F	0.5mm Increment G	Screw Nominal Dia. Selection N (Through Hole)	Screw Nominal Dia. Selection Z (Counterbored Hole)
No Adhesive UNSET UNLET / Adhesive UNSETA UNLETA	1H	1	25~350	25~350	5~345 (1H Type)	5~345 (1H, 2H, 3H Types)	3	-
	2H	2			9~341 (2H, 4H Types)		4	-
		3				9~341 (4H, 6H Types)	5	-
	3H	5			9~170 (3H, 6H Types)		6	3 4
		10					8	4 5 6 8
	4H	15	25~250	25~250	9~241 (1H, 2H, 4H Types)	5~245 (1H, 2H, 3H Types)	10	4 5 6 8
	6H	20			9~120 (3H, 6H Types)	9~241 (4H, 6H Types)		4 5 6 8 10
		30						

- A≥B≥T
- Dimension F Specification Range: For 1H: d(d1)/2+2.5≤F≤A-d(d1)/2-2.5, for 2H, 4H: d(d1)+5≤F≤A-d(d1)-5, for 3H, 6H: d(d1)+5≤F≤A/2-d(d1)/2-2.5.
- Dimension G Specification Range: For 1H, 2H, 3H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H, 6H: d(d1)+5≤G≤B-d(d1)-5. (d for through holes, d1 for counterbored holes.)

Ordering Example

■Square Type, Band Type

Part Number - A

UNSE10 - 100

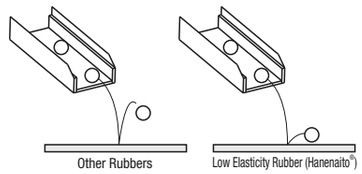
■A, B Configurable - Standard / Hole Type

Part Number - A - B - F - G - Screw Nominal Dia.

UNSET10 - 110 - 65

UNSET4H20 - 200 - 150 - F140 - G100 - Z5

Example



- The price of this product is the unit price shown in the table multiplied by material multiplier:

(Ex.) Part Number - A - B >> UNSETA 1 - 200 - 200

(Unit Price) x (Material Multiplier) =Unit Price of Standard Type

■Square Type

Part Number Type	T	Unit Price A
No Adhesive UNSE (x1.0) / Adhesive UNSEA (x1.1)	15	250
	20	
	30	
No Adhesive UNLE (x1.0) / Adhesive UNLEA (x1.1)	15	
	20	
	30	

■Band Type

Part Number Type	T	Unit Price A 3	5	10	20	30	40	50	80	100
No Adhesive UNSE (x1.0) / Adhesive UNSEA (x1.1) / ( ) Material Multiplier	1									
	2									
	3									
	5	-								
	10	-	-							
No Adhesive UNLE (x1.0) / Adhesive UNLEA (x1.1) / ( ) Material Multiplier	1									
	2									
	3									
	5	-								
	10	-	-							

■Hole Machining Charge

Hole Type	Screw Nominal N (Through Hole)	Screw Nominal Z (Counterbored Hole)
1H		
2H		
3H		
4H		
6H		

■A, B Configurable - Standard / Hole Type

The price of the Hole Type is found by adding the standard type unit price and the hole machining charge.

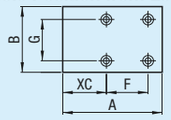
Part Number Type	T	A	Unit Price B 10~50	51~100	101~150	151~200	201~250	251~300	301~350
No Adhesive UNSET (x1.0) / Adhesive UNSETA (x1.1) / ( ) Material Multiplier	1	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	2	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	3	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	5	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	10	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	15	15~50		-	-	-	-		
		51~100							
		101~150							
		151~200							
		201~250							
	20	20~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
	30	30~50		-	-	-	-		
		51~100							
		101~150							
		151~200							
		201~250							

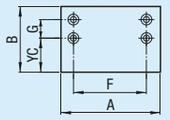
Part Number Type	T	A	Unit Price B 10~50	51~100	101~150	151~200	201~250	251~300	301~350
No Adhesive UNLET (x1.0) / Adhesive UNLETA (x1.1) / ( ) Material Multiplier	1	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	3	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	5	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	10	10~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
		251~300							
		301~350							
	15	15~50		-	-	-	-		
		51~100							
		101~150							
		151~200							
		201~250							
	20	20~50		-	-	-	-	-	-
		51~100							
		101~150							
		151~200							
		201~250							
	30	30~50		-	-	-	-		
		51~100							
		101~150							
		151~200							
		201~250							

Alterations

Part Number - A - B - F - G - Screw Nominal Dia. - (XC, YC)

UNSET4H5 - 100 - 80 - F75 - G40 - N4 - YC30

Alterations	Code	Spec.
Hole Position from Left 	XC	XC=1mm Increment 5≤XC≤336 (2H, 4H Types) d(d1)/2+2.5≤XC≤A-F-d(d1)/2-2.5 (3H, 6H Types) d(d1)/2+2.5≤XC≤A-2F-d(d1)/2-2.5

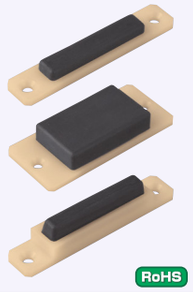
Alterations	Code	Spec.
Hole Position from Bottom 	YC	YC=1mm Increment 5≤YC≤336 d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5

Shock Absorbing Bumpers, Shock Absorbing Foam

Extra Low Hardness Urethane Sheets, Silicone Gel Sheets

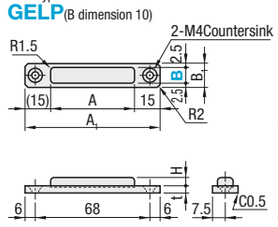
■New bumpers provided with shock and sound absorbing effect, made of soft shock-absorbing gel.
■Long and narrow shape with enlarged pressure contact area more than Round Type enhanced shock absorption. See **P.410** for Circular Type.

■Shock Absorbing Bumpers

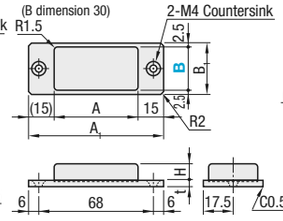


RoHS

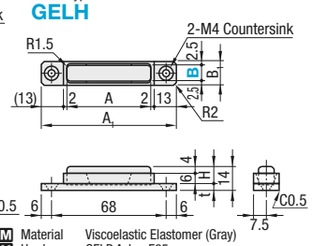
Plate Type
GELP(B dimension 10)



(B dimension 30)



Holder Type
GELH

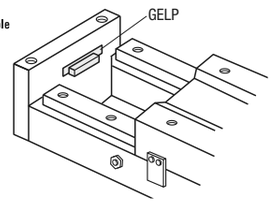


Gel	M Material	Viscoelastic Elastomer (Gray)
	H Hardness	GELP Asker F85 GELH Asker F75 (lower), Asker F98 (upper)
Plate	M Material	ABS

Part Number Type	B	A	H	A1	B1	t	Unit Price
GELP	10	50	5	80	15	4	
Plate Type	30		10		35		
GELH	10		10		15		
Holder Type							

Ordering Example: Part Number **GELP10**

ex Example



■20% Compressive Load Test Results

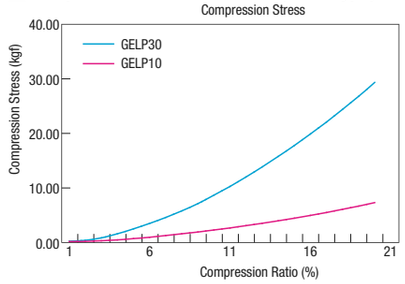
Part Number	GELP10	GELP30	GELH10
20% Compression Load Average (kgf)	7.2	29.2	0.9

• Test Conditions
A static compression load measurement test causing the 80% thickness is repeated 3 times. Above are the mean values of three measurement results.
These are not guaranteed values but an example as a set of measured values.

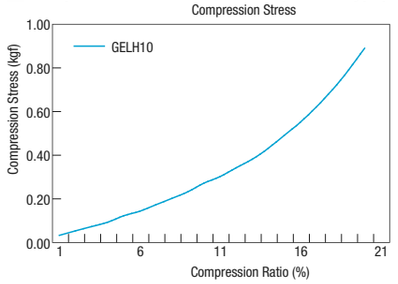
■Precaution for Use

- Do not stick or cut with sharpened objects.
- Do not tear or twist.
- Insert it only from the vertical direction.
- Keep away from fire.
- Do not use detergents for cleaning.
- Replace it when broken.

■Compressive Load Test Result (Plate Type)



■Compressive Load Test Result (Holder Type)

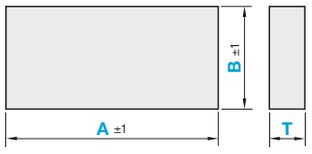


■Copolymerized Acrylic, Urethane, and Rubber for sound and vibration dampening. Best suited for receivers for workpieces.

■Shock Absorbing Foam

RoHS

Type	M Material Main Body	M Material Adhesive Part	Color
PRGCS	Copolymerized Foam of Acrylic, Urethane and Rubber	Acrylic Adhesive	Black
PRGCW			White



Peel off backing paper to adhere it to an object.
Be sure to clean any oil or dust off the affixed surface.
Can be cut with a utility knife. Cut with the adhesive side up.
Remove the protective film from the surface before use.

■Properties

Item	PRGCS	PRGCW
Density	0.32g/cm³	
Tensile Strength	4.5kg/cm²	
Elongation	250%	
Impact Resilience Rate	0.1% or Less	

■Features

- Excellent sound dampening and vibration absorbing characteristics.
- Flexible material can be pasted on curved surfaces with ease.
- Lightweight material can be applied on large panel areas.
- Best suited for human body protection. Can be pasted in multi-layers where more protection is needed.

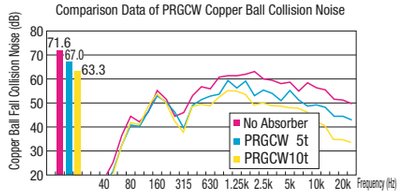
Adhesive Strength (90 Degree Peeling Strength): 19.6N/25mm Width (When affixed to EN 1.4301 Equiv.)

Part Number Type	T	A Selection	B Selection	Unit Price B100	B200	B300	B400	B500
PRGCS PRGCW	3	100	100 200 300 400 500					
		400						
		800						
	5	100						
		400						
		800						
	10	100						
		400						
		800						

Ordering Example: Part Number **PRGCS3 - 100 - 200**

■Steel Ball Collision Noise Level Test

Comparison Data of PRGCW Copper Ball Collision Noise

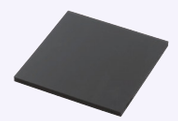


Item	No Absorber	PRGCW5	PRGCW10
Collision Noise (dB)	71.6	67	63.3
Sound Pressure	-	40% Reduced Sound Pressure	60% Reduced Sound Pressure

* A steel ball (Ø20, 36g) is dropped on a wooden base from a 55cm height, and the sound pressure level is measured with a microphone at a distance of 50m, positioned 50cm above the ground.

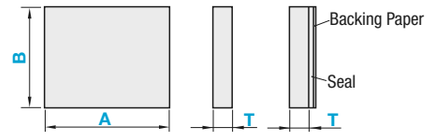
■With more resistance to permanent compression deformation than conventional urethane, it is more durable. The softness of Shore A15 is about firm gelatin.

■Extra Low Hardness Urethane Sheets



RoHS

SUTLL (No Adhesive)
SUTLLA (Adhesive)



■Accuracy Standards

• T Dimension Tolerance

5, 10	15~25	30
±0.4	±0.8	±1.0

• Dimensional Tolerances of A and B

200mm or Less	205~250
+3 0	+5 0

The tolerances are verified at 23°C±2 and 40 ~ 80% humidity.
Edges may remain white after cutting.

M Material Extra Low Hardness Urethane (Black)
H Hardness Shore A15 (High Impact Resilience)

Part Number Type	T	5mm Increment A	B
No Adhesive **SUTLL** Adhesive **SUTLLA**	5	10~250	10~250
	10		
	15		
	20		
	25		
	30		

A≥B≥T

Ordering Example: Part Number **SUTLL5 - 250 - 100**

Part Number Type	T	A	Unit Price B 10~100	B 105~200	B 205~250
No Adhesive **SUTLL** (x1.0) Adhesive **SUTLLA** (x1.2) ( ) Material Multiplier	5	10~100		-	-
		105~200			-
		205~250			
	10	10~100		-	-
		105~200			-
		205~250			
	15	10~100		-	-
		105~200			-
		205~250			
	20	10~100		-	-
		105~200			-
		205~250			
	25	10~100		-	-
		105~200			-
		205~250			
	30	10~100		-	-
		105~200			-
		205~250			

The price of this product is the unit price shown in the table multiplied by material multiplier:
(Ex.) Part Number **SUTLLA10 - 200 - 150** >> (Unit Price) x Material Multiplier) = Unit Price of Standard Type

■Features of Extra Low Hardness Urethane

- High physical strength that cannot be obtained from conventional soft materials.
- MISUMI original material that suppresses self-adhesion, which is the problem of soft material.
- This material has high resistance against impact, and little permanent compression.
- It has the same properties as ether polyurethane.

■Comparison of Characteristics

Properties	Extra Low Hardness Urethane	Nitrile	Ethylene	Silicon	Fluorine
Impact Resilience	◎	○	○	◎	△
Compression Set	◎	◎	○	◎	○
Abrasion Resistance	◎	◎	○	×	◎

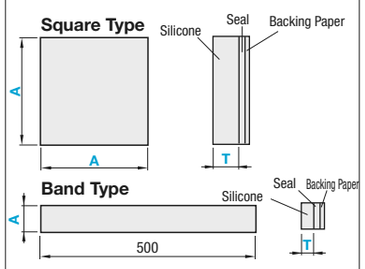
◎- Excellent ○- Good △ - Acceptable × - Not Acceptable

■Silicone Gel Sheets

RoHS

Part Number Type Square Type	Band Type	M Material	H Hardness (Penetration)	Color
GELS	**GELT**	Silicone	55	Milky White

Operating Temperature Range: -40 ~ 100°C
The values of hardness are reference values.
Penetration: JIS K2207 See **P.410**.



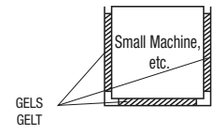
Part Number Type	T	A Selection	Unit Price A 10	A 20	A 50	A 100
GELS (Square)	1	50 100	-	-		
	2					
	3					
GELT (Band)	1	10 20			-	-
	2					
	3					

Silicone is an artificial compound made from silicone.
It can be cut with adhesive side up with a utility knife, etc.
Gel surface has an antistick treatment applied.
Reference: Adhesive Strength (180 Degree Peeling Strength): 14.5N/25mm Width (when affixed to EN 1.4301 Equiv.)
As pressure sensitive adhesive is used, be sure to apply sufficient pressure so that the joint sections may firmly adhere to each other.
75µm PET film is used as base material.
Oil may ooze out to the backing paper.

Ordering Example: Part Number **GELS1 - 50**

ex Example

Can be used as vibration control materials and cushioning materials.

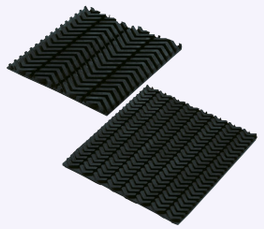


Anti-Skid Rubber Sheets

Hyper V®

Strong grip even on an oil applied workpiece is ensured by its material properties and special shape. Most suitable for workpiece chuck.

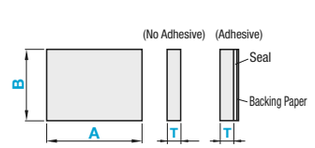
Anti-Skid Rubber Sheets

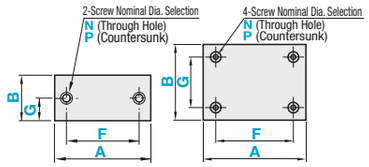


RoHS

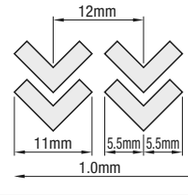
	No Adhesive	Adhesive	Material	Hardness	Color
V Pattern Width 11mm	STHVS	STHVSA	Nitrile Rubber Equiv. (Hyper V® Oil Resistant Type)	Shore A60	Black
V Pattern Width 22mm	STHVM	STHVMA			

Hyper V® is a trademark of Nisshin Rubber Co.

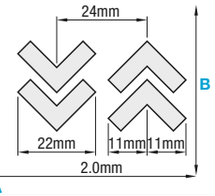




V Pattern Width 11mm Type



V Pattern Width 22mm Type



The sheet can be cut at a desired dimension regardless of the pattern.

Accuracy Standards

- **T Dimension Tolerance** ±0.5
- **Dimensional Tolerances of A and B**

200mm or Less	300mm or Less
±0.5	±1.0

A, B Configurable Type

Part Number		1mm Increment	
Type	T	A	B
STHVS STHVSA	4	10~300	10~300
STHVM STHVMA	4.5		

Hole Type

Part Number			1mm Increment				Screw Nominal Dia. Selection	
Type	Nominal	T	A	B	F	G	N (Through Hole)	P (Countersunk)
STHVS STHVSA	2H 4H	4	10~300	10~300	5~295	5~295	3, 4, 5	3
STHVM STHVMA		4.5						

Dimension F Specification Range: d(d1)+5≤F≤A-d(d1)-5, Dimension G Specification Range: for 2H: d(d1)/2+2.5≤G≤B-d(d1)/2-2.5, for 4H: d(d1)+5≤G≤B-d(d1)-5.

A, B Configurable Type

Part Number		1mm Increment		Unit Price B		
Type	T	A	B	10~100	101~200	201~300
STHVS	4	10~100	10~300			
		101~200				
STHVM	4.5	201~300				
STHVSA	4	10~100	10~300			
		101~200				
STHVMA	4.5	201~300				

Hole Machining Details

N (Through Hole)

P (Countersunk)

Screw Nominal Dia.	3	4	5
d	3.5	4.5	5.5
d1	7.5	-	-
h	2	-	-

Ordering Example

A, B Configurable Type

Part Number	-	A	-	B
STHVS4	-	250	-	100

Hole Type

Part Number	-	A	-	B	-	F	-	G	-	N
STHVS4H4	-	250	-	200	-	F200	-	G150	-	N5

Hole Machining Charge

Hole Type	Hole	
	N (Through Hole)	P (Countersunk)
2H		
4H		

Part Number	-	A	-	B	-	F	-	G	-	N
STHVS4H4	-	250	-	200	-	F200	-	G150	-	N5

(Standard Type Unit Price) + (Hole Machining Charge) = (Hole Type Unit Price)

Property of *Hyper V®*

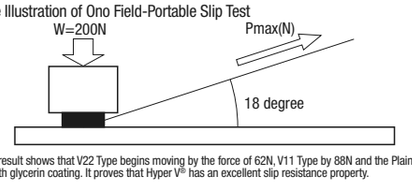
A rubber sheet material used for shoe soles for excellent oil surface non-slip performance is standardized for industrial applications.

Measurement of Coefficient of Slip Resistance (Ono Field-Portable Slip Test)

Condition	Coefficient of Slip Resistance (C.S.R')		
	Hyper V® Sheet		Rubber Plain Sheet
	V22 Type	V11 Type	
Dry	0.97	0.98	0.76
Wet (Water)	0.80	0.84	0.42
Wet (Glycerin)	0.31	0.44	0.03

The above values are not guaranteed values but a measured values.

Simple Illustration of Ono Field-Portable Slip Test



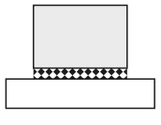
The test result shows that V22 Type begins moving by the force of 62N, V11 Type by 88N and the Plain Sheet by 6N with glycerin coating. It proves that Hyper V® has an excellent slip resistance property.

• Ono Field-Portable Slip Test

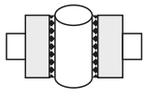
Measure Max. Tensile Load (N)=Pmax by pulling a test specimen of 5mm thickness with applying 200N load on a stainless sheet of 50mmx60mm.
A test result is shown as C.S.R' =Pmax/W.
Recommended as a rubber mat or a chucking material for workpieces that are slippery by cutting oil.

Example

As a Rubber Mat



Grip an oil adherent workpiece which does not easily chuck.



Nonskid Rubber Sheets, Double Sided Adhesive Tape for Rubber

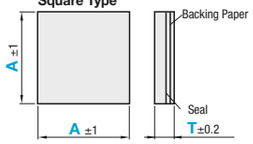
Nonskid rubber sheets with embossed surface that have same function as adhesive discs.

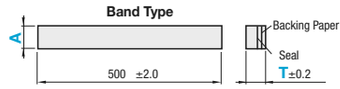
Nonskid Rubber Sheets

RoHS

A Selectable Type

STPES



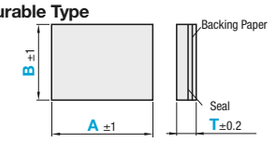


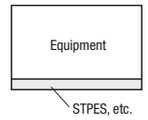
Example

It can be used as nonskid stopper pasted on the backside of equipments.

A, B Configurable Type

STPESF





Adhesive thickness is 0.06 ~ 0.10mm.
Material: Copolymerized Foam of Acrylic, Urethane and Rubber

A Selectable - Square

Part Number		A Selection	Unit Price
Type	T		
STPES	1	300	
		500	

A Selectable - Band

L Dimension is 500mm.

Part Number		A	Unit Price A						
Type	T		10	20	30	40	50	80	100
STPES	1	10, 20, 30, 40, 50, 80, 100							

A, B Configurable Type

Part Number		1mm Increment		Unit Price B				
Type	T	A	B	10~100	101~200	201~300	301~400	401~500
STPESF	1	10~100	10~500		-	-	-	-
		101~200						
		201~300						
		301~400						
		401~500						

A≥B

Ordering Example

A Selectable Type

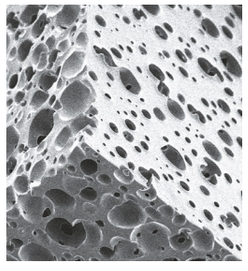
Part Number	-	A
STPES1	-	300
STPES1	-	20

A, B Configurable Type

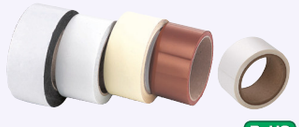
Part Number	-	A	-	B
STPESF1	-	485	-	323

Features

Its finely embossed surface functions like a suction cup.



Double Sided Adhesive Tape for Rubber



RoHS

Part Number				W	Applicable Rubber	Base Material	Main Component	Unit Price			
Standard	Heat Resistant	Conductive	Oil Resistant					Standard	Heat Resistant	Conductive	Oil Resistant
ADTR	-	LADTR	PLADTR	20	Nitrile, Chloroprene, Ethylene, Butyl, Fluorine	Non-Woven Polyester Fabric	Acrylic Adhesive		-		
				50							
ADTS	HADTS	-	-	20	Silicon	Standard: Polyester Film Heat Resistant: Polyimide Film	Silicon Adhesive			-	-
				50							

LADTR are in 5m rolls, others are in 10m rolls.
For ADTS, only the side with the white release paper (silicon bond surface) is applicable to bond to silicon rubber.

Double sided adhesive seals and adhesives for urethane, rubber, and sponge are also available as web page listed products.
For details, search by a Part Number at http://fa.misumi.jp.

Allowable Temperature: HADTS: 200°C, Others: 120°C.

Ordering Example

Part Number	-	W
ADTR	-	20

· Adhesive Test Data

180 Degree Delamination Strength Test: Bond 1mm thick, 25mm wide rubber sheet to a EN 1.4301 Equiv. plate and measured. Delamination resistance strength force is expressed as adhesive load (N).

Unit: N/25mm Wide

Condition	Standard						Heat Resistant	Conductive				Oil Resistant
	ADTR					ADTS	HADTS	LADTR				PLADTR
	Nitrile	Chloroprene	Ethylene	Butyl	Fluorine	Silicon	Silicon	Nitrile	Chloroprene	Ethylene	Butyl	
Room Temperature x20 min.	60	60	60	60	60	13	3	6	6	6	6	See P.420
Room Temperature x72 hrs.	80	80	80	80	80	15	9	9	9	9	9	
80°C x 48 hrs.	70	70	70	70	70	15	10	13	14	12	12	

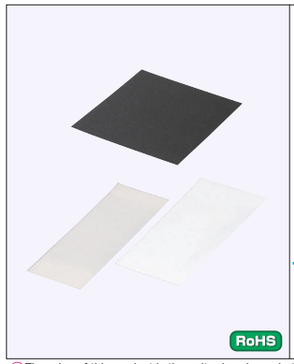
These are not guaranteed values but an example as a set of measured values.

* For other Adhesive Tape and Adhesives, **P.489**

Low Friction Rubber Sheets

Nitrile Rubber Sheets, Silicon Rubber Sheets

■Rubber sheets with high sliding property and are slippery to the touch. Suitable for use on portions that tend to stick to workpieces such as jaws.



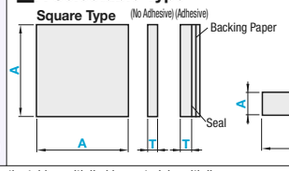
A Selectable Type		A, B Configurable Type		Material	Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
LRBNM	LRBNMA	LRBNMF	LRBNMFA	Low Friction Nitrile Rubber	Shore A70	Black
LRBSM	LRBSMA	LRBSMF	LRBSMFA	Low Friction Silicon Rubber	Shore A70	Light Gray
LRBAM	LRBAMA	LRBAMF	LRBAMFA	Low Friction Silicon Rubber	Shore A50	Milky White

Adhesive thickness is 0.14 ~ 0.2mm.

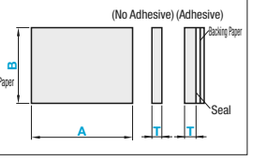
■Accuracy Standards
- T Dimension Tolerance ±0.2
- Dimensional Tolerances of A and B

200mm or Less	201~300	301~500
±1.0	±1.5	±2.0

■A Selectable Type



■A, B Configurable Type



The price of this product is the unit price shown in the table multiplied by material multiplier.

(Ex.) Part Number - A - B >> (Unit Price) x (Material Multiplier) = Standard Type Unit Price
LRBSMFA0.5 - 300 - 200

■A Selectable - Square

Part Number		A Selection	Unit Price	
Type	T		LRBNM LRBNMA	LRBSM, LRBSMA LRBAM, LRBAMA
No Adhesive LRBNM (x1.0) LRBSM (x1.0) LRBAM (x1.0)	0.5	300		
Adhesive LRBNMA (x1.2) LRBSMA (x1.2) LRBAMA (x1.2)	0.5	500		

■A Selectable - Band

Part Number		A Selection	Unit Price A								
Type	T		3	5	10	20	30	40	50	80	100
No Adhesive LRBNM (x1.0) Adhesive LRBNMA (x1.2)	0.5	3, 5, 10, 20, 30, 40, 50, 80, 100									
No Adhesive LRBSM (x1.0) LRBAM (x1.0) Adhesive LRBSMA (x1.2) LRBAMA (x1.2)	0.5	3, 5, 10, 20, 30, 40, 50, 80, 100									

■A, B Configurable Type

Part Number		1mm Increment	
Type	T	A	B
LRBNMF LRBSMF LRBAMF LRBNMFA LRBSMFA LRBAMFA	0.5	10~500	10~500

A≥B

■A, B Configurable Type

Part Number		A	Unit Price B				
Type	T		10~100	101~200	201~300	301~400	401~500
No Adhesive LRBNMF (x1.0) Adhesive LRBNMFA (x1.2)	0.5	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					
No Adhesive LRBSMF (x1.0) LRBAMF (x1.0) Adhesive LRBSMFA (x1.2) LRBAMFA (x1.2)	0.5	10~100		-	-	-	-
		101~200			-	-	-
		201~300				-	-
		301~400					-
		401~500					

Ordering Example

■A Selectable Type

Part Number - A
LRBNM0.5 - 300
LRBAMA0.5 - 100

■A, B Configurable Type

Part Number - A - B
LRBNMF0.5 - 395 - 201

■Features of Low Friction Rubber Sheets (Chemical Resistance Data See P.391)

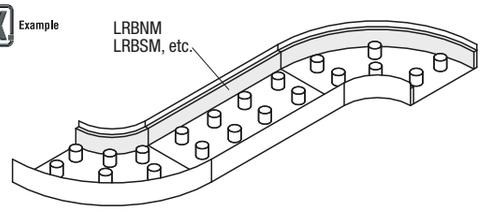
By making only one side of rubber surface coarse, the friction is reduced without changing other properties of the material.
Can be used on the surface of a sliding plate, robotic chuck and etc. that can stick with workpieces.

■Comparison of Dynamic Friction Coefficient

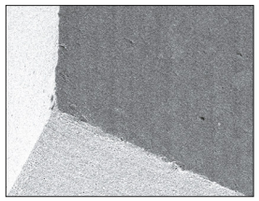
	Nitrile Rubber (Shore A70)	Silicon Rubber (Shore A70)	Silicon Rubber (Shore A50)
Low Friction	1.22	0.48	0.3
Regular	3.32	-	-

Measurement Method: JIS K7125
* Silicon rubber is not measurable because it is self-adhesive.

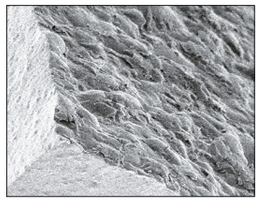
Example



Can be used to prevent curved parts of a conveyor from sticking with workpieces.



Regular



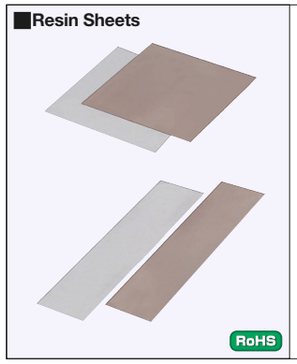
Low Friction

Resin Sheets, Fluororesin Tapes (Sliding, Dust-proof)

Fluororesin, Ultra High-Molecular-Weight Polyethylene

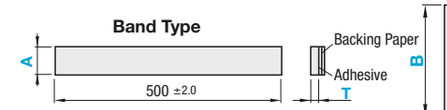
■Resin sheets and tapes with high sliding property and are slippery to the touch. Suitable for enhancing the sliding of workpieces.

■Resin Sheets

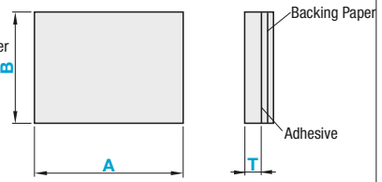


A Selectable Type	A, B Selectable	Material	Adhesive
PTFETT	PTFETS	Fluororesin	Silicon
ULTT	ULTS	Ultra High-Molecular-Weight Polyethylene	Acrylic

■A Selectable - Band



■A, B Selectable



■Accuracy Standards
- T Dimension Tolerance ±0.02
- Dimensional Tolerances of A and B

200mm or Less	300	400, 500
±1.0	±1.5	±2.0

■A Selectable - Band

Part Number		A Selection	Unit Price A3	A5	A10	A20	A30	A40	A50	A80	A100
Type	T										
PTFETT	0.23	3, 5, 10, 20, 30									
ULTT	0.12	40, 50, 80, 100									

L dimension is 500mm.

■A, B Selectable

Part Number		A Selection	B Selection	Unit Price B100	B200	B300	B400	B500
Type	T							
PTFETS	0.23	100	100, 200, 300, 400, 500		-	-	-	-
		200				-	-	-
		300					-	-
		400						-
		500						
ULTS	0.12	100	100, 200, 300, 400, 500		-	-	-	-
		200				-	-	-
		300					-	-
		400						-
		500						

Ordering Example

Part Number - A - B
PTFETT0.23 - 30
ULTT0.12 - 5
PTFETS0.23 - 100 - 100
ULTS0.12 - 500 - 100

■Features of Fluororesin and Ultra High-Molecular-Weight Polyethylene

• Fluororesin

Low friction coefficient, and excellent chemical resistance and heat resistance.

• Ultra High-Molecular-Weight Polyethylene

Although its friction coefficient and heat resistance are inferior to those of fluororesin, the price is relatively inexpensive. Also, it has excellent durability.

■Comparison of Dynamic Friction Coefficient

Fluororesin	0.08
Ultra High-Molecular-Weight Polyethylene	0.14
Nitrile Rubber	3.32

JIS K 7125

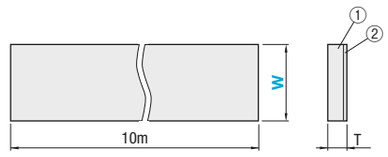
■Characteristic Values

Material	Adhesive Strength (N/25mm Wide)	Tensile Strength (N/25mm Width)	Elongation %	Heat Resistance ℃	Chemical Resistance Oil	Water	Acid	Alkali	Ether	Ketone
Fluororesin	12	184	350	180	◎	◎	◎	◎	○	○
Ultra High-Molecular-Weight Polyethylene	10	93	300	100	○	◎	○	◎	○	○

◎- Excellent ○ - Good △ - Acceptable ✕ - Not Acceptable

■Fluororesin Tapes (Sliding, Dust-proof)

PTFET



	Material
①	Fluororesin Film
②	Adhesives (Silicon Type)

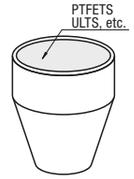
Part Number		W Selection (mm)	T (mm)	①Fluorine Film Thickness	Adhesive Strength (N/25mm Wide)	Tensile Strength (N/25mm Width)	Elongation %	Dielectric Breakdown kV	W13 Unit Price 1 ~ 9 pc(s).	W13 Volume Discount Rate 10~	W25 Unit Price 1 ~ 9 pc(s).	W25 Volume Discount Rate 10~	W50 Unit Price 1 ~ 9 pc(s).	W50 Volume Discount Rate 10~
Type	No.													
PTFET	1	13, 25, 50	0.08	0.05	6.13	49.0	200	4.5						
	2		0.13	0.08	9.32	56.4	250	7.5						
	3		0.18	0.13	10.79	122.6	340	8.2						
	4		0.23	0.18	11.52	149.6	360	9.0						

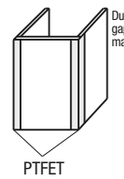
Ordering Example

Part Number - W
PTFET2 - 13

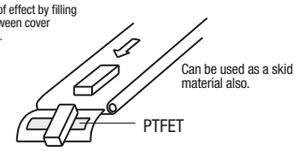
Example

Can be used inside of hoppers, etc.



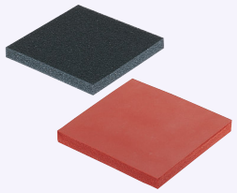


Dust-proof effect by filling gaps between cover materials.



Urethane Sponge Sheets, Rubber Sponge Sheets

For Sponge Gaskets, see P.455. For Sponge Tapes, see P.449.

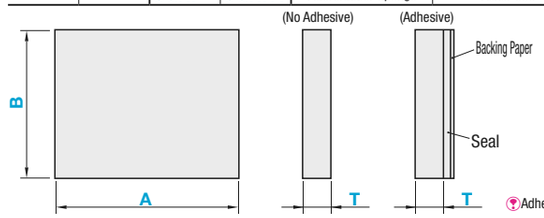


RoHS

Standard Type		Configurable Type		M Material	H Hardness	Color
No Adhesive	Adhesive	No Adhesive	Adhesive			
SGNN	SGNS	SGNNF	SGNSF	Polyurethane Sponge	(Less than Asker C1)	Black
-	-	SGNC	SGNCA	Chloroprene Rubber Sponge	Asker C25	Black
-	-	SGNW	SGNWA	Chloroprene Rubber Sponge	Asker C25	White
-	-	SGNP	SGNPA	EPDM Sponge	Asker C8	Black
-	-	SGNB	SGNBA	NBR Sponge	Asker C30	Black
SISP	SISA	SGNA	SGNAA	Silicon Rubber Sponge	Asker C35* (Asker C22)	Orange
-	-	SGNL	SGNLA	Silicon Rubber Sponge	Asker C15	Orange
-	-	SGNF	SGNFA	Fluororubber Sponge	Asker C35	Black

Temperature limit for seals is 80°C.
SGNW and SGNWA might discolor by aging.

* Values in ( ) are applicable to Standard Type of silicon sponge.



Adhesive thickness is 0.14 ~ 0.2mm.

Accuracy Standards

Polyurethane Sponge		Others	
A, B	Tolerance	A, B	Tolerance
390 or Less	±2	190 or Less	±1.5
400~790	±2.5	200~390	±2
800	±3	400 or More	±3

Standard Type

Part Number		T Tolerance	Selection	
Type	T Selection		A	B
SGNN SGNS	10	±1	100	100
	30	±2	200	400
	50	±3	500	800
SISP SISA	3	±0.5	100	100
	5	±1	250	
	10			

Ordering Example

Standard Type

Part Number	-	A	-	B
SGNN10	-	100	-	100
SISP10	-	250	-	100

Configurable Type A≥B

Part Number	-	A	-	B	-	T
SGNCA	-	320	-	220	-	10

Configurable Type

Part Number	10mm Increment		T Selection	T Tolerance
	A	B		
SGNC SGNW SGNP SGNB SGNCA SGNWA SGNPA SGNBA	20~500	20~500	3 5	±0.5
			8 10 15 20 25	±1
			30	±1.5
SGNA SGNL SGNF SGNAA SGNLA SGNFA	20~500	20~500	2 3 5	±0.5
			10	±1.5
SGNNF SGNSF	10~500	10~500	10	±1
			30	±2
			50	±3

Characteristics of Sponges

Item	Unit	Polyurethane Sponge	Chloroprene Rubber Sponge	EPDM Sponge	NBR Sponge	Silicon Rubber Sponge			Fluororubber Sponge
						Hs35	Hs22	Hs15	
Apparent Density	g/cm³	0.022	0.18	0.13	0.21	0.35~0.37	0.35~0.37	0.3	0.45
Air Bubble	-	Continuous Cell	Independent Cell	Independent Cell	Independent Cell	Independent Cell			Independent Cell
Tensile Strength	MPa {kgf/cm²}	≥0.076 {≥0.77}	0.9 {9}	0.5 {5}	0.8 {8}	1.6~1.8 {16~18}	0.7 {7}	1 {10}	2.7 {27}
Elongation	%	≥120	170	200	200	200~250		250	280
25% Compression Load	MPa {kgf/cm²}	-	5.3×10^{-2} {0.54}	3.1×10^{-2} {0.32}	6.5×10^{-2} {0.66}	- (*1)		8	- (*1)
Continuous Use Temperature *2	°C	-10~70	-35~130	-40~130	-10~140	-70~200			-20~230
Abrasion Resistance		◎	○	○	◎	△			◎
Anti-Aging		○	◎	◎	○	◎			◎
Water Resistance		△	○	○	○	○			◎
Chemical Resistance	Oil (Gasoline)	○	○	×	◎	△			◎
	Acid	×~△	○	×~○	△~○	△~○			◎
	Alkali	×	◎	○	○	◎			△~○
	Organic Solvent	×	×~△	×	×~△	×			×~○

For Adhesive Type, the adhesion strength decreases under high temperature (at approx. 80°C or more).
*1 Compression Set <40% During Compression> (100°C/24h) 71%
*2 The temperature of continuous use is the temperature where long-term use does not cause a sharp decline in quality.

Standard Type

Part Number		A	Unit Price B					
			SGNN			SGNS		
Type	T		100	400	800	100	400	800
SGNN SGNS	10	100						
		200						
		500						
	30	100						
		200						
		500						
	50	100						
		200						
		500						

Part Number		A	Unit Price B	
			SISP	SISA
Type	T		100	
SISP SISA	3	100		
		250		
	5	100		
		250		
	10	100		
		250		

SISP and SISA are double side coated.

Configurable Type

The price of this product is the unit price shown in the table multiplied by material multiplier.

(Ex.) Part Number - A - B - T >> (Unit Price) x (Material Multiplier) = Standard Type Unit Price

SGNCA - 200 - 150 - 10

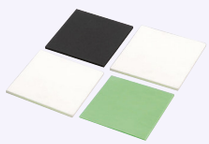
Part Number	T	A	Unit Price B				
			20~100	110~200	210~300	310~400	410~500
No Adhesive SGNC (x1.0) SGNW (x1.5) SGNP (x0.9) SGNB (x1.3) Adhesive SGNCA (x1.1) SGNWA (x1.6) SGNPA (x1.0) SGNBA (x1.4) ( ) Material Multiplier	3	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	8	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	10	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	15	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	20	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	25	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	30	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					

Part Number	T	A	Unit Price B				
			20~100	110~200	210~300	310~400	410~500
No Adhesive SGNA (x1.0) SGNL (x1.2) Adhesive SGNAA (x1.1) SGNLA (x1.3) ( ) Material Multiplier SGNL and SGNLA are single side coated.	2	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	3	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	10	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
No Adhesive SGNF (x1.0) Adhesive SGNFA (x1.1) ( ) Material Multiplier	2	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	3	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	10	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					

Configurable Type

Part Number	T	A	Unit Price B				
			20~100	110~200	210~300	310~400	410~500
No Adhesive SGNNF (x1.0) Adhesive SGNSF (x1.1)	10	10~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	30	10~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	50	10~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					

Hanenaito® / Antistatic Low Rebound / Low Strain Sponge Sheets

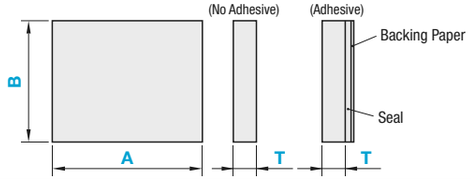


No Adhesive	Adhesive	M Material	H Hardness	Color
SUNSET	SUNSETA	Low Elasticity Rubber Sponge (Hanenaito® Sponge)	Asker C25	Black
SPTA	-	Antistatic Low Rebound Sponge	Asker C27	White
SNPG	-	Low Strain Sponge (Silicone Foam)	Asker C15	Green (T 3mm) White (T 6mm)

Adhesive thickness is 0.14 ~ 0.2mm.

Hanenaito® is a registered trademark of Naigai Rubber Industry Co., Ltd.

The values of hardness are reference values.



Accuracy Standards

T Dimension Tolerance

T	Tolerance
3, 5	±0.5
6~20	±1.0

A, B Dimension Tolerance

A, B	Tolerance
190 or Less	±1.5
200~390	±2.0
400 or More	±3.0

Part Number	10mm Increment A	10mm Increment B	T Selection
SUNSET SUNSETA	20~500	20~350	3 5 8 10
SPTA	20~500	20~500	5 10 15 20
SNPG	20~500	20~300	3 6

Ordering Example: Part Number - A - B - T → SUNSET - 500 - 350 - 10

A≥B

The price of SUNSETA is the price of SUNSET shown in the table multiplied by material multiplier.

(Ex.) Part Number - A - B - T >> (Unit Price) x (Material Multiplier) = Standard Type Unit Price
SUNSETA - 100 - 50 - 3

Part Number	T	A	Unit Price B 20~100	110~200	210~300	310~350
No Adhesive SUNSET (x1.0) Adhesive SUNSETA (x1.2) ( ) Material Multiplier	3	20~100		-	-	-
		110~200				
		210~300				
		310~400				
		410~500				
	5	20~100		-	-	-
		110~200				
		210~300				
		310~400				
		410~500				
	8	20~100		-	-	-
		110~200				
		210~300				
		310~400				
		410~500				
	10	20~100		-	-	-
		110~200				
		210~300				
		310~400				
		410~500				

Part Number	T	A	Unit Price B 20~100	110~200	210~300	310~400	410~500
SPTA	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	10	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	15	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	20	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
SNPG	3 (Green)	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	6 (White)	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					

Features

Low Elasticity Rubber Sponge (Hanenaito® Sponge)

- It is low elasticity rubber (Hanenaito®) foam.
- Excels in shock absorption.
- Lightweight with specific gravity at 0.3.

Antistatic Low Rebound Sponge

- It is bridge foam of styrene-type elastomer.
- Excels in shock absorption and antistatic. (Specific Volume Resistivity: $4x10^{10}$)

Low Strain Sponge (Silicone Foam)

- It is a silicone foam.
- The material resists crushing, even after repetitive impact absorption.
- Usable in a very wide temperature range of -40°C ~ 150°C.

Peel off the protective film on the surface before use.

Characteristics of Sponges

Item	Unit	Low Elasticity Rubber Sponge	Antistatic Low Rebound Sponge	Low Strain Sponge
Apparent Density	g/cm³	0.3	0.097	0.26
Air Bubble	-	Independent Cell	Independent Cell	Independent Cell
Tensile Strength	MPa {kgf/cm²}	0.9 {9}	0.9 {9}	0.32 {3.2}
Elongation	%	480	210	73
25% Compression Set	%	62	5.1	0.2
Temperature of Continuous Use	°C	20~60	10~50	-40~150
Abrasion Resistance		○	○	△
Anti-Aging		△	△	◎
Water Resistance		△	◎	◎
Chemical Resistance	Oil (Gasoline)	×	×	×
	Acid	×	○	◎
	Alkali	×	○	◎
	Organic Solvent	×	×	×

For Adhesive Type, the adhesion strength decreases under high temperature (at approx. 80°C or more).

The temperature of continuous use is the temperature at which long-term use does not cause a sharp decline in quality.

Compression Set JIS K 6262

Values in the table to the right are for reference and not guaranteed.

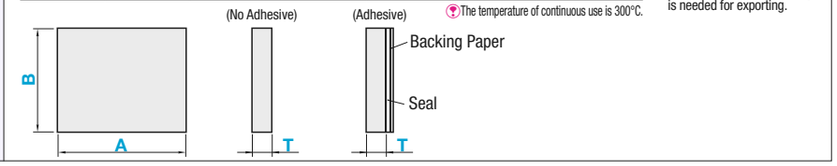
Heat Insulation Polyimide Sheets, Heat Insulation Polyimide Washers

Heat Insulation Polyimide Sheets Polyimide Foam

Type	M Material	Color	H Hardness	Allowable Temperature
No Adhesive / Adhesive	Aromatic Polyimide Foam	Light Beige	Asker C62	Main Body: 400°C; Adhesive Material: 200°C

The temperature of continuous use is 300°C.

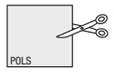
This product is regulated under Foreign Exchange and Foreign Trade Act. Export permit from the Minister of Economy, Trade and Industry is needed for exporting.



Part Number Type	T	1mm Increment A	1mm Increment B
No Adhesive Adhesive	2	10~500	10~500

Ordering Example: Part Number - A - B → - 200 - 100

Example: Can be cut as desired with scissors.



Part Number Type	T	A	Unit Price B 10~100	101~200	201~300	301~400	401~500
No Adhesive	2	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Adhesive	2	10~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

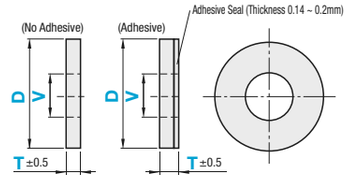
Heat Insulation Polyimide Washers Polyimide Foam

Standard No Adhesive	Standard Adhesive	Configurable Type No Adhesive	Configurable Type Adhesive	M Material	H Hardness	Color
WSPOL	WSPOLA	WSPOLF	WSPOLFA	Polyimide Foam	Asker C62	Light Beige

The temperature of continuous use is 300°C.

D, V Tolerance

D, V	Tolerance
10~40	±1.0
41~60	±1.5
61~100	±2.0



Standard

Part Number Type	D	V Selection	T Selection	Unit Price WSPOL	Unit Price WSPOLA
WSPOL WSPOLA	6	2	2		
	8	2 3 4			
	10	3 4 5 6			
	12	4 5 6 8			
	15	4 5 6 8 10			
	20	5 6 8 10 12			
	25	5 6 8 10 12 16 20			
	30	5 6 8 10 12 16 20			
	35	8 10 12 16 20 25			
	40	8 10 12 16 20 25 30			
	50	8 10 12 16 20 25 30			
	60	12 16 20 25 30 40			

Ordering Example

Standard: Part Number - V - T → WSPOL15 - 6 - 2

Configurable Type: Part Number - D - V → WSPOLF2 - D12 - V6

Configurable Type

Part Number Type	T	T Tolerance	D 1mm Increment	V 1mm Increment	Unit Price D10~20	D21~40	D41~60	D61~80	D81~100
WSPOLF WSPOLFA	2	±0.5	10~100	5~80 (No Hole: V=0) When D≤40, D-V≥5.					

Mechanical Characteristics

Item	Unit	Characteristic Values HPRIS	Characteristic Values POLS	Testing Method
Tensile Strength	MPa	0.05	1.3	ASTM D 3574 (TestE)
Modulus of Elongation	MPa	0.17	11.5	ASTM D 3574 (TestE)
Elongation	%	28	23	ASTM D 3574 (TestE)
Flexural Modulus	MPa	-	18.6	

Chemical Resistance

Chemical	HPRIS	POLS	Testing Method
10% Sulfuric Acid	○	○	Room temperature, soaked for 24 hours
10% Hydrochloric Acid	○	○	
Acetone	○	○	
Methylene Chloride	○	○	
NMP	○	○	
DMA	○	○	

* ○: No appearance change or swelling

Thermal and Electrical Characteristics

Item		Unit	Characteristic Values HPRIS	Characteristic Values POLS	Testing Method
Expansion Ratio		Times	330~270	10	
Apparent Density		kg/m³	4~5	135	ASTM D 3574 (TestA)
Tg		°C	400	401	DSC Analysis
Thermal Decomposition Temp. (5%)		°C	540	569	TGA Analysis
Brittle Temperature		°C	<-150	<-150	
Thermal Conductivity		W/m・K	0.045	0.044	ASTM C 518
Combustibility		-	-	V-0 Equiv.	
Limited Oxygen Index		%	50	49	ASTM D 2863
Outgas	TML	%	1.01	0.94	ASTM E 595
	CVCM		0.04	0.01	
	WVR		0.72	0.81	
Dielectric Constant (1MHz)		-	1	1.25	Impedance Analyzer
Dissipation Factor (1MHz)		-	0.0001	0.0025	

Overview

- Made of polyimide foam, best in heat resistance among engineering plastic.
- Excels in heat resistance, fire retardancy, environment resistance and is of low outgassing. Provides high performance as a thermal insulator or a soundproof material under high temperature.
- Polyimide sheets and washers are made by using heat insulation sponge compressed to 2mm.

Main Features

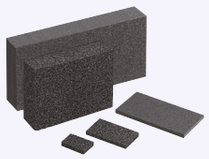
- High heat resistance with glass transition temperature of 400°C.
- Flexible workability: easily cut by utility knives.
- Self-extinguishable and flame-resistant.
- Extremely low gas discharge.
- Possesses superior properties of aromatic polyimide, such as resistance to radiation and ultraviolet, electrical isolation and chemical resistance.

Cautions

- As a characteristic of polyimide, rebound from compression is inferior. Avoid usage in compressed state to maintain heat insulating property.
- Allowable temperature limit for adhesive is 200°C. When using at operating temperature of 200°C or higher, use the adhesive as a temporary measure. (Apply supplementary attachment method such as nipping.)

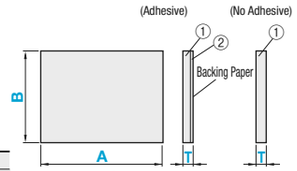
EPT Sealer® Sponge, Opsealer® Sponge

■Semi-closed cell foam can be compressed at small rebound stress, and changes its structure to closed cell after the compression. Therefore, water cannot pass through the material.



RoHS

EPA (Adhesive)
EPAOP (Adhesive)
EPAN (No Adhesive)



※A≥B

Type	M Material ①	M Material ②
EPA EPAN	EPDM Foam (EPT Sealer®)	Adhesive with Unwoven Cloth Base Material
EPAOP	EPDM Foam (Opsealer®)	Adhesive with Net Base Material

※Adhesive thickness is 0.16mm.

■Accuracy Standards

T Dimension Tolerance	
T	Tolerance
3~10	±1.0
15~25	±2.0
30	±2.5

A, B Dimension Tolerance	
A, B	Tolerance
20	±2.0
30~50	±2.5
60~140	±3.5
150~290	±6.5
300~500	±9.0

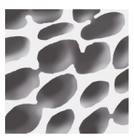
※EPT Sealer® is a registered trademark of Nitto Denko Corporation.
※Opsealer® is a registered trademark of Sanwa Kako Co., Ltd.

Part Number	10mm Increment A	10mm Increment B	Selection T
EPA EPAOP EPAN	20~500	20~400	3 5 8 10 15 20 25 30

Ordering Example

Part Number	-	A	-	B	-	T
EPA	-	100	-	80	-	8
EPAOP	-	200	-	100	-	30
EPAN	-	150	-	100	-	10

• Semi-closed Cell Structure



Before Compression

After Compression

■Characteristic Values ※The values are not guaranteed but measured ones.

Measurement Item		EPA	EPAOP
Color		Black	Black
Specific Gravity		0.11	0.08
Tensile Strength (Mpa)		0.08	0.1
Elongation (%)		450	205
Compression Hardness (25%) (kg/cm2)		0.02	0.04
Compression Hardness (50%) (kg/cm2)		0.05	0.05
Compression Rate (%)	50	×	△
	60	△	○
	70	○	○
	80	○	○

○ : No leakage of water after 30mins.
△ : Leakage of water is seen within 30mins.
× : Leakage of water is seen within 10mins.

※The price of this product is the unit price shown in the table multiplied by material multiplier.
(Ex.) Part Number - A - B - T >> (Price in the Table) x (Material Multiplier) =Standard Type Unit
EPAN -150 - 100 - 10

Part Number	T	A	Unit Price B 20~100	110~200	210~300	310~400
EPA (x1.0) EPAN (x0.9)	3	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	5	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	8	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	10	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				

Part Number	T	A	Unit Price B 20~100	110~200	210~300	310~400
EPA (x1.0) EPAN (x0.9)	15	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	20	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	25	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	30	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				

Part Number	T	A	Unit Price B 20~100	110~200	210~300	310~400
EPAOP	3	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	5	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	8	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	10	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				

Part Number	T	A	Unit Price B 20~100	110~200	210~300	310~400
EPAOP	15	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	20	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	25	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				
	30	20~100		-	-	-
		110~200			-	-
		210~300				-
		310~400				
		410~500				

Special Foam Polyurethane SOFRAS®

Sheet Type, Rolled Type

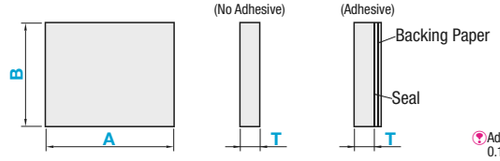
■This special urethane foam has good water retention and wear resistance allowing it to be used in industrial purposes such as application and moisture absorption.

■Sheet Type

RoHS

Type: No Adhesive	Type: Adhesive	M Material	H Hardness	Color
SOFRAS	SOFRASA	Special Foam Polyurethane SOFRAS®	Asker C11	White

※SOFRAS® is a registered trademark of AION Co., Ltd.



※Adhesive thickness is 0.06 ~ 0.10mm.

Part Number Type	5mm Increment A	5mm Increment B	Selection T
No Adhesive SOFRAS Adhesive SOFRASA	10~480	10~270	5 10 15 20
	20~480	20~270	

Ordering Example

Part Number	-	A	-	B	-	T
SOFRAS	-	300	-	200	-	10

■Adhesive Charge

A	B 10~100	B 105~200	B 205~270
10~100		-	-
105~200			-
205~300			
305~400			
405~480			

Type	T	A	Unit Price B 10~100	105~200	205~270
No Adhesive SOFRAS	5	10~100		-	-
		105~200			
		205~300			
		305~400			
		405~480			
Adhesive SOFRASA	10	10~100		-	-
		105~200			
		205~300			
		305~400			
		405~480			

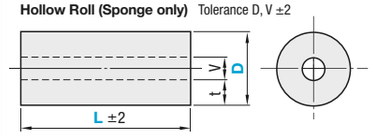
Type	T	A	Unit Price B 20~100	105~200	205~270
No Adhesive SOFRAS	15	20~100		-	-
		105~200			
		205~300			
		305~400			
		405~480			
Adhesive SOFRASA	20	20~100		-	-
		105~200			
		205~300			
		305~400			
		405~480			

■Rolled Type

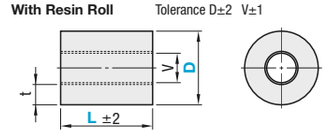
RoHS

Type: Hollow Roll (Sponge only)	Type: With Resin Roll	M Material	H Hardness	Color
SOFRASR	SOFRASRP	Sponge: Special Foam Polyurethane SOFRAS® Resin Roll: Polypropylene (PP)	Asker C7	White

Hollow Roll (Sponge only) Tolerance D, V ±2



With Resin Roll Tolerance D±2 V±1



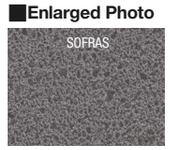
Type	Part Number Type	Selection	5mm Increment L	V	t
Hollow Roll (Sponge only)	SOFRASR	40	30~600	22	9
With Resin Roll	SOFRASRP	40	30~600	16	9

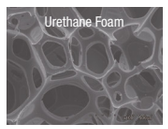
Ordering Example

Part Number	-	D	-	L
SOFRASRP	-	40	-	200

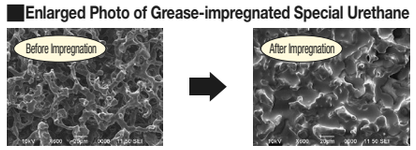
Type	Part Number Type	D	Unit Price L (5mm Increment) 30~100	101~200	201~300	301~400	401~500	501~600
Hollow Roll (Sponge only)	SOFRASR	40						
With Resin Roll	SOFRASRP	40						

■Enlarged Photo





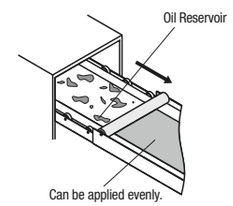
■Enlarged Photo of Grease-impregnated Special Urethane



■Material Properties

Air Bubble	Continuous Cell		Lamination	Semi-closed Cell	Independent Cell
Material	SOFRAS®	Urethane Foam	Felt	EPT Sealer®	CR, EPDM, NBR, Silicon, Fluorine
Page	P.446	P.441	P.447	P.445	P.441
Application Example	Application and Moisture Absorption			Dust-proof and Protection	
Apparent Density g/cm³	0.2	0.02	0.2	-	0.1~0.3
Tensile Strength kPa	1000	76		-	-
Water Retention Rate %	400	-	80	-	-
Heat Resistant °C	130	70	120	-	130~200
Water Retention	◎	○	○	△	×
Abrasion Resistance	◎	×	×	×	○
Water Resistance	◎	△	◎	×	○
Chemical Resistance	○	×	△	×	×

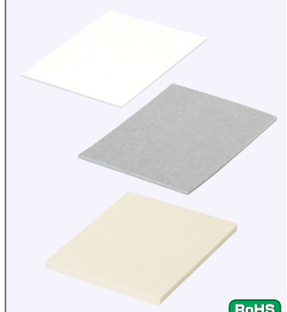
Example



Felt Sheets

A wide variety of felt materials (w/ or w/o adhesive backings) is available in 10mm increment. Most suitable for cushion, liquid application and grinding media.

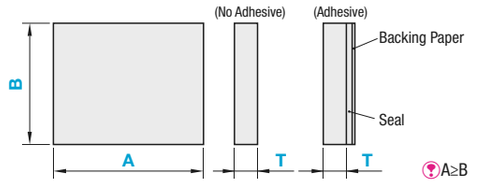
Felt Sheets



RoHS

No Adhesive	Adhesive	Material	Density (g/cm³)	Color	Allowable Temperature
FELP	FELPA	Polyester Felt	0.2 (0.18 for 5.5mm)	White	0 ~ 120°C
FELPET	FELPETA	Polyester Felt (with Binder)	0.32	Gray	0 ~ 80°C
FELH	FELHA	Polyamide Felt	0.2 (0.27 for 1mm)	White	-50 ~ 250°C
FELWL	FELWLA	Sheep Wool Felt (Rayon, PET blended)	0.25	Ivory	-10 ~ 60°C
FELW	FELWA	Sheep Wool Felt	0.6		

Adhesive thickness is 0.06 ~ 0.10mm.



A≥B

·Dimensional Tolerances of A and B

20~200	210~400	410~1000
±2	±4	±6

Part Number	T Selection	10mm Increment A	10mm Increment B
FELP FELPA	1 3 5.5	20~1000	20~950
FELPET FELPETA	5	20~500	20~500
FELH FELHA	1 4 6		
FELWL FELWLA	2 5 10		
FELW FELWA			

Ordering Example

Part Number	-	A	-	B
FELP3	-	500	-	350

Part Number		A (10mm Increment)	Unit Price B (10mm Increment)				
Type	T		20~200	210~400	410~600	610~800	810~950
No Adhesive FELP Adhesive FELPA (x1.3) (Material Multiplier)	1	20~200		-	-	-	-
		210~400					
		410~600					
		610~800					
		810~1000					
	3	20~200		-	-	-	-
		210~400					
		410~600					
		610~800					
		810~1000					
	5.5	20~200		-	-	-	-
		210~400					
		410~600					
		610~800					
		810~1000					

Part Number		A (10mm Increment)	Unit Price B (10mm Increment)				
Type	T		20~100	110~200	210~300	310~400	410~500
No Adhesive FELPET Adhesive FELPETA (x1.2)	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
No Adhesive FELH Adhesive FELHA (x1.1) (Material Multiplier)	1	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	4	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	6	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					

The price of this product is the unit price shown in the table multiplied by material multiplier:

Part Number	-	A	-	B	>>	(Unit Price) x (Material Multiplier) = Standard Type Unit Price
FELPA3	-	600	-	600		

Part Number		A (10mm Increment)	Unit Price B (10mm Increment)				
Type	T		20~100	110~200	210~300	310~400	410~500
No Adhesive FELWL Adhesive FELWLA (x1.1) (Material Multiplier)	2	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	10	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
No Adhesive FELW Adhesive FELWA (x1.1) (Material Multiplier)	2	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	5	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					
	10	20~100		-	-	-	-
		110~200					
		210~300					
		310~400					
		410~500					

Felt Bumpers

Washers, Bumpers

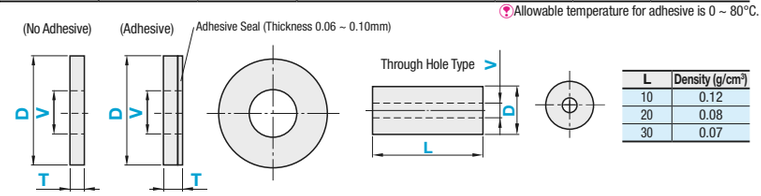
Felt material typically used for oil applicators and air-tight gaskets are offered as bumpers and washers.

Felt Bumpers

RoHS

Type	No Adhesive	Adhesive	Material	Density (g/cm³)	Color	Allowable Temperature
Washer	WFEP	WFEPA	Polyester Felt	0.2	White	0 ~ 120°C
	WFEH	WFEHA	Polyamide Felt			-50 ~ 250°C
Bumper	BFEL	BFELA	Polyester Felt	Refer to the following		-10 ~ 60°C

Allowable temperature for adhesive is 0 ~ 80°C.



L	Density (g/cm³)
10	0.12
20	0.08
30	0.07

Washer Type

Part Number Type	D	V Selection	T Selection	Unit Price WFEP	WFEPA	WFEH	WFEHA
No Adhesive WFEP WFEH	8	0 3	3 (WFEP WFEPA) 4 (WFEH WFEHA)				
	10	0 4					
	12	0 4 6					
Adhesive WFEPA WFEHA (x1.1) ( ) Material Multiplier	15	0 4 6 8					
	20	0 6 8 10 12					
	25	0 6 8 10 12 16 20					
	30	0 6 8 10 12 16 20					

* T dimension for Polyester Felt is 3mm, for Polyamide Felt is 4mm.

Bumper Type (L dimensions indicate the length of felt base materials. The values are for reference only.)

Part Number Type	D	L Selection	V	Unit Price L10	L20	L30
No Adhesive BFEL	20	10 20 30	0			
			10			
Adhesive BFELA (x1.1) ( ) Material Multiplier	30	10 20 30	0			
			10			

This product, especially L dimension 20 and 30, may be deformed during delivery.

Ordering Example

Part Number	-	V	-	T
WFEP10	-	4	-	3

Part Number	-	L	-	V
BFEL20	-	10	-	10

Characteristics of Felt

1. Excellent in weather resistance. (Affected by alkaline solution.)
2. Excellent in oil absorbability. It has the property of soaking up oil by capillary action.
3. Excellent in oil absorbability. It can absorb up to approx. 80% of its total volume.
4. Has good polishing characteristics. Provides high polishing characteristics as it precipitates foreign materials within its tissue.

Features of Materials

Material	Details of Material	Application Example
Polyester Felt (Sheet)	Felt made of 100% polyester Soft with Density of 0.18 ~ 0.2. General-purpose Product.	Applicable to general purpose use as oil / water absorption, cushioning materials, etc.
Polyester Felt (with Binder)	PET : PET Binder (Bonding Material) =9:1 Fibers bonded together by the binder provides high morphological stability.	Protection material and bumper for portions exposed to high impact.
Polyamide Felt	Felt made of 100% polyamide Excellent heat/flame resistances. UL Std. Test V-0 Equiv.	Heat Resistant / Flame Retardant Bumpers
Sheep Wool Felt (Rayon, PET)	Felt made of 60 % sheep wool and 40% PET. JIS-R25W2 Standard Product. Excellent in oil/water retention ability.	Cushion Material, Liquid Application (Oiling), Spacer
Sheep Wool Felt	Felt made of 100% sheep wool Gives less damage to mating materials.	For Buffing
Polyester Felt (Bumper Type)	Density may vary depending on L dimensions.	Oil Application to Workpieces

*The application examples above are references not guaranteed.

Sponge Tapes

Sponge Tapes of 500mm, 1000mm, 1500mm or 2000mm long.

RoHS

Type	Material	Hardness	Color
SGNPTA	EPDM Sponge	Asker C8	Black
SGNATA	Silicon Rubber Sponge	Asker C35	Orange
EPATA	EPDM Foam (EPT Sealer®)	(Less than Asker C1)	Black

• A Dimension Tolerance

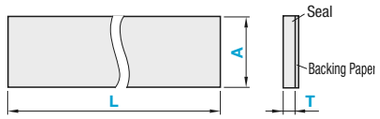
SGNPTA	±1.5
SGNATA	±2.5
EPATA	±2.5

• L Dimension Tolerance

	500	1000
SGNPTA SGNATA	±3	±5

EPATA

500・1000	1500・2000
+14 -6	+15 -8



Temperature limit for seals is 80°C.

Characteristic Data P.441

Part Number Type	T Selection	T Tolerance	Selection A	Selection L
SGNPTA SGNATA	3	±0.5	10 15 20 30 50	500 1000
	5			
	10			
EPATA	3	±1.0	10 15 20 30 50	500 1000 1500 2000
	5			
	10			

Ordering Example: Part Number SGNPTA3 - A 10 - L 1000

Part Number Type	T	A	Unit Price SGNPTA L500	SGNPTA L1000	SGNATA L500	SGNATA L1000	EPATA L500	EPATA L1000	EPATA L1500	EPATA L2000
SGNPTA SGNATA EPATA	3	10								
		15								
		20								
		30								
		50								
	5	10								
		15								
		20								
		30								
		50								
	10	10								
		15								
		20								
		30								
		50								

Features of EPATA

This product is made of a semi-closed cell foam, available for compression in the condition of low stress. After compression, it changes its structure to closed cell. This product is a high performance sealer that has the capability of filling gaps to shut out heat, water and sound.

Characteristic Values

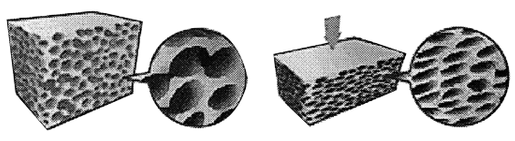
Testing method conforms to JIS K 6767.

Measurement Item		Unit	EPATA
Specific Gravity		-	0.095
Tensile Strength		kg/cm²	0.90
Elongation		%	430
Compression Hardness	25%	kg/cm²	0.02
	50%		0.05
Air Bubble		-	Semi–closed Cell

Compression Rate (%)	EPATA
50	×
60	△
70	○
80	○

○ : No leakage of water after 30 mins.
△ : Leakage of water is seen within 30mins.
× : Leakage of water is seen within 10mins.

• Semi–closed Cell Structure (EPATA)

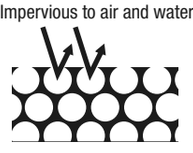


Before Compression　　After Compression

Features of Closed Cell Type (SGNPTA and SGNATA)

Bubbles are separated from each other, so air and water cannot pass through the material. It also excels in shock absorption.

Impervious to air and water



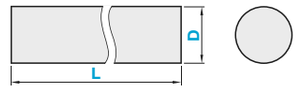
Round Cords - Sealing Elastomer, Round Rubber Rings

A new gel type gasket material useable for a variety of applications such as gap filling.

Round Cords - Sealing Elastomer

RoHS

Type	Material	Hardness	Color
RBGEL	Viscoelastic Elastomer	Asker F65	Light Yellow



- Operating Temperature Range: -10 ~ 70°C.
- Gel surface is coated with fluoride powder to prevent sticking.
- It is delivered in a roll.
- It can be cut with adhesive side up with a utility knife, etc.

Part Number Type	D	L Selection (mm)
RBGEL (Viscoelastic Elastomer)	2	500
	5	1000
	10	1500

Ordering Example: Part Number RBGEL5 - L 500

Part Number Type	D	L Selection (mm)	Unit Price L 500	L 1000	L 1500
RBGEL	2	500 1000 1500			
	5				
	10				

Viscoelastic Elastomer

Viscoelastic elastomer is an extremely soft gel which has an Asker F hardness. Superior in mechanical strength and excellent in durability.
A major characteristic is the three-dimensional slow recovery, which recovers after compression slowly and in multiple directions. It is adaptable to a variety of uses such as gaskets for sealing.

Elasticity of Viscoelastic Elastomer

A very soft and elastic material, as shown in the photo. (Elongation Rate: 2,000% or More) Due to its excellent shape flexibility, it easily conforms to complex shapes. Cutting surface has self-adhesion.

Comparison of Characteristic Values

Item	Viscoelastic Elastomer	Nitrile Rubber	Silicon Rubber
Specific Gravity	0.9	1.6	1.2
Hardness	65 (Asker F)	70 (Shore A)	50 (Shore A)
Tensile Strength (Mpa)	0.17	12.7	8.8
Elongation (%)	>2000	370	330
Maximum Operating Temperature	70	90	200
Low Temp. Resistance	-10	-10	-70

Comparison of Chemical Resistance

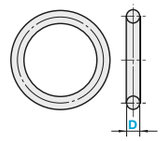
	Viscoelastic Elastomer	Nitrile Rubber	Silicon Rubber
Gasoline Light Oil	×	◎	△-○
Water	◎	◎	△
Strong Acid	◎	○	△
Strong Alkali	◎	○	○
Ether	×	×-△	△

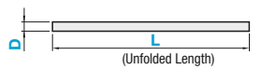
Do not use in places where there may be splashes of solvent.

Round Rubber Rings

RoHS

Type	Material	Hardness	Color
RBWNR	Nitrile Rubber (NBR)	Shore A70	Black
RBWSR	Silicon Rubber (SI)	Shore A53	Milky White
RBWFR	Fluororubber (FPM)	Shore A76	Black





Vulcanized Bonded Product

A rubber cord is cut to desired lengths and made into rings by vulcanized bonding. Bonded seam is polished by sandpaper.
Most suitable for use as general-purpose gasket.

- Not compliant with JIS Standard O ring.
- Avoid using as a belt.

Part Number Type	D	1mm Increment L (Unfolded Length)
RBWNR (Nitrile) RBWSR (Silicon) RBWFR (Fluorine)	2	300~4000
	3	
	4	
	5	
	10	

Accuracy Standards

L Dimension Tolerance

1000mm or Less	2000mm or Less	3000mm or Less	4000mm or Less
0 -1.0	0 -2.0	0 -3.0	0 -4.0

Part Number Type	D	D Dimension Tolerance	Unit Price L (Expanded Length) 1mm Increment 300~600	601~1000	1001~1300	1301~1600	1601~2000	2001~2300	2301~2600	2601~3000	3001~3300	3301~3600	3601~4000
RBWNR Nitrile Rubber	2	±0.2											
	3	±0.3											
	4	±0.4											
	5												
	10	±0.6											
RBWSR Silicon Rubber	2	±0.1											
	3												
	4												
	5	±0.15											
	10	±0.3											
RBWFR Fluororubber	2	±0.2											
	3												
	4												
	5	±0.3											
	10	±0.5											

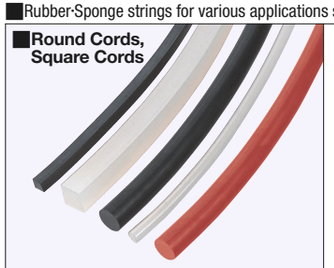
Ordering Example: Part Number RBWNR2 - L 525
Part Number RBWFR10 - L 3301

Round Cords, Square Cords

Rubber, Rubber Sponge

■Rubber·Sponge strings for various applications such as gap gasket.

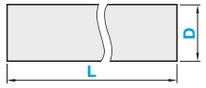
■Round Cords, Square Cords



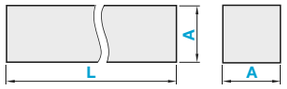
RoHS

Round Cords	Square Cords	Material	Hardness	Color
RBWN	RBKWN	Nitrile Rubber (NBR)	Shore A66	Black
RBWS	RBKWS	Silicon Rubber (SI)	Shore A50	Milky White
RBWF	-	Fluororubber (FPM)	Shore A69	Black
RBWCS	RBKWCS	Chloroprene Rubber Sponge	Asker C20	
RBWSS	RBKWSS	Silicon Rubber Sponge	Asker C25	Orange
RBWFS	-	Fluororubber Sponge	Asker C35	Black

Round Cords



Square Cords



■Accuracy Standards

L Dimension Tolerance

L	Tolerance
200 or Less	±1.5
201~400	±2.0
401 or More	±3.5

■Round Cords

Part Number Type	D	1mm Increment L	L Selection (Meter)
RBWN (Nitrile) RBWS (Silicon) RBWF (Fluorine)	2	20~999	1M
	3		3M
	4		5M
	5		10M
	6		
	7		
	8		
	9		
	10		
	12		
	15		

■Square Cords

Part Number Type	A	1mm Increment L	L Selection (Meter)
RBKWN (Nitrile) RBKWS (Silicon)	5	20~999	1M
	6		3M
	8		5M
	10		10M
	12		
	15		

■Round Cords (Sponge Type)

Part Number Type	D	L Selection (Meter)
RBWCS (Chloroprene Sponge) RBWSS (Silicon Sponge) RBWFS (Fluoro Sponge)	3	1M
	4	3M
	5	5M
	6	10M
	7	
	8	
	9	
	10	
	12	
	15	

■Square Cords (Sponge Type)

Part Number Type	A	L Selection (Meter)
RBKWCS (Chloroprene Sponge) RBKWSS (Silicon Sponge)	5	1M
	6	3M
	8	5M
	10	10M
	12	
	15	

Ordering Example

Part Number	-	L
RBWN2	-	250
RBKWN15	-	1M

The price of this product is the unit price shown in the table multiplied by material multiplier.

(Ex.) Part Number RBWS2 - L 250 >> (Unit Price) x (Material Multiplier) = Standard Type Unit Price

■Round Cords

Part Number Type	D	D Dimension Tolerance	Unit Price L 1mm Increment 20~100	101~200	201~300	301~600	601~800	801~999	L Selection (Meter) 1M	3M	5M	10M
RBWN (x1.0) Nitrile	2	±0.35										
RBWS (x1.5) Silicon	3											
RBWF Fluorine	4	±0.5										
D2~4:(x3.0)	5											
D5~8:(x5.0)	6											
D9~15:(x7.0)	7											
( ) Material Multiplier	8											
	9											
	10	±0.8										
	12	±1.0										
	15											

Material multiplier for RBWF may vary depending on D dimensions.

■Square Cords

Part Number Type	A	A Dimension Tolerance	Unit Price L 1mm Increment 20~100	101~200	201~300	301~600	601~800	801~999	L Selection (Meter) 1M	3M	5M	10M
RBKWN (x1.0) Nitrile	5	±0.5										
RBKWS (x1.5) Silicon	6											
( ) Material Multiplier	8											
	10	±0.8										
	12	±1.0										
	15											

■Round Cords (Sponge Type)

Part Number Type	D	D Dimension Tolerance	Unit Price L Selection (Meter) 1M	3M	5M	10M
Round Cords RBWCS (x1.0) Chloroprene Sponge	3	±1.0				
	4					
	5					
RBWSS (x1.5) Silicon Sponge	6					
	7					
	8					
( ) Material Multiplier	9					
	10					
	12	±2.0				
	15					

Fluoro Sponge is selectable from D=5, 6, 8 or 10.

Fluoro Sponge Price has been revised due to the price list integration.

■Square Cords (Sponge Type), Round Cords (Sponge Type, Fluororubber Sponge)

Part Number Type	A	A Dimension Tolerance	Unit Price L Selection (Meter) 1M	3M	5M	10M
RBKWCS (x1.0) Chloroprene Sponge	5	±1.0				
RBKWSS (x1.5) Silicon Sponge	6					
( ) Material Multiplier	8					
	10	±2.0				
	12					
	15					

Part Number Type	D	D Dimension Tolerance	Unit Price L Selection (Meter) 1M	3M	5M	10M
Round Cords RBWFS Fluororubber Sponge	5	±1.0				
	6					
	8					
	10	±2.0				

Round Dome Cords, Trapezoidal Dome Cords

Rubber, Rubber Sponge

■Can be used for gaskets on door openings in order to enhance air-tightness or to prevent twists.

■Round Dome Cords, Trapezoidal Dome Cords

RoHS

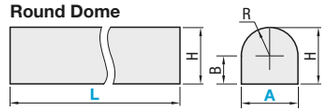
Round Dome	Trapezoidal Dome	Material	Hardness	Color
KMHN	KYHN	Nitrile Rubber (NBR)	Shore A70	Black
KMHS	KYHS	Silicon Rubber (SI)		Red Brown
KMHF	KYHF	Fluororubber (FPM)		Black
KMHNS	-	Chloroprene Rubber Sponge	Asker C20	Black
KMHSS	-	Silicon Rubber Sponge	Asker C25	Orange

■Accuracy Standards

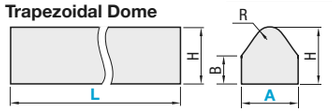
L Dimension Tolerance

L	Tolerance
200 or Less	±1.5
201~400	±2.0
401 or More	±3.5

Round Dome



Trapezoidal Dome



■Round Dome

Part Number Type	A	1mm Increment L	L Selection (Meter)
KMHN (Nitrile) KMHS (Silicon) KMHF (Fluorine)	8	20~999	1M
	10		3M
	12		5M
	15		10M
	16		

■Trapezoidal Dome

Part Number Type	A	1mm Increment L	L Selection (Meter)
KYHN (Nitrile) KYHS (Silicon) KYHF (Fluorine)	8	20~999	1M
	10		3M
	12		5M
	16		10M
	20		

■Round Dome (Sponge Type)

Part Number Type	A	L Selection (Meter)
KMHNS (Chloroprene Sponge) KMHSS (Silicon Sponge)	10	1M
	15	3M
	15A	5M
	20	10M

■Round Dome

Part Number Type	A	A Dimension Tolerance	B	H	R	Unit Price L 1mm Increment 20~100	101~200	201~300	301~600	601~800	801~999	L Selection (Meter) 1M	3M	5M	10M
KMHN (x1.0) Nitrile	8	±0.2	4	8	4										
KMHS (x1.5) Silicon	10		5	10	5										
KMHF(?) Fluorine	12		6	12	6										
( ) Material Multiplier	15		7.5	15	7.5										
	16		8	16	8										

Material Multiplier for Fluororubber KMHF: When A=8, 10 or 12, (Unit Price x4.0). When A=15 or 16, (Unit Price x5.0).

■Trapezoidal Dome

Part Number Type	A	A Dimension Tolerance	B	H	R	Unit Price L 1mm Increment 20~100	101~200	201~300	301~600	601~800	801~999	L Selection (Meter) 1M	3M	5M	10M
KYHN (x1.0) Nitrile	8	±0.2	4	8	2.8										
KYHS (x1.5) Silicon	10		5	10	2.8										
KYHF (?) Fluorine	12		6	12	3										
( ) Material Multiplier	16		8	16	4										
	20		10	20	5										

Material Multiplier for Fluororubber KMHF: When A=8, 10 or 12, (Unit Price x4.0). When A=15 or 16, (Unit Price x5.0).

■Round Dome Sponge

Part Number Type	A	A Dimension Tolerance	B	H	R	Unit Price L Selection (Meter) 1M	3M	5M	10M
KMHNS (x1.0) Chloroprene Sponge	10	±1.0	5	10	5				
KMHSS (x1.5) Silicon Sponge	15		2.5	10	7.5				
( ) Material Multiplier	15A		7.5	15	7.5				
	20		10	20	10				

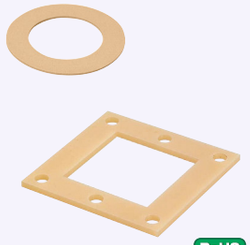
Ordering Example

Part Number	-	L
KMHN8	-	250
KMHNS15	-	10M

The price of this product is the unit price shown in the table multiplied by material multiplier.

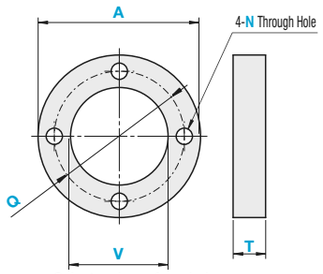
(Ex.) Part Number KMHS8 - L 20 >> (Unit Price) x (Material Multiplier) = Standard Type Unit Price

Urethane Gaskets



RoHS

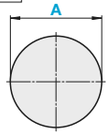
Type	Material	Hardness	Color
FUS	Ether Polyurethane	Shore A95	Natural Color
FUH		Shore A90	Natural Color
FUM	Ester Polyurethane	Shore A70	Natural Color
FUL		Shore A50	Natural Color
FUTH	Heat Resistant Urethane (Ether Polyurethane)	Shore A90	Brown



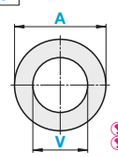
Select a shape from below.

Shape Selection

A

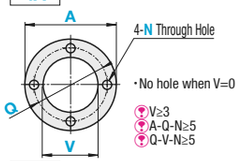


1A



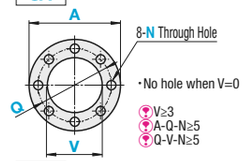
V≥3
A-V≥4

4A



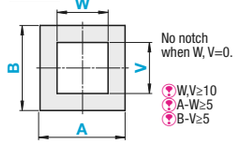
・No hole when V=0
V≥3
A-Q-N≥5
Q-V-N≥5

8A



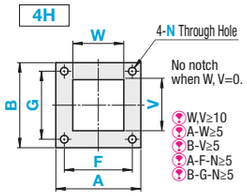
・No hole when V=0
V≥3
A-Q-N≥5
Q-V-N≥5

H



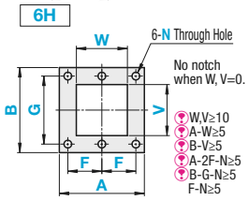
No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5

4H



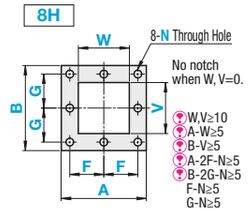
No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5
A-F-N≥5
B-G-N≥5

6H



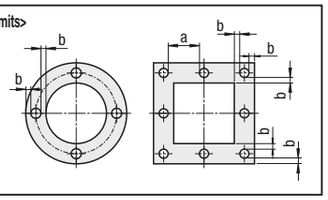
No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5
A-2F-N≥5
B-G-N≥5
F-N≥5

8H



No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5
A-2F-N≥5
B-2G-N≥5
F-N≥5
G-N≥5

<Machining Limits>
a≥5
b≥2.5



Accuracy Standards

T Dimension Tolerance

1~4	5~10	15~30
±0.3	±0.4	±0.5

Dimension Tolerance of A, B and V

200mm or Less	201~300	301~400	401~500
±0.5	±1.0	±1.2	±1.5

A, B dimension tolerance has been changed. Please refer to the accuracy standards.

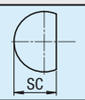
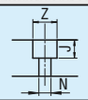
Part Number			1mm Increment (A≥B≥T)		W	V	F	G	Q	0.5mm Increment
Type		Shape Selection	T Selection		A	B					N
		A									
		1A	1	8							
FUS	(Urethane A95)	4A	2	10							
FUH	(Urethane A90)	8A	3	15							
FUM	(Urethane A70)		4	20							
FUL	(Urethane A50)	H	5	25							
FUTH	(Heat Resisting Urethane A90)	4H	6	30							
		6H			25~500 (When T=30, A≥30)	25~500 (When T=30, B≥30)	0.5mm Increment <Refer to Machining Limits and Condition Formula>				3~30
		8H									

Ordering Example

Part Number												
Type	Shape	T	A	B	W	V	F	G	Q	N		
FUH	4A	5	A400			V200			Q300	N11		

Alterations

Part Number														
Type	Shape	T	A	B	W	V	F	G	Q	N	(SC, WSC, ZC)			
FUTH	4H	30	A300	B200	W200	V100	F250	G150		N11	ZC-Z18-J20			

Alterations	1-Flat	2-Flat	Counterbored Hole
			
Code	SC	WSC	ZC
Spec.	Adds one flat. Applicable to Shape A and Shape 1A. Ordering Code SC100 SC=1mm Increment Shape A: A/2≤SC<A–2 Shape 1A: A/2+V/2+2.5<SC<A–2	Adds two flats. Applicable to Shape A and Shape 1A. Ordering Code WSC100 WSC=1mm Increment Shape A: A/2≤WSC<A–4 Shape 1A: V+5<WSC<A–4	Changes N (Through Hole) to Counterbore Hole. Ordering Code ZC-Z17.5-J15 Z, J=0.5mm Increment Z-N≥4 T-J≥2

<Price Calculation Method>
For the price of urethane gaskets, add the shape machining charge shown below to the price in the list.

Shape Machining Charge

Shape Code	Price
A	
1A	
4A	
8A	

Shape Code	Price
H	
4H	
6H	
8H	

Part Number		A	Unit Price B				
Type	T		25~100	101~200	201~300	301~400	401~500
Urethane	1	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
FUS Shore A95 (x1.0)	2	25~100		-	-	-	-
		101~200					
FUH Shore A90 (x0.7)		201~300					
		301~400					
		401~500					
FUM Shore A70 (x1.0)	3	25~100		-	-	-	-
		101~200					
FUL Shore A50 (x1.0)		201~300					
		301~400					
		401~500					
Heat Resistant Urethane	4	25~100		-	-	-	-
		101~200					
FUTH Shore A90 (x1.3)		201~300					
		301~400					
		401~500					
	5	25~100		-	-	-	-
		101~200					
( ) Material Multiplier		201~300					
		301~400					
		401~500					
	6	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

Examples of Price Calculation
(1): For Round Shape (considering A=B)
Urethane Rubber Shore A90
FUH1A3-A300-V200 (Find the price for T3, A300, B300.)
Body Price
Shape Machining Charge
Total

(2): For Square Shape
Heat Resistant Urethane
FUTH4H3-A300-B200-W200-V100-F250-G150-N11
(Find the price for T3, A300, B200.)
Body Price
Shape Machining Charge
Total

Part Number		A	Unit Price B				
Type	T		25~100	101~200	201~300	301~400	401~500
Urethane	8	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
FUS Shore A95 (x1.0)	10	25~100		-	-	-	-
		101~200					
FUH Shore A90 (x0.7)		201~300					
		301~400					
		401~500					
FUM Shore A70 (x1.0)	15	25~100		-	-	-	-
		101~200					
FUL Shore A50 (x1.0)		201~300					
		301~400					
		401~500					
Heat Resistant Urethane	20	25~100		-	-	-	-
		101~200					
FUTH Shore A90 (x1.3)		201~300					
		301~400					
		401~500					
	25	25~100		-	-	-	-
		101~200					
( ) Material Multiplier		201~300					
		301~400					
		401~500					
	30	30~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

Material Properties

・Ether Polyurethane
Excels in mechanical strength. Low heat resistance and chemical resistance. Highly resistant to water and suitable for outdoor use. Has high impact resilience.

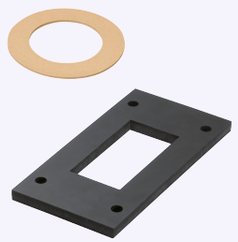
・Ester Polyurethane
Excels in mechanical strength. Low heat resistance and chemical resistance. Mechanical strength is 30~100% higher than the ether type, and has excellent oil resistivity. Has low impact resilience.

・Heat Resistant Urethane
This product has overcome the weakness of conventional urethanes, poor endurance against heat. Withstands use in high temperature up to 120°C, while general urethane can withstand up to only 70°C.

	Water Resistance	Oil Resistance	Chemical Resistance	Heat resistance
Ether Polyurethane	○		×	×70°C
Ester Polyurethane		○	×	×70°C
Heat Resistant Urethane	○		×	○120°C

Rubber, Sponge Gaskets

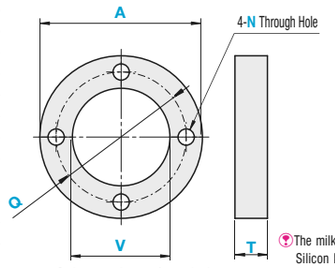
■Popular gasket shapes in 9 materials are provided.



RoHS

Type	Material	Hardness	Color
FRN	Nitrile Rubber (NBR)	Shore A70	Black
FRC	Chloroprene Rubber (CR)	Shore A65	Black
FRCAN	Amber Color Rubber	Shore A45	Amber Color
FRSM	Silicon Rubber	Shore A70	Light Gray
FRAM	Silicon Rubber	Shore A50	Milky White
FRFF	Fluororubber (FPM)	Shore A80	Black
FSNC	Chloroprene Rubber Sponge	Asker C25	Black
FSNF	Fluororubber Sponge	Asker C35	Black
FSNA	Silicon Rubber Sponge	Asker C35	Orange
FREP	Ethylene Rubber (EPDM)	Shore A65	Black

Sponge Hardness: ASKER-C

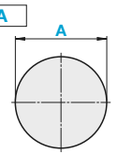


Select a shape from below.

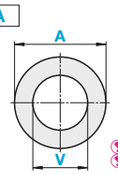
The milky white color of Silicon Rubber Shore A 50 is translucent.

Shape Selection

A

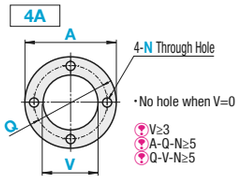


1A



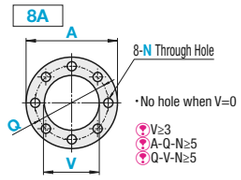
V≥3
A-V≥4

4A



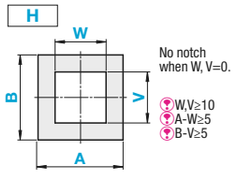
・No hole when V=0
V≥3
A-Q-N≥5
Q-V-N≥5

8A



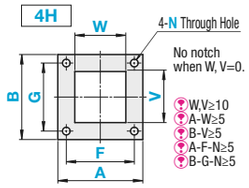
・No hole when V=0
V≥3
A-Q-N≥5
Q-V-N≥5

H



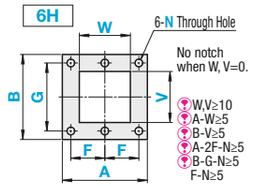
No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5

4H



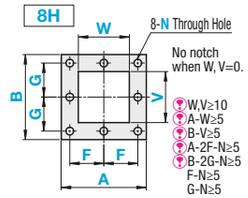
No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5
A-F-N≥5
B-G-N≥5

6H



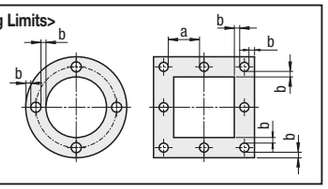
No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5
A-2F-N≥5
B-G-N≥5
F-N≥5

8H



No notch when W, V=0.
W,V≥10
A-W≥5
B-V≥5
A-2F-N≥5
B-2G-N≥5
F-N≥5
G-N≥5

<Machining Limits>
a≥5
b≥2.5



■Accuracy Standards

Rubber

T Dimension Tolerance	1~3	5	10	15~30
	±0.3	±0.4	±0.6	+2.0 -0.5

Dimension Tolerance of A, B and V	200mm or Less	201~300	301~500
	±0.5	±1.0	±1.5

Sponge

T Dimension Tolerance	3, 5	10
	±0.3	±1.5

A, B Dimension Tolerance	190mm or Less	191~390	391 or More
	±1.5	±2	±3

A, B dimension tolerance has been changed. Please refer to the accuracy standards.

Part Number: Type		Shape Selection	T Selection: Rubber	T Selection: Sponge	1mm Increment (A≥B≥T): A	1mm Increment (A≥B≥T): B	W	V	F	G	Q	0.5mm Increment: N
FRN	(Nitrile Rubber)	A	1		25~500 (When T=30, A≥30)	25~500 (When T=30, B≥30)	0.5mm Increment <Refer to Machining Limits and Condition Formula>					3~30
FRC	(Chloroprene Rubber)	1A	2									
FRFF	(Fluororubber)	4A	3	3								
FRSM	(Silicon A70)	8A										
FRAM	(Silicon A50)		5									
FRCAN	(Amber Color Rubber)	H	10	5								
FSNC	(Chloroprene Rubber Sponge)	4H	15									
FSNF	(Fluororubber Sponge)	6H		10								
FSNA	(Silicon Rubber Sponge)	8H	20									
FREP	(Ethylene Rubber EPDM A65)		30									

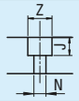
For FRFF (Fluororubber) with T dimension 15 ~ 30, maximum value for A and B is 300.

Ordering Example

Part Number												
Type	Shape	T	A	B	W	V	F	G	Q	N		
FRN	4H	3	A300	B200	W200	V100	F250	G150		N11		

Alterations

Part Number													
Type	Shape	T	A	B	W	V	F	G	Q	N	(SC, WSC, ZC)		
FRN	4H	30	A300	B200	W200	V100	F250	G150		N11	ZC-Z18-J20		

Alterations	1-Flat	2-Flat	Counterbored Hole
			
Code	SC	WSC	ZC
Spec.	Adds one flat. Applicable to Shape A and Shape 1A. Ordering Code SC100 SC=1mm Increment Shape A: A/2≤SC<A–2 Shape 1A: A/2+V/2+2.5<SC<A–2	Adds two flats. Applicable to Shape A and Shape 1A. Ordering Code WSC100 WSC=1mm Increment Shape A: A/2≤WSC<A–4 Shape 1A: V+5<WSC<A–4	Changes N (Through Hole) to Counterbore Hole. Ordering Code ZC-Z17.5-J15 Z, J=0.5mm Increment Z-N≥4 T-J≥2

<Price Calculation Method>
For the prices of rubber and sponge gaskets, add the shape machining charge below to the price in the list.

■Shape Machining Charge

Shape Code	Price	Shape Code	Price
A		H	
1A		4H	
4A		6H	
8A		8H	

Examples of Price Calculation
(1): For Round Shape (considering A=B)
Nitrile Rubber
FRN1A3-A300-V200 (Find the price for T3, A300, B300.)
Body Price
Shape Machining Charge
Total

(2): For Square Shape
Ethylene Rubber
FREP4H3-A300-B200-W200-V100-F250-G150-N11
(Find the price for T3, A300, B200.)
Body Price
Shape Machining Charge
Total

■Nitrile Rubber, Chloroprene Rubber, Silicon Rubber

Part Number: Type	T	A	Unit Price: B 25~100	101~200	201~300	301~400	401~500
Nitrile Rubber FRN	1	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	2	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Chloroprene Rubber FRC	3	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	5	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Amber Color Rubber FRCAN (x1.6)	10	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	15	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Ethylene Rubber FREP (x1.2) (Material Multiplier)	20	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	30	30~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Silicon Rubber FRSM Shore A70	1	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	2	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	3	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Silicon Rubber FRAM Shore A50	5	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	15	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	20	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	30	30~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					

■Fluororubber

Part Number: Type	T	A	Unit Price: B 25~100	101~200	201~300	301~400	401~500
Fluororubber FRFF	1	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	2	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	3	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	5	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	15	25~100		-	-	-	-
		101~200					
		201~300					
	20	25~100		-	-	-	-
		101~200					
		201~300					
	30	30~100		-	-	-	-
		101~200					
		201~300					

■Chloroprene Rubber Sponge, Fluororubber Sponge, Silicon Rubber Sponge

Part Number: Type	T	A	Unit Price: B 25~100	101~200	201~300	301~400	401~500
Chloroprene Rubber Sponge FSNC	3	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	5	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Fluororubber Sponge FSNF	3	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	5	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
Silicon Rubber Sponge FSNA	3	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	5	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					
	10	25~100		-	-	-	-
		101~200					
		201~300					
		301~400					
		401~500					