

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

Accuracy Standards
 • T Dimension Tolerance ±0.2
 • Dimensional Tolerances of A and B
 200mm or Less ±1.0 201~300 ±1.5 301~500 ±2.0

Adhesive thickness is 0.14 ~ 0.2mm.

A Selectable Type

Square Type

A, B Configurable Type

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

A Selectable - Band

Part Number	Type	T	Unit Price								
			A Selection								
No Adhesive LRBNM (x1.0) Adhesive LRBNMA (x1.2)	0.5	300	3	5	10	20	30	40	50	80	100
			Adhesive LRBSM (x1.0) LRBAM (x1.0) Adhesive LRBSMA (x1.2) LRBAMA (x1.2)								

A, B Configurable Type

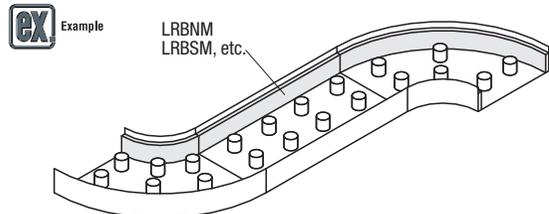
Part Number	Type	T	1mm Increment	
			A	B
LRBNMF, LRBSMF, LRBAMF, LRBNMFA, LRBSMFA, LRBAMFA	0.5		10~500	10~500

A, B Configurable Type

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

Ordering Example
 Part Number - A - B
 LRBNM0.5 - 300 - 200

A, B Configurable Type
 Part Number - A - B
 LRBNMF0.5 - 395 - 201



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

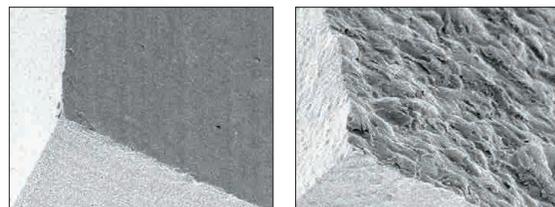
Features of Low Friction Rubber Sheets Chemical Resistance Data See P.391
 By making only one side of rubber surface coarse, the friction is reduced without changing other properties of the material. Can be used on the surface of a sliding plate, robotic chuck and etc. that can stick with workpieces.

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.



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.

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

A Selectable - Band

Band Type

A, B Selectable

Accuracy Standards
 • T Dimension Tolerance ±0.2
 • Dimensional Tolerances of A and B
 200mm or Less ±1.0 300 ±1.5 400, 500 ±2.0

A Selectable - Band

Part Number	Type	T	Unit Price								
			A Selection								
PTFETT	0.23	300	3	5	10	20	30	40	50	80	100
			ULTT	0.12	40	50	80	100			

L dimension is 500mm.

A, B Selectable

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

Ordering Example
 Part Number - A - B
 PTFETT0.23 - 300 - 100
 ULTT0.12 - 50 - 100
 PTFETS0.23 - 100 - 100
 ULTS0.12 - 500 - 100

Features of Fluororesin and Ultra High-Molecular-Weight Polyethylene

Fluororesin • Ultra High-Molecular-Weight Polyethylene
 Low friction coefficient, and excellent chemical resistance and heat resistance. 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

Material	Dynamic Friction Coefficient
Fluororesin (N/25mm Wide)	0.08
Ultra High-Molecular-Weight Polyethylene (N/25mm Width)	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 °C	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)

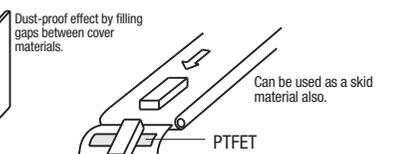
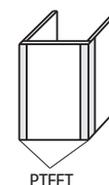
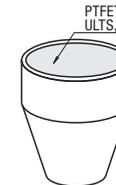
PTFET

Part Number		W Selection (mm)	T (mm)	Fluorine Film Thickness	Adhesive Strength (N/25mm Wide)	Tensile Strength (N/25mm Width)	Elongation %	Dielectric Breakdown kV	W13		W25		W50	
Type	No.								Unit Price (1~9 pc(s))	Volume Discount Rate	Unit Price (1~9 pc(s))	Volume Discount Rate	Unit Price (1~9 pc(s))	Volume Discount Rate
PTFET	1	13	0.08	0.05	6.13	49.0	200	4.5						
	2	25	0.13	0.08	9.32	56.4	250	7.5						
	3	50	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
 PTFETS, ULTS, etc.

Can be used inside of hoppers, etc.



PTFET

Can be used as a skid material also.

MC Nylon® Plates

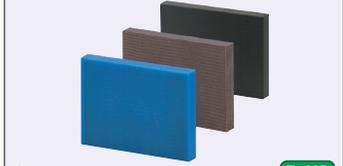
Standard / Sliding / High Strength / Conductivity / Weather Resistance Grade



MC Nylon® is the most general material in engineered plastics and is used for various industrial purposes. For Finishing, Circular Sawing and Milling are available.

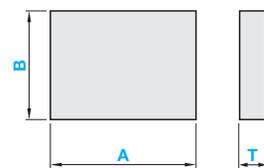
*For Details of color samples and features, see P.951.

Standard Type



Properties P.953
For Plastic Blocks, see P.1024.

Type	Grade / Material	Color	Operating Ambient Temperature
MCA	Standard / MC901	Blue	-40~120°C
MCAW	Standard / MC900NC	Ivory	-40~120°C
MCAS	Sliding / MC703HL	Purple	-40~120°C
MCAY	High Strength / MC602ST	Dark Brown	Ambient Temp. ~150°C
MCAPS	Weather Resistance / MC801	Dark Gray	Ambient Temp. ~120°C
MCCA	Conductivity CDR2 / MC501CDR2	Black	Ambient Temp. ~120°C
MCDA	Conductivity CDR6 / MC501CDR6	Black	Ambient Temp. ~120°C
MCEA	Conductivity CDR9 / MC501CDR9	Black	Ambient Temp. ~150°C



Dimension Tolerance of A and B			Dimension Tolerance, Rate of Camber and Torsion		
T	A, B Unit: mm	A, B Dimension Tolerance	T	T Dimension Tolerance	Rate of Camber and Torsion per 1,000mm
5~30	~99	±0.5	5, 7, 10	0~+1.5	1.2% or Less
	100~250	±0.75	12, 15, 20		1.0% or Less
	251~	±1.0	25, 30	0~+2.0	0.4% or Less
40~60	~300	0~+5	40, 50, 60	0~+3.0	

Finish	4 Sides		Upper-lower Surface	
	Drilling Method	Finish Symbol	Drilling Method	Finish Symbol
Circular Sawing (-)	Circular Sawing	✓	Material	~
Guaranteed Perpendicularity of Circular Saw Cuts (NT)	Circular Sawing	✓	Material	~
4-side Milling (4F)	Milling	✓	Material	~
6-surface Milling (6F)	Milling	✓	Milling	✓
Upper-lower Surface Milling (2F)	Circular Sawing	✓	Milling	✓

Finish	Width Parallelism		Perpendicularity of Reference Plane
	per 100mm		
4-side Milling (4F)	0.1		0.1
6-surface Milling (6F)	0.1		0.1

Reference plane stickers are attached to 4-side milled plates.

Standard Type

Type	Part Number		Dimension Range by Material	A	B	T		
	Finish Symbol Selection	T Dimension Tolerance						
MCA (Standard, Blue) MCAW (Standard, Ivory) MCAS (Sliding) MCAY (High Strength) MCAPS (Weather Resistance) MCCA (Conductivity CDR2) MCDA (Conductivity CDR6) MCEA (Conductivity CDR9)	Circular Sawing		MCA	1mm Increment		Selectable		
	-	Not available		Not available	20~500		20~400	5, 7, 10, 12, 15, 20, 25, 30
					40~300		40~300	40, 50, 60
			20~500		20~400	10, 12, 15, 20, 25		
	Others	Not available	Not available	5, 7, 10, 12, 15, 20, 25, 30				
				Guaranteed Perpendicularity of Circular Saw Cuts (NT)		Selectable		
				NT	Not available		MCA	0.5mm Increment
	T5, 7, 10	T12, 15, 20	T25, 30					
	Q 0~+0.3	0~+0.4	0~+0.5					
	N ±0.2	±0.3	±0.4					
M -0.3~0	-0.4~0	-0.5~0						
4-side Milling (4F)		MCEA	0.1mm Increment		Selectable			
4F	Not available		MCEA	10~400		10~200	10, 12, 15, 20, 25	
				5, 7, 10, 12, 15, 20, 25, 30				
		6-surface Milling (6F)		0.1mm Increment				
6F	Not available	MCEA	10~400		10~200	10~24		
			5~29					
			Upper-lower Surface Milling (2F)		0.1mm Increment			
2F	Not available	MCEA	20~400	20~250		10~24		
			5~29					

Alterations	Part Number	A	B	T
Circular Sawing	MCA	300	200	40
Guaranteed Perpendicularity of Circular Saw Cuts	MCA NTQ	200.5	100.5	10
4-side Milling	MCA 4FN	150.5	100.3	15
6-surface Milling	MCA 6FMM	100.3	90.5	10.5
Upper-lower Surface Milling	MCA 2FQ	80	50	5

T40, 50 and 60 may have steps on cut surfaces.

Alterations	Corner Radius		Corner Cut	
	CRA	CRB	CCA	CCB
Code	CRA, CRB, CRC, CRD		CCA, CCB, CCC, CCD	
Spec.	Adds radius to any corner. R = 5mm Increment (10 ≤ A(B) - R(2R)) 5 ≤ CRA, CRB, CRC, CRD ≤ 100 (Ex.) Adds R10 at the corner of A and C. CRA10-CRC10 Not applicable to 4-surface milling or 6-surface milling. Not applicable to T40, 50 and 60.		Cuts any corners. 5 ≤ Corner Cut ≤ 50 10 ≤ A-C or 10 ≤ B-C 5mm Increment (Ex.) When the corners of A and D are cut by C5 → CCA5-CCD5 Not applicable to 4-surface milling or 6-surface milling. Not applicable to T40, 50 and 60.	

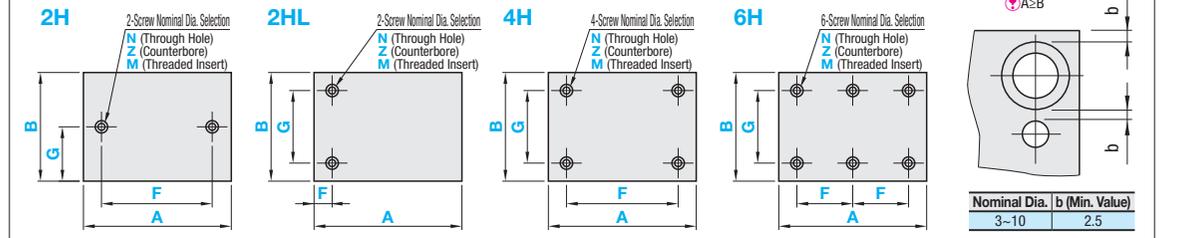
Pre-drilled Type



Properties P.953
RoHS

Type	Grade / Material	Color	Operating Ambient Temperature
MCA	Standard / MC901	Blue	-40~120°C
MCAW	Standard / MC900NC	Ivory	-40~120°C
MCAS	Sliding / MC703HL	Purple	-40~120°C
MCAY	High Strength / MC602ST	Dark Brown	Ambient Temp. ~150°C
MCAPS	Weather Resistance / MC801	Dark Gray	Ambient Temp. ~120°C
MCCA	Conductivity CDR2 / MC501CDR2	Black	Ambient Temp. ~120°C
MCDA	Conductivity CDR6 / MC501CDR6	Black	Ambient Temp. ~120°C
MCEA	Conductivity CDR9 / MC501CDR9	Black	Ambient Temp. ~150°C

Dimension Tolerance of A and B			Dimension Tolerance, Rate of Camber and Torsion		
T	A, B Unit: mm	A, B Dimension Tolerance	T	T Dimension Tolerance	Rate of Camber and Torsion per 1,000mm
5~30	~99	±0.5	5, 7, 10	0~+1.5	1.2% or Less
	100~250	±0.75	12, 15, 20		1.0% or Less
	251~	±1.0	25, 30	0~+2.0	0.4% or Less



Finish	4 Sides		Upper-lower Surface	
	Drilling Method	Finish Symbol	Drilling Method	Finish Symbol
Circular Sawing	Circular Sawing	✓	Material	~
Upper-lower Surface Milling	Circular Sawing	✓	Milling	✓

Pre-drilled Type

Type	Part Number		A	B	T Dimension Range by Material	T	F	G			
	Finish Symbol Selection	T Dimension Tolerance									
MCA (Standard, Blue) MCAW (Standard, Ivory) MCAS (Sliding) MCAY (High Strength) MCAPS (Weather Resistance) MCCA (Conductivity CDR2) MCDA (Conductivity CDR6) MCEA (Conductivity CDR9)	Circular Sawing		20~500	20~400	MCEA	Selectable	6~491.5 (2H, 4H) 4.5~395.5 (2HL, 4HL) 6~391.5 (2H, 4H, 6H)	4.5~395.5 (2H) 6~391.5 (2HL, 4H, 6H)			
	Not available	2H (Horizontal) 2HL (Vertical) 4H 6H							Others	5, 7, 10, 12, 15, 20, 25, 30	
										Upper-lower Surface Milling (2F)	
			2FQ 0~+0.2 2FN ±0.1 2FM -0.2~0	2H (Horizontal) 2HL (Vertical) 4H 6H	MCEA	10~24					
	Others	5~29									

T Dimension	Pre-drilled Hole Nominal Dia.			
	Through Hole		Threaded Insert	
	N	Z	M	L
5~6	3	-	3 4	-
7~9	4	3 4	3 4 5 6	-
10~14	5	4 5 6	3 4 5 6 8 10	-
15~30	6	4 5 6 8	3 4 5 6 8 10	-

Dimension F Specification Range: For 2H and 4H, $d(d1)+2.5 \leq F \leq A-d(d1)-5$; for 2HL, $d(d1)/2+2.5 \leq F \leq A-d(d1)/2-2.5$; for 6H, $d(d1)+2.5 \leq F \leq (A-d(d1)-5)/2$.
 Dimension G Specification Range: For 2H, $d(d1)/2+2.5 \leq G \leq B-d(d1)/2-2.5$; for 2HL, 4H and 6H, $d(d1)+2.5 \leq G \leq B-d(d1)-5$.
 For Pre-drilled Type, select N (through hole) or Z (counterbore hole); for Threaded Insert Type, select M (threaded insert) or L (insertion length).

Alterations	Pre-drilled Type	
	Part Number	Ordering Example
Ordering Example	Part Number - A - B - T - F - G - Screw Nominal Dia. - L	MCA4H - 200 - 155 - 5 - F160 - G120 - N4 MCA4H - 500 - 300 - 10 - F300 - G200 - M5 - L7.5
Alterations	Part Number - A - B - T - F - G - Screw Nominal Dia. - (XC · YC)	MCA2H - 50 - 40 - 5 - F10 - G20 - N3 - XC10

Alterations	Hole Position from Left		Hole Position from Bottom	
	XC	YC	XC	YC
Code	XC		YC	
Spec.	XC = 0.5mm Increment (2H, 4H Type) $d(d1)/2+2.5 \leq XC \leq A-F-d(d1)/2-2.5$ (6H Type) $d(d1)/2+2.5 \leq XC \leq A-2F-d(d1)/2-2.5$		YC = 0.5mm Increment $d(d1)/2+2.5 \leq YC \leq B-G-d(d1)/2-2.5$ Not available for 2H.	

Polyacetal Plates

Standard / Antistatic Grade



Polyacetal (equal to Duracone®) is a general Engineered Plastic used for various industrial purposes. Antistatic Grade is made from non-carbon antistatic materials. For Finishing, Circular Sawing and Milling are available.

*For Details of color samples and features, see P.951

Standard Type

Properties P.953 RoHS

For Plastic Blocks, see P.1024.

Type	Grade	Color	Operating Ambient Temperature
PAA	Standard	White	-45~95°C
PABA		Black	
PACA	Antistatic	Ocher	Ambient Temperature: ~ 80°C

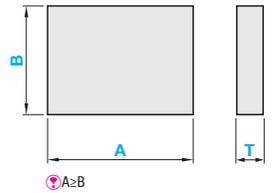
PABAH is available on our Website.

T	Dimension Tolerance of A and B		T Dimension Tolerance, Rate of Camber and Torsion	
	A-B Unit: mm	A, B Dimension Tolerance	T	T Dimension Tolerance Rates of Camber and Torsion per 1,000mm
5~30	~99	±0.5	5~10	+0.2~1.5
	100~250	±0.75	12	+0.3~2.0
40~60	251~	±1.0	15~30	0.5% or Less
	~300	0~+5	40, 50, 60	+0.5~3.0

Finish	4 Sides		Upper-lower Surface	
	Drilling Method	Finish Symbol	Drilling Method	Finish Symbol
Circular Sawing	Circular Sawing	✓	Material	~
Guaranteed Perpendicularity of Circular Saw Cuts (NT)	Circular Sawing	✓	Material	~
4-side Milling (4F)	Milling	✓	Material	~
6-surface Milling (6F)	Milling	✓	Milling	✓
Upper-lower Surface Milling (2F)	Circular Sawing	✓	Milling	✓

Finish	Width Parallelism	Perpendicularity of Reference Plane
	per 100mm	
Guaranteed Perpendicularity of Circular Saw Cuts (NT)	0.1	0.1
4-side Milling (4F)	0.1	0.1
6-surface Milling (6F)	0.1	0.1

Reference plane stickers are attached to 4-side milled plates.



Material: Polyacetal

Type	Finish Selection	T Dimension Tolerance	Part Number		
			A, B Dimension Tolerance	T	T
PAA (Standard White) PABA (Standard Black) PACA (Antistatic Grade)	-	Not available	Circular Sawing		
			PAA	20-500 20-400	5, 6, 8, 10, 12, 15, 20, 25, 30
			PABA	40-300 40-300	40, 50, 60
	NT	Not available	Guaranteed Perpendicularity of Circular Saw Cuts (NT)		
			PAA	20-500 20-400	5, 6, 8, 10, 12, 15, 20, 25, 30
			PABA	20-500 20-400	6, 9, 12, 19, 25
	4F	Not available	4-side Milling (4F)		
			PAA	10-400 10-200	5, 6, 8, 10, 12, 15, 20, 25, 30
			PABA	10-400 10-200	6, 9, 12, 19, 25
	6F	Not available	6-surface Milling (6F)		
PAA			10-400 10-200	5-29	
PABA			10-400 10-200	5-24	
2F	Not available	Upper-lower Surface Milling (2F)			
		PAA	20-400 20-250	5-29	
		PABA	20-400 20-250	5-24	

T40, 50 and 60 may have steps on cut surfaces.
For T0.5, 1.0, 1.5 and 2.0, see P.973.

Part Number	A	B	T
PAA	300	200	40
PAANTQ	200.5	100.5	10
PAA4FN	150.5	100.3	15
PAA6FMM	100.3	90.5	10.5
PAA2FQ	80	50	5



Alterations	Corner Radius	Corner Cut
	<p>Code: CRA, CRB, CRC, CRD</p> <p>Spec: Adds radius to any corner. R = 5mm Increment. 10 ≤ A(B)-R(2R). 5 ≤ CRA, CRB, CRC, CRD ≤ 100. (Ex.) Adds R10 at the corner of A and C. CRA10-CRC10. Not applicable to 4-side milling or 6-surface milling. Not applicable to T40, 50 and 60.</p>	<p>Code: CCA, CCB, CCC, CCD</p> <p>Spec: Cuts any corners. 5 ≤ Corner Cut ≤ 50. 5mm Increment. (Ex.) When the corners of A and D are cut by CS → CCAS-CCD5. Not applicable to 4-side milling or 6-surface milling. Not applicable to T40, 50 and 60.</p>

Pre-drilled Type

Properties P.953 RoHS

Type	Grade	Color	Operating Ambient Temperature
PAA	Standard	White	-45~95°C
PABA		Black	
PACA	Antistatic	Ocher	Ambient Temperature: ~ 80°C

PABAH is available on our Web site.

T	Dimension Tolerance of A and B		T Dimension Tolerance, Rate of Camber and Torsion	
	A-B Unit: mm	A, B Dimension Tolerance	T	T Dimension Tolerance Rates of Camber and Torsion per 1,000mm
5~30	~99	±0.5	5~10	+0.2~1.5
	100~250	±0.75	12	+0.3~2.0
40~60	251~	±1.0	15~30	0.5% or Less
	~300	0~+5	40, 50, 60	+0.5~3.0

Finish	4 Sides		Upper-lower Surface	
	Drilling Method	Finish Symbol	Drilling Method	Finish Symbol
Circular Sawing	Circular Sawing	✓	Material	~
Upper-lower Surface Milling (2F)	Circular Sawing	✓	Milling	✓

Type	Part Number	T Dimension Tolerance	Number of Holes	A	B	T Dimension Range by Material	T	F	G			
										Finish Selection	Drilling Method	Finish Symbol
PAA (Standard White) PABA (Standard Black) PACA (Antistatic Grade)	Circular Sawing			1mm Increment	Selectable	0.5mm Increment	Selectable	0.5mm Increment	Selectable			
	Not available	2H (Horizontal) 2HL (Vertical) 4H 6H	20-500 20-400	PAA PABA PACA	5, 6, 8, 10, 12, 15, 20, 25, 30	6-491.5 (2H, 4H) 4.5-395.5 (2HL) 6-245.5 (6H)	4.5-395.5 (2H) 6-391.5 (2HL, 4H, 6H)					
								Upper-lower Surface Milling (2F)		1mm Increment	T Dimension Configurable: 0.1mm Increment	0.5mm Increment
								2FQ 0~+0.2 2FN ±0.1 2FM -0.2~0	2H (Horizontal) 2HL (Vertical) 4H 6H	20-400 20-250	PAA PABA PACA	5-29
	Upper-lower Surface Milling (2F)		1mm Increment	T Dimension Configurable: 0.1mm Increment	0.5mm Increment							
	Pre-drilled Hole Nominal Dia.		Through Hole		Counterbore Hole		Threaded Insert					
	T Dimension	N	Z	M	L							
	5			3 4								
	6, 7	3		3 4 5 6								
	8	4		3 4 5 6								
9	5		4 5 6 8									
10, 11	6		4 5 6 8 10									
12-14	8		4 5 6 8 10									
15-30	10		4 5 6 8 10									

Dimension F Specification Range: For 2H and 4H, d(d1)+2.5 ≤ F ≤ A-d(d1)-5; for 2HL, d(d1)/2+2.5 ≤ F ≤ A-d(d1)-5/2.
Dimension G Specification Range: For 2H, d(d1)/2+2.5 ≤ G ≤ B-d(d1)/2-2.5; for 2HL, 4H and 6H, d(d1)+2.5 ≤ G ≤ B-d(d1)-5. (d for through hole and threaded insert, d1 for counterbore).
For Pre-drilled Type, select N (through hole) or Z (counterbore hole); for Threaded Insert Type, select M (threaded insert) or L (insertion length).

Pre-drilled Type

Ordering Example: Part Number - A - B - T - F - G - Screw Nominal Dia. - L

PABA4H - 400 - 325 - 15 - F300 - G200 - Z6
PABA4H - 500 - 300 - 10 - F300 - G200 - M5 - L7.5

Alterations

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

PAA2H - 50 - 40 - 5 - F10 - G20 - N3 - XC10

Alterations	Hole Position from Left	Hole Position from Bottom
	<p>Code: XC</p> <p>Spec: XC = 0.5mm Increment (2H, 4H Type). d(d1)/2+2.5 ≤ XC ≤ A-F-d(d1)/2-2.5. (6H Type). d(d1)/2+2.5 ≤ XC ≤ A-2F-d(d1)/2-2.5.</p>	<p>Code: YC</p> <p>Spec: YC = 0.5mm Increment (2H, 4H Type). d(d1)/2+2.5 ≤ YC ≤ B-G-d(d1)/2-2.5. Not available for 2H.</p>

Bakelite Plates

Paper Type, Cloth Type



Bakelite excels in insulation and heat resistance. Paper based materials are less expensive, and cloth based materials are stronger. For Finishing, Circular Sawing and Milling are available.

* For Details of color samples and features, see P951

Standard Type

Properties P955 RoHS

Type	Material	Color	Operating Ambient Temperature
BLA	Paper-based Bakelite	Natural Color	-50~100°C
BLBA	Paper-based Bakelite	Black	-50~100°C
BLSA	Cloth-based Bakelite	Natural Color	-50~100°C

Finish	4 Sides		Upper-lower Surface	
	Drilling Method	Finish Symbol	Drilling Method	Finish Symbol
Circular Sawing (-)	Circular Sawing	✓	Material	~
	Circular Sawing	✓	Material	~
4-side Milling (4F)	Milling	✓	Material	~
6-surface Milling (6F)	Milling	✓	Milling	✓
Upper-lower Surface Milling (2F)	Circular Sawing	✓	Milling	✓

Dimension Tolerance of A and B

Unit: mm	A, B Dimension Tolerance
~99	±0.5
100~250	±0.75
251~	±1.0

T Dimension Tolerance, Rate of Camber and Torsion

T	Paper Type	Cloth Type	per 1,000mm
2	±0.15	±0.25	3.0% or Less
3	±0.20	±0.30	1.2% or Less
4	±0.25	±0.35	1.0% or Less
5	±0.30	±0.40	0.6% or Less
6	±0.35	±0.50	0.5% or Less
8	±0.40	±0.55	0.5% or Less
10	±0.45	±0.65	0.4% or Less
12	±0.50	±0.75	0.4% or Less
15	±0.55	±0.80	0.2% or Less
20	±0.70	±1.10	0.2% or Less

Precision Guarantee

Finish	Width Parallelism	
	per 100mm	Perpendicularity of Reference Plane
4-side Milling (4F)	0.1	0.1
6-surface Milling (6F)		

Reference plane stickers are attached to 4-side milled plates.

Material: Bakelite (JIS PL-PEM)

Part Number		A	B	T
Type	Finish Selection	A, B Dimension Tolerance		
	Finish Selection	T Dimension Tolerance	A, B Dimension Tolerance	
Type	Circular Sawing		1mm Increment	Selectable
	-	Not available	20~800	20~600
Guaranteed Perpendicularity of Circular Saw Cuts (NT)		0.5mm Increment	Selectable	
NT	Q	0~+0.3	0~+0.4	20~500
	N	±0.2	±0.3	
	M	-0.3~0	-0.4~0	
4-side Milling (4F)		0.1mm Increment	Selectable	
4F	Q	0~+0.2		10~400
	N	±0.1		
	M	-0.2~0		
6-surface Milling (6F)		0.1mm Increment	0.1mm Increment	
6F	Q	0~+0.2	0~+0.2	10~400
	N	±0.1	±0.1	
	M	-0.2~0	-0.2~0	
Upper-lower Surface Milling (2F)		1mm Increment	0.1mm Increment	
2F	Q	0~+0.2		20~400
	N	±0.1		
	M	-0.2~0		

BLA
(Paper-based Bakelite, Natural Color)

BLBA
(Paper-based Bakelite, Black)

BLSA
(Cloth-based Bakelite, Natural Color)

Alterations

Part Number	A	B	T
BLA	300	200	15
BLBANTQ	200.5	100.5	10
BLSA4FN	150.5	100.3	15
BLA6FMM	100.3	90.5	10.5
BLA2FN	80	50	5

Alterations

Part Number	A	B	T	(CRA ... etc.)
BLA	300	200	15	CRA10

Alterations	Corner Radius	Corner Cut
	CRA, CRB, CRC, CRD	CCA, CCB, CCC, CCD
Code	CRA, CRB, CRC, CRD	CCA, CCB, CCC, CCD
Spec.	Adds radius to any corner. R = 5mm Increment ① 10 ≤ A(B) - R(2R) ② 5 ≤ CRA, CRB, CRC, CRD ≤ 100 Ordering Code (Ex.) Adds R10 at the corner of A and C. CRA10-CRC10 ③ Not applicable to 4-side milling or 6-surface milling.	Cuts any corners. 5 ≤ Corner Cut ≤ 50 5mm Increment Ordering Code (Ex.) When the corners of A and D are cut by C5 CCA5-CCD5 ④ Not applicable to 4-side milling or 6-surface milling.

Pre-drilled Type

Type	Material	Color	Operating Ambient Temperature
BLA	Paper-based Bakelite	Natural Color	-50~100°C
BLBA	Paper-based Bakelite	Black	-50~100°C
BLSA	Cloth-based Bakelite	Natural Color	-50~100°C

Hole Machining Details

N (Through Hole)	Z (Counterbore Hole)	N (Through Hole), Z (Counterbore Hole) Details	M (Threaded Insert)	Table 1M (Threaded Insert) Details

Ordering Code (Ex.) M4-L6
① L ≤ T-1
② For details of threaded insert HLTS, see P271

Pre-drilled Type

Part Number		A	B	T	F	G
Type	Dimension Tolerance	Number of Holes				
	Dimension Tolerance	Number of Holes				
Type	Circular Sawing		1mm Increment	Dimension Selection	0.5mm Increment	
	Not available	2H (Horizontal) 2HL (Vertical) 4H 6H	20~800	20~600	2, 3, 4, 5, 6, 8, 10, 12, 15, 20 (Selectable)	6~791.5 (2H, 4H) 4.5~595.5 (2H) 6~395.5 (6H)
Type	Upper-lower Surface Milling (2F)		1mm Increment	0.1mm Increment	0.5mm Increment	
	2FQ 0~+0.2 2FN ±0.1 2FM -0.2~0	2H (Horizontal) 2HL (Vertical) 4H 6H	20~400	20~250	5~19 (0.1mm Increment)	6~391.5 (2H, 4H) 4.5~395.5 (2H) 6~195.5 (6H)

Pre-drilled Hole Nominal Dia.

T Dimension	Pre-drilled Hole Nominal Dia.			
	N (Through)	Z (Counterbore Hole)	M (Threaded Insert)	L (Insert Length)
2~4	3	-	-	-
5	4	-	3 4	-
6, 7	5	3	3 4 5 6	Select from Table 1
8, 9	6	3 4 5	3 4 5 6 8	
10~14	8	4 5 6	3 4 5 6 8 10	
15~20	10	4 5 6 8	3 4 5 6 8 10	

① Dimension F Specification Range: For 2H and 4H, d(d1)+2.5 ≤ F ≤ A-d(d1)-5; for 2HL, d(d1)/2+2.5 ≤ F ≤ A-d(d1)/2-2.5; for 6H, d(d1)+2.5 ≤ F ≤ (A-d(d1)-5)/2.
② Dimension G Specification Range: For 2H, d(d1)/2+2.5 ≤ G ≤ B-d(d1)/2-2.5; for 2HL, 4H and 6H, d(d1)+2.5 ≤ G ≤ B-d(d1)-5.
(d for through hole and threaded insert, d1 for counterbore)
③ For Pre-drilled Type, select N (through hole) or Z (counterbore hole); for Threaded Insert Type, select M (threaded insert) or L (insertion length).

Alterations

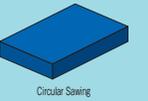
Part Number	A	B	T	F	G	Screw Nominal Dia.	L
BLA4H	400	325	15	F300	G200	Z6	L7.5
BLA4H	500	300	10	F300	G200	M5	-

Alterations

Part Number	A	B	T	F	G	Screw Nominal Dia.	(XC, YC)
BLA2H	50	40	5	F10	G20	N3	XC10

Alterations	Hole Position from Left	Hole Position from Bottom
Code	XC	YC
Spec.	XC = 0.5mm Increment ① (2H, 4H Type) d(d1)/2+2.5 ≤ XC ≤ A-F-d(d1)/2-2.5 ② (6H Type) d(d1)/2+2.5 ≤ XC ≤ A-2F-d(d1)/2-2.5	YC = 0.5mm Increment ① d(d1)/2+2.5 ≤ YC ≤ B-G-d(d1)/2-2.5 ② Not available for 2H.

Unilate® (Free-cutting Resin) / Antistatic PET Plates



- Unilate® (Free-cutting Resin) excels in heat resistance and insulation.
- Antistatic PET is excellent in material workability and dimensional stability and hardly causes color staining.

* For Details of color samples and features, see P951

Unilate® Free-cutting Resin Plates

Antistatic PET Plates

Type	Material	Color	Operating Ambient Temperature
YCA	Unilate®	Natural Brown	Ambient Temp. ~ 120°C
PYCA	Antistatic PET, PET300ESD	Black	Ambient Temp. ~ 100°C

Unilate® is a registered trademark of Unilica Ltd.

Standard Type

(1mm Increment)

Pre-drilled Type

2H

2-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbore)
M (Threaded Insert)

4H

4-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbore)
M (Threaded Insert)

6H

6-Screw Nominal Dia. Selection
N (Through Hole)
Z (Counterbore)
M (Threaded Insert)

Hole Machining Details

N (Through Hole)	Z (Counterbore Hole)	M (Threaded Insert)

Ordering Code (Ex.) M4-L6
L ≤ T-1
When L < T, drilled holes will be blind ones.

Screw Nominal Dia.	Table 1M (Threaded Insert) Details											
	3	4	5	6	8	10	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	11	3.5	4.5	5.5	6.5	9	11
d1	-	8	9.5	11	14	-	3	4	5	6	8	10
h	5	6	7	9	-	-	4.5	6	7.5	9	12	15
							6	8	10	12	16	20

Part Number	A		B		T	
	1mm Increment		Selectable		Selectable	
YCA Unilate® (Free-cutting Resin)	20~800		20~600		5, 10, 15	
PYCA Antistatic PET	20~500		20~400		8, 10, 15, 20, 25, 30	

Part Number	Number of Holes	A	B	T	F	G	Pre-drilled Hole Nominal Dia.			
							Through Hole		Threaded Insert	
							N	Z	M	L
YCA Unilate® (Free-cutting Resin)	2H 4H 6H	20~800	20~600	5 10 15	6~791.5 (2H, 4H) 6~395.5 (6H)	4.5~595.5 (2H) 6~591.5 (4H, 6H)	-			
							3	4	5	6
							4	5	6	8
PYCA Antistatic PET	2H 4H 6H	20~500	20~400	8 10 15 20 25 30	6~491.5 (2H, 4H) 6~245.5 (6H)	4.5~395.5 (2H) 6~391.5 (4H, 6H)	-			
							3	4	5	6
							4	5	6	8

- Dimension F Specification Range : For 2H and 4H, d(d1)+2.5 ≤ F ≤ A-d(d1)-5; for 2HL, d(d1)/2+2.5 ≤ F ≤ A-d(d1)/2-2.5; for 6H, d(d1)+2.5 ≤ F ≤ (A-d(d1)-5)/2.
- Dimension G Specification Range : For 2H, d(d1)/2+2.5 ≤ G ≤ B-d(d1)/2-2.5; for 2HL, 4H and 6H, d(d1)+2.5 ≤ G ≤ B-d(d1)-5. (d for through hole and threaded insert, d1 for counterbore)
- For Pre-drilled Type, select N (through hole) or Z (counterbore hole); for Threaded Insert Type, select M (threaded insert) or L (insertion length).

Ordering Example

Standard Type
Part Number - A - B - T
PYCA - 300 - 200 - 10

Pre-drilled Type
Part Number - A - B - T - F - G - Screw Nominal Dia. - L
PYCA2H - 200 - 100 - 15 - F50 - G30 - N5 - L
YCA2H - 180 - 100 - 10 - F80 - G60 - M5 - L5

Standard Type Unit Price (YCA)

Type	T	A	Unit Price													
			B													
			20	51	101	151	201	251	301	351	401	451	501	551		
			50	100	150	200	250	300	350	400	450	500	550	600		
YCA	10	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
501-550	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
551-600	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
601-650	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
651-700	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
701-750	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
751-800	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Standard Type Unit Price (PYCA)

Type	T	A	Unit Price													
			B													
			20	51	101	151	201	251	301	351	401	451	501	551		
			50	100	150	200	250	300	350	400	450	500	550	600		
PYCA	8	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PYCA	10	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PYCA	15	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	
PYCA	20	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	
PYCA	25	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	
PYCA	30	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	
PYCA	40	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	
PYCA	50	20-50	-	-	-	-	-	-	-	-	-	-	-	-		
		51-100	-	-	-	-	-	-	-	-	-	-	-	-	-	
		101-150	-	-	-	-	-	-	-	-	-	-	-	-	-	
		151-200	-	-	-	-	-	-	-	-	-	-	-	-	-	
		201-250	-	-	-	-	-	-	-	-	-	-	-	-	-	
		251-300	-	-	-	-	-	-	-	-	-	-	-	-	-	
		301-350	-	-	-	-	-	-	-	-	-	-	-	-	-	
		351-400	-	-	-	-	-	-	-	-	-	-	-	-	-	
		401-450	-	-	-	-	-	-	-	-	-	-	-	-	-	
		451-500	-	-	-	-	-	-	-	-	-	-	-	-	-	

Hole Machining Charge

Pre-drilled Type	Hole Machining Charge		
	N (Through)	Z (Counterbore Hole)	M (Threaded Insert)
2H			
4H			
6H			

Price Calculation Method for Pre-drilled Type

Pre-drilled Type Price = Standard Type Unit Price + Hole Machining Charge

(Ex.) Part Number - A - B - T - F - G - Screw Nominal Dia. - L
PYCA2H - 300 - 200 - 10 - F200 - G100 - Z6
(Standard Type Unit Price) + (Hole Machining Charge) = Pre-drilled Type Price

