Heat Insulating Plates, Heat Insulating Paper

Free Cutting Grade, Thermal Plates

■Free Cutting Grade

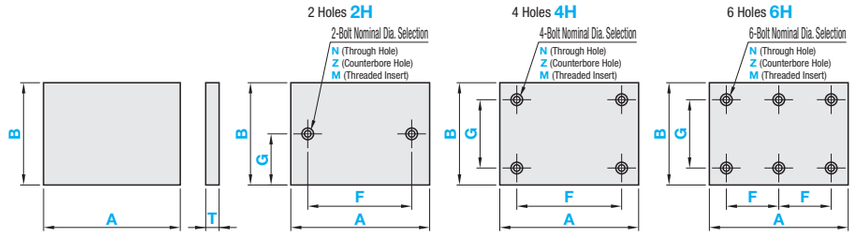
■Thermal Plates

Type	Grade	Color	Operating Ambient Temperature
HIPMA	Free-cutting	White Gray	Room Temp. ~ 300°C
HIPCA	Thermal	White	Room Temp. ~ 350°C

RoHS10

Properties and Machining Conditions P.1675

Standard **With Holes**



A≥B

■Standard

Part Number Type	1mm Increment A	1mm Increment B	Selection T
HIPMA HIPCA	20~800	20~600	5 10 15

■Precision Standards

•T Dimension Tolerance

(HIPMA) T:±0.5

(HIPCA)

T	5	10	15
	±0.8	±1.0	±1.3

•Dimension Tolerance of A and B

(HIPMA) A, B: +1.0 / 0

(HIPCA)

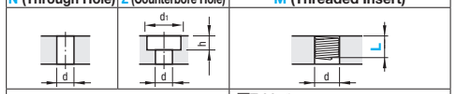
A, B	~499mm	500~
	+1.0 / 0	+2.0 / 0

■Rate of Camber and Torsion (HIPCA)

T Dimension	Rate of Camber and Torsion per 1000mm
5, 10	1.3% or Less
15	0.65% or Less

Hole Machining Detail

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



Bolt Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	11
d1	-	8	9.5	11	14	-
h	-	5	6	7	9	-

■Table 1

Bolt Nominal Dia.	3	4	5	6	8	10
d	3.5	4.5	5.5	6.5	9	11
L	3 4.5 6	4 6 8	5 7.5 10	6 9 12	8 12 -	10 15 -

Ordering Code Ex.) M4-L6

L≤T-1

For details of Threaded Insert HLTS, See P.271

When L+5<T, machined holes will be blind ones.

■With Holes

Part Number Type	Number of Holes	1mm Increment A	1mm Increment B	Selection T	0.5mm Increment F	0.5mm Increment G	Bolt Hole Nominal Dia. Selection: Through Hole N	Counterbore Hole Z	Threaded Insert M	L
HIPMA	2H 4H 6H	20~800	20~600	5	9~791 (2H, 4H Type)	5~595 (2H Type)	3 4 5 6 8 10	-	3 4	Select from Table 1
				10	9~395 (6H Type)	9~591 (4H, 6H Type)		-	3 4 5 6 8	
				15				4 5 6	3 4 5 6 8 10	
HIPCA				5	9~786 (2H, 4H Type)	7~593 (2H Type)		-	-	-
				10	9~391 (6H Type)	9~591 (4H, 6H Type)		4 5 6		
				15				4 5 6 8		

Threaded insert machining is not applicable to HIPCA.

F Dimension Range: For 2H and 4H, $d(d_1)+5 \le F \le A-d(d_1)-5$; for 6H, $d(d_1)+5 \le F \le A/2-d(d_1)/2-2.5$.

G Dimension Range: For 2H, $d(d_1)/2+2.5 \le G \le B-d(d_1)/2-2.5$; for 4H and 6H, $d(d_1)+5 \le G \le B-d(d_1)-5$.
(d for through hole and threaded insert, d_1 for counterbore)

For Hole Type, select N (through hole), Z (counterbore hole), or M (threaded insert) and L (insert length).

When machined hole of Threaded Insert Type goes through, the hole periphery may peel.

Ordering Example

■Standard

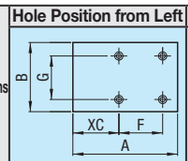
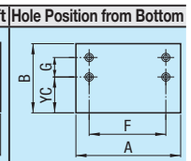
Part Number - A - B - T
HIPMA - 300 - 222 - 10

■With Holes

Part Number - A - B - T - F - G - Bolt Nominal Dia. - L
HIPCA2H - 200 - 170 - 10 - F100 - G70 - N8
HIPMA2H - 200 - 150 - 5 - F100 - G75 - M4 - L4

Alterations

Part Number - A - B - T - F - G - Bolt Nominal Dia. - (XC, YC)
HIPCA2H - 100 - 100 - 5 - F40 - G50 - N6 - XC30

Alterations	Hole Position from Left	Hole Position from Bottom
		
Code	XC	YC
Spec.	XC=1 mm Increment 5≤XC≤786 (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	YC=1mm Increment 5≤YC≤586 d(d1)/2+2.5≤YC≤B-G-d(d1)/2-2.5 Not applicable to 2H Type.

■Standard Type Unit Price (HIPMA, HIPCA)

T	A	Unit Price HIPMA B 20~50	51~100	101~150	151~200	201~250	251~300	301~350	351~400	401~450	451~500	501~550	551~600	Unit Price HIPCA B 20~50	51~100	101~150	151~200	201~250	251~300	301~350	351~400	401~450	451~500	501~550	551~600
5	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																								
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																								
15	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																								

■Hole Machining Charge

With Holes	Unit Price Bolt Nominal N (Through Hole)	Z (Counterbore Hole)	M (Threaded Insert)
2H			
4H			
6H			

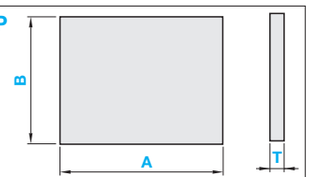
The price of Hole Type is Standard Type Unit Price plus Hole Machining Charge.

(Ex.) Part Number - A - B - T - F - G - Bolt Nominal Dia.
HIPMA4H - 300 - 200 - 10 - F240 - G160 - Z6

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

■Insulating Paper

HIFP



Ambient Operating Temperature up to 1300°C

M Material: Ceramic Fiber

Part Number Type	Selection T	A	B	Unit Price B100	B200	B400	B600
HIFP	1	100	100 200 400 600				
		400					
		800					
	2	100					
		400					
		800					
	3	100					
		400					
		800					

Ordering Example

Part Number - A - B
HIFP3 - 100 - 400

■Features

Insulating paper product made from Ceramic Fiber has excellent flexibility and can be bent when used. Can be cut with scissors or a utility knife.

■Tolerance

T Dimension 1	2	3	A Dimension 4	B Dimension 4
±0.15	±0.25	±0.30	-2	-2

■Properties

Density (kg/m³)			250
Maximum Operating Temperature (°C)			1300
Thermal Conductivity (W/m·K) {kcal/m·h·°C}		400°C	0.07 {0.06}
		600°C	0.09 {0.08}
		800°C	0.13 {0.11}
		1000°C	0.16 {0.14}
Tensile Strength (N/25mm)	T	1mm	14.7 or More
		2mm	29.4 or More
		3mm	44.1 or More