Heat Insulating Plates, Heat Insulating Paper

Free Cutting Grade, Thermal Plates

Spec.Change Printed in Purple

■Free Cutting Grade

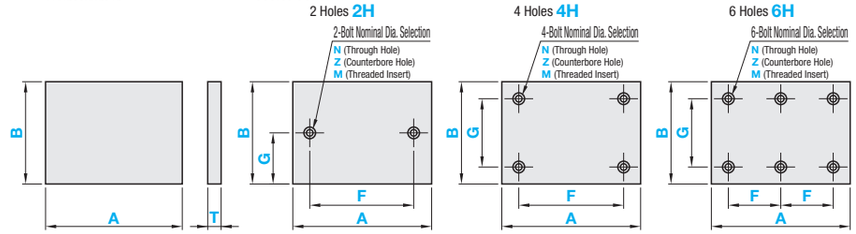
■Thermal Plates

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)	(HIPCA)			
T:	T	5	10	15
±0.5		±0.8	±1.0	±1.3

•Dimension Tolerance of A and B

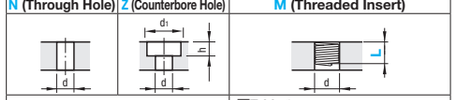
(HIPMA)	(HIPCA)		
A, B:	A, B	~499mm	500~
+1.0 0		+1.0 0	+2.0 0

■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	8	10
	4.5	6	7.5	9	12	15
	6	8	10	12	-	-

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	Part Number 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(d1)+5≤F≤A-d(d1)-5; for 6H, d(d1)+5≤F≤A/2-d(d1)/2-2.5.

G Dimension Range: For 2H, d(d1)/2+2.5≤G≤B-d(d1)/2-2.5; for 4H and 6H, d(d1)+5≤G≤B-d(d1)-5.
(d for through hole and threaded insert, d1 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

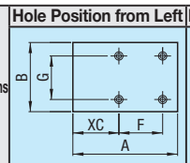
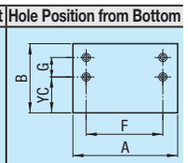
Part Number	A	B	T
HIPMA	300	222	10

■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.

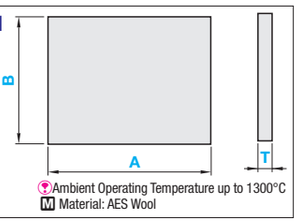
HIPMA4H - 300 - 200 - 10 - F240 - G160 - Z6

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

■Insulating Paper

RoHS10

HIFPN



Ambient Operating Temperature up to 1300°C

M Material: AES Wool

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

Part Number HIFP has been changed to HIFPN. This product is more fragile than conventional products. Be careful when bending.

Ordering Example

Part Number	A	B
HIFPN3	100	400

■Features

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

■Properties

Density (kg/m³)			250
Maximum Operating Temperature (°C)			1300
Thermal Conductivity (W/m·K)		400°C	0.08
		600°C	0.12
		800°C	0.17
		1000°C	0.23
Tensile Strength (N/25mm)	T	1mm	23
		2mm	39
		3mm	58

■Tolerance

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