Torque Hinges
Fixed Torque, Adjustable Torque

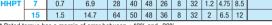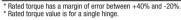# Damper Hinges

■Fixed Torque — HHPT

Part Name	M Material
① Hinge Plate	EN 1.4301 Equiv.
② Plastic Barrel	Polyacetal
③ Shaft	EN 1.4305 Equiv.
④ Plate	EN 1.4301 Equiv.
⑤ Swage Pin	EN 1.4567 Equiv.

RoHS10

■Caution
・Use two hinges for one door/lid.
・Align the axes of the two hinges.
・Do not use the hinges outdoors or in any places where oil or grease adheres to the hinges.
・Do not use the hinges in any places requiring continuous open-close movements.
・Given the product characteristics, vertical usage is not assumed. For vertical use, adjust allowable load and torque value to the actual operating conditions.

Operating Temp. Range: -10°C ~ 50°C
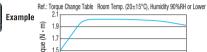Operating Humidity Range: 90%RH or lower

Part Number		Rated Torque*		Mass (g)	L	W	P	J	S	T	E	R	Unit Price 1 ~ 19 pc (s).	Volume Discount Rate 20~50
Type	No.	N·m	kgf·cm											
HHPT	3	0.35	3.4	15	32	36	18	7.5	21	1.2	4.25	7.5		
	7	0.7	6.9	28	40	48	26	8	32	1.2	4.75	8.5		
	15	1.5	14.7	64	50	48	36	8	32	2	6.5	12		

* Rated torque has a margin of error between +40% and -20%.
* Rated torque value is for a single hinge.

Ordering Example — Part Number — HHPT7

Ref.: Torque Change Table   Room Temp. (20±15°C), Humidity 90%RH or Lower

Values are measured by using HHPT15 for reference, and not guaranteed.
Opening/closing frequency: 5 times per minute (0° ~ 160° per opening/closing)
* The torque is set to a value higher than the rated torque before shipping considering the torque degradation due to aging and temperature/humidity change.
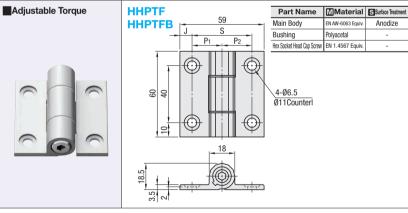
■How to Select Torque Hinges
When operated as a lid as shown on right, calculate the necessary torque according to the following formula before selecting a torque hinge that satisfies the specifications. (Assume that the lid's center of gravity lies in the middle.)

[Formula]
Max. Torque $T = L / 2 \times m$ (Weight: kg) $\times 9.8$ (Newton: N)

(Ex.) When L=0.3m and m=2kg,
Max. Torque $T = 0.3/2 \times 2 \times 9.8 = 2.94$ N·m.
⇒ Select 2 pcs. of **HHPT15**.

m (Lid Weight)

■Adjustable Torque — HHPTF / HHPTFB

Part Name	M Material	S Surface Treatment
Main Body	EN AW-6063 Equiv.	Anodize
Bushing	Polyacetal	-
Hex Socket Head Cap Screw	EN 1.4567 Equiv.	-

Use a hex wrench to adjust torque value.
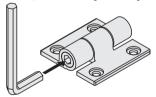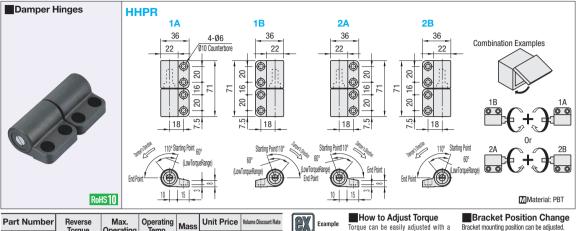💡If tightened with a force of 1.5N·m or more, a hex wrench might be damaged.

Part Number		* Allowable Load		** Rated Torque		Mass (g)	S	P₁	P₂	J	Clear Anodize		Black Anodize	
Type	No.	kg	N	N·m	kgf·cm						Unit Price 1 ~ 8 pc (s).	Volume Discount Rate 9~50	Unit Price 1 ~ 8 pc (s).	Volume Discount Rate 9~50
HHPTF HHPTFB (Black Anodize)	6	10	98	0 ↓ 4.9	0 ↓ 50	54	32	16	16	13.5				
	8-6						37	16	21	13.5				
	8						42	21	21	8.5				

* The allowable load is the value when 2 pieces are used.
** Rated torque value is for a single hinge.

Ordering Example — Part Number — HHPTF8

■Table of Weight Selection Guide (per Hinge)

Part Number
HHPTF6, HHPTF8-6,
HHPTF8, HHPTFB6,
HHPTFB8-6, HHPTFB8

[Formula]
Max. Torque $T = L/2 \times m$ (Weight: kg) x 9.8 (Newton: N)
*Torque is common to HHPTF and HHPTFB. Adjust the torque by tightening the screw in reference to the "Table of Weight Selection Guide - Door Dim." below.

Door Dim. (m)	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60
Approx. Weight (kg)	3.1	2.9	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1

■Damper Hinges — HHPR

1A **1B** **2A** **2B**

M Material: PBT

RoHS10
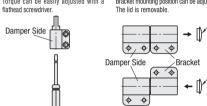
Combination Examples
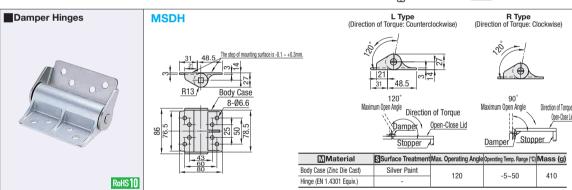
Part Number		Reverse Torque (N·m)*	Max. Operating Angle	Operating Temp. Range (°C)	Mass (g)	Unit Price 1 ~ 19 pc (s).	Volume Discount Rate 20~50
Type	No.						
HHPR	1A	0.49~1.27	110	0~40	46		
	1B						
	2A						
	2B						

* Reverse torque value is for a single damper hinge.

Ordering Example — Part Number — HHPR1B

■How to Adjust Torque
Torque can be easily adjusted with a flathead screwdriver.

■Bracket Position Change
Bracket mounting position can be adjusted. The lid is removable.

■Damper Hinges — MSDH

RoHS10

L Type (Direction of Torque: Counterclockwise)
R Type (Direction of Torque: Clockwise)

The step of mounting surface is -0.1 ~ +0.3mm.

M Material	S Surface Treatment	Max. Operating Angle	Operating Temp. Range (°C)	Mass (g)
Body Case (Zinc Die Cast)	Silver Paint	120	-5~50	410
Hinge (EN 1.4301 Equiv.)	-			

Part Number		Shaft Rotating Direction	Max. Reverse Torque (N·m)	Unit Price
Type	Max. Usable Torque {N·m}			
MSDH	3	L (Counterclockwise) R (Clockwise)	0.4 or Less	
	5		0.6 or Less	
	7.5		0.8 or Less	
	10		1.0 or Less	

💡Torque value is for a single hinge.
💡Reverse torque is torque in the opposite direction.

Ordering Example — Part Number — MSDH3 - L — Shaft Rotating Direction

<Basic Principle>
The rotation of the vanes compresses the oil and generates control (brake) force to act against work force.

Body Case
Silicon Oil
Vane

■Table of Selection Guide

L (Dimension of Lid)

	0.2	0.25	0.3	0.32	0.34	0.36	0.38	0.4	0.42	0.44	0.46	0.48	0.5	0.52	0.54	0.56	0.58	0.6

m (Mass)

MSDH3 Area
MSDH5 Area
MSDH7.5 Area
MSDH10 Area

How to Use the Table: Select a damper in the intersecting area of the vertical axis (mass of lid: m) and the horizontal axis (dimension of lid in rotating direction: L).

Selection Example: m=2kg, L=0.35m   According to the table, a damper **MSDH5** satisfies the point where the vertical axis 2kg and the horizontal axis 0.35m cross.

◆ As the inertia moment of the lid, shaft friction and other conditions are ignored, selection provided by the table should be considered as references only.

■How to Select a Damper Hinge

The lid in a horizontal position generates maximum torque as shown on the left. Calculate maximum torque according to the following formula before selecting a damper that satisfies the specifications.

m (Lid Weight)

[Formula]
Max. Torque $T = L/2 \times m$ (Weight: kg) x 9.8 (Newton: N)

Ex.) When L=0.4m and m=5kg,
Max. Torque $T = 0.4/2 \times 5 \times 9.8 = 9.8$ N·m
⇒ **MSDH10** is selected.

Note) The selection made by the calculation above is for reference only.
The friction resistance and the effect of inertia moment at the hinge were not taken into consideration in the example above.

The viscosity of the oil in the damper changes depending on the temperature of the operating environment. Generally, the damping characteristic decreases with rising temperature, whereas it increases with lowering temperature.