

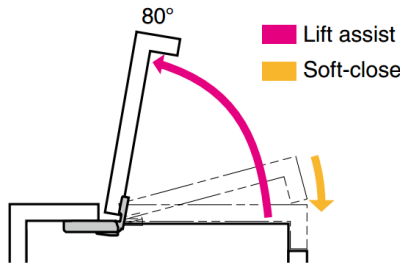
## HG-PA230/231 Lift Assist Hinge (Internal Mount)

### Features

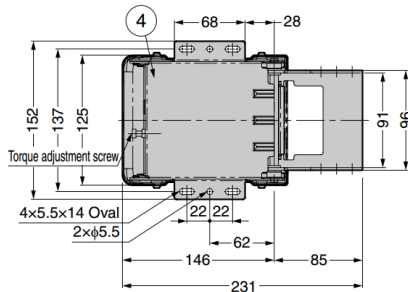
- Easy to lift heavy top-opening lid with spring tension (lift assist function)
- Smooth and soft-closing movement at the end, preventing lid from slamming shut
- Torque is adjustable by turning the adjustment screw ( $\pm 5\%$ )
- Torque peaks at  $20^\circ$  or  $35^\circ$  depending on the lid shape
- Able to limit the  $140^\circ$  opening angle to  $55^\circ$  or  $80^\circ$  with use of included stopper plate
- Opening angle can also be restricted between  $15^\circ$  and  $90^\circ$  (made-to-order)
- Passed 100,000 life cycle test



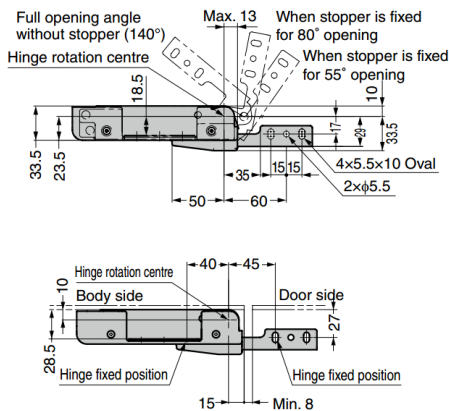
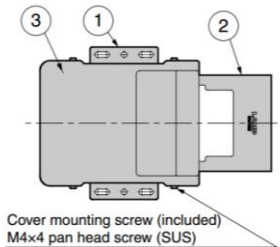
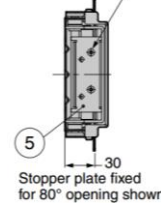
### Operating Range



No.	Part Name	Material / Colour
①	Base A	Stainless Steel (SUS430)
②	Base B	
③	Cover	PP/Light Grey
④	Case	Stainless Steel (SUS430)
⑤	Stopper Plate	
-	Slider	POM
-	Spring	Steel (SWO)



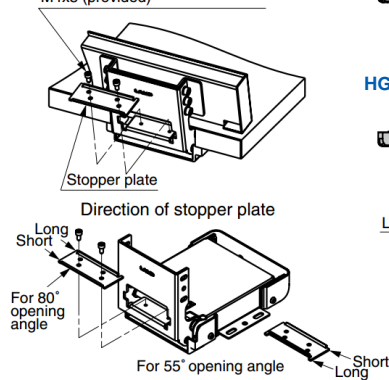
Screw for angle restricting piece mounting (included)  
M4x8 hexagon socket head cap screw (SUS)



### Setting of Opening Angle

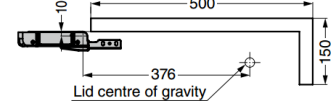
Opening angle can be limited to  $55^\circ$  or  $80^\circ$  with the included stopper plate.

Hexagon socket head cap screw  
M4x8 (provided)

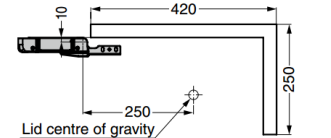


### Installation

**HG-PA230** (Peak torque angle  $20^\circ$ )



**HG-PA231** (Peak torque angle  $35^\circ$ )



Part No.	Description	Torque (per piece)	
HG-PA230-15	Peak torque angle $20^\circ$	15 $\pm 10\%$ N.m	153 $\pm 10\%$ kgf.cm
HG-PA230-20		20 $\pm 10\%$ N.m	204 $\pm 10\%$ kgf.cm
HG-PA230-25		25 $\pm 10\%$ N.m	255 $\pm 10\%$ kgf.cm
HG-PA231-15	Peak torque angle $35^\circ$	15 $\pm 10\%$ N.m	153 $\pm 10\%$ kgf.cm
HG-PA231-20		20 $\pm 10\%$ N.m	204 $\pm 10\%$ kgf.cm
HG-PA231-25		25 $\pm 10\%$ N.m	255 $\pm 10\%$ kgf.cm

## Lift Assist Hinge - An Overview

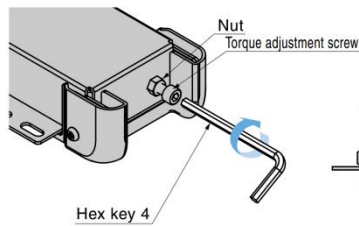
### Features

- Easy to lift heavy top-opening lid with spring tension (lift assist function)
- Smooth and soft closing movement at the end, prevents lid from slamming shut
- Torque adjustable by turning the adjustment screw
- Suitable for medical equipment, analysis equipment, and semiconductor devices, etc.

### Notes

- Operating temperature: 0°C ~ 40°C
- Ensure both hinge shafts are levelled and aligned
- Use a stopper (not included) to ensure operating angle is not exceeded during opening or closing
- For indoor usage
- For internal mount type, check torque adjusting screw position, and turn the screw with enclosure and lid already mounted

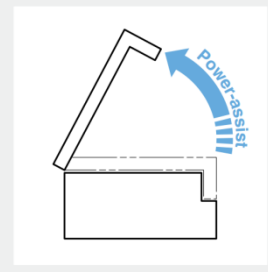
### Torque Adjustment



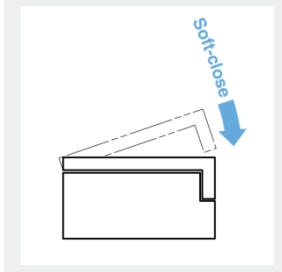
Loose the end nut with a wrench, and then turn the adjustment screw with a hex key. Tighten the nut again after adjustment.

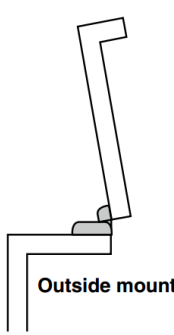



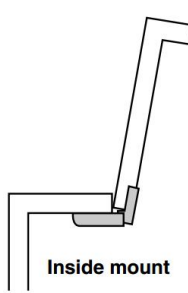




### Lift assist function



### Soft-close function



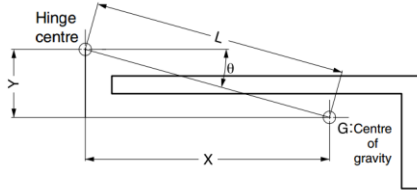
Type	Torque N · m	Torque kgf · cm	Torque Adjustment Range	Item Name
 <p>Outside mount</p>	9 ± 10%	91 ± 10%	± 11%	 <b>HG-PA180</b>
	15 ± 10%	153 ± 10%	± 5%	 <b>HG-PA200/201</b>
	20 ± 10%	204 ± 10%		
	25 ± 10%	255 ± 10%		
	35 ± 10%	357 ± 10%	± 5%	 <b>HG-PA270</b>
	45 ± 10%	459 ± 10%		
 <p>Inside mount</p>	9 ± 10%	91 ± 10%	± 11%	 <b>HG-PA210</b>
	15 ± 10%	153 ± 10%	± 5%	 <b>HG-PA230/231</b>
	20 ± 10%	204 ± 10%		
	25 ± 10%	255 ± 10%		

## Selection

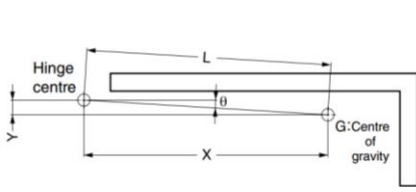
### 1. Calculation for the moment of the lid

Formula :  $M_u = m \times g \times L \times \cos\theta$

● External mounting  
(HG-PA180, HG-PA200, HG-PA201, HG-PA270)

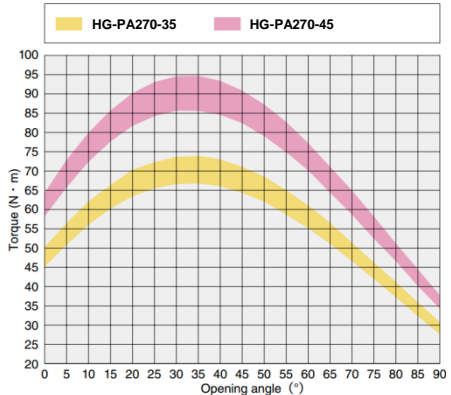
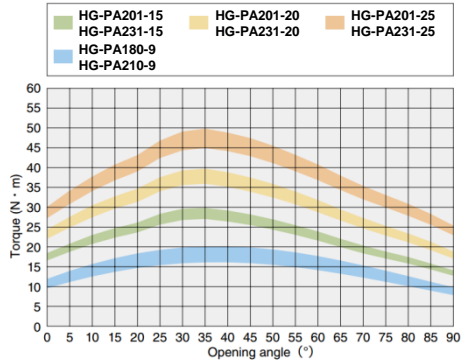
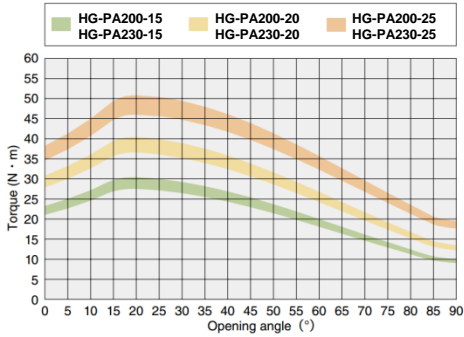


● Internal mounting  
(HG-PA210, HG-PA230, HG-PA231)



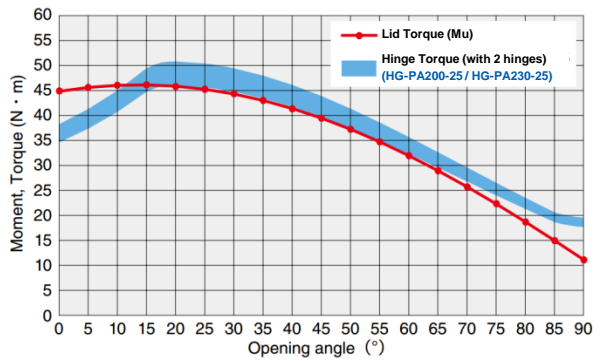
X	Horizontal distance from rotation centre to lid centre of gravity
Y	Vertical distance from rotation centre to lid centre of gravity
L	Distance from rotation centre to lid centre of gravity
$\theta$	Angle from the horizontal line at the rotation centre to lid centre of gravity
m	Lid weight
G	Lid centre of gravity

### 2. Torque of the hinge (1 pair use)



### 3. How to select the model

#### Example



Lid torque and hinge torque should be overlapped as shown on the graph above.

Lid moment  $M_u >$  Hinge torque... Force is applied in the closing direction of lid.  
Lid moment  $M_u <$  Hinge torque... Force is applied in the opening direction of lid.

※ Confirm the movement with actual item when the lid moment  $M_u$  is at the upper or lower limit of the torque range of lift assist hinge.

Conditions in the above example :  $X=43$  cm,  $Y=-10.5$  cm,  $L=44.3$  cm,  $W=10.8$  kg  
Recommended model : 2 pcs of **HG-PA200-25** or **HG-PA230-25**