

# Manual Stages Guide

## Operating Environment of Manual Stages

Use manual positioning stages within the following environment temperature range.

Contact us for information regarding using the stages outside the given operational environment temperature range.

### \* Operating environment

Category	Operational environment temperature
Stainless steel manual stages	-20°C ~ +120°C
Stages with digital micrometer head	0°C ~ +40°C
Other manual stages	-20°C ~ +70°C

### \* Recommended environment

23±5°C, 60±10% (without condensation)

Operating environment temperature changes depending on various conditions such as the type of positioning stage, installation and operation conditions.

Avoid use of the stages in the following sites.

- Sites subject to water or oil
- Sites subject to direct sunlight or radiant heat
- Sites subject to dirt and dust
- Sites subject to vibration or impact
- Sites close to fire
- Sites subject to inflammable gas and corrosive gas

## Installation Direction (Mounting)

The values in the specifications of each product are based on installation on a horizontal surface.

Note that load capacity and other specifications will significantly change for upside down, lateral horizontal and other installation orientations.

Category	Positioning Slide	Part Number	Upside Down	Lateral Horizontal (Inclination)	Lateral Vertical
Linear	Extended contact ball bearing guide method	TSD	○	○	○
	Extended contact ball bearing guide method (flat Z)	TSD-**-3	×	×	×
	Extended contact ball bearing guide method (flat Z)	TSD-**-UD	○	○	○
	Crossed roller method	TAM	○	○	○
	Dovetail slide method	TASB, TAR	○	○	○
Rotation	Extended contact ball bearing guide method	KSPT	○	○	○
	Crossed roller method	KSPB	○	○	○
	Fitting method	KSP, KSPA, KSW, KSC	△	△	△
Gonio	Extended contact ball guide method	GOHT, GOHT-S	○	○	○
	Dovetail slide method	GOH, GOHB	○	○	○

○: Possible with limits on load and moment, etc.

△: May significantly deteriorate precision depending on installation orientation, but possible with limits on load and moment, etc.

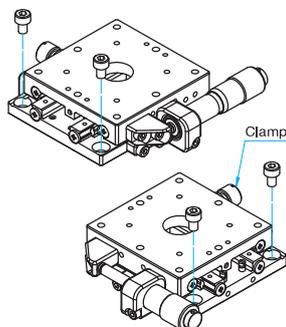
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Note) When using stages in lateral vertical direction, refer to the actuator specifications. [Reference](#) Chapter F Actuators

## Mounting Methods of Stages

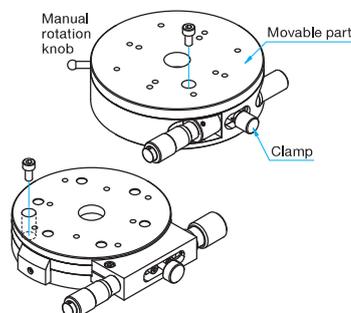
Mounting methods differ depending on the stage type; some stages require the table surface to be moved (by loosening the clamp), and some stages can be directly mounted.

### Linear Stage

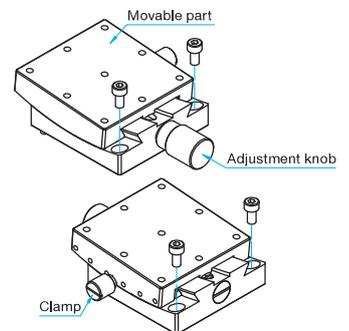


Loosen the clamp, turn the micrometer head, and then move the stage to mount.

### Rotation Stage



### Gonio Stage



Loosen the clamp, turn the adjustment knob, and then move the stage to mount. Attach the accessory screws to the two mounting holes, and do the same thing on the other side.

## Accessory Screws

Mounting bolts described in the external dimensions in the catalog are included.

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Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

# Rotation Stages Guide |

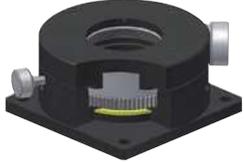


## Stages used for adjustment by rotating samples.

Coarse/fine movement type, transmission hole type, low-profile square type and other types are available to suit your purpose.

## Structures and Features

Guide Method	Lapping	Crossed Roller	Extended Contact Ball Bearing Guide
Part Number	<b>KSP/KSPA/KSPS</b>	<b>KSPB</b>	<b>KSPT</b>
Primary Material	Brass / Stainless steel	Brass	Steel
Structure			
Features	High resolution, coarse movement of 360° and fine movement of ±5° are possible, and models with a transmission hole at the center of the stage can be used when a transmission hole is required	Transmission hole, high precision, high resolution, and high load capacity	Ultra thin, flexibly support any installation orientation
Stage Thickness	○	○	◎
Rigidity	○	◎	○
Travel Accuracy	○	◎	◎
Coarse Rotation Range	360°	360°	±10°
Resolution	○	◎	◎
Weight	◎	○	◎

Guide Method	Lapping (partly crossed roller)	Dovetail Slide Method
Part Number	<b>KSW</b>	<b>KSSA</b>
Primary Material	Brass (part Aluminum)	Brass
Structure		
Features	Since driven by worm gear, precision adjustment is possible for over 360°	Unique rotation stage having square table surface Rotation Stage
Stage Thickness	△	△
Rigidity	○ (Aluminum is △)	○
Travel Accuracy	○	◎
Coarse Rotation Range	360°	±3 – ±5° (depending on the stage)
Resolution	○	△
Weight	◎	○

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60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

# Ultrathin Rotation Stage with Central Aperture

Stage Size 40 × 40 mm / 60 × 60 mm

KSPT

RoHS

Square footprint of rotation stages with a clear aperture at the center. total stage thickness 10mm. Can be installed in arbitrary orientations such as vertical or inverted due to superior stiffness inherent to the intergrated bearing way design.

- Ideal for use in systems that require angular adjustment of high loads or that are constrained for space.



## Guide

- ▶ Low-profile X axis steel stage (TSDT) with stage thickness of 10mm is also available. [Reference](#) E016 [Catalog Code](#) W7003
- ▶ Opposed clamp locking mechanism standard.
- ▶ The part number suffix FP indicates products with fine-pitch screws instead of standard micrometers. Fine Pitch screws have a screw pitch of 0.25mm and require a hex wrench or the optional hex wrench with knob (KCL) for adjustment.

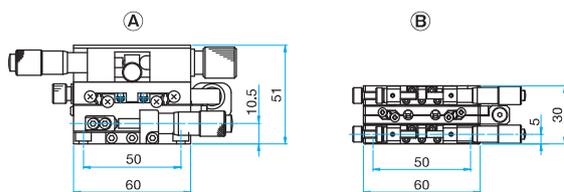
[Reference](#) F010 [Catalog Code](#) W8008



## Attention

- ▶ When installing on a vertical surface, please make sure to place the micrometer head pointing down so that gravity pulls in the same direction as the springs. If the springs oppose gravity, they may not be able to withstand the load and not be able to hold the stage against the micrometer.

Comparison of Thickness when the KSPT is Used (KSP and TSD → KSPT and TSDT)



Part Number	(A)	(B)
θ axis	KSP-606M	KSPT-606MH
Y axis		TSDT-601S
X axis	TSD-602S	TSDT-601S



TSDT-601S + KSPT-606MH combination

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60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

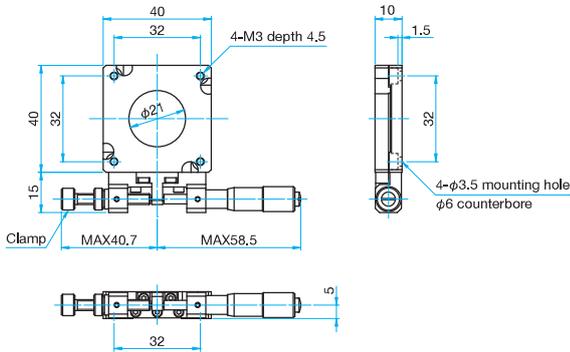
## Specifications

Part Number	KSPT-406MH	KSPT-406MHFP	KSPT-606MH	KSPT-606MHFP
Opposite ModelPart Number	KSPT-406MRH	KSPT-406MRHFP	KSPT-606MRH	KSPT-606MRHFP
Stage Size [mm]	40×40	40×40	60×60	60×60
Rotation Range [°]	±10	±10	±10	±10
Guide Method	Extended contact ball bearing guide			
Primary Material	Steel			
Finish	Black matte			
Load Capacity [N]	78.4 (8.0kgf)	78.4 (8.0kgf)	147 (15.0kgf)	147 (15.0kgf)
Max. Moment Capacity	Pitch [N·m]	3.9	3.9	6.4
	Roll [N·m]	3.9	3.9	6.4
Moment Stiffness	Pitch [°/N·cm]	0.3	0.3	0.15
	Roll [°/N·cm]	0.6	0.6	0.3
Parallelism [μm]	30	30	30	30
Eccentricity [μm]	10	10	10	10
Wobble [μm]	10	10	10	10
Weight [kg]	0.11	0.11	0.18	0.18

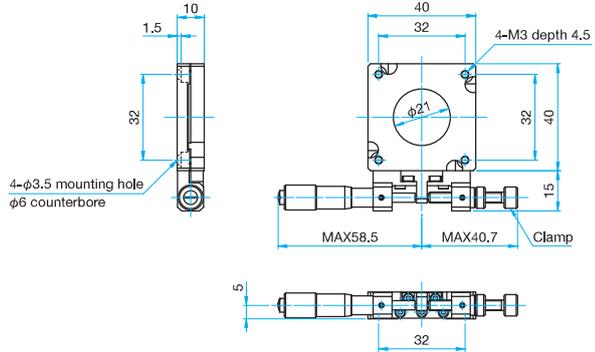


**Outline Drawing**

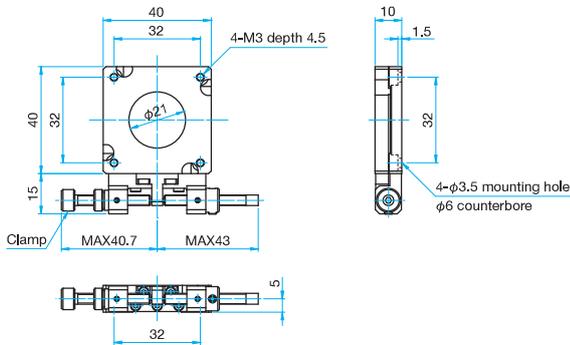
**KSPT-406MH** Low head hexagon socket head cap screw M3x5...4 screws



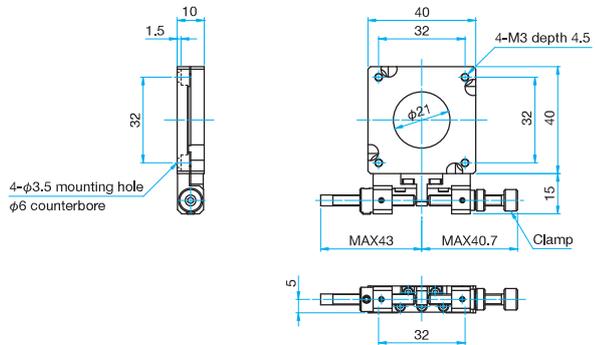
**KSPT-406MRH** Low head hexagon socket head cap screw M3x5...4 screws



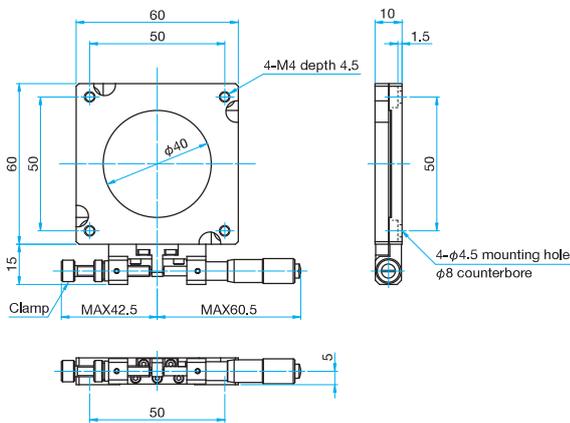
**KSPT-406MHFP** Low head hexagon socket head cap screw M3x5...4 screws



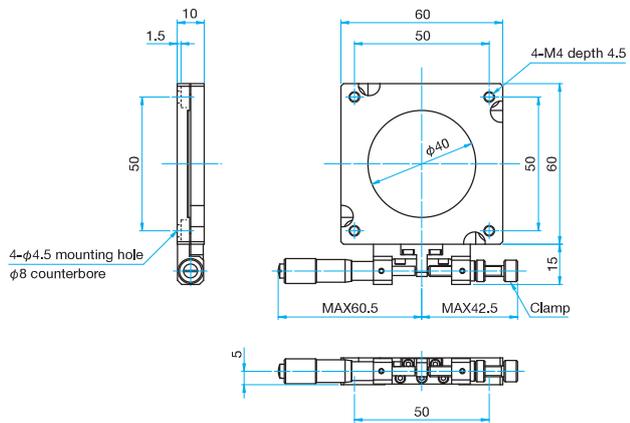
**KSPT-406MRHFP** Low head hexagon socket head cap screw M3x5...4 screws



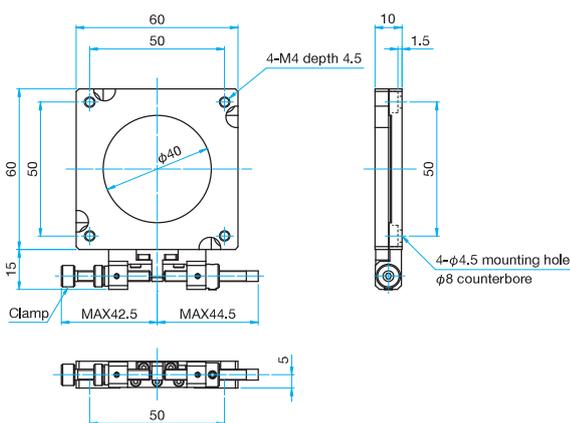
**KSPT-606MH** Low head hexagon socket head cap screw M4x6...4 screws



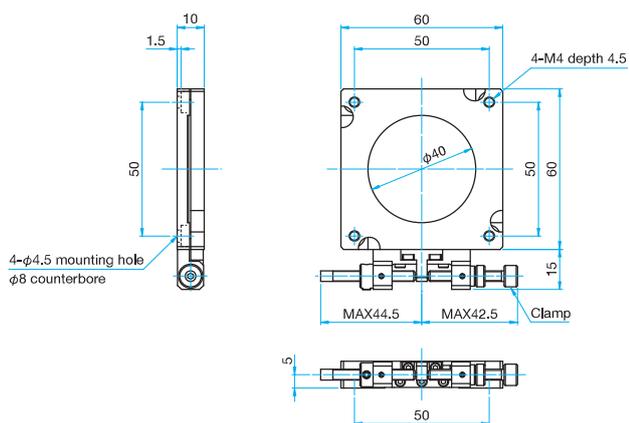
**KSPT-606MRH** Low head hexagon socket head cap screw M4x6...4 screws



**KSPT-606MHFP** Low head hexagon socket head cap screw M4x6...4 screws



**KSPT-406MRHFP** Low head hexagon socket head cap screw M4x6...4 screws



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Others

15 x 15 mm

25 x 25 mm

40 x 40 mm

60 x 60 mm

65 x 65 mm

80 x 80 mm

100 x 100 mm

120 x 120 mm

Others

# Rotation Stages

KSP-256/406  
KSP-606/656/786

RoHS  
RoHS

Low profile rotation stages offer coarse rotation adjustment of 360° and fine adjustment (with either a micrometer head or fine-pitch screw).

Directly rotate the stage upper plate for coarse adjustment, then clamp the clutch screw and use micrometer head or fine-pitch screw ( $\pm 5^\circ$ ) for fine adjustment.

- The main body of these stages is made of brass for high stiffness and incorporate plain bearings for high performance and small size.
- The through hole at the center of the stage can be used as a transmission hole.
- A scale around the circumference provides an indication of the angle.



## Guide

- ▶ Most stages can be directly mounted to corresponding sized linear stages for multiple axis adjustments.
- ▶ Using the top plate for KSP-406 (SP-123) to convert mounting holes, various stages can be mounted. [Reference](#) D044 [Catalog Code](#) W6068
- ▶ Using the top plate for KSP/KSPA (SP-103) to convert mounting holes, various stages can be mounted. [Reference](#) D042 [Catalog Code](#) W6059
- ▶ Using the bottom plate for KSP-786M (SP-104) to convert mounting holes, mounting on magnet bases or 60 × 60mm stages (M4 50×50) is possible. [Reference](#) D042 [Catalog Code](#) W6060

Specifications						
Part Number	METRIC	KSP-256	KSP-406M	KSP-606M	KSP-656M-M6	KSP-786M
	INCH	—	KSP-406MUU	—	KSP-656MUU	—
(Opposite Model)	METRIC	—	KSP-406MR	KSP-606MR	—	—
Stage Size [mm]		φ25	φ40	φ60	φ65	φ60
Rotation Range [°]		Coarse: 360 Fine: $\pm 5$				
Scale Readable Resolution		2°	2°	1°	1°	5'
Micrometer Readable Resolution		—	about 1'24.2"	about 55.8"	about 52.2"	about 51.6"
Guide Method		Lapping method				
Primary Material		Brass				Aluminum
Finish		Super black chrome				Black anodized
Load Capacity [N]		29.4 (3.0kgf)	49.0 (5.0kgf)	68.6 (7.0kgf)	68.6 (7.0kgf)	49 (5.0kgf)
Max. Moment Capacity [N·m]		0.15	0.3	0.75	0.75	1.3
Moment Stiffness ["/N·cm]		6.1	1.5	0.4	0.4	1.5
Parallelism [μm]		20	20	20	20	50
Eccentricity [μm]		20	20	20	20	20
Wobble [μm]		15	20	20	20	20
Options		—	FP*	FP	FP	FP
Weight [kg]		0.09	0.3	0.6	0.7	0.4

Option				
Option Code	Compatible product		Micrometer Readable Resolution [mm]	<a href="#">Reference</a>
	Products Name	Part Number		
FP	Fine-pitch Screw Adjusters	*FPSA-42525 FPSA-62540	—	E008

\* Please add an option code as the part number suffix to specify various optional specifications.

\* The FP type requires a hex wrench or the optional hex wrench with knob (KCL) for driving operation. [Reference](#) F010 [Catalog Code](#) W8008

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V Groove Screw

Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others



## Rotation Stages to with Aperture | KSPA

RoHS

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Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

Low profile rotation stages offer coarse rotation adjustment of 360° and fine adjustment (with either a micrometer head or fine-pitch screw).

Directly rotate the stage upper plate for coarse adjustment, then clamp the clutch screw and use micrometer head or fine-pitch screw ( $\pm 5^\circ$ ) for fine adjustment.

- Light-weight and high precision design.
- Vernier scales for reading angular position.
- Center hole extends completely through stage.
- Available with micrometers or fine pitch screws.



## Guide

- ▶ Most stages can be directly mounted to corresponding sized linear stages for multiple axis adjustments.
- ▶ Using the top plate for KSP/KSPA (SP-103) to convert mounting holes, various stages can be mounted.  
[Reference](#) D038 [Catalog Code](#) W6059
- ▶ Mounting holes can be converted using the bottom plate for KSPA-806M/1006M (SP-117). [Reference](#) D039 [Catalog Code](#) W6063

Specifications					
Part Number	METRIC	KSPA-806M	KSPA-986M	KSPA-806MH	KSPA-1006MH
Stage Size [mm]		$\phi 80$	$\phi 98$	$\phi 57$	$\phi 76$
Rotation Range [°]		Coarse: 360 Fine: $\pm 5$	Coarse: 360 Fine: $\pm 5$	Coarse: 360 Fine: $\pm 5$	Coarse: 360 Fine: $\pm 3$
Scale Readable Resolution		5'	5'	5'	5'
Micrometer Readable Resolution		about 1'08.8"	about 52.9"	about 51.6"	about 42.1"
Guide Method		Lapping method			
Primary Material		Aluminum			
Finish		Black anodized			
Load Capacity [N]		58.8 (6.0kgf)	68.6 (7.0kgf)	49.0 (5.0kgf)	68.6 (7.0kgf)
Max. Moment Capacity [N·m]		1.0	1.0	0.88	0.98
Moment Stiffness ["/N·cm]		0.8	0.8	0.61	0.2
Parallelism [ $\mu\text{m}$ ]		50	50	30	40
Eccentricity [ $\mu\text{m}$ ]		20	20	20	20
Wobble [ $\mu\text{m}$ ]		20	20	20	20
Options		FP	FP	FP	FP
Weight [kg]		0.5	0.7	0.45	0.6

Option				
Option Code	Compatible product		Micrometer Readable Resolution [mm]	<a href="#">Reference</a>
	Products Name	Part Number		
FP	Fine-pitch Screw Adjusters	FPSA-62540	—	E008

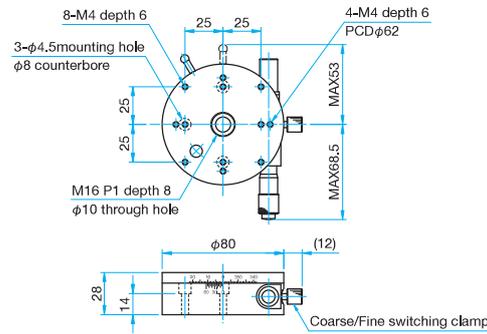
\* Please add an option code as the part number suffix to specify various optional specifications.

\* The FP type requires a hex wrench or the optional hex wrench with knob (KCL) for driving operation. [Reference](#) F010 [Catalog Code](#) W8008

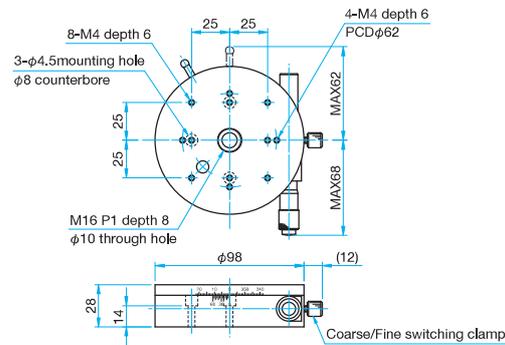


**Outline Drawing**

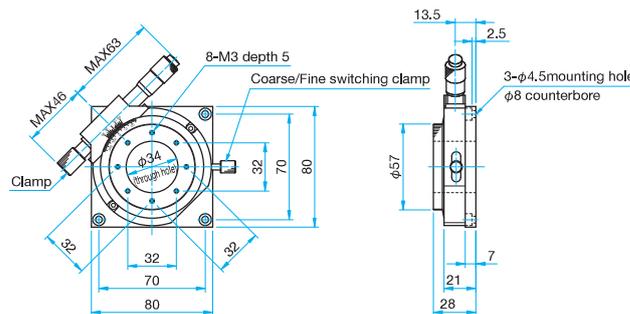
**KSPA-806M** Hexagonal socket head cap screw M4x20...3 screws, Spring washers



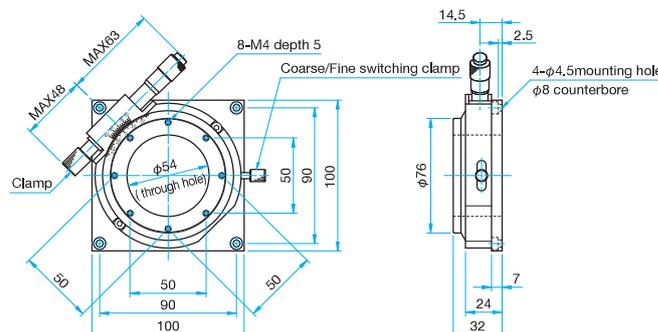
**KSPA-986M** Hexagonal socket head cap screw M4x20...3 screws, Spring washers



**KSPA-806MH** Hexagonal socket head cap screw M4x8...4 screws, Spring washers



**KSPA-1006MH** Hexagonal socket head cap screw M4x8...4 screws, Spring washers



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Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

# Rotation stages with large Aperture | KSPB

RoHS

Low profile rotation stages offer coarse rotation adjustment of 360° and fine adjustment (with either a micrometer head or fine-pitch screw).

Directly rotate the stage upper plate for coarse adjustment, then clamp the clutch screw and use micrometer head or fine-pitch screw ( $\pm 5^\circ$ ) for fine adjustment.



- Crossed roller bearing for high precision and high stiffness.
- Vernier scales for reading angular position.
- Center hole extends completely through stage.
- Available with micrometers or fine pitch screws.

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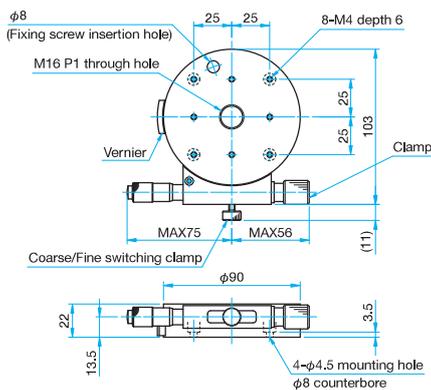
- ▶ Most stages can be directly mounted to corresponding sized linear stages for multiple axis adjustments.
- ▶ Adapter plates are available for mounting other size stages and accessories.



## Outline Drawing

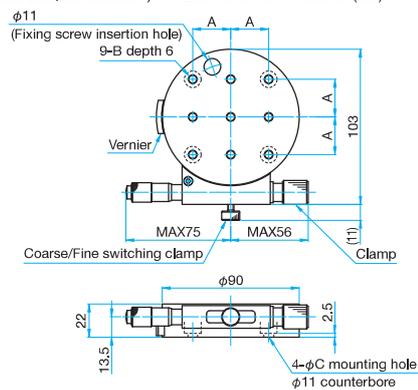
### KSPB-906M

Hexagonal socket head cap screw M4x8...4 screws



### KSPB-906M-M6/906MUU

Hexagonal socket head cap screw M6x8...4 screws (M6)  
Hexagonal socket head cap screw (stainless steel construction) 1/4-20UNCx5/16...4 screws (UU)



Part Number	A (mm)	B	φC (mm)
KSPB-906M-M6	25	M6 P1	φ6.5
KSPB-906MUU	25.4	1/4-20UNC	φ7

## Specifications

Part Number	METRIC	KSPB-906M	KSPB-906M-M6
	INCH	—	KSPB-906MUU
Stage Size [mm]		φ90	φ90
Rotation Range [°]		Coarse: 360 Fine: $\pm 5$	Coarse: 360 Fine: $\pm 5$
Scale Readable Resolution		5'	5'
Micrometer Readable Resolution		about 41.25"	about 41.25"
Guide Method		Crossed roller	
Primary Material		Brass	
Finish		Super black chrome	
Load Capacity [N]		147 (15.0kgf)	147 (15.0kgf)
Max. Moment Capacity [N·m]		5.0	5.0
Moment Stiffness [°/N·cm]		0.2	0.2
Parallelism [μm]		50	50
Eccentricity [μm]		20	20
Wobble [μm]		20	20
Options		FP	FP
Weight [kg]		1.3	1.3

## Option

Option Code	Compatible product		Micrometer Readable Resolution [mm]	Reference
	Products Name	Part Number		
FP	Fine-pitch Screw Adjusters	FPSA-62540	—	E008

\* Please add an option code as the part number suffix to specify various optional specifications.

\* The FP type requires a hex wrench or the optional hex wrench with knob (KCL) for driving operation. Reference F010 Catalog Code W8008

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80 × 80 mm

100 × 100 mm

120 × 120 mm

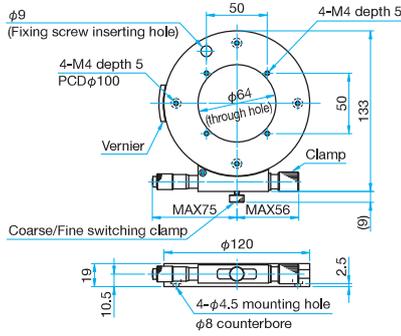
Others



**Outline Drawing**

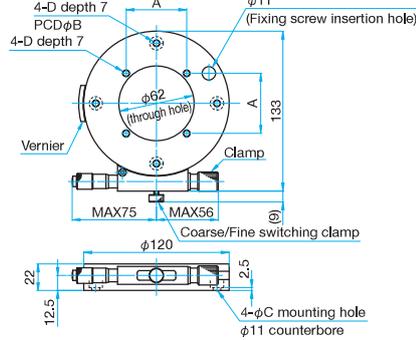
**KSPB-1206MH**

Hexagonal socket head cap screw M4x8...4 screws



**KSPB-1206MH-M6/1206MHUU**

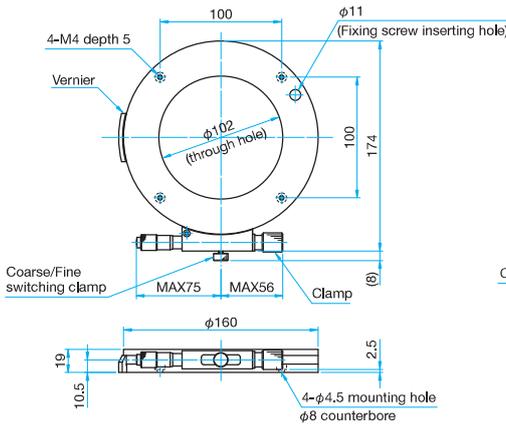
Hexagonal socket head cap screw M6x8...4 screws (M6)  
Hexagonal socket head cap screw (stainless steel construction) 1/4-20UNCx5/16...4 screws (UU)



Part Number	A (mm)	φB (mm)	φC (mm)	D
<b>KSPB-1206MH-M6</b>	50	φ100	φ6.5	M6 P1
<b>KSPB-1206MHUU</b>	50.8	φ101.6	φ7	1/4-20UNC

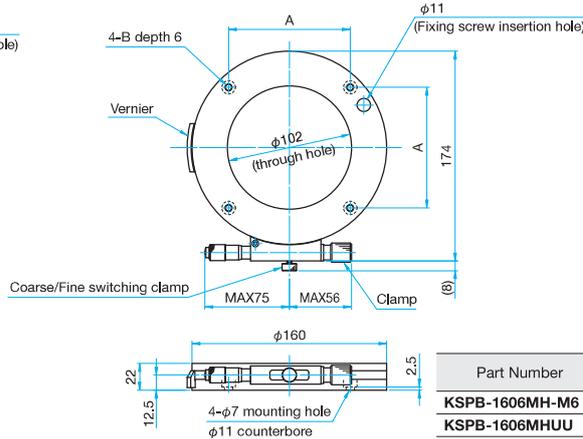
**KSPB-1606MH**

Hexagonal socket head cap screw M4x8...4 screws



**KSPB-1606MH-M6/1606MHUU**

Hexagonal socket head cap screw M6x8...4 screws (M6)  
Hexagonal socket head cap screw (stainless steel construction) 1/4-20UNCx5/16...4 screws (UU)



Part Number	A (mm)	B
<b>KSPB-1606MH-M6</b>	100	M6 P1
<b>KSPB-1606MHUU</b>	101.6	1/4-20UNC

**Specifications**

Part Number	METRIC	<b>KSPB-1206MH</b>	<b>KSPB-1206MH-M6</b>	<b>KSPB-1606MH</b>	<b>KSPB-1606MH-M6</b>
	INCH	—	<b>KSPB-1206MHUU</b>	—	<b>KSPB-1606MHUU</b>
Stage Size [mm]		φ120	φ120	φ160	φ160
Rotation Range [°]		Coarse: 360 Fine: ±4	Coarse: 360 Fine: ±4	Coarse: 360 Fine: ±3	Coarse: 360 Fine: ±3
Scale Readable Resolution		5'	5'	5'	5'
Micrometer Readable Resolution		about 31.8"	about 31.8"	about 23.7"	about 23.7"
Guide Method	Crossed roller				
Primary Material	Brass				
Finish	Super black chrome				
Load Capacity [N]		196 (20.0kgf)	196 (20.0kgf)	196 (20.0kgf)	196 (20.0kgf)
Max. Moment Capacity [N·m]		7.8	7.8	9.8	9.8
Moment Stiffness ["/N·cm]		0.1	0.1	0.1	0.1
Parallelism [μm]		50	50	50	50
Eccentricity [μm]		30	30	30	30
Wobble [μm]		20	20	20	20
Options		FP	FP	FP	FP
Weight [kg]		1.1	1.1	1.5	1.5

**Option**

Option Code	Compatible product		Micrometer Readable Resolution [mm]	Reference
	Products Name	Part Number		
<b>FP</b>	Fine-pitch Screw Adjusters	<b>FPSA-62540</b>	—	E008

\* Please add an option code as the part number suffix to specify various optional specifications.

\* The FP type requires a hex wrench or the optional hex wrench with knob (KCL) for driving operation. Reference F010 Catalog Code W8008

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Ohters

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

# Rotation Stages

## Rotation Stages with Square Top

KSC  
KSSA

RoHS Catalog Code W7506  
RoHS Catalog Code W7508

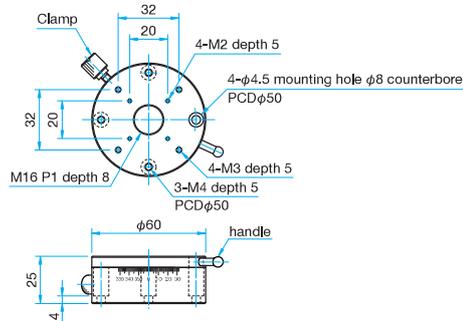
The KSC stage is Light weight, simple rotation stage. Manually positioned using handle with lock for securing position after adjustment.

The KSSA stages are fine rotation stages having a square table top. These stages are suitable for making minute angle adjustment in applications where a minimal footprint is desired.



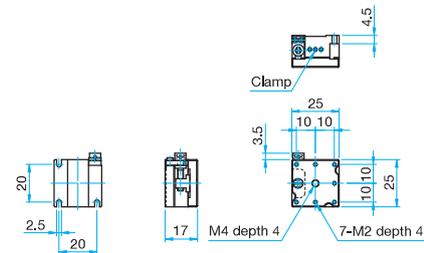
### Outline Drawing

**KSC-606** Hexagonal socket head cap screw M4x8...4 screws



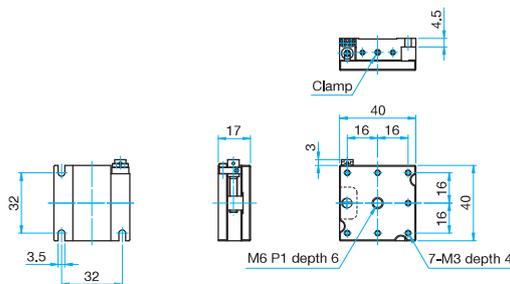
**KSSA-256**

- Hexagonal socket head cap screw M2x8...3 screws, One 3mm hex wrench with knob, One 0.89mm hex wrench
- Wrench size for adjustment 3mm, Wrench size for clamp 0.89mm



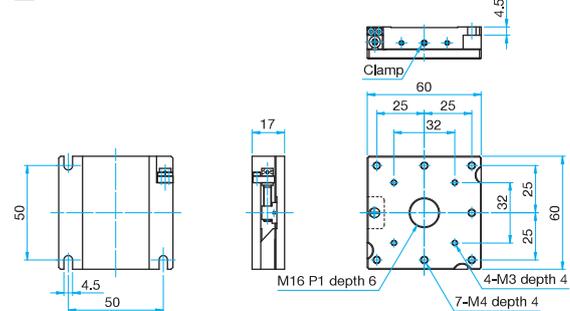
**KSSA-406**

- Hexagonal socket head cap screw M3x8...3 screws, One 3mm hex wrench with knob, One 1.5mm hex wrench
- Wrench size for adjustment 3mm, Wrench size for clamp 1.5mm



**KSSA-606**

- Hexagonal socket head cap screw M4x8...3 screws, One 3mm hex wrench with knob, One 1.5mm hex wrench
- Wrench size for adjustment 3mm, Wrench size for clamp 1.5mm



### Specifications

Part Number	METRIC	KSC-606	KSSA-256	KSSA-406	KSSA-606
Stage Size [mm]		φ60	25×25	40×40	60×60
Rotation Range [°]		360	±3	±5	±7
Scale Readable Resolution		1°	—	—	—
Micrometer Readable Resolution [°]		—	about 3.18	about 1.92	about 1.47
Guide Method		Lapping method	Dovetail method		
Primary Material		Aluminum	Brass		
Finish		Black anodized	Super black chrome		
Load Capacity [N]		68.6 (7.0kgf)	29.4 (3.0kgf)	49.0 (5.0kgf)	68.6 (7.0kgf)
Max. Moment Capacity [N·m]		—	—	—	—
Moment Stiffness ["/N·cm]		1.5	2.0	1.5	1.0
Parallelism [μm]		50	50	50	50
Eccentricity [μm]		20	—	—	—
Wobble [μm]		20	—	—	—
Weight [kg]		0.19	0.09	0.23	0.5

\* When using the M3 or M4 screws in the screw hole on the top surface of this stage, please use the screws within the length of the tap depth. There is a risk of damaging the sliding surface.

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Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

An integrated worm gear drive makes these rotation stages are capable of precise adjustment over a full 360° rotation.



- The through hole at the center of the stage can be used as a transmission hole.
- In order to switch coarse / fine adjustment, please use a set screw inside of the side surface of the rotation stage. (The location of the set screw is indicated by ▽ mark.)

**Attention**

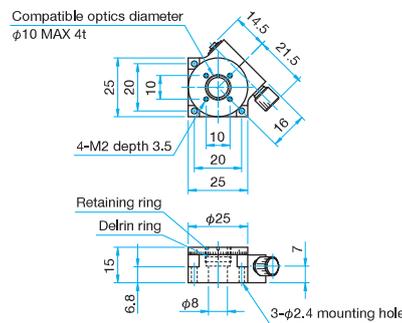
- ▶ KSW-256 and KSW-1006 do not have a clamping mechanism.
- ▶ KSW-256 and KSW-406 do not have a vernier scale.



**Outline Drawing**

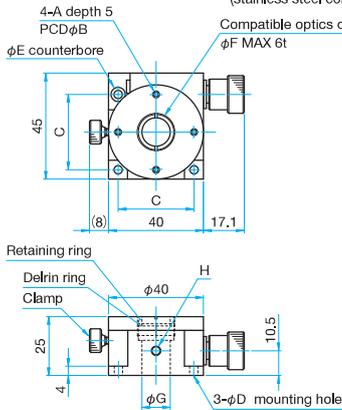
**KSW-256**

ⓘ Pan head screw M2x10...3 screws



**KSW-406/406UU**

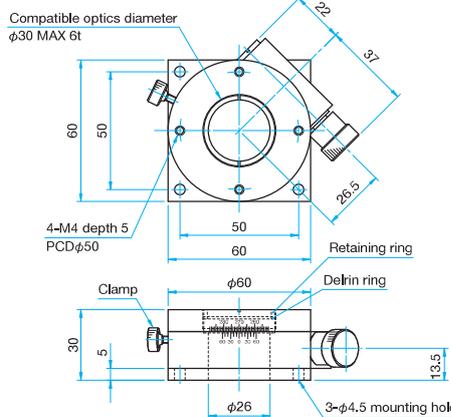
ⓘ Pan head screw M3x8...3 screws, Hexagonal socket head cap screw (stainless steel construction) 6-32UNCx5/16...3 screws (UU)



Part Number	KSW-406	KSW-406UU
A	M3	6-32UNC
B (mm)	φ32	φ31.75
C (mm)	32	31.75
D (mm)	φ3.5	φ4
E (mm)	φ6	φ6.5
F (mm)	φ15	φ12.7
G (mm)	φ12	φ10
H		8-32UNC depth5

**KSW-606**

ⓘ Hexagonal socket head cap screw M4x10...3 screws, One 1.5mm hex wrench (Coarse/Fine switching)



**Specifications**

Part Number	METRIC	KSW-256	KSW-406	KSW-606
	INCH	—	KSW-406UU	—
Stage Size [mm]		φ25	φ40	φ60
Rotation Range [°]		Coarse: — Fine: 360°	Coarse: — Fine: 360°	Coarse: 360° Fine: 360°
Scale Readable Resolution		5°	2°	10'
Knob Rotation Angle [°/1 rotation]		about 8	about 7.5	about 4
Guide Method		Lapping method		
Primary Material		Brass		
Finish		Super black chrome		
Load Capacity [N]		29.4 (3.0kgf)	49.0 (5.0kgf)	98.0 (10.0kgf)
Max. Moment Capacity	Pitch [N·m]	0.14	0.29	0.49
Moment Stiffness	Pitch [°/N·cm]	6.1	1.5	0.9
Parallelism [μm]		30	30	50
Eccentricity [μm]		20	20	20
Wobble [μm]		15	20	20
Weight [kg]		0.07	0.3	0.55

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V Groove Screw

Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

# Rotation Stages (Worm Nut and Gear Drive) | KSW

RoHS

An integrated worm gear drive makes these rotation stages are capable of precise adjustment over a full 360° rotation.

- The through hole at the center of the stage can be used as a transmission hole.
- In order to switch coarse / fine adjustment, please use a set screw inside of the side surface of the rotation stage. (The location of the set screw is indicated by ▽ mark.)



### Attention

- ▶ KSW-1006 does not have a clamping mechanism.

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V Groove Screw

Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others

## Specifications

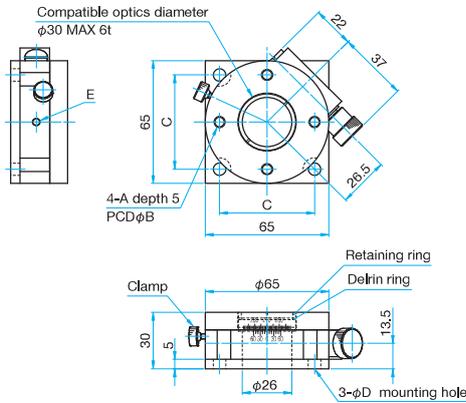
Part Number	METRIC	KSW-656-M6	KSW-1006	KSW-1206	KSW-1206-M6
	INCH	KSW-656UU	—	—	KSW-1206UU
Stage Size [mm]		φ65mm	φ84mm	φ120mm	φ120mm
Rotation Range [°]		Coarse: 360° Fine: 360°	— Fine: 360°	Coarse: 360° Fine: 360°	Coarse: 360° Fine: 360°
Scale Readable Resolution		10'	5'	5'	5'
Knob Rotation Angle [°/1 rotation]		4	2.05	1.62	1.62
Guide Method		Lapping method	Lapping method	Crossed roller	Crossed roller
Primary Material		Brass	Aluminum	Brass	
Finish		Super black chrome	Black anodized	Super black chrome	
Load Capacity [N]		98.0 (10.0kgf)	78.4 (8.0kgf)	196.0 (20.0kgf)	196.0 (20.0kgf)
Max. Moment Capacity	Pitch [N·m]	0.49	1.0	9.8	9.8
Moment Stiffness	Pitch ["/N·cm]	0.9	0.5	0.15	0.15
Parallelism [μm]		50	70	60	60
Eccentricity [μm]		20	20	30	30
Wobble [μm]		20	20	30	30
Weight [kg]		0.6	0.62	2.2	2.2



**Outline Drawing**

**KSW-656-M6/656UU**

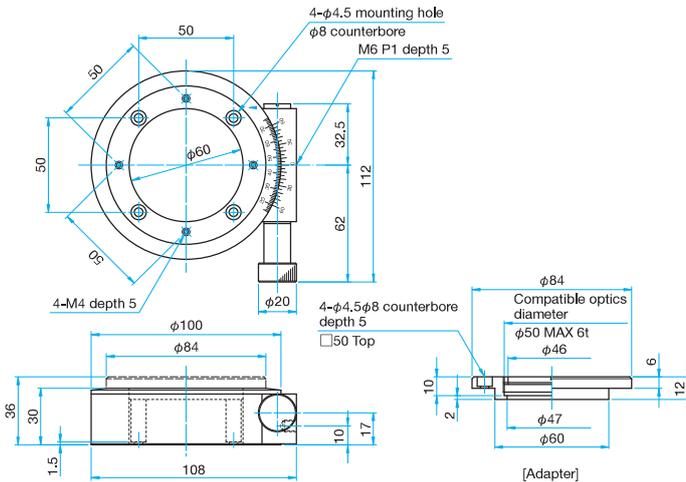
Hexagonal socket head cap screw M6x10...3 screws, One 1.5mm hex wrench (Coarse/Fine switching) (M6)  
Hexagonal socket head cap screw 1/4-20UNCx3/8...3 screws, One 1.5mm hex wrench (Coarse/Fine switching) (UU)



Part Number	A	B (mm)	C (mm)	D (mm)	E
<b>KSW-656-M6</b>	M6	φ50	50	φ6.5	8-32UNC depth 5
<b>KSW-656UU</b>	1/4-20UNC	φ50.8	50.8	φ7	

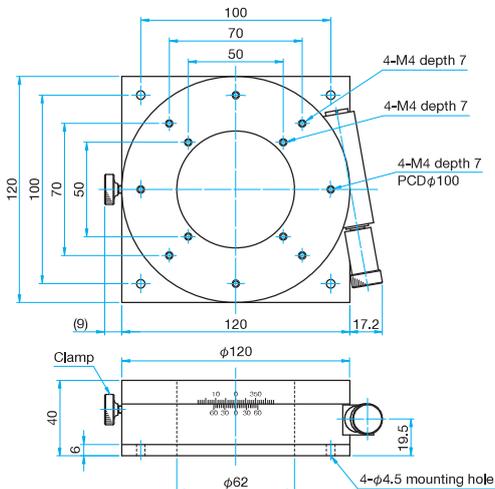
**KSW-1006**

Hexagonal socket head cap screw M4x6...4 screws



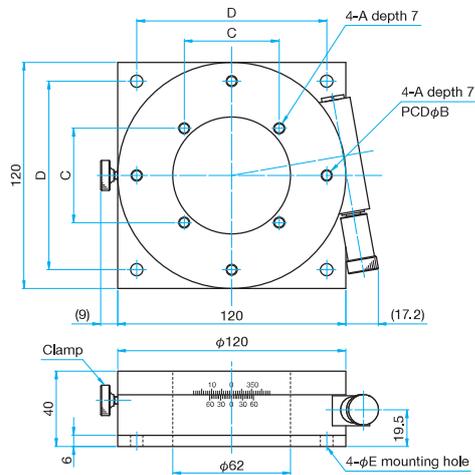
**KSW-1206**

Hexagonal socket head cap screw M4x12...4 screws, Spring washer, One 1.5mm hex wrench (Coarse/Fine switching)



**KSW-1206-M6/1206UU**

Hexagonal socket head cap screw M6x12...4 screws, Spring washer, One 1.5mm hex wrench (Coarse/Fine switching) (M6)  
Hexagonal socket head cap screw 1/4-20UNCx1/2...4 screws, One 1.5mm hex wrench (Coarse/Fine switching) (UU)



Part Number	A	B (mm)	C (mm)	D (mm)	E (mm)
<b>KSW-1206-M6</b>	M6 P1	φ100	50	100	φ6.5
<b>KSW-1206UU</b>	1/4-20UNC	φ101.6	50.8	101.6	φ7

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Others

15 × 15 mm

25 × 25 mm

40 × 40 mm

60 × 60 mm

65 × 65 mm

80 × 80 mm

100 × 100 mm

120 × 120 mm

Others