

# Vacuum Guidance for Stainless Steel Stages

The amount of gas emitted from a vacuum compatible manual stage was measured. According to the analysis of gas, the gas consists mainly of water and hydrocarbon. It is assumed that moisture on the stage surface and part of the grease used as drive lubricating oil evaporated.

## Emitted amount of gas

Part Number	Emitted Amount of Gas Q (after 40 minutes of emission)	
	(Torr·ℓ/s/unit)	(Pa·ℓ/s/unit)
TSDS-602S	$3.57 \times 10^{-5}$	$4.76 \times 10^{-3}$
TSDS-603	$1.65 \times 10^{-5}$	$2.20 \times 10^{-3}$

### Evaluation and Device Specifications

Exhaust system: Turbo-Molecular Pump STP-301

Seiyu Instruments Inc. (Now Edwards Japan Limited)

Pumping speed:  $300\ell/\text{sec}$

Mass spectroscope: Quad Mass Spectrometer QME200

Pfeiffer Vacuum

Mass range: 1 – 200amu

Emitted amount of gas is found by the following equation:

$$Q = \frac{(P - P') \times V}{t \times N}$$

P : Vacuum immediately after seal off

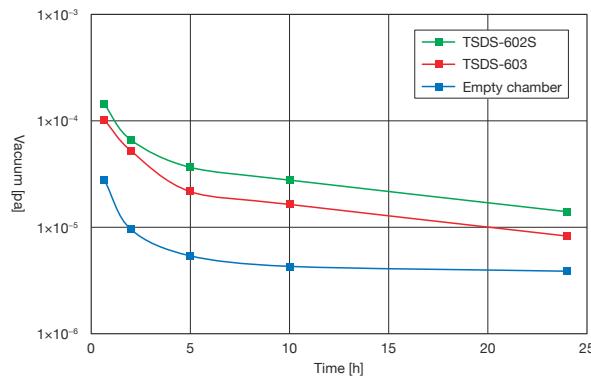
P' : Vacuum after seal-off time has elapsed

N : Number of stage units (1unit)

V : Vacuum chamber volume (ℓ)

t : Seal-off time (600s)

## Vacuum of Vacuum Chamber



## Mass Component Ratio

Mass Number	Component Ratio [%]		Ion	Gas Molecule
	TSDS-602S	TSDS-603		
1	7.48	8.72	H <sup>+</sup>	H <sub>2</sub> , water vapor, hydrocarbon
2	6.56	7.75	H <sub>2</sub> <sup>+</sup>	H <sub>2</sub> , water vapor, hydrocarbon
6	0.01	–	C <sub>2</sub> <sup>+</sup>	CO, CO <sub>2</sub> , hydrocarbon
12	0.51	0.66	C <sup>+</sup>	CO, CO <sub>2</sub> , hydrocarbon
14	–	2.84	N <sup>+</sup> , CO <sup>2+</sup> , CH <sub>2</sub> <sup>+</sup>	N <sub>2</sub> , NH <sub>3</sub> , CO, hydrocarbon
15	2.26	3.06	CH <sub>3</sub> <sup>+</sup> , NH <sup>+</sup>	Hydrocarbon, NH <sub>3</sub>
18	9.7	17.92	H <sub>2</sub> O <sup>+</sup>	H <sub>2</sub> O
20	–	0.13	HF <sup>+</sup> , Ar <sup>2+</sup>	HF, Ar
22	0.01	0.01	CO <sub>2</sub> <sup>2+</sup>	CO <sub>2</sub>
27	4.9	4.56	C <sub>2</sub> H <sub>3</sub> <sup>+</sup>	Hydrocarbon
28	–	11.46	CO <sup>+</sup> , N <sub>2</sub> <sup>+</sup> , C <sub>2</sub> H <sub>4</sub> <sup>+</sup>	CO, CO <sub>2</sub> , N <sub>2</sub> , Hydrocarbon
29	7.44	4.94	C <sub>2</sub> H <sub>5</sub> <sup>+</sup>	Hydrocarbon
31	–	0.3	C <sub>2</sub> H <sub>5</sub> OH <sup>+</sup>	C <sub>2</sub> H <sub>5</sub> OH
32	0.24	1.65	O <sup>2+</sup> , S <sup>+</sup>	O <sub>2</sub> , H <sub>2</sub> S, SO <sub>2</sub>
34	0.13	0.16	H <sub>2</sub> S <sup>+</sup>	H <sub>2</sub> S
36	–	0.19	HCl <sup>+</sup>	HCl
39	3.19	2.94	C <sub>3</sub> H <sub>5</sub> <sup>+</sup>	Hydrocarbon
41	10.99	6.97	C <sub>3</sub> H <sub>5</sub> <sup>+</sup>	Hydrocarbon
43	11.79	5.56	C <sub>3</sub> H <sub>5</sub> <sup>+</sup>	Hydrocarbon
47	0.04	0.05	CH <sub>3</sub> S <sup>+</sup>	CH <sub>3</sub> SH

## Interpretation of Mass Peak

The following list shows major gases that appear for each mass number when mass peaks (mass spectra) of residual gas are measured, and their interpretations.

### List of Residual Gas Spectra

Mass Number	Ion	Remarks	Mass Number	Ion	Remarks
1	H <sup>+</sup>	H <sub>2</sub> , H <sub>2</sub> O, hydrocarbons, etc	30	NO <sup>+</sup>	Appears immediately after emission of dirty vacuum system.
2	H <sub>2</sub> <sup>+</sup>	H <sub>2</sub> , H <sub>2</sub> O, hydrocarbons, etc	31	CH <sub>3</sub> O <sup>+</sup>	Alcohol
3	HD <sup>+</sup>	Abundance ratio of D is about 0.01%.	32	O <sub>2</sub> <sup>+</sup>	Becomes N <sub>23</sub> : O <sub>32</sub> = 4 : 1 when air leak occurs.
4	He <sup>+</sup>		35	Cl <sup>+</sup>	
12	C <sup>+</sup>	CO, CO <sub>2</sub> , hydrocarbons	37	Cl <sup>+</sup>	Cl <sub>35</sub> : Cl <sub>37</sub> = 3 : 1
14	N <sup>+</sup> , CH <sub>2</sub> <sup>+</sup> , CO <sub>2</sub> <sup>+</sup>	N <sub>2</sub> , CO <sub>2</sub> , hydrocarbons	39	K <sup>+</sup> , C <sub>3</sub> H <sub>3</sub> <sup>+</sup>	K <sup>+</sup> dissociates from filament.
15	CH <sub>3</sub> <sup>+</sup>	Molecule that has CH <sub>4</sub> , CH <sub>3</sub>	40	Ar <sup>+</sup> , C <sub>3</sub> H <sub>4</sub> <sup>+</sup>	Ar makes up 1% of the atmosphere.
16	C <sup>+</sup> , CH <sub>4</sub> <sup>+</sup>	O <sub>2</sub> , CH <sub>4</sub> , oxygen compounds	41	C <sub>3</sub> H <sub>5</sub> <sup>+</sup>	Hydrocarbon
17	OH <sup>+</sup>	H <sub>2</sub> O	42	C <sub>3</sub> H <sub>6</sub> <sup>+</sup>	Hydrocarbon
18	H <sub>2</sub> O <sup>+</sup>	H <sub>2</sub> O, OH <sup>+</sup> : H <sub>2</sub> O <sup>+</sup> ≈ 1 : 5	43	C <sub>3</sub> H <sub>7</sub> <sup>+</sup>	Hydrocarbon
19	F <sup>+</sup>	Sometimes adsorbed to filaments and electrode surface.	44	CO <sub>2</sub> <sup>+</sup>	
20	Ar <sup>+</sup> , H <sub>2</sub> O <sup>+</sup> , Ne <sup>+</sup>	H <sub>2</sub> O(20) is present about 0.2% of abundance ratio of O <sub>15</sub> .	50	C <sub>4</sub> H <sub>2</sub> <sup>+</sup>	Hydrocarbon
22	CO <sub>2</sub> <sup>2+</sup> , Ne <sup>+</sup>	Abundance ratio of NE <sub>22</sub> is 8.8%.	51	C <sub>4</sub> H <sub>3</sub> <sup>+</sup>	Hydrocarbon
23	Na <sup>+</sup>	Sometimes adsorbed to filaments and electrode surface.	55	C <sub>4</sub> H <sub>7</sub> <sup>+</sup>	Hydrocarbon
27	C <sub>2</sub> H <sub>3</sub> <sup>+</sup>	Hydrocarbon	56	C <sub>4</sub> H <sub>8</sub> <sup>+</sup>	Hydrocarbon
28	N <sub>2</sub> <sup>+</sup> , CO <sup>+</sup>	Remain till the last.	57	C <sub>4</sub> H <sub>9</sub> <sup>+</sup>	Hydrocarbon
29	C <sub>2</sub> H <sub>5</sub> <sup>+</sup> , N <sub>2</sub> <sup>+</sup> , CO <sup>+</sup>	Abundance ratio of N <sub>15</sub> is 0.7%, and that of C <sub>13</sub> is 1.1%.			



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□15mm  
□25mm  
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□120mm  
Others

## X axis Stainless Steel Extended Contact Slide Stages | TSDS-1 Stage size □25/□40/□60/□65mm

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Others

**Stainless Steel Linear Stages** suitable for hard vacuum and clean room applications have the same design and performance as TSD stages. Completely made of stainless steel, they offering excellent corrosion resistance. Both the stage and the stainless steel micrometer head are lubricated with a high grade vacuum grease (YVAC2).



## Guide

► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

Reference Vacuum measurement data E199

Also ideal for use in airtight spaces that have to avoid outgassing.

## Attention

► There may be protrusions from the top surface depending on the components that secure the micrometer heads.

► Note that some samples might not be able to be fixed on the stage depending on their shapes, or required travel might not be ensured.

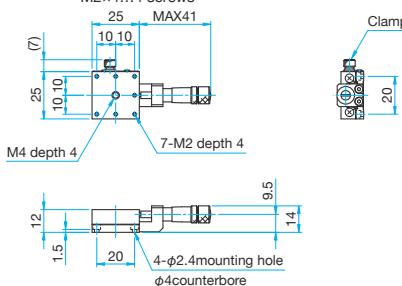
## Specifications

Part Number	METRIC	TSDS-251C	TSDS-251S	TSDS-401C	TSDS-401S	TSDS-601C	TSDS-601S	TSDS-651C-M6	TSDS-651S-M6
INCH	—	—	TSDS-401CUU	TSDS-401SUU	—	—	—	TSDS-651CUU	TSDS-651SUU
Table Size [mm]	25x25	25x25	40x40	40x40	60x60	60x60	65x65	65x65	65x65
Axes of Travel				X axis					
Micrometer Position	Center	Side	Center	Side	Center	Side	Center	Side	Side
Travel [mm]	±3	±3	±6.5	±6.5	±6.5	±6.5	±6.5	±6.5	±6.5
Lead of Actuator [mm/rotation]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Bearing type				Extended contact ball guide					
Primary Material					Stainless steel				
Finish					None				
Load Capacity [N]	49 (5.0kgf)	49 (5.0kgf)	147 (15.0kgf)	147 (15.0kgf)	343 (35.0kgf)	343 (35.0kgf)	343 (35.0kgf)	343 (35.0kgf)	343 (35.0kgf)
Travel Accuracy	Straightness [µm]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Pitch [ " ]	30	30	30	30	25	25	25	25
	Yaw [ " ]	25	25	25	25	15	15	15	15
Max. Moment Capacity	Pitch [N·m]	3.0	3.0	3.9	3.9	6.4	6.4	8.8	8.8
	Roll [N·m]	3.7	3.7	3.9	3.9	6.4	6.4	9.8	9.8
	Yaw [N·m]	1.5	1.5	2.5	2.5	4.9	4.9	4.9	4.9
Moment Stiffness	Pitch ["/N·cm]	1.8	1.8	0.36	0.36	0.2	0.2	0.2	0.2
	Roll ["/N·cm]	1.6	1.6	0.3	0.3	0.2	0.2	0.2	0.2
	Yaw ["/N·cm]	2.0	2.0	0.4	0.4	0.2	0.2	0.2	0.2
Parallelism [µm]	30	30	15	15	15	15	30	30	30
Running Parallelism [µm]	10	10	10	10	10	10	10	10	10
Weight [kg]	0.07	0.07	0.2	0.2	0.5	0.5	0.55	0.55	0.55



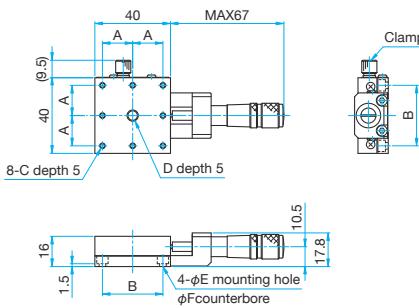
### Outline Drawing

**TSDS-251C** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



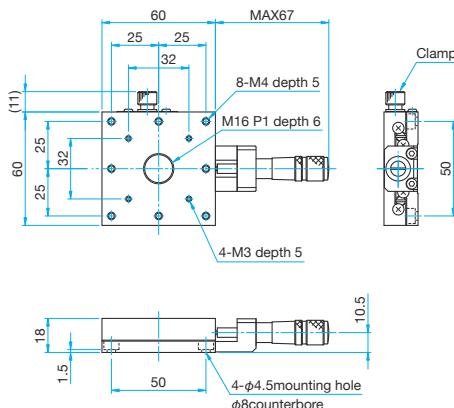
**TSDS-401C/401CUU**

Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



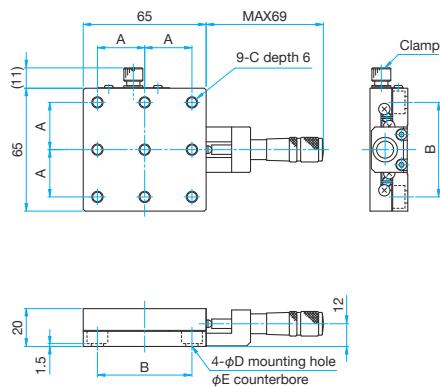
Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-401C	16	32	M3	M6 P1	3.5	6
TSDS-401CUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

**TSDS-601C** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws



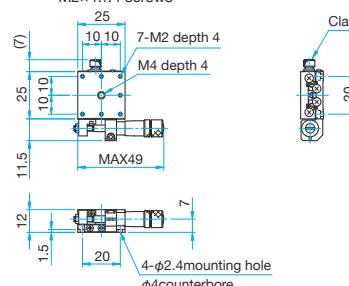
**TSDS-651C-M6/651CUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



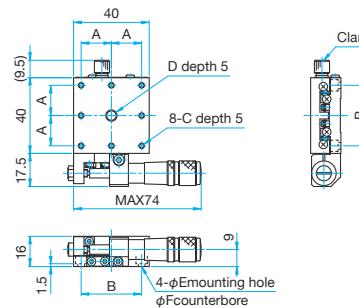
Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-651C-M6	25	50	M6	6.5	11
TSDS-651CUU	25.4	50.8	1/4-20UNC	7	12

**TSDS-251S** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



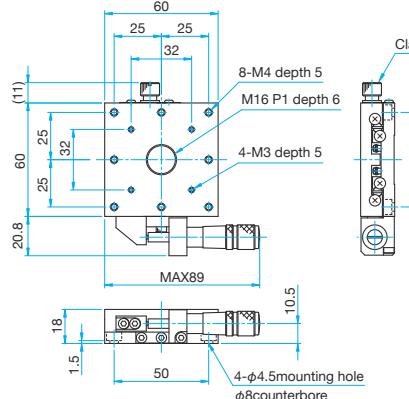
**TSDS-401S/401SUU**

Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



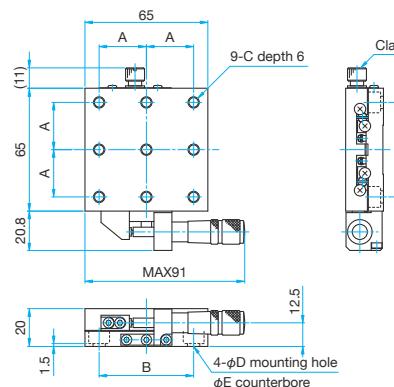
Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-401S	16	32	M3	M6 P1	3.5	6
TSDS-401SUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

**TSDS-601S** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws



**TSDS-651S-M6/651SUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



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□15mm

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□60mm

□65mm

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□100mm

□120mm

Others

## XY axis Stainless Steel Extended Contact Slide Stages | TSDS-2 Stage size □25/□40/□60/□65mm

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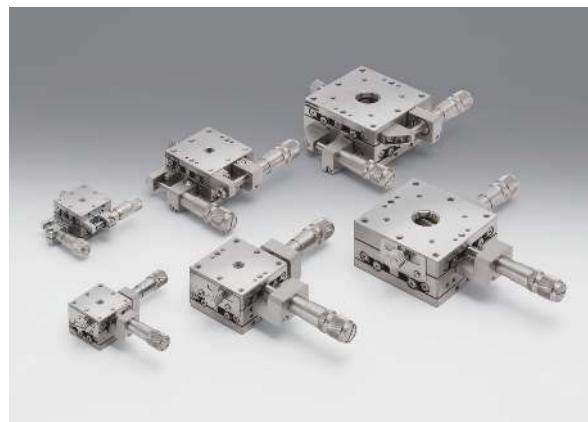
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Others

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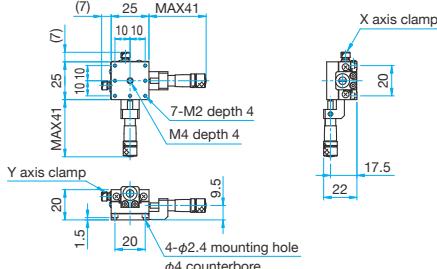
## Specifications

Part Number	METRIC	TSDS-252C	TSDS-252S	TSDS-402C	TSDS-402S	TSDS-602C	TSDS-602S	TSDS-652C-M6	TSDS-652S-M6
	INCH	—	—	TSDS-402CUU	TSDS-402SUU	—	—	TSDS-652CUU	TSDS-652SUU
Table Size [mm]		25×25	25×25	40×40	40×40	60×60	60×60	65×65	65×65
Axes of Travel				XY axis					
Micrometer Position		Center	Side	Center	Side	Center	Side	Center	Side
Travel [mm]		±3	±3	±6.5	±6.5	±6.5	±6.5	±6.5	±6.5
Lead of Actuator [mm/rotation]		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Bearing type				Extended contact ball guide					
Primary Material				Stainless steel					
Finish				None					
Load Capacity [N]		49 (5.0kgf)	49 (5.0kgf)	147 (15.0kgf)	147 (15.0kgf)	343 (35.0kgf)	343 (35.0kgf)	343 (35.0kgf)	343 (35.0kgf)
Travel Accuracy	Straightness [ $\mu\text{m}$ ]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Pitch ["]	30	30	30	30	25	25	25	25
	Yaw ["]	25	25	25	25	15	15	15	15
Max. Moment Capacity	Pitch [N·m]	3.0	3.0	3.9	3.9	6.4	6.4	8.8	8.8
	Roll [N·m]	3.0	3.0	3.9	3.9	6.4	6.4	8.8	8.8
	Yaw [N·m]	1.5	1.5	2.5	2.5	4.9	4.9	4.9	4.9
Moment Stiffness	Pitch ["/N·cm]	3.4	3.4	0.66	0.66	0.41	0.41	0.41	0.41
	Roll ["/N·cm]	3.4	3.4	0.66	0.66	0.41	0.41	0.41	0.41
	Yaw ["/N·cm]	4.0	4.0	0.8	0.8	0.41	0.41	0.41	0.41
Parallelism [ $\mu\text{m}$ ]		50	50	30	30	30	30	50	50
Running Parallelism [ $\mu\text{m}$ ]		20	20	20	20	20	20	20	20
Orthogonality [ $\mu\text{m}$ ]		10	10	10	10	10	10	10	10
Weight [kg]		0.1	0.1	0.3	0.3	0.9	0.9	1.2	1.2



### Outline Drawing

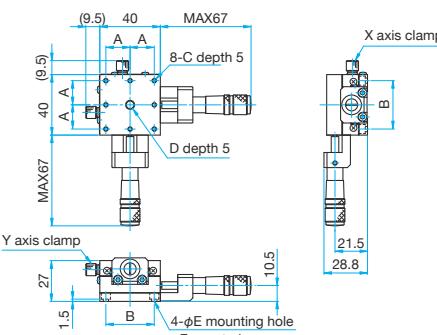
**TSDS-252C** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



**TSDS-402C/402CUU**

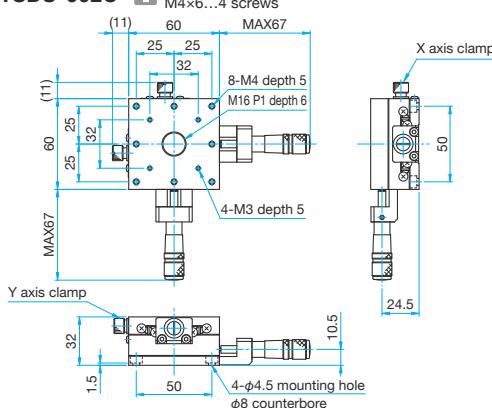
Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers

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Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-402C	16	32	M3	M6 P1	3.5	6
TSDS-402CUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

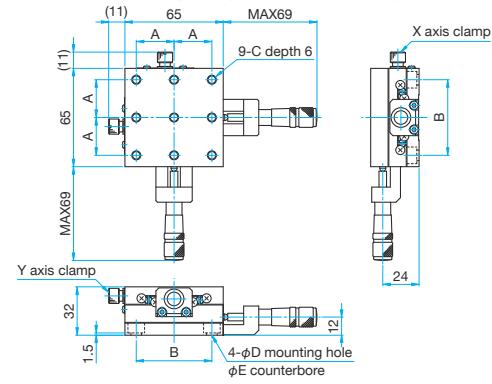
**TSDS-602C** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws



**TSDS-652C-M6/652CUU**

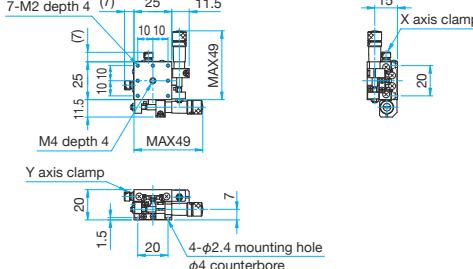
Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)

Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
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TSDS-652CUU	25.4	50.8	1/4-20UNC	7	12

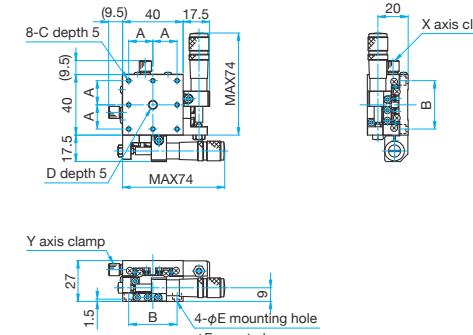
**TSDS-252S** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



**TSDS-402S/402SUU**

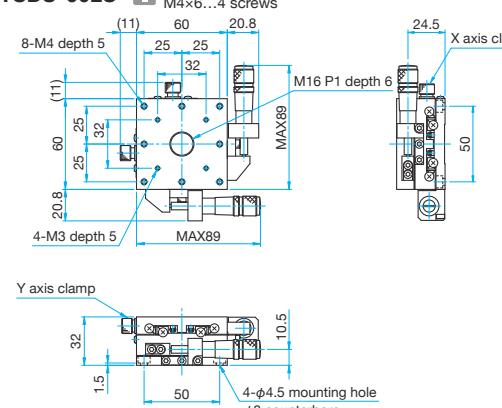
Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers

Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-402S	16	32	M3	M6 P1	3.5	6
TSDS-402SUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

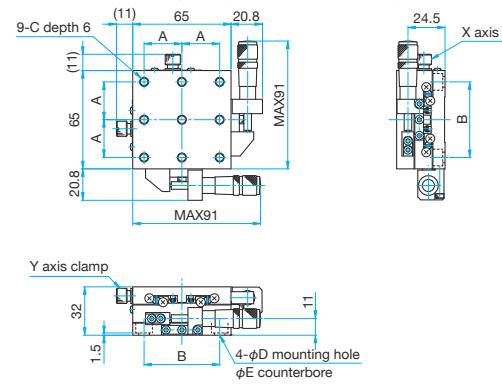
**TSDS-602S** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws



**TSDS-652S-M6/652SUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)

Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-652S-M6	25	50	M6	6.5	11
TSDS-652SUU	25.4	50.8	1/4-20UNC	7	12

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#### Ohters

#### 15mm

#### 25mm

#### 40mm

#### 60mm

#### 65mm

#### 80mm

#### 100mm

#### 120mm

#### Others

## Z axis Stainless Steel Extended Contact Slide Stages

TSDS-3 Stage size □25/□40/□60/□65mm

RoHS

Catalog  
Code

W7043

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Lapping

V Groove Screw

Others

□15mm

□25mm

□40mm

□60mm

□65mm

□80mm

□100mm

□120mm

Others

**Stainless Steel Linear Stages suitable for hard vacuum and clean room applications have the same design and performance as TSD stages.**

**Completely made of stainless steel, they offering excellent corrosion resistance. Both the stage and the stainless steel micrometer head are lubricated with a high grade vacuum grease (YVAC2).**



## Guide

► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

Reference ► Vacuum measurement data E199

Also ideal for use in airtight spaces that have to avoid outgassing.

## Attention

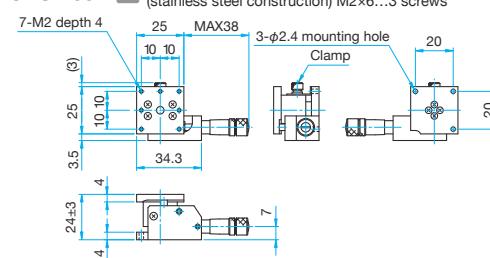
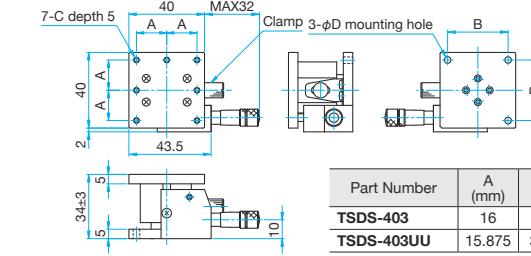
► The structure does not allow upside down installation since the spring inside the stage might not be able to withstand the load and may stretch.

► Since the structure uses the principle of leverage, the feed rate fluctuates against the scale depending on the travel (about ±0.02mm for micrometer head 0.5mm/rotation).



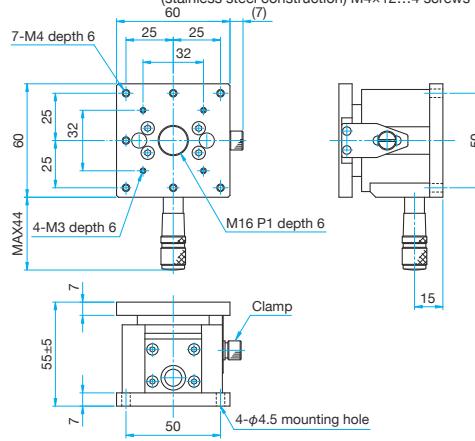
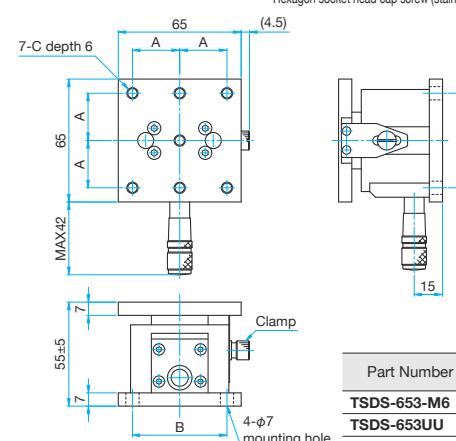
## Outline Drawing

TSDS-253 Hexagon socket head cap screw (stainless steel construction) M2×6...3 screws

TSDS-403/403UU Hexagon socket head cap screw (stainless steel construction) M3×8...3 screws  
Hexagon socket head cap screw (stainless steel construction) 6-32UNC×3/8...3 screws (UU)

Part Number	A (mm)	B (mm)	C (mm)	D (mm)
TSDS-403	16	32	M3	3.5
TSDS-403UU	15.875	31.75	6-32UNC	4

TSDS-603 Hexagon socket head cap screw (stainless steel construction) M4×12...4 screws

TSDS-653-M6/653UU Hexagon socket head cap screw (stainless steel construction) M6×12...3 screws (M6)  
Hexagon socket head cap screw (stainless steel construction) 1/4-20UNC×1/2...4 screws (UU)

Part Number	A (mm)	B (mm)	C
TSDS-653-M6	25	50	M6
TSDS-653UU	25.4	50.8	1/4-20UNC

## Specifications

Part Number	METRIC	TSDS-253	TSDS-403	TSDS-603	TSDS-653-M6
	INCH	—	TSDS-403UU	—	TSDS-653UU
Table Size [mm]		25×25	40×40	60×60	65×65
Axes of Travel		Z axis			
Travel [mm]		±3	±3	±5	±5
Lead of Actuator [mm/rotation]		0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]		0.01	0.01	0.01	0.01
Bearing type		Extended contact ball guide			
Primary Material		Stainless steel			
Finish		None			
Load Capacity [N]		29.4 (3.0kgf)	88.3 (9.0kgf)	147 (15.0kgf)	147 (15.0kgf)
Travel Accuracy	Straightness [μm]	5	2.5	2.5	2.5
Max. Moment Capacity	Pitch [N·m]	1	3.9	6.9	6.9
	Roll [N·m]	1	3.9	6.9	6.9
Moment Stiffness	Pitch ["/N·cm]	7.14	1.84	0.51	0.51
	Roll ["/N·cm]	7.15	1.84	0.51	0.51
Parallelism [μm]		80	80	80	80
Running Parallelism [μm]		15	20	25	25
Weight [kg]		0.1	0.25	1.0	1.1

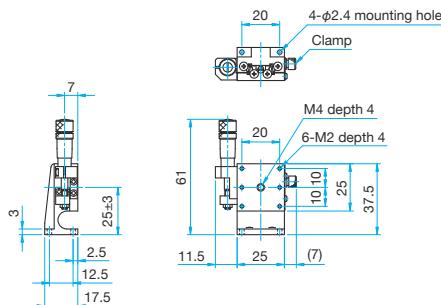
**Stainless Steel Linear Stages** suitable for hard vacuum and clean room applications have the same design and performance as TSD stages.

Completely made of stainless steel, they offering excellent corrosion resistance. Both the stage and the stainless steel micrometer head are lubricated with a high grade vacuum grease (YVAC2).

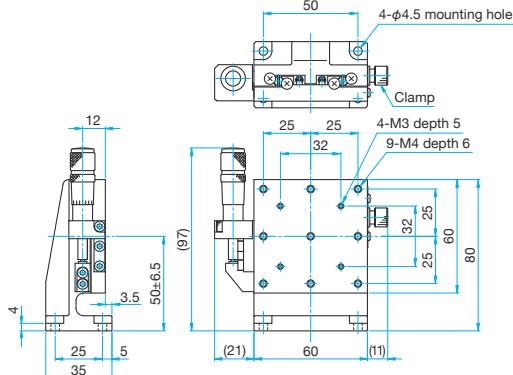


### Outline Drawing

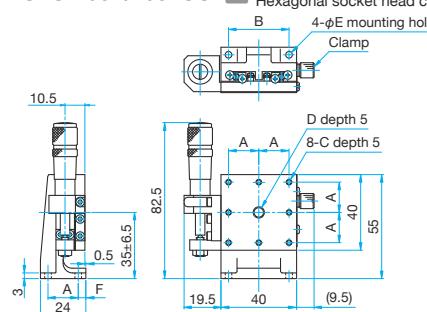
**TSDS-253L** Hexagon socket head cap screw (stainless steel construction) M2×6...4 screws



**TSDS-603L** Hexagon socket head cap screw (stainless steel construction) M4×8...4 screws

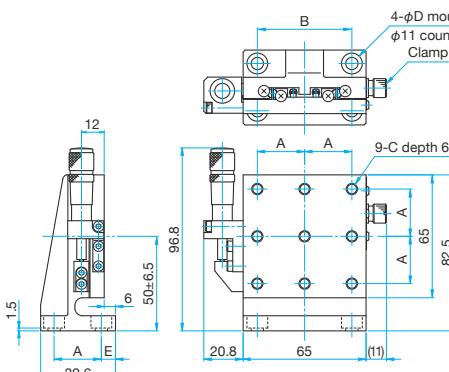


**TSDS-403L/403LUU** Hexagonal socket head cap screw M3×6...4 screws  
 Hexagonal socket head cap screw 6-32UNC×1/4...4 screws (UU)



Part Number	TSDS-403L	TSDS-403LUU
A (mm)	16	15.875
B (mm)	32	31.75
C	M3	6-32UNC
D	M6 P1	1/4-20UNC
E (mm)	3.5	4
F (mm)	4	3.625

**TSDS-653L-M6/653LUU** Hexagonal socket head cap screw M6×6...4 screws (M6)  
 Hexagonal socket head cap screw 1/4-20UNC×1/4...4 screws (UU)



Part Number	TSDS-653L-M6	TSDS-653LUU
A (mm)	25	25.4
B (mm)	50	50.8
C	M6 P1	1/4-20UNC
E (mm)	6.5	7
F (mm)	11	12

### Specifications

Part Number	METRIC	TSDS-253L	TSDS-403L	TSDS-603L	TSDS-653L-M6
Table Size [mm]	INCH	—	TSDS-403LUU	—	TSDS-653LUU
Axes of Travel	Z axis	25×25	40×40	60×60	65×65
Micrometer Position	Side	Side	Side	Side	Side
Travel [mm]	±3	±6.5	±6.5	±6.5	±6.5
Lead of Actuator [mm/rotation]	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]	0.01	0.01	0.01	0.01	0.01
Bearing type		Extended contact ball guide			
Primary Material		Stainless steel			
Finish		None			
Load Capacity [N]		14.7 (1.5kgf)	49.0 (5.0kgf)	49.0 (5.0kgf)	49.0 (5.0kgf)
Travel Accuracy	Straightness [μm]	1	1	1	1
Max. Moment Capacity	Pitch [N·m]	2.2	5	8	8
Moment Stiffness	Roll [N·m]	2.1	5	8	8
Parallelism [μm]	Pitch ["/N·cm]	3.3	0.6	0.25	0.25
Running Parallelism [μm]		20	20	20	20
Weight [kg]		0.1	0.3	0.8	0.9



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Dovetail

Lapping

V Groove Screw

Ohters

 15mm 25mm 40mm 60mm 65mm 80mm 100mm 120mm

Others

XZ axis Stainless Steel Extended Contact Slide Stages | **TSDS-4** Stage size □25/□40/□60/□65mm**RoHS****Application Systems****Optics & Optical Coatings****Holders****Bases****Manual Stages****Actuators****MotORIZED Stages****Light Sources****Index****Guide****X axis Stages****XY axis Stages****Z axis Stages****XZ axis Stages****XYZ axis Stages****θ axis Stages****Goniometer****Inclination****Vacuum****Ball Guide****Crossed Roller****Dovetail****Lapping****V Groove Screw****Ohters****□15mm****□25mm****□40mm****□60mm****□65mm****□80mm****□100mm****□120mm****Others**

**XZ axis Stainless Steel Stages suitable for hard vacuum and clean room applications have the same design and performance as TSD stages.**

- Made completely of stainless steel, offering excellent corrosion resistance.
- Both the stage and micrometer head use high vacuum grease (YVAC2).

**Guide**

► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

**Reference** Vacuum measurement data E199

Also ideal for use in airtight spaces that have to avoid outgassing.

**Attention**

- The structure does not allow upside down installation since the spring inside the stage might not be able to withstand the load and may stretch.
- Since the structure uses the principle of leverage, the feed rate fluctuates against the scale depending on the travel (about ±0.02mm for micrometer head 0.5mm/rotation).

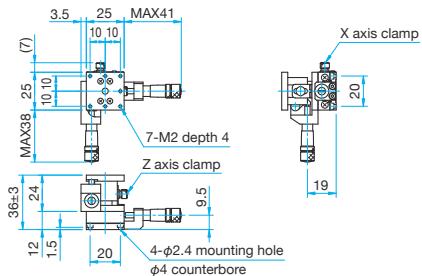
**Specifications**

Part Number	METRIC	TSDS-254C	TSDS-254S	TSDS-404C	TSDS-404S	TSDS-604C	TSDS-604S	TSDS-654C-M6	TSDS-654S-M6
	INCH	—	—	TSDS-404CUU	TSDS-404SUU	—	—	TSDS-654CUU	TSDS-654SUU
Table Size [mm]	25×25	25×25	40×40	40×40	60×60	60×60	60×60	65×65	65×65
Axes of Travel									
Micrometer Position	Center	Side	Center	Side	Center	Side	Center	Side	Side
Travel [mm]	X axis ±3 Z axis ±3	X axis ±3 Z axis ±3	X axis ±6.5 Z axis ±3	X axis ±6.5 Z axis ±3	X axis ±6.5 Z axis ±5				
Lead of Actuator [mm/rotation]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Bearing type	Extended contact ball guide								
Primary Material	Stainless steel								
Finish	None								
Load Capacity [N]	29.4 (3.0kgf)	29.4 (3.0kgf)	88.3 (9.0kgf)	88.3 (9.0kgf)	147 (15.0kgf)				
Travel Accuracy	Straightness [μm]	5	5	2.5	2.5	2.5	2.5	2.5	2.5
Max. Moment Capacity	Pitch [N·m]	1.0	1.0	3.9	3.9	6.9	6.9	6.9	6.9
	Roll [N·m]	1.0	1.0	3.9	3.9	6.9	6.9	6.9	6.9
Moment Stiffness	Pitch ["/N·cm]	8.95	8.95	2.2	2.2	0.75	0.75	0.75	0.75
	Roll ["/N·cm]	8.75	8.75	2.15	2.15	0.75	0.75	0.75	0.75
Parallelism [μm]		110	110	110	110	110	110	110	110
Weight [kg]		0.17	0.17	0.45	0.45	1.5	1.5	1.65	1.65



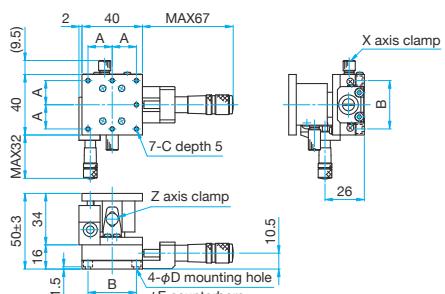
## Outline Drawing

**TSDS-254C** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



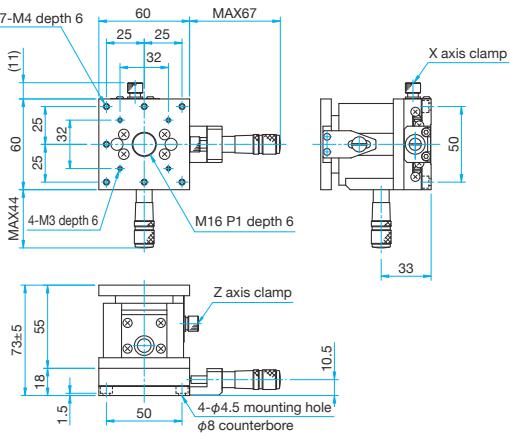
**TSDS-404C/404CUU**

Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



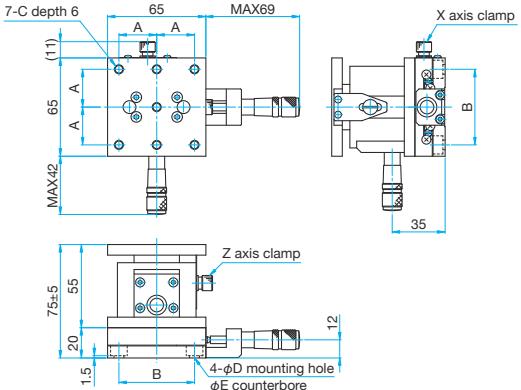
Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-404C	16	32	M3	3.5	6
TSDS-404CUU	15.875	31.75	6-32UNC	4	6.5

**TSDS-604C** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws



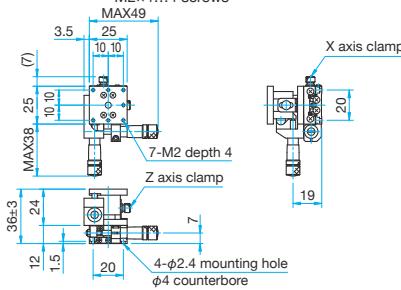
**TSDS-654C-M6/654CUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



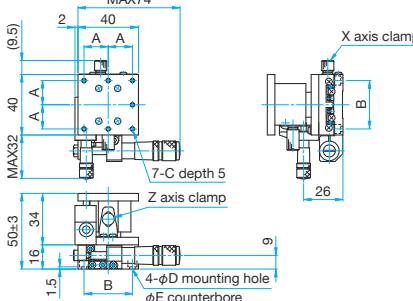
Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-654C-M6	25	50	M6	6.5	11
TSDS-654CUU	25.4	50.8	1/4-20UNC	7	12

**TSDS-254S** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



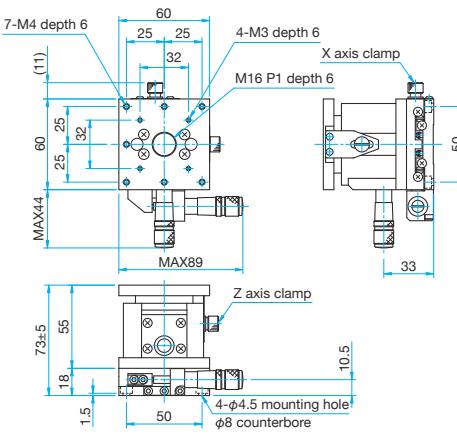
**TSDS-404S/404SUU**

Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



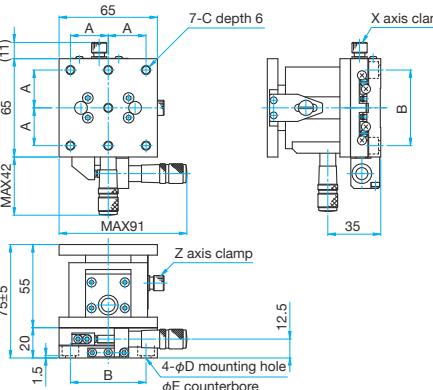
Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-404S	16	32	M3	3.5	6
TSDS-404SUU	15.875	31.75	6-32UNC	4	6.5

**TSDS-604S** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws



**TSDS-654S-M6/654SUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-654S-M6	25	50	M6	6.5	11
TSDS-654SUU	25.4	50.8	1/4-20UNC	7	12

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V Groove Screw

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15mm

25mm

40mm

60mm

65mm

80mm

100mm

120mm

Others

XYZ axis Stainless Steel Extended Contact Slide Stages (Vertical) | **TSDS-4L** Stage size  25/ 40/ 60/ 65mm**RoHS**

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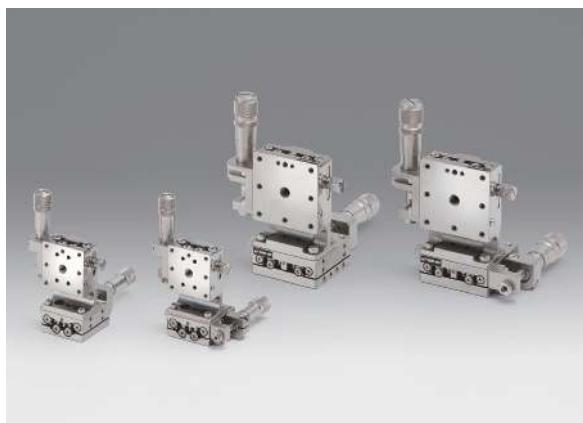
Goniometer

Inclination

Vacuum

**XYZ axis Stainless Steel Stages suitable for hard vacuum and clean room applications have the same design and performance as TSD stages.**

- Made completely of stainless steel, offering excellent corrosion resistance.
- Both the stage and micrometer head use high vacuum grease (YVAC2).

**Guide**

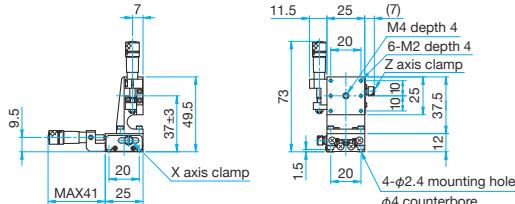
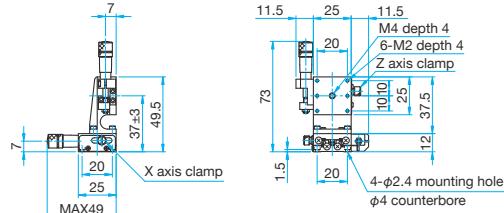
► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

**Reference** Vacuum measurement data E199

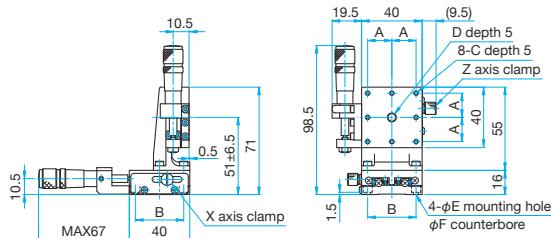
Also ideal for use in airtight spaces that have to avoid outgassing.

**Specifications**

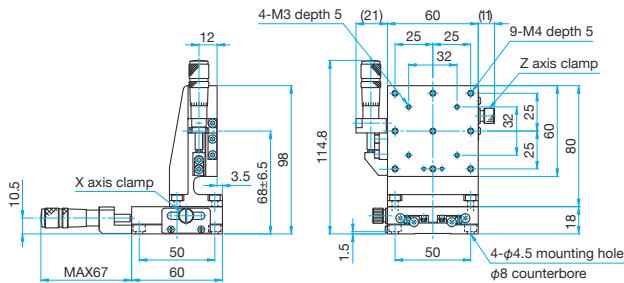
Part Number	METRIC	TSDS-254CL	TSDS-254SL	TSDS-404CL	TSDS-404SL	TSDS-604CL	TSDS-604SL	TSDS-654CL-M6	TSDS-654SL-M6
	INCH	—	—	TSDS-404CLUU	TSDS-404SLUU	—	—	TSDS-654CLUU	TSDS-654SLUU
Table Size [mm]		25x25	25x25	40x40	40x40	60x60	60x60	65x65	65x65
Axes of Travel		XZ axis							
Micrometer Position		Center	Side	Center	Side	Center	Side	Center	Side
Travel [mm]		X axis ±3 Z axis ±3	X axis ±3 Z axis ±3	X axis ±6.5 Z axis ±3	X axis ±6.5 Z axis ±3	X axis ±6.5 Z axis ±6.5			
Lead of Actuator [mm/rotation]		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Bearing type		Extended contact ball guide							
Primary Material		Stainless steel							
Finish		None							
Load Capacity [N]		14.7 (1.5kgf)	14. (1.5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)
Travel Accuracy	Straightness [ $\mu\text{m}$ ]	1	1	1	1	1	1	1	1
Max. Moment Capacity	Pitch [ $\text{N}\cdot\text{m}$ ]	2.2	2.2	3.9	3.9	8.0	8.0	8.0	8.0
	Roll [ $\text{N}\cdot\text{m}$ ]	2.1	2.1	3.9	3.9	8.0	8.0	8.0	8.0
Moment Stiffness	Pitch [ $^{\circ}/\text{N}\cdot\text{cm}$ ]	5.1	5.1	0.96	0.96	0.45	0.45	0.45	0.45
Weight [kg]		0.17	0.17	0.5	0.5	1.3	1.3	1.45	1.45

**Outline Drawing****TSDS-254CL** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws**TSDS-254SL** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws**TSDS-404CL/404CLUU**

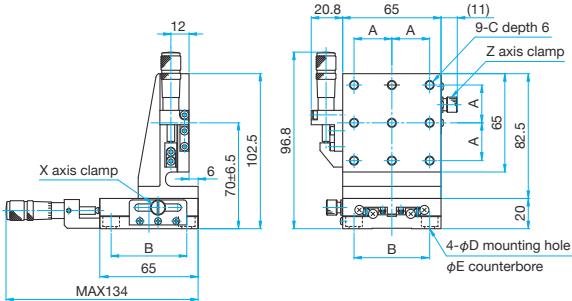
Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-404CL	16	32	M3	M6 P1	3.5	6
TSDS-404CLUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

**TSDS-604CL** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws**TSDS-654CL-M6/654CLUU**

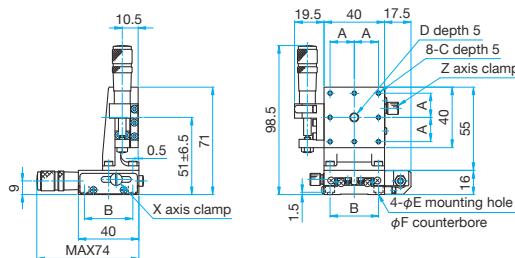
Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



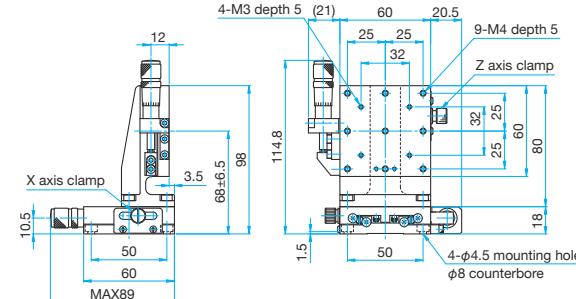
Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-654CL-M6	25	50	M6	6.5	11
TSDS-654CLUU	25.4	50.8	1/4-20UNC	7	12

**TSDS-404SL/404SLUU**

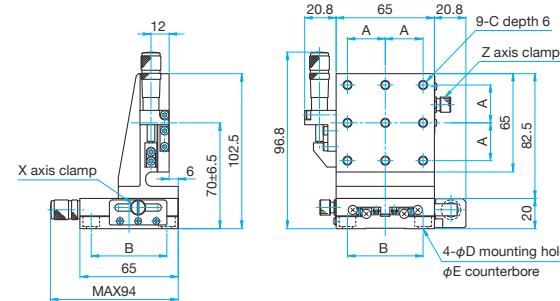
Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-404SL	16	32	M3	M6 P1	3.5	6
TSDS-404SLUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

**TSDS-604SL** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws**TSDS-654SL-M6/654SLUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-654SL-M6	25	50	M6	6.5	11
TSDS-654SLUU	25.4	50.8	1/4-20UNC	7	12

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Dovetail

Lapping

V Groove Screw

Ohters

15mm

25mm

40mm

60mm

65mm

80mm

100mm

120mm

Others

## XYZ axis Stainless Steel Extended Contact Slide Stages | TSDS-5 Stage size □25/□40/□60/□65mm

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Dovetail

Lapping

V Groove Screw

Ohters

□15mm

□25mm

□40mm

□60mm

□65mm

□80mm

□100mm

□120mm

Others

**XYZ axis Stainless Steel Stages suitable for hard vacuum and clean room applications have the same design and performance as TSD stages.**

- Made completely of stainless steel, offering excellent corrosion resistance.
- Both the stage and micrometer head use high vacuum grease (YVAC2).



## Guide

► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

Reference ► Vacuum measurement data E199

Also ideal for use in airtight spaces that have to avoid outgassing.

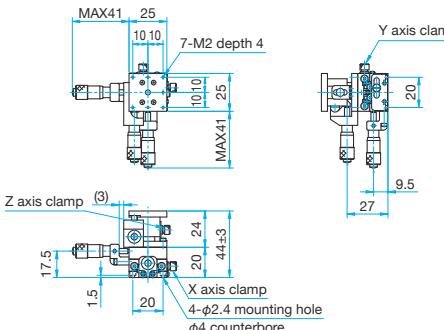
## Attention

- The structure does not allow upside down installation since the spring inside the stage might not be able to withstand the load and may stretch.
- Since the structure uses the principle of leverage, the feed rate fluctuates against the scale depending on the travel (about ±0.02mm for micrometer head 0.5mm/rotation).

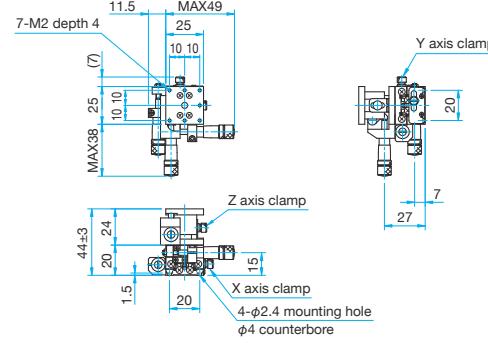
2D CAD 3D CAD

## Outline Drawing

**TSDS-255C** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws



**TSDS-255S** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws

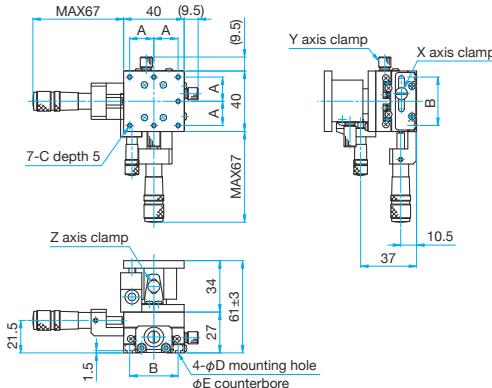


## Specifications

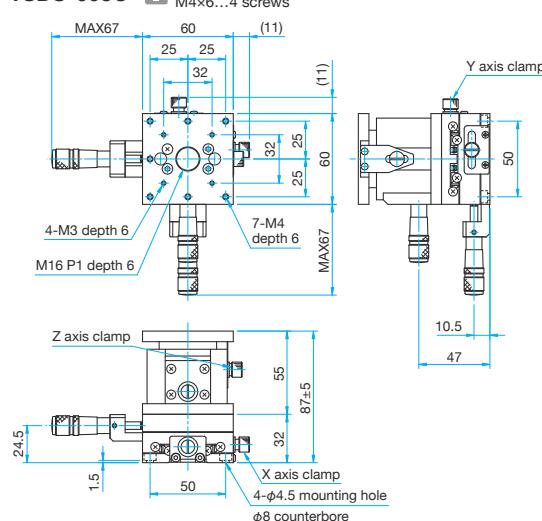
Part Number	METRIC	TSDS-255C	TSDS-255S	TSDS-405C	TSDS-405S	TSDS-605C	TSDS-605S	TSDS-655C-M6	TSDS-655S-M6
	INCH	—	—	TSDS-405CUU	TSDS-405SUU	—	—	TSDS-655CUU	TSDS-655SUU
Table Size [mm]	25×25	25×25	40×40	40×40	60×60	60×60	60×60	65×65	65×65
Axes of Travel									
Micrometer Position	Center	Side	Center	Side	Center	Side	Center	Center	Side
Travel [mm]	XY axis ±3 Z axis ±3	XY axis ±3 Z axis ±3	XY axis ±6.5 Z axis ±3	XY axis ±6.5 Z axis ±3	XY axis ±6.5 Z axis ±5				
Lead of Actuator [mm/rotation]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Bearing type	Extended contact ball guide								
Primary Material	Stainless steel								
Finish	None								
Load Capacity [N]	29.4 (3.0kgf)	29.4 (3.0kgf)	88.3 (9.0kgf)	88.3 (9.0kgf)	147 (15.0kgf)				
Travel Accuracy	Straightness [μm]	5	5	2.5	2.5	2.5	2.5	2.5	2.5
Max. Moment Capacity	Pitch [N·m]	1.0	1.0	3.9	3.9	6.9	6.9	6.9	6.9
	Roll [N·m]	1.0	1.0	3.9	3.9	6.9	6.9	6.9	6.9
Moment Stiffness	Pitch ["/N·cm]	10.55	10.55	2.5	2.5	1.0	1.0	1.0	1.0
	Roll ["/N·cm]	10.55	10.55	2.5	2.5	1.0	1.0	1.0	1.0
Parallelism [μm]	130	130	130	130	130	130	130	130	130
Weight [kg]	0.2	0.2	0.55	0.55	1.9	1.9	2.2	2.2	2.2

**Outline Drawing****TSDS-405C/405CUU**

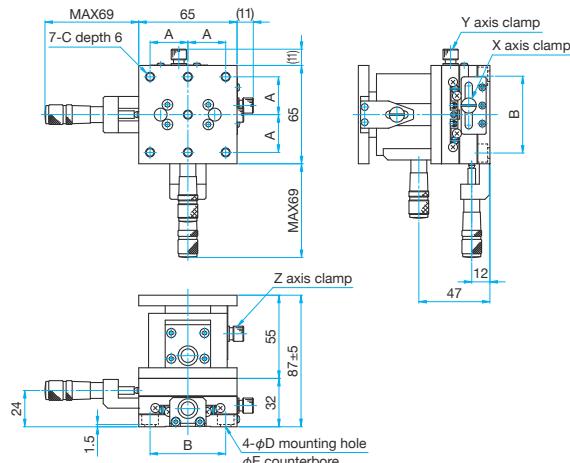
Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-405C	16	32	M3	3.5	6
TSDS-405CUU	15.875	31.75	6-32UNC	4	6.5

**TSDS-605C** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws**TSDS-655C-M6/655CUU**

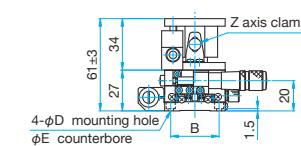
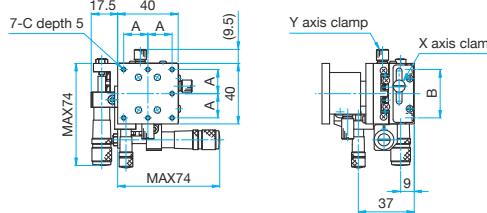
Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



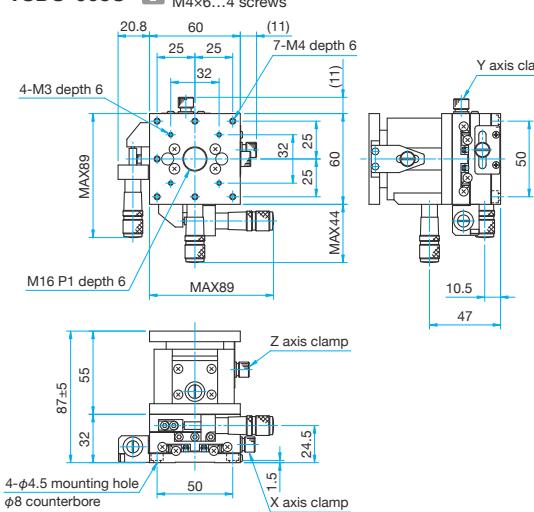
Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-655C-M6	25	50	M6	6.5	11
TSDS-655CUU	25.4	50.8	1/4-20UNC	7	12

**TSDS-405S/405SUU**

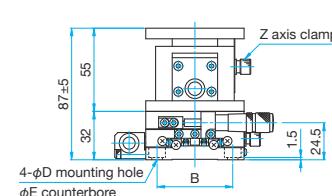
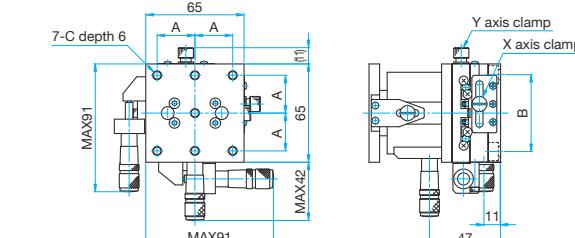
Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-405S	16	32	M3	3.5	6
TSDS-405SUU	15.875	31.75	6-32UNC	4	6.5

**TSDS-605S** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws**TSDS-655S-M6/655SUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-655S-M6	25	50	M6	6.5	11
TSDS-655SUU	25.4	50.8	1/4-20UNC	7	12



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Lapping

V Groove Screw

Ohters

15mm

25mm

40mm

60mm

65mm

80mm

100mm

120mm

Others

## XYZ axis Stainless Steel Extended Contact Slide Stages (Vertical) | TSDS-5L Stage size □25/□40/□60/□65mm

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Inclination

Vacuum

**XYZ axis Stainless Steel Stages suitable for hard vacuum and clean room applications have the same design and performance as TSD stages.**

- Made completely of stainless steel, offering excellent corrosion resistance.
- Both the stage and micrometer head use high vacuum grease (YVAC2).



## Guide

► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

**Reference** Vacuum measurement data E199

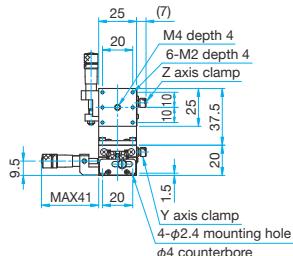
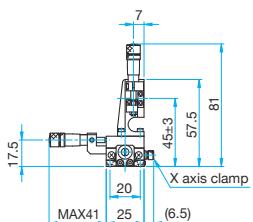
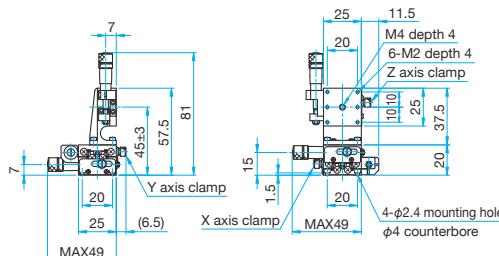
Also ideal for use in airtight spaces that have to avoid outgassing.

 15mm 25mm 40mm 60mm 65mm 80mm 100mm 120mm

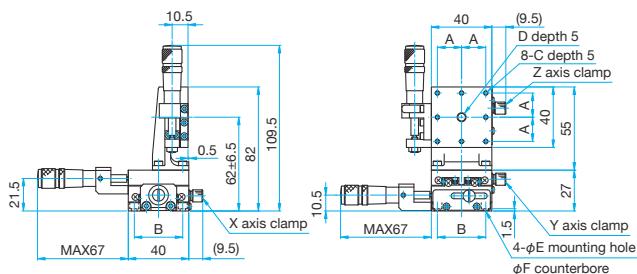
Others

## Specifications

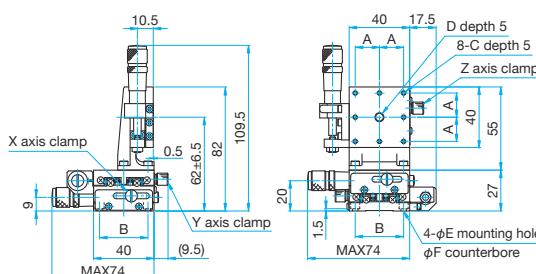
Part Number	METRIC	TSDS-255CL	TSDS-255SL	TSDS-405CL	TSDS-405SL	TSDS-605CL	TSDS-605SL	TSDS-655CL-M6	TSDS-655SL-M6
	INCH	—	—	TSDS-405CLUU	TSDS-405SLUU	—	—	TSDS-655CLUU	TSDS-655SLUU
Table Size [mm]		25×25	25×25	40×40	40×40	60×60	60×60	65×65	65×65
Axes of Travel		XYZ axis							
Micrometer Position		Center	Side	Center	Side	Center	Side	Center	Side
Travel [mm]		XY axis ±3 Z axis ±3	XY axis ±3 Z axis ±3	XY axis ±6.5 Z axis ±3	XY axis ±6.5 Z axis ±3	XY axis ±6.5 Z axis ±6.5			
Lead of Actuator [mm/rotation]		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Micrometer Readable Resolution [mm]		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Bearing type		Extended contact ball guide							
Primary Material		Stainless steel							
Finish		None							
Load Capacity [N]		14.7 (1.5kgf)	14.7 (1.5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)	49 (5kgf)
Travel Accuracy	Straightness [ $\mu\text{m}$ ]	1	1	1	1	1	1	1	1
Max. Moment Capacity	Pitch [ $\text{N}\cdot\text{m}$ ]	2.2	2.2	3.9	3.9	8.0	8.0	8.0	8.0
	Roll [ $\text{N}\cdot\text{m}$ ]	2.1	2.1	3.9	3.9	8.0	8.0	8.0	8.0
Moment Stiffness	Pitch [ $^{\circ}/\text{N}\cdot\text{cm}$ ]	6.7	6.7	1.26	1.26	0.58	0.58	0.58	0.58
Weight [kg]		0.2	0.2	0.6	0.6	1.7	1.7	2.0	2.0

**Outline Drawing****TSDS-255CL** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws**TSDS-255SL** Hexagon socket head cap screw (stainless steel construction) M2x4...4 screws**TSDS-405CL/405CLUU**

Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)

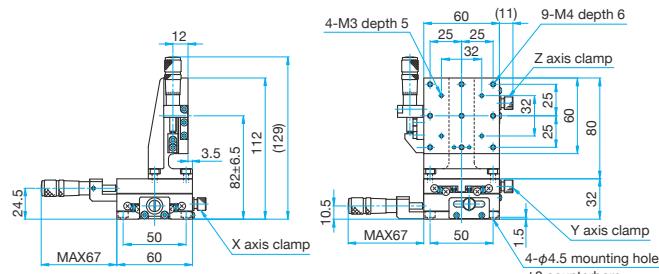
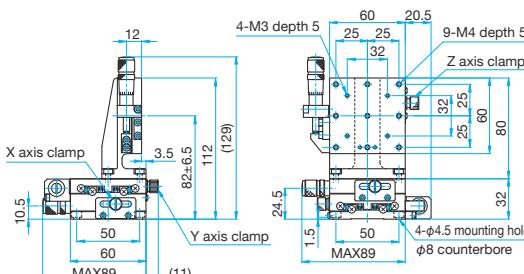
**TSDS-405SL/405LUU**

Hexagon socket head cap screw (stainless steel construction) M3x6...4 screws, Spring washers  
 Hexagon socket head cap screw (stainless steel construction) 6-32UNCx3/16...4 screws (UU)

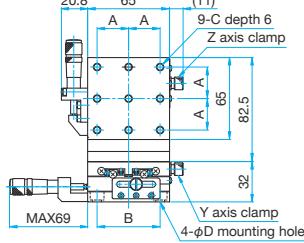
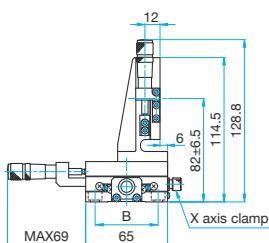


Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-405CL	16	32	M3	M6 P1	3.5	6
TSDS-405CLUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

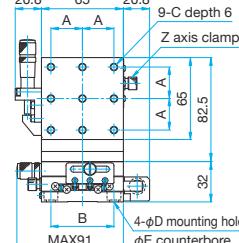
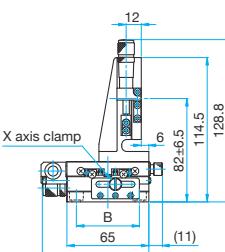
Part Number	A (mm)	B (mm)	C	D	E (mm)	F (mm)
TSDS-405SL	16	32	M3	M6 P1	3.5	6
TSDS-405LUU	15.875	31.75	6-32UNC	1/4-20UNC	4	6.5

**TSDS-605CL** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws**TSDS-605SL** Hexagon socket head cap screw (stainless steel construction) M4x6...4 screws**TSDS-655CL-M6/655CLUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)

**TSDS-655SL-M6/655SLUU**

Hexagon socket head cap screw (stainless steel construction) M6x6...4 screws (M6)  
 Hexagon socket head cap screw (stainless steel construction) 1/4-20UNCx1/4...4 screws (UU)



Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-655CL-M6	25	50	M6	6.5	11
TSDS-655CLUU	25.4	50.8	1/4-20UNC	7	12

Part Number	A (mm)	B (mm)	C	D (mm)	E (mm)
TSDS-655SL-M6	25	50	M6	6.5	11
TSDS-655SLUU	25.4	50.8	1/4-20UNC	7	12

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Dovetail

Lapping

V Groove Screw

Ohters

15mm

25mm

40mm

60mm

65mm

80mm

100mm

120mm

Others

# Stainless Steel Rotation Stages | KSPS

RoHS

Catalog  
Code

W7087

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Dovetail

Lapping

V Groove Screw

Ohters

15mm

25mm

40mm

60mm

65mm

80mm

100mm

120mm

Others

**θ axis (rotation) coarse/fine adjustment stages that use a fitting method, offering coarse rotation adjustment of 360° and fine adjustment (micrometer head).**

**Directly rotate the stage top plate for coarse adjustment, and clamp the coarse adjustment part and use micrometer head ( $\pm 5^\circ$ ) for fine adjustment.**

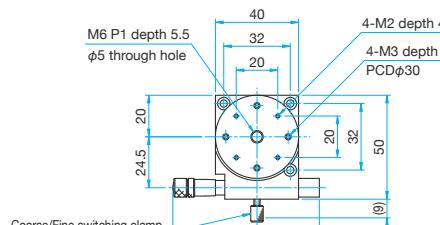


- Made completely of stainless steel, offering excellent corrosion resistance. Both the stage and micrometer head use high vacuum grease (YVAC2).

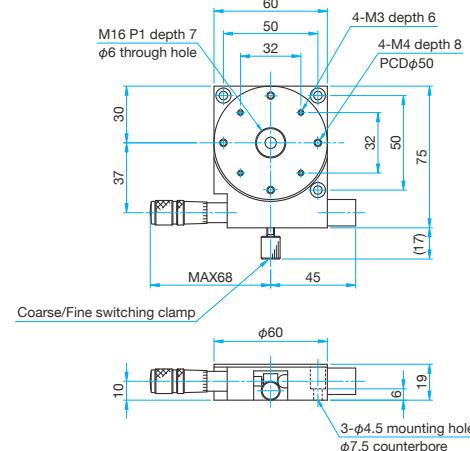
[2D CAD](#) [3D CAD](#)

## Outline Drawing

**KSPS-406M** Hexagon socket head cap screw (stainless steel construction)  
M3x6...3 screws



**KSPS-606M** Hexagon socket head cap screw (stainless steel construction)  
M4x10...3 screws



## Specifications

Part Number	METRIC	KSPS-406M	KSPS-606M
Table Size [mm]		φ40.0	φ60.0
Angle of Rotation [°]		Coars: 360° Fine: $\pm 5^\circ$	Coars: 360° Fine: $\pm 5^\circ$
Micrometer Position		Center	Side
Scale Readable Resolution		2°	1°
Micrometer Readable Resolution		$\pm 1'24.2''$	$\pm 55.8''$
Bearing type		Lapping method	
Primary Material		Stainless steel	
Finish		None	
Load Capacity [N]		49 (5.0kgf)	68.6 (7.0kgf)
Max. Moment Capacity [N·m]		0.3	0.75
Moment Stiffness ["/N·m]		1.5	1
Parallelism [μm]		30	50
Eccentricity [μm]		20	20
Wobble [μm]		20	20
Weight [kg]		0.3	0.6

# $\alpha$ axis Stainless Steel Goniometers $\alpha\beta$ axis Stainless Steel Goniometers

GOHS-40A Stage size □40mm

**RoHS**

Catalog Code W7099

GOHS-40B Stage size □40mm

**RoHS**

Catalog Code W7107

Goniometers fitted with dovetail groove and worm gear, suitable for orientation adjustment (angle adjustment or correction).

Best suited for use in vacuum because high vacuum grease (YVAC2) is used.



## Guide

► The TSDS series offers stages suitable for use in clean rooms or vacuum applications.

Reference Vacuum measurement data E199

Also ideal for use in airtight spaces that have to avoid outgassing.

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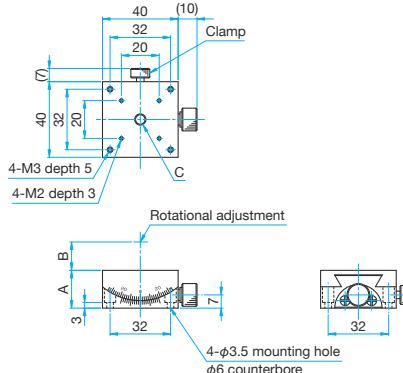


## Outline Drawing

### GOHS-40A15/35

Hexagon socket head cap screw (stainless steel construction)  
M3x6...4 screws

Ø 2.5mm

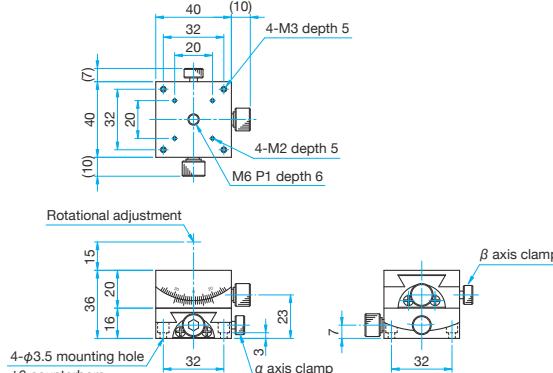


Part Number	A (mm)	B (mm)	C
GOHS-40A15	20	15	M6 P1 depth 6
GOHS-40A35	16	35	M4 depth 4

### GOHS-40B15

Hexagon socket head cap screw (stainless steel construction)  
M3x6...4 screws

Ø 2.5mm



## Specifications

Part Number	METRIC	GOHS-40A15	GOHS-40A35	GOHS-40B15
Table Size [mm]		40x40	40x40	40x40
Axes of Travel		$\alpha$ axis	$\alpha\beta$ axis	
Rotation Center Height [mm]		15±0.1	35±0.1	15±0.1
Angle Range [°]		±20	±20	±20
Vernier Readable Resolution		12'	12'	12'
Travel per Knob Rotation [°]	(Upper) $\beta$ axis	—	—	about 2.83°
	(Lower) $\alpha$ axis	about 2.83°	about 1.74°	about 1.74°
Rotation Center Displacement [mm]		φ2mm or less	φ2mm or less	φ2mm or less
Bearing type		Dovetail slide method		
Primary Material		Stainless steel		
Finish		None		
Load Capacity [N]		68.7 (7.0kgf)	68.7 (7.0kgf)	68.7 (7.0kgf)
Max. Moment Capacity	Pitch [N·m]	0.9	0.9	0.9
	Roll [N·m]	1.2	1.2	0.9
Moment Stiffness	Roll ["/N·m]	0.51	0.51	—
Parallelism [ $\mu$ m]		50	50	100
Weight [kg]		0.25	0.2	0.45

Ball Guide

Crossed Roller

Dovetail

Lapping

V Groove Screw

Ohters

□15mm

□25mm

□40mm

□60mm

□65mm

□80mm

□100mm

□120mm

Others

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Lapping

V Groove Screw

Others

15mm

25mm

40mm

60mm

65mm

80mm

100mm

120mm

Others