

Graplate (Precision Granite Surface Plate)

【Foreword】

Thank you for purchasing the Mitutoyo Graplate (Precision Granite Surface Plate).

- This User's Manual describes the precautions to be observed with Graplate and the installation procedure. Carefully read this user's manual to obtain the highest performance from your Graplate and to use it effectively.
- After reading this manual keep it near the Graplate for quick reference.
- Mitutoyo assumes no liability to any party for any loss or damage, direct or indirect, caused by use of the Graplate.
- The description in this manual is subject to change without notification.

【Safety Precautions】

WARNING To obtain the highest performance from the Graplate and the use it safely, observe the following precautions. Mitutoyo assumes no liability to any party for damage or problems resulting from not observing the precautions.

- Exercise care so as not to drop a workpiece or tools the top surface of the Graplate.
- Place only essential workpieces and tools on the surface plate.
- Do not exert a force greater than the critical strength on the Graplate and do not subject it to strong shocks. Personal injury may result due to breakage, etc. Disperse the load as broadly across the plate as possible.
- The Graplate is supported at three points. The Graplate may tilt if a workpiece or other object is positioned on the surface with no support leg. Pay special attention to critical unbalanced loads (see the specifications) if the Graplate (1000×750mm or smaller) does not have auxiliary legs.
- If a workpiece with a large thermal difference is placed on the Graplate, it may be damaged due to internal stresses. Do not place a workpiece with a thermal difference of more than 30°C on the Graplate.
- Operators should wear appropriate clothing. Shoes are of special importance.
 - ① Never use slippers. Wear safety shoes.
 - ② Prevent cuts and abrasions to arms due to sharp workpiece edges by wearing long-sleeved shirts.
- Do not sit or step on the Graplate.

【Precautions On Use】

WARNING To obtain the highest performance from this Graplate and to use it correctly, observe the following precautions.

- Wipe dust dirt from the top surface before placing or moving a workpiece on the surface. Dust and dirt will accelerate scratch and wear on the surface.
- Gently place workpiece and tools on the Graplate.
- Use the whole surface evenly. Do not constantly use the same region of the surface, otherwise local wear will result.
- Never hammer on the Graplate. The surface may peel or crack.
- Immediately wipe water and oil from the work surface with cloth or paper. If spills are not wiped up promptly, the flatness will deteriorate.
- When measuring a workpiece on the Graplate take the change in flatness, due to warp of the surface plate caused by workpiece load, into consideration.
- To maintain the flatness of the work surface, use the Graplate under stable environmental conditions that are as close to the recommended ones as possible.
- Be sure to perform maintenance.

【Operating Environment】

《Operating environment》 ··· Temperature : 0 to 40°C

《Recommended environmental conditions》 ··· Temperature : 20°C, Humidity : 58%

※ The flatness of the Graplate is guaranteed under the recommended environmental conditions.

(Temperature environment)

Install the Graplate at sites with as little thermal fluctuations as possible. Avoid sites that are directly exposed to sunlight or the conditioners. It is also important to eliminate the thermal differences within the room, that cause the difference in temperature between the top surface and the bottom surface of the Graplate.

(Humidity environment)

The Graplate expands if it absorbs moisture. Since it may deform depending on the amount of moisture in the air, it is advisable to use the Graplate under the recommended environmental conditions.

【Maintenance】

- Be sure to cover the Graplate while it is not in use.
- After use, clean the work surface with alcohol.
- The work surface of the Graplate is subject to abrasion. According to the frequency of use, inspect the work surface periodically to determine the extent of abrasion. The Graplate requires repair if the abrasion exceeds the limit. For information about calibration and repair, contact your dealer or the nearest Mitutoyo sales office.

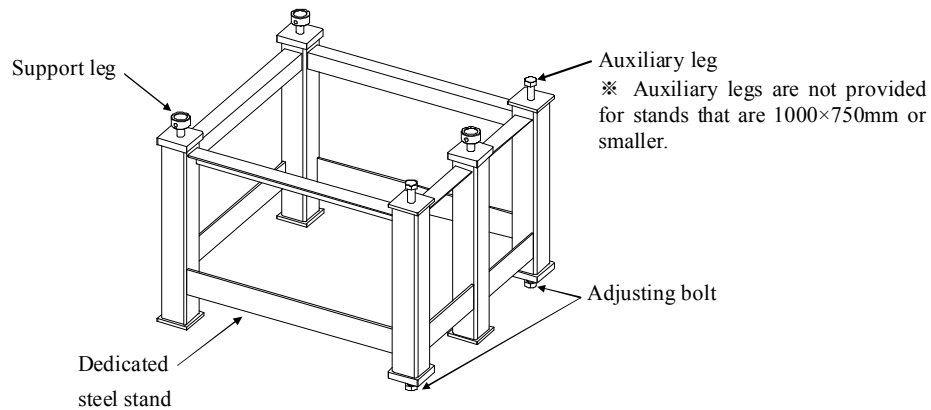
【Installing The Graplate】

Select a Graplate installation site which has a foundation that is solid enough to support it.

《Installation procedure with dedicated steel stand》

- ① Install the steel stand on the floor. Stabilize the stand with the adjusting bolt on one of the four legs.

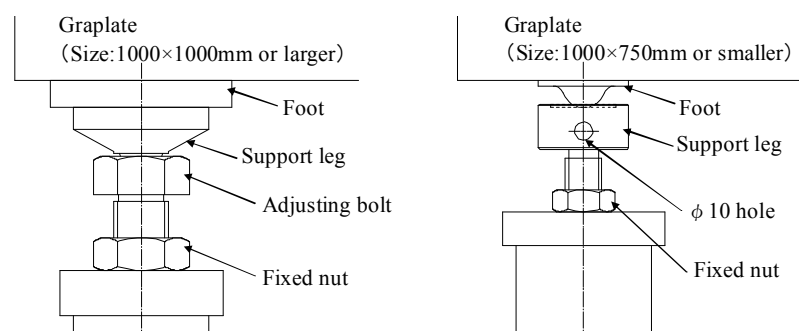
WARNING When installing the stand with casters, fix the stand with adjusting bolts and make sure the stand is stabilized.



- ② Install the Graplate on the dedicated steel stand using a block and tackle or other lifting machinery.

WARNING The Graplate has very slippery surface. Exercise great care when installing the Graplate.

- ③ Position the feet that are stuck to the bottom surface of the Graplate on the support legs on the stand. Position the feet at each center of the legs.



Dedicated steel stand for large scale

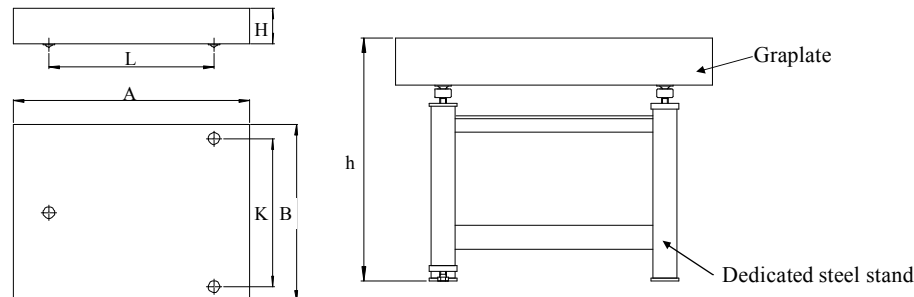
Dedicated steel stand for small scale

※ Rotate the adjusting bolt and adjust height.

※ Rotate the supporting leg by using the φ 10 hole and adjust height.

- ④ Place a level on the Graplate and level it by adjusting the height of the support legs (at 3 points). Tighten a fixed nut after it completes it. If the Graplate has auxiliary legs, gently bring them into contact with the bottom surface of the Graplate after leveling has been completed. The auxiliary legs are used to prevent the surface plate from tilting, and therefore they do not need hard contact.

【Specifications】



Order No.	Grade	Dimensions (mm)			Flatness (μm)	Critical strength (N)	Weight (kg)	Mass Dedicated steel stand (optional)			
		A×B×H	K	L				Standard Steel Stand	Drop Prevention Stand	Caster Wheel Stand	h(mm)
517-401	00	300×300×100	240	240	2	9,800	27				
517-301	0				3						
517-101	1				5						
517-411	00	450×300×100	240	390	2	4,900	40				
517-311	0				3						
517-111	1				6						
517-414	00	600×450×100	370	500	2.5	7,850	80	517-203	517-203R	517-203CR	755~775
517-314	0				4						
517-114	1				8						
517-403	00	600×600×130	500	500	2.5	17,600	140	517-204	517-204R	517-204CR	755~775
517-303	0				5						
517-103	1				8						
517-405	00	750×500×130	420	630	3	15,700	146	517-205	517-205R	517-205CR	755~775
517-305	0				5						
517-105	1				9						
517-407	00	1000×750×150	630	700	3	19,600	337	517-206	517-206R	517-206CR	755~775
517-307	0				6						
517-107	1				12						
517-409	00	1000×1000×150	700	700	3.5	28,400	450	517-207	517-207R	517-207CR	755~775
517-309	0				7						
517-109	1				13						
517-413	00	1500×1000×200	700	1100	4	31,400	900	517-208	517-208R	517-208CR	755~775
517-313	0				8						
517-113	1				16						
517-410	00	2000×1000×250	600	1500	4.5	34,300	1,500	517-209	517-209R	517-209CR	755~775
517-310	0				9.5						
517-110	1				19						
517-416	00	2000×1500×300	1100	1500	5	78,400	2,700	517-210	517-210R	517-210CR	755~775
517-316	0				10						
517-116	1				20						
517-417	00	2000×2000×350	1500	1500	20	104,400	4,200	06AAY174			700~706
517-317	0				11						
517-117	1				22						
517-418	00	3000×1500×400	1100	2000	6.5	140,000	5,400	06AAY175			700~706
517-318	0				12.5						
517-118	1				25						
517-419	00	3000×2000×500	1500	2000	7	213,000	9,000	06AAY176			700~706
517-319	0				13.5						
517-119	1				27						

《Standard accessories》 ··· Vinyl sheet (1 sheet), Warranty card (1 PC.), User's Manual (1 PC.)

《Physical characteristics of granite》

The Graplate is made of granite or materials with equivalent or better physical characteristics. The following shows the reference values of those physical characteristics. The values are not guaranteed.

- Density : 3×10^6 kg/mm³
- Water absorption : 0.03% or less
- Hardness : Hv780
- Modules of longitudinal elasticity : 9 to 10×10^4 N/mm²
- Coefficient of linear expansion : 8.0×10^{-6} /K