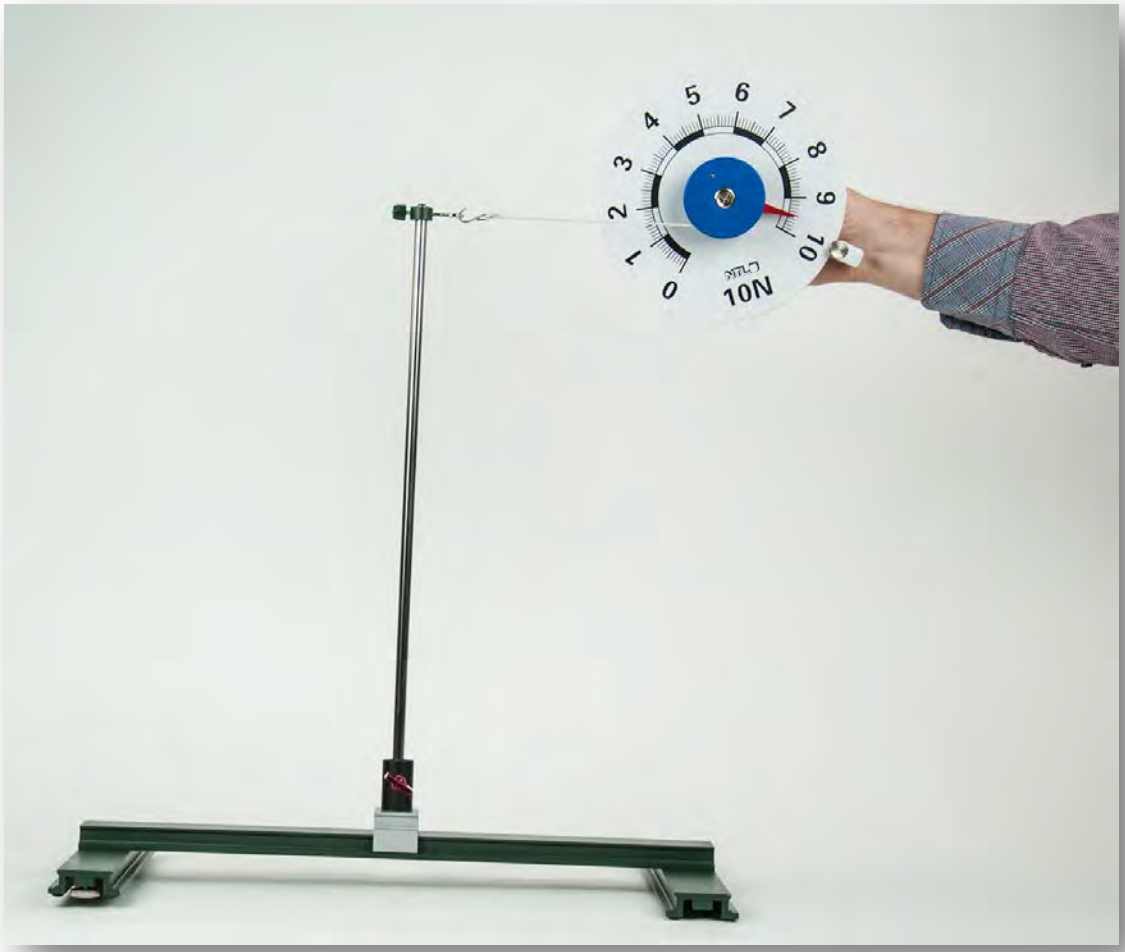
TILT STABILITY

MED 03.16



Material:

Item-no.	Qty.	Description
DS101-1G	1	Support base, large, L=500 mm
DS093-04	1	Sliding saddle "Sepp", H=40 mm
P7240-1G	1	Support rod, round, L=500 mm, D=10 mm
DS202-1R	1	Ring with hook
DM132-1C	1	Torsion dynamometer 2 N

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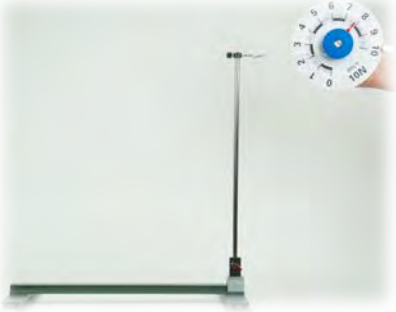
Purpose
Who wants a crane that falls over easily? How can we make a body more stable?

Preparation
Place the sliding saddle in the centre of the large support base and insert the 500 mm support rod into the sliding saddle; afterwards mount the ring with hook at the top of the support rod

Experiment 1
The load hook of the torsion dynamometer is hooked onto the hook of the ring. Pull with the Torsion dynamometer in horizontal direction as shown on the first image below

What force is required to bring the base out of the resting position?

Exp. 1



Exp. 2

Exp. 3

Experiment 2
Loosen the sliding saddle and move it to the right as shown on the second image above.
Again measure the force.

Experiment 3
Loosen the sliding saddle and move it to the left as shown on the third image above.
Again measure the force.

Experiment 4
Move the sliding saddle back to the centre of the support base. Mount the ring with hook on a lower height now as shown on the image on the right.

Take a dynamometer with a larger measuring range than 10 N (e.g. P1130-1H Dynamometer, 100 N, transparent) and measure the force again.
What force is required now to bring the base out of the resting position?

Conclusion
A body becomes more resistant to tipping when the point of attack is further away from the edge of its contact area.
A body becomes more resistant to tipping when the point of attack is closer to the ground of its contact area.

Note
Tilt resistance is the resistance of an object to tipping over around the edge of its contact area.