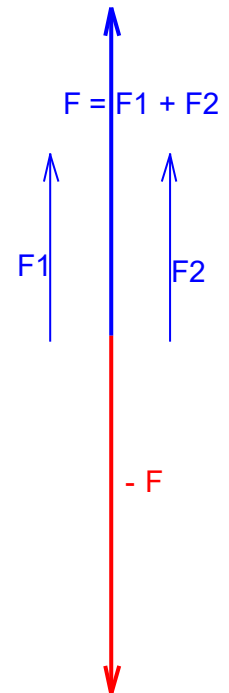


# COMPOSITION OF PARALLEL FORCES

MED 02.07



## Material:

Item-no.	Qty.	Description
DS101-1G	1	Support base, large, L 500 mm
DS093-04	1	Sliding saddle „Sepp“
DS201-75	1	Support rod, round, L=750 mm
DS095-3K	3	Boss head demo
DM132-1D	2	Torsion dynamometer 5N
DG200-1S	1	Cord, 500 m
DM725-ND	1	Newtonmeter
P3120-5B	1	S-shaped assembly platform

# COMPOSITION OF PARALLEL FORCES

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Purpose:

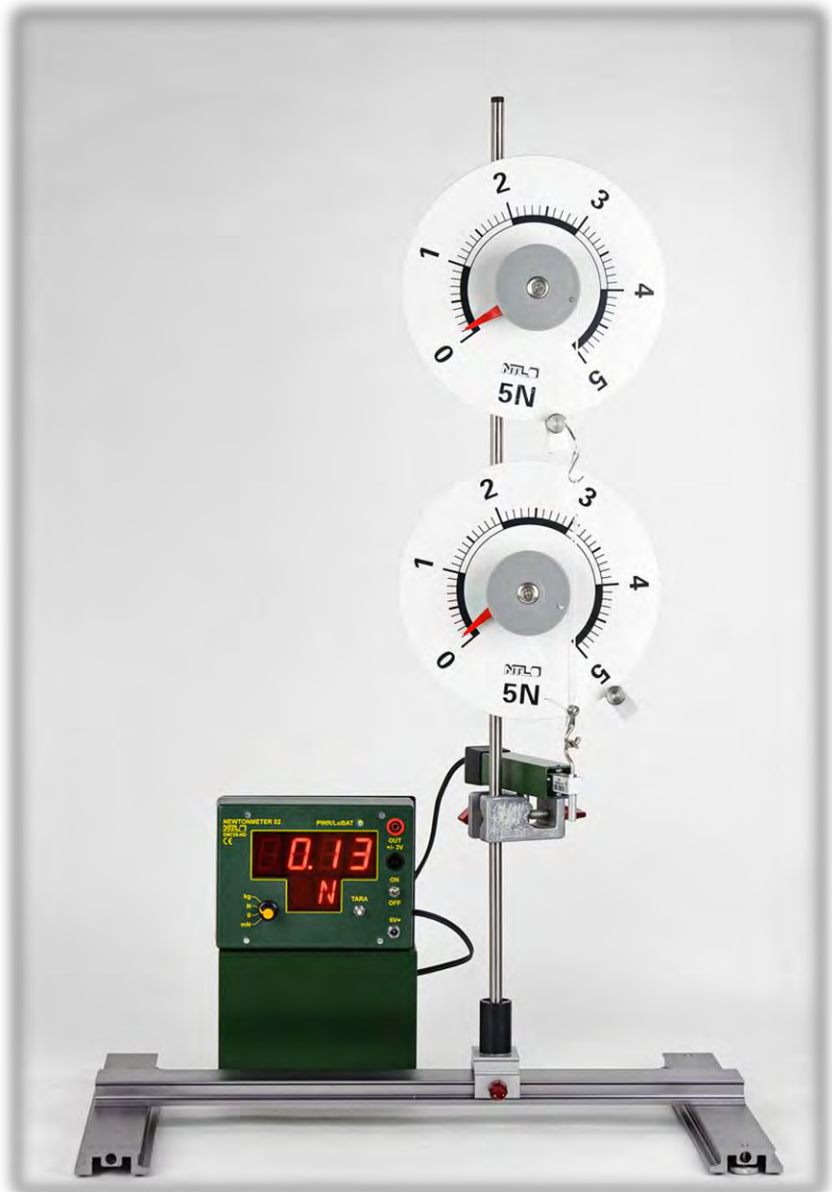
We want to investigate the composition of forces in the same direction and the resulting quantities.

Assembly:

The sliding saddle gets mounted on top of the saddle support base. Afterwards, the support rod gets placed into it.



In the middle of the support rod, two torsion dynamometers are being placed, by mounting them on the boss heads.



# COMPOSITION OF PARALLEL FORCES

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Underneath the dynamometer, the weighing beam of the newton meter gets fixed on the remaining boss head, with its hook directed upwards.

The hook of the bottom dynamometer is hooked with the hook of the weighing beam. The height of the dynamometer and the weighing beam can be adjusted as desired.

The hook of the upper dynamometer is being extended with the cord, which is provided with a loop. The loop is being hooked with the weighing beam

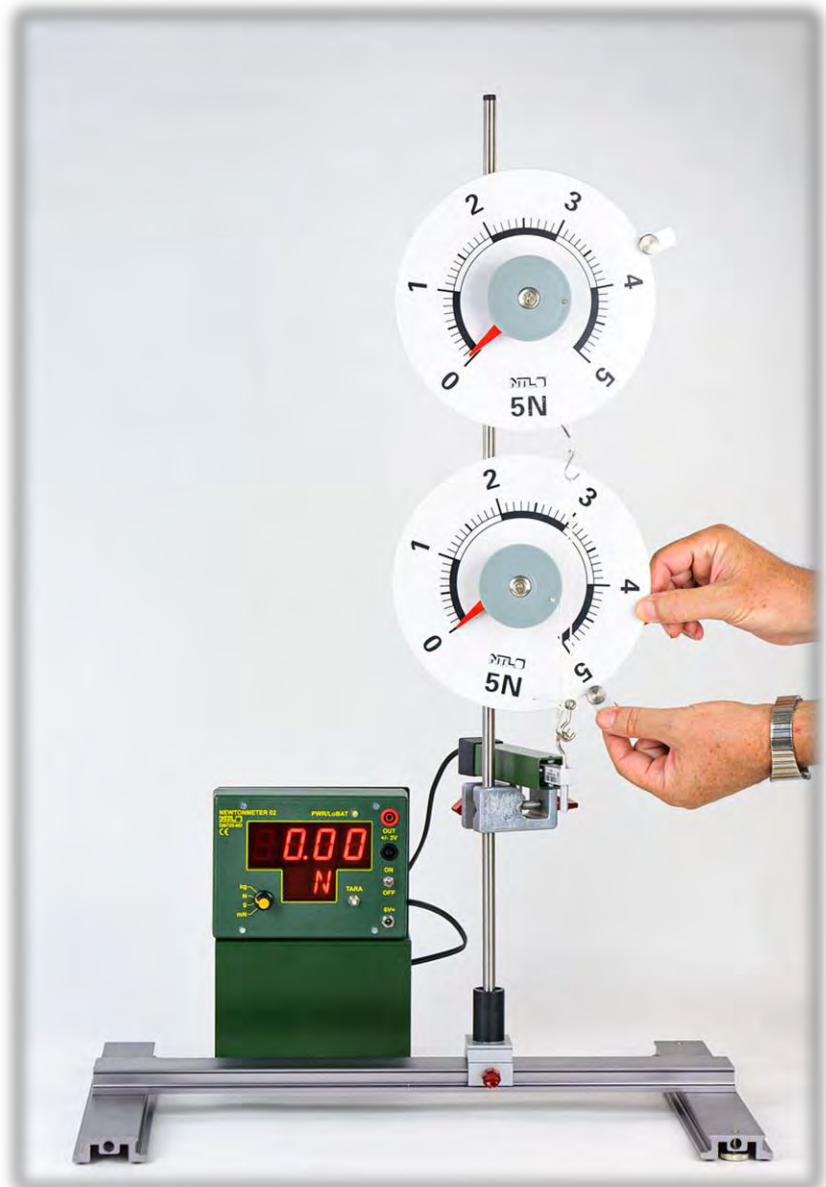
The upper dynamometer is gets adjusted, so that both cords are vertical and as close to each other as possible.

Both torsion dynamometers are being horizontally moved, until a small force is being displayed on their pointers. Afterwards, they are being fixed.

Both torsion dynamometers are getting tared to "zero", by rotating the scale accordingly.

The measurement area of the newtonmeter is set to "N" (Newton)

The newtonmeter is turned on and tared to „zero“.



# COMPOSITION OF PARALLEL FORCES

## Experiment series 1:

The boss head together with the weighing beam are being loosened on the rod and slowly pulled downwards.

Three measured values are determined in approximately 1 - newton steps. The values of the dynamometers and the newtonmeter are being read and entered into the table

## Experiment series 2:

The lower dynamometer together with the boss head is being loosened on the rod, slightly moved and fixed again.

The values are being read and entered into the table.

Afterwards, the upper dynamometer together with the boss head is being loosened on the rod and slightly moved and fixed again.



	Dynamometer 1 (upper) Force (N)	Dynamometer 2 (lower) Force (N)	Newtonmeter Force (N)
Measurement 1			
Measurement 2			
Measurement 3			
Measurement 4			
Measurement 5			

## Conclusion:

When forces of the same direction are combined, their magnitudes add up.  
In equilibrium, the following applies:  $F = F_1 + F_2$