

# dynamics - simple machines



## Plastic pulleys:

Pulleys with grooves, made of ABS plastic, centre hole D = 3.1 mm for inserting bearing pin with e.g. clamp on stem DS402-1P, magnetic base DS102-2L or sliding saddle with bearing pin DS402-ff.

- DM210-1A** Pulley, plastic, yellow, D=50 mm
- DM210-2A** Pulley, plastic, yellow, D=75 mm
- DM210-3A** Pulley, plastic, yellow, D=100 mm



## Pulley brackets:

Aluminium L-profile, green powder-coated, with adjustable hook and hook for suspension as well as tapped socket for support DM210-9S; adjustable bearing pins for mounting one or two pulleys to rotate

### P1230-2R

Bracket for pulleys D=75 mm  
Dimensions: 54x12x24 mm

### DM210-2B

Bracket for pulleys D=100 mm  
Dimensions: 75x35x24 mm

### DM210-9S

Support for pulley bracket

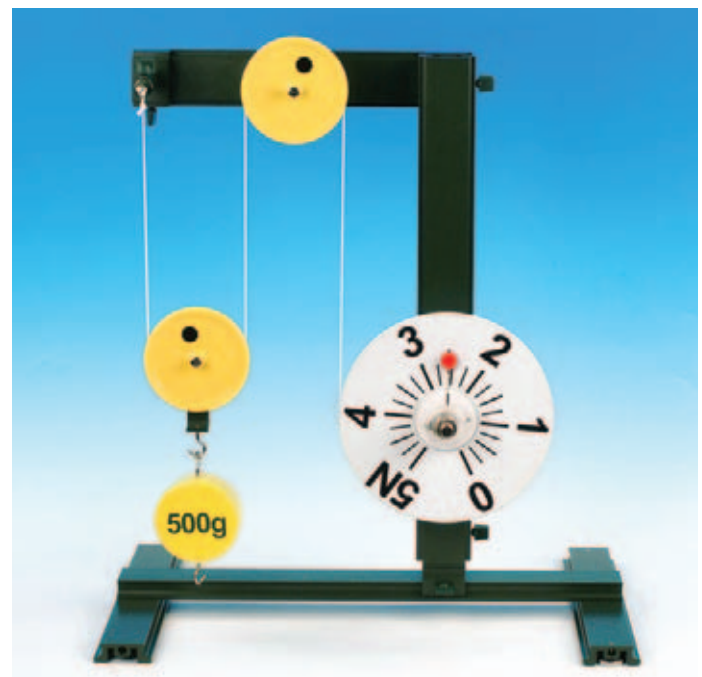


## Pulley on rod, consisting of:

Pulley bracket P1230-2R with pulley DM210-2A D=75 mm and threaded rod DM210-9S



Experiment: Fixed pulley



Experiment: Simple block and tackle



# dynamics - simple machines



**Pulley, movable, with bracket**  
 consisting of:  
 Pulley bracket P1230-2R with pulley  
 D=75 mm DM210-2A



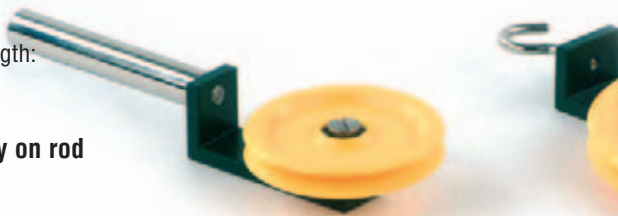
**Double pulley, movable, with bracket,**  
 consisting of:  
 Pulley bracket P1230-2R  
 with two pulleys  
 D=75 mm DM210-2A

**DM210-1K Pulley on rod, ball bearing**

D=50 mm  
 Rod: D=10 mm,  
 L=60 mm; total length:  
 approx. 130 mm

**DM210-1F Pulley on rod**

D=70 mm,  
 Rod:  
 D=10 mm, L=120 mm  
 (not shown)

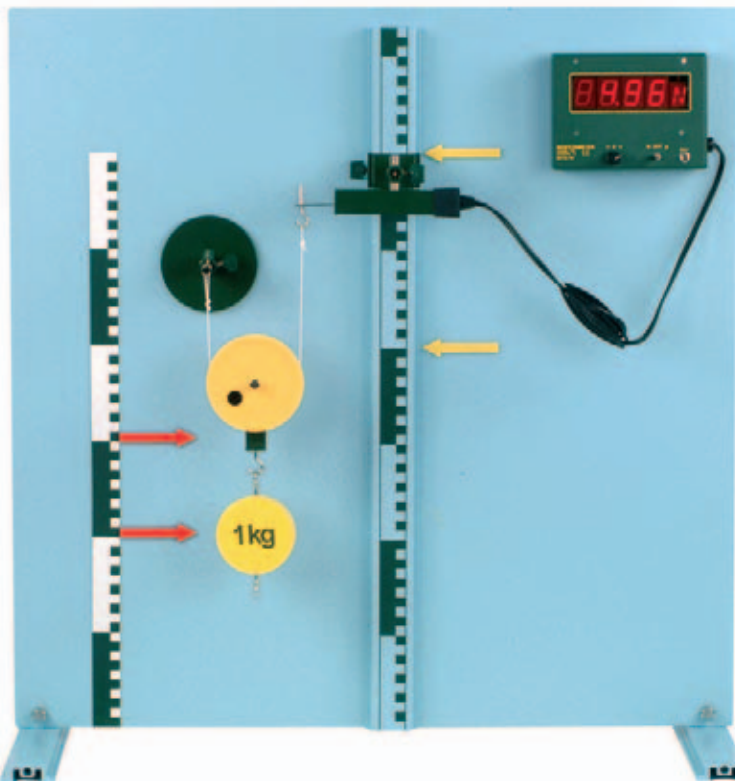


**DM210-2L Pulley, movable, with hook,**

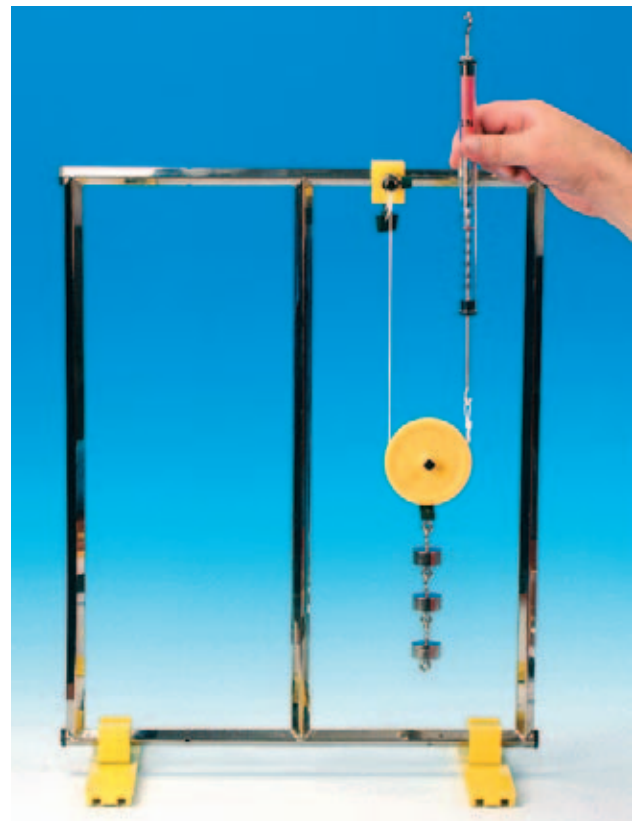
D=100 mm  
 Total length: approx. 144 mm

**DM210-1L Pulley, movable, with hook,**

D=70 mm,  
 weight=40 g  
 (not shown)



**Experiment:** Movable pulley, magnetically attached to assembly panel, measurement of force using Newton meter "inno" DM722-N



**Experiment:** Movable pulley "compact system"

# dynamics - simple machines



## DM210-2D Block and tackle with 4 pulleys

Block and tackle for demonstration with two pulleys per block mounted on top of each other; plastic pulleys with grooves for cord; one block with one hook, the other with twohooks

Pulley diameter: 75 and 100 mm, L = approx. 255 mm

Weight per block: 140 g

## DM210-1D Block and tackle, D=70 mm

Description like DM210-2D, but Pulley diameter: 50 and 70 mm; Weight per block: 80 g

(not shown)

## DM210-2P Parallel pulley block, pulley D=100 mm

Block and tackle for demonstrations, with two pulleys per block mounted beside each other; plastic pulleys with grooves for cord; one block with one hook, the other with two hooks Pulley diameter: 100 mm; L = approx. 145 mm

Weight per block: 140 g

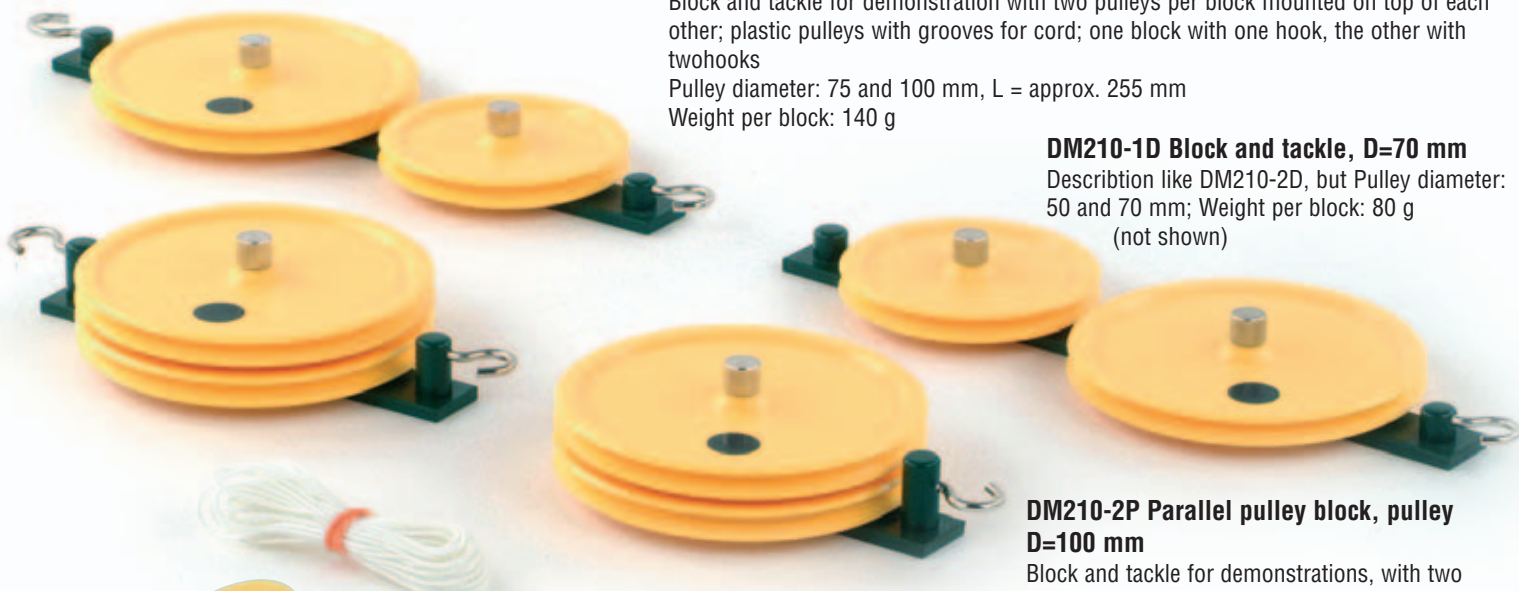
## DM210-1P Parallel pulley block, pulley D=70 mm

Description like DM210-2P, but Pulley diameter: 70 mm; Weight per block: 70 g

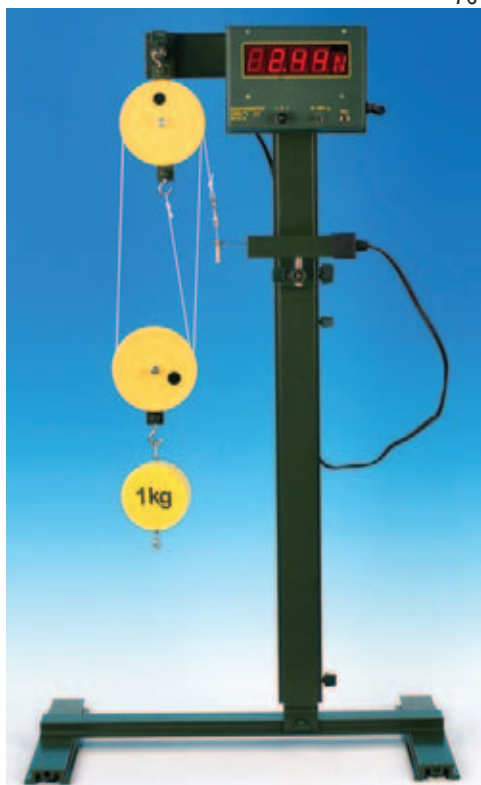
(not shown)

DG200-1S Cord, white,  
D=1.7 mm, L=5 m

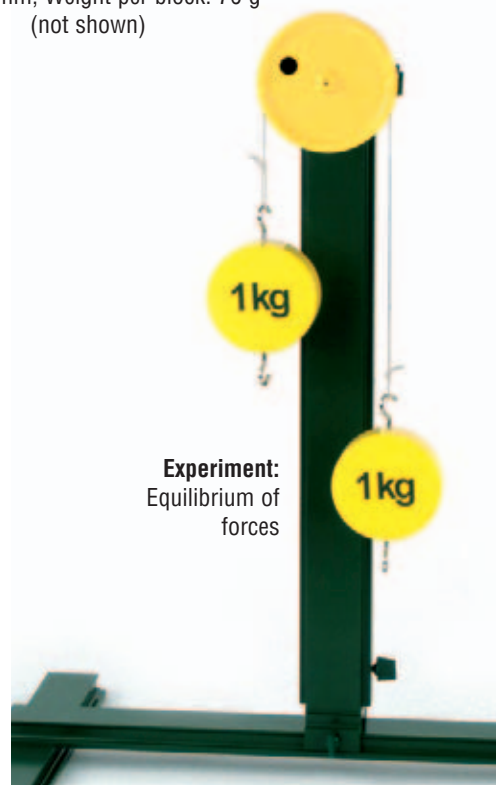
DM210-2K  
Pulley on rod, ball bearing,  
D = 100 mm  
Rod: D = 10 mm, L = 40 mm



**Experiment:**  
Block and tackle with 4 pulleys (in series) on assembly panel



**Experiment:** Block and tack with 4 parallel pulleys, measurement of force using newtonmeter "inno" DM722-1M



**Experiment:**  
Equilibrium of forces



# dynamics - simple machines

## DM215-1W Wheel and axle, demo

Three wheels of different colours connected together, each with groove; centre hole for rotating on bearing pin of the sliding saddle DS402-ff, clamp saddle on support with bearing pin, L=40 mm, DS402-1P or magnetic base DS102-3L; two holes in each wheel for attaching cords  
Wheel diameters: 150 / 100 / 50 mm



## P1230-1W Wheel and axle "compact"

consisting of:

- P1230-1L** Pulley with pin, D=50 mm
- P1230-2L** Pulley with holes, D=100 mm

## Belt pulleys and gears:

Centre hole for rotating on bearing pin (see pivoting methods mentioned above); hole for crank pin as well as for coupling pin DM208-1K when connecting several gears or pulleys



- DM210-50** Belt pulley D=50 mm, red
- DM210-75** Belt pulley D=75 mm, blue
- DM210-10** Belt pulley D=100 mm, yellow
- DM210-15** Belt pulley D=150 mm, green
- DS402-2N** Crank pin, L=50 mm
- DS401-1A** Drive belts, set of 2

Not shown:

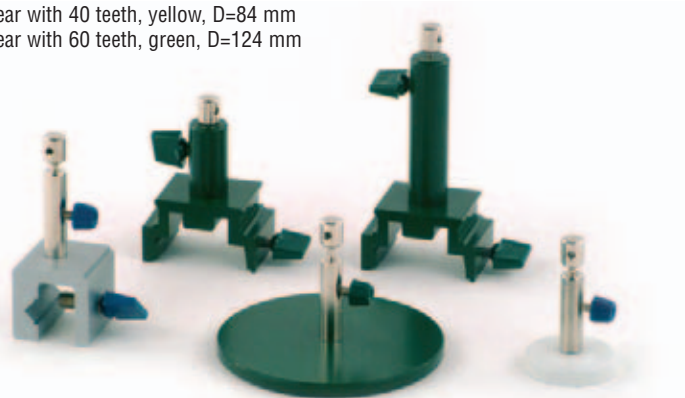
- DM208-1K** Coupling pin

For fastening together 2 - 3 belt pulleys DM210-ff or gears DM211-ff; nickel-plated steel pins with 4 mm plug pin

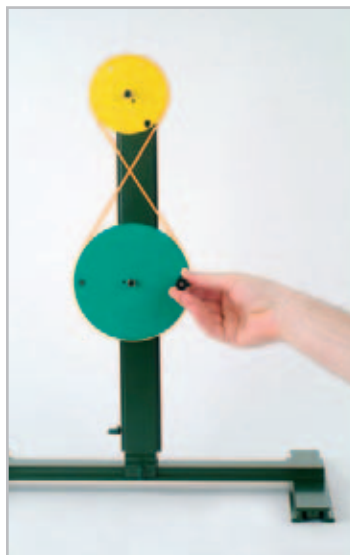
- DM211-20** Gear with 20 teeth, red, D=44 mm
- DM211-40** Gear with 40 teeth, yellow, D=84 mm
- DM211-60** Gear with 60 teeth, green, D=124 mm

## Recommended for mounting wheel and axle, gears and belt pulleys on

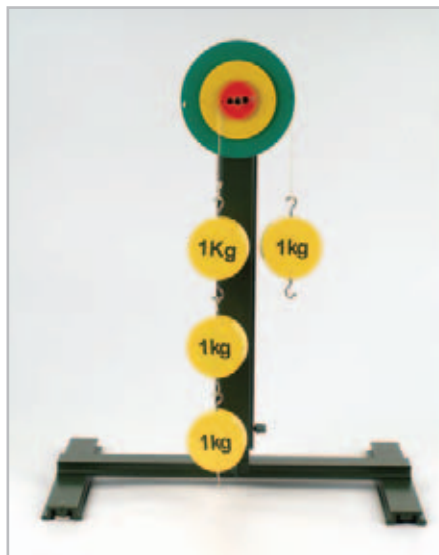
- a) Support rods:  
DS402-1P Clamp on support with bearing pin, L=40 mm
- b) Stand rails:  
DS403-3R Sliding saddle with bearing pin, H=34 mm  
DS403-7R Sliding saddle with bearing pin, H=70 mm
- c) Magnetic panel:  
DS100-1L Magnetic Base with bearing pin, D=40 mm  
DS102-2L Magnetic Base with bearing pin, D=100 mm



Experiment: Gear transmission



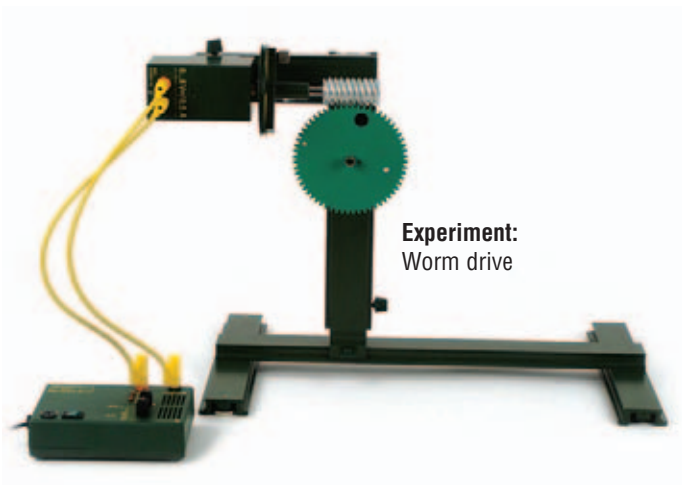
Experiment: Belt drive



Experiment: Wheel and axle demo



Experiment: Wheel and axle "compact"



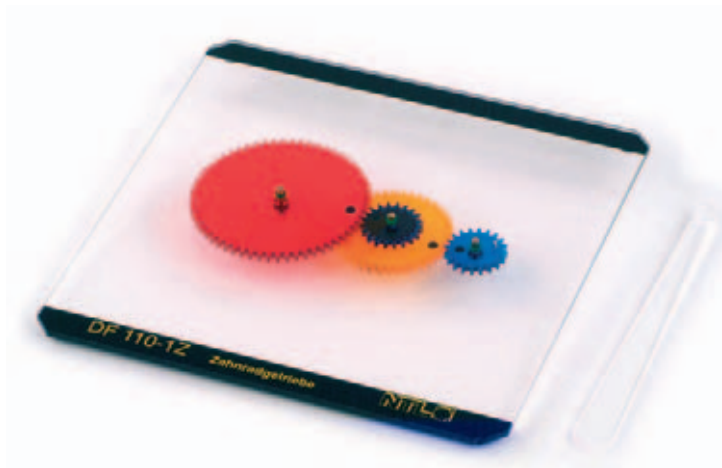
**Experiment:**  
Worm drive



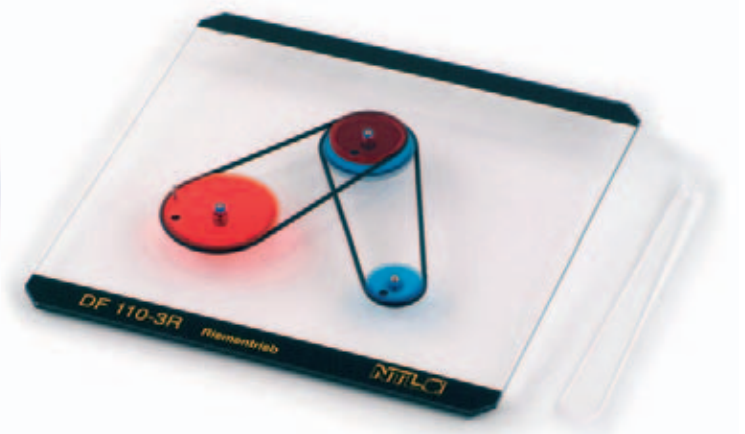
**DM212-2G Worm gear on rod**

Worm: D=30mm, L=60 mm; rod: D=10 mm  
Gear ratio of 1:20 is obtained when used with 60-tooth gear DM211-60

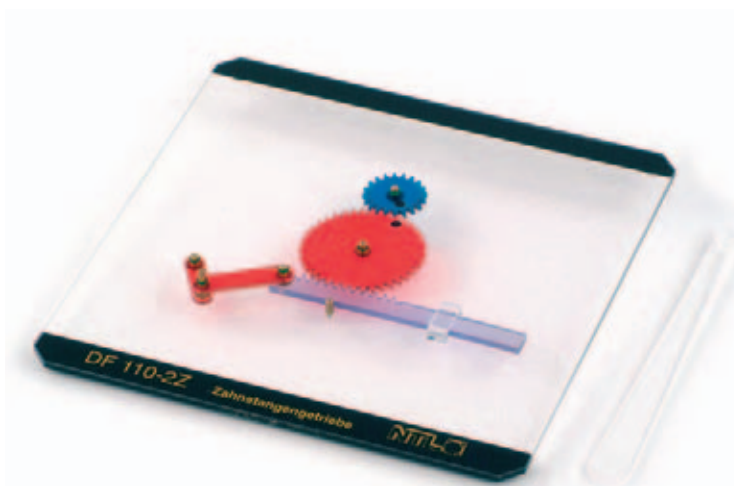
Overhead functioning models (OFM) made of acrylic, with individual parts in various colours, with drive shaft  
Basic panel: 248x248 mm



**DF110-1Z** Gear transmission, OFM



**DF110-3R** Belt drive, OFM



**DF110-2Z** Rack and pinion gear drive, OFM



**DF110-3K** Concentric disks, OFM