1.3.16-11 Centrifugal force with Cobra3

**Principle:**
A body with variable mass moves on a circular path with adjustable radius and variable angular velocity. The centrifugal force of the body will be measured as a function of these parameters.

**Typical evaluation of central force as a function of the square of angular velocity.**

**What you can learn about:**
- Centrifugal force
- Centripetal force
- Rotary motion
- Angular velocity
- Apparent force

**What you need:**
- Cobra3 BASIC-UNIT, USB 12150.50 1
- Power supply 12V/2A 12151.99 1
- Newton measuring module 12110.00 1
- Newton Sensor 12110.01 1
- Software Cobra3 Force/Tesla 14515.61 1
- Centrifugal force apparatus 11008.00 1
- Car for measurements and experiments 11060.00 1
- Holding pin 03949.00 1
- Laboratory motor, 220 VAC 11030.93 1
- Gearing 30:1 11029.00 1
- Bearing unit 02845.00 1
- Driving belt 03981.00 1
- Support rod with hole, stainless steel, \( l = 10 \text{ cm} \) 02036.01 1
- Support rod - PASS-, square, \( l = 250 \text{ mm} \) 02025.55 1
- Right angle clamp - PASS- 02040.55 1
- Bench clamp - PASS- 02010.00 3
- Fishing line on spool, \( d = 0.5 \text{ mm}, \ l = 100 \text{ mm} \) 02090.00 1
- Slotted weights, 10 g, coated black 02205.01 4
- Slotted weight, 50 g, coated black 02206.01 2
- PC, Windows® 95 or higher

**Tasks:**
- Determination of the centrifugal force as a function of
  1. the mass,
  2. the angular velocity,
  3. the distance from the axis of rotation to the centre of gravity of the car.