

Governor Apparatus – SD-1.61

Compact, bench top apparatus to demonstrate the principle of operation of various centrifugal force governors. A motor driven vertical shaft has a chuck mounting which allows the easy attachment of the three governor mechanisms supplied. The shaft is speed controlled with the speed displayed on the front panel.

Three governors are supplied: Porter, Proell and Hartnell. Each governor is fully assembled, ready for testing. The Porter and Proell governors incorporate governor masses that can be removed to vary the rotating mass. Sleeve weights can also be added to these two governors using the slotted weights provided. The slotted weights are profiled not to come off during testing.

The Hartnell governor incorporates a compression spring. This controls the movement of the central sleeve, by adjusting the spring tension using the adjustment knob on the vertical shaft. The vertical stroke of each governor can be measured using the increments on each of the governor shafts.

A transparent safety cover keeps rotating parts away from the students. A cut-off micro switch ensures the power to the motor is removed if the safety cover is not present.

BENCH TOP APPARATUS TO DEMONSTRATE THE PRINCIPLE OF OPERATION OF VARIOUS CENTRIFUGAL FORCE GOVERNORS



Experimental content

- ▶ Geometry and operation of a Porter, Proell and Hartnell governor
- ▶ To observe the lift off speed of the three different types of governor
- ▶ To observe the stability of a governor
- ▶ To observe the affect of varying sleeve weight or spring force on the operation of a governor
- ▶ To compare actual results with calculated theoretical values

Related laws

- ▶ Centrifugal force
- ▶ Rotational motion of a body
- ▶ Geometry
- ▶ Characteristic curves
- ▶ Lift off speed
- ▶ Stability
- ▶ Speed control

Requirements

Scale



Electrical supply: 110/120V, 60Hz or 220/240V, 50Hz

Ordering specification

- ▶ 1 x SD-1.61
- ▶ 1 x Protective dome
- ▶ 1 x Proell governor
- ▶ 1 x Porter governor
- ▶ 1 x Hartnell governor
- ▶ 8 x Hartnell mass
- ▶ 1 x Power supply
- ▶ 1 x Alternative hartnell spring
- ▶ Locking handle
- ▶ Instruction manual

Overall dimensions

Length	0.500m
Width	0.500m
Height	0.450m

Packed and crated shipping specifications

Volume	0.33m ³
Gross weight	42kg

Technical specification

- ▶ Porter governor radial travel range: 80-100mm
- ▶ Proell governor radial travel range: 75-100mm
- ▶ Hartnell Spring rates: 0.39N/mm and 0.97N/mm
- ▶ Porter and Proell Sleeve masses: 58g
- ▶ Porter and Proell masses: 157g
- ▶ Hartnell masses: 118g
- ▶ Hartnell mass adjustment range: 20mm
- ▶ 3mm increment indications on vertical shafts

Features / benefits

- ▶ Self-contained bench top unit
- ▶ Three classic governors supplied; Porter, Proell, Hartnell
- ▶ Easily interchanged
- ▶ Speed controlled and digitally displayed
- ▶ Additional sleeve weights supplied

Operational conditions

- ▶ Storage temperature: -10°C to +70°C
- ▶ Operating temperature range: +10°C to +50°C
- ▶ Operating relative humidity range: 0 to 95%, non-condensing

Ordering codes

- ▶ SD-1.61-A Governor Apparatus