



## EPICYCLIC GEAR TRAIN

### HTM13



**Year 2**  
study

#### Features

- Wall Mounted Dual Epicyclic Gears
- Can be mounted to HST1, HST100, HAC10, HAC14, HVT12f frames
- Plastic gears for smooth operation and noise reduction
- Gear ratios can be adjusted
- Locking devices to stop rotation while setting up weights
- Transparent Gear Guards for safety and visibility
- All weights supplied

#### Description

This apparatus consists of two standard epicyclic gear trains. Each gear train consists of a sun gear in the centre, three planet gears, a planet linkage and an internal or ring gear. The sun gear, ring gear and planet carrier all rotate about the same axis. The planet gears are mounted on shafts that turn in planet carrier and meshes with both the sun gear and the ring gear. Pulleys fitted with protractors are attached to the input and output shaft so that torque and velocity ratios may be determined. Torques can be applied to the shaft by adding weights on cords wrapped on the pulleys. Bearings are used in the entire unit to minimize friction losses. The apparatus can be operated in one a variety of modes. Locking pins are used to holding different parts of the apparatus in position. This gives the user different options on gear ratios that can be applied between the input and output shafts. By changing the combinations between the first and second epicyclic gear sets a wide range of ratios and different output directions can be produced. Efficiencies can be calculated for the units operation as well as theory tables given for the different gear combinations.

**Related Laws/Applications**

- Automotive
- Epicyclic Gears
- Sun, planet, Annulus
- Gears
- Meshing
- Ratios
- Torque
- Efficiency
- Mechanical Advantage
- Load and Effort
- Machine Performance

**Learning capabilities**

- Calculate and experimentally observe the angular velocity ratios of gear trains
- Experimentally obtain the torque ratios of gear trains, gear ratios, efficiencies and velocity ratios can be calculated
- Calculate the efficiencies of gear trains and draw efficiency curve

**Technical Specification**

- 2 x Sun Gear: 48T, 72PCD, MOD1
- 6 x Planet Gear: 16T, 24PCD, MOD1.5
- 2 x Annulus Gear: 80T, 120PCD
- 2 x Protractor: 0..360°, 1° increments
- 2 x Pulley: Ø87.5mm

**Essential Ancillaries**

- Sturdy vertical support such as HAC14, HAC10, HST1, HST100 or HVT12F

**What's in the Box?**

- 1 x HTM13 assembled
- 1 x Accessories container
- 4 x Load hanger (100g)
- 6 x 0.1N, 10 x 0.2N, 3 x 1N weights
- 4 x 2N, 3 x 5N, 3 x 10N weights
- 1 x Tape measure
- Spare Cord (10m)
- Instruction manual
- Packing list
- Test sheet

**You might also like**

- HTM98
- HTM25
- HTM7
- HTM73
- HTM34

**Weights & Dimensions**

- 380(L) x 250(W) x 200(H) mm
- Net Weight: 16 kg (approx.)
- Gross Weight: 23 kg (approx.)
- Packing Case Dimensions: 50(L) x 24(W) x 45(H) cm

**Essential Services**

- Sturdy vertical support
- Provision for mounting at eye level.

**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 information**

To order this product, please call PA Hilton quoting the following code: HTM13

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COUNTRY OF ORIGIN - UK WARRANTY PERIOD - 5 YEARS