



T-02 Forces in a 3-bar Truss

(1 **TS-02** Truss member Set2; 1 **SF-01**, 1 **SF-02** Spring Force actuator assemblies Types 1 and 2)

Aims: This experiment is designed to allow students to observe measure and compare the static displacements and associated force equilibrium conditions at the three connection nodes of a 3-bar truss (all members nominally of equal initial length and stiffness) to loading applied at the two active nodes (values and directions to be advised by the instructor from a Table).

Learning Outcomes:

After performing this experiment, students will be able to:

- (i) Use the Spreadsheet supplied to compare the predicted forces in each member of a 3-bar truss induced by the applied load cases considered using the method of joints with the experimentally obtained values of these forces.
- (ii) Reinforce their understanding of the principle of superposition in the context of application to a 3-bar pin-jointed truss.
- (iii) Appreciate the role played by a member's characteristic stiffness in the stiffness method in the evaluation of internal actions from the individual member elongation/contraction.

Equipment/Resources Required:

- (i) **TM-00** (Pixi with window frame in “landscape” configuration with transparent film & pens; Set of two adjustable assemblies of stainless steel weights; Digital Scales for weight force evaluation)
- (ii) A digital camera – Better than 8Mega Pixel preferred (Hi-Res phone cameras are suitable)
- (iii) **xyRectify** photogrammetric software on a suitable Notebook, Laptop or PC – if desired.

