

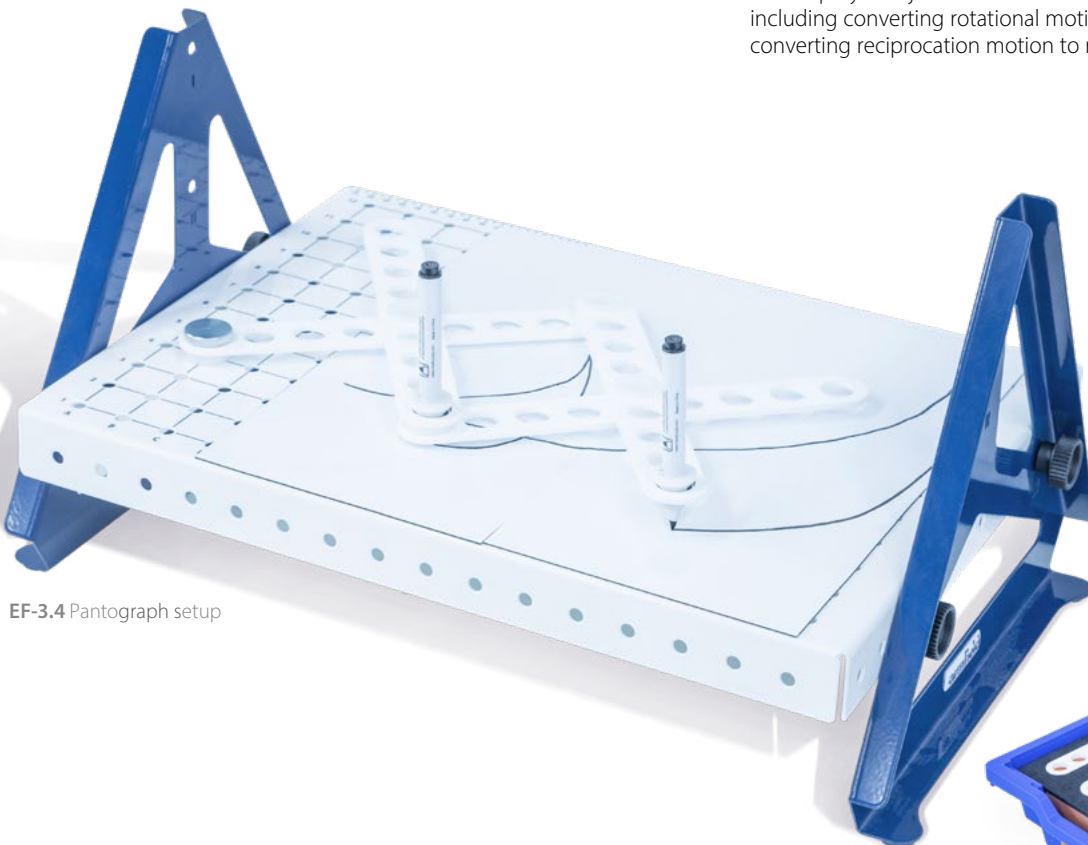
The Engineering Fundamentals range enables students to gain an understanding of the principles of engineering by the process of learning via experimentation.

The EF-3.4 Bar Linkages experiments kit comprises of different bars or links configured into a range of different linkage mechanisms, including four-bar linkages, rotary and linear movement and planar linkages allowing students to trace the relative movements of each linkage and joint.

AN INNOVATIVE HANDS ON MODULAR SYSTEM DESIGNED TO ENABLE INVESTIGATION AND THE UNDERSTANDING OF ENGINEERING PRINCIPLES

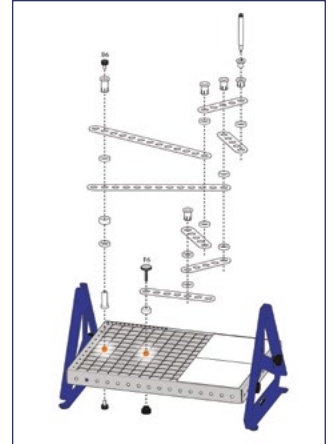
A linkage is an assembly of links and joints that provide a desired output motion in response to a specified input motion.

One such example and one of the simplest moveable closed-chain linkages is the four-bar which consists of four bars or links connected in a loop by four joints and can be used for many mechanical purposes including converting rotational motion to reciprocating motion and converting reciprocation motion to rotational motion.



EF-3.4 Pantograph setup

Easy to follow instructions

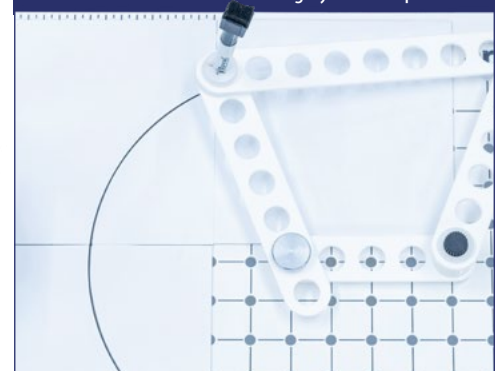


1 tray supplied with EF-3.4

Bar linkage experiments shown below, Harts Inversor, Crank Rocker and Peaucellier-Watt's linkage



Highly Visual Experiments



Engineering fundamentals system

The modular tray-based system is supplied in conjunction with a multifunctional base unit enabling the student to conduct their own experiments in subjects such as statics, dynamics, mechanisms and kinematics.

Each kit is supplied with a highly visual user-friendly operational guide, allowing the student to understand the theory of the subject by the application of practical experimentation.

Requirements

Scale

EF-BU

Experiment tray scale



EF-BU scale



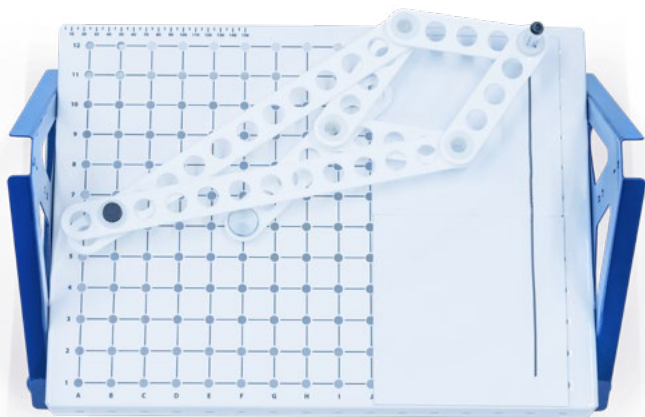
EF-WS scale



- ▶ EF-BU on which to build the experiment from the tray components
- ▶ Level and stable work surface to mount the EF-BU upon.
The optional EF-WS is ideal for this if no suitable desk or bench is available.

Experimental content

- ▶ Four-bar linkages – crank rocker, double rocker, drag link and parallelogram
- ▶ Determine degrees of freedom of a four-bar linkage
- ▶ Straight line linkages – Watt's straight line, Chebyshev, Peaucellier-Lipkin, Hart's inversor and Hoeken's
- ▶ The different ways motion is transferred from one motion to another. For example, linear to rotary and linear to rocking
- ▶ The different motions scribed by different locations on a bar linkage system
- ▶ What is meant by constrained motion?
- ▶ Pantograph
- ▶ Ackermann steering



Overall dimensions

Tray	
Length	0.430m
Width	0.312m
Height	0.080m
Packed and crated shipping specifications	
Volume	0.02m ³
Gross weight	5.0Kg

Features / benefits

Features

- ▶ Neatly presented in an easily identifiable and durable storage tray
- ▶ Trays have clear lids making it easy to see their contents
- ▶ Pictorial tray contents list to identify missing components easily
- ▶ Accompanied by a detailed manual with various practical exercises
- ▶ Clear and concise assembly instructions for each experiment
- ▶ Multiple experiments per kit
- ▶ Toolless assembly

Benefits

- ▶ Hands-on understanding from lessons
- ▶ Improve the student's dexterity by self-assembly with the instructions provided

Essential accessories / equipment

- ▶ EF-BU Base Unit

Related products

- ▶ EF-BU Base Unit

Statics Experiments

- ▶ EF-1.1 Forces
- ▶ EF-1.2 Moments
- ▶ EF-1.3a Beams
- ▶ EF-1.3b Trusses
- ▶ EF-1.4 Springs
- ▶ EF-1.5 Torsion

Dynamics Experiments

- ▶ EF-2.1 Friction
- ▶ EF-2.2 Simple Harmonic Motion
- ▶ EF-2.3 Rotational Friction
- ▶ EF-2.4 Potential and Kinetic Energy
- ▶ EF-2.5 Centrifugal and Centripetal Force

Mechanisms Experiments

- ▶ EF-3.1 Cam, Crank and Toggle
- ▶ EF-3.2 Simple Mechanisms
- ▶ EF-3.3 Additional Mechanisms
- ▶ EF-3.4 Bar Linkages

Kinematics

- ▶ EF-4.1 Pulleys
- ▶ EF-4.2 Gears
- ▶ EF-4.3 Drive Systems

Strength of Materials

- ▶ EF-5.1 Tensile Tester

Options

- ▶ EF-WS Workstation

Ordering specification

- ▶ 2 x 13 Hole linkage
- ▶ 4 x 9 Hole linkage
- ▶ 2 x 7 Hole linkage
- ▶ 4 x 5 Hole linkage
- ▶ Removable pivot pin – short, medium, long
- ▶ Stand – short, medium, long

Ordering codes

- ▶ EF-3.4 - Bar Linkages
- ▶ EF-BU - Base Unit
- ▶ EF-WS - Workstation (optional)

Armfield standard warranty applies with this product

Knowledge base

- > 28 years expertise in research & development technology
- > 50 years providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company



armfield.co.uk

Aftercare

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Commissioning
Training
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