armfield

Engineering Fundamentals - EF series

EF SERIES

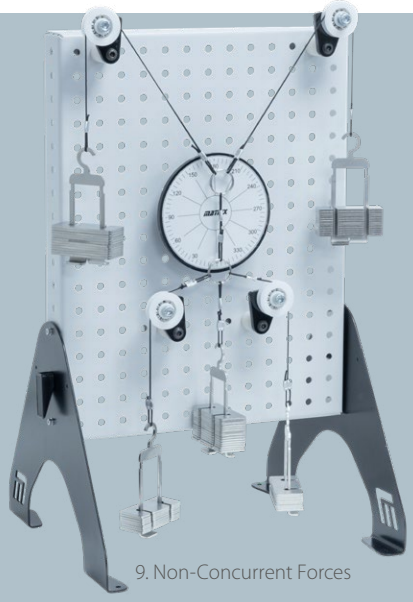
EFK1-MKII Statics Fundamentals Kit

The Engineering Fundamentals EFK1-MKII Statics fundamentals kit is designed to enable students to gain an understanding of the fundamentals of engineering by the process of learning via hands-on experimentation.

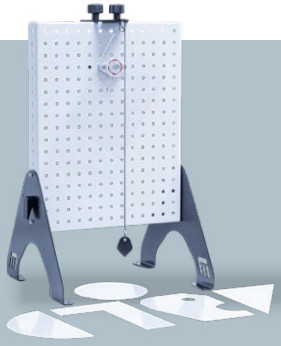
Practical experience allows students to see the real-world application of theoretical knowledge, leading to a deeper and more comprehensive understanding of engineering principles.

The modular kit is supplied in conjunction with a multifunctional Base Unit enabling the student to conduct their own experiments in subjects such as Forces, Moments, Beams and Levers.

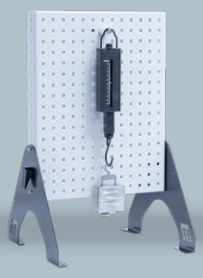
Each kit is supplied with a highly visual user-friendly operational guide, enabling the student to understand the theory of the subject by the application of practical experimentation.



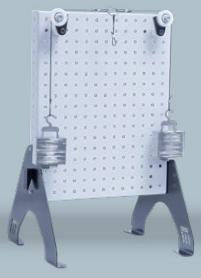
9. Non-Concurrent Forces



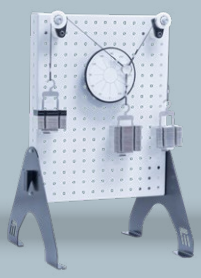
1. Centre of Gravity



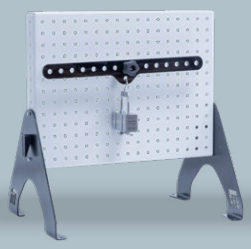
2. Mass Weight and Force



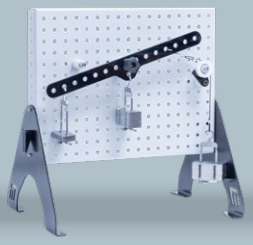
3. Combining Forces



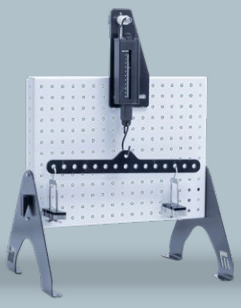
4. Triangle of Forces



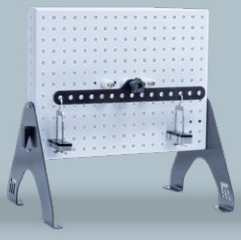
5. Stability



6. Oblique Forces



7. Parallel Forces

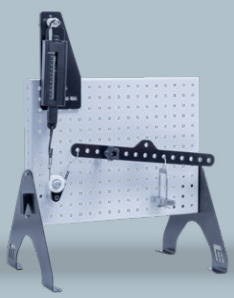


8 .Principle of moments

Topics Covered:

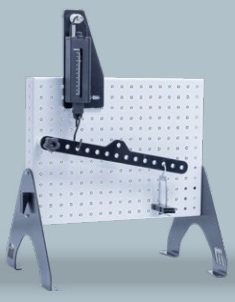
• FORCES • MOMENTS • BEAMS • LEVERS

EACH KIT CONTAINS A SINGLE MULTIPURPOSE FRAME



10. 1st Order Lever

11. 2nd Order Lever



12. 3rd Order Lever

13. Supported Beam

14. Uniformly distributed load

15. Horizontal Reactions

Features/benefits

Features

- Neatly presented in an easily identifiable and durable storage tray
- Trays have clear lids making it easy to see their contents
- Accompanied by a detailed manual, including Student handouts and teachers notes with various practical exercises
- Clear and concise assembly instructions for each experiment
- Multiple experiments per kit
- Toolless assembly

Benefits

- Enhanced Understanding of Concepts
- Improved Problem-Solving Skills
- Engagement and Motivation
- Teamwork and Communication

Tray 1 of 2 supplied with **EFK1- MKII**

UK office - email: sales@armfield.co.uk tel: +44 (0) 1425 478781 (for ROW)
USA office - email: info@armfield.inc tel: +1 (609) 208-2800 (USA only)

Issue: 4
URL: http://www.armfield.co.uk/ef

Applications: ME ChE CE IP

armfield.co.uk

Requirements

EFK1 MKII

Scale: Experiment tray scale | Backboard scale

- EFK1- MKII base unit with stand on which to build the experiment from the tray components

Experimental content

- distinguish between mass and weight.
- explain the terms vector quantity and scalar quantity.
- state the units of measurement for weight and mass.
- explain the meaning of the term centre of gravity.
- obtain experimentally the location of the centre of gravity of a lamina.
- represent a force vector as a line, drawn to scale.
- state the conditions for the forces acting on a body that is in equilibrium.
- draw a free-body diagram for a body subject to several coplanar forces.
- explain the terms resultant and equilibrant of a set of forces.
- sum two force vectors using a parallelogram of forces.
- interpret a triangle of forces diagram.
- explain the use of Bow's notation to clearly label a system of forces.
- use a triangle of forces diagram to find the resultant and equilibrant for several forces.
- define the term moment of a force and state its unit of measurement.
- distinguish between the term's moment and torque.
- state that a moment of a force is a vector, and that it can be represented by a clockwise or anticlockwise arrow dependent on its direction and the reference point.
- state that when a body is in equilibrium, the sum of the clockwise moments is equal to the sum of the anticlockwise moments about any point.
- use a beam balance to weigh an object.
- use a link polygon to describe a system of forces acting on a body in equilibrium.
- distinguish between neutral and stable equilibrium.
- calculate the moment of an oblique force about a given point on a beam.
- distinguish between the three classes of levers and give examples of each.
- explain what is meant by the term mechanical advantage.
- explain what is meant by the term uniform distributed load, UDL.
- use the principle of moments and equilibrium of forces to find the support reactions for both point loads and UDLs.
- distinguish between the two different types of pinned supports and show how they are drawn.
- resolve a given force into two perpendicular components.
- use given information on horizontal, vertical, and oblique forces to determine whether a beam is in equilibrium.

Related products

- EFK2-MKII Dynamics
- EFK4-MKII Mechanisms
- EFK6-MKII Materials

Ordering specification

Work Panel for Fundamentals	1
Magnetic Protractor Assembly	1
RH Adjustable Pulley Assembly	2
Hanging Weights	5
Looped String kit	1
Balance Slider Plate Assembly	2
Peg Bar Assembly	1
Spring Balance Pillar	2
Equilibrium Beam Pillar Assembly	1
Plumb Bob Assembly	1
Suction Cup Assembly	1
Pulley Hook	15
Short beam	1
Salter 12 spring balance 10N x 0.1N	2
Spring balance mounting plate	2
Beam	1
Extra fine tip black marker pen	1
Centre of gravity shape (rectangle)	1
Centre of gravity shape (circle)	1
Centre of gravity shape (L)	1
Centre of gravity shape (semi-circle)	1
Centre of gravity shape (irregular)	1
Centre of gravity shape (triangle)	1
LH adjustable pulley assembly	2
Looped String kit Setup 1	1
Looped String Kit Setup 2	1
Looped String Setup 3	1
5g hanging weights pack of	55

High quality materials

Overall Dimensions

Tray 1		Tray 2	
Length	0.43m	Length	0.43m
Width	0.21m	Width	0.21m
Height	0.08m	Height	0.24m
Packed and crated shipping specifications			
Volume	0.032m³ per kit		
Gross weight	9Kg		

Ordering codes

- EFK1-MKII Static Fundamentals Kit

Armfield standard warranty applies with this product