

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

The EF-4.3 Drive Systems experiments kit introduces students to various types of belt, chain, and shaft drive systems.

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

Belt and chain drive experiments are included to demonstrate the characteristics of different belt and chain systems with multiple velocity ratios. The efficiency can be calculated for varying loads for both the different velocity ratios and the different belt and chain systems allowing comparisons between the different systems to be observed. Experiments are also included to demonstrate the effect of belt tension and the effect of pulley lap.

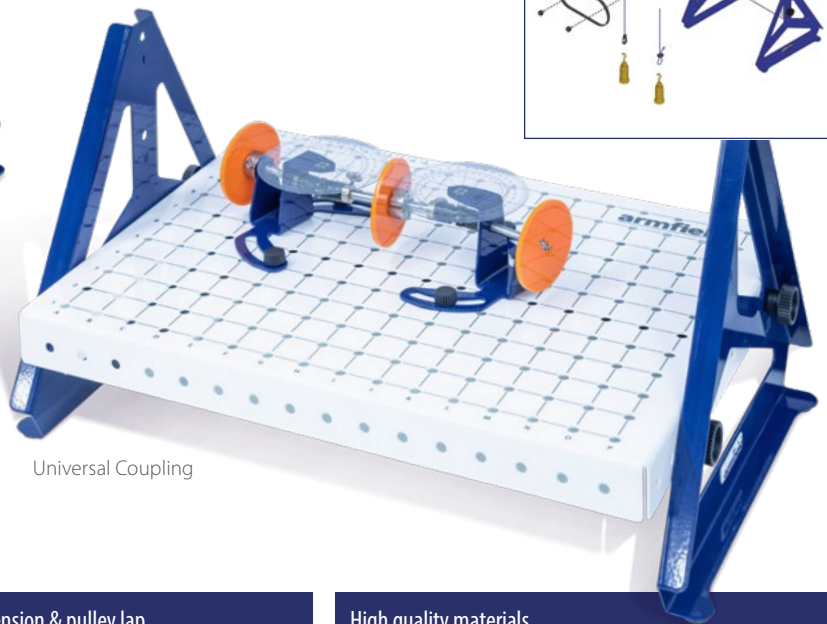
Experiments in universal couplings define how they should be set up to ensure that the rotational velocity from the input is seen at the output. The angle of each universal joint and the orientation relative to each other will be tested to see which setup will give uniform angular transmission.

Chain Drive

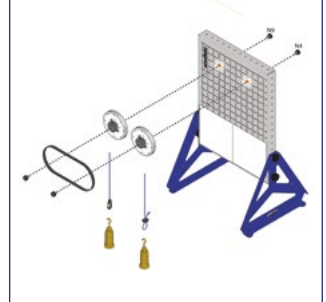


2 trays supplied with EF-4.3

Universal Coupling



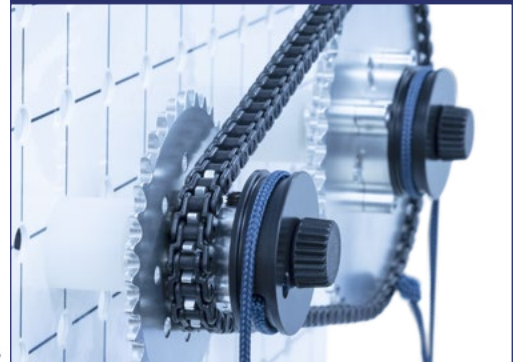
Easy to follow instructions



Drive systems experiments shown below; timing belt drive system, belt tension & pulley lap



High quality materials



## 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



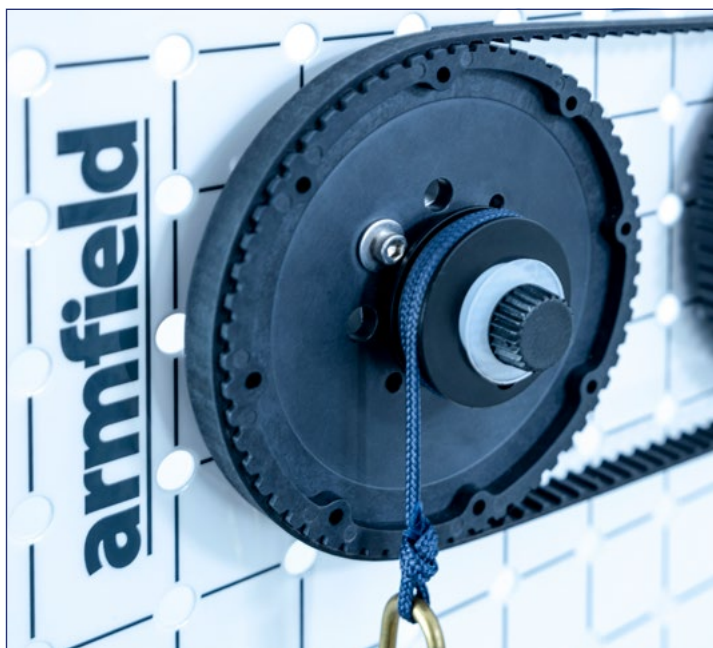
EF-WS scale



- ▶ 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

- ▶ Power transfer, efficiency and direction in a belt drive
- ▶ Power transfer and efficiency in a chain drive
- ▶ Friction and angle of lap on a pulley
- ▶ Input and output relationships of a universal coupling
- ▶ Prevention of vibration at high speed in a universal coupling



### Overall dimensions

#### Tray

Length	0.430m
Width	0.312m
Height	0.160m

#### Packed and crated shipping specifications

Volume	0.02m <sup>3</sup>
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

- ▶ 1 x Timing pulley assembly
- ▶ 2 x Sprocket assembly
- ▶ 1 x Idler pulley assembly
- ▶ 1 x Universal joint connecting shaft
- ▶ Universal joint fixed bearing
- ▶ Universal joint moving bearing
- ▶ Round belt
- ▶ Chain belt
- ▶ Tooth timing belt
- ▶ 2 x 250g weights

### Ordering codes

- ▶ EF-4.3 - Drive Systems
- ▶ 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

Installation  
Commissioning  
Training  
Service and maintenance  
Support: [armfieldassist.com](mailto:armfieldassist.com)