

fischer technik

Mechanisms Kit

The Mechanisms Kit is designed to be used by a group of 2 to 3 students.

The mechanisms course in the Focus Kits Book uses models that are quick and easy to build so that the emphasis is clearly on investigation and learning from hands-on experience.

Students learn to use: levers and linkages, pulley systems, pulleys and belt, chain and sprockets, crank and slider, cam and follower, rack and pinion, leadscrew, gears (simple and compound gear trains, idler, bevel gears, worm, crown and pinion).

The Focus Kits Book contains clear photocopiable construction guides for all the models used in the lessons.



ECON 2500

Does not include Focus Kits Book.

Focus Kits Book

Over 100 photocopiable worksheets for use with the Structures, Mechanisms and Electrical Control Kits.

Manageable structured courses with clear teaching objectives guide students through building, investigating and developing simple models. Technical concepts are developed in the context of designing systems for specific clients and situations.

Extensive Teacher's Notes include suggested solutions, extension ideas and a quick guide to the Fischertechnik construction system.

L30/041

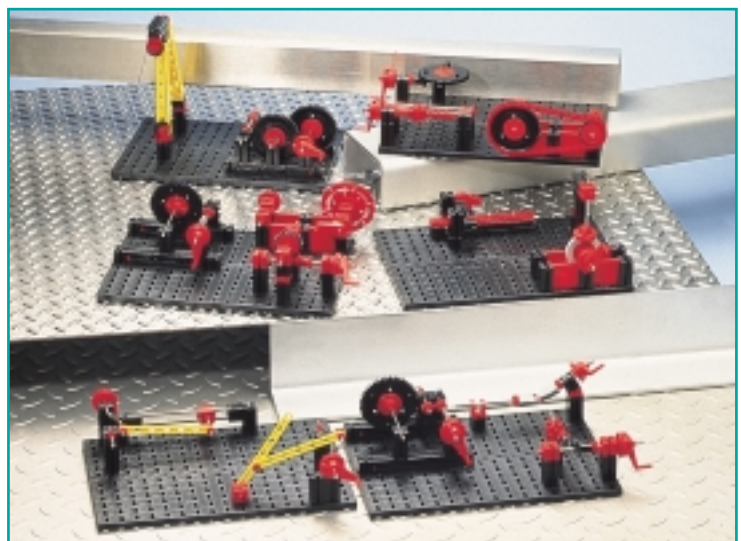
This book is not included with the kits. Please order it separately.



Mechanisms Reference Set

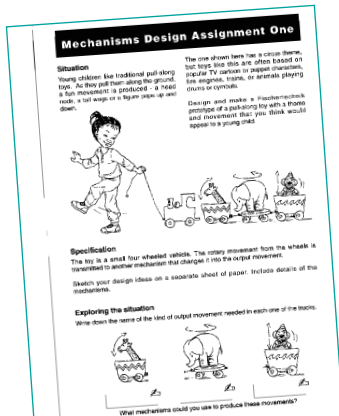
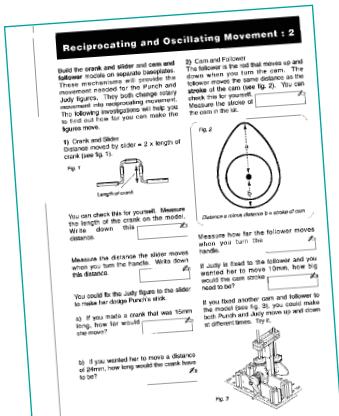
Fifteen different models are supplied in kit form with full assembly instructions. They provide a permanent and comprehensive collection of mechanisms for use as hands-on reference at all stages of designing and making products that involve mechanical systems. The Set also makes an ideal revision resource.

ECON 2530



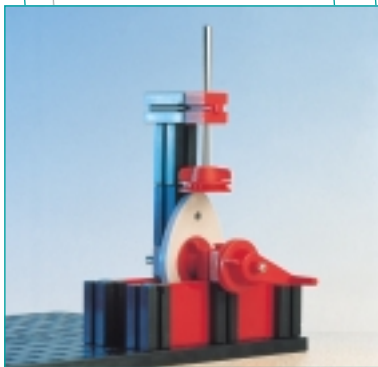
Mechanisms for Movement . . .

By building and investigating simple mechanical models, students learn that a mechanism is a system with an input and output, and that mechanisms can be used to transmit and change movement and force.



Design assignments provide the opportunity for students to interconnect mechanical systems to achieve different kinds of movement, and to practise skills of designing and prototyping.

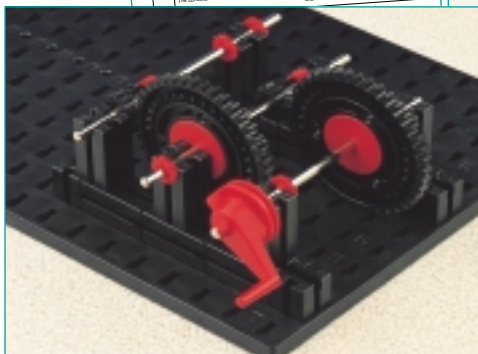
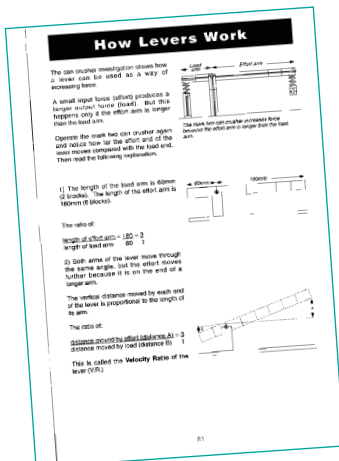
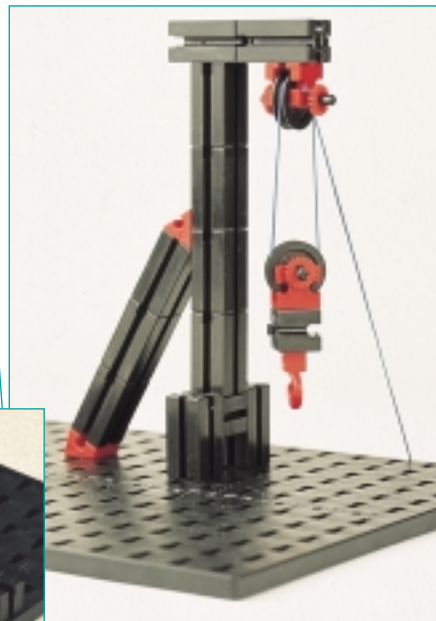
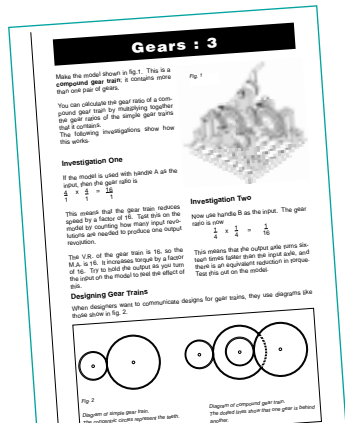
Using the Mechanisms Kit provides a solid foundation for designing and making products using resistant materials and mechanical systems.



. . . and Mathematical Understanding

The Mechanisms Kit can also be used at examination levels to teach the necessary mathematical understanding of mechanical systems.

Practical activities provided in the Focus Kits Book help students to understand and calculate Mechanical Advantage, Velocity Ratio, Efficiency in relation to levers, pulleys and simple and compound gear trains.



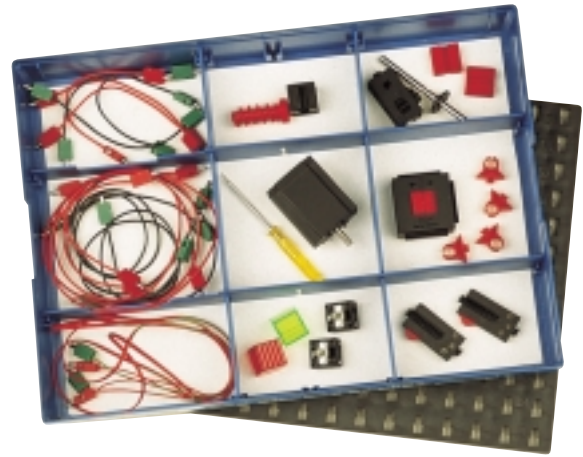
fischertechnik 

Electrical Control Kit

The Electrical Control Kit is designed to be used by a group of 2 to 3 students.

It can be used as a stand-alone resource for simple investigation of circuits. However, to realise its full potential, it should be used with a Mechanisms Kit to provide the experience of: using electrical switches to control devices, and interconnecting mechanical and electrical systems.

The electrical control course in the Focus Kits Book is based on a series of simple models built from the kits. It covers: simple circuits, series and parallel, circuit diagrams and symbols, using switches to control devices (push to make or break, on/off, reversing, AND/OR configuration), motorised mechanical systems (gearing, torque, effects of load on an electric motor).



ECON 2510

Does not include Focus Kits Book.

fischertechnik 

Power Supply

The Electrical Control Kit contains wire and Fischertechnik plugs. It requires a 6V power supply. The Fischertechnik Power Supply is recommended; it has both variable and fixed outputs and sockets for Fischertechnik plugs.

ECON 570



fischertechnik 

Pneumatics Kit

The Pneumatics Kit is designed to be used by a group of 2 to 3 students, and provides a simple and economical resource for teaching the basic principles of pneumatics.

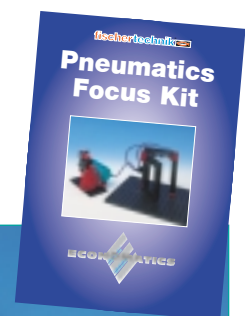
It contains: a fully-working model compressor which provides the compressed air supply for the kit, 2 double-acting cylinders, 2 valves, pipe and connectors, and a range of construction components. The model compressor requires a 6V power supply. The Fischertechnik Power Supply is recommended.

The Pneumatics Focus Kit book, available separately, provides a course of investigation activities and design scenarios based on a series of simple models built from the kit.

ECON 2525

Pneumatics Focus Kit Book

L30/057

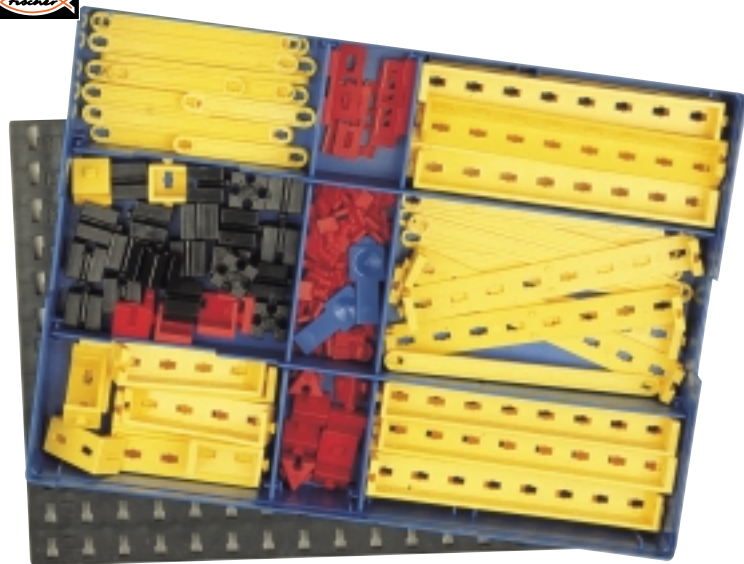


fischertechnik®

Structures Kit

The Structures Kit is designed to be used by a group of 2 to 3 students.

The structures course in the Focus Kits Book is based on a series of simple models built from the kit. It covers: recognising structures, rigidity and the effects of shape on strength, struts and ties, compressive and tensile loading, triangular frame structures, stability and centre of mass.



ECON 2520

Does not include Focus Kits Book.

Supporting a Load

1) Build model one on the Stool construction sheet. This is a model of the frame of a stool like the one shown in Fig. 1.

The load that the real stool has to support is a person sitting on it. The load applies a force to the structure. Push down on the top of the frame to represent the force applied by someone sitting on the stool.

Describe what happens to the top of the frame and to the legs.




Fig. 1

The force applied by the load bends the beams on top of the frame. The movement is transmitted through the structure and pushes the legs apart. It needs some resistance.

The struts supply the resistance. The stool that stands up only if beams are built around it each must use.

The resistance should be supplied to the structure itself.

The back of this sheet shows how it can be done.

2) Use your hands to make struts around the stool as shown in Fig. 2. Push down on the top of the stool again. What happens now?

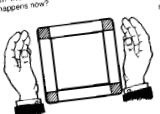


Fig. 2

View from above. Put your hands around the stool, but not touching it.



Using ties or altering the shape of the beams at the top frame to increase rigidity are possible alternatives for reducing deflection in this design for a stool.



Fischertechnik is a good material to use for teaching about structures because it can be used in compression and in tension. The resulting deflection can be clearly seen without destroying the structure.

Structures Homework One

John and Paul want to make a bracket to support a large load outside their front door. They want to make it from some sheet metal that they have been given.

The metal is only 2mm thick. The two different designs that they have thought of are shown in Fig. 1.

Look carefully at each design and think about what will happen when the load is hung in the end of the bracket.

3) Complete the two designs and write down what you think will happen when the load is hung in the end of the bracket.

4) Use the notes on the back of this sheet to assist your ideas for supporting each one of the designs. Include notes to explain how your version will improve it.




Fig. 1

Design 1



CITB Kit

A Fischertechnik kit for building towers and a simple tower crane, based on the Structures Kit, has been specially developed by Economatics to support the CITB Construction Award Scheme. Teaching materials are included.

CITB