EDITION 2

MECHANICAL ENGINEERING

AMTEC TECHNIQUIP

Engineering The Future

Suppliers Of Educational Engineering Equipment & Accessories

MADE IN SOUTH AFRICA

30 YEARS OF ENGINEERING EXCELLENCE

BEE LEVEL 2 company 125% recognition

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Amtec Techniquip applies 30 years of knowledge & experience in the design, manufacture and import of educational engineering equipment, accessories, instrumentation and consumables.

During this time, we have been a market leader in innovation, bringing many new concepts and products to the educational industry while expanding our comprehensive range of quality teaching equipment to a level unsurpassed by any other company in the industry.

This includes unique new methods of introducing and educating the learners in all facets of modern engineering. Our products are visual and demonstrational to best teach and explain concepts from basic engineering, all the way up to research and thesis levels in the most advanced forms of engineering.

Amtec Techniquip's commitment to the end user...

AMTEC offers a personal approach to each and every end user as we are always available to meet and discuss any requirements face-to-face basis to provide a tailor-made solution.

AMTEC have a large footprint throughout Southern Africa and regularly visit the countries and provinces we service while also keeping our customers up-to-date with any new products and innovations we bring to the market.

AMTEC supplies expert training on all our products. Our team of experts offer training at the end user or alternately at our head office in Jhb. All our products are supplied with their relevant manuals, course materials and exercise guides.

AMTEC offers unmatched after-sales service and customer support. All our equipment is supplied complete with ICT (Installation, Commissioning & Training). Our sales and support teams are at the end user's disposal should any assistance be needed during the life of a product.

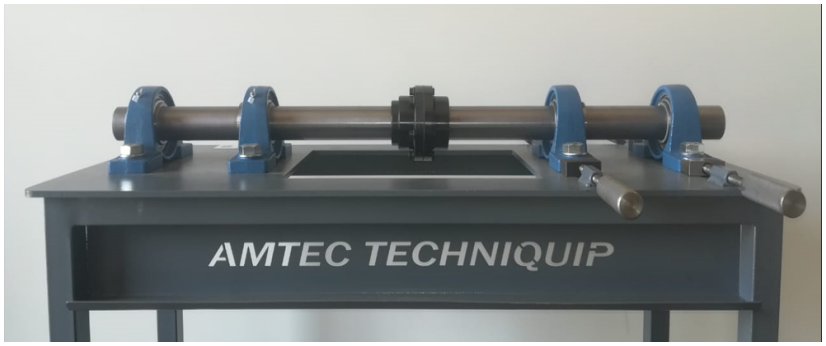
AMTEC offers an extended Service and Maintenance plan to make sure that your equipment and apparatus are maintained to ensure a long lifespan with little or no downtime.

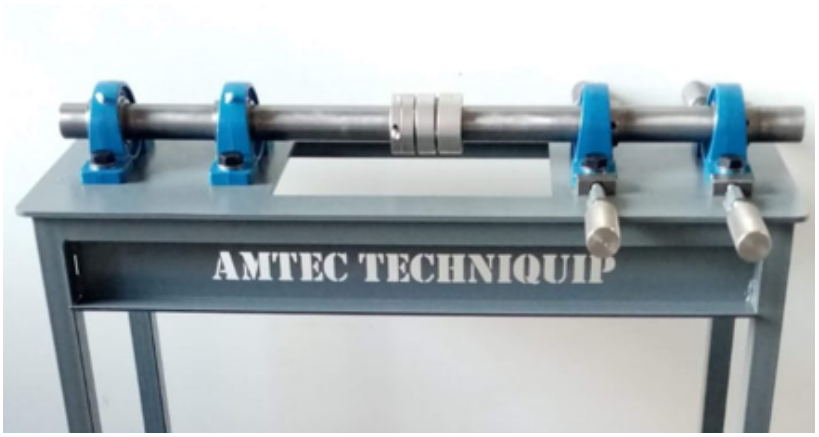
AMTEC makes use of only quality components to ensure reliability and longevity of all our manufactured equipment. This provides the end user with peace of mind and a product that will stand the test of time in an educational environment.

AMTEC has the manufacturing capability to R+D and manufacture "one-off" designs and customise any equipment within our range to meet the end users requirements. We have many accessories, add-ons and tooling that can work in conjunction with our equipment and trainers.

AMTEC offers a 24-month factory warranty on all our products supported by the backing of our local & international suppliers.

AMTEC – SHAFT COUPLING ALIGNMENT SIMULATORS





A shaft coupling is one of the most common machine elements because it is just so important in power transmission systems. Thus, they find use in a variety of applications and service environments.

As a result, designers and engineers have designed many variations of couplings for specific service conditions and environments over the years.A coupling is a mechanical device that connects similar or dissimilar shafts in machines to transmit power and movement. It is usually a temporary connection (but can be permanent in some cases) and capable of removal for service or replacement. A coupling may be rigid or flexible.

Due to the availability of many designs, there can be stark differences in the construction and function of two types of mechanical couplings. Some couplings can connect to shafts without moving the shaft, while most will require shaft movement for fitting.

In most cases, a coupling does not change the direction of motion or angular velocity, unlike gears. It cannot be connected or disconnected mid-operation, unlike clutches. Couplings can only transfer torque over short distances, for longer distances chain drives and belt drives are better alternatives. Couplings are often paired with lead screw assemblies to connect the screw shaft in-line to a motor. The coupling works by maintaining a strong but flexible connection at all times between two shafts to transfer motion from one shaft to another. It does so at all values of loads and misalignment without permitting any relative motion between the two shafts.

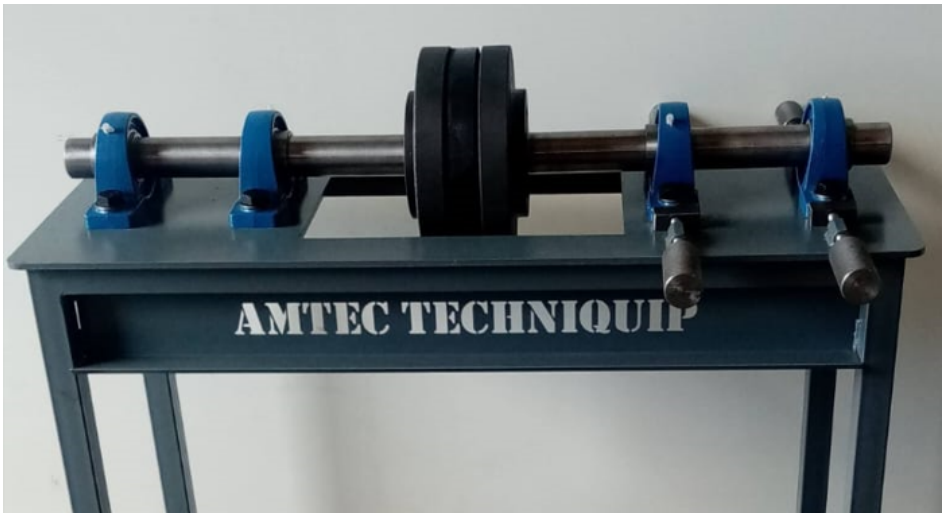
AMTEC – SHAFT COUPLING ALIGNMENT SIMULATORS

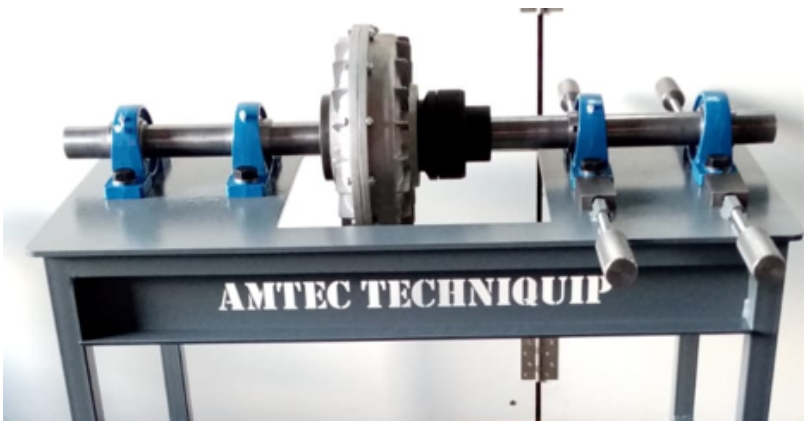
Types of Couplings

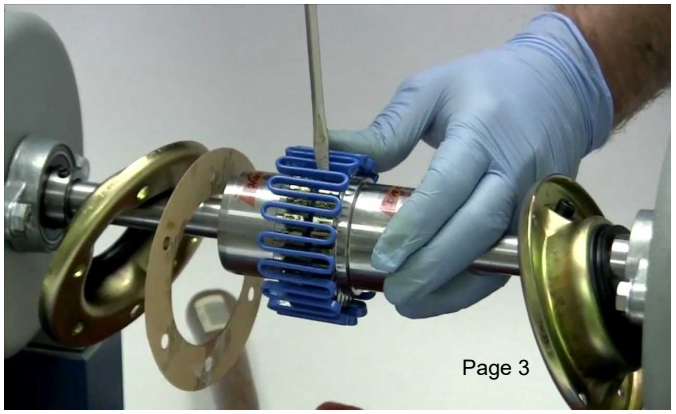
Couplings come in a host of different shapes and sizes. Some of them work great for generic applications, while some others are custom-designed for really specific scenarios.

Examples of couplings:

- **Grid coupling**
- **Claw coupling**
- **Clutch Coupling**
- **Rigid coupling**
- **Flexible coupling**
- **Sleeve or muff coupling**
- **Split muff coupling**
- **Flange coupling**
- **Fluid coupling**
- **Gear coupling**
- **Universal Joint (Hooke's Joint)**
- **Oldham coupling**
- **Jaw coupling**
- **Beam coupling**
- **Spider coupling**
- **Diaphragm coupling**







AMTEC – SHAFT COUPLING ALIGNMENT SIMULATORS

The Purpose of Couplings

A shaft coupling can perform multiple functions in a machine. The design may incorporate more than one of these coupling features into the product's function in advanced applications.
Let us take a brief look at what these are:

Power transmission

The primary purpose in most cases is power and torque transmission from a driving shaft to a driven shaft — for example, a coupling connecting a motor to a pump or a compressor.

Absorb shock and vibration

A shaft coupling can smooth out any shocks or vibrations from the driving element to the driven element. This feature reduces the wear on the components and increases the service life of the setup.

Accommodate any misalignment

Misalignments between shafts can result from initial mounting errors or may develop over time due to other reasons. Most couplings can accommodate some degree of misalignment (axial, angular and parallel) between shafts.

Interrupt heat flow

A shaft coupling can also interrupt the flow of heat between the connected shafts. If the prime mover tends to heat up during operation, the machinery on the drive side is protected from being exposed to this heat.

Overload protection

Special couplings known as Overload Safety Mechanical Coupling are designed with the intention of overload protection. On sensing an overload condition, these torque-limiting couplings sever the connection between the two shafts. They either slip or disconnect to protect sensitive machines.

AMTEC – ALIGNMENT SIMULATORS

Pillow block assembly trainer

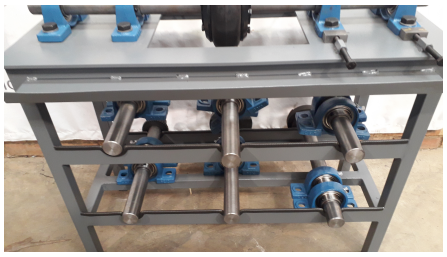
A pillow block usually refers to a housing with an included anti-friction bearing. A pillow block refers to any mounted bearing wherein the mounted shaft is in a parallel plane to the mounting surface, and perpendicular to the center-line of the mounting holes, as contrasted with various types of flange blocks or flange units.

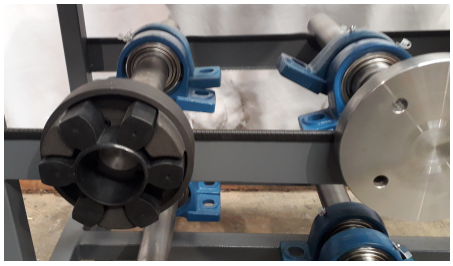
A pillow block may contain a bearing with one of several types of rolling elements, including ball, cylindrical roller, spherical roller, tapered roller, or metallic or synthetic bushing. The type of rolling element defines the type of pillow block.

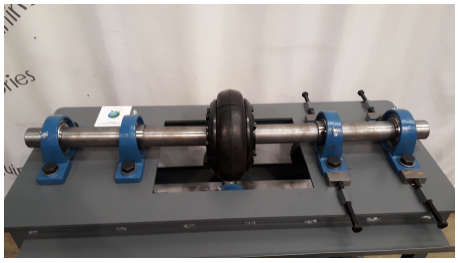
These differ from "Plummer blocks" which are bearing housings supplied without any bearings and are usually meant for higher load ratings and a separately installed bearing.

AMTEC – ALIGNMENT SIMULATORS

MULTI ALIGNMENT TRAINER







AMTEC Combination alignment trainers offer the versatility of multiple alignment options on one workstation. We can vary the configuration to suit the customers required tasks.

Currently available in the combination type alignment trainers are

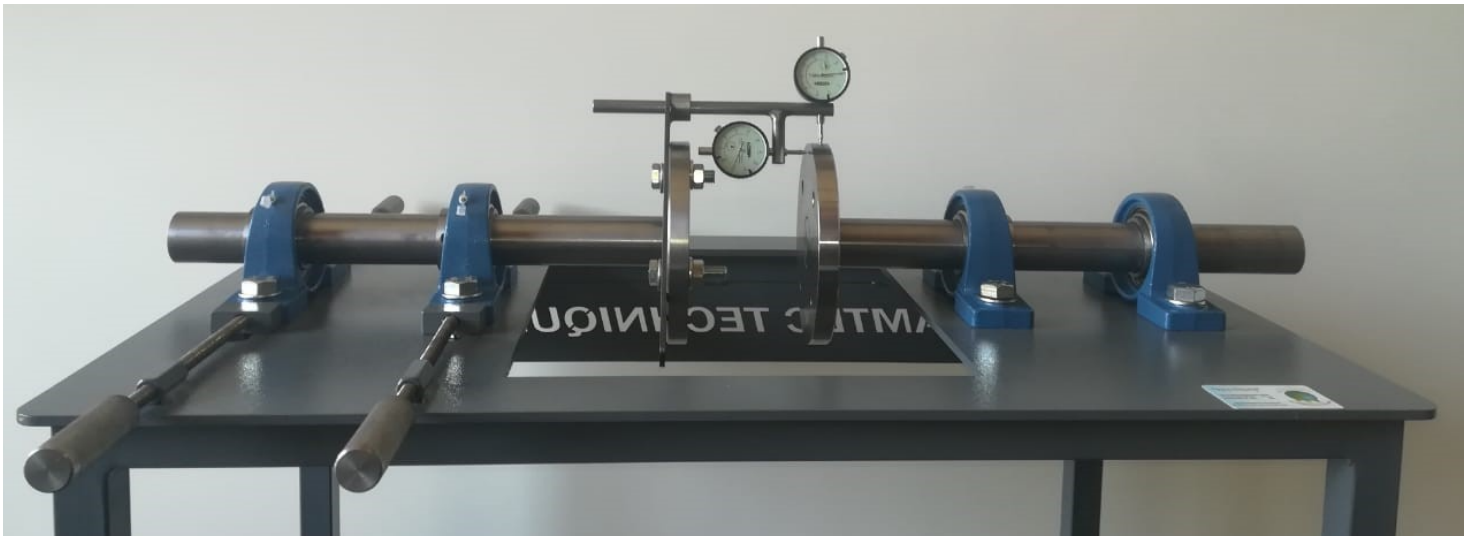
Chain and Pulley combination alignment trainer
Multi Stage Pump-Motor-Flange alignment trainer
Duplex Chain and Belt Alignment trainer
Multi Shaft Alignment trainer

The Multi Alignment trainer pictured here above features Fenner flex, DTI flange, Grid coupling and Jaw coupling topics are covered with interchangeable shafts to give exposure to different forms of couplers and alignment techniques. This trainer is:

- built on robust powder coated steel frame with 8mm laser cut top.
- shaft stainless steel high grade to reduce rusting
- shaft precisely cut to be within tolerance
- dimensions 1000l x 900h x 400w +/-80kg

AMTEC – ALIGNMENT SIMULATORS

DTI TRAINER



There are two commonly use methods to align rotating machine shafts using dial indicators.

Rim-face method
When using a rim-face method, one measurement is taken on the rim of the coupling to determine shaft offset. another measurement is taken on the face of the coupling to determine shaft angularity. This method often requires the machines to be uncoupled to perform alignment.

Reverse dials method
When using a reverse dial method, two measurements are taken on the rims of the couplings to determine shaft offset at two points. Shaft angularity is then calculated as the slope between the two offset measurement points. This measurement normally requires the machines to be coupled.

This trainer is:

- built on robust powder coated steel frame with 8mm laser cut top.
- shaft stainless steel high grade to reduce rusting.
- shaft precisely cut to be within tolerance.
- dimensions 1000l x 900h x 400w +/-80kg.

AMTEC – ALIGNMENT SIMULATORS

BELT DRIVE ALIGNMENT

STATIC BELT DRIVE

SINGLE BELT

PART# ASVBAT-W

DOUBLE BELT

PART# ADVBAT-W

MOTOR-DRIVEN

BELT DRIVE

SINGLE BELT PART#

ASVBAT-WM

DOUBLE BELT

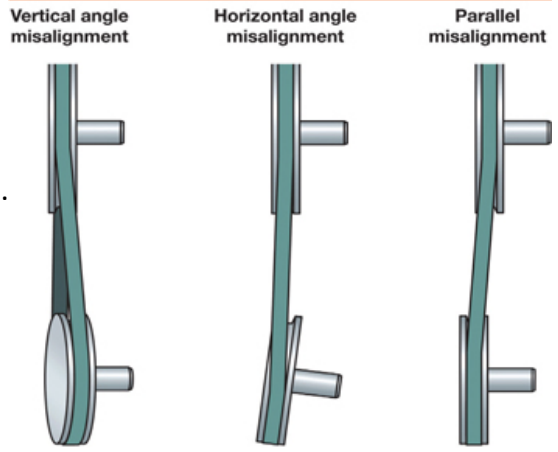
PART# ADVBAT-WM

Amtec belt drive alignment trainer allows for the study of correct handling, adjustment, installation, and maintenance of belt drives resulting in maximum belt life.

Alignment with straight edge or string for proper drive belt alignment.

Belt drive misalignment is one of the most common causes of premature belt failure. depending on the severity, misalignment reduces belt performance by increasing wear and fatigue.

The three common misalignments are: vertical , horizontal and parallel.



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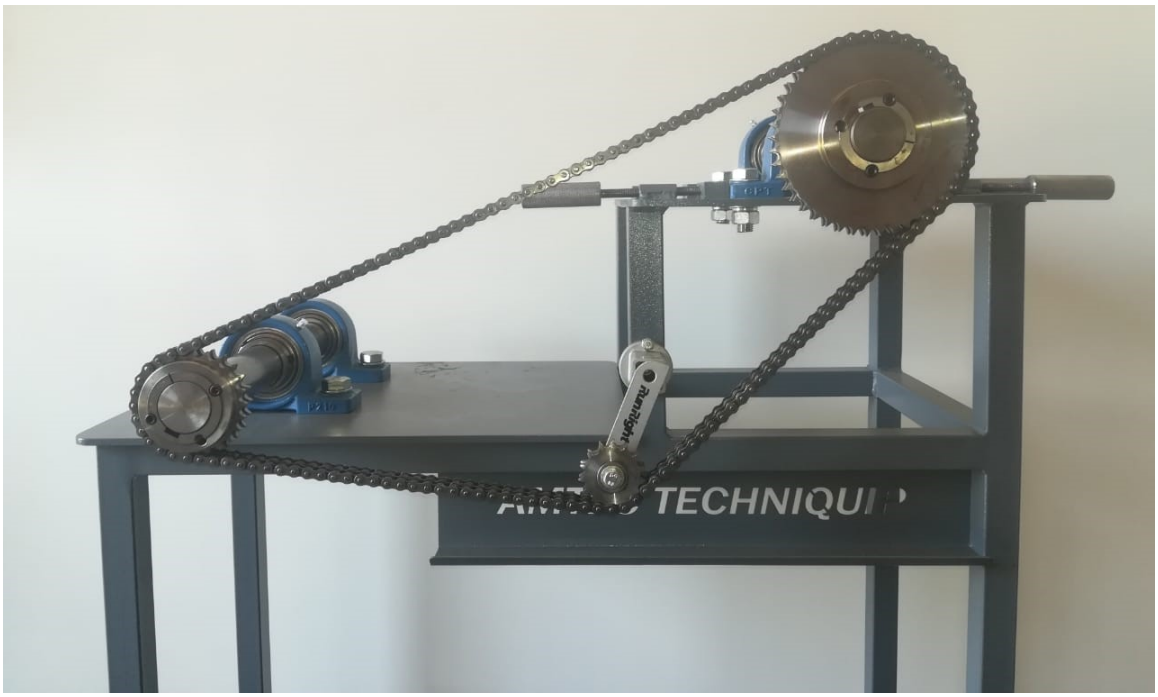
- shaft stainless steel high grade to reduce rusting.
- shaft precisely cut to be within tolerance.
- dimensions 1000l x 900h x 400w +/-80kg.

AMTEC – ALIGNMENT SIMULATORS

CHAIN ALIGNMENT



STATIC CHAIN DRIVE

SINGLE CHAIN PART#

ASCAT-W DOUBLE CHAIN

PART# ADCAT-W

MOTOR-DRIVEN

CHAIN DRIVE

SINGLE CHAIN PART#

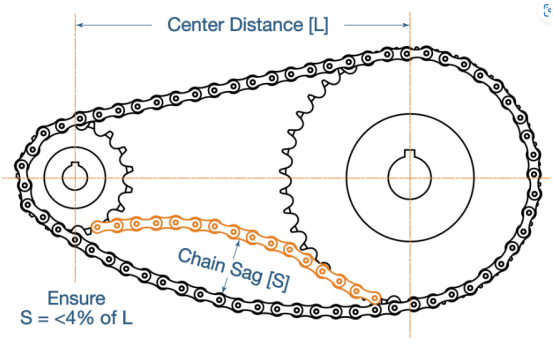
ASCAT-WM DOUBLE

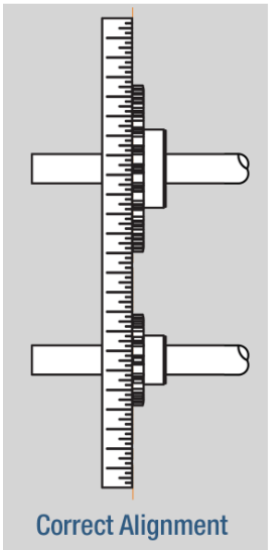
CHAIN PART# ADCAT-WM

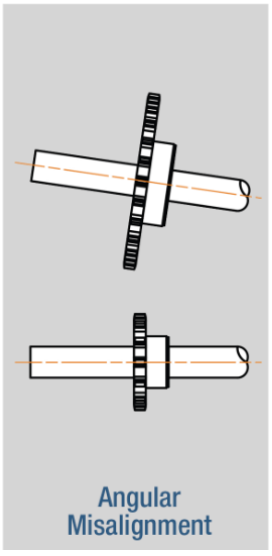
Amtec chain drive alignment trainer allows for the study of correct handling, adjustment, installation, and maintenance of chain drives resulting in maximum chain life and optimal functioning.

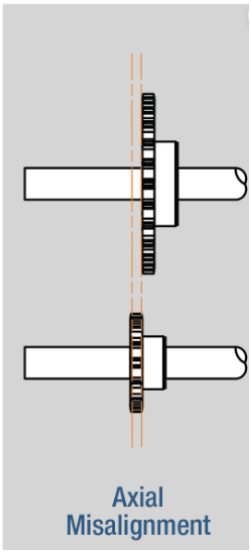
The three common misalignments are: vertical ,horizontal and parallel.

- built on robust powder coated steel frame with 8mm laser cut top.
- shaft stainless steel high grade to reduce rusting.
- shaft precisely cut to be within tolerance.
- dimensions 1000l x 900h x 400w +/-80kg.









AMTEC – ALIGNMENT SIMULATORS

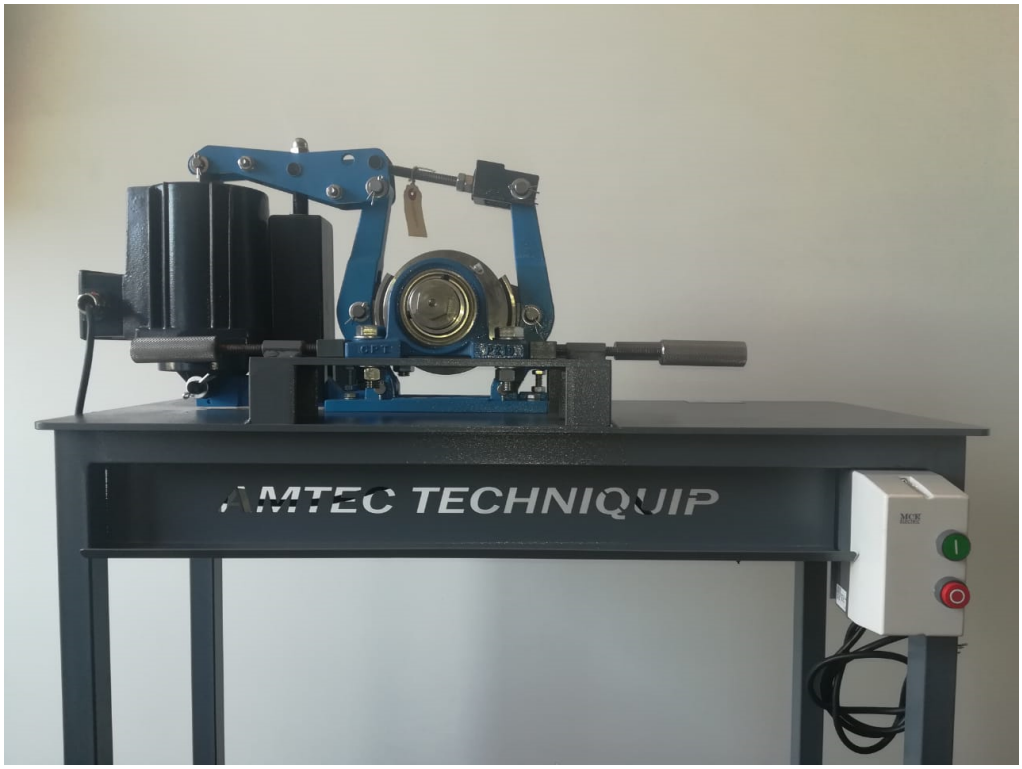
FLEXIBLE TYRE COUPLING

Fenaflex tyre couplings are highly elastic, lubrication free couplings that tolerate large amounts of misalignment in all planes as well as offering simple installation and inspection without disrupting the drive. The Fenaflex coupling also has excellent shock absorbing properties while reducing vibration and torsional oscillations.

This trainer is:

- built on robust powder coated steel frame with 8mm laser cut top.
- shaft stainless steel high grade to reduce rusting
- shaft precisely cut to be within tolerance
- dimensions 1000l x 900h x 400w +/-80kg

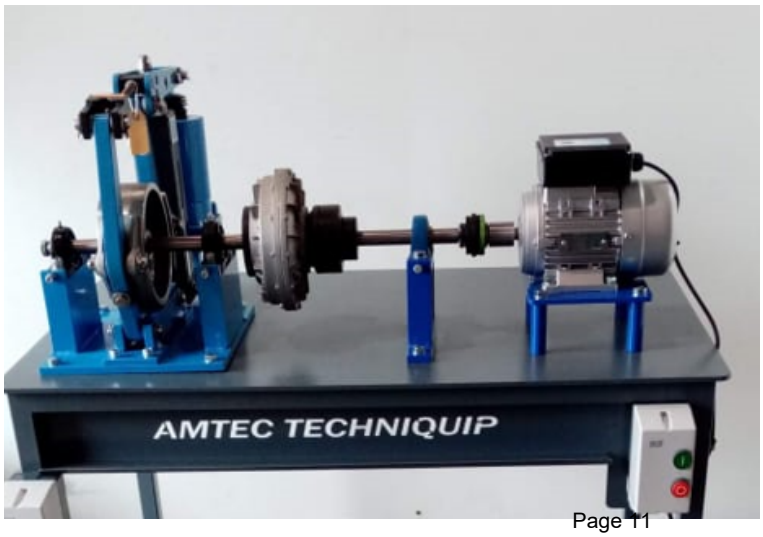
AMTEC – THRUSTER BRAKE TRAINER



Thruster brake is a device used to retard the speed of moving machinery and to stop it accurately to the desired position. The braking force is applied to the brake shoes by a pre-stressed comprising spring. The shoes press on the rotating brake drum retarding its speed and finally stop it.

Thruster brakes possess a scalable torque tube which means that torque can be ostensibly adjusted which is ideal; for instance, as the linings gradually bed into the wheel (burnish), greater mechanical braking torque will be achieved and consequently the torque may need to be reduced. Compared to magnetic brakes, the brake operator can set the exact torque amount which yields more precise braking and enhanced safety.

Thruster brakes also provide a clean, efficient, and economical package. thrusters can accommodate high temperatures, especially with the addition of silicone fluid and high-temperature kits. Furthermore, a lowering valve/time delay can be added to the thruster to time the setting of the brake, and set/ release limit switches can also be added. This is an ideal setup to be used in conjunction with variable frequency drives. External torque springs and self-adjust mechanisms for lining wear compensation are also ideal features of these brakes.



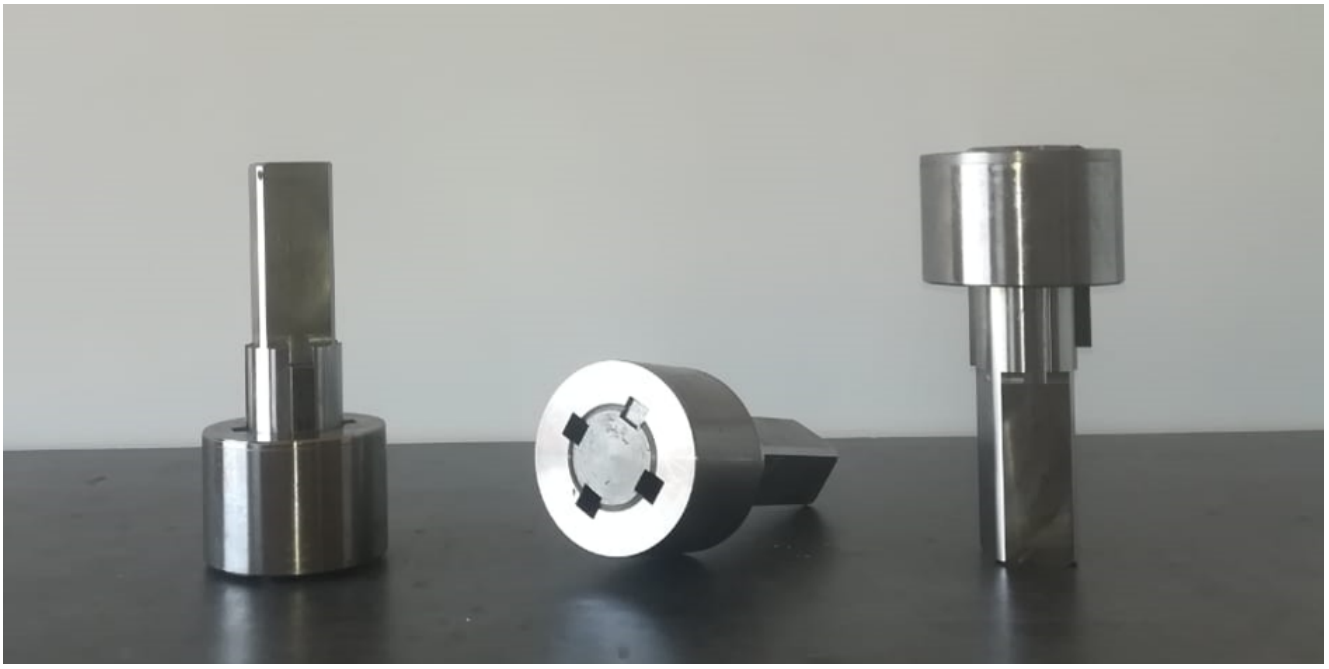
AMTEC – BEARING TRAINER

A ball bearing is a type of rolling-element bearing that uses balls to maintain the separation between the bearing races.

The purpose of a ball bearing is to reduce rotational friction and support radial and axial loads. It achieves this by using at least three races to contain the balls and transmit the loads through the balls. In most applications, one race is stationary and the other is attached to the rotating assembly (e.g. a hub or shaft). As one of the bearing races rotates it causes the balls to rotate as well. Because the balls are rolling they have a much lower coefficient of friction than if two flat surfaces were sliding against each other.

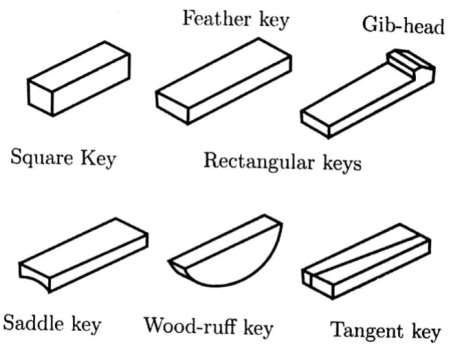
Ball bearings tend to have lower load capacity for their size than other kinds of rolling-element bearings due to the smaller contact area between the balls and races. However, they can tolerate some misalignment of the inner and outer races.

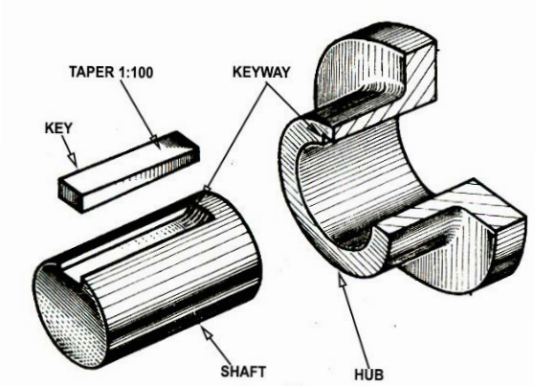
AMTEC – KEY WAY TRAINER



Engineering keys are commonly used in engines and motors, gear reducers, transmissions and motor shafts to hold pulleys and gears tightly to the rotating shaft. These keys are found on equipment using rotating shafts including Industrial, Plant, Agriculture and Manufacturing equipment and machinery.

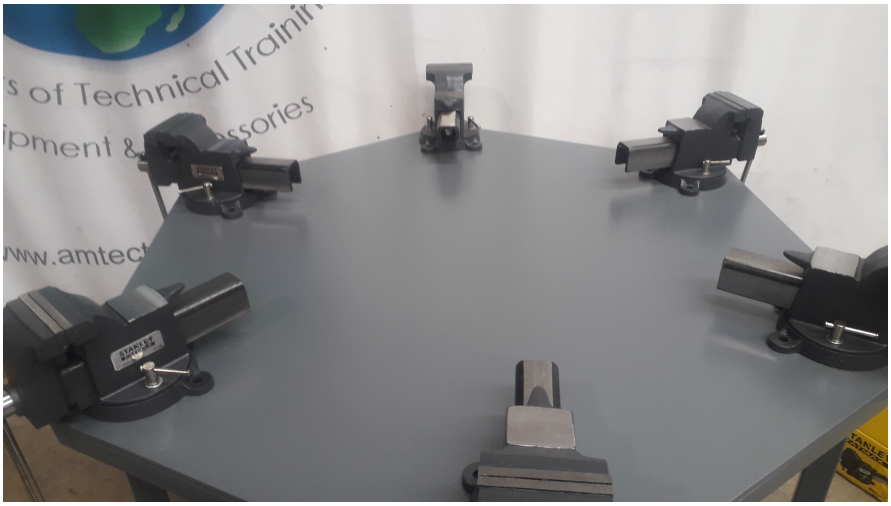
The key prevents relative rotation between the two parts and may enable torque transmission. For a key to function, the shaft and rotating machine element must have a keyway and a keyseat, which is a slot and pocket in which the key fits. The whole system is called a keyed joint.





AMTEC WORKBENCHES &
WELDING BAYS

Amtec welding bays are purpose-built to draw contaminants away from the worker's breathing zone without hindering the worker's movement or productivity. Additional lighting maybe be added as well as power outlet additional bench vice may be added. Side walls have a unique catchment design to prevent sparks reflecting back to worker. Removable trays that catch all sparks and shavings.
Work area is a heavy-duty grid design to allow dirt and sparks to fall through to catchment trays.These tables are available in a variety of sizes & can be used in a number of applications, such as Grinding, Welding, Sanding, Deburring, and Cutting.



Amtec can offer a variety of custom made Vice benches and Workstations to meet customer requirements.

MARKING OFF TABLE

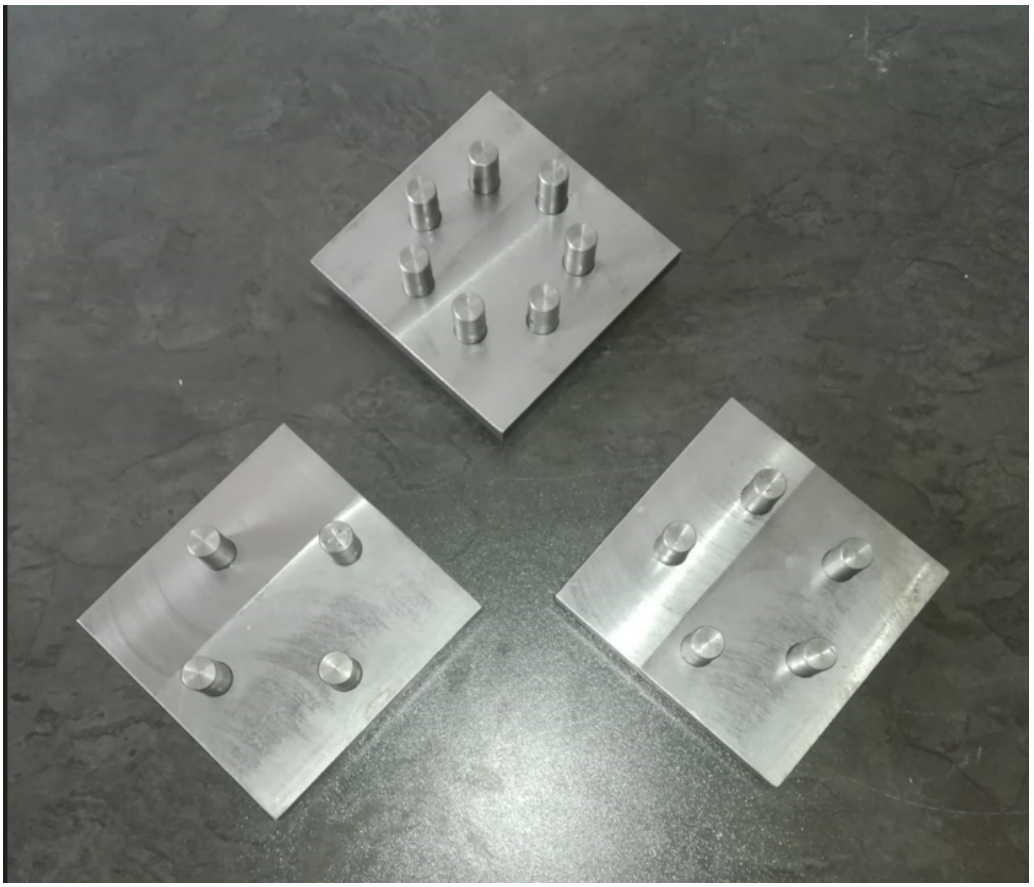
AMTEC Granite surface plates or Marking-off tables provide an accurate reference plane for work inspection and for work layout.

Their high degree of flatness, overall quality and workmanship also make them ideal bases for mounting sophisticated mechanical, electronic and optical gauging systems.

The Granite tops are available in a variety of sizes and thicknesses. They can also be made to order for a tailor-made unique size.
1200mm X 1200mm
2000mm x 1000mm
800mm x 800mm
800mm x 500mm

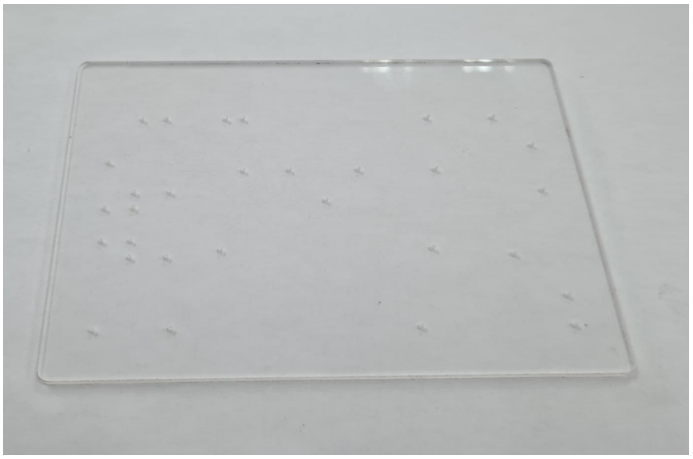
The different grades of the granite stone can also be offered:
GRADE 00
GRADE 0
GRADE 1
GRADE 2

4, 5 AND 7 HOLE JIG



AMTEC can supply 4 hole, 5 hole and 7 hole Jigs for Mechanical assessment tasks.

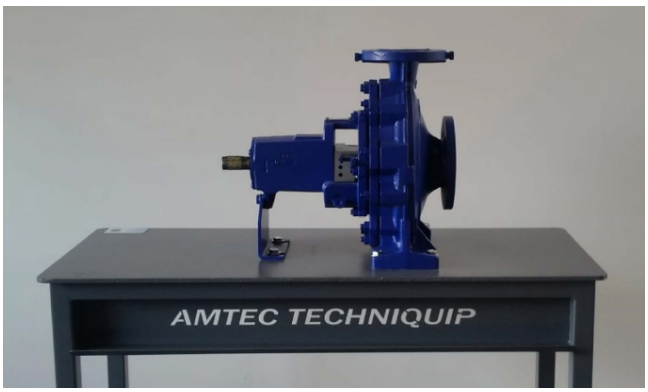
MARKING TEMPLATES



Marking templates made of perspex that are precision laser-cut to be used in assessment of tolerances and accuracy.

AMTEC REDUCTION GEARBOXES

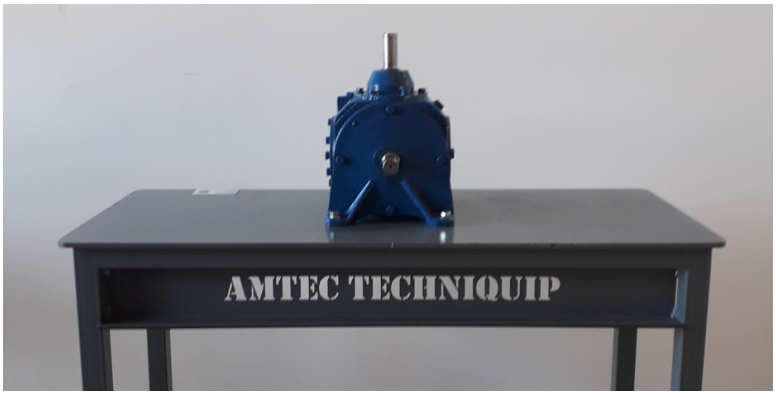
AMTEC PUMPS AND VALVES



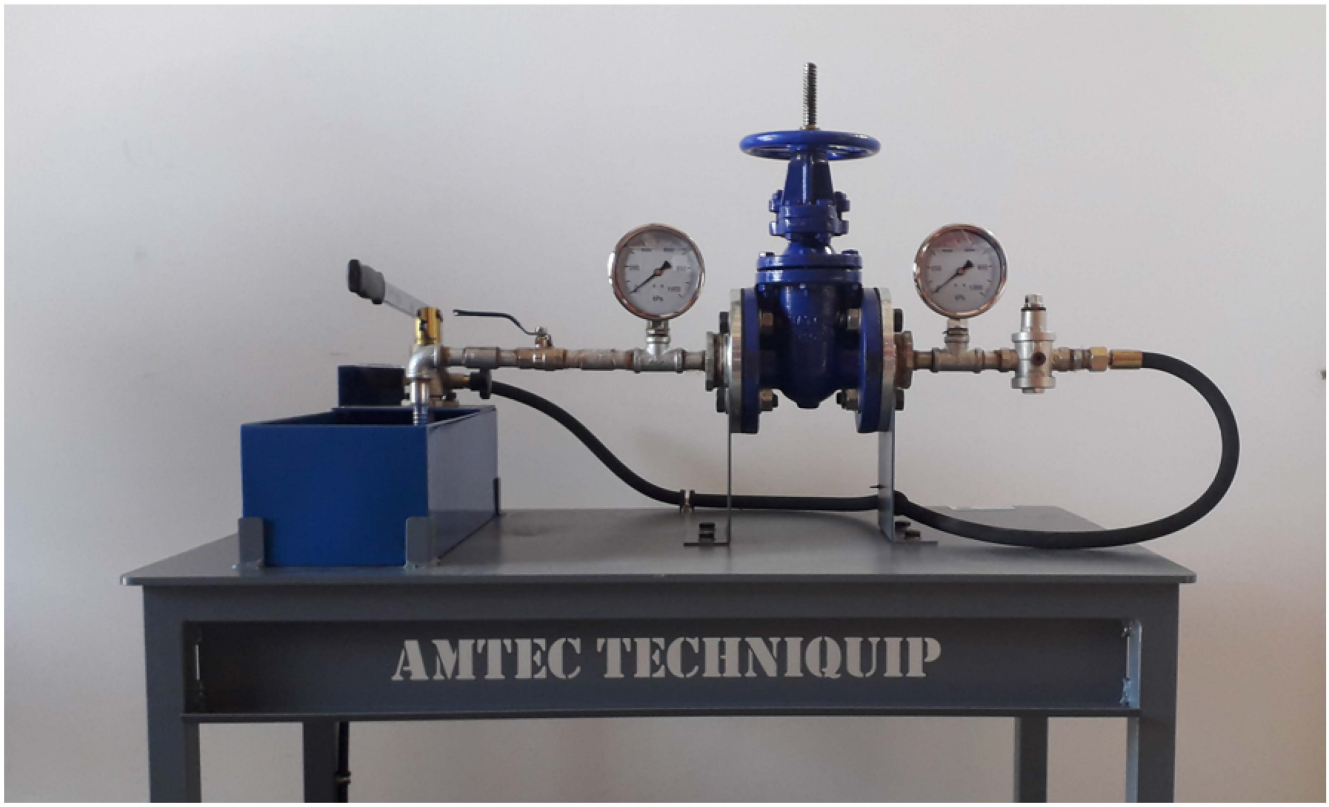
A pump is a device that moves fluids (liquids or gases), or sometimes slurries, by mechanical action. Pumps can be classified into three major groups according to the method they use to move the fluid: direct lift, displacement, and gravity pumps.

Pumps operate by some mechanism (typically reciprocating or rotary), and consume energy to perform mechanical work moving the fluid. Pumps operate via many energy sources, including manual operation, electricity, engines, or wind power, come in many sizes, from microscopic for use in medical applications to large industrial pumps.

When a casing contains only one revolving impeller, it is called a single-stage pump. When a casing contains two or more revolving impellers, it is called a double- or multi-stage pump.



AMTEC GATE VALVE TRAINER



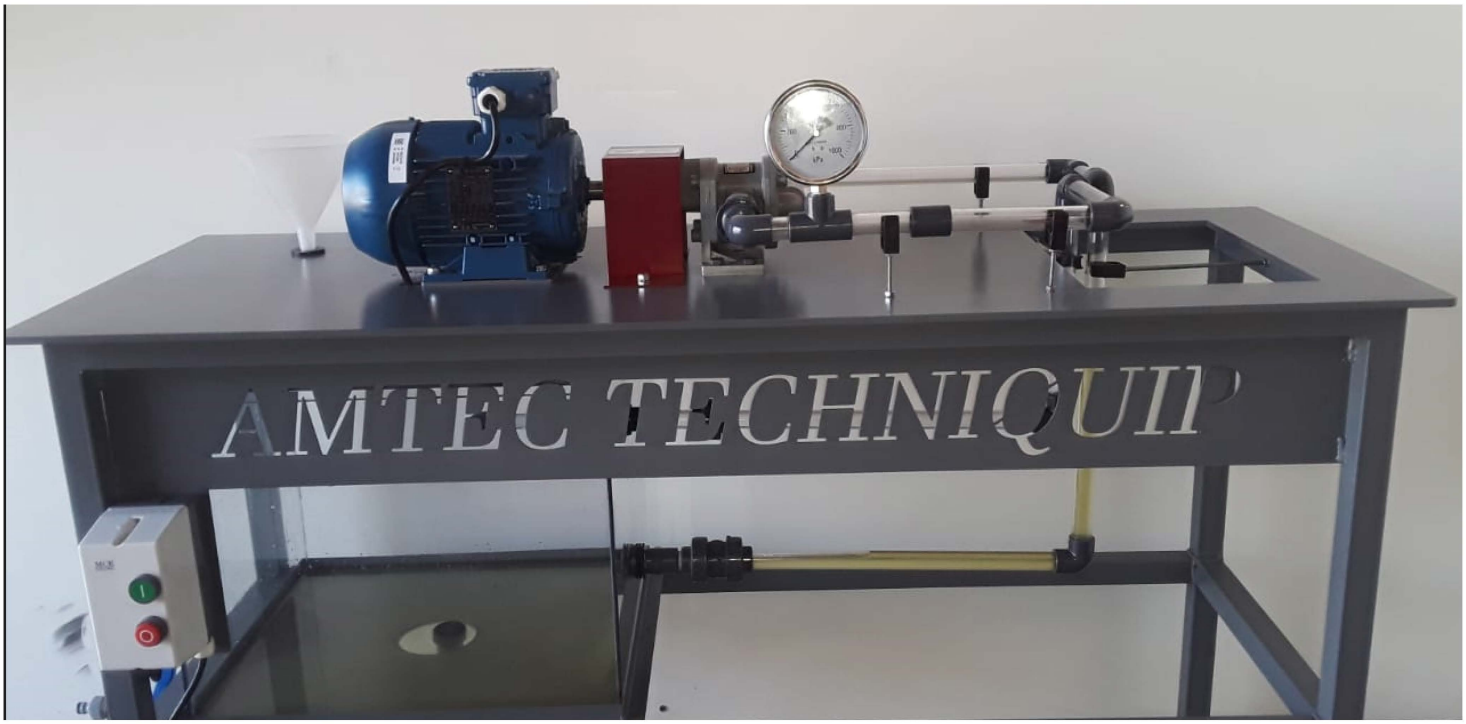
A gate valve, also known as a sluice valve, is a valve that opens by lifting a barrier (gate) out of the path of the fluid. Gate valves require very little space along the pipe axis and hardly restrict the flow of fluid when the gate is fully opened. The gate faces can be parallel but are most commonly wedge-shaped (in order to be able to apply pressure on the sealing surface).

Typical use
Gate valves are used to shut off the flow of liquids rather than for flow regulation, which is frequently done with a globe valve. When fully open, the typical gate valve has no obstruction in the flow path, resulting in very low flow resistance. The size of the open flow path generally varies in a nonlinear manner as the gate is moved. This means that the flow rate does not change evenly with stem travel. Depending on the construction, a partially open gate can vibrate from the fluid flow.

Gate valves are mostly used with larger pipe diameters (from 2" to the largest pipelines) since they are less complex to construct than other types of valves in large sizes

AMTEC OPERATIONAL
RECIRCULATING PUMP TRAINERS

AMTEC OPERATIONAL
RECIRCULATING PUMP TRAINERS



AMTEC OPERATIONAL
RECIRCULATING PUMP TRAINERS

H52

SERIES AND PARALLEL PUMPS

Bench-top test set that allows students to investigate the operation and performance of a single centrifugal pump and two centrifugal pumps in both series and parallel.

KEY FEATURES

- Self-contained, compact, bench-top, easy-to-use test set for a range of experiments and demonstrations
- Easily configurable system to enable pumps to be tested individually, in series and in parallel, with a manually adjustable water flow rate
- Long-life, robust valves with large handles allow students to change the water circuit in seconds, ready for the next experiment.
- Includes pressure gauges to measure intake and delivery pressures
- Discharge flow measurement

LEARNING OUTCOMES

Comprehensive demonstration and investigation into a centrifugal pump including:

- Centrifugal pump performance and characteristics, typically: head versus flow rate
- Operation of centrifugal pumps in series
- Operation of centrifugal pumps in parallel
- Suction tests of a single pump
- Demonstration of cavitation

H52

SERIES AND PARALLEL PUMP TEST SET

DESCRIPTION

A compact, bench-top and fully self-contained centrifugal pump test set, that allows students to find the characteristics of centrifugal pumps, working alone or in series or parallel.

The apparatus comprises two identical centrifugal pumps, together with two bearing-mounted motors driving each pump independently. The pumps draw water from the clear acrylic reservoir. The water travels through a series of valves to be delivered to a flow measurement device. The water then returns to the reservoir for re-use, keeping water use to a minimum.

There are pressure gauges fitted in the intake and delivery pipes for the direct measurement and visible display of the inlet and outlet pressures of the pumps. The adjustable inlet and delivery valves allow students to create different operating conditions.

STANDARD FEATURES

- Supplied with a comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives

OPTIONAL ANCILLARIES

- Stroboscope (ST1)

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specification without prior notice.

APPROXIMATE NETT DIMENSIONS AND WEIGHT:

- 1040 mm (width); 572 mm (depth); 740 mm (height)
- Approximately 50 kg (weight - tank empty)

ESSENTIAL SERVICES

ELECTRICAL SUPPLY:

- Single phase 220 VAC to 240 VAC, 50 Hz

OR

- 100 VAC to 120 VAC, 60 Hz

OR

- 220 VAC 60 Hz (specify on order)

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory environment

STORAGE TEMPERATURE RANGE:

–25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

30% to 95% (non-condensing)

Engineering Science

Sixth Forms – Technical Colleges – Universities

Materials testing

Vibration

Mechanisms

Forces and moments

Simple machines

Friction

The Engineering Science range is a high quality, robust modular system based around a work panel and 18 separate experiment kits.

The system is suitable for use on courses from foundation level up to technology familiarisation programmes at post-graduate level.

You can order as much or as little as you like, and a comprehensive system can be built up over time.

FEATURES:

Each kit performs a number of different experiments
Housed in tough storage trays with a moulded insert
Full worksheets, background notes and lecturer resources included
The kits are safe and simple to setup and use
Everything required to do the experiments is included in each kit
Further details and a list of available experiment kits is shown overleaf.

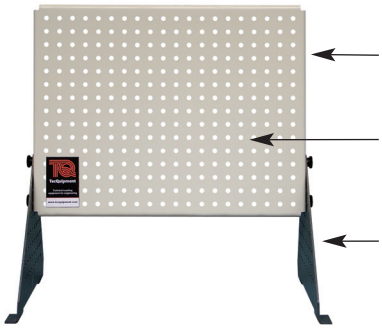
BENEFITS:

Outstanding value for money
Easy to organize and keep tidy, giving optimal use of the laboratory
Convenient class planning
Minimal student supervision required – ideal for open-learning laboratories
All students need is a basic maths set, calculator and the printed worksheets

The Engineering Science Work Panel

The work panel includes a CD containing all the worksheets, notes and lecturer material for all 18 kits in PDF format – over 1,000 pages in total.

The work panel has been designed to be rugged, compact and easy to set up and use. It can be set up in a number of different ways to suit a particular experiment.



The Experiment Kits

The experiment kits are all housed in a tough, stackable tray with a moulded insert and lid to keep the contents safe and tidy. A laminated graphical parts list provides a quick and easy means to check the contents and allows the kit to be audited.

From the 18 kits over 60 experiments can be performed, details of which can be found in our datasheets.

Storage

TecQuipment offers a purpose-built mobile storage unit which can house all of the kits with room for duplication and expansion.

EXPERIMENT KITS:

- Forces Kit
- Moments Kit
- Deflection of Beams Kit
- Torsion of Circular Sections Kit
- Tensile Tester Kit
- Simple Harmonic Motion Kit
- Friction and Inclined Plane Kit
- Potential and Kinetic Energy Kit
- Pulley Kit
- Drive Systems Kit
- Cam, Crank and Toggle Kit
- Gear Trains Kit
- Simple Mechanisms Kit
- Bar Linkages Kit
- Centrifugal Force Kit
- Rotational Friction Kit
- Additional Mechanisms Kit
- Spring Tester Kit

Ordering

All you need to get you started is one work panel and one experiment kit.

Dependent on the range of experiments you require, and your budget, additional kits and work panels can be ordered at any time and added to your laboratory.

Alternatively, a complete class set of kits in the storage unit is also available consisting of:

- All 18 experiment kits
- Three work panels
- A common spare parts kit
- Five additional empty storage trays and lids

ES2

FORCES KIT

Allows students to understand how to find the centre of gravity of shapes and the relationship between angles and coplanar forces

EXPERIMENTS

- Centres of gravity
- Force triangles
- Force polygons and Bow's Notation
- Linked polygons (non-concurrent forces)

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments with centres of gravity and angles and coplanar forces

FORCES KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a set of different plastic shapes for experiments in centres of gravity of two-dimensional objects. It also includes pulleys, weights and a magnetic protractor for experiments in concurrent and non-concurrent coplanar forces and angles.

The selection of pulleys and weights allows you to create force triangles, polygons and linked polygons. The guidance notes show how to analyse and predict forces using Bow's Notation and the parallelogram of forces.

TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: The kit is for use with the ES1 Work Panel (supplied separately).

ES3

MOMENTS KIT

Demonstrates the relationship between distances and forces in rigid beams and levers

EXPERIMENTS

- Principle of moments
- Beam balances
- 1st, 2nd and 3rd order levers
- Bell crank lever
- Beam reactions

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Provides experiment capabilities into the principles of moments, beam reactions, beam balances and levers

MOMENTS KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a rigid beam for experiments in the principle of moments, extending to levers and beams. It shows the three main lever types (1st, 2nd and 3rd order) and includes an 'L' shape plate for experiments in bell crank levers. A pulley allows extra experiments with moments caused by oblique forces.

The rigid beam allows experiments that show the use of moments to find unknown weights, creating simple beam balances. It also works with spring balances to show reaction forces on beams with point loads and uniformly distributed loads (UDLs).

TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: The kit is for use with the ES1 Work Panel (supplied separately).

ES4

DEFLECTION OF BEAMS AND CANTILEVERS KIT

Demonstrates the deflection of beams of different material and dimensions, held on different supports

EXPERIMENTS

- Beam length and deflection
- Beam material and deflection (Young's Modulus)
- Beam '*I*' value and deflection
- Beam supports (cantilever, propped cantilever, fixed beam and simply supported) and deflection

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments showing the deflection of beams with different supports

DEFLECTION OF BEAMS AND CANTILEVERS KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes different beams and fixing blocks. The fixing blocks work as clamps or knife-edge supports. They hold the beams in different ways, such as a cantilever, simply supported, fixed (encastre) and a propped cantilever.

Students set up a beam on the supports and add weights to deflect the beams. An accurate dial indicator measures the deflection at the point of loading.

The choice of different beams allow extra experiments, showing the relationships between beam deflection and 'I' (second moment of area) value. They also allow comparisons of different beam material and how it affects deflection, introducing Young's Modulus.

Students also use the cantilever for easy experiments showing the relationship between beam length and deflection.

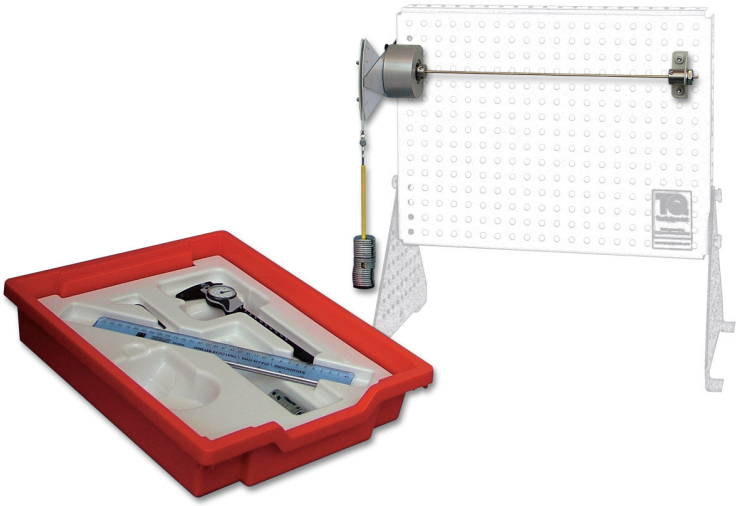
TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: the kit is for use with the ES1 Work Panel (supplied separately).

ES5

TORSION OF CIRCULAR SECTIONS KIT

Demonstrations the torsion in circular section specimens of different material and length



EXPERIMENTS

- Specimen length and angle of twist
- Specimen material and angle of twist (Modulus of Rigidity)
- Specimen '*J*' value and angle of twist

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments showing the torsion in circular section specimens of different material and length

TORSION OF CIRCULAR SECTIONS KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes different circular section specimens and adjustable chucks for experiments in torsion.

Students fix the specimens in the chucks and apply weights to a lever arm. The arm applies a moment (torque) to one end of the specimen. A scale on the arm shows the angle of twist.

Standard tests show the relationship between torsion and 'J' (polar second moment of area) value. Students use this to predict the twist angle for any given specimen.

The choice of different specimens allows comparisons of different specimen material and how it affects torsion, introducing the Modulus of Rigidity.

Students also move the chuck positions for easy experiments showing the relationship between specimen length and angle of twist.

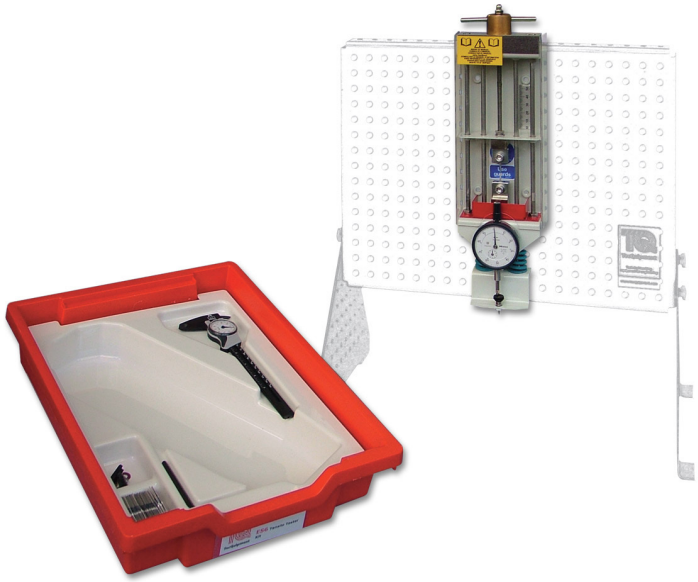
TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: the kit is for use with the ES1 Work Panel (supplied separately).

ES6

TENSILE TESTER KIT

Demonstrates the principles of tensile tests on specimens of different material



EXPERIMENTS

- Tensile tests (to destruction) of different materials
- Finding the tensile strength of a material
- Material behaviour in the elastic and plastic region
- Creating a force and extension chart

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments in tensile testing of different materials

TENSILE TESTER KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes specimens of different materials to show students the principles of tensile tests.

Students use the tensile tester to stretch the specimens to destruction, while measuring the extension and force. The tests introduce students to tensile test terms including:

- overall stress and strain
- yeild properties
- tensile strength
- elongation

The choice of different specimens allows comparisons of different specimen material and how it affects its tensile properties.

TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the Work Panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: the kit is for use with the ES1 Work Panel (supplied separately).

ES8

FRICTION AND INCLINED PLANE KIT

Demonstrates the frictional and other forces on bodies and between different surfaces on a flat or inclined plane

EXPERIMENTS

- Forces on an Inclined Plane
- Rolling and Sliding Friction on different surfaces
- Kinetic and Static Sliding Friction between different surfaces
- Surface angle and friction between different surfaces

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains an inclinable flat metal plate for experiments in frictional forces and the classic 'forces on an inclined plane' experiment

FRICTION AND INCLINED PLANE KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes parts for experiments in friction and forces on a flat or inclined plane. The plane has an inclinometer and adjustment to allow the student to set the plane to any angle between zero and 90 degrees. The parts include different friction surfaces, a roller set, a rolling car or sled with adjustable mass and a simple roller.

Students fit the different parts to the plane and apply masses. They learn how different surface finishes and mass affect friction and how surface angles and mass affect forces around a body on a plane.

The experiments introduce students to important engineering and scientific terms, such as the coefficient of friction, sliding friction and kinetic friction.

The inclinable plane allows students to do the classic 'forces on an inclined plane experiments'. It also shows the relationship between frictional forces and angles other than horizontal.

TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: the kit is for use with the ES1 Work Panel (supplied separately).

ES9

POTENTIAL AND KINETIC ENERGY KIT

Demonstrates the difference between potential and kinetic energy and how it can change from one to the other

EXPERIMENTS

- Kinetic and potential energy in a pendulum
- Elastic potential energy in a spring
- Kinetic energy in a flywheel

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular with sensible size parts – each kit fits onto the Work Panel (ES1) for experiments and simple classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments in potential and kinetic energy

POTENTIAL AND KINETIC ENERGY KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a pendulum, a spring and a flywheel for experiments in potential and kinetic energy.

Students test each part to discover the difference between potential and kinetic energy and the transfer of energy from one form to another.

The kit introduces students to key engineering terms such as 'moment of inertia' and 'elastic potential energy'.

TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the Work Panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: the kit is for use with the ES1 Work Panel (supplied separately).

ES10

PULLEY KIT

Demonstrates the mechanical advantage of different combinations of pulleys and a simple wheel and axle

EXPERIMENTS

- Simple Pulleys - fixed, movable and compound
- The Wheel and Axle
- The Weston Differential Pulley

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments in pulleys

PULLEY KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a wheel and axle with single, double and triple wheel or 'sheave' pulleys for experiments in mechanical advantage.

Students test fixed, movable and compound pulleys attached to load and effort weights to test their mechanical advantage.

The kit includes a unique pulley - the Weston Differential pulley to show how two different size sheaves on one pulley has a dramatic effect on mechanical advantage.

The kit introduces students to key engineering terms such as machine efficiency, velocity ratio and 'work done'.

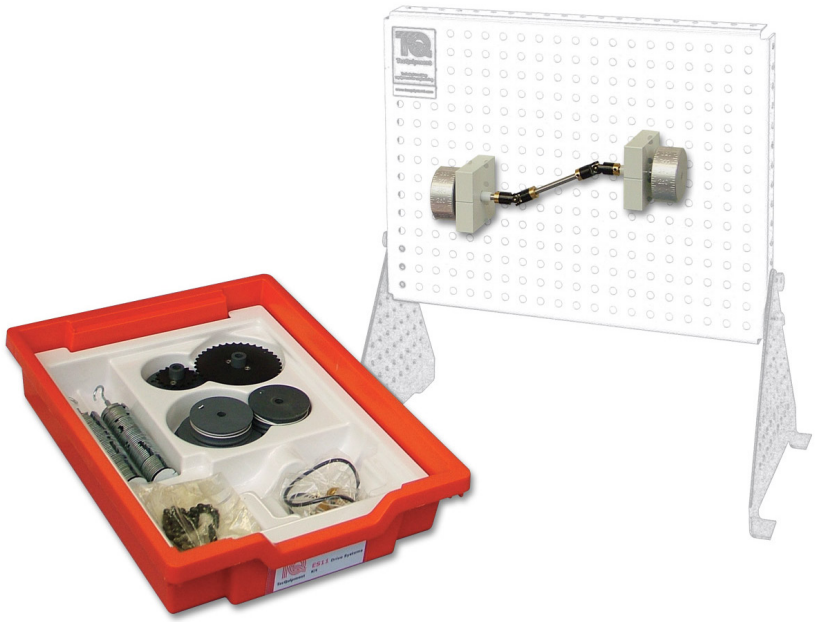
TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the Work Panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: the kit is for use with the ES1 Work Panel (supplied separately).

ES11

DRIVE SYSTEMS KIT

Demonstrates the advantages and disadvantages of three popular drive systems – belt, chain and a universal coupling



EXPERIMENTS

- Power transfer, efficiency and direction in a belt drive
- Power transfer and efficiency in a chain drive
- Input and output relationships of a universal coupling
- Friction and angle of lap on a pulley

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments with three popular drive systems

DRIVE SYSTEMS KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes three different drive systems to show their relative advantages and disadvantages.

Students test a universal coupling, a belt drive and a chain drive to see how they work and how they differ in the way they transfer motion (power).

The kit includes extra parts to help show the importance of the angle of lap around a pulley and its relationship with friction.

The kit introduces students to key engineering terms such as gear ratio, pulley ratio and efficiency.

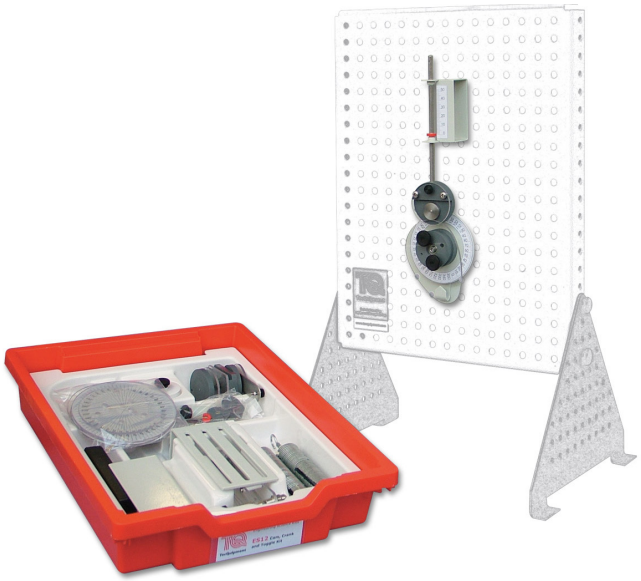
TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the Work Panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: The kit is for use with the ES1 Work Panel (supplied separately).

ES12

CAM, CRANK AND TOGGLE KIT

Demonstrates the characteristics of a mechanical toggle, crank motion and the most popular shaped cams



EXPERIMENTS

- Displacement and angle characteristics of pear, heart, round and spiral cams
- Characteristics of a mechanical toggle
- Turning moments and forces during crank motion

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for experiments with a mechanical toggle, crank motion and four popular shapes of cam

CAM, CRANK AND TOGGLE KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a crank and slider to show the relative forces during crank motion. It also includes four popular cam shapes to show their different characteristics. Another set of parts in the kit shows the characteristics of a mechanical toggle.

Students fit the crank and slider with weights and a spring balance to see the change in linear and rotational forces (moments) as the crank turns. They also use the slider with different followers on a set of four popular shape cams -heart, pear, spiral and round. This gives several cam and follower combinations to help students understand the different characteristics of each cam and why engineers choose between them for different applications.

The last set of parts in the kit has a simple linkage that allows students to see the characteristics of a toggle mechanism. Its shows the relative forces and angular conditions of the toggle in its initial state and how they affect the point at which it locks or 'snaps' into a horizontal state.

The kit introduces students to key engineering terms such as a 'flat follower', a 'roller follower' and 'toggle action'.

TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the Work Panel means that teachers or lecturers may extend the experiments to an even greater range.

ES13

GEAR TRAINS KIT

Demonstrates the characteristics of the most popular gear sets

EXPERIMENTS

- Characteristics of Spur Gears, including single and compound gear trains and the 'idler' gear
- Characteristics of a Bevel Gear
- Characteristics of a Worm Drive

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains a selection of the most popular gears and arrangements to show the efficiencies, advantages and disadvantages of each type of gear

GEAR TRAINS KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a selection of different gears for experiments to find their unique characteristics.

The gears include Spur Gears, a Bevel Gear and a Worm Drive. The spur gears have two sets of teeth on the same shaft, allowing extra experiments in compound gear trains.

Students test each set of gears to see how it works and note the differences in characteristics (such as efficiency, gear ratio and mechanical advantage) of each set.

The gear sets are a selection of the most common sets similar to those used in real applications, such as automobile gear boxes, domestic and industrial hand tools and clockwork instruments. Each has advantages and disadvantages that make them suitable for a particular job.

The kit introduces students to key engineering terms such as gear ratio, efficiency, mechanical advantage and velocity ratio.

TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: The kit is for use with the ES1 Work Panel (supplied separately).

ES14

SIMPLE MECHANISMS KIT

Demonstrates how three popular mechanisms convert motion

EXPERIMENTS

- Conversion of motion using the 'Scotch yoke' (or 'slotted link')
- Conversion of motion using the Quick Return mechanism
- Conversion of motion using the Crank and Slider

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains three popular mechanisms that show how they can usefully convert motion from one form or direction to another

SIMPLE MECHANISMS KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes three popular mechanisms for experiments in conversion of motion from linear to rotary or rotary to linear. These include the Scotch Yoke (sometimes called 'donkey crosshead' or 'slotted link'), the Crank and Slider, and the Quick Return mechanisms.

Students test each mechanism to see how it works and note the differences in the way that each mechanism converts the motion.

The three mechanisms are the same as those used in real applications, such as combustion engines, power assisted valves or fluid pumping systems. Each has a unique way of converting motion, shown by the experiments.

The kit introduces students to key engineering terms such as reciprocating motion, rotary to linear motion and linear to rotary motion.

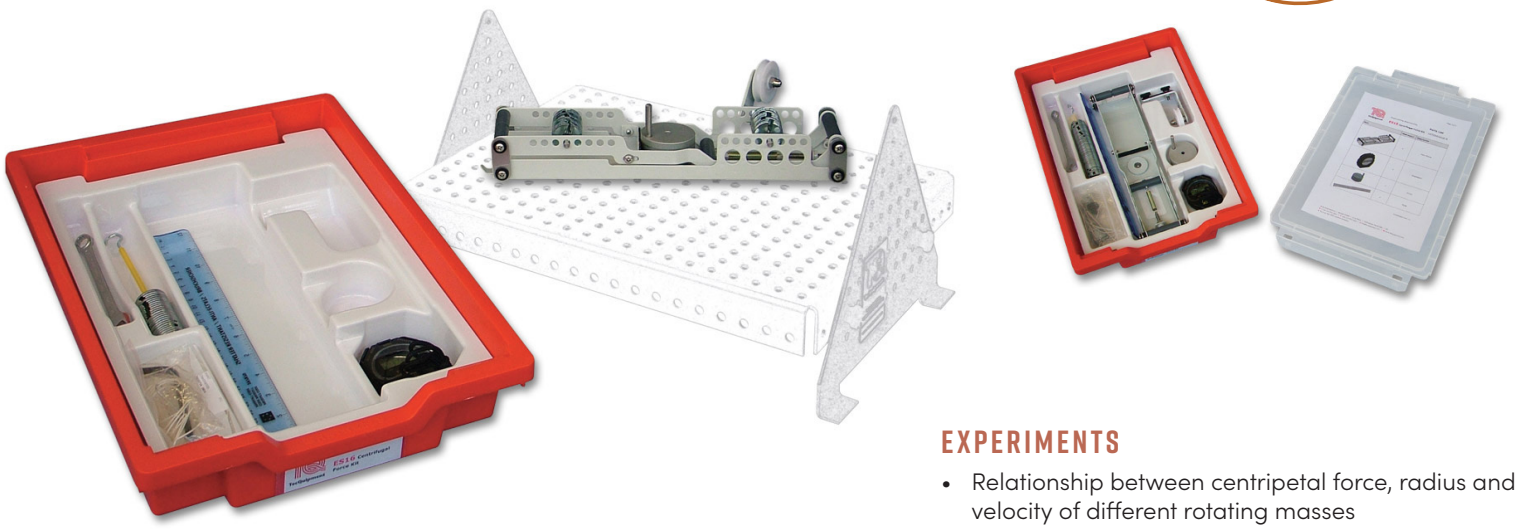
TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: The kit is for use with the ES1 Work Panel (supplied separately).

ES16

CENTRIFUGAL FORCE KIT

Demonstrates the relationship between centripetal force, radius and velocity of rotating masses



EXPERIMENTS

- Relationship between centripetal force, radius and velocity of different rotating masses

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains a manually-rotated frame that shows the relationship between centripetal force, radius and velocity of different rotating masses

CENTRIFUGAL FORCE KIT

DESCRIPTION

This versatile kit is part of a series that allows many experiments using different arrangements of their parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or show an engineering science topic.

This kit includes a manually rotated frame with a low-friction cantilever linkage. The frame has mounting positions for adjustable masses and a spring that applies a fixed frictional force value to a rotating drum. The range of mounting positions and masses allows many variations of the experiment to help students understand the relationships between the variables of speed, mass and radial position.

Students fit the chosen masses to one side of the frame and an equal counterbalance to the opposite side of the frame. They rotate the assembly which will overcome the spring frictional force at a given speed, working as centrifugal clutch that regulates its own speed. The frame has a durable 'clicking' tab that students use with a stopwatch (supplied) to measure the speed. They use their measurements to calculate the forces due to the rotating masses and compare them with the opposing force from the spring.

The kit introduces students to key engineering terms such as centrifugal and centripetal force, while explaining the fictitious term 'centrifugal' force and its accepted use. It also shows the use of 'radians' in rotational velocity measurement.

TecQuipment supplies a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the Work Panel means that teachers or lecturers may extend the experiments to an even greater range.

NOTE: The kit is for use with the ES1 Work Panel (supplied separately).

ES19

SPRING TESTER KIT

Demonstrates the characteristics of coiled springs and how to test them

EXPERIMENTS

- Hooke's Law and compression spring tests
- Hooke's Law and extension spring tests
- Parallel and series spring tests

KEY FEATURES

- One of a series of 18 kits for experiments in fundamental engineering science topics
- For use on any engineering course from foundation to postgraduate
- Flexible and modular – each kit fits onto the Work Panel (ES1) for experiments and classroom demonstrations
- Supplied in a hard-wearing storage tray with moulded insert to hold parts securely and a graphical list to help check the kit contents
- Rugged and durable parts for safe 'hands-on' experiments – allowing better understanding
- Contains all parts needed for tests of coiled extension and compression springs, showing the use of 'Hookes law'

SPRING TESTER KIT

DESCRIPTION

This versatile kit allows many experiments using different arrangements of its parts. Students, teachers or lecturers fit the parts of the kit to the Work Panel (ES1) (supplied separately) to study or demonstrate an engineering science topic.

This kit includes different coiled springs for experiments in spring testing. These include extension springs, compression springs, parallel springs and springs that can connect in series.

Students test the springs to prove Hooke's Law and find their spring rate, comparing it with given manufacturer's values. They also test springs in parallel and series to see how this affects the overall spring rate.

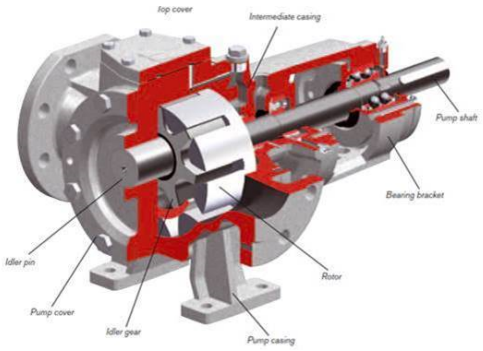
The kit helps students to understand the link between spring rate, spring extension and the design and construction of springs. It introduces students to key engineering terms such as:

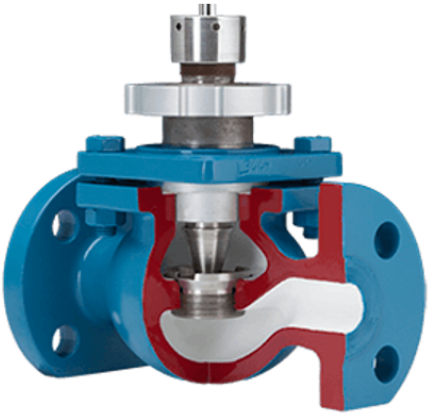
- Spring rate
- Hooke's Law
- Spring pretension

TecQuipment supply a CD-ROM with the Work Panel (ES1). It includes all the worksheets, guidance notes and lecturer notes (with answers) needed for typical experiments with each kit. The selection of parts in the kits and the choice of fixing points on the work panel means that teachers or lecturers may extend the experiments to an even greater range.

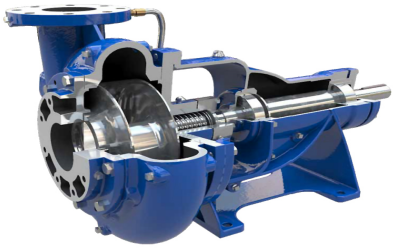
AMTEC SECTIONED PUMPS AND VALVES

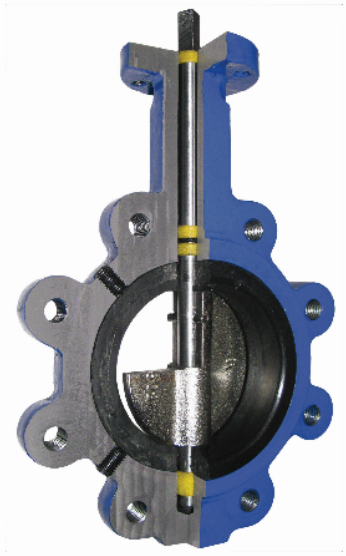
MULTI-STAGE CENTRIFUGAL ELECTROPUMP





INTERNAL GEAR PUMP





OPEN ROTOR CENTRIFUGAL ELECTRIC PUMP

HELICAL SCREW PUMP / PROGRESSIVE CAVITY PUMP

AMTEC SECTIONED PUMPS AND VALVES

The Armfield Machine Elements product range has been designed to teach hands-on industrial skills, demonstrate the principals and content of machine components and to prepare students for work in real industrial environments.

The range allows students to fully understand the function and main components of universally used machine elements, including the ability to strip and repair real industrial pumps, valves and equipment.

Several static models are also available within this range to show the principle elements of heat exchangers and separation processes.

Index – ME Series

Our cutaway pumps and valves are manufactured using brand new industrial pumps, sectioned and mounted for easy visualisation of the internal pumps components such as impellers, shafts, bearings and flow paths.

As well as our standard product range, we can cut away any industrial pump, valve or other industrial equipment up to several meters in size. We can either source new industrial components or refurbish used and end of life industrial components from your plant, to produce custom cutaway training units.

Technical specifications

Product Title: 2"/DN50 Close-Coupled Centrifugal Pump

Code: ME1

Description: A 2" or DN50 inlet cutaway Close Coupled Centrifugal Pump for studying the internal construction and operation of a close coupled industrial Centrifugal Pump.

ME1 Close-Coupled Centrifugal Pump

Technical specifications

Product Title: 2.5" Long-Coupled Centrifugal Pump

Code: ME2

Description: A 2.5" or DN65 inlet cutaway Long Coupled Centrifugal Pump for studying the internal construction and operation of a Long coupled industrial Centrifugal Pump.

ME2 Long Coupled Centrifugal Pump

Technical specifications

Product Title: 2"/DN50 Internal Gear Pump

Code: ME4

Description: A 2" or DN50 inlet and outlet cutaway Internal Gear Pump without bypass, for studying the internal construction and operation of an industrial Internal Gear Pump.

ME4 Internal Gear Pump

Technical specifications

Product Title: 2"/DN65 Vane Pump

Code: ME6

Description: A 2.5" or DN65 inlet and outlet cutaway Vane Pump for studying the internal construction and operation of an industrial Vane Pump.

ME6 Vane Pump

Cutaway pumps and valves continued:

Technical specifications

Product Title: 2"/DN50 Triple Screw Pump

Code: ME7

Description: A 2" or DN50 inlet and outlet cutaway Triple-Screw Pump for studying the internal construction and operation of an industrial Multi-Screw Pump.

ME7 Triple Screw Pump

Additional cutaway pumps available in the range

ME3: 2"/DN50 Multi-Stage Centrifugal Pump

ME5: 2"/DN50 External Gear Pump

ME8: 2"/DN50 Triple Lobe Pump

ME9: 2"/DN40 Triple Diaphragm Pump

ME10: 3/8"/DN10 Triple Diaphragm Pump

Technical specifications

Product Title: 2"/DN50 Ball Valve

Code: ME21

Description: A 2" or DN50 inlet and outlet cutaway Ball Valve for studying the internal construction and operation of an industrial Ball Valve.

ME21 Ball Valve

Technical specifications

Product Title: 2"/DN50 Gate Valve

Code: ME23

Description: A 2" or DN50 inlet and outlet cutaway Gate Valve for studying the internal construction and operation of an industrial Gate Valve.

ME23 Gate Valve

Cutaway pumps and valves continued:

Technical specifications

Product Title: 2"/DN50 Globe Valve

Code: ME24

Description: A 2" or DN50 inlet and outlet cutaway Globe Valve for studying the internal construction and operation of an industrial Globe Valve.

ME24 Globe Valve

Technical specifications

Product Title: 2"/DN50 Butterfly Valve

Code: ME27

Description: A cutaway 2"/DN50 inlet and outlet butterfly valve for studying the internal construction and operation of an industrial Butterfly Valve.

ME27 Butterfly Valve

Technical specifications

Product Title: 2"/DN50 Ball Check Valve

Code: ME30

Description: A 2" or DN50 inlet and outlet cutaway unsprung Ball Check Valve for studying the internal construction and operation of an industrial Ball Check Valve.

ME30 Ball Check Valve

Technical specifications

Product Title: 2"/DN50 Swing Check Valve

Code: ME31

Description: A cutaway 2"/DN50 inlet and outlet swing check valve for studying the internal construction and operation of an industrial Swing Check Valve.

ME31 Swing Check Valve

Cutaway pumps and valves continued:

Technical specifications

Product Title: 2"/DN50 Disk Check Valve

Code: ME32

Description: A 2" or DN50 inlet and outlet cutaway Disc Check Valve for studying the internal construction and operation of an industrial Disc Check Valve.

ME32 Disk Check Valve

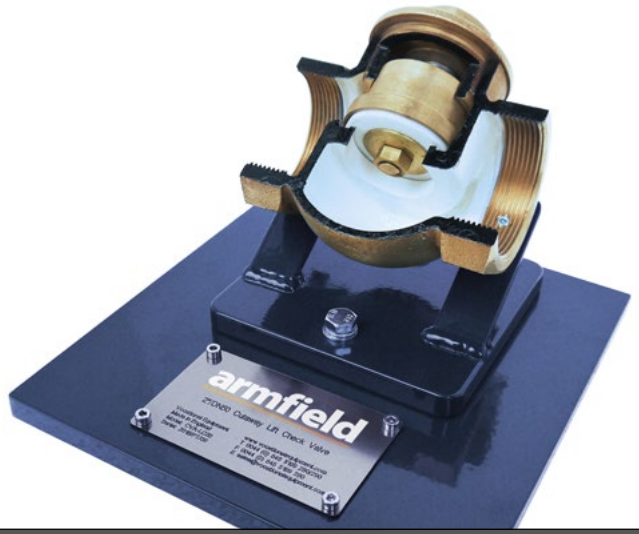
Technical specifications

Product Title: 2"/DN50 Lift Check Valve

Code: ME33

Description: A 2" or DN50 inlet and outlet cutaway Lift Check Valve for studying the internal construction and operation of an industrial Lift Check Valve.

ME33 Lift Check Valve



Technical specifications

Product Title: 2"/DN50 Spring Safety Relief Valve

Code: ME40

Description: A cutaway 2"/DN50 inlet and outlet spring safety relief valve for studying the internal construction and operation of an industrial Spring Safety Relief Valve.

ME40 Spring Safety Relief Valve

Steam turbine & additional pumps cutaway lists:

Additional cutaway pumps available in the range

ME22: 2"/DN50 3 – Way Ball Valve
ME25: 2"/DN50 Right-Angled Globe Valve
ME26: 2"/DN50 Weir Diaphragm Valve
ME28: 1"/DN25 Needle Valve
ME29: 2"/DN50 2-Port Plug (cock) Valve
ME34: 2"/DN50 Electrically Actuated Ball Valve
ME35: 2"/DN50 Pneumatically Actuated Ball Valve
ME36: 2"/DN50 Control Valve
ME37: 2"/DN50 3-Way Control Valve
ME38: 2"/DN50 Solenoid Valve
ME39: 2"/DN50 Pressure Reducing Valve

Technical specifications

Product Title: Steam Turbine without Governor

Code: ME51

Description: A Cutaway Steam Turbine for studying the internal construction and operation of a single stage ball bearing type steam turbine without a governor.

ME51 Steam Turbine without Governor

Additional cutaway steam turbines available in the range

ME52: Cutaway Steam Turbine with Governor

Dissectible Pumps and Valves

Our dissectible maintenance training kits use new industrial pumps and valves that are commonly used in industrial plants.

Trainees learn about pump/ valve operation, disassembly, refurbishment and re-assembly of a wide range of industrial devices.

The kits are supplied in a toughened case with a full toolkit appropriate for maintenance operations.

Every dissectible maintenance training kit is supplied with an equipment manual and laminated job worksheets with clear instructions on the dis-assembly, checking and re-assembly of the equipment.

Technical specifications

Product Title: 2"/DN50 Single-Stage Centrifugal Pump

Code: ME61

Description: A Brand New Single Stage Centrifugal Pump with DN50 inlet and DN32 outlet for maintenance and repair training.

The set includes a complete toolkit for pump maintenance operations and laminated job worksheets for disassembly, checking, repair and reassembly of a single stage centrifugal pump.

All components are supplied in a foam lined rugged industrial case for easy storage and handling.

ME61 Single-Stage Centrifugal Pump

Additional dissectible pumps and valves available in the range

ME62: 2"/DN50 Long Coupled Single- Stage Centrifugal Pump
ME63: 2"/DN50 4 Stage Centrifugal Pump
ME64: 2"/DN50 Internal Gear Pump
ME65: 2"/DN50 External Gear Pump
ME66: 1.5"/DN40 Vane Pump
ME67: 2"/DN50 Multi-Screw Pump
ME68: 2"/DN50 Lobe Pump
ME69: 2"/DN50 Diaphragm Pump
ME70: 2.5"/DN65 Tri-Rotor Rotary Piston Pump
ME81: 2"/DN50 Ball Valve
ME82: 2"/DN50 3-Way Ball Valve
ME83: 2"/DN50 Gate Valve
ME84: 2"/DN50 Globe Valve
ME85: 2"/DN50 Right-Angled Globe Valve
ME86: 2"/DN50 Diaphragm Valve
ME87: 2"/DN50 Butterfly Valve
ME88: 1"/DN25 Needle Valve
ME89: 2"/DN50 2-Port Plug (Cock) Valve
ME90: 2"/DN50 Ball Check Valve
ME91: 2"/DN50 Swing Check Valve
ME92: 2"/DN50 Disc Check Valve
ME93: 2"/DN50 Lift Check Valve
ME94: 2"/DN50 Electrically Actuated Ball Valve
ME95: 2"/DN50 Pneumatically Actuated Ball Valve
ME96: 2"/DN50 Control Valve without Positioner
ME97: 2"/DN50 Control Valve With Smart Positioner
ME98: 2"/DN50 Dissectible 3-Way Control Valve
ME99: 2"/DN50 Solenoid Valve
ME100: 2"/DN50 Pressure Reducing Valve
ME101: 2"/DN50 Spring Safety Relief Valve

Warranty

Two year extended warranty on this product

Knowledge base

> 26 years' expertise in industrial R&D 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.

Products CE

AMTEC HYDRAULICS AND PNEUMATICS

We offer:

- **Single sided workstation**
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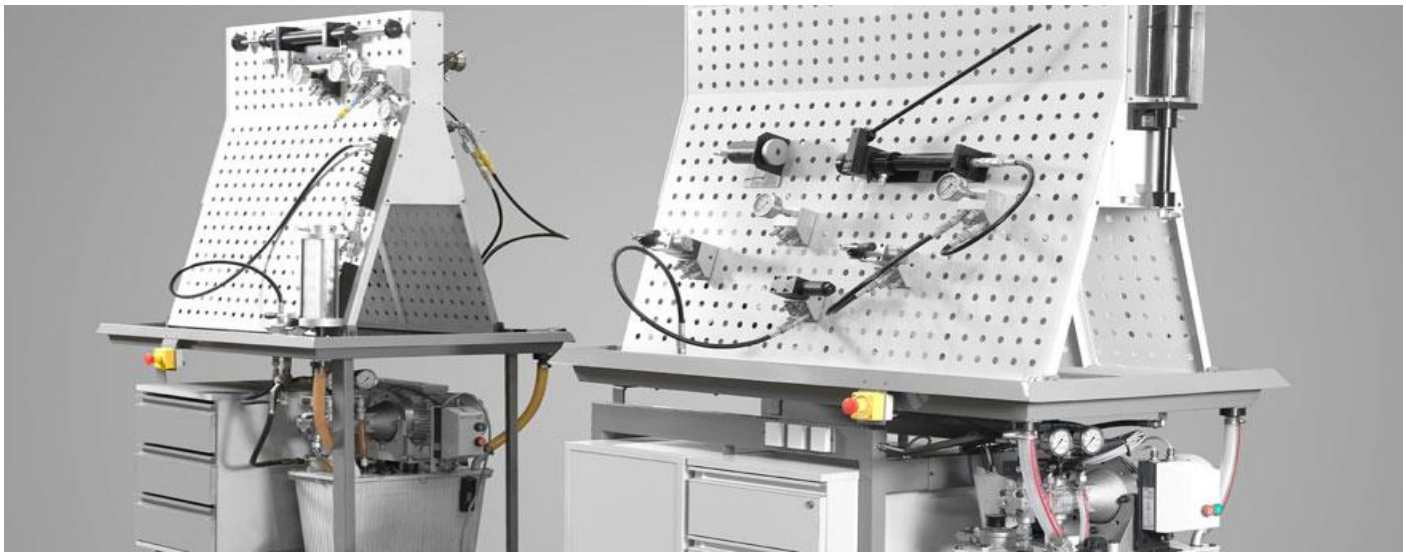
- **Proportional Hydraulics component sets**



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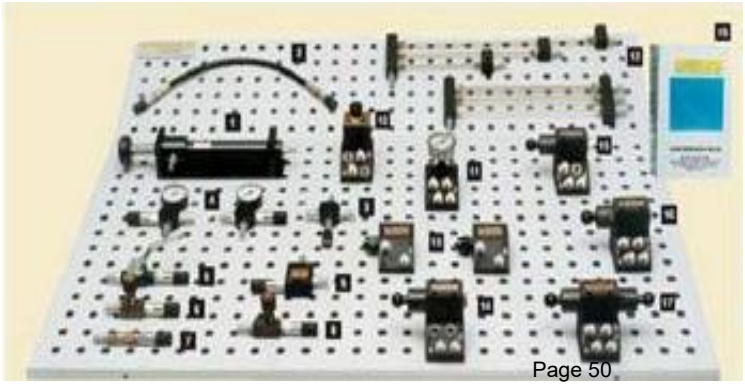
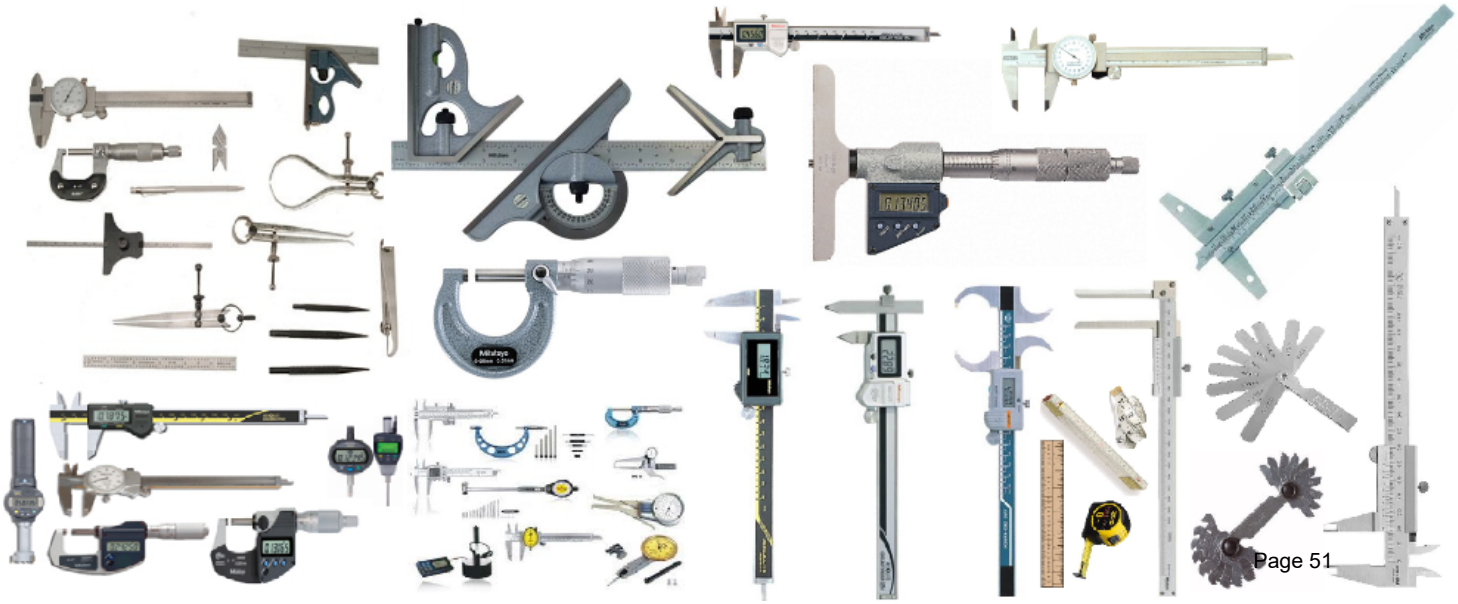
- **Plug and play components**
- **Full after sales services**
- **Spares readily Available**
- **2-year warranty**
- **Locally supported**



AMTEC MECHANICAL TOOLS AND WORKSHOP EQUIPMENT

AMTEC can supply a wide ranch of Mechanical Engineering tools and Workshop equipment



AMTEC MECHANICAL TOOLS AND WORKSHOP EQUIPMENT

AMTEC can supply a wide ranch of Mechanical Engineering tools and Workshop equipment










AMTEC DVD LIST

Amtec Techniquip has training DVDs and manuals available for common processes in the various Engineering workshop teaching various principles from safety in the workplace to various machines.

We have the following DVD's available for the Engineering Workshop.

DVD Description	PART NO	COURSE
AC & DC MACHINES DVD + 2 MANUALS	AMTECDVD001	Electrical
AC INDUCTION MOTORS DVD + 2 MANUALS	AMTECDVD002	Electrical
AIR CONDITIONING & REFRIGERATION DVD + 2 MANUALS	AMTECDVD003	AC
ANALOGUE OSCILLOSCOPE DVD + 1 MANUAL	AMTECDVD004	Electronics
AUTO ELECTRICAL TESTING DVD + 1 MANUAL	AMTECDVD005	Auto Electrical
AUTOMATIC PROCESS CONTROL DVD + 2 MANUALS	AMTECDVD006	Instrumentation
AUTOMOTIVE ELECTRICAL MAINTENANCE DVD + 1 MANUAL	AMTECDVD007	Auto Electrical
BASIC BEARING MAINTENANCE DVD + 2 MANUALS	AMTECDVD008	Mechanical
BASIC CENTRIFUGAL PUMPS DVD + 2 MANUALS	AMTECDVD009	Mechanical
BASIC HAND TOOLS DVD + 2 MANUALS	AMTECDVD010	Various
BASIC HYDRAULIC MAINTENANCE DVD + 2 MANUALS	AMTECDVD011	Mechanical
BELT AND CHAIN DRIVES DVD + 1 MANUAL	AMTECDVD012	Mechanical
BRAZING AND BRAZE WELDING DVD + 2 MANUALS	AMTECDVD013	Mechanical
COMPOUND MITRE SAW DVD + 1 MANUAL	AMTECDVD014	Mechanical
COMPRESSED AIR SYSTEMS DVD + 2 MANUALS	AMTECDVD015	Mechanical
CONFINED SPACES DVD + 2 MANUALS	AMTECDVD016	Various
DRILLING TAPPING AND THREADING DVD + 2 MANUALS	AMTECDVD017	Mechanical
ELECTRICAL ANGLE GRINDER DVD + 2 MANUALS	AMTECDVD018	Mechanical
ELECTRICAL CONSTRUCTION OPERATOR DVD + 2 MANUALS	AMTECDVD019	Electrical
ELECTRICAL TEST EQUIPMENT DVD + 2 MANUALS	AMTECDVD020	Electrical
ELECTRICITY IN THE WORKPLACE DVD + 2 MANUALS	AMTECDVD021	Electrical
ESSENTIAL KNOWLEDGE FOR WELDERS DVD + 1 MANUAL	AMTECDVD022	Welding
FIRE SAFETY SERIES DVD + 1 MANUAL	AMTECDVD023	Various
FIRE SAFETY FOR OFFICES DVD - NO MANUALS	AMTECDVD024	Various
FORKLIFT OPERATOR TRAINING 2 DVDs + CD ROM	AMTECDVD025	Fork Lift
GAS HAZARD AWARENESS DVD + 1 MANUAL	AMTECDVD026	Welding
GAS METAL ARC WELDING DVD + 1 MANUAL	AMTECDVD027	Welding
GAS SAFETY - PORTABLE CYLINDER HANDLING DVD + 1 MANUAL	AMTECDVD028	Welding
GEARED REDUCTION UNITS DVD + 1 MANUAL	AMTECDVD029	Mechanical
GENERAL SAFETY IN THE WORKPLACE 2 DVDs + CDROM	AMTECDVD030	Various
GENERAL WELDING SAFETY DVD + 1 MANUAL	AMTECDVD031	Welding
GRINDING MACHINES DVD + 2 MANUALS	AMTECDVD032	Mechanical
LEAD ACID BATTERIES DVD + 2 MANUALS	AMTECDVD033	Electrical
LIGHT DUTY HAND SOLDERING DVD + 1 MANUALS	AMTECDVD034	Electrical
LIGHT VOLTAGE JOINTS DVD + 1 MANUAL & EVJ MANUAL	AMTECDVD035	Electrical
LUBRICATION DVD + 1 MANUAL	AMTECDVD036	Mechanical
MEASURING & MARKING (BASIC ENG SKILLS) DVD + 1 MAN	AMTECDVD037	Mechanical
MECHANICAL COUPLING ALIGNMENT DVD + 2 MANUALS	AMTECDVD038	Mechanical
MECHANICAL THREADED FASTENERS DVD + 1 MANUAL	AMTECDVD039	Mechanical
MEDIUM VOLTAGE JOINTS 2 DVDs - NO MANUALS	AMTECDVD040	Electrical
OXY/ACETYLENE EQUIPMENT DVD + 2 MANUALS	AMTECDVD041	Welding
OXY/ACETYLENE PROCESS DVD + 2 MANUALS	AMTECDVD042	Welding
PRECISION MEASURING INSTRUMENTS DVD + 2 MANUALS	AMTECDVD043	Welding
PRESSURE VESSEL TESTING DVD + 1 MANUAL	AMTECDVD044	Mechanical
PROGRAMMABLE LOGIC CONTROLLERS DVD + 2 MANUALS	AMTECDVD045	Electrical
SAFE LIFTING & MOVING 2 DVDs + CD ROM	AMTECDVD046	Various
SEALS & GASKETS DVD + 2 MANUALS	AMTECDVD047	Various
SHIELDED METAL ARC WELDING DVD + 2 MANUALS	AMTECDVD048	Welding
TUNGSTEN INERT GAS WELDING DVD + 2 MANUALS	AMTECDVD049	Welding
VALVES AND VALVE MAINTENANCE DVD + 2 MANUALS	AMTECDVD050	Mechanical
WORKING WITH PORTABLE LADDERS DVD + 2 MANUALS	AMTECDVD051	Mechanical

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"Please feel free to contact us should you require a Quotation or Technical information & datasheets"