

**ENGLISH**

**Building Blocks For Life**



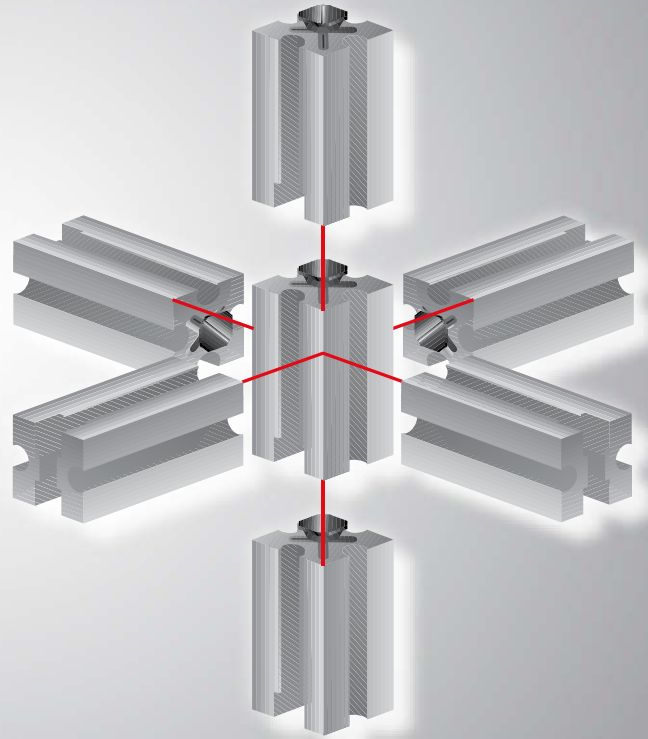
### **What is fischertechnik?**

fischertechnik is the flexible and innovative construction system, built around the unique fischertechnik building block which allows attachment to all six sides.

### **fischertechnik – the building blocks to an engaging STEM education program**

These days it seems everywhere you turn, leading educators are stressing the importance of STEM Education (Science, Technology, Engineering and Mathematics). The reason for this is simple: Demand for scientists and engineers is expected to grow at a rate far exceeding any other occupational field. At the same time fewer and fewer students are pursuing careers in these areas. When they are, they are often not performing at a sufficient level of academic achievement to be successful. While most schools do address the areas of Science and Maths to varying degrees, the two aspects of the STEM education equation that are most often overlooked are the “T” and the “E”– technology and engineering. To help close this gap, you need materials that allow you to provide an engaging, hands-on introduction to technology and essential STEM related concepts.

**You need fischertechnik**



### **STEM KITS**

Various Science and Technology Kits

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### **STEM ROBOTICS**

State-of-the-art Robotics Sets from Elementary level up to College and University level

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fischertechnik's innovative instructional material teaches basic technical understanding and provides optimum preparation for technical occupations.

The fischertechnik learning products are used extensively around the globe, to explore STEM concepts such as:

- **Simple Machines**
- **Mechanics**
- **Statics**
- **Pneumatics**
- **Renewable Energies**
- **Fuel Cell**
- **Optics & Lights**
- **Electronics**
- **Physics**
- **Robotics**
- **Cybernetics**
- **Mechatronics**
- **Automation Control**

fischertechnik is also widely used in industry for vocational training, as well as simulation purposes for realistic representation and simulation of complex systems.

## **STEM SETS**

Project based STEM SETS, aligned with the STEM curriculum

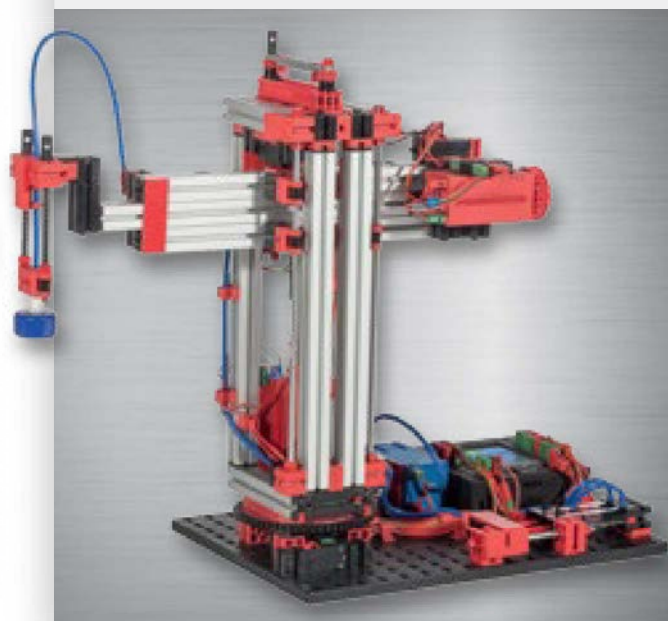
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## **TRAINING MODELS**

Pre-assembled industrial type simulation models, in 9V and 24V for Vocational Training and Higher Education

**Page 20–21**



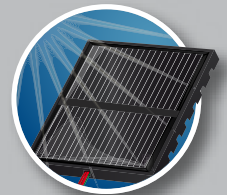
**› TEACHING MATERIAL**

How does a gear box work? What is a planetary gear? How is the movement of a windshield wiper produced? How do you design a stable bridge? These questions are answered in the instructional activity booklets in the sets, with illustrations and easy-to-understand information. Go to [www.fischertechnik-elearning.com](http://www.fischertechnik-elearning.com) to find lots of instructional information, animations, tutorials and videos on the individual educational construction sets.



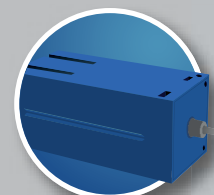
**› “GREEN“ COMPONENTS**

- Gold Cap (3.0V / 10F) – electrolytic capacitor for storing electrical energy
- Solar module (1V / 400mA) – generation of electrical power from solar energy
- Reversible fuel cell with integrated hydrogen storage tank  
Operation as electrolyzer (2–3V / 8ml/min / 400–1500mA)  
Operation as fuel cell (0.5–0.9V / 300mW / 600mA)



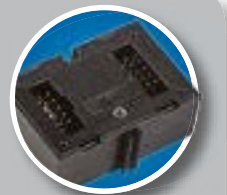
**› ACTUATORS**

- Motors – generation of motion and propulsion of fischertechnik models
  - XS Motor (9VDC / 5995 rpm / 1.52mNm / 265mA)
  - S Motor (9VDC / 9500 rpm / 4.8mNm / 650mA)
  - S Motor (24VDC / 10700 rpm / 5mNm / 300mA)
  - XM Motor (9VDC / 338 rpm / 84.15mNm / 950mA)
  - Encoder motor (9VDC / 173.5 rpm / 60.29mNm / 465mA)
  - Encoder motor (24VDC / 440 rpm / 176.5mNm / 600mA)
  - Solar motor (2VDC)
- Compressor (9VDC / 0.7bar / 2 l/min / 200mA) – generation of compressed air
- 3/2-way solenoid valve (12VDC / 0.133A) – control of pneumatic cylinder
- White LED (9VDC / 10mA) and Rainbow LED (9VDC / 10mA)
- Lens tip lamp for light barrier (9VDC / 150mA)
- Reflector lamp for light barrier (24VDC / 30mA)



**› SENSORS**

- USB color camera (1 MP) – recognition of color, motion, trail, sound and ball
- NTC resistor (1.5kΩ / 450mW) – temperature measurement
- IR trail sensor (2 digital outputs 9V) – trail recognition
- Color sensor (signal: analog 0–9VDC) – color recognition
- Ultrasonic distance sensor (9VDC / distance 3cm-3m) – distance recognition
- Photo resistor (LDR03, R100=1.2kΩ) – for measuring brightness
- Push button (for use as NC (normally closed) and NO (normally open) switch) – touch sensor
- Phototransistor for light barrier (35V)
- Reed contact – magnetic sensor
- Potentiometer (0-4.7kΩ) – rotating resistor
- Combi sensor – 3 sensors in one device: triaxial 16bit gyroscope, triaxial 12bit accelerometer, geomagnetic sensor, I2C-port, (9VDC)



➤ **ELECTRONICS MODULE  
ROBOTICS MODULE**

- Electronic control for models with fixed programs
- DIP-switches to select programs
- 3 analog inputs
- 2 motor outputs
- Potentiometer



➤ **BEGINNER LEVEL**

**LT Controller**

- Processor – 8bit
- USB interface – also serves as power supply
- 3 analog inputs for sensors
- 2 outputs for actuators

**Software ROBO Pro Light**

- Simple and easy-to-understand graphic programming (“drag & drop”)



Works with:  
**SCRATCH**

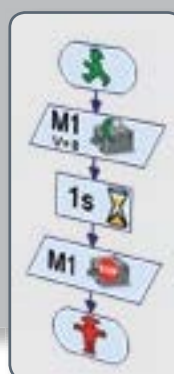
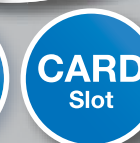
➤ **ADVANCED LEVEL**

**TXT Controller**

- Dual Processor – 32bit / 600MHz
- 128 MB RAM, 64 MB flash
- Color 2.4“ touch display
- Integrated loudspeaker
- Micro SD card reader – for expansion of storage capacity
- USB host port – for USB color camera, USB sticks etc.
- Bluetooth / WLAN connectivity
- Connection to Smartphone / Tablet PC
- 8 Universal inputs – digital / analog 0-9VDC, analog 0–5 kΩ
- 4 high speed counter inputs – digital, frequency up to 1kHz
- 4 motor outputs – 9V / 250mA (max: 800mA): infinitely controllable speed

**Software ROBO Pro**

- Simple “drag & drop” programming with graphic flow charts
- Use of various software modules
- Creation of teach-in programs
- Interactive introduction to programming with ROBO Pro



**› 3D-PRINTER**

Powered by: German RepRap 

**330**  


Build, Plug & Print! This build-it-yourself kit gives users a fascinating insight into the groundbreaking technology of 3D printing. Print your own parts yourself at any time - so individual, so easy, so flexible - for use in your own home! Either with the supplied printing examples or with your very own print data. The robust 3D printer is easy to build and can be used for 3D printing of different parts. Users acquire basic knowledge about 3D printing and an insight into this revolutionary technology that promises high future potential. Includes PC software for controlling the printer via the USB interface.

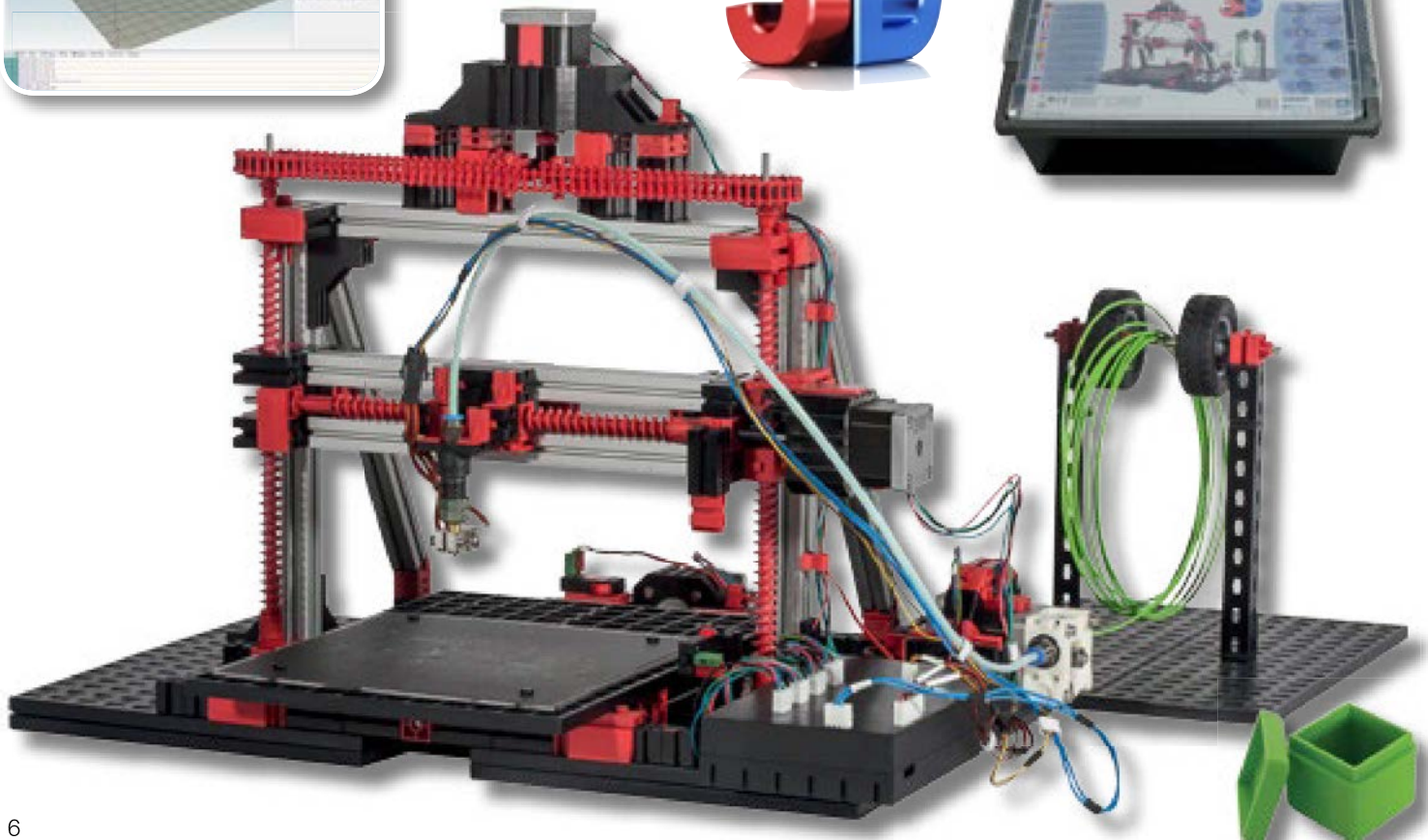
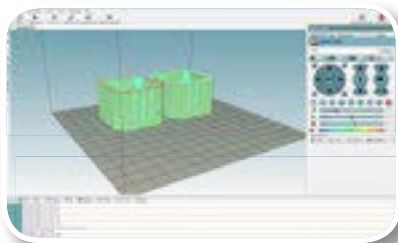
- > Incl. Control PCB in fischertechnik housing with Atmel microcontroller, USB interface for PC (USB port Micro B, incl. interface cable), 4 step motor drivers (for x-, y, z-axis and extruder), one power output (MOS-FET) for the extruder nozzle (hot end), connections for 3 limit switches and a temperature sensor, DC port for voltage supply 19V, 5A, dimensions: 150x90x25mm
- > Incl. 3D printer software on CD, with slicer and printer control, specially adapted to fischertechnik 3D-Printer (Windows 7, 8, 10). Numerous finished printing examples as G-codes
- > Incl. 4 high-torque step motors (x-/ y-/ z-axis, extruder), 3 push-buttons (as limit switches for x-/ y-/ z-axis), heated nozzle (for 1.75 mm Ø filament) with temperature monitoring, printing bed with removable printing plate
- > Incl. power unit (AC input 100-240V, DC output 19V, 5A, 50-60Hz)
- > Incl. top quality filament sample (PLA, 1.75 mm diameter). Quality filament (PLA) in special fischertechnik colors can be ordered separately

**Main subjects:**  
Basic knowledge of 3D printing / interaction between hardware and software / robotics / control

Technical data:

- Printing range: 150x100x80 mm
- Layer thickness: min. 0.1 mm
- Filament diameter: 1.75 mm
- Nozzle diameter: 0.5 mm
- Material: PLA (polylactide)

Item No.	536624	EAN	4048962250312
Models	1	Components	330
Dim. (mm)	440 x 315 x 150	Weight (g)	6300



➤ **FACTORY SIMULATION**

Combination of the models Sorting Line With Color Detection, Multi Processing Station With Oven, Automated High-Bay Warehouse and Vacuum Gripper Robot. Self-contained material cycle: workpieces are retrieved from the Automated High-Bay Warehouse, processed in the Multi Processing Station With Oven, then sorted by color in the Sorting Line With Color Detection and finally stored in the Automated High-Bay Warehouse again.

The Factory Simulation is available in both 9V and 24V version:

**Item No.: 536629** (9 V... / with ROBOTICS TXT Controllers)

**Item No.: 536634** (24 V... / without controllers)

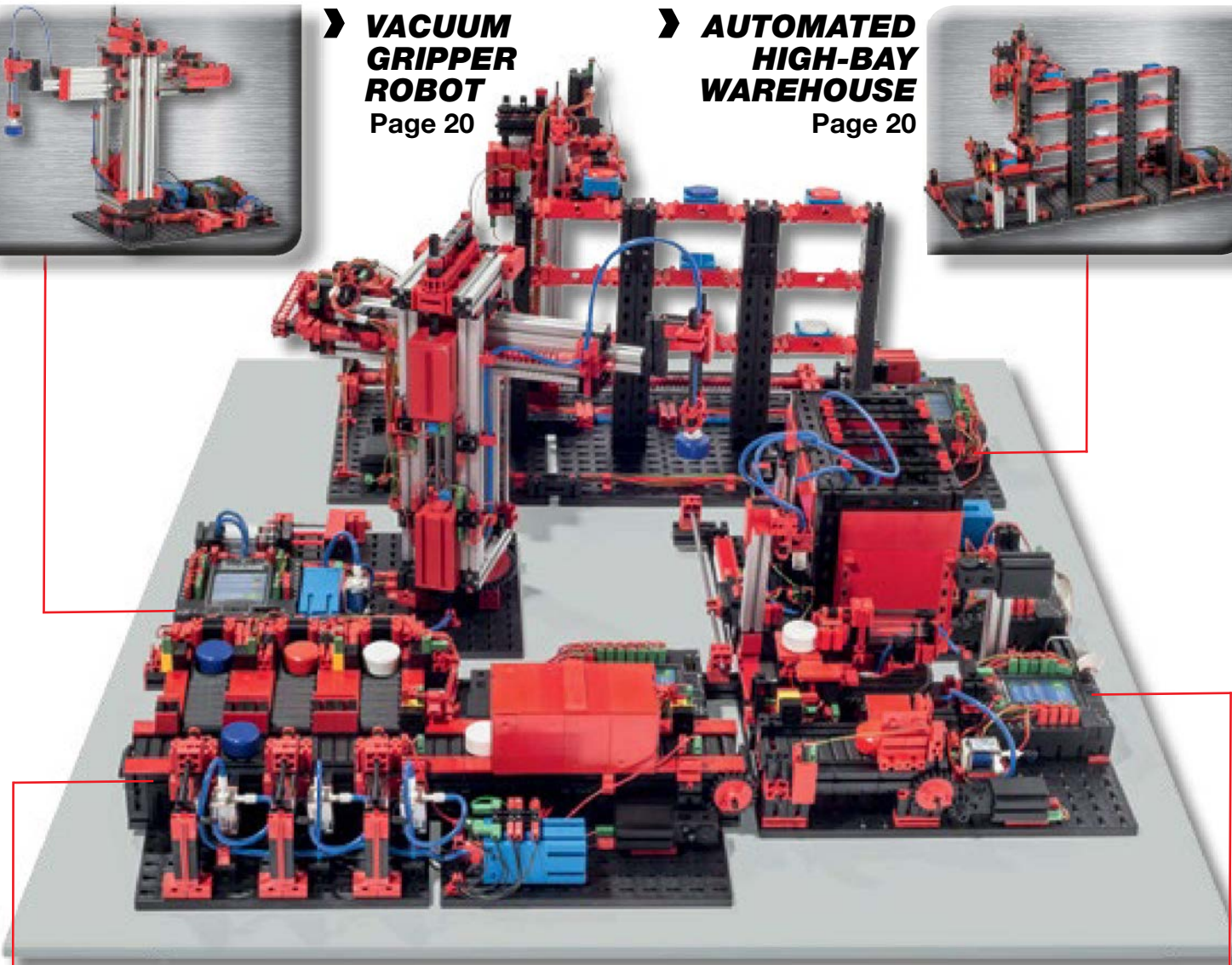
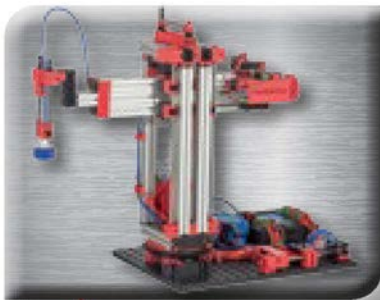
Item No.	536629 (9 V...)	EAN	4048962250367
Item No.	536634 (24 V...)	EAN	4048962250411
Dim. (cm)	120 x 80 x 32	Weight (kg)	41,6 (9 V...), 39,5 (24 V...)



➤ **Required for 536629 (9V): 5x Power Supply**  
Item No. 505287 (9V/220V) / 122952 (9V/120V)

➤ **VACUUM GRIPPER ROBOT**  
Page 20

➤ **AUTOMATED HIGH-BAY WAREHOUSE**  
Page 20



➤ **SORTING LINE WITH COLOR DETECTION**  
Page 21

➤ **MULTI PROCESSING STATION WITH OVEN**  
Page 21



➤ **SIMPLE MACHINES**

500  


40  
Models

**Introduction to everyday engineering!**

40 models, including vehicles with steering, bulldozer with tracks, crane with cable winch and windmill with reduction gear, allows students a fascinating glimpse into the world of technology while playing. The large number of parts (gears, structural parts, building blocks, building boards, etc.) leaves maximum leeway for creativity.

A MUST for all class rooms.

> **Ideal supplements: Motor Set XS, Motor Set XM, Power Set**

**Main subjects:**

Transmissions / block and tackle /steering / centrifugal governor / cable winch / structural engineering

Item No.	533506	EAN	4048962223361
Models	40	Components	500
Dim. (mm)	440 x 315 x 150	Weight (g)	2832

(US version: Introduction to STEM I - Item No.: 533353)



➤ **MECHANICS**

500  


30  
Models

**Principles of Mechanical and Structural Engineering**

This educational construction set is ideal for future machine builders, technicians and engineers: How does a manual transmission work? What is a planetary gear set or a differential? How is the movement of a windshield wiper controlled? How do you design a stable bridge?

This educational construction set answers these and other elementary questions from the subject areas of mechanical and structural engineering using 30 different models.

> **Incl. instructional activity booklet**  
> **Incl. mini motor, battery tray for 9V block (battery not included)**

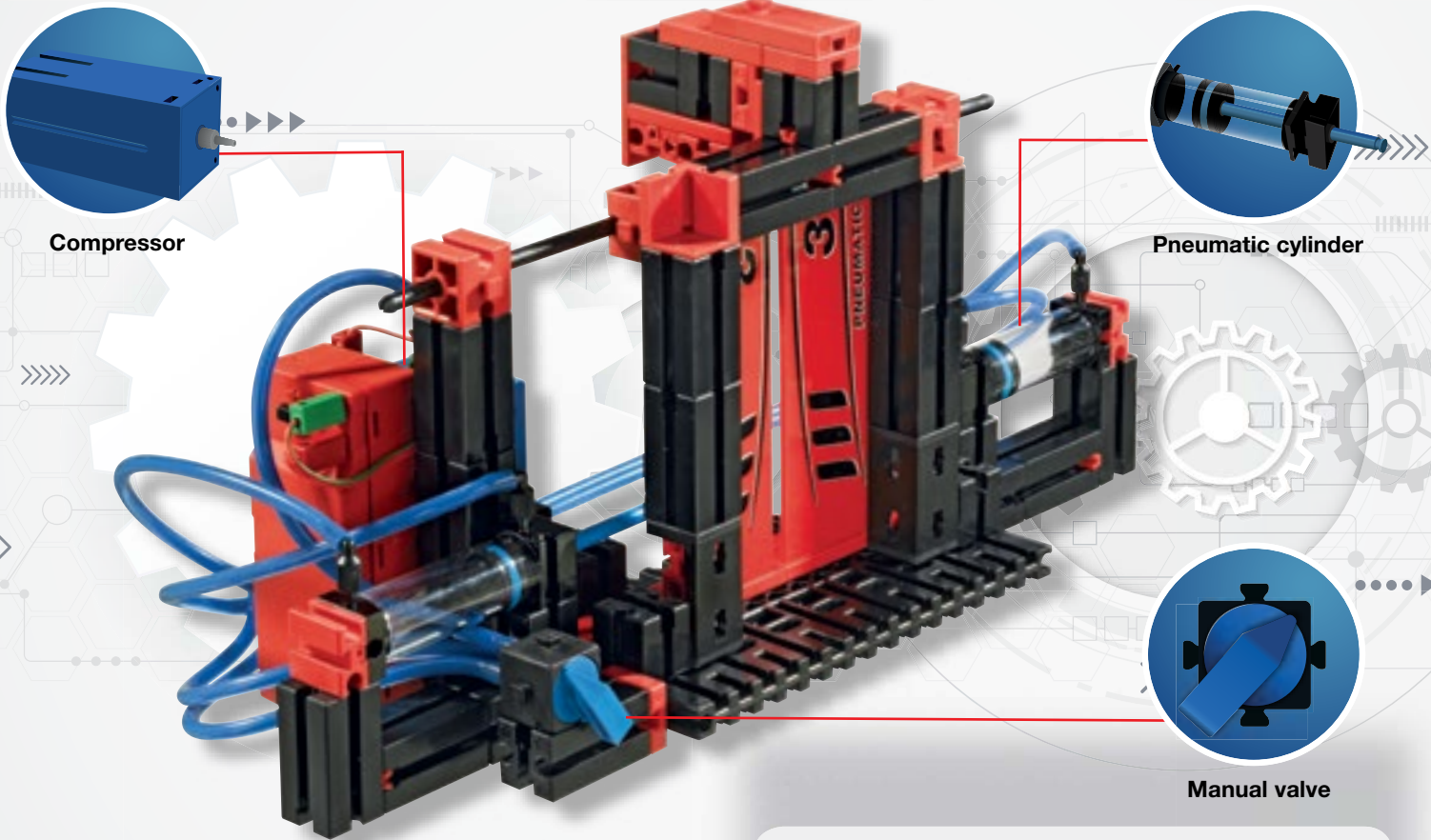
**Main subjects:**

Mechanical / structural engineering / effect of forces on bodies and objects, and much more

Item No.	533021	EAN	4048962220766
Models	30	Components	500
Dim. (mm)	440 x 315 x 150	Weight (g)	3155







**> PNEUMATICS**

440  


8  
Models

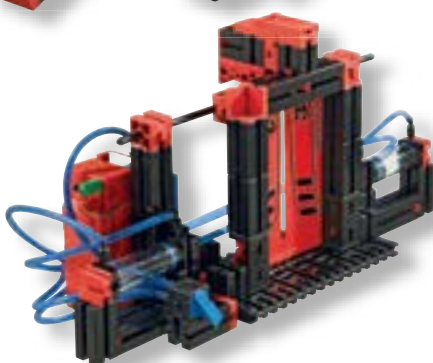
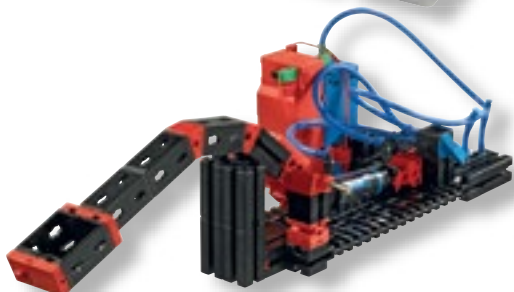
**Fundamentals of Pneumatics**

This play-and-learn construction set familiarizes students with the principles of pneumatics using realistic models to demonstrate how compressors, pneumatic valves and cylinders work. The powerful and compact compressor guarantees a reliable supply of compressed air for the models. A total of eight educational models can be built to provide future technicians and engineers with comprehensive background knowledge on the subject of pneumatics, in combination with the instructional activity booklet.

**Main subjects:**

Generation and distribution of compressed air and control of pneumatic cylinders, and much more

- > Incl. instructional activity booklet
- > Incl. compressor, 4x pneumatic cylinders, 4x 4/3-way manual valves, battery tray for 9V block (battery not included)
- > Ideal supplement: Accu Set



Item No.	533013	EAN	4048962220711
Models	8	Components	440
Dim. (mm)	440 x 315 x 150	Weight (g)	2991

**▶ OPTICS & LIGHTS**

270  


15  
Models

**Principles of Optics and Light**

Investigate optical phenomena and experiment with light! The planetary model clearly demonstrates why the moon has phases or why solar and lunar eclipses occur. Optical lenses with various focal lengths, mirrors, lens tip lamps and a variety of other parts allow construction of a microscope, magnifier, telescope and periscope. Time can be measured with a sun dial. This model uses fiber-optic cable to demonstrate what total reflection is and how data can be transferred using light. This educational construction set gives school children a glimpse into the world of optics and light.

**Main subjects:**  
Refraction / reflection of light / light and shadow / fiber-optic cable / optical illusions, and much more

- > Incl. instructional activity booklet
- > Incl. 3x optical lenses (two focal lengths), rainbow LED, mirror, fiber-optic cable, 2x lens tip lamps, battery tray for 9V block (battery not included)
- > Ideal supplement: Power Set or Accu Set



Item No.	533037	EAN	4048962220803
Models	15	Components	270
Dim. (mm)	440 x 315 x 80	Weight (g)	2262

**▶ DRIVE SYSTEMS**

280  


8  
Models

**Principles of Drive Technology**

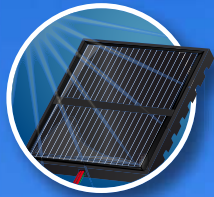
How does a recoil or bending rod drive work?  
What is the difference between a friction drive and a rubber band drive?  
How can wind be used for propulsion?  
This set provides a glimpse into how different types of drives work. The instructional activity booklet provides a great deal of interesting information.

**Main subjects:**  
Wind propulsion / bending rod drive / recoil drive / rubber band and friction motors

- > Incl. instructional activity booklet
- > Incl. friction motor

Item No.	533028	EAN	4048962220780
Models	8	Components	280
Dim. (mm)	440 x 315 x 80	Weight (g)	1045





Solar module



Solar motor



Reversible fuel cell



**GREEN ENERGY**

390

19  
Models

**Principles of Regenerative Power**

How can ecological electric power be produced? How does a fuel cell work and how does it generate hydrogen? "Renewable energy sources" will become our most important suppliers of energy in the future. Production, storage and use of electricity from natural energy sources such as water, wind and sun are graphically illustrated using various models and numerous experiments. The high performance solar modules open up many attachment possibilities for flexible use in models.

The Gold Cap included for power storage releases the stored power slowly. The fuel cell clearly demonstrates how water can be split up into its two constituents: Hydrogen and oxygen. This helps students understand energy forms of the future. The instructional activity booklet offers assistance.

**Main subjects:**

Generation, storage and use of electrical power from water, wind and sun / other energy sources: Fuell cell

- > Incl. instructional activity booklet
- > Incl. solar motor (2V $\pm$ ), 3x solar modules (1V; 400 mA), Gold Cap power storage device, LED, ON / OFF switch
- > Incl. reversible fuel cell with integrated hydrogen storage tank

Item No.	533022	EAN	4048962220773
Models	19	Components	390
Dim. (mm)	440 x 315 x 150	Weight (g)	3278



**PHYSICS I**

690  


7  
Models

**Introduction into Physics**

Physics is fun. Balls race on unique flex-rails through various obstacle courses. They accelerate, decelerate, cause chain reactions, shoot through the loop and run through obstacles such as teeter-totters and switches. An elevator powered by an XS motor conveys the balls to the top. The effects are based on various physical phenomena (acceleration, inertia of mass, centrifugal force, law of conservation of energy, principle of linear momentum and laws of motion). These are explained in the instructional activity booklet and can be demonstrated clearly using various experimental set-ups.

- > Incl. instructional activity booklet
- > Incl. XS motor, 22x flex-rails 180, 10x balls, 3x magnetic holders, battery tray for 9V block (battery not included)

**Main subjects:**

Centrifugal force / force of gravity / acceleration / law of conservation of energy / pulses

Item No.	533050	EAN	4048962220810
Models	7	Components	690
Dim. (mm)	440 x 315 x 150	Weight (g)	3589



**PHYSICS II**

1250  


8  
Models

**Principles of Elevator and Conveying Technology**

With special parts such as 90° turns, cross-over and jumps with catch funnel, balls race through tight curves and chutes and fly through various tracks. Discover exciting conveying technology: With the wheel and stage conveyor models the balls are moved up by a motor-driven conveying wheel. Then even higher by the innovative stage conveyor, which transports the balls one by one all the way to the top in a zig-zag pattern. Once there the balls shoot along their own path downward through the loop, quarter pipe and jumping loop. More ingenious models such as a launching pad, stair step conveyor and chain lift make the subject of conveying technology inspiring.

**Main subjects:**

Elevator technology / conveying technology

- > Incl. instructional activity booklet
- > Incl. mini motor, 2x rainbow LED's, 31x flex-rails 180, 12x balls, 3x magnetic holders, 5x 90° turns, cross-over, catch funnel, battery tray for 9V block (battery not included)

Item No.	533053	EAN	4048962220827
Models	8	Components	1250
Dim. (mm)	440 x 315 x 150	Weight (g)	4733



**▶ ELECTRONICS**

260  


16  
Models

**Principles of Electronics**

Simple circuits, series and parallel connections, electronic circuits with transistors, capacitors, resistors and LED's. Step by step, this educational construction set teaches the basic principles of electronics. The electronics module, a control with 16 fixed programs, has 2 motor outputs, 3 analog inputs for sensors and a potentiometer for controlling the speed of the motor. Many fascinating as well as functional models can be built with this construction set, from a simple flashlight to a ship see-saw, alternating flasher and controllable ventilation fan.

**Main subjects:**  
Electrical circuits, series, parallel and three-way / four-way circuits / electronic components and circuits, and much more

- > Incl. instructional activity booklet
- > Incl. electronics module, XS motor, 2x transistors, 2x capacitors, 3x resistors, 2x push buttons, phototransistor, temperature sensor, lens tip lamp, 2x LED's, battery tray for 9V block (battery not included)

Item No.	533029	EAN	4048962220797
Models	16	Components	260
Dim. (mm)	440 x 315 x 80	Weight (g)	2191



**▶ ROBOTICS: MINI BOTS**

145  


5  
Models

**From Electronics to Robotics**

The Mini Bots are the ideal introduction to the Education Line Robotics by fischertechnik. Five nimble mobile robots can be made from actuators and sensors, such as XS motors, IR trail sensor and push buttons. The clever robot models can follow lines and avoid hindrances. An obstacle course template can be used to test the models directly. The Mini Bot programs are saved on the fischertechnik ROBOTICS module and can be selected with the DIP switches. The selection of available programs makes it easy to discover the world of robotics. The eLearning portal ([fischertechnik-elearning.com](http://fischertechnik-elearning.com)) offers instructional activity information, animations and videos all about the mobile robots.

**Main subjects:**  
Electronic parts / controlling and regulating / use of actuators and sensors

- > Incl. ROBOTICS module, IR trail sensor, 2x push buttons (limit switch), 2x XS motors, battery tray for 9V block (battery not included)

Item No.	533923	EAN	4048962230000
Models	5	Components	145
Dim. (mm)	440 x 315 x 80	Weight (g)	1490



**▶ ROBOTICS: BEGINNER**

200  
12 Models

**Instrumentation and Control (I&C)**

Simple introduction to the world of robots. With over 200 components and the aid of sensors (phototransistor, push buttons) and actuators (XS motor, indicator lights), students can construct 12 easy-to-understand models such as a hand dryer, stamping machine, lighthouse with blinking light, merry-go-round or automatic sliding door. The ROBO LT Controller with 3 inputs for sensors and 2 outputs for motors or indicator lights has a USB interface which serves simultaneously for power supply. The ROBO Pro Light software makes quick programming easy as pie. The graphical user interface (GUI) provides an ideal introduction for little programmers. Programming is accomplished by completing flow charts. The detailed didactic activity booklet supports the learning process for students, making programming easy to understand.

**Main subjects:**  
Instrumentation and control / programming / interaction between hardware and software / use of actuators and sensors

- > Incl. instructional activity booklet
- > Incl. ROBO LT Controller (USB interface / USB power supply)
- > Incl. ROBO Pro Light control software
- > Incl. XS motor, 2x lights, lens tip lamp phototransistor, 2x push buttons



Item No.	533015	EAN	4048962220728
Models	12	Components	200
Dim. (mm)	440 x 315 x 80	Weight (g)	2308

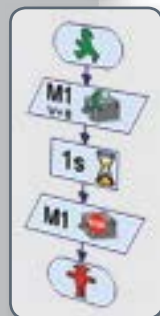
(US version: Introduction to STEM II – Item No.: 533507)



**▶ ROBO PRO SOFTWARE**

**Simple Programming**

Graphic flow charts consisting of various software building blocks make it easy for beginners to get started programming. Data can be exchanged between software building blocks and subroutine using variables as well as graphical interfaces, allowing program functions to be demonstrated in an understandable manner. Teach-in features and data exchange with other Windows® software make it easy to create programs.



Item No.	93296	EAN	4006209932964
System	Windows® XP, Vista, 7, 8, 10		
Dim. (mm)	210 x 25 x 150	Weight (g)	85

**▶ ROBOTICS TXT CONTROLLER**



The compact ROBOTICS TXT Controller (90x90x25 mm) can be controlled easily with the color 2.4" touch display. The combined Bluetooth / WiFi RF module provides the perfect, wireless interface for numerous applications. The numerous interfaces also include a USB host port for USB sticks and other components such as the fischertechnik USB camera. Integrated Micro SD card slot allows expansion of memory capacity. Controllers can be coupled.

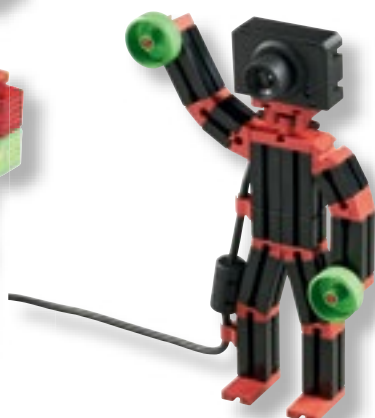
- > Dual processor ARM Cortex A8 (32bit/600MHz) + Cortex M3
- > Memory capacity: 128 MB DDR3 RAM, 64 MB Flash
- > 8 Universal inputs: Digital / analog 0-9VDC, analog 0-5kΩ
- > 4 High speed numerical inputs: Digital, frequency up to 1kHz
- > 4 Motor outputs 9V/250mA (max: 800 mA): speed infinitely controllable, short-circuit proof, alternative 8 single outputs for components such as lights, etc.
- > Combined Bluetooth / WiFi RF module: BT 2.1 EDR+ 4.0, WLAN 802.11
- > Infrared receiver diode: for fischertechnik Control Set transmitter
- > USB 2.0 Client: Mini USB port for connection to PC
- > Camera interface: over USB host, Linux camera driver integrated into operating system
- > 10-pin male connector for additional inputs and outputs as well as I2C interface
- > Integrated loudspeaker
- > Integrated real time clock with replaceable buffer battery: for capturing measured values within a defined period of time
- > Linux-based, open source operating system
- > Programming possible with ROBO Pro, C-Compiler, PC-Library etc.
- > Link to smartphones / tablet PC's via Bluetooth or WLAN, allowing use as terminals for controller. Programming using ROBO-Pro software.
- > Power supply: 9V DC socket 3.45 mm or fischertechnik 2.5 mm sockets (for set of rechargeable batteries), Accu Set or Power Set

Item No.	522429	EAN	4048962179828
Dim. (mm)	225 x 65 x 150	Weight (g)	450

**Vision System**



**Main subjects:**  
Instrumentation and control / programming / interaction between hardware and software / use of actuators and sensors



**▶ ROBOTICS: ADVANCED**

**310**  
Components

**14**  
Models

**Instrumentation and Control (I&C)**

Professional introduction to the world of robots. Robotics set with over 300 components, high performance ROBOTICS TXT Controller, ROBO Pro graphic programming software for control of mobile and stationary robot models and camera for USB or WiFi image transfer, color recognition, line tracking and detection of motion. The TXT Controller has the following features: Dual processor ARM Cortex A8 (32 bit / 600 MHz) + Cortex M3, color 2.4" touch display, combined WLAN / Bluetooth module, Micro SD card slot for additional memory space, IR receiver diode, integrated loud speaker, 4 motor outputs, 8 digital / analog inputs for sensors and 4 high speed numerical inputs. Completed program modules are also provided for beginners. Including instructional information material for support of construction and programming. Additional sensors and actuators such as encoder motors, XS motor, push buttons, NTC resistors, phototransistors and LED's allow construction of mobile detection robot, soccer robot, temperature control and many other models! This set is compatible with other Robotics construction sets.

- > Incl. ROBOTICS TXT Controller, CD with ROBO Pro control software and related instructional (interactive) material, USB camera (1 MP), 2x encoder motors, XS motor, 2x LED's, 2x push buttons, phototransistor, NTC resistor
- > Required: Accu Set


Item No.	533018	EAN	4048962220735
Models	14	Components	310
Dim. (mm)	440 x 315 x 150	Weight (g)	3050

**▶ ROBOTICS & ELECTRO-PNEUMATICS**

440  4  Models

**Instrumentation and Control (I&C)**

Ideal introduction to programming realistic electro-pneumatic machines and robots. The subjects of electro-pneumatics and vacuum technology are demonstrated clearly with the aid of fascinating models such as the pinball machine, compressed air motor, color sorting robot for colored parts and ball obstacle course robot. The powerful and compact compressor guarantees a reliable supply of compressed air for the models. The electro-magnetic valves included allow remote control of the models with a PC.

- > Incl. didactic material on CD
- > Incl. compressor, mini motor, 2x solenoid valves, optical color sensor, vacuum suction device, 3x cylinders with spring, 2x phototransistors, 2x lens tip lamps, 11x flex-rails 180
-  > Required: ROBOTICS TXT Controller, ROBO Pro software and 9V / 1A power pack (Accu Set or Power Set)

**Main subjects:**

Instrumentation and control / programming / interaction between hardware and software / use of actuators and sensors

Item No.	533019	EAN	4048962220742
Models	4	Components	440
Dim. (mm)	440 x 315 x 150	Weight (g)	3162



**▶ ROBOTICS IN INDUSTRY**


510  4  Models

**Instrumentation and Control (I&C)**

Ideal introduction to programming realistic industrial applications. Four realistic, fully functional industrial robots: High-bay storage rack, 3-axis robot and two additional gripper robots. Stable fischertechnik aluminum profiles used in all models. The didactic material provides support in the form of background information, projects and programming tips.

**Main subjects:**

Instrumentation and control / programming / interaction between hardware and software / use of actuators and sensors

- > Incl. didactic material on CD
- > Incl. 2x encoder motors, 2x XS motors, 6x push-buttons
-  > Required: ROBOTICS TXT Controller, ROBO Pro software and 9V / 1A power pack (Accu Set or Power Set)

Item No.	533020	EAN	4048962220759
Models	4	Components	510
Dim. (mm)	440 x 315 x 150	Weight (g)	3328







**▶ ROBOTICS COMPETITION SET**

670  
20 Models

**Focus on robotics competitions**

The fischertechnik Robotics Competition Set has been developed for schools, universities and other education establishments seeking to enhance or improve their previous robotics competitions for their students. It contains robot models such as the trail searcher, detection robot, soccer robot, hindrance detector with camera and much more. The models are suitable for the RoboCup competition (junior category) and various other competitions all over the world. The fischertechnik Robotics Competition Set helps students with project-based learning for discovering robotics and the key STEM teaching principles. The set consists of 670 parts. These include static parts, gear-wheels, transmissions, wheels, DC motors, motors with integrated encoders, USB camera, combi sensor (gyro, accelerometer, compass) and other fischertechnik sensors. Incl. ROBO Pro software with possibilities for programming on five levels. From the beginner's level through to professional programming with objects, sub-programs, variables and user-defined commands. Furthermore, obstacle course templates are included for testing the models.

**Main subjects:**  
Robotics competitions

- > Incl. printed assembly instructions and instructional activity information on CD
- > Incl. ROBOTICS TXT Controller, CD with controller software ROBO Pro, USB camera, 2x encoder motors, XS motor, lens tip lamp, 3x LEDs, combi sensor (gyro, accelerometer, compass), 3x ultrasonic distance sensors, IR trail sensor, optical color sensor, photo resistor, phototransistor, NTC resistor, magnetic sensor (reed contact), Accu Set (battery charger with rechargeable NiMH battery)

Item No.	519143	EAN	4048962159356
Models	20	Components	670
Dim. (mm)	440 x 315 x 150	Weight (g)	3650



**P**

**R**

**E**

**P**



**STEM PREP** **PHYSICS, ROBOTICS, ENERGY & POWER**

**STEM Tutorial**

**2110**

**118 Models**

**Project-based learning with a focus on standards**

“The fischertechnik STEM program combines maths, reading and writing standards in the compulsory subjects with the National Science Education Standards and the Standards of ISTE and ITEEA. The STEM PREP Set easily fills several months of the school year and introduces the students to applied technology through a systematic approach to physics, robotics, energy and power.”

Tom White, Program Creator

**Project Themes:**

Simple machines / mechanical systems / structures / forces / pneumatics / potential and kinetic energy / energy preservation / energy conversion and storage / electricity / electronics / optics / digital communication and control programming

**Main subjects:**  
Physics / Robotics / Energy / Power

> Incl. assembly instructions for 118 model examples from 9 STEM Kits and comprehensive STEM tutorials for teachers and students on CD

> Incl. ROBOTICS LT Controller, CD with controller software ROBO Pro Light, electronics module, XS motor, mini motor, solar motor, pull-back motor, compressor, 2x solar modules, „Gold Cap“ energy storage device, LED, 2x rainbow LEDs, phototransistor, NTC resistor, 2x push buttons

Item No.	519340	EAN	4048962160864
Models	118	Components	2110
Dim. (mm)	440 x 315 x 230	Weight (g)	6470





**Main subjects:**  
Robotics / cybernetics /  
mechatronics /  
automation control

**► STEM ENGINEERING**

**STEM Tutorial**

**890**

**22 Models**

**Project-based learning with a focus on standards**

"The fischertechnik STEM program combines maths, reading and writing standards in the compulsory subjects with the National Science Education Standards and the Standards of ISTE and ITEEA. The STEM Engineering Set easily fills several months of the school year and introduces the students to applied engineering through a systematic approach to robotics, mechatronics and automation control."

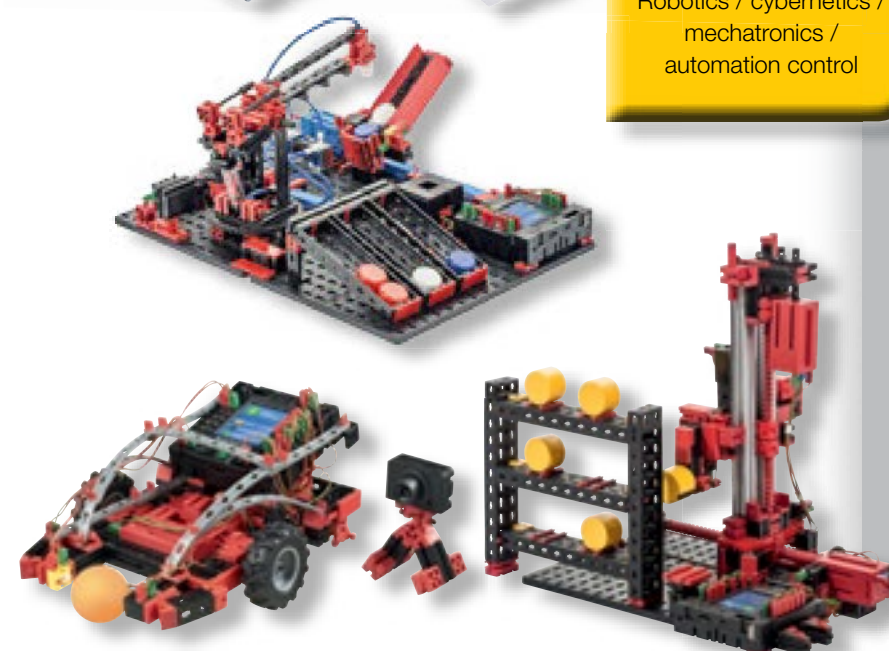
Tom White, Program Creator

**Project Themes:**

Mechatronics / cybernetics / design and documentation / structures / mechanical systems / control systems / sensor systems / motors and other actuators / automation / principles of robotics / mobile robots

- > Incl. assembly instructions for 22 model examples from 3 STEM Robotics Kits and comprehensive STEM tutorials for teachers and students on CD
- > Incl. ROBOTICS TXT Controller, CD with controller software ROBO Pro, USB camera, 2x encoder motors, 2x XS motors, mini motor, compressor, 2x LEDs, 2x solenoid valves, vacuum suction device, optical color sensor, 2x phototransistors, NTC resistor, 6x push buttons (limit switch), Accu Set (battery charger with rechargeable NiMH battery)

Item No.	519341	EAN	4048962160871
Models	22	Components	890
Dim. (mm)	440 x 315 x 150	Weight (g)	5350



## ➤ VACUUM GRIPPER ROBOT

3-axis robot with vacuum gripper works quickly and precisely, positioning workpieces in three-dimensional space. Working range:  
x-axis 270°, y-axis (forwards/back) 140 mm, z-axis (up/down) 120 mm

> Incl. 3x encoder motors, 3x push buttons (limit switch), vacuum suction device, compressor, solenoid valve

> Model packed in a robust box

Model available in both 9V and 24V version:

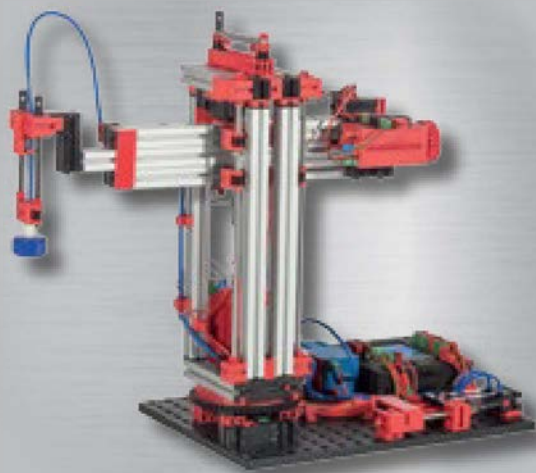
**Item No.: 536625** (9 V<sub>DC</sub> / with ROBOTICS TXT Controller and controller software ROBO Pro)

**Item No.: 536630** (24 V<sub>DC</sub> / without controller)

 > Required for 536625 (9V): Power Supply

Item No. 505287 (9V/220V) / 122952 (9V/120V)

Item No.	536625 (9 V <sub>DC</sub> )	EAN	4048962250329
Item No.	536630 (24 V <sub>DC</sub> )	EAN	4048962250374
Dim. (mm)	440 x 200 x 330	Weight (g)	3100 (9 V <sub>DC</sub> ), 2800 (24 V <sub>DC</sub> )



## ➤ AUTOMATED HIGH-BAY WAREHOUSE

Transfer station with conveyor belt, shelf stacker for storing and retrieving special workpiece carriers, 9 storage slots.


> Incl. 2x encoder motors, 2x mini motors, 4x push buttons (limit switch), 2x phototransistors, 2x lens tip lamps, workpiece carriers, various colored workpieces (6 pcs.)

> Model packed in a robust box

Model available in both 9V and 24V version:

**Item No.: 536626** (9 V<sub>DC</sub> / with ROBOTICS TXT Controller and controller software ROBO Pro)

**Item No.: 536631** (24 V<sub>DC</sub> / without controller)

 > Required for 536626 (9V): Power Supply

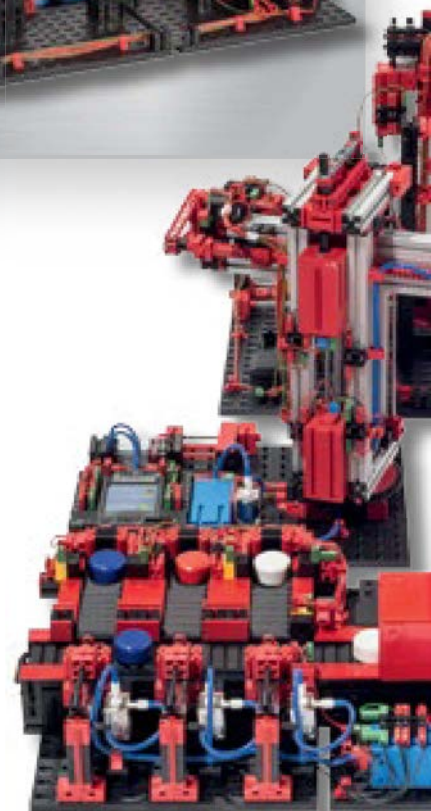
Item No. 505287 (9V/220V) / 122952 (9V/120V)

Item No.	536626 (9 V <sub>DC</sub> )	EAN	4048962250336
Item No.	536631 (24 V <sub>DC</sub> )	EAN	4048962250381
Dim. (mm)	600 x 400 x 320	Weight (g)	5100 (9 V <sub>DC</sub> ), 4500 (24 V <sub>DC</sub> )



## ➤ IDEAL COMBINATION POSSIBILITIES

	VACUUM GRIPPER ROBOT	AUTOMATED HIGH-BAY WAREHOUSE	MULTI PROCESSING STATION WITH OVEN	SORTING LINE WITH COLOR DETECTION
VACUUM GRIPPER ROBOT		X	X	X
AUTOMATED HIGH-BAY WAREHOUSE	X			
MULTI PROCESSING STATION WITH OVEN	X			X
SORTING LINE WITH COLOR DETECTION	X		X	



➤ **MULTI PROCESSING STATION WITH OVEN**


Furnace with pneumatic sliding door. Downstream processing station with pneumatic transfer unit including vacuum gripper, cutter with rotary table and conveyor belt.

- > Incl. 4x mini motors, 6x push buttons (limit switch), 2x phototransistors, 2x lens tip lamps, 4x solenoid valves, compressor
- > Model packed in a robust box

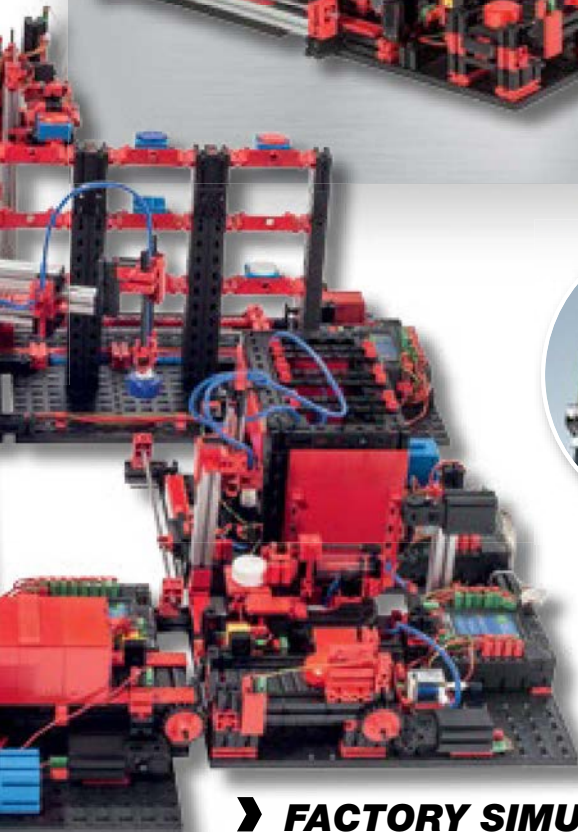
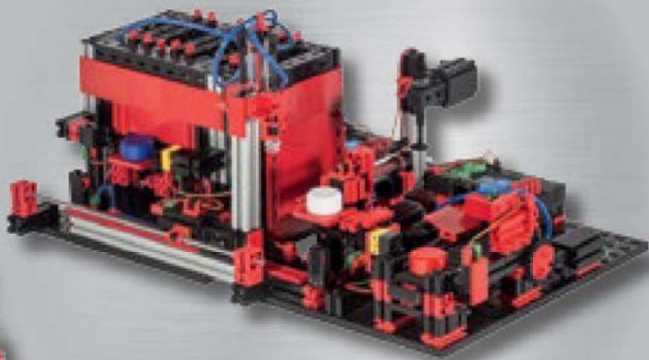
Model available in both 9V and 24V version:

**Item No.: 536627** (9 V... / with 2x ROBOTICS TXT Controller)

**Item No.: 536632** (24 V... / without controller)

-  > **Required for 536627 (9V): 2x Power Supply**  
Item No. 505287 (9V/220V) / 122952 (9V/120V)

Item No.	536627 (9 V...)	EAN	4048962250343
Item No.	536632 (24 V...)	EAN	4048962250398
Dim. (mm)	470 x 310 x 220	Weight (g)	4300 (9 V...), 3700 (24 V...)



➤ **SORTING LINE WITH COLOR DETECTION**


Detects workpieces of different colors and sorts them via a conveyor belt into the provided storage unit.

- > Incl. 2x mini motors, 5x phototransistors, 5x lens tip lamps, 3x solenoid valves, compressor, optical color sensor
- > Model packed in a robust box

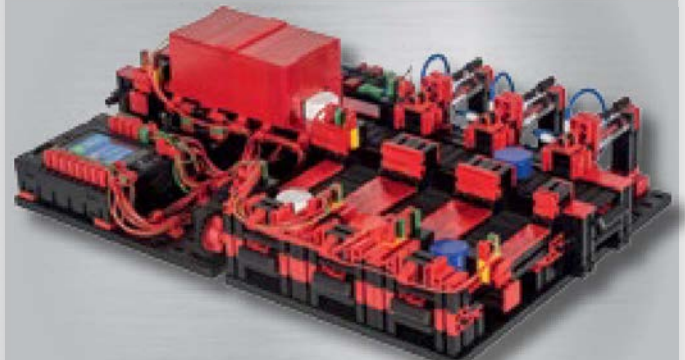
Model available in both 9V and 24V version:

**Item No.: 536628** (9 V... / with ROBOTICS TXT Controller)

**Item No.: 536633** (24 V... / without controller)

-  > **Required for 536628 (9V): Power Supply**  
Item No. 505287 (9V/220V) / 122952 (9V/120V)

Item No.	536628 (9 V...)	EAN	4048962250350
Item No.	536633 (24 V...)	EAN	4048962250404
Dim. (mm)	440 x 280 x 120	Weight (g)	4100 (9 V...), 3500 (24 V...)



**24V versions:**

**Port to PLC:** PCB with relays to reverse polarity of motor, multi pin connector (26 pins, grid 2,54mm) and in addition PCB terminals with push in connection for all I/O.

Pre-assembled industrial type simulation models in 9V and 24V, for Vocational Training and Higher Education to learn all about Automation Control



720

➤ **CREATIVE BOX 1000**

**Supplement for all fischertechnik sets!**  
More than 700 components from the current fischertechnik assortment (no electronic parts). Packed in BOX 1000 with building board, 390 x 270 mm as cover.

Item No.	91082	EAN	4006209910825
Components	720	Weight (g)	2750
Dim. (mm)	390 x 95 x 270		



➤ **BOX 1000**

**Perfect for storing fischertechnik parts**  
Practical storage box with eight sorting trays and 32 sorting partitions. The cover also serves as a large building board, 390 x 270 mm.

Item No.	30383	EAN	4006209303832
Components	–	Weight (g)	1860
Dim. (mm)	390 x 95 x 270		



➤ **ACCU SET**

Charger with micro-controller for reliable protection against overcharging. Extremely short charging times, max. 2 hrs., heavy duty battery pack with short-circuit protection, 8.4V / 1500 mAh.



Item No. 220V	34969	EAN	4006209349694
Item No. 120V	57487	EAN	4006209574874
Item No. 240V UK	79833	EAN	4006209798331
Item No. 240V AUS	52091	EAN	4006209520918
Components	–	Weight (g)	490
Dim. (mm)	225 x 65 x 150		



➤ **POWER SET**

Power supply and infinite speed controller all in one. The plug-in power pack for all fischertechnik models. Power supply performance data: Voltage 9V $\dots$ , 2.5 A. Power controller performance data: Controllable output 1A max., additional output with 9V $\dots$ , 1A max. (not controllable), both outputs short-circuit-proof with overload protection.

Item No. 220V	505283	EAN	4048962069440
Item No. 120V	91087	EAN	4006209910870
Components	–	Weight (g)	430
Dim. (mm)	225 x 65 x 150		



45

➤ **MOTOR SET XS**

Thanks to the compact measurements, this motor can be installed almost anywhere. In addition to the building blocks, gearbox parts and toothed gears, the set also contains a safety battery tray with integrated pole-reversing switch for 9V block batteries (battery not included).  
> Performance data: Voltage 9V, max. output 1.0 W at 6000 RPM

Item No.	505281	EAN	4048962069426
Components	45	Weight (g)	200
Dim. (mm)	225 x 65 x 150		



40

➤ **MOTOR SET XM**

High performance geared motor in compact plastic casing with numerous possibilities for attachments. With many toothed gears, axles and gearbox parts.  
> Performance data: Voltage 9V, max. output 3.0 W about 340 RPM  
> **Required: Accu Set or Power Set**



Item No.	505282	EAN	4048962069433
Components	40	Weight (g)	275
Dim. (mm)	225 x 65 x 150		



➤ **CONTROL SET**

The four channel infrared remote control allows you to control fischertechnik models from a distance as well. Up to three motors and one servo can be controlled proportionally. This means an infinitely variable turning angle of the steering wheel and infinitely variable speed control. Up to four receivers can be operated with the remote control, which allows numerous applications. > **Required: Accu Set and 9V block (battery not included)**



Item No.	500881	EAN	4048962003277
Components	–	Weight (g)	370
Dim. (mm)	225 x 65 x 150		

➤ **BMA Schools Thailand / Learning Center Taiwan**



➤ **Vocational Schools Germany**



➤ **fischertechnik Robotics Cup Germany**

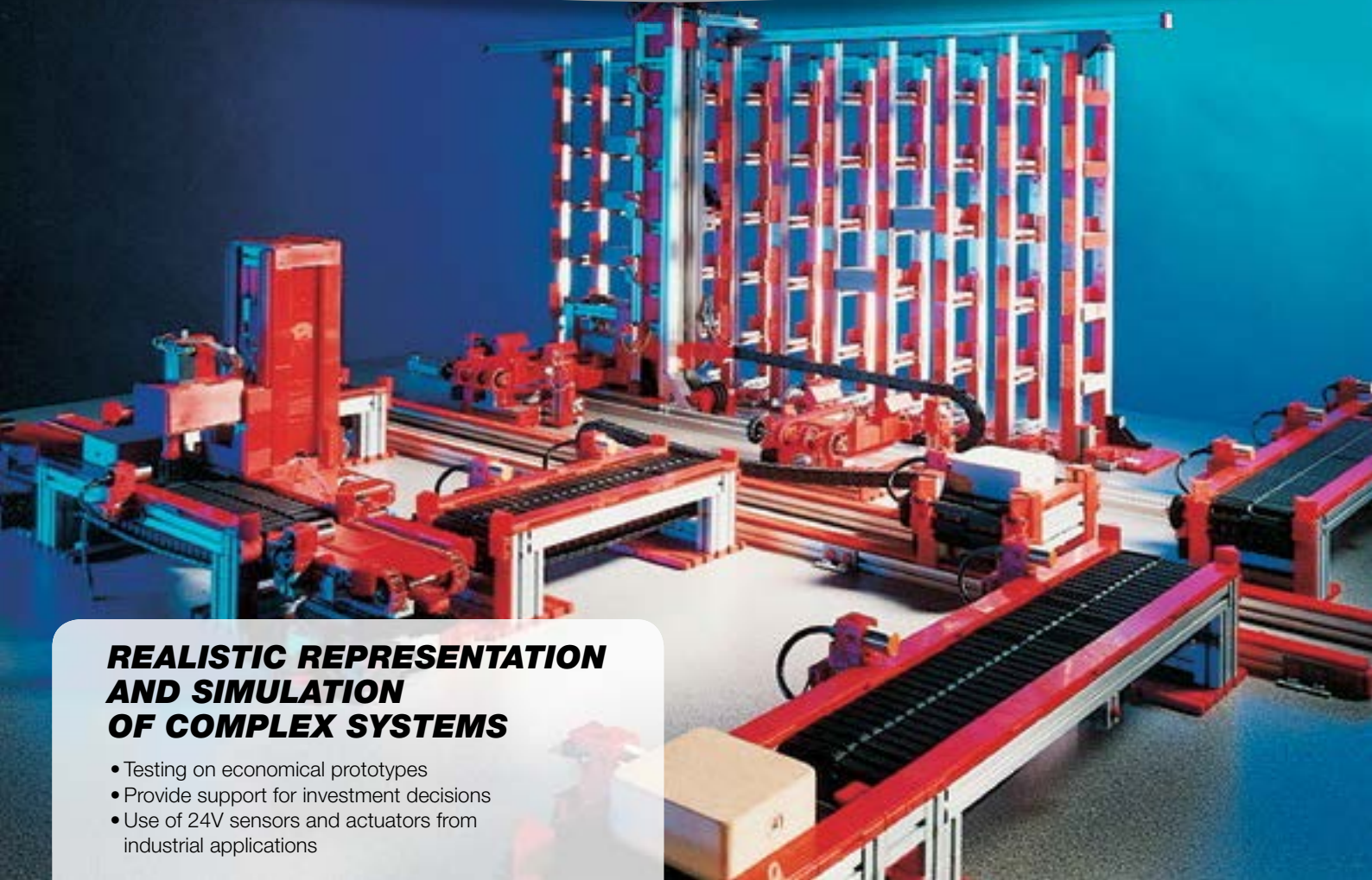


➤ **fischertechnik teams at RoboCup World Cup**



➤ **University Competition China**





**REALISTIC REPRESENTATION  
AND SIMULATION  
OF COMPLEX SYSTEMS**

- Testing on economical prototypes
- Provide support for investment decisions
- Use of 24V sensors and actuators from industrial applications



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