

**fischertechnik**   
**Schulprogramm**

**Experimenta Computing**  
Bauanleitung • Assembly Manual

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## Die Software

### Grafische Programmieroberfläche "FiPro"

Diese interaktive Programmieroberfläche ermöglicht durch visuelle Programmierung ein Steuerungsprogramm für jedes beliebige Modell zu entwickeln, das am Interface angeschlossen ist. Bereits geringe Programmierkenntnisse reichen aus, um vorhandene Beispielprogramme zu ändern und neue Programme zu entwickeln. Einfache Handhabung und

schneller Lernerfolg sind wesentliche Kriterien dieser Software. Die Programme werden nicht im herkömmlichen Sinne geschrieben, sondern mit der Maus am Bildschirm gestaltet. Einzelne Prozessschritte werden durch Bildsymbole (Icons) dargestellt. Die Icons entsprechen den jeweiligen fischertechnik Bauteilen.

**Hardwarevoraussetzung:**  
IBM-kompatibler AT ab 286er, 640 KB Arbeitsspeicher, VGA-Farbmonitor, Maus.  
Diskette "FiPro" für IBM-kompatible (3,5")

Bestellnummern:  
Einfach-Version 68552  
Zehnfach-Version 68553  
Zusatz-Version 68554

Zur Programmieroberfläche "FiPro" ist eine Demo-Version (Bestell-Nr. 68555) erhältlich. Das Programm wird vorgestellt und erlaubt dem Bediener gleichzeitig den Test mit ausgewählten Modellen.

## The Software

### "FiPro" Programming Graphical User Interface

This interactive programming GUI lets you develop a control program for any computing model connected to the interface by visual programming. Even a slight knowledge of programming is enough to change existing example programs and develop new ones. Easy to use and quick to learn: these are

the main features of this software. The programs are not written in the conventional meaning of the word. They are compiled by clicking the mouse on screen. Each of the process steps is displayed by icons which correspond to the fischertechnik components.

**Hardware requirements:**  
IBM-compatible AT 286er or higher, 640 KB RAM, VGA-color monitor, mouse.  
"FiPro" diskette for IBM-compatibles (3.5")  
Order Numbers:  
Single version 68552  
Tenfold version 68553  
Additional version 68554

A functional demo version is available for the "FiPro" programming GUI (Order No. 68555). The program is presented and you can also program selected models.

Bestellungen an / Send your orders to: Cornelsen Experimenta • Holzhauser Str. 76 • D-13509 Berlin

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# Kabelkonfektionierung • Cable termination

- 1** Flachbandkabel 50cm  
Ribbon cable 50cm



- 2** paarweise abtrennen  
cut into wire-pairs



- 3** 10 Doppellitzen  
10 wire-pairs



- 4** Doppellitzen 30mm auftrennen  
Split open wire-pairs at ends, 30mm



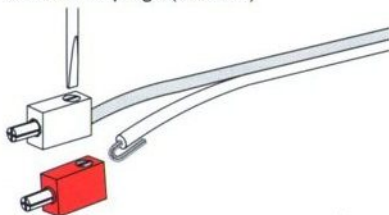
- 5** je 4mm abisolieren  
Strip 4mm off each end



- 6** Litze umbiegen  
Bend back conductors



- 7** Stecker (Buchsen) anschraubend  
Screw into plugs (sockets)

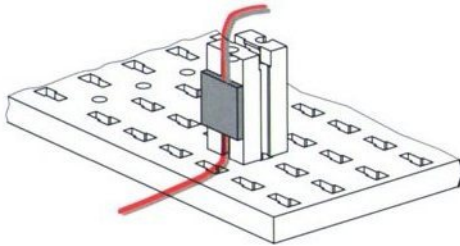


- 8** fertiges Kabel  
finished cable

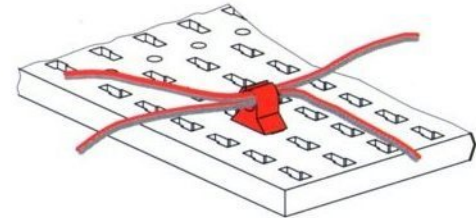




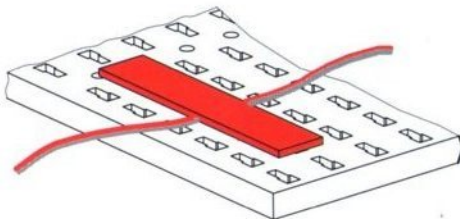
- 1** Einzelkabel in Bausteinnuten  
Individual cable in device groove



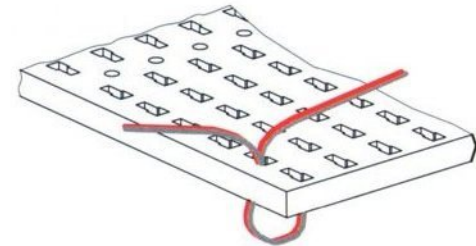
- 2** Kabel auf Experimentierplatte oder im Modell  
Cable on base plate or in model



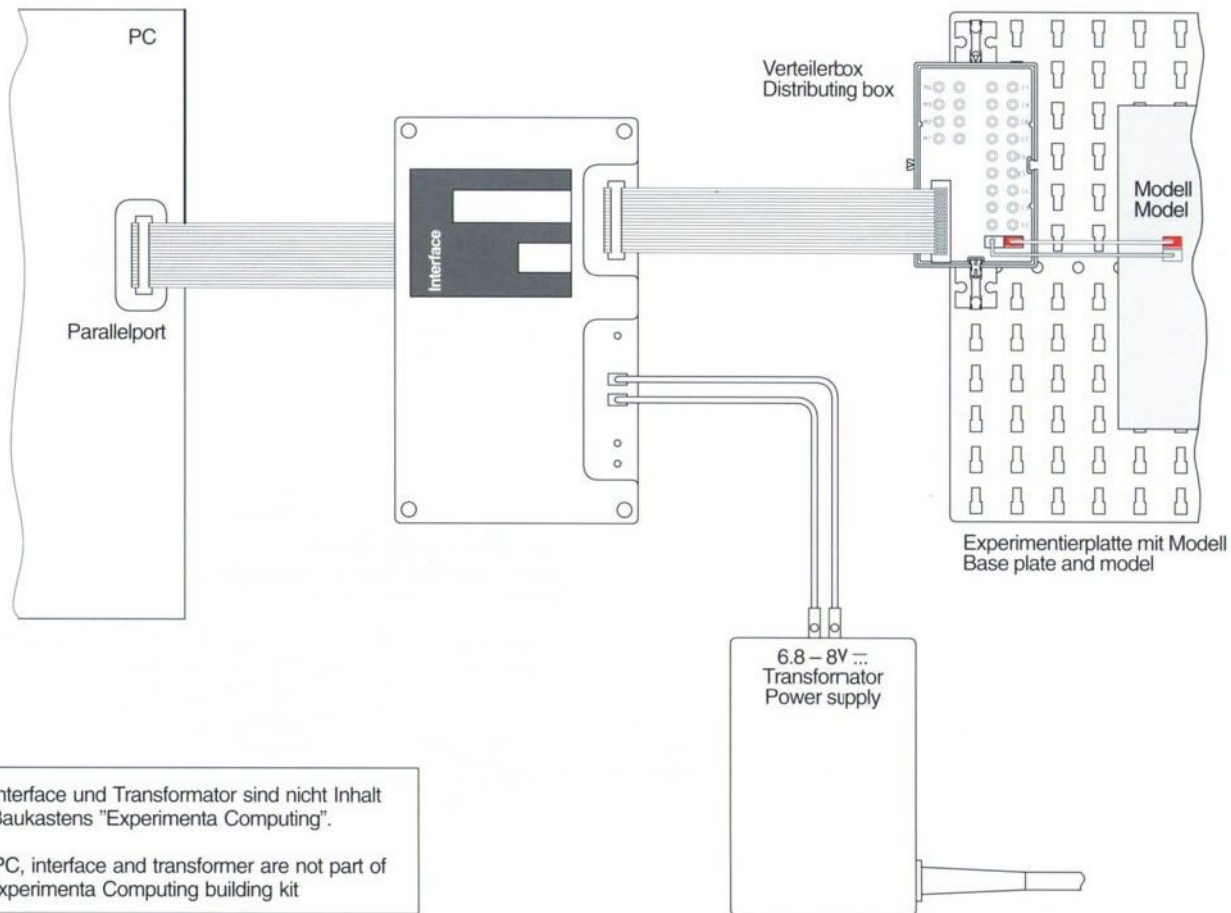
- 3** Kabel auf Experimentierplatte  
Cable on base plate



- 4** Kabellänge variabel anpassen  
Kabellschleife durch Nut der Experimentierplatte stecken  
Adjust cable length variably  
Insert cable loop through base plate



## Anschlußschema • Wiring diagram

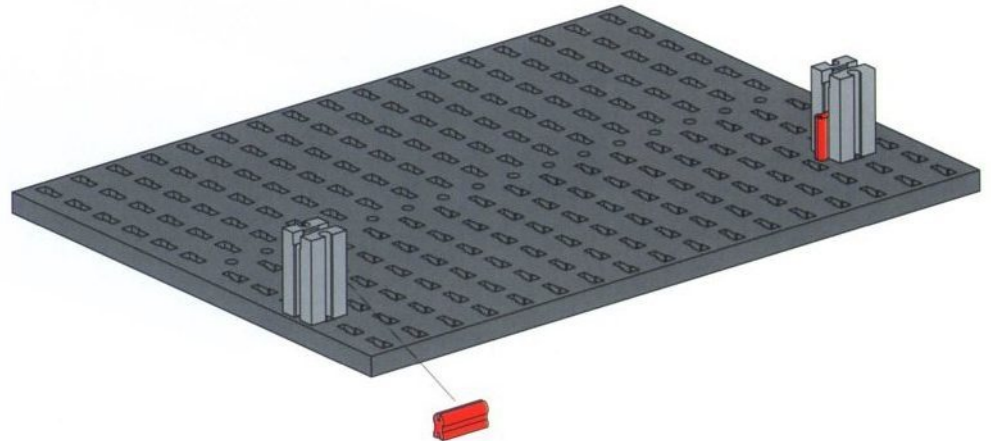
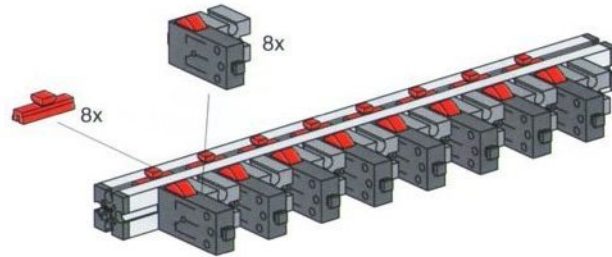
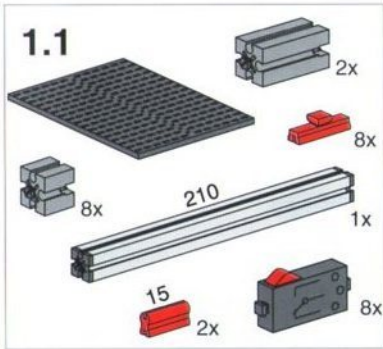


PC, Interface und Transformator sind nicht Inhalt des Baukastens "Experimenta Computing".

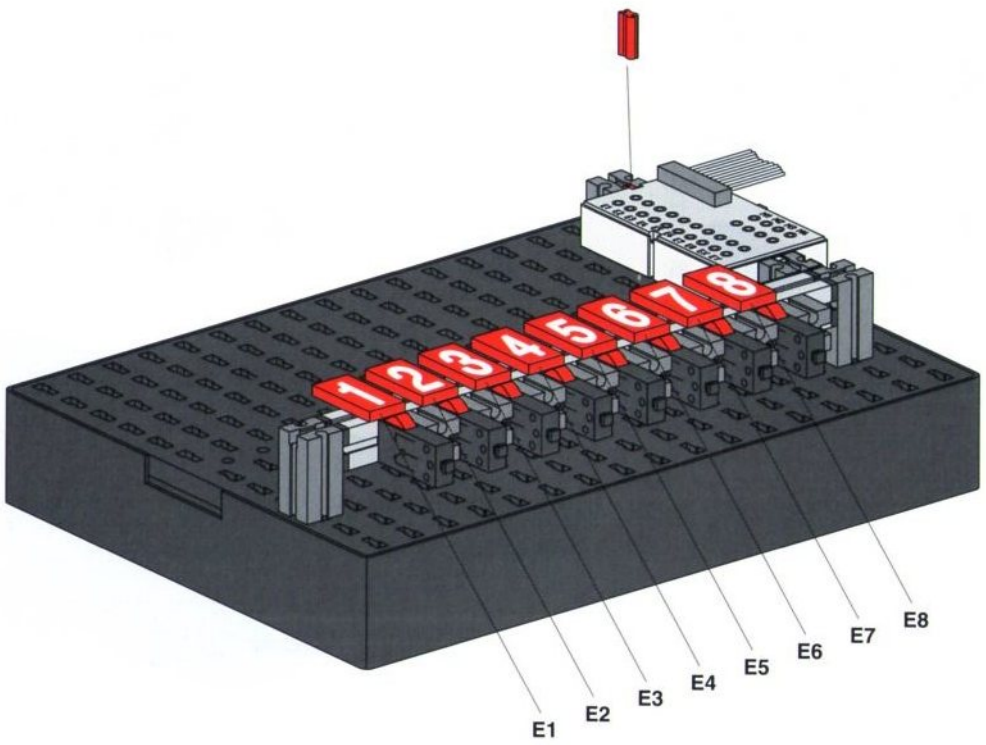
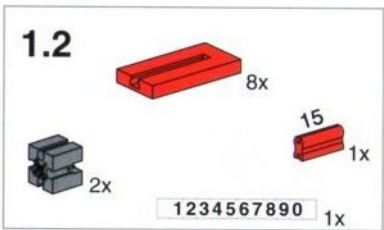
The PC, interface and transformer are not part of the Experimenta Computing building kit

1

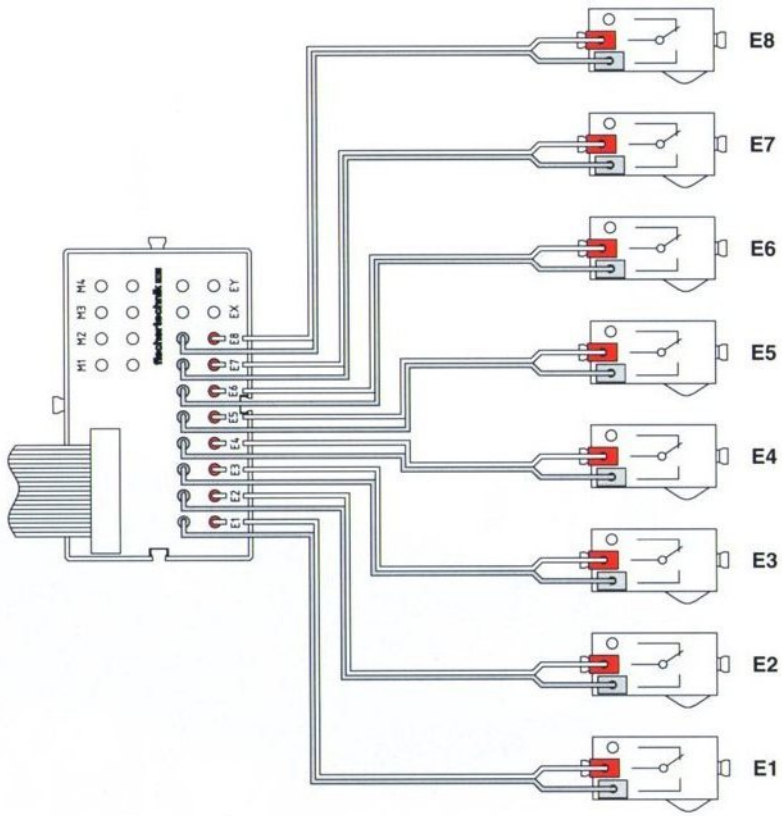
Tasterleiste  
Key bank



# 1



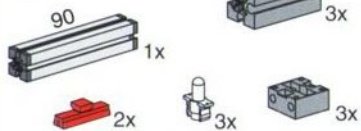




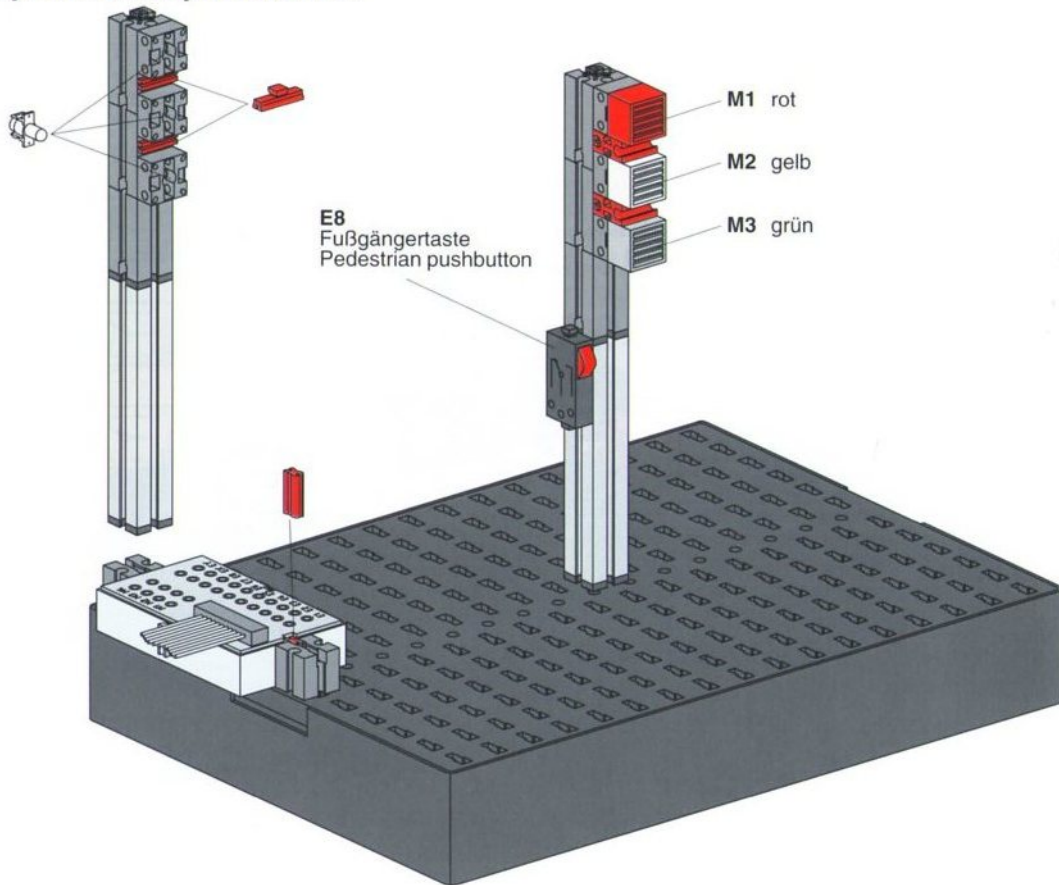
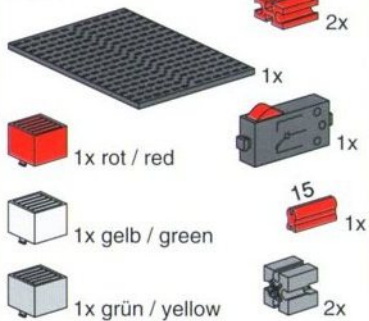
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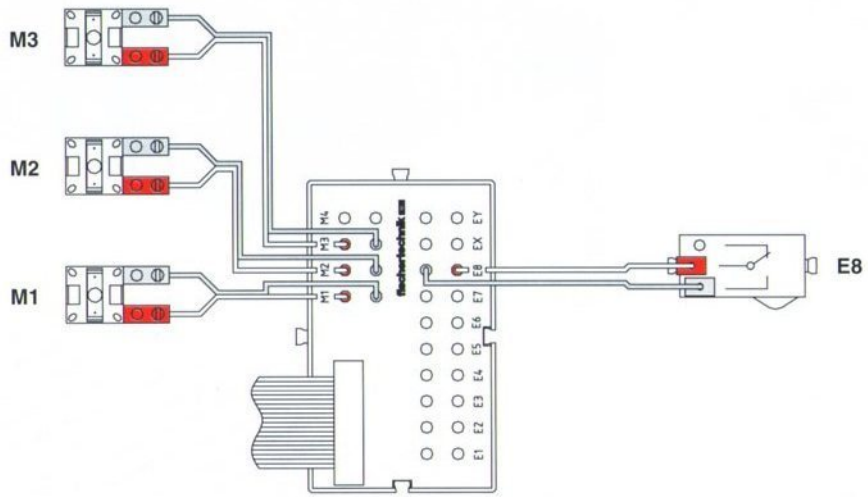
## Verkehrsampel mit Fußgängertaste Traffic light with pedestrian pushbutton

### 2.1



### 2.2

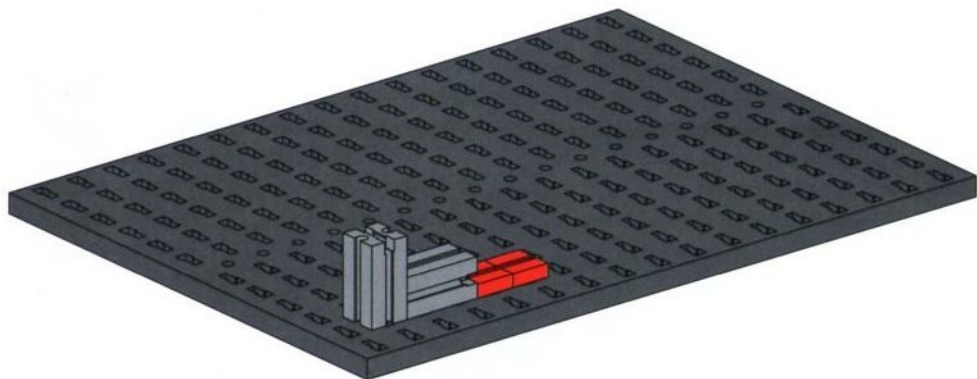
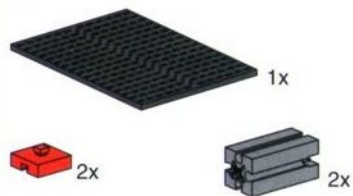




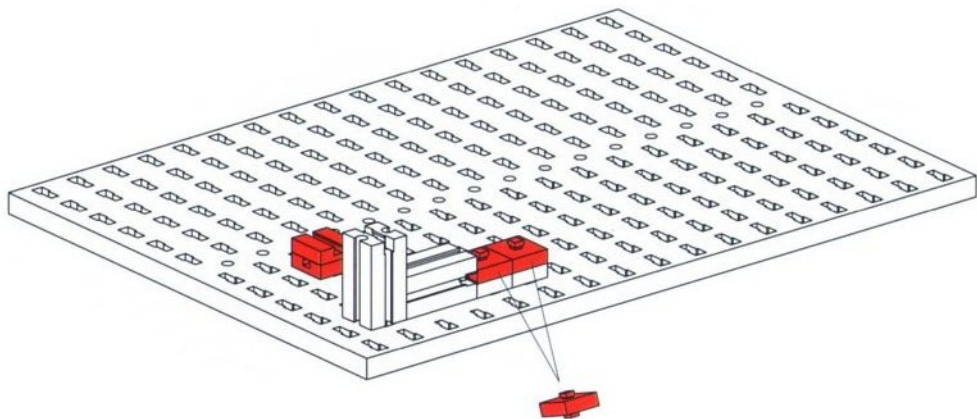
# 3

## Motorwinde 1 Motor winch 1

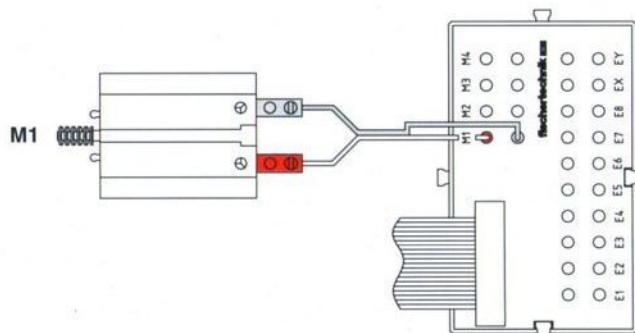
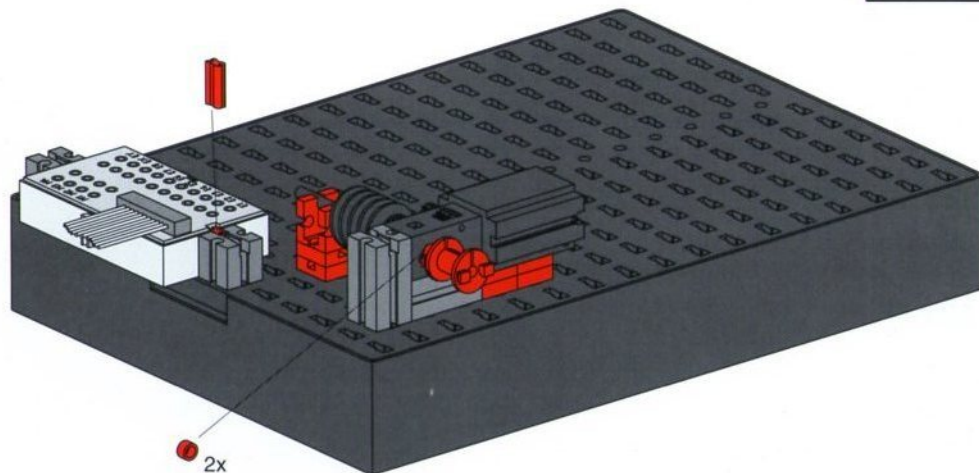
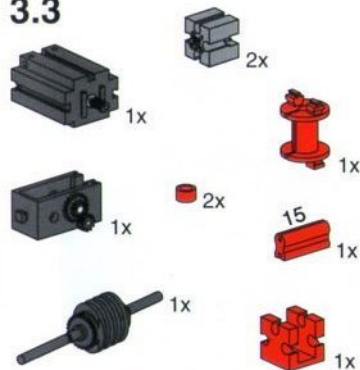
### 3.1



### 3.2



## 3.3

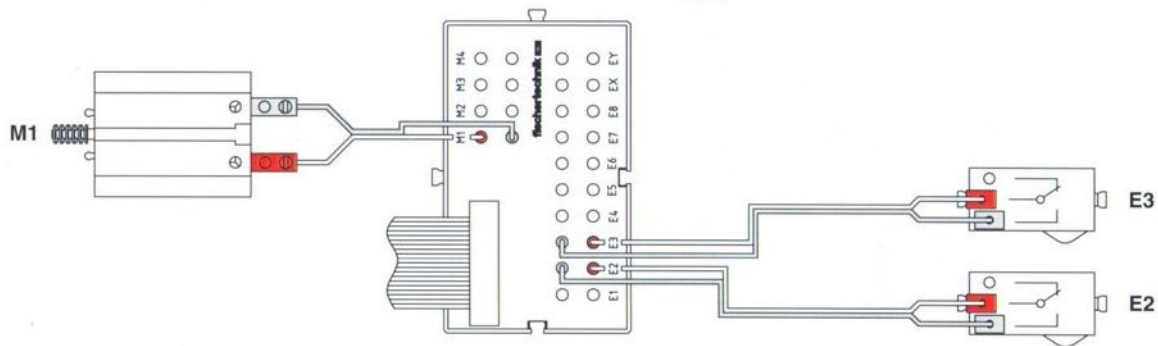
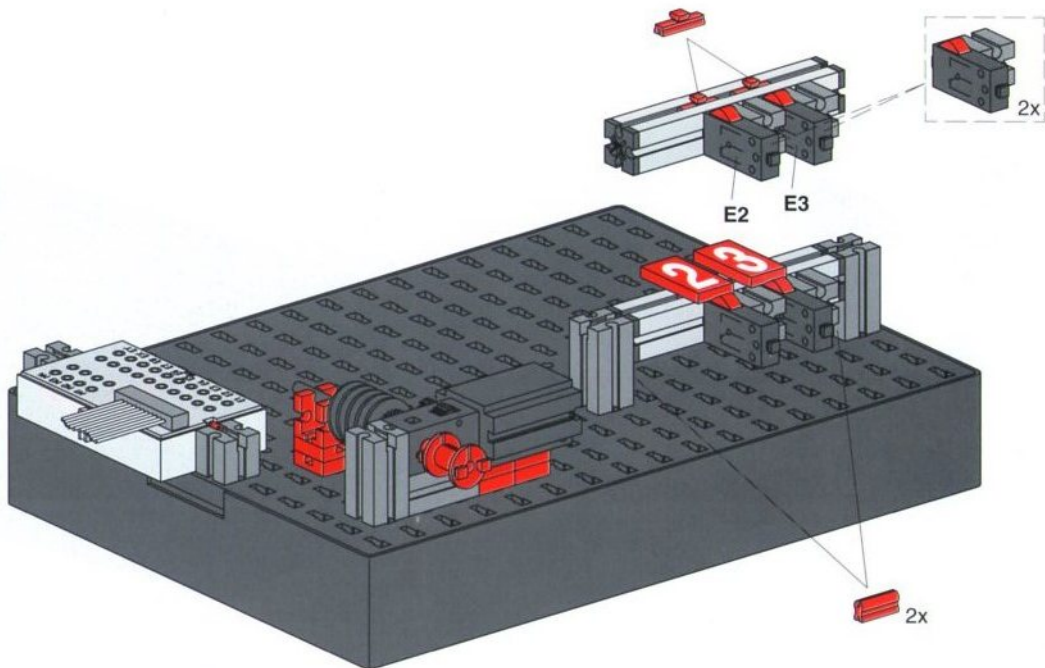
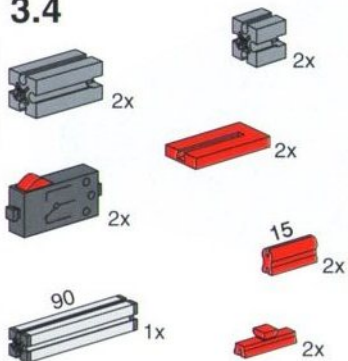




# 3

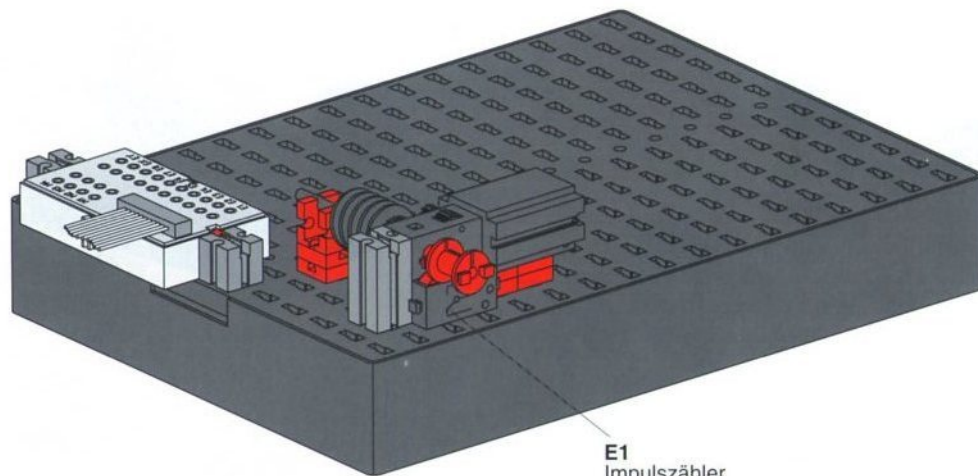
## Motorwinde 2 Motor winch 2

### 3.4

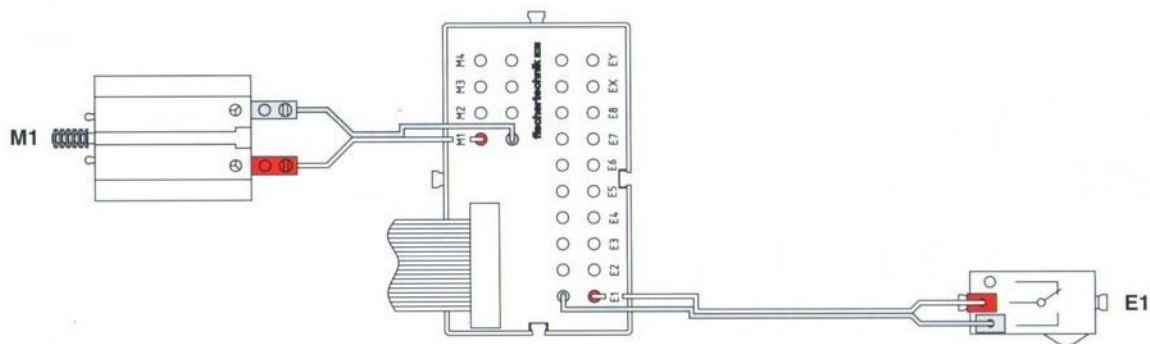


Motorwinde 3  
Motor winch 3

3.5



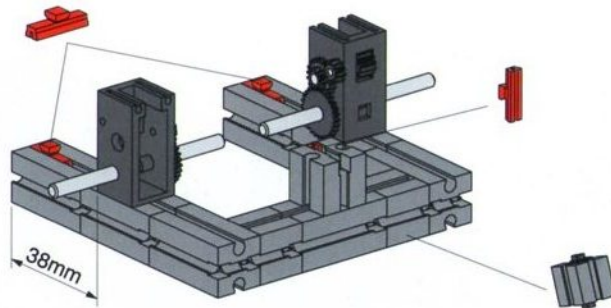
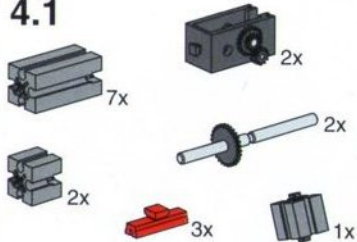
E1  
Impulszähler  
Pulse counter



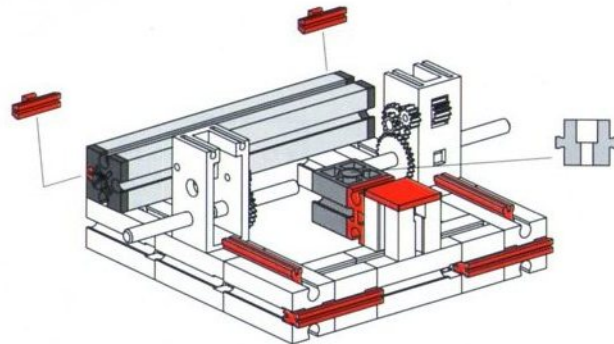
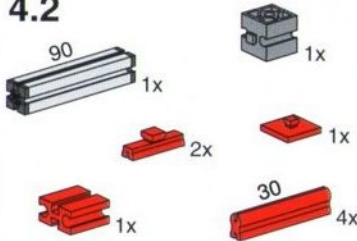
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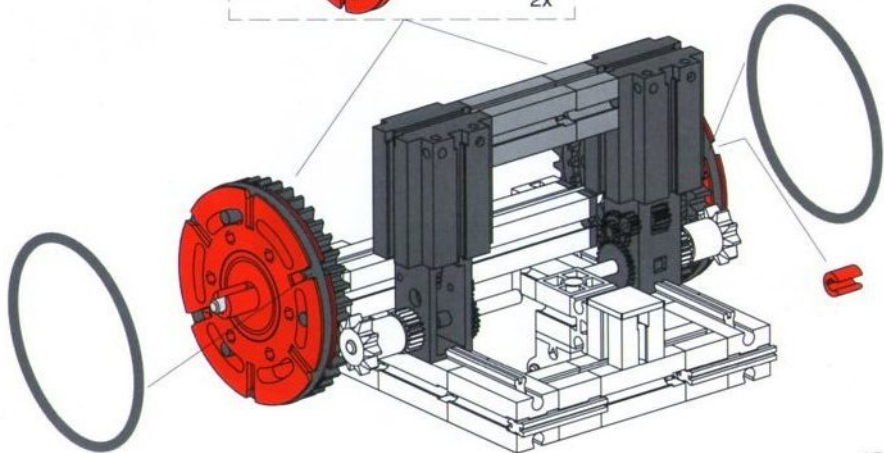
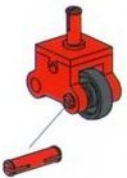
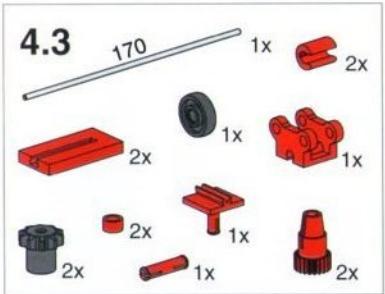
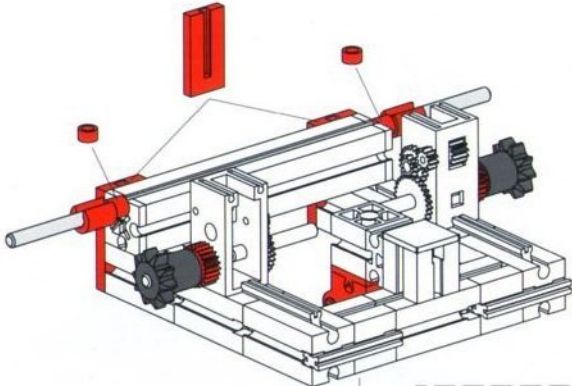
## Schildkröte Turtle

### 4.1

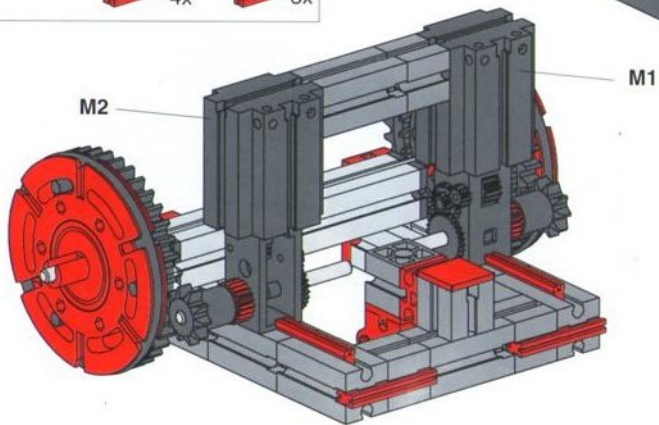
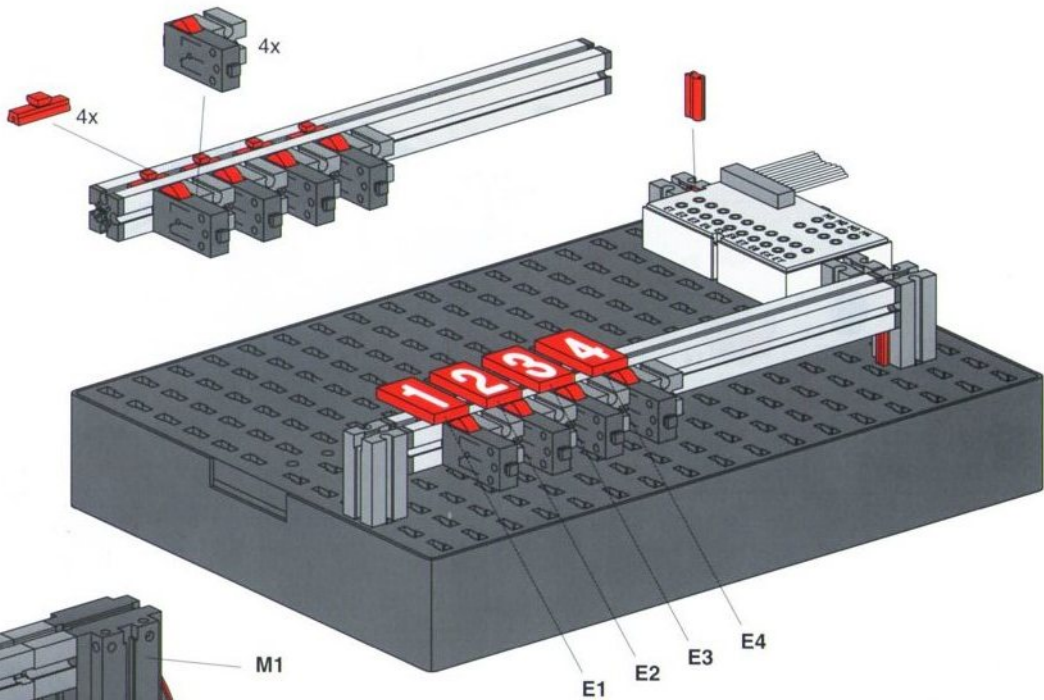
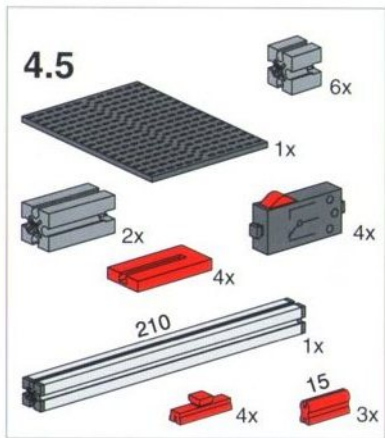


### 4.2

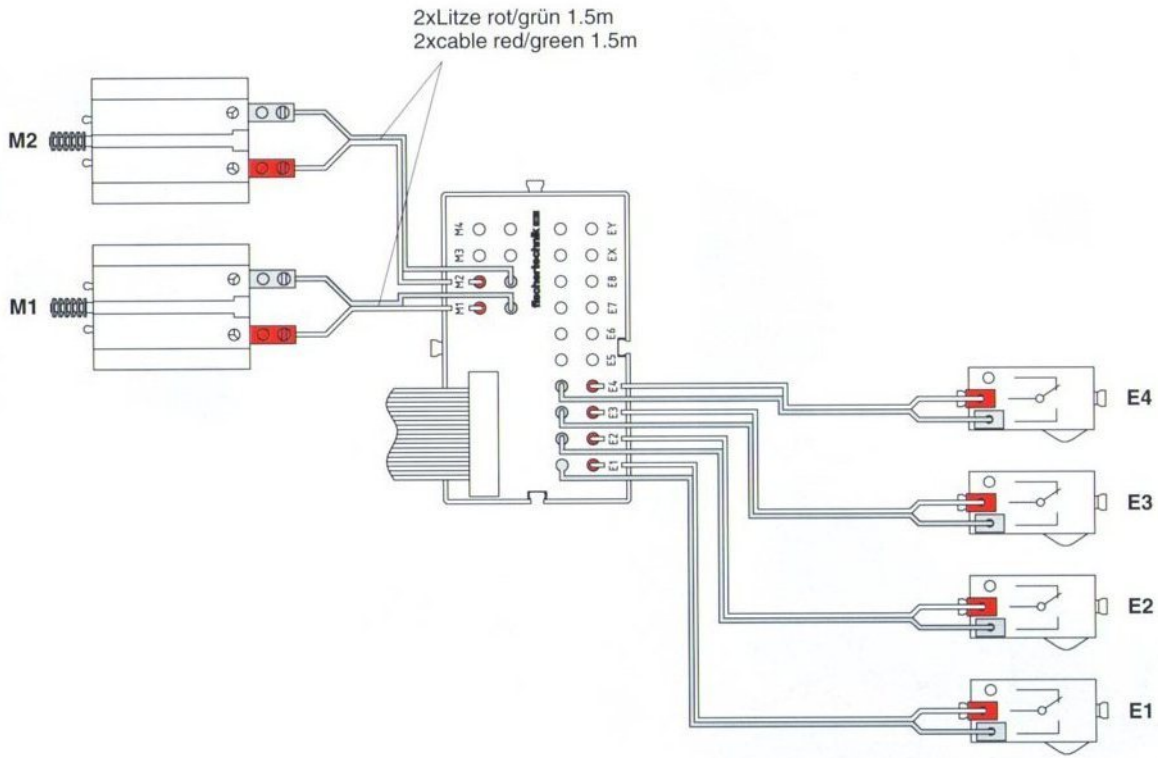




4









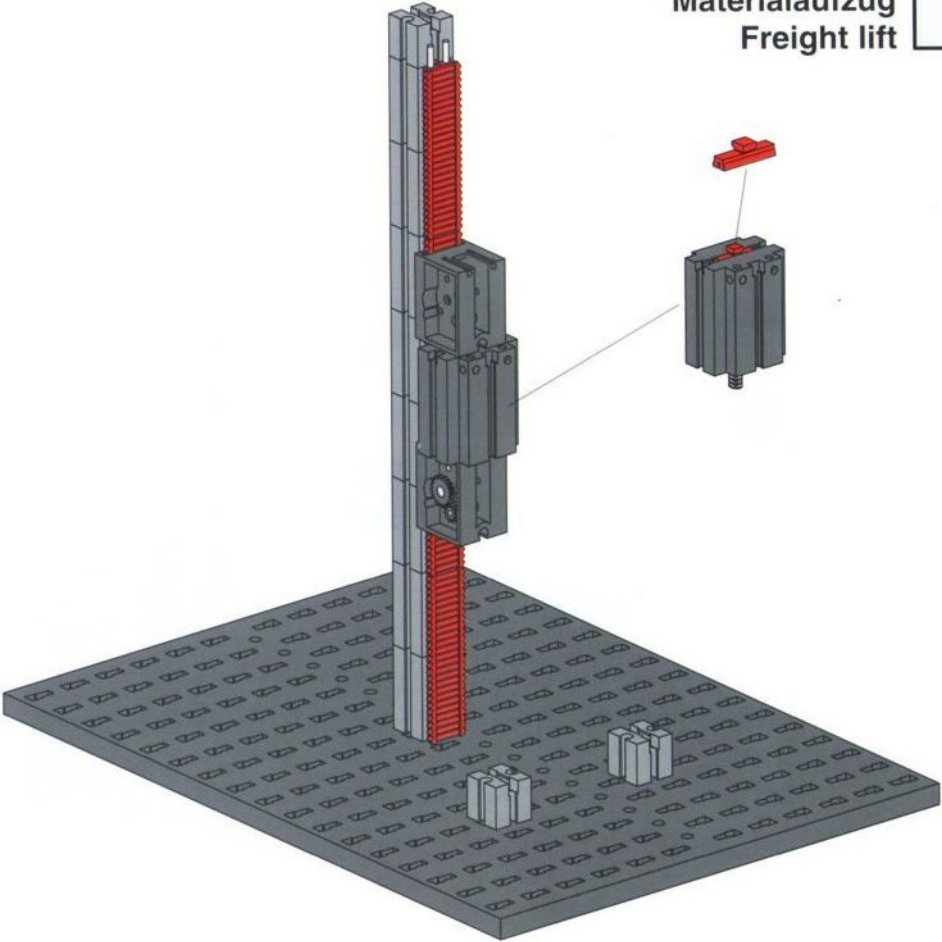
**Notizen**  
**Notes**

# 5

## Materialaufzug Freight lift

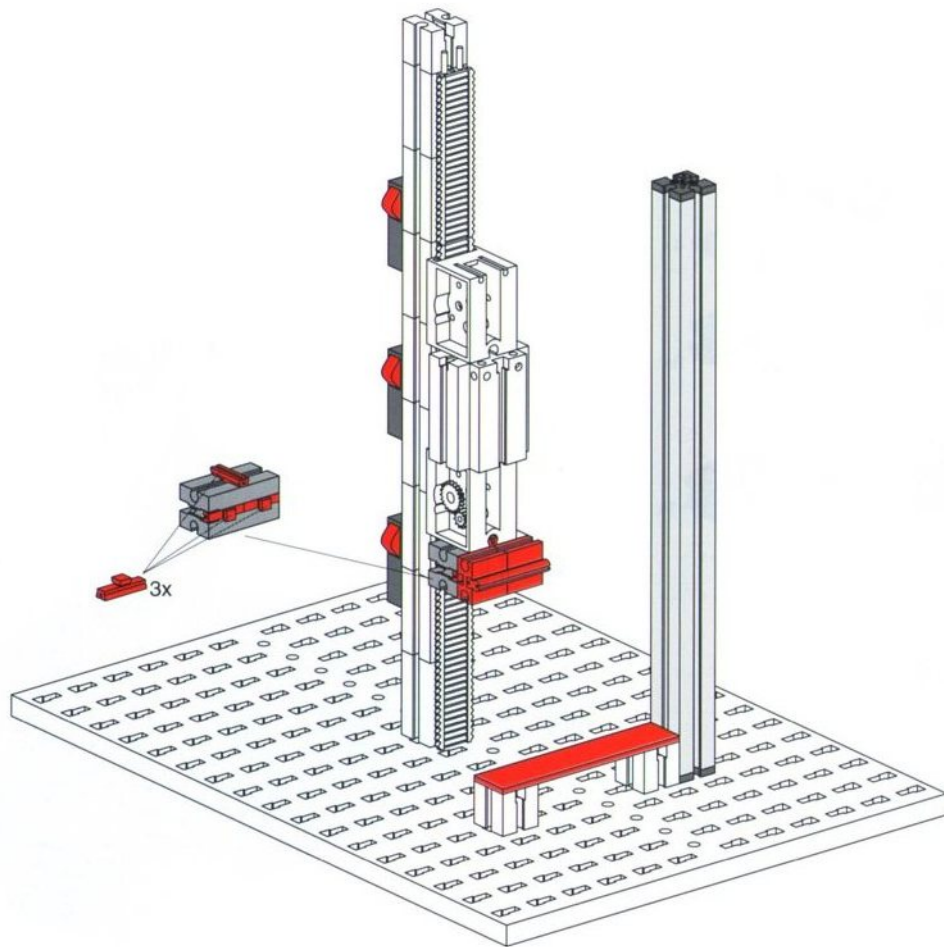
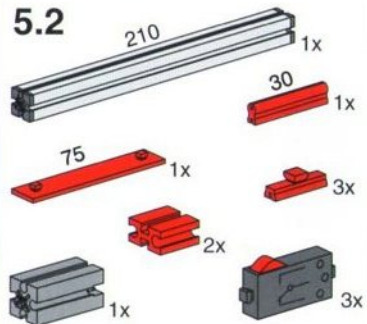
**5.1**

- 1x Red Technic Pin
- 1x Grey Technic Plate (10x10)
- 1x Grey Technic Axle Connector
- 4x Red Technic Pin
- 1x Grey Technic Axle Connector
- 3x Grey Technic Axle Connector
- 8x Grey Technic Axle Connector
- 1x Grey Technic Motor
- 1x Grey Technic Axle Connector



# 5

## 5.2

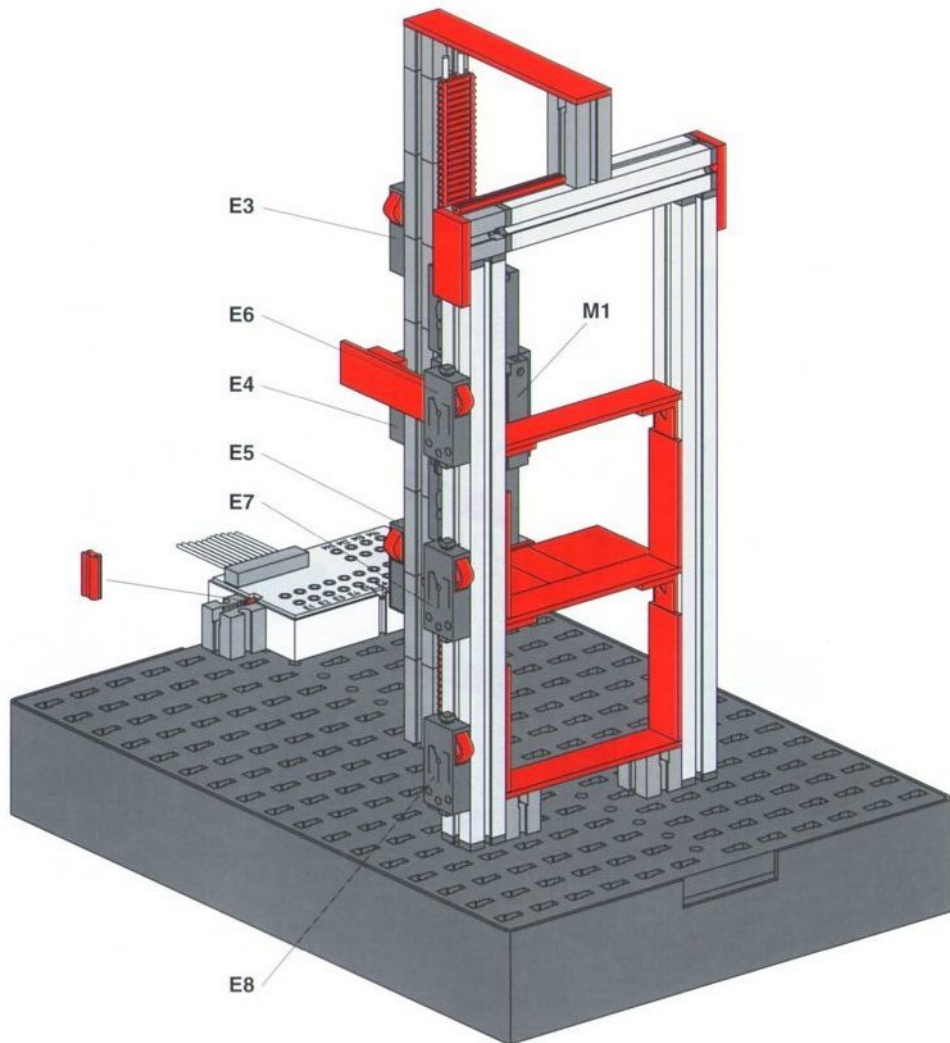


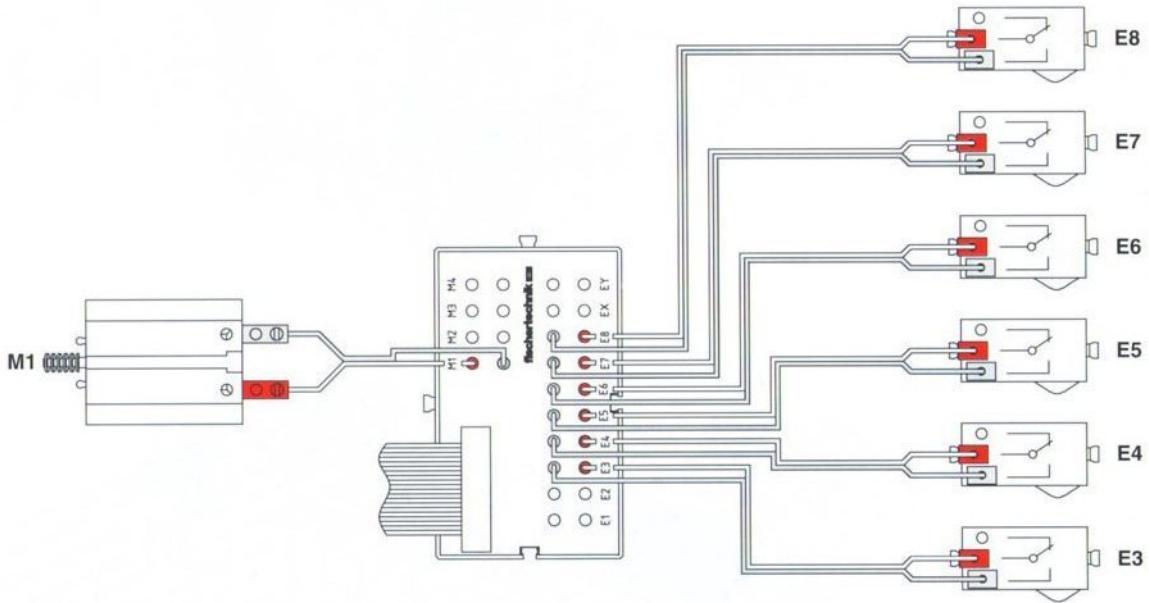




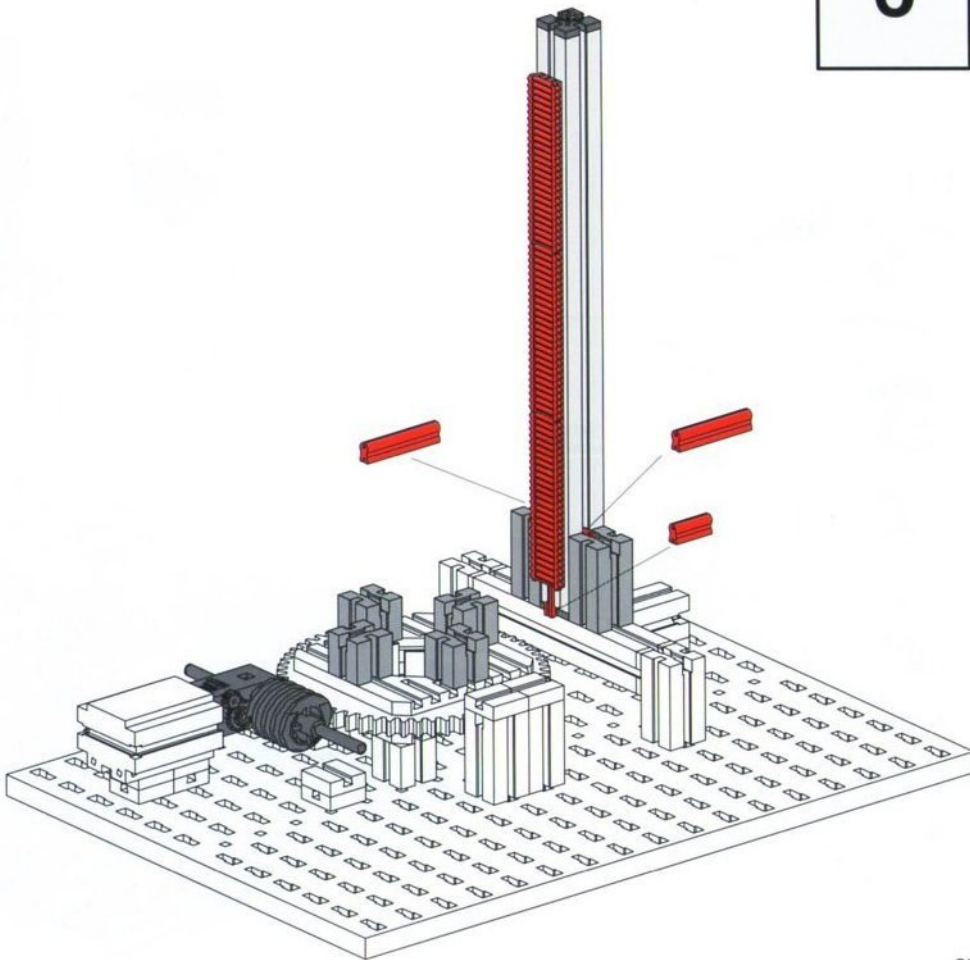
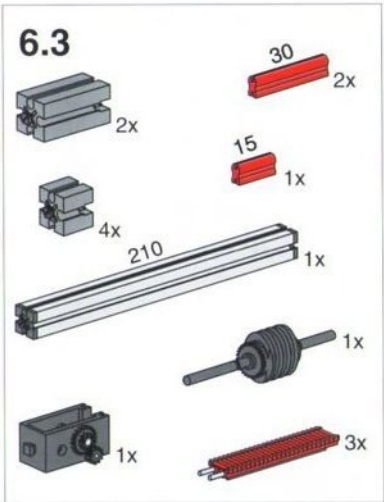
# 5

## 5.4



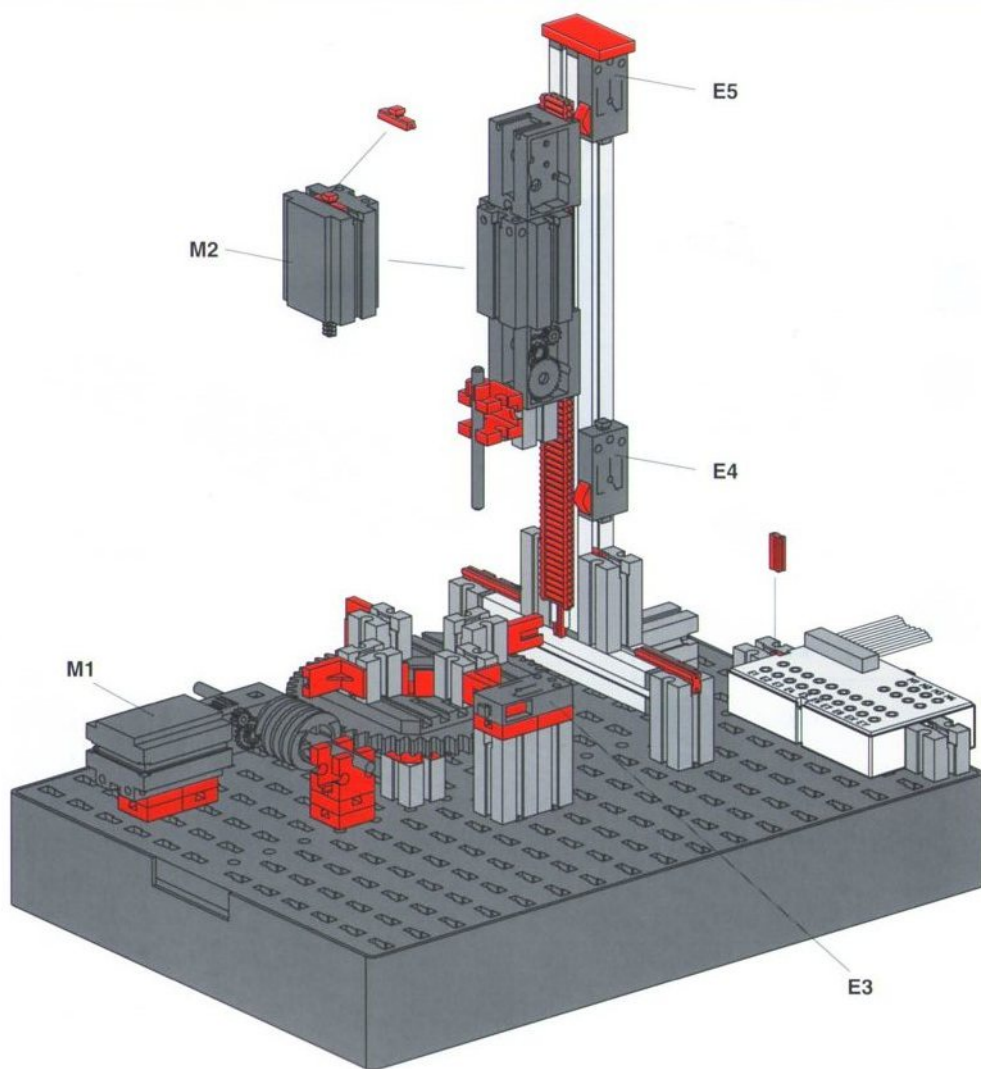
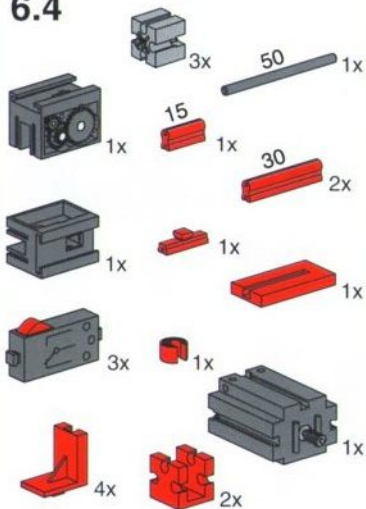




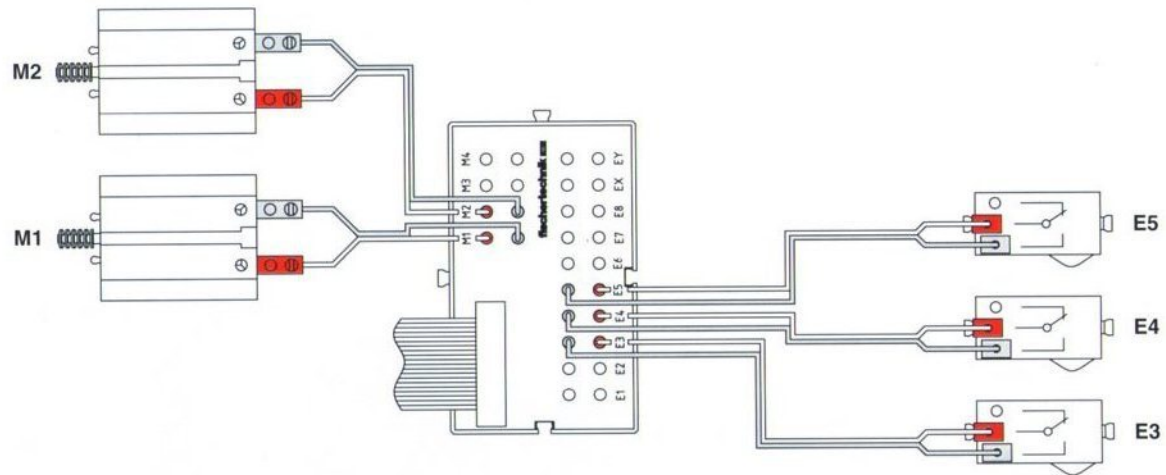


# 6

## 6.4



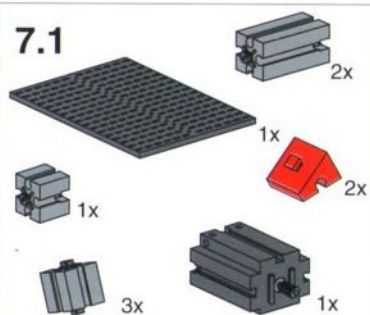




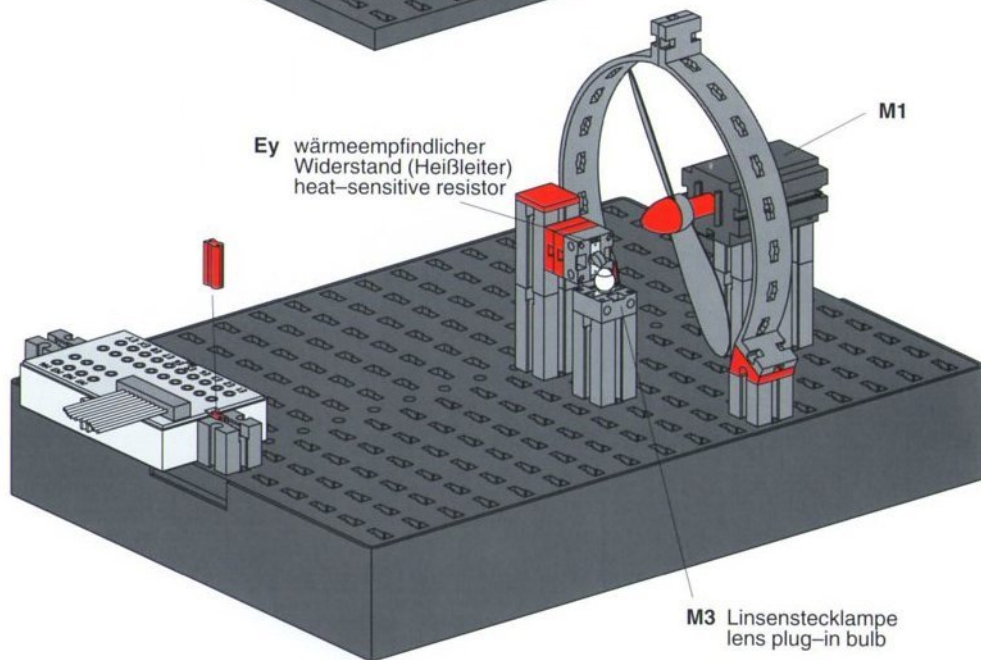
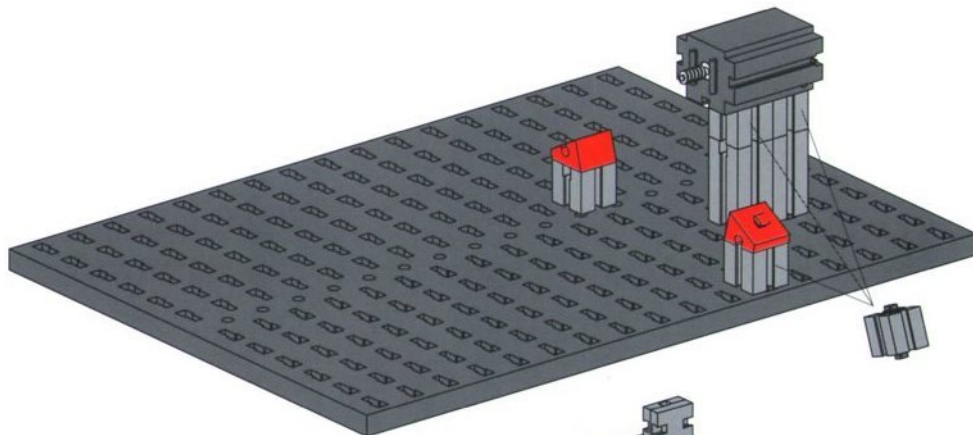
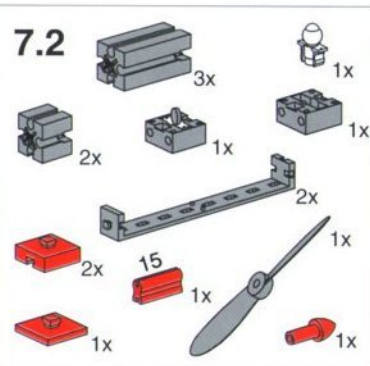
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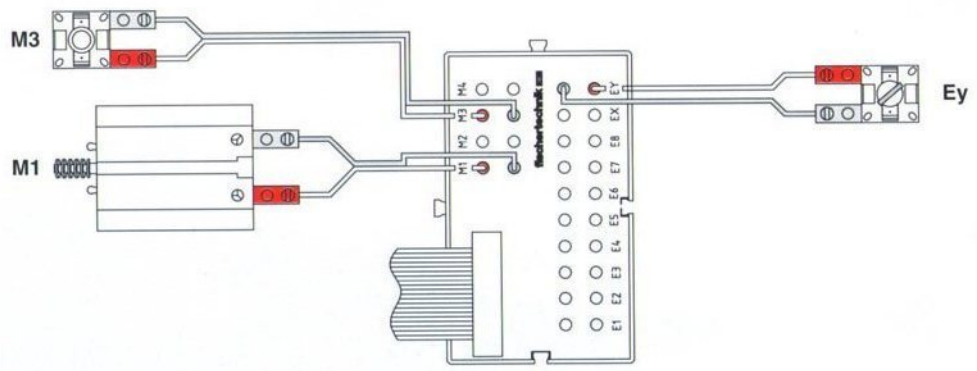
## Gebüse Fan

### 7.1



### 7.2

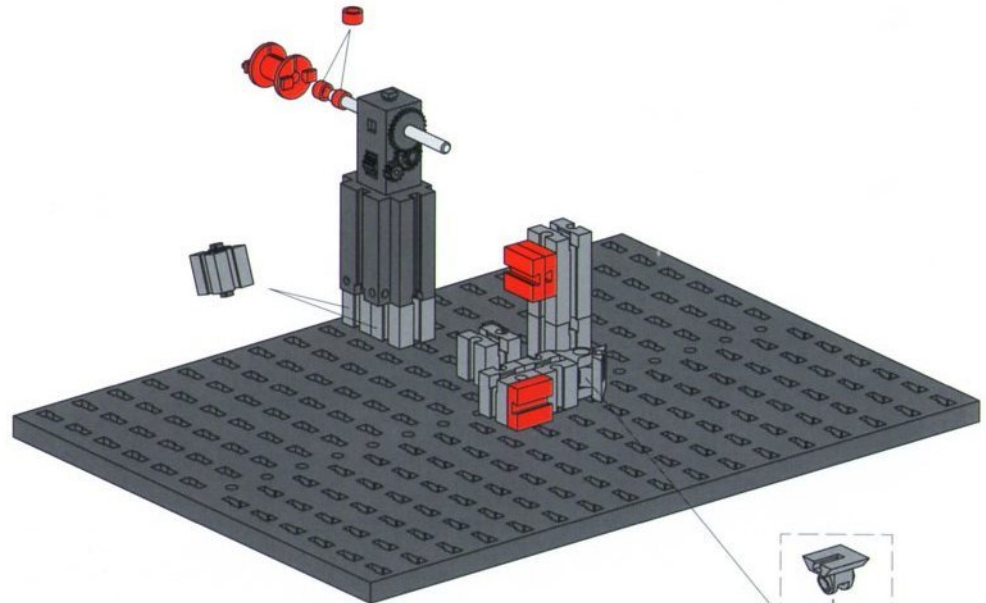
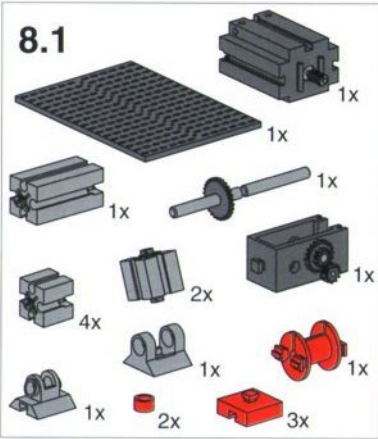


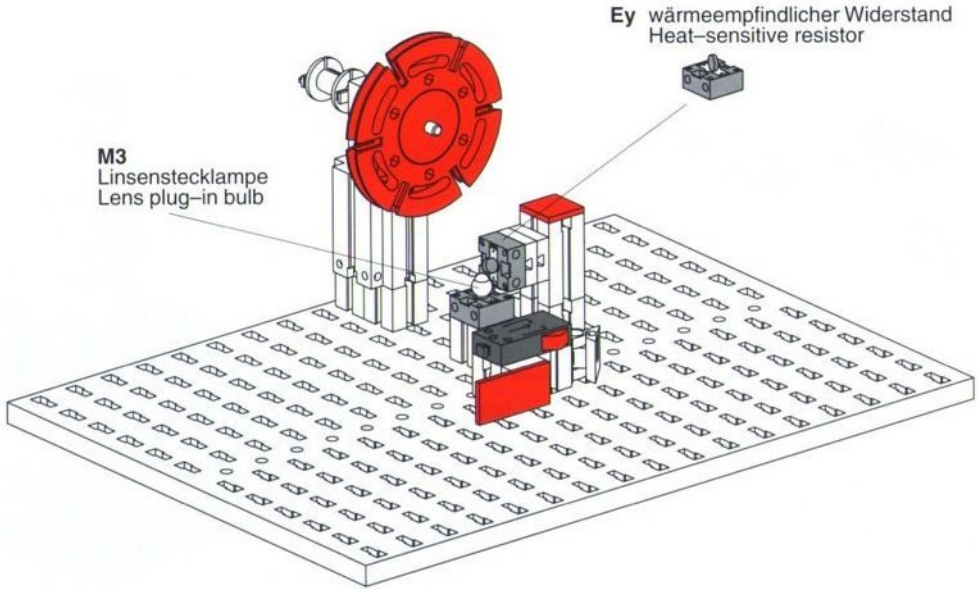
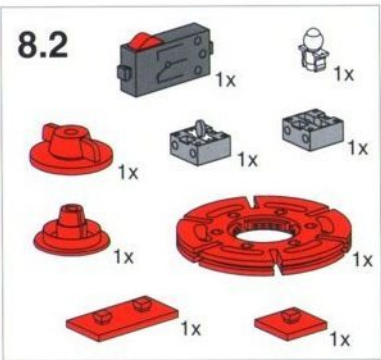


# 8

## Waschmaschine Washing machine

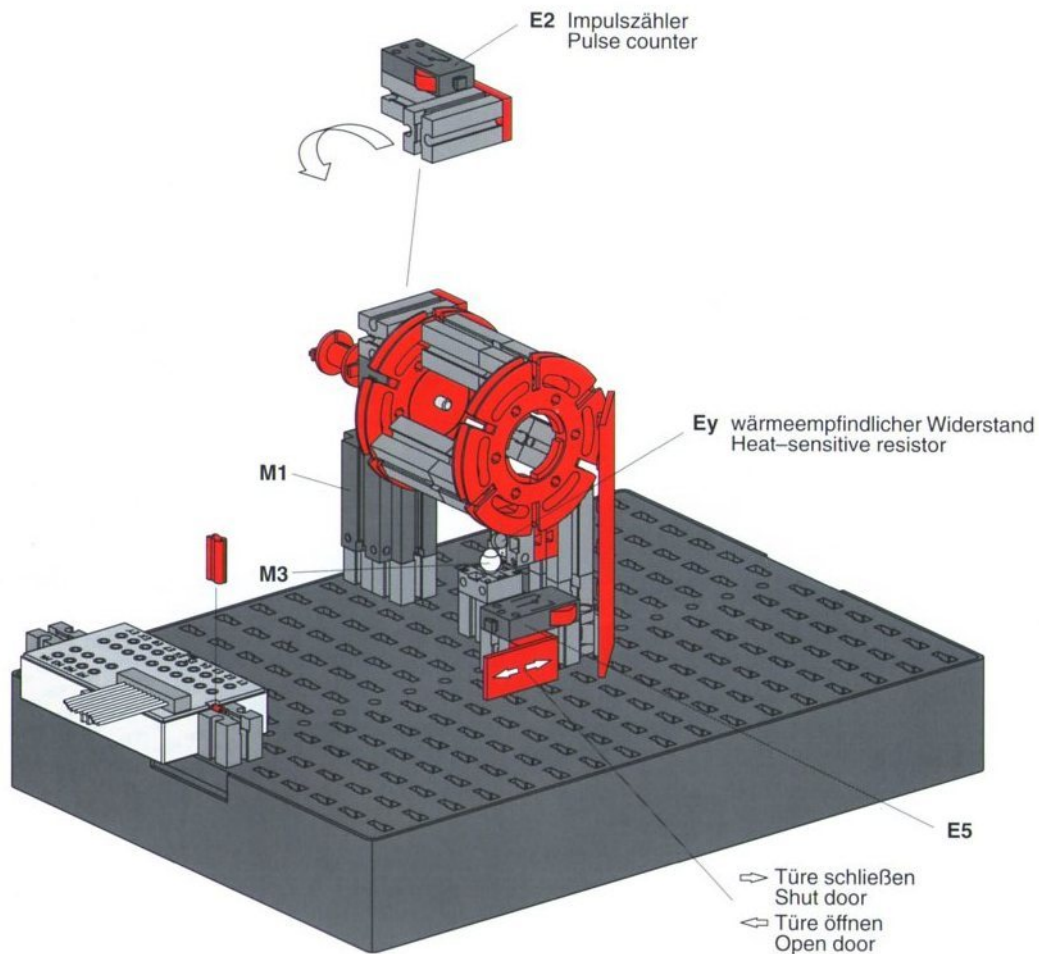
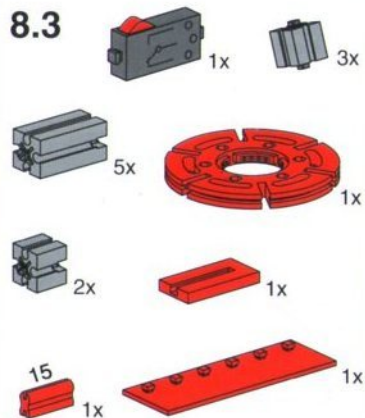
8.1



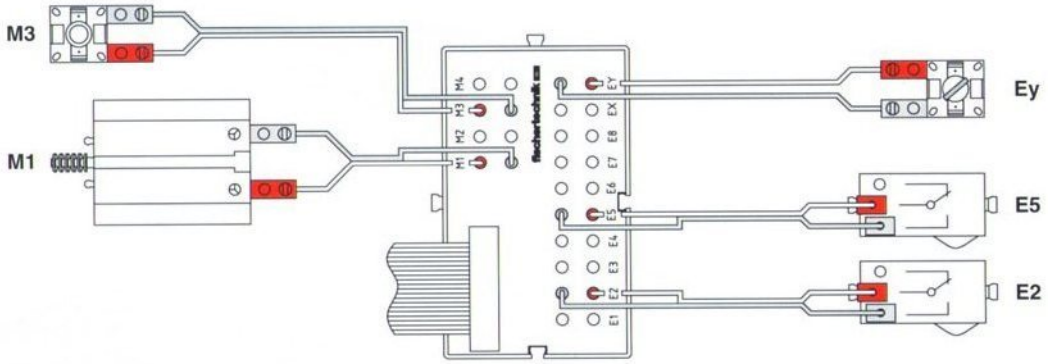


# 8

## 8.3



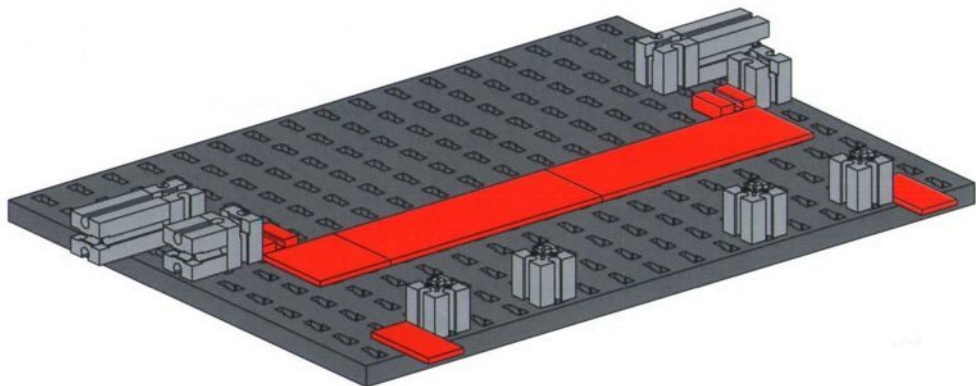
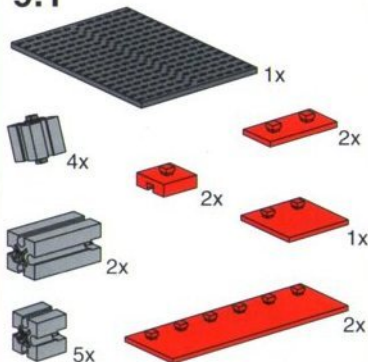




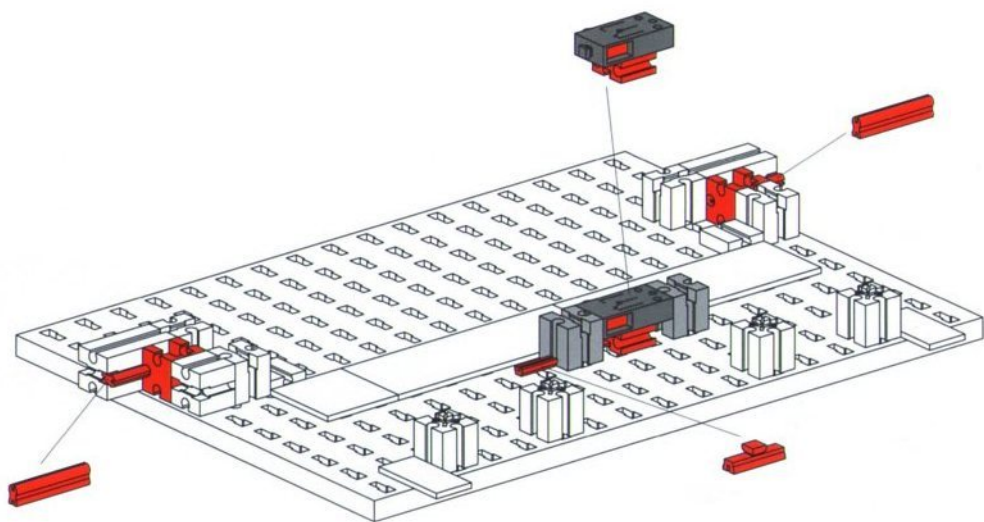
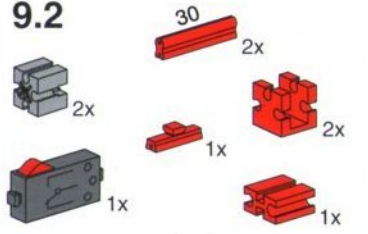
# 9

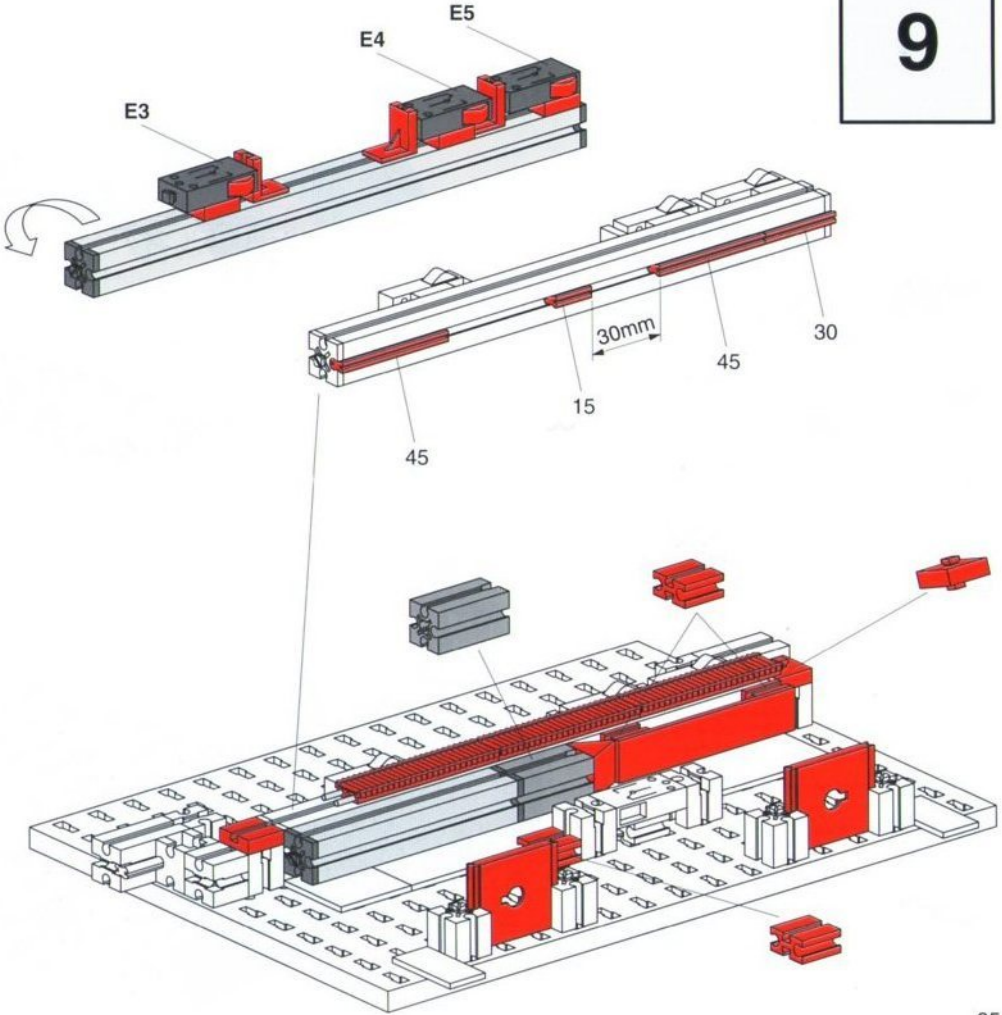
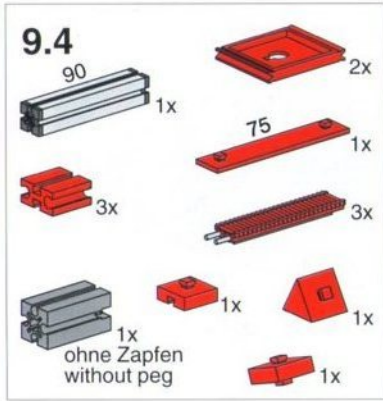
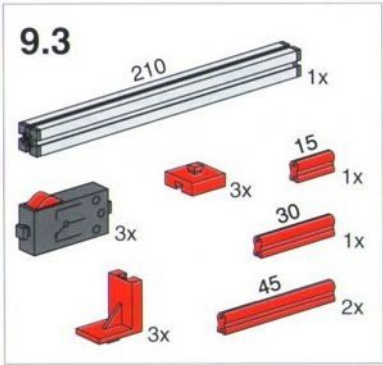
## Sortieranlage Sorting system

### 9.1



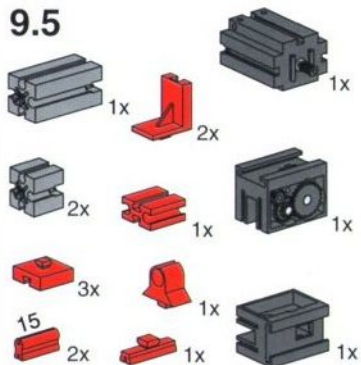
### 9.2



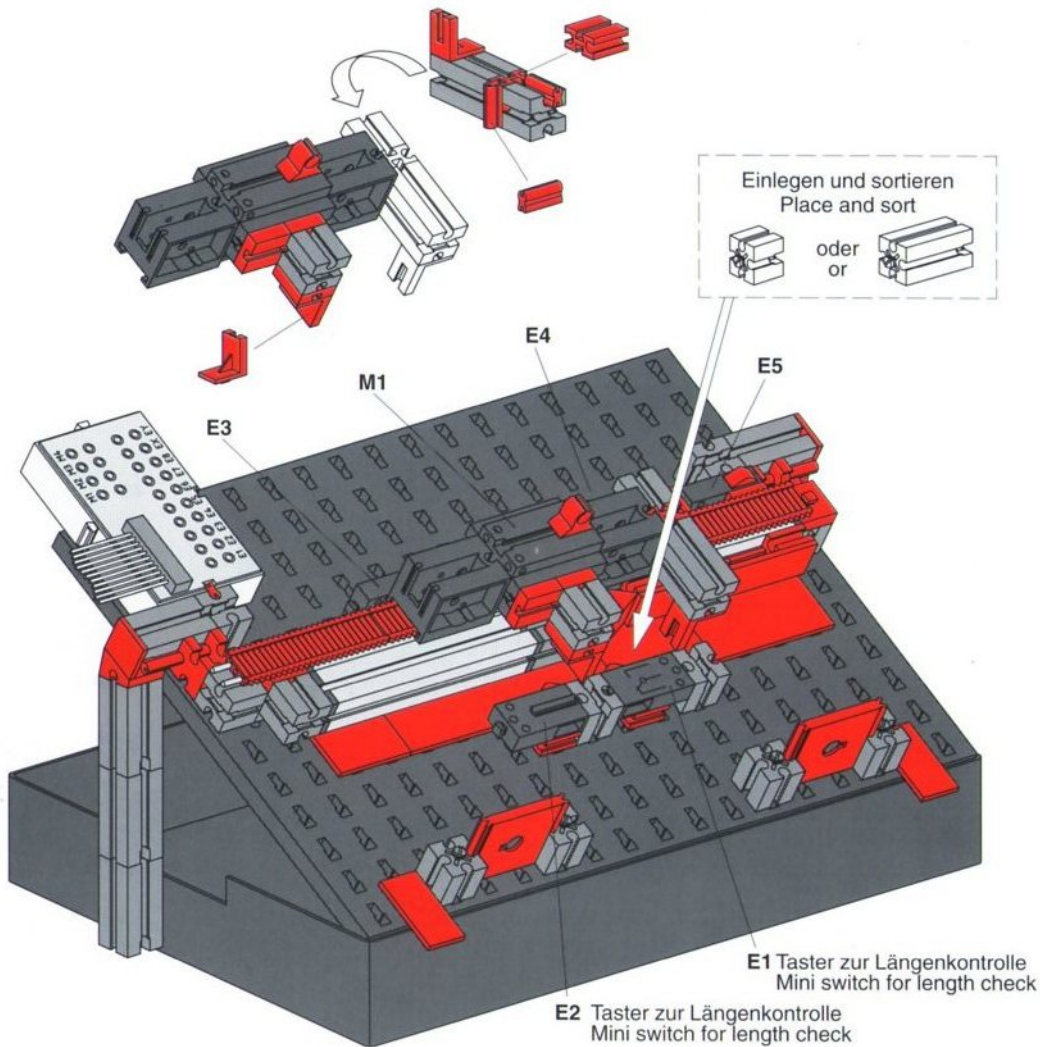
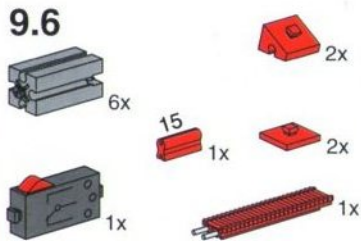


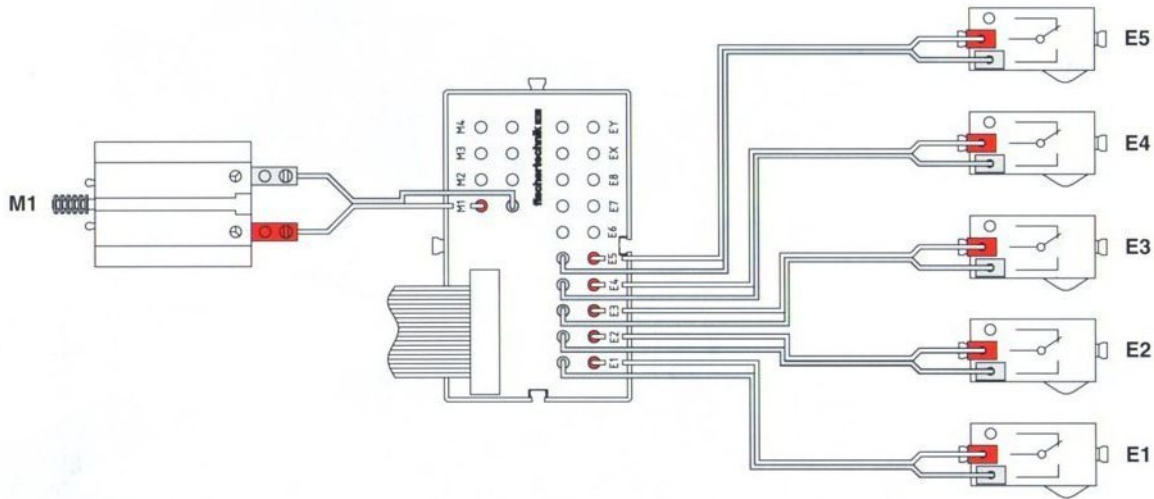
# 9

## 9.5



## 9.6



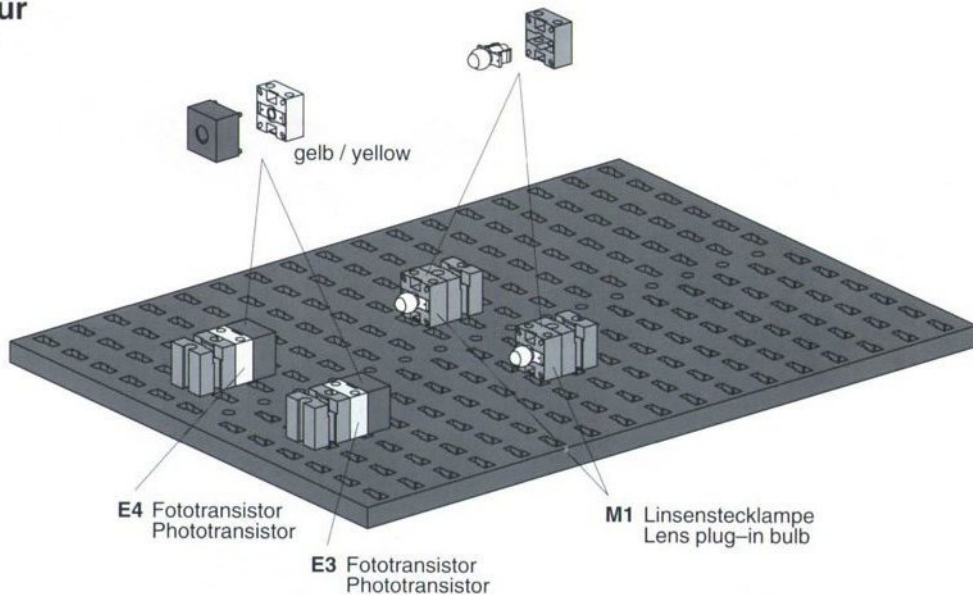
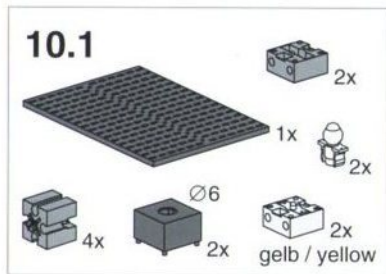




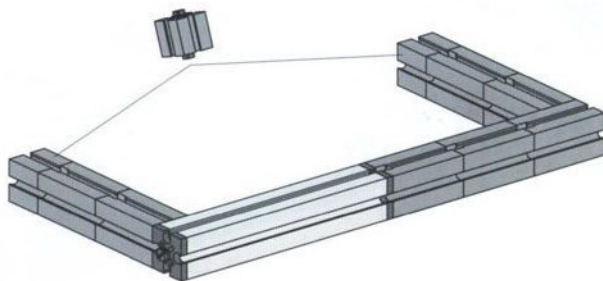
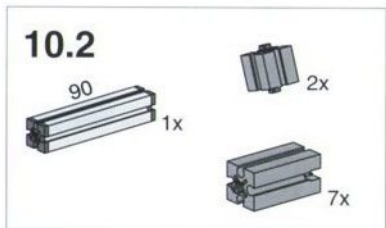
# 10

## Automatische Tür Automatic door

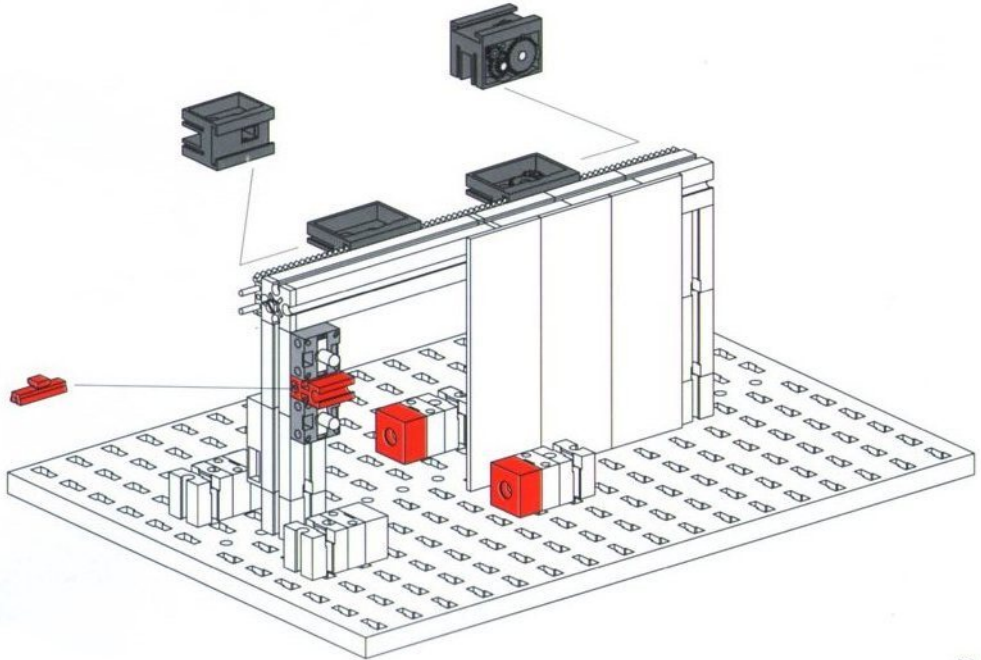
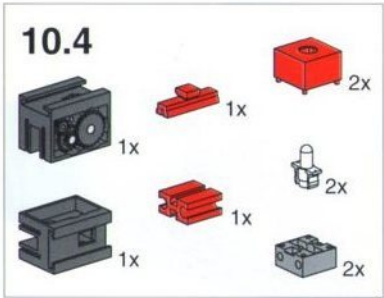
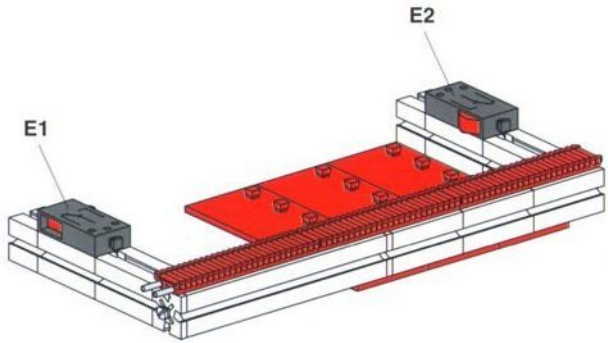
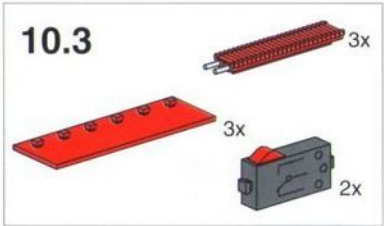
### 10.1



### 10.2

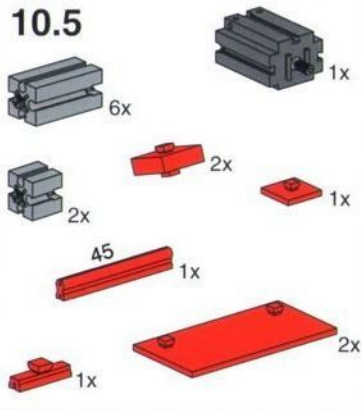




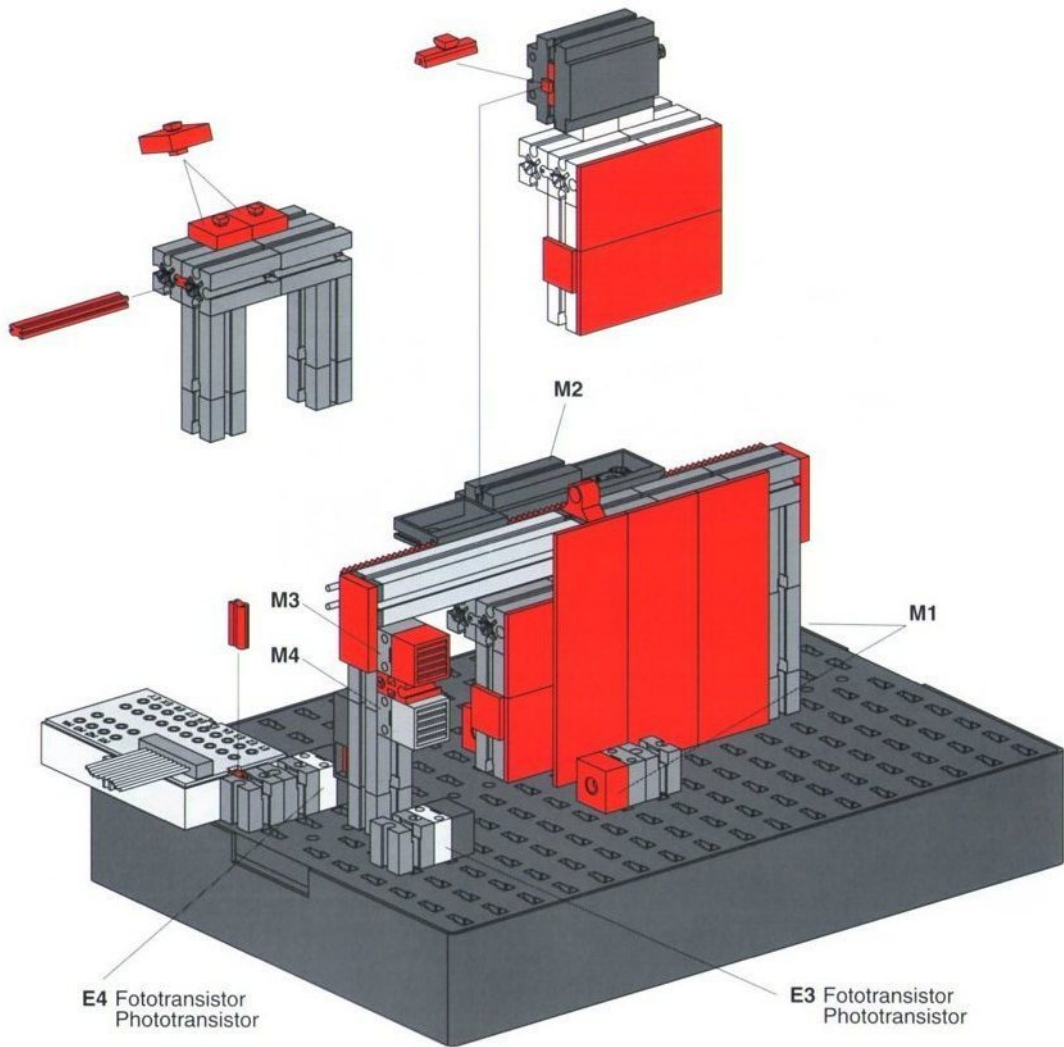
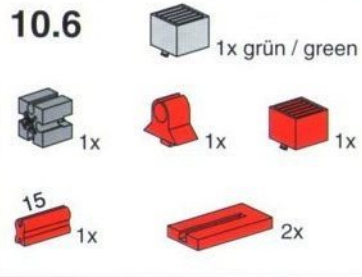


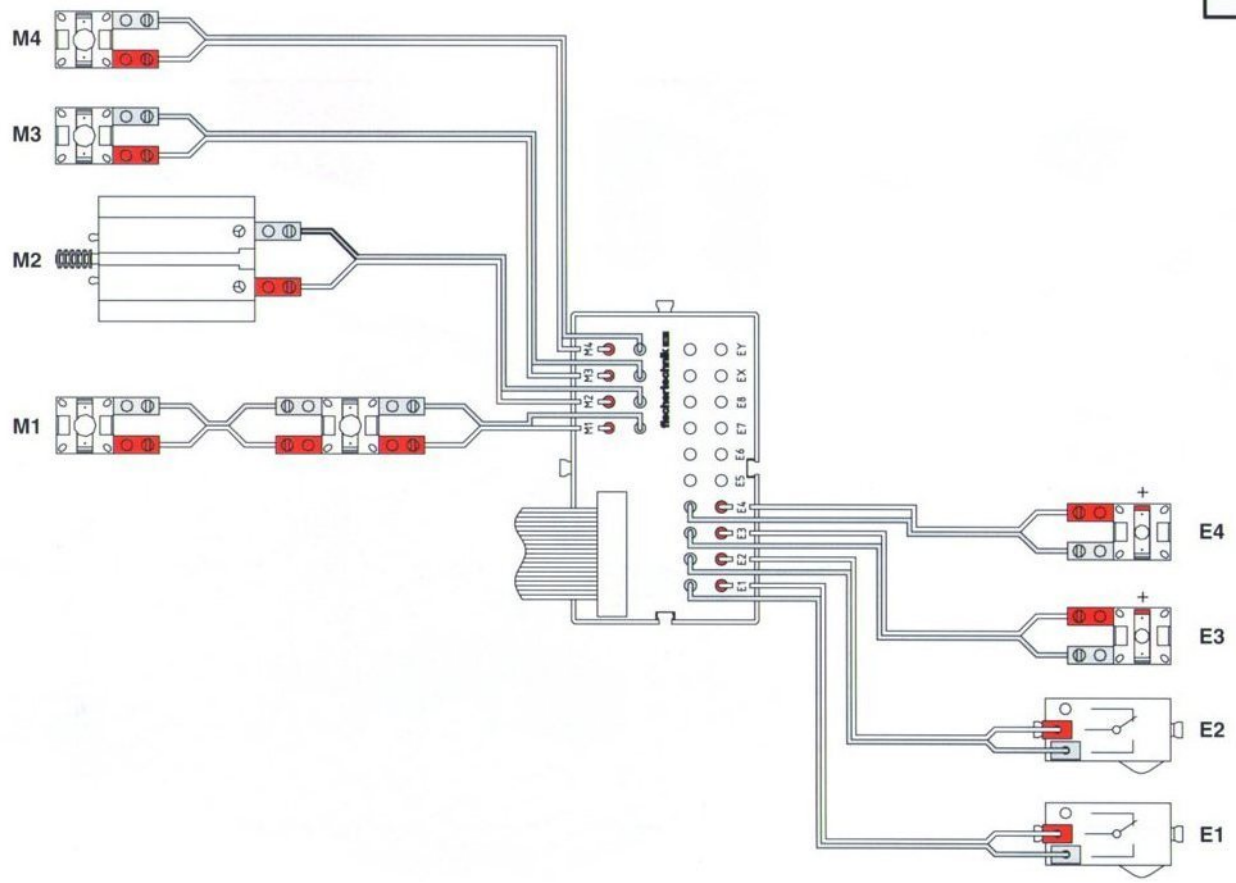
# 10

## 10.5



## 10.6

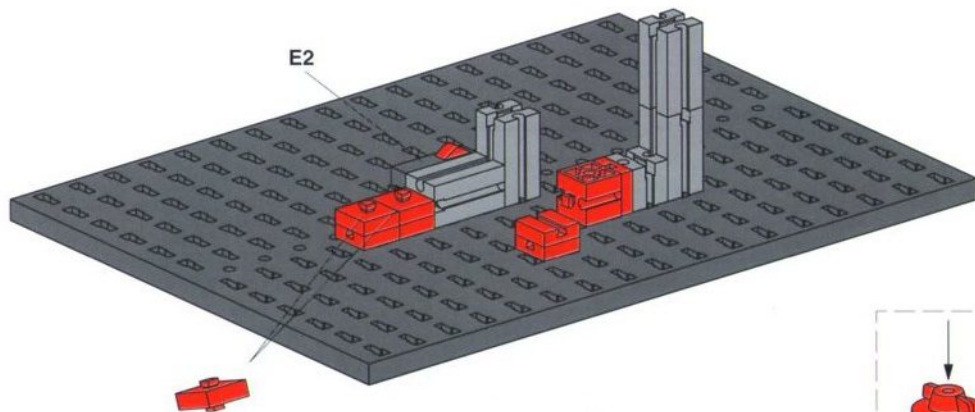
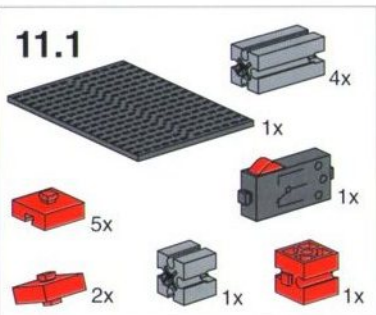




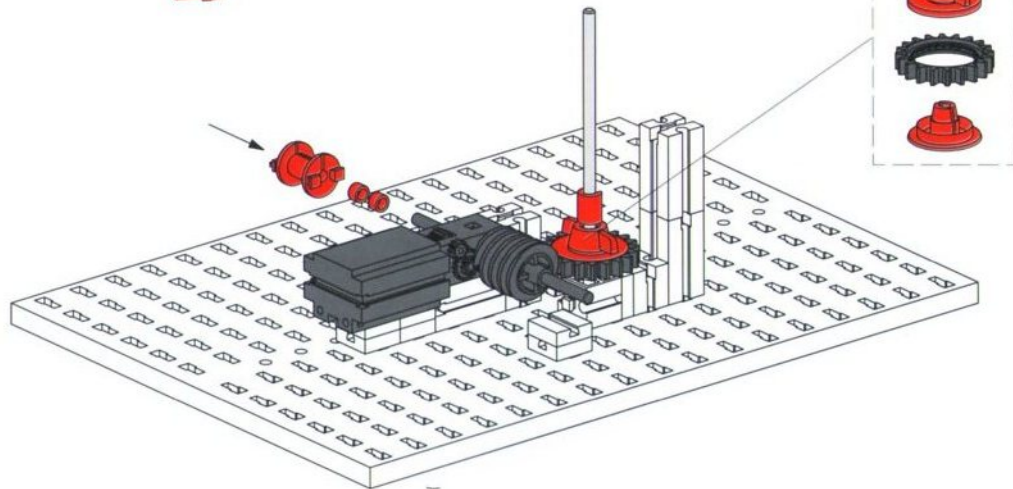
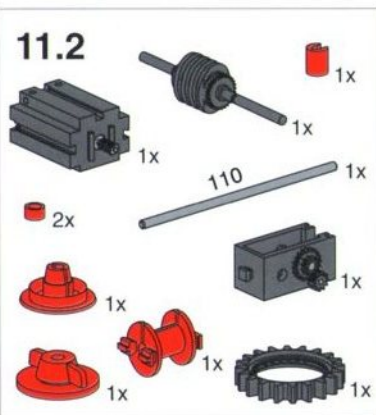
# 11

## Computerauge Computer eye

### 11.1



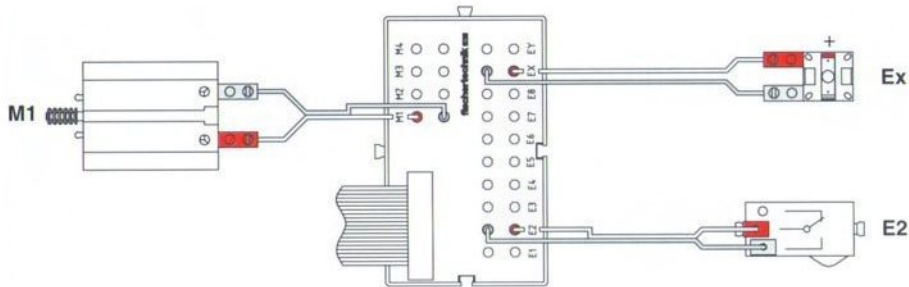
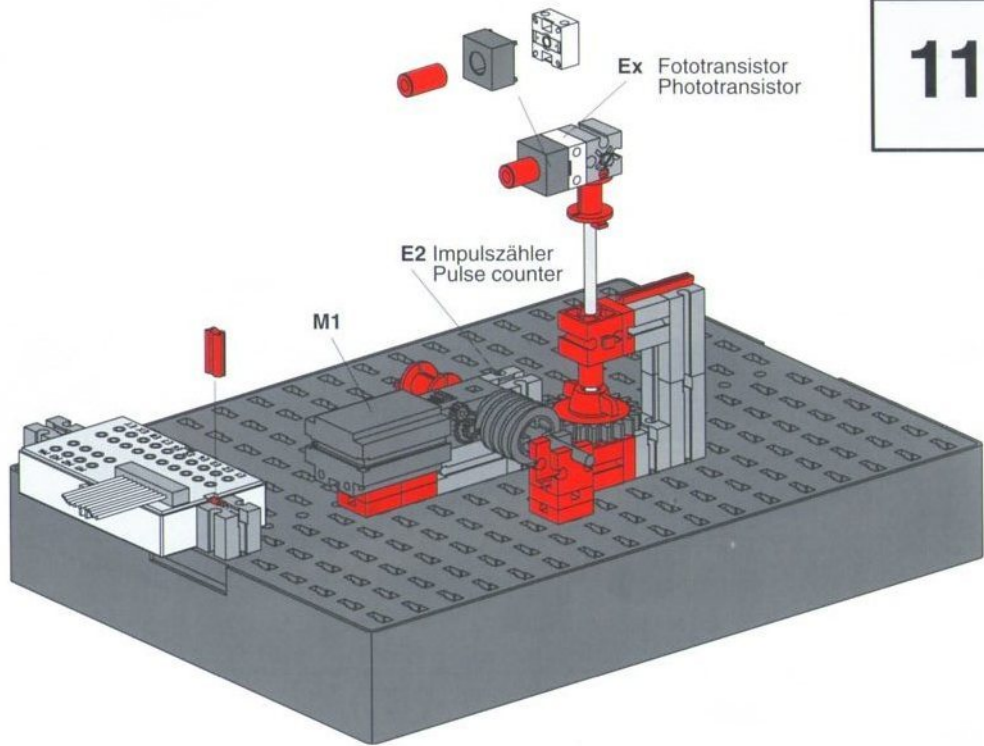
### 11.2



**11.3**

	2x		1x		1x
	2x		1x		1x
	2x		1x		1x
	1x		1x		1x

gelb / yellow

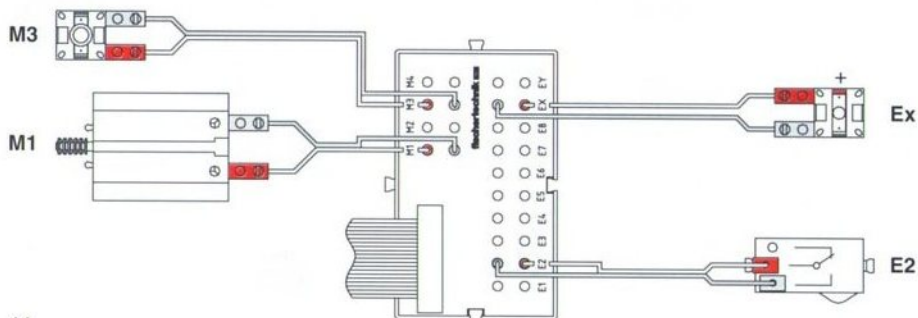
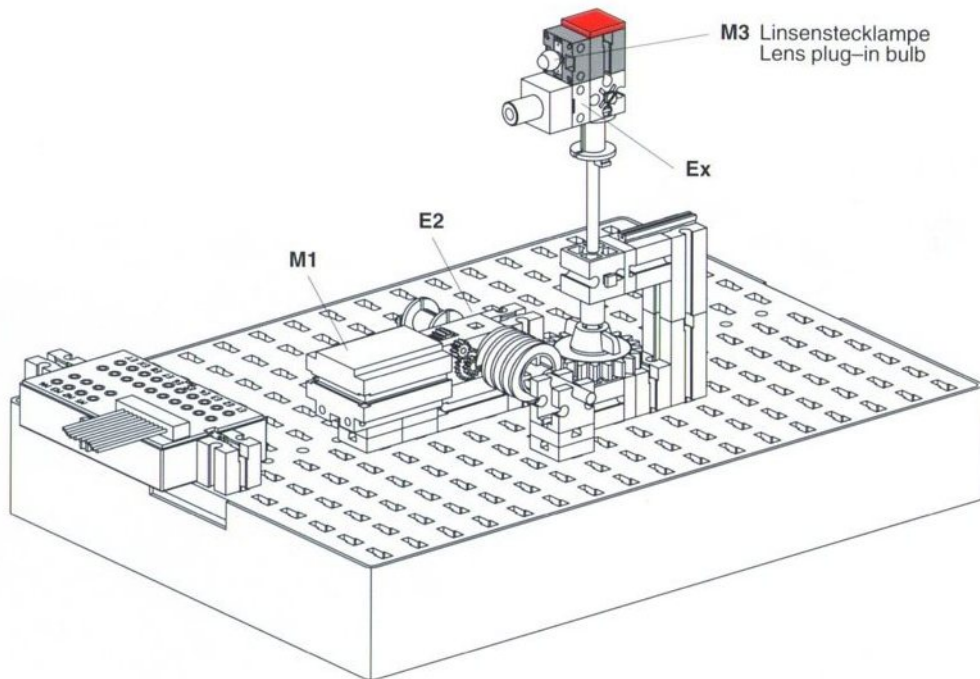
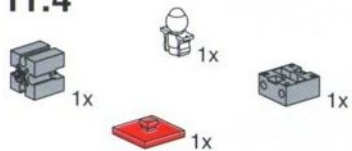




# 11

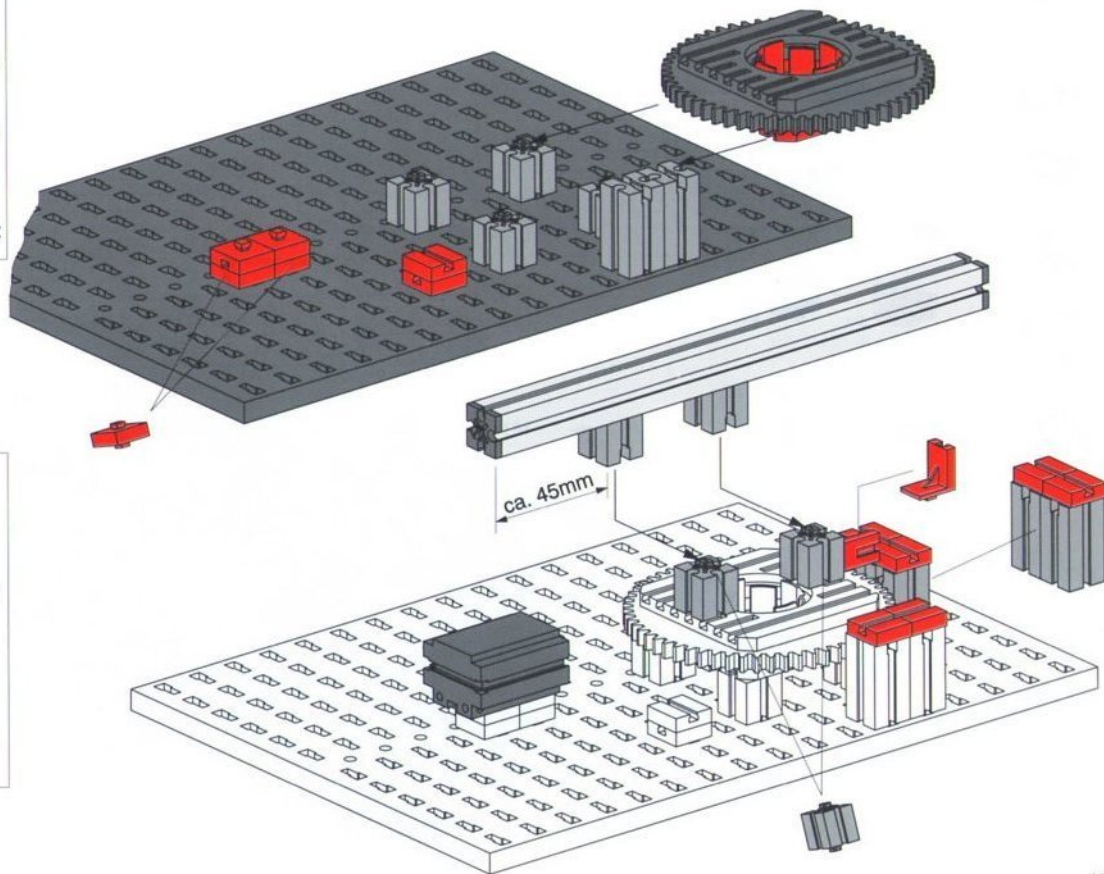
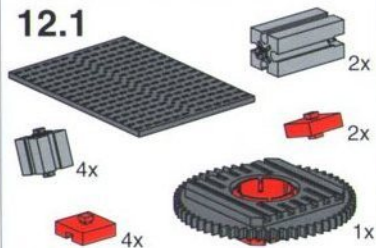
## Radar

### 11.4

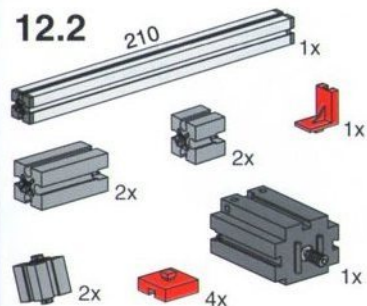


# Roboter-Arm Robot arm

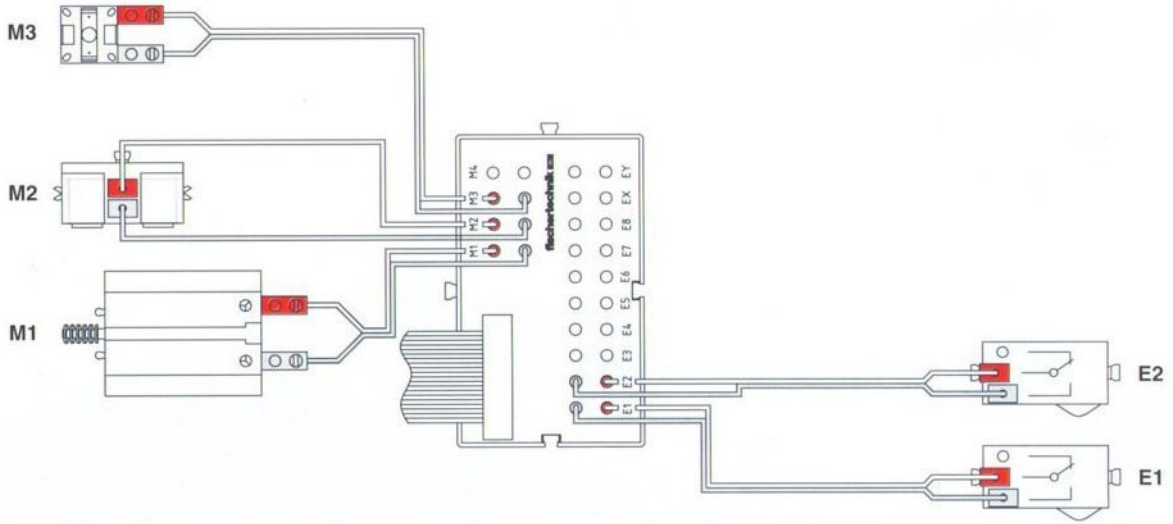
12.1



12.2



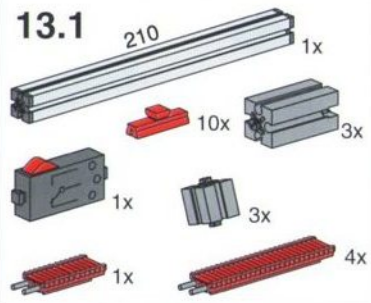




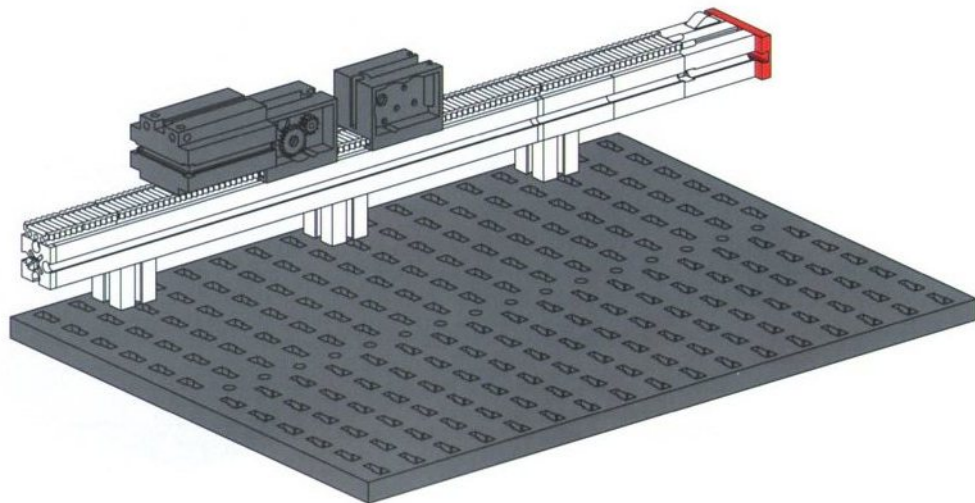
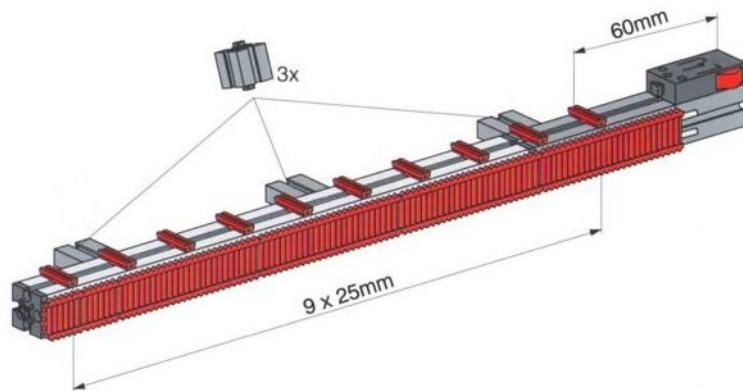
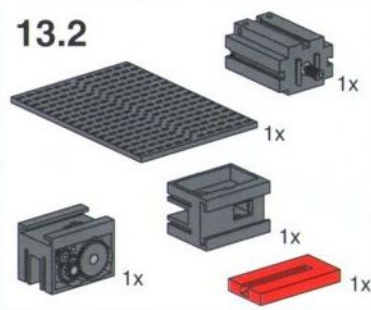
# 13

## Lagersteuerung Storage control

### 13.1



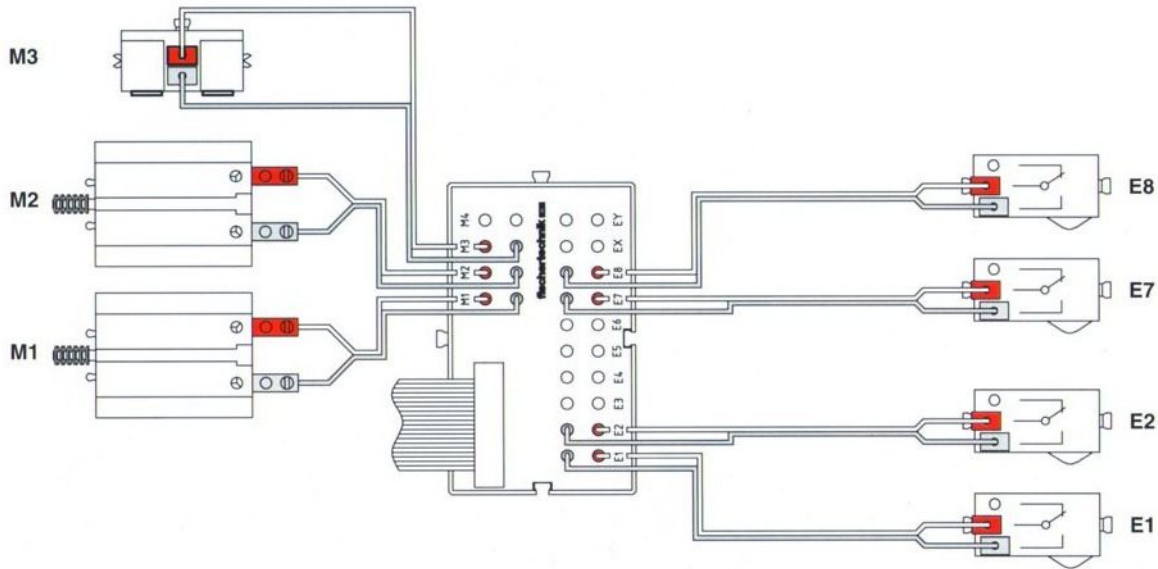
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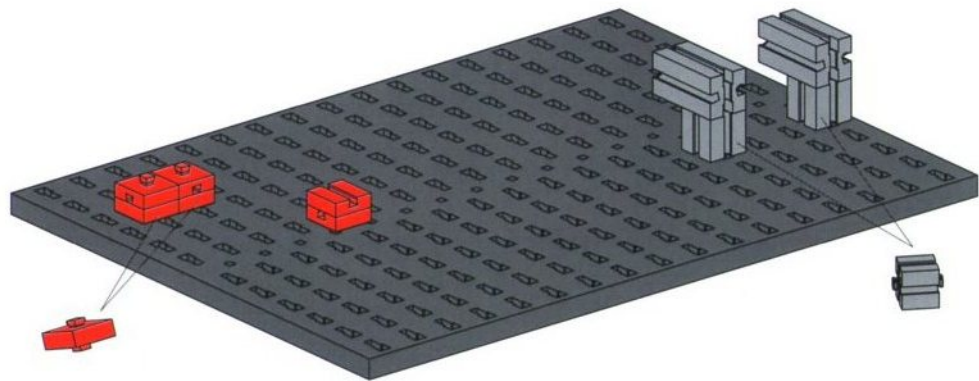
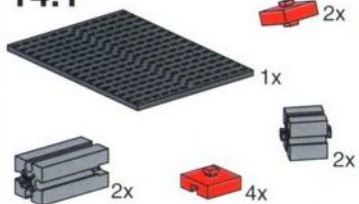




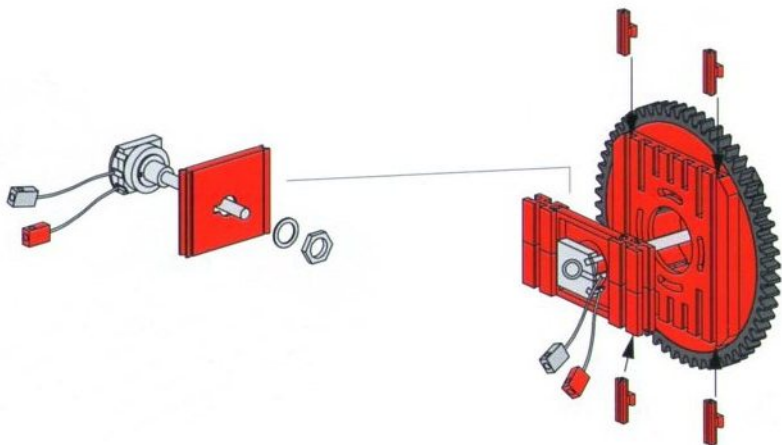
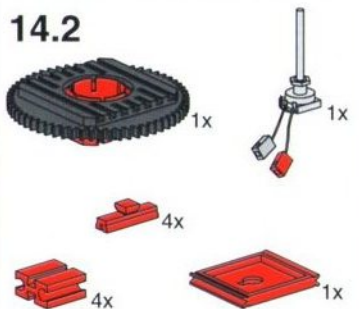
# 14

## Antennenrotor Arialrotor


14.1



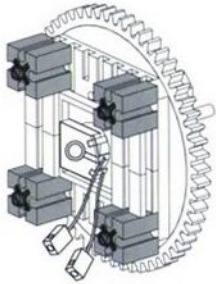
14.2



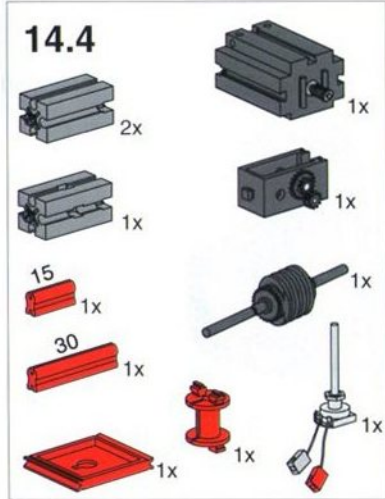
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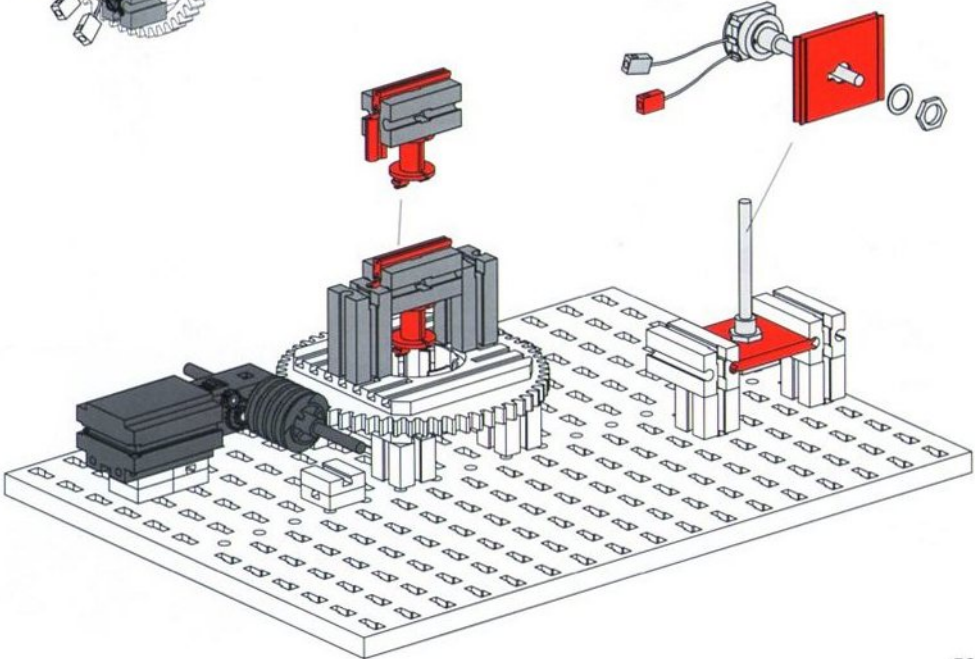
4x



14.4



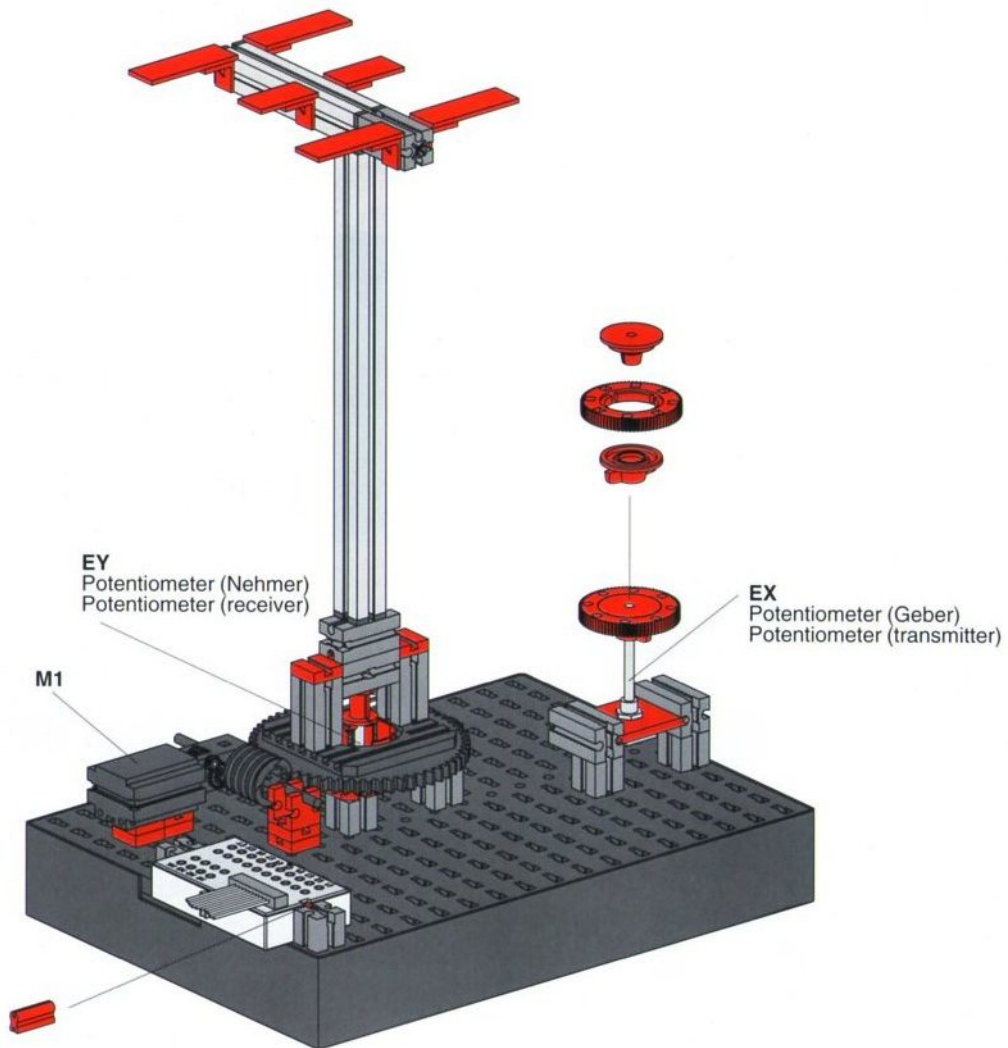
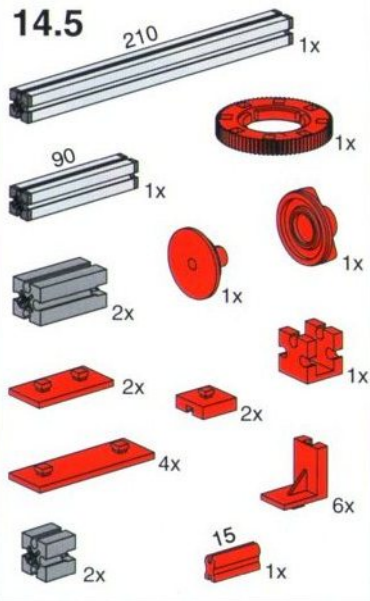
- 2x Grey Technic Connector Pin
- 1x Grey Technic Connector Pin
- 1x Grey Technic Connector Pin
- 1x Grey Technic Connector Pin
- 1x Red Technic Pin of Length 15
- 1x Red Technic Pin of Length 30
- 1x Red Technic Plate
- 1x Red Technic Axle Connector
- 1x Grey Technic Axle Connector
- 1x Grey Technic Axle



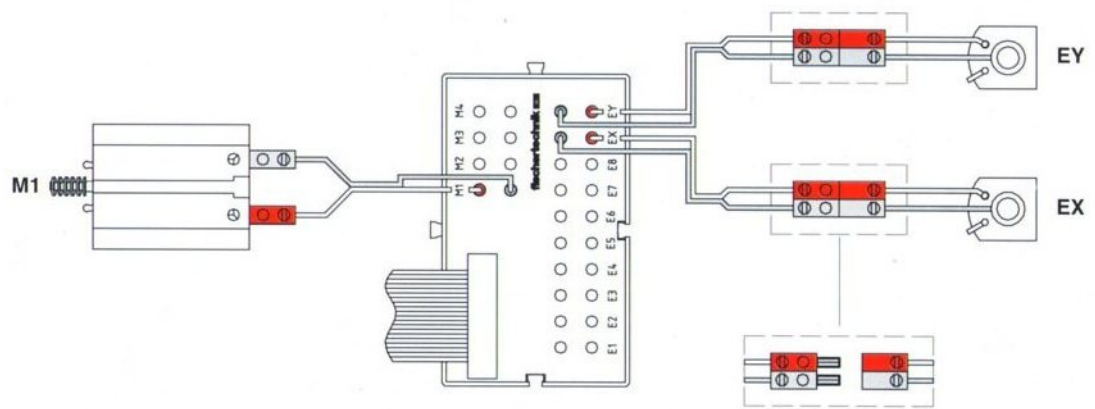


# 14

## 14.5





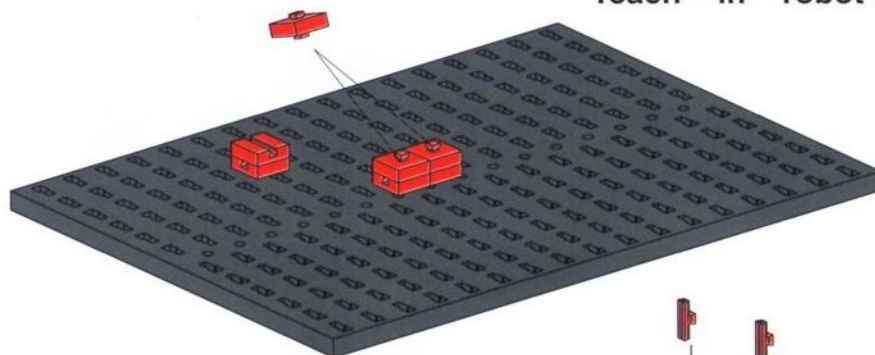




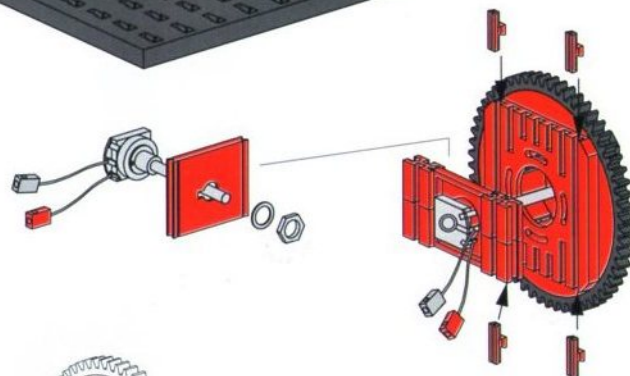
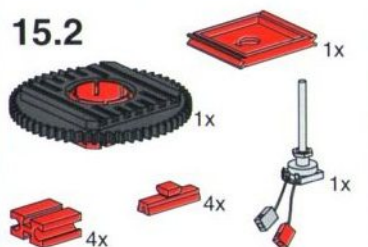
**Notizen**  
**Notes**

Teach – in – Roboter  
Teach – in – robot

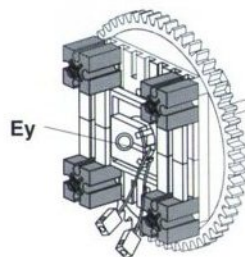
15.1



15.2

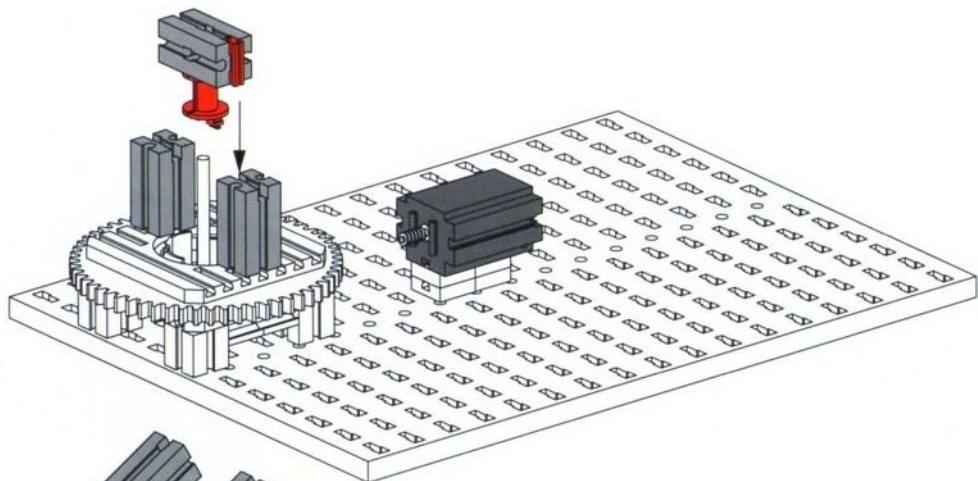
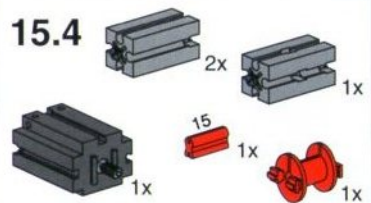


15.3

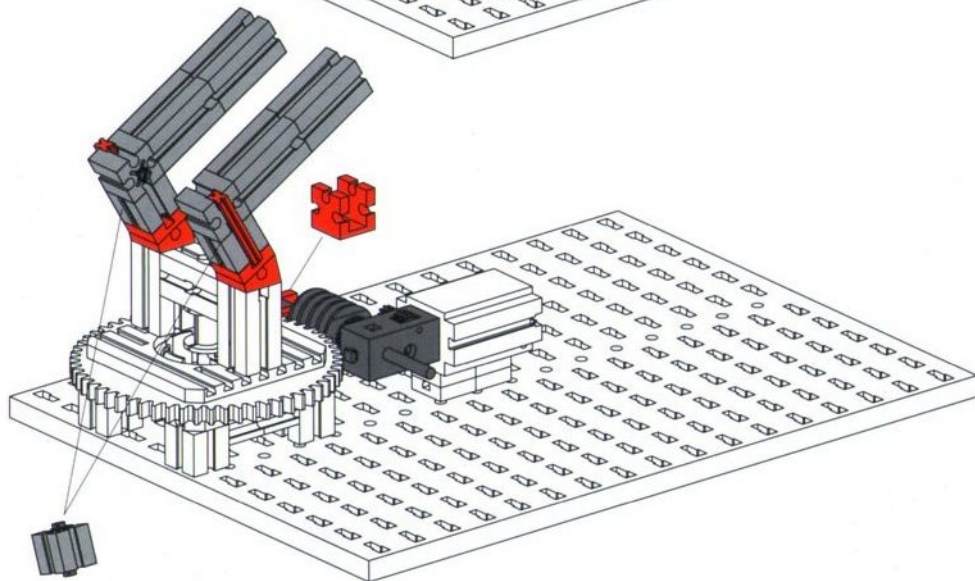
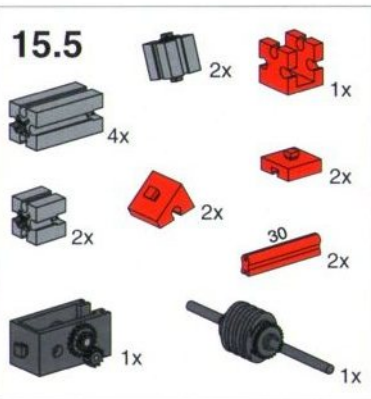


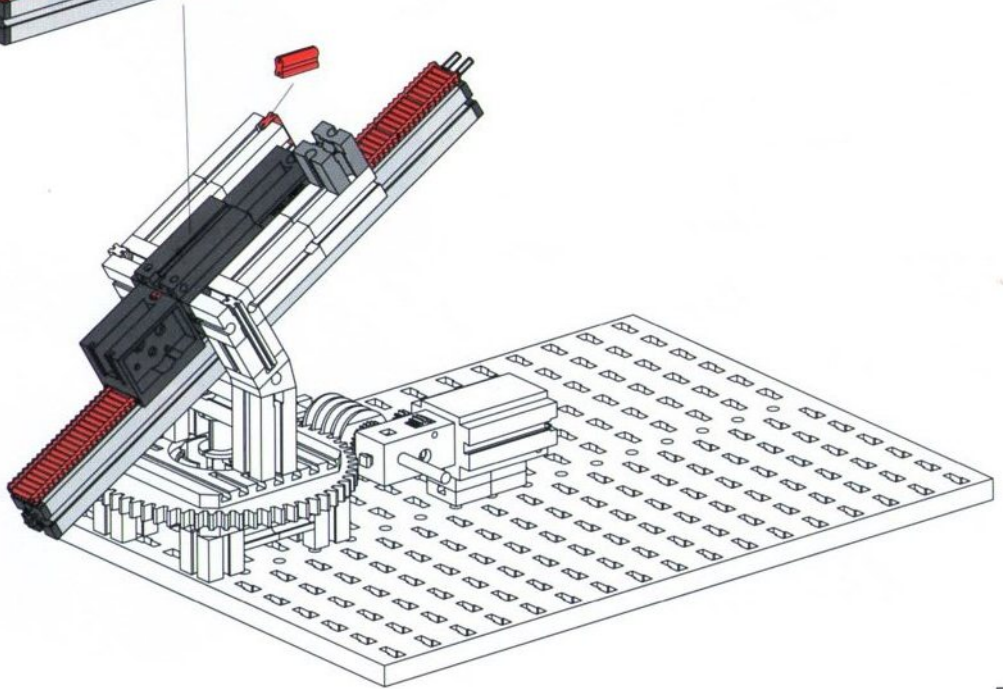
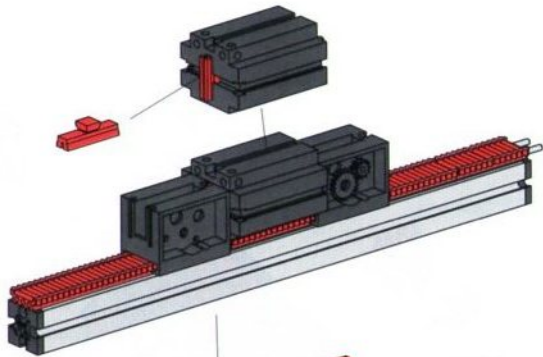
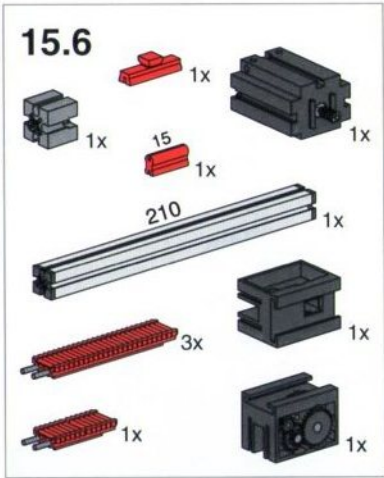
# 15

## 15.4



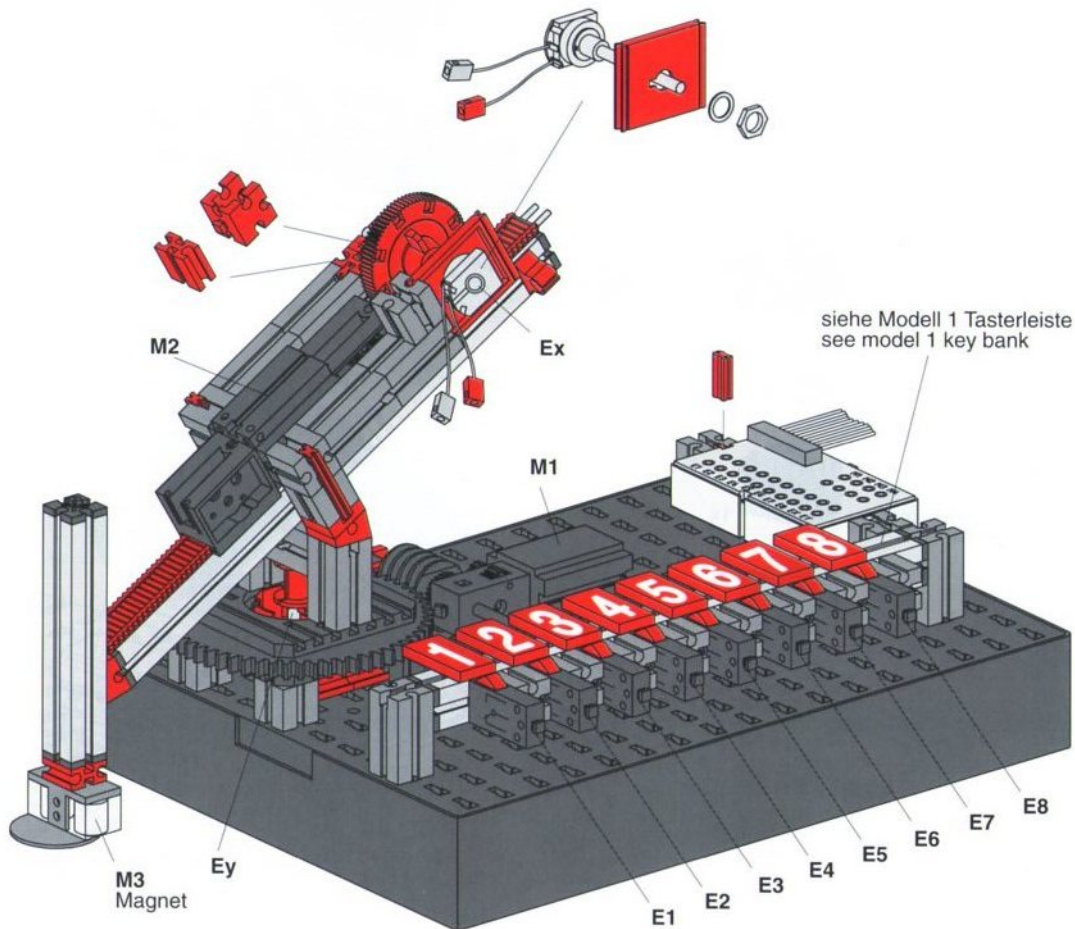
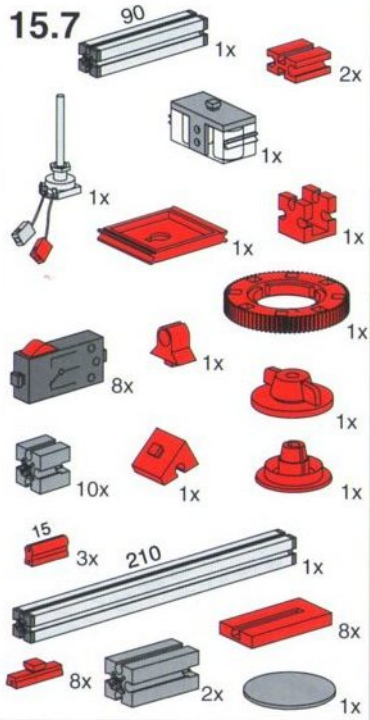
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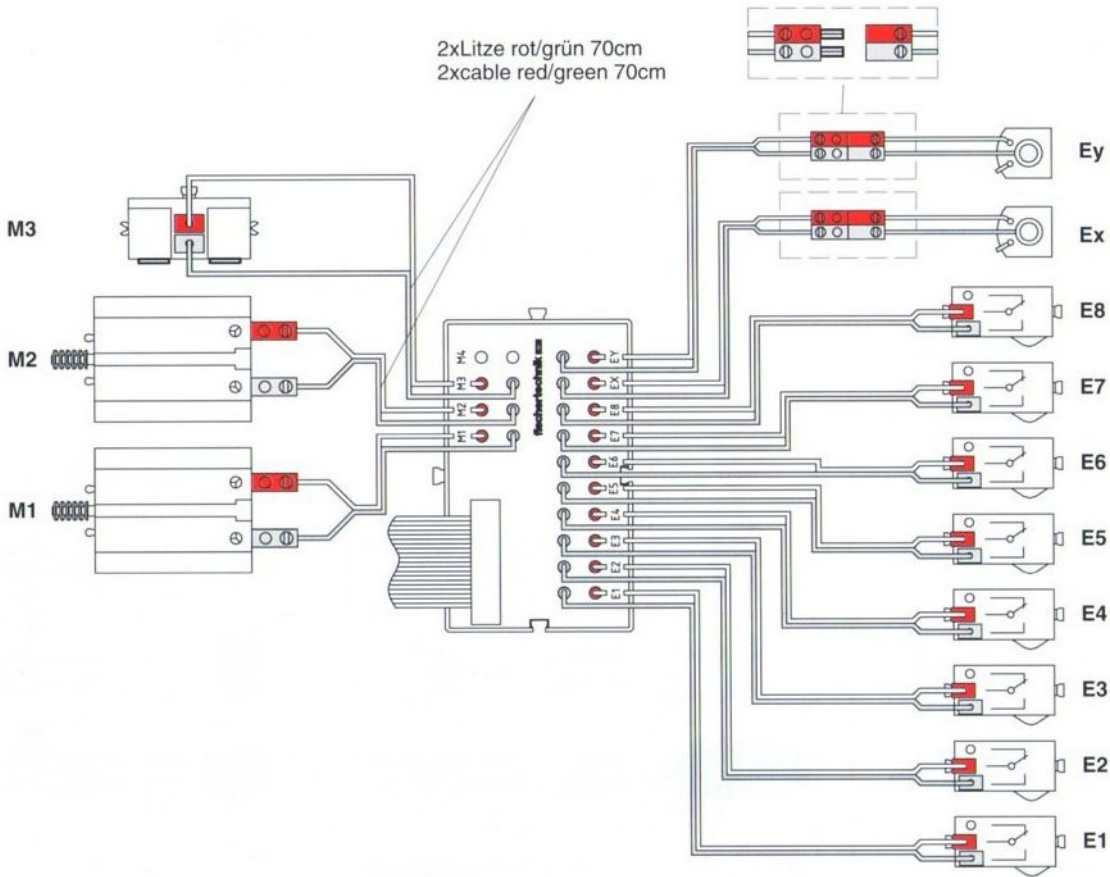


















## 15.7






Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 13x	60179 (31003)	Baustein 30 Building block 30
 1x	60187 (31004)	Baustein 30 mit Bohrung Building block 30 with bore
 1x	65570 (35001)	Stein 30 ohne Zapfen Buildin block without peg
 13x	60195 (31005)	Baustein 15 Building block 15
 6x	60209 (31006)	Baustein 15 mit 2 Zapfen Double ended block
 1x	67378 (32322)	Baustein 15 mit Ansenkung Buildin block 15 with counterbase
 3x	60845 (31011)	Winkelstein 30° Angle block 30°
 9x	63585 (37237)	Baustein 5 Building block 5
 2x	68145 (37238)	Baustein 5 mit 2 Zapfen Building block 5 with 2 pins







Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 6x	61876 (37468)	Baustein 7,5 Building block 7,5
 6x	64247 (38423)	Winkelstein 10x15x15 Angle block 10x15x15
 1x	64751 (38309)	Stein 15/60° Block 15/60°
 2x	64484 (31058)	Nabenmutter Hub nut
 1x	64492 (35031)	Flachnabenzange Flat hub chuck
 2x	67726 (32928)	Freilaufnabenzange Freewheel hub chuck
 2x	64697 (35113)	Spannzange Collet chuck
 1x	65006 (31390)	Drehkranz-Oberteil Turntable top
 1x	65103 (31391)	Drehkranz-Unterteil Turntable base

Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 4x	60250 (31023)	Klemmbuchse 10 Clip 10
 5x	60969 (31060)	Verbindungsstück 15 Link 15
 4x	60977 (31061)	Verbindungsstück 30 Link 30
 2x	61094 (31330)	Verbindungsstück 45 Link 45
 15x	64743 (31982)	Federnocken Spring cam
 1x	67157 (31124)	Aufnahmeachse Holding axle
 2x	63208 (31016)	Seiltrommel Winch drum
 1x	66487 (32085)	Rollenbock Roller block
 2x	61892 (37636)	Rollenlager Roller bearing



Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 2x	64832 (38241)	Bauplatte 15x30 Mounting plate 15x30
 4x	64182 (38242)	Bauplatte 15x45 Mounting plate 15x45
 5x	64840 (38244)	Bauplatte 15x75 Mounting plate 15x75
 1x	64174 (38245)	Bauplatte 15x90 Mounting plate 15x90
 2x	64824 (38246)	Bauplatte 15x15 Mounting plate 15x15
 2x	64816 (38259)	Bauplatte 30x30 Mounting plate 30x30
 2x	66428 (38249)	Bauplatte 30x60 Mounting plate 30x60
 3x	64158 (38251)	Bauplatte 30x90 Mounting plate 30x90
 1x	67149 (38464)	Bauplatte 15x60 Mounting plate 15x60

Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 2x	64859 (31253)	Flachbuche grün Flat busting green
 2x	64867 (31254)	Flachbuche rot Flat busting red
 26x	60543 (31336)	Flachstecker grün Flat plug green
 26x	60551 (31337)	Flachstecker rot Flat plug red
 1x	68080 (35079)	Rastleuchtkappe rot Light cap red
 1x	68099 (35085)	Rastleuchtkappe gelb Light cap yellow
 1x	68102 (35084)	Rastleuchtkappe grün Light cap green
 2x	61078 (31321)	Leuchtkappe für Linsenlampe Luminous cap for lenstype lamp
 2x	61809 (36532)	Störlichtkappe Ø6 Masking light cap Ø6

Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 1x	63275 (37604)	Störlichtkappe Ø8 Masking light cap Ø8
 3x	61922 (37869)	Kugelstecklampe Ball lamp
 2x	61930 (37875)	Linsenstecklampe Lens plug-in bulb
 4x	63534 (38217)	Leuchtstein mit Steckfassung Plug in light holder
 2x	68129 (36134)	Fototransistor in gelbem Sockel Fototransistor in yellow socket
 1x	67394 (36387)	Heißleiter Heat sensitive resistor
 1x	68463 (36573)	Rad 14 Wheel 14
 6x	65634 (32366)	Bauplatte 15x15 grau Mounting plate 15x15 grey
 8x	67130 (32330)	Bauplatte 15x30x3,75 m. Nut Building plate 15x30x3.75 w. slot






Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 2x	68412 (37272)	Hub-Getriebe Mini-motor rack
 1x	68404 (37271)	Hubgetriebegehäuse Rack without gear
 7x	64794 (37351)	Hub-Zahnstange 60 Rack and pinion 60
 1x	64808 (37457)	Hub-Zahnstange 30 Rack and pinion 30
 2x	68420 (32293)	S-Motor 6-9V=
 2x	68439 (31078)	U-Getriebe mini Mini mot gear box
 8x	68447 (37783)	Mini-Taster Mini-switch
 2x	67173 (31063)	U-Achse 60 mit Zahnrad Z28 Mini mot axle 60
 1x	68471 (32886)	Schneckenantrieb Worm drive

Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 2x	64700 (35112)	Ritzel Z10 Cog wheel Z10
 1x	60853 (31021)	Zahnrad Z 20 Gear wheel Z20
 2x	63186 (31019)	Drehscheibe 60 Large pulley 60
 2x	63224 (31022)	Zahnrad Z40/32 Gear wheel Z40/32
 1x	64760 (35404)	V-Achse 4x17 V-axle 4x17
 1x	68455 (38415)	K-Achse 50 Plastic axle 50
 1x	61388 (35696)	Achse 170 Axle 170
 1x	65359 (31221)	Alu-Profil 90 Aluminium strut 90
 2x	65375 (31226)	Alu-Profil 210 Aluminium strut 210

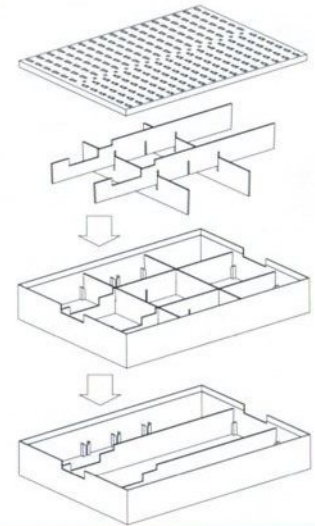
Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 1x	65081 (32117)	Drehschalter Ober- teil Upper part of rotary switch
 3x	68153 (35969)	Reed-Kontakthalter Holder for reed contact
 2x	65065 (32235)	Potentiometer Potentiometer
 2x	65073 (32116)	Flachstein 30 mit Bohrung Flat block 30 with bore
 2x	67165 (35678)	O-Ring 54x3 O-Ring 54x3
 1x	68498 (36778)	Flachbandkabel 50cm Rainbow cable 50cm
 1x	68617 (36391)	Verteilerbox mit Kabel Distributing box with cable
 1x	68684 (36216)	Zahlenaufkleber Sticker with numbers
	68625 (36779)	Litze 2-adrig, 5m rot/grün Twin lace 5m red/green



Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 110 1x	60861 (31031)	Achse 110 Axle 110
 1x	68668 (31424)	Gelenkwürfel-Klaue Hinged block claw
 1x	68676 (31425)	Gelenkwürfel-Zunge Hinged block tab
 2x	65758 (31597)	Abstandsring Spacer ring
 1x	65650 (31983)	Hülse 15 Sleeve 15
 1x	64212 (37679)	Klemmbuchse 5 Clip 5
 2x	65596 (32064)	Baustein 15 mit Bohrung Building block 15 with bore
 2x	61523 (36305)	Flachträger 120 Flat girder 120
 1x	64735 (36443)	Schraubendreher Screw driver

Stückliste Parts list	Best.-Nr. Order No.	Bezeichnung Specification
 1x	68633 (36558)	Luftschraube Propeller
 1x	68641 (37681)	Adapterspitze Pointed adapter
 1x	66550 (32363)	Elektromagnet Electromagnet
 1x	64930 (32123)	Scheibe $\varnothing$ 25 Disc $\varnothing$ 25
 1x	68064 (32985)	Experimentierplatte Base plate

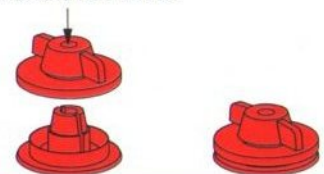
### Aufbau der Sortierwanne Setup of storage device



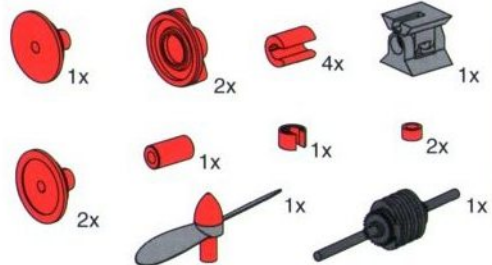
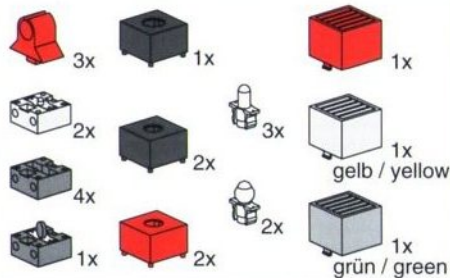
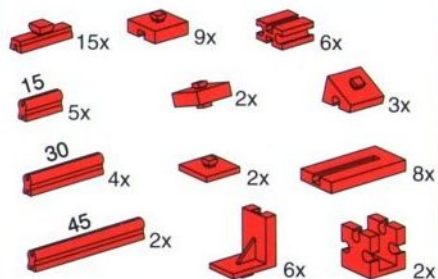
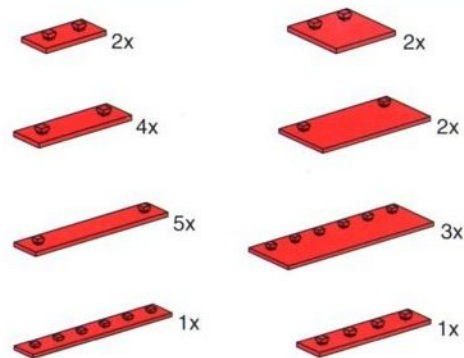
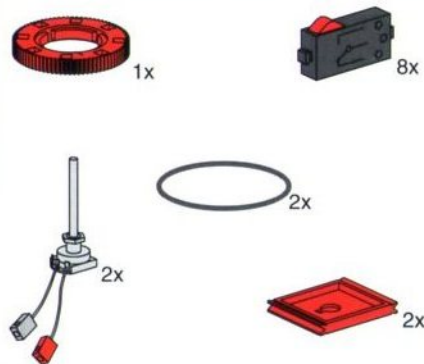
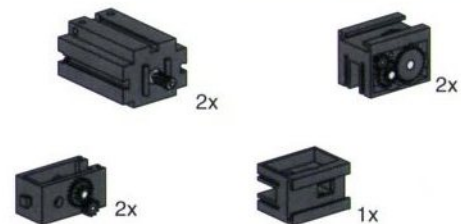
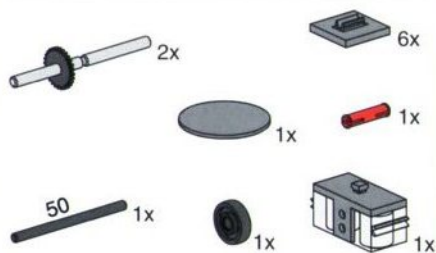
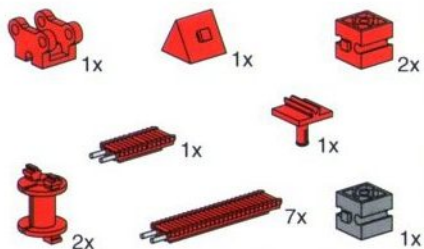
### Ritzel und Spannzange Cog wheel and collet chuck

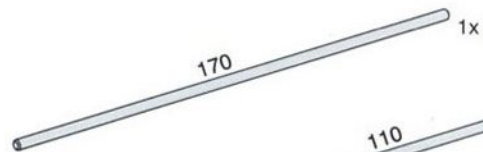
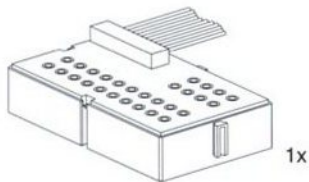
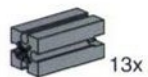


### Nabenmutter und Nabenzange Hub nut and hub chuck



Einräumungsvorschlag / Storage proposal







**Notizen**  
**Notes**

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