

fischertechnik 

PROFI

fischertechnik 

PROFI

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Bauanleitung
Assembly instruction
Instructions de montage
Bouwhandleiding
Instrucciones de construcción
Manual de montagem
Istruzioni di montaggio
Инструкция по сборке
安装说明书

Didactic Information
www.fischertechnik-eLearning.com
free download ↓

eLearning Portal

146 400 - Printed in Germany - Technische Änderungen vorbehalten - Subject to technical modifications

Optics

15 MODELS

Optics

15 MODELS



- Mit dem fischertechnik eLearning Portal geben wir Ihnen die Möglichkeit, noch mehr Hintergrundwissen zum Thema des Baukastens zu erhalten. Dabei stehen Ihnen didaktische Inhalte sowie technische Hintergrundinformationen, lehrreiche Begleitinformationen, Videos, Dokumentationen und vieles mehr zur Verfügung. Über **www.fischertechnik-elearning.com** gelangen Sie direkt zum eLearning Portal. Wir wünschen viel Spaß beim spielerischen Lernen und Entdecken mit fischertechnik!
- With the fischertechnik eLearning portal, we are giving you the opportunity to obtain even more background knowledge on the topic of the construction set. Didactic contents, technical background information, instructive accompanying information, videos, documentary films and much more are at your disposal. You can access the eLearning portal directly via **www.fischertechnik-elearning.com**. We hope that you have fun learning and discovering through play with fischertechnik!
- Avec le portail eLearning de fischertechnik, vous pouvez parfaire vos connaissances au sujet de la boîte de construction. Vous y trouverez des contenus didactiques et des informations techniques, d'autres informations complémentaires, des vidéos, de la documentation et bien plus encore. Cliquez sur **www.fischertechnik-elearning.com** pour accéder directement à notre portail. Nous vous souhaitons une découverte et un apprentissage pleins de plaisir avec fischertechnik !
- Met het fischertechnik eLearning portaal geven wij u de mogelijkheid, nog meer achtergrondkennis over het thema van het modulaire systeem te verkrijgen. Daarbij staan u didactieve inhoud alsmede technische achtergrondinformatie, educatieve begeleidende informatie, video's, documentaties en nog veel meer ter beschikking. Via **www.fischertechnik-elearning.com** komt u direct bij het eLearning portaal. Wij wensen veel plezier bij het spelenderwijs leren en ontdekken met fischertechnik!
- Con el portal de aprendizaje electrónico de fischertechnik le ofrecemos la oportunidad de obtener más conocimientos básicos sobre el tema de los módulos. De este modo, se pone a su disposición contenido didáctico, así como información básica técnica, información adicional instructiva, vídeos, documentos y muchas cosas más. A través de **www.fischertechnik-elearning.com** podrá acceder directamente al portal de aprendizaje electrónico. ¡Esperamos que se divierta aprendiendo y descubriendo jugando con fischertechnik!
- Com o portal de eLearning da fischertechnik damos lhe a possibilidade de obter ainda mais conhecimentos aprofundados sobre os kits de construção. Estão disponíveis conteúdos didáticos, informações técnicas de fundo, informações auxiliares úteis, vídeos, documentações e muito mais. Em **www.fischertechnik-elearning.com** pode aceder diretamente ao portal de eLearning. Esperamos que se divirta muito durante a aprendizagem e as descobertas com a fischertechnik!
- Con il portale eLearning di fischertechnik vi diamo la possibilità di accumulare maggiori informazioni di base sul tema delle scatole di montaggio. Vi troverete contenuti didattici e informazioni tecniche di background, informazioni accessorie molto istruttive, video, documenti e molto altro ancora. Tramite **www.fischertechnik-elearning.com** potete raggiungere direttamente il portale eLearning. Vi auguriamo buon divertimento nell'apprendere giocando e nella scoperta di fischertechnik!
- Обучающий Интернет-портал компании fischertechnik предлагает вам возможность получить больше базовых знаний по теме конструирования. В вашем распоряжении дидактические материалы, а также вводная техническая информация, поучительная сопроводительная информация, видеоматериалы, документация и многое другое. По ссылке **www.fischertechnik-elearning.com** вы попадаете прямо на обучающий Интернет-портал. Желаем вам приятно провести время в ходе игрового обучения и получения новых знаний с компанией fischertechnik!
- 通过 fischertechnik eLearning 电子学习门户网站，我们为您提供更多关于积木的背景知识。您可获得关于教学内容以及技术方面的背景知识、丰富的教学经验分享、视频、文档和其他实用内容。登陆 **www.fischertechnik-elearning.com** 访问我们的 elearning 门户网站。祝 fischertechnik 带给您更多学习和探索的乐趣！

Inhalt
Contents
Contenu

Einzelteilübersicht / Spare parts list / Liste des pièces détachées / Onderdelenoverzicht / Lista da piezas / Resumo de peça individual /
Singoli componenti / Перечень деталей / 零件概览 3

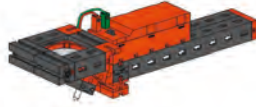
Montagetipps / Tips for assembly / Tuyaux pour le montage / Montagetips / Consejos para el montaje / "Dicas" para montagem /
Consigli per il montaggio / Советы по сборке / 装配建议 4

Inhoud
Contenido
Conteúdo

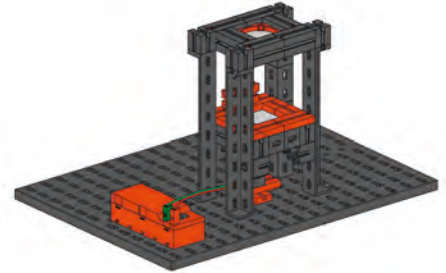
Contenuto
Содержание
目录



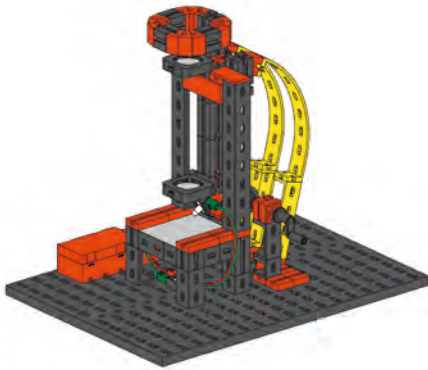
Lupe / Magnifier / Loupe / Loep / Lupa / Lupa /
Lente d'ingrandimento / Лупа / 放大镜 8



Lupe mit Licht / Magnifier with light / Loupe à
éclairage / Loep met verlichting / Lupa con luz /
Lupa com luz / Lente d'ingrandimento con luce /
Лупа с подсветкой / 带照明的放大镜.. 9



Diabetrachter / Slide viewer / Visionneuse /
Diaviewer / Visor de diapositivas / Visualizador
de slides / Visore per diapositive / Диаскоп /
幻灯片观像器 11



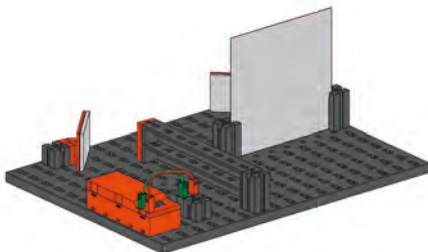
Mikroskop / Microscope / Microscope / Microscop /
Microscopio / Microscópio / Microscopio /
Микроскоп / 显微镜 15



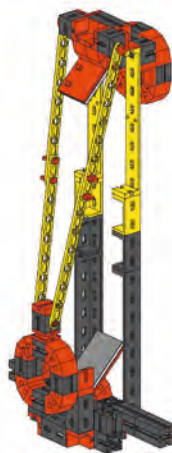
Astronomisches Fernrohr / Astronomical telescope
/ Télescope astronomique / Telescoop / Telescopio
astronómico / Telescópio astronómico / Telescopio
astronomico / Астрономический телескоп
/ 天文望远镜 24



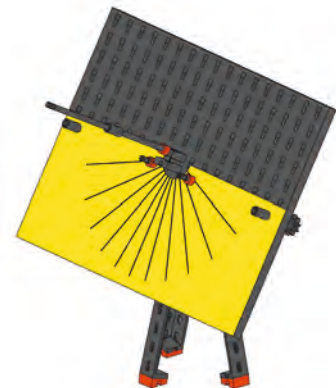
Erdferrrohr / Erecting telescope / Télescope terrestre /
Terrestrische telescop / Telescopio terrestre / Telescópio
terrestre / Telescopio terrestre / Подзорная
труба / 折射望远镜 31



Spiegelparcours / Mirror course / Parcours à miroir /
Spiegelparcours / Pista de recorrido de espejo / Percur-
so de espelhos / Percorso specchio / Зеркальный
маршрут / 镜子障碍物跑道 37



Periskop / Periscope / Périscope / Periscop /
Periscopio / Periscópio / Periscopio /
Перископ / 潜望镜 39

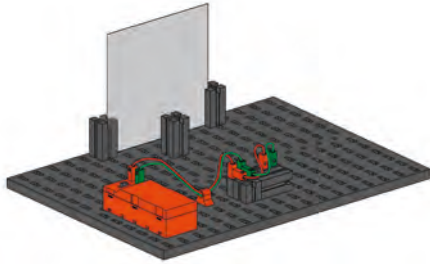


Sonnenuhr / Sun dial / Cadran solaire /
Zonnewijzer / Reloj de sol / Relógio de sol / Meridiana
/ Солнечные часы / 日规 43

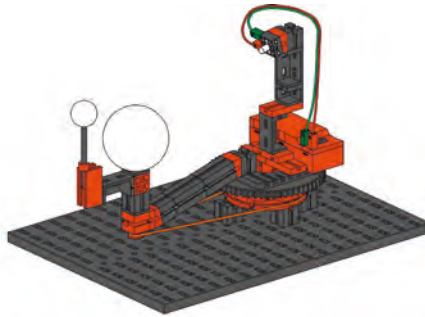
Inhalt
Contents
Contenu

Inhoud
Contenido
Conteúdo

Contenuto
Содержание
目录



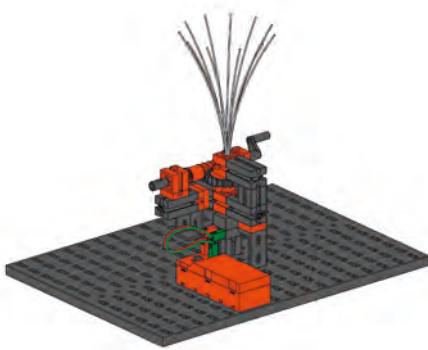
Halb- und Kernschatten / Partial and full shade /
Ombre pure et pénombre / Half- en kernschaduw /
Semisombra y sombra absoluta / Penumbra e umbra
/ Ombra e penombra / Полутени и полные
тени / 半影和本影 46



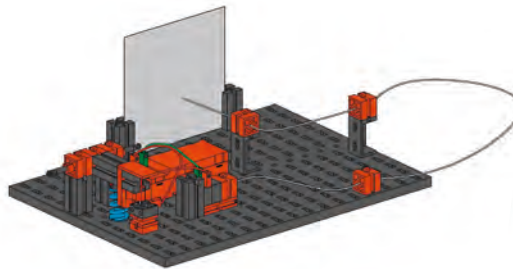
Planetenmodell / Planetary model / Modèle
planétaire / Model van planeten / Modelo de
planetas / Modelo planetário / Modello planetario /
Модель планет / 行星模型 48



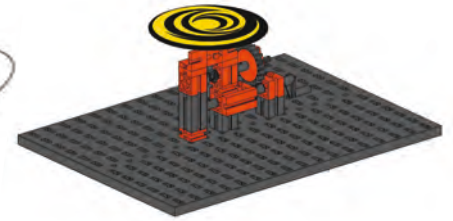
Lichtspiel / Light effects / Jeu de lumière / Lichtspel /
Juego de luces / Jogo de luz / Gioco di luci /
Игра света / 光表演 52



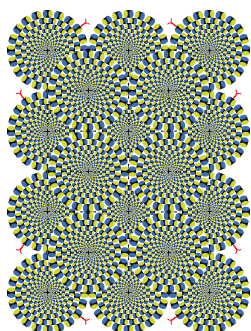
Lichtspiel mit Kurbel / Light effects with crank / Jeu
de lumière à manivelle / Lichtspel met slinger / Juego
de luces con manivela / Jogo de luz com manivela
/ Gioco di luci con manovella / Игра света с
рукояткой / 用手摇柄进行光表演
..... 54



Optischer Morseapparat / Optical morse telegraph
/ Manipulateur de morse à fonctionnement optique
/ Optisch morseapparaat / Telégrafo Morse óptico /
Aparelho Morse ótico / Apparecchio Morse ottico /
Оптический аппарат Морзе / 光的摩
尔斯电报机 57




















Optische Täuschung / Optical illusion / Illusion optique
/ Gezichtsbedrog / Ilusión óptica / Ilusão de ótica /
Illusione ottica / Оптический обман
/ 视错觉 60



Fantastische Kreise / Fantastic circles / Cercles
fantastiques / Fantastische cirkels / Círculos
fantásticos / Círculo fantástico / Illusione ottica /
Оптический обман / 视错觉 63



Einzelteilübersicht
Spare parts list
Liste des pièces détachées


















	31 010 2 x
	31 011 28 x
	31 019 1 x
	31 021 1 x
	31 022 1 x
	31 031 1 x
	31 058 1 x
	31 060 1 x
	31 336 4 x
	31 337 4 x
	31 390 1 x
	31 391 1 x
	31 597 2 x
	31 674 4 x
	31 848 2 x
	31 891 1 x
	31 892 1 x

Onderdelenoverzicht
Lista da piezas
Resumo de peça individual

	31 915 1 x
	31 918 1 x
	31 981 9 x
	31 982 12 x
	32 064 9 x
	32 850 6 x
	32 879 9 x
	32 880 1 x
	32 881 13 x
	32 882 1 x
	32 985 1 x
	35 031 1 x
	35 049 6 x
	35 054 2 x
	35 060 4 x
	35 061 1 x
	35 062 1 x

Singoli componenti
Перечень деталей
零件概览

	35 063 2 x
	35 064 2 x
	35 066 1 x
	35 072 1 x
	35 073 4 x
	35 087 1 x
	35 088 1 x
	35 945 2 x
	35 969 1 x
	35 973 1 x
	35 977 1 x
	36 293 3 x
	36 299 4 x
	36 323 11 x
	36 334 2 x
	36 443 1 x
	36 532 1 x

	36 819 1 x
	36 920 8 x
	36 922 6 x
	36 950 5 x
	36 973 3 x
	36 977 1 x
	37 034 2 x
	37 237 11 x
	37 238 3 x
	37 468 3 x
	37 679 3 x
	37 858 1 x
	37 925 1 x
	37 926 1 x
	38 216 1 x
	38 240 12 x
	38 241 2 x

Einzelteilübersicht
Spare parts list
Liste des pièces détachées

	38 242 1 x
	38 246 1 x
	38 248 2 x
	38 416 1 x
	38 423 6 x
	38 428 2 x

Onderdelenoverzicht
Lista da piezas
Resumo de peça individual

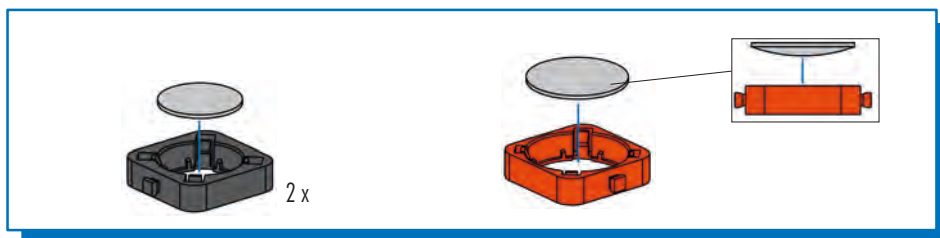
	130 593 2 x
	135 719 1 x
	136 775 1 x
	137 103 1 x
	145 416 1 x
	145 860 2 x

	145 862 2 x
	145 863 1 x
	145 864 1 x
	146 373 2 x
	146 374 1 x
	146 375 1 x

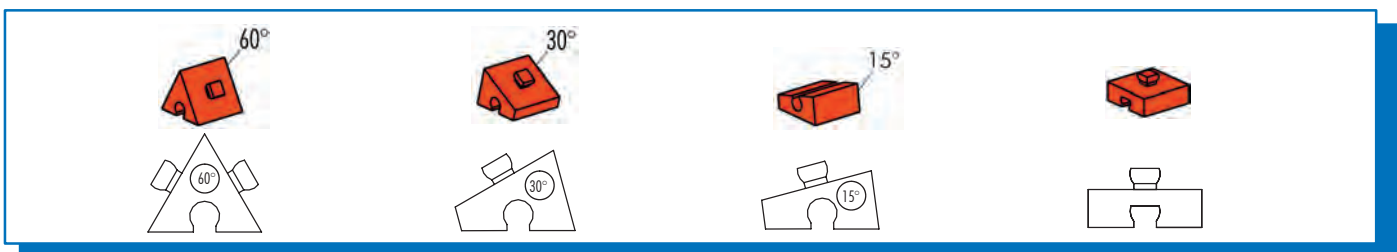
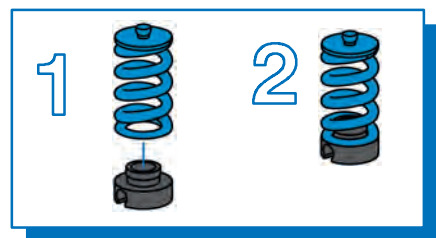
Singoli componenti
Перечень деталей
零件概览

	146 376 1 x
	146 377 1 x
	146 876 1 x
	162 134 2 x
	162 135 1 x
	162 136 1 x

Montagetipps
Tips for assembly
Tuyaux pour le montage



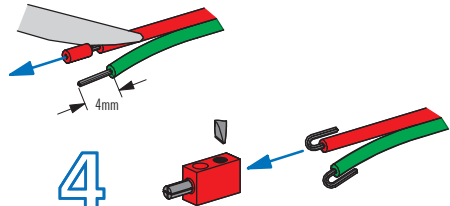
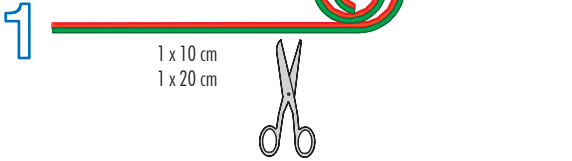
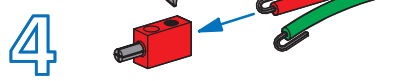

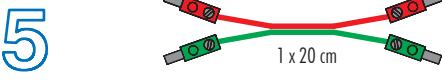
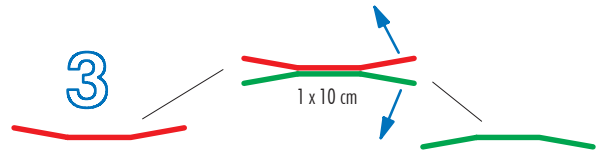
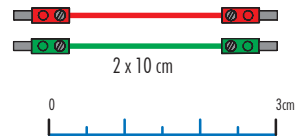
Consigli per il montaggio
Советы по сборке
装配建议

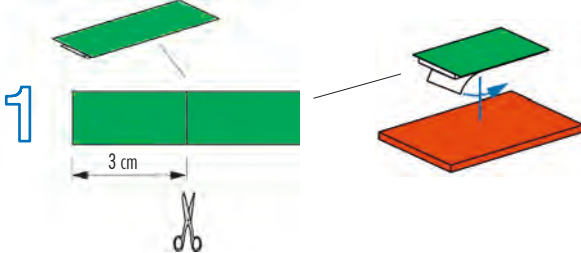
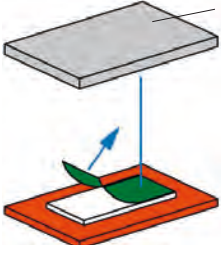
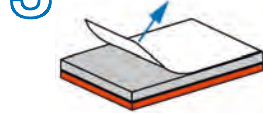
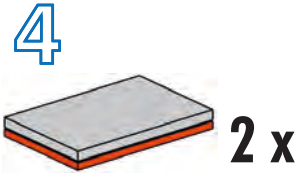


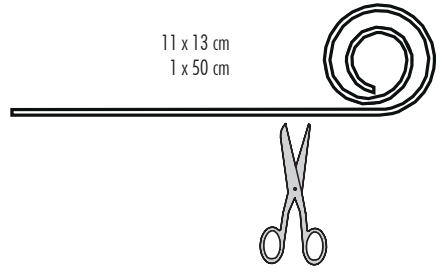
Montagetipps
Tips for assembly
Tuyaux pour le montage

Montagetips
Consejos para el montaje
"Dicas" para montagem

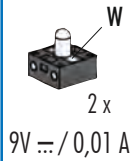
Consigli per il montaggio
Советы по сборке
装配建议

<p>Kabel und Stecker Plugs and cables Fiches et des câbles</p>	<p>Stekkers en cables Enchufes en cables Cabos e contatos</p>	<p>Cavi e connettori Провода и штекеры 电缆和插头</p>	
<p>1</p> 			<p>4</p> 
<p>2</p> 			<p>5</p> 
<p>3</p> 			

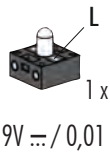
<p>Spiegelplatte Mirror plate Plaque miroitante</p>	<p>Spiegelplaat Placa de espejo Placa espelhada</p>	<p>Piastra a specchio Зеркальная пластина 镜子</p>	<p>Schutzfolie Protective foil Pellicule de protection Bescherfolie Película de protección</p> <p>Filme de proteção Pellicola protettiva Защитная плёнка 保护膜</p>
<p>1</p> 		<p>2</p> 	
<p>Schutzfolie abziehen Remove protective foil Retirer la pellicule de protection De beschermfolie verwijderen Desprender la película de protección</p>		<p>Remover o filme de proteção Togliere la pellicola protettiva Снять защитную плёнку 撕掉保护膜</p>	
<p>3</p> 		<p>4</p> 	

<p>Lichtleiter Fiber Optics Fibres optiques</p>	<p>Lichtgeleiders Conductor de luz Fibras óticas</p>	<p>Fibre ottiche Световод 光导纤维</p>
		

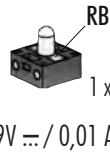
25 cm
20 cm
15 cm
10 cm
5 cm
0



≠



≠



9V \dots / 0,01 A
LED
LED
LED
LED
LED
LED
LED
LED
LED
LED

9V \dots / 0,01 A
Lichtschranken LED
Light barriers LED
LED barrières photoélectriques
Lichtsluis-LED
Barreras de luz LED
Células fotoeléctricas de LED
Barriere fotoelettriche LED
Световой барьер LED
光电LED

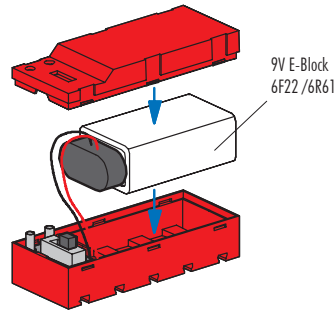
9V \dots / 0,01 A
Rainbow LED (RB)
Rainbow LED (RB)
DEL Rainbow (RB)
Rainbow-LED (RB)
LED de arco iris (RB)
Rainbow LED (RB)
Rainbow LED (RB)
Светодиод „радуга“ (RB)
LED 彩灯 (RB)

Achtung: Beim Anschluß auf richtige Polung achten.
Caution: Make sure the terminals are connected correctly.
Attention: lors du raccordement, veiller à ce que la polarisation soit exacte.
Pas op: let bij het aansluiten op de juiste polariteit.
Atenção: al conectar, procurar que los polos estén correctamente colocados.
Atenção: Por ocasião da conexão atentar para a polaridade correta.
Attenzione: nel collegamento osservare la corretta polarità.
Внимание: при подключении соблюдать полярность.
注意: 连接时应注意极性正确。

Sicherheitshinweise Safety Information Consignes de sécurité

Veiligheidsrichtlijnen Indicaciones de seguridad Observações sobre segurança

Informazioni per la sicurezza Указания по технике безопасности 安全指南



Batterie ist nicht Inhalt der Packung
Battery not included
Batterie non comprise
De batterij wordt niet meegeleverd
La batería no está incluida en el suministro
A bateria não é o conteúdo da embalagem
La batteria non è inclusa nella confezione
Батарея в комплект не входит
包装中不含电池

- 1 Batterie 9Volt-Block Alkaline oder 1 NiMH-Akku 9V
- Nicht wiederaufladbare Batterien dürfen nicht geladen werden
- Aufladbare Batterien dürfen nur von Erwachsenen geladen werden
- Aufladbare Batterien sind aus dem Batteriehalter herauszunehmen, bevor sie geladen werden.
- Batterien müssen mit der richtigen Polarität eingelegt werden.
- Leere Batterien müssen aus dem Spielzeug herausgenommen werden
- Die Anschlussklemmen dürfen nicht kurzgeschlossen werden.
- Verbrauchte Batterien dem Sondermüll zuführen.
- Drähte nicht in Steckdose einführen!
- Ladegerät regelmäßig auf Schäden überprüfen. Bei einem Schaden darf das Ladegerät bis zur vollständigen Reparatur nicht mehr verwendet werden.
- Alle elektrischen Bauteile (Motoren, Lampen) dürfen ausschließlich an Stromversorgungen von Fischertechnik angeschlossen werden.

- 9V rechargeable battery or 9V alkaline dry cell
- Do not attempt to charge NON-rechargeable batteries.
- Rechargeable batteries are only to be charged by adults.
- Take rechargeable batteries out of the battery tray before charging them.
- Insert batteries with the correct polarity.
- Remove dead batteries from the toy.
- Do not short circuit the connecting terminals!
- Discard spent dry cells at special waste disposal centre.
- Do not insert the wires into an outlet!
- Regularly inspect battery charger for damage. If the battery charger has been damaged, it should not be used further until fully repaired.
- No electrical components (motors, lamps) are to be connected to any other power supply than that provided by Fischertechnik.

- pila 9V ou accu 9V
- Il est interdit de recharger des piles qui ne sont pas des accumulateurs
- Le chargement des accumulateurs doit toujours se faire par des adultes
- Retirer les accumulateurs du support de pile avant de les recharger.
- Veiller à la polarité correcte lors de la mise en place des piles.
- Retirer impérativement les piles ou accumulateurs vides du jouet.
- Il est interdit de court-circuiter les bornes de raccordement.
- Jeter les piles usagées dans un conteneur spécial réservé à cet effet.
- Ne pas introduire les fils dans une prise!
- Contrôlez régulièrement le chargeur en vue d'éventuelles détériorations
- En cas de détérioration, il est interdit d'utiliser le chargeur jusqu'à ce qu'il ait été intégralement réparé
- Tous les composants électriques (moteurs, lampes) ne doivent être branchés aux alimentations électriques uniquement que par la société Fischertechnik.

- alkaline batterije of oplaadbare batterije (9Volt)
- Niet-oplaadbare batterijen mogen niet worden opgeladen.
- Oplaadbare batterijen mogen uitsluitend door volwassenen worden opgeladen.
- Oplaadbare batterijen moeten uit de batterijhouder worden verwijderd, voordat deze worden opgeladen.
- De batterijen moeten met de juiste polariteit worden geplaatst.
- Legge batterijen moeten uit het speelgoed worden verwijderd.
- De aansluitklemmen mogen niet worden kortgesloten.
- Afleveren gebruikte batterijen bij het klein chemisch afval (KCA).
- Geen draden in de contactdoos steken!
- Laadtoestel regelmatig controleren op schade. Bij schade mag het laadtoestel niet meer gebruikt worden tot het volledig hersteld is.
- Alle elektrische componenten (motoren, lampen) mogen uitsluitend op stroomvoorzieningen van Fischertechnik worden aangesloten.

- pila alcalina bloque de 9 Voltios o acumulador NiMH- de 9 Voltios
- Las pilas no recargables no pueden ser cargadas
- Las pilas recargables sólo pueden ser cargadas por un adulto
- Las pilas recargables deben ser extraídas del compartimento de pilas antes de que sean cargadas.
- Las pilas deben ser colocados con la polaridad correcta.
- Las pilas descargadas deben ser extraídas del juguete
- Los bornes de conexión no pueden ser puestos en cortocircuito.
- Retirar las baterías viejas, desechándolas en un depósito de basuras especiales.
- No introducir hilos en la toma de corriente!
- Comprobar con regularidad si el cargador presenta daños. En caso de presentar daños, el cargador no debe volver a ser utilizado hasta que esté completamente reparado.
- Todos los componentes eléctricos (motores, luces) deben conectarse a la alimentación de corriente de la técnica Fischer exclusivamente.

- Bateria alcalina de bloco de 9 V ou acumulador NiMH- de 9 V
- Pilhas não recarregáveis não devem ser novamente carregadas.
- Pilhas recarregáveis somente devem ser recarregadas por adultos.
- Pilhas recarregáveis devem ser retiradas do compartimento de pilhas antes de serem carregadas.
- As pilhas devem ser colocadas com a polaridade correta.
- As pilhas descarregadas devem ser retiradas do brinquedo.
- Os terminais de conexão não devem ser curto-circuitados.
- Eliminar as baterias esgotadas como desperdício perigoso
- Nunca introduzir fios na tomada!
- Verificar regularmente se o carregador apresenta danos. Em caso de dano, o carregador não deverá ser utilizado enquanto não estiver plenamente consertado.
- Todos as peças componentes elétricas (motores, lâmpadas) só podem ser exclusivamente conectadas em abastecimentos de corrente da Fischertechnik.

- 1 batteria alcalina da 9 V o 1 batteria NiMH- ricaricabile da 9V
- Le batterie non ricaricabili non devono essere ricaricate
- Le batterie ricaricabili devono essere ricaricate da persone adulte
- Le batterie ricaricabili si devono estrarre dal supporto prima di ricaricarle.
- Le batterie si devono inserire rispettando la polarità.
- Togliere le batterie dal giocattolo quando sono scariche
- I morsetti di allacciamento non devono essere cortocircuitati.
- Smaltire le batterie usate negli appositi contenitori per la raccolta differenziata.
- Non inserire i fili nella presa elettrica.
- Controllare periodicamente se il caricabatterie presenta dei danni. In caso di danni, il caricabatterie non deve più essere utilizzato fino alla riparazione.
- Tutti i componenti elettrici (motori, lampadine) devono essere collegati esclusivamente ad alimentatori Fischertechnik.
- 1 алкалиновая батарейка на 9 В или 1 никель-кадмиевый аккумулятор, 9 В
- Не пытайтесь заряжать перезаряжаемые батарейки.
- Зарядку перезаряжаемых аккумуляторов разрешается выполнять только взрослым.
- Перед зарядкой перезаряжаемых аккумуляторов извлеките их из аккумуляторного отсека.
- При установке аккумуляторов на место соблюдайте полярность.
- Разряженные батарейки необходимо извлечь из игрушки.
- Не замыкайте коротко соединительные клеммы.
- Использованные батареи утилизировать как спецотходы.
- Не вставляйте в розетку провода!
- Регулярно проверяйте зарядное устройство на отсутствие повреждений. При наличии повреждений использовать зарядное устройство до выполнения его полного ремонта не разрешается.
- Все электрические детали (электромоторы, лампочки) можно подключать только к источникам электропитания от Fischertechnik.

- 1个9V的碱性干电池或1个9V的NiMH-蓄電池
- 不得给非充电电池充电
- 只允许由成年人给充电电池充电
- 在充电时必须将充电电池从电池夹中取出。
- 必须按照正负极正确放入电池。
- 必须从玩具中取出没有电的电池
- 接线柱不允许被短路。
- 用完了的电池应作为特种垃圾处理。
- 禁止将金属丝插入插座!
- 经常检查充电器是否有损坏情况。如果充电器有损,直到完全修好为止不可以再使用。
- 只允许将所有电气部件(传感器,电机,灯泡)与慧鱼技术产品的电源装置相连接

Sicherheitshinweise Safety Information Consignes de sécurité

Veiligheidsrichtlijnen Indicaciones de seguridad Observações sobre segurança

Informazioni per la sicurezza Указания по технике безопасности 安全指南

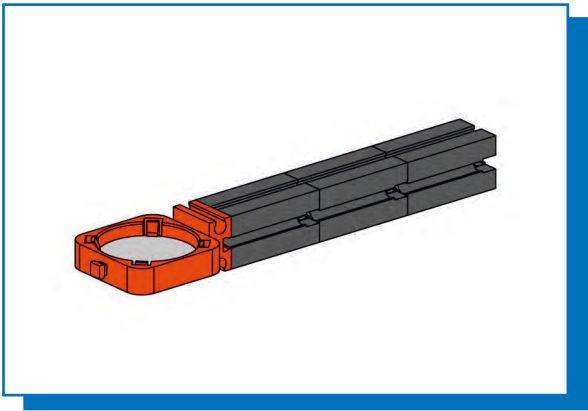
- Das Spielzeug darf nur mit einer der folgenden fischertechnik Energiequellen benutzt werden: Power Set oder Art.-Nr.: 35537 Accu Pack 8,4V.
- The toy may only be used with one of the following fischertechnik energy sources: Power Set or Art No.: 35537 Accu Pack 8.4V.
- L'utilisation de ce jouet n'est permis qu'avec l'une des sources d'énergie fischertechnik suivantes: Power Set ou Art. n° : 35537 pack d'accumulateurs 8,4 volts.
- Het speelgoed mag uitsluitend met een van de volgende fischertechnik energiebronnen worden gebruikt: art.nr.: Power Set of art.nr.: 35537 accupack 8,4V
- El juguete se debe utilizar únicamente con una de las siguientes fuentes de energía: Power Set o Art. No. 35537 paquete acumulador de 8,4V.
- O brinquedo somente pode ser utilizado com uma das seguintes fontes de energia da fischertechnik: Power Set ou art. n°: 35537 Bloco de bateria de 8,4V.
- Questo giocattolo può essere utilizzato solo con le seguenti fonti di energia fischertechnik: Power Set oppure cod. prod.: 35537 confezione batterie da 8,4V.
- Игрушку можно использовать только с одним из следующих источников энергии от fischertechnik: Power Set или арт. №: 35537 Accu Pack 8,4В
- 该玩具只允许使用如下的慧鱼 (fischertechnik) 能量源 : Power Set , 或者商品号 : 35537 , 8.4V 电池套件 (Accu Pack)

- Achtung! Verletzungsgefahr an Bauteilen mit funktionsbedingten scharfen Kanten und Spitzen!
- Caution! Be careful not to hurt yourself on components with sharp or pointed edges!
- Attention! Risque de blessure sur les éléments comportant des arêtes et o pointes vives indispensables au bon fonctionnement!
- Let op! U kunt zich bezeren aan bouwstenen met scherpe randen of punten!
- Attenzione! Esiste il pericolo di lesione con i pezzi di costruzione che hanno bordi e punte spigolosi necessari per la funzionalità del pezzo!
- Alle Einzelteile, insbesondere bewegliche Teile sind falls notwendig zu warten und zu reinigen.
- All components, especially moving parts, should be maintained and cleaned as necessary.
- Toutes les pièces détachées et en particulier les pièces mobiles, sont, si nécessaire, à entretenir et à nettoyer.
- Alle onderdelen, vooral de bewegende delen, kunnen, indien noodzakelijk, onderhouden en gereinigd worden.
- Es necesario limpiar y mantener en buen estado todas las diferentes piezas - especialmente las piezas móviles.
- Atenção! Perigo de ferimentos em peças componentes com cantos vivos e pontas obrigatórios para o funcionamento !
- Attenzione! Pericolo di lesioni dovute a componenti con spigoli vivi e punte per motivi funzionali!
- Будьте осторожны! Об острые края деталей и и наконечники можно порезаться!
- 注意 ! 因功能需要而带有锋利的棱边和尖角的部件可能会带来受伤危险 !
- Caso necessário, todas as peças individuais, especialmente peças móveis, tem que ser submetidas à manutenção e ser limpadas.
- Se necessario, tutti i singoli componenti, soprattutto le parti mobili, si devono eventualmente sottoporre a manutenzione e pulizia.
- Все детали, особенно подвижные, требуют ухода и чистки.
- 必要时应保养和清洁所有零件，尤指运动部件。



Hinweise zum Umweltschutz / Instructions for Environmental Protection / Remarques de protection de l'environnement / Bescherming van het milieu / Notas con respecto a la protección del medio ambiente / Instruções para a proteção do meio ambiente / Indicazioni sulla tutela ambientale / Указания по охране окружающей среды / 有关环保的提示 :

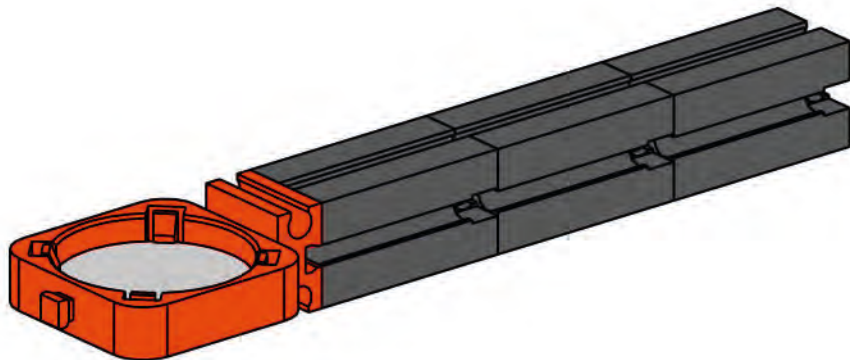
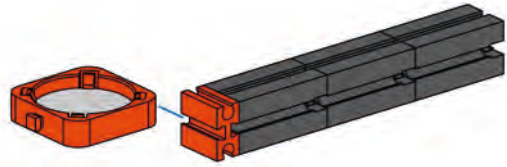
www.fischertechnik.de/environment

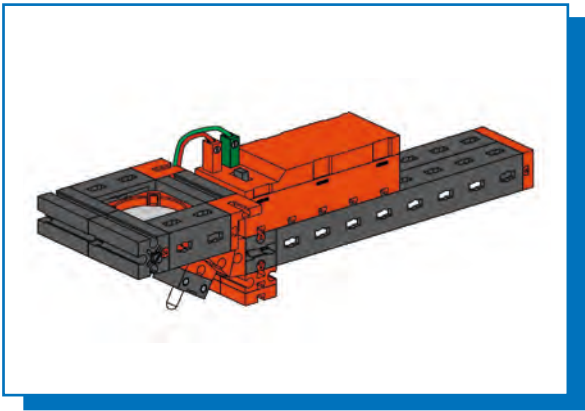


Lupe
Magnifier
Loupe

Loep
Lupa
Lupa

Lente d'ingrandimento
Лупа
放大镜



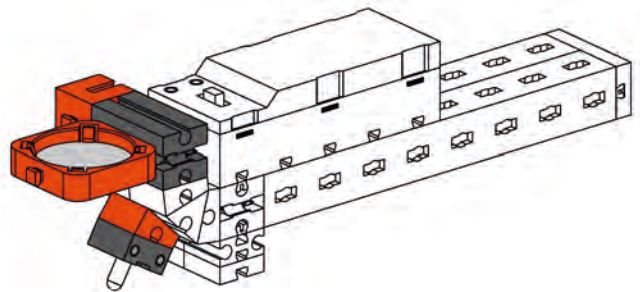
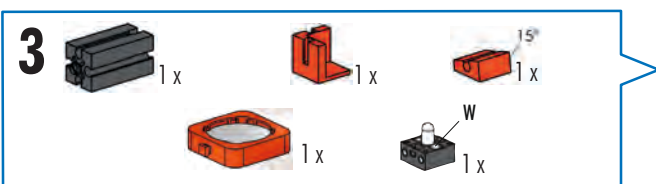
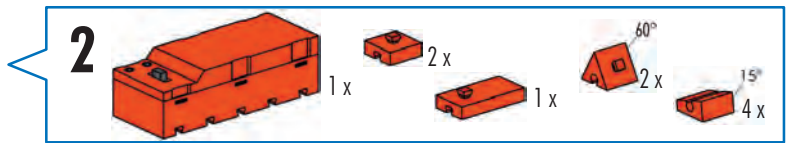
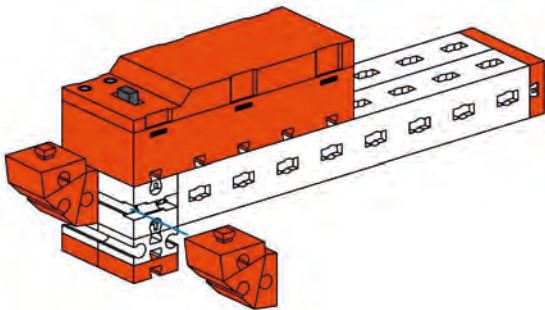
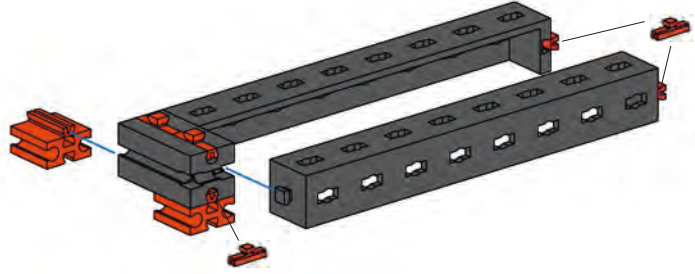
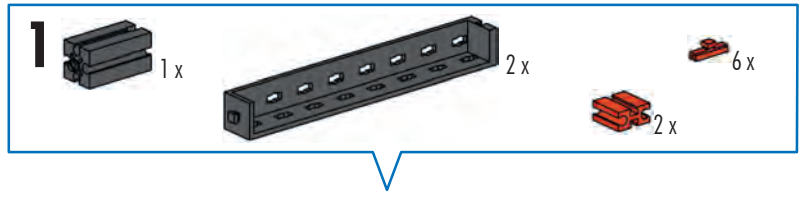


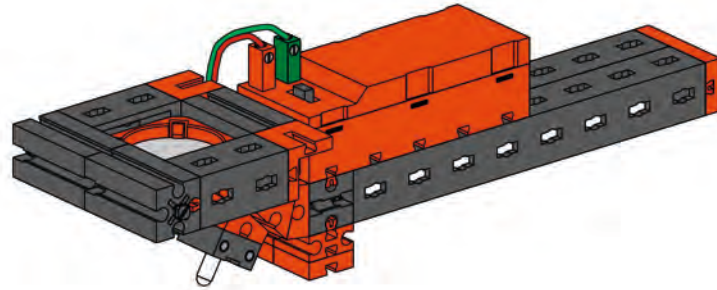
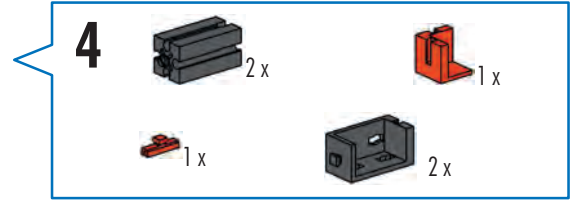
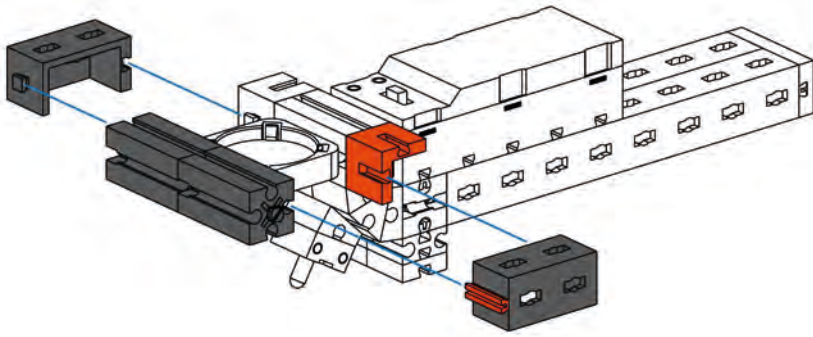
Lupe mit Licht
Magnifier with light
Loupe à éclairage

Loep met verlichting
Lupa con luz
Lupa com luz

Lente d'ingrandimento
con luce

Лупа с подсветкой
带照明的放大镜

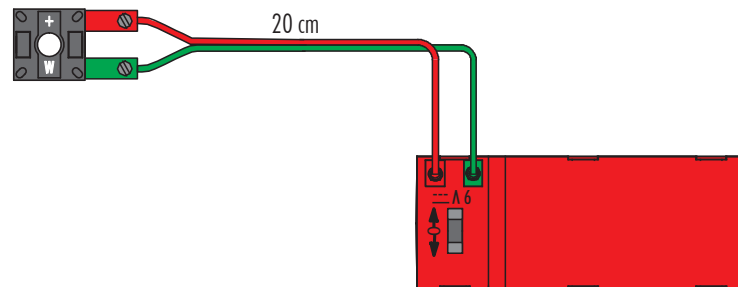


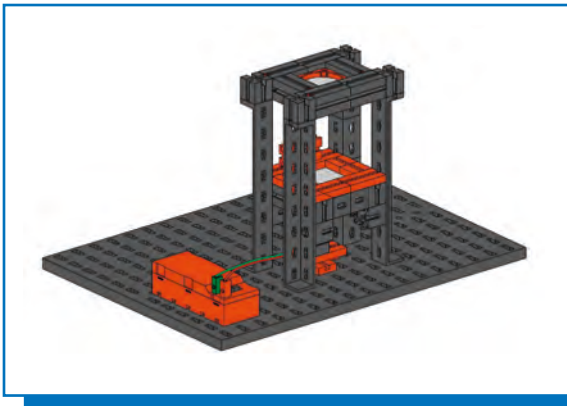


Schaltplan
Circuit diagram
Plan électrique

Schakelschema
Diagrama de circuitos
Plano elétrico de ligação

Schema elettrico
Схема подключения
电路图

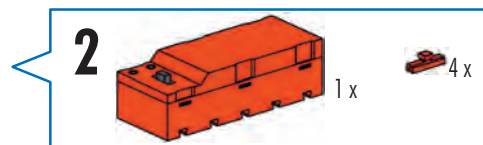
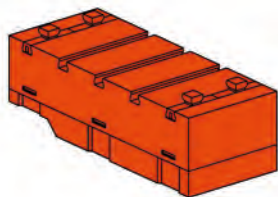
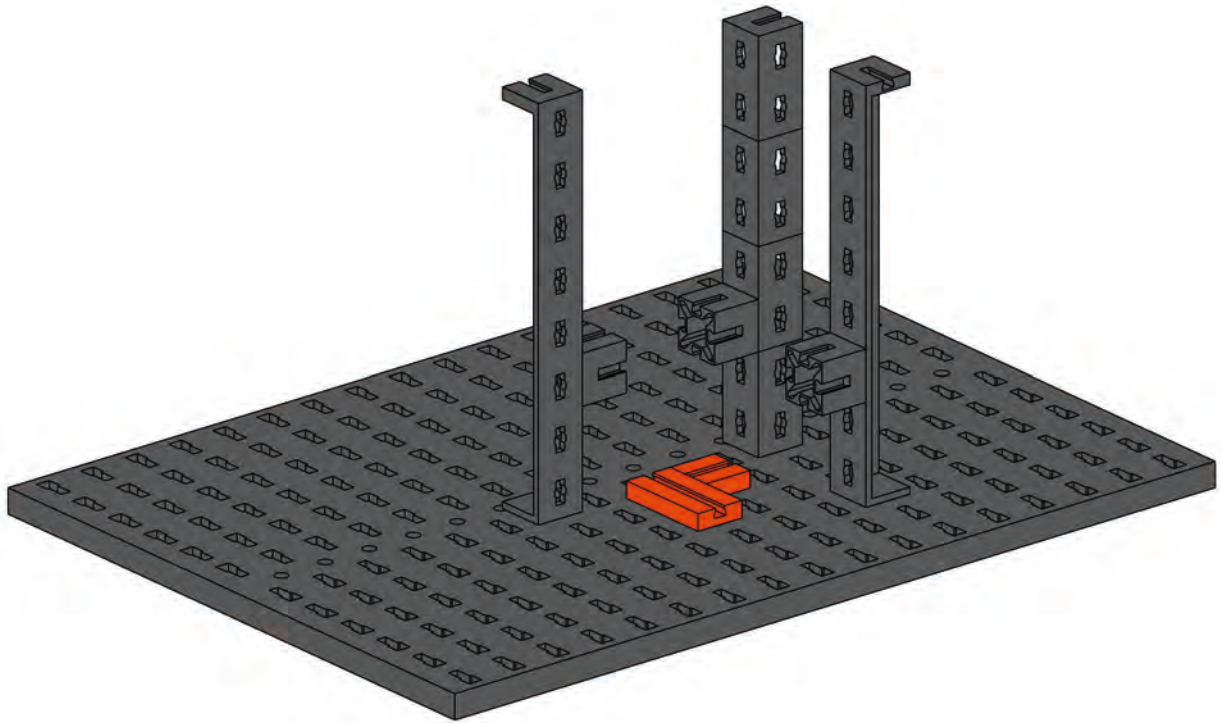
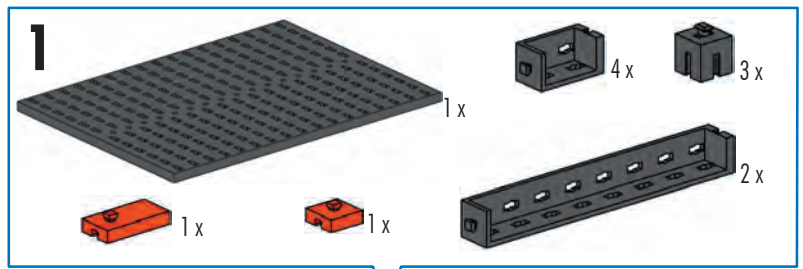


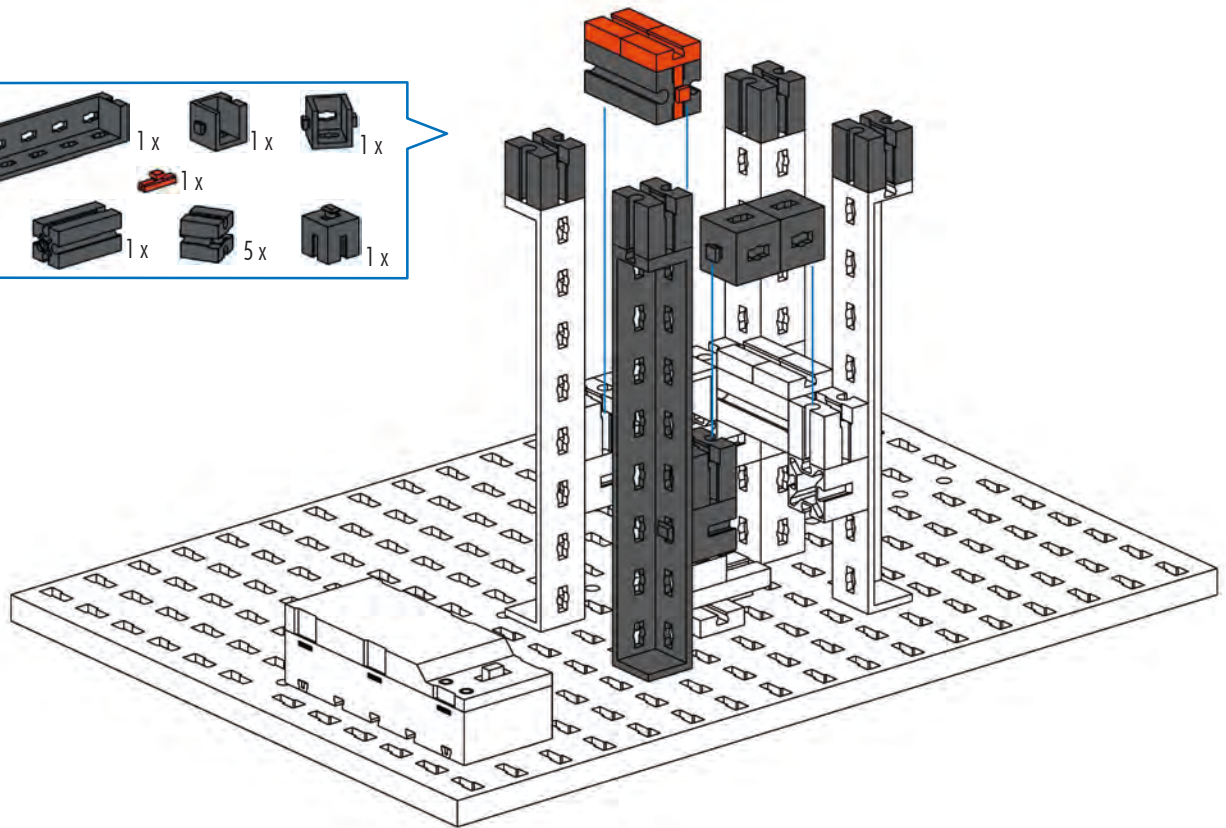
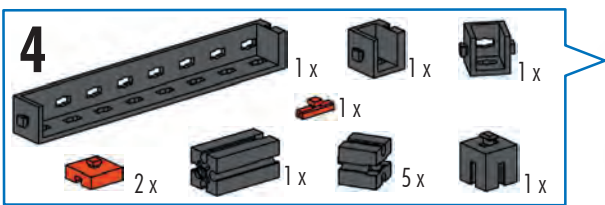
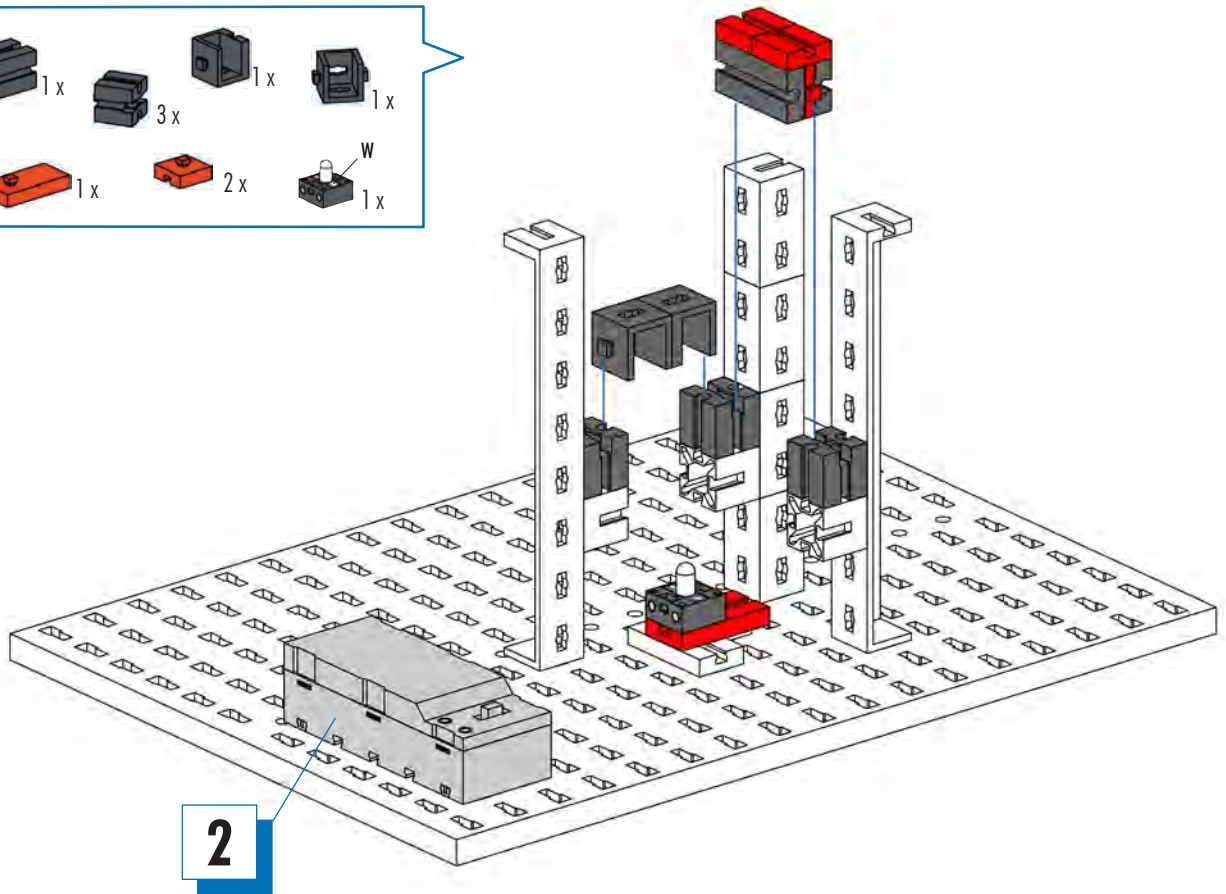
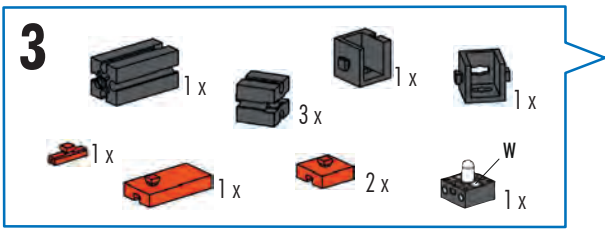


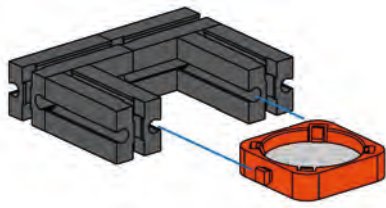
Diabetrachter
Slide viewer
Visionneuse

Diaviewer
Visor de diapositivas
Visualizador de slides



Visore per diapositive
Диаскоп
幻灯片观像器

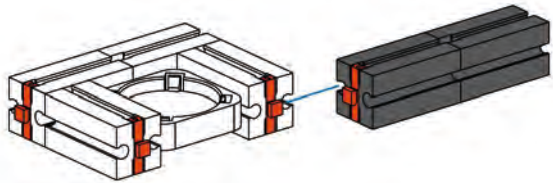








5





4x  1x 

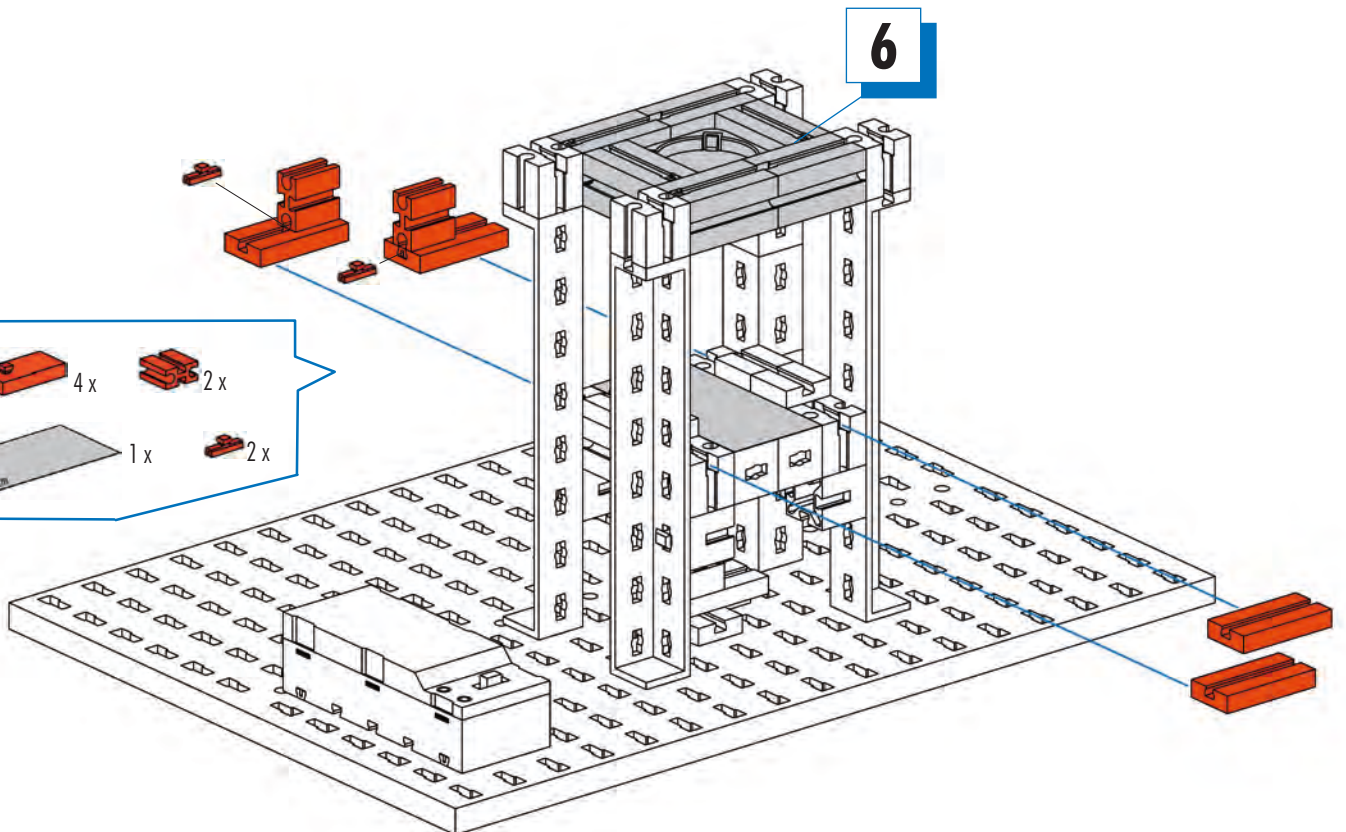


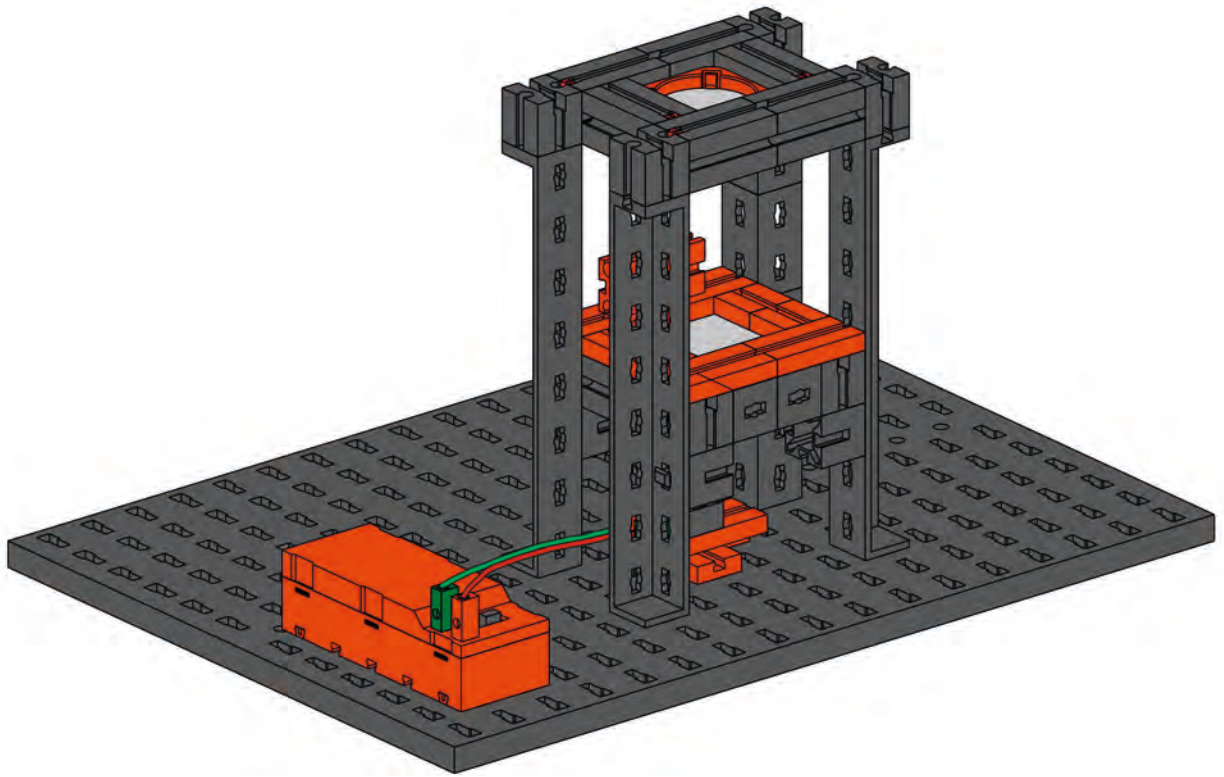
6

2x  4x 

7

4x  2x 
1x  2x 

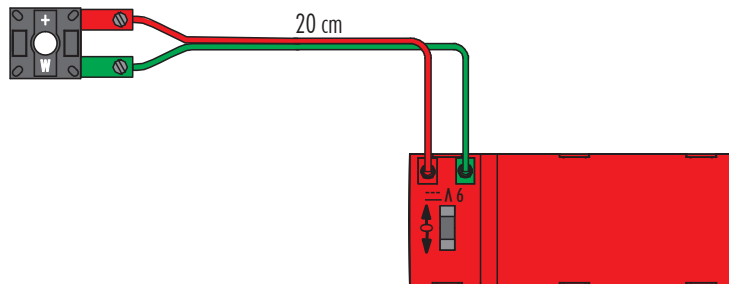


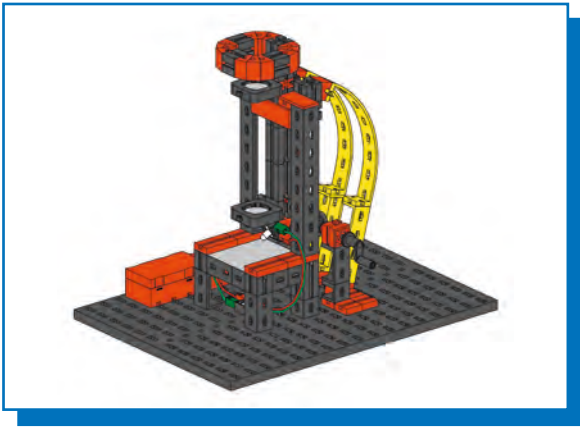


Schaltplan
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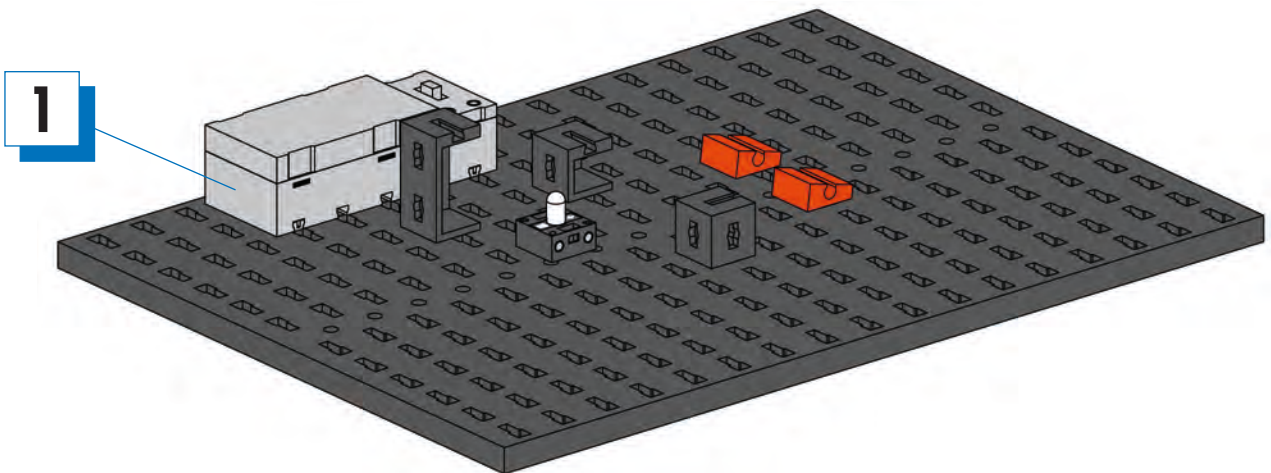
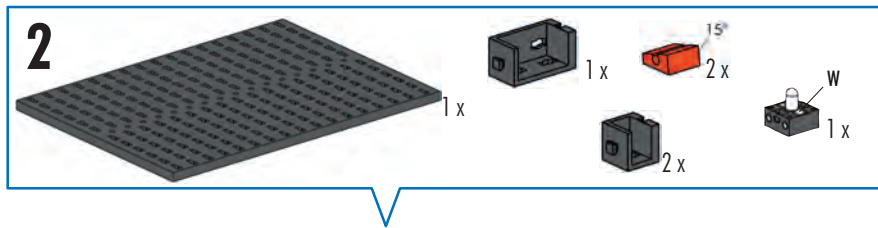
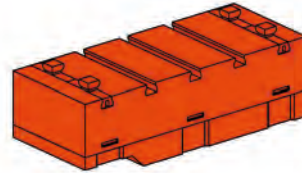
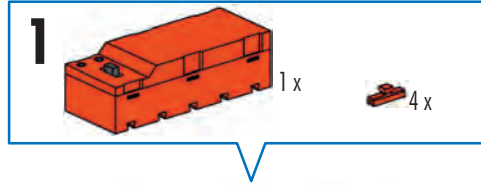




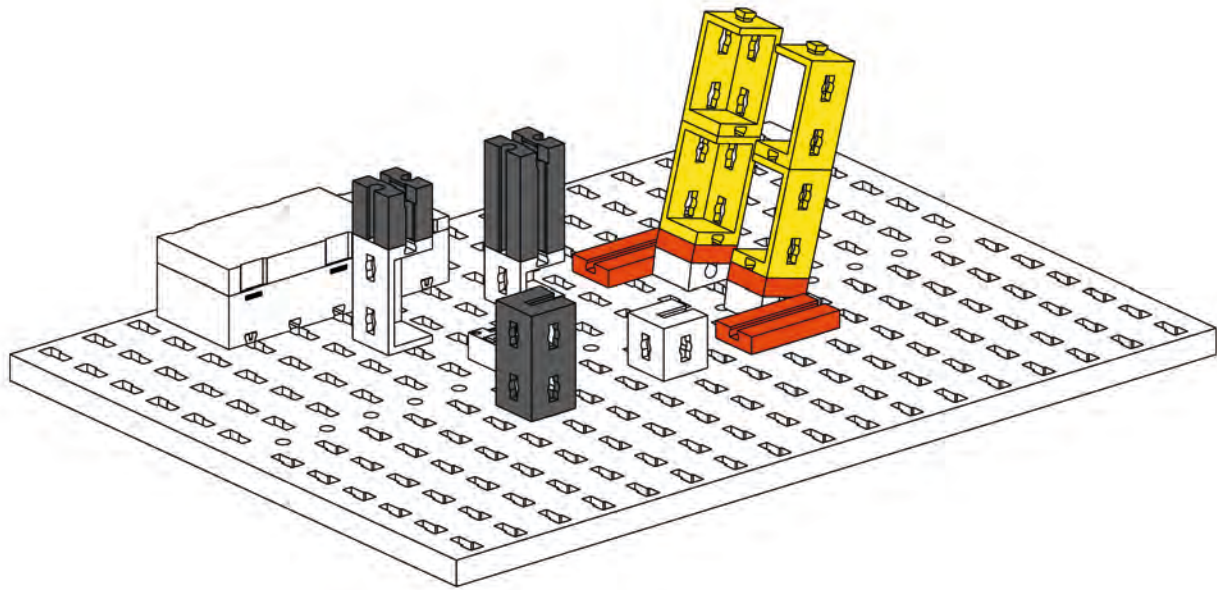
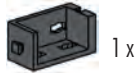
Mikroskop
Microscope
Microscope

Microscop
Microscopio
Microscópio

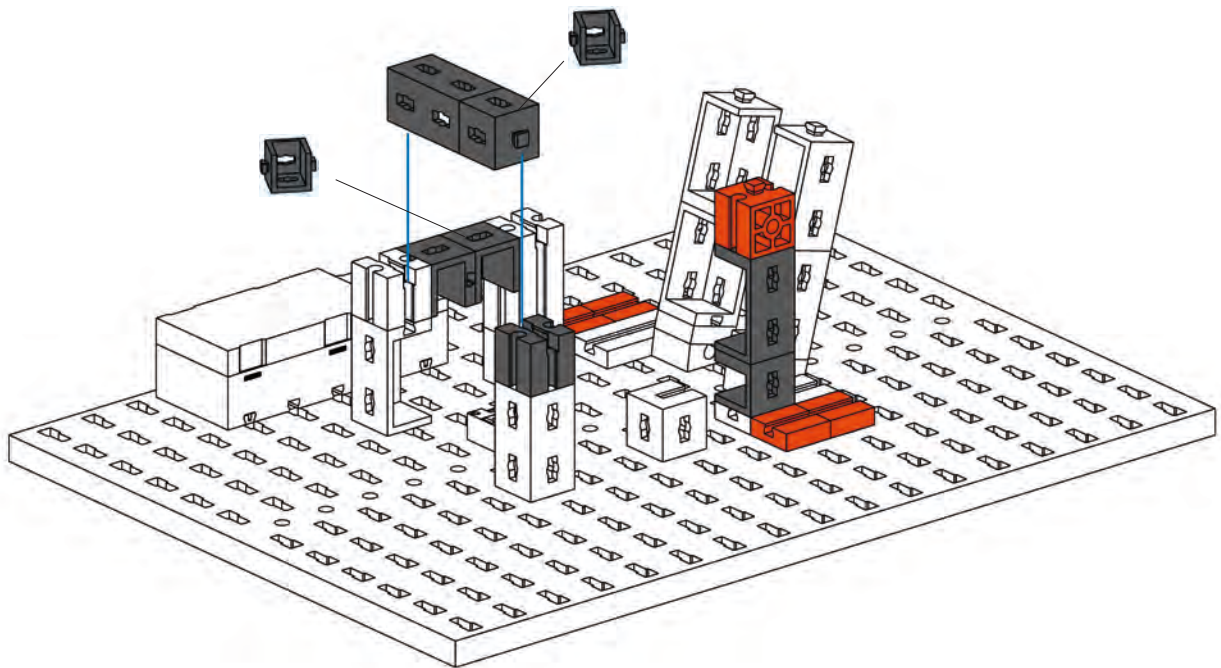
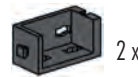
Microscopio
Микроскоп
显微镜




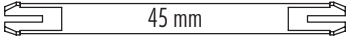
3




4

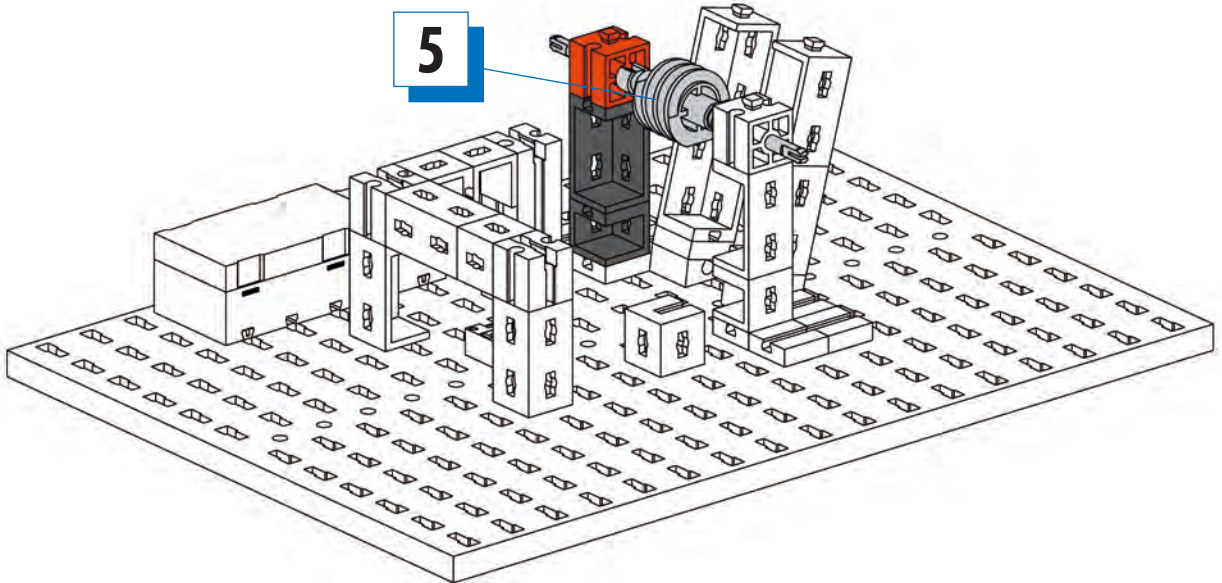


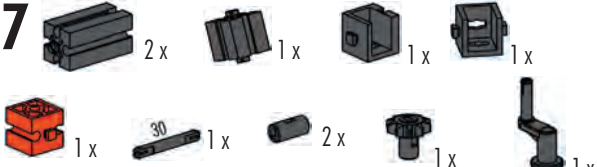
5  1x 45 2x 2x 2x

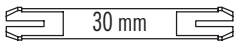
 45 mm

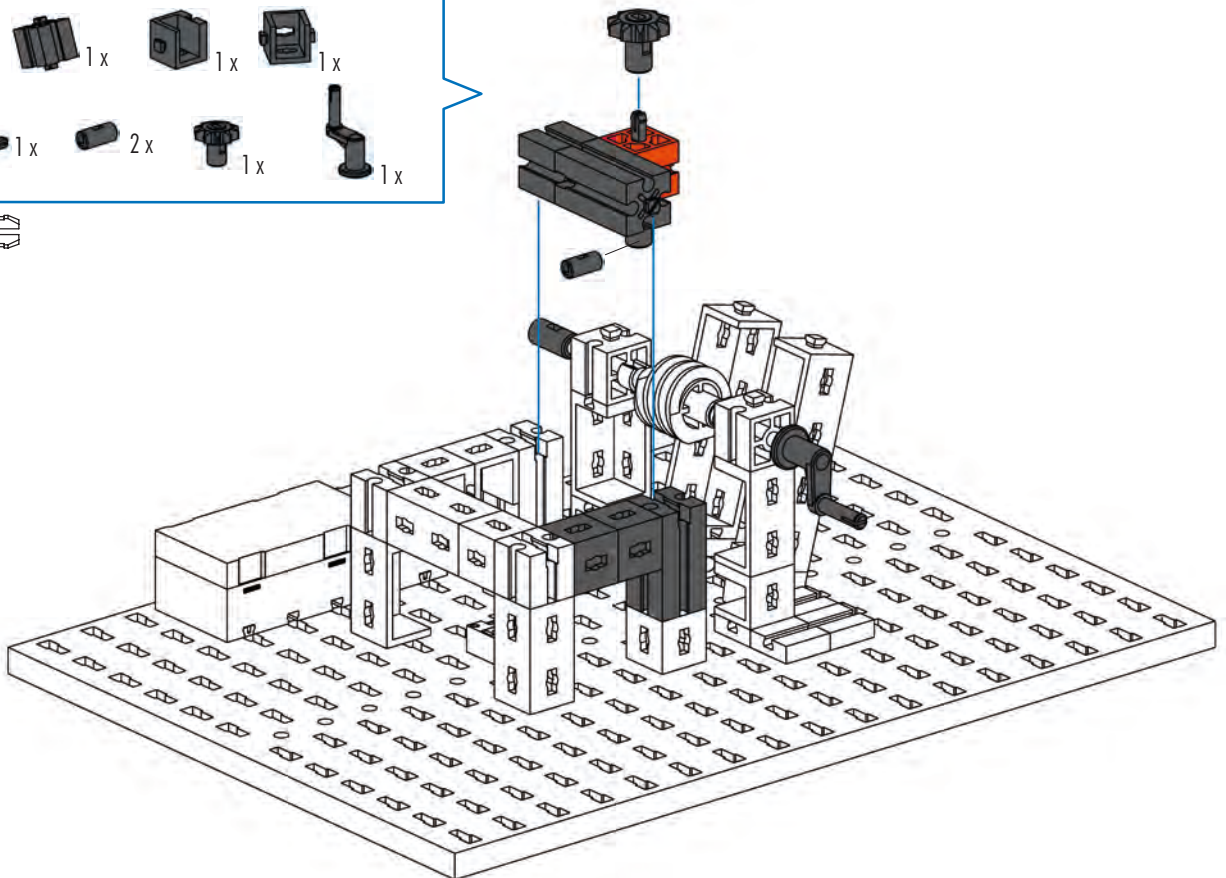


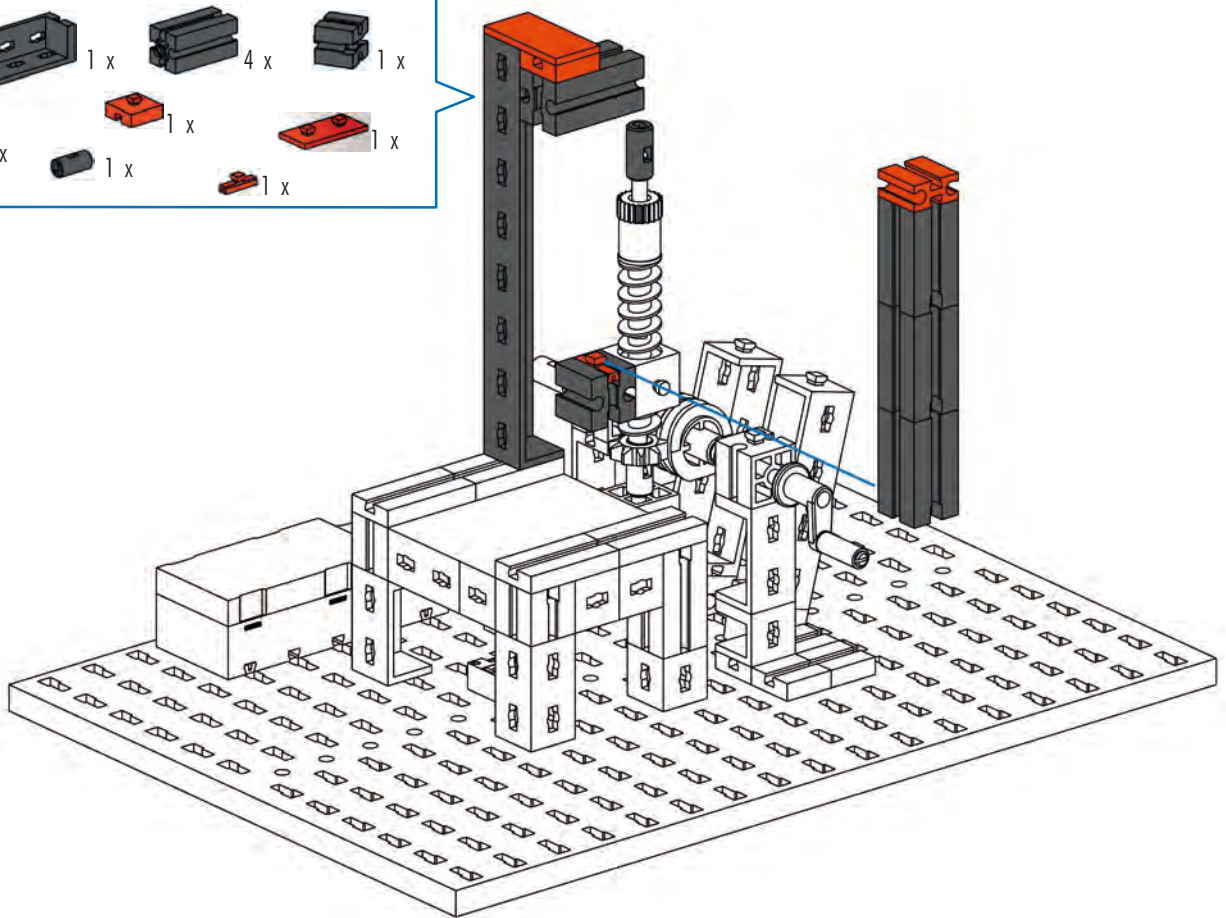
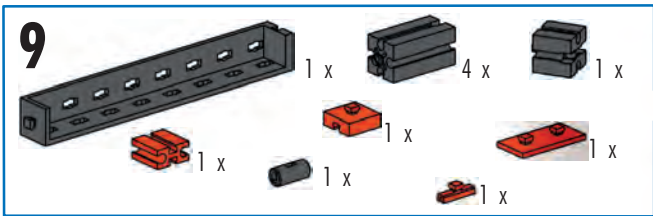
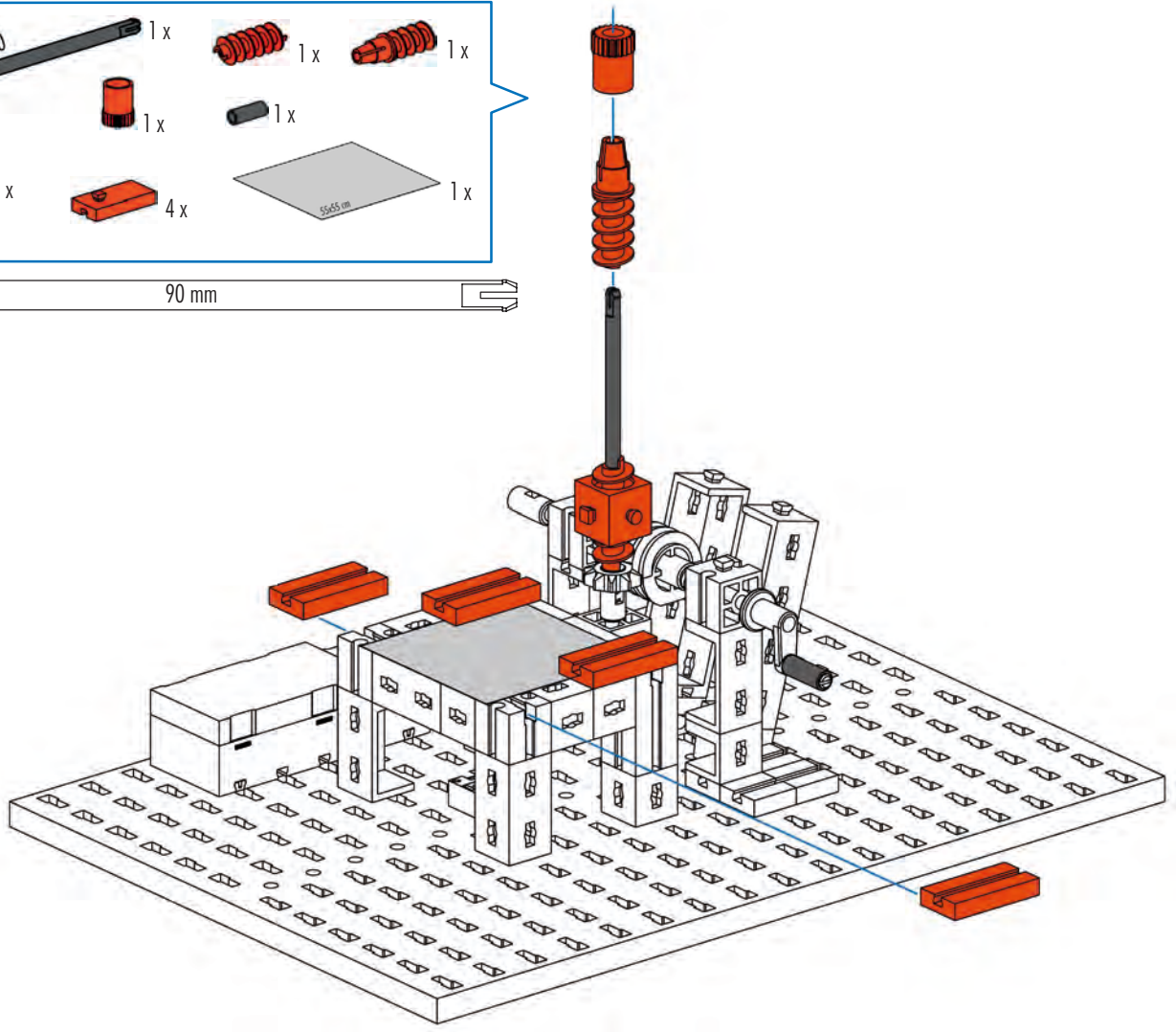
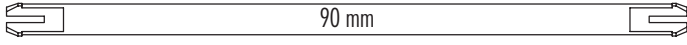
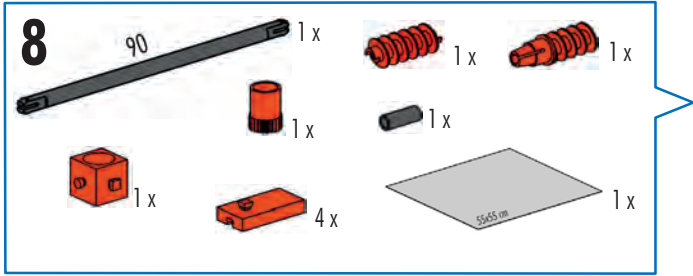
6  1x 1x 1x

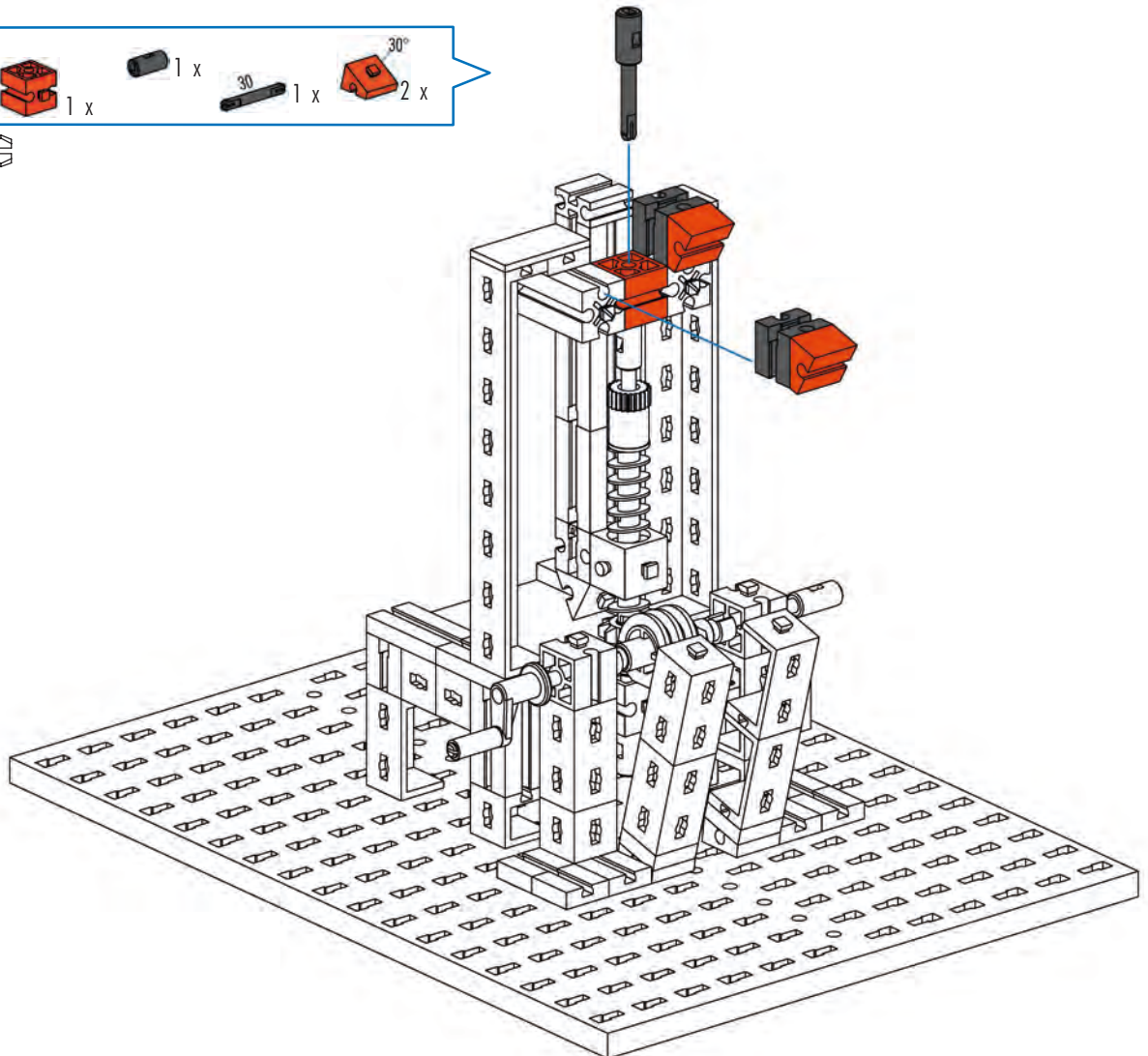
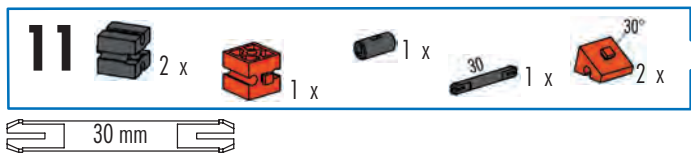
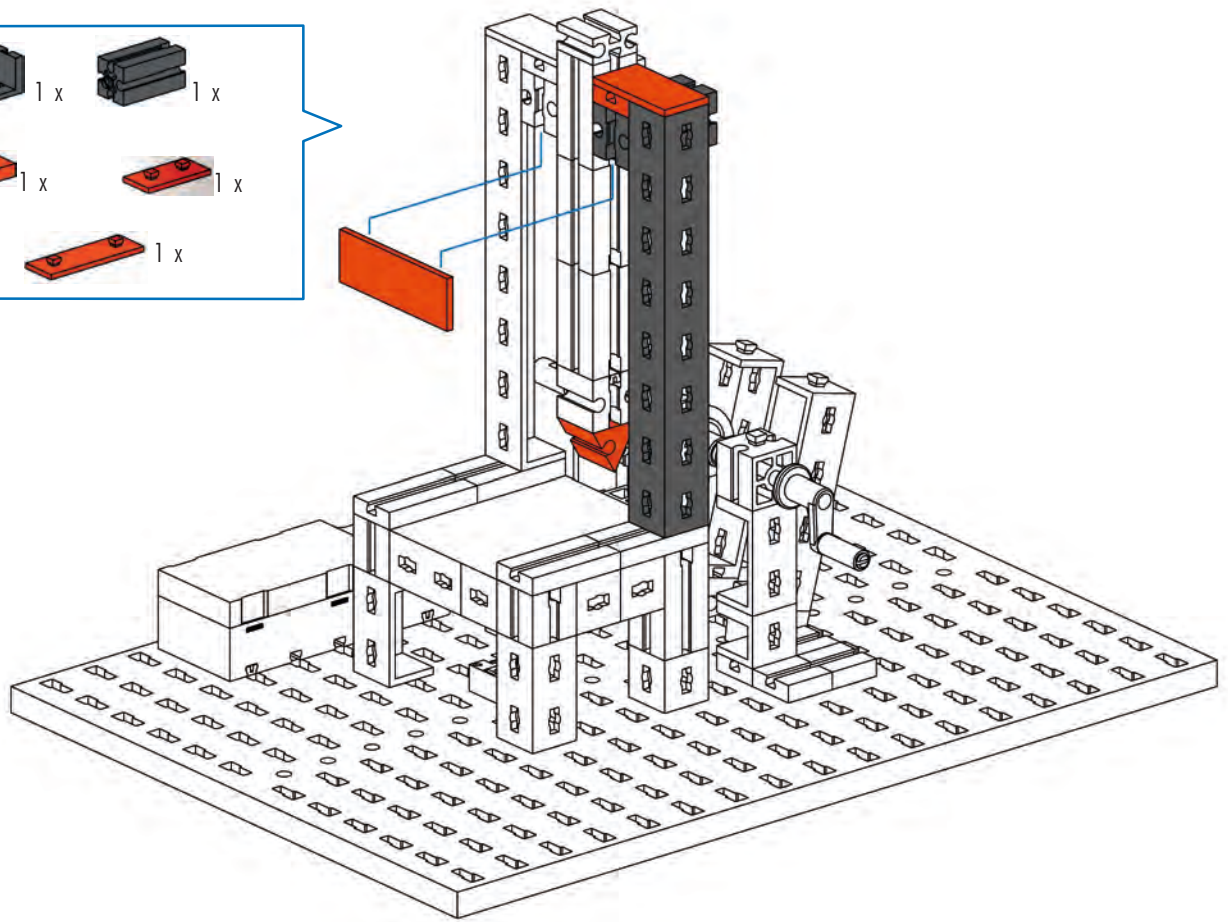
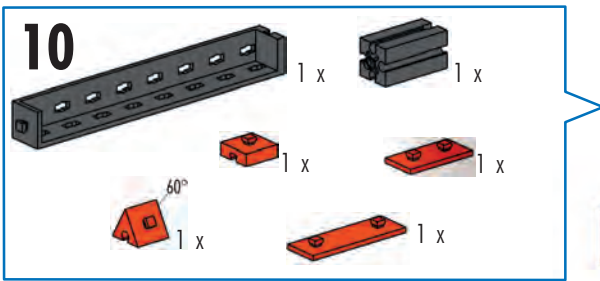


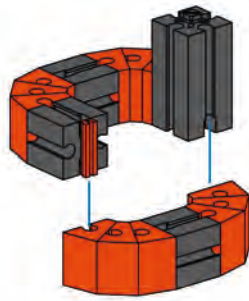
7  2x 1x 1x 1x 1x 1x 30 1x 2x 1x 1x

 30 mm









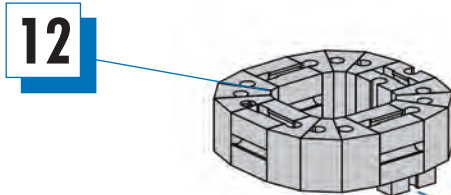
12

- 1 x [Grey Technic Beam 1x3]
- 3 x [Grey Technic Beam 1x2]
- 12 x [Red Technic Brick with 30° angle]
- 1 x [Red Technic Pin]

Version 1: Vergrößerung 3-5fach
 Version 1: Magnification factor 3-5x
 Version 1: Grossissement de 3 à 5 fois

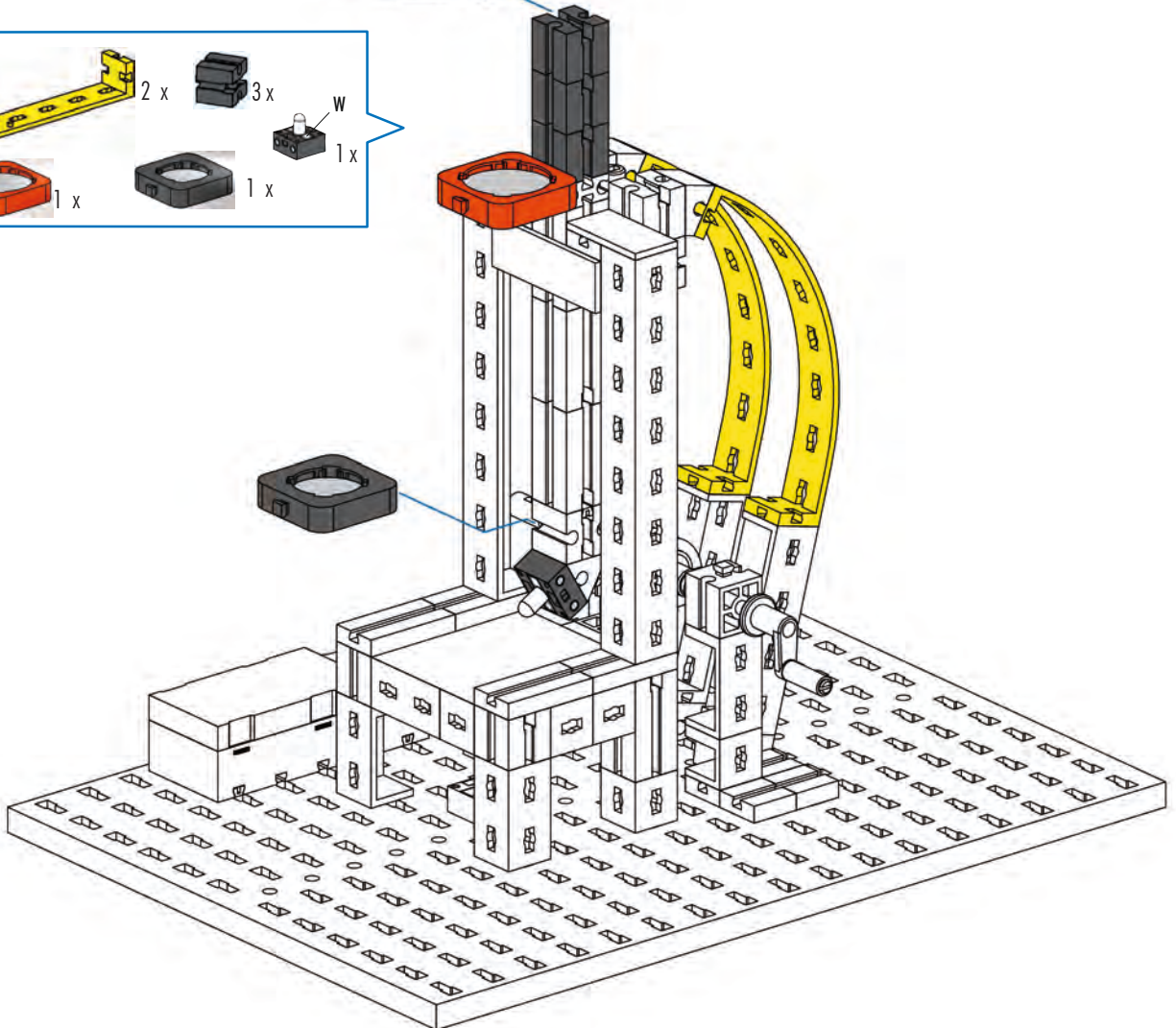
Versie 1: Vergroting 3- tot 5-voudig
 Versión 1: 3 a 5 aumentos
 Versão 1: Aumento de 3 a 5 vezes

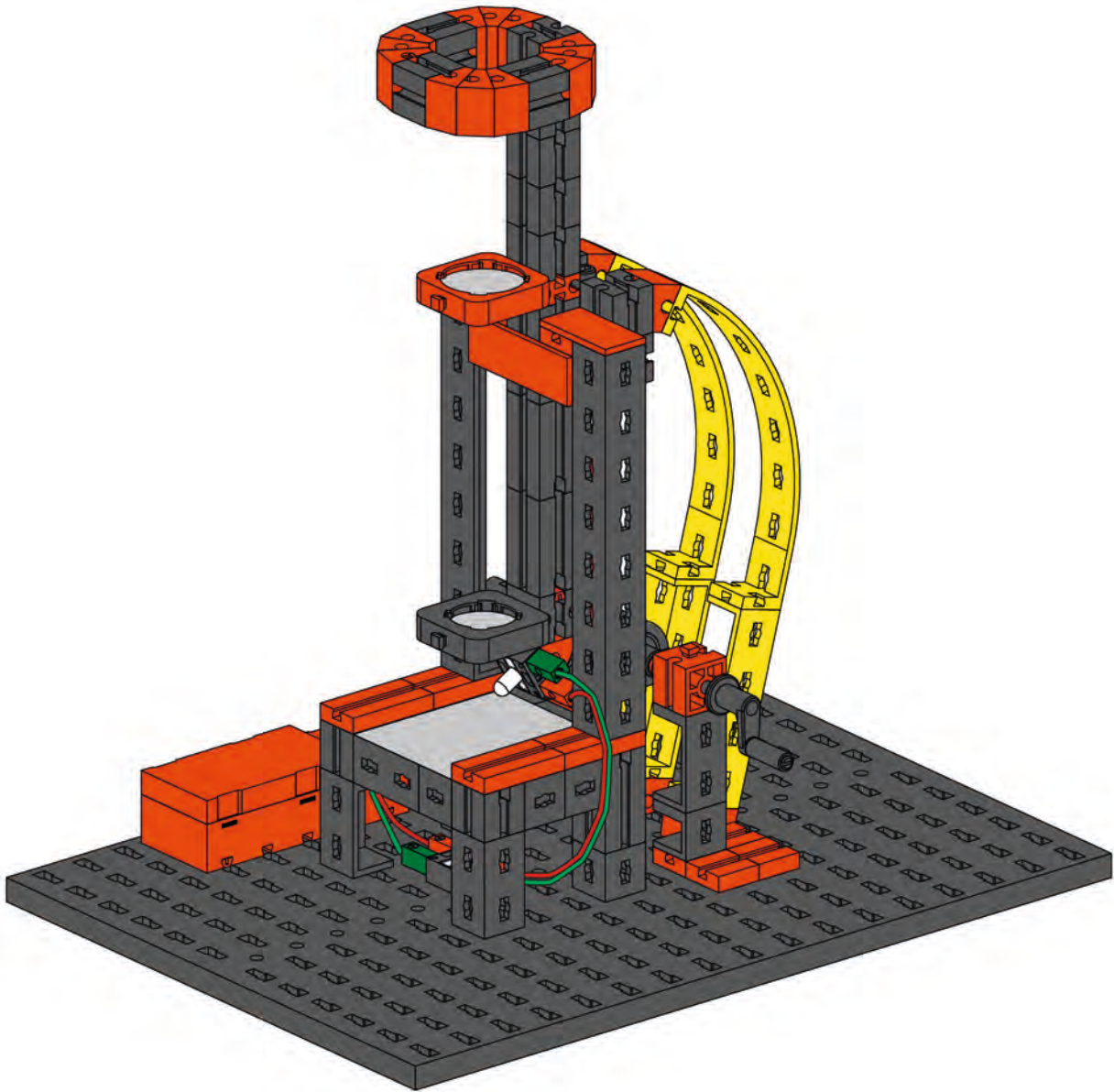
Versione 1: Ingrandimento 3-5x
 Версия 1: 3-5 кратное увеличение
 版本 1: 放大 3 至 5 倍



13

- 2 x [Yellow Technic Beam 1x10]
- 3 x [Grey Technic Beam 1x2]
- 1 x [Red Technic Ring]
- 1 x [Grey Technic Ring]
- 1 x [Black Technic Pin with 'W' label]

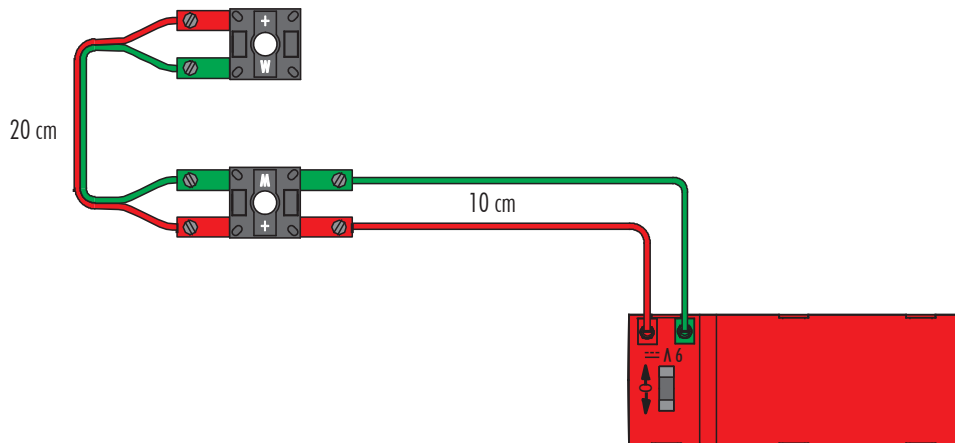




Schaltplan
Circuit diagram
Plan électrique

Schakelschema
Diagrama de circuitos
Plano elétrico de ligação

Schema elettrico
Схема подключения
电路图



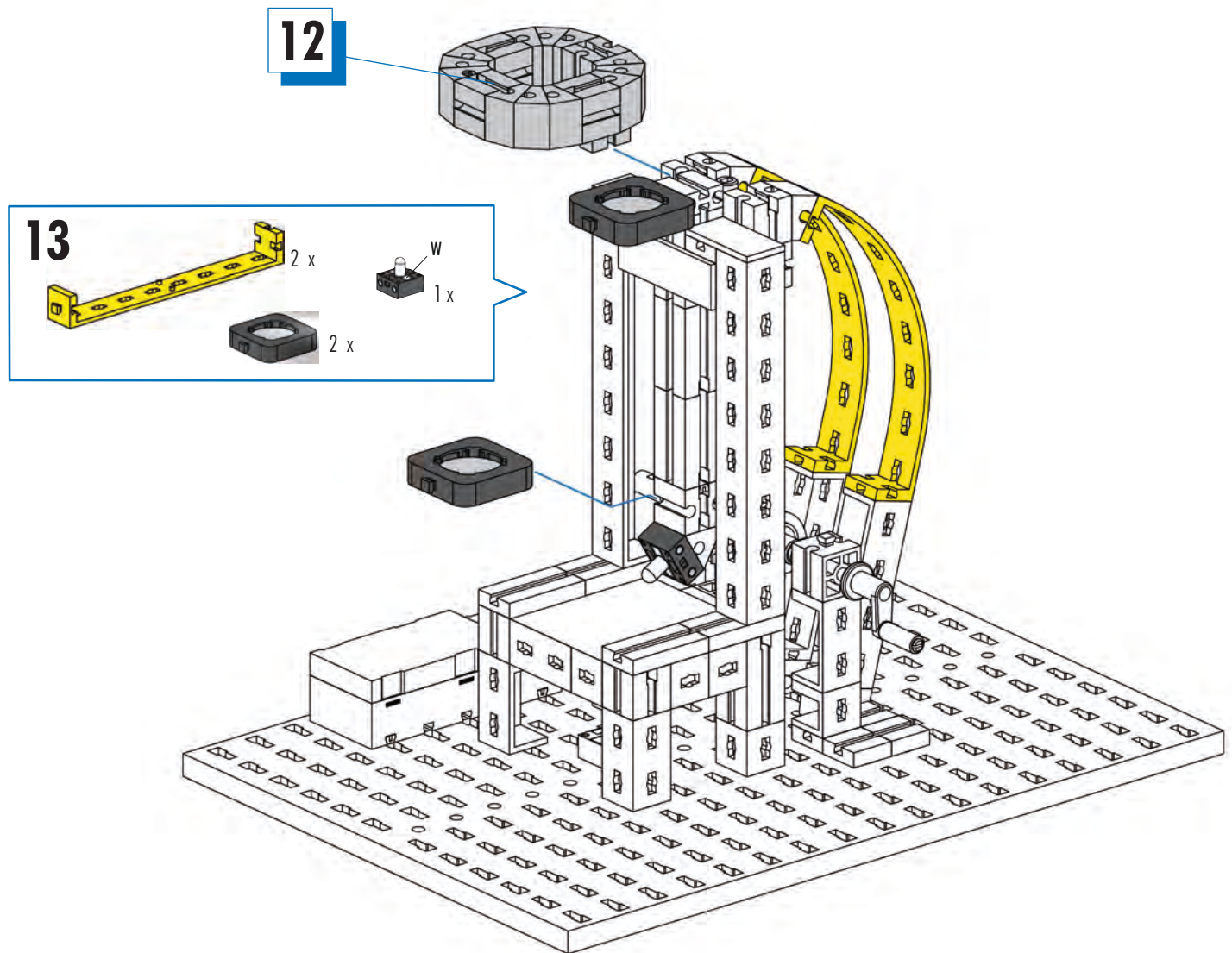
Version 2: Vergrößerung 7-10fach
Version 2: Magnification factor 7-10x
Version 2: Grossissement de 7 à 10 fois

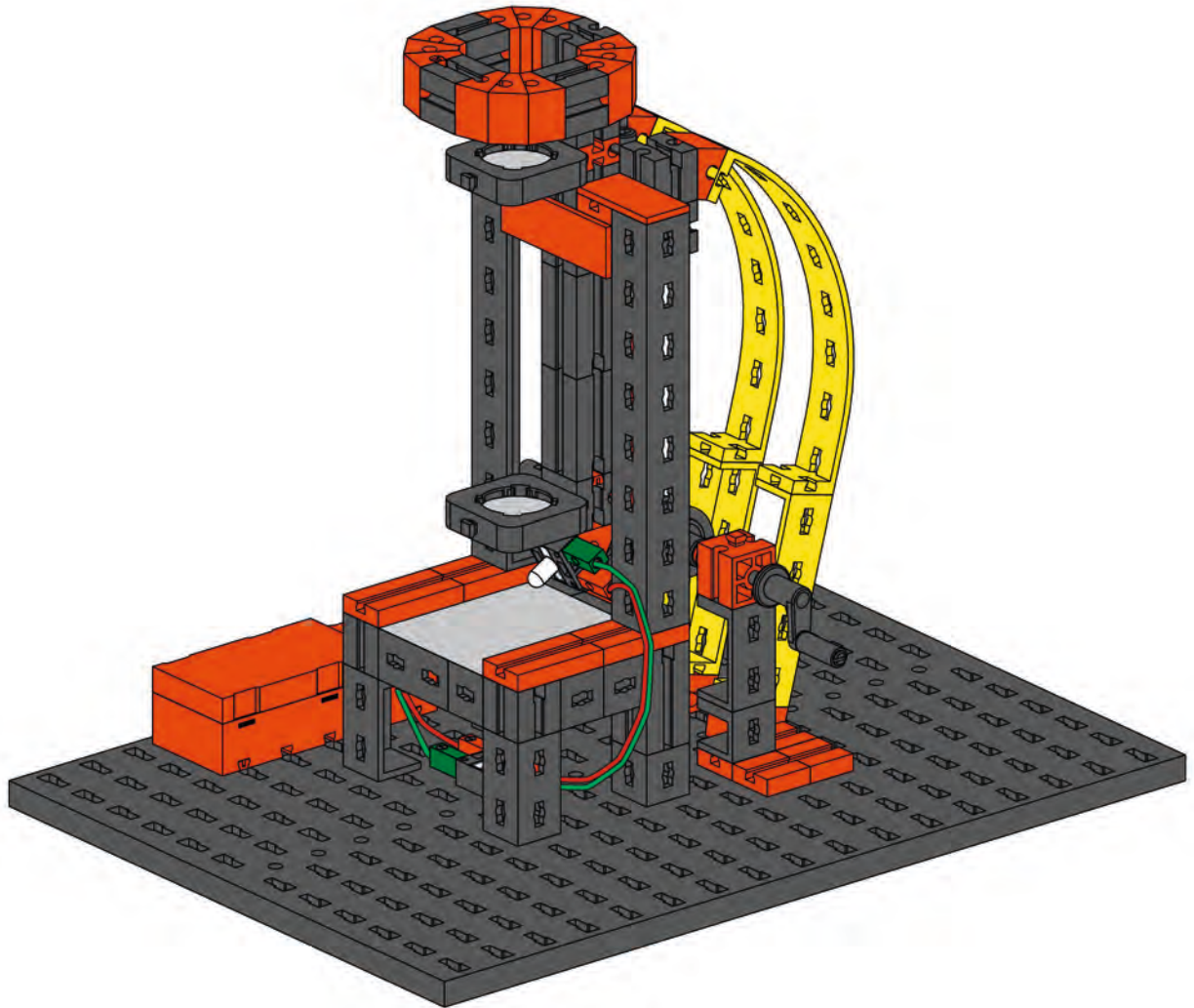
Versie 2: Vergroting 7- tot 10-voudig
Versión 2: 7 a 10 aumentos
Versão 2: Aumento de 7 a 10 vezes

Versione 2: Ingrandimento 7-10x
Версия 2: 7-10 кратное увеличение
版本 2: 放大 7 至 10 倍

1-12

Seite 15
Page 15
Page 15
Bladzijde 15
Página 15
Pagina 15
Página 15
Страница 15
页次 15

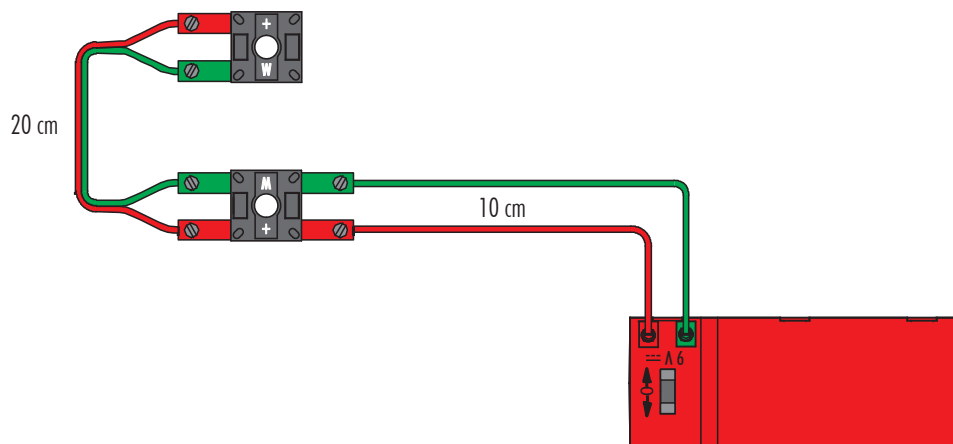




Schaltplan
 Circuit diagram
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Schakelschema
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 电路图

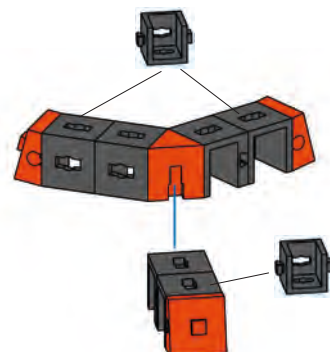
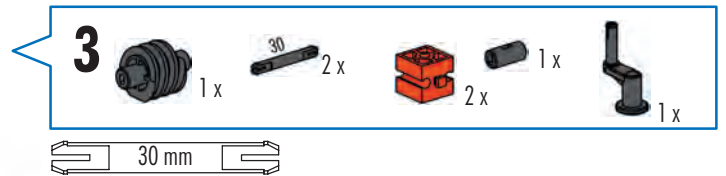
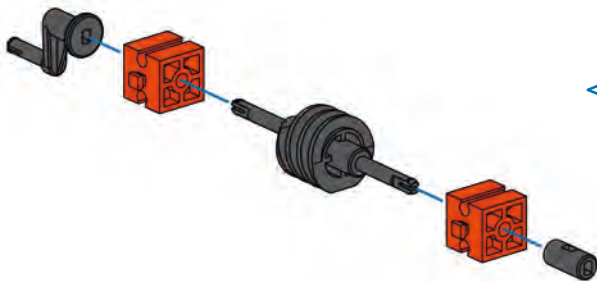
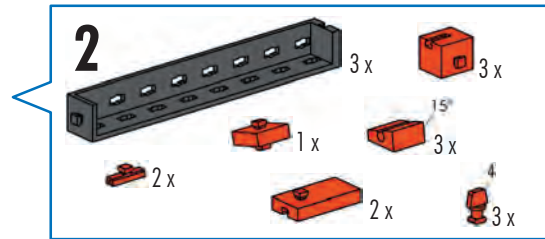
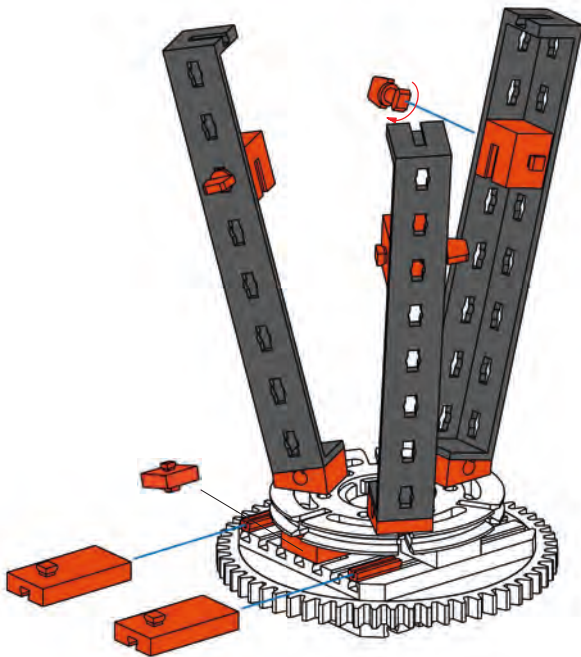
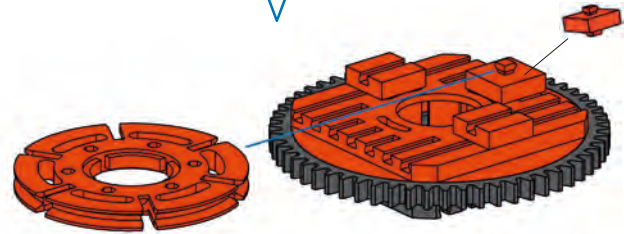


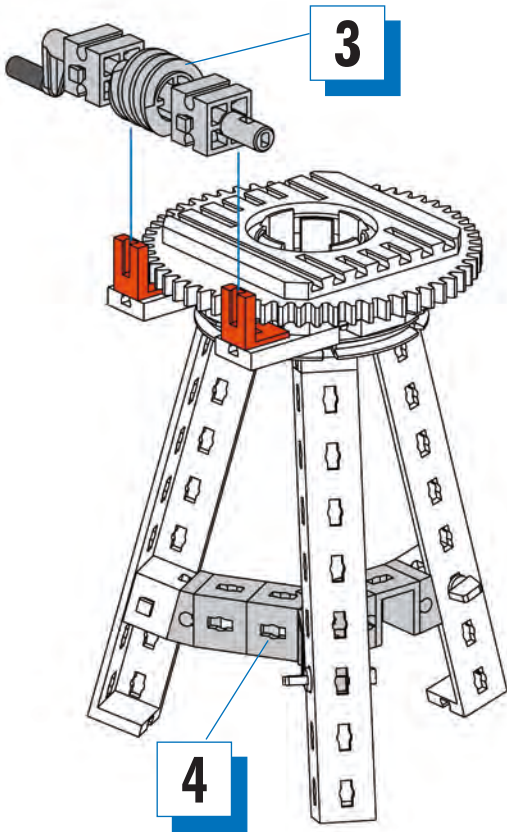


Astronomisches Fernrohr
Astronomical telescope
Télescope astronomique

Telescop
Telescopio astronómico
Telescópio astronômico

Telescopio astronomico
Астрономический
телескоп
天文望远镜



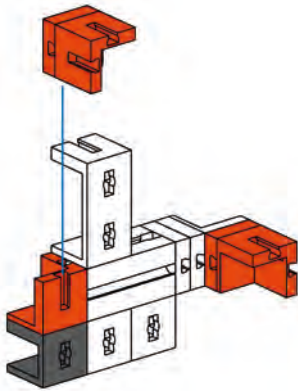
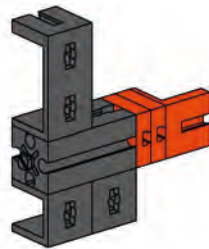


3








4

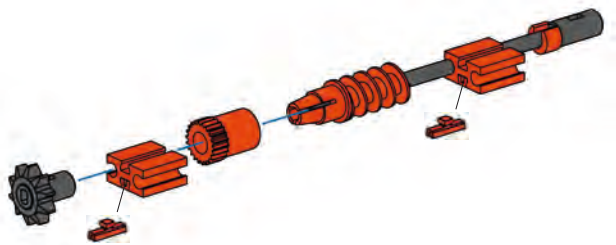
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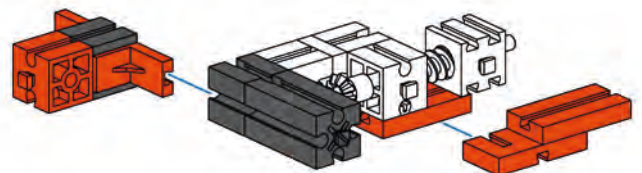
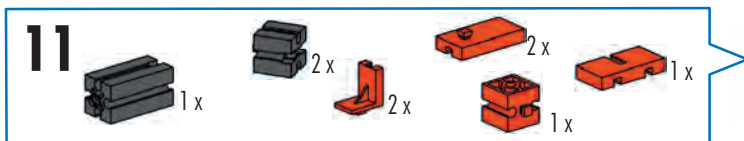
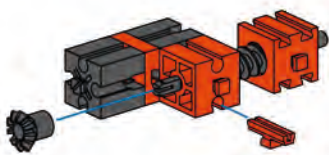
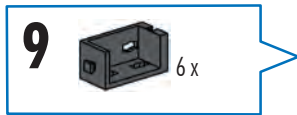
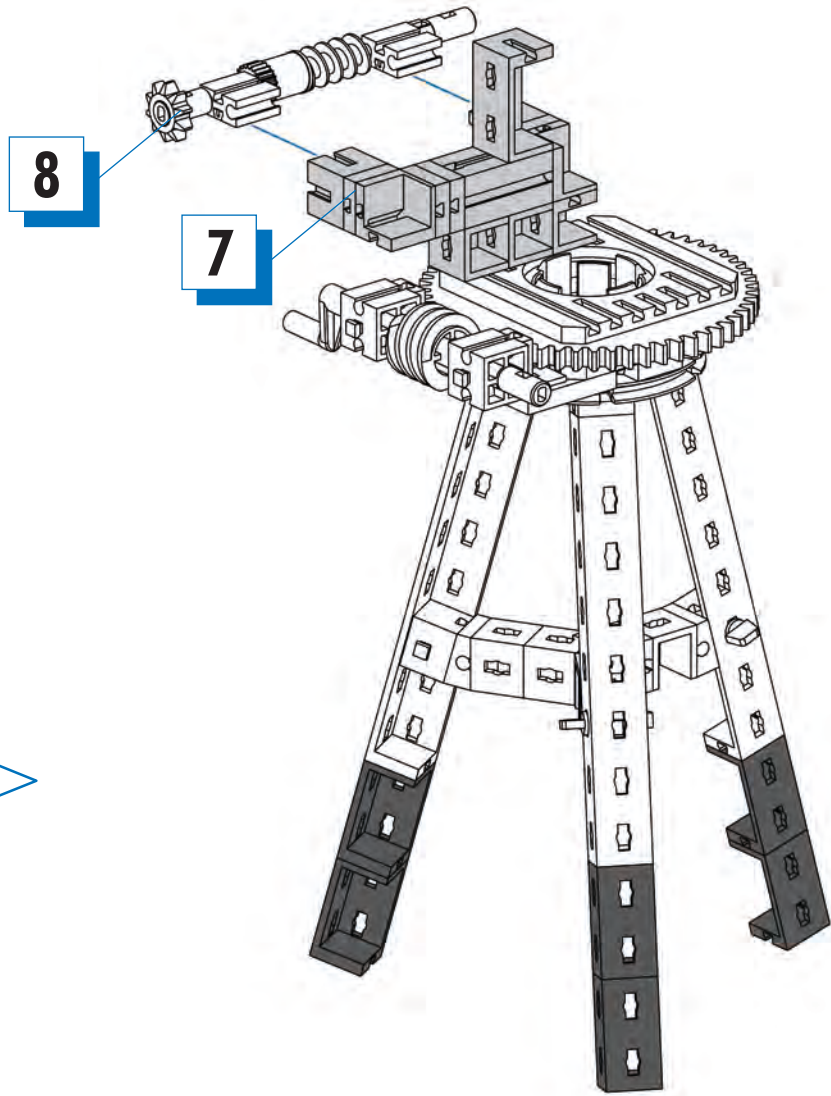
6  1x  1x  2x  2x  1x

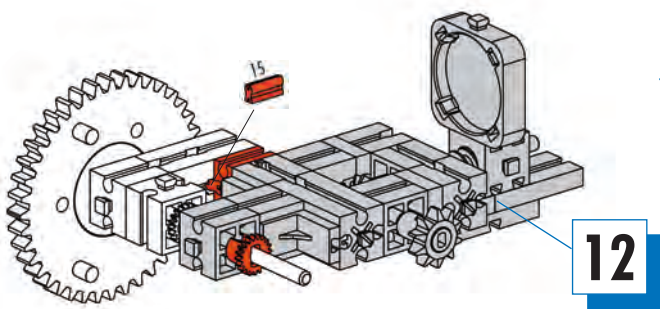
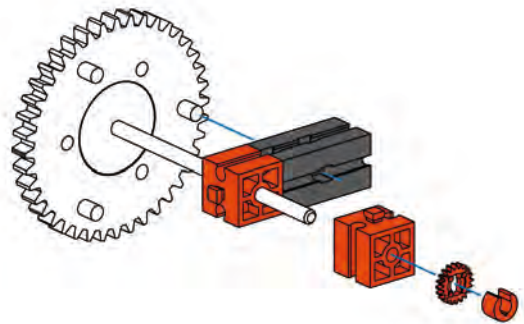
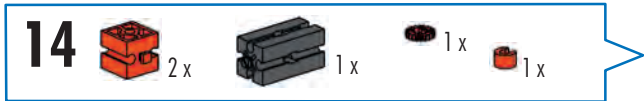
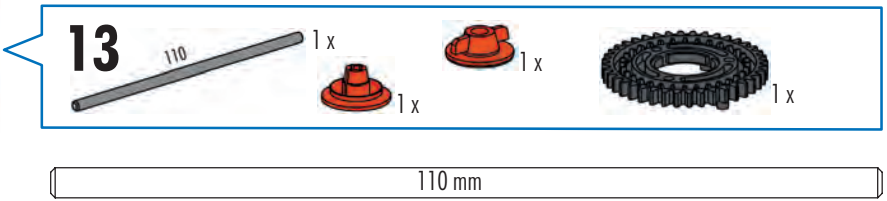
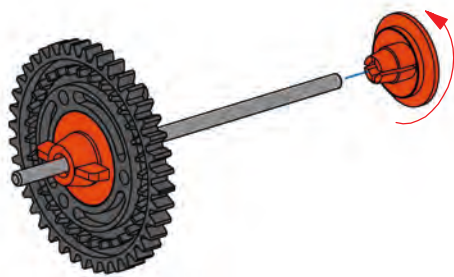
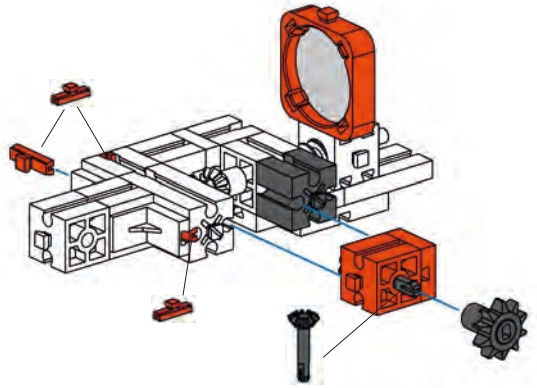
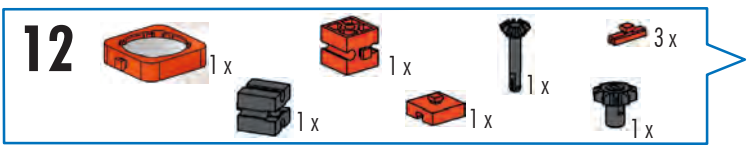


7  3x  2x  1x

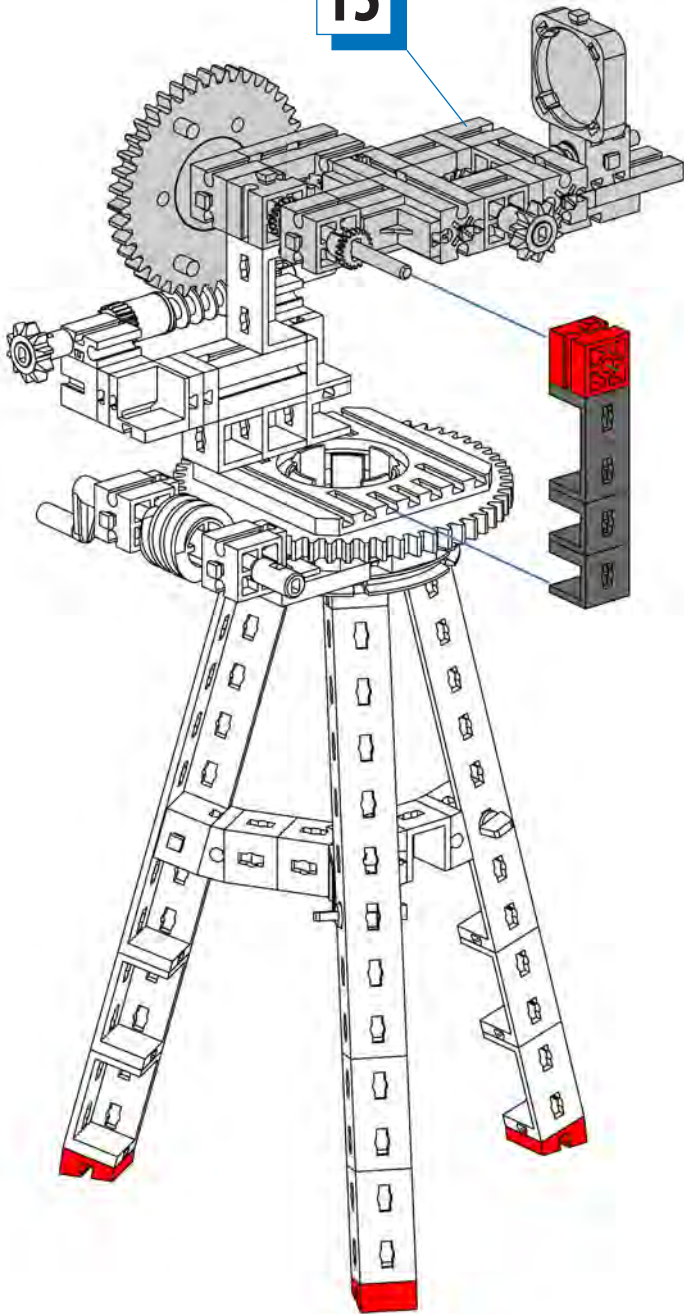
8  90 1x  2x  1x  1x  2x  1x  1x







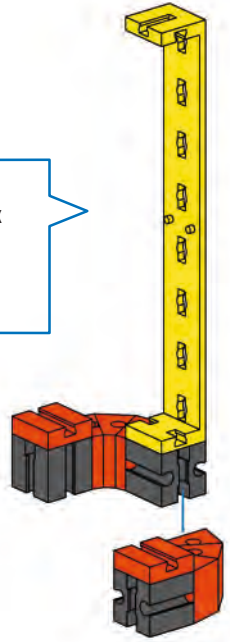
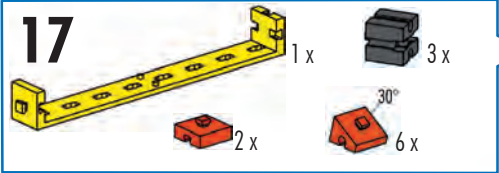
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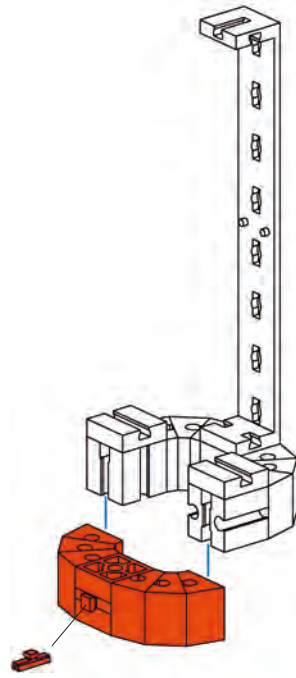
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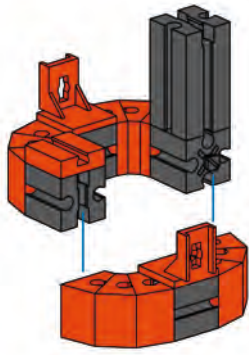


17



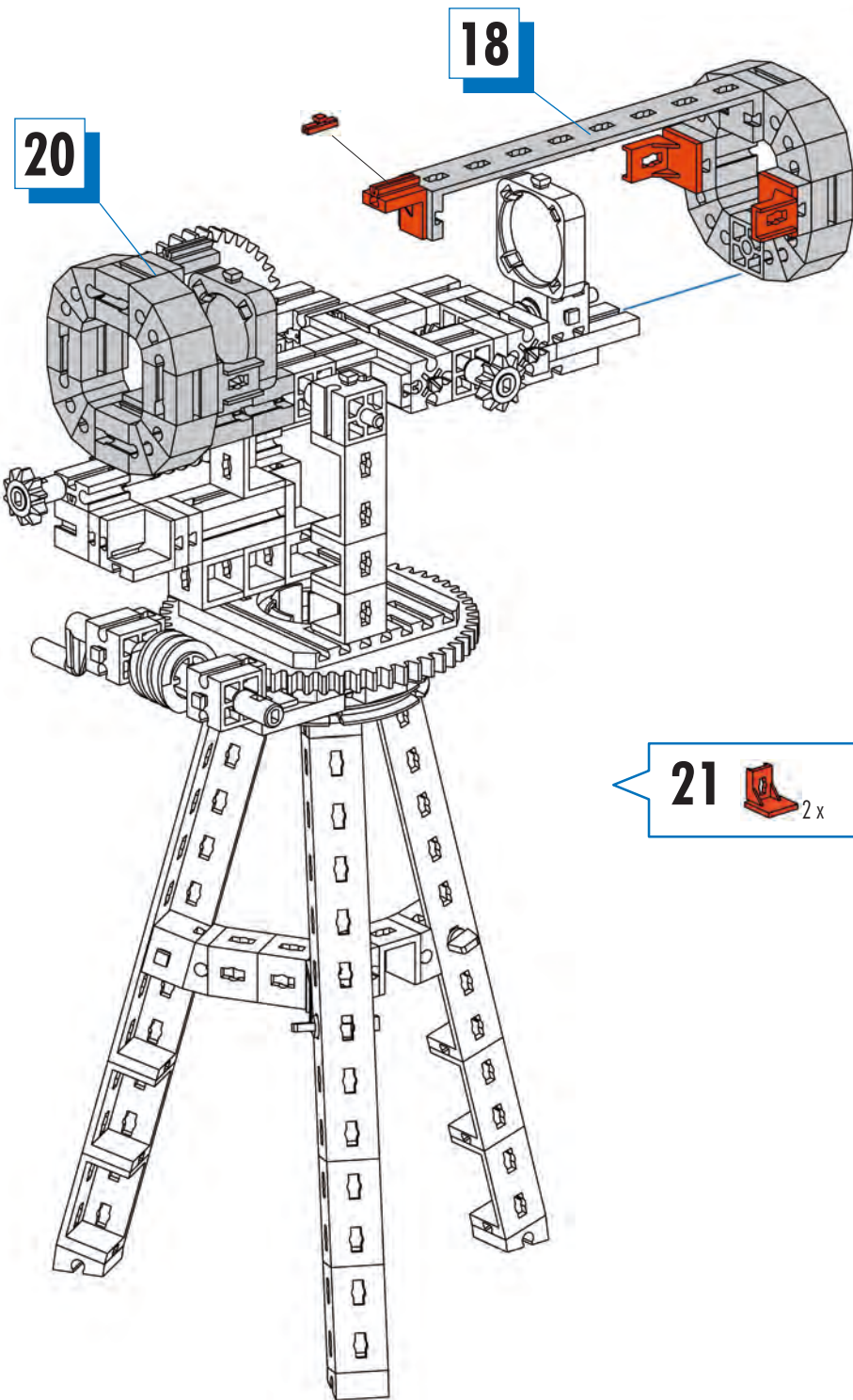
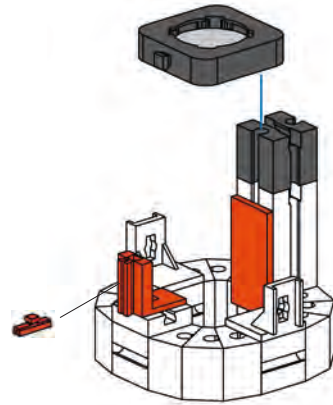
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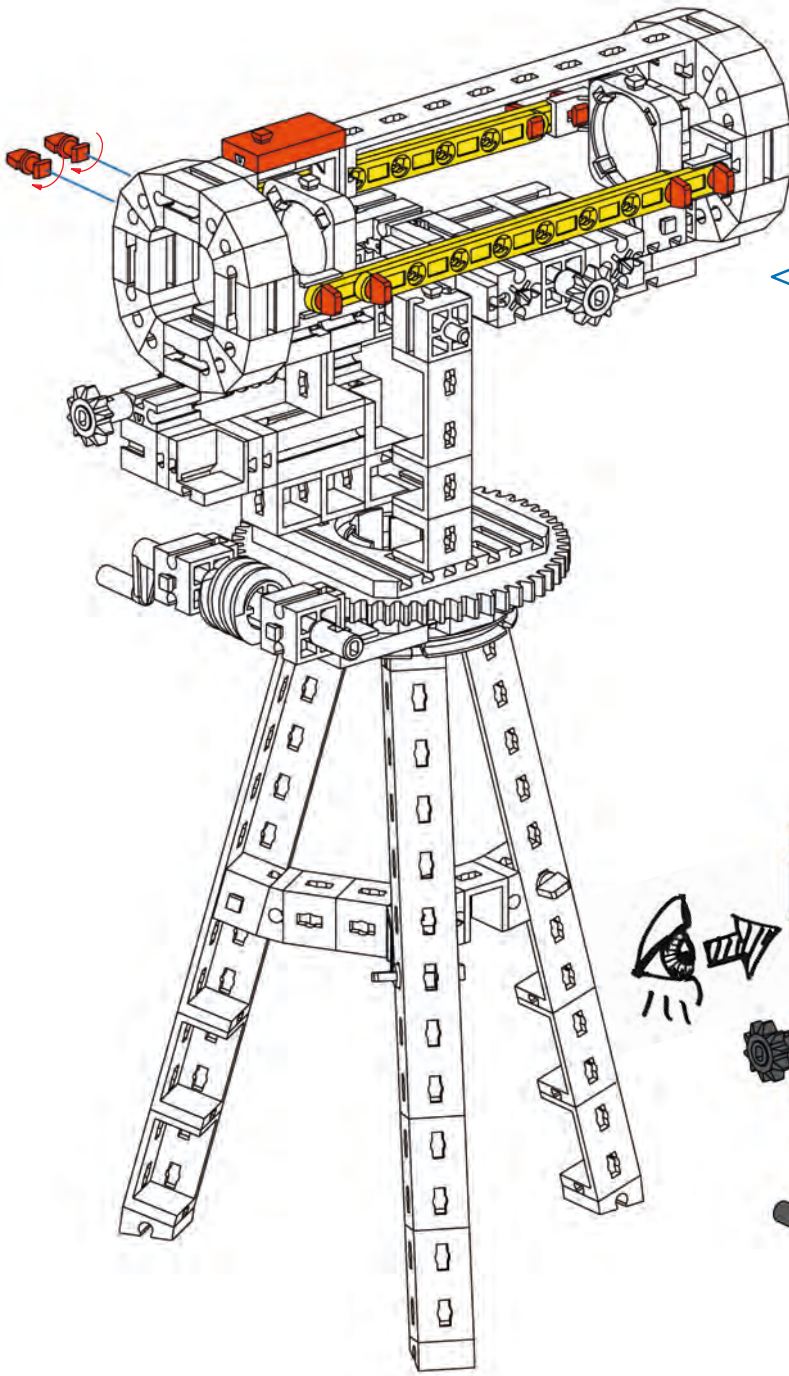


19  1x  4x  12x  2x  1x

20  1x  1x  1x  1x  1x

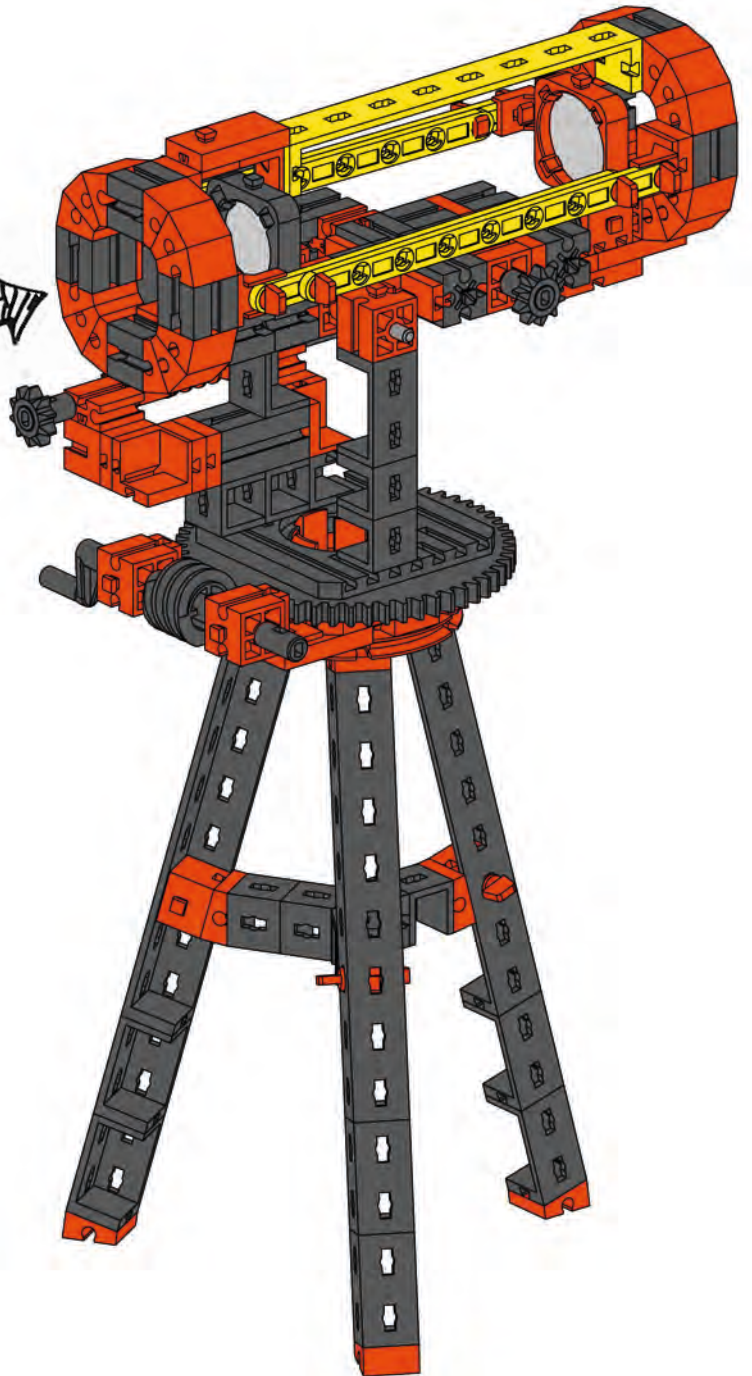


21  2x  1x  1x



22

	4 x		8 x		1 x
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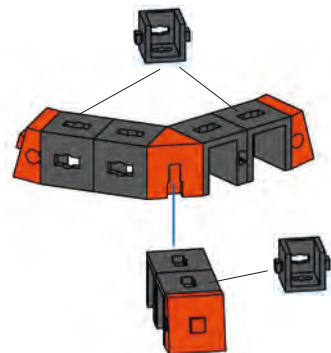
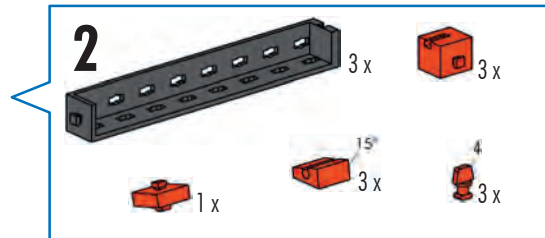
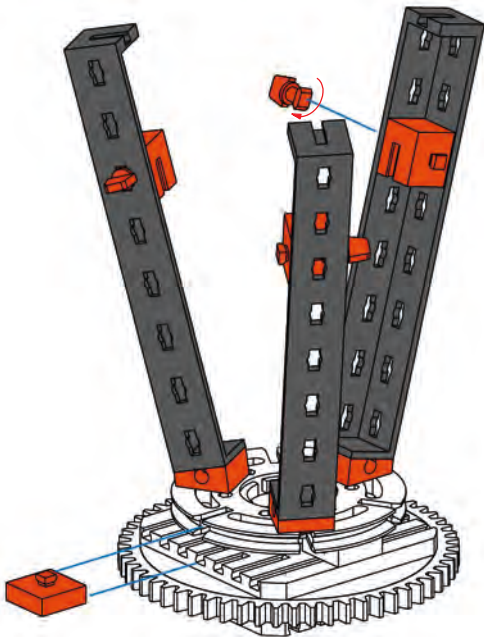
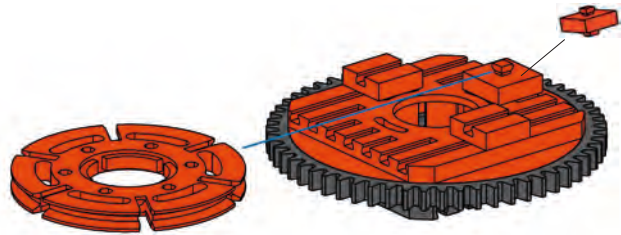


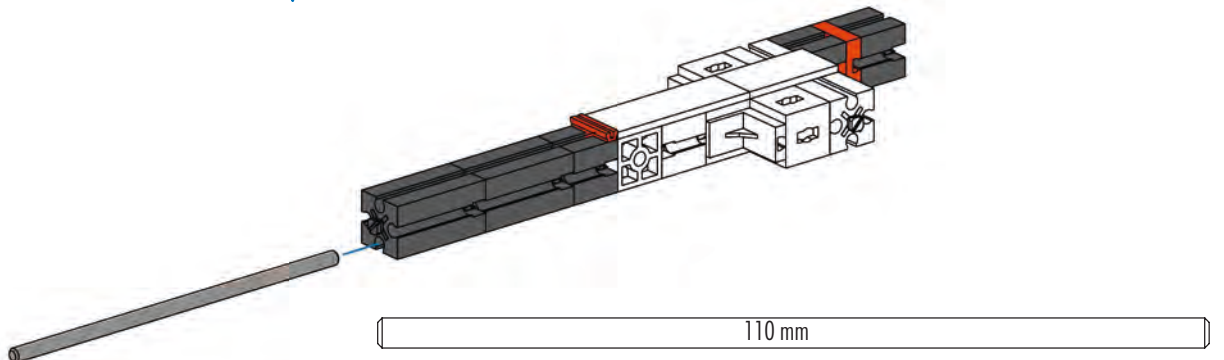
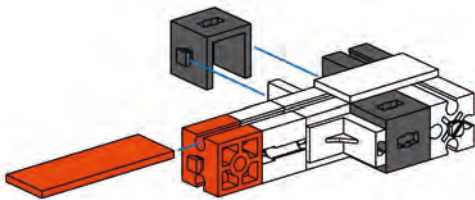
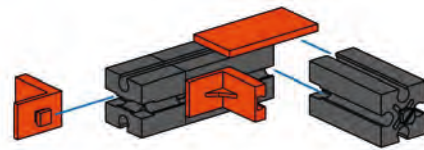
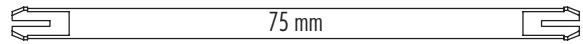
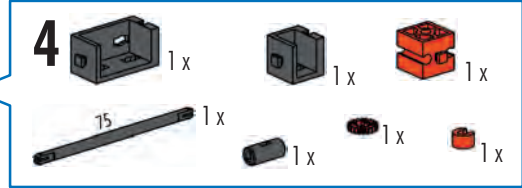
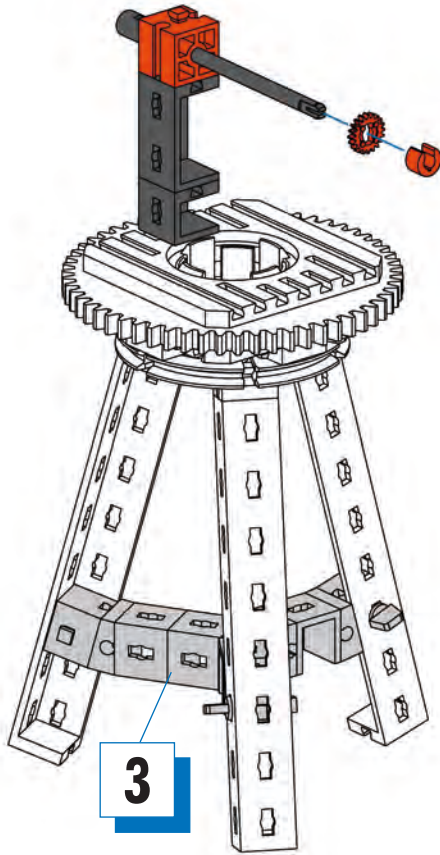


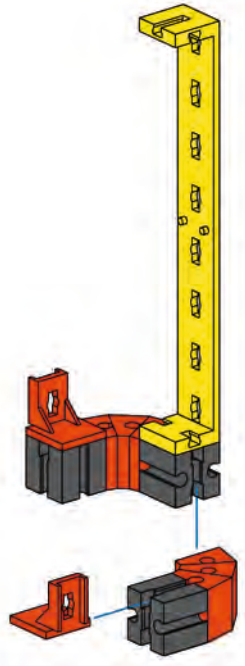
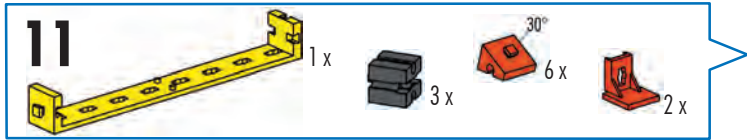
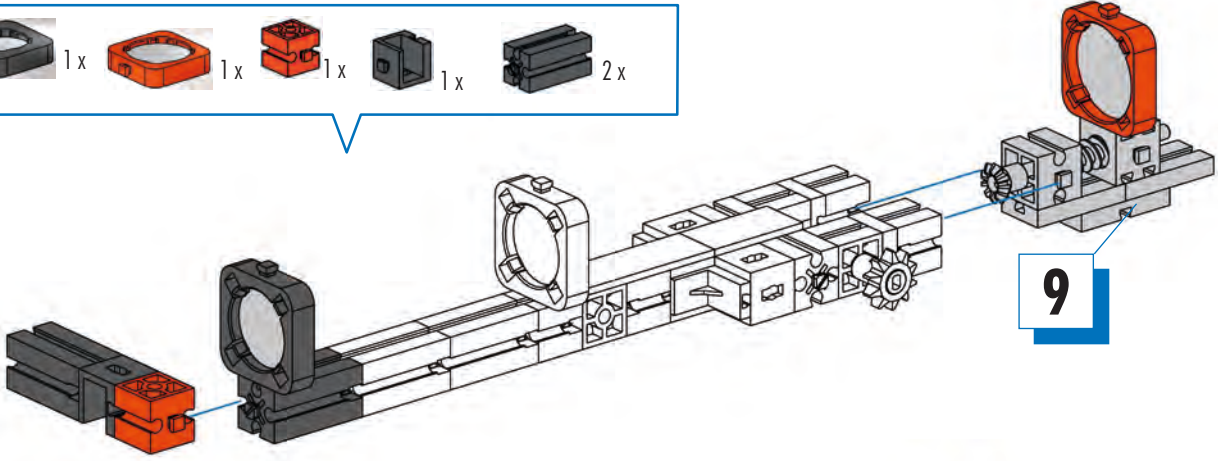
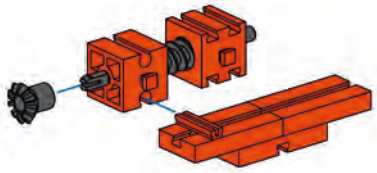
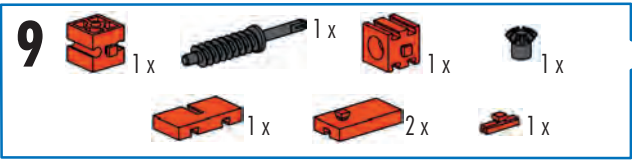
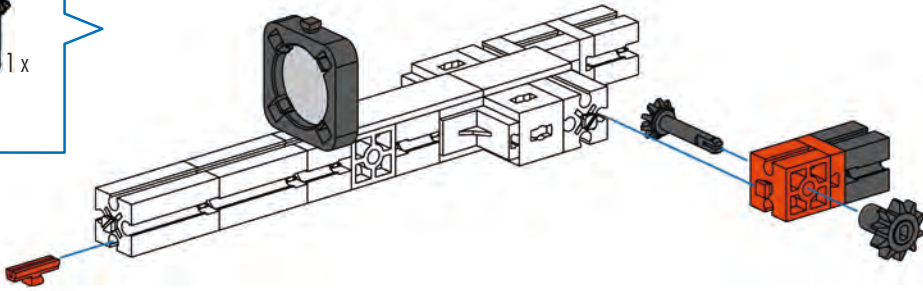
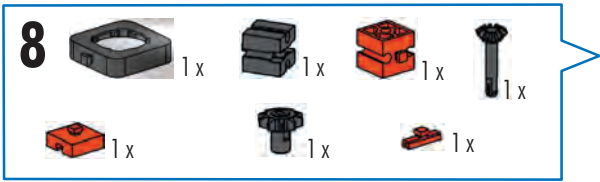
Erdfernrohr
Erecting telescope
Télescope terrestre




Terrestrische telescoop
Telescopio terrestre
Telescópio terrestre

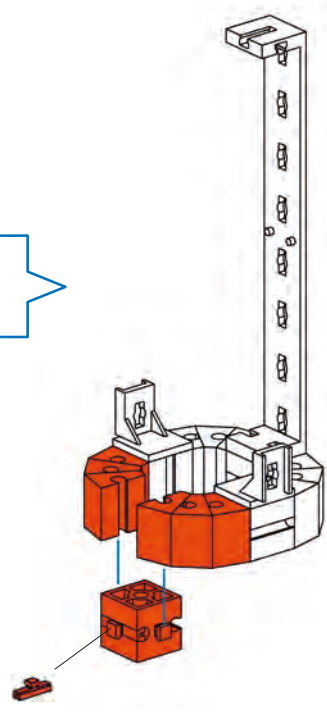
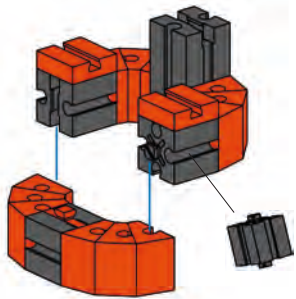
Telescopio terrestre
Подзорная труба
折射望远镜



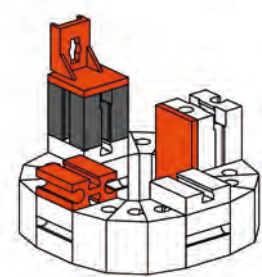
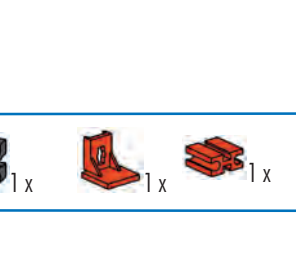




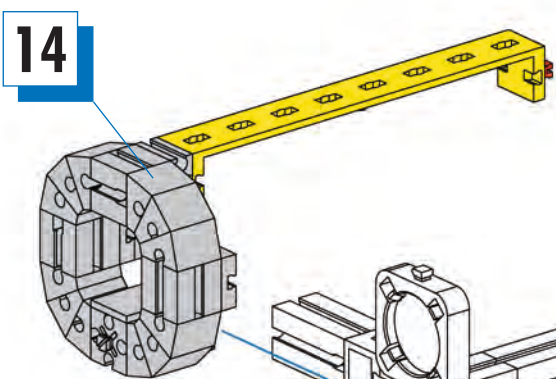
- 12**  1x  1x  6x






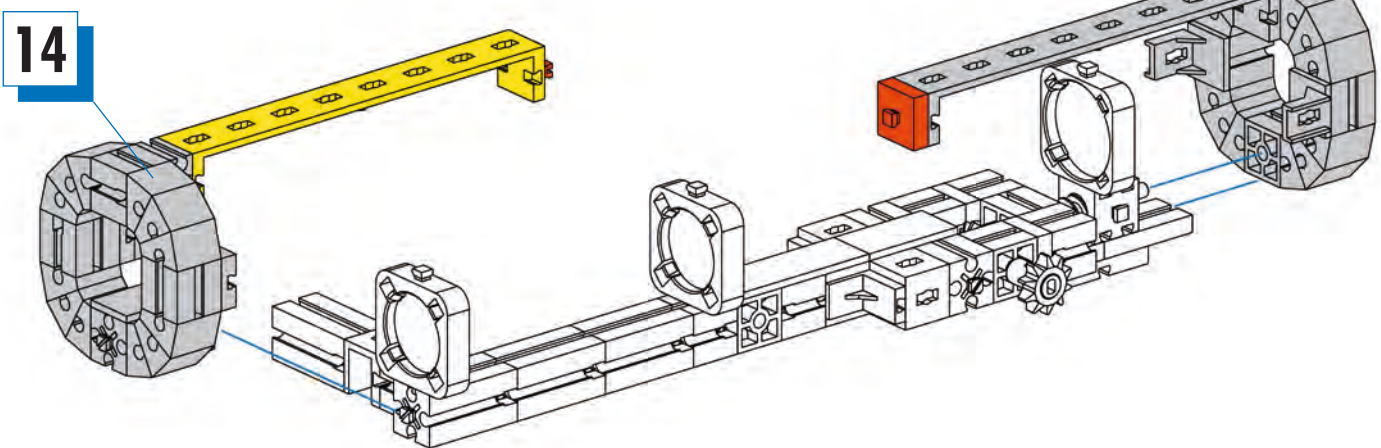
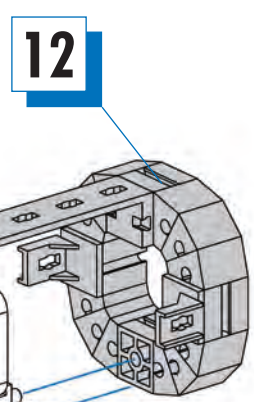
- 13**  1x  2x  1x  12x  2x  1x



- 14**  1x  1x  1x  1x



- 15**  1x  1x  1x



16



7x



1x



3x



1x



1x



1x



120

4x



1x



1x



1x

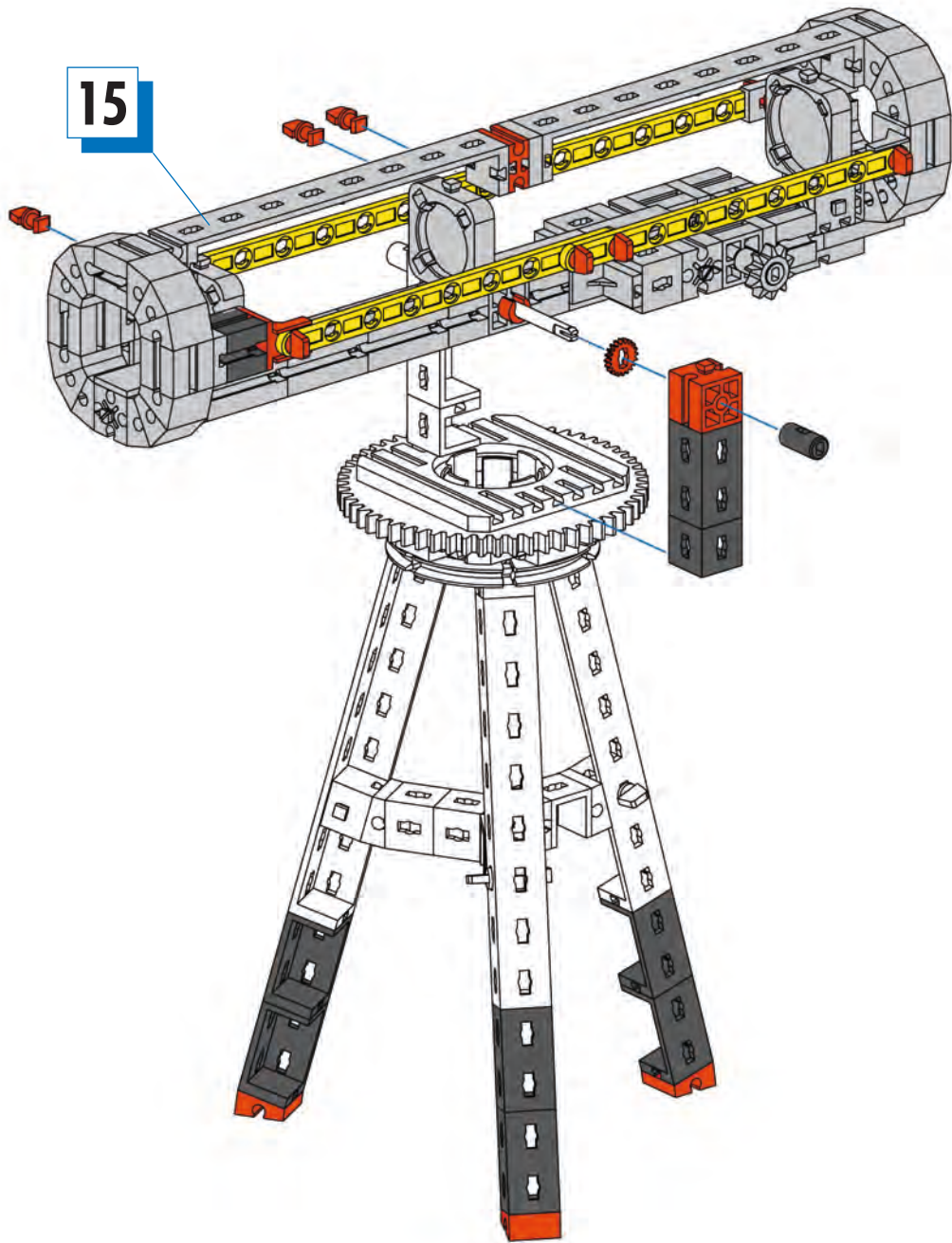


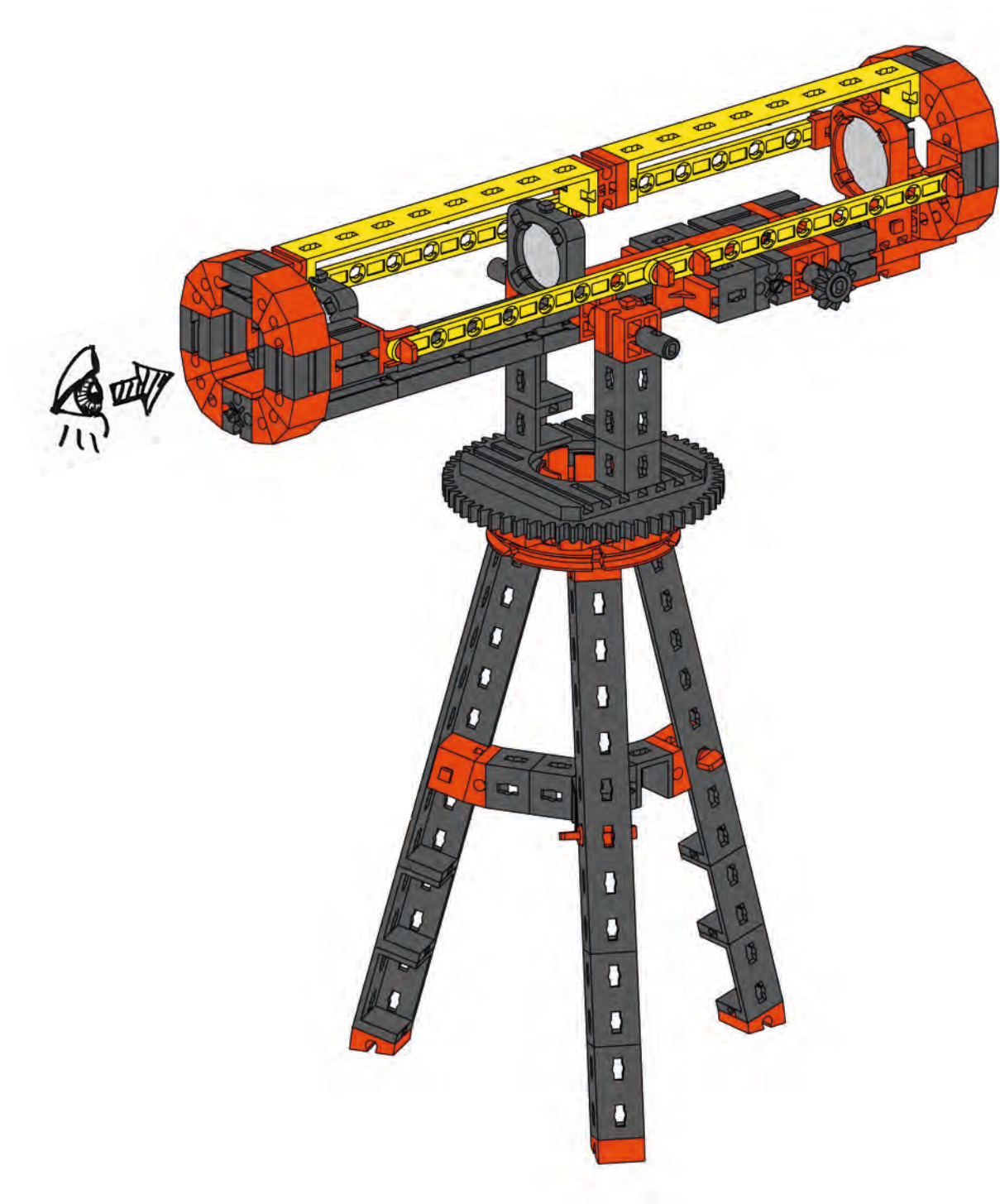
1x

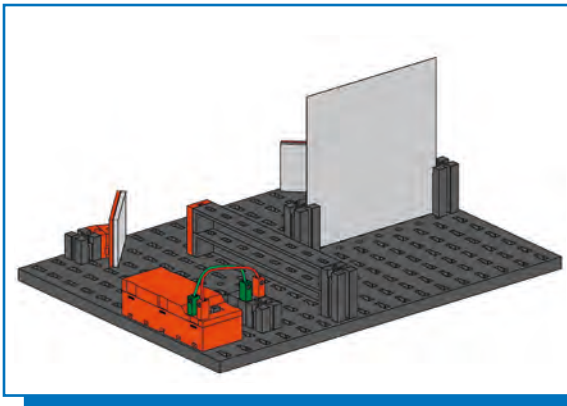


8x

15



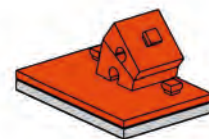
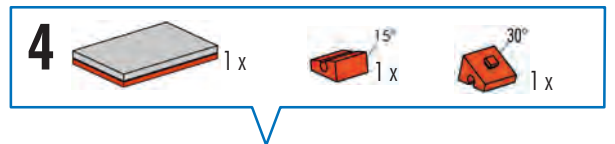
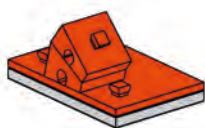
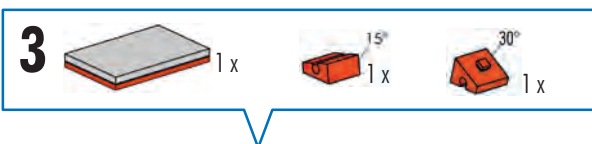
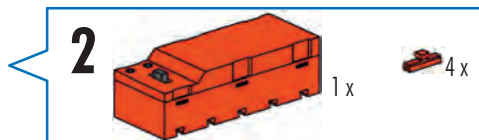
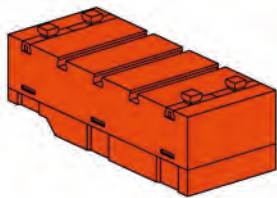
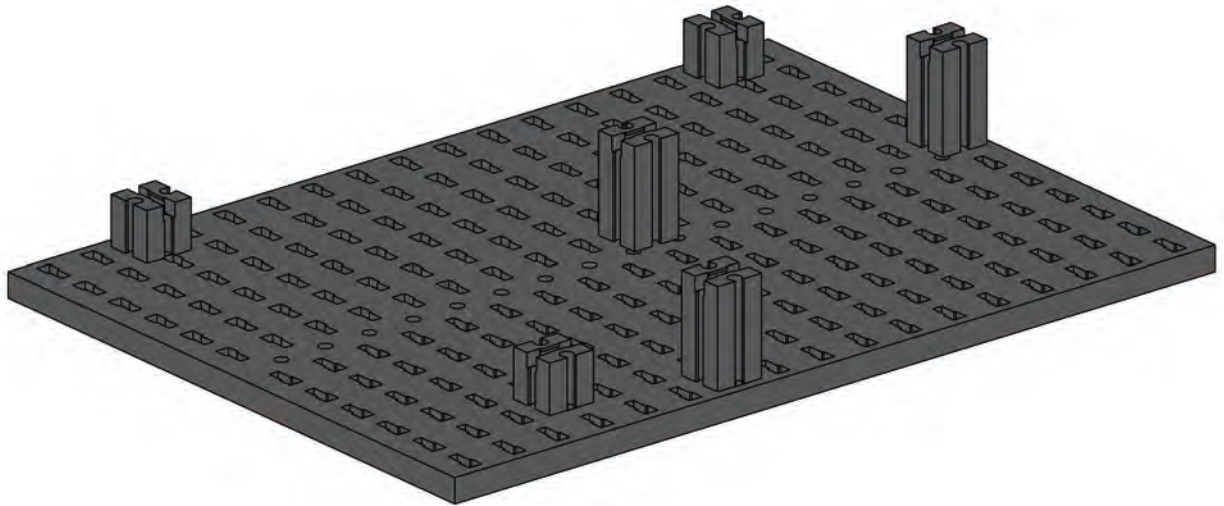
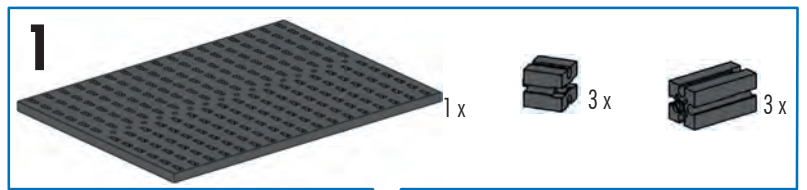


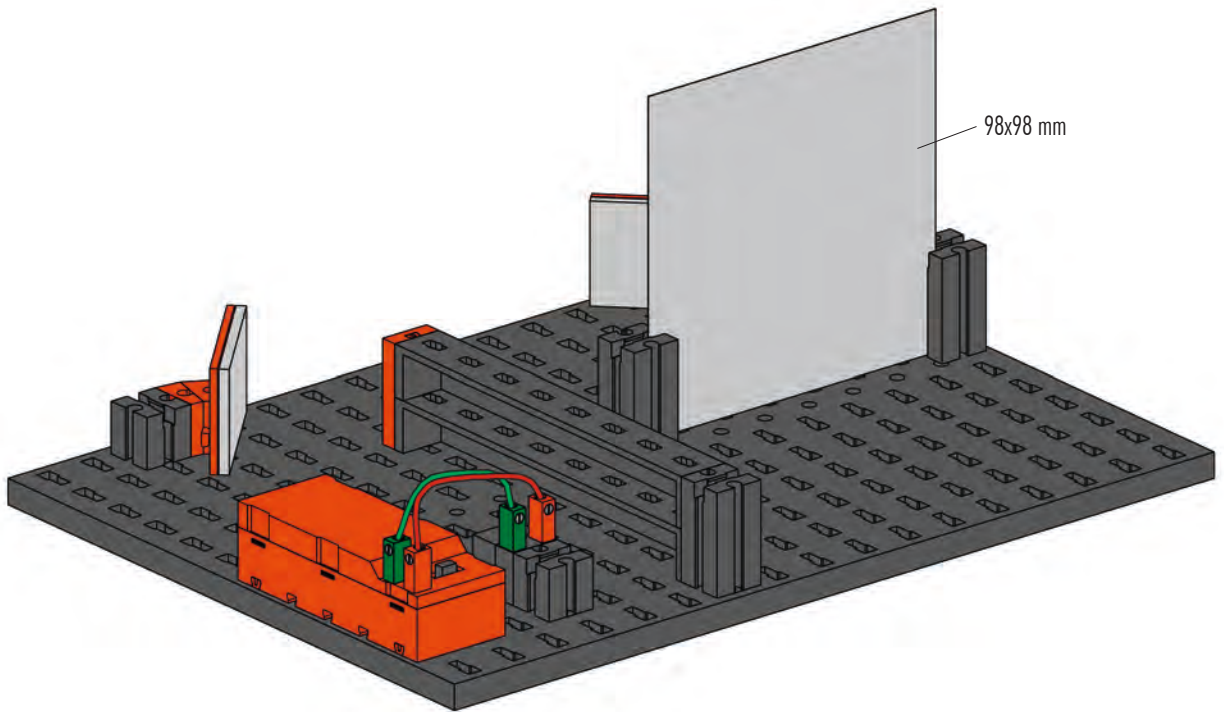
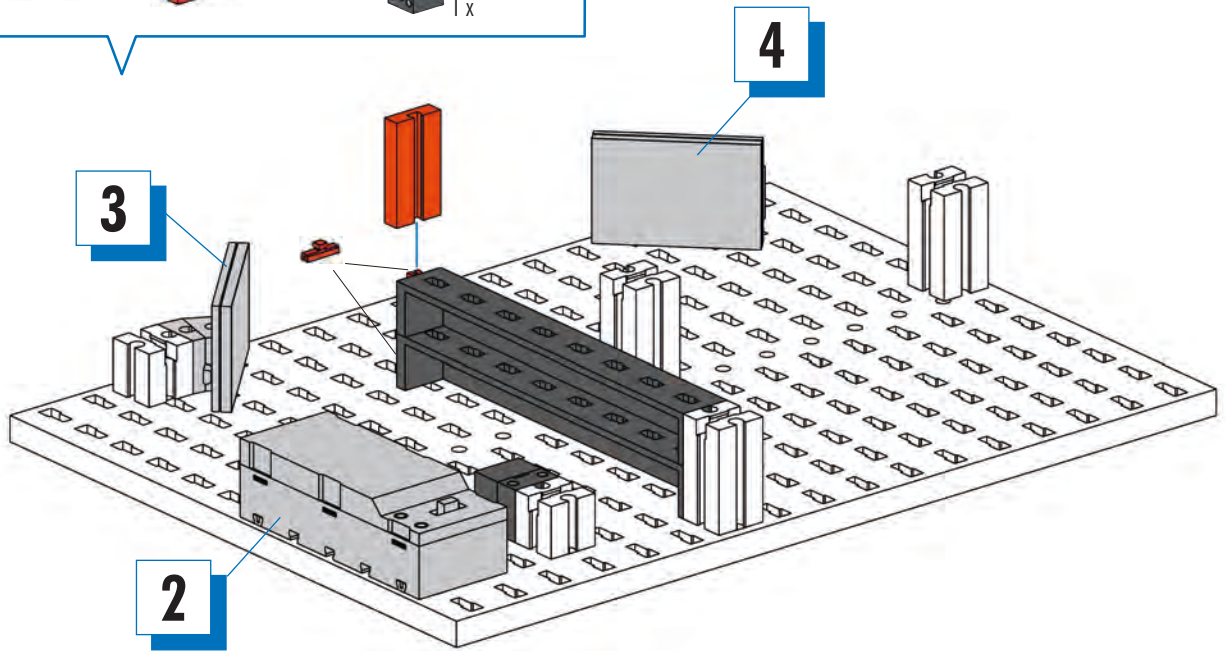
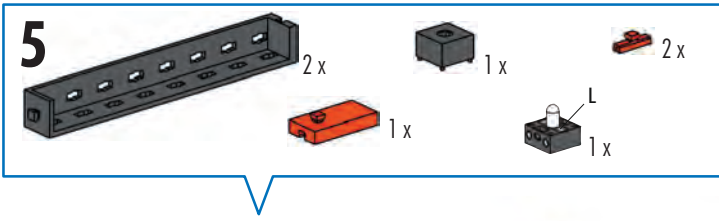


Spiegelparcours
Mirror course
Parcours à miroir

Spiegelparcours
Pista de recorrido de
espejo
Percurso de espelhos

Percorso specchio
Зеркальный маршрут
镜子障碍物跑道

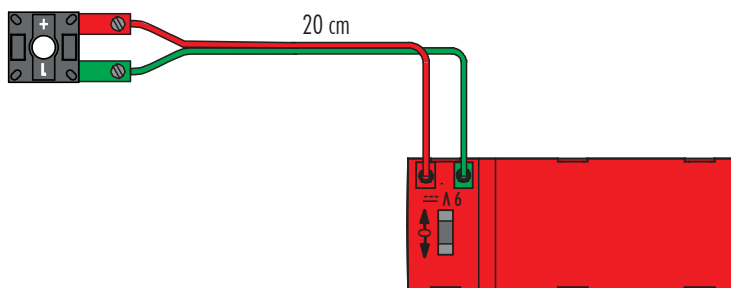




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电路图

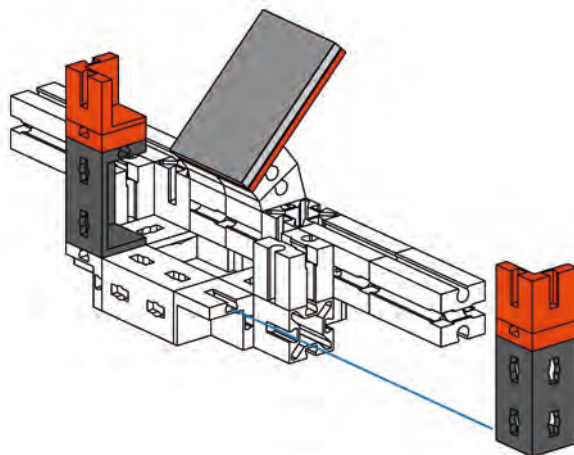
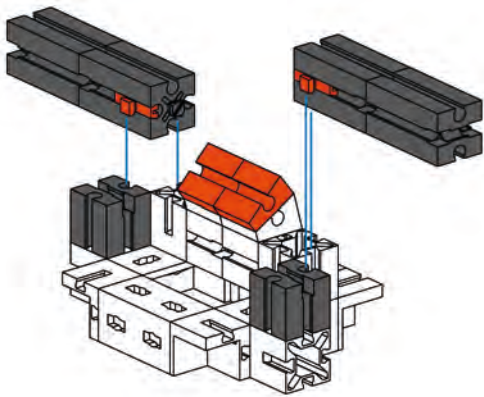
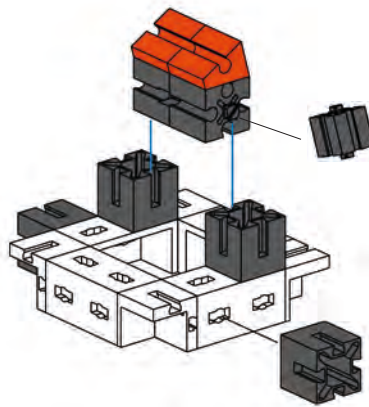
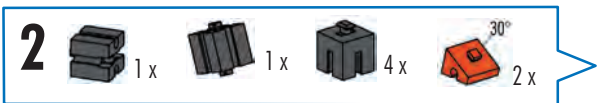
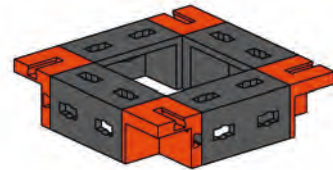
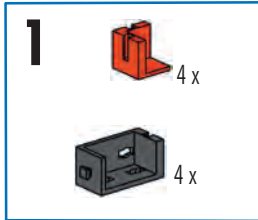







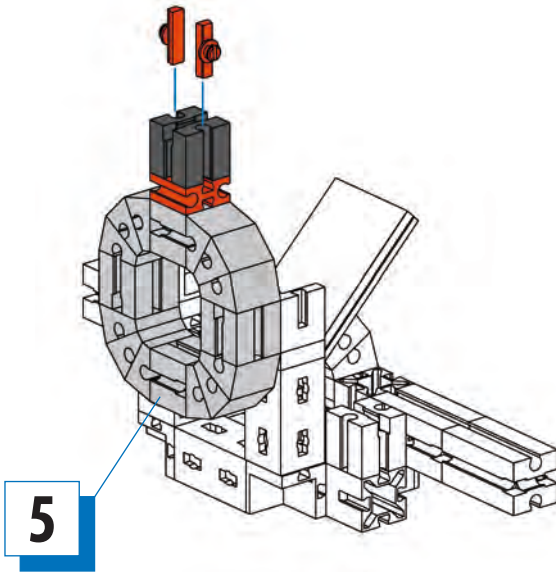
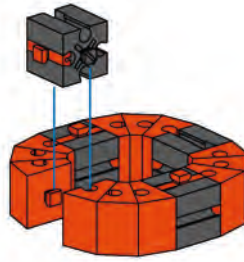
Periskop
Periscope
Périscop

Periscoop
Periscopio
Periscópio







Periscopio
Перископ
潜望镜

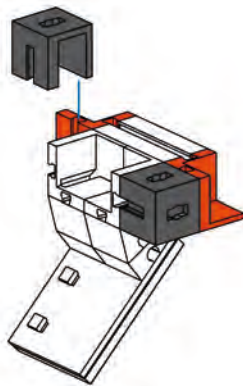
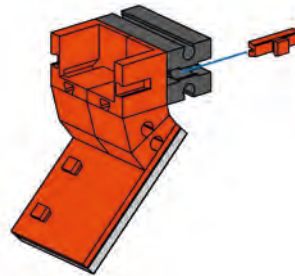




- 5**  4 x  12 x  3 x



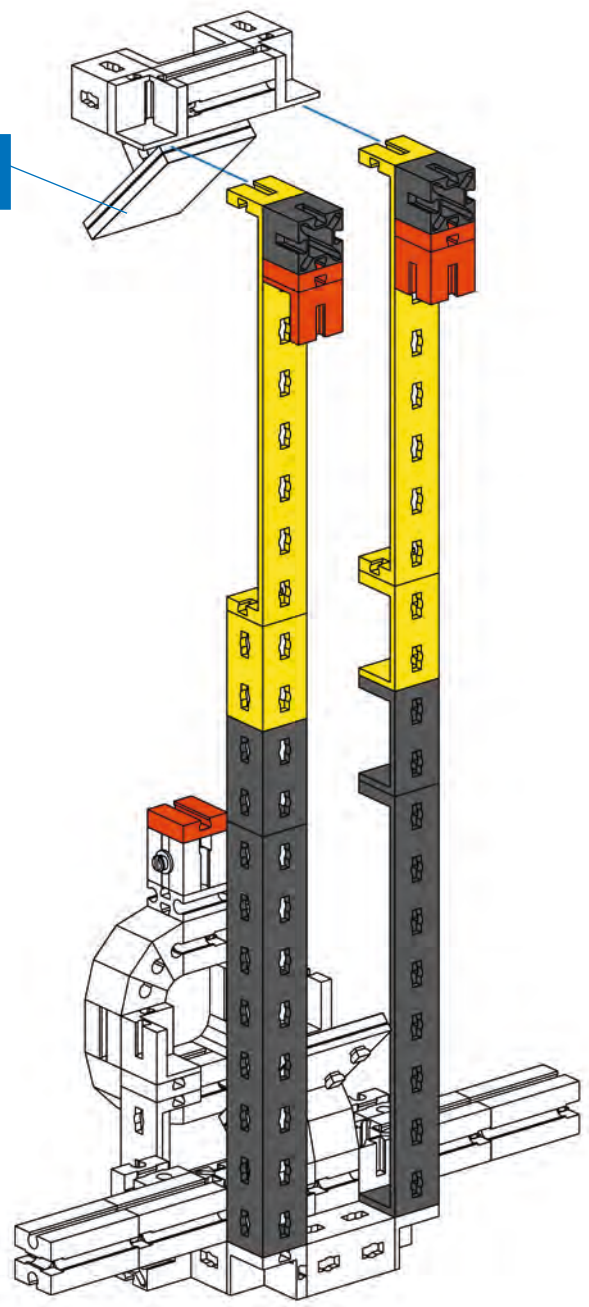
- 6**  1 x  1 x  2 x

- 7**  1 x  2 x  1 x
 2 x  2 x  1 x

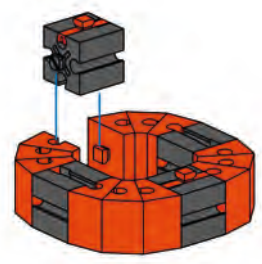
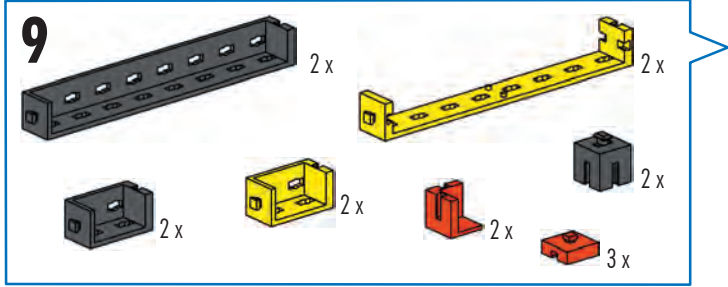


- 8**  2 x  2 x

8



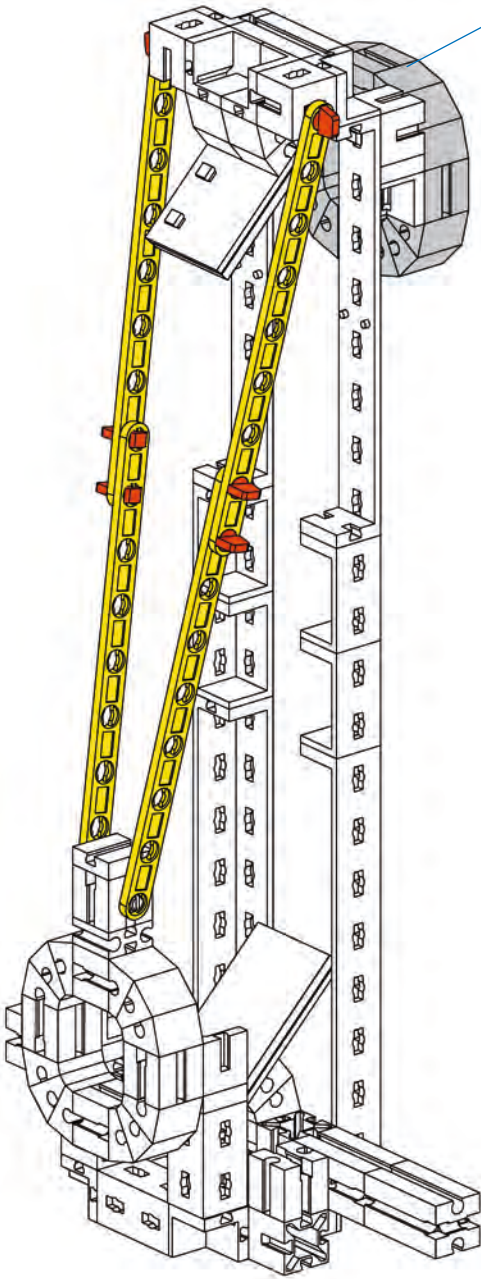
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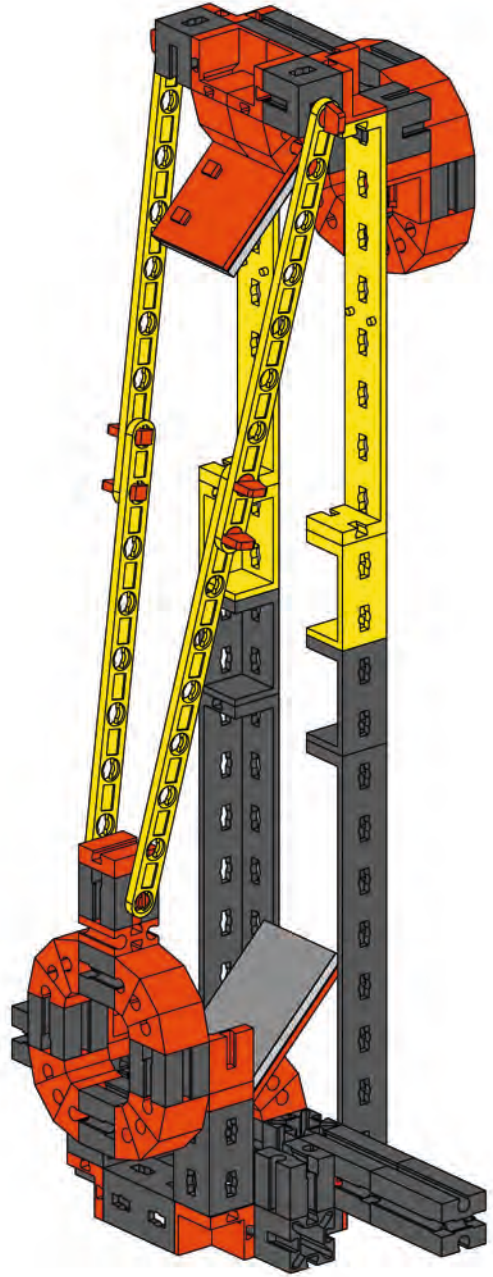
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10



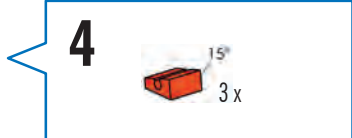
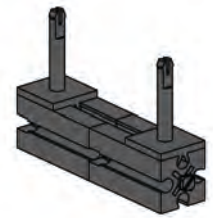
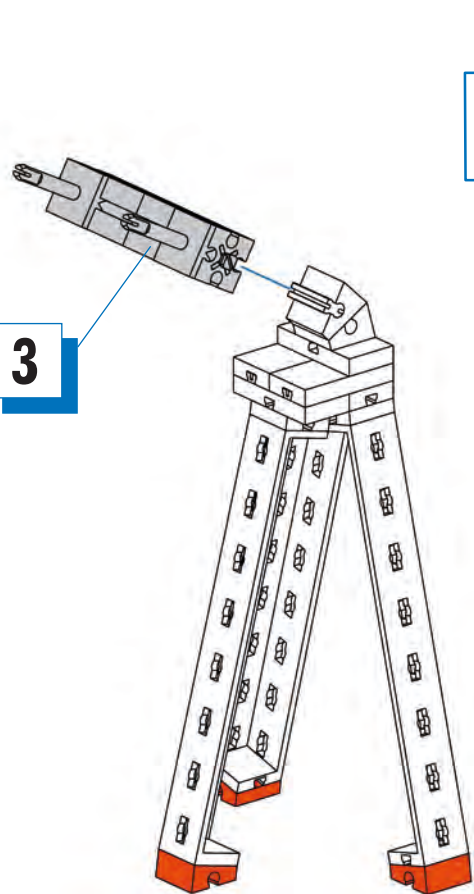
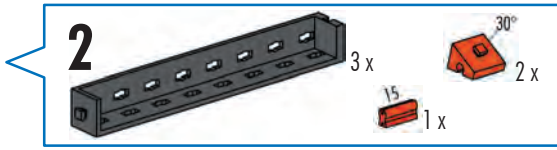
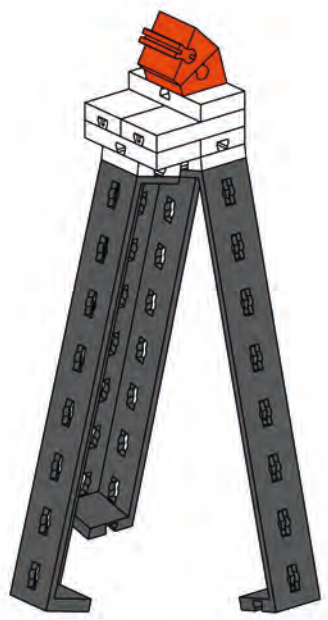
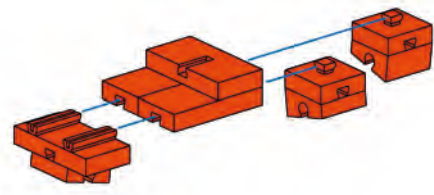
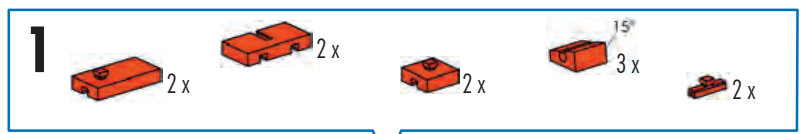
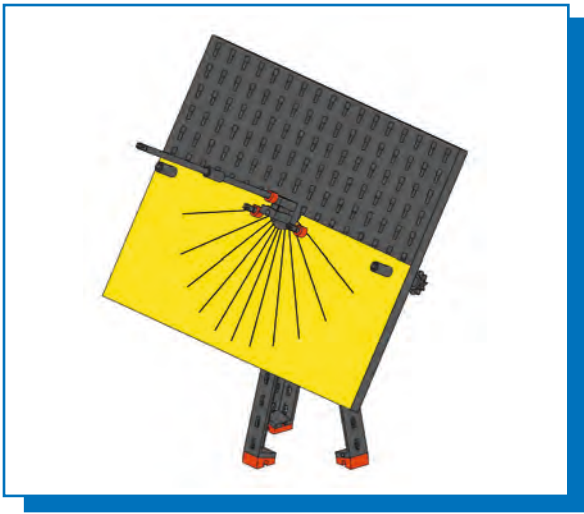
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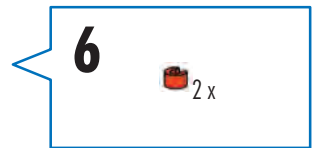
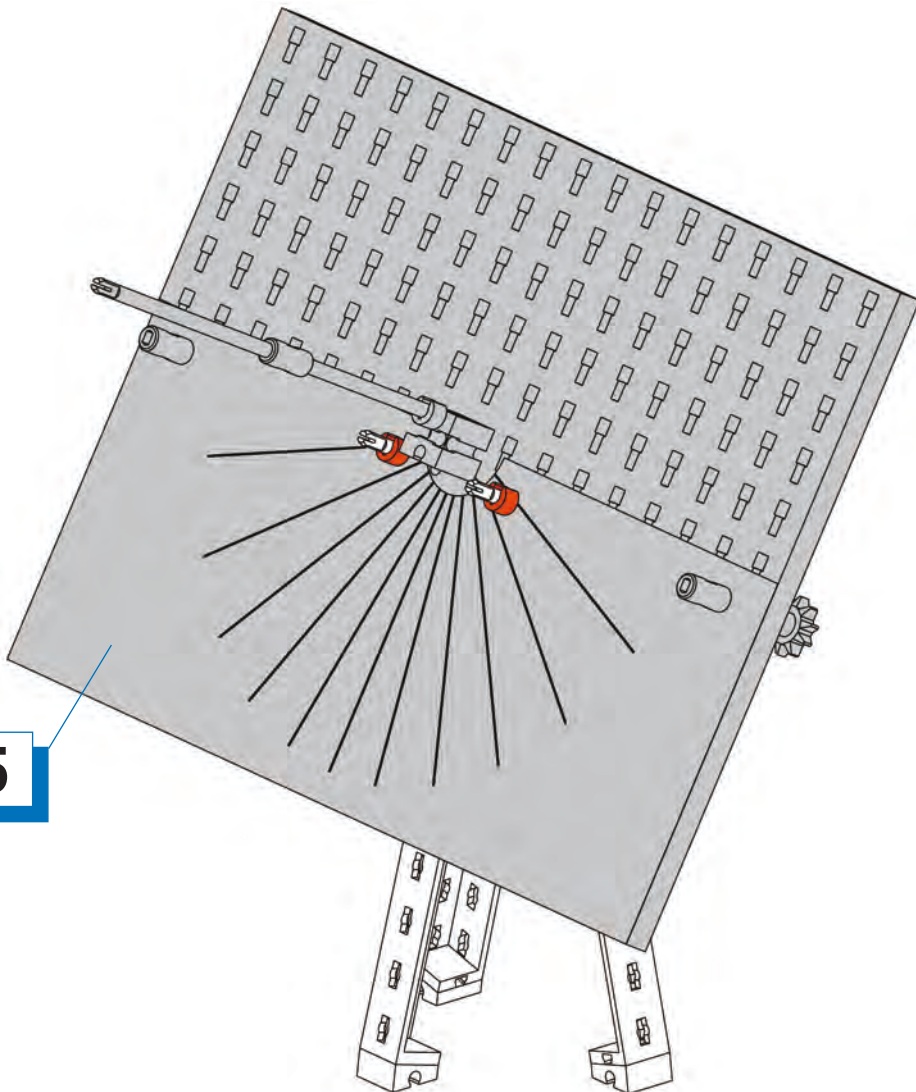
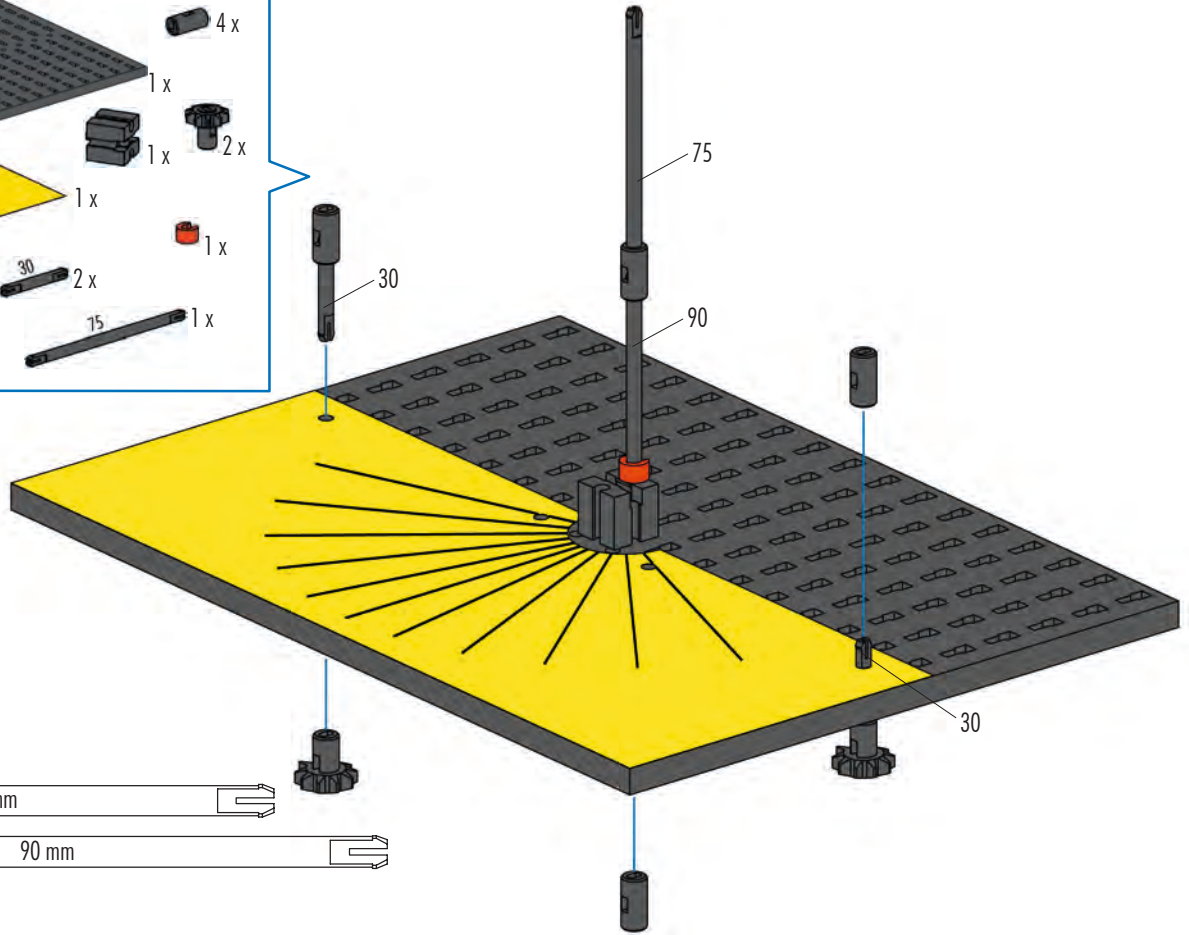
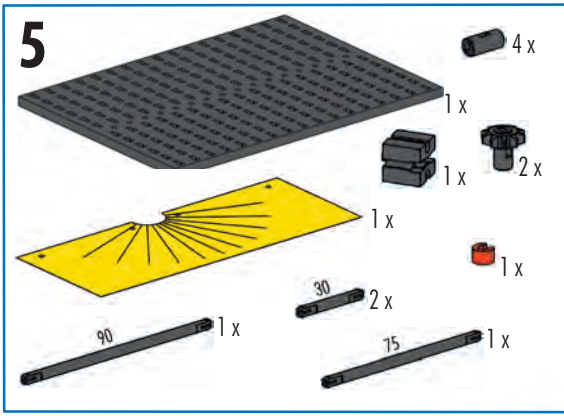


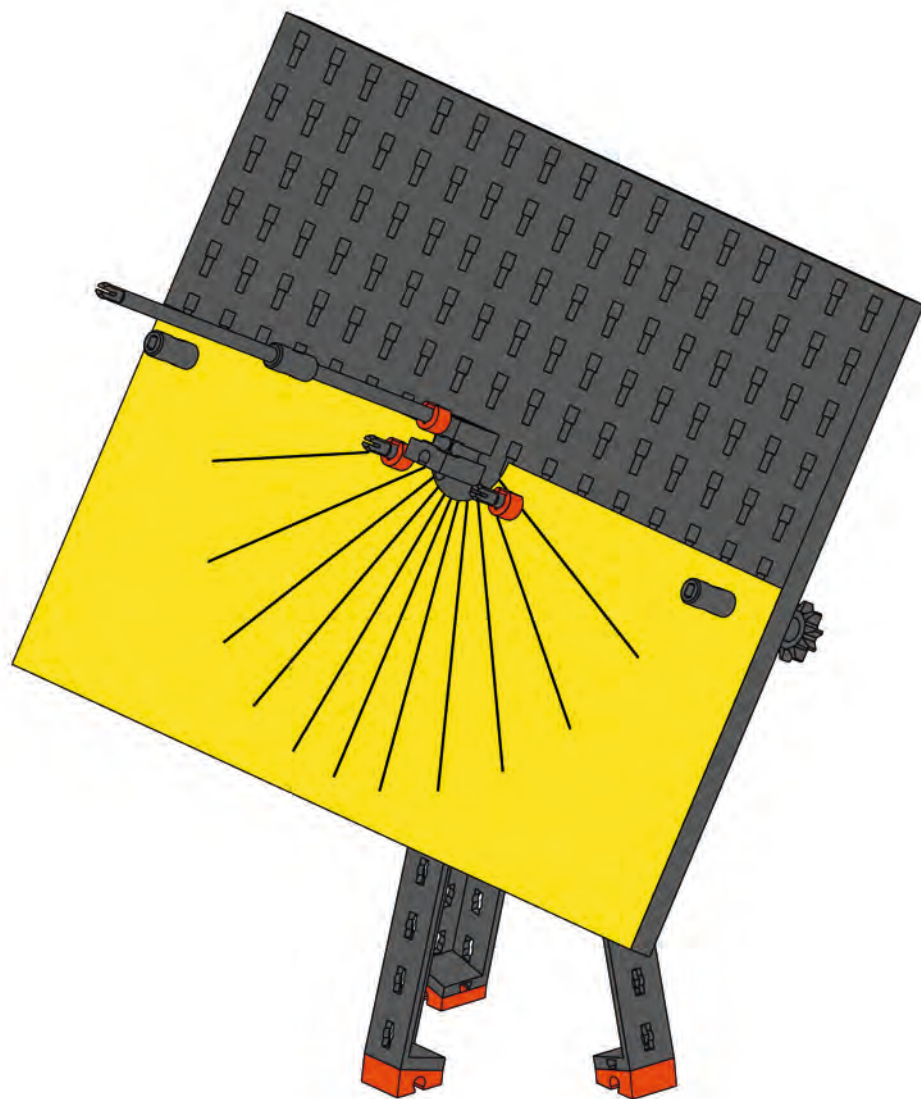
Sonnenuhr
Sun dial
Cadran solaire

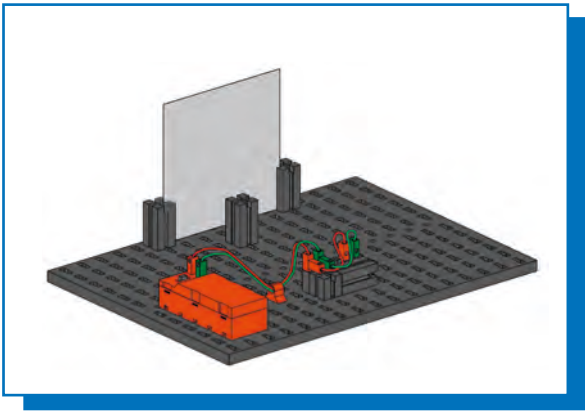
Zonnewijzer
Reloj de sol
Relógio de sol

Meridiana
Солнечные часы
日规





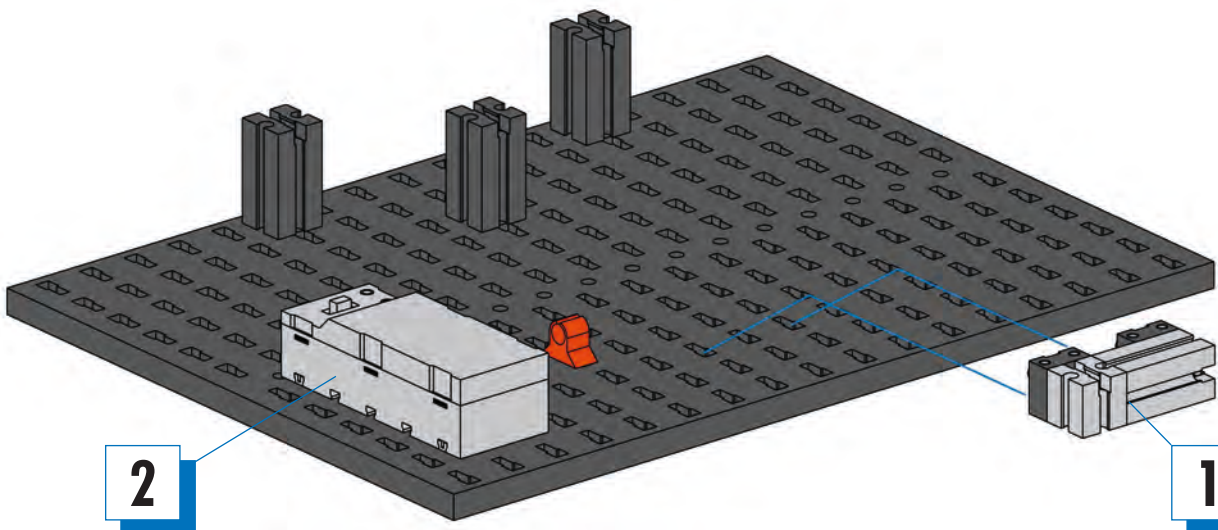
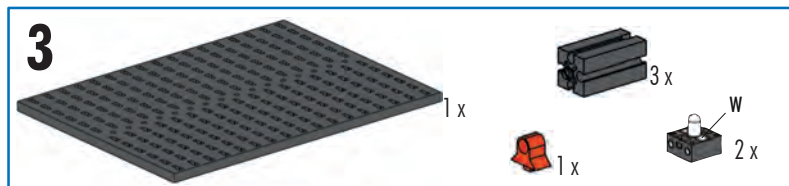
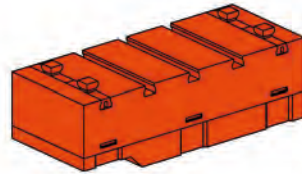
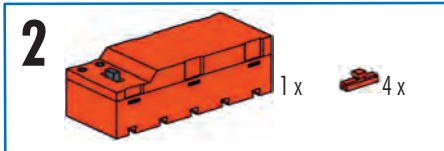
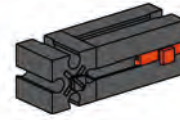


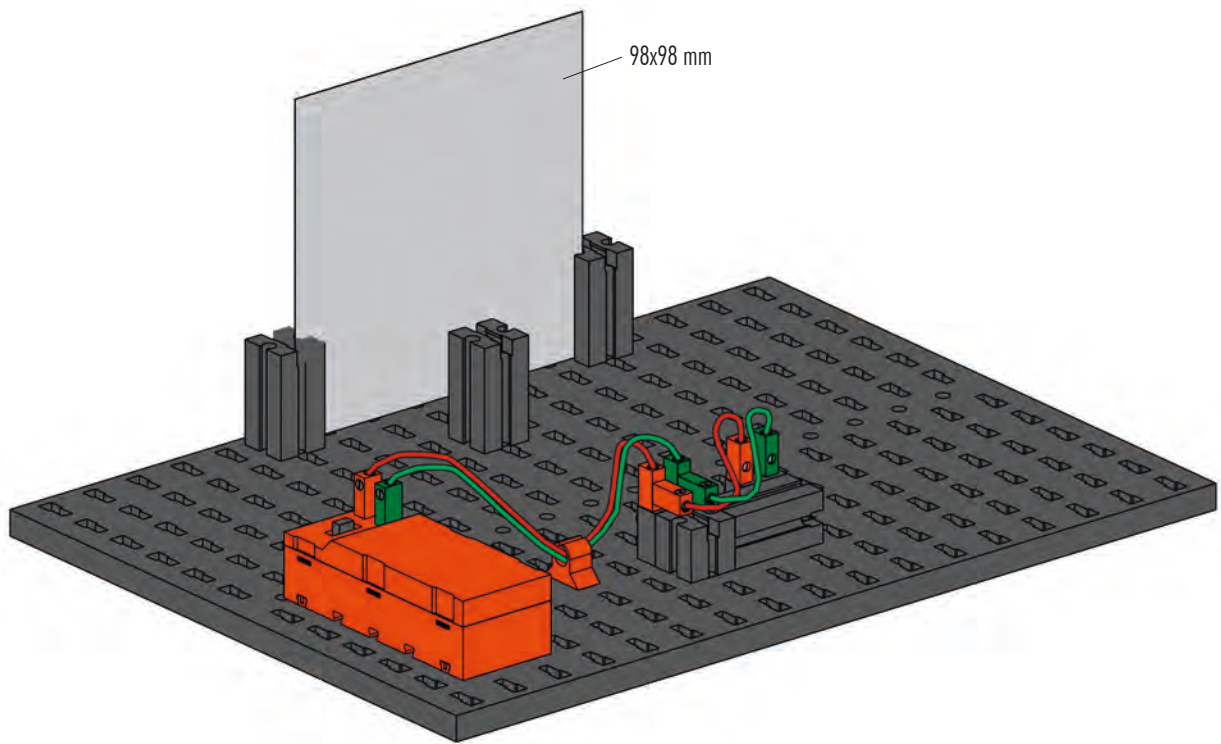


Halb- und Kernschatten
Partial and full shade
Ombre pure et
pénombre

Half- en kernschaduw
Semisombra y sombra
absoluta
Penumbra e umbra

Ombra e penombra
Полутени и полные
тени
半影和本影

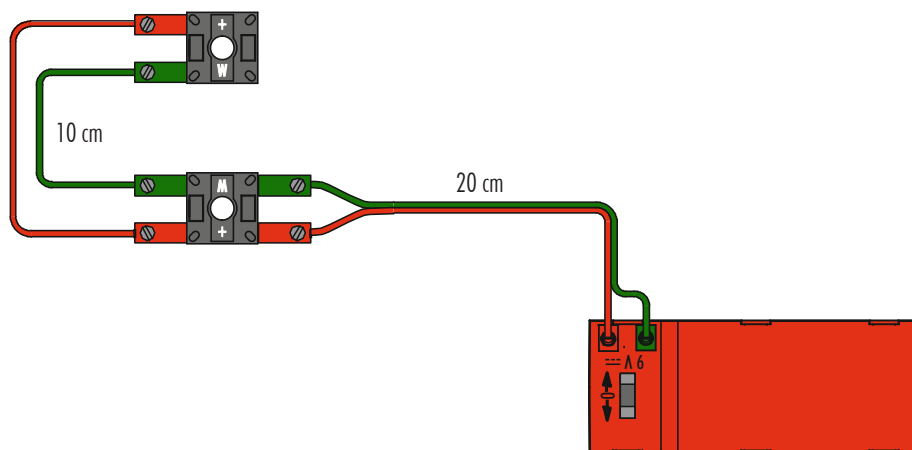




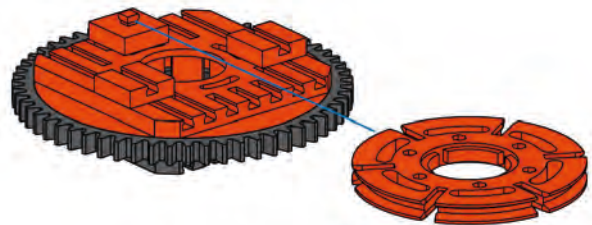
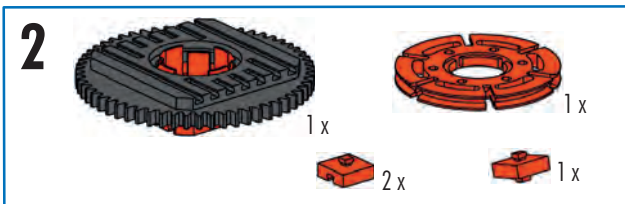
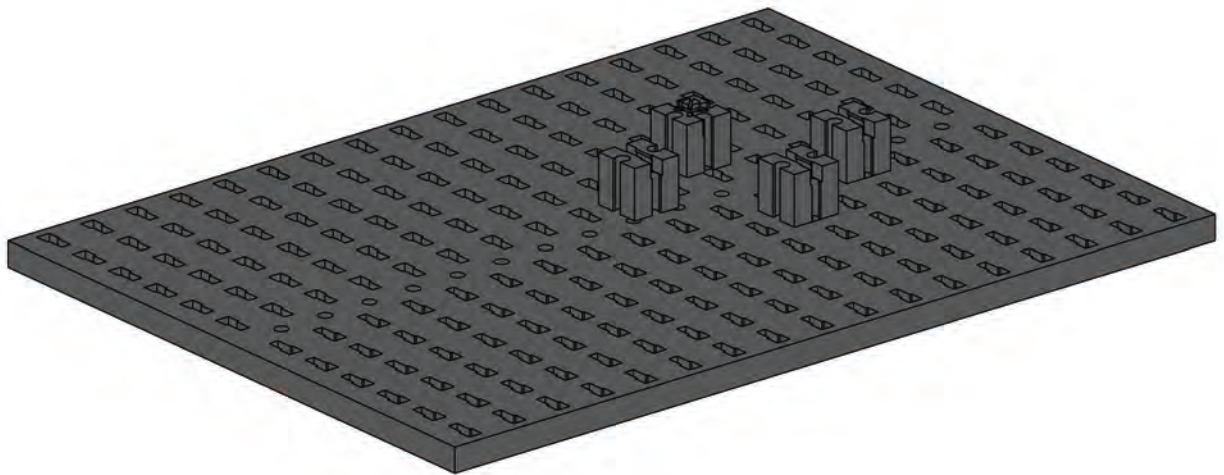
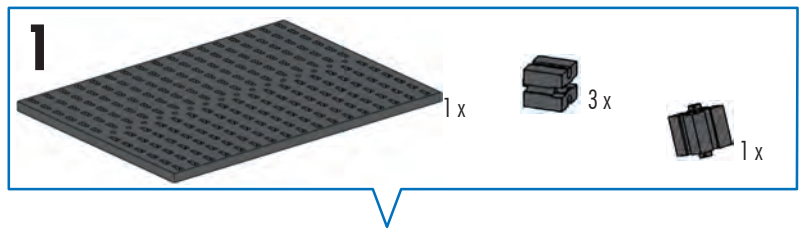
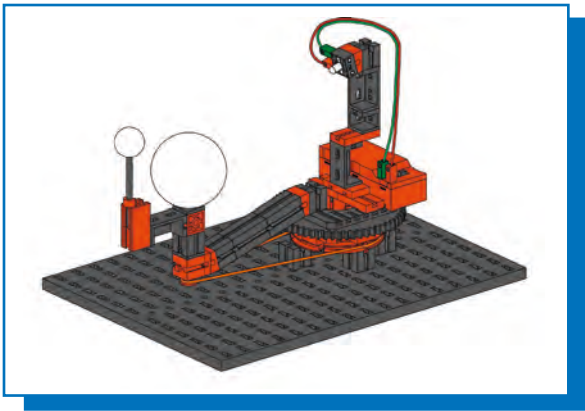
Schaltplan
Circuit diagram
Plan électrique

Schakelschema
Diagrama de circuitos
Plano elétrico de ligação

Schema elettrico
Схема подключения
电路图



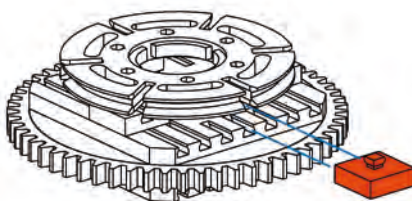
Planetenmodell **Model van planeten** **Modello planetario**
Planetary model **Modelo de planetas** **Модель планет**
Modèle planétaire **Modelo planetário** **行星模型**



3



1x



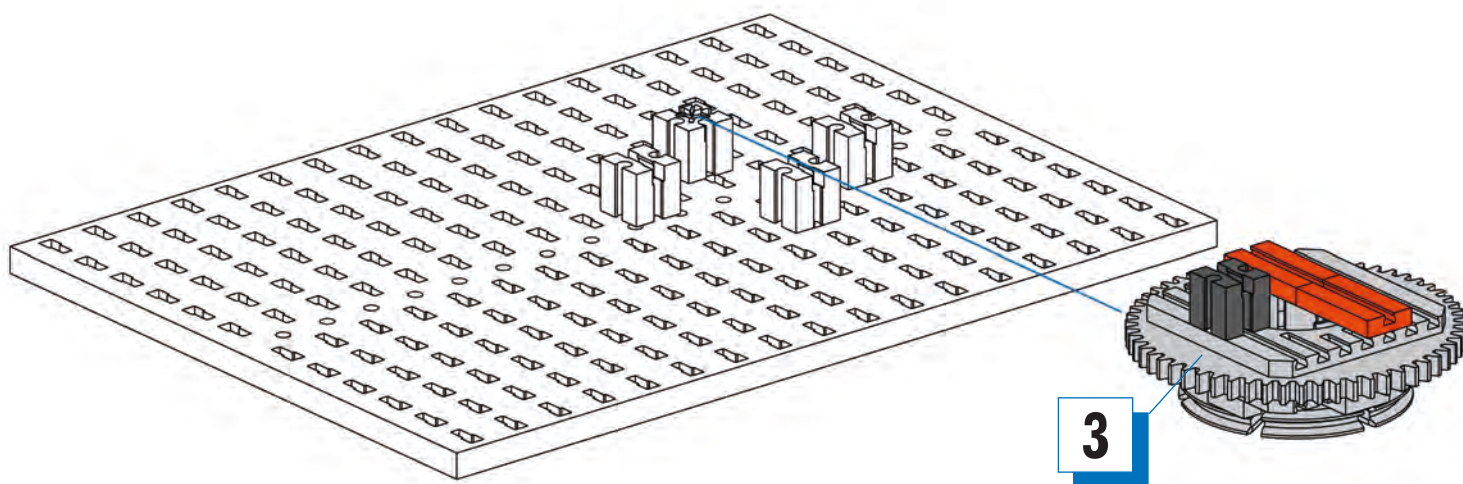
4



1x



2x



3

5



2x



1x



2x



1x



1x



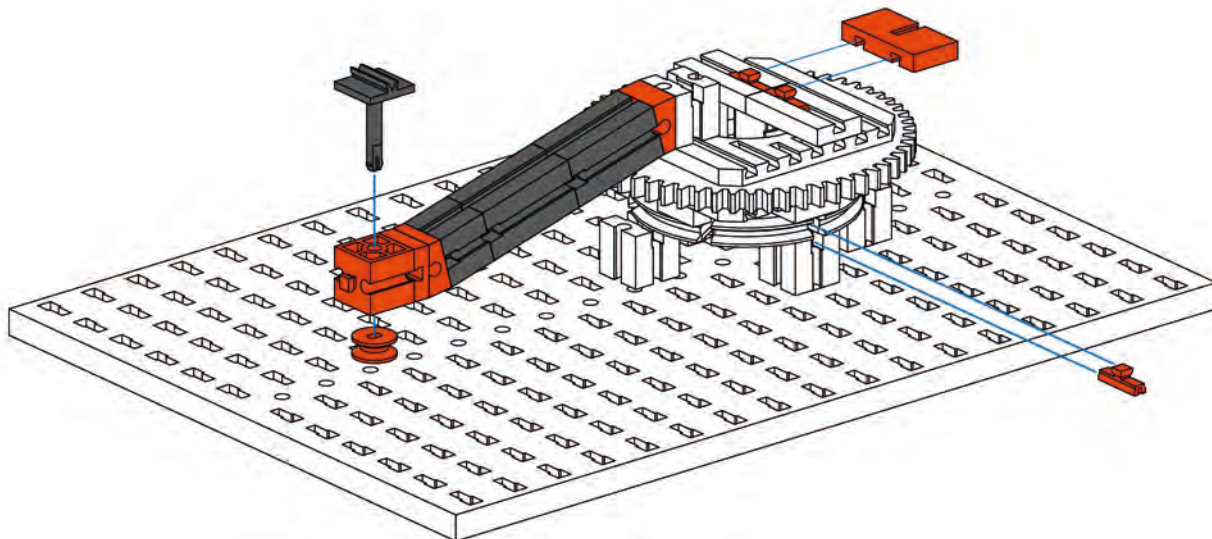
1x

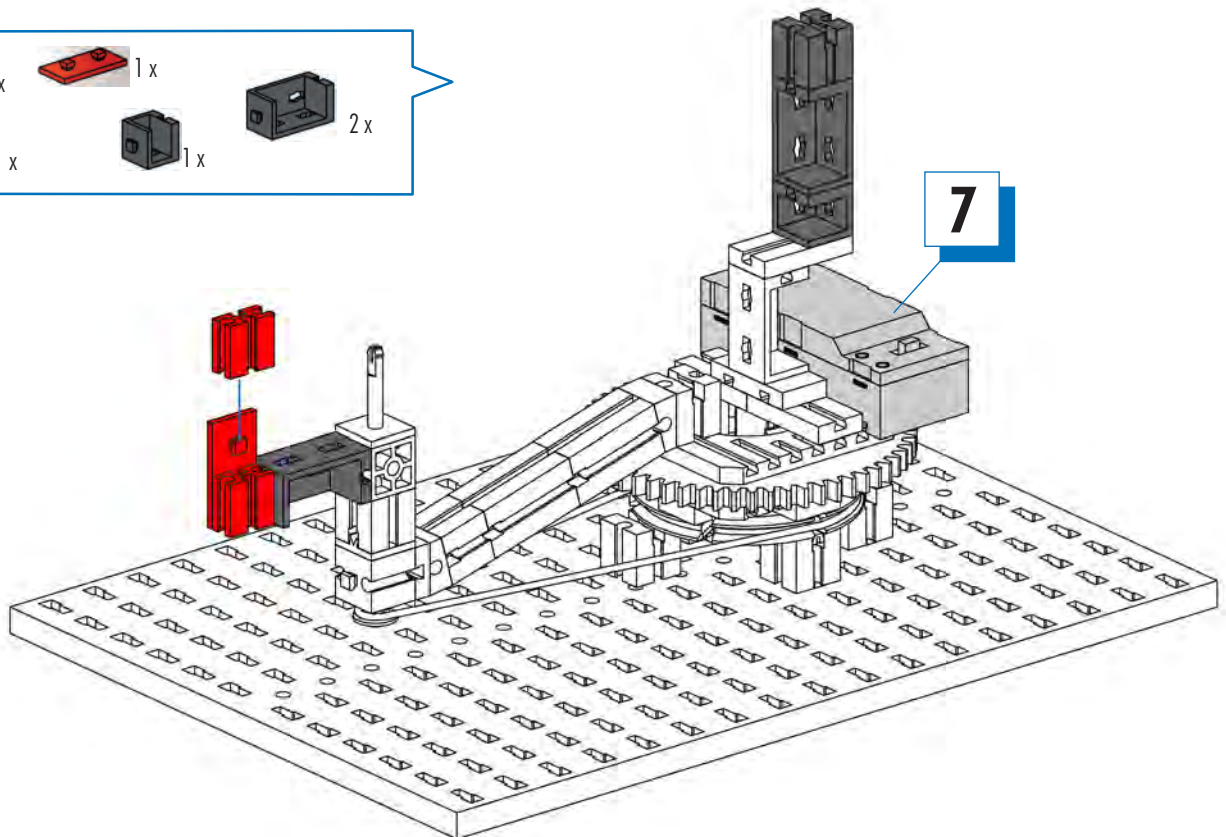
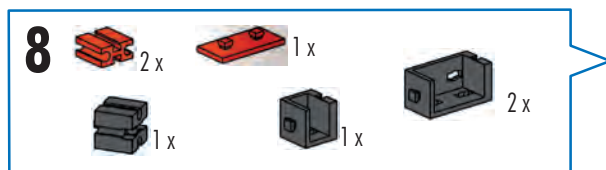
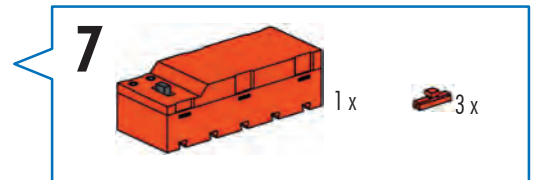
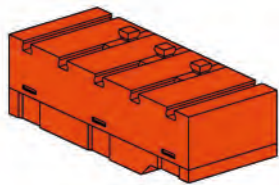
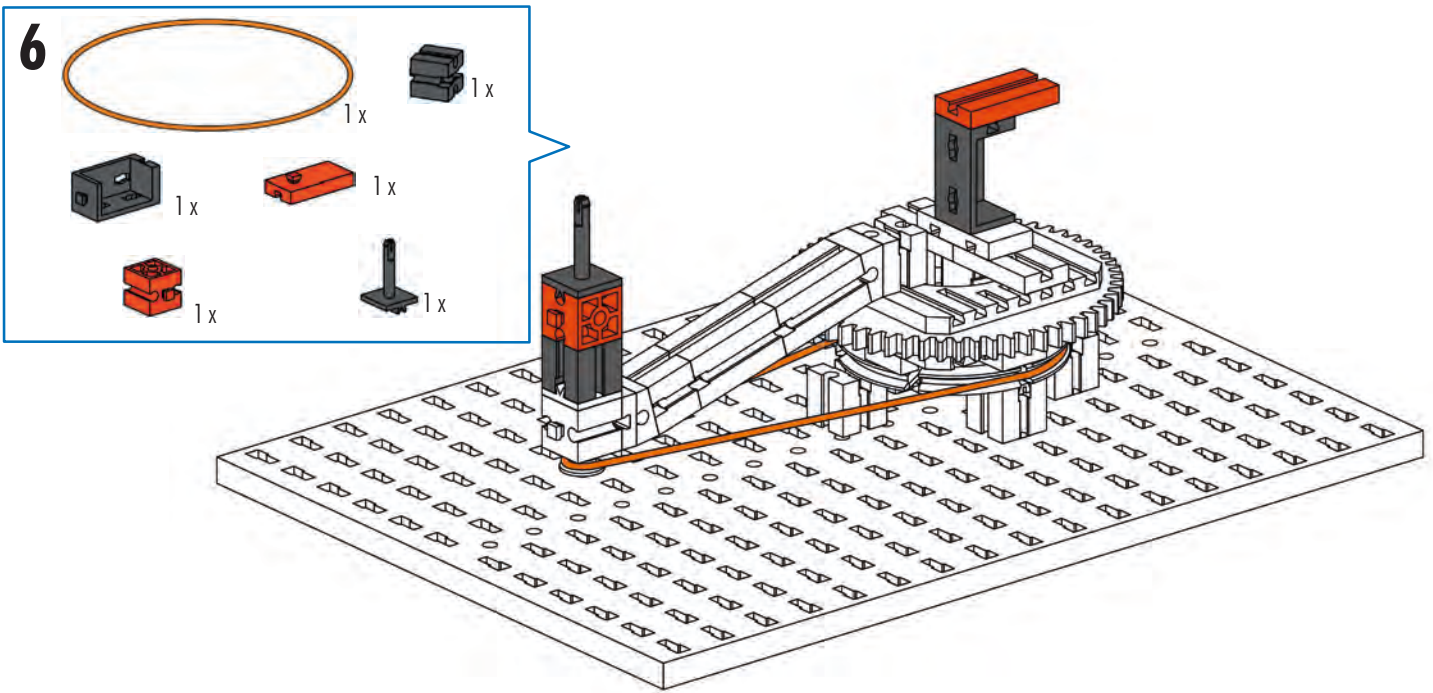


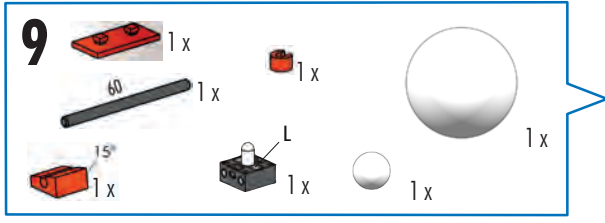
1x



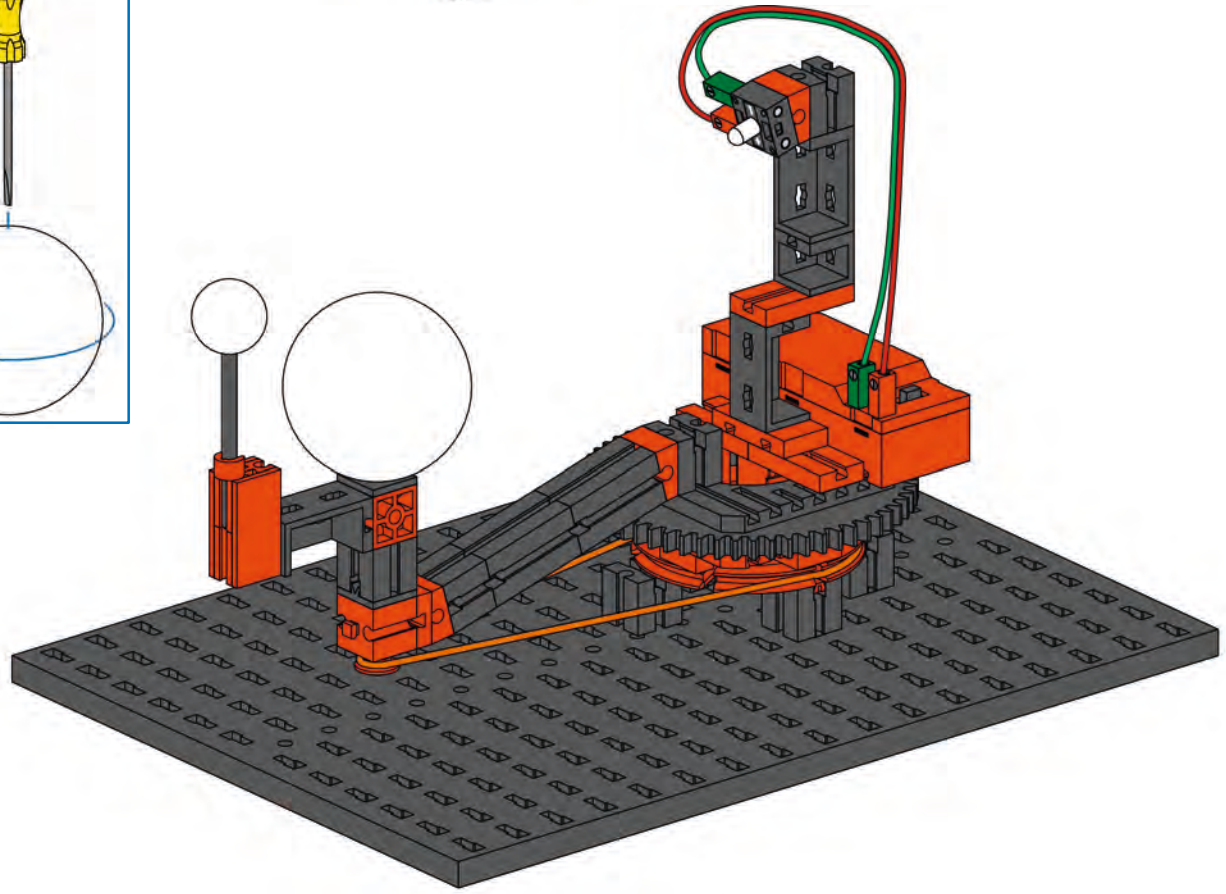
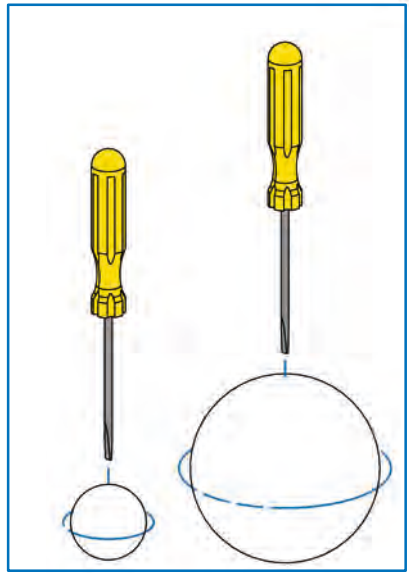
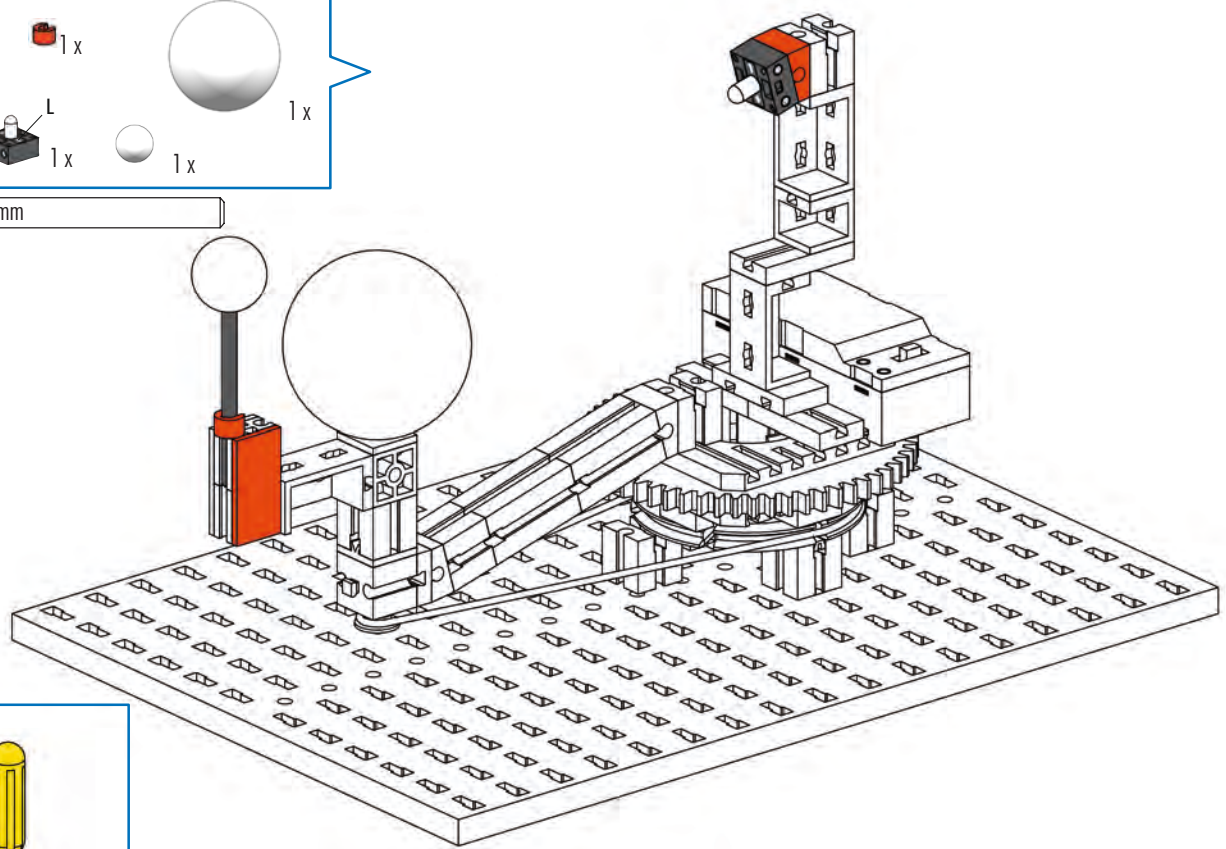
3x







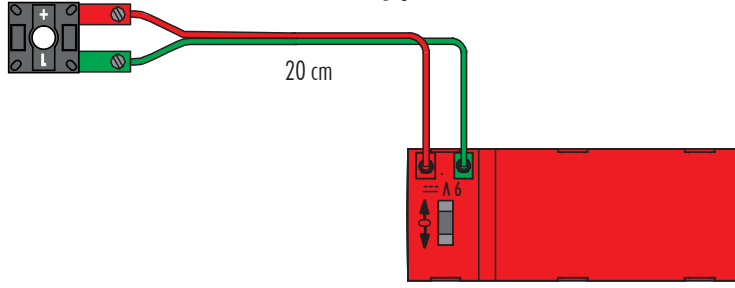
60 mm



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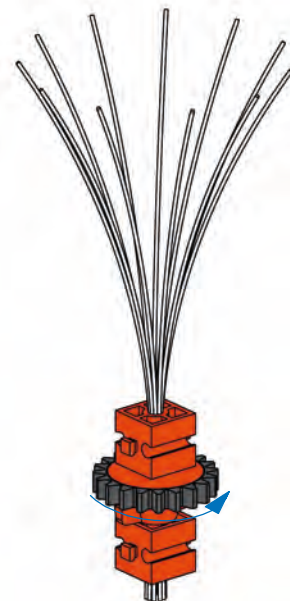
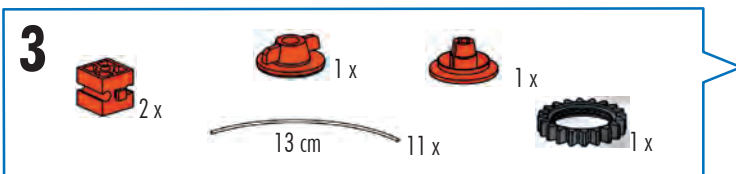
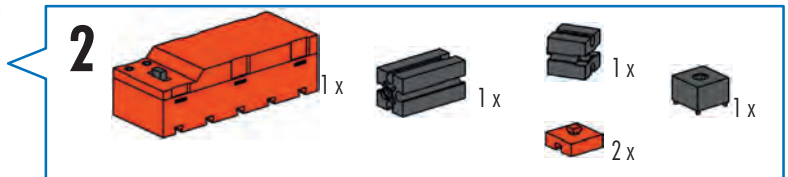
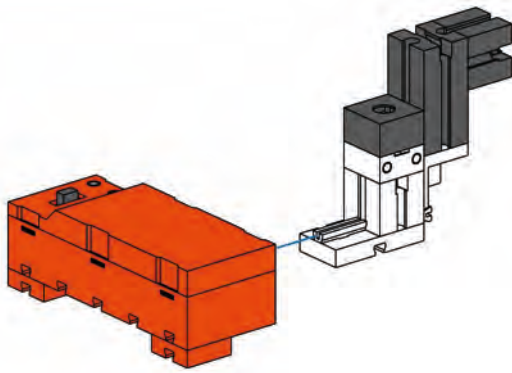
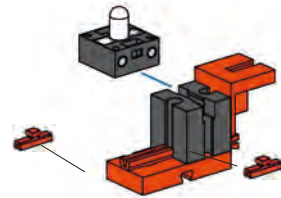
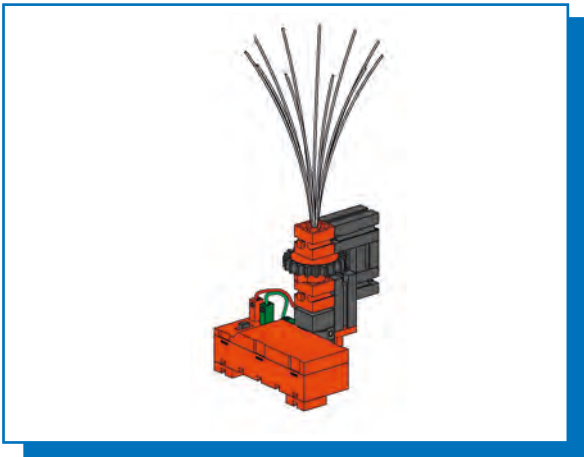
Schema elettrico
Схема подключения
电路图

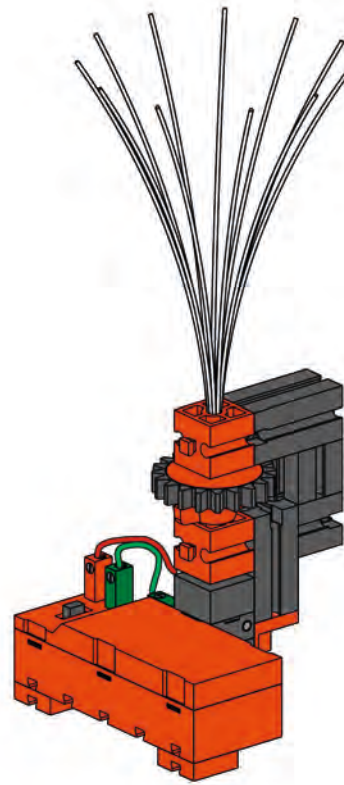
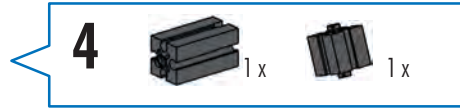
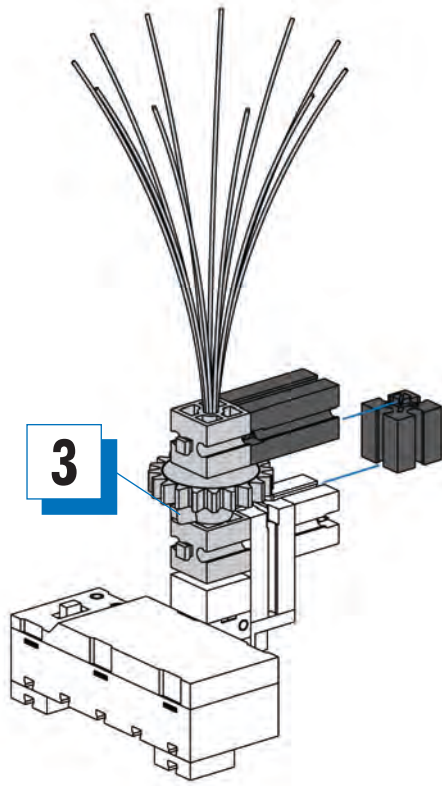


Lichtspiel
Light effects
Jeu de lumière

Lichtspel
Juego de luces
Jogo de luz

Gioco di luci
Игра света
光表演

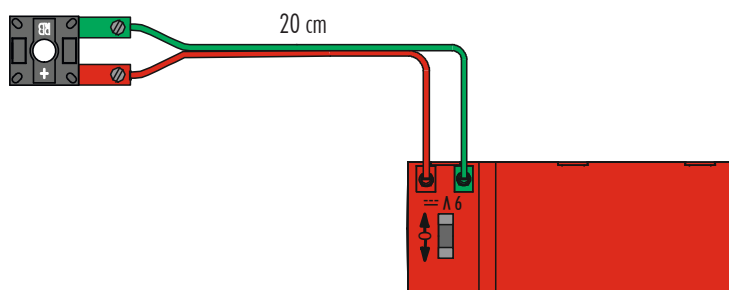


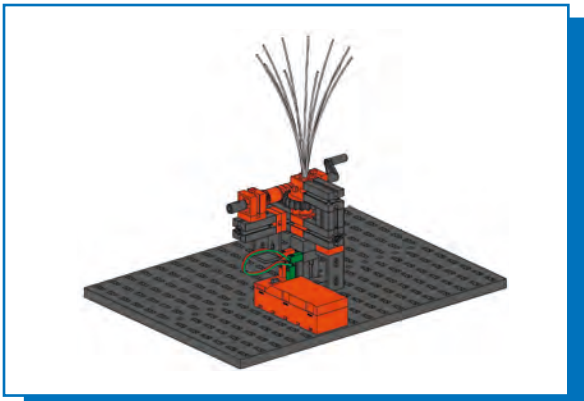


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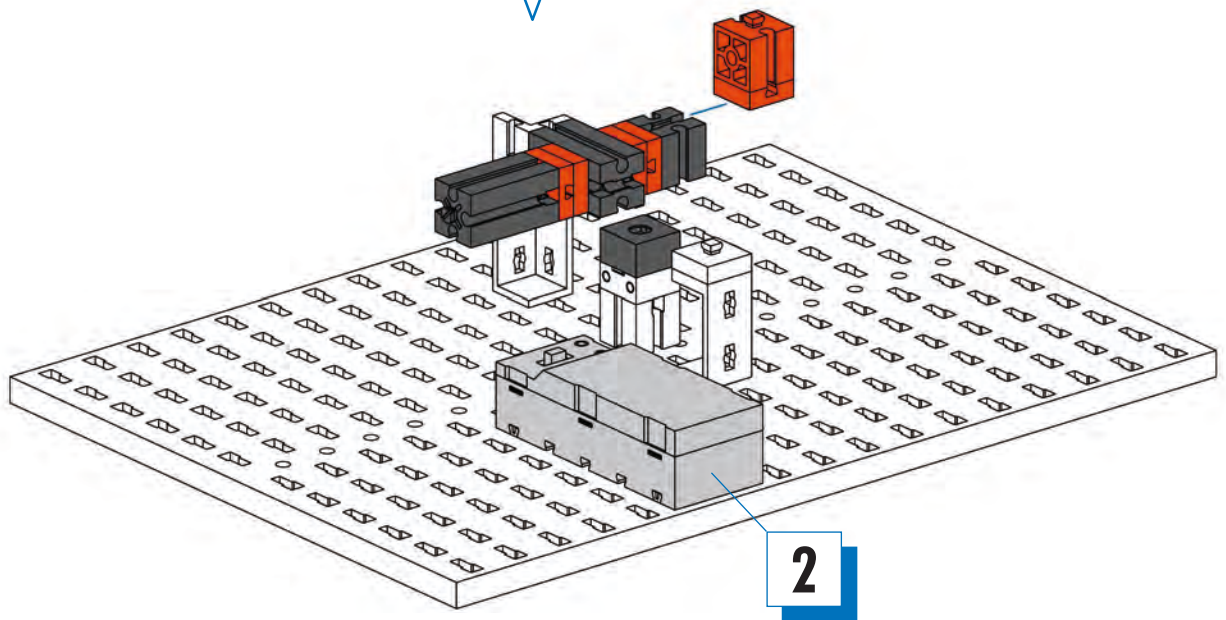
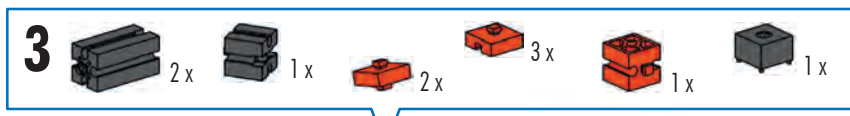
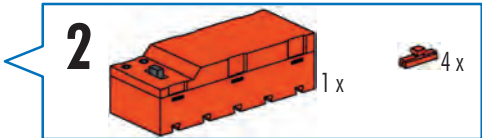
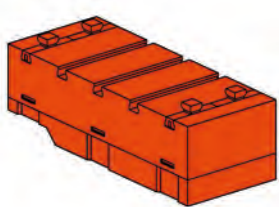
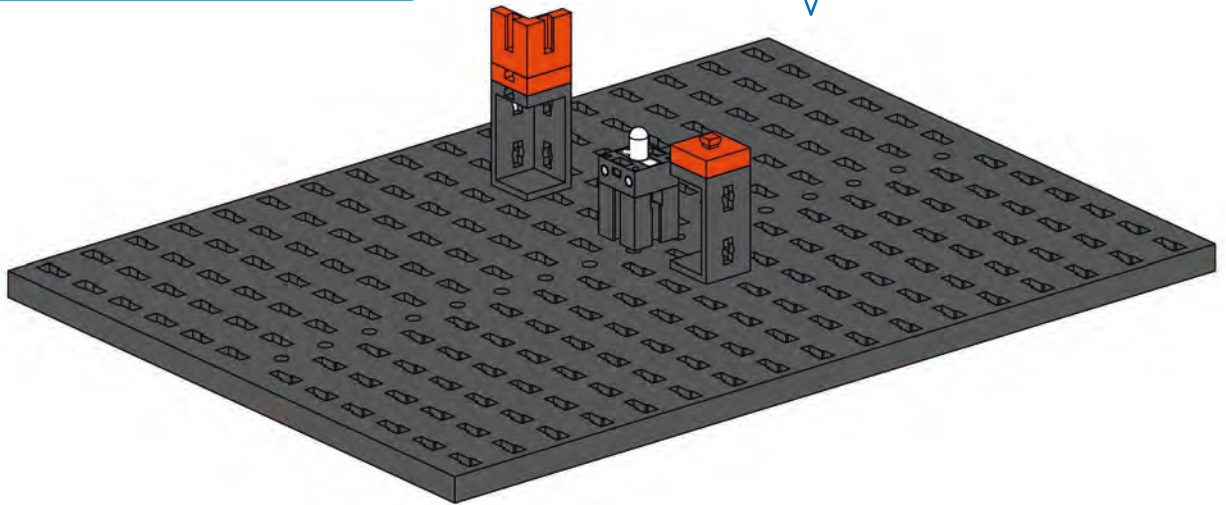
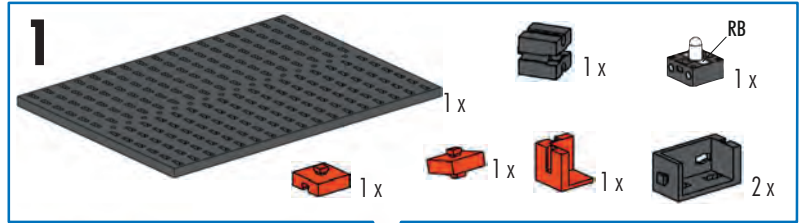


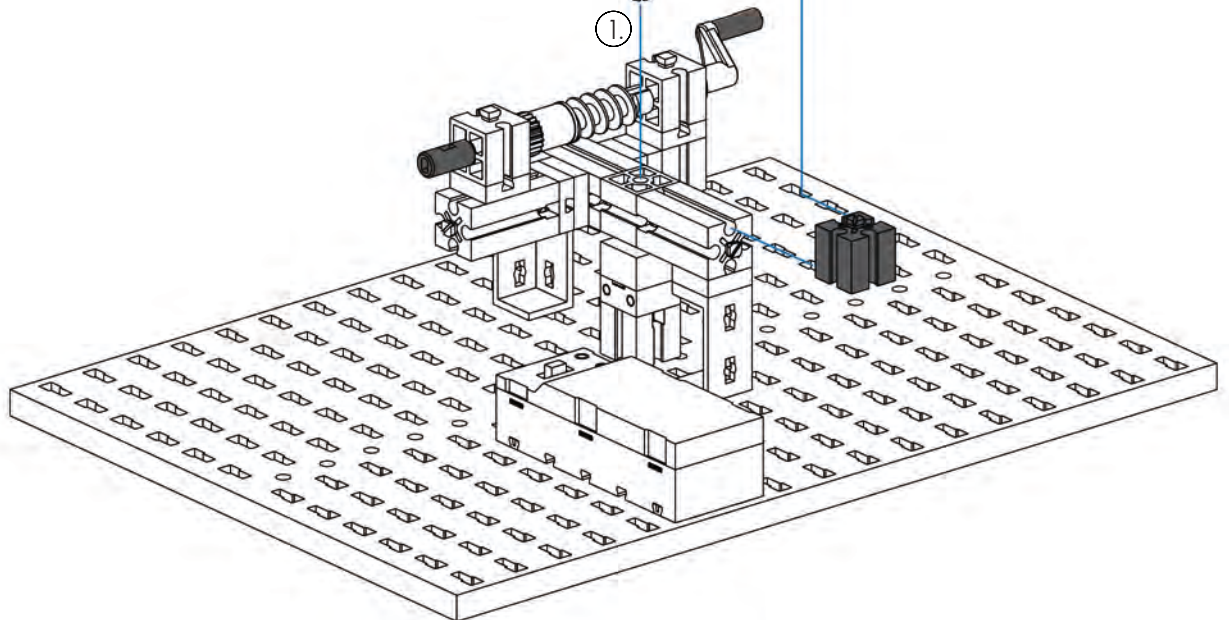
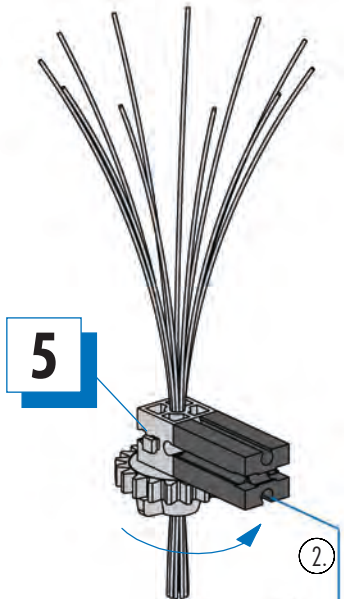
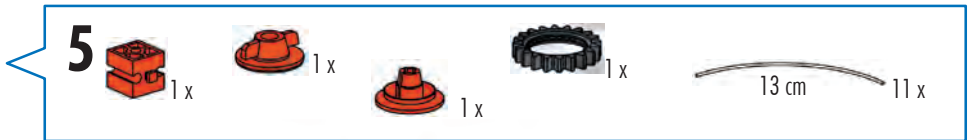
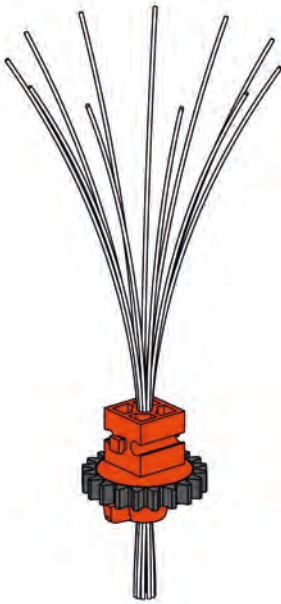
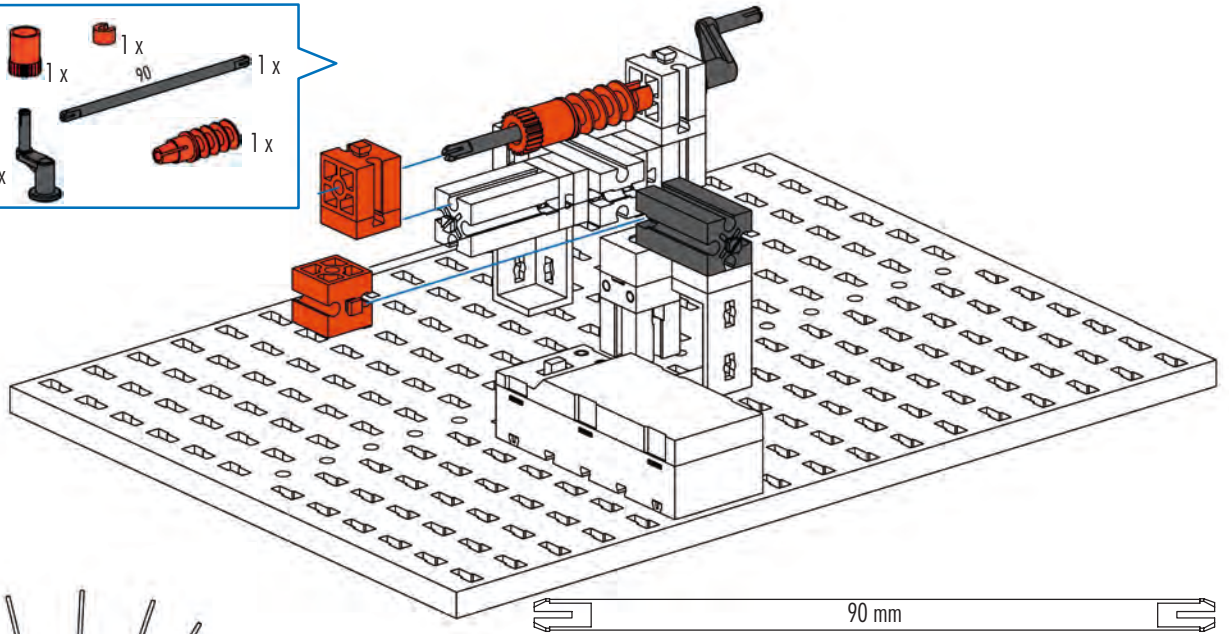
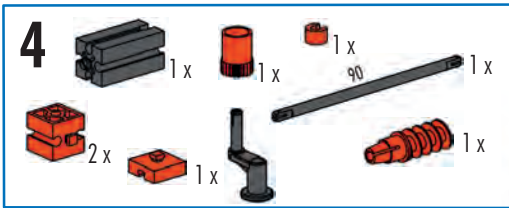


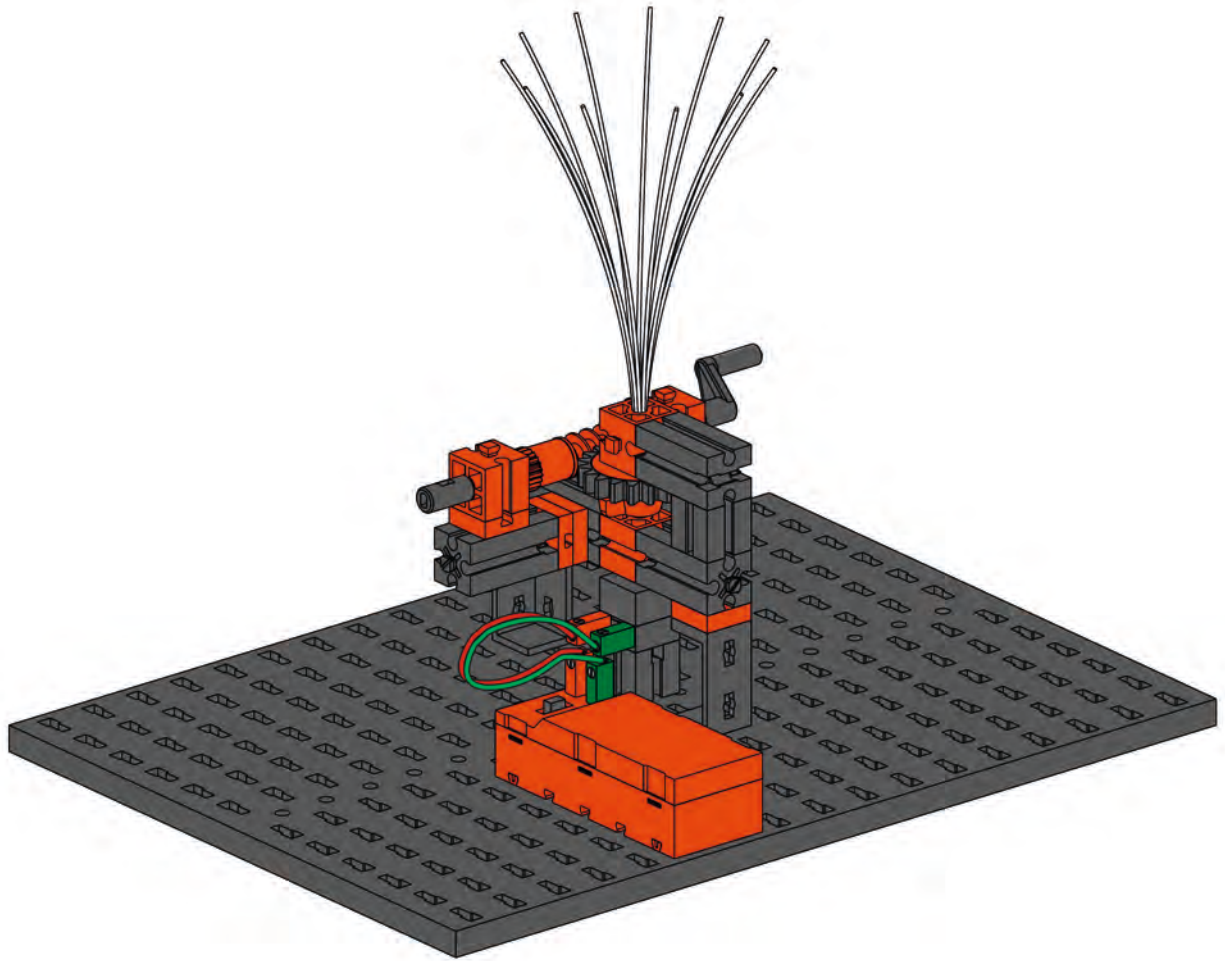
Lichtspiel mit Kurbel
Light effects with crank
Jeu de lumière à manivelle

Lichtspel met slinger
Juego de luces con manivela
Jogo de luz com manivela

Gioco di luci con manovella
Игра света с рукояткой
用手摇柄进行光表演



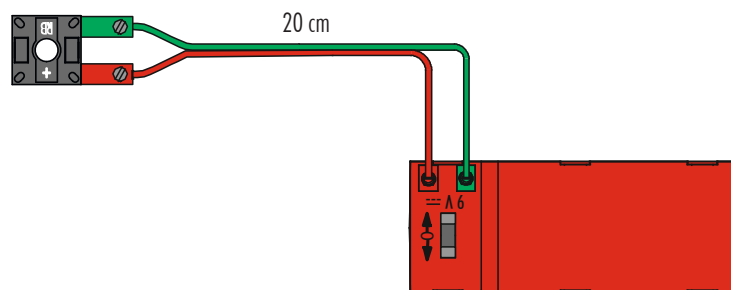


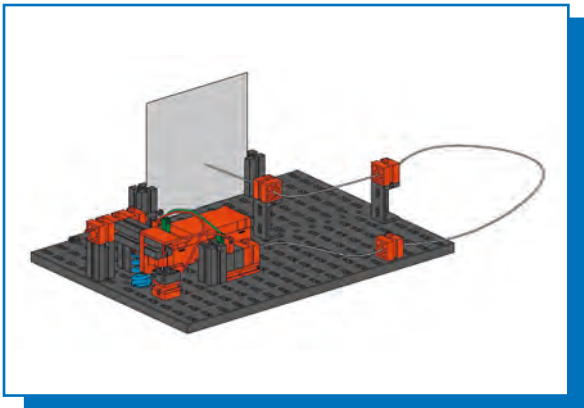


Schaltplan
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Plan électrique

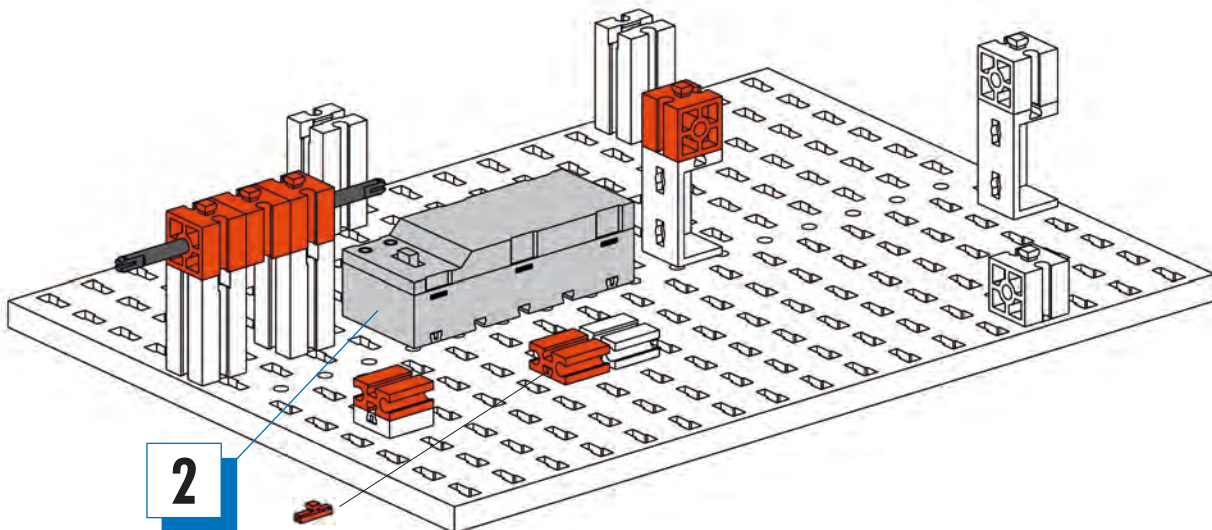
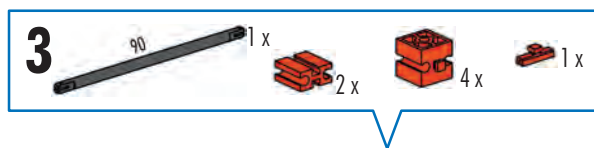
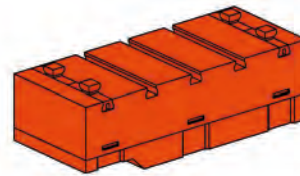
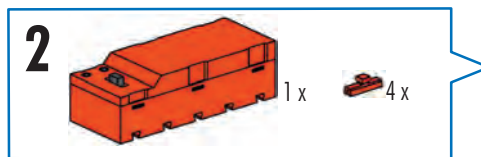
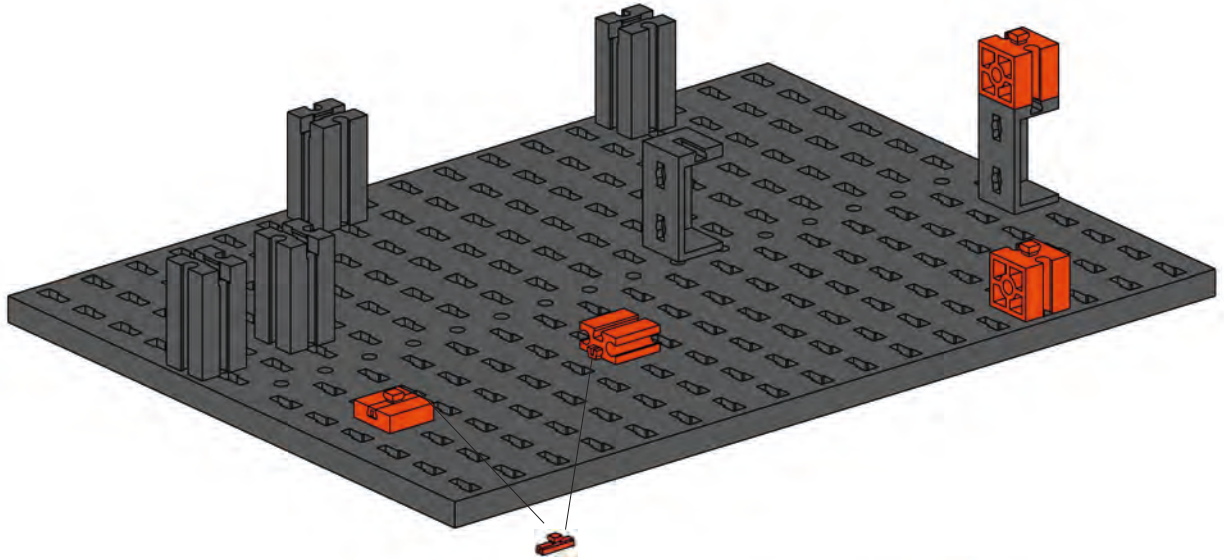
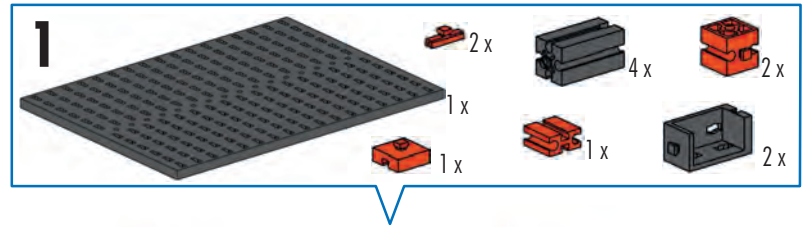
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电路图

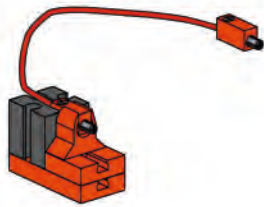
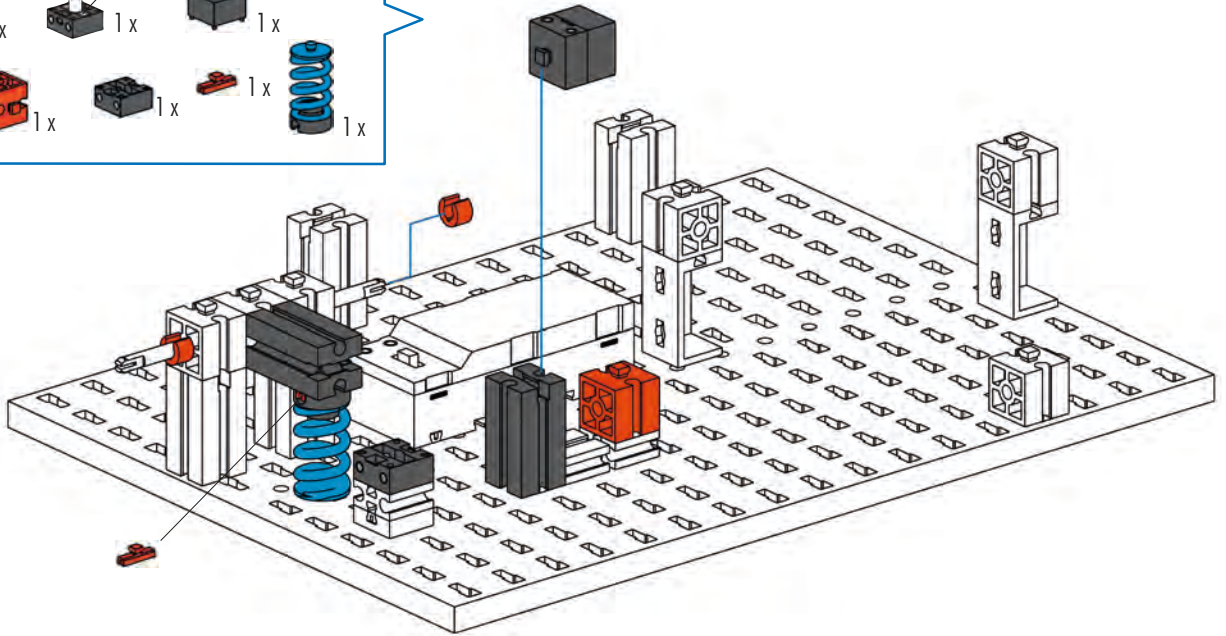




Optischer Morseapparat **Optisch morseapparaat** **Apparechio Morse ufficio**
Optical morse telegraph **Telégrafo Morse óptico** **Оптический аппарат Морзе**
Manipulateur de morse à fonctionnement optique **Aparelho Morse ótico** **光的摩尔斯电报机**

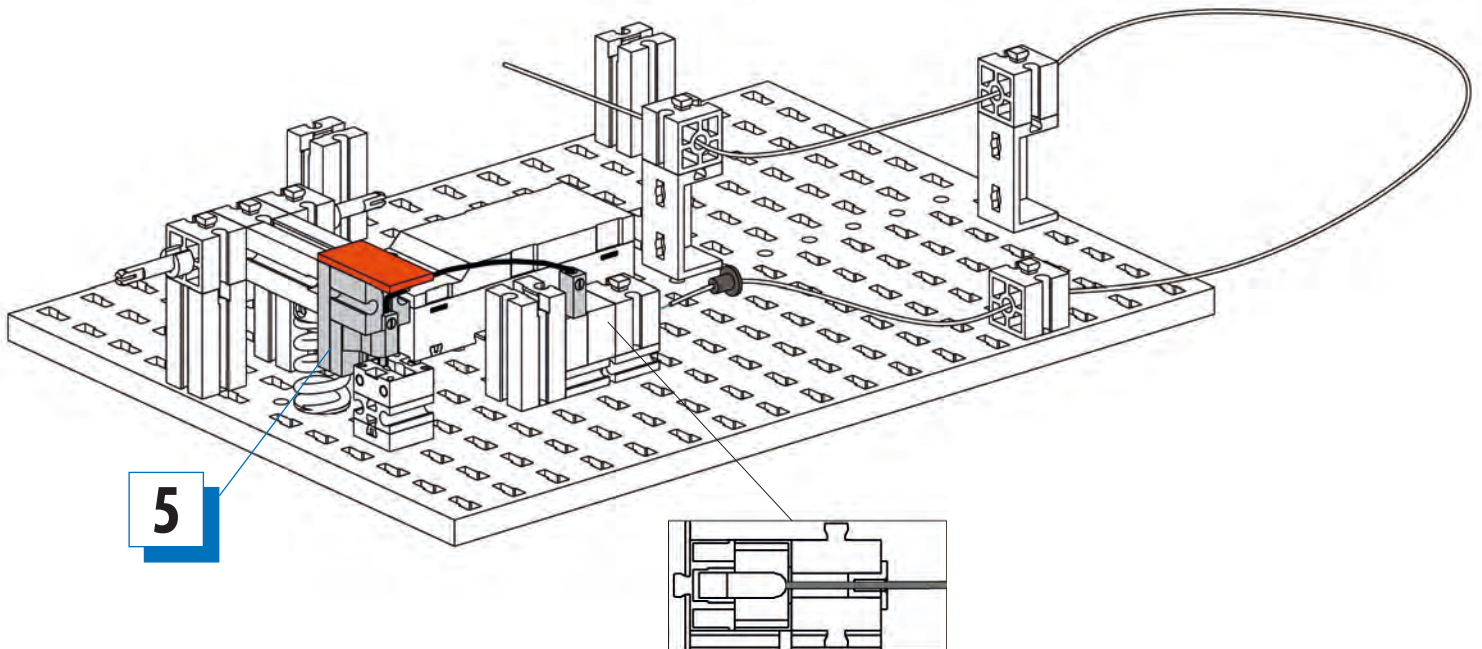


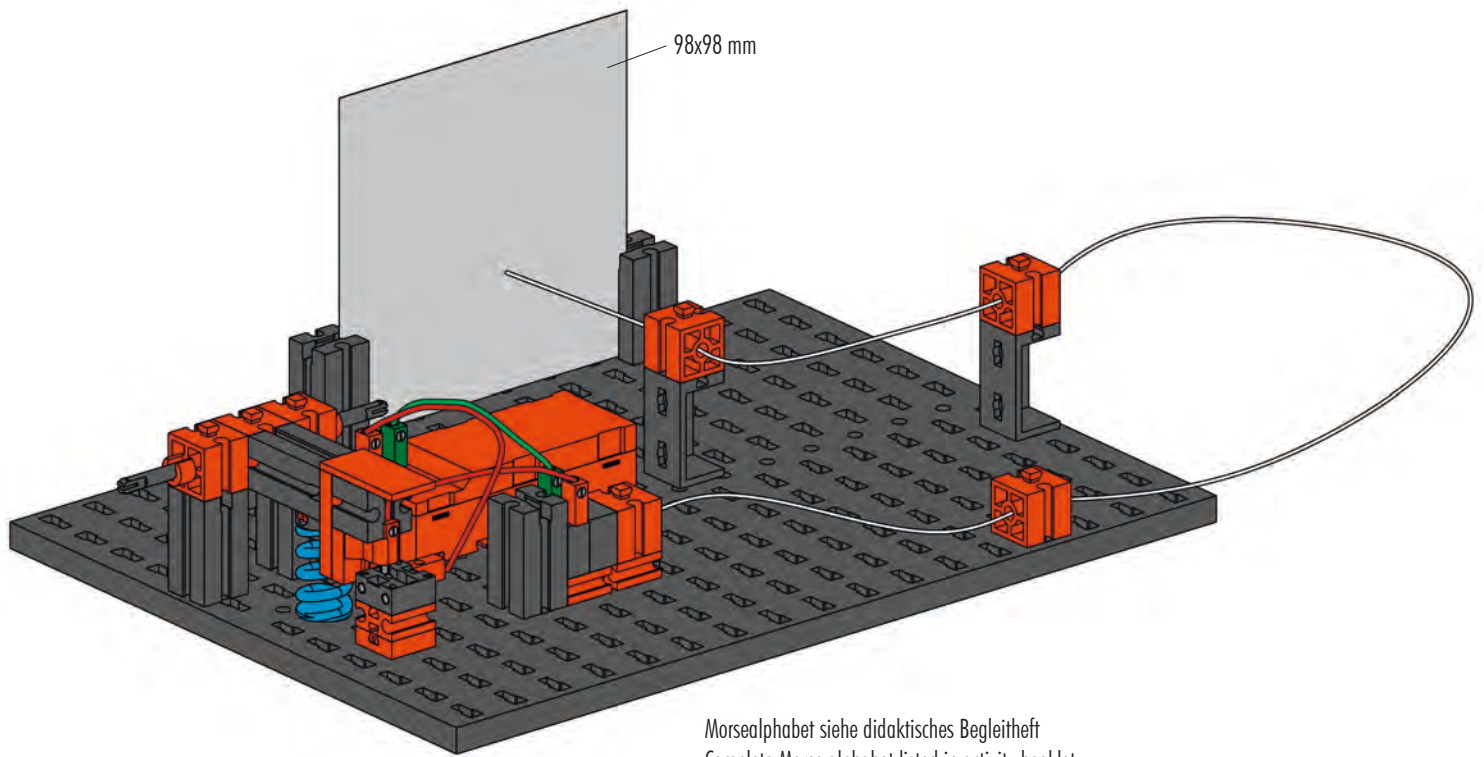
- 4**
- 2x [Black 1x3 Technic Beam]
 - 1x [Black 1x2 Technic Beam]
 - 1x [Black 1x2 Technic Beam]
 - 1x [Red 1x2 Technic Beam]
 - 1x [Black 1x2 Technic Beam]
 - 1x [Red 1x2 Technic Beam]
 - 1x [Blue Spring]
 - 2x [Red Pin]



- 5**
- 1x [Red 1x3 Technic Beam]
 - 1x [Black 1x2 Technic Beam]
 - 1x [Red 1x2 Technic Beam]
 - 1x [Red 1x2 Technic Beam]
 - 1x [Red Cable, 10 cm]

- 6**
- 1x [Red 1x3 Technic Beam]
 - 1x [Red Cable, 50 cm]
 - 1x [Black Pin]



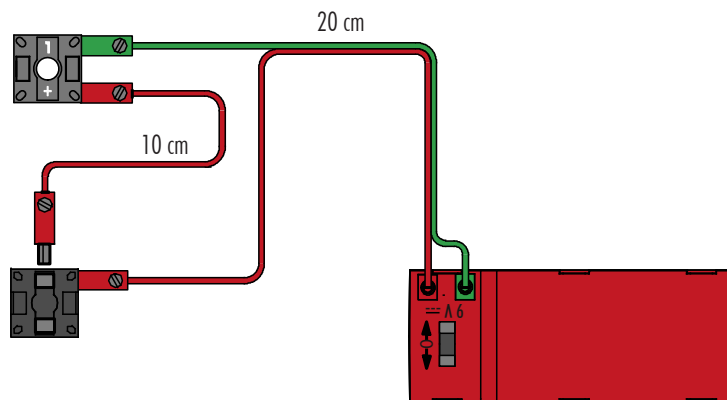


Morsealphabet siehe didaktisches Begleitheft
 Complete Morse alphabet listed in activity booklet
 Voir le manuel d'accompagnement en ce qui concerne l'alphabet morse
 Zie het didactisch begeleidend boekje voor het morse-alfabet
 Véase alfabeto Morse en el cuaderno didáctico adjunto
 Alfabeto Morse ver folheto didático
 Alfabeto Morse, vedi libretto didattico delle attività
 Азбуку Морзе см. в обучающей сопроводительной брошюре
 摩尔斯电码见随附的指导性说明书

Schaltplan
 Circuit diagram
 Plan électrique

Schakelschema
 Diagrama de circuitos
 Plano elétrico de ligação

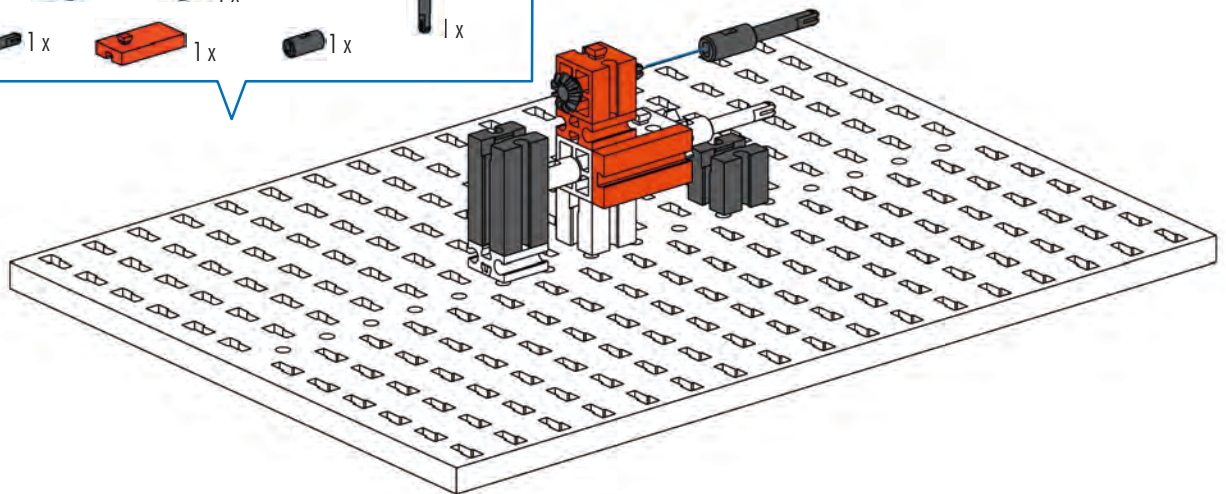
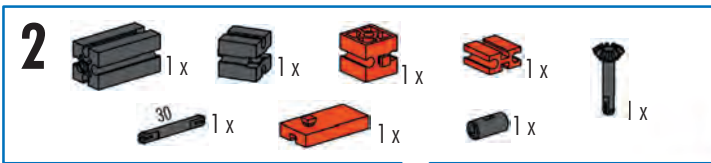
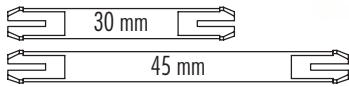
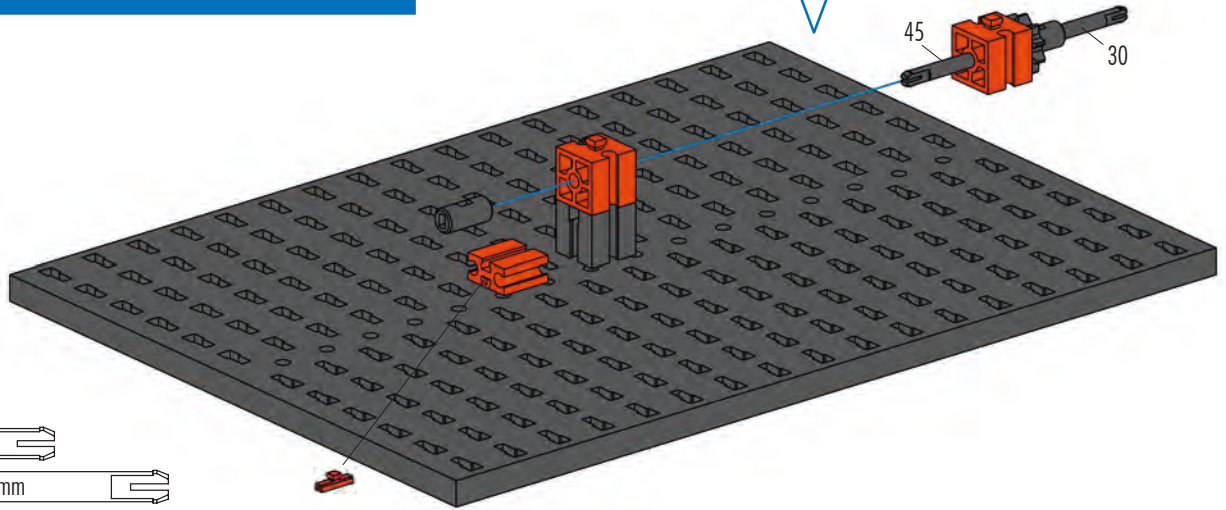
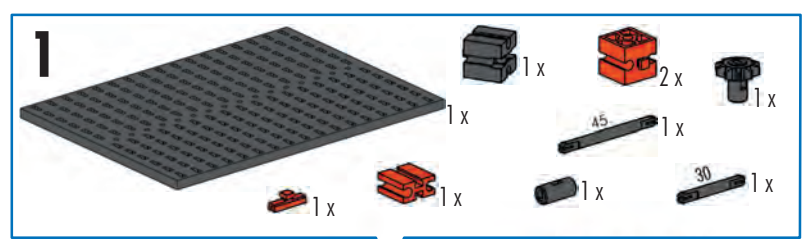
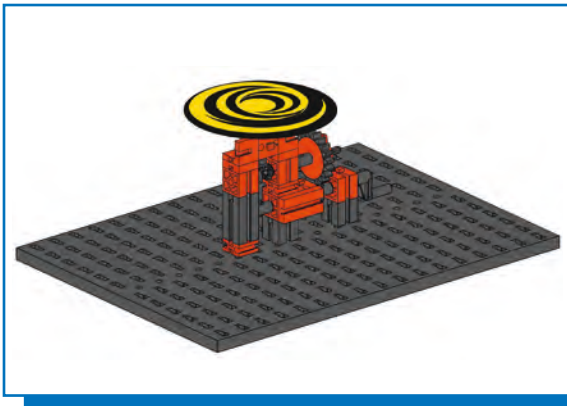
Schema elettrico
 Схема подключения
 电路图



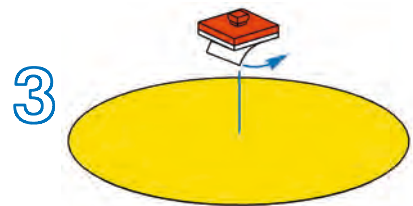
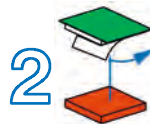
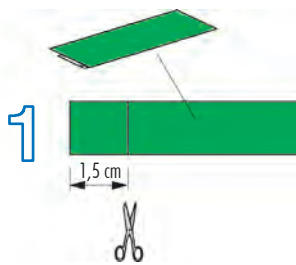
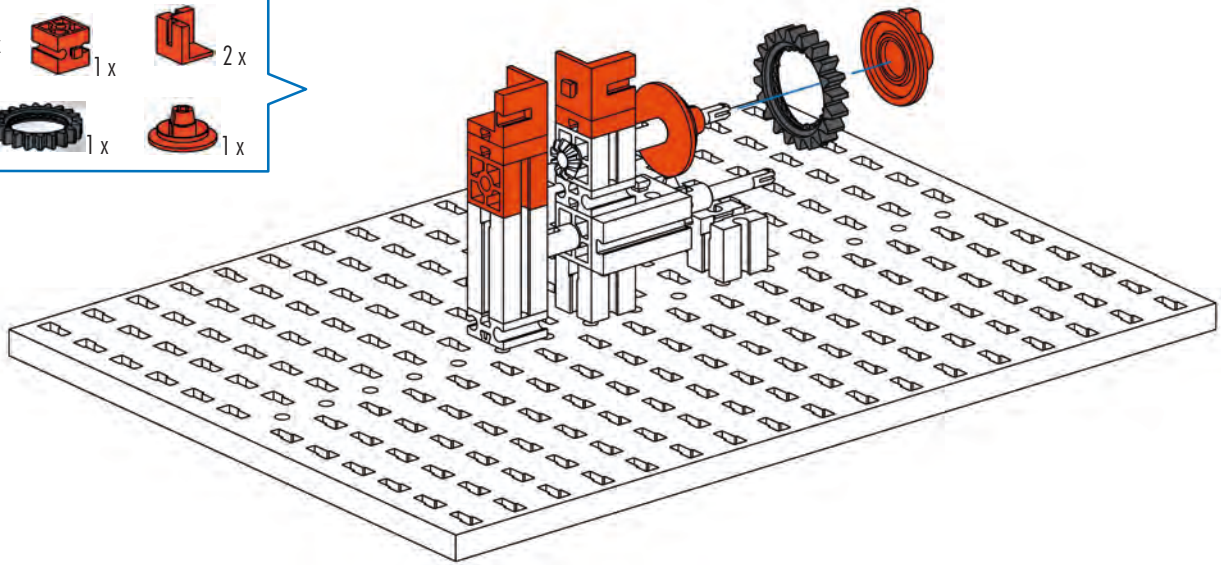
Optische Täuschung
Optical illusion
Illusion optique

Gezichtsbedrog
Ilusión óptica
Ilusão de ótica

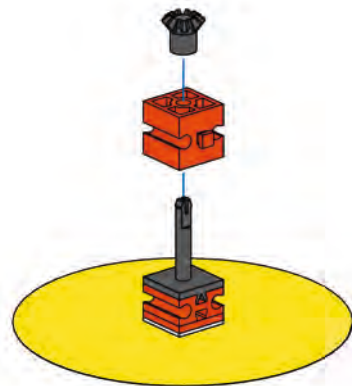
Illusione ottica
Оптический обман
视错觉

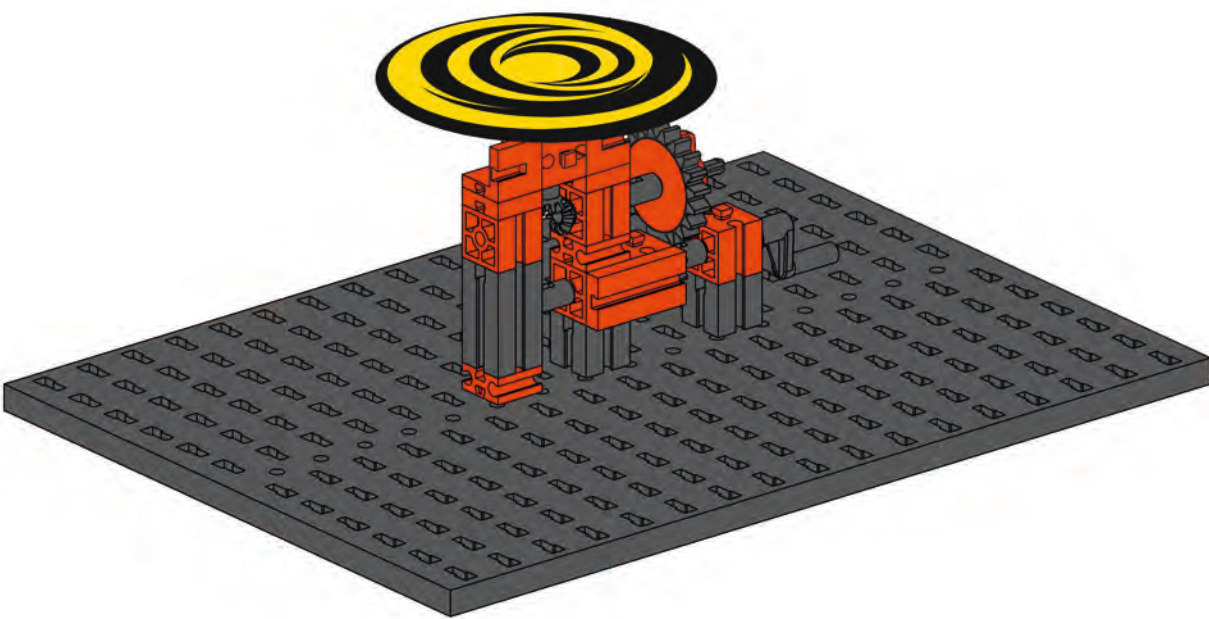
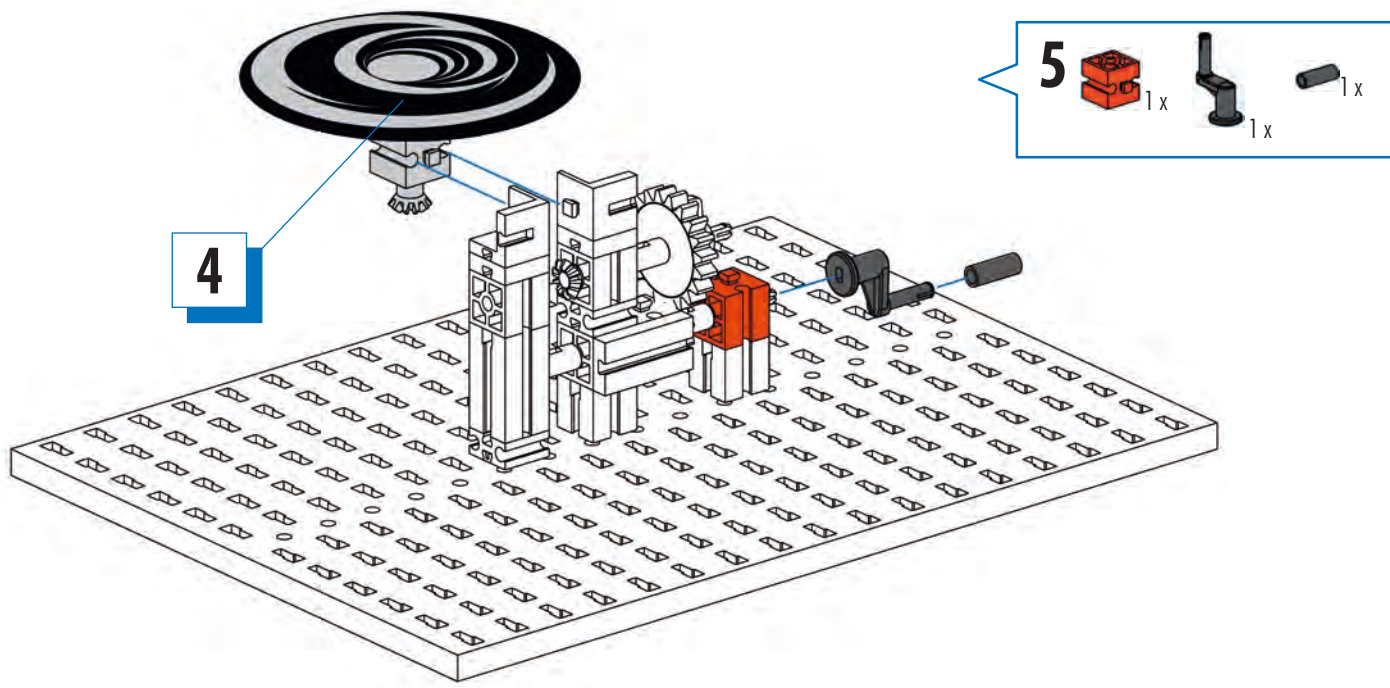


- 3**
- 2 x [Red 1x2 Technic Brick]
 - 1 x [Red 1x2 Technic Brick with Hole]
 - 2 x [Red L-shaped Technic Brick]
 - 1 x [Red Technic Pin]
 - 1 x [Black Technic Gear]
 - 1 x [Red Technic Pin with Friction Ridge]



- 4**
- 1 x [Red 1x2 Technic Brick]
 - 1 x [Red 1x2 Technic Brick with Hole]
 - 1 x [Red Technic Pin]
 - 1 x [Red Technic Pin with Friction Ridge]
 - 1 x [Black and Yellow Concentric Circle Sticker]
 - 1 x [Black Technic Pin]
 - 1 x [Black Technic Pin with Friction Ridge]

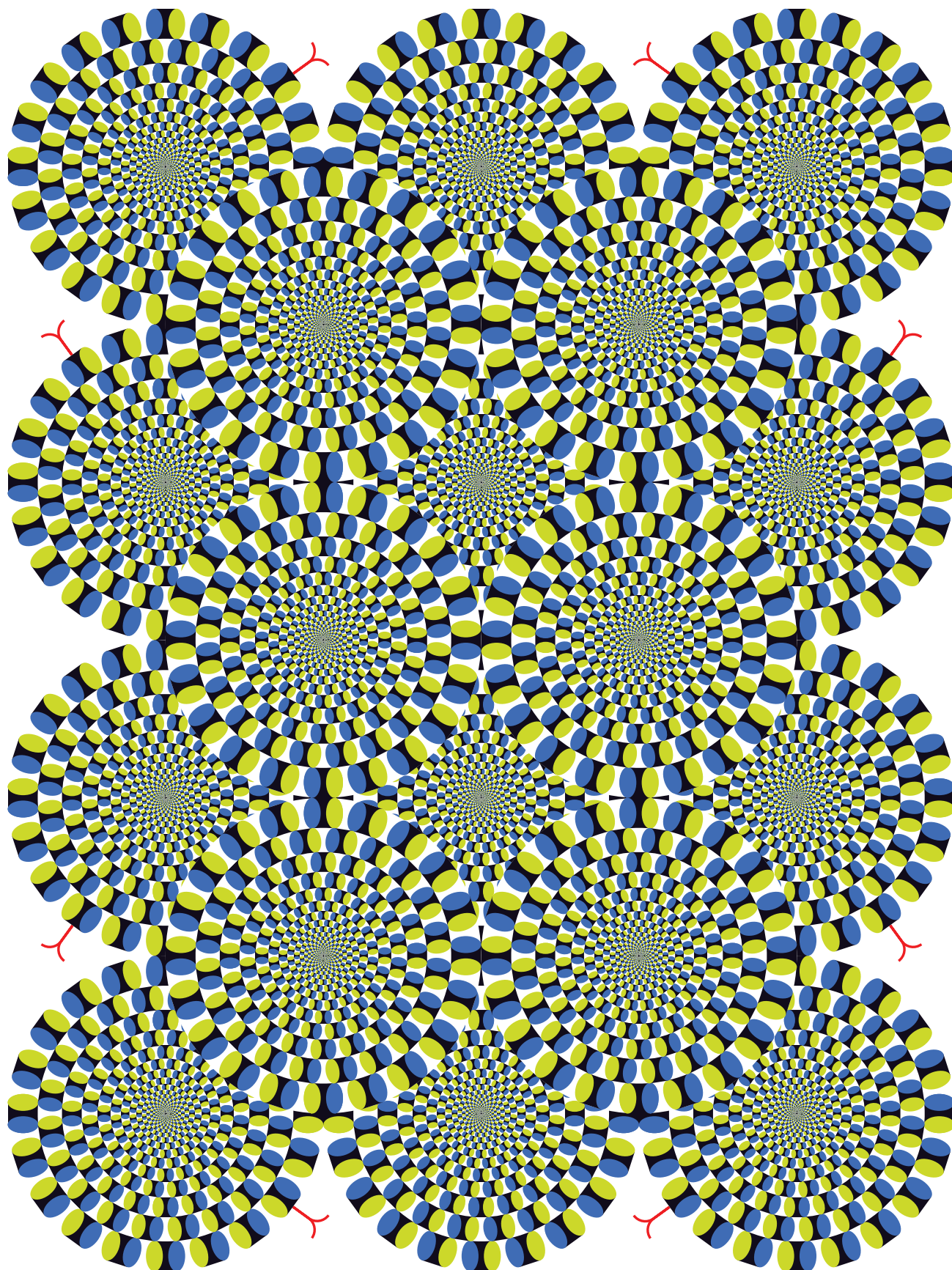




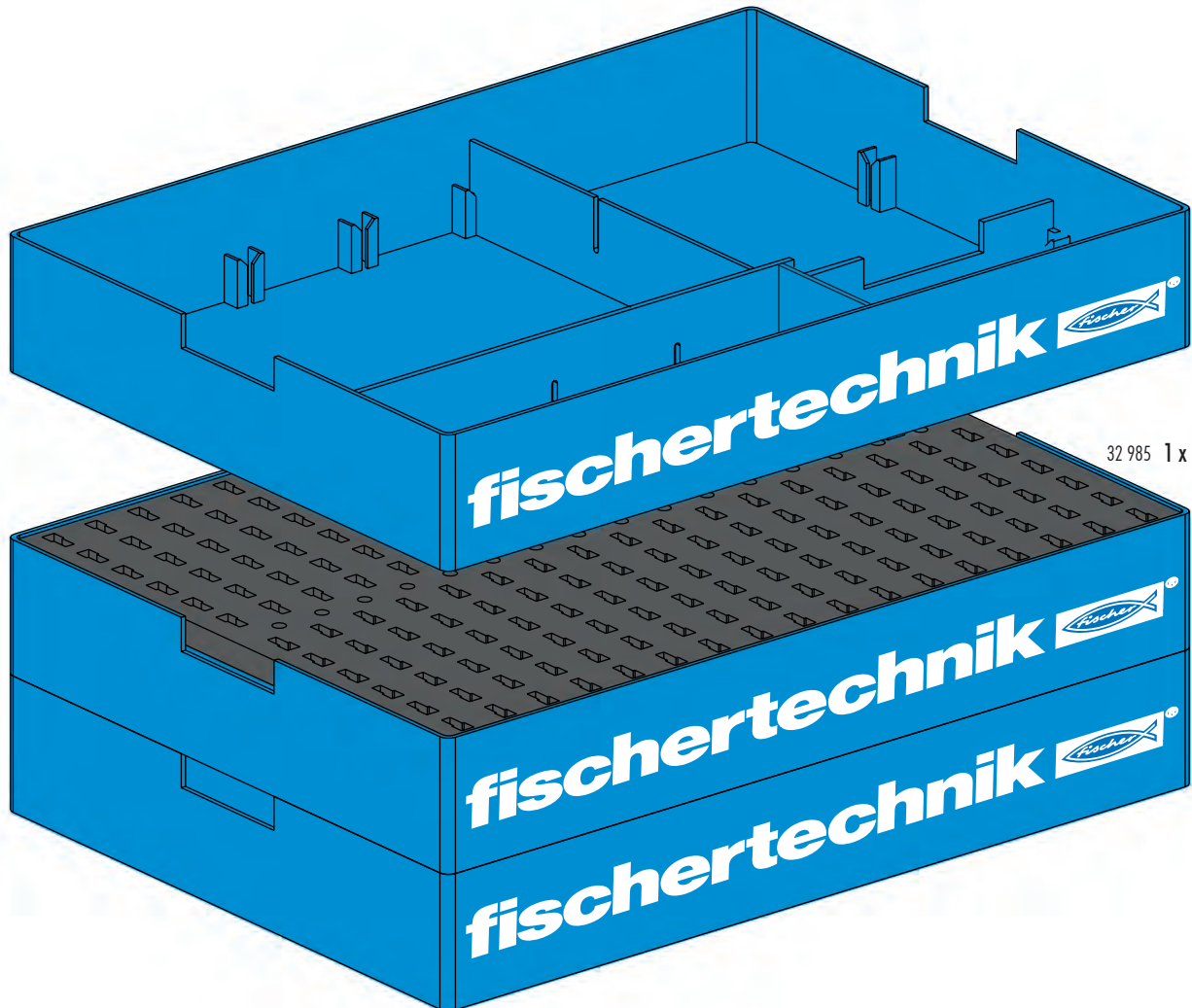
Fantastische Kreise
Fantastic circles
Cercles fantastiques

Fantastische cirkels
Círculos fantásticos
Círculo fantástico

Illusione ottica
Оптический обман
视错觉



Empfohlene Aufbewahrung:	3 x Aufbewahrungssystem Art.-Nr. 94828
Recommended storage:	3 x storage system Art No. 94828
Stockage conseillé :	3 x système de stockage Art n° 94828
Bewaaradvies:	3 x bewaarsysteem art.-nr. 94828
Consejos para guardar el producto:	3 x almacenamiento Art. Nº 94828
Conservação recomendada:	3 x sistema de conservação n.º de art. 94828
Conservazione consigliata:	3 sistemi di conservazione, cod. prod. 94828
Рекомендуемое хранение:	3 x бокса для хранения. Арт.№ 94 828
推荐的保存方式 :	3 个产品号为 94 828 的保存系统



Sortiervorschlag / Storage suggestion / Suggestion de classement / Sorteervoorstel / Propuesta de clasificación / Proposta de divisão / Proposta di sistemazione / Рекомендации по сортировке / 保存系统的分类建议:

www.fischertechnik.de/Sortiervorschläge