EXPERIMENT MANUAL

ROBOTICS

SMART MACHINES

THAMES & KOSMOS

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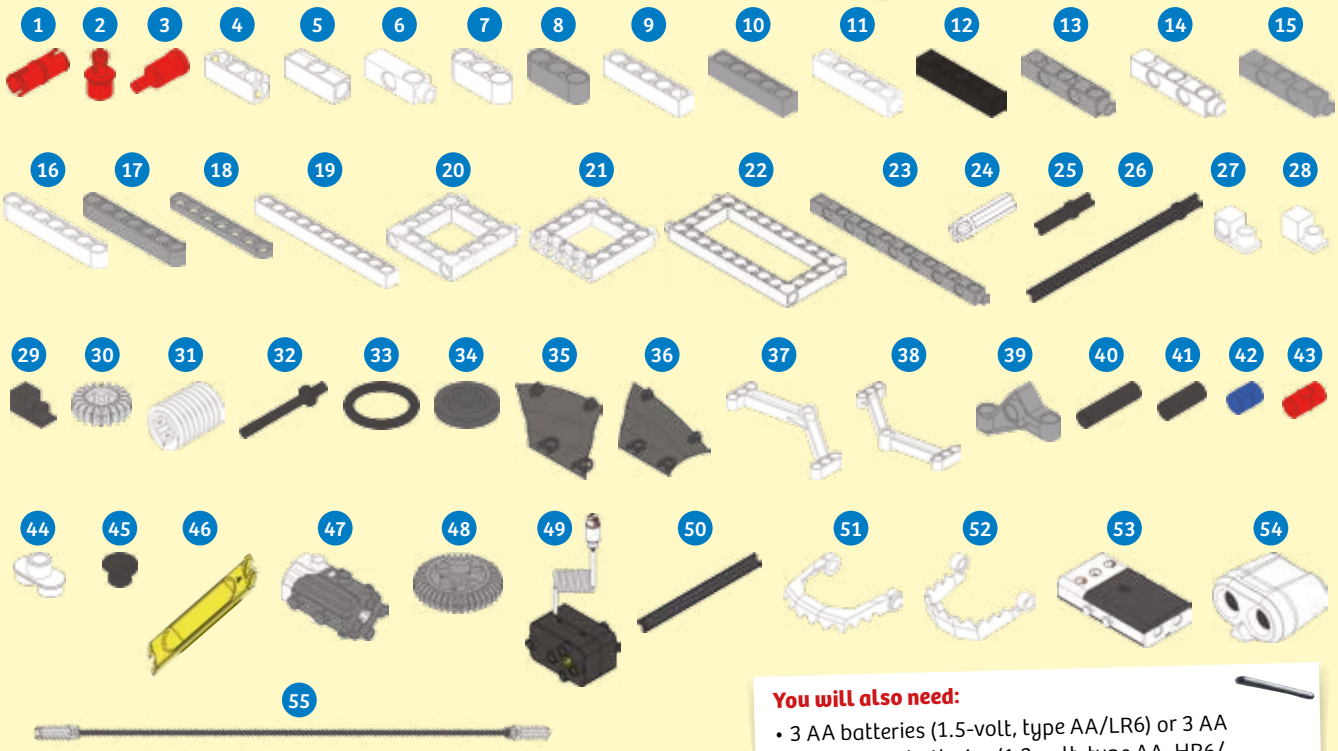
What's inside your experiment kit:



You will also need:

• 3 AA batteries (1.5-volt, type AA/LR6) or 3 AA rechargeable batteries (1.2-volt, type AA, HR6/KR6) and a tablet or smartphone running iOS or Android (see page 7 for hardware requirements)

Checklist: Find – Inspect – Check off

✔	No.	Description	Qty.	Item No.
❍	1	Joint pin	18	1156-W10-A1R
❍	2	Shaft plug	8	7026-W10-H1R
❍	3	Shaft pin	9	7026-W10-J3R
❍	4	3-hole rod	1	7026-W10-Q1W
❍	5	3-hole cross rod	5	7026-W10-X1W
❍	6	3-hole dual rod	2	7061-W10-R1W
❍	7	3-hole wide rounded rod, white	2	7404-W10-C1W
❍	8	3-hole wide rounded rod, gray	6	7404-W10-C1S
❍	9	5-hole rod, white	1	7413-W10-K2W
❍	10	5-hole rod, gray	4	7413-W10-K2S1
❍	11	5-hole cross rod, white	2	7413-W10-K3W
❍	12	5-hole cross rod, black	2	7413-W10-K3D
❍	13	5-hole dual rod B, gray	6	7026-W10-S2S1
❍	14	5-hole dual rod C, white	2	7026-W10-S3W
❍	15	5-hole dual rod C, gray	2	7026-W10-S3S2
❍	16	7-hole wide rounded rod, white	2	7404-W10-C2W
❍	17	7-hole wide rounded rod, gray	6	7404-W10-C2S
❍	18	7-hole flat rounded rod, gray	3	7404-W10-C3S
❍	19	11-hole rod, white	2	7026-W10-C1W
❍	20	Square frame B	2	7026-W10-T2W
❍	21	Square frame A	1	7026-W10-V1W
❍	22	Short frame, white	2	7413-W10-I1W
❍	23	14-hole dual rod, gray	2	7413-W10-H1S1
❍	24	Motor shaft	4	7026-W10-L1W
❍	25	3-cm axle	1	7413-W10-N1D
❍	26	10-cm axle	1	7413-W10-L2D
❍	27	90-degree converter X, white	4	7061-W10-J1W
❍	28	90-degree converter Y, white	4	7061-W10-J2W

✔	No.	Description	Qty.	Item No.
❍	29	90-degree converter Y, gray	6	7061-W10-J2S2
❍	30	Small gear	8	7026-W10-D2S
❍	31	Worm	1	7344-W10-A1W
❍	32	Crank bar	1	7026-W10-J2D
❍	33	O-ring	2	R12-08S
❍	34	Small pulley	2	7344-W10-N3S
❍	35	Body plate 3	3	7392-W10-L1TD
❍	36	Body plate 4	3	7392-W10-L2TD
❍	37	Leg left	1	7397-W10-C1W
❍	38	Leg right	1	7397-W10-C2W
❍	39	Diagonal connector	6	7404-W10-B2S
❍	40	30-mm tube	4	7400-W10-G1D
❍	41	20-mm tube	1	7400-W10-G2D
❍	42	Short anchor pin	6	880-W10-M1B
❍	43	Anchor pin	51	7061-W10-C1R
❍	44	Two-to-one converter	4	7061-W10-G1W
❍	45	Button pin	4	7061-W10-E1D
❍	46	Anchor pin lever	1	7061-W10-B1Y
❍	47	Motor unit 1	1	7392-W85-B1
❍	48	Medium gear	10	7346-W10-C1S
❍	49	Motor unit 2	1	7400-W85-A
❍	50	6.5-cm axle	3	7416-W10-C1D
❍	51	Jaw, upper	1	7416-W10-A1W
❍	52	Jaw, lower	1	7416-W10-A2W
❍	53	Bluetooth battery box	1	7416-W85-A
❍	54	Ultrasonic sensor	1	7416-W85-B
❍	55	Flexible shaft	2	7416-W85-C

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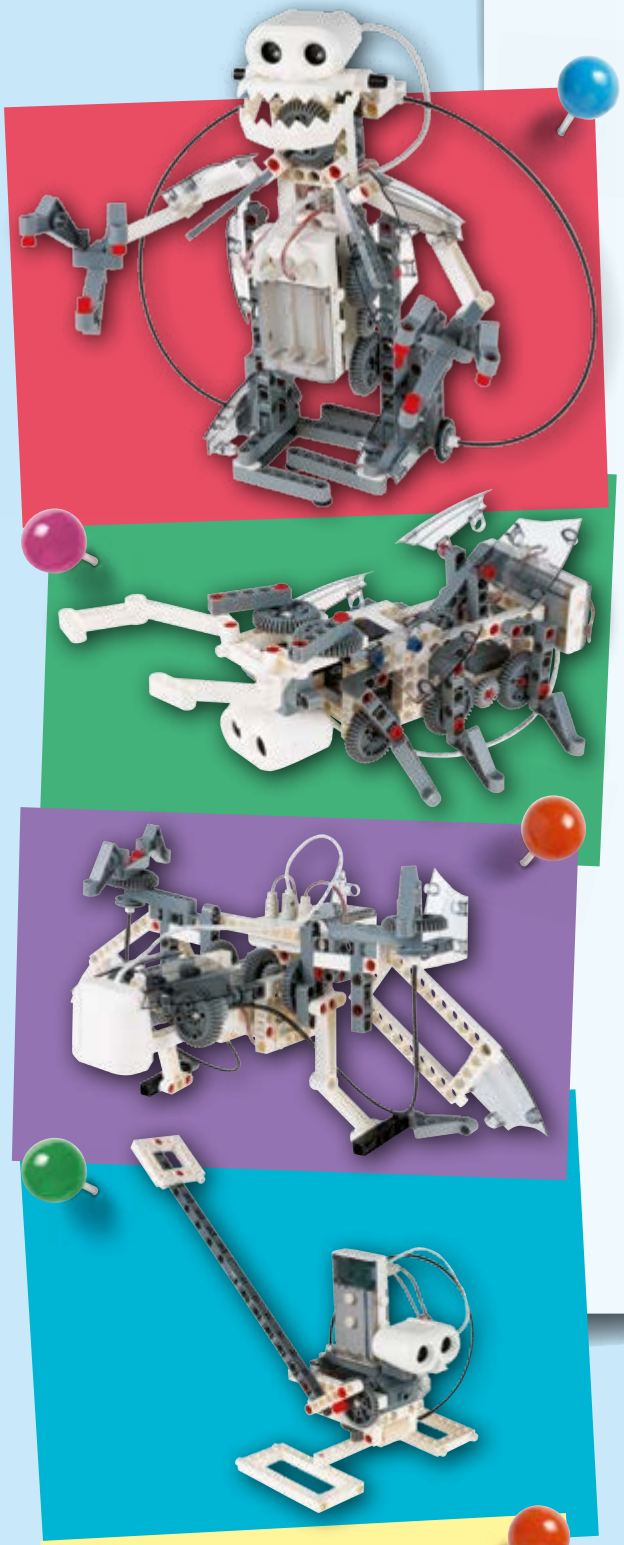

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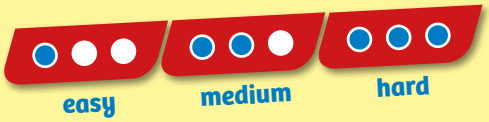
TIP!

Above each set of assembly instructions, you will find a red bar:

››› It shows you the difficulty level for the model's assembly:



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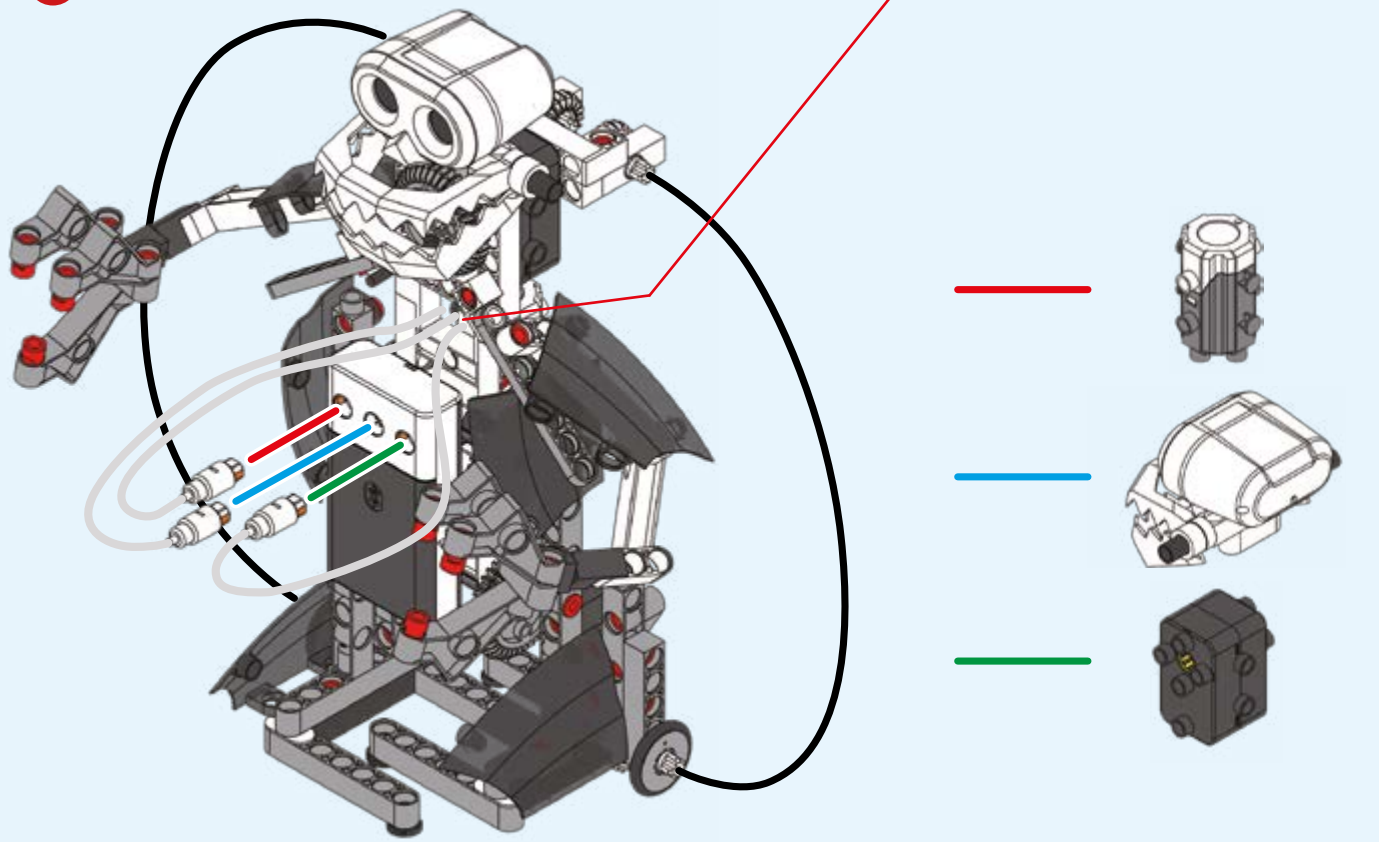

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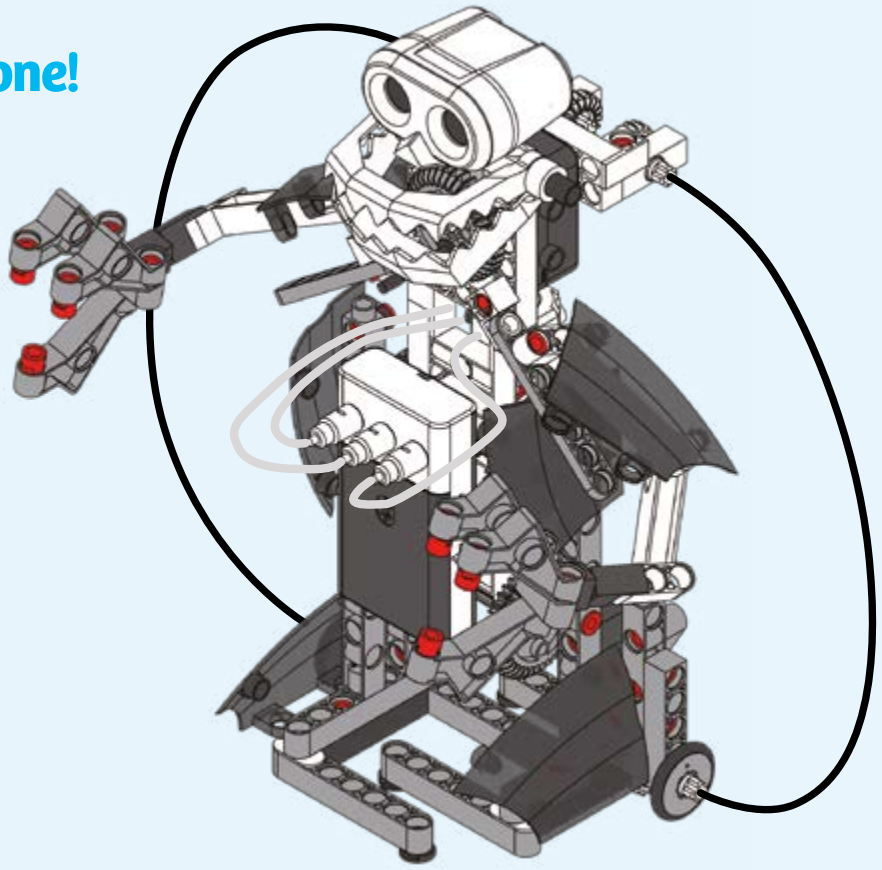
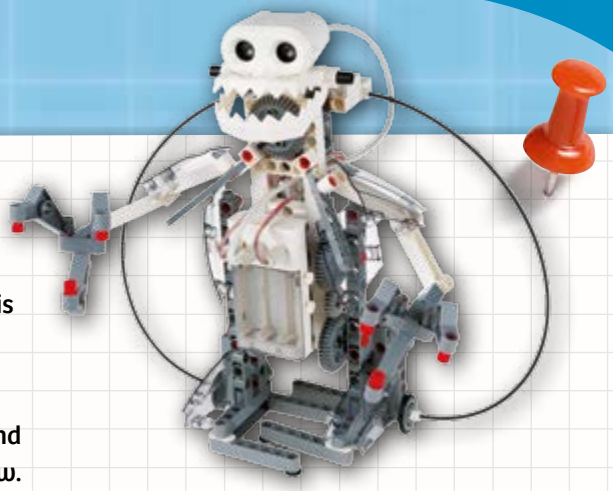
Done!



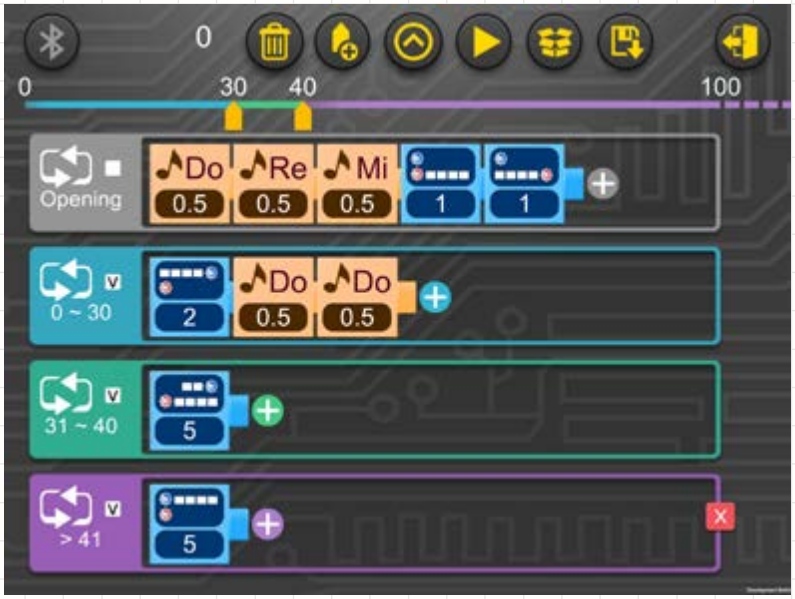
PROGRAMMING



SAMPLE PROGRAM FOR THE BIPEDAL DROID

Use this program to make your bipedal droid walk forward until it detects an obstacle with the ultrasound sensor. When the obstacle is detected, the robot will turn to the side. When the robot no longer detects an obstacle, it will walk forward again.

This program is preloaded in the app under Program 7. Test it out and write down how the robot behaves for each program segment below.



DEMO PROGRAM:

Program 7

OPENING SEGMENT:

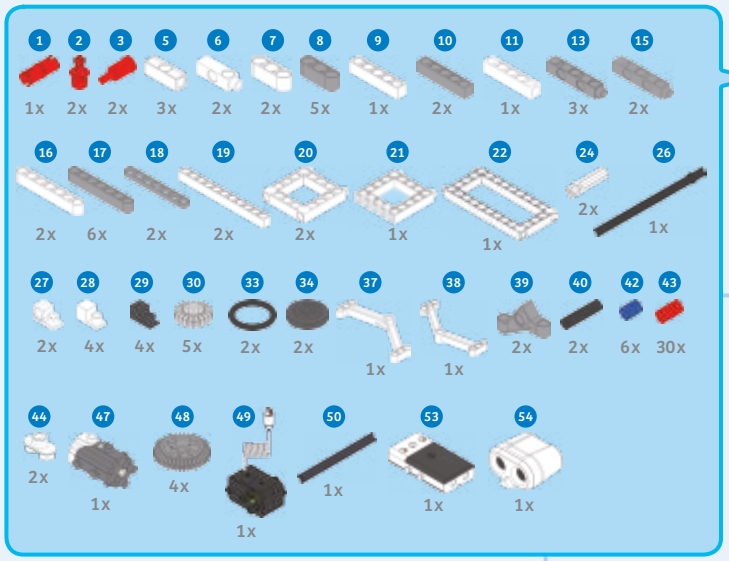
SEGMENT 0-30:

SEGMENT 31-40:

SEGMENT >41:

PROGRAMMING NOTES

SPY BOT



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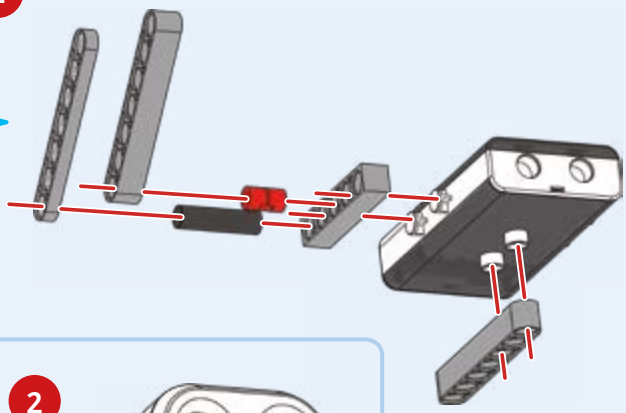

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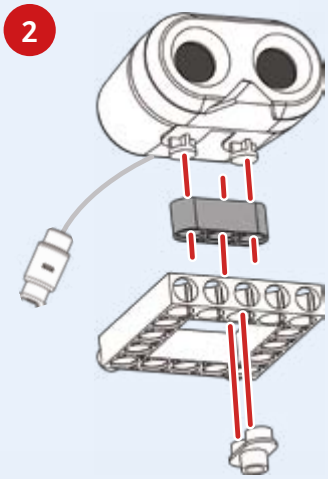

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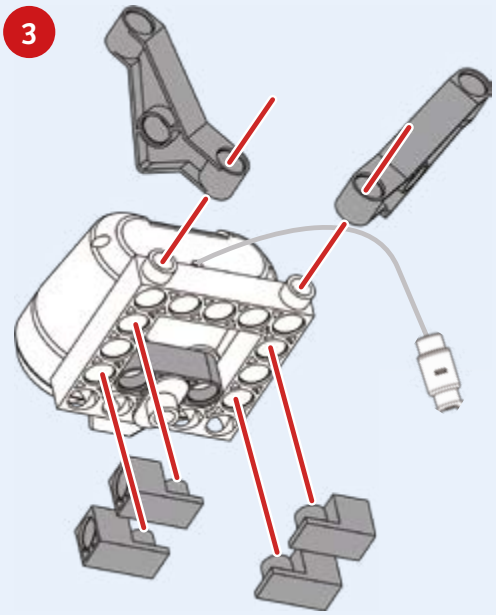

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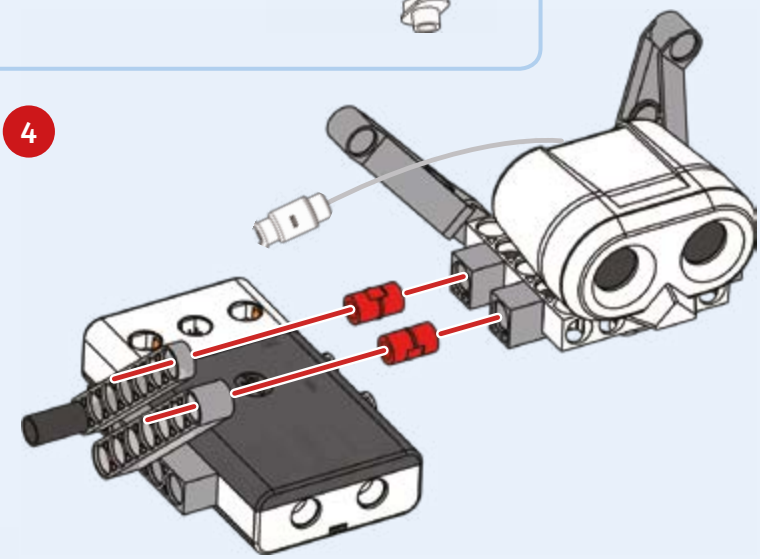

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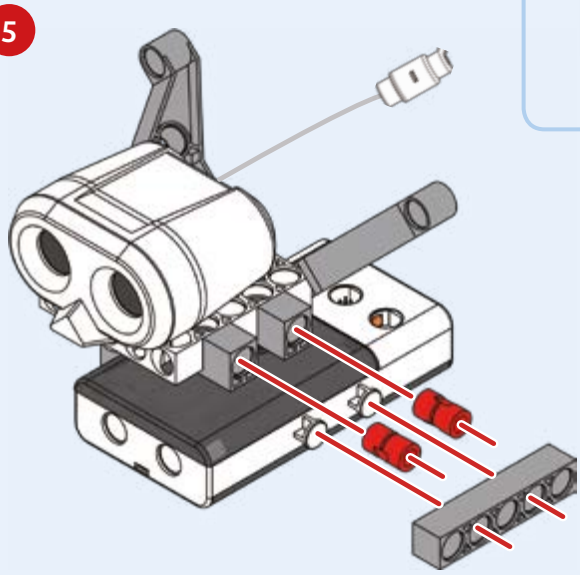

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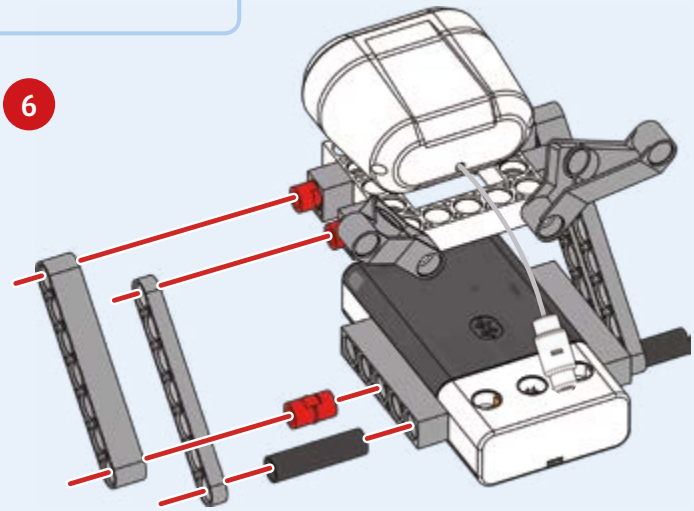

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Technical product development: Genius Toy Taiwan Co., Ltd., Taichung, Taiwan, R.O.C.
Text and Editing: Ted McGuire
Additional Graphics and Packaging: Dan Freitas

Manual design concept: Atelier Bea Klenk, Berlin
Manual illustrations: Genius Toy Taiwan Co., Ltd., Taichung, Taiwan, R.O.C., and Thames & Kosmos

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Printed in Taiwan / Imprimé en Taiwan

620375-03-010615