42164 Off-Road Race Buggy

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Kids aged 8 and up enjoy big-time fun with this cool vehicle toy. Young builders develop their skills as they assemble the LEGO® Technic™ Off-Road Race Buggy (42164). The experience continues as they evaluate out their model. It features authentic details inspired by real buggy race cars, including rear suspension, a moving 4-cylinder engine and cool flex steering. This set makes a great treat or gift idea for kids who love vehicles and race car toys.

LEGO Technic construction kits combine realistic details with interactive models to inspire young LEGO builders to learn more about engineering. Give kids a fun building adventure with the LEGO Builder app where they can zoom in and rotate models in 3D and track their progress.

- A building toy for kids aged 8+ – Race car fans can have lots of fun building and playing with the LEGO® Technic™ Off-Road Race Buggy car for children who love vehicle toys.
- 4-cylinder engine – This car toy features authentic details inspired by real buggy race cars, including a moving 4-cylinder engine
- Steering and suspension – Kids put their car to the test as they try out the rear suspension and the flex steering, which lets the buggy tilt nimbly from side to side.
- A car gift idea for kids – This set makes a fun treat or gift for boys, girls and kids who love vehicles or car building sets.
- An introduction to engineering – LEGO® Technic™ buildable model sets feature realistic movement and mechanisms that introduce young LEGO builders to the universe of engineering.
- Small LEGO® set – 219-piece set with a car measuring over 3.5 in. (9 cm) high, 6.5 in. (17 cm) long and 4 in. (11 cm) wide.

On the front of the LEGO Technic 42164 Off-Road Race Buggy box, the finished buggy is shown racing across a dirt track! The model is built in blue and yellow, with large black wheels and visible suspension parts! On the top left, the LEGO Technic logo is printed together with the set number 42164 and the age mark 8+. The front of the box highlights the racing action and shows the buggy as an off-road vehicle designed for rough ground and dusty tracks!

On the back of the box, the focus is on the buggy's functions! There are close-up pictures of the suspension, the steering system, and the four-cylinder engine with moving pistons! Side and rear views of the buggy are also included, giving a clear look at its shape and mechanical details! The back of the box highlights the technical features and shows how the model combines play with realistic engineering!

This set has 219 pieces and is for kids aged 8+.

Baggs 1: contain the pieces to build the rear suspension, the rear wing, the rear axles for the back wheels, and the moving 4-cylinder engine.

Baggs 2: contain the pieces to build the rest of the buggy: Buggy's body, the buggy's direction, the front rotating axles for the front wheels, the seats, the safety bars, and the 4 wheels.

Welcome to text-based instructions from Bricks for the Blind. Before you start building, here are some terms we'll be using:

- In Front of/Front: towards you.
- Behind/Back: away from you.

- Up: towards the ceiling.
- Down: towards the floor.
- Stud: the bump on a LEGO brick. Example: A 2x1 brick has two studs on it.
- Vertically: with the longest side going from front to back
- Horizontally: with the longest side going from left to right.
- Upright: pointing up towards the ceiling.
- Standing upright: The piece is perpendicular to the ground, like a wall.
- Lying flat: The piece is parallel to the ground, like a piece of toast which fell off the table.
- That one/ppp: previously placed piece.
- Plate: piece with studs.
- Tile: smooth piece without studs (unless otherwise specified)
- A jumper plate is a 1x2 plate with a single stud on top, or a 1x3 plate with only two studs on top.
- Anti-stud is a term for the portion of a LEGO piece which accepts studs, like the bottom of a plate or brick.
- Symmetrically: a mirror image. Example: If you place a 2x1 brick with technic connector on the front wall at the right, connector to the front, and then place another such piece symmetrically on the back wall, at the right, the technic connector of the second piece should point to the back, since it will be placed symmetrically.
- Centered-vertically: even amount of space in front of and behind piece
- Centered-horizontally: even amount of space left and right of piece.
- Row: studs lined up horizontally (left to right/side to side).
- Column: studs lined up upright or vertically (top to bottom/back to front).

A note on LEGO Technic™ part names. These parts are different from regular LEGO bricks. Here are some definitions in case the builder or helper is not familiar with LEGO Technic™.

- Axles - An axle is a connector which has an X shaped cross-section. Because their cross section is not round, anything connected to an axle using an axle-hole will rotate with that axle. Axles are longer than they are wide, and the length of an axle corresponds with how many bricks long it is. Aka a 3L axle is three bricks long. Axles come in a variety of lengths, with a 2L axle being the shortest available. They may be combined with pins or have circular stops on them. A stop prevents the axle from sliding through an axle-hole at a specific point on the axle.
- Pins - A pin is a connector which has a circular cross section and a flanged notch out of one or both ends. This flanged notch allows them to click into bricks with a pinhole. Pins come with and without friction ridges, which are small bumps on the pin which prevent them from rotating freely. For standard pins, black is a high friction pin, and gray is a low friction pin. A standard-length pin is two brick lengths long, with a stop in the middle. This prevents a brick from being pushed from one side of the pin to the other. A 1L pin is one brick long and still retains the stop; however, it also includes a hollow stud at the other end. A 3L pin is three bricks long, and only contains a stop at one side, allowing two bricks to be pushed onto the other side of the pin. Pins may also have one side which is an axle.

- Technic brick - a brick which contains one or more holes which accept technic pins.

- Lift-arms - A lift-arm is a basic structural element, like a brick or a plate, but usually without any studs. It is a beam with rounded ends and with holes in it, with the same spacing as the studs on a LEGO brick. lift-arms come in a variety of lengths, including a 1x1 lift-arm which looks like a cylinder. Thick lift- arms are as wide as a LEGO brick, and thin lift-arms are half as wide as a LEGO brick, but not the same thickness as a LEGO plate! The holes in a lift-arm arm may accept axles or pins. They also come in a variety of shapes, including tees, ells, and triangles.

- Gears - A gear is a functional element. They are typically discs with teeth on the outside; there are also worm gears which look like a spiraling cylinder! Gears connected by axles transmit or even transform rotational motion!

- Axle and Pin Connectors - These elements are typically smaller than lift-arms and are used to connect some combination of pins or axles. They might have pins or axles, as well as axle or pinholes. They have a lot of different angle combinations! The simplest just connects two axles or pins together in a straight line.

- Bushes/Bushings - LEGO Technic™ uses bushes largely as spacers, but they also can reduce friction between rotating parts or can form useful elements such as bars. Bushes are typically light gray, cylindrical, and have an axle-hole running through the middle. They have a flange at the front and back to make it easier to pull on and off.

For builders with low vision, or a sighted building partner who may want to follow along with the printed visual instructions that come with each kit, PDF versions are always online at LEGO.com: (https://www.lego.com/en-us/service/buildinginstructions/42164) As low vision users may benefit from viewing the instructions on a personal device where they can zoom in on content and use assistive technologies to enhance the visuals.

Sorting the pieces:

To begin a successful build, it helps to sort the pieces into groups, bags, or small containers. Have a sighted friend or family member do this in advance following the instructions below. You will see that the pieces should be sorted into groups according to the building steps in the set. Doing this in advance makes locating the pieces easier. See below on how to sort the pieces to correspond to the steps in this set. Number the containers using letters A-Z, Numbers, or meaningful names. The parts will be collected into a small Number from steps in the instructions. Example: Steps 1-3 means collecting all the parts used in steps 1, 2 and 3, and putting them in one container.

This set comes with 2 plastic bags labelled 1, 2 plastic bags labelled 2, a sticker sheet, 2 sets of instructions, and some loose pieces. Sort the pieces into groups as described below. Note that where there are multiple colors of the same brick in a step, the colors will be split across two groups to make telling the difference easier for the builder!

LEGO includes a few spare parts in case you lose something. Set these into their own group away from the rest, in case you need them later.

Before you begin building, here's a description of the buggy you will create. This description could help you imagine what the LEGO Technic Buggy (42164) looks like before building, and by doing so, guide and enrich the building process: the buggy is a compact, sporty vehicle in black, yellow, and blue, designed for rough terrain with a high chassis raised above the ground and four wheels set wide apart, the rear ones larger than the front to give extra stability and power; at the back sits the engine and suspension, which include a realistic replica of the four-stroke engine movement, adding authenticity to the model; inside, the seats are open with no

roof, protected only by side bars placed at roof height, so instead of doors you hold onto these bars, giving the buggy its adventurous, open-air character; the suspension and flexible frame allow the model to twist slightly left and right, mimicking how real buggies absorb bumps and avoid rolling when climbing hills or crossing uneven ground, resulting in a dynamic, mountain-ready vehicle that feels both playful and true to life.

Specific guidelines for this set

In this set, you will use many types of liftarms: L-shaped liftarms, bent liftarms, T-shaped liftarms, and straight liftarms. These pieces may have different combinations of pin holes (round) and axle holes (cross-shaped). To make the building process easier and consistent, follow this rule when inserting pins, axles, or other connectors:

Counting the Holes

- When a liftarm has both pin holes and axle holes, we count all holes in order from one side to the other.

- Unless the instruction specifically says, in the axle hole or in the pin hole, you should assume the counting includes both types of holes together.

- The direction of counting will always be specified: from the right or from the left:

Examples

- Insert a tan 2L pin into the 2nd back-facing hole from the right. Count all holes (pin and axle) starting at the right end. Place the pin in the second hole.

- Insert a black 2L axle into the 3rd hole from the left. Count all holes from the left end until the third one, regardless of type.

- Insert a blue pin into the axle hole on the 4th position from the right. Here, the instruction specifies axle hole, so you must place the pin in the axle-shaped hole at that position.

    - To make the building instructions smoother and more precise for blind builders, we provide clear directional guidance whenever a piece needs to be inserted or attached. These directions specify the exact path the piece should follow, using the terms front to back (the piece moves away from you), back to front (the piece moves toward you), top to bottom (the piece moves downward), and bottom to top (the piece moves upward). For example: Insert a black 2L pin from front to back into the second front-facing hole from the right of your 5L liftarm or attach the leftmost forward-facing hole of your 7L liftarm from back to front onto the 1L section extending from the ppp.

After inserting or attaching a piece, we specify how far the axle or pin extends in each direction. For example: Insert a black 2L pin from front to back into the second front-facing hole from the right of the 5L liftarm, so that 1L of the pin extends toward the front. Or: Attach the leftmost back-facing hole of a 7L liftarm from front to back onto the 1L pin end extending at the front.

Book 1

Bags 1

Group 1: contains the pieces for steps 1-6.

Group 2: contains the pieces for steps 7-8.

Group 3: contains the pieces for steps 9-10.

Group 4: contains the pieces for steps 11-14.

Group 5: contains the pieces for steps 15-18.

Group 6: contains the pieces for steps 19-22.

Group 7: contains the pieces for steps 23-26.

Group 8: contains the pieces for step 27.

Group 9: contains the pieces for steps 28-30.

Group 10: contains the pieces for steps 31-39.

Book 2

Bags 2

Group 11: contains the pieces for step 40.

Group 12: contains the pieces for steps 41-44.

Group 13: contains the pieces for steps 45-46.

Group 14: contains the pieces for steps 47-52.

Group 15: contains the pieces for steps 53-54.

Group 16: contains the pieces for steps 55-60.

Group 17: contains the pieces for steps 61-62.

Group 18: contains the pieces for steps 63-65.

Group 19: contains the pieces for steps 66-67.

Group 20: contains the pieces for steps 68-71.

Group 21: contains the pieces for steps 72-73.

Group 22: contains the pieces for steps 74-77.

Group 23: contains the pieces for steps 78-79.

Group 24: contains the pieces for steps 80-81.

Group 25: contains the pieces for steps 82-84.

Group 26: contains the pieces for step 85.

group 27: contains the pieces for step 86.

Let’s get to building!

Building Instructions (Bags 1, Book 1):

Group 1:

1. Place a red 2l liftarm horizontally in front of you, so its holes face up and down. Insert a blue 3l pin from top to bottom into the left up-facing hole of the ppp, so that 2l of the pin extends upward.

2. Take a black 3l perpendicular axle liftarm with triple pin connector and place it horizontally in front of you, so that its three pin holes face up and down at the front, while the axle connector is

positioned at the back with its axle holes facing left to right. Attach the second bottom-facing pin hole starting from the right from top to bottom onto the upward 2L extending pin, so that after attaching 1l of the pin extends upward. The axle connector should remain at the back, with one pin hole overhanging to the left. Insert the axle end of a blue 2l pin-axle from left to right into the left-facing axle hole, so that 1l extends to the left.

3. Hold your part and insert a yellow 7l axle from top to bottom into the left overhanging up-facing pin hole, pushing it down until nearly the top end, so that 1l of the axle extends upward and 5l extend downward past the pin hole. Place a grey 9l bent liftarm horizontally in front of you so that its short arm is on the left, its long arm extends diagonally to the front right, and its pin holes face up and down. Attach the two left down-facing holes of the liftarm from top to bottom: the leftmost onto the top end of the ppp and the other onto the upward-sticking 1L pin end. The long side of the liftarm should point diagonally to the front right, overhanging by six holes.

4. Let's make a part! Place a black 3x3 U-shaped pin connector flat in front of you so that the right side is open. The front side has two pin holes, and the back side has two pin holes, all facing front to back. The left side has one centered pin hole and two axle holes, one on each side of the pin hole, facing left to right. Insert a tan ¾ pin from front to back into the leftmost front-facing pin hole, so that ½l of the pin extends outward to the front. Repeat symmetrically to the back inserting from back to front.

5. Insert a red 6l axle from left to right into the centered left-facing pin hole, so that about 1l protrudes on the right side while 5L extends to the left. Place a tan 12-tooth bevel gear onto the right 1L end of the axle — the part that passed through the pin hole — so it stays secured and is ready to connect with other parts.

6. Insert the end without stop of a grey 8l axle with stop from front to back into the right front-facing pin hole, pushing only about 1l through so it does not yet reach the back symmetrical hole. Attach a tan 20-tooth bevel gear to the back axle end, with its hollow side facing to the back. Then push the axle fully through until it crosses the back right pin hole and extends 5l outward to the back. The hollow side of the gear should rest against the front side of the back pin hole. Note that if you turn the back protruding end of the grey 8l axle, the red horizontal 6l axle from Step 5 will also rotate.

Group 2:

7. Rotate your part 90° counterclockwise so that the 5l extending portion of the red 6l axle faces to the front. Take a grey 2l liftarm with pin and axle hole and position it horizontally upright, with its holes facing front to back, with the axle hole at the right and the pin hole at the left. Attach the right back-facing axle hole of this liftarm from front to back onto the front end of the vertical red 5l front-extending portion of the red 6l axle. Slide the liftarm along the axle until it rests against the front side of the black 3x3 U-shaped connector, leaving 4l of the axle extending free at the front. Take another grey 2l liftarm with pin and axle hole and position it so that its holes face front to back, with the axle hole on the left and the pin hole on the right. Attach the left back-facing axle hole of this liftarm from front to back onto the front-facing end of the same vertical 4L extending axle end of the red 6l axle. Slide it inward until it rests against the ppp, 3L end from the red 6L axle should extend to the front. The two grey 2l liftarms should now be staggered. Finally, rotate your build 90° clockwise again so that the 5l extending end of the grey 8l axle with stop points to the back.

8. Bring back your main build and position it so that the 9L liftarm is in front of you, its short arm faces vertically upright at the front right, its holes face front to back, the sticking axles point to the back, and the triangular tip points downward. Insert the back 5L axle extending end of your sub build from front to back into the 3rd hole from the right of the 9l bent liftarm at the front -this

is the hole on the triangular tip. Push the axle from front to back until it is secured, 4L of the axle should extend to the back. Then attach the back tan 1/2L back extending pin of your sub build to the hole immediately to the left of where you attached the axle, the 4th hole from the right of the 9L bent liftarm at the front, from front to back, so it is rigidly attached.

Group 3:

9.1 Let's make a part! Hold a black 3L perpendicular axle pin liftarm with triple pin connector vertically upright, so that the axle connector is on the right, with its axle holes facing up and down, and the three pin connectors are on the left, with their pin holes facing front to back. Insert a blue 3l pin into the 2nd hole from the bottom on the left side of the ppp, at the front, from front to back. After insertion 1l extends to the back and 1L to the front. Insert the axle end of a blue 2l pin axle into the up-facing axle hole of the 3L perpendicular axle and pin liftarm with triple pin connector, from top to bottom. After insertion 1l extends upward.

9.2 Place a red 2l liftarm vertically upright in front of the two bottom pin holes of the black 3L perpendicular axle and pin liftarm with triple pin connector, so the top hole of the liftarm at the back connects to the front extending 1L of the blue 3l pin, attach it from front to back.

9.3 Place a grey 9l bent liftarm horizontally in front of you, so that the short side faces vertically upright at the right and its holes face front to back. Attach the 2nd front facing hole from the right of the 9l bent liftarm from back to front onto the back extending 1L of the blue 3l pin from your part. Then insert a reddish-brown 5l axle with stop from back to front into the 3rd back facing hole from the right of the 9l bent liftarm, this is the hole on the angle tip. Push it all the way in so that it passes through the bottom holes of the 3 pieces of the sub build. The stop should rest flush at the back, and 2L of the axle should extend to the front.

9.4 Bring back your main build and position it horizontally in front of you so that the axles point to the back, the red axle with the two staggered grey 2l liftarms faces to the left and the side with the extending 1/2L tan pin is at the front. Attach the 4th back facing hole from the right of the 9l bent liftarm of your part from front to back onto the tan extending 1/4L pin at the front of your main build.

10. Locate the blue 1L pin at the right side of the front 9l bent liftarm that is pointing up. Then locate the blue 1L pin at the right side of the back 9l bent liftarm that is pointing up. Take a blue 7l liftarm with 7 pin holes. Position it vertically in front of you, so that its pin holes face up and down. Attach the bottom front hole of the 7l liftarm to the front blue pin from top to bottom. Attach the bottom back hole of the 7l liftarm to the back blue 1L pin.

Group 4:

11. Locate the leftmost hole at the front of your main build. Insert the 2L axle end of a black 3l pin axle into this hole from front to back.

After insertion 2l should extend to the front. Repeat symmetrically to the back. Locate the 3rd hole from the left at the back of your main build and insert a black 2l pin into this hole from back to front. After insertion 1l extends to the back. Repeat symmetrically to the front.

12. Let's make a part! Place a light grey axle and Pin Connector Angled 90° in front of you, so the right angle with the pin hole faces the front right, the pin holes face up and down, and the axle holes face the left and the back. Insert a red 2l axle into each axle connector. Insert the first red 2l axle from left to right into the left facing axle hole, so 1l of the axle extends outside to the left, Insert the second red 2l axle from back to front into the back facing axle hole, so 1l of the axle extends to the back. Bring back your main build so that the horizontal red extending 3L axle with the two staggered grey 2l liftarms faces to the left. Ensure the leftmost grey 2l liftarm with 2 holes points downward. Slide your angled connector part onto the left-facing red

extending 4l axle, through its pin hole, from left to right. After connection, the two red 2l axles of your sub-part each extend 1l diagonally upward, ready to link with the next assembly.

13. Vertically Place a grey Axle and Pin Connector Angled 180° in front of you so the pin holes face left and right and the axle holes face front and back. In this position slide the right facing pin hole of your grey Axle and Pin Connector Angled 180 from left to right onto the red left facing axle where you attached the previous part. Both axle holes should align with the back leftmost and front rightmost axle hole of the 9L liftarms. Press the front left black 3L pin axle from front to back so the axle end gets inserted into the Axle and Pin Connector Angled 180°. Repeat symmetrically to the back.

14. Let's make 2 identical parts! Place a reddish brown 1x1 necktie with 1x1 upright side stud in front of you, so the side stud faces the front. Place a light grey 1x1 slope on the side stud of the ppp so it slopes down. You should now have 2 identical parts! Bring back your main build and place it horizontally in front of you, so the pin hole of the Axle and Pin Connector Angled 180° faces the left. In this position slide the 1x1 neck tile of your first part from front to back through the diagonal front upward 1L extending axle from step 12, so the side with the slope is at the front facing diagonally down. Note that this is not very steady. Repeat symmetrically to the back. You have built the moving 4-cylinder engine!

Group 5:

15. Let's make 2 identical parts! Place a reddish-brown 4L thin liftarm with 2 pin holes and 2 axle holes horizontally upright in front of you, so that the holes face back to front. Insert a white 1l pin with stud from back to front into each of the two center back facing holes, so the studs face the back and 0.5L of the pins extend to the front. You should now have 2 identical parts! Attach the leftmost back facing axle hole of your first part horizontally upright from front to back onto the diagonal front upright red 1L extending axle where you attached a part in the previous step. Repeat symmetrically to the back attaching from back to front.

16. Let's make a part! Place a grey 9l bent liftarm with 7 pin holes and 2 axle holes horizontally in front of you, so that the triangular tip faces upward, the short side is at the left, and the holes face front to back. Insert a yellow 3l axle into the rightmost front-facing axle hole from front to back. Push it all the way through so 1l extend evenly outside on both sides. Insert a blue 3l pin into the 3rd hole from the right at the front from front to back, so 1L extends to the back and 1L to the front.

17. Hold a grey 3x3 T-shape liftarm upright so that the short cross liftarm of the T points upward and the longer liftarm of the T extends sideways to the left from the middle height of the vertical upright section. In this position, the sideways liftarm sits diagonally, with its holes facing front to back. Attach the leftmost back-facing hole of this diagonal liftarm from front to back onto the front extending 1L end of the ppp. Attach the rightmost back-facing hole of the diagonal liftarm from front to back onto the front extending 1L end of the black 3l axle. The top and bottom holes of the upright section of the T-shape liftarm remain free, with the upper hole sticking out above the structure. Repeat symmetrically to the back.

18. Insert a light grey 3L pin with stop into the top front facing hole of the front 3x3 T-shape lift arm from front to back. Do not push the pin all the way through, as 1L should extend to the front and 1L to the back.

Group 6:

19.1 Let's make a part! Let's build the buggy suspension! Hold a light grey 2x2 axle and pin connector holder with 4 axle holes and 1 pin hole vertically upright so that the pin holes face left and right, and the tip of the triangular shape faces down at the bottom left. Insert a yellow 3l axle from front to back into the front right facing axle hole, so 2L of the axle extends to the front

and 0.5L extends to the back inside the connector. Position a light grey 6.5l shock absorber with soft spring and tight coils horizontally in front of you, with the spring at the left and the pin holes facing front to back. Slide the left pin hole of the shock absorber onto the 0.5L back extending end of the yellow 3l axle from back to front. Once connected, press the front extending 2L end of the yellow 3l axle further from front to back so that its back end passes completely through the back right-facing axle hole of the connector holder. At this point, 0.5L of the axle extends to the front and 0.5L to the back.

19.2 Bring back your previous sub build and place it horizontally in front of you, so the T-shaped liftarms are at the front right and at the back right and their holes face front to back. Slide the right pin hole of the light grey 6.5l shock absorber with soft spring and tight coils onto the back 1l extension of the half-inserted light grey 3l pin with stop from Step 18, inserting from back to front. Then press the pin fully through from front to back, so that it also fits into the top front-facing hole of the back 3x3 T-shape liftarm. At this point, the pin is completely engaged, securing both your new part and the back T-shape liftarm together.

20.1 Hold a light grey 2x2 axle and pin connector holder with 4 axle holes and 1 pin hole vertically upright, so that the triangular tip points upward at the left, its pin hole is at the top facing left to right and the axle holes face front to back. Align the front right axle hole and the back right axle hole of this connector holder with the 3rd hole from the left of the 9l bent liftarm at the front and at the back, this hole is located at the triangular tip of the 9L bent liftarm.

20.2 Insert a light grey 5l axle through the front right axle hole of the connector holder from front to back, then pass it through the 3rd hole from the left of the 9l bent liftarm at the triangular tip, and finally through the back right axle hole of the connector holder. Make sure both ends of the axle extend evenly, with the same distance 1.5L protruding at the front and at the back.

21. Attach the leftmost back-facing axle hole of a grey 3x3 thin L-shaped liftarm with 2 pin holes and 3 axle holes upright, with its holes facing front to back, to the 1.5L front sticking axle end of the part you previously built from front to back, so that the right angle of the liftarm faces the bottom right and 0.5L of the axle extends to the front. Then connect the top rightmost back-facing axle hole of the L-shaped liftarm from front to back onto the front 0.5L protruding end of the yellow 3l axle from Step 19. Finally, attach a light grey 2x2 curved corner axle connector from front to back onto the 0.5L front protruding end of the light grey 5l axle you have pushed through the leftmost axle hole of the 3x3 L-shaped liftarm, so that the other end of the connector faces to the right and the curved edge faces the front left.

22. Attach the leftmost front-facing axle hole of a grey 3x3 thin L-shaped liftarm with 2 pin holes and 3 axle holes upright, with its holes facing front to back, from back to front onto the back 1.5l protruding end of the left vertical light grey 5l axle, so that the right angle of the liftarm faces the bottom right and 0.5L of the axle extends to the back. Then connect the top rightmost front-facing axle hole of the L-shaped liftarm from back to front onto the back 0.5L sticking end of the yellow 3l axle from Step 19. This attachment should be symmetrical to the front connection made in the previous step. Finally, attach a light grey 1l bush with axle hole from back to front onto the 0.5L back sticking end of the light grey 5l axle you have pushed it through the 3x3 L-shaped liftarm, with the ridge facing to the back.

Group 7:

23. Insert a yellow 7l axle into the leftmost front-facing axle hole of your sub build from front to back. Push the axle all the way through so that it extends evenly, with the same length 3L protruding on both sides of the 9l bent liftarm.

24. Attach a blue 2l perpendicular axle and pin liftarm using the back facing axle hole to the front 3L sticking end of the ppp, attaching from front to back, so that the pin connector is at the

top and the pin holes face left to right. Push it forward until it reaches the 9L bent liftarm. Repeat symmetrically to the back, attaching from back to front. Then attach a light grey 1l bush with axle hole onto the back 2L sticking end of the yellow 7l axle from back to front, pushing it forward until it reaches the ppp. Repeat symmetrically to the front, attaching from front to back.

25.1 Bring back your main build and position it horizontally in front of you, so the staggered 2L liftarms are on the left side. On the main build, there is 1 9l bent liftarms attached at the back and there is 1 9l bent liftarms attached at the front, with their holes facing front to back. Place your sub-build horizontally on top of the main build, centered vertically, so that the 3x3 T-shaped liftarms are at the front right and back right. The sub-build sits between the back attached 9l bent liftarm and the front attached 9l bent liftarm. Align the bottom pin hole of the front 3x3 T-shaped liftarm on your sub-build with the top right hole of the front attached 9l bent liftarm and align the bottom pin hole of the back 3x3 T-shaped liftarm on your sub-build with the top right hole of the back attached 9l bent liftarm.

25.2 Locate the back 5l protruding axle end of the yellow 7l axle from Step 3, which is sticking out at the back right of the main build at the same height as the aligned holes. Push this axle forward from back to front so that it passes through the axle hole of the back black 3L perpendicular axle and pin liftarm with triple pin connector, through the top right hole of the back 9l bent liftarm, the bottom hole of the back 3x3 T-shaped liftarm, the bottom hole of the front 3x3 T-shaped liftarm, the top right hole of the front 9l bent liftarm and the top hole of the front 3L perpendicular axle and pin liftarm with triple pin connector. There is no extending.

26. Position a blue 2x4 L-shaped liftarm with 4 pin holes and 1 axle hole upright in front of you, so that the right angle faces the bottom left and the long side of the L is horizontal with its holes facing front to back. Attach the top leftmost back-facing hole of the liftarm from front to back onto the front protruding 1l end of the left vertical yellow 7l axle from Step 23. Then connect the right-angle back-facing hole and the second back-facing hole from the right of the liftarm from front to back onto the two black front-facing 1L protruding pins from Step 11.

Group 8:

27.1 Let’s make a part! Horizontally place a red 6l axle in front of you. Position a blue 2L perpendicular axle and pin liftarm so that the axle connector is at the front with its axle hole facing left to right, and the pin connector is at the back with its pin holes facing up and down. Attach the right facing axle hole of your liftarm from left to right onto the left end of the red 6l axle.

27.2 On the right end of the red 6l axle, attach a light grey 1l bush with two ridges from right to left, push it until it touches the blue liftarm. The notched ridge must face to the left. Then position a light grey 3l perpendicular axle and pin liftarm, with two axle holes and one center pin hole, so that the pin connector and the other axle connector are at the back, the pin holes face up and down, and the free axle holes face left to right. Attach the left front axle hole of this liftarm from right to left onto the right end of the red 6l axle, sliding it in until it touches the bush. 3L of the 6L axle should remain free at the right end.

27.3 Bring back your main build and place it horizontally in front of you, so the suspension faces to the right. Insert 1L of the right end of the red 6l axle from left to right into the left-facing pin hole of the left 2x2 axle and pin connector holder. This holder has four axle holes and one pin hole, with its triangular shape pointing upward. Push the axle into the left-facing pin hole but do not pass it all the way through. Locate the second 2x2 axle and pin connector holder to the right of the first one. This holder also has four axle holes and one pin hole, but its triangular shape points downward. Notice the gap between the two holders. Place a light grey 3L perpendicular axle and pin liftarm vertically upright in that gap, with its two axle holes and one center pin hole positioned so that the lower axle holes align: the right-facing pin hole of the left holder matches,

and the left-facing pin hole of the right holder matches. Push your part from left to right, so that the 3L red axle right end of your part slides through all three pieces — the left holder, the vertical liftarm, and the right holder.

Group 9:

28.1 Let's make a part! Horizontally place a light grey 5l axle in front of you. Position a blue 2L perpendicular axle and pin liftarm so that the axle connector is at the front, the pin connector is at the back, its pin holes face up and down, and its axle hole faces left to right. Attach the connector from left to right onto the left end of the light grey 5l axle, so 4L of the axle remain free at the right.

28.2 On the right end of the light grey 5L axle, position a grey 9L bent liftarm vertically so that its triangular tip points upward and its long side faces forward, with its axle holes facing left to right. Attach the back left-facing axle hole of the liftarm from right to left onto the right axle end. Push it through until it reaches the blue 2L perpendicular axle and pin liftarm. 3L of the axle should extend to the right. Then insert another light grey 5L axle into the frontmost hole at the right of the liftarm from right to left. Push it through, so that it only protrudes 1L to the left of the liftarm, and 3L protrude to the right.

28.3 On the right end of the 5l axle, attach a grey 1l bush with two ridges (one smooth and one notched) from right to left. Slide the bush until it touches the liftarm, with the notched ridge facing left, so that 2l of the 5l axle protrude to the right. Rotate your sub-build 90° clockwise so that the long axle ends face forward. Bring back your main build and place it horizontally in front of you, so the suspension faces to the right. Locate the center pin hole of the right vertical upright light grey 3L perpendicular axle and pin liftarm with two axle holes and one center pin hole. Insert the front right 3L axle end of your sub-build from back to front into the back-facing pin hole of this connector, so 2L of this axle extends to the front.

29. Position a grey 9l bent liftarm horizontally so that its long side is on the left, its short side is on the right, its axle holes face front to back, and its triangular tip points upward. Attach the rightmost back-facing axle hole of the liftarm from front to back onto the front protruding 2L end of the light grey 5l axle you have just passed through the center pin hole of the light grey 3L perpendicular axle and pin liftarm with two axle holes and one center pin hole, so 1L of this axle extends to the front. Then attach the leftmost back-facing axle hole of the liftarm from front to back onto the front extending 2L end of the vertical left 5l axle with the inserted bush of your attached part, so 1L of the axle extends to the front. This attachment is symmetrical to the back liftarm placed in the previous step.

30. Position a blue 2L perpendicular axle and pin liftarm vertically upright, so that its pin connector is at the top, its pin holes face left to right, and its axle hole faces front to back. Attach the back facing axle hole from front to back onto the front protruding 1L end of the vertical right 5l axle. This axle has already passed through the center pin hole and the rightmost axle hole of the front horizontal 9l bent liftarm. This placement is symmetrical to the back connector attached in Step 28.

31. Horizontally insert the pin end of a red 3L pin axle into the right facing pin hole of the ppp from right to left, so 1L extends to the right and 1L to the left. Repeat symmetrically to the back. Attach a black 3L pin into the right axle end of the ppp by the side with ridged edge. Repeat symmetrically to the front.

32. Position a yellow 7l liftarm vertically so that its holes face left to right. Align the second right facing hole from the front and the second right facing hole from the back of the liftarm with the left 1l protruding pin ends at the front and back of your build of the red 3l pin-axle pieces from

the previous step. Attach the liftarm from left to right so that both pins connect securely into those holes.

33. Let's make a part! Let's build the buggy's exhaust pipe! Place a light grey 2l pin connector with slot in front of you so that the slot faces to the back. This part looks like a smooth 1L cylinder with a pin hole at each end. Along the outside there is a shallow longitudinal slot you can feel with your fingertip. Insert the pin end of a blue 2l pin-axle into the right-facing hole of the connector from right to left, so 1L extends to the right. Then insert a black 2l pin into the left-facing hole of the same connector from left to right, so 1L extends to the left. Horizontally attach another light grey 2l pin connector with slot from left to right onto the ppp, keeping its slot facing to the back as well. Rotate your part 180 degrees. Bring back your main build and place it horizontally in front of you, with the higher side facing to the left. Locate the light grey 2x2 curved corner axle connector at the front left of the main build, positioned above the blue 2x4 L-shaped liftarm from Step 21. Insert the axle end of your new part from right to left into the right-facing axle hole of the curved corner connector.

34. Let's make a part! Place a black 3x7 curved panel upside down horizontally in front of you, so that its narrow edge faces to the back and its two pin holes face left to right through the panel surface. Insert a red 1l pin with stud from right to left into the right-facing hole at the back right corner. Repeat symmetrically to the left from left to right into the left-facing hole.

35.1 Rotate your part 90 degrees clockwise, so a short side of the panel is in front of you. Place a large black armor small plate with stickers horizontally upright and attach the back right bar into the open stud of the front red 1L pin with stud from front to back. Repeat symmetrically to the back.

35.2 Skip this step if you have already placed your sticker! Ask a helper to place sticker 3 on the back large armor small plate. This sticker has a dark pink and black background with the number 12 in white. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

35.3 Skip this step if you have already placed your sticker! Ask a helper to place sticker 6 on the front large armor small plate. This sticker has a dark pink and black background with the number 12 in white. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

36. Bring back your main build and place it in front of you, so the higher side faces the left. Vertically attach the 1st and 5th left facing holes starting from the front of your part to the top right 3L facing pins from step 31 from right to left, so the hollow side of the panel faces up.

37. Let's make a part! Place a light grey 5l axle vertically in front of you. Position a grey 2L liftarm with pin and axle hole so that its pin connection is at the top and its holes face front to back. Attach the front axle hole of the liftarm from back to front onto the back end of the axle, so 4L of the axle extend to the front. Insert the axle end of a black 2L axle and pin connector angled 1 from back to front into the back-facing pin hole of the ppp, so the pin connector extends to the back with its pin holes facing left to right. Bring back your main build and place it vertically in front of you, so the suspension faces to the back. Locate the horizontal yellow 7l liftarm at the front top of your main build from Step 32, with its holes facing front to back. Below it, identify the two vertical upright grey 9l bent liftarms with their long sides facing forward and their holes facing left to right. Find the left-facing hole in front of the top horizontal 7l liftarm and insert the 4L free end of the axle of your part from left to right. Push it through so that it passes through both vertical upright front 9l bent liftarms and protrudes out 1L to the right.

38. Position a grey 2l liftarm vertically upright so that its pin connector is at the top and its holes face left to right. Attach the left-facing axle hole of the liftarm from right to left onto the right

protruding end of the axle of your attached part. Then insert the axle of a black 2L axle and pin connector angled 1 from right to left into the right-facing pin hole of the ppp, with the pin holes of the connector facing front to back and the pin connector protruding to the right. This placement is symmetrical to the connector attached on the left side in the previous step.

39.1 Let's make a part! Horizontally place a blue 2x3x1 curved panel with sticker in front of you, so it slopes to the front. Insert a black 4L axle from back to front into the back facing hole of the ppp, so 3L extends to the back.

39.2 Skip this step if you have already placed your sticker! Ask a helper to place sticker 2 on the blue 2x3x1 panel. This sticker has a dark pink, blue and black background with the letters BIT BOX in white. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

39.3 Bring back your main build so it is vertically in front of you and the suspension is at the back. Insert the back 3L protruding end of the 4L axle of your part into the front top facing axle hole of the 3L perpendicular axle and pin liftarm with center pin hole from step 30 between the 2 front vertical upright 9L bent liftarms. Push it through to secure the attachment so it crosses through the center hole of the horizontal top 1x7 liftarm and the top axle connector of the back vertically upright 3L perpendicular 2 axle and pin connector.

By completing Baggs 1 and book 1, you have built the bit box, which contains the realistic four-stroke moving engine, along with the rear axle where you will connect the larger rear wheels, the rear suspension, and the sporty rear wing. In other words, you've already assembled the power core and backbone of the buggy. You're proving yourself to be a great mechanic—but don't clean your hands yet, because the adventure continues and there's still more to build!

Building Instructions (Bags 2, Book 2):

Group 11:

40. Let's make a part! Place a light grey 9l bent liftarm horizontally in front of you, so the pin and axle holes face front to back. Position it so that its short side rests flat on the table, its long side points diagonally upward, and its triangular tip faces downward. Insert a light grey 5l axle from front to back into the leftmost front-facing axle hole, so 4L extends to the front. Insert a blue 3l pin from front to back into the fifth front-facing hole from the right on the diagonal side of the liftarm, so that the pin sticks out evenly 1L to the front and to the back. Insert a red 1l pin with stud from back to front into the back-facing hole just to the right of the blue pin, with the stud facing to the back. Finally, insert a black 2l pin from front to back into the second front-facing hole from the right, so 1L extends to the front.

Group 12:

41.

Insert the pin end of a blue 2l pin-axle from front to back into the third front-facing hole from the left of the grey 9l bent liftarm, so 1L extends to the front. Take a blue 2x4 L-shape liftarm and position it so that its short side points left and downward and the holes face front to back. Attach its rightmost back-facing axle hole on the long side from back to front onto the front-sticking 1L axle end of the blue 2L pin axle. Now attach the third back-facing hole from the right on the long side of this L-shape liftarm from back to front onto the front 4L protruding end of the light grey 5l axle located at the front left of the 9l bent liftarm, so 3 L of the axle extends to the front after the attachment. Push the parts together firmly so that the two liftarms touch.

42. Attach the bottom back-facing axle hole of a light grey 3L perpendicular axle and pin liftarm (with two axle holes and a center pin hole) vertically upright from back to front onto the front left-sticking 3l axle. Push it inward until the liftarm rests against the blue 2x4 L-shape liftarm, so 2L of the axle extends to the front.

43. Insert a blue 3l pin from front to back into the leftmost front-facing hole of the horizontal short side of the blue 2x4 L-shape liftarm, the hole located at the right angle at the front, so 1L extends to the front. Then attach the center back-facing pin hole of a light grey 3L perpendicular axle and pin liftarm vertically upright from front to back onto the front protruding 1L end of the ppp.

44. Insert a light grey 5l axle from back to front into the second back-facing hole from the left of the grey 9l bent liftarm. Push it forward so that it also passes through the blue 2x4 L-shape liftarm and protrudes 2L at the front. Attach the bottom back-facing axle hole of a light grey 3L perpendicular axle and pin liftarm (with two axle holes and a center pin hole) with its axle holes facing front to back vertically upright, from front to back, onto the front 2L sticking end of the ppp. Slide the liftarm inward until it rests against the blue 2x4 L-shape liftarm.

Group 13:

45. Insert a yellow 7L axle horizontally into the right-facing center pin hole of the ppp. Push the axle through so it also passes into the center pin hole of another light grey 3L perpendicular axle and pin liftarm. Continue sliding the axle until it inserts into the top axle connector of the leftmost 3L perpendicular axle and pin liftarm from step 43. The axle must not stick out on the left side and should extend 4L to the right.

46. Locate a blue 2x4 L-shape liftarm and position it so that its short side points down to the left, aligned with the previously attached 2x4 L-shape liftarm, with all holes facing front to back. Attach the leftmost back-facing hole at the right angle of this liftarm from front to back onto the front left 1l sticking end of the blue 3l pin. Then attach the two back-facing holes immediately to the right of that one from front to back onto the two front left 2l sticking axle ends of the two 5l axles. Press firmly so that this liftarm sits flush against the two 3l perpendicular axle and pin liftarms. Finally, insert a black 2l pin from front to back into the rightmost front-facing pin hole of the 2x4 L-shape liftarm, leaving 1l of the pin extending outward to the front.

Group 14:

47. Insert the axle end of a tan 2L pin axle from front to back into the bottom left facing axle hole of your part, so 1L extends to the front.

48. Insert a yellow 3l axle from front to back into each of the two front-left top axle holes of the two vertical upright 3L perpendicular axle and pin liftarms. Push both axles fully through so that they extend 1L to the front and to the back.

49. Position a blue 2x4 L-shape liftarm horizontally upright, so its holes face front to back and the short end points downward at the left. attach the 2 rightmost front facing holes from back to front onto the back 1L sticking ends of the ppps. Then insert 2 blue 3L pins from front to back into the 2 left front facing holes of the horizontal arm of the 2x4 L-shaped liftarm so 2L of each pin extends to the front.

50. Attach a light grey 3L perpendicular axle and pin liftarm (with two pin holes and one axle hole) vertically upright so that its pin holes face front to back. Connect the center pin hole from front to back onto the leftmost front-facing 2l pin end from the previous step, leaving 1l of the pin extending outward to the front. Then take a light grey 2l liftarm with axle and pin hole and position it vertically upright so that its holes face front to back, with the pin hole at the bottom. Attach the bottom pin hole at the back of the liftarm from front to back onto the second

front-left-facing 2L pin end to the right of the perpendicular connector. Push both parts inward until they rest firmly against the top back blue 2x4 L-shape liftarm.

51. Attach a blue 2x4 L-shape liftarm in the same orientation as the top back 2x4 L-shape liftarm from Step 49, aligning it with the top front left sticking 1L ends of the two 3l pins and the two front protruding 1L ends of the yellow 3l axles. Connect the two left back-facing holes from front to back onto the two front left sticking pin ends. Then connect the two right back-facing holes from front to back onto the two front-sticking axle ends. Press firmly so that the liftarm sits flush and secures the assembly.

52. Insert a yellow 3l axle from front to back into the front-facing axle hole of the vertical upright 2L liftarm with one pin hole and one axle hole, located above the second hole from the left of the horizontal arm of the perpendicular connector. Push the axle fully through so that 1l extends evenly outward to the front and to the back on each side of the connector.

Group 15:

53. Let's make a part! Let's start building the front rotating axle wheels! Place a black 7l perpendicular liftarm horizontally in front of you. The liftarm has seven pin holes: four on one side and three on the other. Position it so that the side with four pin holes faces upward. Insert a light grey 2l pin from top to bottom into the rightmost up-facing hole. Repeat symmetrically to the left.

54.1 Let's make 2 identical parts! Place a light grey 3L perpendicular pin connector with 4 pins horizontally flat in front of you, so the pins face vertically the front and the back and the pin holes face up and down. Attach a grey 1L round pin connector to the front right facing pin from front to back. Repeat symmetrically to the back.

54.2 Hold your part upright so that the left and right holes face front to back and the pins point vertically up and down. Insert a grey 4l axle with stop from front to back into the leftmost front-facing hole of the pin connector. Push it inward as far as possible so that 3l of the axle protrudes at the back. Attach a light grey 1l bush onto the 3l back-sticking end of the axle, sliding it from back to front until it rests against the pin connector, with the notched ridge facing to the back. The 2L axle end should extend to the back. You should now have two identical parts.

54.3 Bring back your previous part from Step 53 and place it horizontally in front of you, make the holes face up and down, with the two 1L extending pins facing upward. Vertically attach the bottom center pin hole of one of your identical parts from Step 54.2 from top to bottom onto the left up-facing pin, so that the 4l axle with stop points to the left close to the front. Attach the other identical part symmetrically onto the right up-facing pin. Press firmly and set this sub-build aside.

Group 16:

55. Let's make a part! Place a blue 7l liftarm horizontally in front of you so that its holes face up and down. Insert a black 2l pin from top to bottom into the second up-facing hole from the right, so 1L extends upward. Repeat symmetrically to the left. Attach a grey 1l round pin connector from top to bottom onto the 1L protruding end of the ppp. Repeat symmetrically to the right. Bring back your sub-build from the end of Step 54 and place it horizontally in front of you so that the axles point left and right close to the front. Attach the rightmost up-facing hole of your new blue 7l liftarm from bottom to top horizontally onto the bottom front right pin of your sub-build. Repeat symmetrically to the left. Press firmly so the assembly sits flush.

56. Horizontally attach the rightmost bottom facing hole of a black 7L perpendicular liftarm with 7 holes from top to down onto the front right up facing pin of your part, so 4 holes face up and

down and 3 holes face the front and the back. Then attach the leftmost bottom facing hole of the ppp from top to down onto the front left up facing pin.

57. Bring back your sub build from step 52, position it vertically in front of you, so the holes face left to right, 1L extending pin faces the front, 1L extending pin faces the right and 2 1L extending axles face the right, and a 4L protruding axle faces the back right. Attach the front facing pin of the direction sub build from back to front into the center back facing pin hole of the horizontal bottom 7L perpendicular liftarm at the back of your front axle wheels sub build you've been working on since step 53.

58. Horizontally place a grey 3x5 L-shape liftarm with 7 holes in front of you. The short end should be at the front left, with the holes facing up and down. Insert a blue 3L pin from top to bottom into the 2nd upward-facing pin hole from the right of your ppp, so 2L of the pin extend upward. Repeat symmetrically to the left. Bring back your sub-build and place it horizontally in front of you, so the front axle wheels of your buggy face to the front left and back left. Hold your 3x5 L-shape liftarm upright, with the sticking pins facing forward and the short end pointing down to the left. In this position, insert the rightmost front facing pin from back to front into the back-facing hole of the top pin hole of a vertical upright black 3L perpendicular axle and pin liftarm (with 2 pin holes and 1 axle hole) of your sub-build. Push it through until it reaches the front-facing hole of the 3x5 L-shape liftarm. The rightmost front facing hole of your part should attach from back to front onto the back 1L protruding axle end of a 3L axle which passes through the axle hole of a vertical upright grey 2L liftarm located at the right of the 3L perpendicular axle and pin liftarm.

59. Attach the top back facing pin hole of an upright vertical grey 3L perpendicular axle and pin liftarm (with 2 pin holes and 1 axle hole) from front to back to the front left facing protruding 2L pin of a blue 3L pin of your attached part, so after attaching 1L of the pin extends to the front.

60. Position a light grey 3L pin connector with 2 pins and a pin hole vertically in front of you so the pin holes of the round hole face left to right. Insert the back end from front to back into your bottom front left facing hole of the 3x5 L-shape liftarm. Push the right 4L protruding end of the horizontal yellow 7L axle from right to left until the left end inserts into the center pin hole of the ppp.

Group 17:

61.1 Insert a blue 3L pin from front to back into the front facing hole between the 2 vertical front facing blue pins from the 3x5 L-shape liftarm, so 1L of the pin extends to the back and 1L extends to the front. Locate a yellow 2x4 L-shape liftarm with 4 pin holes, 1 axle hole and a sticker. Hold it upright, so the short end faces down at the left, and the holes face front to back. Attach the bottom left back facing hole of the 2x4 L-shape liftarm with sticker to the 1L front sticking end of the ppp.

61.2 Skip this step if you have already placed your sticker! Ask a helper to place sticker 8 on the smooth long side of the yellow 2x4 L-shape liftarm. This sticker has a dark pink, blue and black background. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

62. Let's make a part! Horizontally place a grey 2L liftarm in front of you, so the holes face front to back and the axle holes are at the front and back left. Insert a blue 3L pin from front to back into the front facing pin hole of the ppp, so 1L of the pin extends to the back and 1L to the front. Bring back your main build, so it is horizontally in front of you and the front axle wheels face the front left and the back left. Locate the left overhanging down facing side of the 3x5 L-shape liftarm from step 58 and insert the back sticking end of the ppp into the 2nd front facing hole from the bottom from front to back, so the axle hole of your attached part overhangs to the left.

Group 18:

63.1 Let's make a part! Let's build the front lights! Horizontally place a black 2x3 perpendicular axle and triple pin connector in front of you, so the pin holes face up and down and the axle connector is at the front with its holes facing left and right. Insert the 2L axle end of a black 3L pin axle from left to right into the left facing axle hole of the ppp, so 1l of the axle end extends to the right and 1L of the pin end extends to the left.

63.2 Insert a white 1L pin with stud from top to down into each of the up facing pin hholes,3 in total. Place a transparent 1x1 round tile on each stud of the ppps.

63.3 Bring back your main build, so it is horizontally in front of you and the front axle wheels face the front left and the back left. Locate the left overhanging down facing side of the 3x5 L-shape liftarm. Insert the left 1L sticking pin end of the 3L pin axle of your part from front to back into the top leftmost facing pin hole of the attached 3x5 L-shaped liftarm, so the lights are at the top facing to the left.

64. Position a grey 3x5 L-shape liftarm horizontally upright. The short side should point down to the left, and the holes should face front to back. Hold the liftarm and insert a black 2L pin from front to back into the 3rd front-facing hole from the right of the horizontal arm, so 1L of the pin extends to the front. Bring back your sub-build and place it horizontally in front of you, with the lights facing left. At the very front left, locate the 1L front extending axle end of the 3L pin axle used to attach the lights. Connect the top leftmost back-facing hole of your liftarm from front to back onto this axle end. Attach the back-facing hole directly below that one from front to back onto the front 1L sticking end of the blue 3L pin from step 62. Connect the bottom back-facing hole from front to back onto the front 1L sticking end of the light grey pin of the 3L pin connector with 2 pins and a round hole from step 60. Then attach the 2nd back-facing hole from the left and the 2nd back-facing hole from the right of the horizontal arm of this liftarm from front to back onto the front 1L sticking ends of the two blue 3L pins from step 58. Attach the rightmost back-facing hole to the yellow front 1L extending axle end of the 3L axle from step 52. Check that this 3x5 L-shape liftarm sits symmetrically with the back one you placed earlier in step 58.

65. Insert a light grey 5L axle from front to back into the front facing axle hole to the left of the ppp. Push it through, so 2L of the axle extends to the back of the 2L liftarm and 2L of the axle extends to the front of the liftarm.

Group 19:

66. Let's make a part! Horizontally place a black 9L bent liftarm in front of you with its holes facing up and down, with the triangular tip facing the back left. Insert a light grey 5L axle into the leftmost up facing axle hole. Don't push it through, so 4L extend upward.

67. Flip your previous part so the triangular tip faces to the top left and the ppp faces the front. Insert the 2L axle end of a black 3L pin axle from back to front into the rightmost back facing axle hole of your part, push it through so 1L of the axle end extends to the front and 1L of the pin end extends to the back. Vertically attach the back facing axle hole of a grey 3L axle and pin connector 180 degrees from front to back onto the front 1L axle sticking end of the ppp, so the pin holes face left and right.

Group 20:

68. Insert the 1L pin end of a red 3L pin axle from front to back into the 2nd front facing hole from the left to the right of the attached 5L axle, so the 2L axle end extends to the front. Attach the 2 back facing holes of the short arm of a black 2x4 liftarm from front to back onto the ppp and onto the 5l axle, so the long arm of the L-shape liftarm overhangs to the right. After the

attachment, 3L of the light grey 5L axle extends to the front and 1L of the pin axle extends to the front.

69. Attach a black 3L pin with stop bush from front to back onto the front 1L sticking end of the red 3L pin axle using the stop bush.

70. Take another black 2x4 L-shaped liftarm and position it horizontally upright in front of you, so the short end faces upward to the left. attach the 2 back facing holes of the short end to the ppp and the front facing end of the 5L axle symmetrically to the first one you placed from step 68.

71. Hold your part so that the two blue 2x4 L-shape liftarms are at the front left, and the triangular tip of the grey 9L liftarm points upward. Bring back your sub-build and place it horizontally in front of you, with the lights facing left. Connect the 3rd front-facing hole of the 9L bent liftarm of your part from back to front onto the back left 2L sticking axle end of the light grey 5L axle from step 65. Connect the 4th front-facing hole from the right of the same 9L bent liftarm from back to front onto back 1L sticking end of the blue 3L pin from step 61.

Group 21:

72. Hold a black 9L bent liftarm so that the holes face front to back and the triangular tip points upward to the left. This liftarm should be positioned symmetrically to the one placed at the back in the previous step. Attach the three leftmost back-facing holes of the liftarm from front to back onto: the front 1L sticking end of the bottom vertical 5L axle from step 66, the front 1L sticking end of the black 3L pin with stop bush from step 69, and the front 1L sticking end of the top vertical 5L axle from step 65. Insert the 2L axle end of a black 3L pin axle from front to back into the rightmost front-facing axle hole of the liftarm. Push it through so that it passes across the liftarm and connects into the front-facing axle hole of the grey 3L axle and pin connector with center pin hole from step 67, so the 1L pin end extends to the front.

73. Locate the top long end of the yellow 2x4 L-shape liftarm with sticker from step 61. It is positioned on top of your build centered vertically, with its holes facing front to back, behind and above the four rightmost holes of the front 9L bent liftarm you placed in the previous step. Insert a blue 3L pin from front to back into the leftmost front-facing pin hole of this 2x4 L-shape liftarm with sticker, so 1L extends to the front and 1L of the pin extends to the back. Insert another blue 3L pin from front to back into the front-facing hole immediately to the right of the one you just used, so 1L of the pin extends to the front and 1L extends to the back.

Group 22:

74.1 Attach a yellow 2x5 curved left wedge panel with sticker using the 2 back facing holes from front to back to the front 1L sticking ends of the 2 ppps. Attach a yellow 2x5 curved right wedge panel with sticker from back to front symmetrically to the back. When you place the curved yellow 2x5 wedge panel in front of you with the thin edge pointing forward and the round holes facing toward the back, you can tell which one it is by the short end: if the short end points to the left, it is the left panel; if the short end points to the right, it is the right panel.

74.2 Skip this step if you have already placed your sticker! Ask a helper to place sticker 9 on the yellow 2x5 curved left wedge panel. This sticker has a dark pink, blue and black background with the letters buggy in white. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

74.3 Skip this step if you have already placed your sticker! Ask a helper to place sticker 7 on the yellow 2x5 curved right wedge panel. This sticker has a blue and black background with the number 12 in dark pink. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

75. Bring back your main build and place it horizontally in front of you, so the rear suspension faces the right. Let's attach it to your sub build you've been working on since the beginning of bags 2. Insert the back left 1L sticking end of a 5L axle of your main build from Baggs 1 from front to back into the 6th front facing hole starting from the right of the right overhanging light grey 9L bent liftarm from step 40 of your sub build, the one on the triangular tip. The front 1L sticking end of the blue 3L pin from step 40 of your sub build to the right of the hole of the previous attachment, inserts from back to front into the 2nd back facing hole from the left of the back grey 9L bent liftarm of your main build. The front sticking 1L end of the black 2L pin from step 40 inserts from back to front into the 5th back facing hole from the left of the back grey 9L bent liftarm from your main build.

76. Let's make a part! Horizontally place a light grey 9L bent liftarm in front of you, so its holes face front to back, its short side rests on the table, its long side points diagonally upward, and the triangular tip faces downward. Insert a blue 3L pin from front to back into the 5th front-facing hole from the right on the diagonal side of the liftarm. The pin should stick out 1L evenly to the front and to the back. Insert a red 1L pin with stud from front to back into the front-facing hole just to the right of the blue pin, so the stud faces the front. Then insert a black 2L pin from back to front into the 2nd back-facing hole from the right, so 1L of the pin extends to the back. Bring back your buggy build and place it horizontally in front of you so the suspension faces the right, and the lights face the left. Keeping the same position of your part, attach the leftmost back facing hole to the front left sticking 1L end of a light grey 5L axle from step 40. The 2nd back facing hole from the left attaches from front to back onto the front 1L sticking end of a light grey 5L axle from step 44 just to the right of the previous one. The 3rd back facing hole attaches to the front 1L sticking pin end of a blue 2L pin axle from step 46 just to the right of the previous axle. The 4th back facing hole from the left attaches to the front 1L sticking end of a 5L axle to the right of the previous pin, it is the hole on the triangular tip at the back. The back 1L sticking end of the blue 3L pin of your part inserts from front to back into the 2nd front facing hole from the left of the front grey 9L bent liftarm of your main build. The back 1L sticking end of the black 2L pin from your part inserts from front to back into the 5th front facing hole from the left of the front grey 9L bent liftarm from your main build.

77. Attach the back left facing pin hole of a grey 2L liftarm with 1 pin hole and 1 axle hole horizontally upright from front to back onto the front 1L sticking end of the blue 3L pin from the previous step so the right end of the liftarm overhangs to the right. Repeat symmetrically to the back.

Group 23:

78. Insert a yellow 3L axle from front to back into the front facing pin hole of a blue 2L perpendicular axle and pin liftarm from step 27 below a vertical 1x2 curved panel with sticker, so the axle sticks out 1L evenly on each side of the connector. Attach the stop bush end of a black 3L pin with stop bush from back to front onto the back end of the ppp. Repeat symmetrically to the front attaching from front to back.

79.1 Let's place the seats! Position a blue 3x5x3 curved panel with sticker in front of you so the high wall faces the right. attach the top hole of the right wall to the front end of the ppp. Slide the seat through the ppp from front to back until it reaches the bush. Repeat symmetrically to the back sliding from back to front.

79.2 Skip this step if you have already placed your stickers! Ask a helper to place stickers 1 on the backrest of the blue3x5x3 curved panel so they face the left. The sticker has a blue background with two white seatbelts, each featuring a silver buckle. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

Group 24:

80.1 Let’s make 2 identical parts! Place a black 3L bent axle connector with center pin hole angled 3 (157°) horizontally in front of you. The triangular tip should face upward, and the pin holes should face front to back. Insert the axle end of a blue 2L pin axle into the right-facing axle hole of this connector, so 1L of it extends to the right. You should now have two identical parts. Bring back your buggy build and place it horizontally in front of you, with the lights facing left. Locate the black pin connector at the top front of the build, with its pin holes facing left to right. Insert the 1L protruding pin end of the blue 2L pin axle from your first part from left to right into the left-facing pin hole of this black pin connector. Repeat the same connection symmetrically to the back with your second part.

80.2 Horizontally insert a black 4L axle from left to right into the left facing axle hole of your back black 3L bent axle connector with center pin hole (157°) of the attached part. Repeat symmetrically to the front. Then attach the axle hole of a black 1L axle and pin connector from left to right onto the left end of the ppp so the pin holes face front and back. Attach the pin connector of the ppp to a front 1L sticking pin end of a black 3L pin axle from step 72. Press it to secure the attachment. Repeat symmetrically to the back. You’ve built the top bar holders!

81. Let’s make 2 identical parts! Vertically place a black 2L pin connector with pin in front of you so the pin is at the front, and the pin holes of the pin connector face up and down. insert a white 1L pin with stud from top to bottom into the up facing hole, so the stud faces up. Place a transparent 1x1 round tile on the ppp. You should now have 2 identical parts! Bring back your buggy and place it vertically in front of you, so the lights are at the front. Locate the left vertical black 3L bent axle connector with center pin hole (157°) from the previous step, then insert the pin of your first part from left to right into the left facing pin hole of this black 3L bent axle connector with center pin hole (157°), so the transparent 1x1 round tile faces the front. Repeat symmetrically to the right, inserting from right to left.

Group 25:

82.1 Let’s make a part! Horizontally place a grey 3L perpendicular axle and pin liftarm (with 2 pin holes and 1 axle hole) in front of you, so the axle connector is at the right with its axle holes facing front and back, and the pin holes of the 2 pin connectors face up and down. Insert a black 2L pin from top to bottom into each upward facing pin hole, so 1L of each pin extends upward, there are 2 in total. Horizontally insert a grey 4L axle with stop from front to back into the front facing axle hole. Push it through, so 3L of the axle extends to the back.

82.2 Attach a yellow 2x5 curved right slope wedge panel with sticker horizontally upright using the 2 bottom holes from top to bottom onto the 2 1L upward extending pin ends of your part, so it slopes upward and the sticker faces the front.

82.3 Skip this step if you have already placed your sticker! Ask a helper to place sticker 11 on the yellow 2x5 curved right slope wedge panel. This sticker has a dark pink, blue and black background. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

82.4 Bring back your buggy build and place it horizontally in front of you, so the lights are facing the left. Locate the front horizontal upright 2L liftarm (with 1 axle hole and 1 pin hole) from step 77, it is positioned next to the front seat, it is attached to the build by a pin and the right side of the liftarm, where the axle hole is, overhangs to the right, so the liftarm can move. Insert the back 3L axle end of your part from front to back into the front-facing axle hole of this 2L liftarm. Push firmly until the axle goes all the way in.

83.1 Let’s make a part! Horizontally place a grey 3L perpendicular axle and pin liftarm (with 2 pin holes and 1 axle hole) in front of you, so the axle connector is at the left with axle holes facing front to back, and the pin holes of the 2 pin connectors face up and down. Insert a black

2L pin from top to bottom into each upward facing pin hole, so there are 2 in total and 1L of each extends upward. Horizontally insert a grey 4L axle with stop from front to back into the front facing axle hole. Push it through, so 3L of the axle extend to the back.

83.2 Attach a yellow 2x5 curved left slope wedge panel with sticker horizontally upright using the 2 bottom holes from top to bottom onto the 2 1L extending upward pin ends of your part, so it slopes upward and the sticker faces the front.

83.3 Skip this step if you have already placed your sticker! Ask a helper to place sticker 10 on the yellow 2x5 curved left slope wedge panel. This sticker has a dark pink, blue and black background. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

83.4 Bring back your buggy build and place it horizontally in front of you, so the lights are facing the left. Locate the back horizontal upright 2L liftarm (with 1 axle hole and 1 pin hole) from step 77, it is positioned next to the back seat, it is symmetrical to the front one where you attached the previous part in the previous step. Insert the back 3L axle end of your part from back to front into the back-facing axle hole of this 2L liftarm. Push firmly until the axle goes all the way in.

84. Let’s make 2 identical parts! Let’s build the rear wheels! Place a black 30,4x20 wheel with axle hole inside a black 43,2x22 tire so the hollow side faces the front. You should now have 2 identical parts! Bring back your main build and place it vertically in front of you so the suspension is at the front and the lights at the back. Attach the first wheel to the right 2L facing end close to the front of the grey 8L axle with stop, so the hollow side of the wheel faces the right. After attaching 0.5L of the axle should extend to the right of the wheel hole. Repeat symmetrically to the left.

Group 26:

85. Let’s make 2 identical parts! Let’s build the front wheels! Place a blue 30x14 wheel with axle hole inside a black 43,2x14 tire so the hollow side faces the front. You should now have 2 identical parts! Bring back your main build and place it vertically in front of you so the suspension is at the back, and the lights are at the front. Attach the first wheel to the right 2L facing axle end close to the front of the grey 4L axle with stop, so the hollow side of the wheel faces the right, 0.5L of the axle should extend to the right of the wheel hole. Repeat symmetrically to the left.

Group 27:

86.1 Attach a black 3x3 disk with axle hole with sticker to the left 0.5L sticking axle end in the center of the front left wheel. Repeat symmetrically to the right.

86.2 Skip this step if you have already placed your sticker! Ask a helper to place sticker 4 on the left black 3x3 disk with axle hole. This sticker has a dark pink and black background. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

86.3 Skip this step if you have already placed your sticker! Ask a helper to place sticker 5 on the right black 3x3 disk with axle hole. This sticker has a dark pink and black background. Make sure the sticker is placed on correctly and is oriented on the build correctly, ask a sighted person to check.

You’ve finished the buggy in Baggs 2 — front axle with its smaller wheels, the steering system, the seats, the protective bars, and the car body. The whole beast is now assembled, and you’ve proven yourself to be a top-class mechanic. Congratulations, the build is complete! Now imagine yourself bouncing over bumps, flying through rocky roads, and twisting around hills with the suspension flexing and the engine roaring. Even if you’re blind, you’ve built a buggy that’s

ready to conquer the wild — so buckle up, hold tight to those safety bars, and enjoy the ride… just don't ask me for insurance!

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