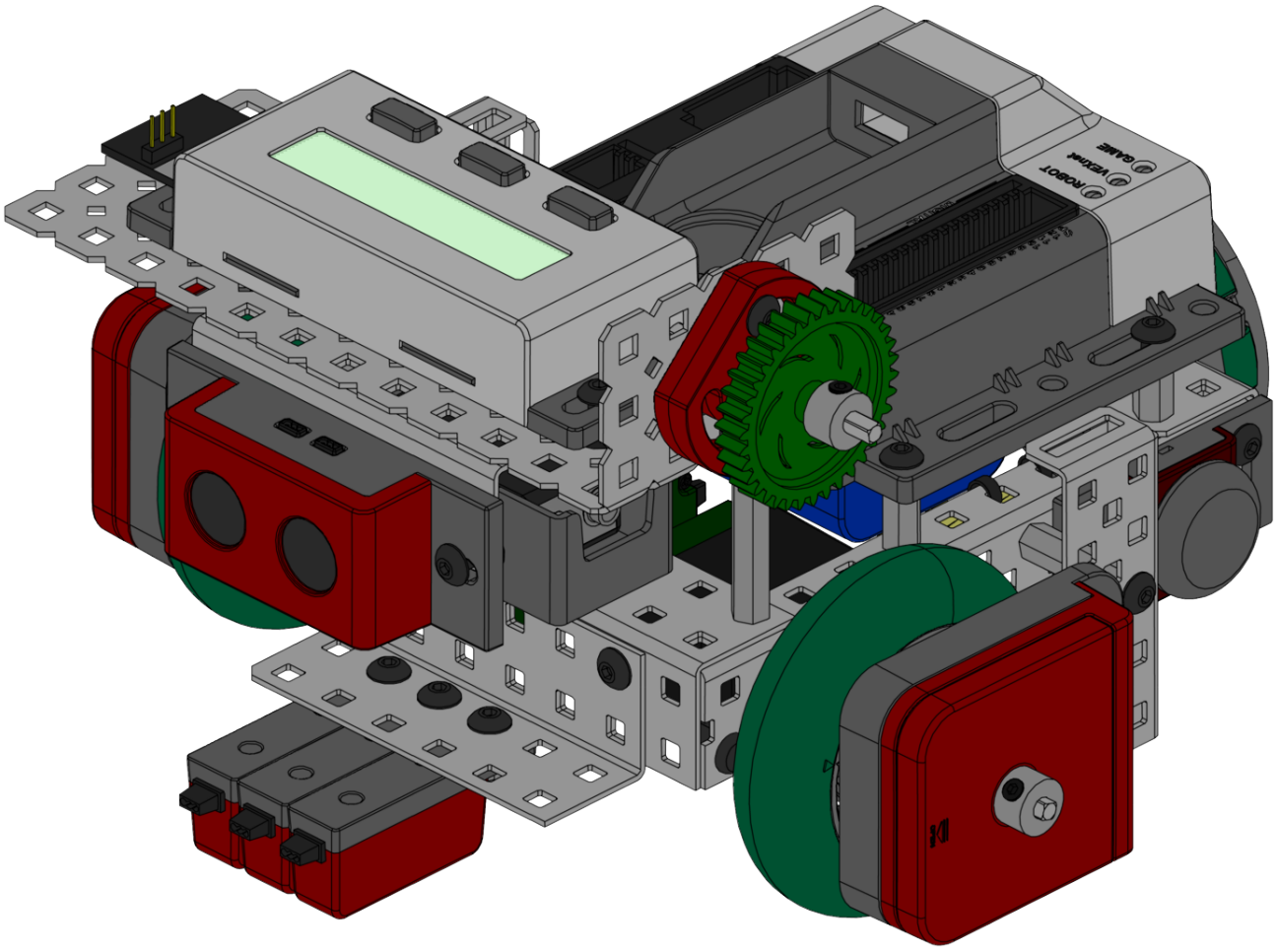
SWERVEBOT BUILDING INSTRUCTIONS



USING THE VEX CORTEX

SWERVEBOT BUILDING INSTRUCTIONS

1 Collect parts and tools from the lists below:

Materials	Quantity
Screw, 8-32 x 1/4" Long	13
Screw, 8-32 x 1/2" Long	5
Screw, 8-32 x 3/8" Long	21
Screw, 8-32 x 3/4" Long	2
Motor Screw, Short [1/4"]	4
Nut, 8-32 Keps	25
Shaft, 3" long	2
Shaft, 2" long	2
Shaft Collar	8
Shaft Spacer Thin (4.6mm)	9
Shaft Spacer Thick (8mm)	1
Bearing, Flat	7
Bearing Pop Rivets	6
Standoff, 2" Long	2
Standoff, 1" Long	2
Standoff, .5" Long	6
Gear, 36 tooth	1
Chassis Rail, 16 hole	2
Chassis Bumper, 15 hole	2
Plate, 5 x 15 hole	1
Small Low Friction VEX Wheel	2
Small Omni Wheel*	1
VEX Cortex Microcontroller*	1
LCD Display*	1
VEX 2-Wire Motor 269	2
Motor Controller 29	2
Optical Shaft Encoder*	2
Ultrasonic Rangefinder*	1
Potentiometer*	1
Bumper Sensor*	2
Line Tracking Sensor*	3
Yaw Rate Gyro*	1
9V Battery*	1
Backup Battery Holder*	1
3-Wire Extension Cable*	1
Serial Y-Cable*	1

Tools	Quantity
Zip Tie, 4" Long	4
Rubber Bands	2
Allen Wrench 3/32"	1
Allen Wrench 5/64"	1
Open End Wrench 1/4"	1
Pliers*	1
Hacksaw*	1

* Not included in Protobot Robot Kit

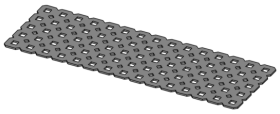
SWERVEBOT BUILDING INSTRUCTIONS

2 Modifications

CAUTION - Bending VEX Metal

The following step involves permanent alterations to the materials in the VEX Kit. Make sure you have permission before continuing.

ALL APPLICABLE SAFETY PROCEDURES MUST BE OBSERVED WHILE PERFORMING THIS STEP. IF YOU ARE UNSURE ABOUT HOW TO USE THE TOOLS OR PERFORM THIS PROCEDURE SAFELY, DO NOT ATTEMPT THIS STEP ALONE. SEEK QUALIFIED ASSISTANCE BEFORE PROCEEDING.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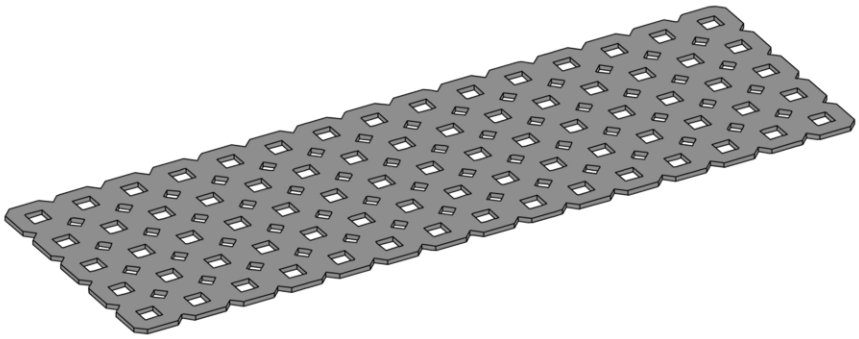
A



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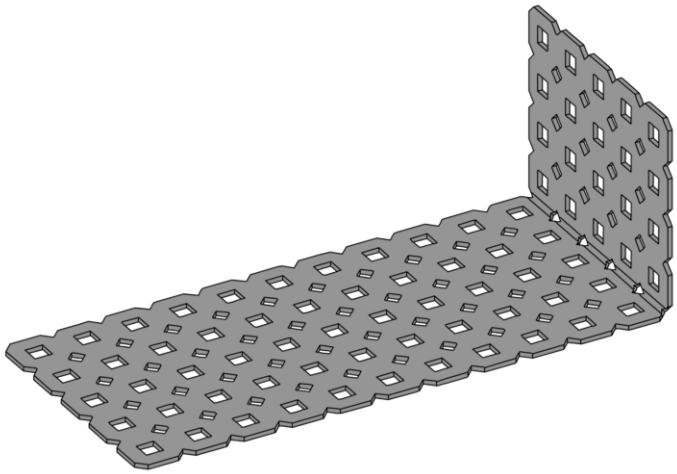


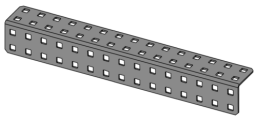
SWERVEBOT BUILDING INSTRUCTIONS

2 Modifications *(continued)*

CAUTION - Cutting Tools

The following step involves cutting tools and permanent alterations to the materials in the VEX Kit. Make sure you have permission before continuing.

ALL APPLICABLE SAFETY PROCEDURES MUST BE OBSERVED WHILE PERFORMING THIS STEP. IF YOU ARE UNSURE ABOUT HOW TO USE THE TOOLS OR PERFORM THIS PROCEDURE SAFELY, DO NOT ATTEMPT THIS STEP ALONE. SEEK QUALIFIED ASSISTANCE BEFORE PROCEEDING.



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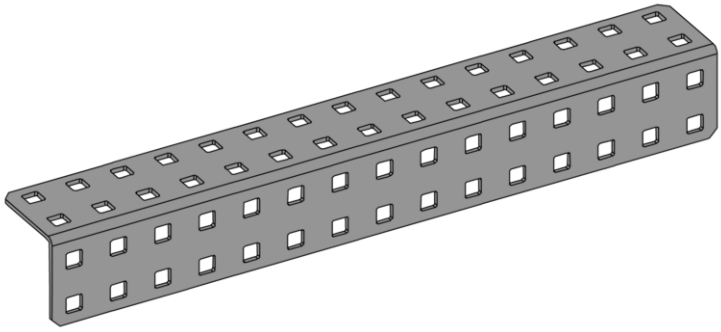

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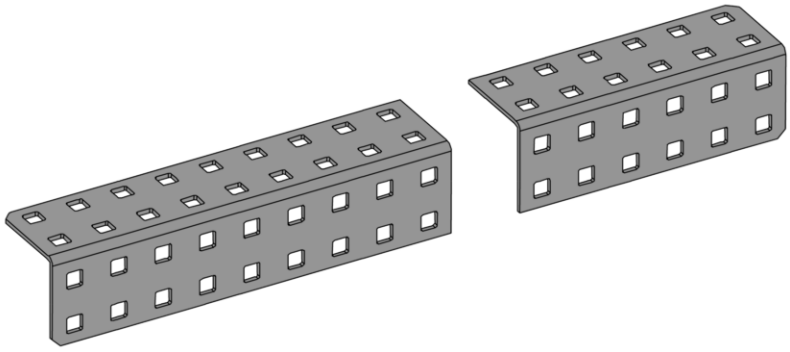
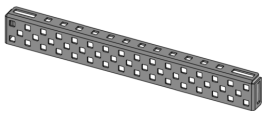


Perform this step **2x**

SWERVEBOT BUILDING INSTRUCTIONS

2 Modifications *(continued)*

> ***CAUTION - Cutting Tools***
>
> The following step involves cutting tools and permanent alterations to the materials in the VEX Kit. Make sure you have permission before continuing.
>
> ALL APPLICABLE SAFETY PROCEDURES MUST BE OBSERVED WHILE PERFORMING THIS STEP. IF YOU ARE UNSURE ABOUT HOW TO USE THE TOOLS OR PERFORM THIS PROCEDURE SAFELY, DO NOT ATTEMPT THIS STEP ALONE. SEEK QUALIFIED ASSISTANCE BEFORE PROCEEDING.



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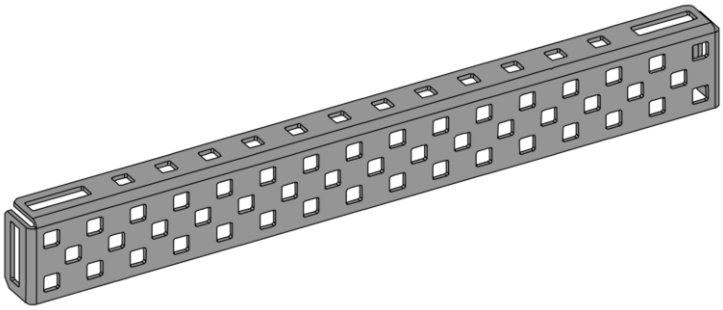

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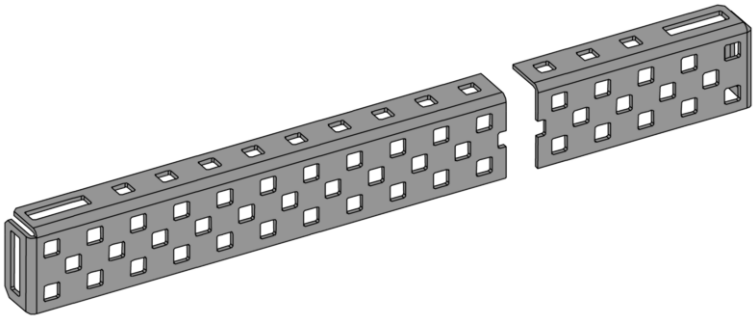


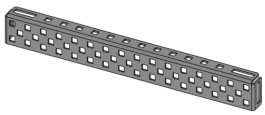
SWERVEBOT BUILDING INSTRUCTIONS

2 Modifications *(continued)*

CAUTION - Cutting Tools

The following step involves cutting tools and permanent alterations to the materials in the VEX Kit. Make sure you have permission before continuing.

ALL APPLICABLE SAFETY PROCEDURES MUST BE OBSERVED WHILE PERFORMING THIS STEP. IF YOU ARE UNSURE ABOUT HOW TO USE THE TOOLS OR PERFORM THIS PROCEDURE SAFELY, DO NOT ATTEMPT THIS STEP ALONE. SEEK QUALIFIED ASSISTANCE BEFORE PROCEEDING.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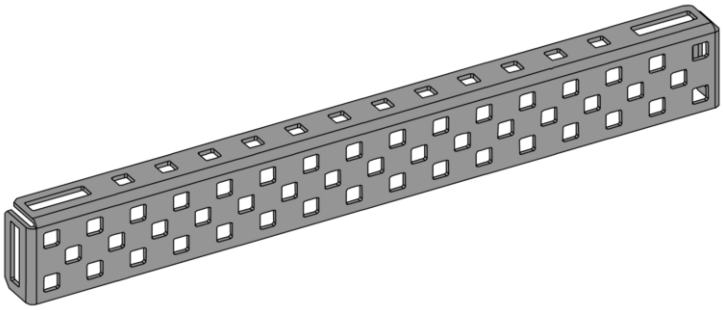

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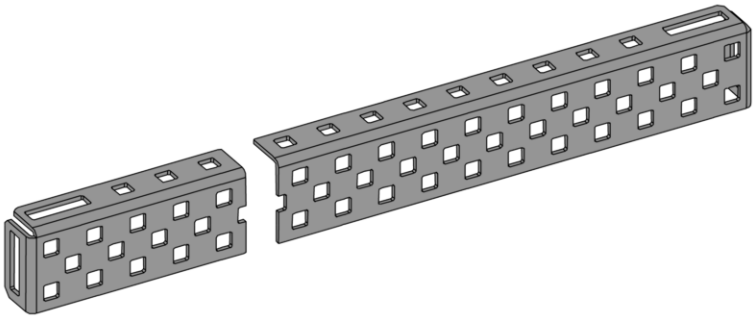
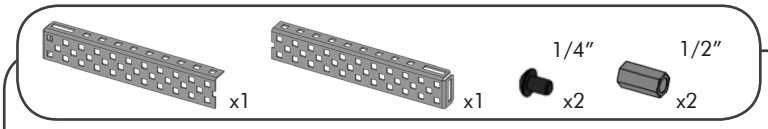
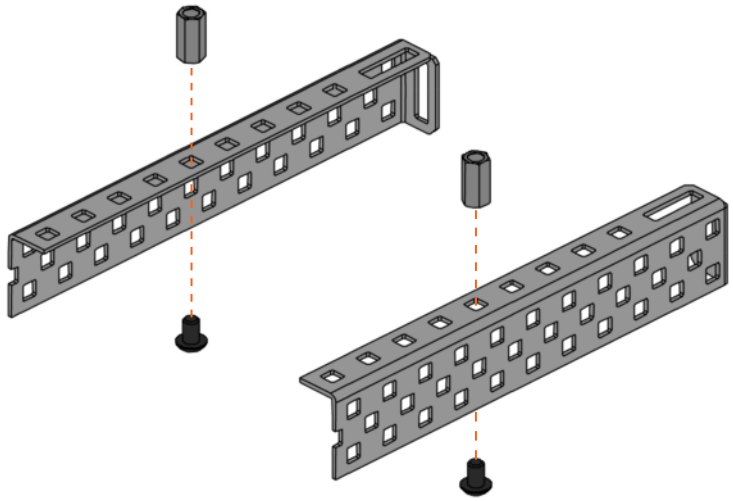
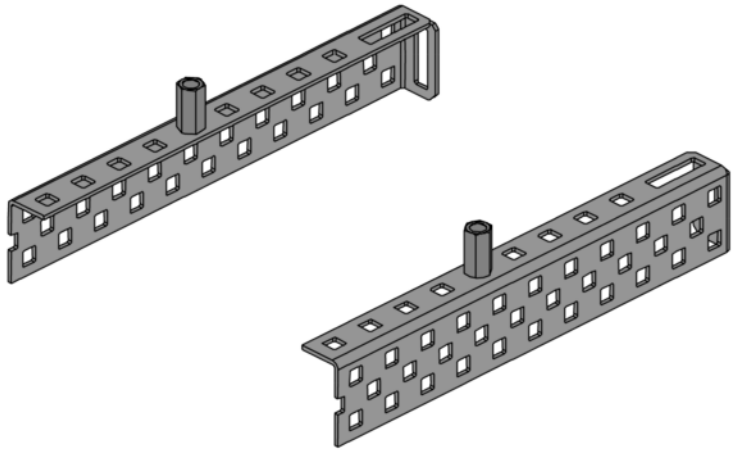


SWERVEBOT BUILDING INSTRUCTIONS

3 Base Frame Construction

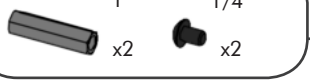


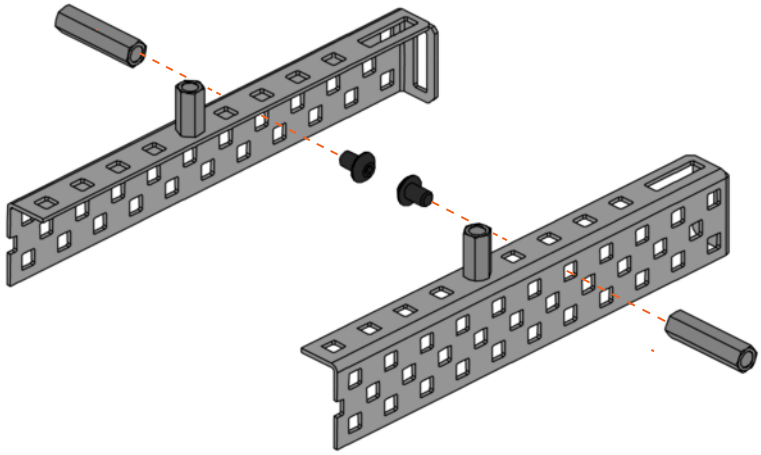


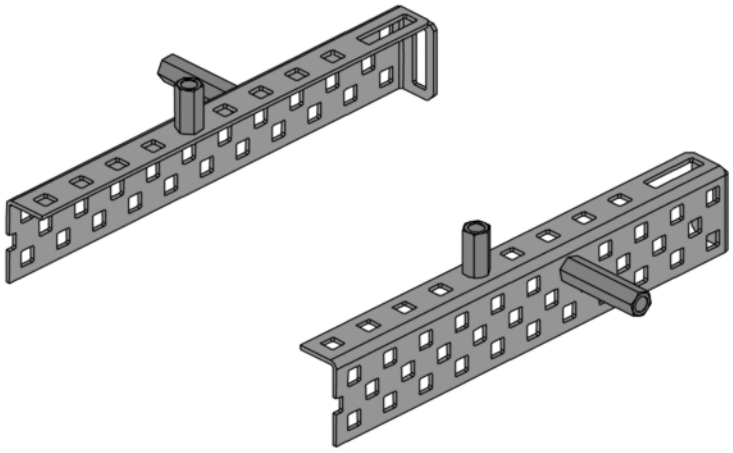


SWERVEBOT BUILDING INSTRUCTIONS

3 Base Frame Construction *(continued)*

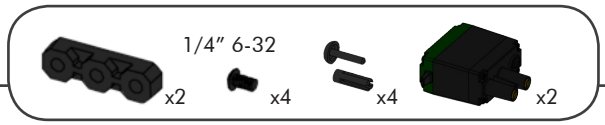


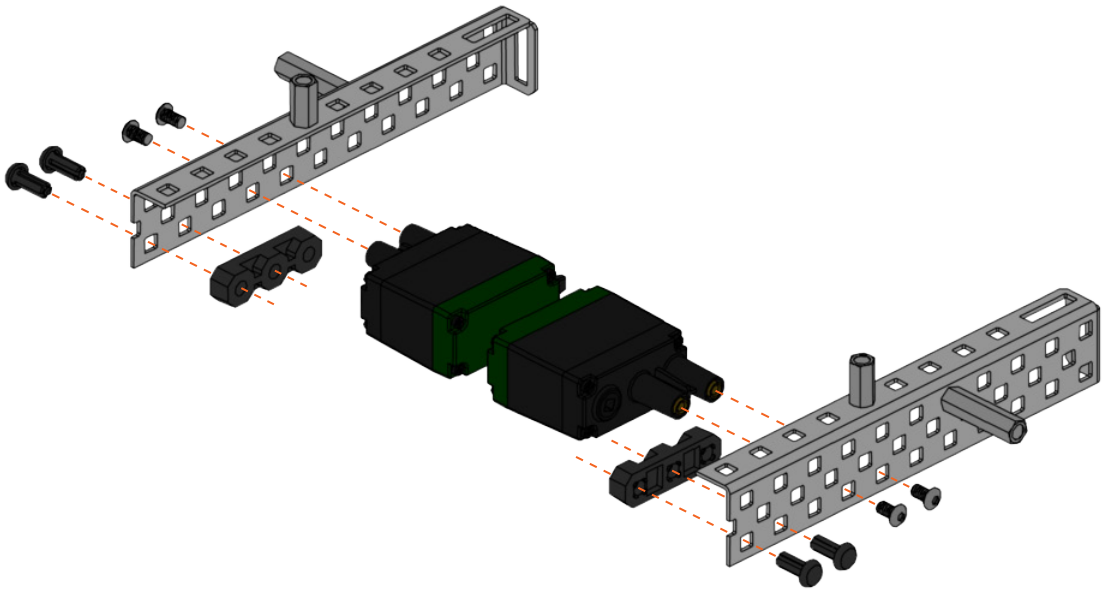


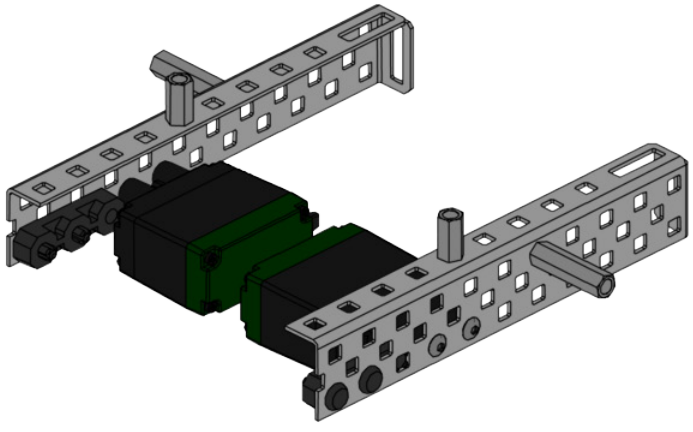


SWERVEBOT BUILDING INSTRUCTIONS

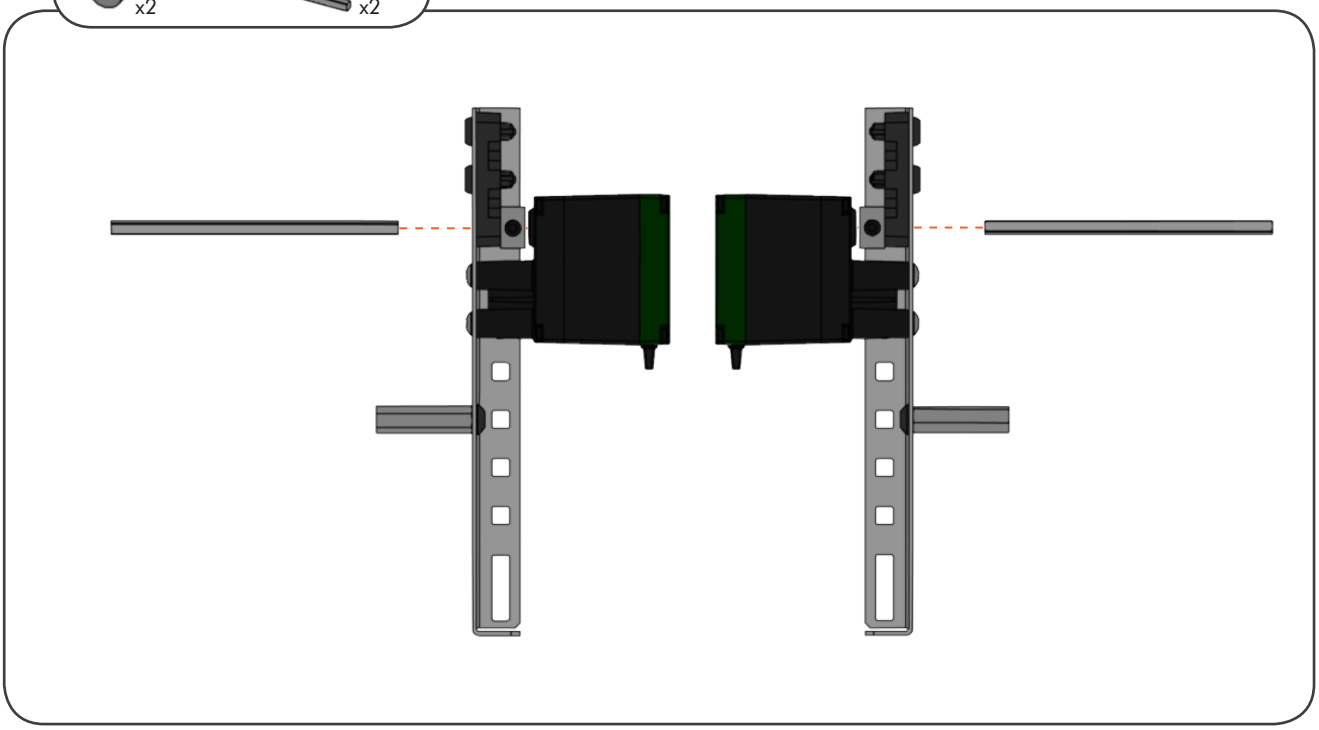
4 Drivetrain Assembly



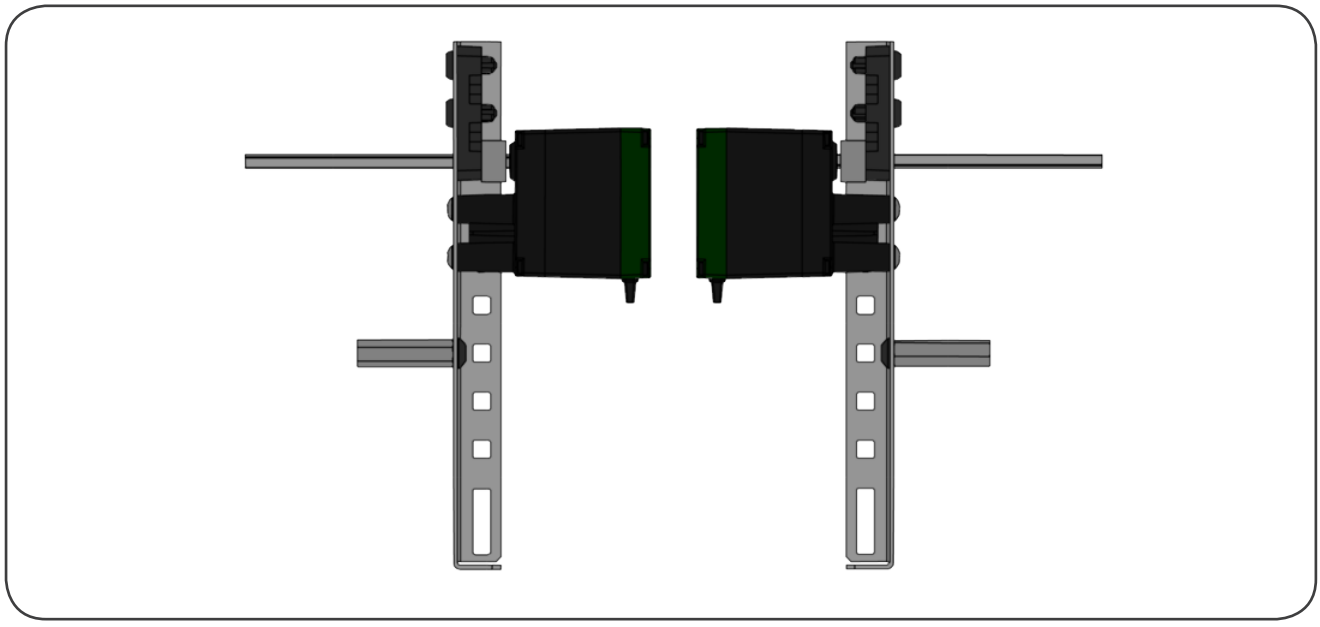




4 Drivetrain Assembly *(continued)*

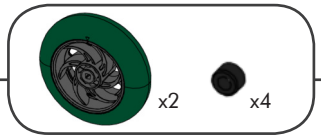


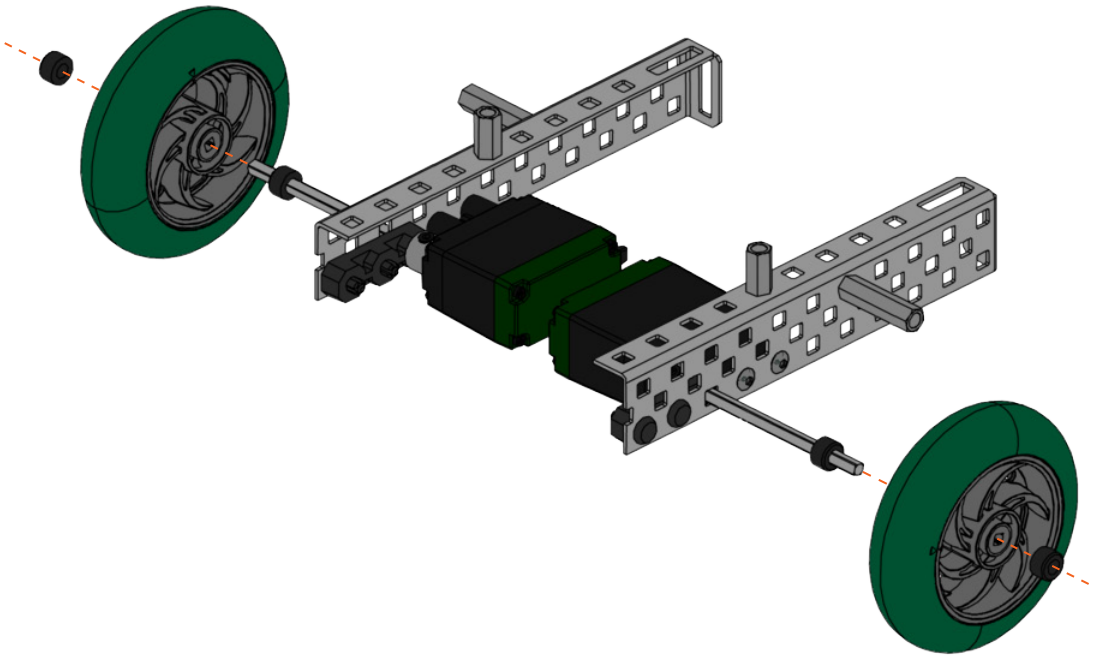
Building Tip - Using Shaft Collars

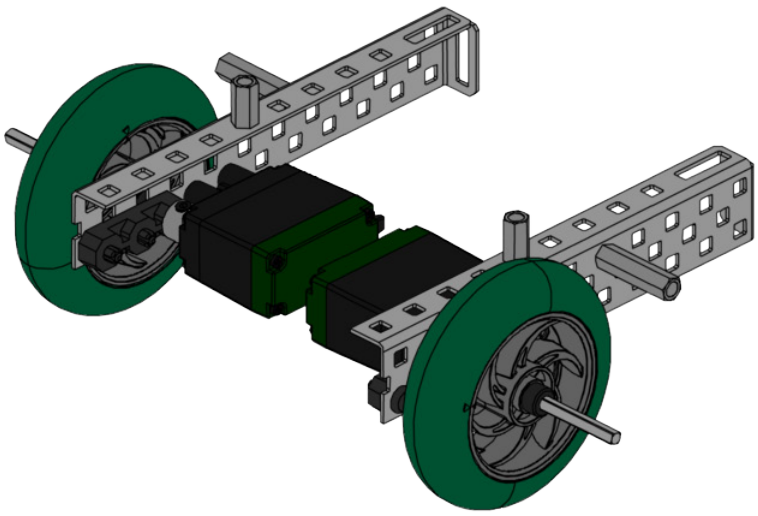


SWERVEBOT BUILDING INSTRUCTIONS

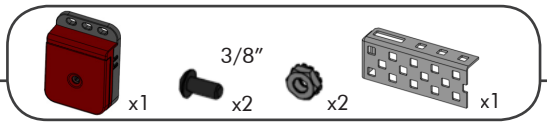
4 Drivetrain Assembly *(continued)*

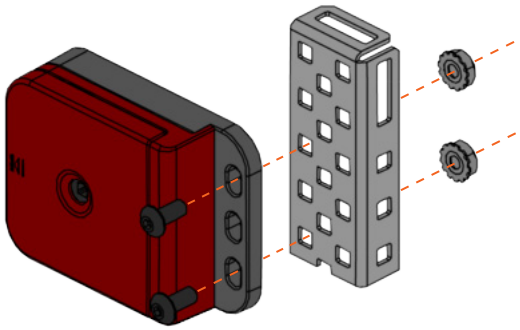


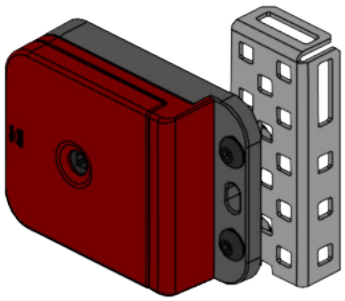




4 Drivetrain Assembly *(continued)*

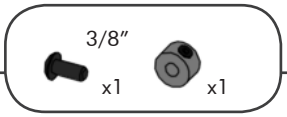


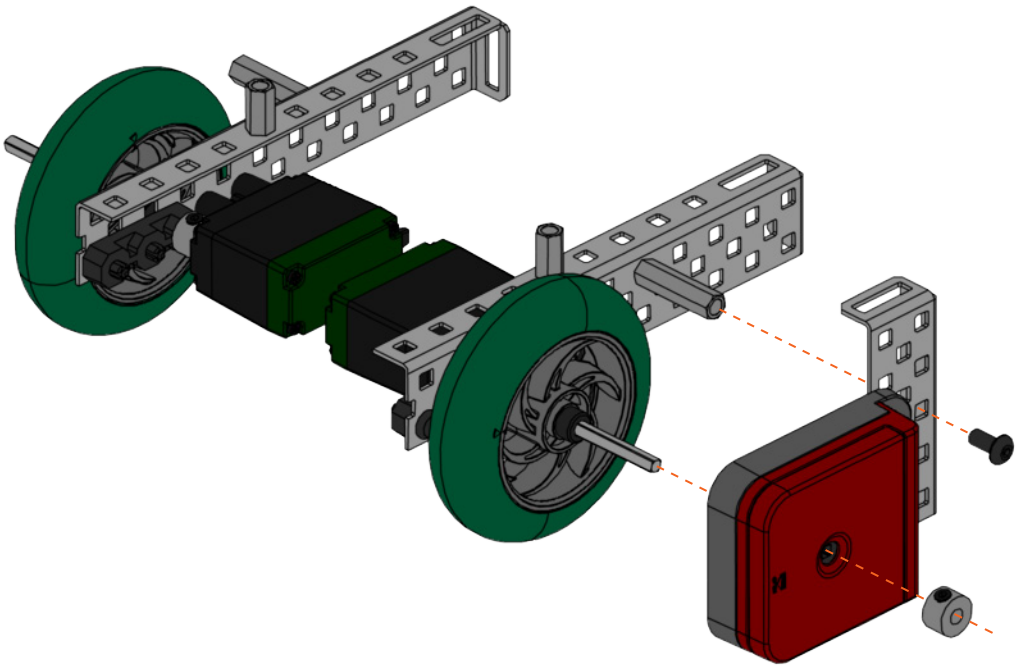


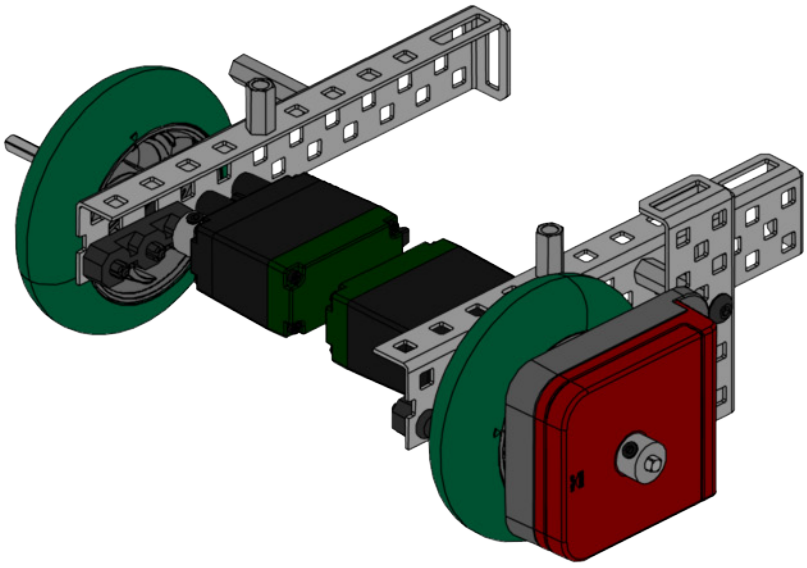


SWERVEBOT BUILDING INSTRUCTIONS

4 Drivetrain Assembly *(continued)*

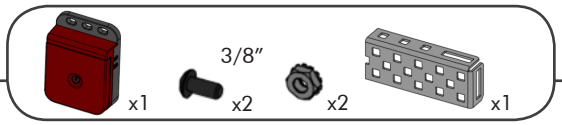


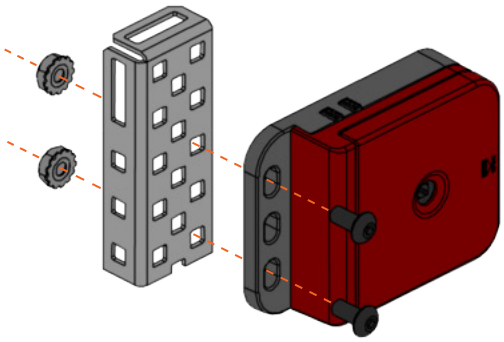


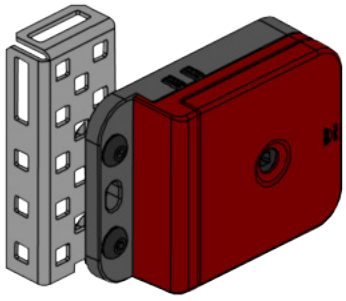


SWERVEBOT BUILDING INSTRUCTIONS

4 Drivetrain Assembly *(continued)*

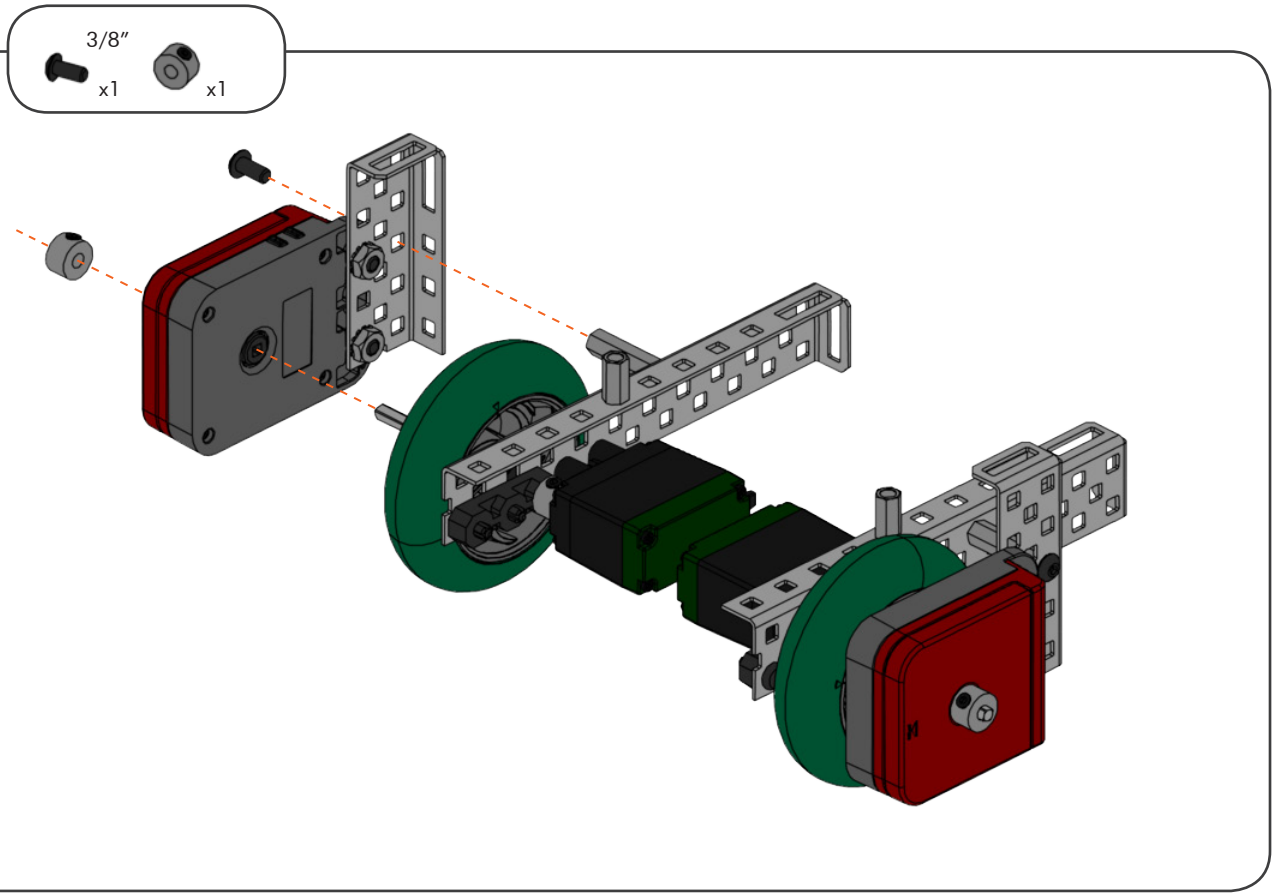


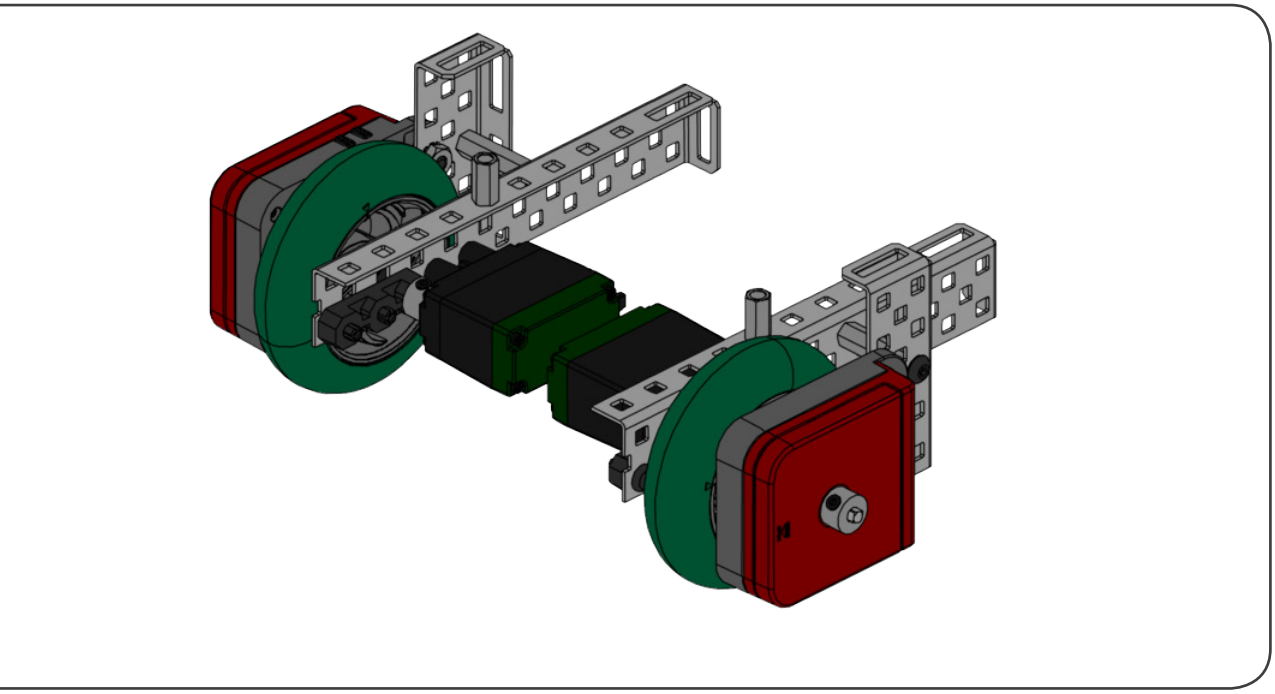




SWERVEBOT BUILDING INSTRUCTIONS

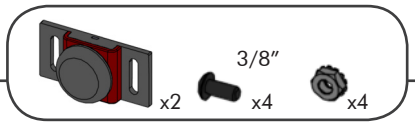
4 Drivetrain Assembly *(continued)*

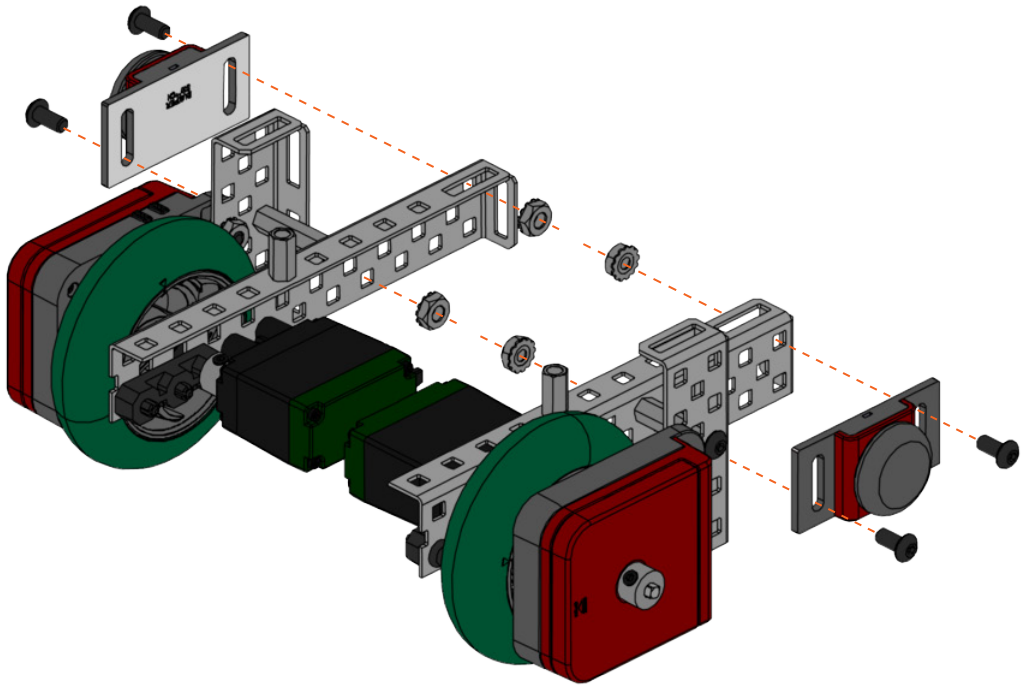


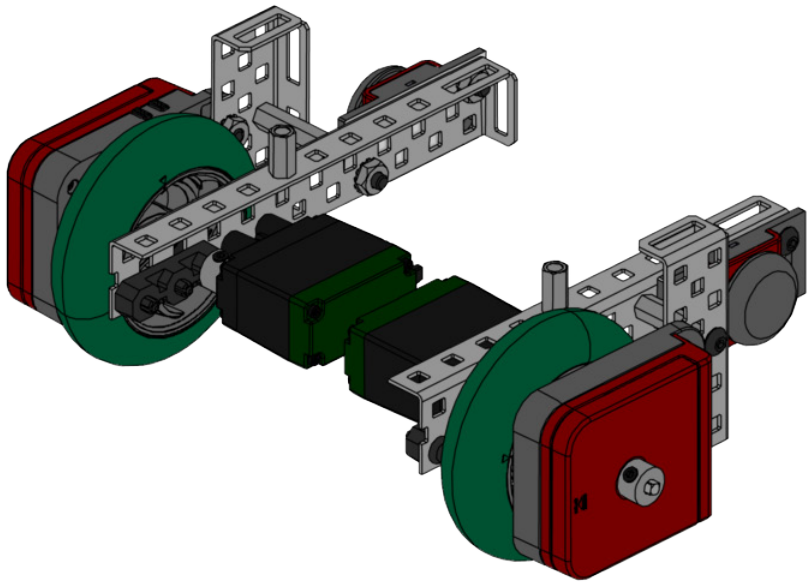


SWERVEBOT BUILDING INSTRUCTIONS

5 Attaching the Bump Switches

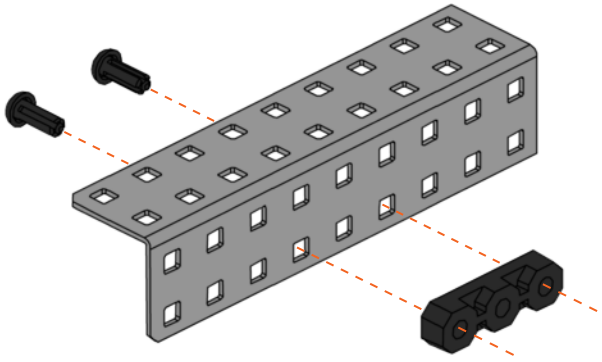




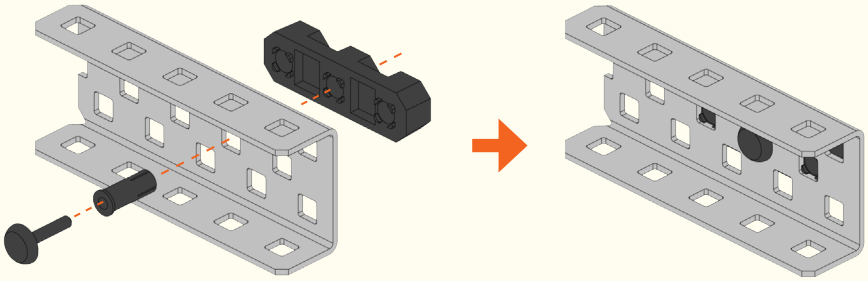


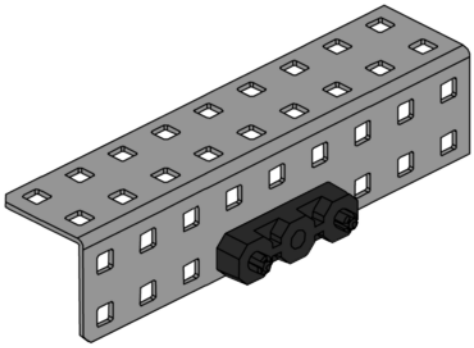
SWERVEBOT BUILDING INSTRUCTIONS

6 Omni-Wheel & Rear Bumper Construction



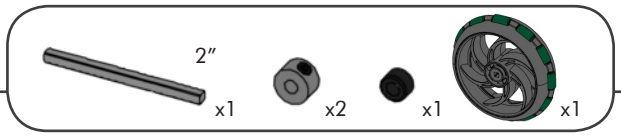
Building Tip - Using Pop Rivets

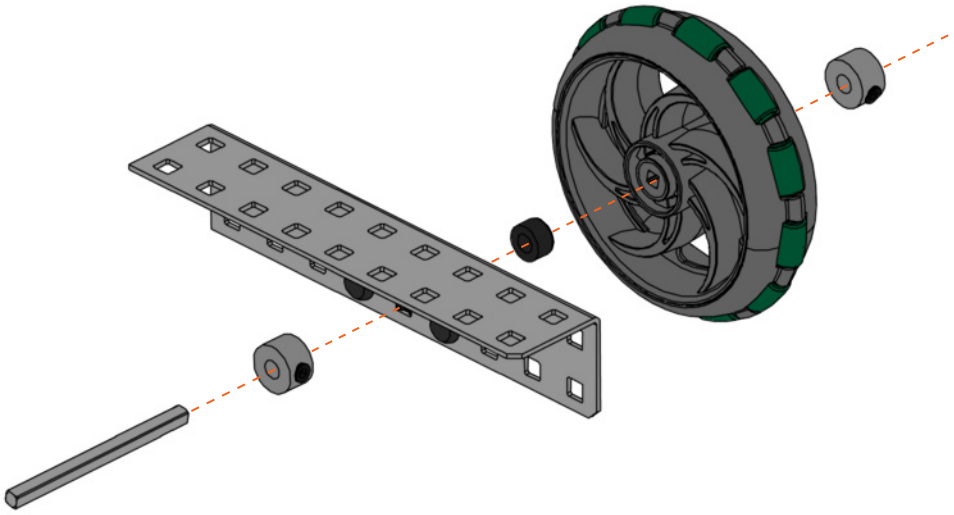


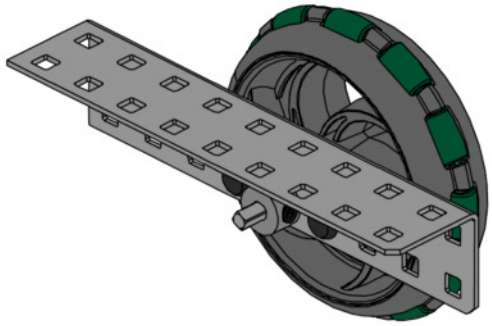


SWERVEBOT BUILDING INSTRUCTIONS

6 Omni-Wheel & Rear Bumper Construction *(continued)*

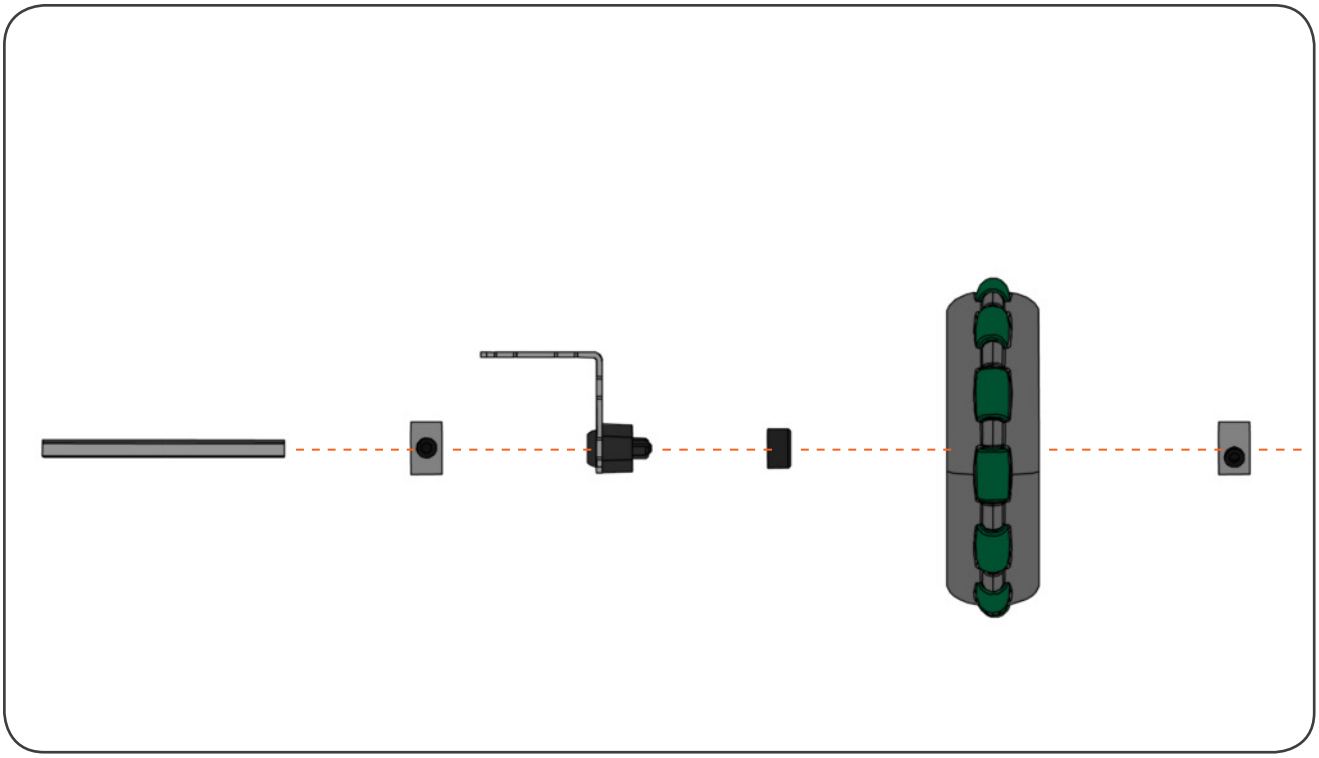


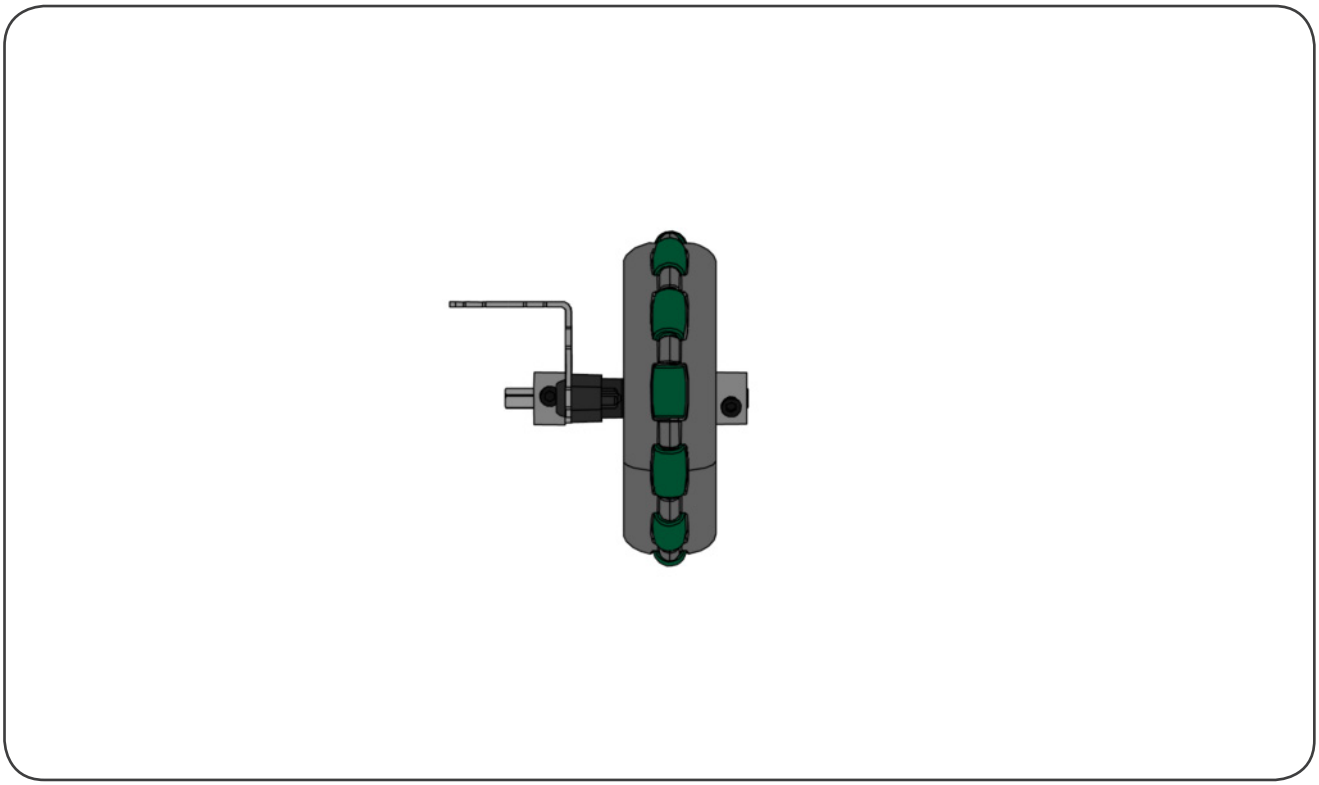




Alternate view on next page

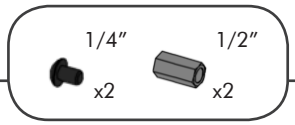
6 Omni-Wheel & Rear Bumper Construction *(continued)*

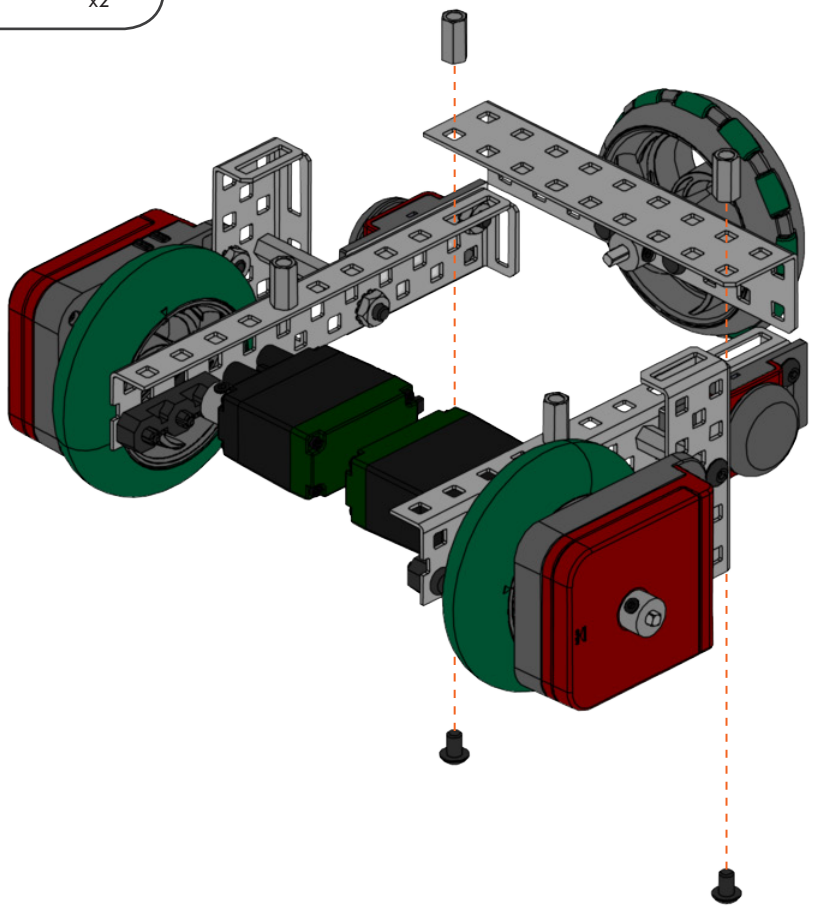


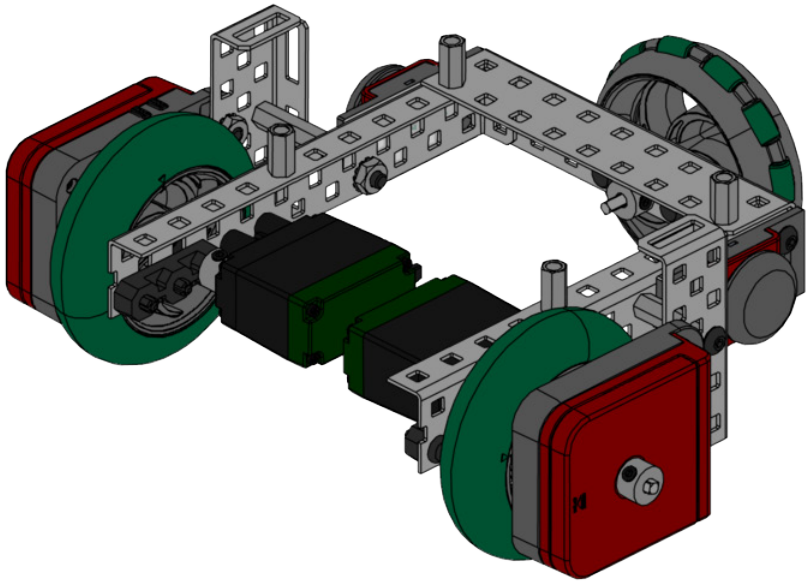


SWERVEBOT BUILDING INSTRUCTIONS

7 Attaching Omni-Wheel & Rear Bumper

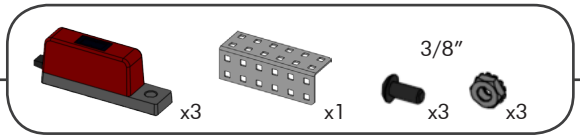


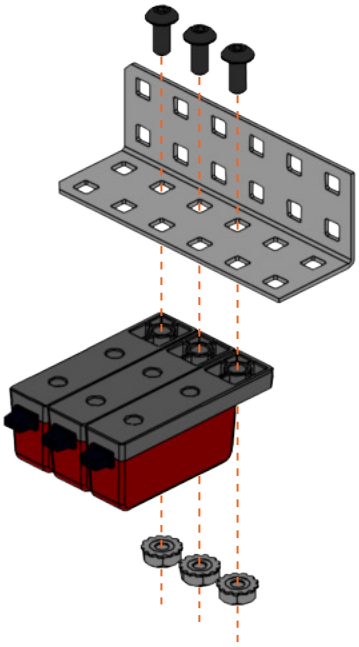


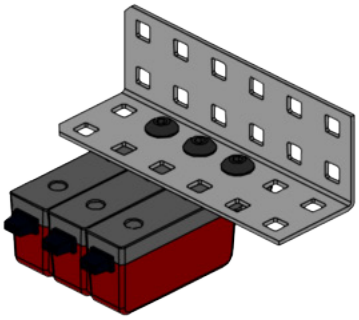


SWERVEBOT BUILDING INSTRUCTIONS

8 Line Tracking Kit and Front Bumper Construction

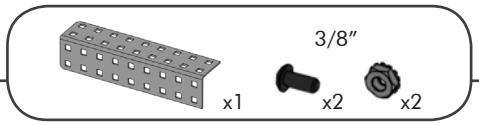


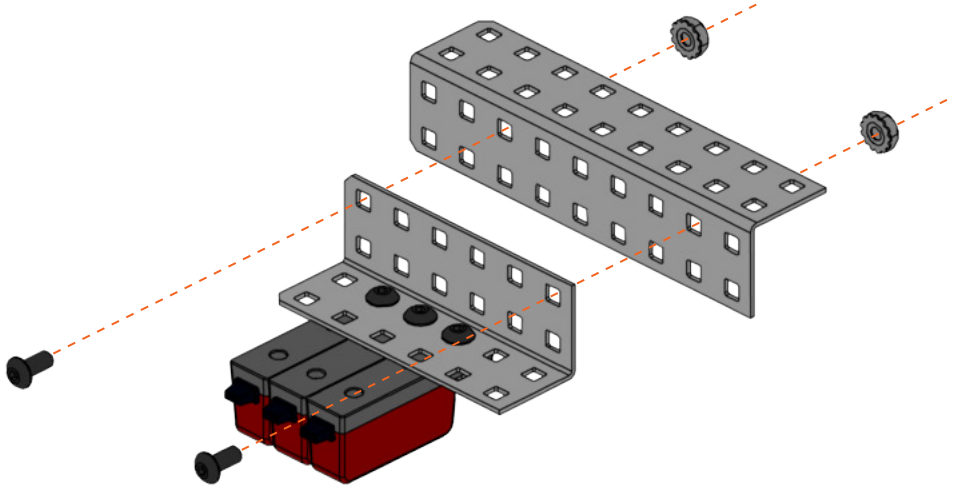


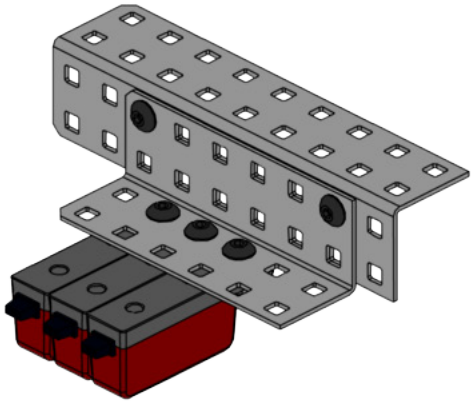


SWERVEBOT BUILDING INSTRUCTIONS

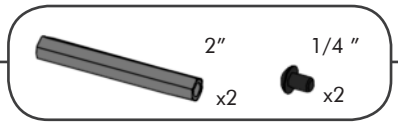
8 Line Tracking Kit and Front Bumper Construction *(continued)*

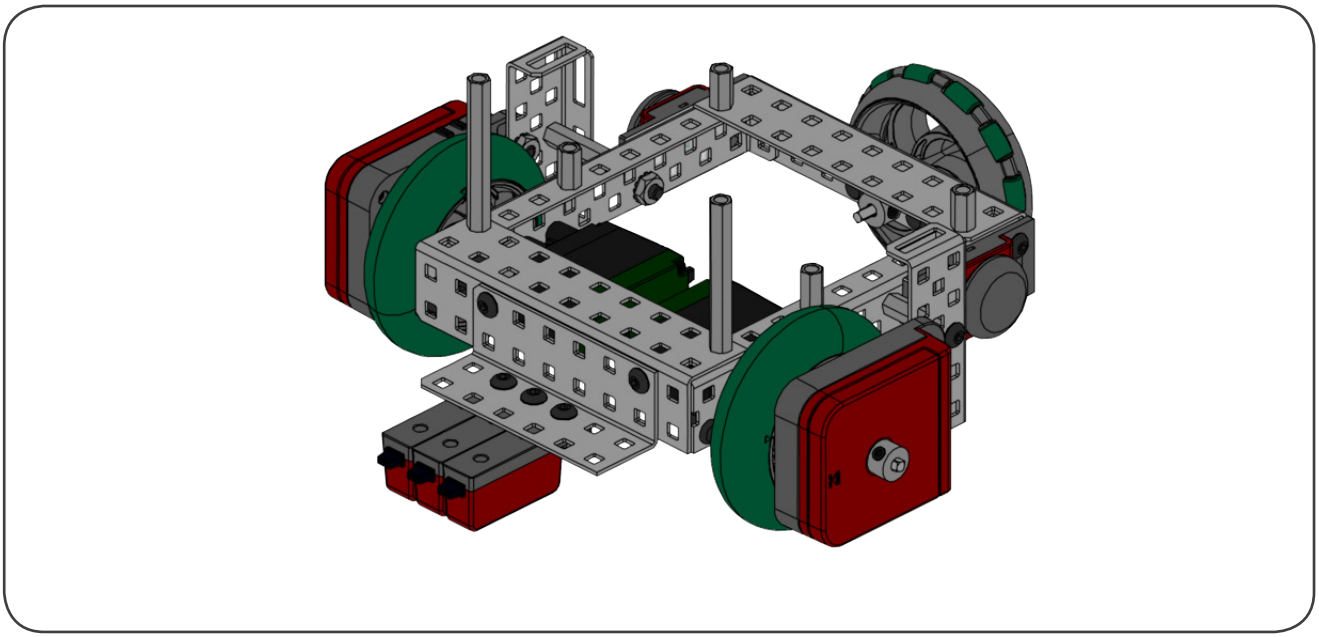






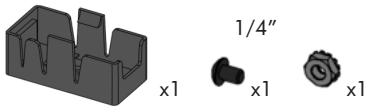
9 Attaching the Line Tracking Kit and Front Bumper

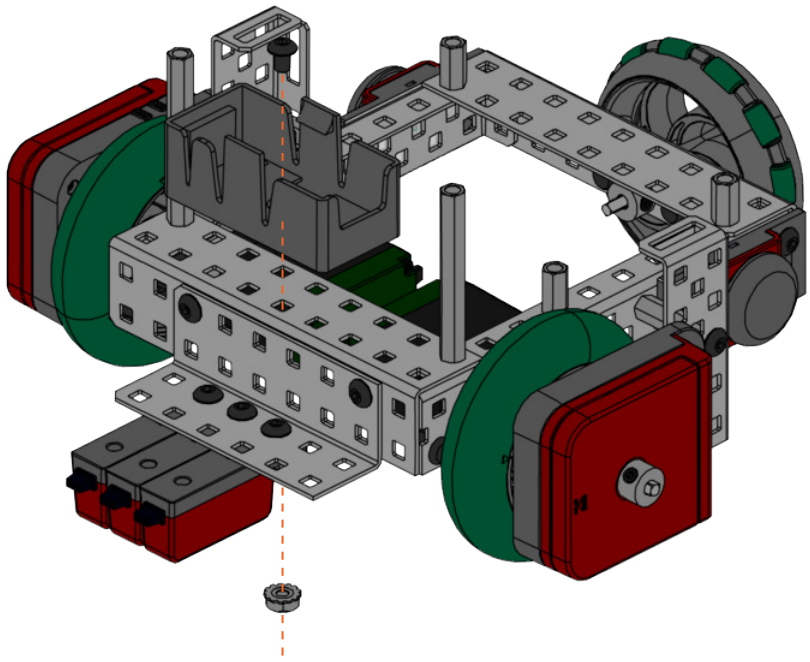


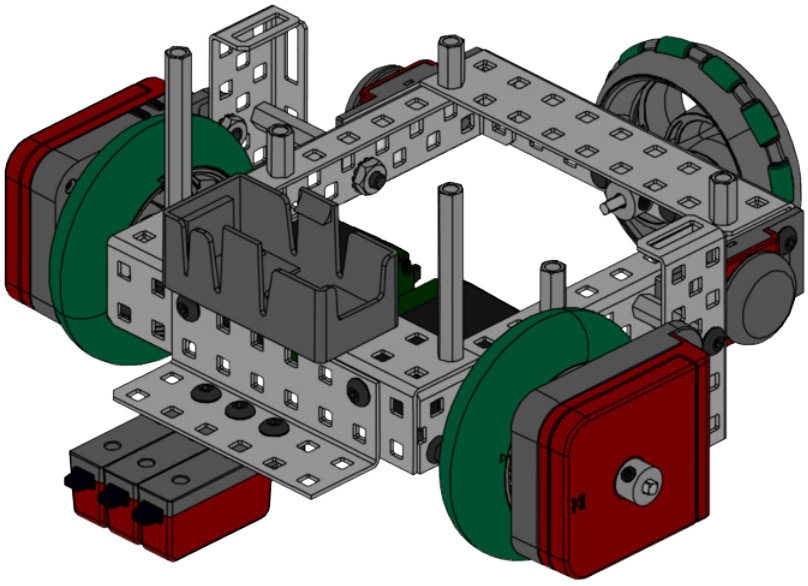


SWERVEBOT BUILDING INSTRUCTIONS

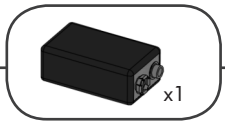
10 Optional: Attaching the Backup Battery

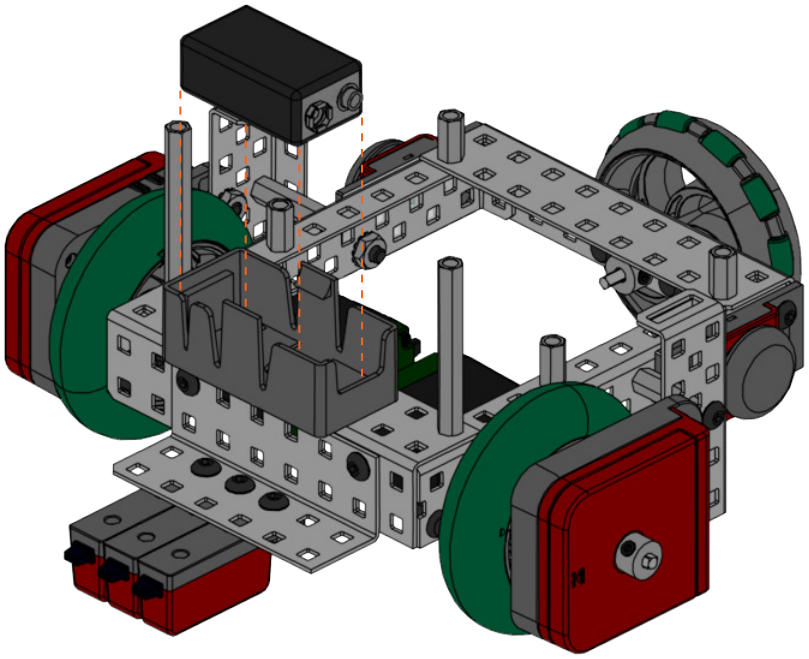


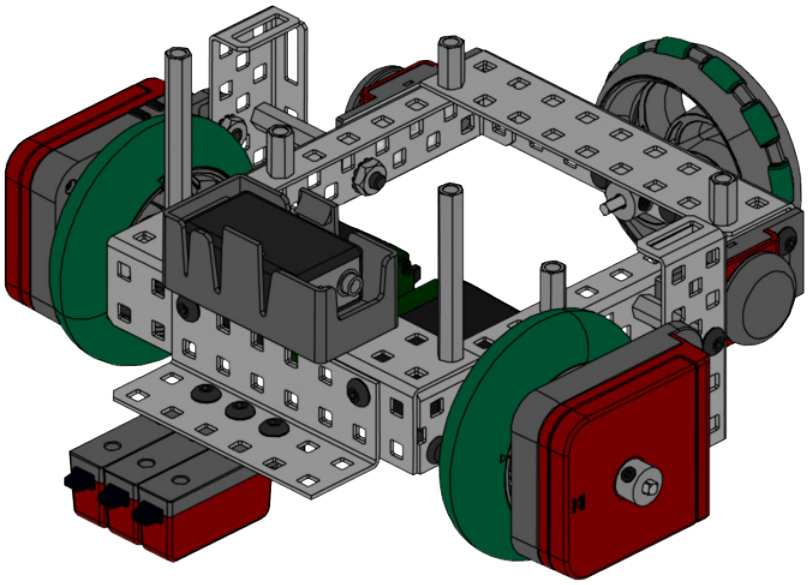




10 Optional: Attaching the Backup Battery *(continued)*

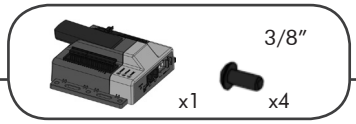


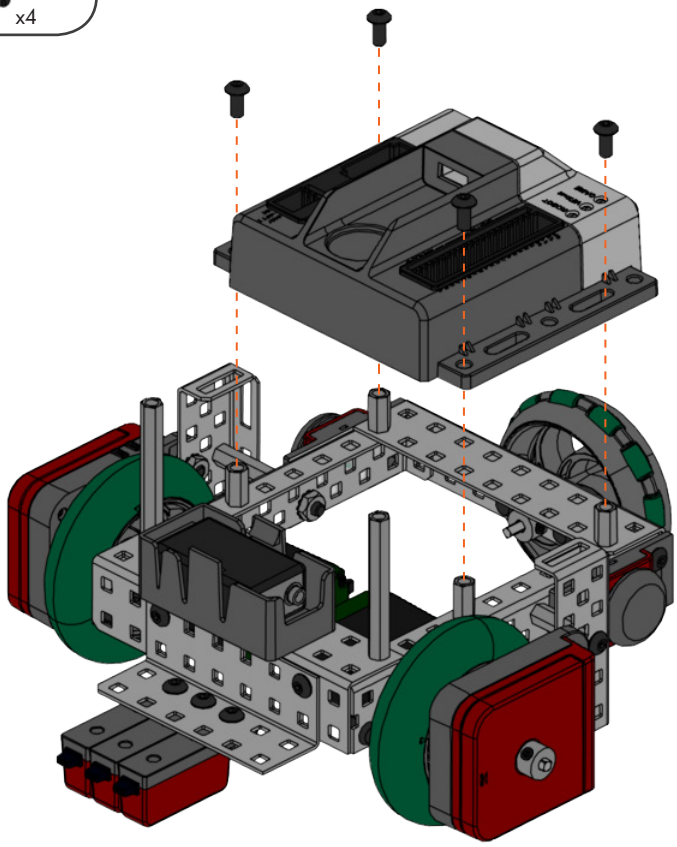


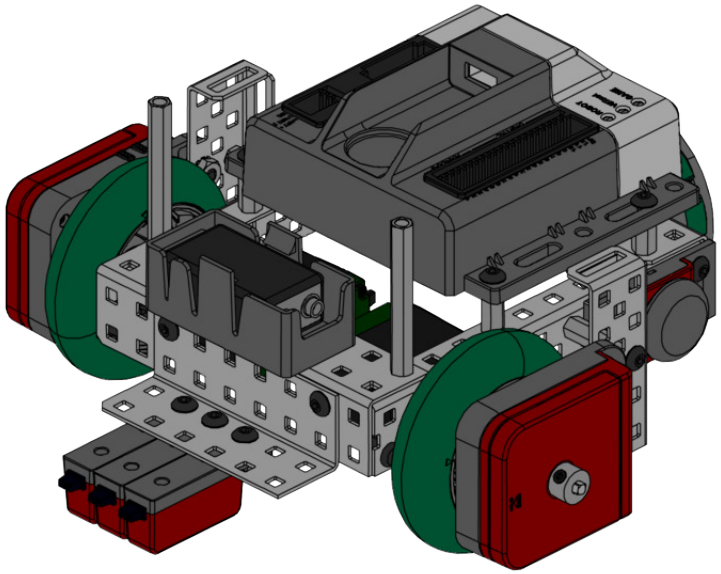


SWERVEBOT BUILDING INSTRUCTIONS

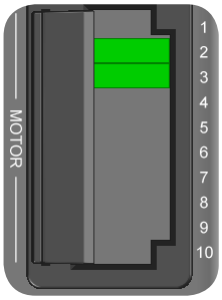
11 Attaching the VEX Cortex Microcontroller

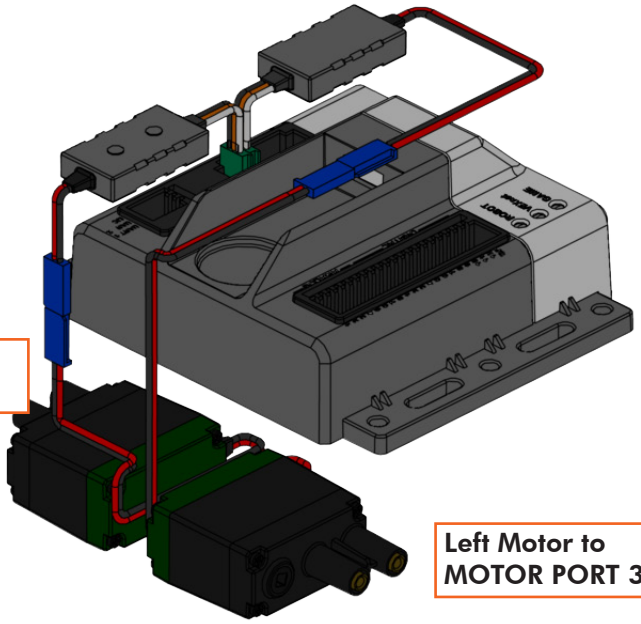






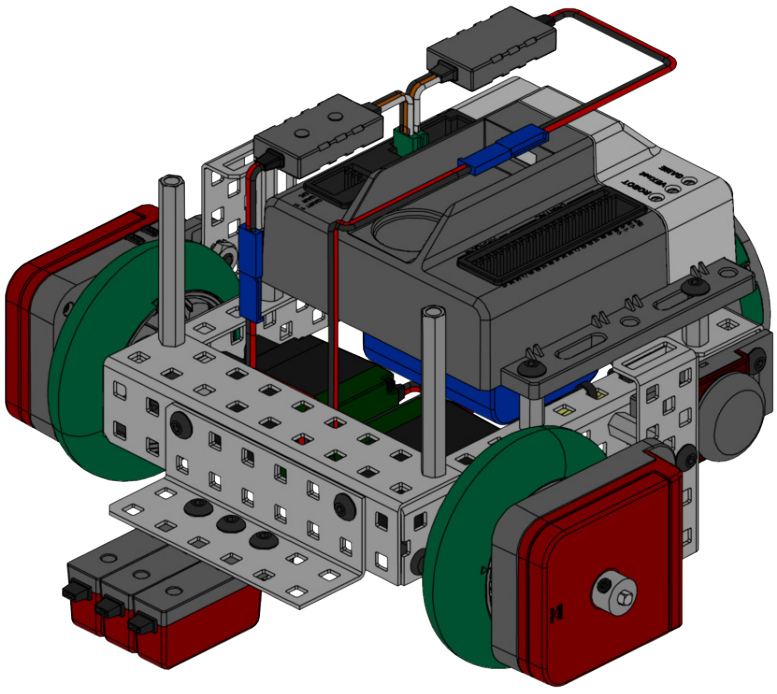
12 Wiring the Motors





Right Motor to MOTOR PORT 2

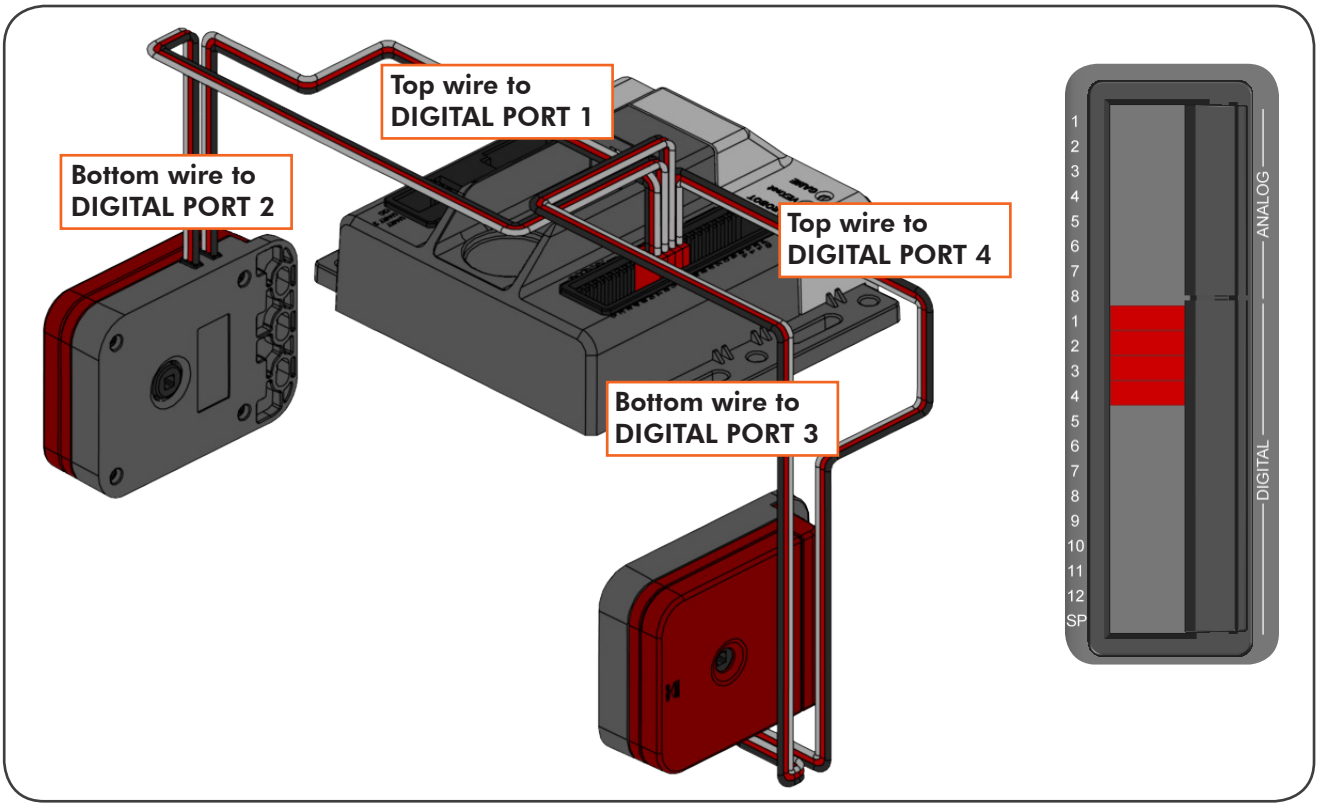
Left Motor to MOTOR PORT 3

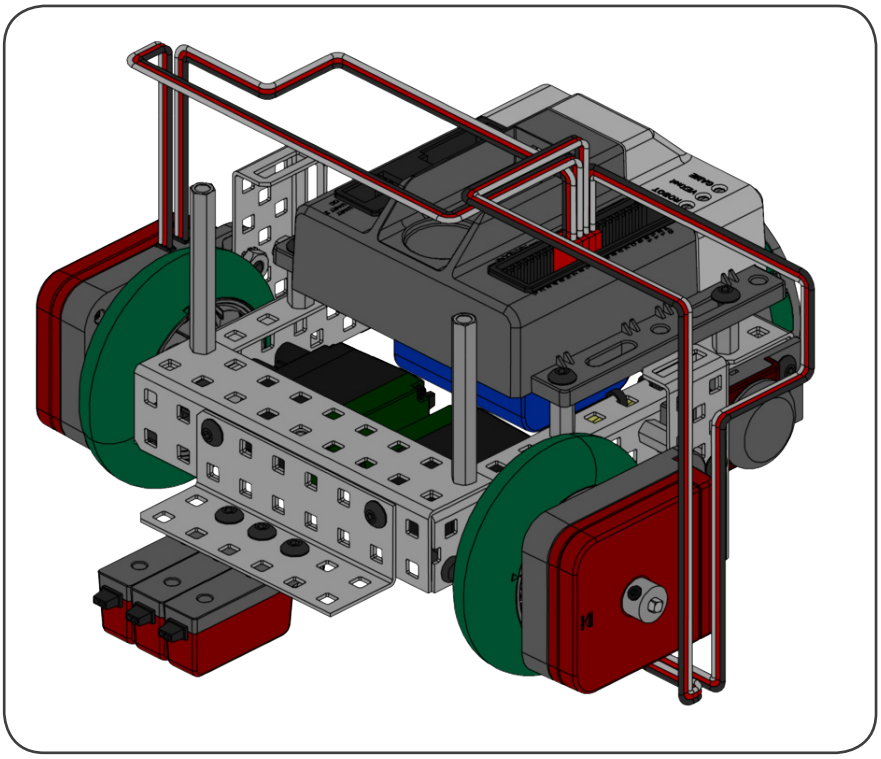


Building Tip: 2-Wire Motors

If you are using the 2-wire VEX motors, you will need to plug your motors into MOTOR Ports 1 & 10, or use the VEX Motor Controller 29's to adapt the 2-wire motors to the 3-wire MOTOR Ports (2 - 9).

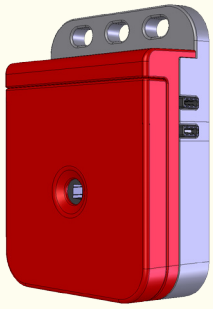
13 Wiring the Encoders



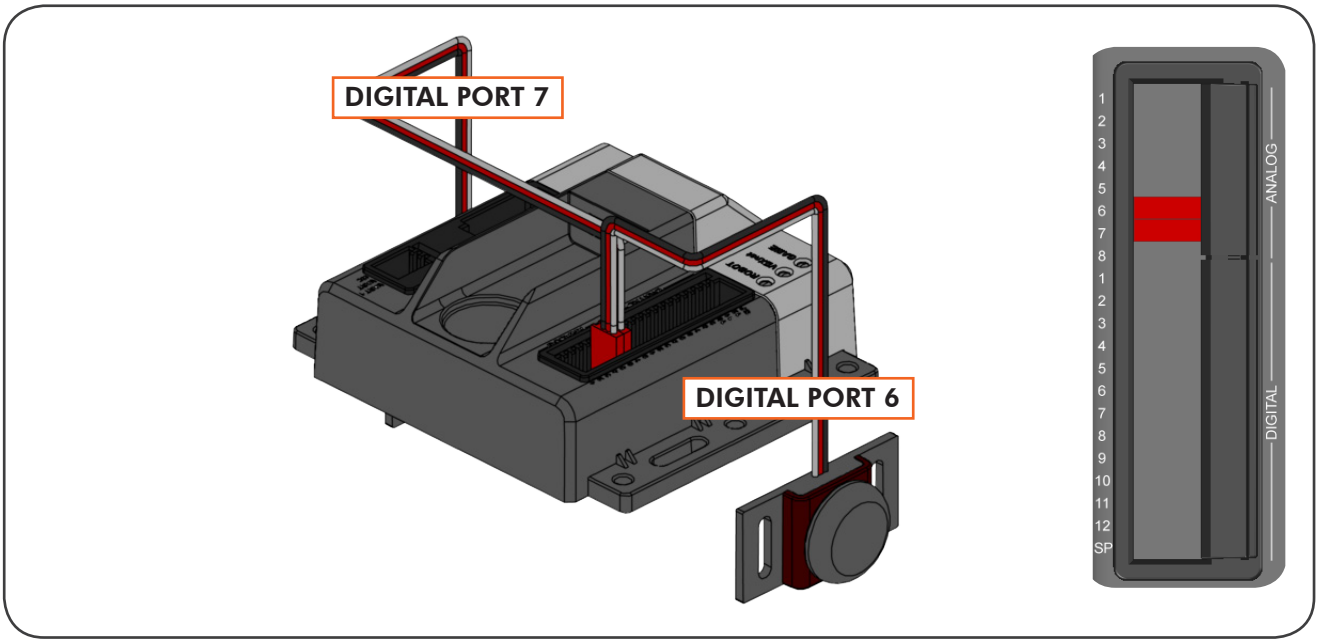


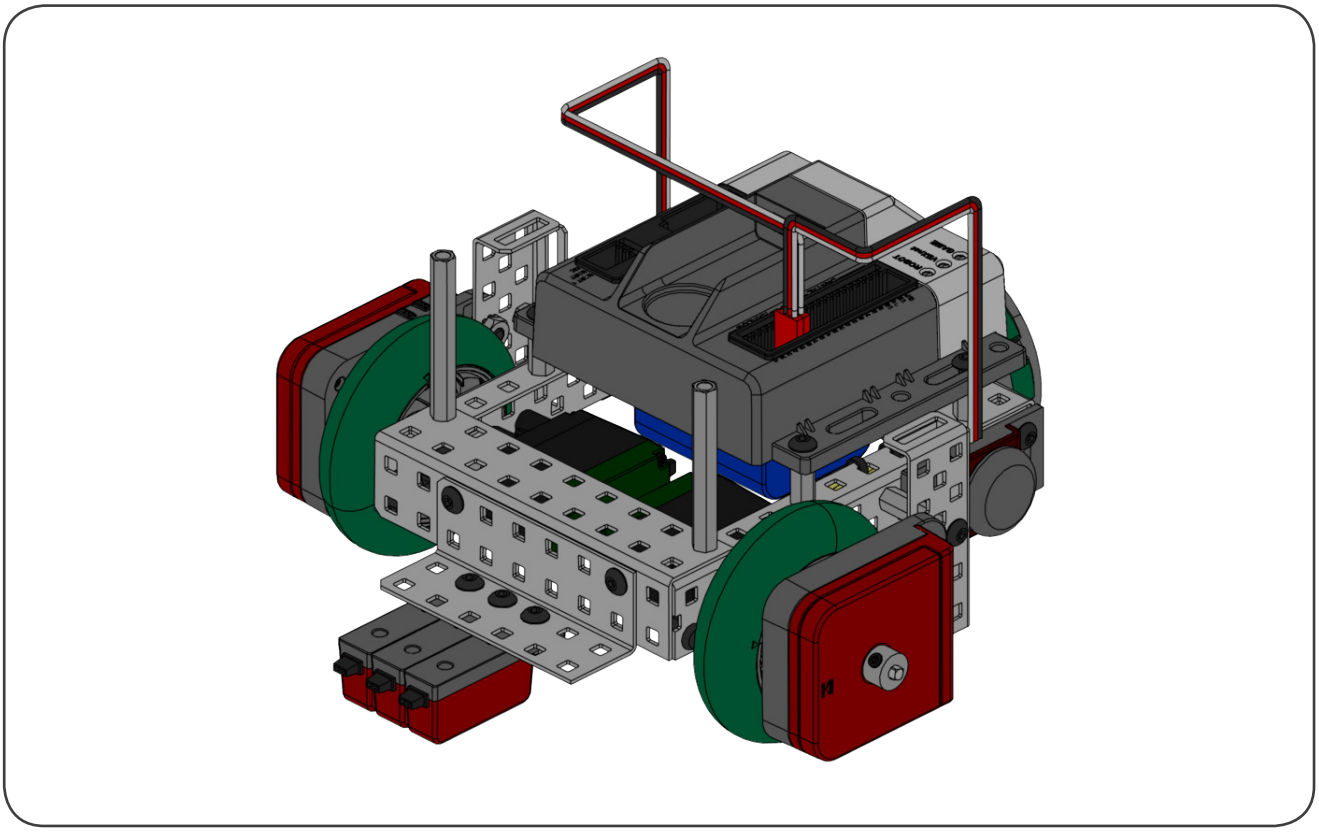
Building Tip: Encoder Wires

In the step above, the top encoder wire is the wire closer to the mounting holes.



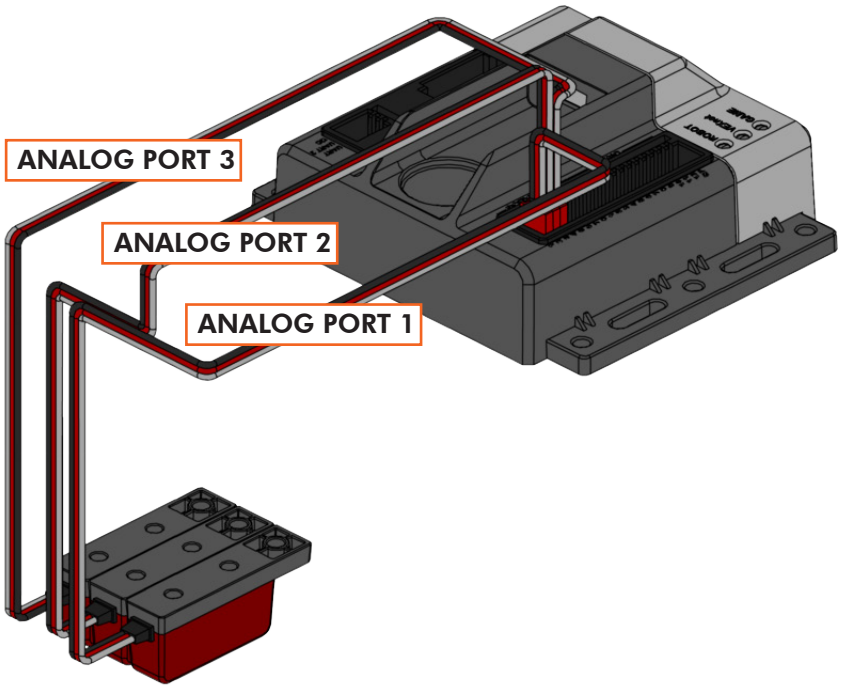
14 Wiring the Bump Switches

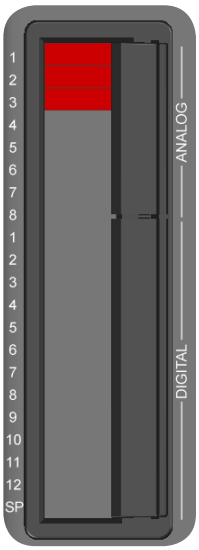


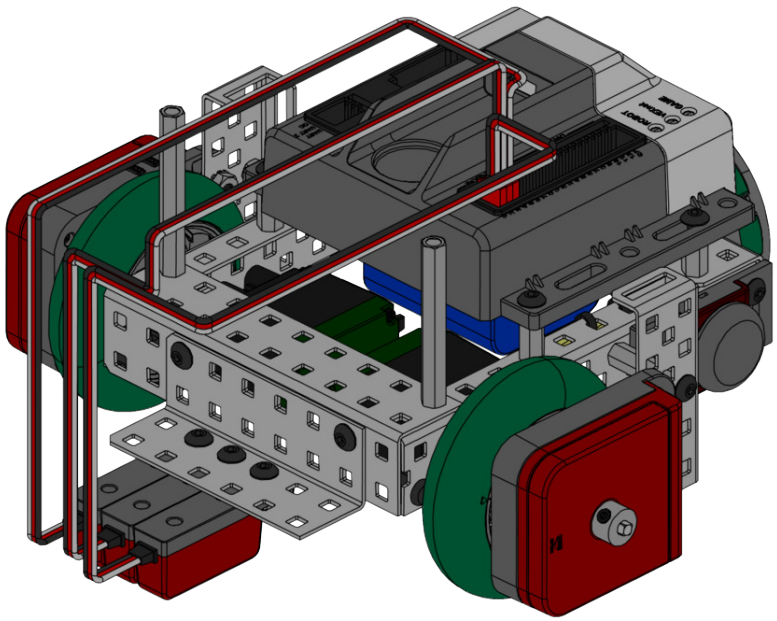


SWERVEBOT BUILDING INSTRUCTIONS

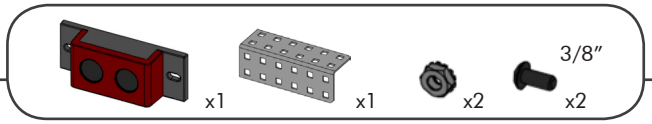
15 Wiring the Line Tracking Sensors

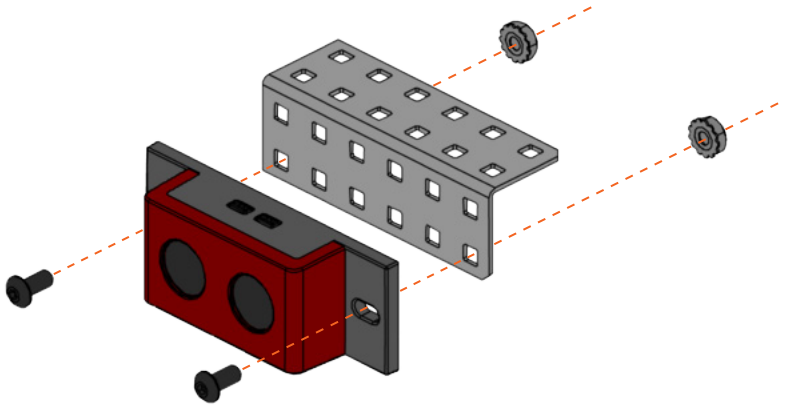


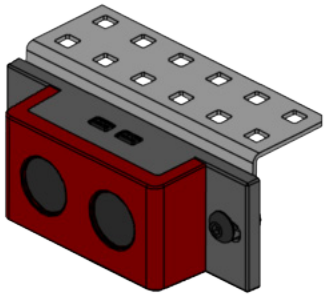




16 LCD Platform Construction

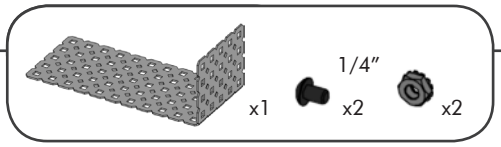


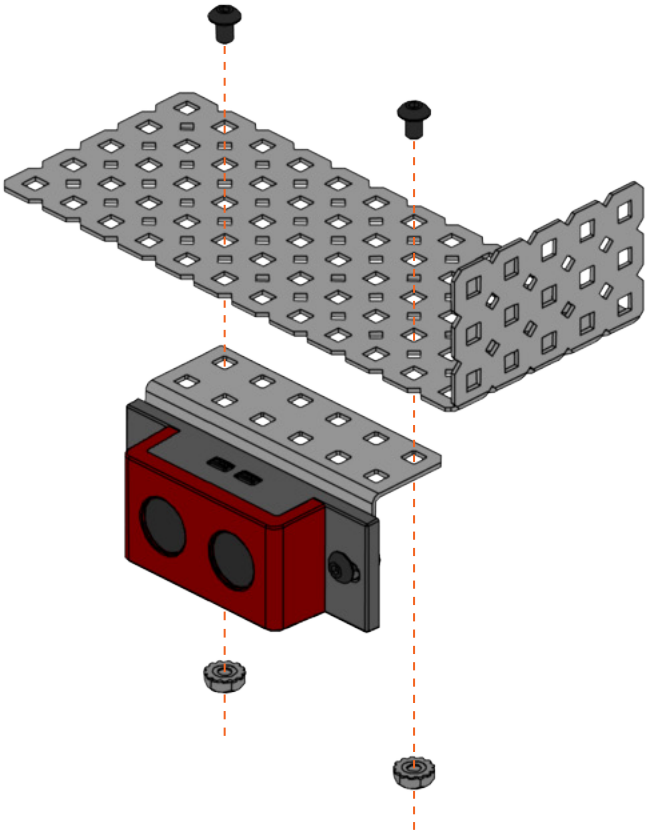


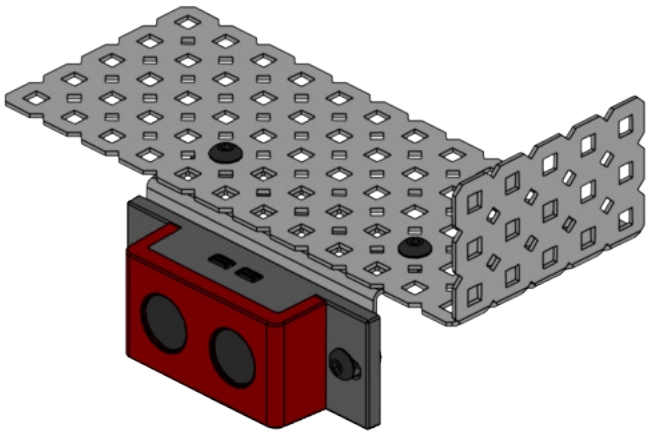


SWERVEBOT BUILDING INSTRUCTIONS

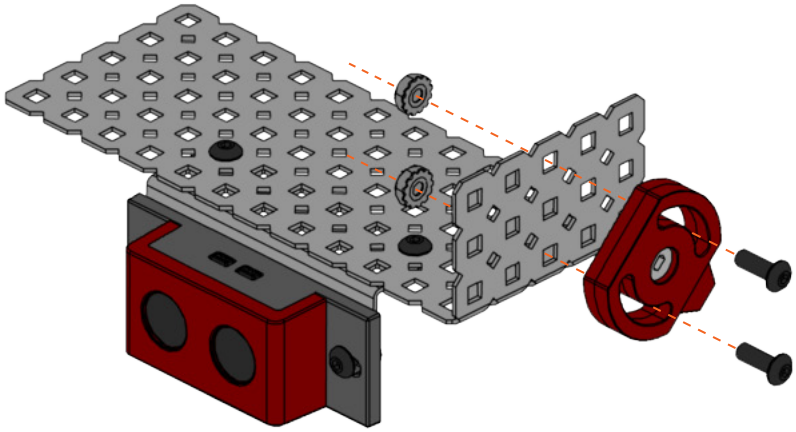
16 LCD Platform Construction *(continued)*

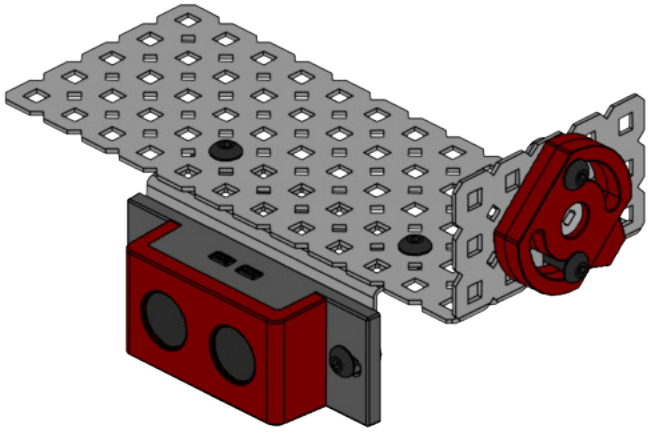




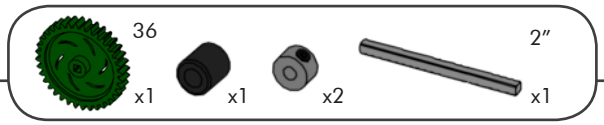


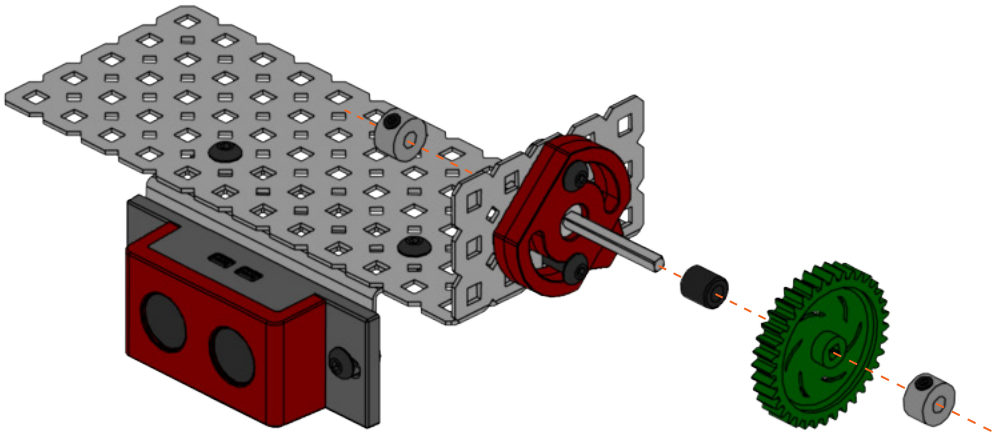
16 LCD Platform Construction *(continued)*

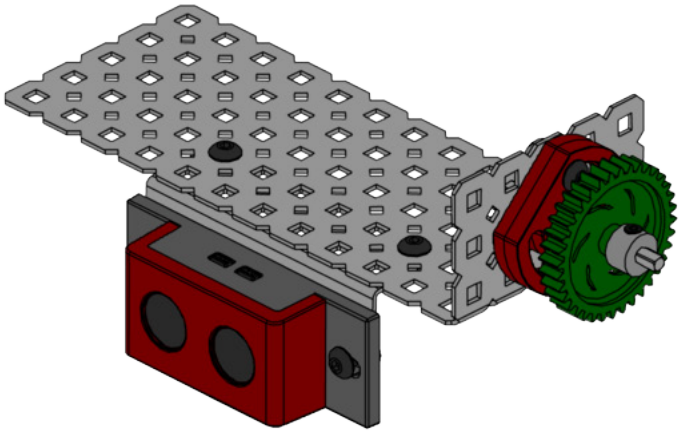




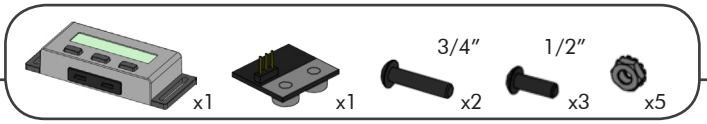
16 LCD Platform Construction *(continued)*

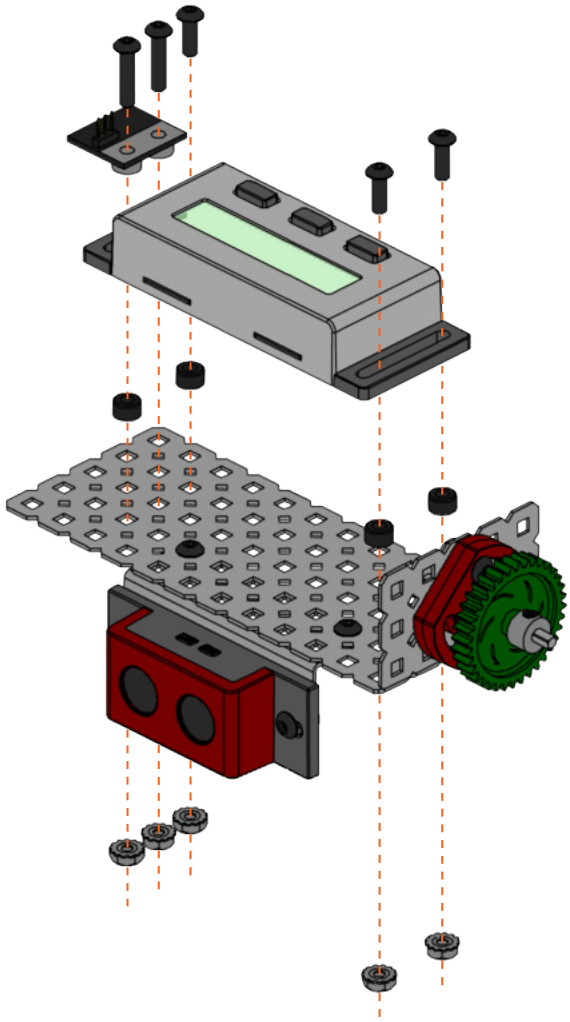


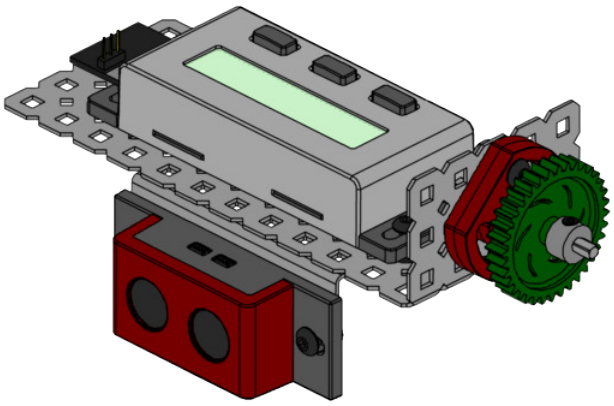




16 LCD Platform Construction *(continued)*



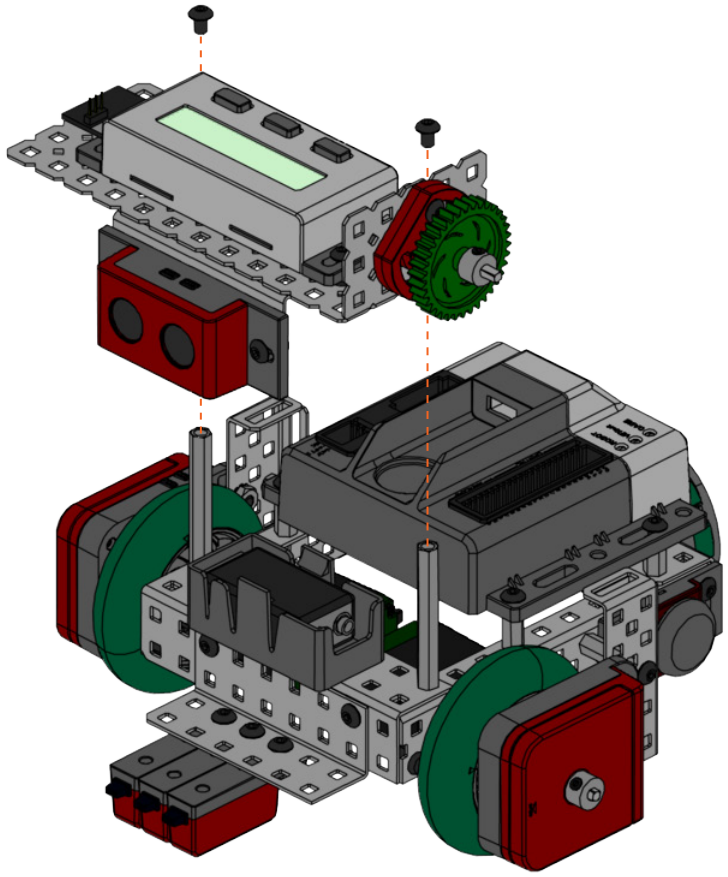


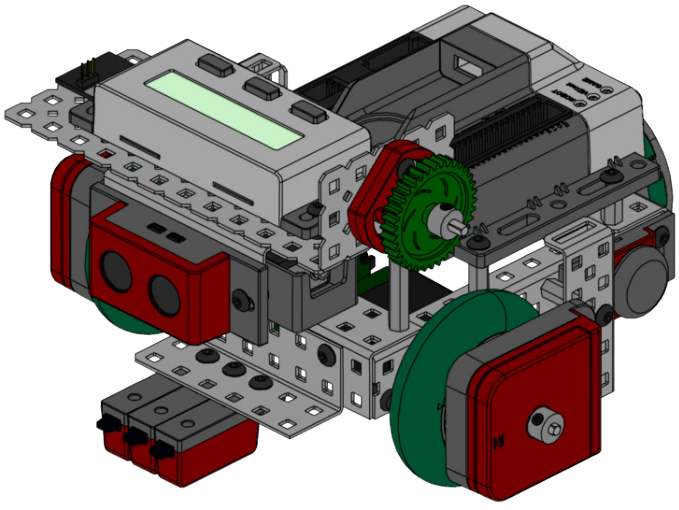


SWERVEBOT BUILDING INSTRUCTIONS

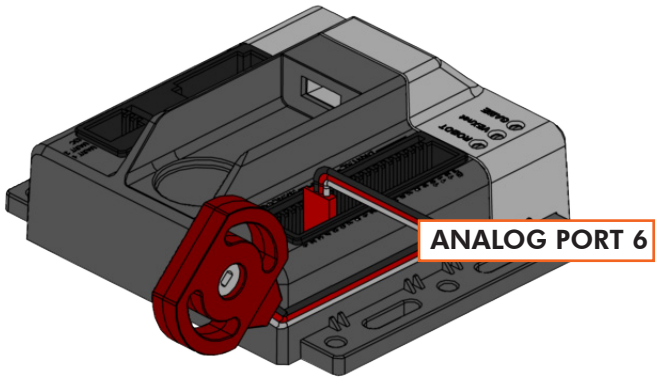
17 Attaching the LCD Platform

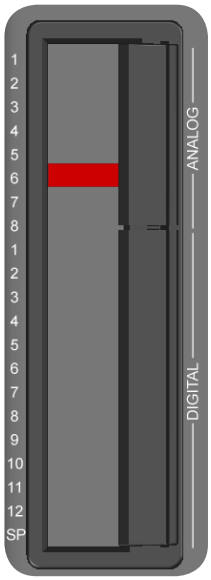
x2

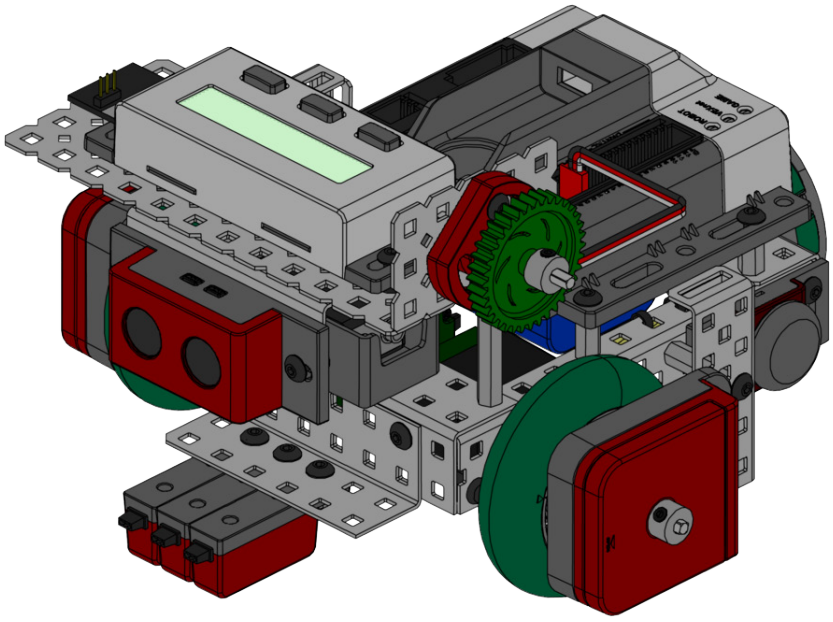




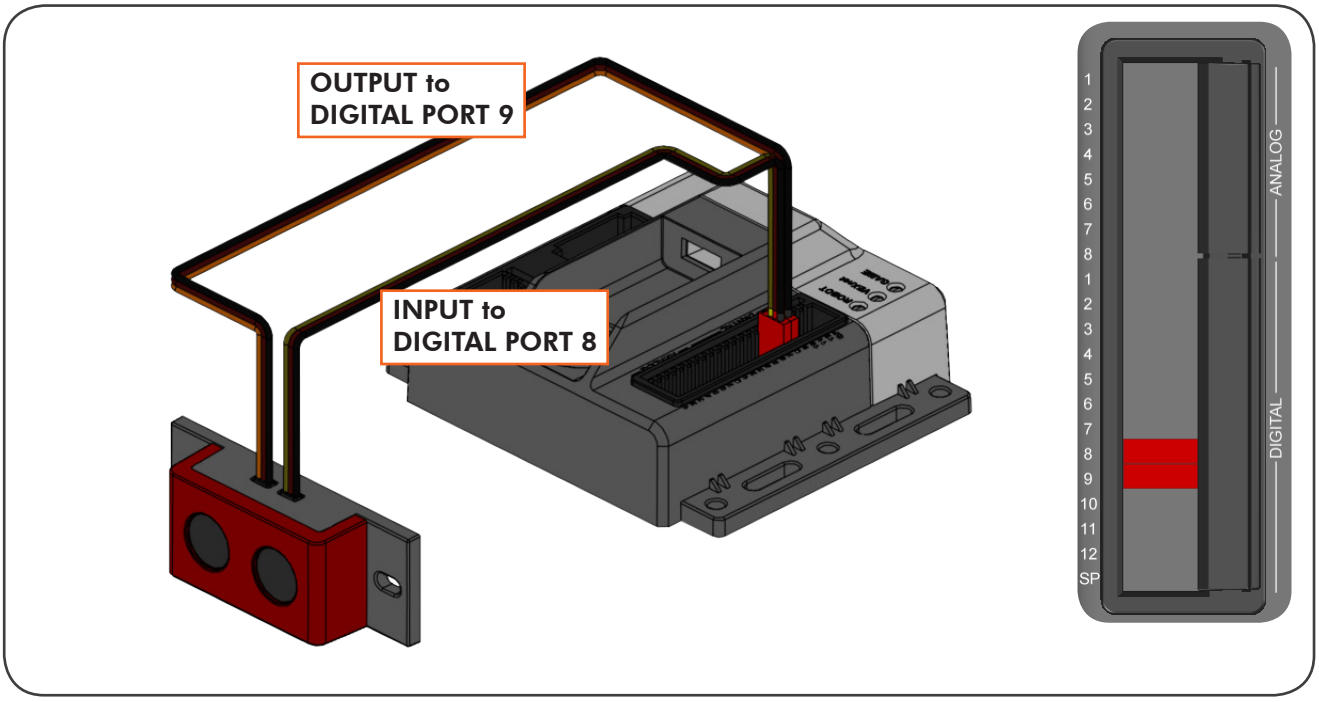
18 Wiring the Potentiometer

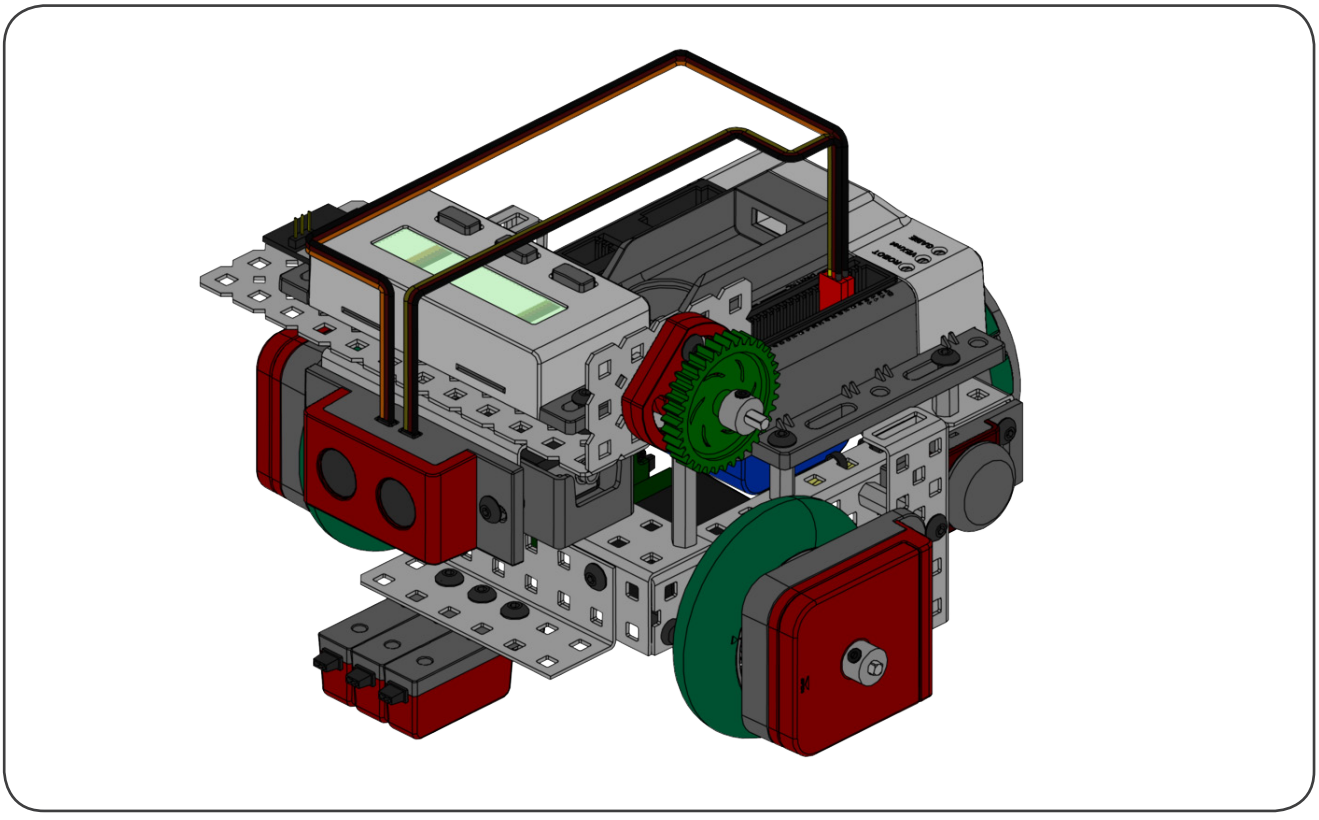




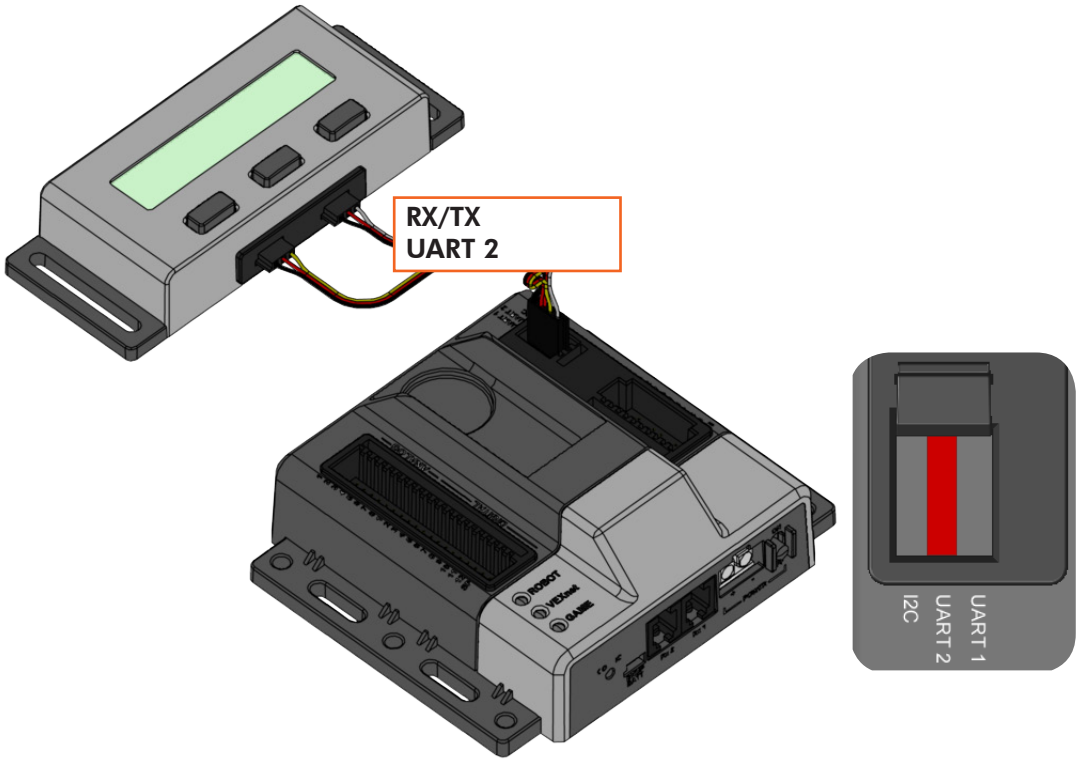


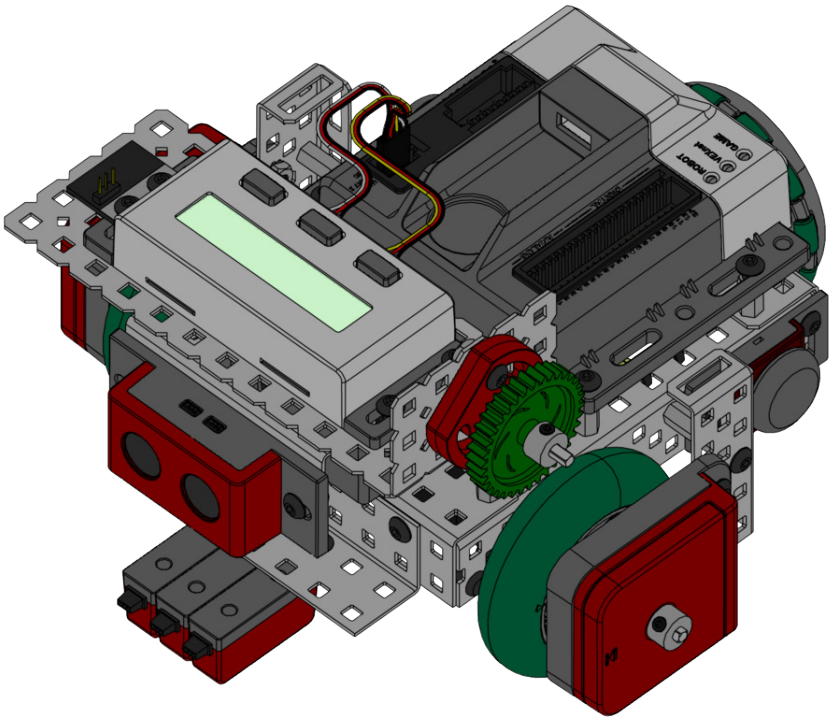
19 Wiring the Ultrasonic Rangefinder





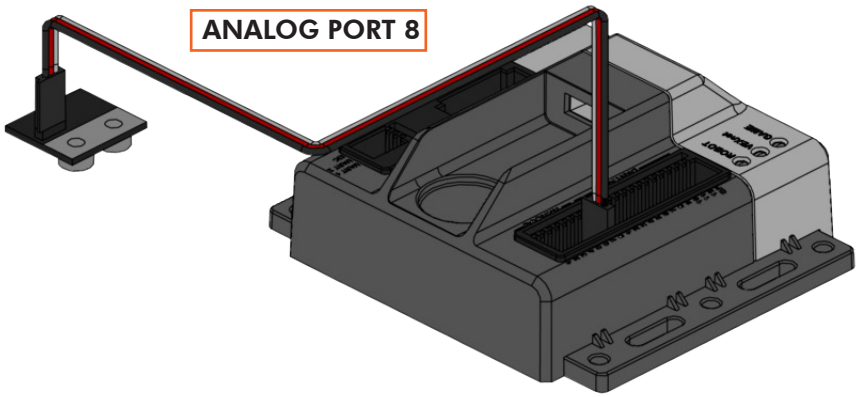
20 Wiring the VEX LCD

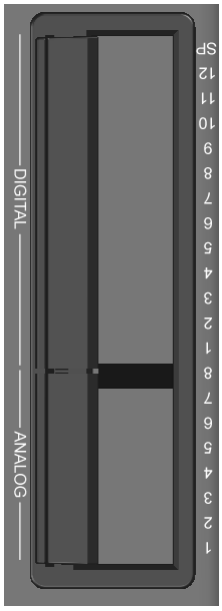


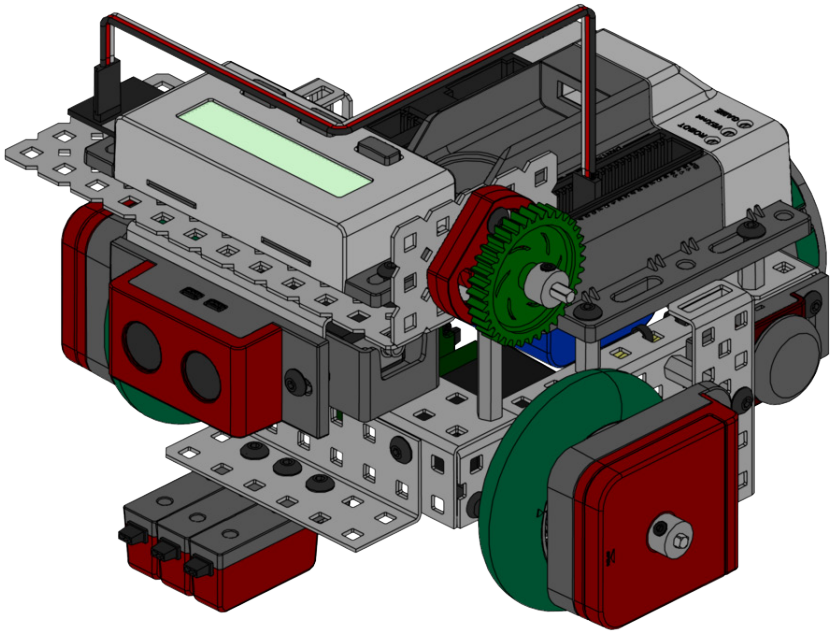


SWERVEBOT BUILDING INSTRUCTIONS

21 Wiring the Gyro

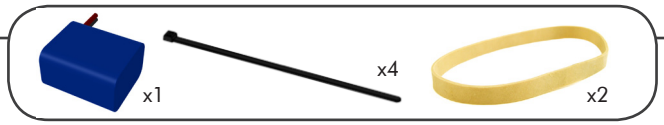


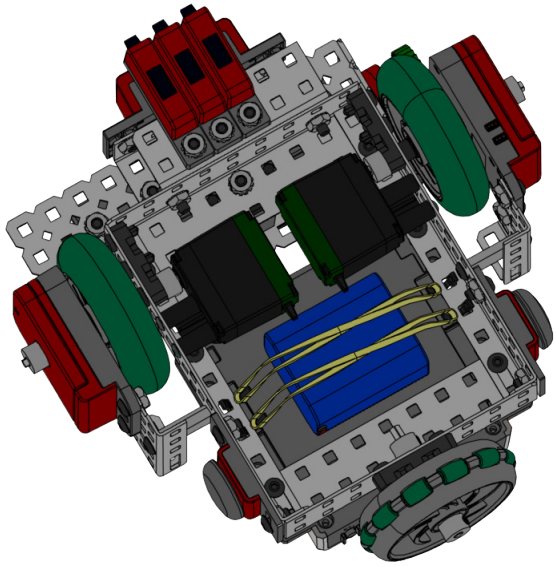


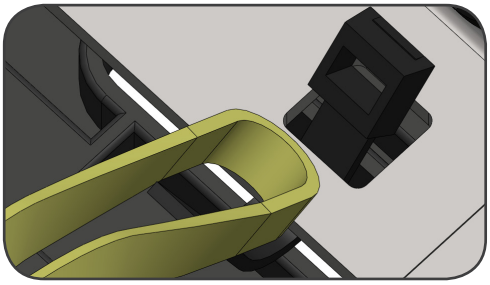


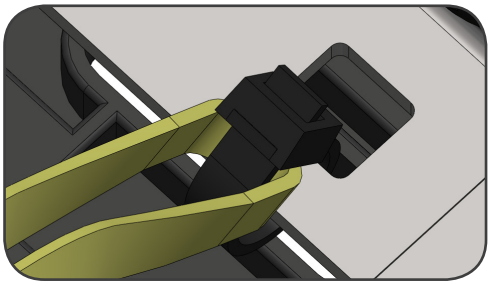
SWERVEBOT BUILDING INSTRUCTIONS

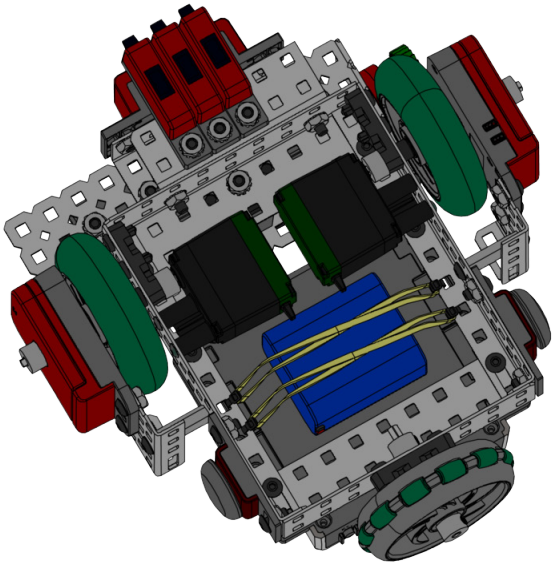
22 Attaching the Battery



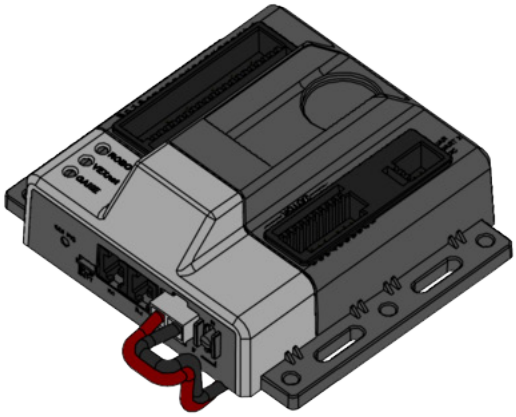


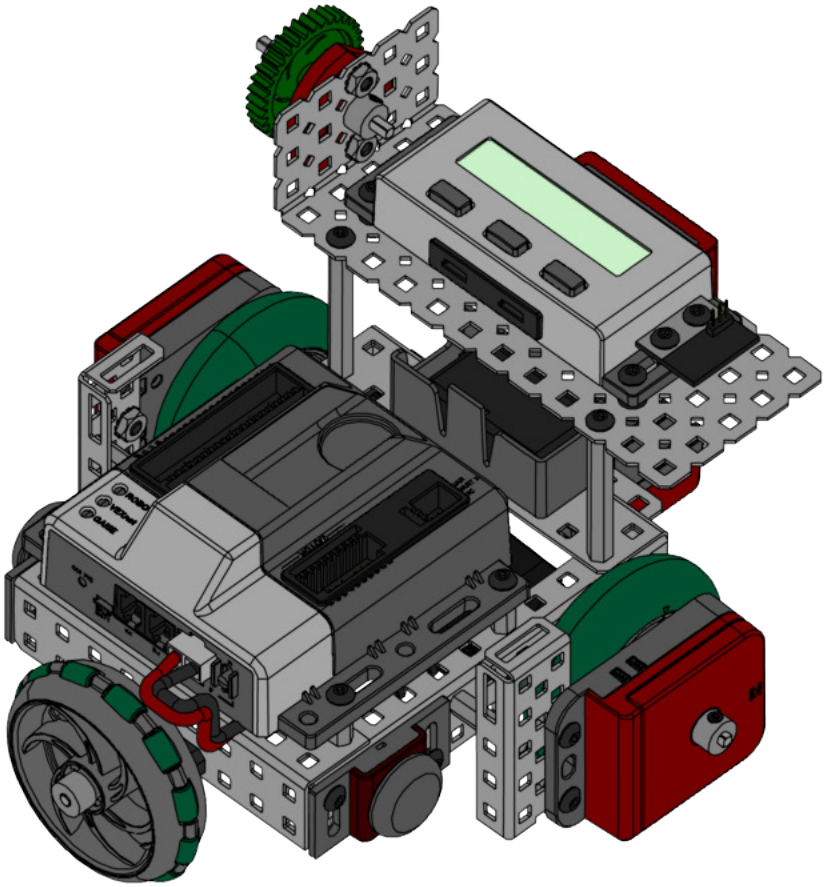






22 Attaching the Battery *(continued)*





YOUR SWERVEBOT IS COMPLETE!