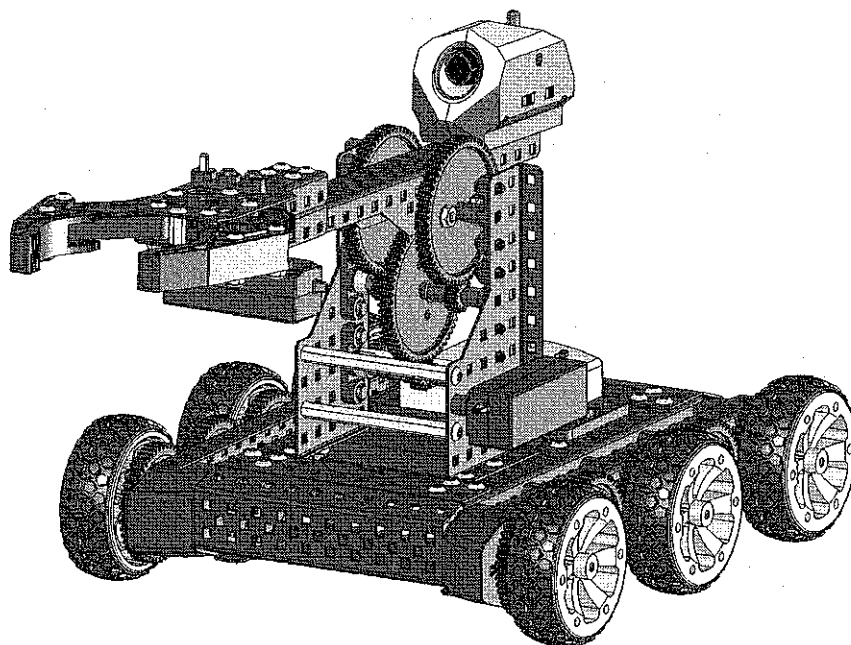


# vEXplorer™

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## Step-by-step guide for building the VEXplorer



**Your Vexplorer robot has been partially assembled to help you easily enjoy your first robot experience. This instruction manual details the steps to build this first version. For maximum enjoyment we encourage you to design and build other variations using your own creativity and imagination and the SolidWorks design software.**

**Two illustrations of different designs are shown at the end of this manual to help get you started.**

**If you have any questions or comments, call our hotline at: (800) 833-3570  
or, please write to:**

**Revell-Monogram Consumer Service Department, 725 Landwehr Road, Northbrook, Illinois 60062**

**Be sure to include the plan number (85174400200), part number, description, your return address and phone number.**

**Visit our website: [www.revell.com](http://www.revell.com)**

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## Things To Know

When the safety precautions are followed, the VEXplorer will provide years of enjoyment. Use care and good sense at all times when operating this radio controlled product. Failure to use this vehicle in a safe, sensible manner can result in injury or damage to property. You and you alone must insure that the instructions are carefully followed and all safety precautions are obeyed.

- Water can cause the electronics to short out and can cause permanent damage.
- Always turn on the transmitter before turning on the receiver.
- Fully extend the transmitter antenna before operating your vehicle.
- Before turning on your radio system, check to make sure that non one else is running on the same frequency.
- Do not allow children under age 3 to play with the VEXplorer, radio transmitter or TV receiver. The model contains small parts which could accidentally be swallowed and cause suffocation.
- Keep hair, loose clothing, face and fingers away from the gears, tires and wheels while the model is running.
- The transmitters antenna could also cause injury if played with violently or pointed towards someone's face.
- Never operate your VEXplorer on streets or in any areas where full-size vehicles are.
- Do not pick up your VEXplorer when it is in motion.
- Never charge, run or store your VEXplorer in a location subject to high temperatures, low temperatures or high humidity. Do not store in direct sunlight.
- To avoid electronic malfunction, do not allow the vehicle to become wet. Short circuits will produce a very strong electrical current. Should your VEXplorer become wet, stop using it immediately.
- Never attempt to disassemble or solder the model. Do not put it into fire.
- Always use AA alkaline batteries. If improper batteries are used in the transmitter, they may become hot, leak and may rupture.
- Do not attempt to recharge non-rechargeable batteries.
- Only batteries of the same equivalent type as recommended are to be used. Do not mix old and new batteries.
- Exhausted batteries are to be removed from the toy. Replace ALL of the old batteries with new ones.
- Make sure the batteries are installed with the correct polarity as shown in the battery compartment. Do not disassemble your batteries. Never allow them to become hot or to burn. To avoid short-circuits, avoid getting them wet. Do not short circuit batteries.
- If liquid from inside the batteries contacts your skin or clothes, wash them with water. If leaked battery fluid gets into your eyes, flush them immediately with cool water and seek medical attention. Do not rub eyes.
- You can operate VEXplorer for about 1 hour with new AA alkaline batteries. The 9V battery in the transmitter will last about 8 hours and the AA batteries in the TV receiver also roughly 8 hours.

All pictures, descriptions and specifications found in this instruction manual are subject to change without notice. Revell maintains no responsibility for inadvertent errors in this manual. Visit [www.Revell.com](http://www.Revell.com) for the latest updates and information for your model.

**Warning:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

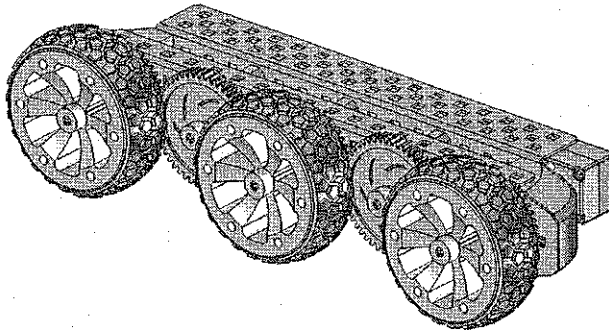
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

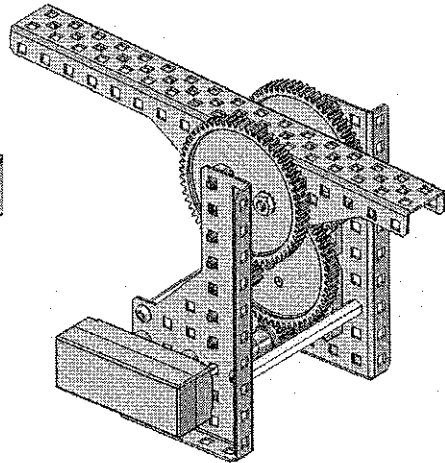
# VEXplorer parts and assembly

## 1 Collect and Identify Parts

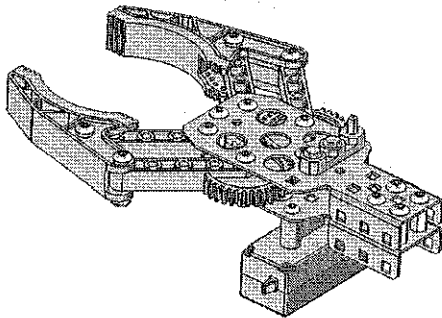
Wheel assembly x 2



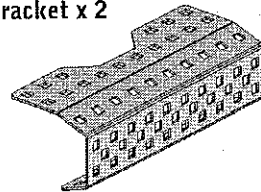
Arm assembly



Claw assembly



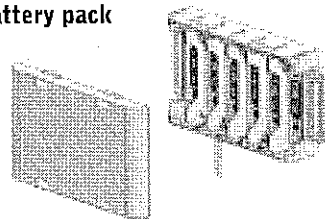
Bumper bracket x 2



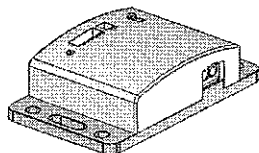
10x5 plate



Battery pack

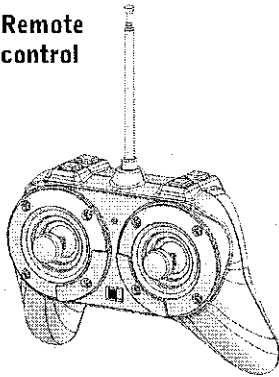


Receiver module x 1



## VEXplorer parts and assembly

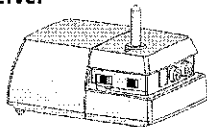
Remote control



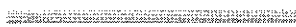
Camera



Camera receiver



Antenna holder



Keeps nut x 24



8-32 1/4" Hex screw x 26



8-32 1/2" Hex screw x 4



Small wire ties x 7



RCA cable (male to male)



Tools included

Large Allen wrench 3/32"



Small Allen wrench 5/64"



VEX open-ended wrench



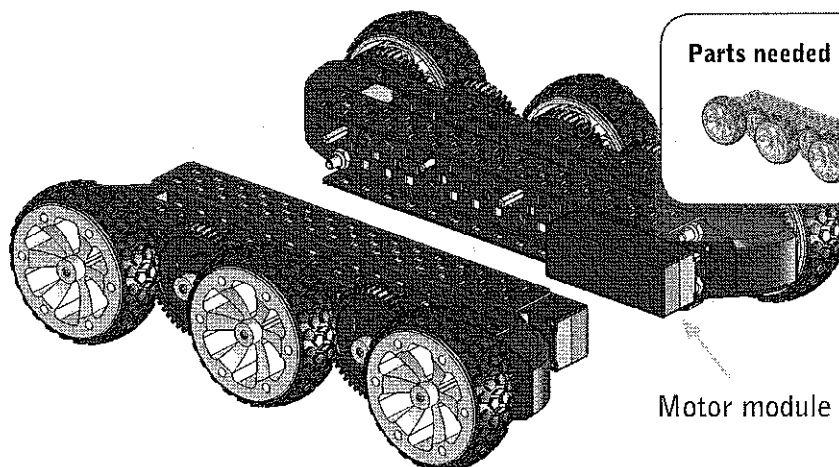
Tools/parts not included:

Phillips head screwdriver

10 AA batteries and 1 9V battery (not included) required to operate VEXplorer

## 2 Chassis Assembly

You will need two wheel assemblies, one for the right side and one for the left side. Orient them as shown, so that the motor modules are on the same side, facing towards one another.



Parts needed in this step:



x 2

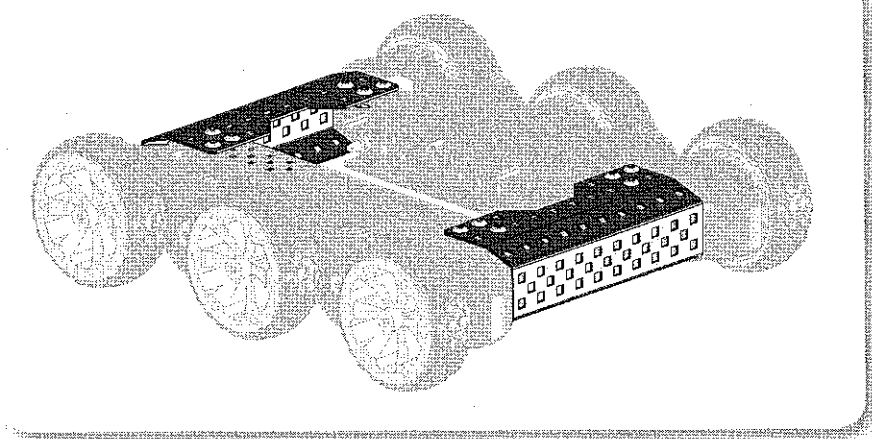
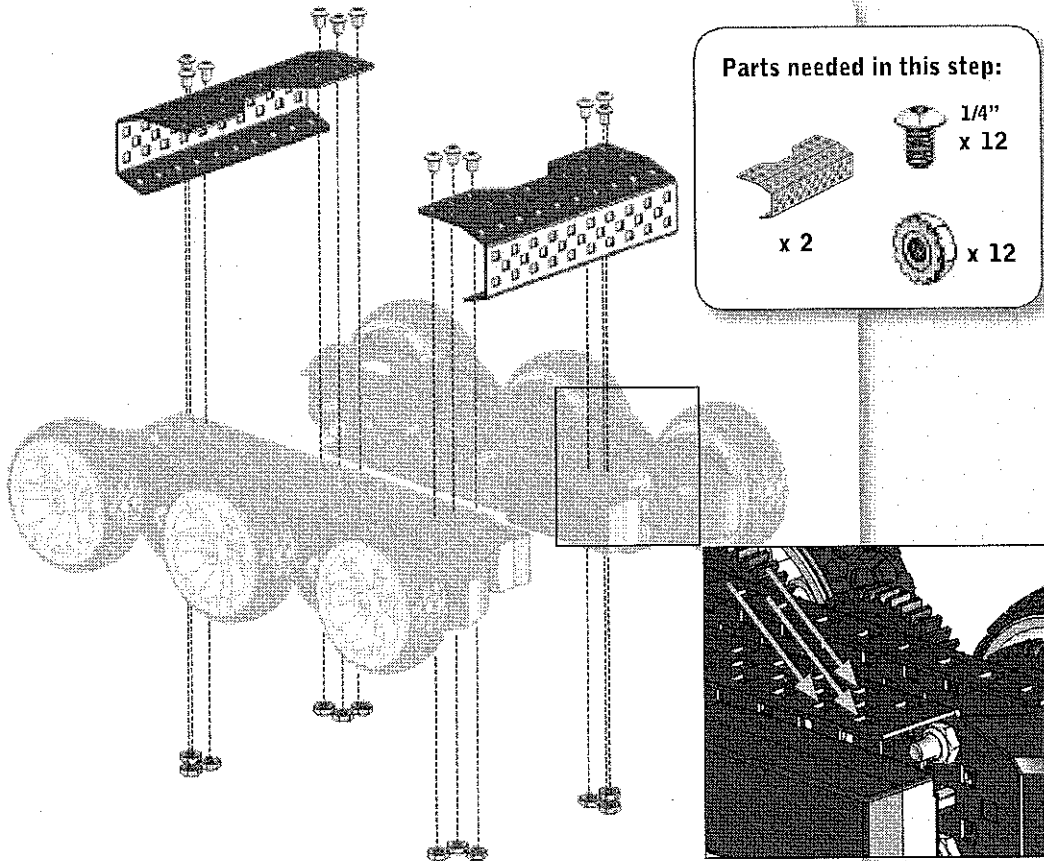
Motor module

**VEXplorer parts and assembly, continued**

**3 Bumper Attachment**

Add the two bumper brackets to the wheel assemblies. The brackets will slide over the top of the wheel assemblies, acting as bumpers and protecting the motors.

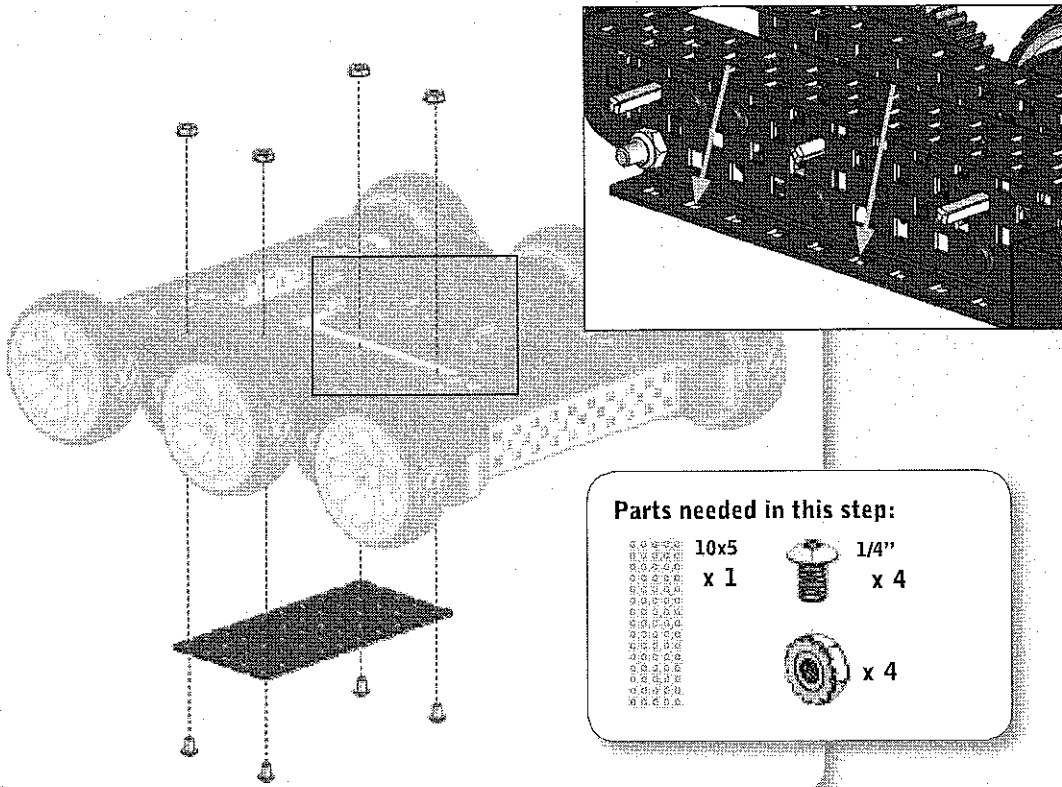
Attach each bracket with six keps nuts and six 1/4" hex screws. It may be helpful to use the VEX open-ended wrench to hold the keps-nuts as you move them into place.



## VEXplorer parts and assembly, continued

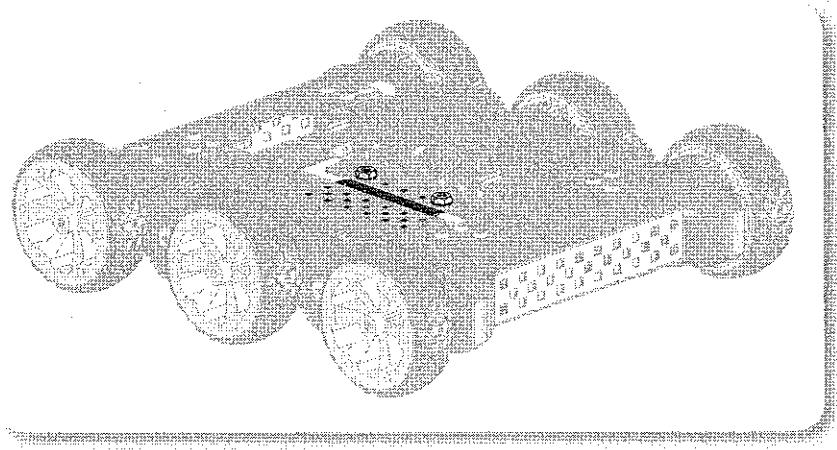
### 4 Plate Attachment

Attach the 10x5 plate on the bottom of the chassis, using four keps nuts and four 1/4" screws. Attach the plate to the bottom flange of the wheel assembly (the horizontal face furthest from the wheels). The plate mounts on the "front" of the robot (on the side away from the drive motors); use the 2nd and 6th holes from the front for mounting.



**Parts needed in this step:**

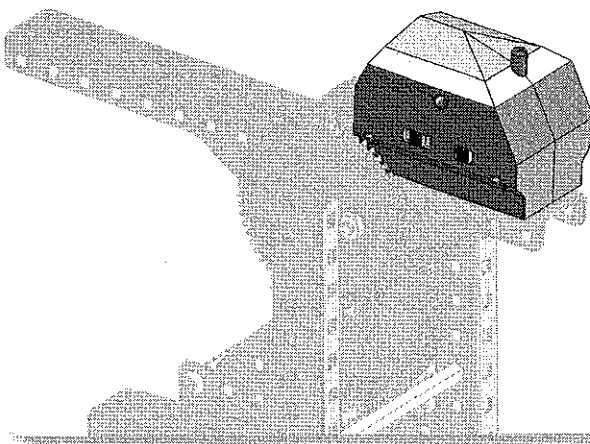
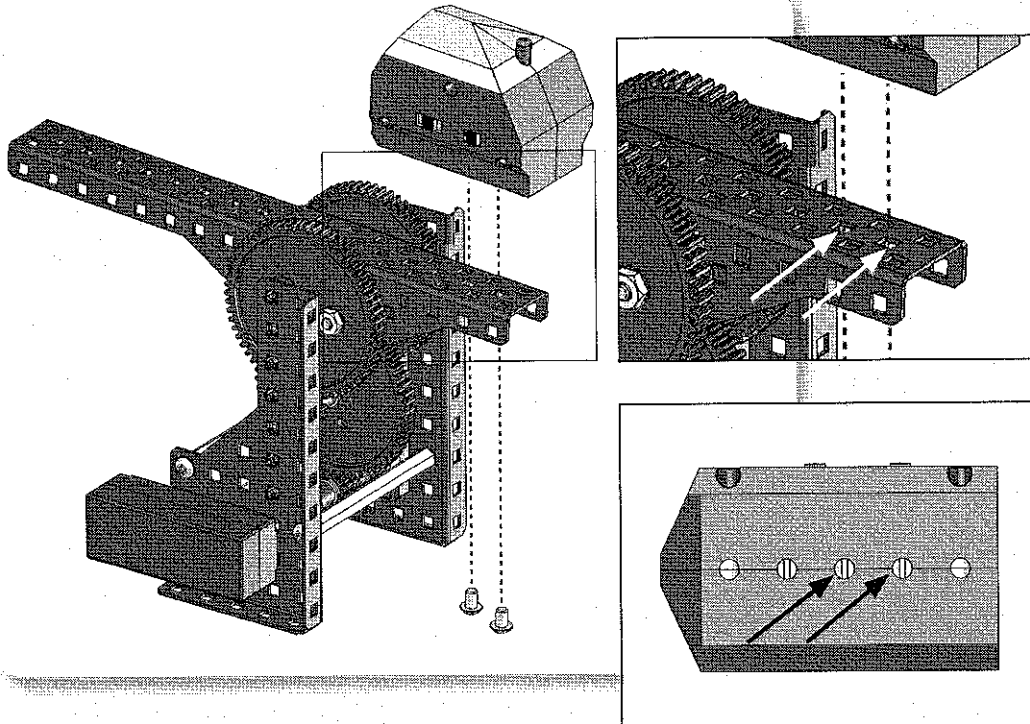
10x5	1/4"
x 1	x 4
	x 4



**VEXplorer parts and assembly, continued**

**5 Camera Attachment**

Set the camera on the shorter end of the arm and attach the camera with two 1/4" hex screws through the first and second middle holes of the arm assembly (counting from the end) into the second and third holes in the camera (counting from the back).  
 Note: This is a suggested position. The camera can be mounted in other locations as well, depending on desire.



**Parts needed in this step:**



x 1

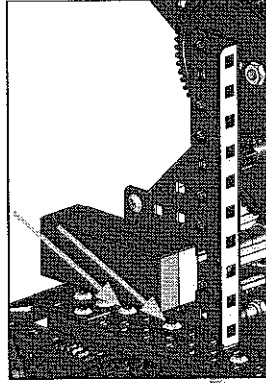
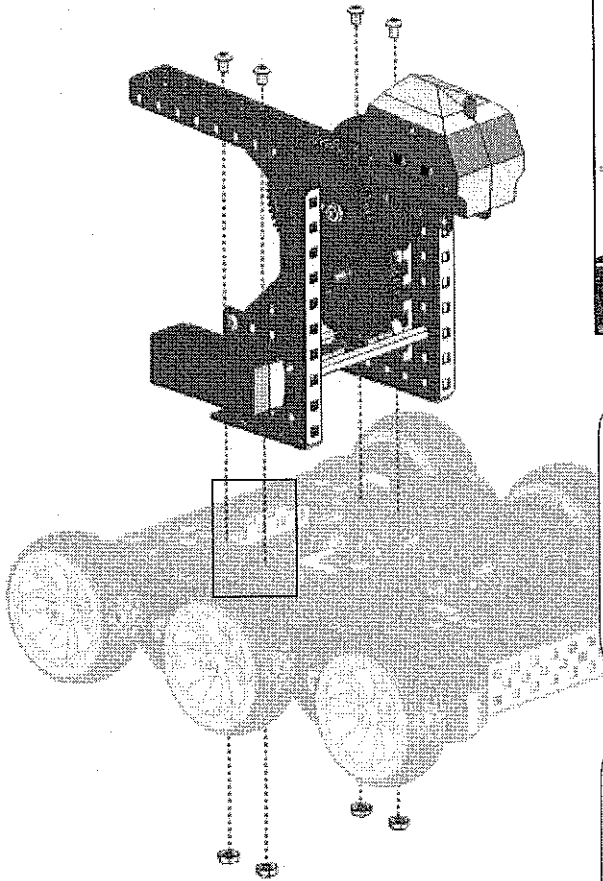


1/4" x 2

## VEXplorer parts and assembly, continued

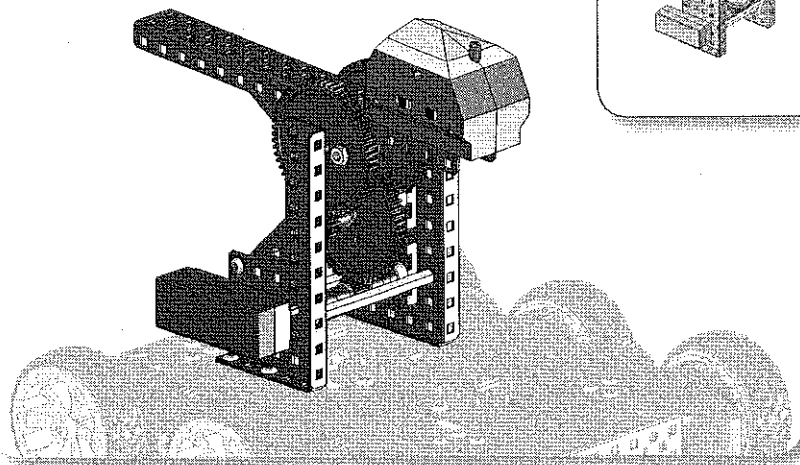
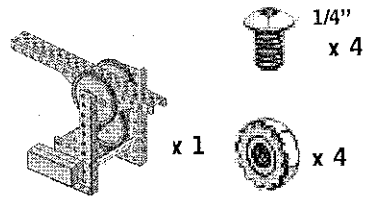
### 6 Arm Assembly Attachment

Using four 1/4" hex screws and four keps nuts, attach the arm assembly to the chassis, using the third and fifth holes from the front. When complete, the arm assembly will be flush with the front bumper.



Note: the holes used on the bottom of the arm assembly are the first hole, and the middle hole. Do NOT use the hole on the back of the assembly for mounting, or it will interfere with the battery pack mount.

#### Parts needed in this step:

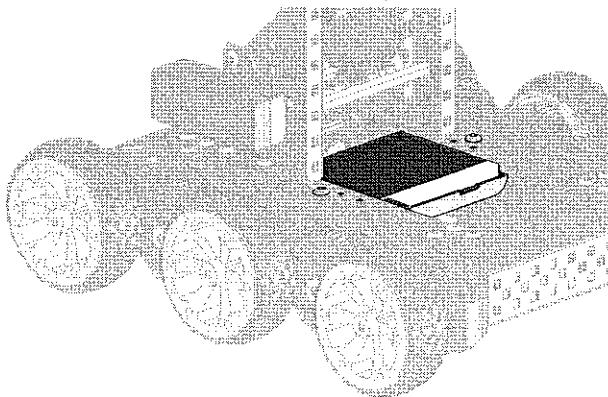
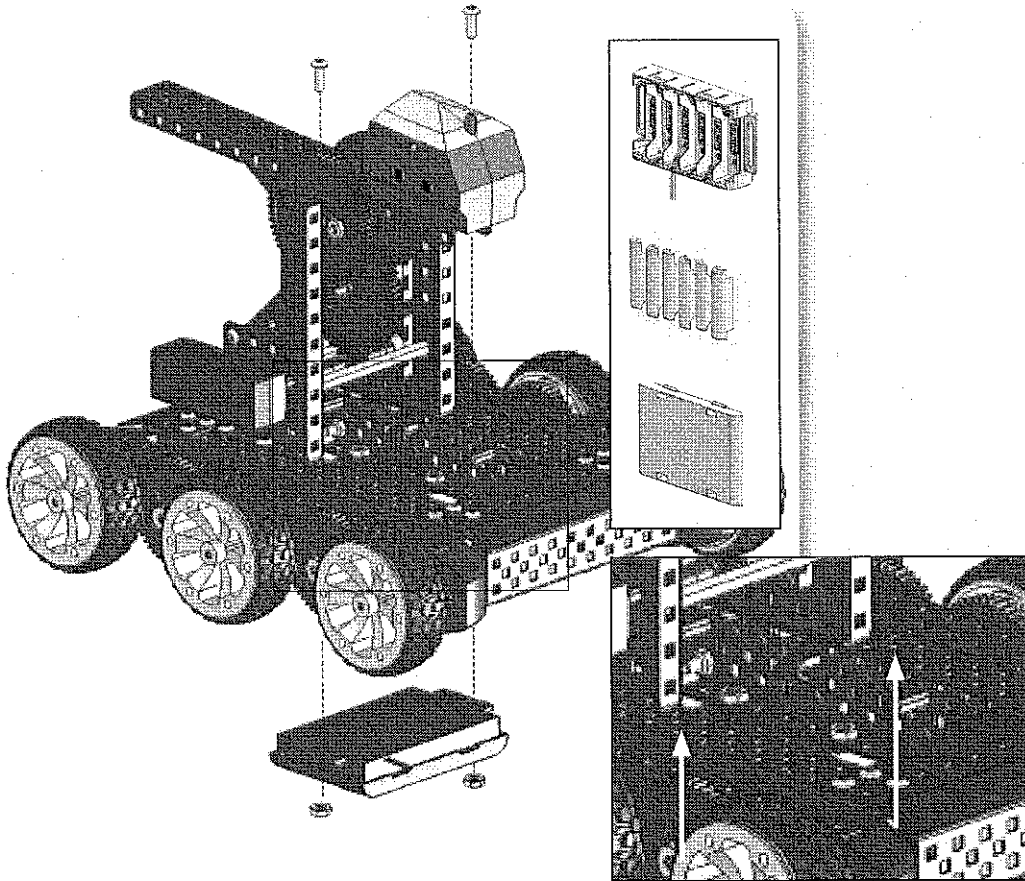




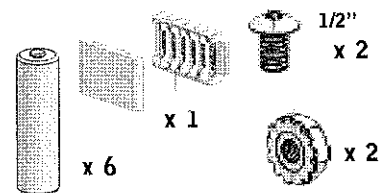
VEXplorer parts and assembly, continued

**7 Battery Pack Attachment**

Install 6 AA batteries in the battery pack, being sure to install them as shown inside the battery pack before attaching the battery pack to the robot. Attach the battery pack to the same plates holding the arm assembly so that each of the two 1/2" hex screws and keps nuts are directly above the inside edge of each of the two axle holding the middle wheel. Snap the cover on the battery pack.



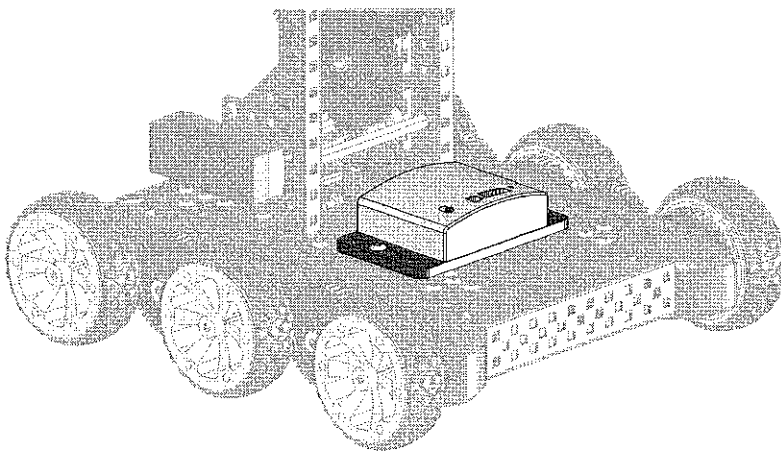
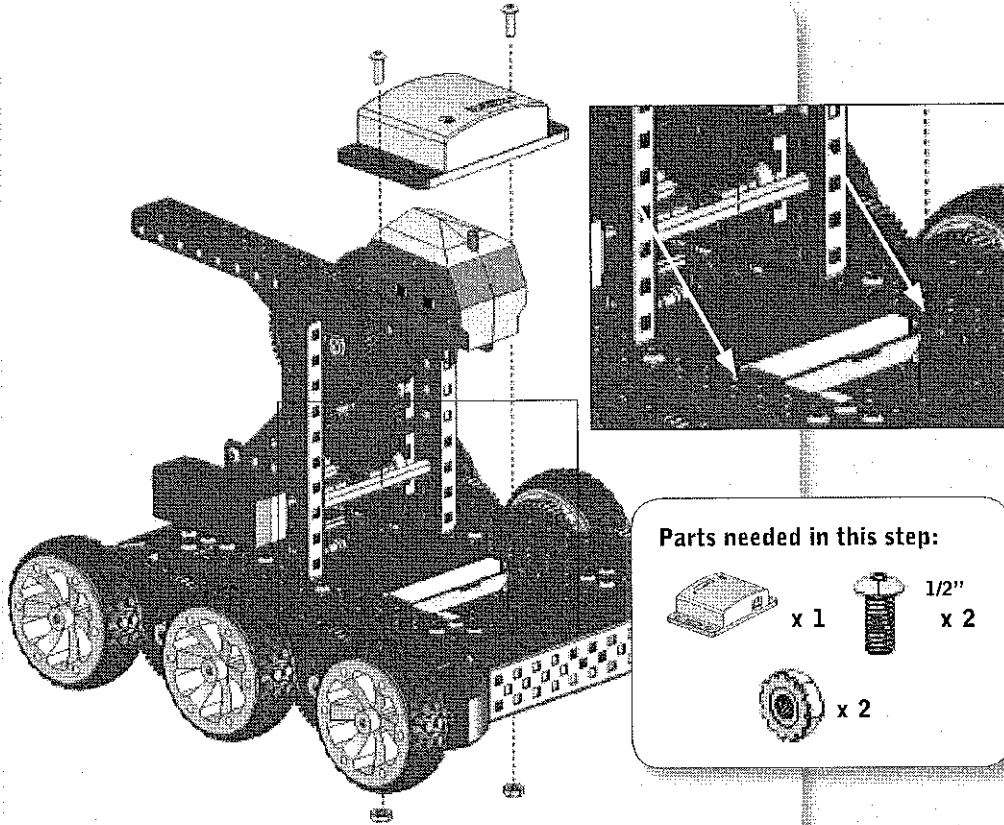
Parts needed in this step:



## VEXplorer parts and assembly, continued

### 8 Receiver Attachment

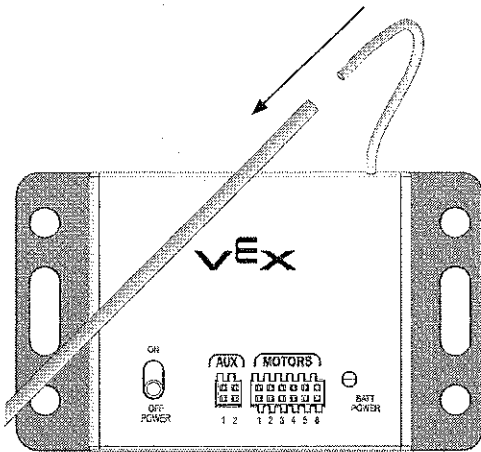
Using two 1/2" hex screws and two keps nuts, attach the receiver module on top of the chassis assembly and behind the arm assembly so that the keps nuts holding the receiver are flush with the back edge of the battery pack.



## VEXplorer parts and assembly, continued

### 9 Antenna Attachment

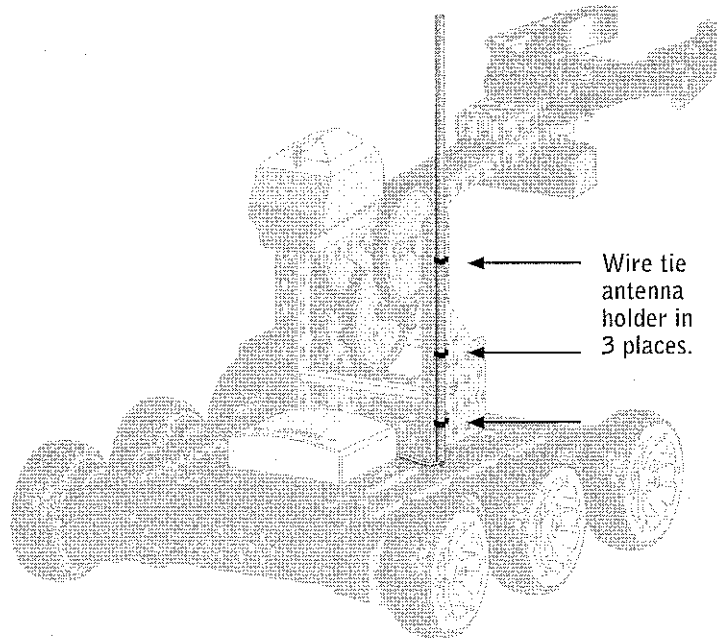
Slide the antenna (the wire attached to the receiver) into the antenna holder.  
Wire tie the antenna holder to the adjacent upright beam.



Parts needed in this step:

 x 3

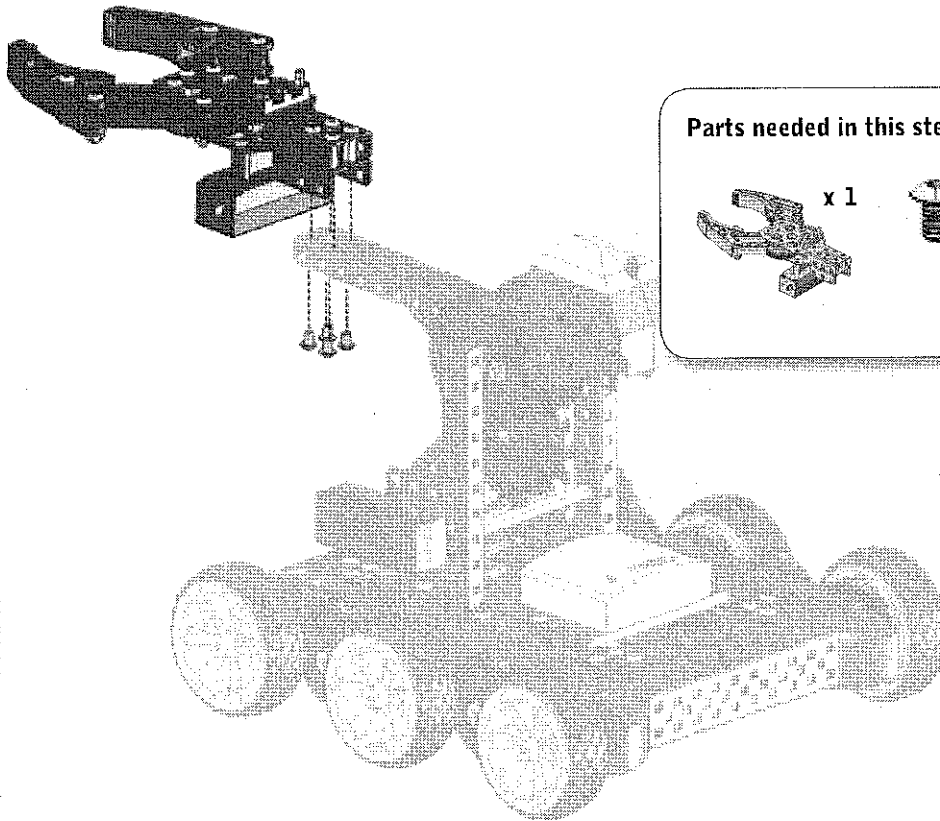
 x 1



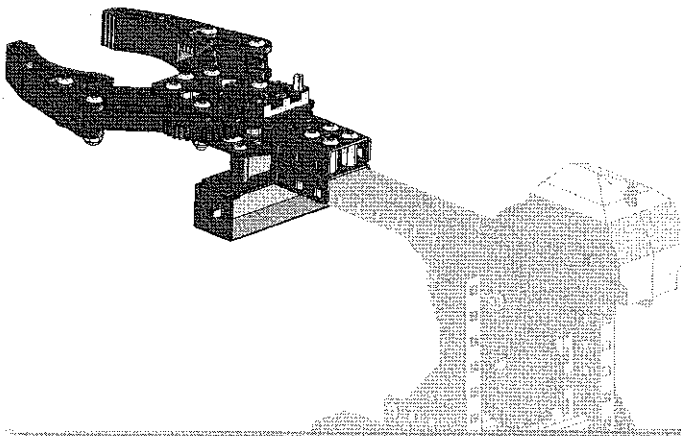
## VEXplorer parts and assembly, continued

### 10 Claw Assembly Attachment

Using four 1/4" hex screws attach the claw assembly to the protruding end of the arm assembly. The screws go through the second and third outer holes of the arm assembly into the threaded spacers of the claw assembly.



Parts needed in this step:



## VEXplorer parts and assembly, continued

### 11 Motor Wiring and Remote Control Operation

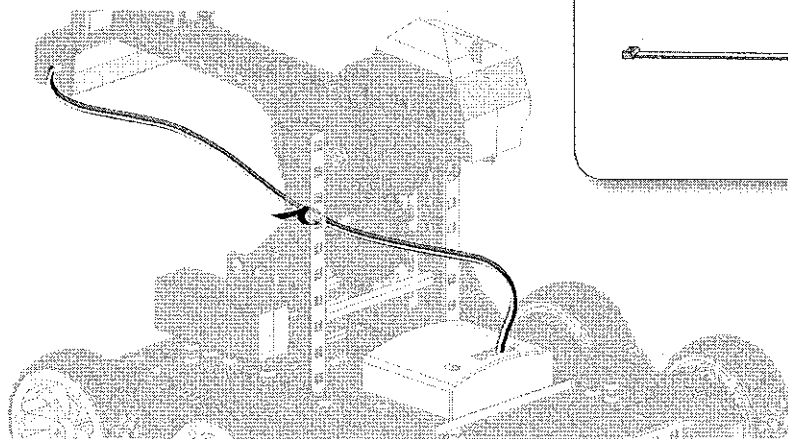
Connect the four motors to the receiver motor ports using the chart below.

Motor wire pin from:	Insert into receiver motor port number:	Results in control by remote control feature:
Arm motor	1	Left two buttons
Gripper motor	2	Right two buttons
Left wheel motor	4	Left joystick vertical axis
Right wheel motor	6	Right joystick vertical axis
	(Leave receiver motor ports 3 and 5 empty)	(3 and 5 control the left joystick horizontal axis and the right joystick horizontal axis.)

### 12 Safely Secure All Motor Wires

Wire tie each of the four motor wires so that they cannot catch in any moving part or drag on the ground. The motor wires should be secured as follows: both the gripper motor wire and the arm motor wires should be wire tied to the left vertical beam of the arm assembly.

Both the left and right wheel motor wires should be wire tied to the lowest adjacent beams of their respective motor assemblies (left on left, right on right), in such a way as to keep them both free of gears and off the ground. Be especially careful that the gripper motor wire cannot catch in the arm motor's gears (shown below). Also be sure there is enough slack in the wire leading to the claw motor to allow for total movement of the arm from lowest to highest position.



Parts needed in this step:

 x 4

## VEXplorer parts and assembly, continued

### 13 Remote Control Operation

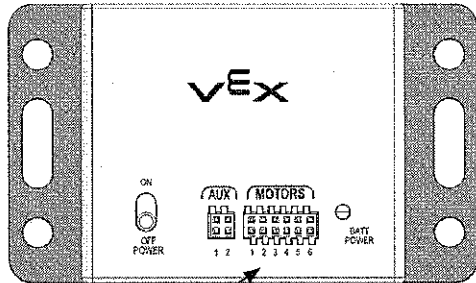
Install a 9V battery in the remote control. Install the remote control antenna in the top of the unit, and using your hand, screw it on. Place robot in an area clear of obstacles and hazards. Turn on receiver and remote control to begin operation.

#### Parts needed in this step:

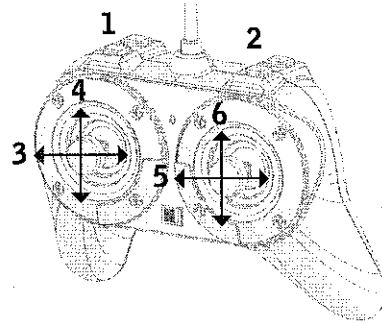
Phillips head screwdriver x 1  
9V battery x 1



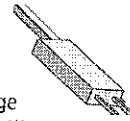
Open the battery compartment door in the back using a Phillips-head screwdriver and install one 9 volt battery. Replace battery compartment door when finished.



The motor ports on the receiver are labeled "MOTORS" and numbered "1-6". Each of the motor ports on the receiver (above) is controlled by one of the channels on the remote control (right). The auxiliary power ports (labeled "AUX") can be used to power a variety of VEX accessories. The camera included in the VEXplorer kit utilizes this feature.



The PWM plugs are reversible; by changing the direction they are plugged in, you can change the direction the motor will move when the controller is used. If a motor runs "backwards" from the desired direction, reverse the PWM cable.



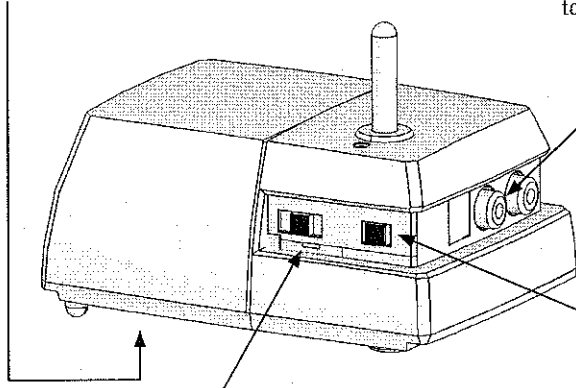
The motors, transmitter, and receiver are part of the VEX "Blue" product line. These components may not be compatible with items from other VEX product lines. For more information refer to [VexRobotics.com](http://VexRobotics.com)

## VEXplorer camera

### 14 Camera Operation Procedure

1. Open the battery compartment door (located at the bottom the camera receiver) using a Phillips-head screwdriver and place four AA batteries. Replace battery compartment door when finished.

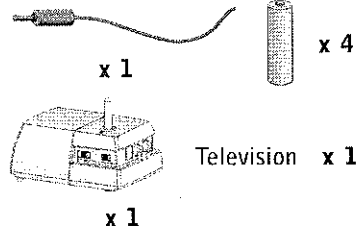
2. Attach an RCA (male) video cable to the camera receiver in the "Video" port. Attach the other end of the RCA video cable to your television. Set the television to the specific video input.



3. Turn on the camera receiver by turning the power switch to the "on" position. Confirm the camera receiver has power by checking if the LED on the receiver is lit.

4. Set the "Channel" selection on the camera receiver to the same channel that the camera on the robot is set to (either channel 1,2,3 or 4).

#### Parts needed in this step:



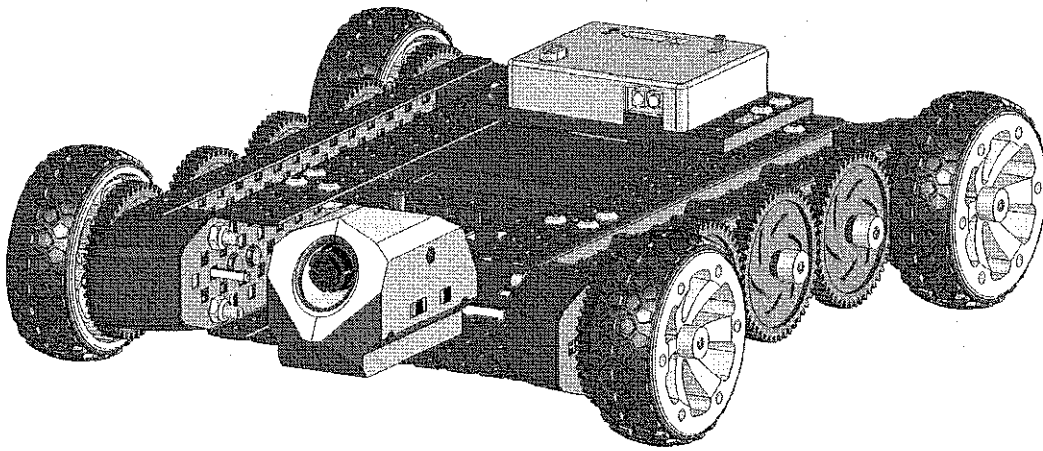
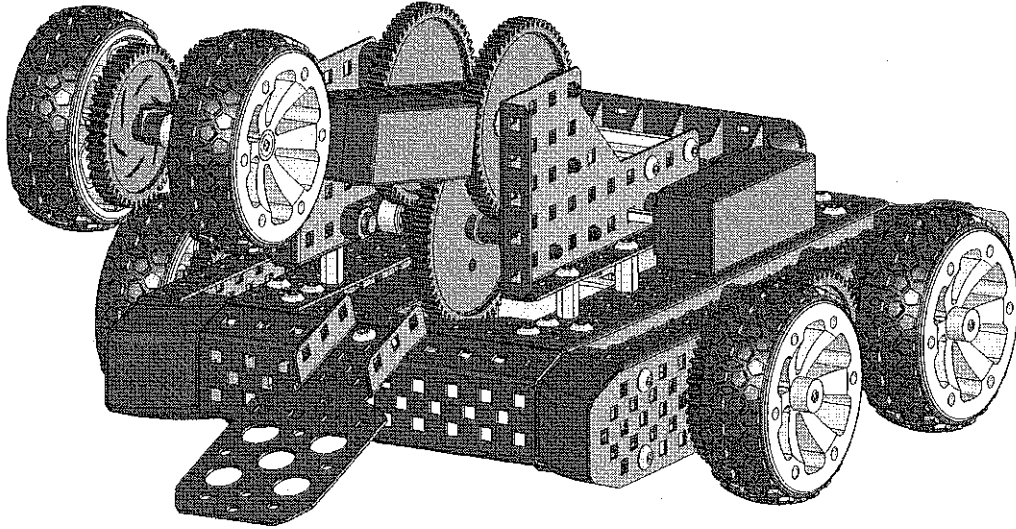
VEXplorer camera, continued

**15** Camera Troubleshooting

<p>The LED light on the camera receiver is not on.</p>	<ol style="list-style-type: none"> <li>1. Check your batteries to see if they have been installed correctly</li> <li>2. Check that the power switch is in the "on" position.</li> </ol>
<p>The LED light is on the camera receiver, but I get no video.</p>	<ol style="list-style-type: none"> <li>1. Check that the RCA video cable is attached to your television and your television is on the correct input channel (refer to your television's manual for this)</li> <li>2. Check that the channel on the Receiver is set to the same channel as the camera on the VEXplorer</li> <li>3. Check that the LED on the camera is lit.             <ol style="list-style-type: none"> <li>a. Check that the power switch is in the ON position on the camera.</li> <li>b. Check that the wire connected to the VEXplorer is in the camera" port.</li> <li>c. Check that the VEXplorer is turned on and has fresh batteries.</li> </ol> </li> </ol>
<p>The video quality is poor.</p>	<ol style="list-style-type: none"> <li>1. Check that the camera is not too far away from the receiver. The camera will only work at a certain distance from the receiver.</li> <li>2. There may be interference from outside sources. Try changing the channel on the camera and the receiver to see if video quality improves.</li> <li>3. The RCA video cable may be damaged or broken. Try an alternate video cable.</li> <li>4. The battery level on the VEXplorer or the Camera Receiver is low. Replace batteries.</li> </ol>



Other VEX robot ideas



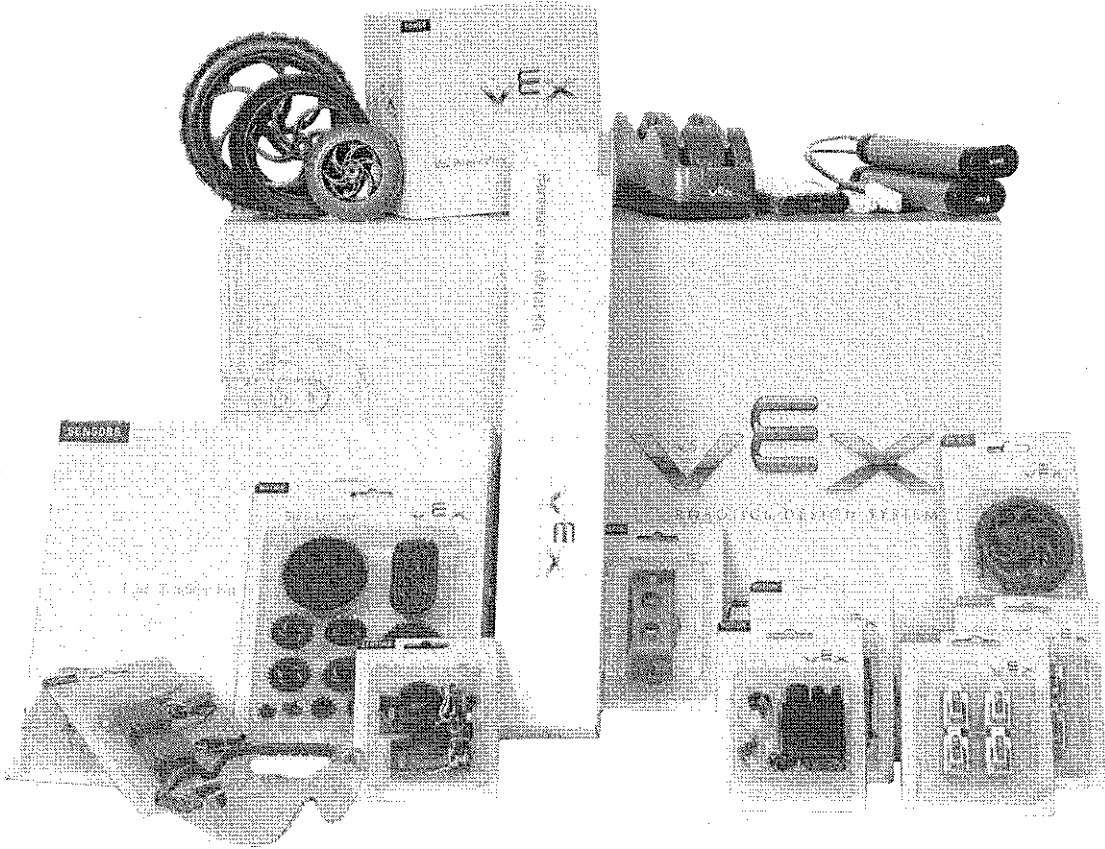
Find additional inspiration explore  
the rest of the Vex Robotics world at  
[www.vexrobotics.com/vexplorer](http://www.vexrobotics.com/vexplorer)

Designed in the United States and custom manufactured in China by Innovation First, Inc.  
1519 Interstate 30 West  
Greenville, TX 75402.  
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All rights reserved. All other trademarks and servicemarks are the property of their respective owners.

## Troubleshooting Guide

PROBLEM	SOLUTION
Motor does not operate or works intermittently	<ul style="list-style-type: none"> <li>• Check that the batteries are properly installed.</li> <li>• Check that connections to the receiver are securely plugged in.</li> <li>• Check that the switches in receiver and transmitter are in the ON position.</li> <li>• Let unit sit without operating for a few minutes. The motor is protected by a thermistor that will shut down motor if overheating occurs from overload.</li> </ul>
One motor is running opposite of the desired direction	<ul style="list-style-type: none"> <li>• Reverse the direction of the motor PWM cable that plugs into the receiver.</li> </ul>
Holes do not line up during assembly	<ul style="list-style-type: none"> <li>• Parts may have been assembled in slightly offset manner. Do not tighten any bolts/nuts for an assembly step until all bolts have been installed and hand-tightened.</li> </ul>
Difficult to install bolts/nuts during assembly	<ul style="list-style-type: none"> <li>• Try using open-ended wrench to hold nuts in place while installing bolts.</li> </ul>
Spy cam does not transmit to the TV receiver	<ul style="list-style-type: none"> <li>• Check that both receiver on vehicle and TV receiver are turned ON.</li> <li>• Check that camera and TV receiver are on the same channel.</li> <li>• Check that camera cable is properly connected to vehicle receiver.</li> </ul>
Picture on TV is not clear	<ul style="list-style-type: none"> <li>• Check distance from vehicle to TV. Check for metal objects blocking signal. Check for possible interference from other R/C transmissions.</li> </ul>
Gears do not mesh smoothly – slip or stick	<ul style="list-style-type: none"> <li>• Check that all nuts, bolts and collars are tightened securely and that gears are properly aligned.</li> <li>• Check for possible broken teeth in gears.</li> </ul>
Limited range – less than 150 feet between vehicle and transmitter or TV receiver	<ul style="list-style-type: none"> <li>• Check that transmitter antenna is completely extended and secured tightly into transmitter.</li> <li>• Check that batteries in transmitter and receivers have sufficient charge.</li> <li>• If indoors, check for metal objects such as appliances, heating ducts, etc. that can block radio transmissions between transmitter and receiver.</li> </ul>
Claw does not grip properly, esp. with heavy objects.	<ul style="list-style-type: none"> <li>• Check that all bolts and nuts are tightly fastened.</li> <li>• Add rubber bands for more tension.</li> </ul>

## VEXplorer assembly



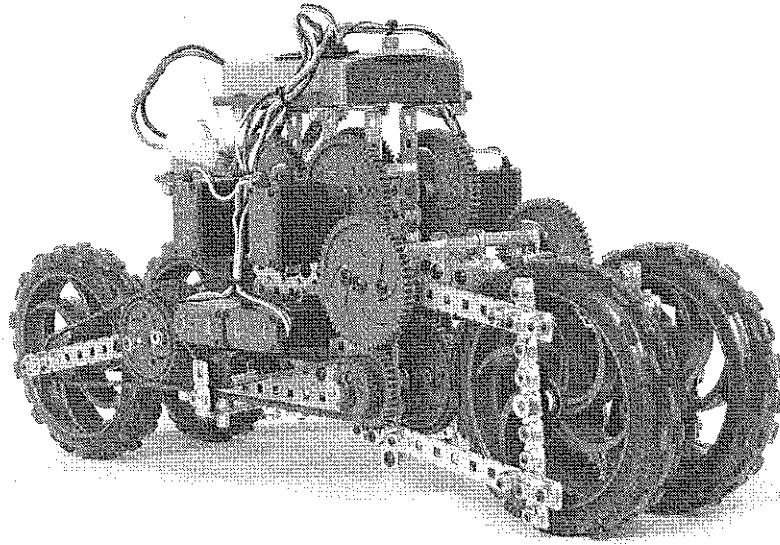
# Think. Create. Build. Amaze. Vex.

VEXplorer is the latest product in the award winning VEX Robotics Design System assortment. With hundreds of unique robotics parts and accessories, the creative possibilities are endless. And now VEX can be found in schools and on university campuses worldwide.



Classroom curriculum for teachers is available from Intelitek ([www.intelitek.com](http://www.intelitek.com)) and the Robotics Academy at Carnegie Mellon University ([www.education.rec.ri.cmu.edu](http://www.education.rec.ri.cmu.edu)). And not only is VEX a major fixture in the classroom, it is also one of the leading platforms for student robotics competitions worldwide.

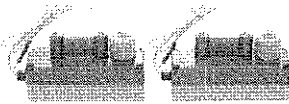
**Expand your possibilities at [www.VexRobotics.com](http://www.VexRobotics.com)**



# Expand and Conquer

Once you've mastered VEXplorer, we challenge you to move on to even more advanced robot designs. Of course, all VEX mechanical gears, wheels, hardware and structural metal parts are cross-compatible for endless design possibilities. With hundreds more upgrade parts and accessories, the creative possibilities for your robot designs are limitless. Log on to [www.VexRobotics.com](http://www.VexRobotics.com) for more information.

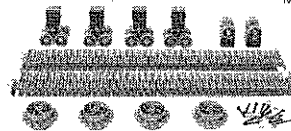
**Motor Kit** \$19.99  
**VB-1** MSRP  
 SKU VRC-MOTOR-VB1



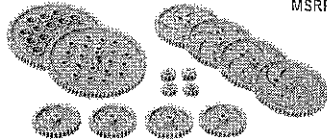
**Metal Kit** \$79.99  
 MSRP  
 SKU 276-2161



**Tank Tread** \$29.99  
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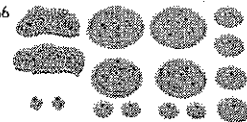


**Gear Kit** \$12.29  
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**Sprocket and Chain** \$29.99  
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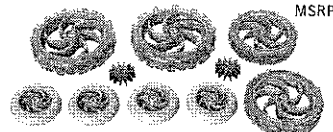
**Advanced Gear Kit** \$19.99  
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 SKU 276-2184



**Omni Wheels** \$19.99  
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**Wheel Kit** \$29.99  
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