Kit Hardware Overview:

If you can imagine it, you can build it with VEX IQ. Here’s an overview of common part types and their primary designed functions to help you get started.

Common part types and primary functions

<table>
<thead>
<tr>
<th>Beams</th>
<th>Specialty Beams</th>
<th>Plates</th>
</tr>
</thead>
<tbody>
<tr>
<td>various sizes</td>
<td>angle, tee, right-angle beams</td>
<td>various sizes</td>
</tr>
<tr>
<td>![Beam Image]</td>
<td>![Specialty Beam Image]</td>
<td>![Plate Image]</td>
</tr>
<tr>
<td>Structural parts.</td>
<td>Structural parts.</td>
<td>Structural parts.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connector Pins</th>
<th>Standoffs</th>
<th>Standoff Connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>several lengths</td>
<td>several lengths</td>
<td>several types</td>
</tr>
<tr>
<td>![Connector Pin Image]</td>
<td>![Standoff Image]</td>
<td>![Standoff Connector Image]</td>
</tr>
<tr>
<td>Use with beams, plates, corner connectors, and more.</td>
<td>Maintain desired spacing between beams and plates.</td>
<td>Connect standoffs and connector pins.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corner Connectors</th>
<th>Shaft</th>
<th>Shaft Bushing</th>
</tr>
</thead>
<tbody>
<tr>
<td>several types</td>
<td>several lengths</td>
<td></td>
</tr>
<tr>
<td>![Corner Connector Image]</td>
<td>![Shaft Image]</td>
<td>![Shaft Bushing Image]</td>
</tr>
<tr>
<td>Create corner connections between beams, plates, or other VEX IQ parts.</td>
<td>Transmit power to, or allow rotation of, wheels, pulleys, gears, and more.</td>
<td>Interfaces shafts with beams and plates, allowing the shaft to spin and be held in desired location.</td>
</tr>
<tr>
<td>Shaft Lock Plates</td>
<td>Rubber Shaft Collars</td>
<td>Twist Lock Shaft Collars</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Plates that lock onto shafts allowing design components to spin with the shaft.</td>
<td>Holds objects on shafts and/or the shaft itself in place.</td>
<td>Holds objects on shafts and/or the shaft itself in place.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Washers &amp; Spacers</th>
<th>Pulleys</th>
<th>Rubber Belts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use with shafts, reduces friction and maintains desired spacing.</td>
<td>Drive belts or make rollers and small wheels.</td>
<td>Use with pulleys, as a form of stored energy, and/or as a fastener.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rubber Band Anchor</th>
<th>Turntable</th>
<th>Wheel hubs and tires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use with rubber belts and bands.</td>
<td>Use to create high strength rotational joints.</td>
<td>Rolling and powering movement.</td>
</tr>
<tr>
<td>Omni-Directional Wheels</td>
<td>Sprockets</td>
<td>Chain Link</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>200mm Travel</td>
<td>several Sizes</td>
<td>Flexible links allow transfer of power over long distances.</td>
</tr>
<tr>
<td>Rolls forward and reverse like a regular wheel, but has almost no friction sideways.</td>
<td>Powers chain and tank tread links.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tank Tread Attachment Links</th>
<th>Traction Link</th>
<th>Intake Flaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create intake mechanisms and tank tread drive trains.</td>
<td>Add traction to tank tread drive trains.</td>
<td>Attach to tank tread to create intake mechanisms.</td>
</tr>
</tbody>
</table>
VEX IQ Kit Hardware Tips:

Removing Connector Pins

To remove connector pins from structural components, gently push the pin with your finger from the back of the structural components to free it slightly, then it will be easier to pull it out. Alternatively, a shaft can be used instead of a finger to push the pin from the back.

Fitting Small Gears, Pulleys, and Wheel Hubs onto Shaft

VEX IQ shafts are built to last and run flawlessly in powered applications. Gears, pulleys, and wheel hubs fit very tightly on the VEX IQ shaft to ensure quality mechanisms with minimal amounts of “wiggle”. Because of the intentionally tight fit, sliding smaller gears, pulleys, and wheel hubs can be tough for some users. To help in this process, insert the shaft into a large wheel hub (which acts as a temporary stand), then use the leverage from a beam or plate to push the smaller gear, pulley, or wheel hub to the desired place. Then the temporary stand can be removed and the shaft with small gears, pulleys, or wheel hubs can be mounted on its mechanism.
Keeping the Shaft Supported & Seated in Smart Motors & Assemblies

Having a motor turn a shaft in the VEX IQ system is accomplished easily with only a few parts. However, without proper shaft support and either a rubber shaft collar and/or a shaft bushing, the shaft will quickly shift or fall out of your mechanism or Smart Motor.
**KIT Quantities**

**VEX IQ Structural Add-On Kit**

- 1x3 Beam (4x)
- 1x4 Beam (10x)
- 1x6 Beam (10x)
- 1x8 Beam (12x)
- 1x10 Beam (10x)
- 1x12 Beam (6x)
- 2x2 Beam (8x)
- 2x4 Beam (8x)
- 2x6 Beam (8x)
- 2x8 Beam (8x)
- 2x10 Beam (6x)
- 2x12 Beam (8x)
- 2x16 Beam (8x)
- 2x20 Beam (4x)
- 2x12 Plate (4x)
- 4x4 Plate (4x)
- 4x12 Plate (4x)
- 1x1 Connector Pin (120x)
- 1x2 Connector Pin (30x)
- 2x2 Connector Pin (10x)
- 1/2x Pitch Standoff (12x)
- 1x Pitch Standoff (12x)
- 2x Pitch Standoff (12x)
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber Band Anchor</td>
<td>6x</td>
</tr>
<tr>
<td>10mm Diameter Pulley</td>
<td>2x</td>
</tr>
<tr>
<td>20mm Diameter Pulley</td>
<td>6x</td>
</tr>
<tr>
<td>30mm Diameter Pulley</td>
<td>2x</td>
</tr>
<tr>
<td>40mm Diameter Pulley</td>
<td>2x</td>
</tr>
<tr>
<td>Mini Standoff Connector</td>
<td>24x</td>
</tr>
<tr>
<td>Straight Standoff Connector</td>
<td>12x</td>
</tr>
<tr>
<td>End Standoff Connector</td>
<td>16x</td>
</tr>
<tr>
<td>Small Turntable Center Bushing</td>
<td>3x</td>
</tr>
<tr>
<td>Small Turntable Outer Housing</td>
<td>6x</td>
</tr>
<tr>
<td>Large Turntable Center Bushing</td>
<td>2x</td>
</tr>
<tr>
<td>Large Turntable Outer Housing</td>
<td>4x</td>
</tr>
<tr>
<td>100mm Travel Rubber Tire</td>
<td>6x</td>
</tr>
<tr>
<td>30mm Rubber Belt</td>
<td>2x</td>
</tr>
<tr>
<td>40mm Rubber Belt</td>
<td>2x</td>
</tr>
<tr>
<td>50mm Rubber Belt</td>
<td>2x</td>
</tr>
<tr>
<td>60mm Rubber Belt</td>
<td>2x</td>
</tr>
<tr>
<td>Inner Twist Lock Shaft Collar</td>
<td>8x</td>
</tr>
<tr>
<td>Outer Twist Lock Shaft Collar</td>
<td>8x</td>
</tr>
<tr>
<td>200mm Smart Cable</td>
<td>2x</td>
</tr>
<tr>
<td>300mm Smart Cable</td>
<td>2x</td>
</tr>
<tr>
<td>400mm Smart Cable</td>
<td>1x</td>
</tr>
<tr>
<td>600mm Smart Cable</td>
<td>1x</td>
</tr>
<tr>
<td>200mm Smart Cable</td>
<td>2x</td>
</tr>
<tr>
<td>Chain Link</td>
<td>200x</td>
</tr>
</tbody>
</table>
Mechanical Quick Start Guide

8 Tooth Sprocket (8x)
16 Tooth Sprocket (8x)
24 Tooth Sprocket (8x)
32 Tooth Sprocket (4x)
40 Tooth Sprocket (4x)
Tank Tread Attachment Link (200x)
Traction Link (40x)
Short Intake Flap (20x)
Medium Intake Flap (20x)
Long Intake Flap (20x)
Small Wheel Hub (6x)
Large Wheel Hub (4x)
160mm Travel Tire (4x)
200mm Travel Tire (4x)
250mm Travel Tire (4x)
Omni Wheel (2x)
Touch LED (1x)
Color Sensor (1x)
Gyro Sensor (1x)
Smart Motor (2x)
Storage Lid (1x)
Storage Tray (1x)
Storage Tray Divider (1x)
Storage Bin (1x)
Appendix A Compliance Statements

FCC Compliance Statement (United States)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

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.

Note: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user’s authority to operate the equipment.

Industry Canada Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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Once you've mastered the CLAWBOT, we challenge you to move onto even more advanced robot designs. Of course, all VEX mechanical gears, wheels, hardware and structural parts are cross-compatible for endless design possibilities. With hundreds more upgrade parts and accessories, the creative possibilities for your robot designs are limitless. Visit www.VEXROBOTICS.com/VEXIQ for more information.

Expand and conquer.

**Smart Motor**
SKU 228-2560

**Tank Tread & Intake Kit**
SKU 228-2878

**Gear Kit**
SKU 228-2532

**Chain & Sprocket Add-On Kit**
SKU 228-2534

**Wheel Kit**
SKU 228-2523

**200mm Travel Omni-Directional Wheels**
SKU 228-2536

**Foundation Add-On Kit**
SKU 228-2531

**Pin Add-On Kit**
SKU 228-3058

www.VEXROBOTICS.com/VEXIQ