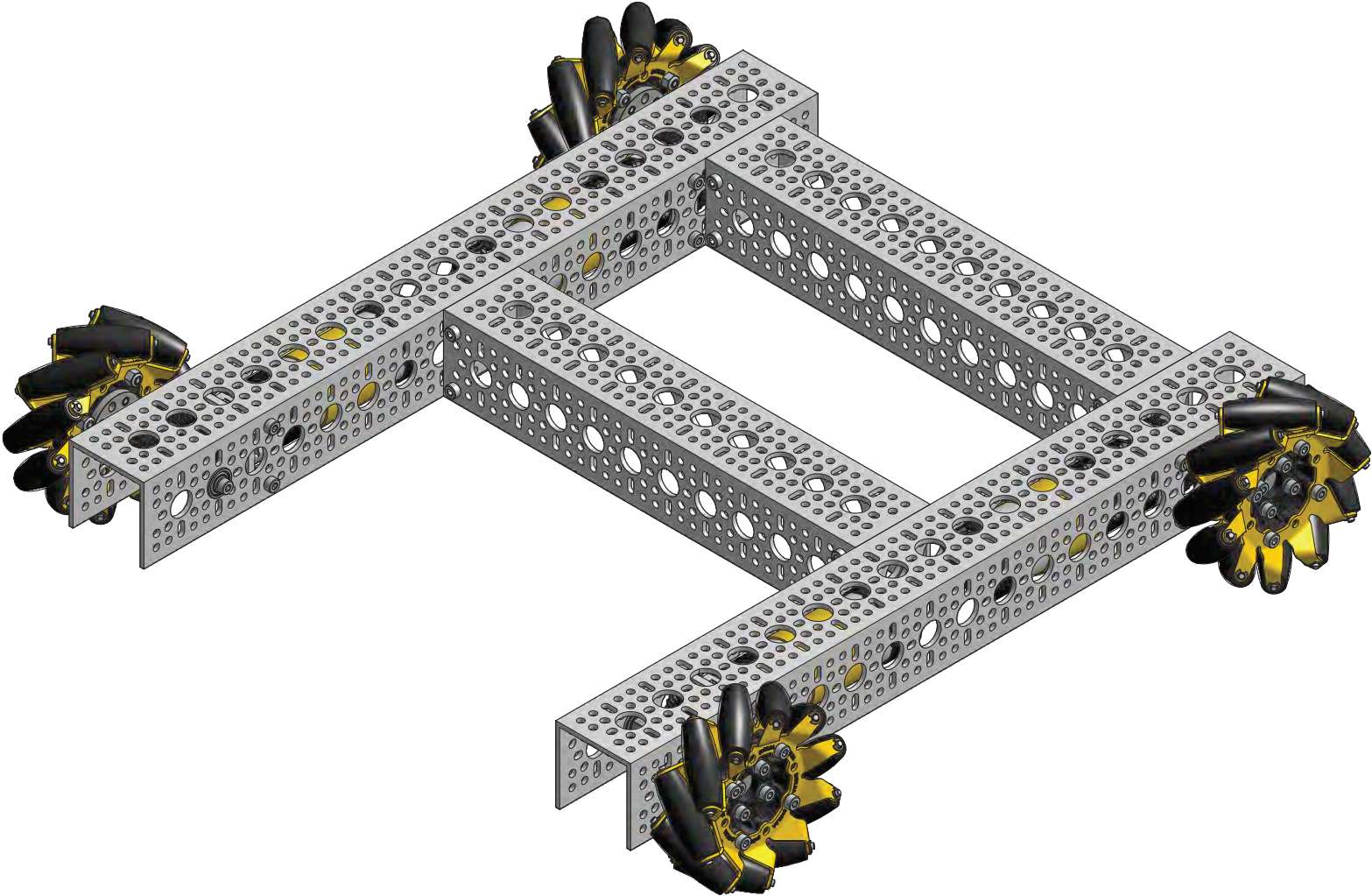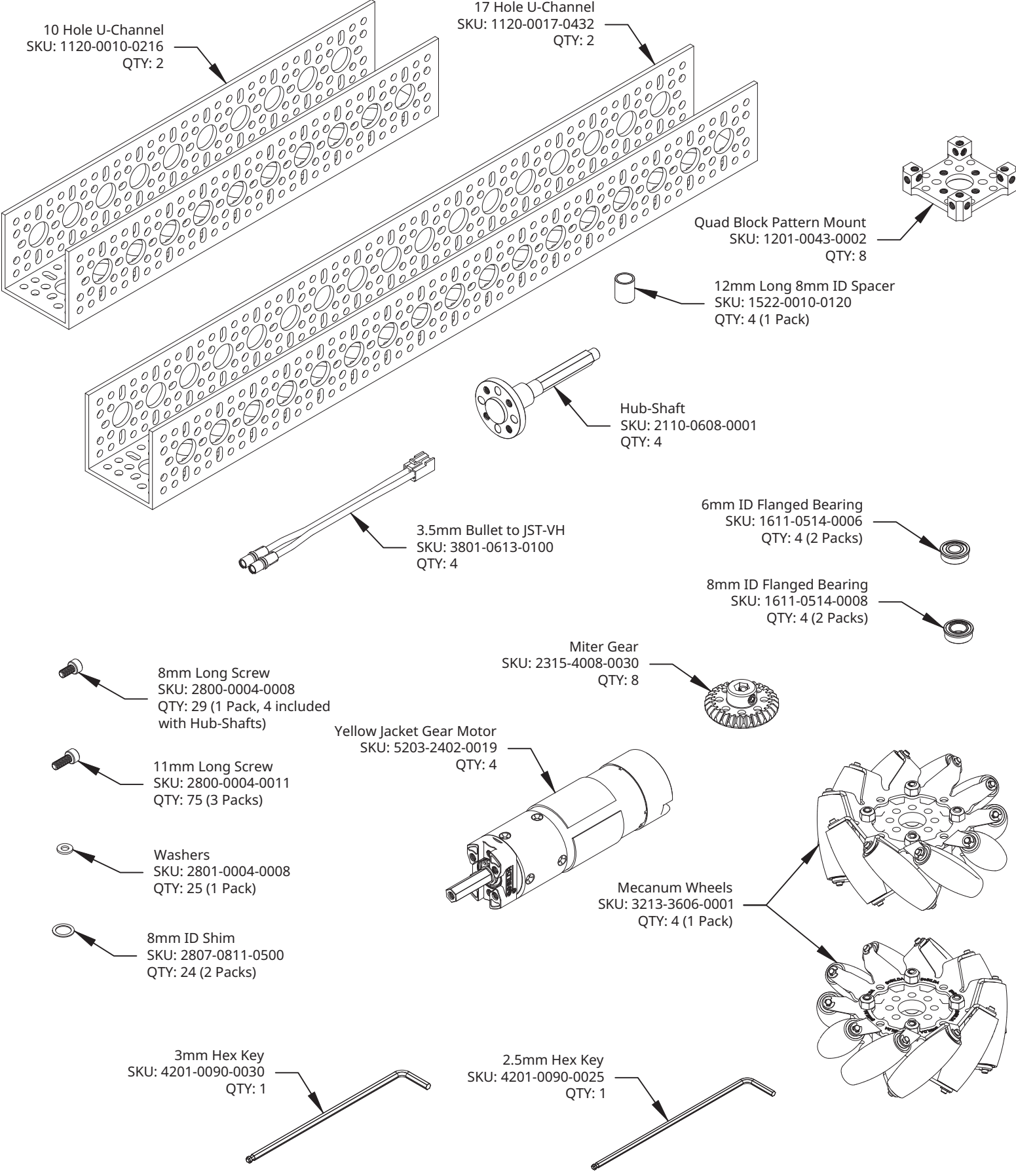Assembly instructions for
Strafer™ Chassis V5
SKU: 3209-0001-0005

Kit Contains:

10 Hole U-Channel
SKU: 1120-0010-0216
QTY: 2

17 Hole U-Channel
SKU: 1120-0017-0432
QTY: 2

Quad Block Pattern Mount
SKU: 1201-0043-0002
QTY: 8

12mm Long 8mm ID Spacer
SKU: 1522-0010-0120
QTY: 4 (1 Pack)

Hub-Shaft
SKU: 2110-0608-0001
QTY: 4

6mm ID Flanged Bearing
SKU: 1611-0514-0006
QTY: 4 (2 Packs)

3.5mm Bullet to JST-VH
SKU: 3801-0613-0100
QTY: 4

8mm ID Flanged Bearing
SKU: 1611-0514-0008
QTY: 4 (2 Packs)

Miter Gear
SKU: 2315-4008-0030
QTY: 8

8mm Long Screw
SKU: 2800-0004-0008
QTY: 29 (1 Pack, 4 included
with Hub-Shafts)

Yellow Jacket Gear Motor
SKU: 5203-2402-0019
QTY: 4

11mm Long Screw
SKU: 2800-0004-0011
QTY: 75 (3 Packs)

Washers
SKU: 2801-0004-0008
QTY: 25 (1 Pack)

Mecanum Wheels
SKU: 3213-3606-0001
QTY: 4 (1 Pack)

8mm ID Shim
SKU: 2807-0811-0500
QTY: 24 (2 Packs)

3mm Hex Key
SKU: 4201-0090-0030
QTY: 1

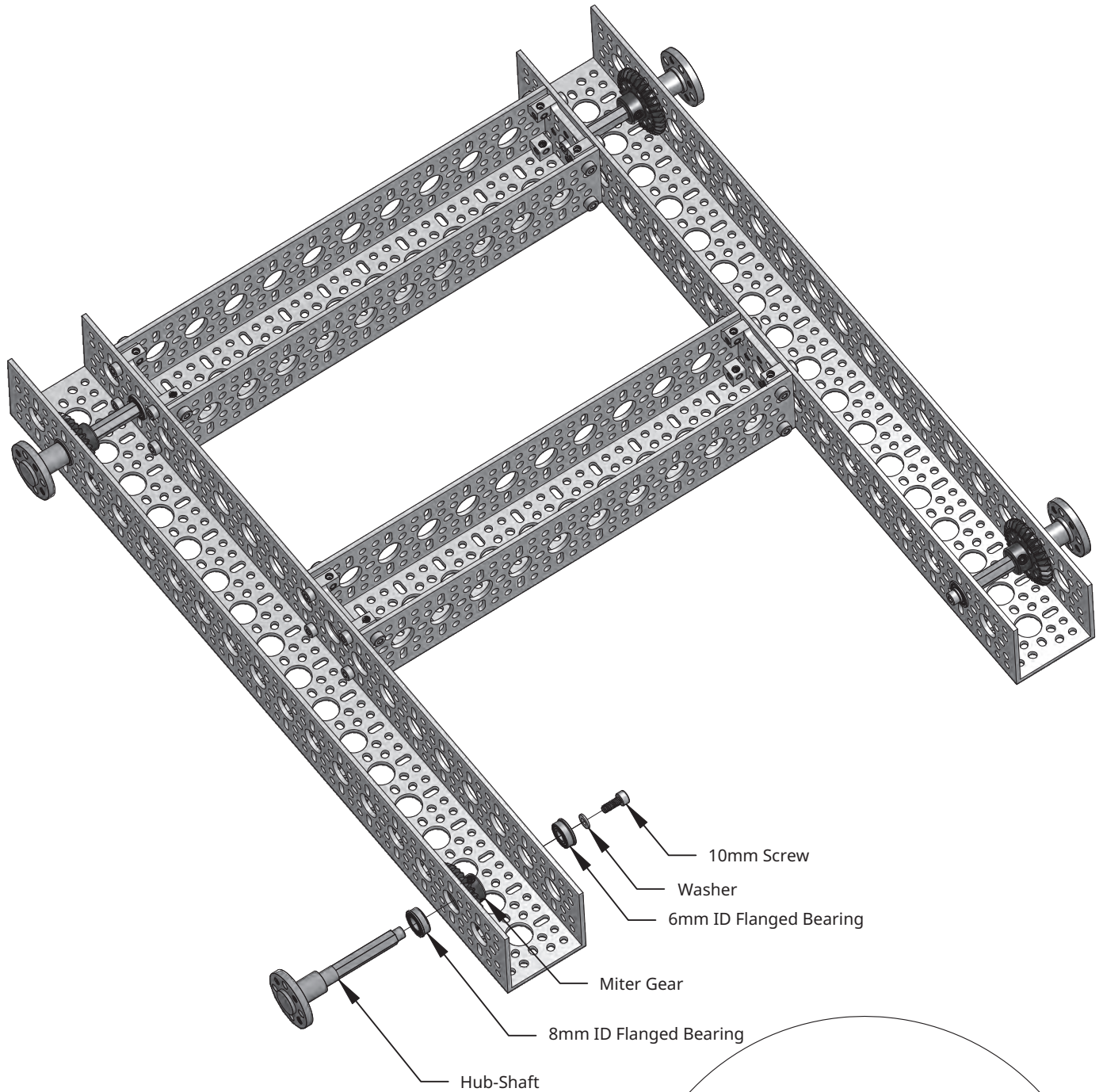2.5mm Hex Key
SKU: 4201-0090-0025
QTY: 1

Step 1 - Chassis Frame Assembly

Use sixteen 11mm length screws to attach four
Quad Block Mounts to the ends of the two 10 Hole channels as shown.
These channels will be the "crossbars" of the chassis.
Then use sixteen 8mm length screws to fasten the crossbars to the
17 hole channels on holes 2 and 9, as shown.
Before installing the crossbar in hole 2, place 2 6mm ID bearings
in the holes on the channel as shown.
Take note of their orientation.

17 Hole Channel

Quad Block Mount

6mm ID Bearing

8mm Length Screw

B

10 Hole Channel

11mm Length Screw

9 8 7 6 5 4 3 2 1
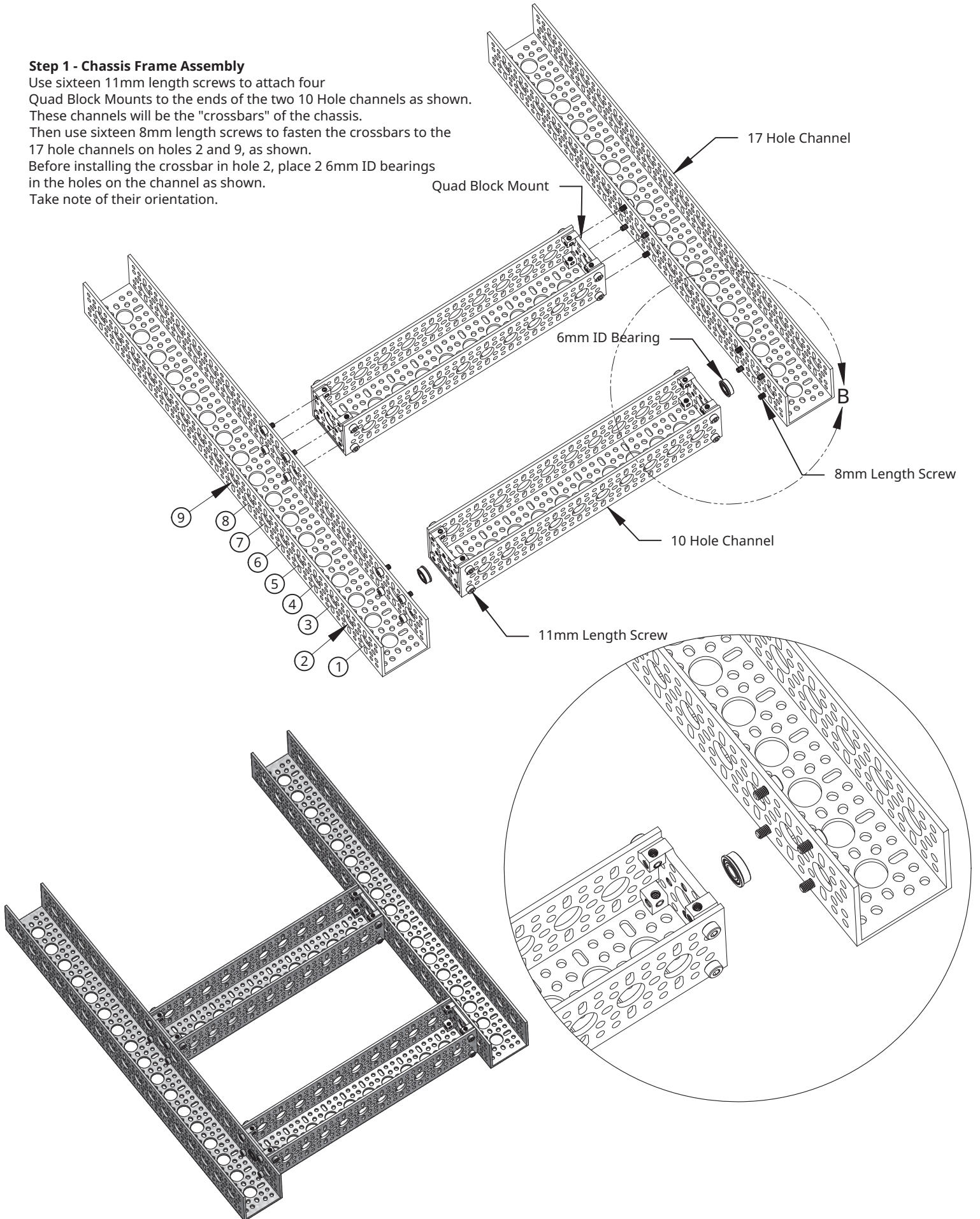
Step 2 - Output Shaft Assemblies

In this step you will assemble the driven shafts of the chassis. Create one corner of the assembly as shown in the exploded view, then duplicate that process on the 3 other corners of the chassis.

10mm Screw

Washer

6mm ID Flanged Bearing

Miter Gear

8mm ID Flanged Bearing

Hub-Shaft

Step 3: Constrain Miter Gears

Slide the Miter Gear as far to the outside of the chassis (Closest to the mounting face of the Hub-Shaft) as it will go. It should stop before contacting the channel wall. Then, using a 2.5mm Hex Key, tighten both set screws. Repeat for each corner of the chassis.

Set-Screw

Miter Gear

Set-Screw
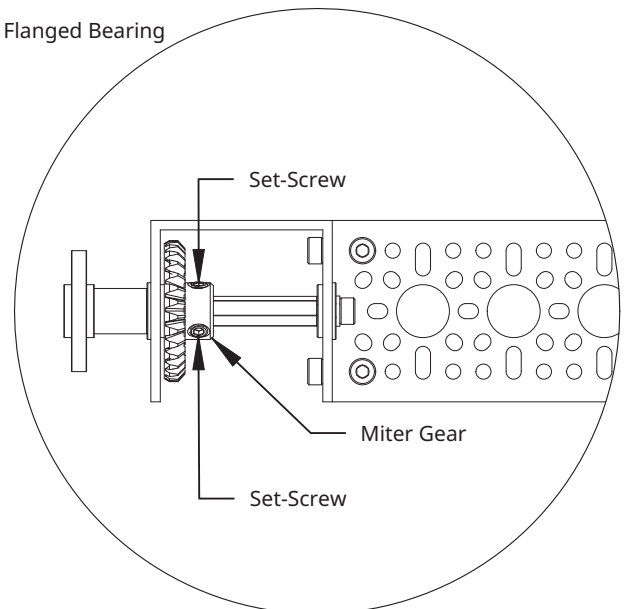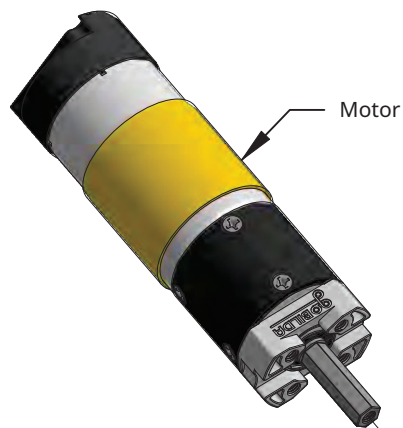
Motor

Step 4: Motor Assembly

Start by mounting a Motor to a Quad Block, using four 11mm screws, before adding three 0.5mm long shims onto the motor shaft. These give you a way to adjust the gear mesh of the Miter Gears. Add a 12mm spacer, and a Miter Gear to the shaft and slide everything down as far as it will go. Then tighten the Set-Screws on the Miter Gear. Repeat this 3 more times to create 4 Motor Assemblies.

Quad Block

0.5mm Shim

12mm Spacer

11mm Screw
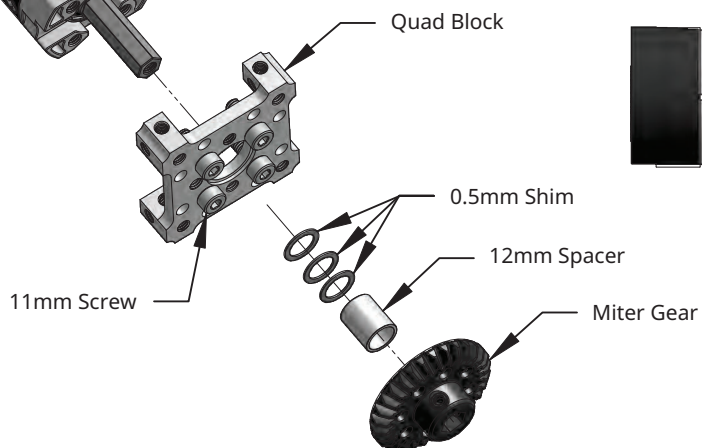
Miter Gear

Step 5: Install Motor Assembly

Grab the assemblies you made in step 4 and install them into the channel to mesh with a Miter Gear. Use 11mm Screws to secure them in place.

11mm Screws

Assembly from Step 5
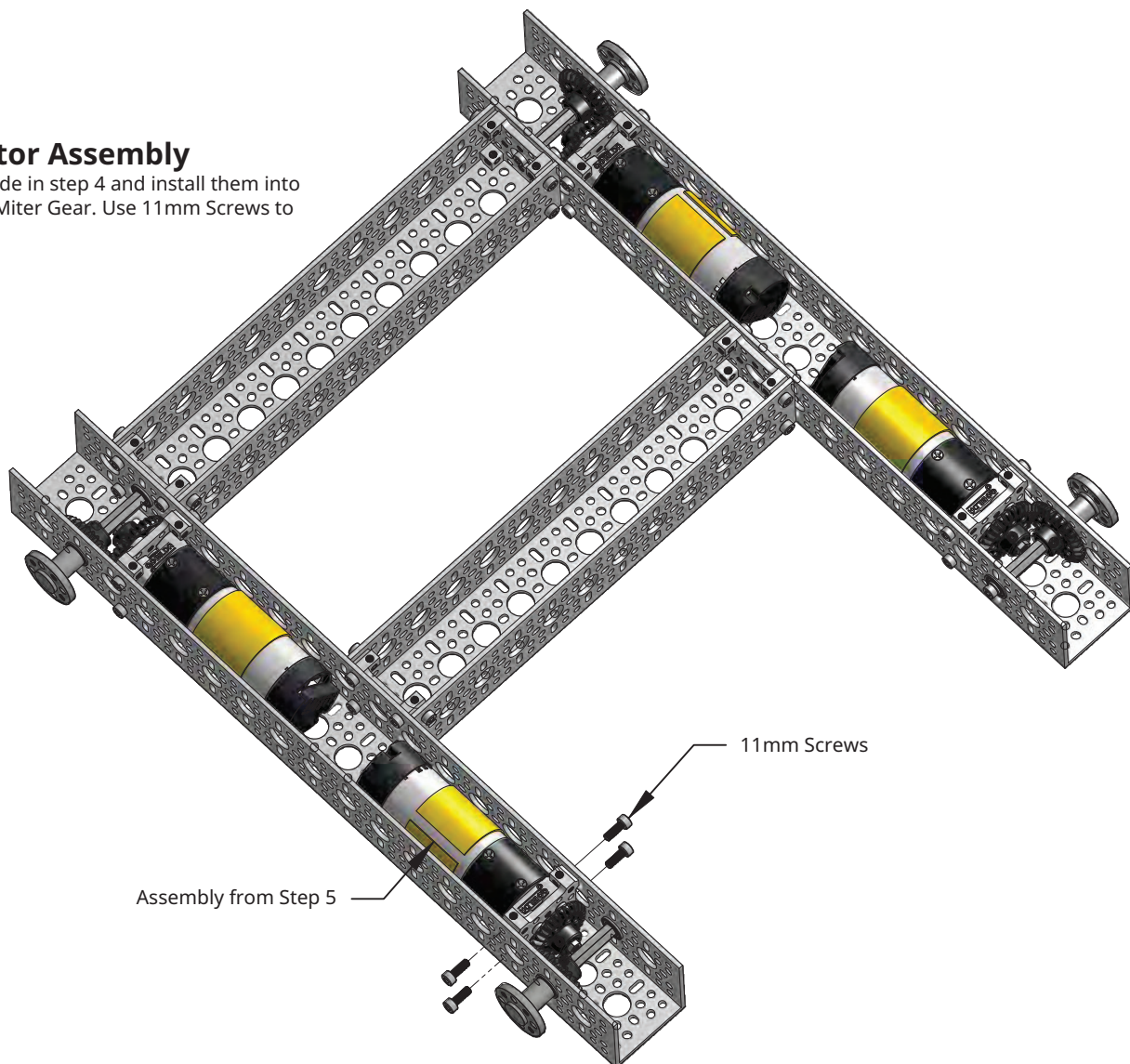
Step 6: Wheels

The final step is to use sixteen 11mm length screws (each with a washer) to fasten the wheels to the Hyper Hubs. (Figure A) Note that each side of the robot gets one left-slant wheel and one right-slant wheel. Also note that each wheel's core has a shallow side and a deep side - the deep side will be towards the outside of the chassis (see Figure B). For ease-of-assembly and visibility, we have been assembling the chassis upside-down. When you flip your chassis right-side-up and look down from above (Figure C), the rollers of the wheels should "point" towards the center of the chassis.
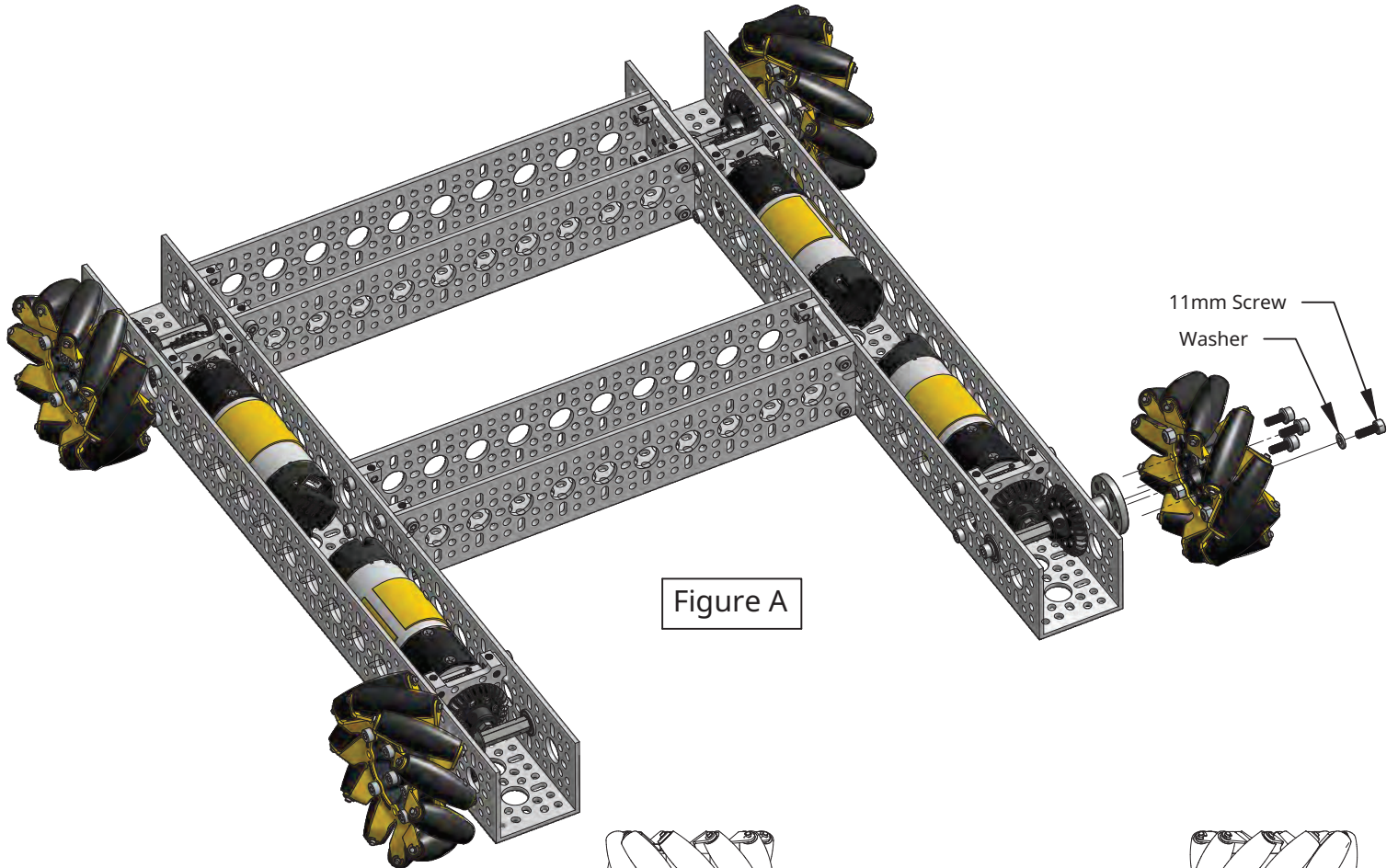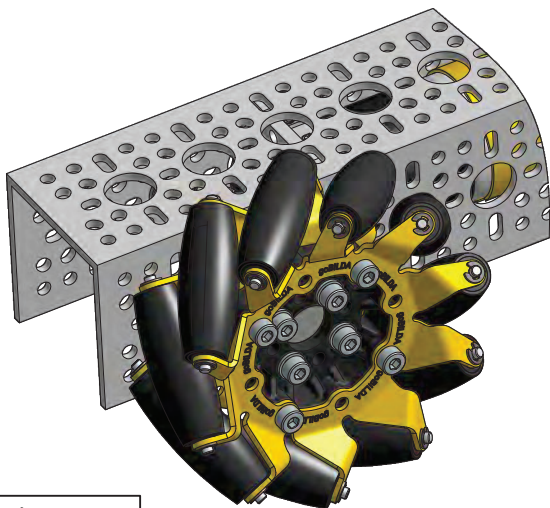
11mm Screw

Washer

Figure A

Figure B

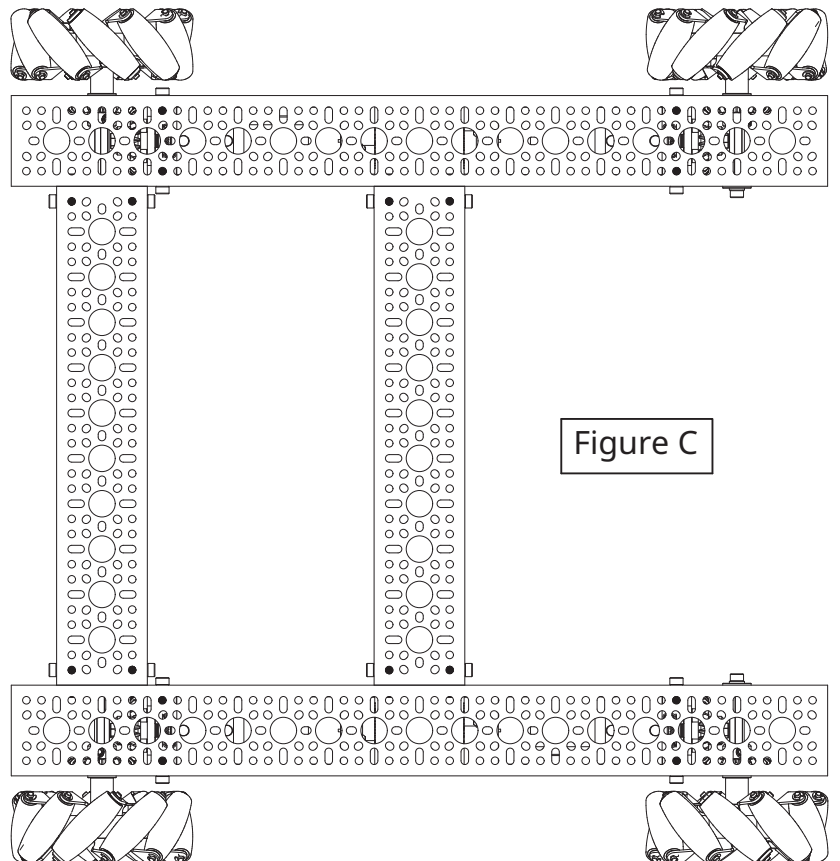Figure C

Congrats! Your chassis is now assembled.
We've incuded some parts that make running and fine-tuning your chassis easier.

A.   Your chassis comes with 4 Bullet to JST VH adaptor cables so you can control the chassis with a REV Robotics controller.

B.   Spin each wheel of the chassis by hand (with the battery disconnected). Make sure each shaft is able to rotate smoothly. A small amount of backlash between the miter gears is desirable. If the gear mesh is too tight (you'll feel excess friction when rotating the wheel), remove a shim from the motor assembly covered in step 4.

11mm Screw   12mm Spacer

Motor   Quad Block   0.5mm Shims   Miter Gear
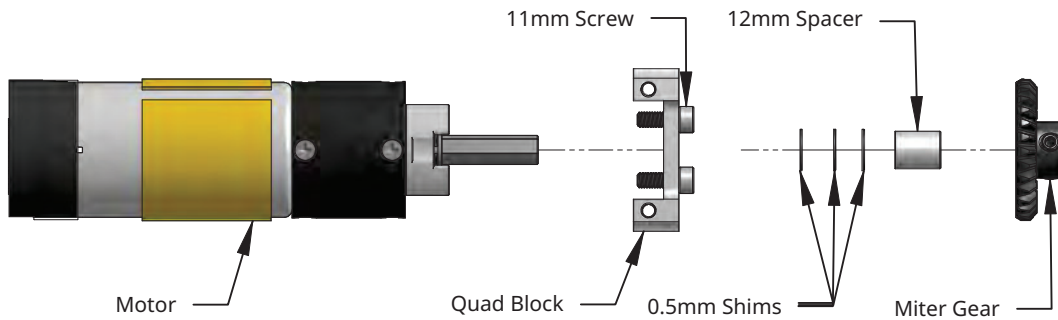
C.   Included with each Hub-Shaft is a 6mm id 0.25mm thick shim. This can adjust the spacing between the bearings. If the Hub-Shaft can slide back and forth in the channel, and the screw is tight, install the shim under the washer while making sure to align the inside of the shim to the round portion of the hub shaft.

8mm Bearing   6mm Bearing   Washer

Hub-Shaft   Shim   Screw