Kit Contents

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 of 4)*

Hub-Shaft
SKU: 2110-0608-0001
QTY: 4
*(Each Hub-Shaft includes
an 8mm Screw, 6mm ID Shim, & Washer)*

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

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

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

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

11mm Length Screw
SKU: 2800-0004-0011
QTY: 75 *(3 Packs of 25)*

Yellow Jacket Planetary Gear Motor
SKU: 5203-2402-0027
QTY: 4

8mm Length Screw
SKU: 2800-0004-0008
QTY: 25 *(1 Pack of 25)*

Washer
SKU: 2801-0004-0008
QTY: 25 *(1 Pack of 25)*

8mm ID Shim
SKU: 2807-0811-0500
QTY: 24 *(2 Packs of 12)*

140mm Mecanum Wheel Set
SKU: 3213-3606-0003
QTY: 4 *(2 Left Slant, 2 Right Slant)*

3mm Hex Key
SKU: 5027104001
QTY: 1
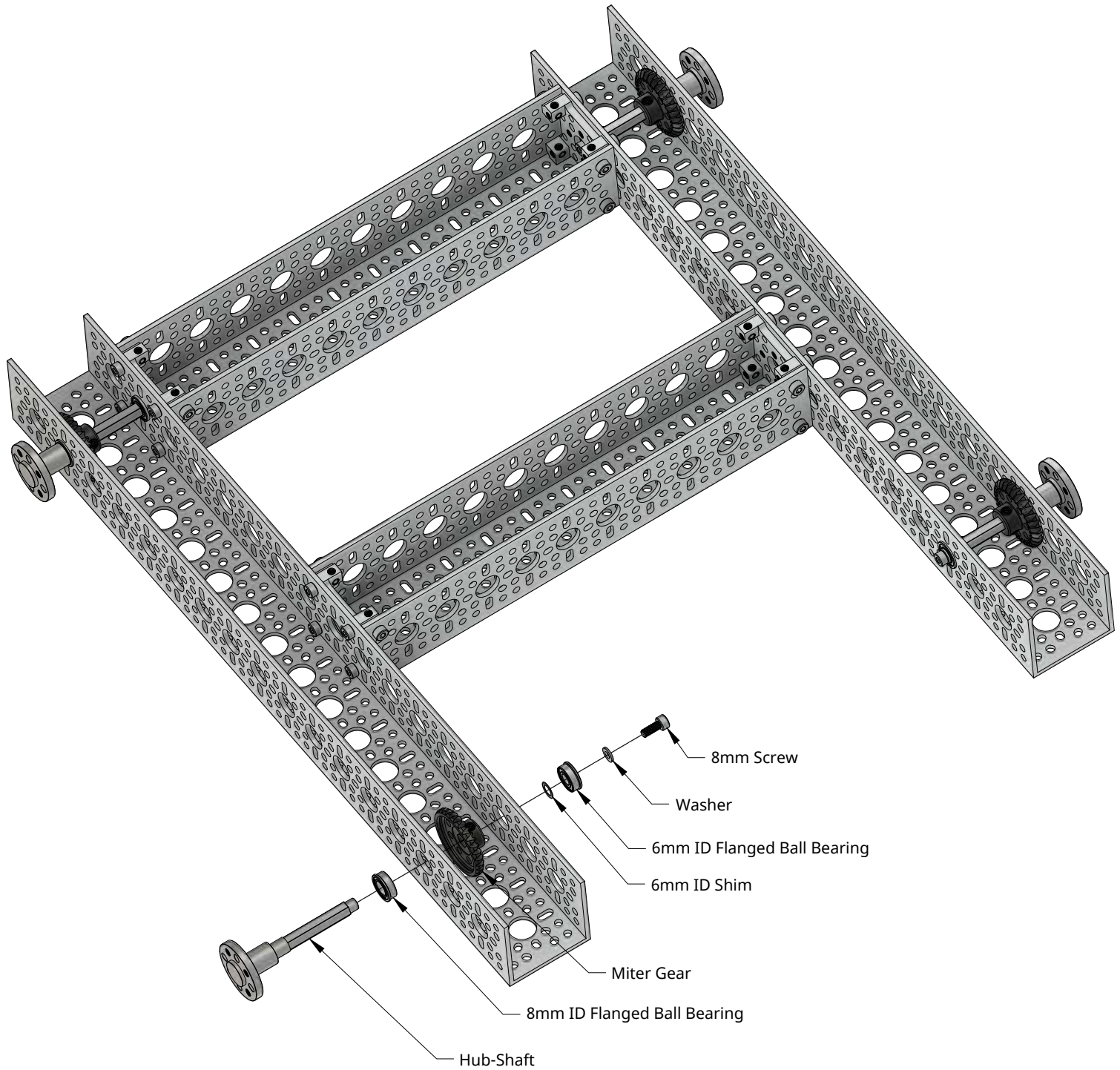
2.5mm Hex Key
SKU: 5027103001
QTY: 1

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.

9
8
7
6
5
4
3
2
1

A

17 Hole Channel

8mm Length Screw

Quad Block Mount

6mm ID Bearing

11mm Length Screw

10 Hole Channel
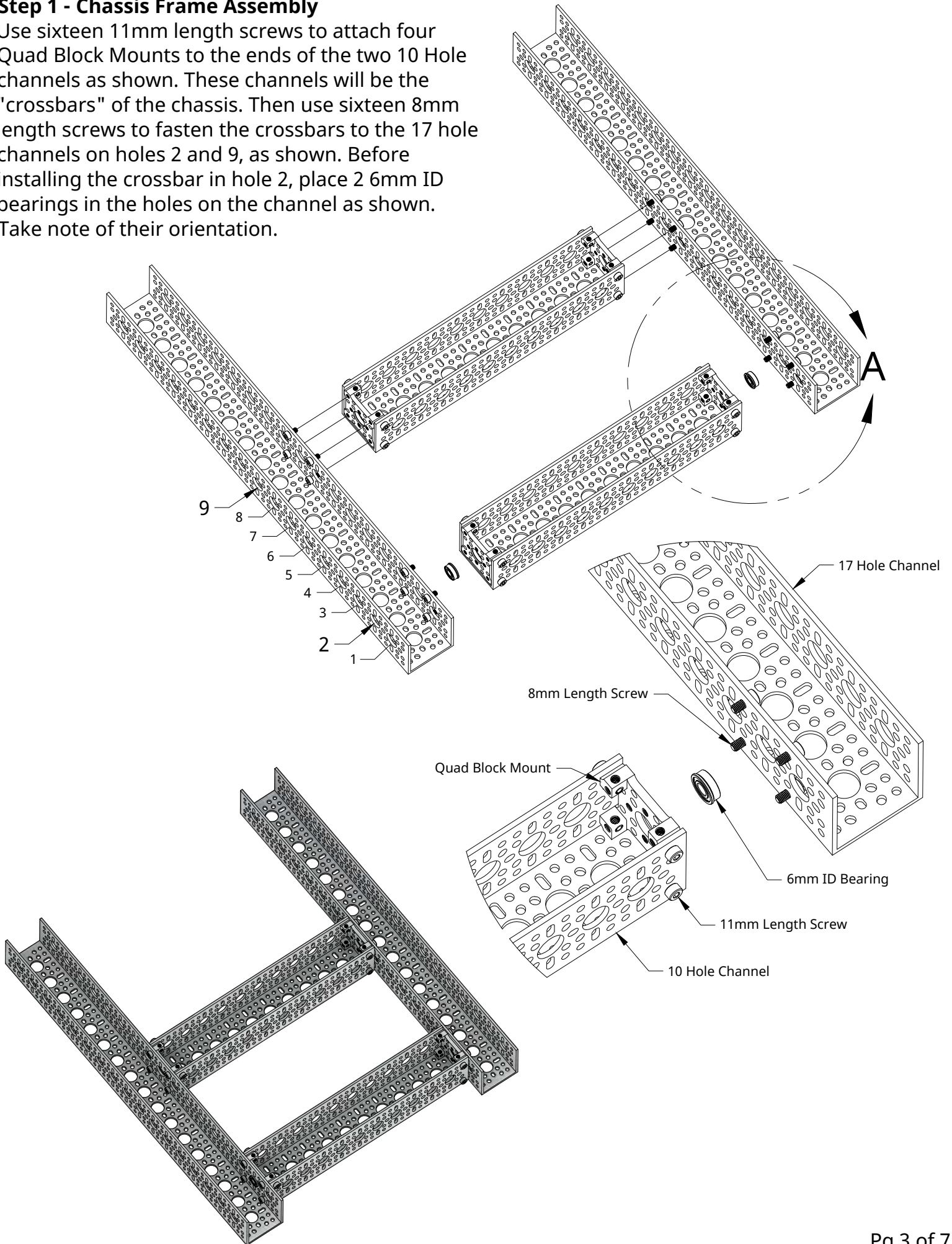
Step 2 - Output Shaft Assemblies

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.

8mm Screw

Washer

6mm ID Flanged Ball Bearing

6mm ID Shim

Miter Gear

8mm ID Flanged Ball Bearing

Hub-Shaft

Miter Gear

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

Set-Screw
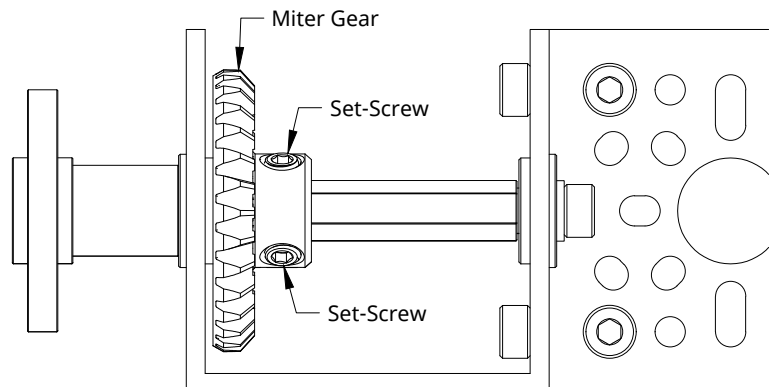
Step 4: Motor Assembly

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

Motor

11mm Screw

Quad Block

8mm ID, 0.5mm Thickness Shims

12mm Spacer

Miter Gear

Step 5: Install Motor Assemblies

Install the assemblies you made in step 4 into the channel to mesh with a Miter Gear on the Hub-Shaft. Use 11mm screws to secure them in place.

11mm Screw
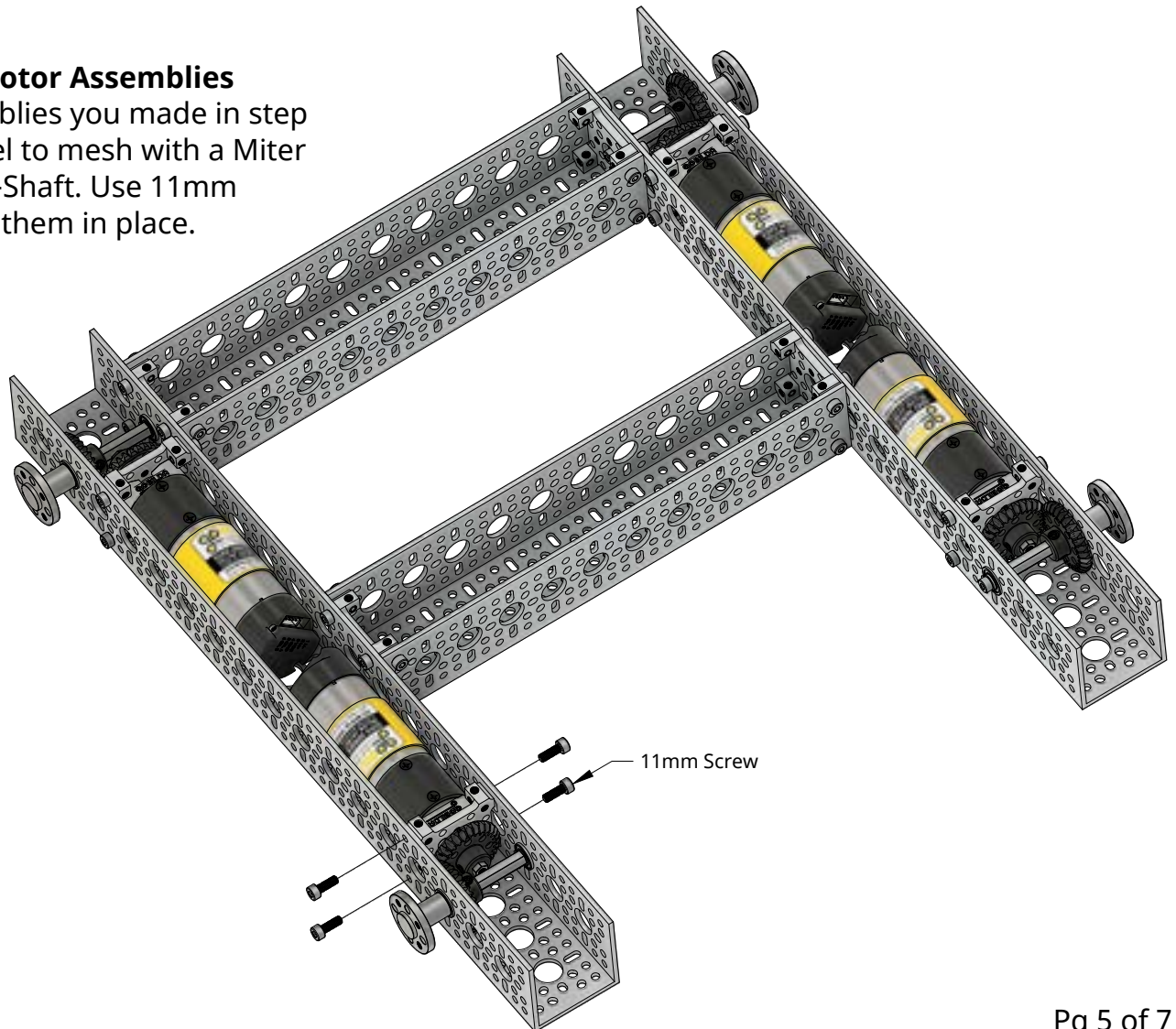
Step 6: Wheels

The final step is to use sixteen 11mm length screws (each with a washer) to fasten the wheels to the Hub-Shafts. (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.
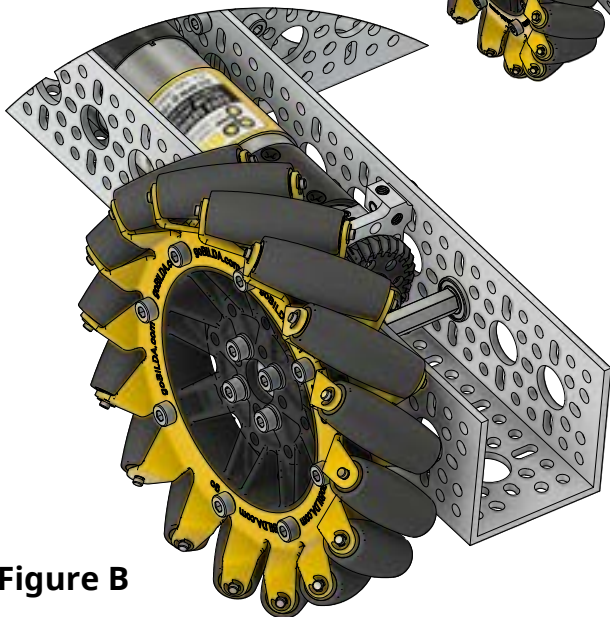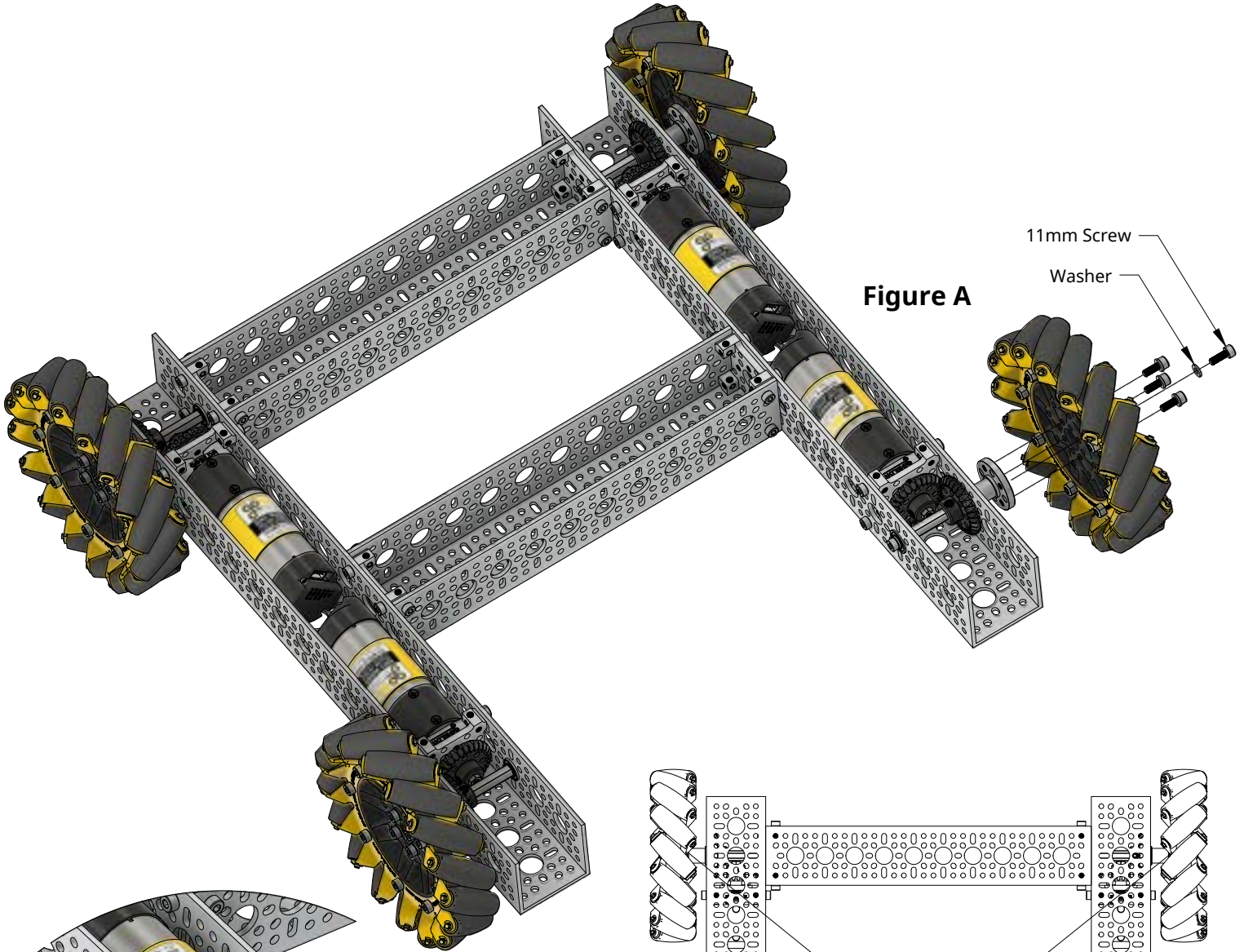
11mm Screw
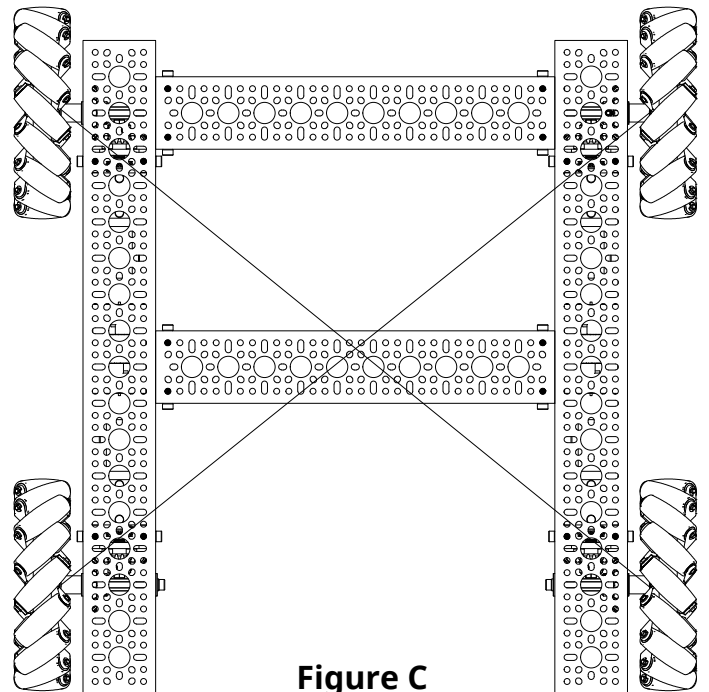
Washer

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.
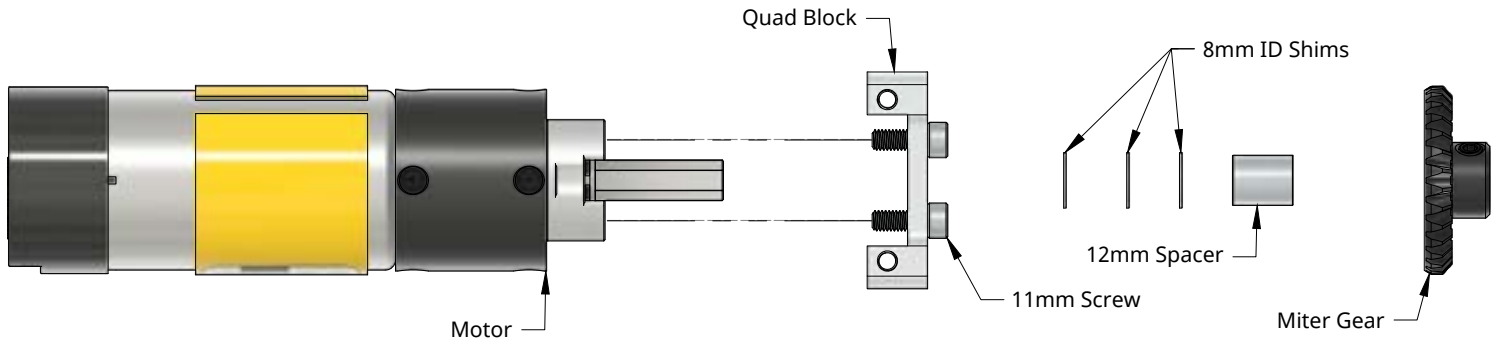
c.   In Step 2, the 6mm ID shim was installed onto the Hub-Shaft before the 6mm ID bearing. If the Hub-Shaft can slide back and forth in the channel, and the screw at the end of the Hub-Shaft is tight, place the shim after the bearing as shown. Make sure to center the shim with the Hub-Shaft so that it does not become pinched between the end of the shaft and the washer.