15MM LINEAR MOTION SYSTEM

October 10, 2016

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1 INTRODUCTION

The REV Robotics 15mm Linear Motion kit is intended to be used with the REV Robotics 15mm x 15mm Aluminum Extrusion. The Linear Motion kit contains all the necessary hardware (Figure 1) to build a 2-stage lift. A 5.5mm Nut driver and 2mm Allen key are needed for assembly.

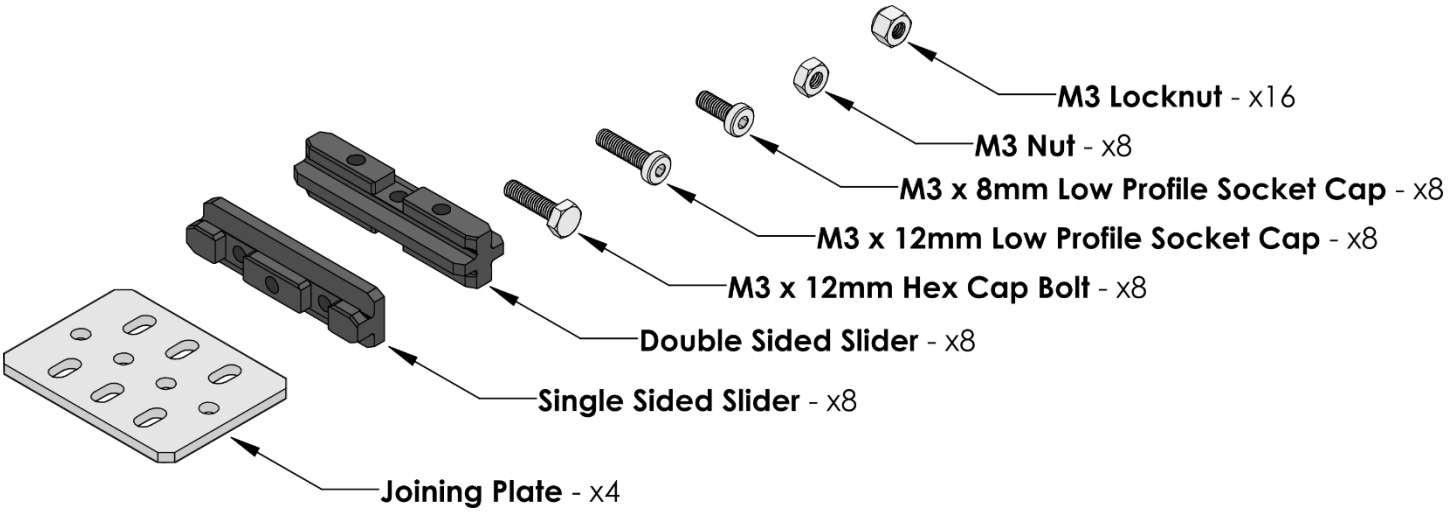


Figure 1: Linear Motion Kit Contents (REV-41-1098)

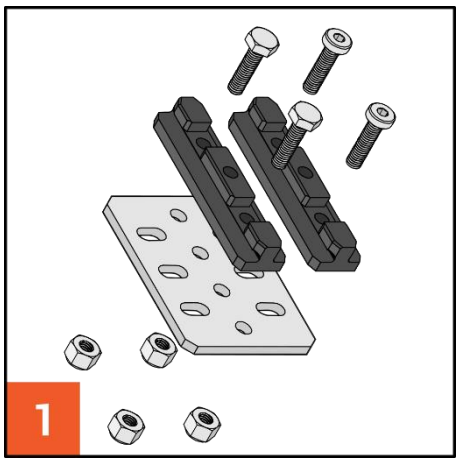
Kit contents were updated on 9/21/2016 to improve assembly and use.

To drive the linear motion system, we recommend using:

- Small Pulley Bearings (REV-41-1368)
- M3 x 12mm or longer hex cap bolts (REV-41-1360)
- M3 Nyloc Nuts (REV-41-1361)
- M3 Plain Nuts
- Non-Stretching string such as Spectra fishing line

2 ASSEMBLY INSTRUCTIONS

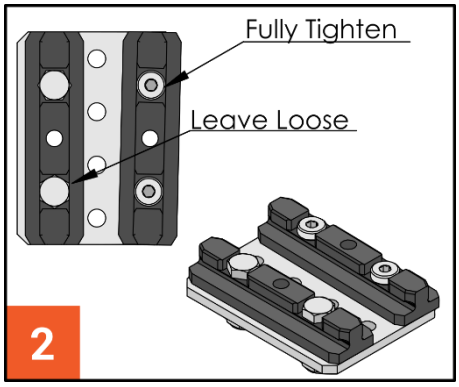
These instructions explain how to build one half of a single stage lift. Each linear motion kit contains enough hardware to create a 2-stage lift.



Step 1

Required Components:

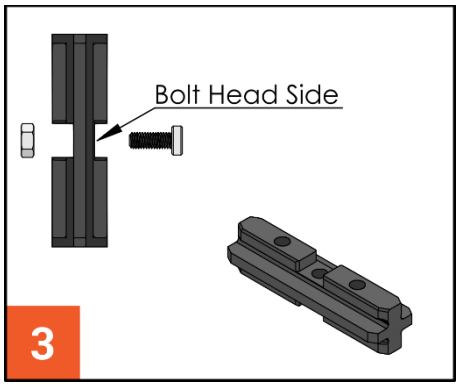
- Joining Plate – x2
- Single Sided Slider – x2
- M3 x 12mm Hex Cap Bolts – x2
- M3 x 12mm Low Profile Socket Cap Bolts –x2
- M3 Nylon Locknuts –x4



Step 2

On the single-sided slider side with the low profile socket cap bolts, fully tighten the single-sided slider onto the joining plate so that the edge of the slider and the plate are roughly parallel.

On the single-sided slider with the hex cap bolts, just start the nuts enough so they won't fall off, but leave the bolts loose.

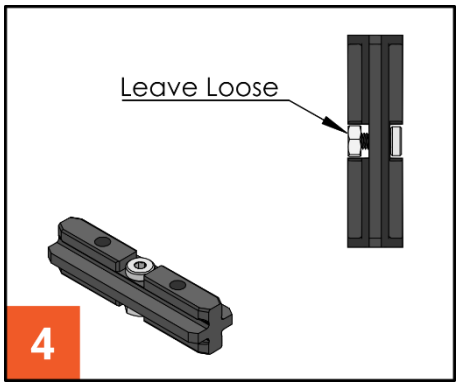


Step 3

Required Components:

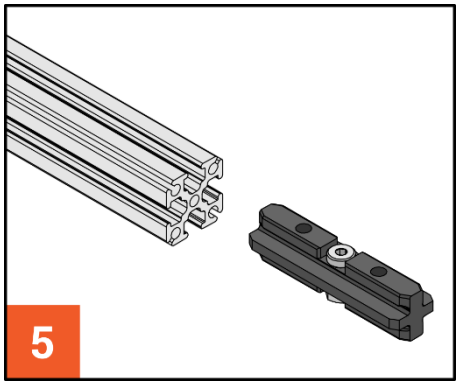
- Double Sided Slider – x1
- M3 x 8mm Low Profile Socket Cap Bolts –x1
- M3 Nut –x1

Be sure that you insert the bolt from the correct side because the double-side slider is not completely symmetric. The bolt should be on the side with the shallower cutout as shown.



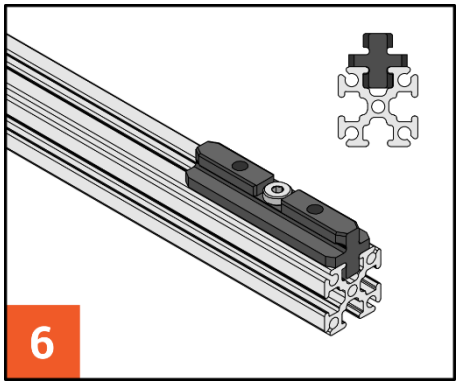
Step 4

When assembling the double-sided slider, only tighten the nut so that it is flush with the bottom of the slider when the bolt head is all the way down. There should be clearance between the top of the nut and the slider as shown.



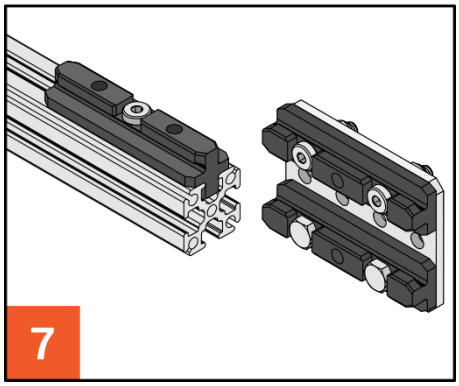
Step 5

Insert the double-sided slider into the extrusion channel. You may have to slightly loosen or tighten the nut so that it will alight with the channel.



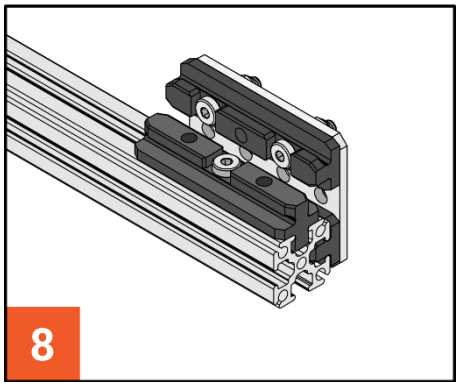
Step 6

One the slider is fully inserted into the channel tighten the bolt until snug.



Step 7

Take the single-sided assembly from Step 2 and slide the hex cap bolt slider into the extrusion channel on the side adjacent to the double-sided slider.



Step 8

Once the slider assembly from Step 2 is fully inserted into the channel, tighten just enough so that the single-sided slider assembly does not freely slide in the channel, but is still loose enough that you can move the slider with some minimal force.

The above steps 1-8 will result in the basic building assemble for a linear motion elevator using the REV Robotics Linear Motion Kit and Extrusion (Figure 2). Repeat the steps 1-8 above for as many stages as needed, a minimum of two assemblies are needed.

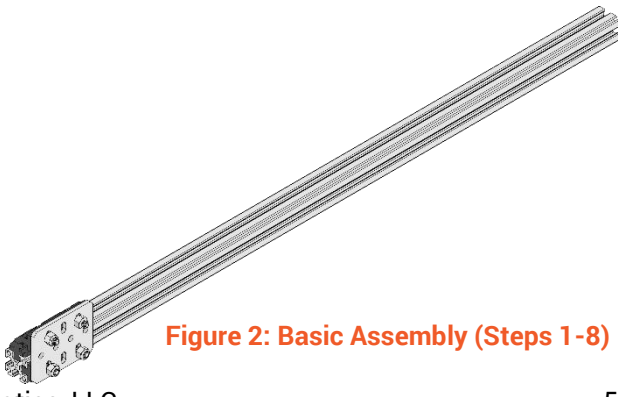
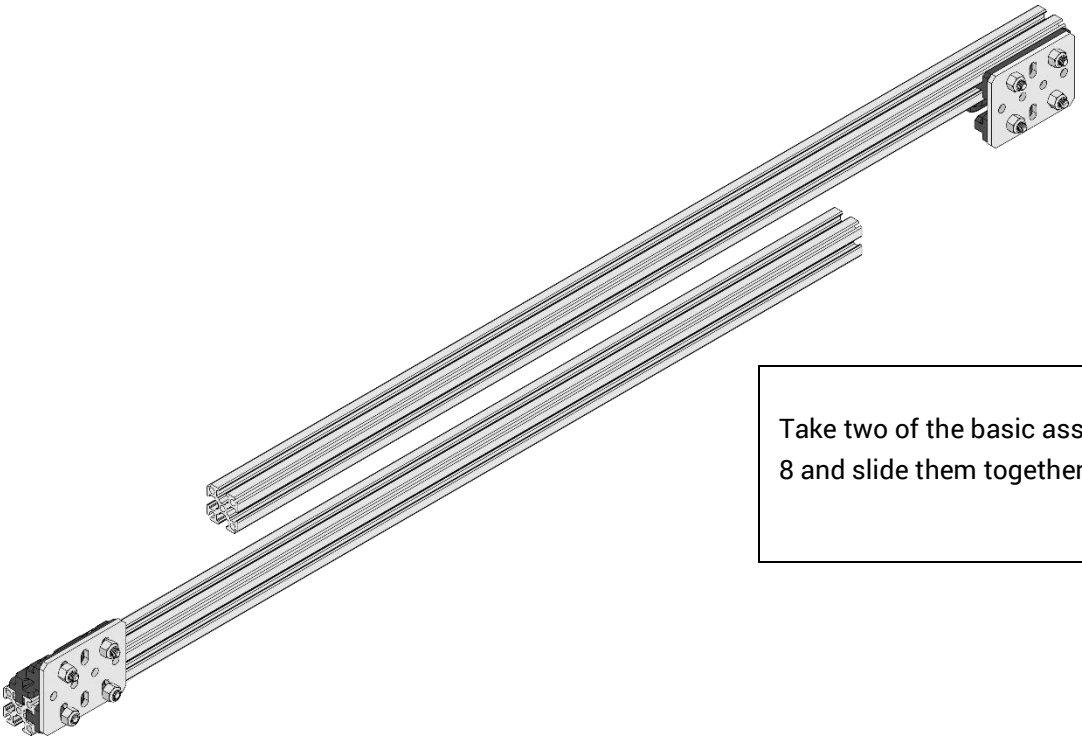
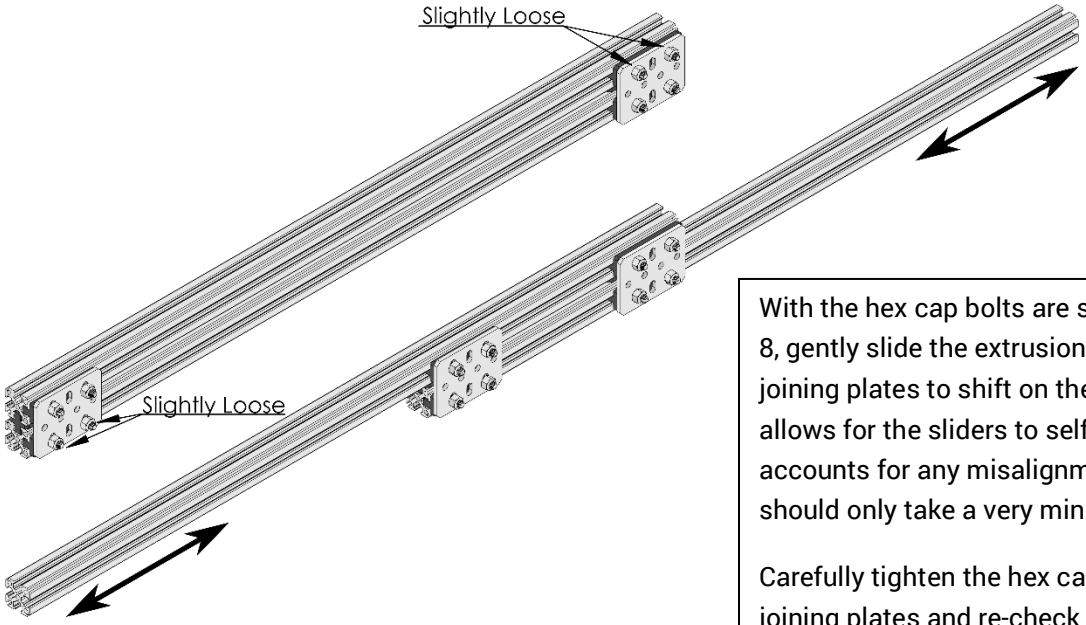


Figure 2: Basic Assembly (Steps 1-8)



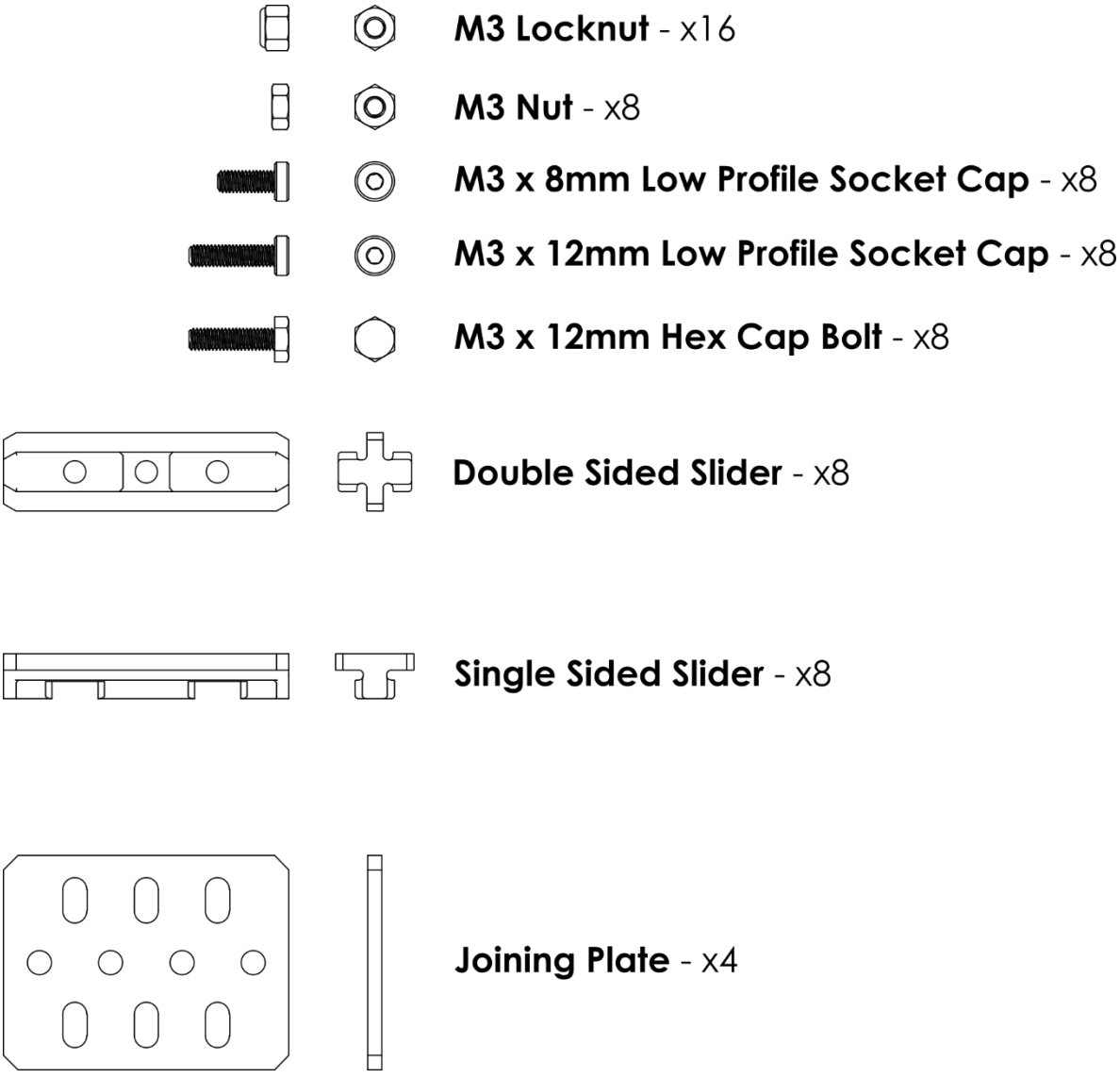
Take two of the basic assemblies created in Steps 1-8 and slide them together.



With the hex cap bolts are still slightly loose from step 8, gently slide the extrusion in and out allowing the joining plates to shift on the hex cap bolts. This allows for the sliders to self-adjust parallel and accounts for any misalignment from step 2. The slide should only take a very minimum effort to move.

Carefully tighten the hex cap bolts without shifting the joining plates and re-check the slide for any binding. Repeat as necessary.

3 KIT COMPONENTS (1:1 Scale)



M3 Locknut - x16

M3 Nut - x8

M3 x 8mm Low Profile Socket Cap - x8

M3 x 12mm Low Profile Socket Cap - x8

M3 x 12mm Hex Cap Bolt - x8

Double Sided Slider - x8

Single Sided Slider - x8

Joining Plate - x4