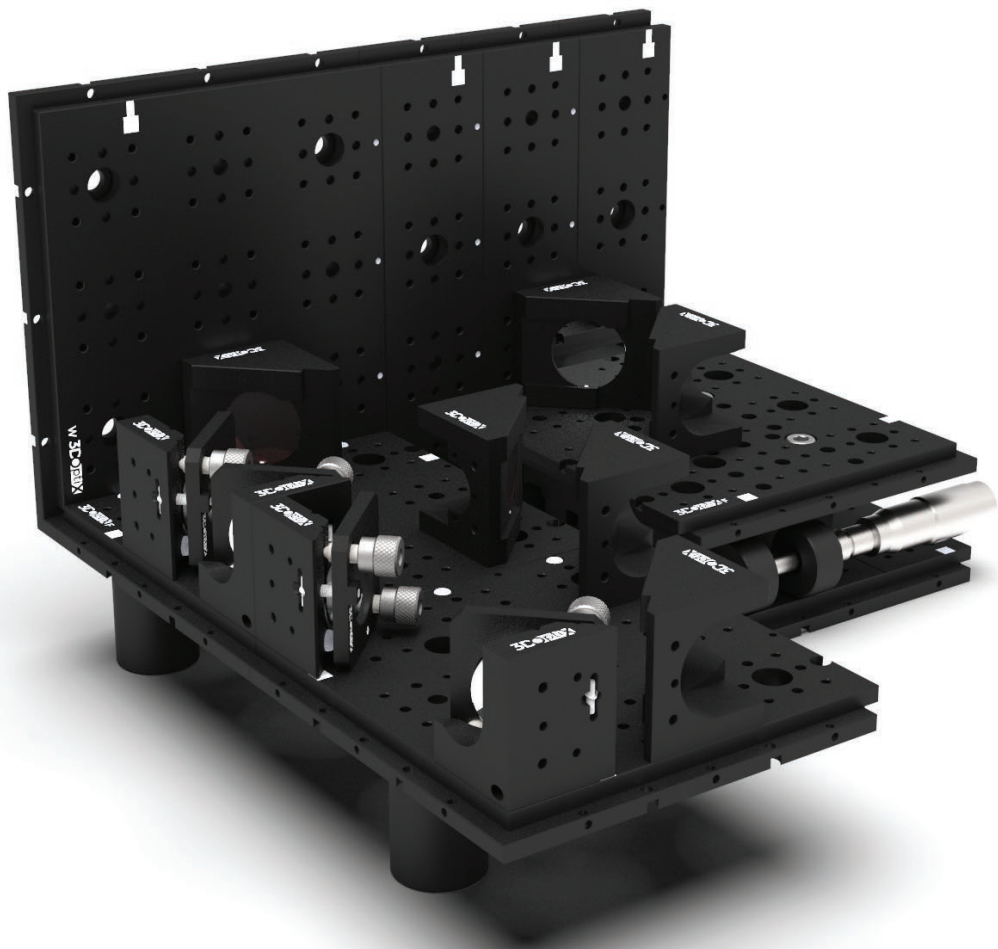


Broadband / Two-color Pump Probe



Introduction

The pump-probe technique is a widely used ultrafast spectroscopy method allowing to study the ultrafast dynamics of light-matter interactions. This method uses two light pulses, typically of different wavelengths and intensities, which are spatially overlapped with a high precision and whose relative time delay is controlled with a delay line capable of micrometric translation. The nominal paths taken by the pump and the probe need to be equal to an extremely high degree of accuracy. The opto-mechanical requirements for such setups are therefore very high and the alignment is very tedious and demanding.

The 3D-Optix breadbox-based pump-probe reference design removes all of these hurdles from the equation, allowing the user to build a pump-probe setup in record time with minimal alignment necessary. This way, you can focus on the experiment itself and its results rather than spending valuable time and resources on setting things up.

Parts Description:

Parts included in the reference design

Pump Probe Ø1"/25mm - Parts Description	Item Number	Qty
Premium Box Frame - Floor/ceiling 9 (3X3) mount locations	20020 / 20020-M	3
Premium Box Frame - Wall Frame 9 (3X3) mount locations	20010 / 20010-M	1
Premium Box Frame - Wall Frame 4 (1X4) mount locations	20018 / 20018-M	3
Premium Box Frame - Floor/ceiling 3 (1X3) mount locations	20022 / 20022-M	3
Translator Box Frame – Floor/ceiling 9 (3X3) mount locations	20600 / 20600-M	1
Fixed Mount - Triangular Ø1"/25mm Mirror/DM Mount	20100 / 20100-M	6
Triangular Kinematic Mirror Mount Ø1"/25mm	20200 / 20200-M	4
Iris Mount Ultimate	20502 / 20502-M	1

Included Hardware and Screws	Qty
Imperial: 4-40 Cap Screw, 1/4" Long	41
Metric: M2.5-0.45mm Cap Screw 6mm Long	
2.5mm 18-8 Stainless Steel Dowel Pins	16
Aluminum Unthreaded Spacer - 1/8" Long, 5/8" Outside Diameter	2



The 3DOptix optomechanical elements are compatible with optical elements from any major company. Here we recommend third-party parts that should be purchased. These parts may vary depending on the specific spectral needs of your setup.

Parts not included in the reference design

Recommended third party optical/optomechanical elements	Qty
Metallic/Dielectric mirrors	8
Ø1"/ 25mm Dichroic mirrors 45° AOI	2
Threaded Iris Diaphragm, SM1 (1.035" - 40)	1
1" Lens Tube, SM1 (1.035" - 40)	2
Retaining Ring, SM1 (1.035" - 40)	2
Fluorescing Alignment Disks	2
Travel Linear Translation Stage compatible with manual and motorized heads for 1" translator height - Spacers/Washers are provided as part of the reference design. Translator + Spacers/Washers height should be - 1.125" / 28.12mm	1
Ø1/2"/12.5mm Post Holder, 1.5"/37.5mm Long	2
Ø1/2"/12.5mm Post, 1"/25mm Long	2
1/4"-20 Stainless Steel Cap Screw, 3/8" Long	4

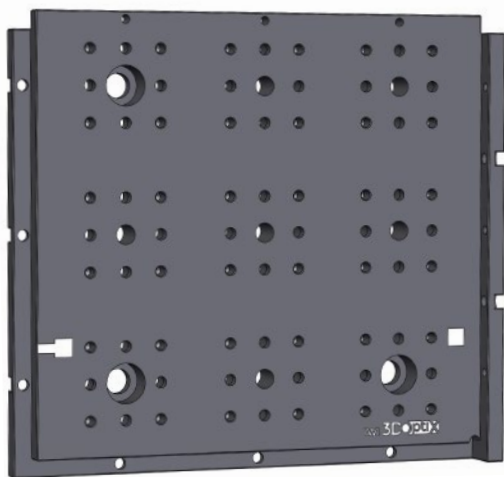


Safety Note:

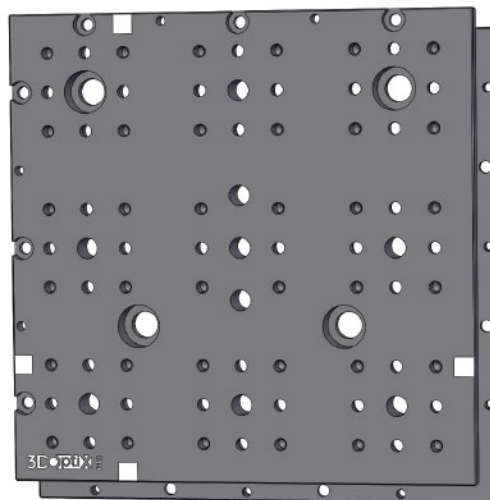
Our reference designs serve as guides for building common optical setups, often found in labs, with the 3DOptix™ parts. They provide a reference for your own designs and a good place to start learning how to build with the 3DOptix™ optomechanical elements. All reference design assembly instructions have passed our quality and safety procedures. Though, there are various ways to assemble the apparatus, we recommend to closely follow the provided assembly instructions as measures have been taken to ensure maximal safety.

Assembly of the optical elements inside the optomechanical parts should always be performed when the light source is blocked, otherwise unwanted reflections can occur. The accuracy of our products guarantees great precision of alignment, therefore make sure that the relevant holes of all structures are blocked in order to avoid stray light beams from passing through. When lasers are on always use proper laser safety eyewear for maximal protection.

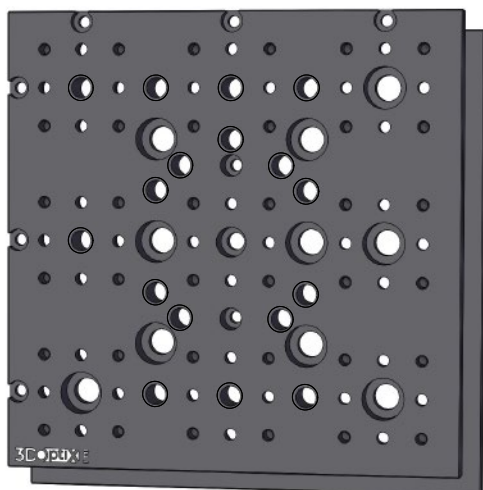
Parts List



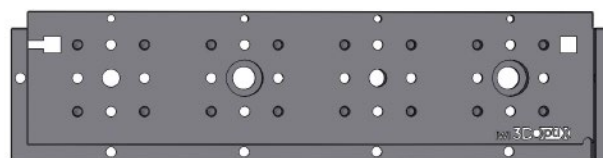
Premium Box Frame - Wall Frame 9 (3X3) mount locations **x1**



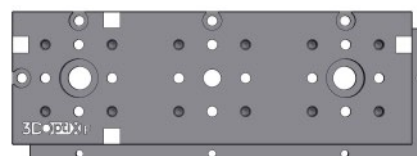
Premium Box Frame - Floor/ceiling 9 (3X3) mount locations **x3**



Translator Box Frame - Floor/ceiling 9 (3X3) mount locations **x1**



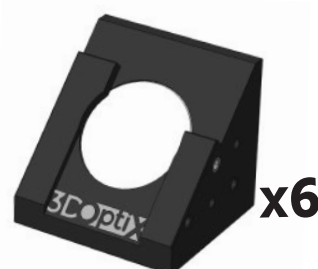
Premium Box Frame - Wall Frame 4 (1X4) mount locations **x3**



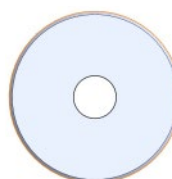
Premium Box Frame - Floor/ceiling 1 (1X3) mount locations **x1**



Elite Triangular Kinematic Mount - Ø1"/25mm **x4**



Fixed Mount - Triangular Ø1"/25mm Mirror Mount **x6**



Aluminum Unthreaded Spacer **x2**

#4-40 \ M2.5-0.45

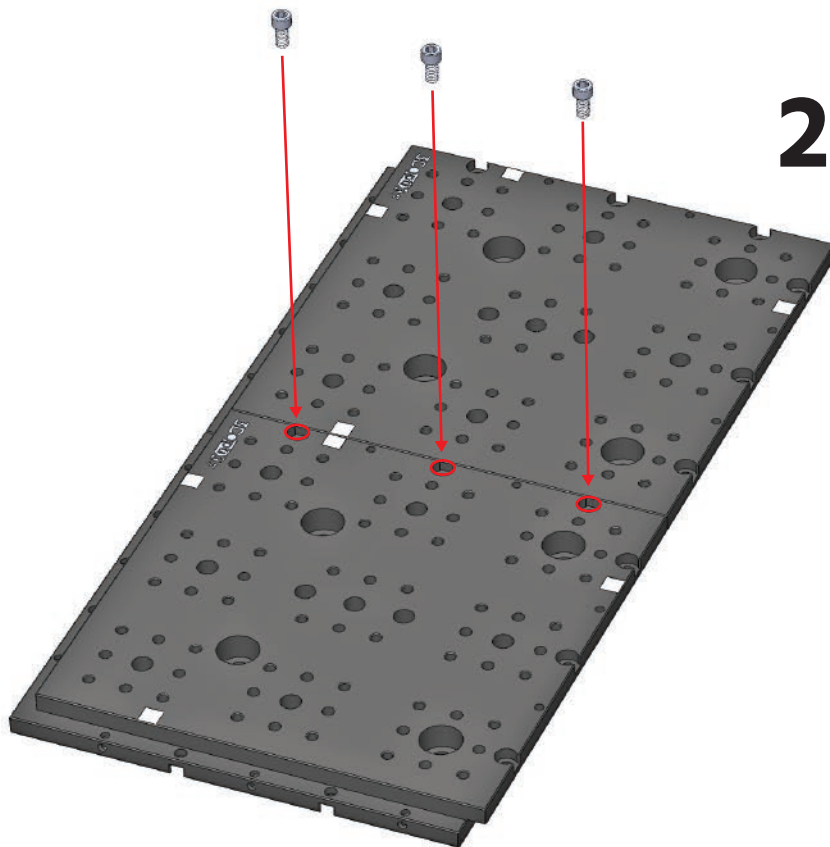
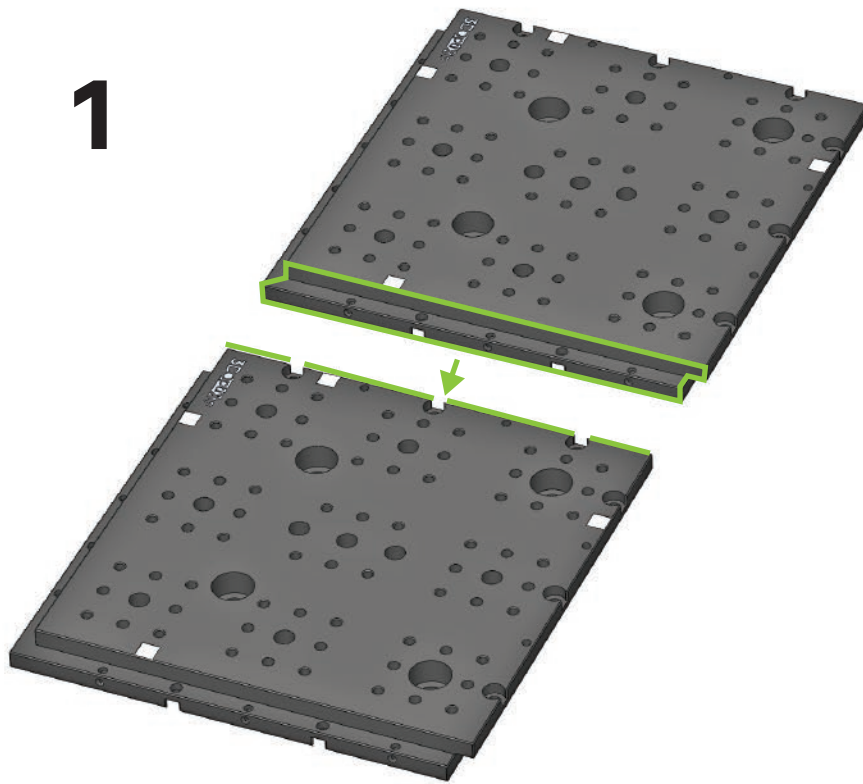


x41

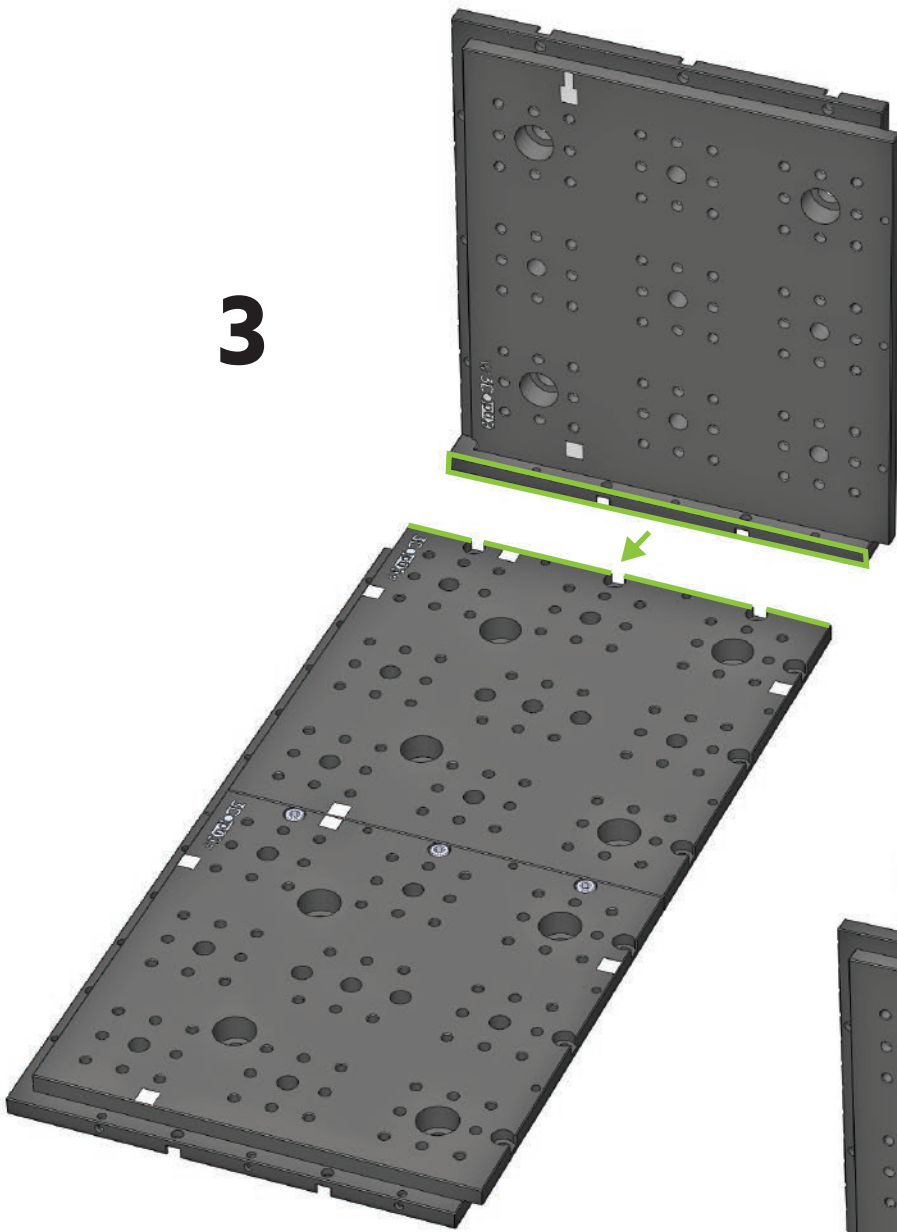
DOWEL PIN



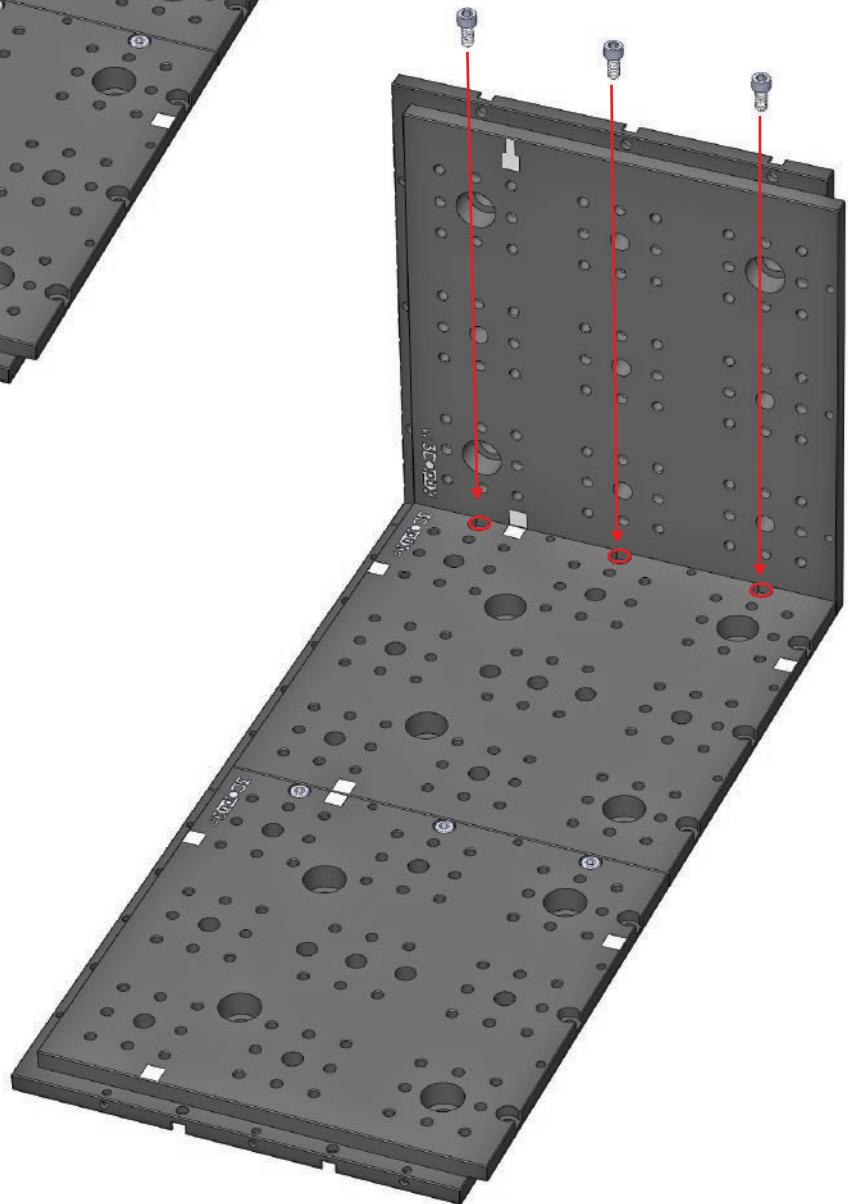
x16

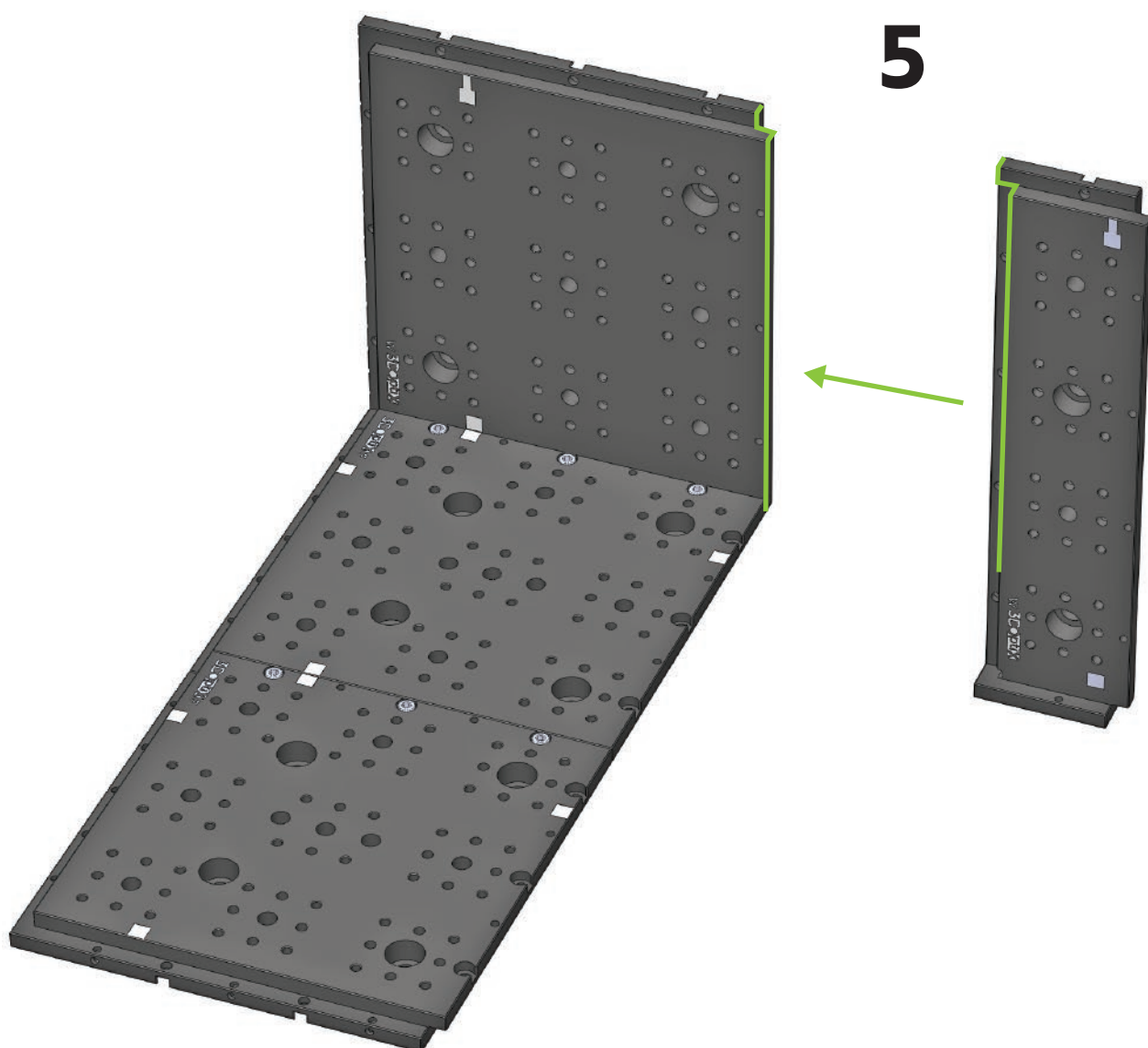


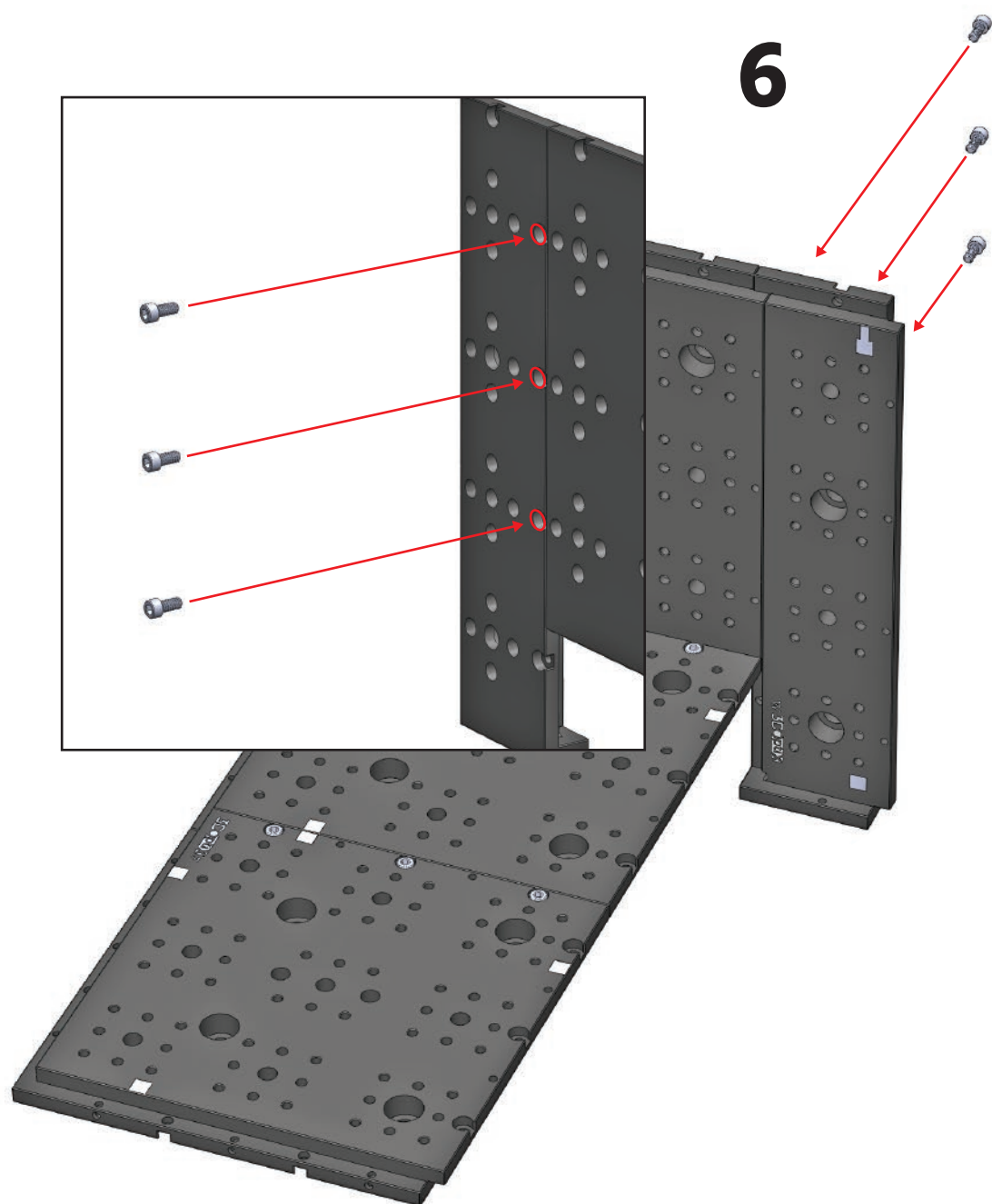
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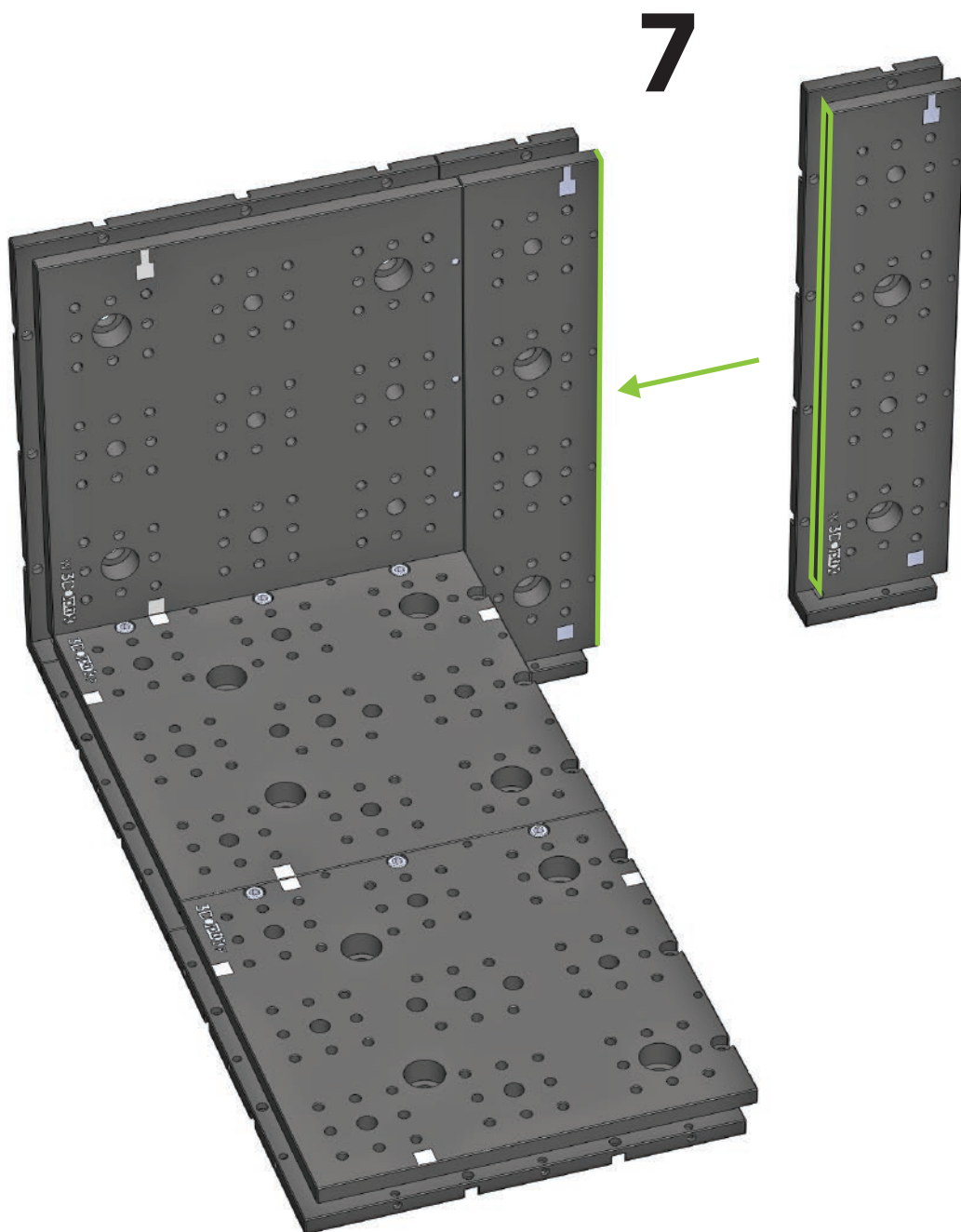


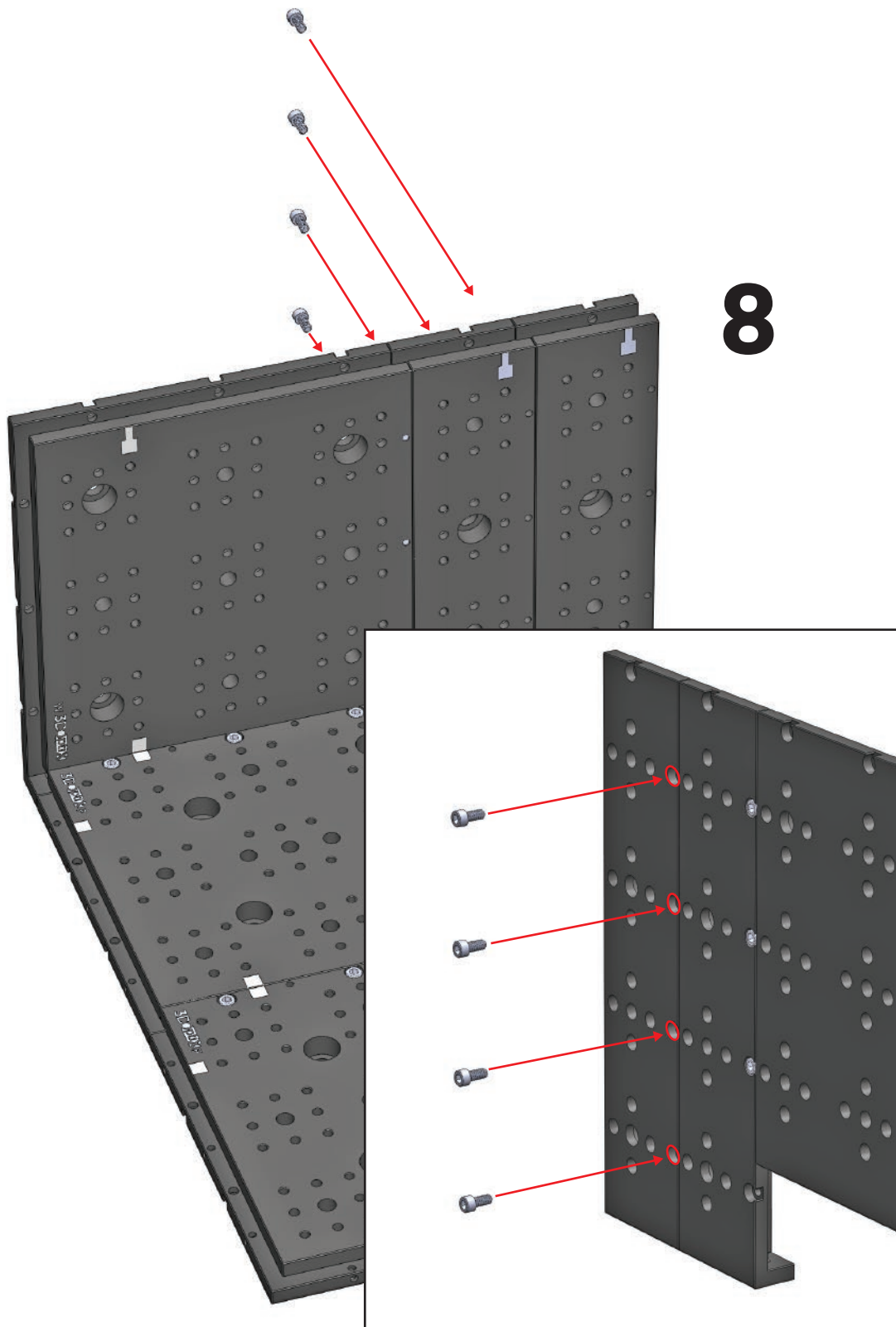
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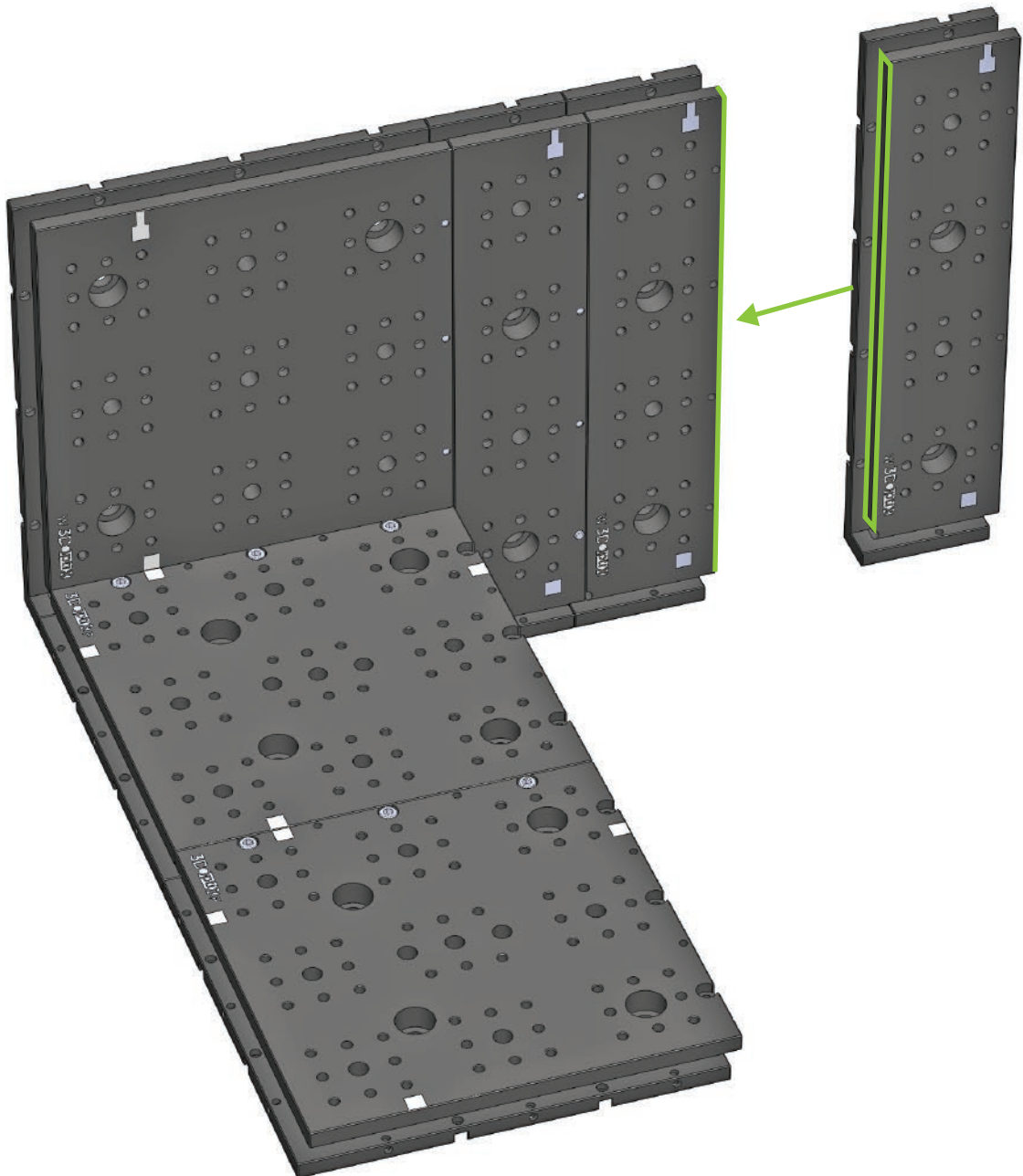


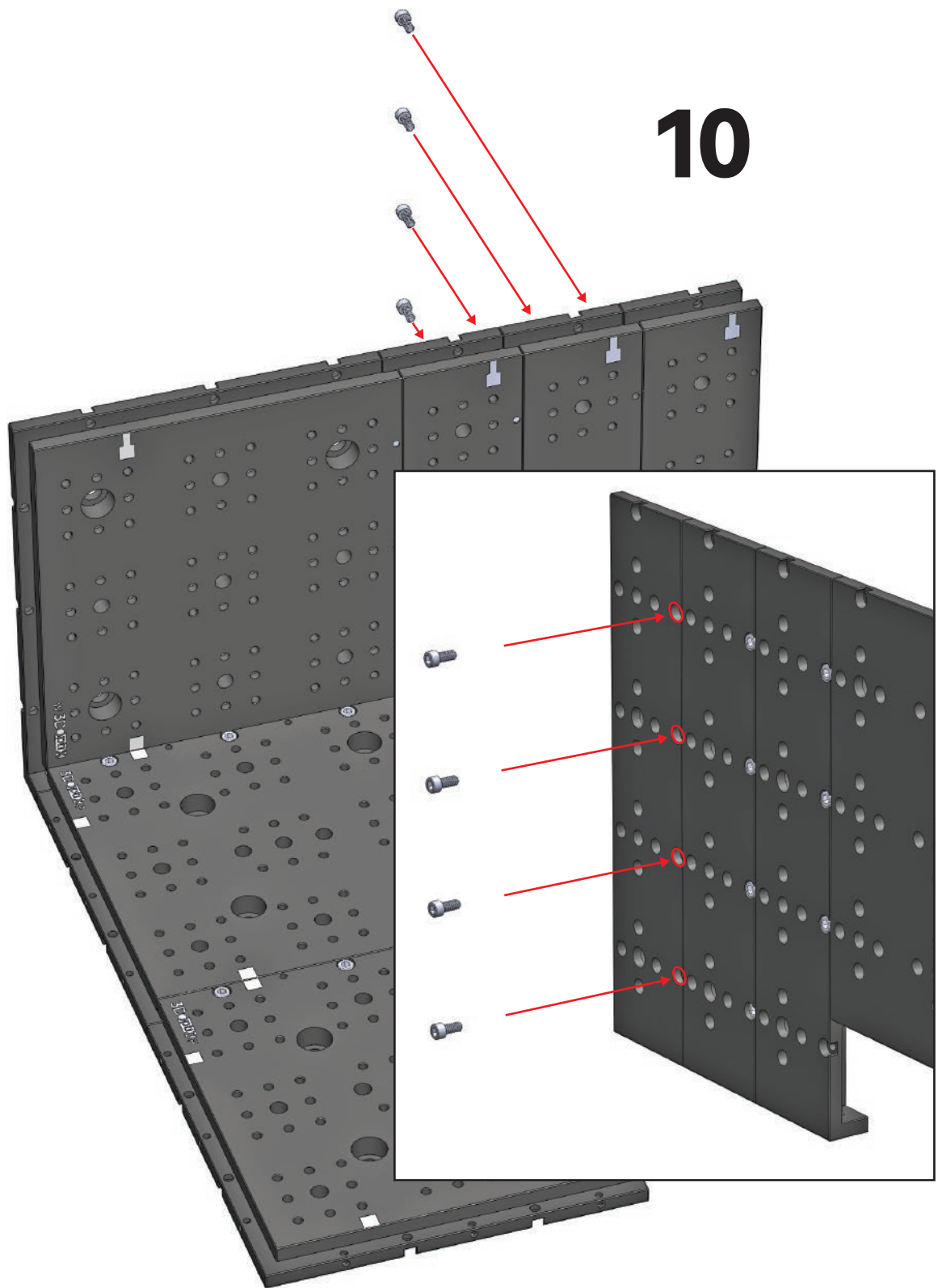




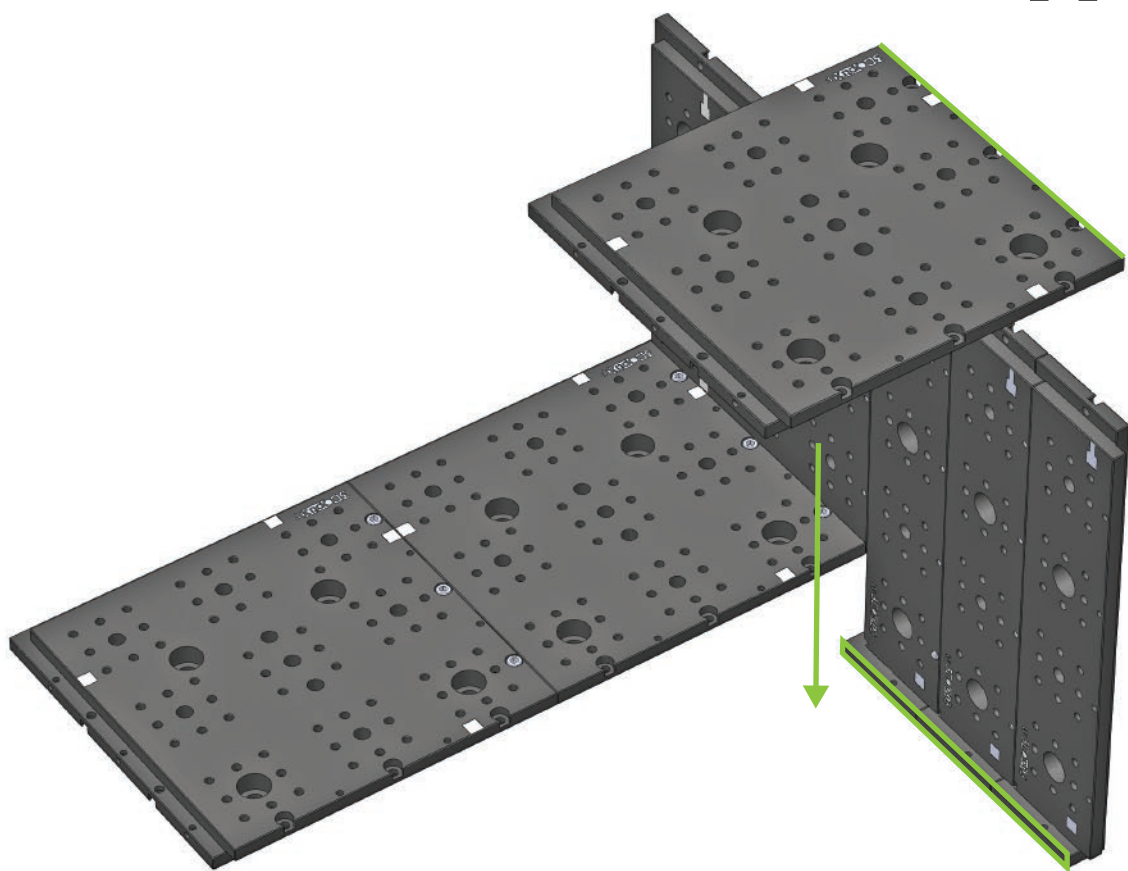


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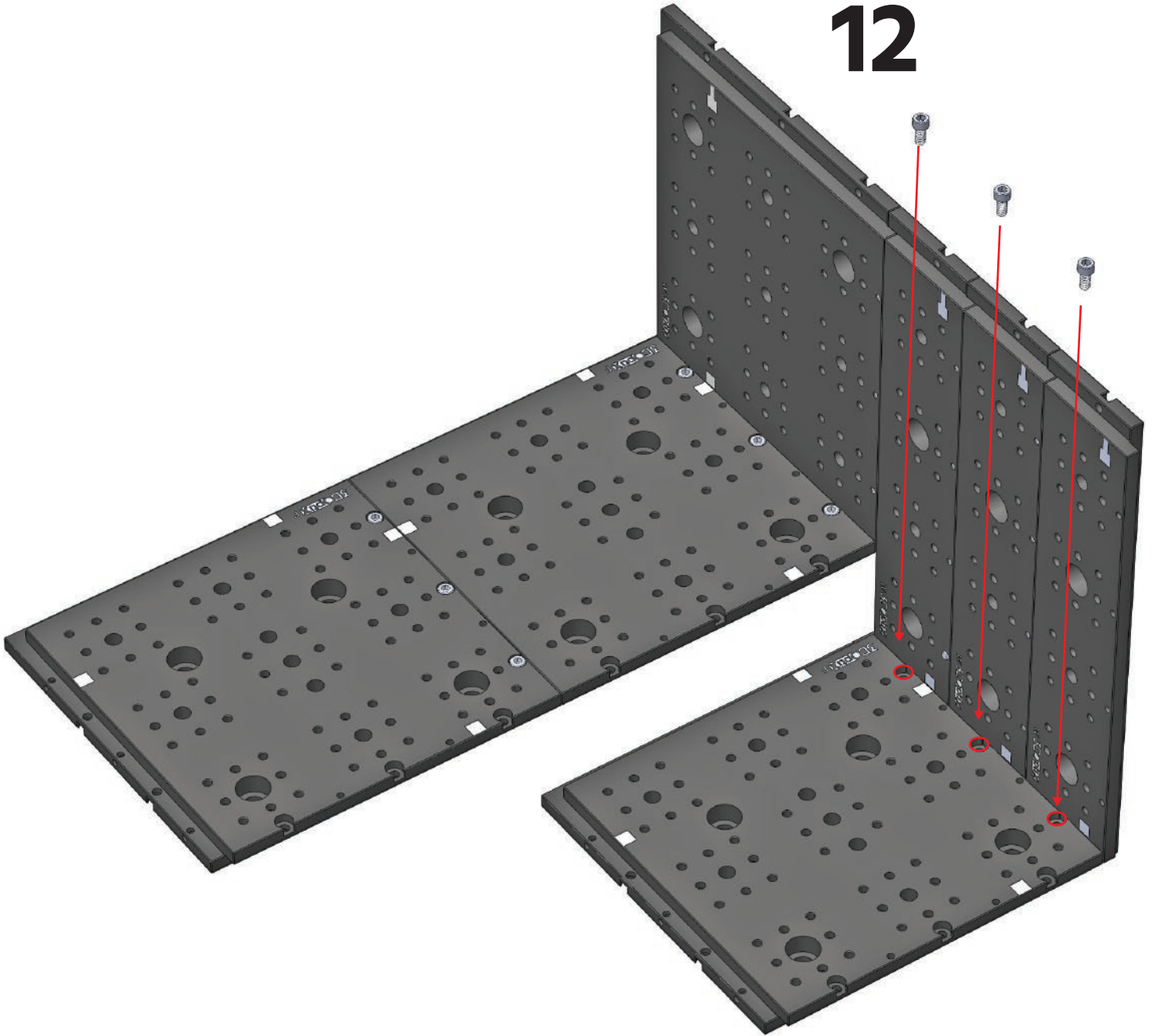




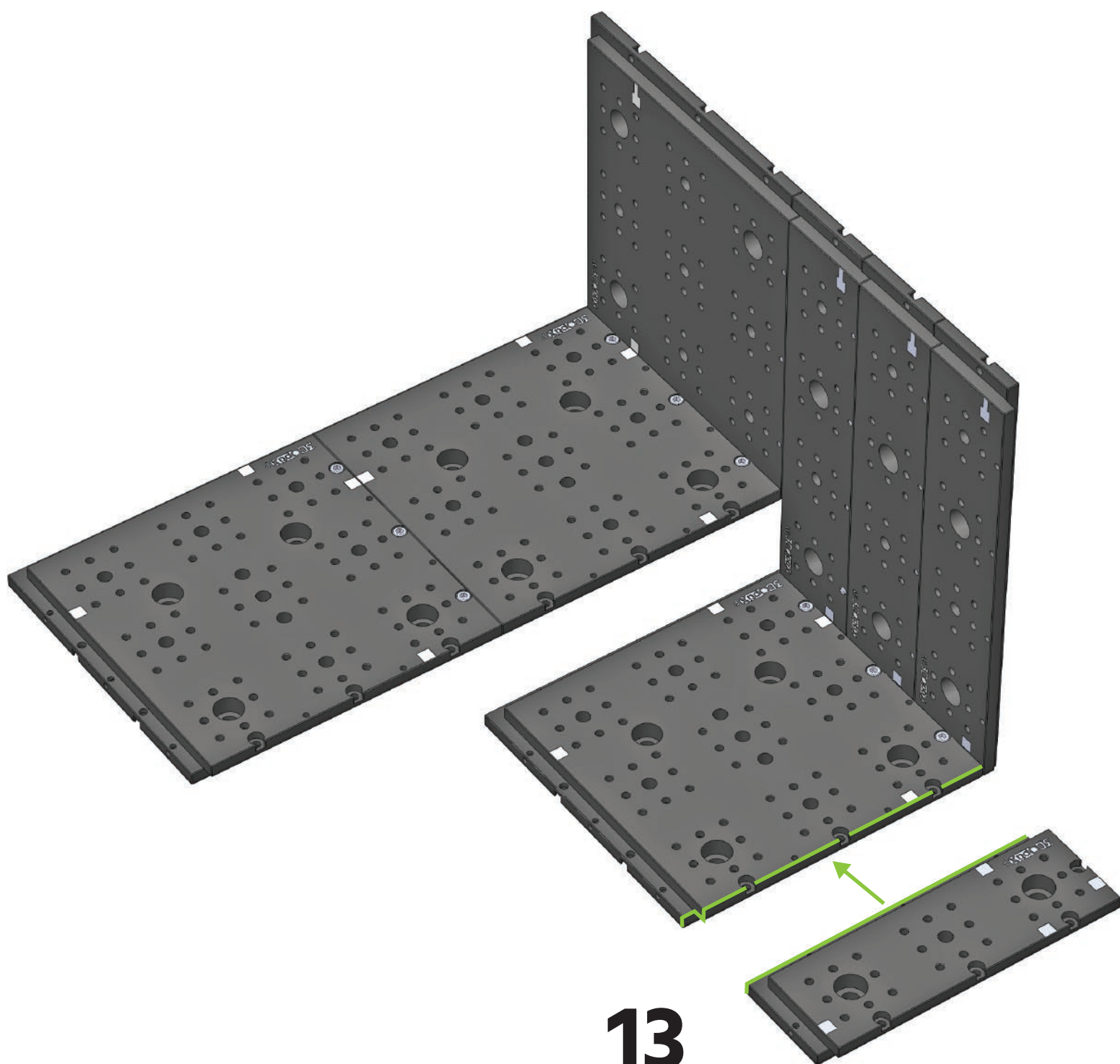
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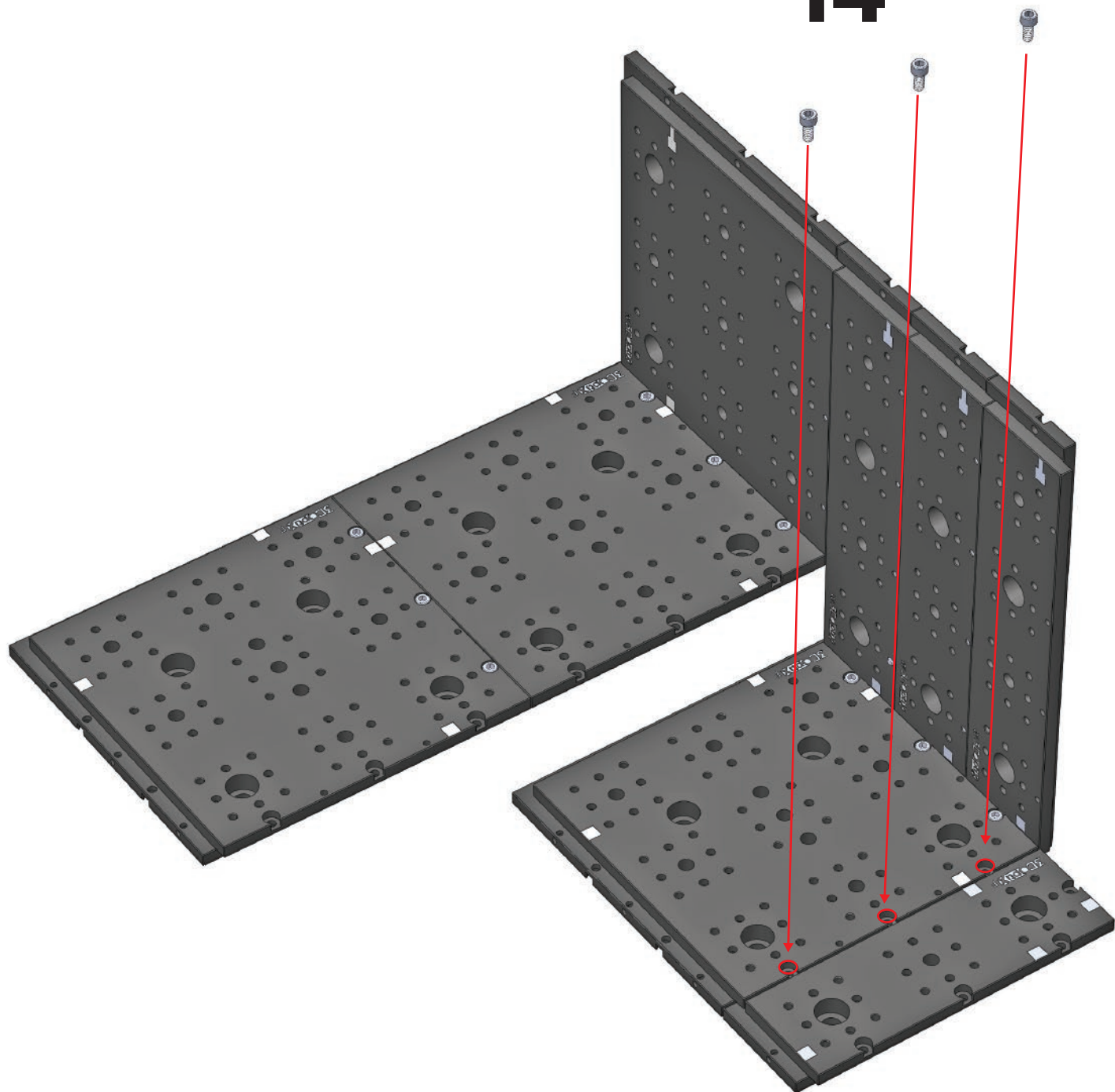
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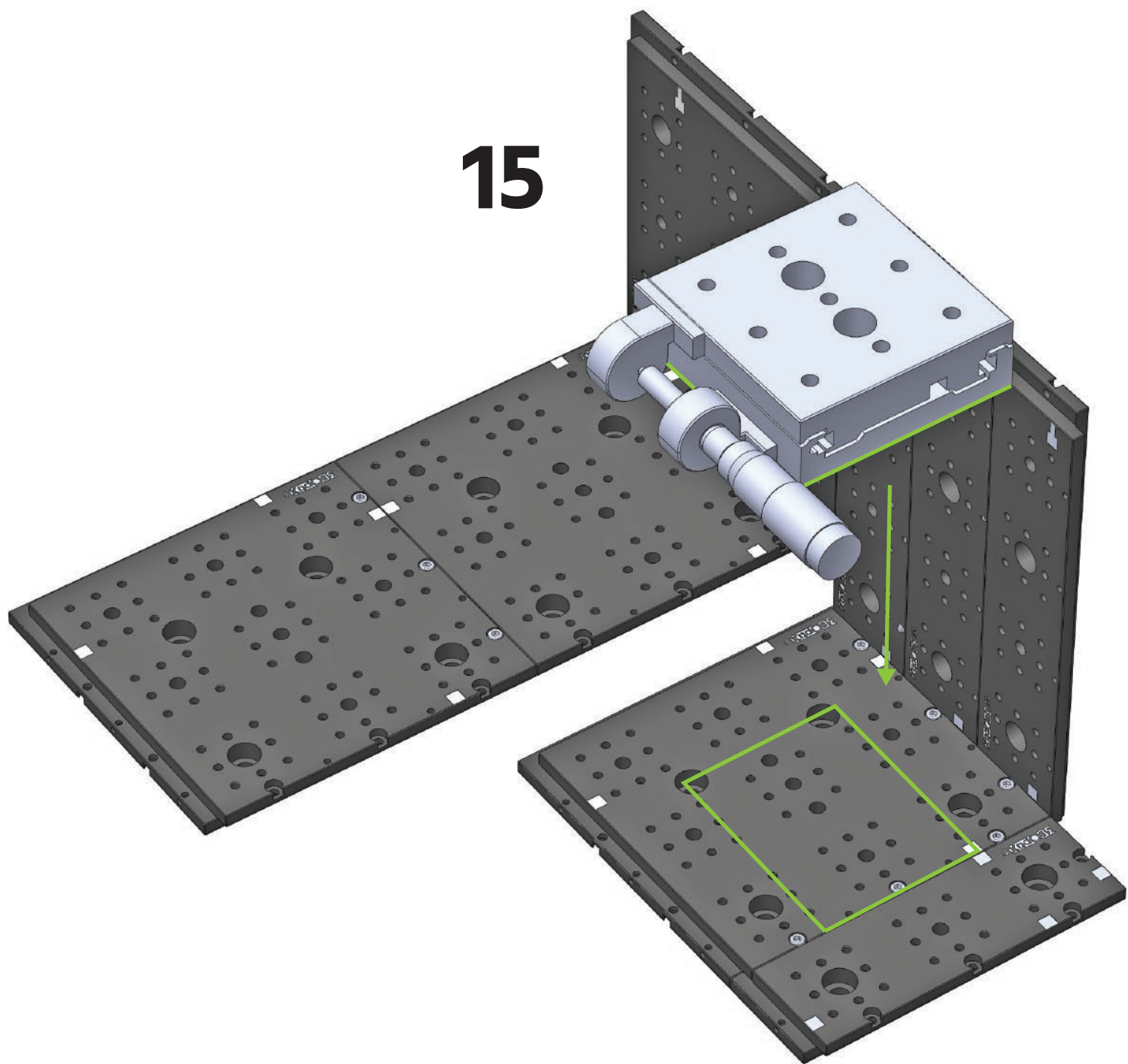
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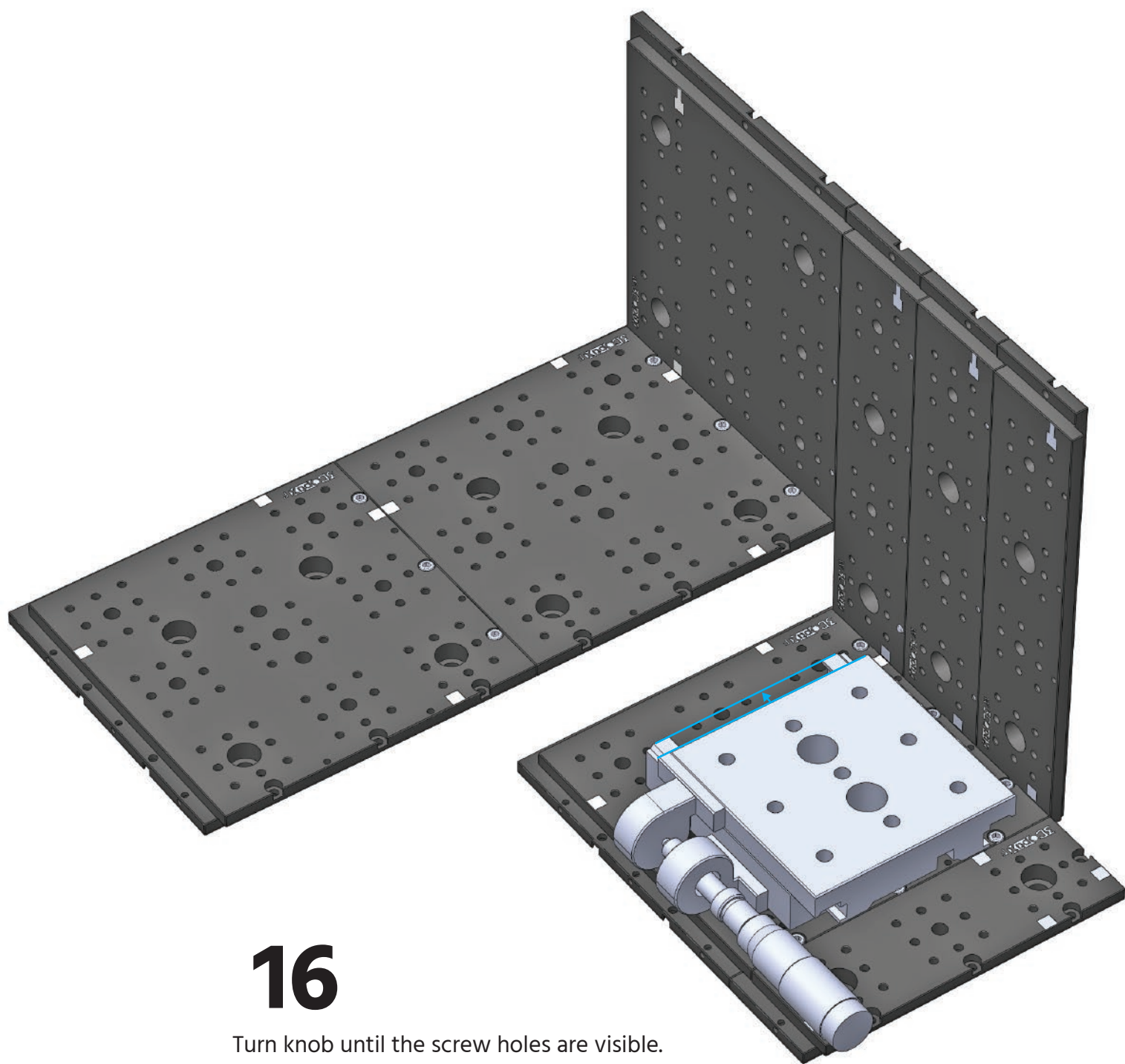


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15



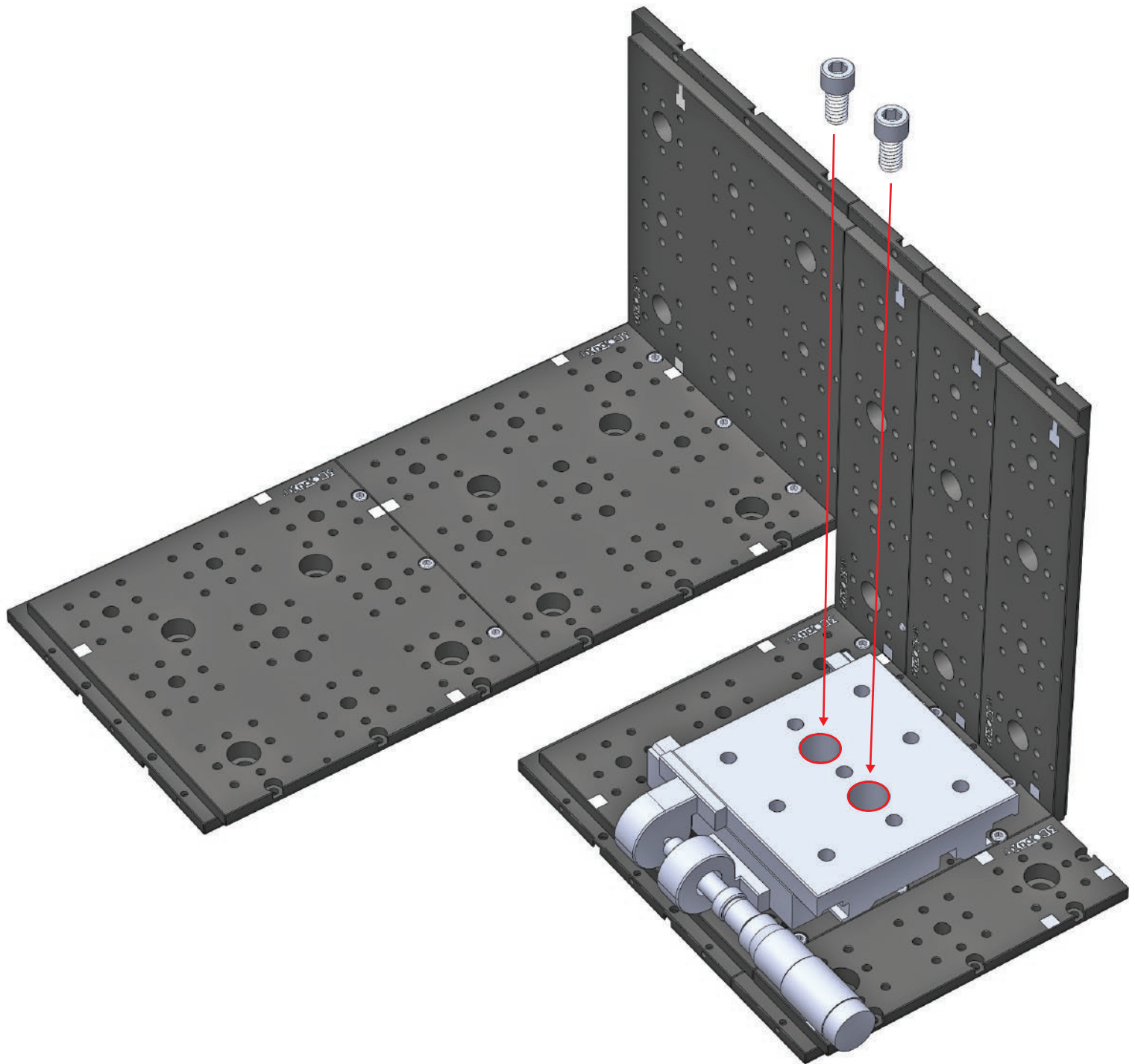


16

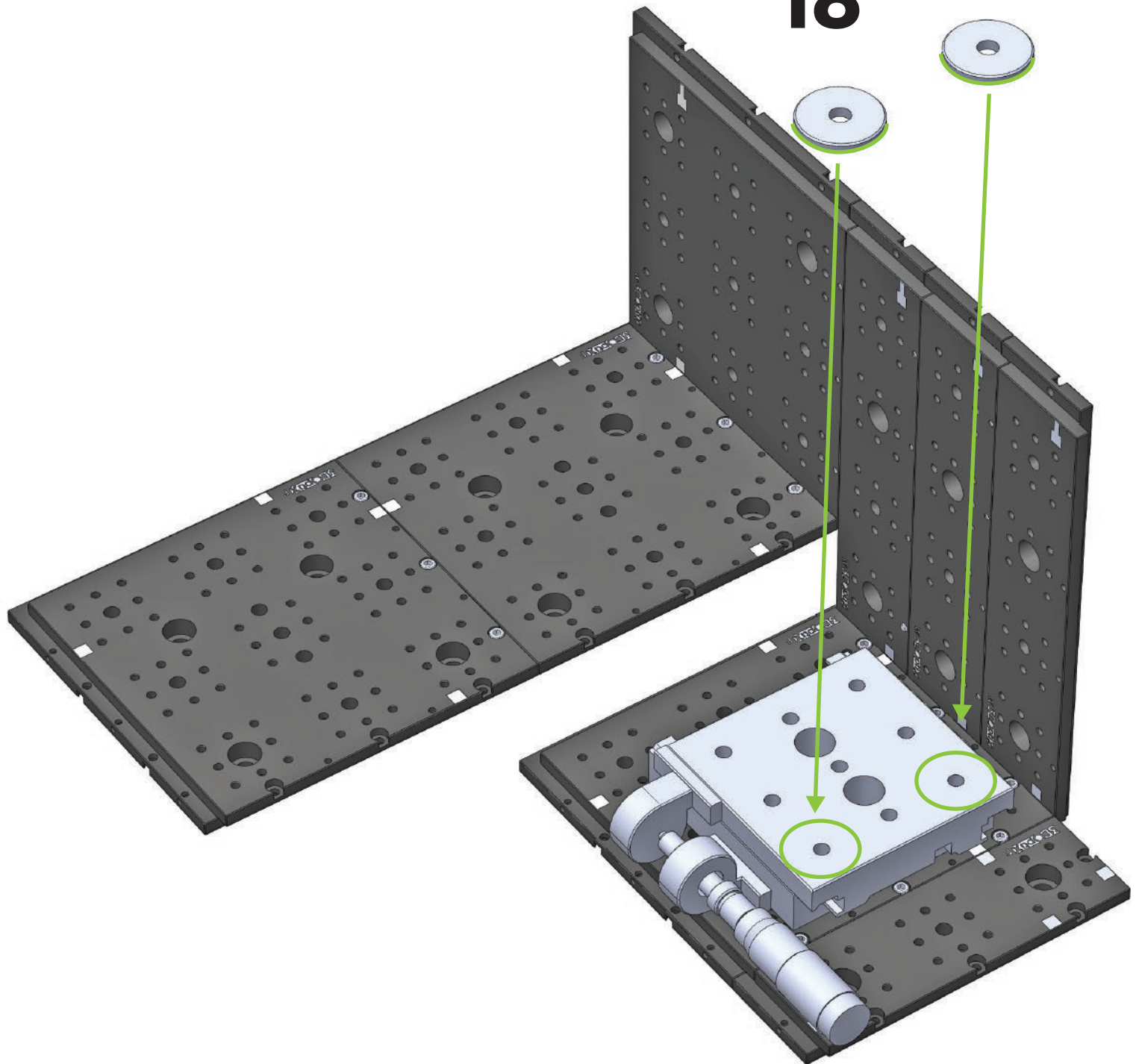
Turn knob until the screw holes are visible.

17

1/4"-20 Stainless Steel Cap Screw, 3/8" Long

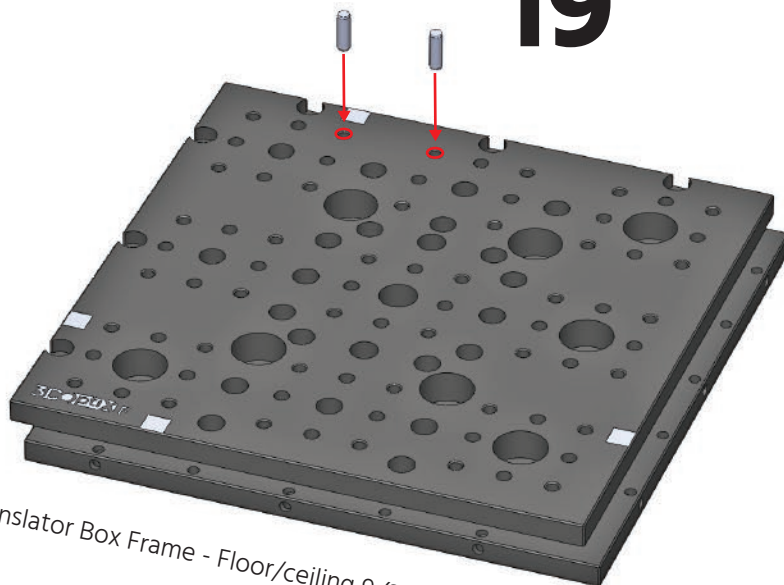


18



Delay Assembly

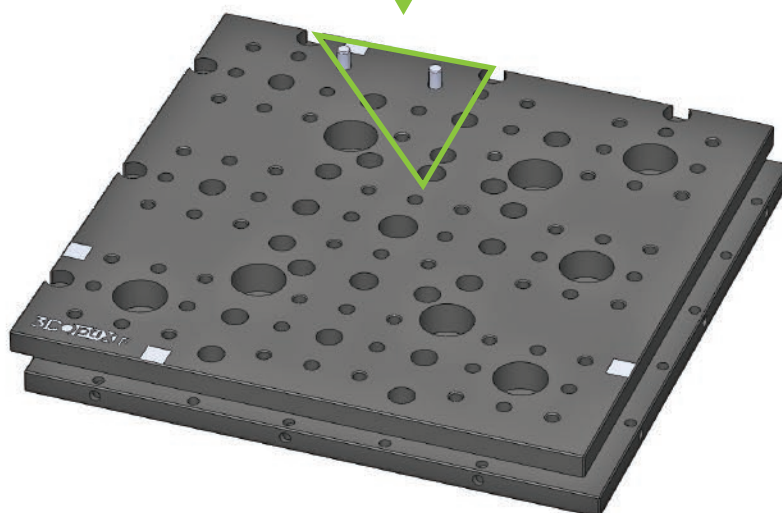
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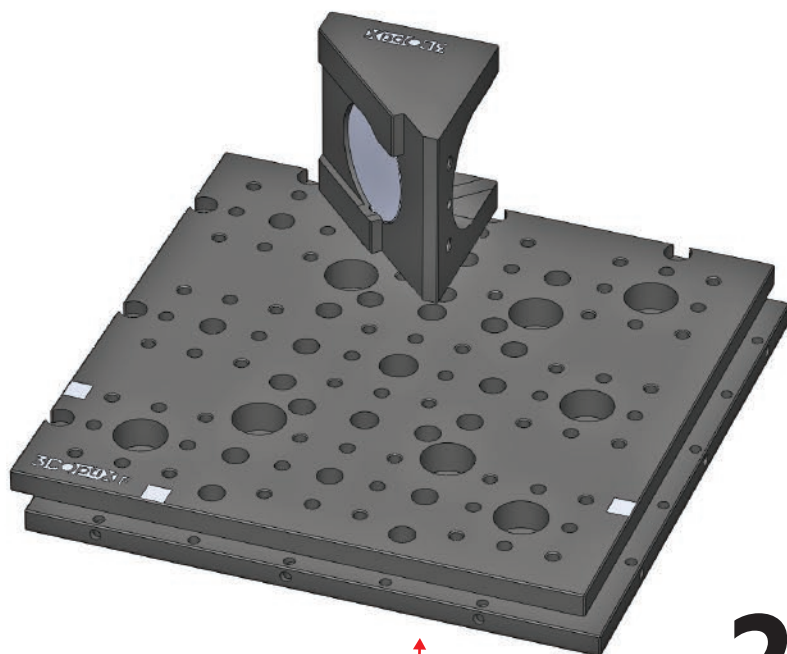


Translator Box Frame - Floor/ceiling 9 (3X3) mount locations

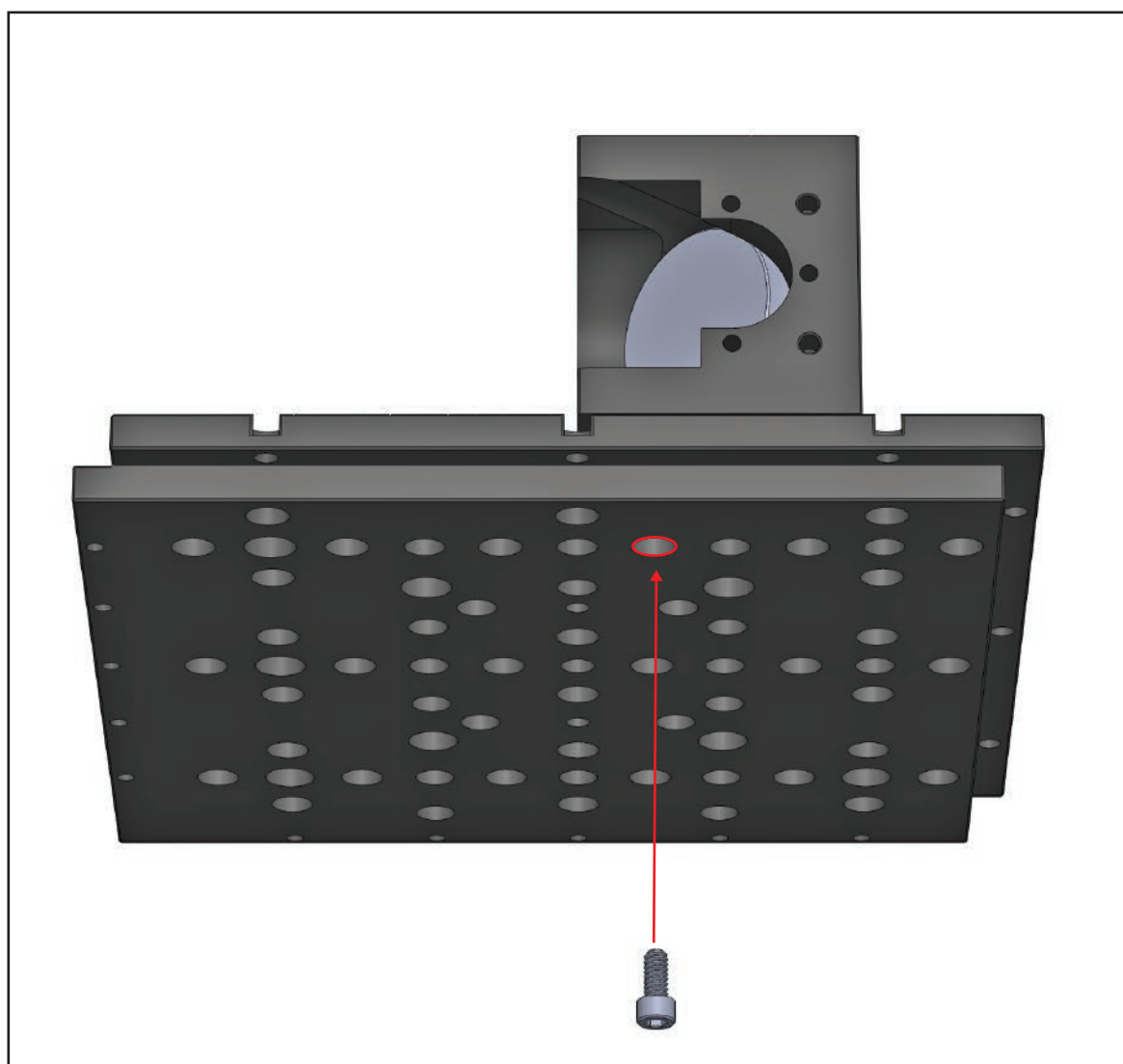
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Mirror

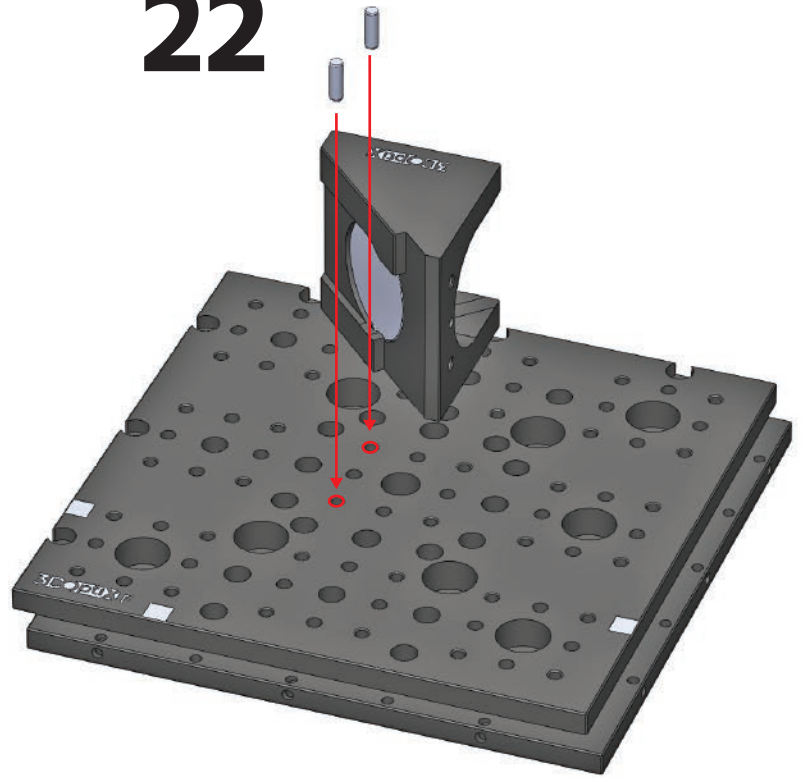




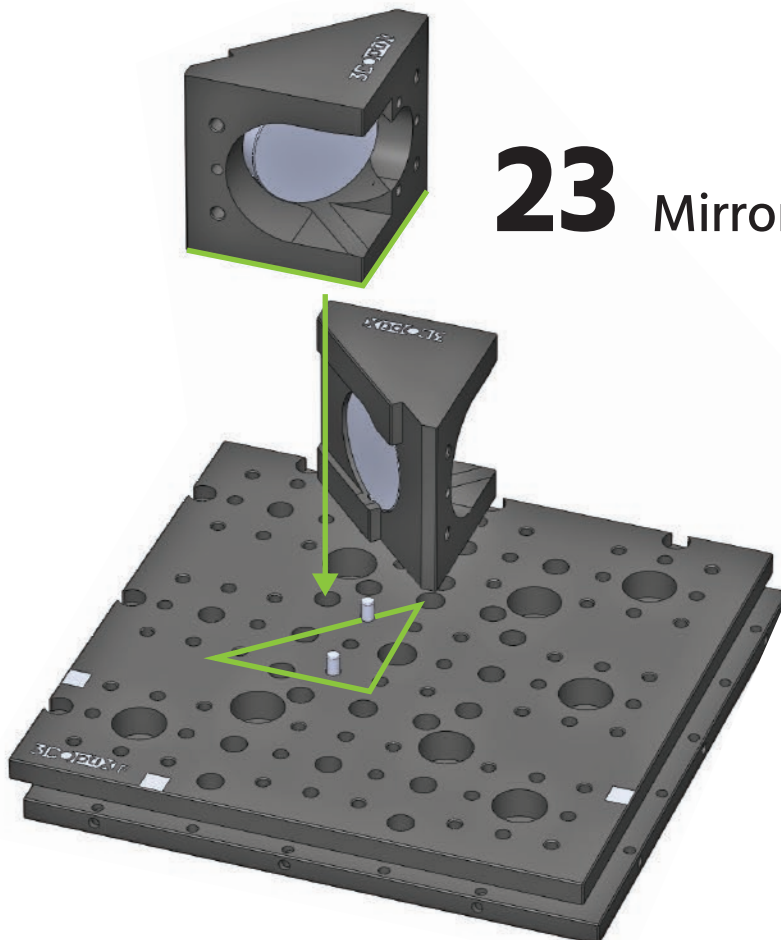
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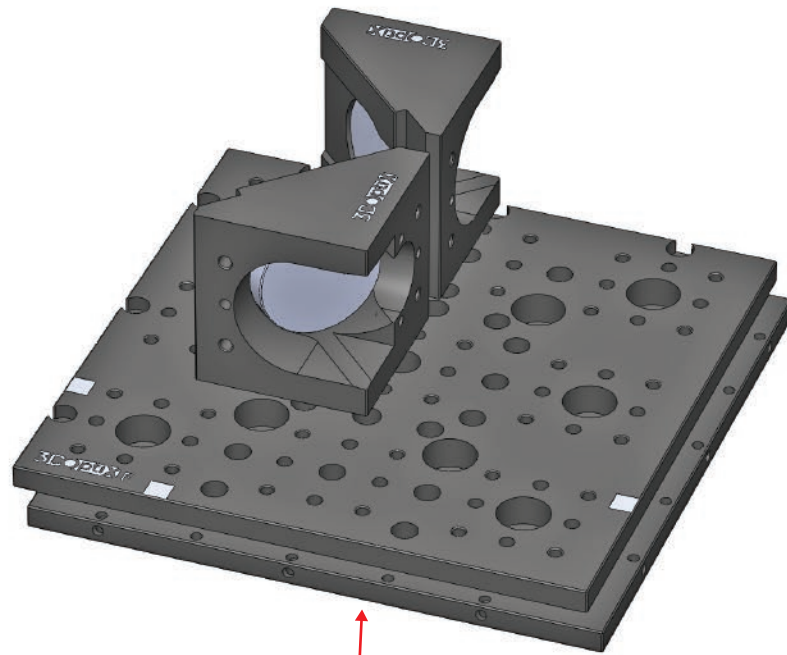


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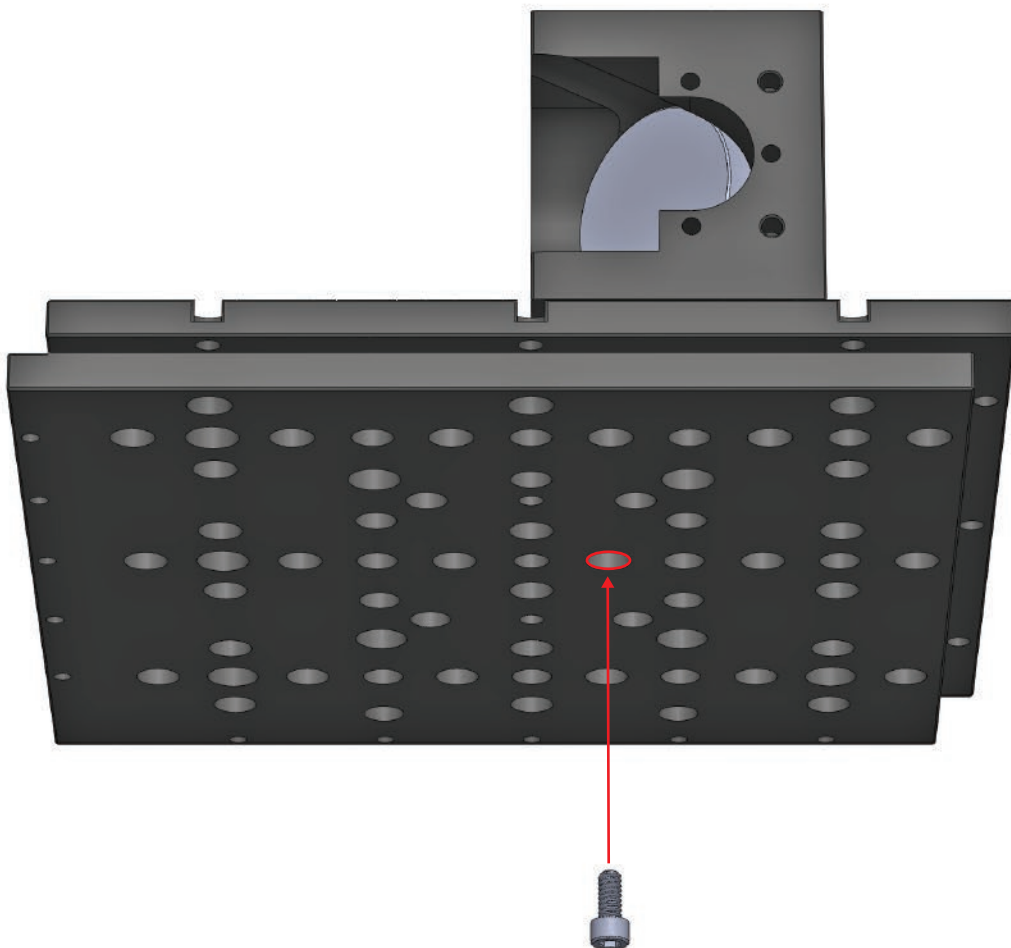


23 Mirror

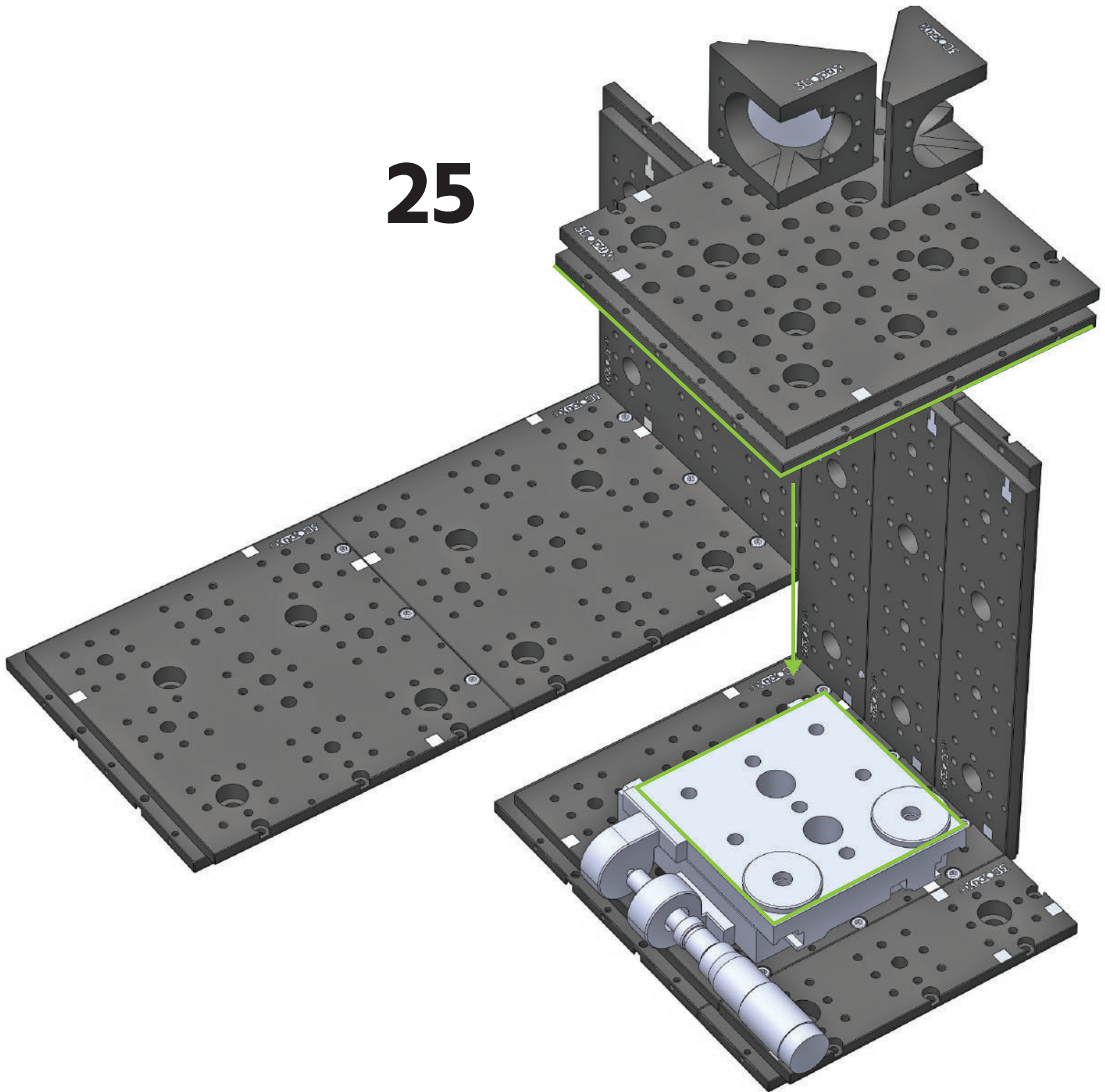




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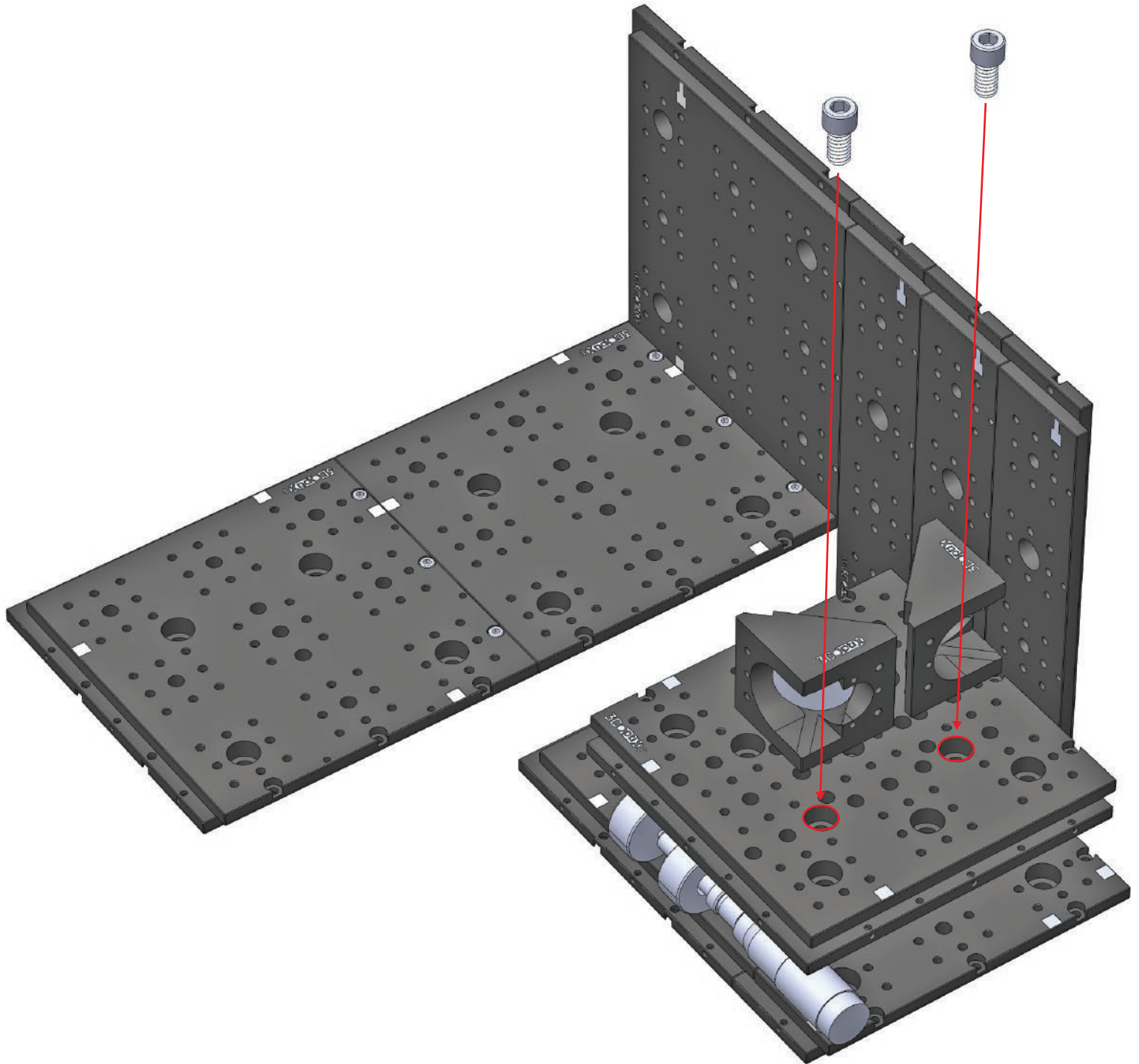


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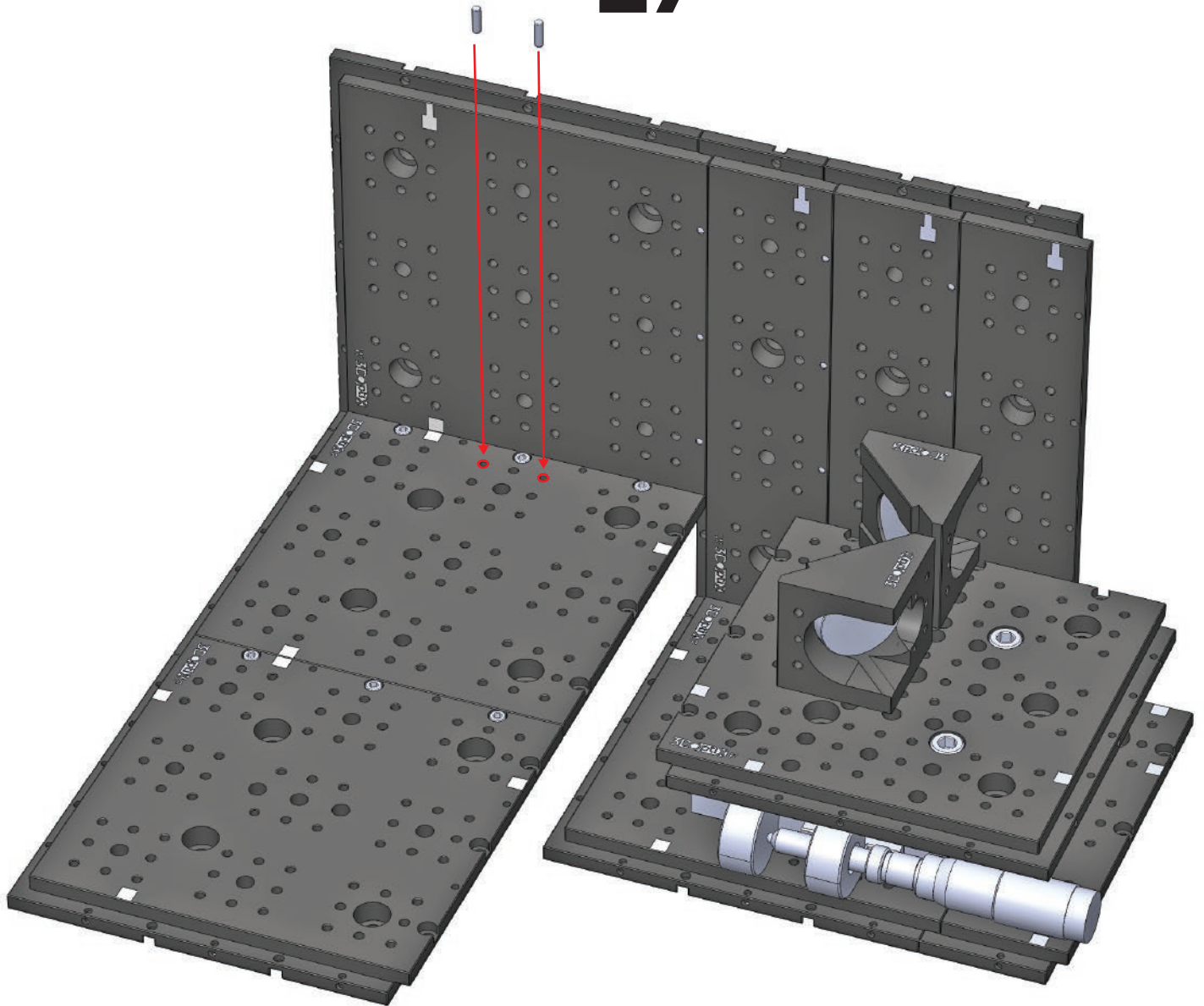


26

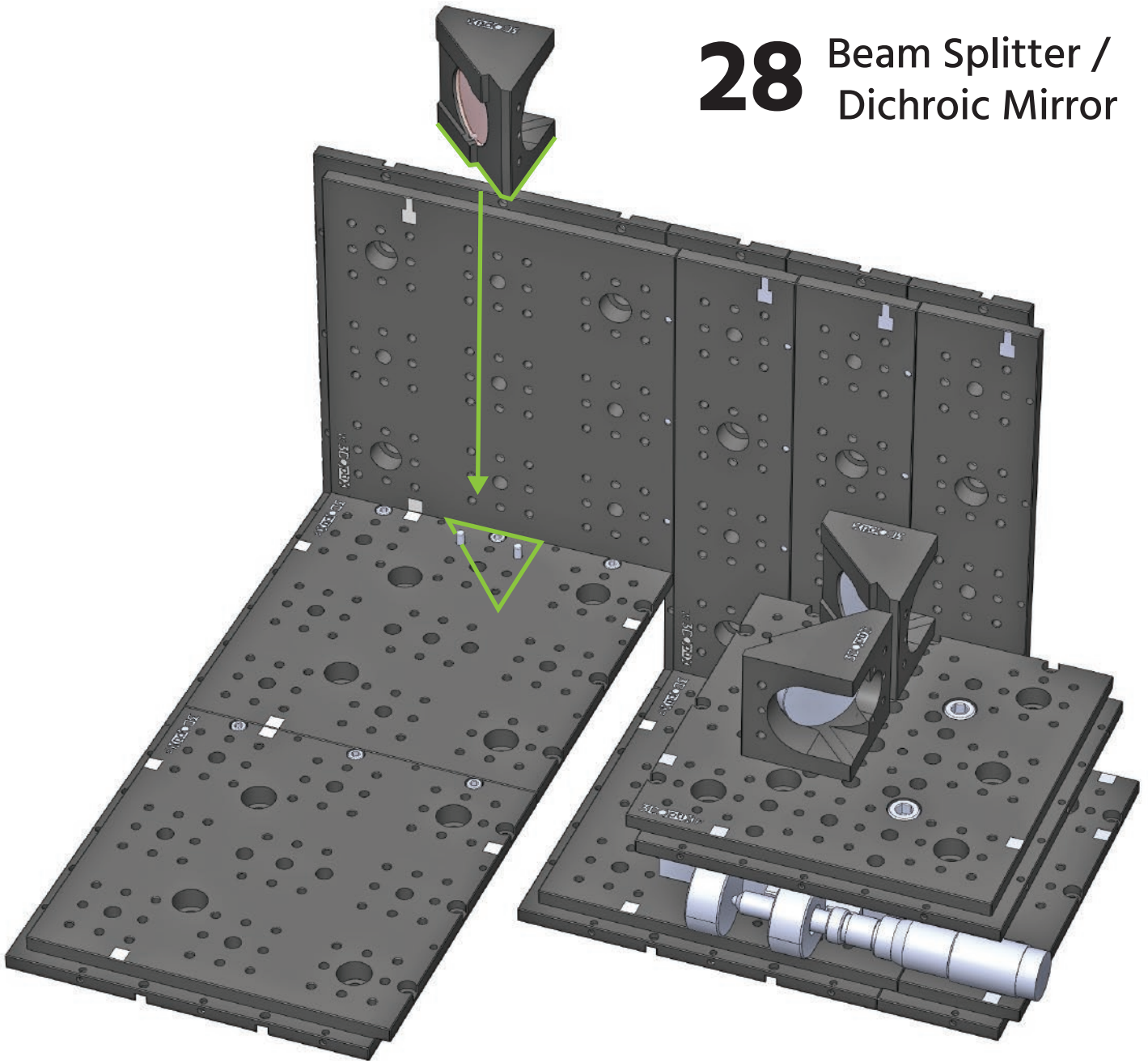
1/4"-20 Stainless Steel Cap Screw, 3/8" Long

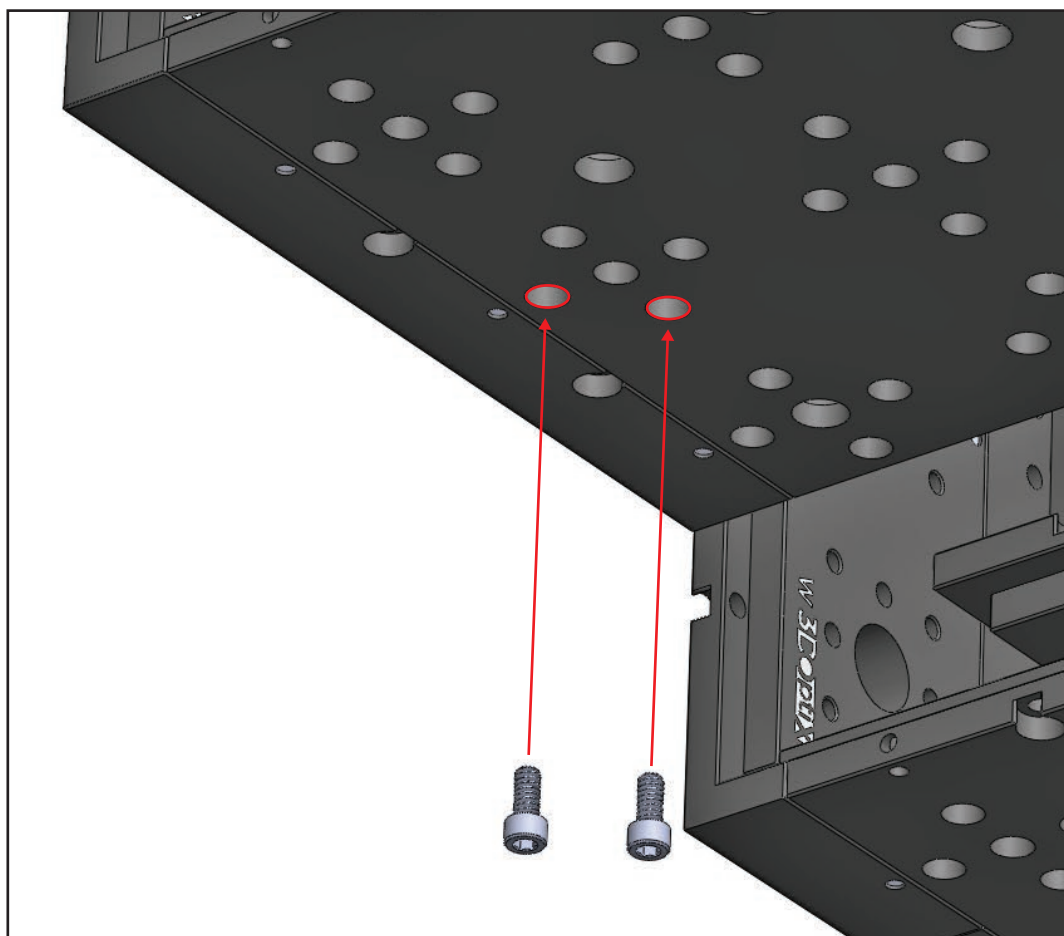


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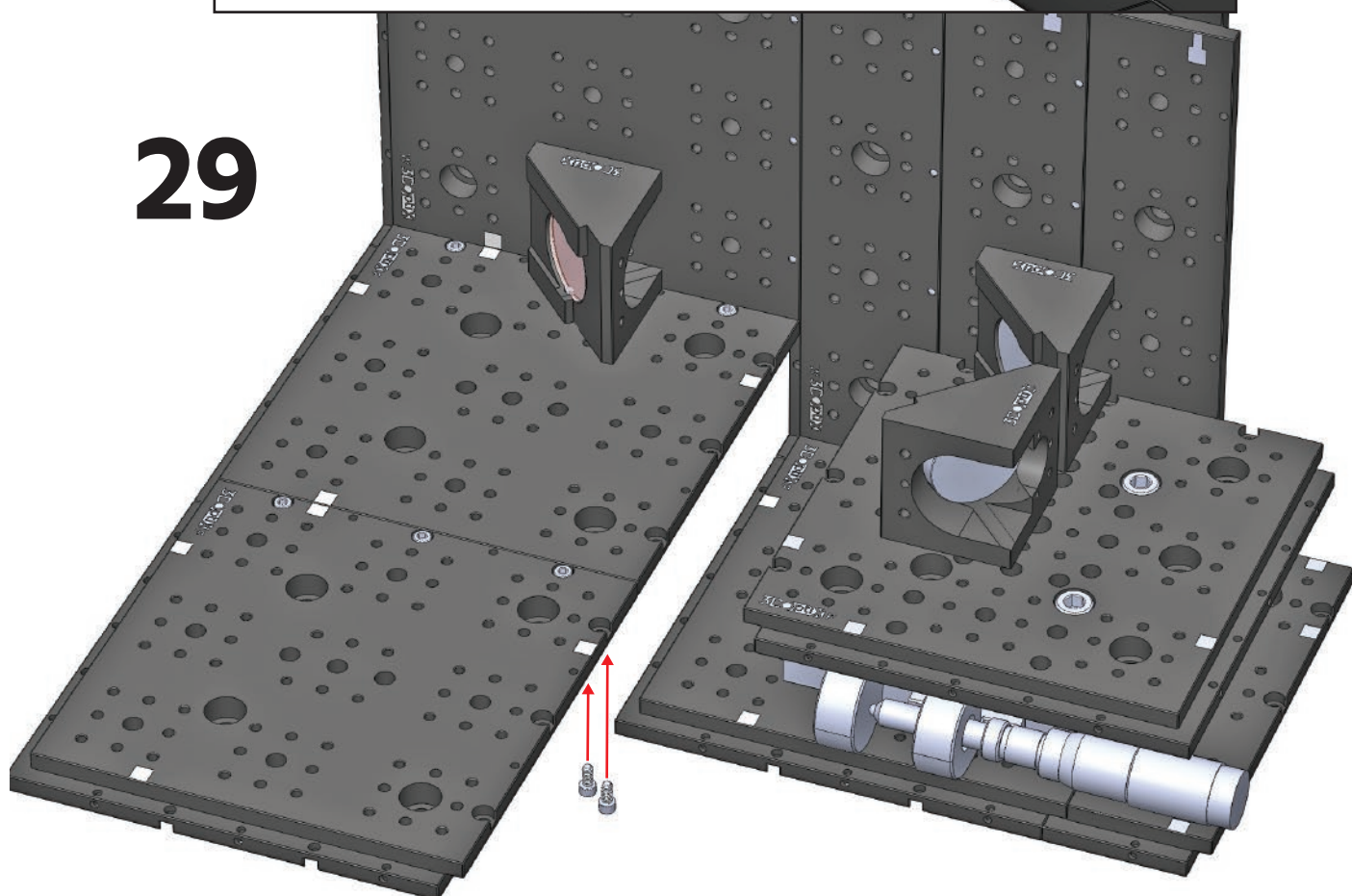


28 Beam Splitter / Dichroic Mirror

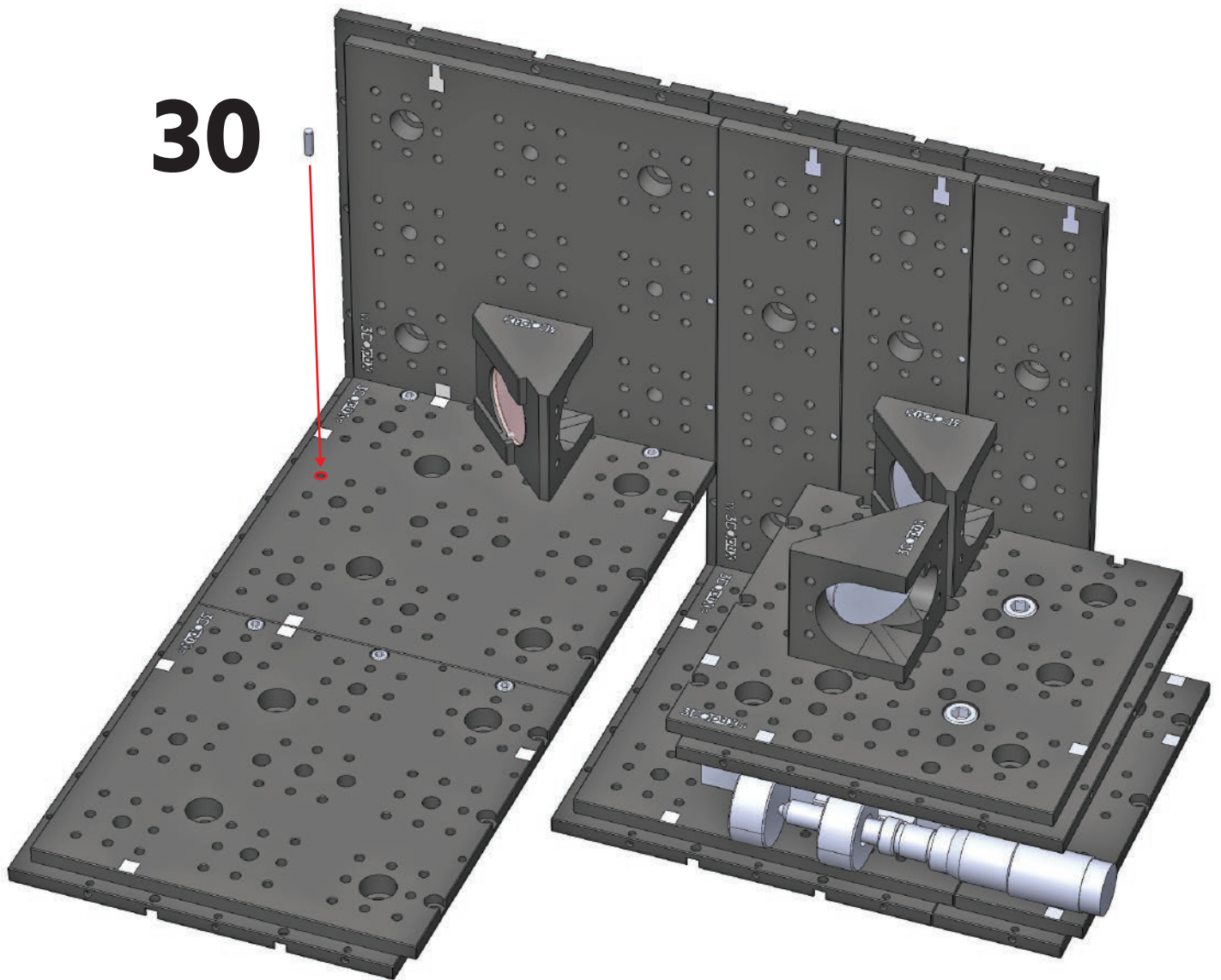




29

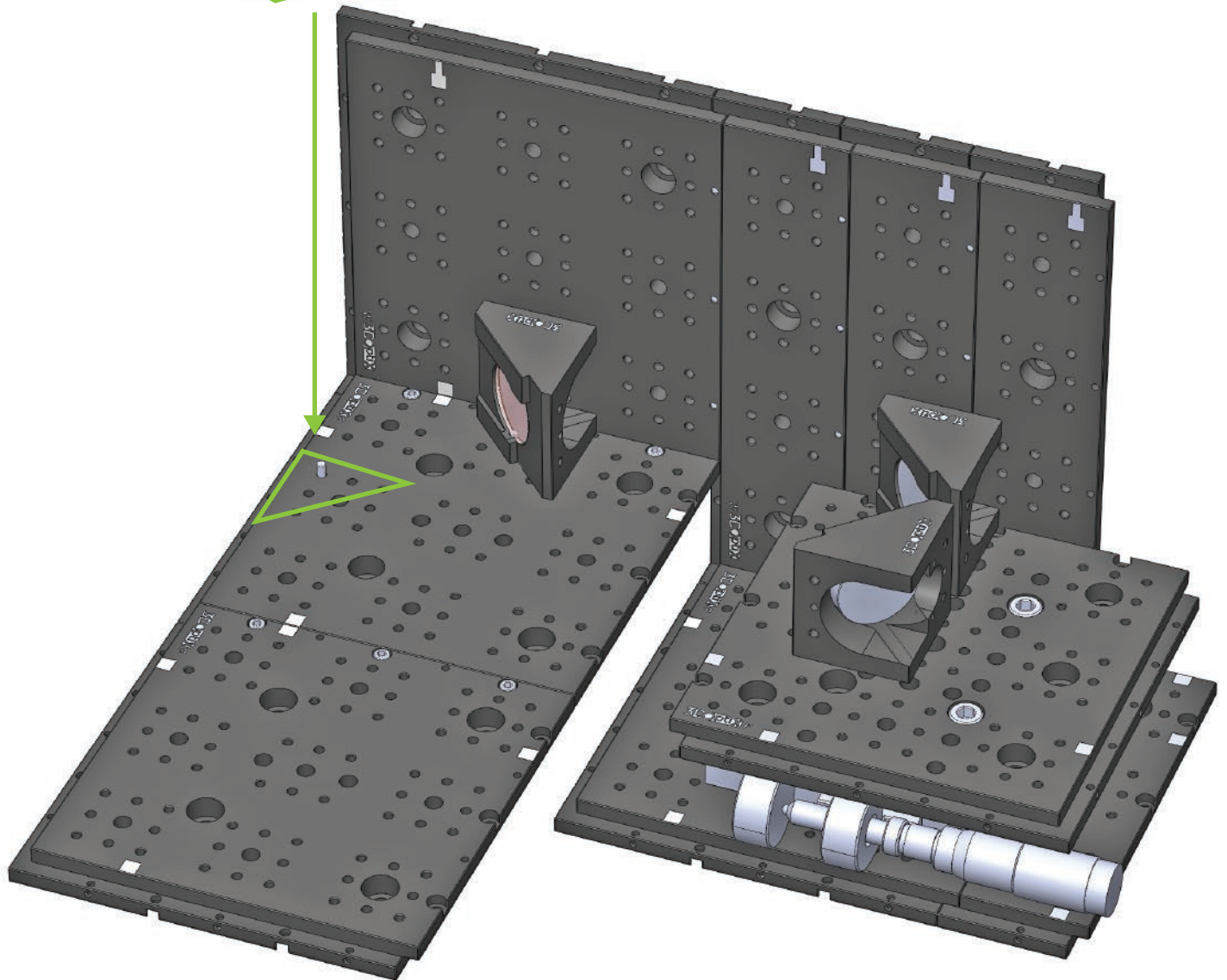


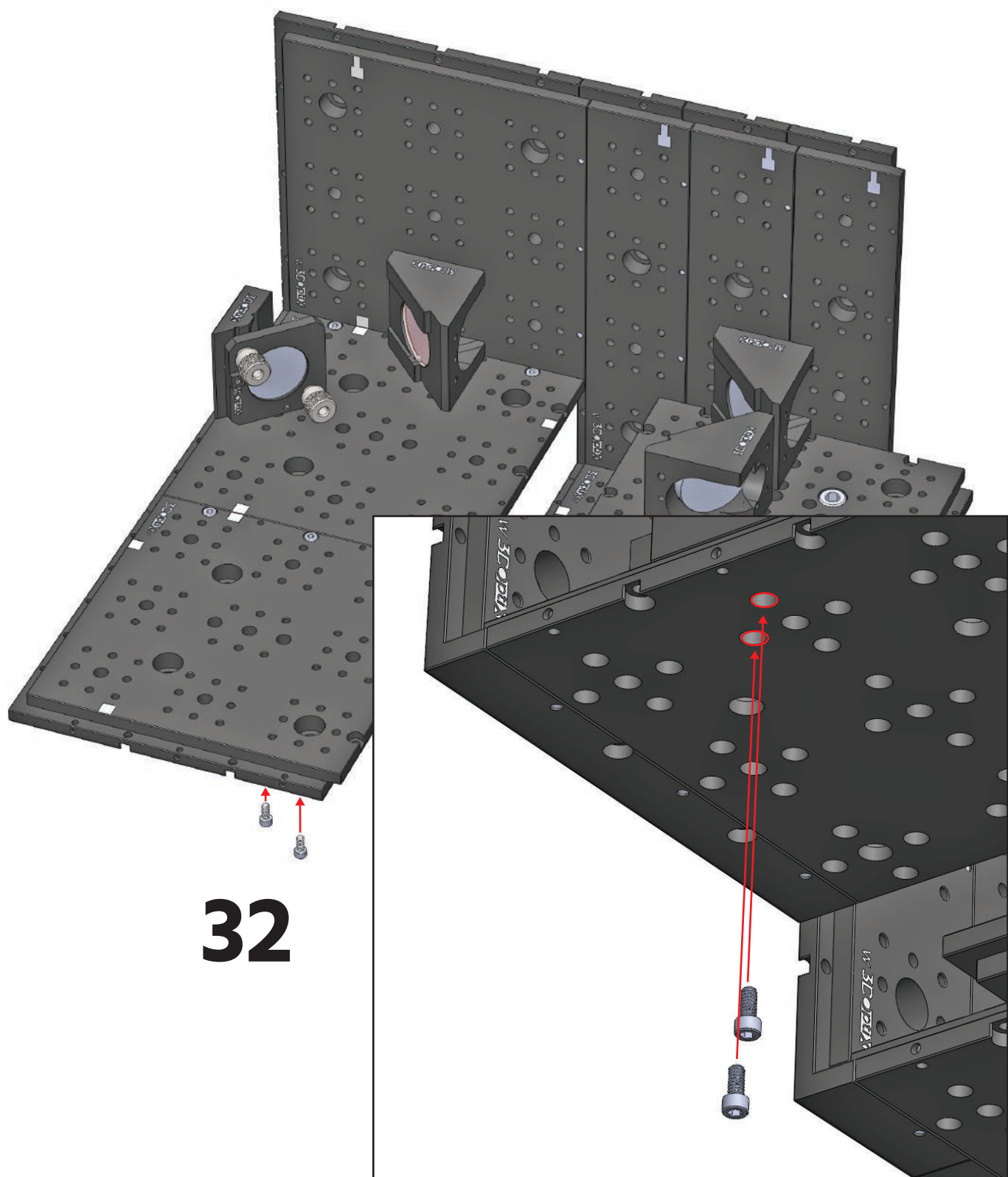
30





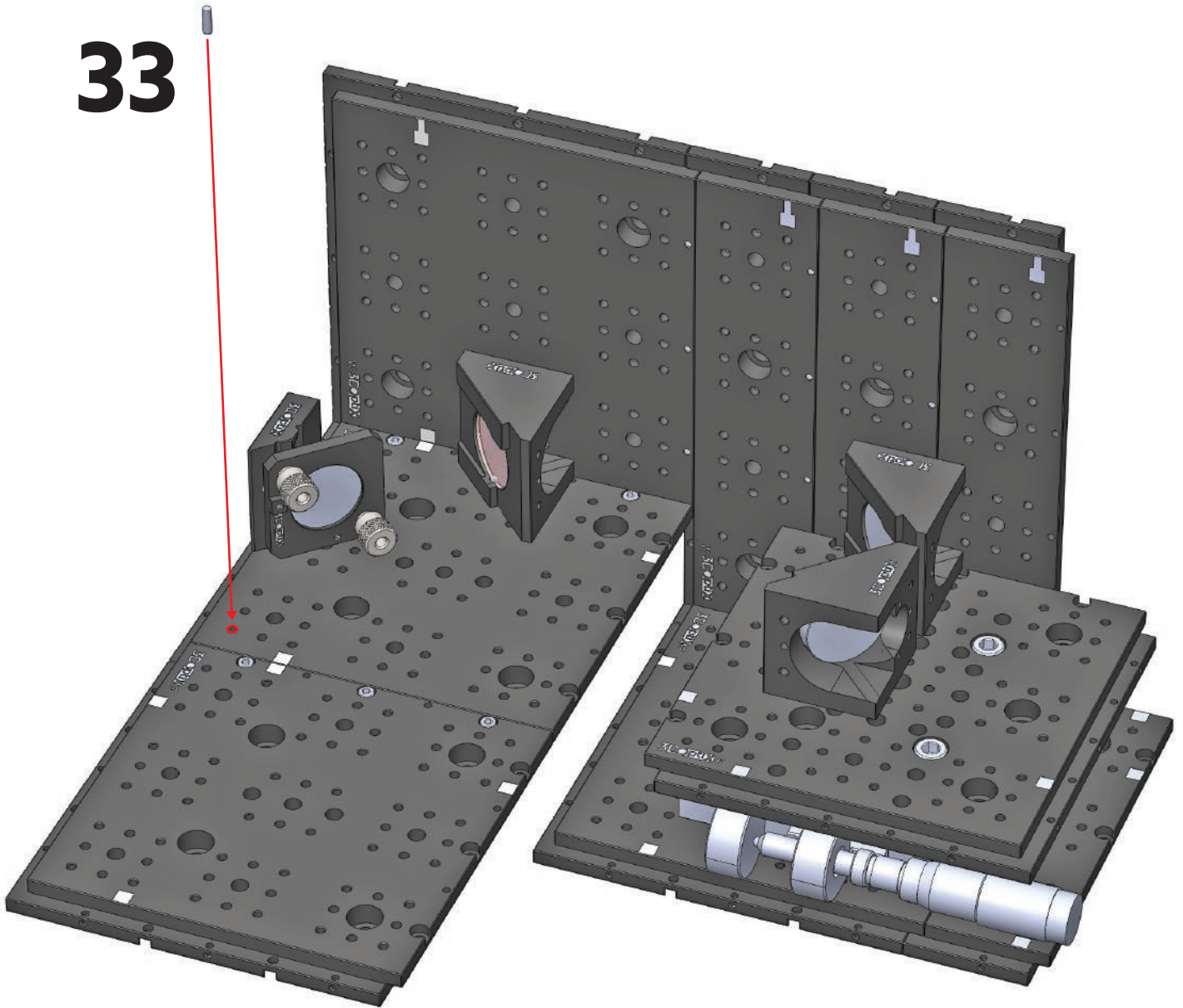
31 Mirror



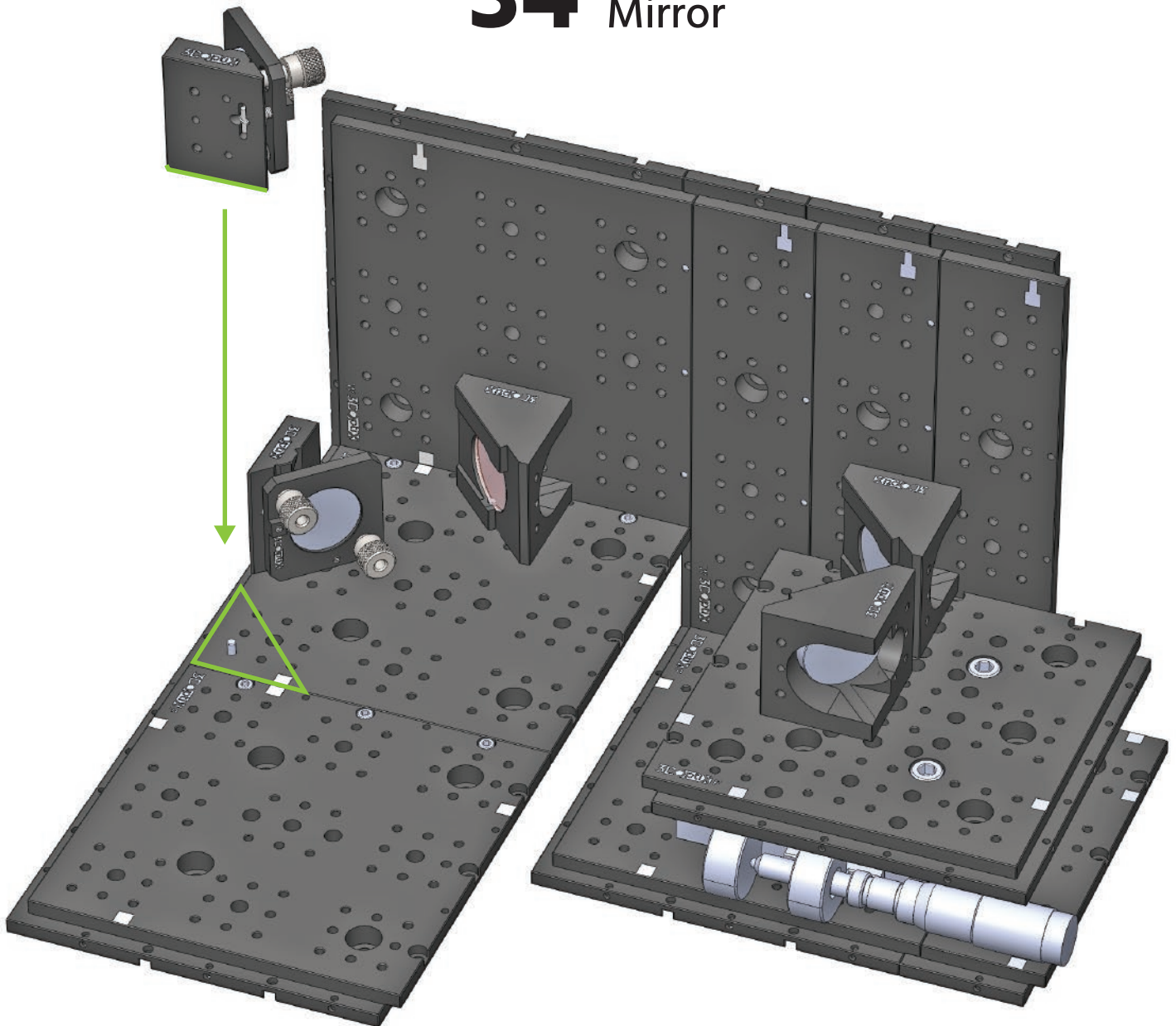


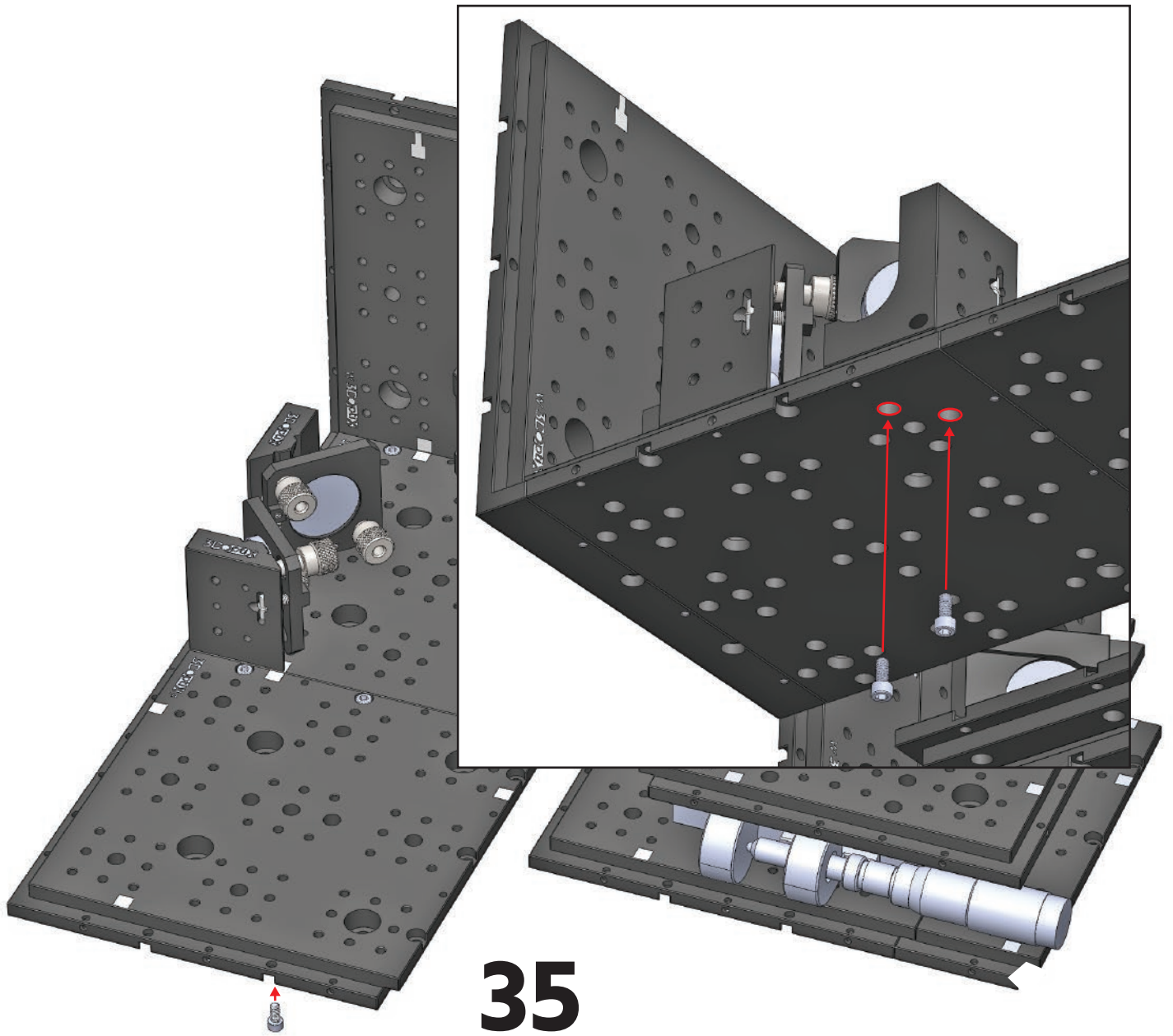
32

33

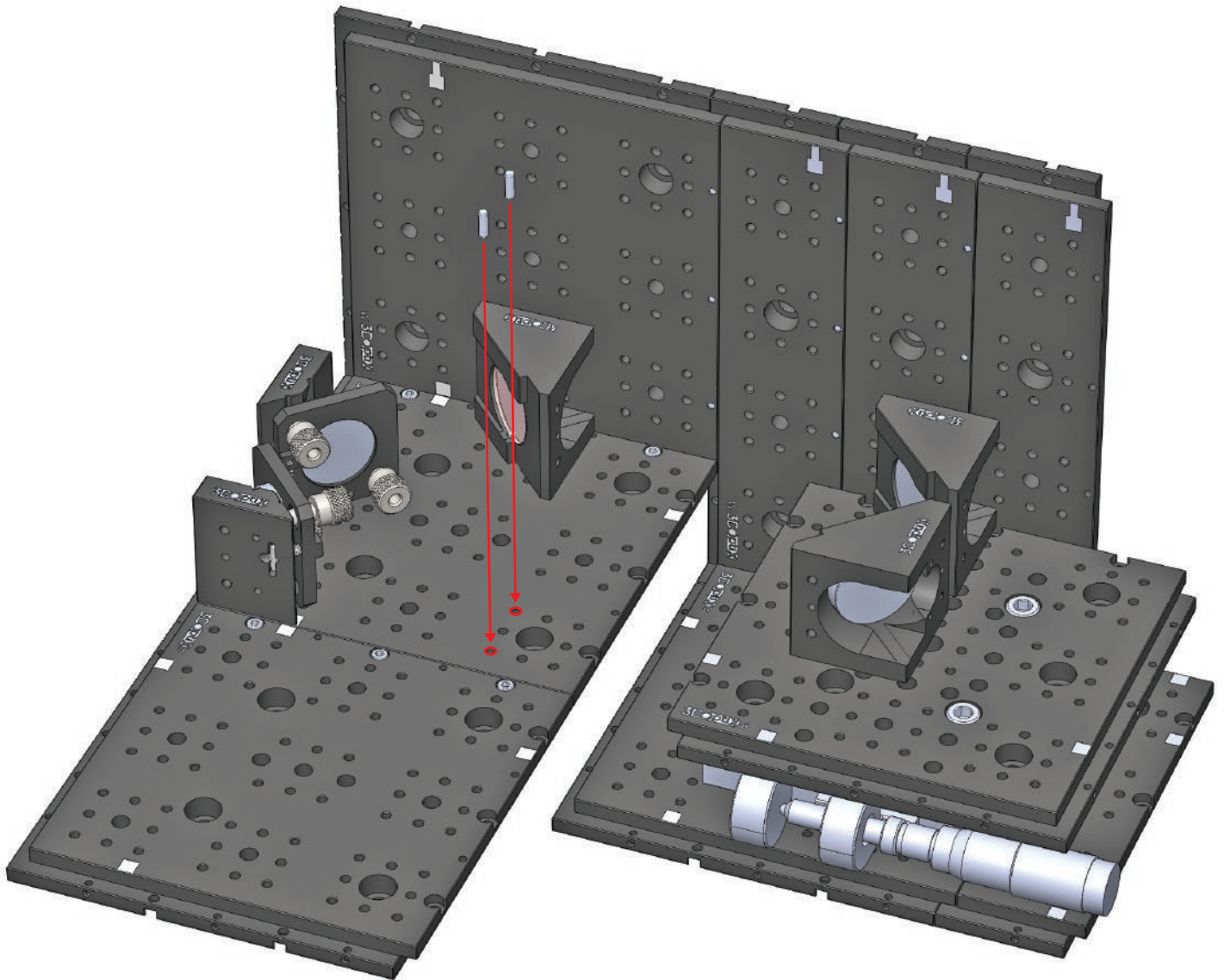


34 Mirror

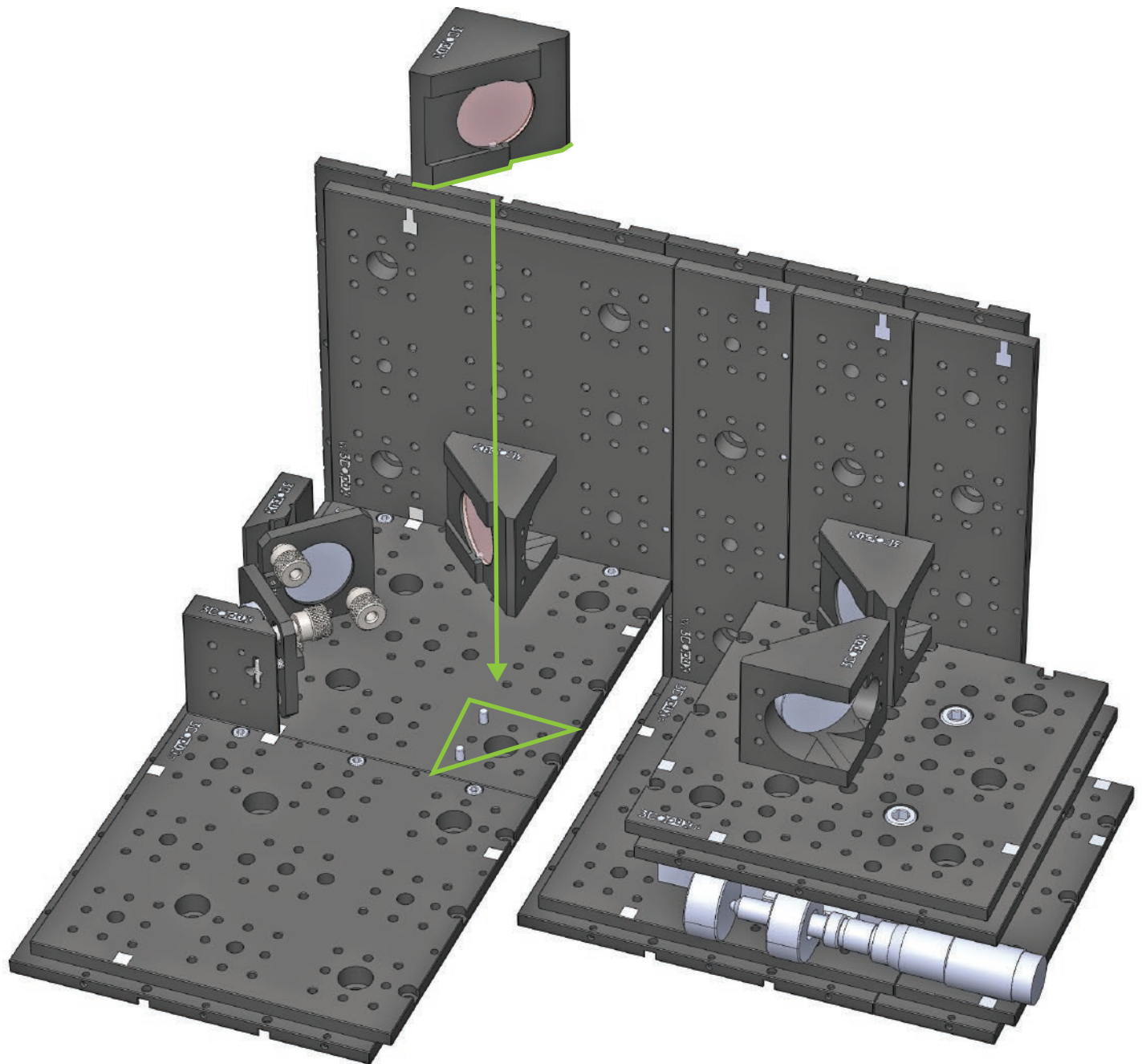


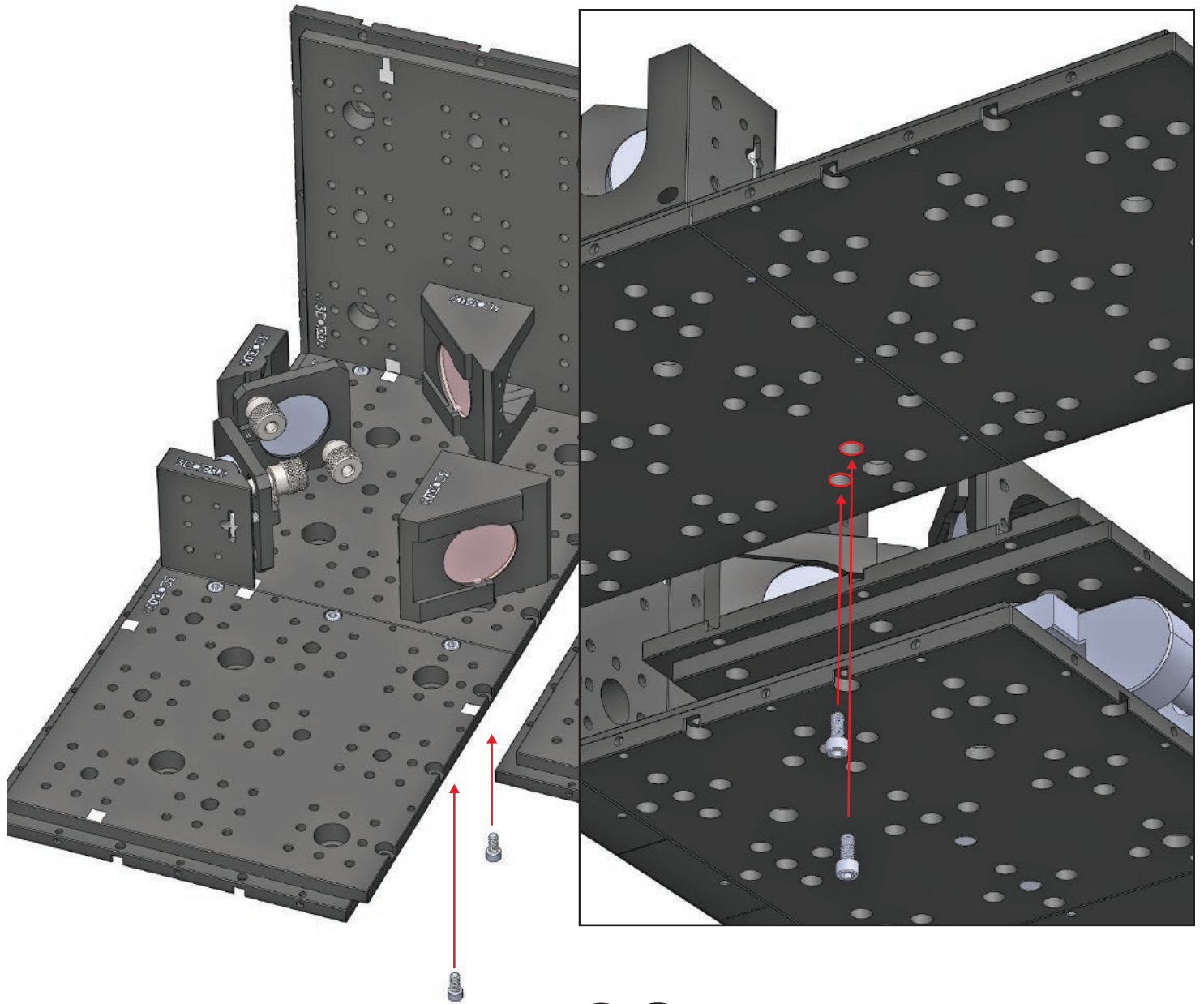


36



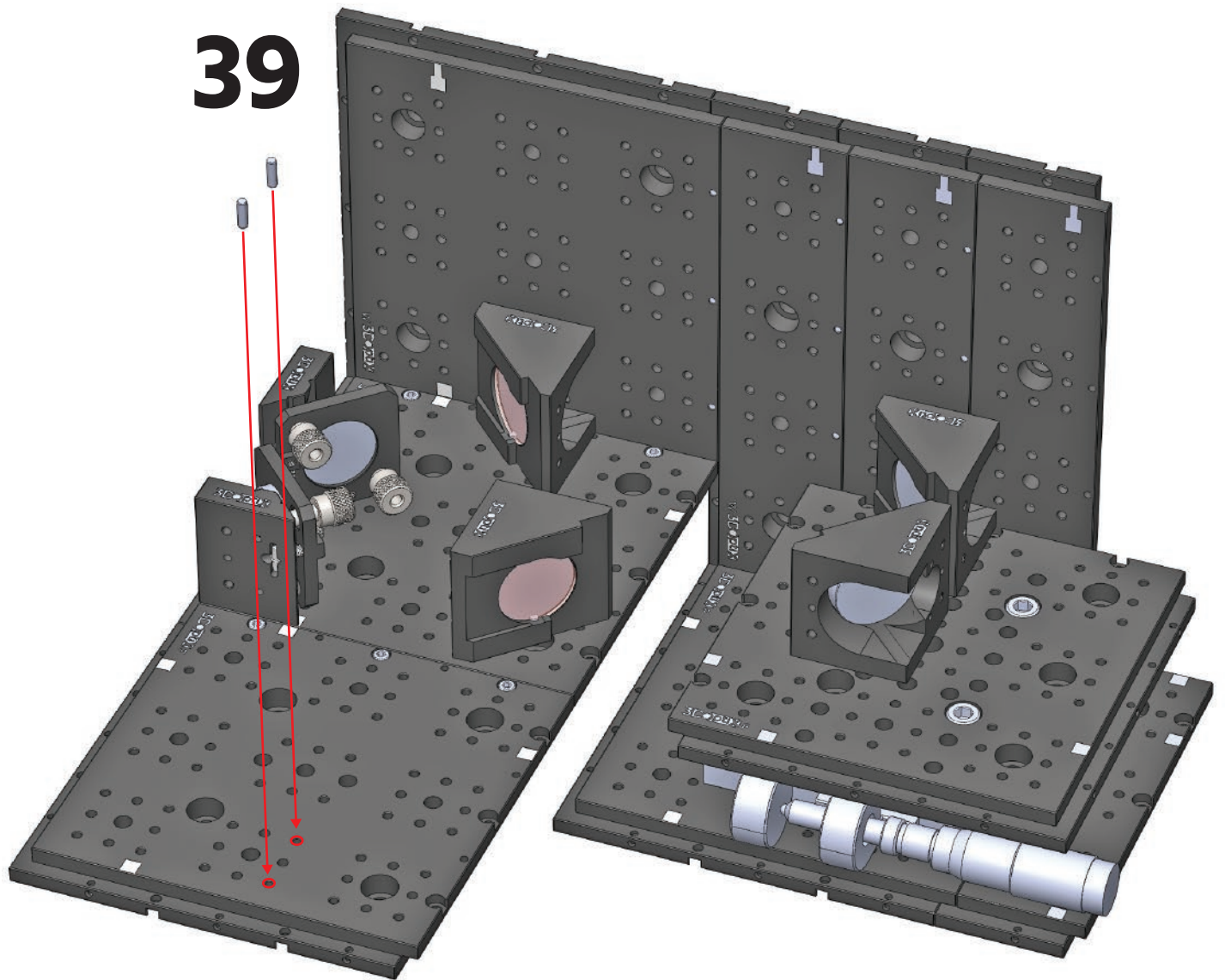
37 Beam Splitter / Dichroic Mirror



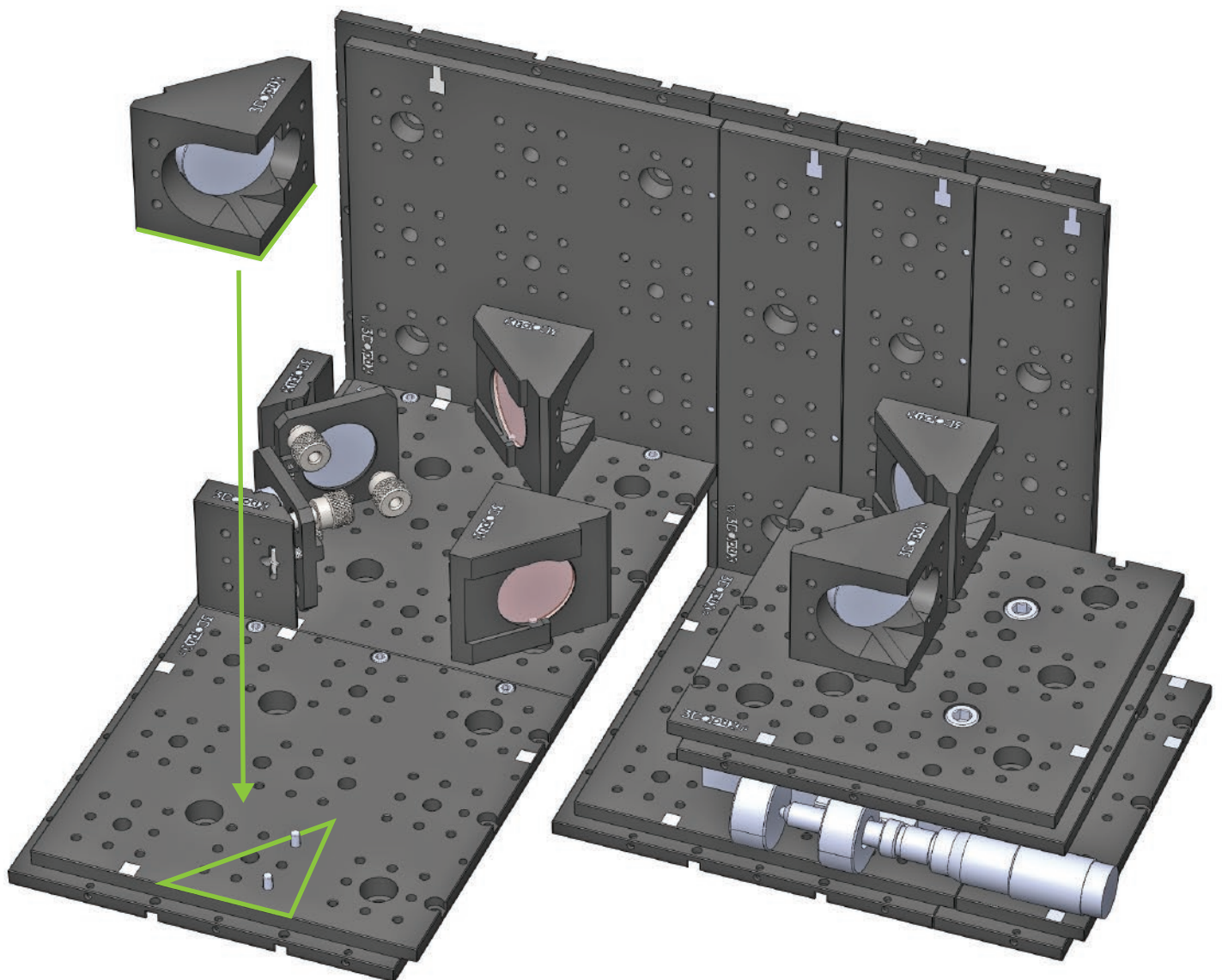


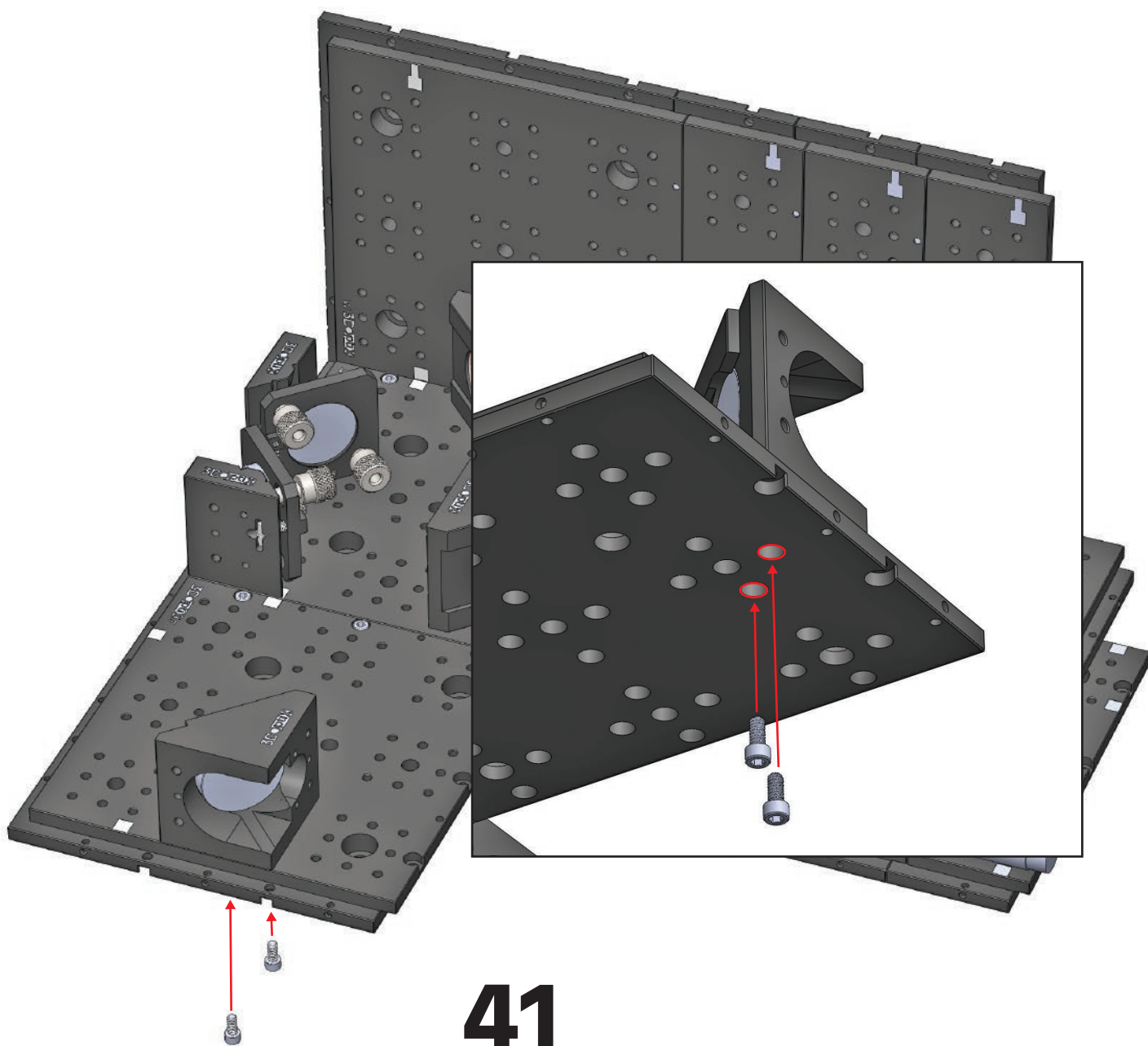
38

39

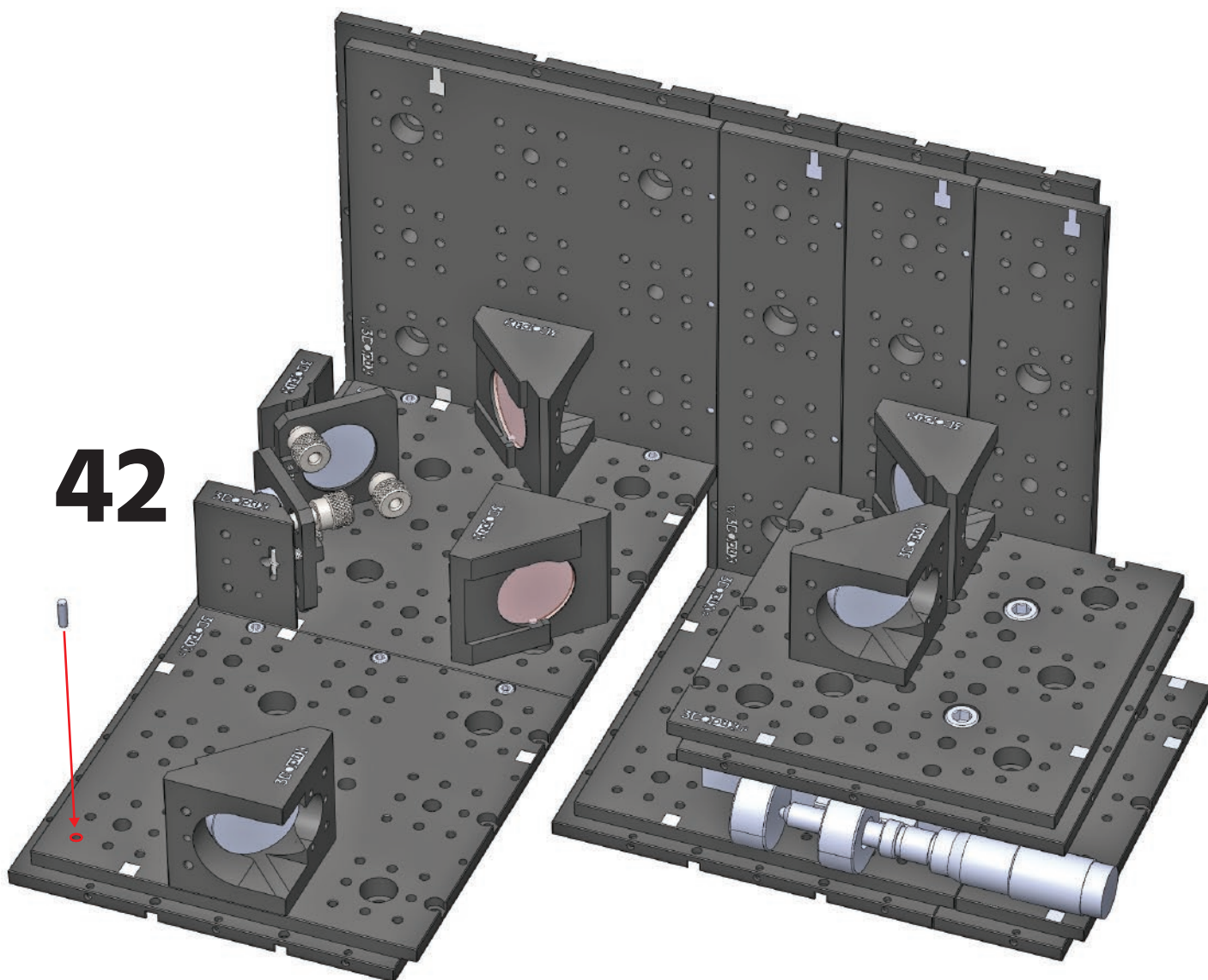


40 Mirror

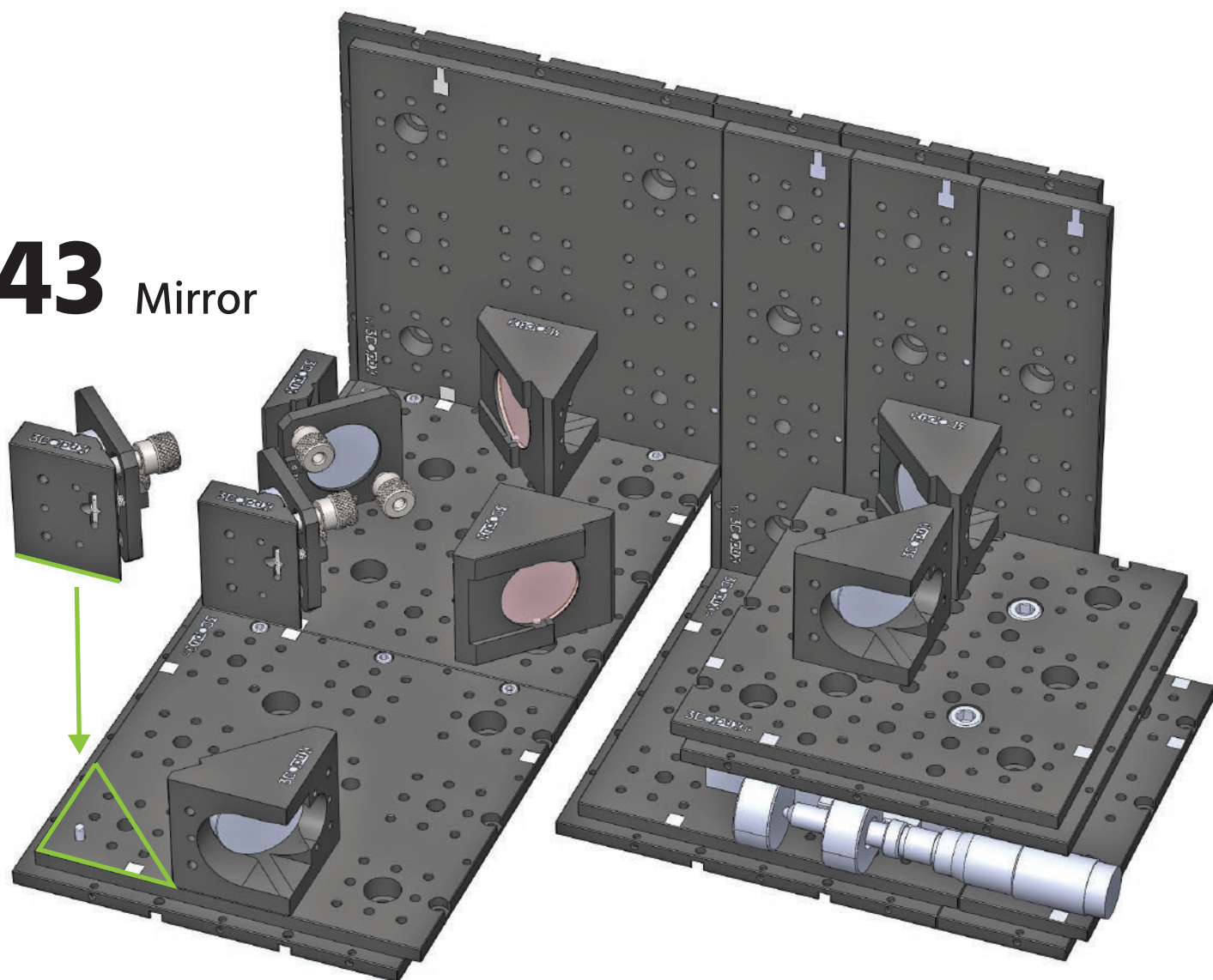


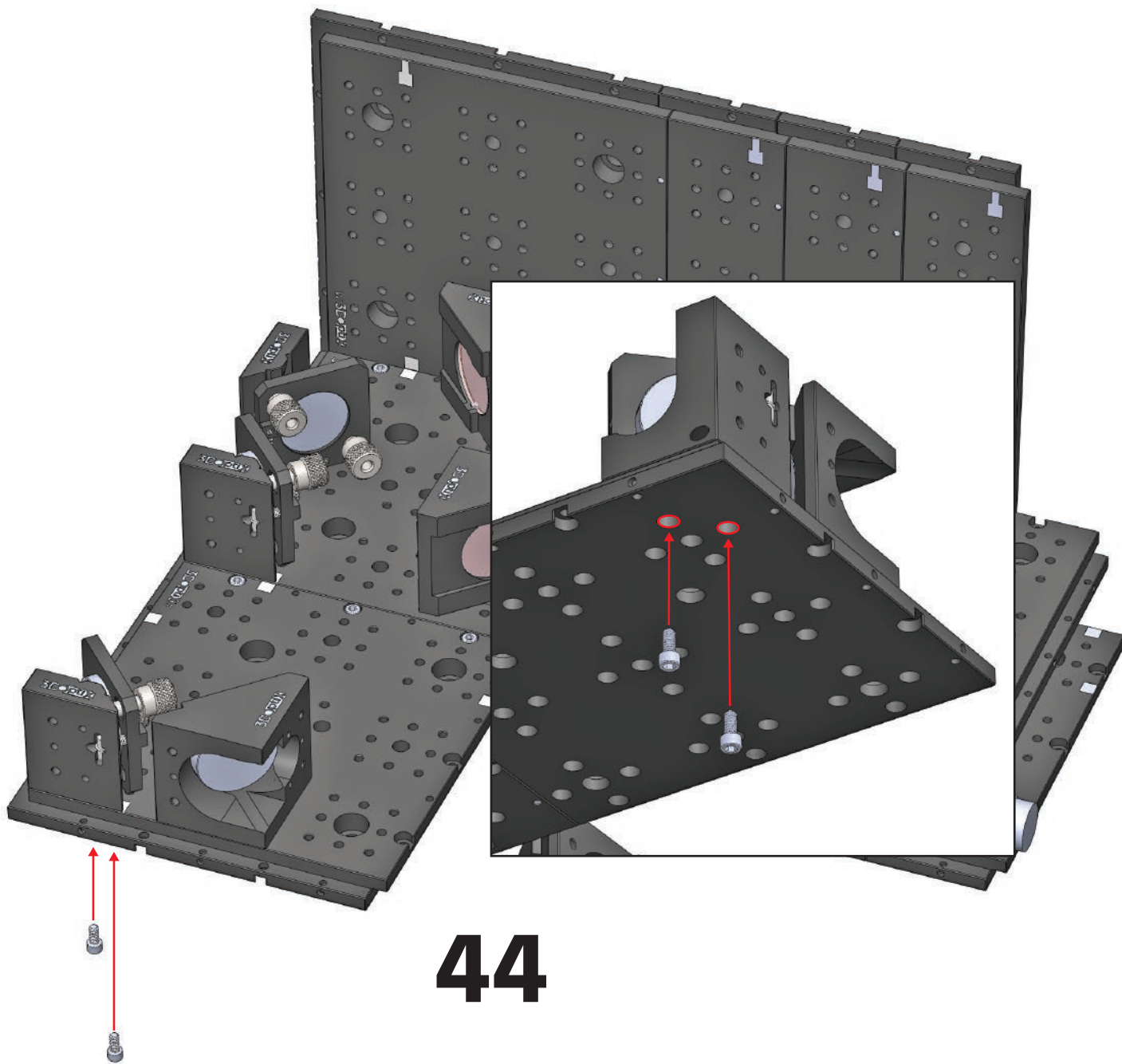


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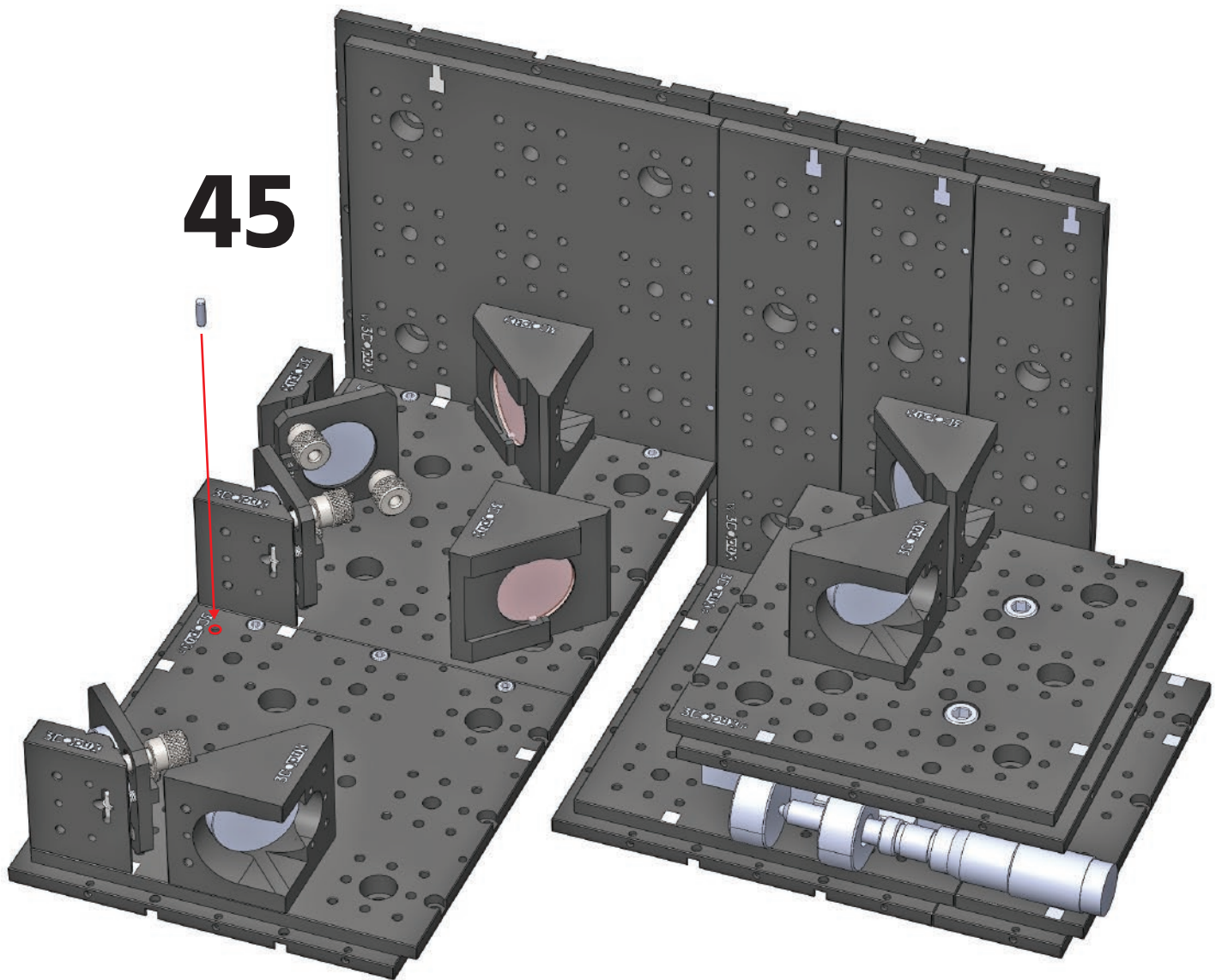


43 Mirror

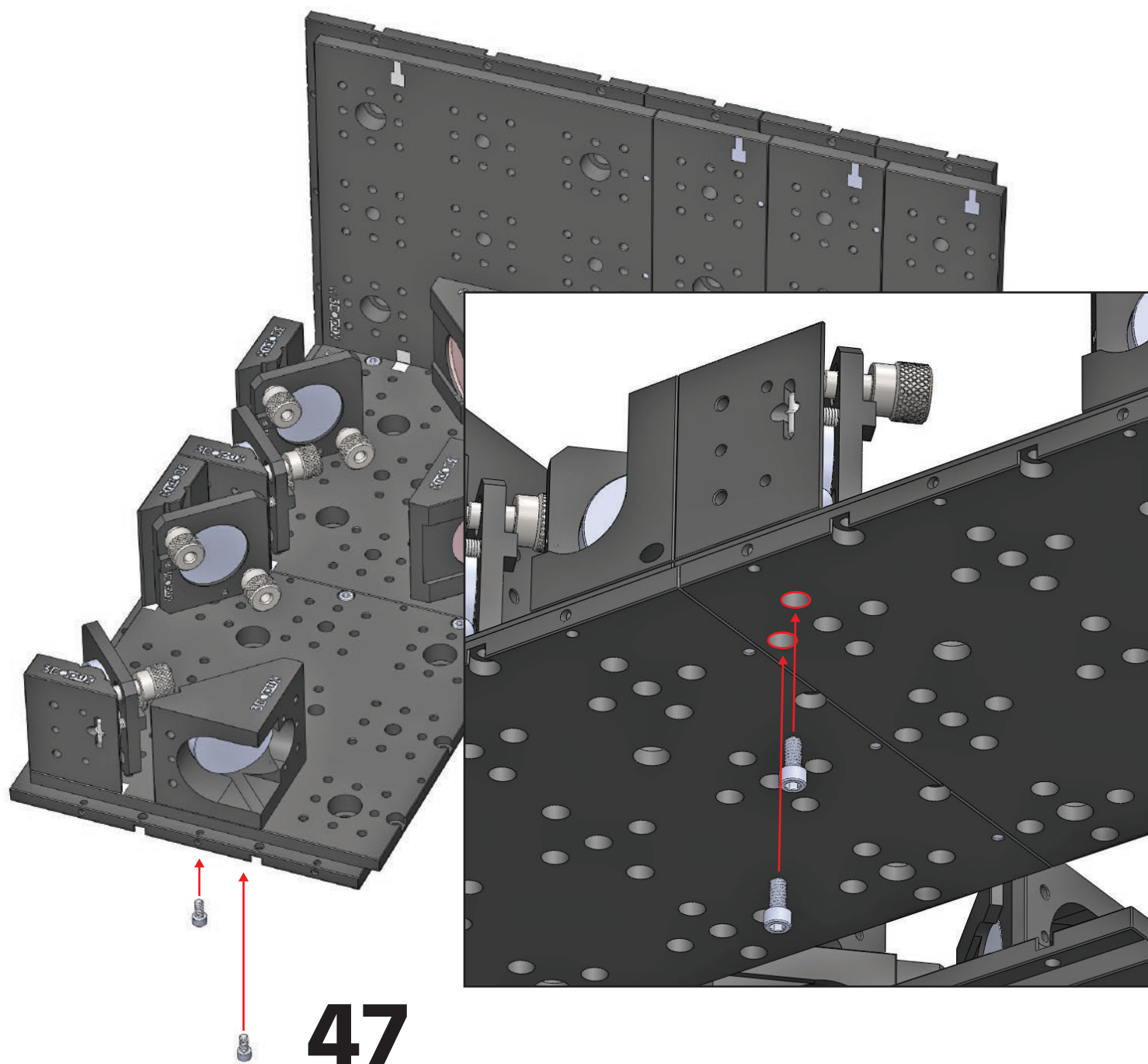




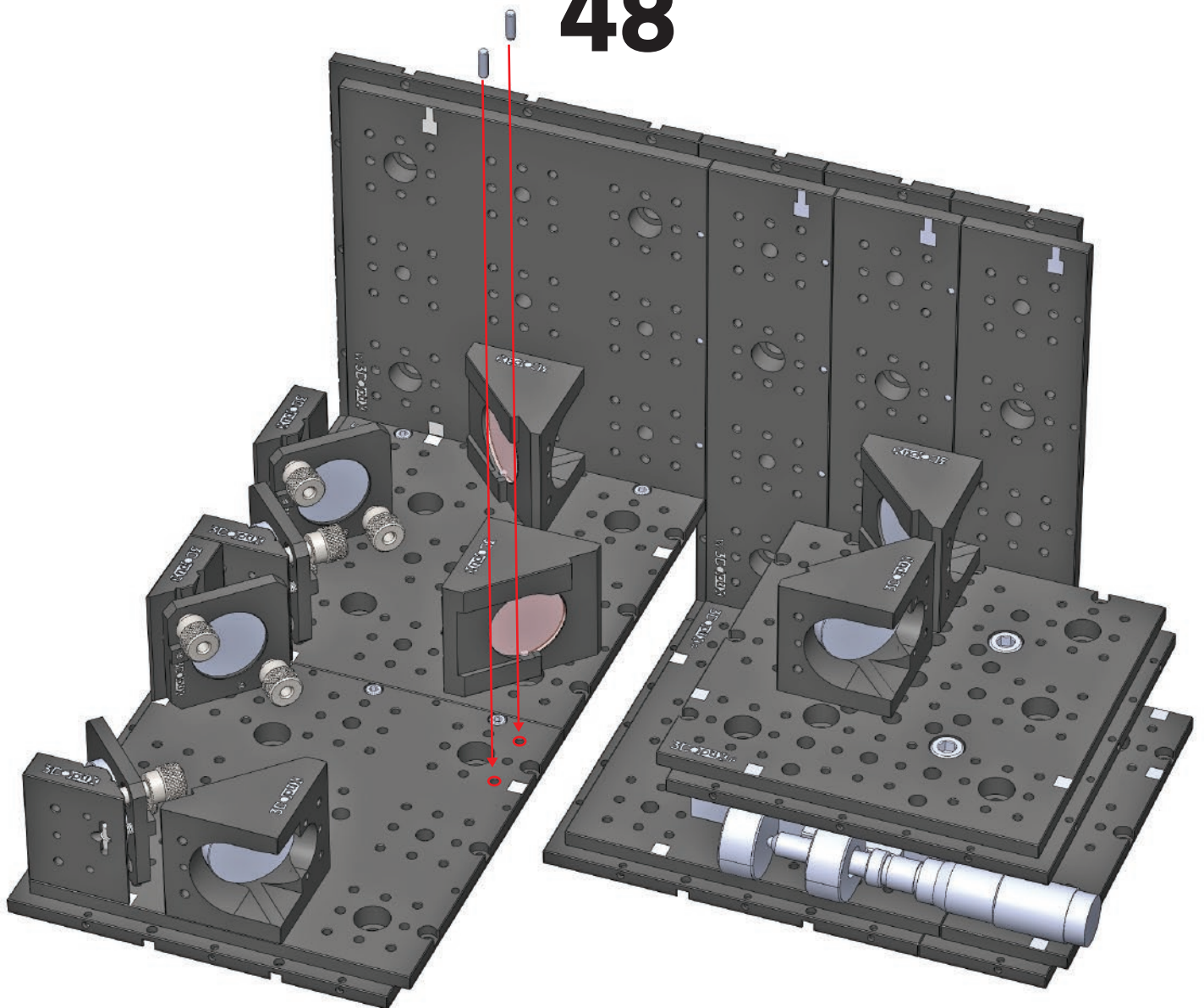
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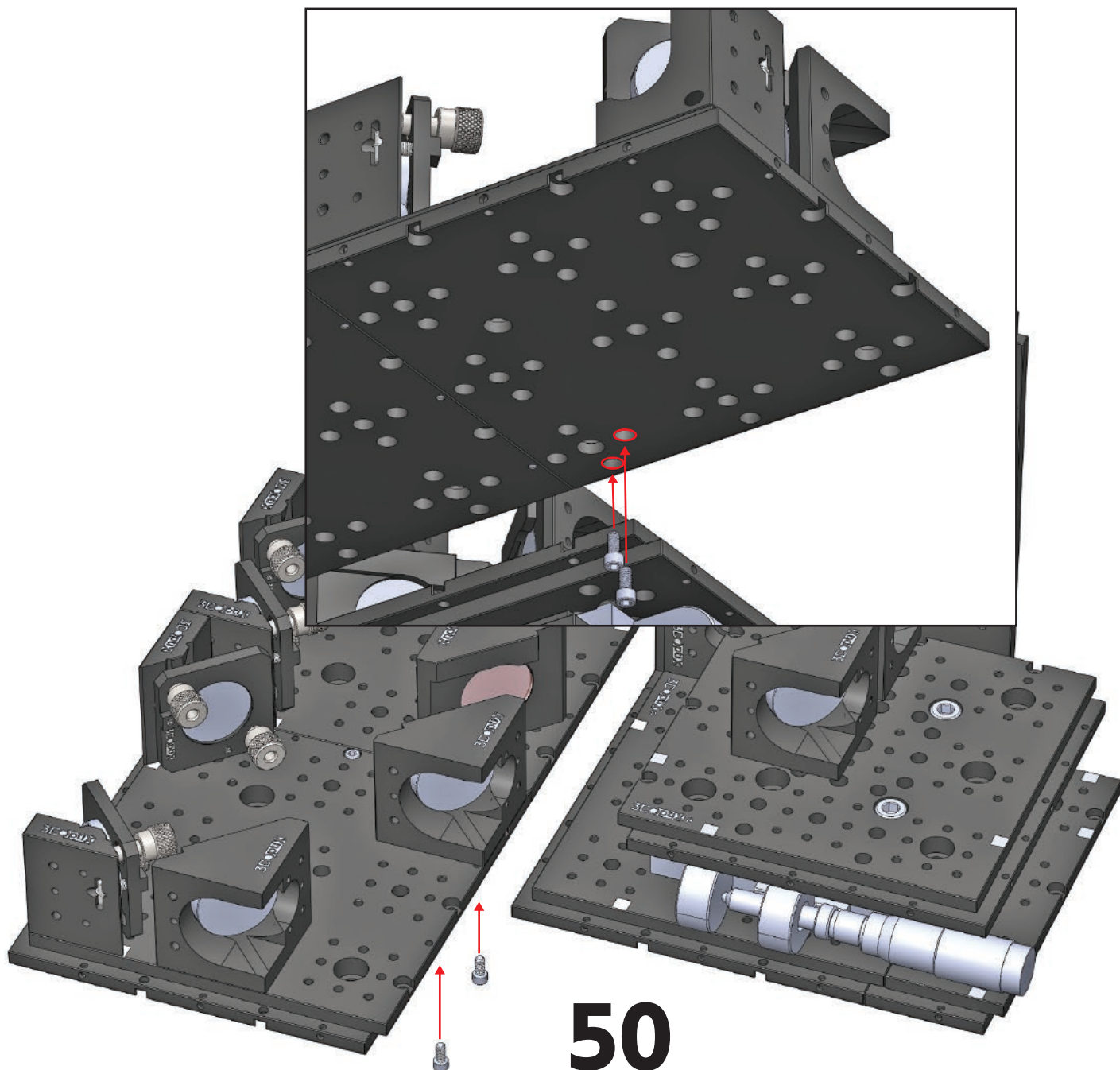


48



49 Mirror

This exploded view shows the 49 Mirror assembly. The mirror is mounted on a base plate (part 30-200) which is secured to a larger structure by a bolt and nut. The mirror is held in place by a bracket (part 30-201) and a screw (part 30-202). A green arrow indicates the assembly path for the mirror.



50

