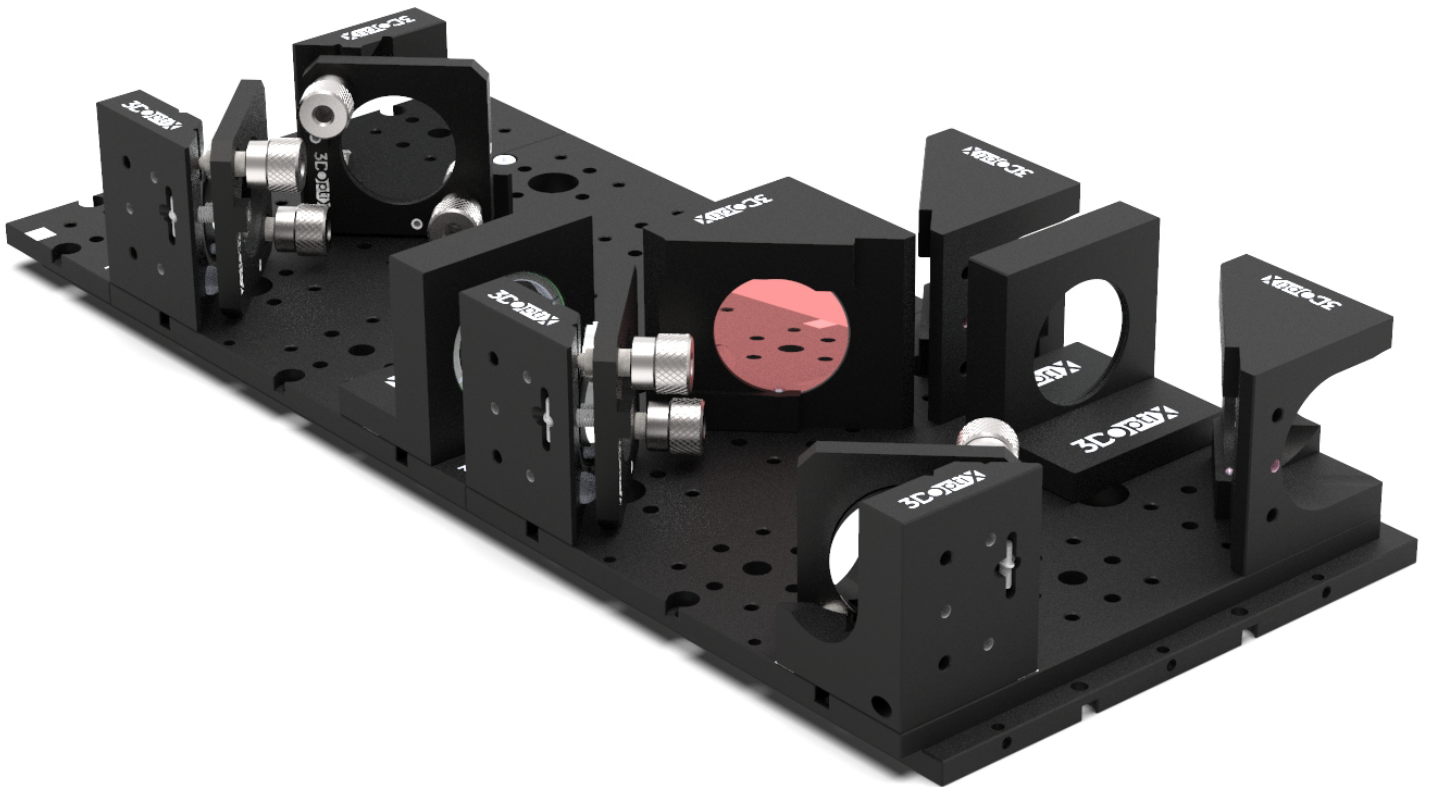


Michelson Interferometer



Introduction

The Michelson Interferometer reference design is part of the 3DOptix™ Interferometer design series. Interferometers use the property of interference between two optical beams to accurately measure various optical properties. 3DOptix™ provides an easy and precise manner in which to build such devices.

The Michelson interferometer uses a beam-splitter, which is a partially transmissive mirror that divides an optical beam into two separate arms. The beam splitter is used to split and to recombine the optical beam. Oftentimes, the optical path lengths of the two arms are not the same and an external delay line is added to one of the paths to control its length. The difference between the path lengths of the two arms affect the interference pattern and can be adjusted by accurately moving one of the mirrors.

Our reference designs include the 3DOptix™ building-blocks, which are based on the BreadBox™ platform and its modular and versatile optomechanical mounts and adaptors. The advantage of 3DOptix™ devices are that they are modular and very robust. Once the reference designs are assembled they can be moved around as a unit while maintaining the accuracy of the device. The following design is for optical elements of Ø1"/25mm. With the following easy-to-use instruction manual and its associated instructional video, you can focus on experiments and not on alignments.

Parts Description:

Parts included in the reference design

Michelson Interferometer Ø1"/25mm - Parts Description	Item Number	Qty
Premium Box Frame - Floor/ceiling 9 (3X3) mount locations	20020 / 20020-M	2
Fixed Mount - Triangular Ø1"/25mm Mirror/DM Mount	20100 / 20100-M	3
Triangular Kinematic Mirror Mount Ø1"/25mm	20200 / 20200-M	4
1X1 Square Mount for Ø1"/25mm Optical Elements	20550 / 20550-M	2
Iris Mount Ultimate	20502 / 20502-M	1
Premium Box Frame - Floor/ceiling 3 (1X3) mount locations	20022 / 20022-M	2

Included Hardware and Screws	Qty
Imperial: 4-40 Cap Screw, 1/4" Long	22
Metric: M2.5-0.45mm Cap Screw 6mm Long	
2.5mm 18-8 Stainless Steel Dowel Pins	14



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 Beamsplitter 45° AOI	1
Threaded Iris Diaphragm, SM1 (1.035" - 40)	1
1" Lens Tube, SM1 (1.035" - 40)	1
Retaining Ring, SM1 (1.035" - 40)	1
Fluorescing Alignment Disks	1
1/4"-20 Stainless Steel Cap Screw, 3/8" Long	4

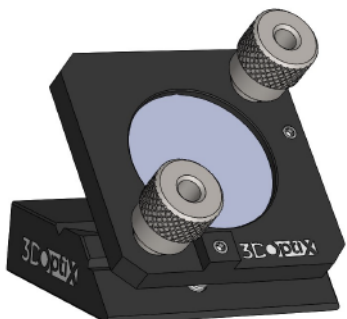


Safety Note:

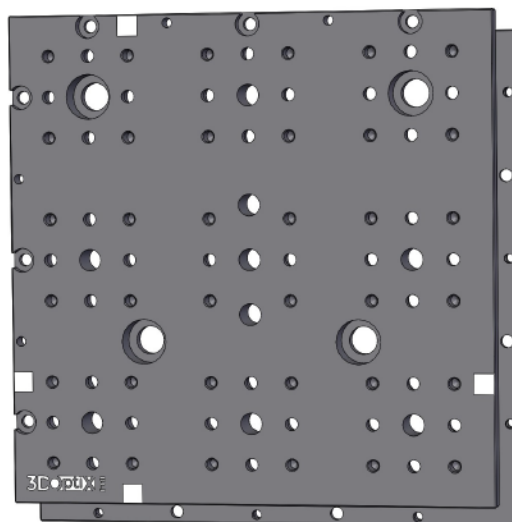
Our reference designs serve as guides for building common optical setups, often found in labs, with the 3DOptix™ parts. They provide a reference for your own designs and a good place to start learning how to build with the 3DOptix™ optomechanical elements. All reference design assembly instructions have 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.

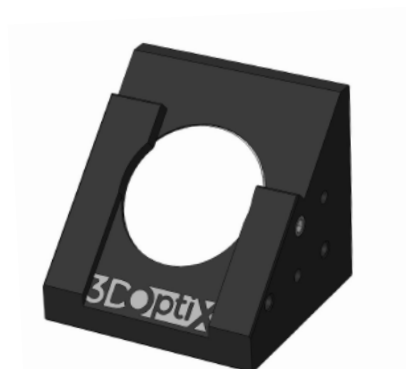
Parts List



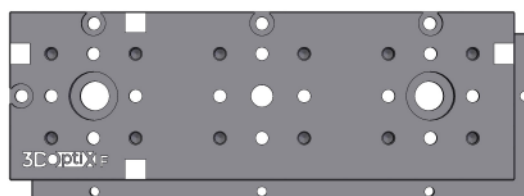
Elite Triangular Kinematic Mount - Ø1"/25mm **x4**



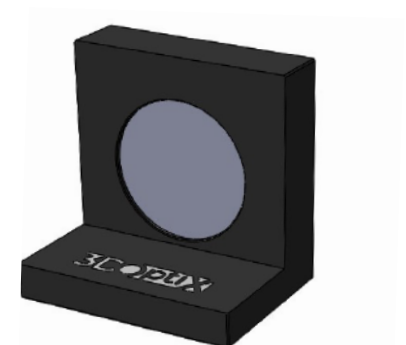
Premium Box Frame - Floor/ceiling 9 (3X3) mount locations **x2**



Fixed Mount - Triangular Ø1"/25mm Mirror Mount **x3**



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



1X1 Square Mount for Ø1"/25mm Optical Elements **x2**

#4-40 \ M2.5-0.45



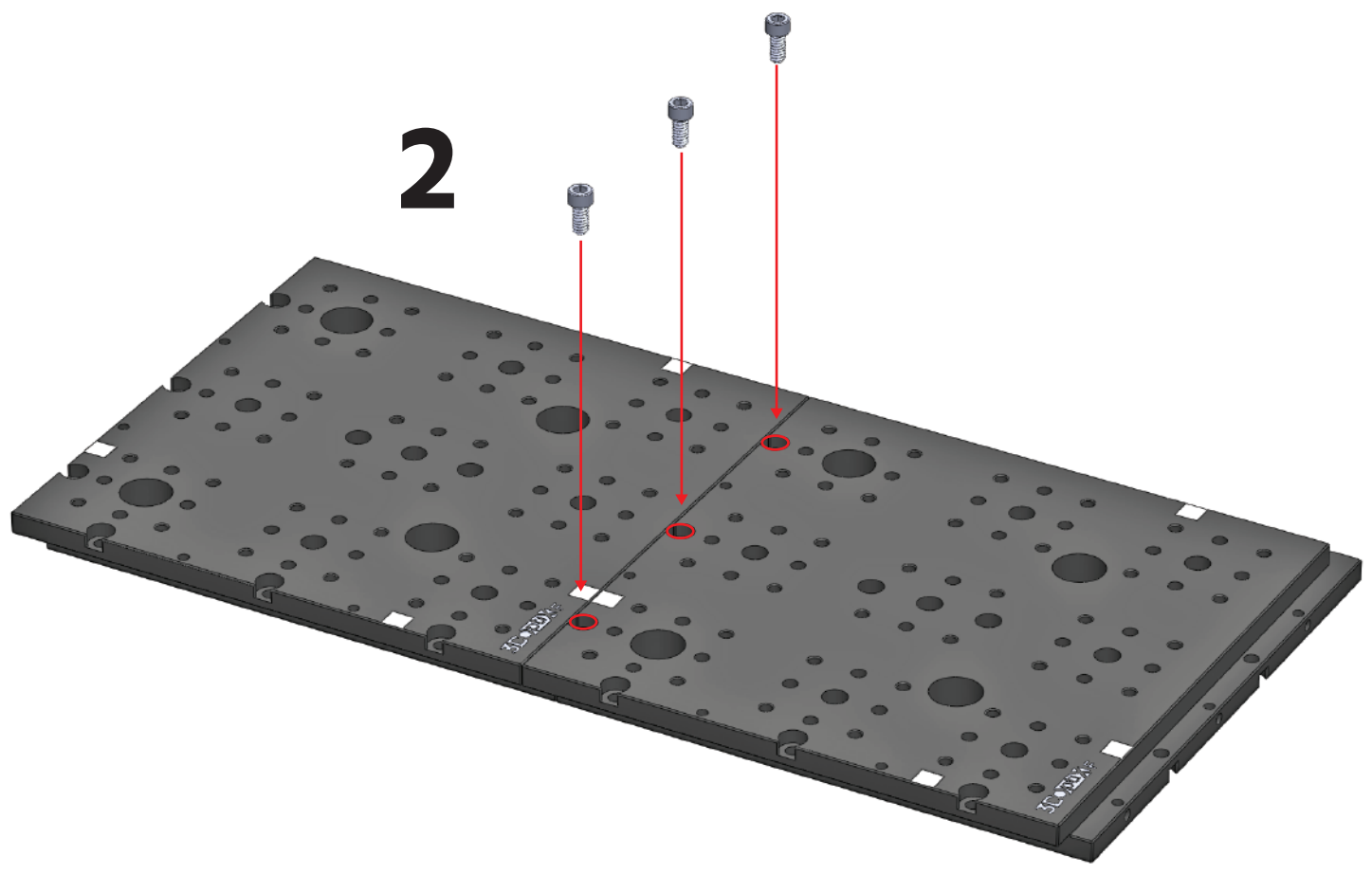
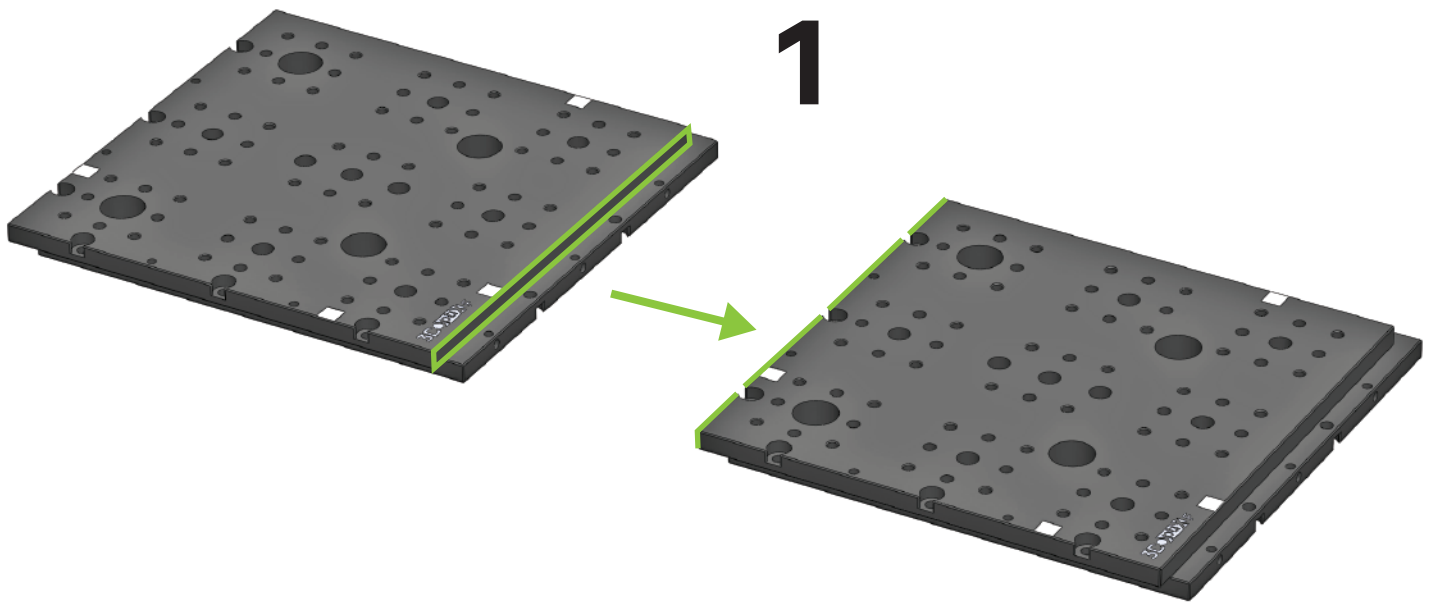
x22

DOWEL PIN

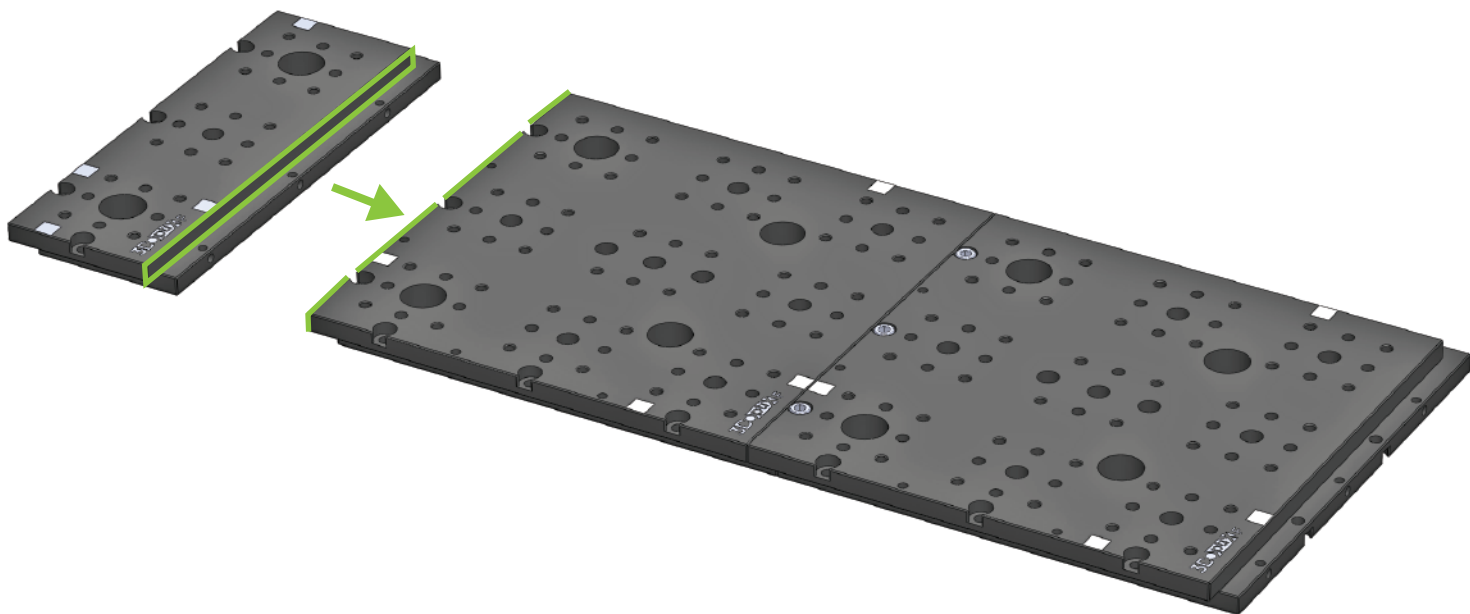


x14

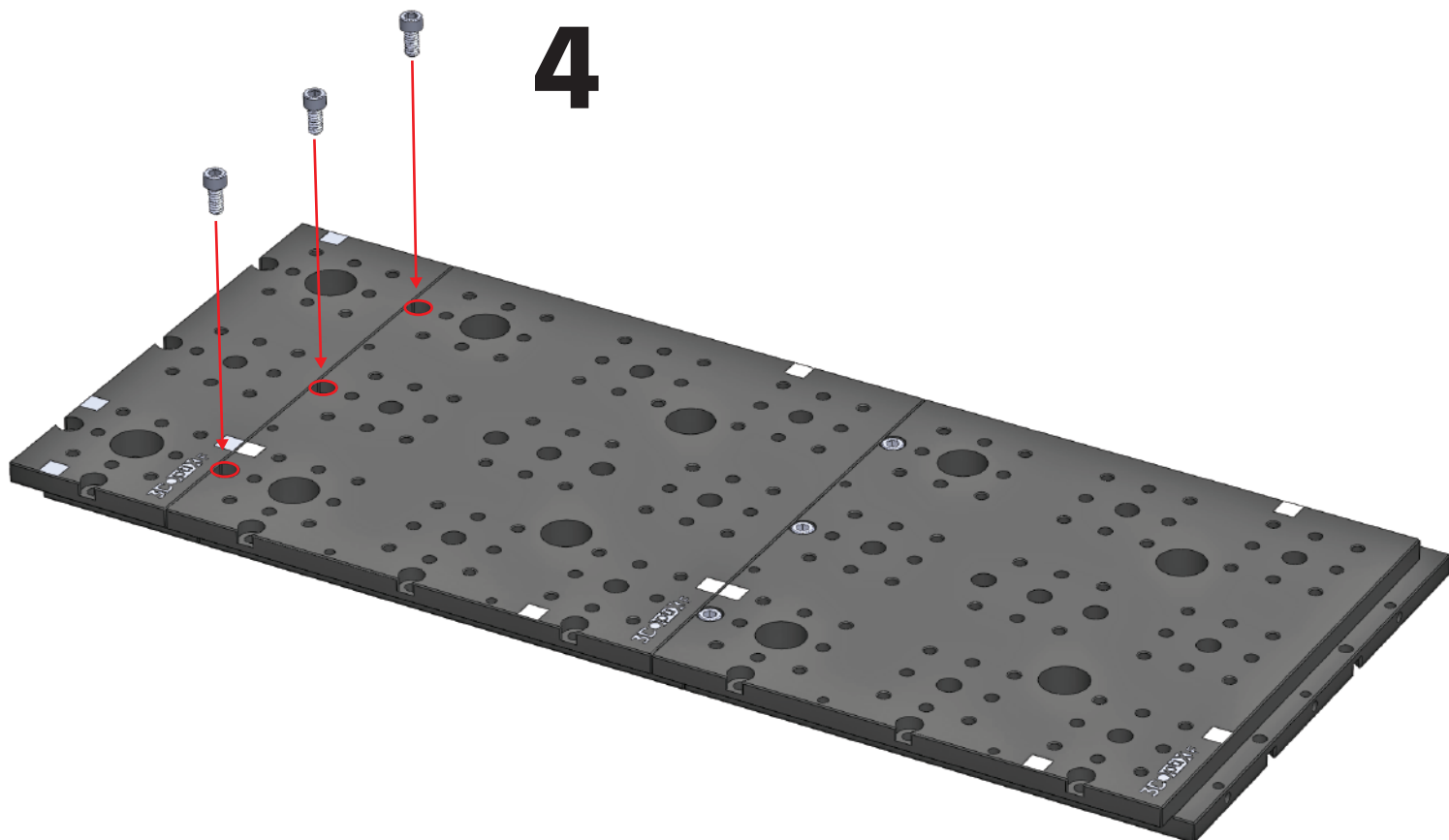


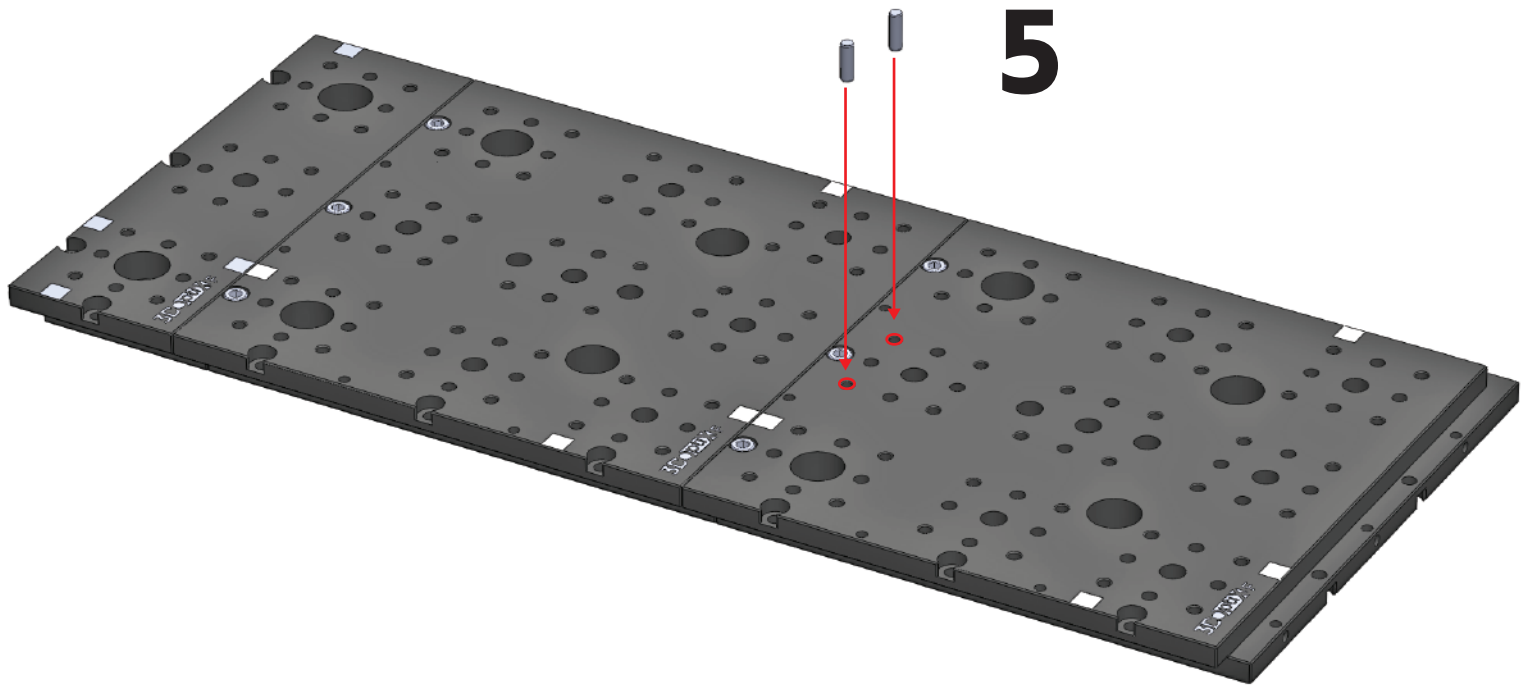


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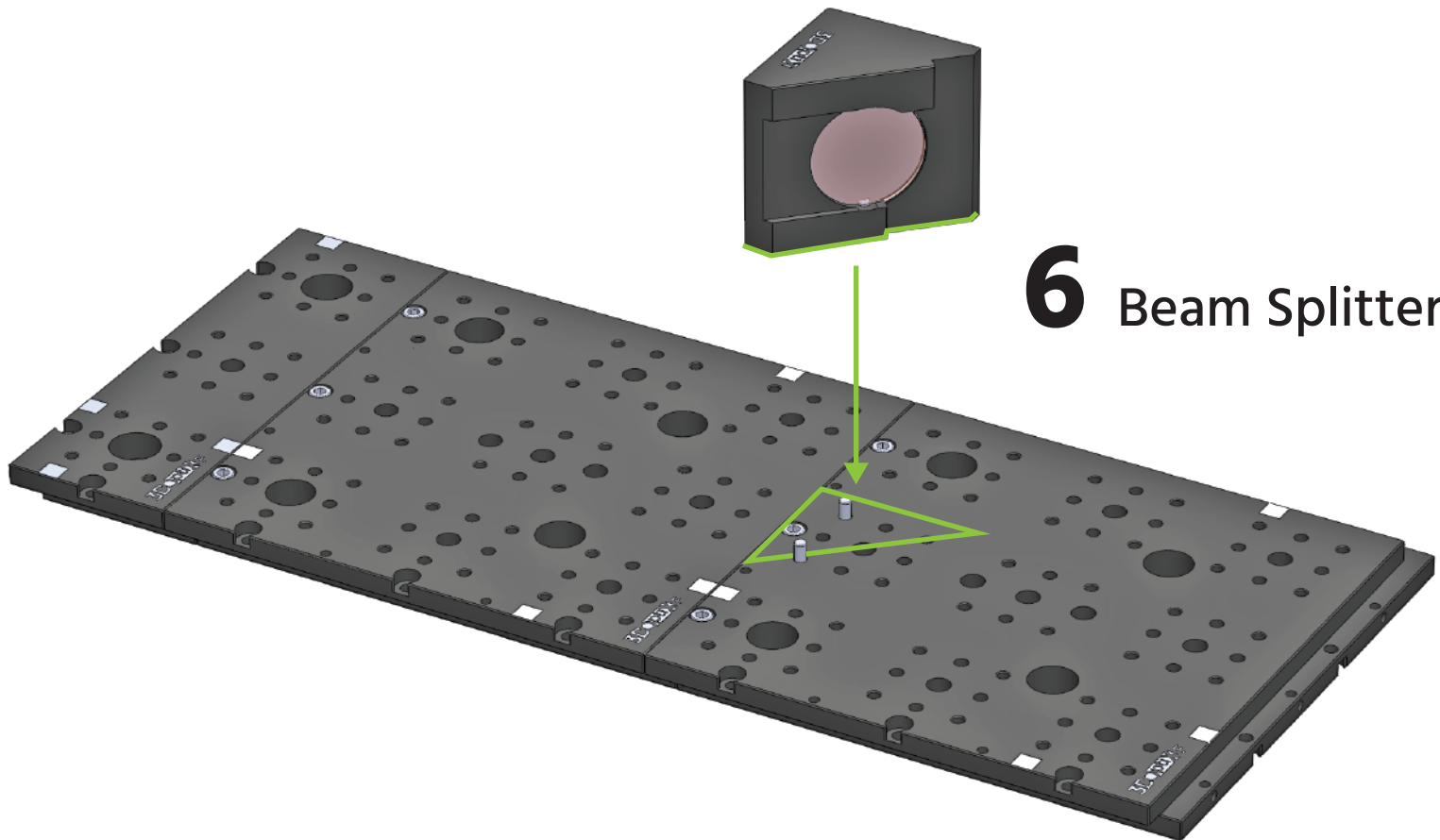


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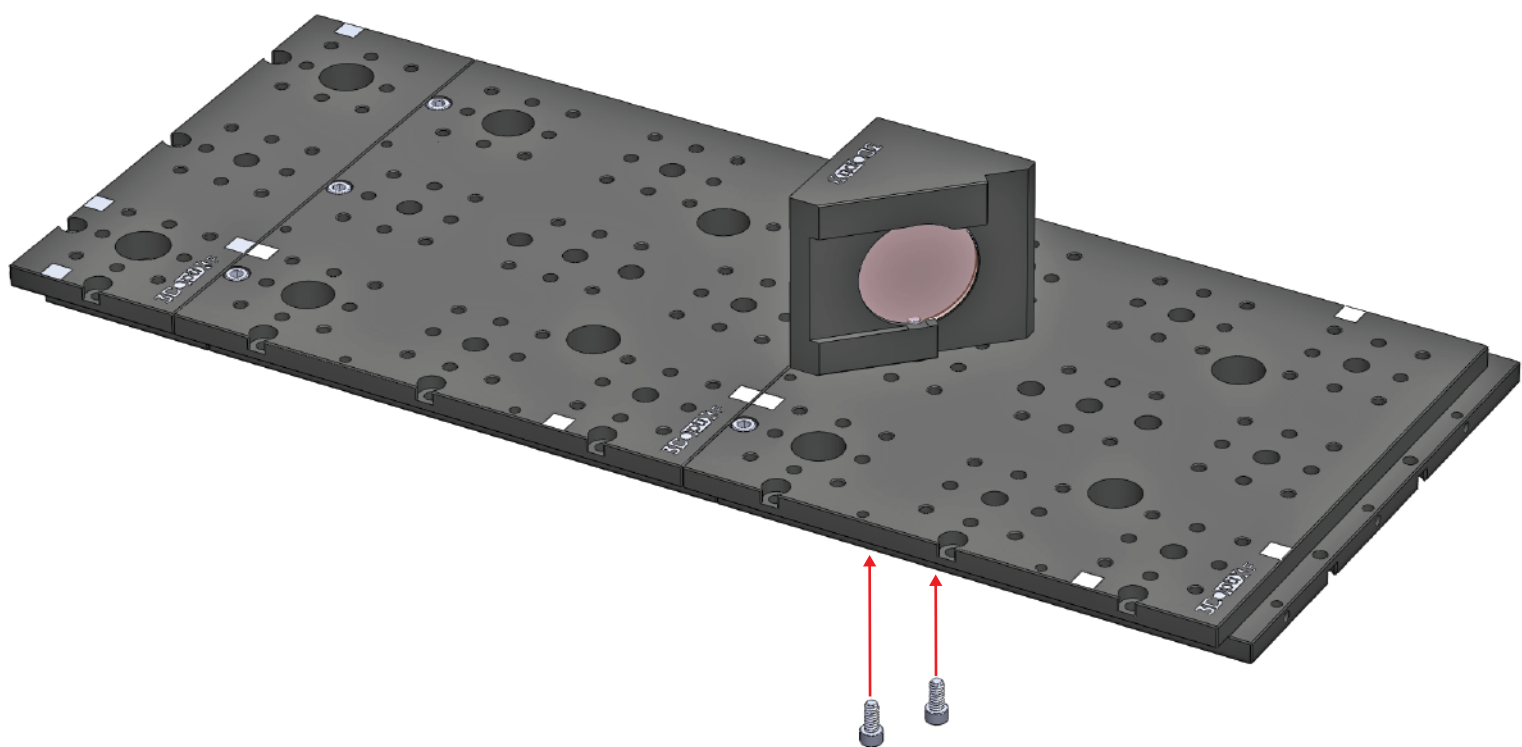




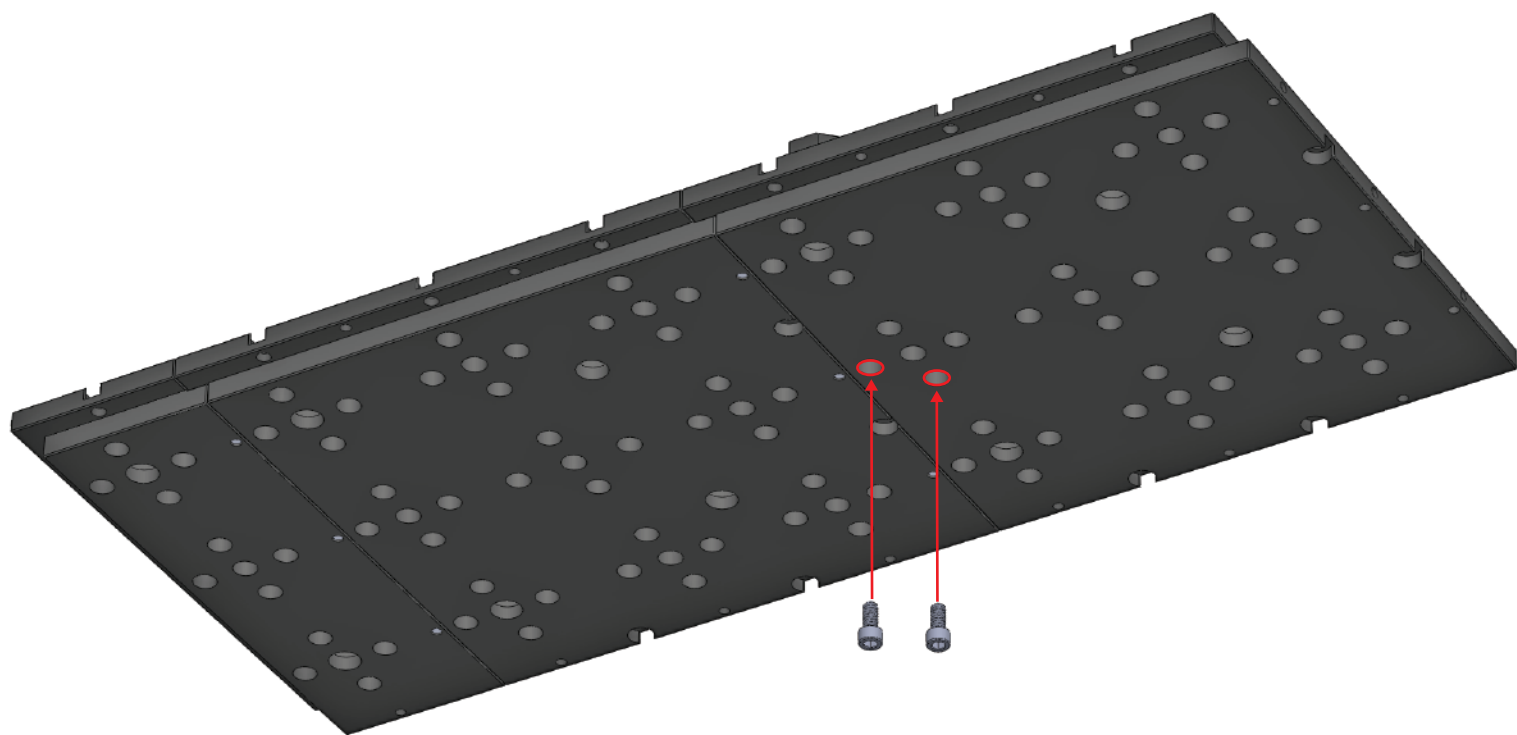
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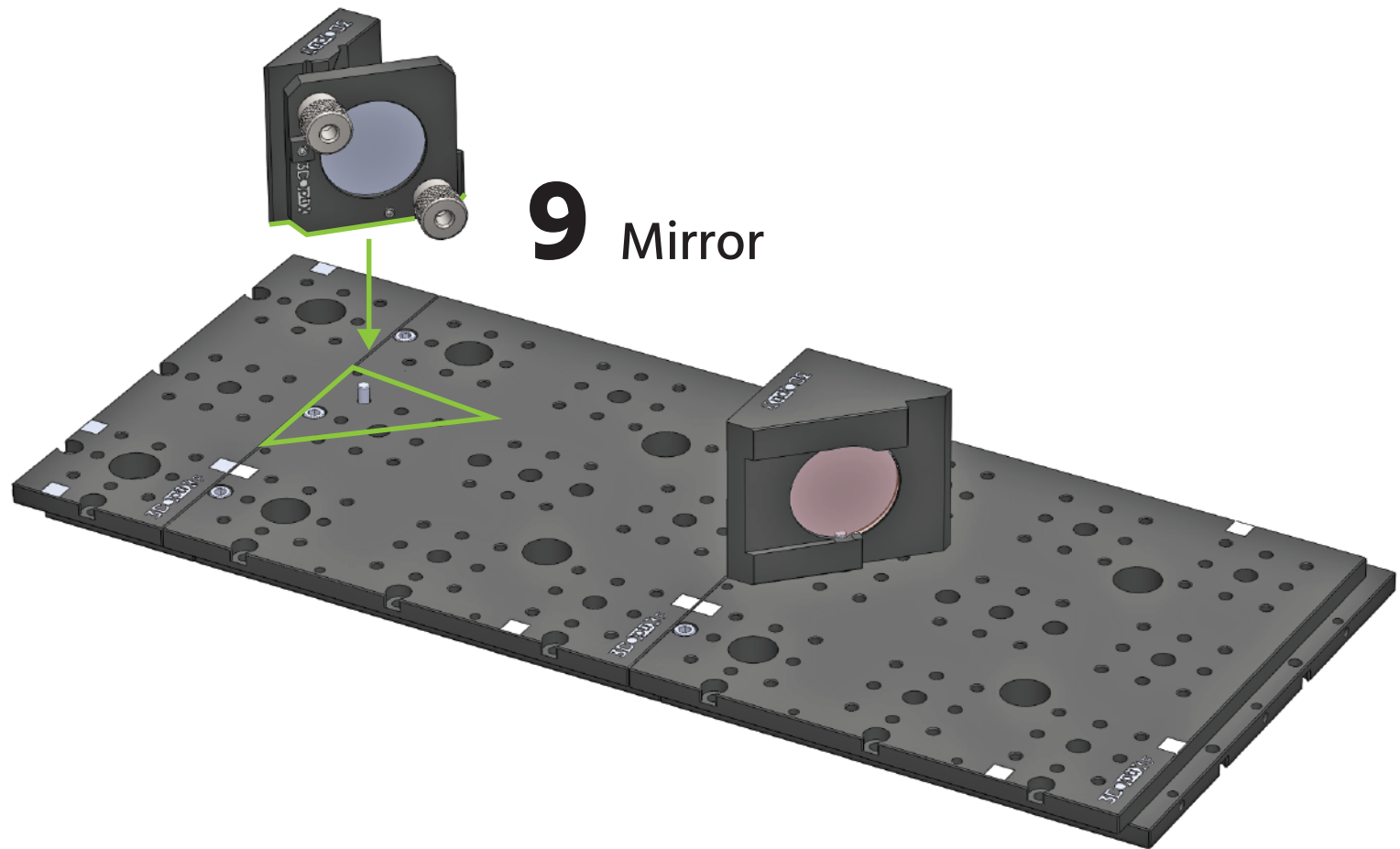
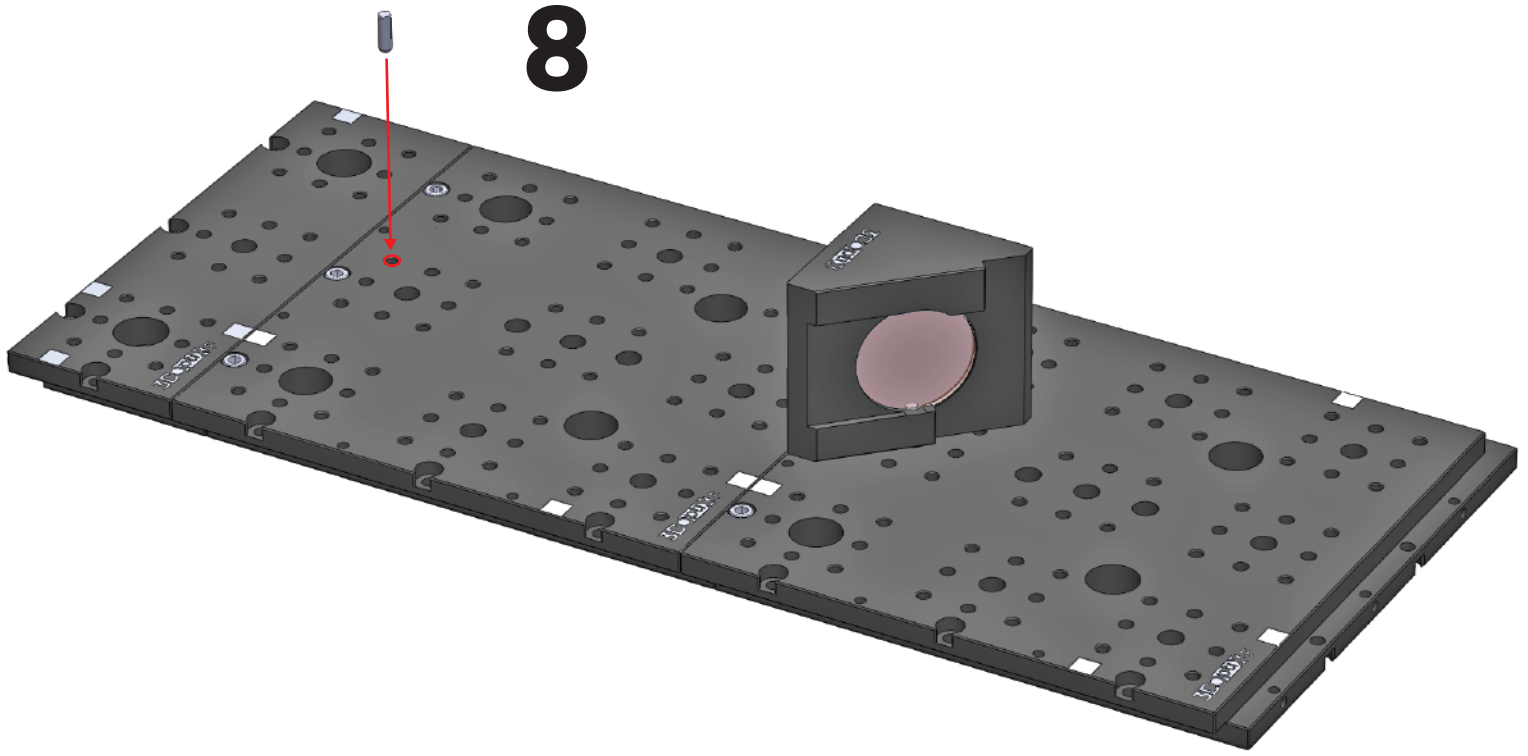


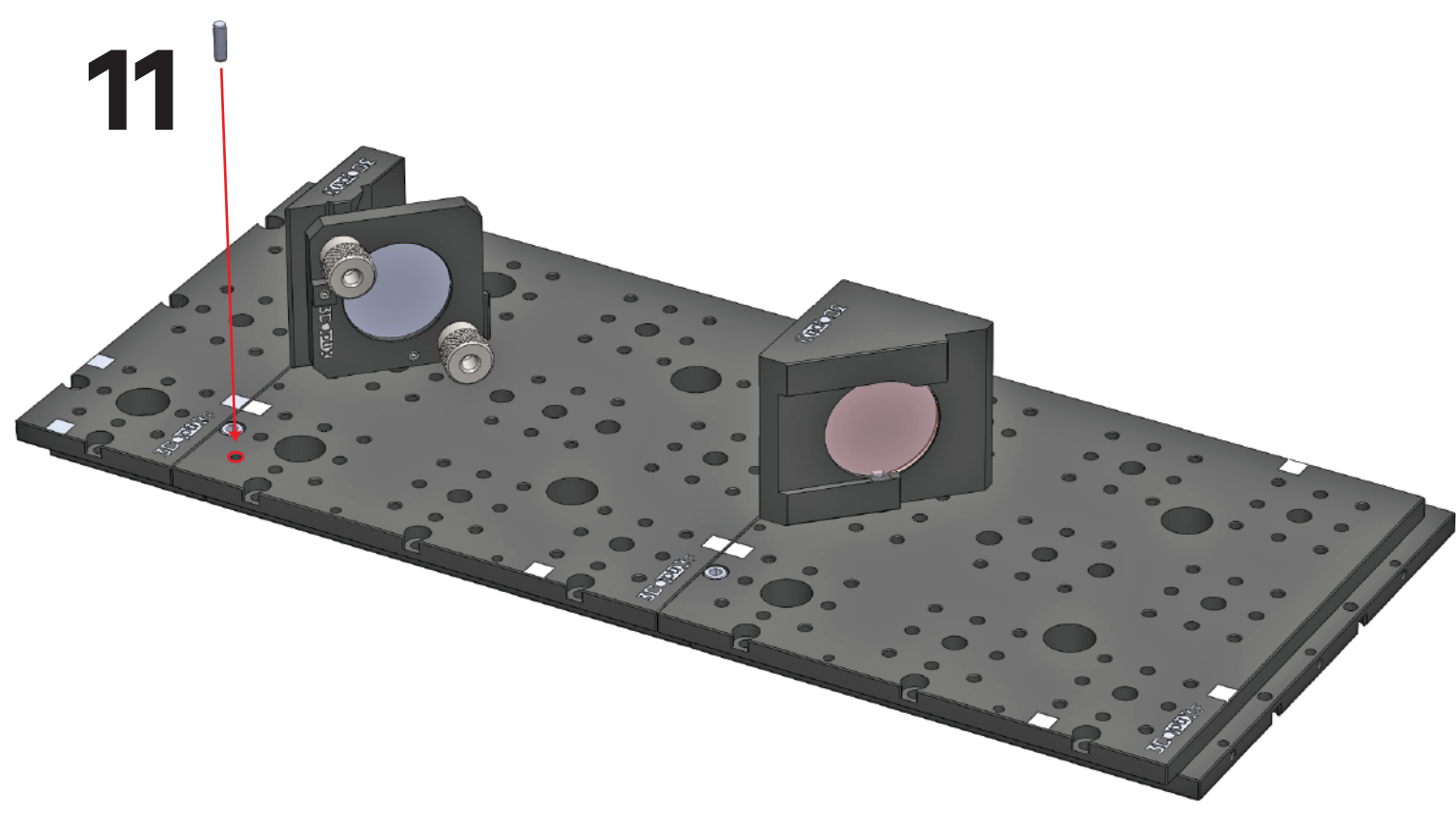
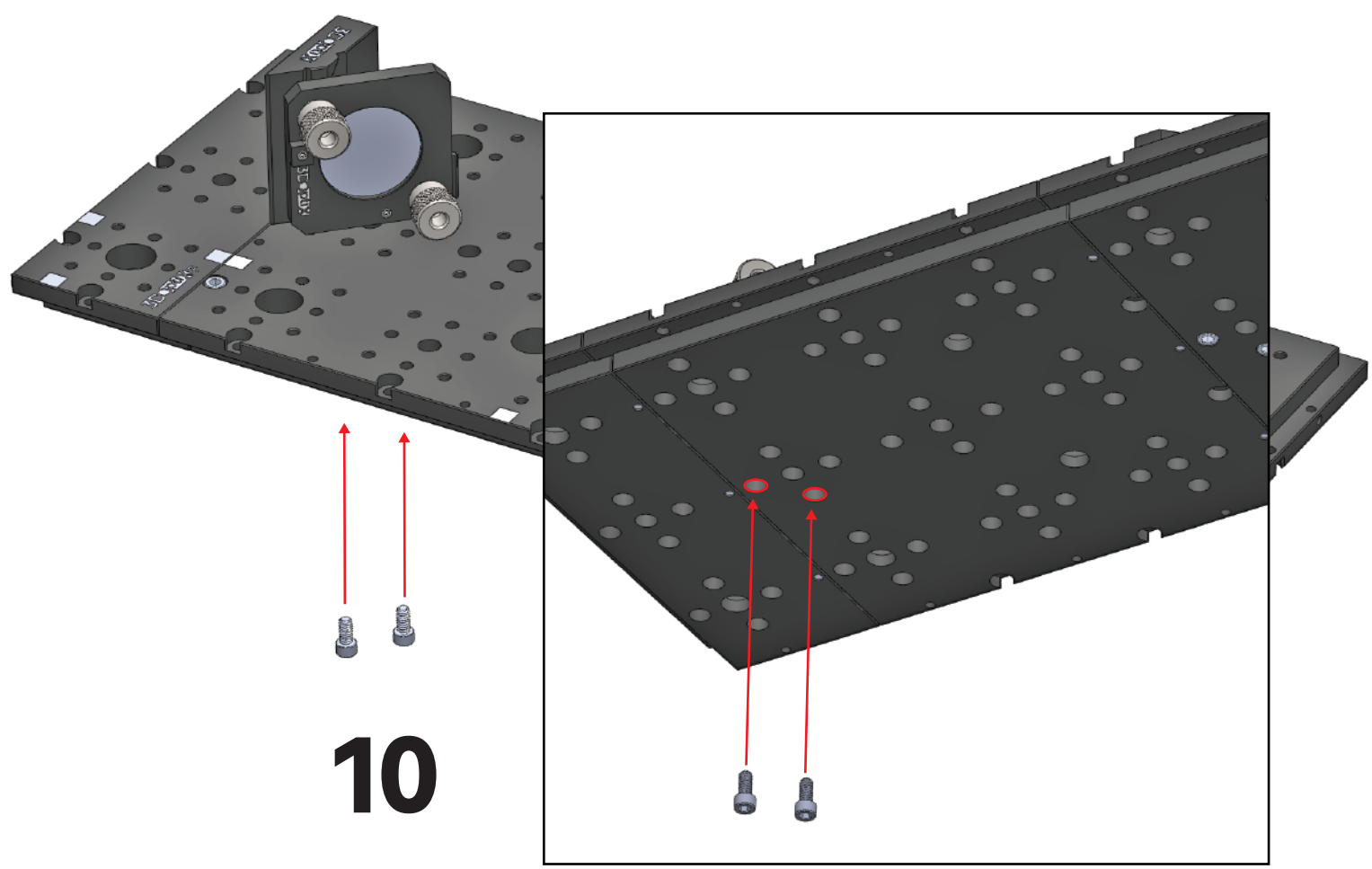
6 Beam Splitter



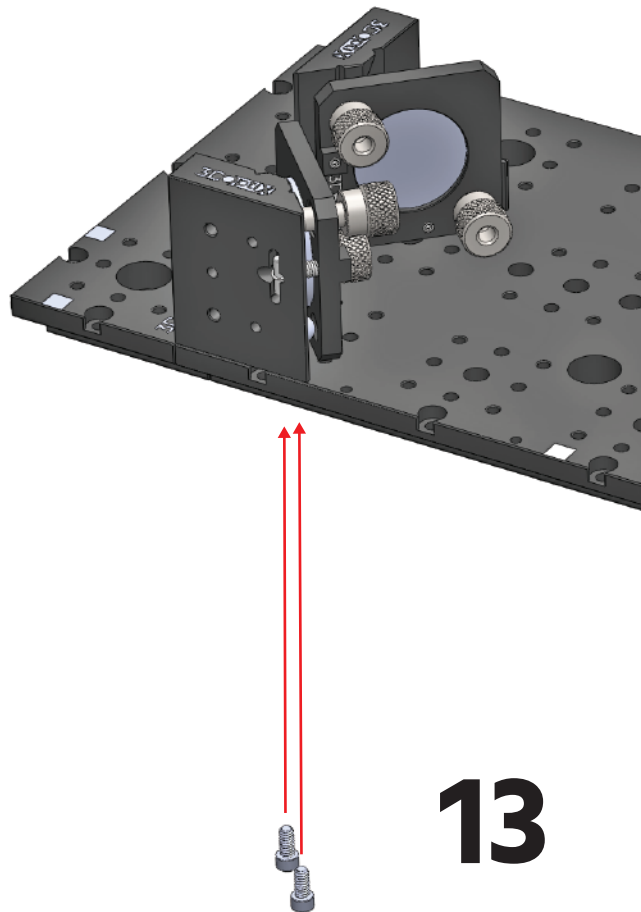
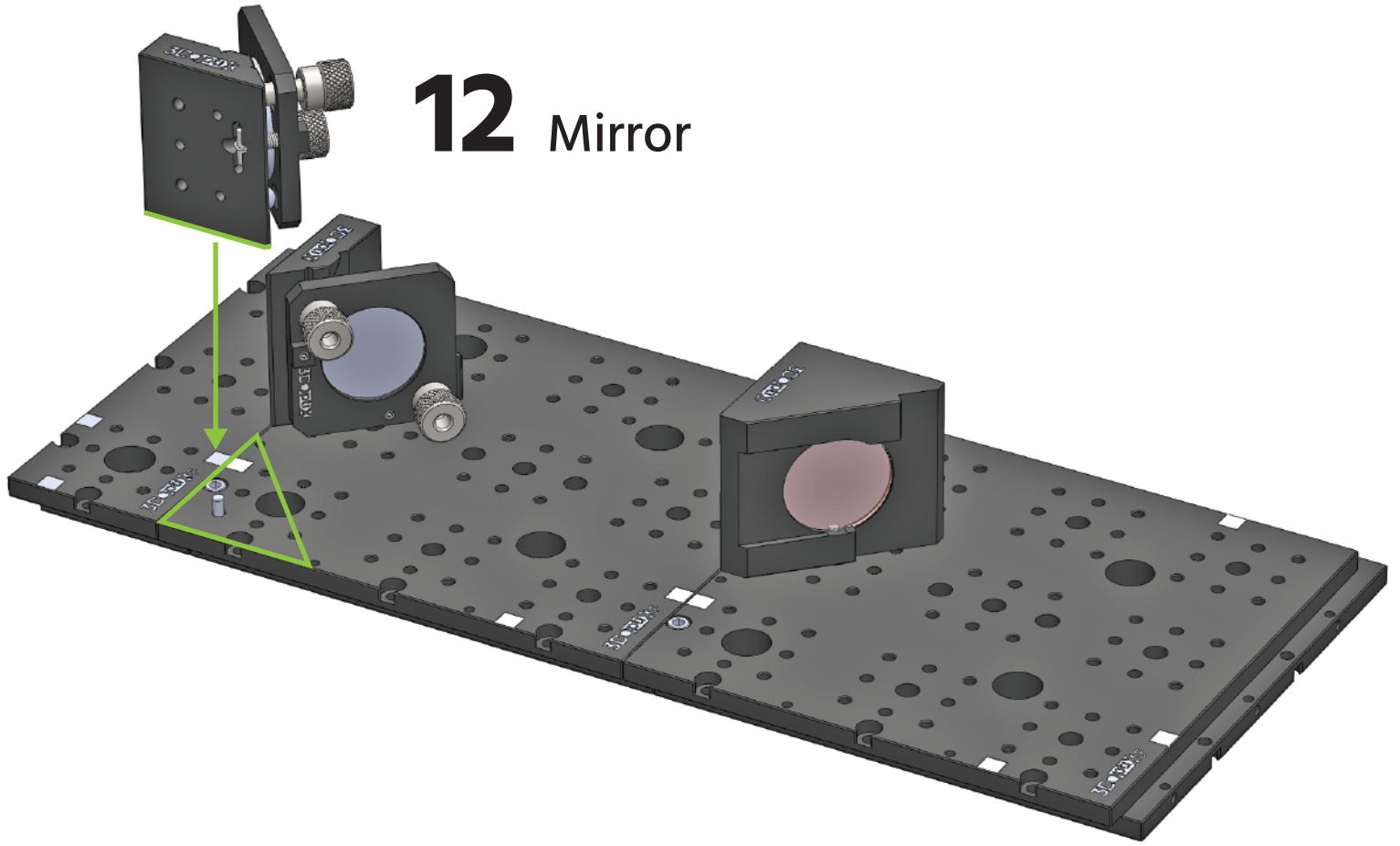
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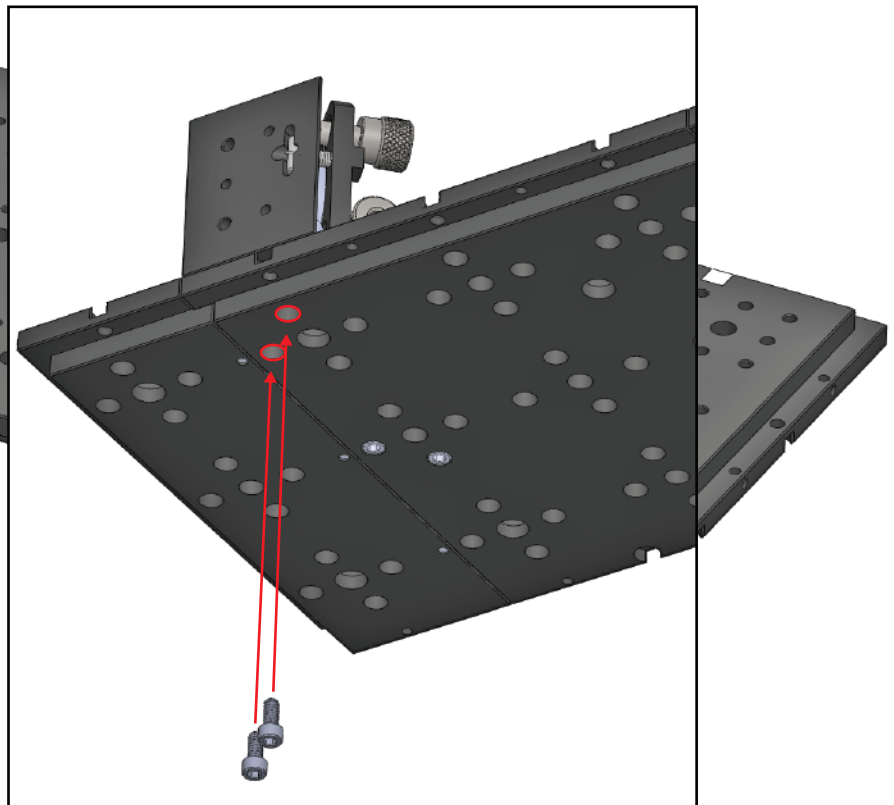




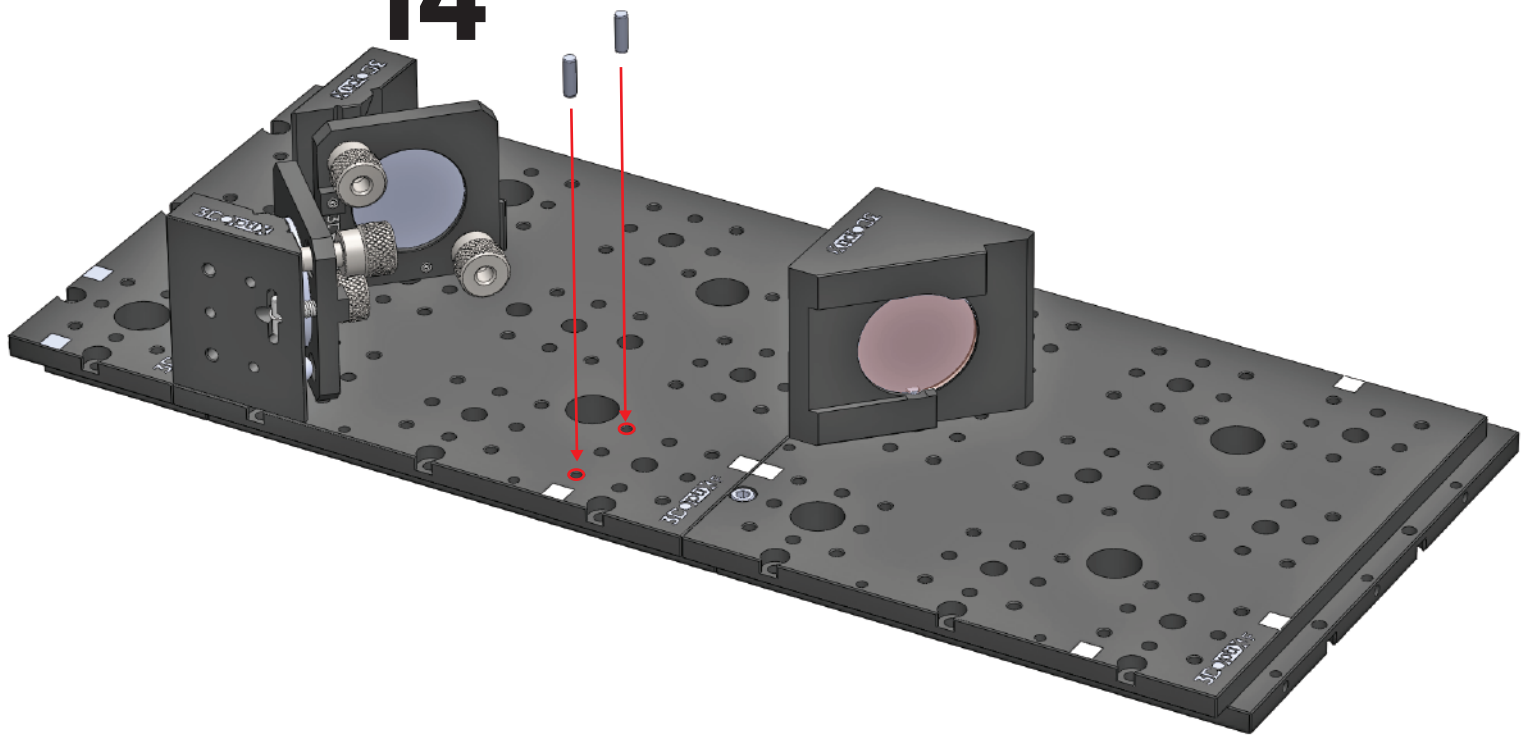
12 Mirror



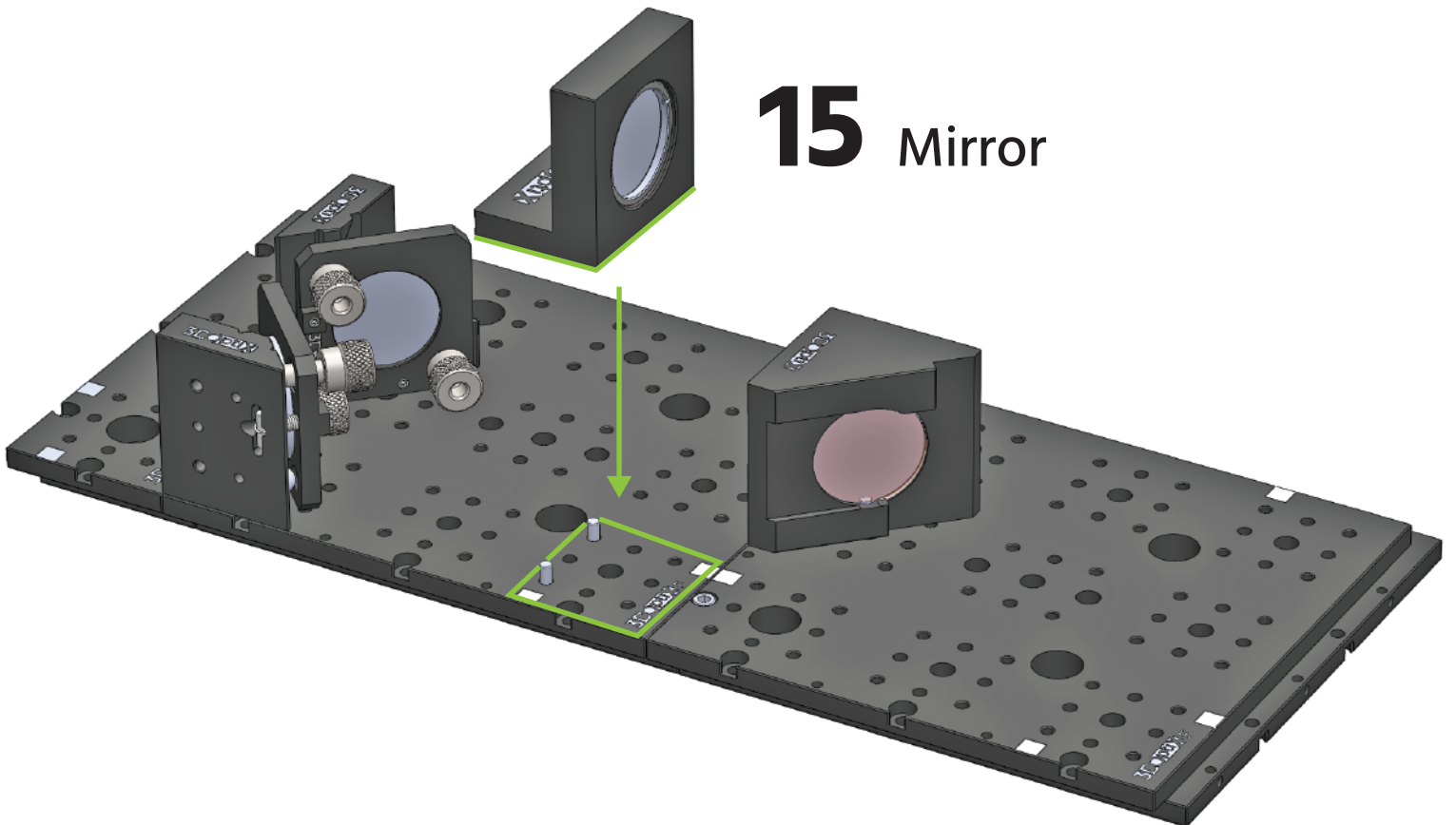
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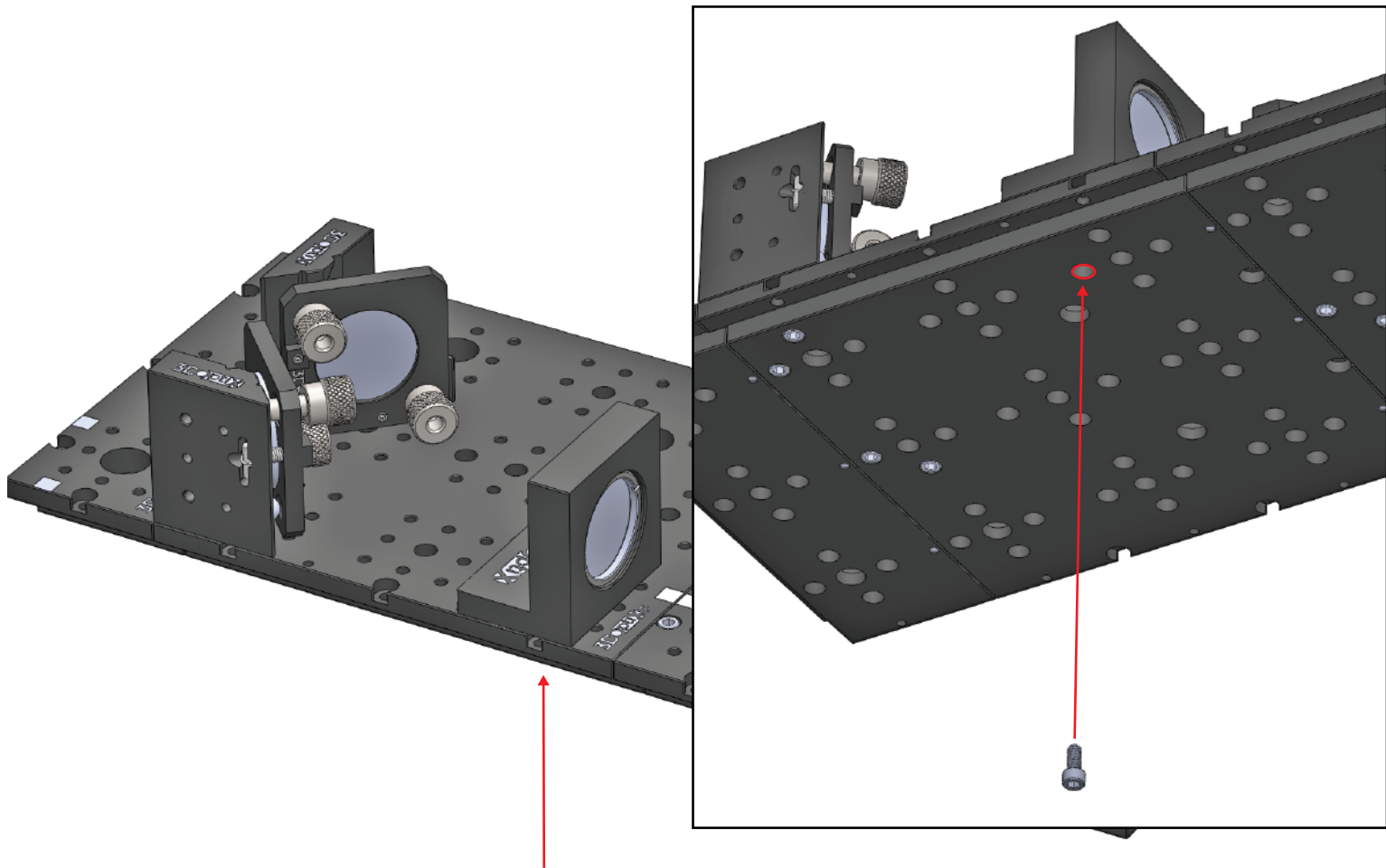


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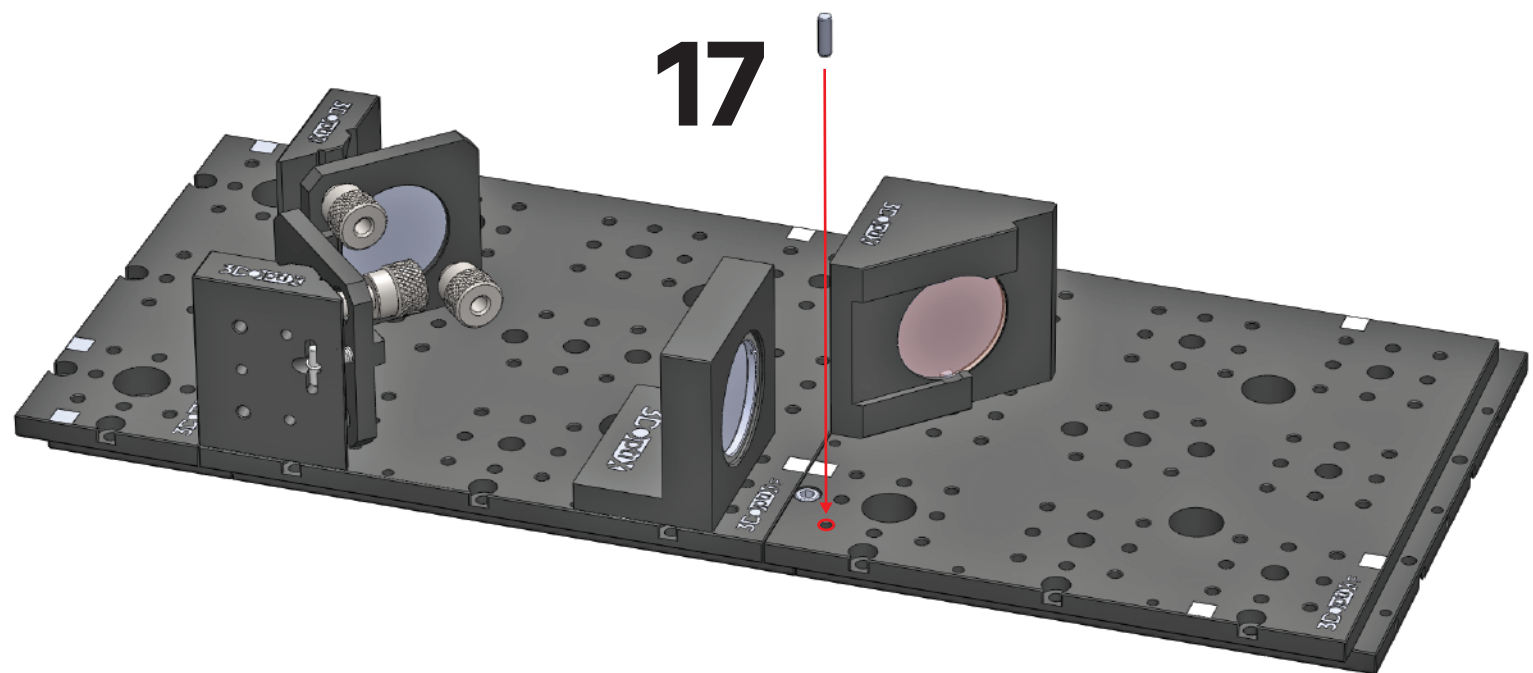


15 Mirror

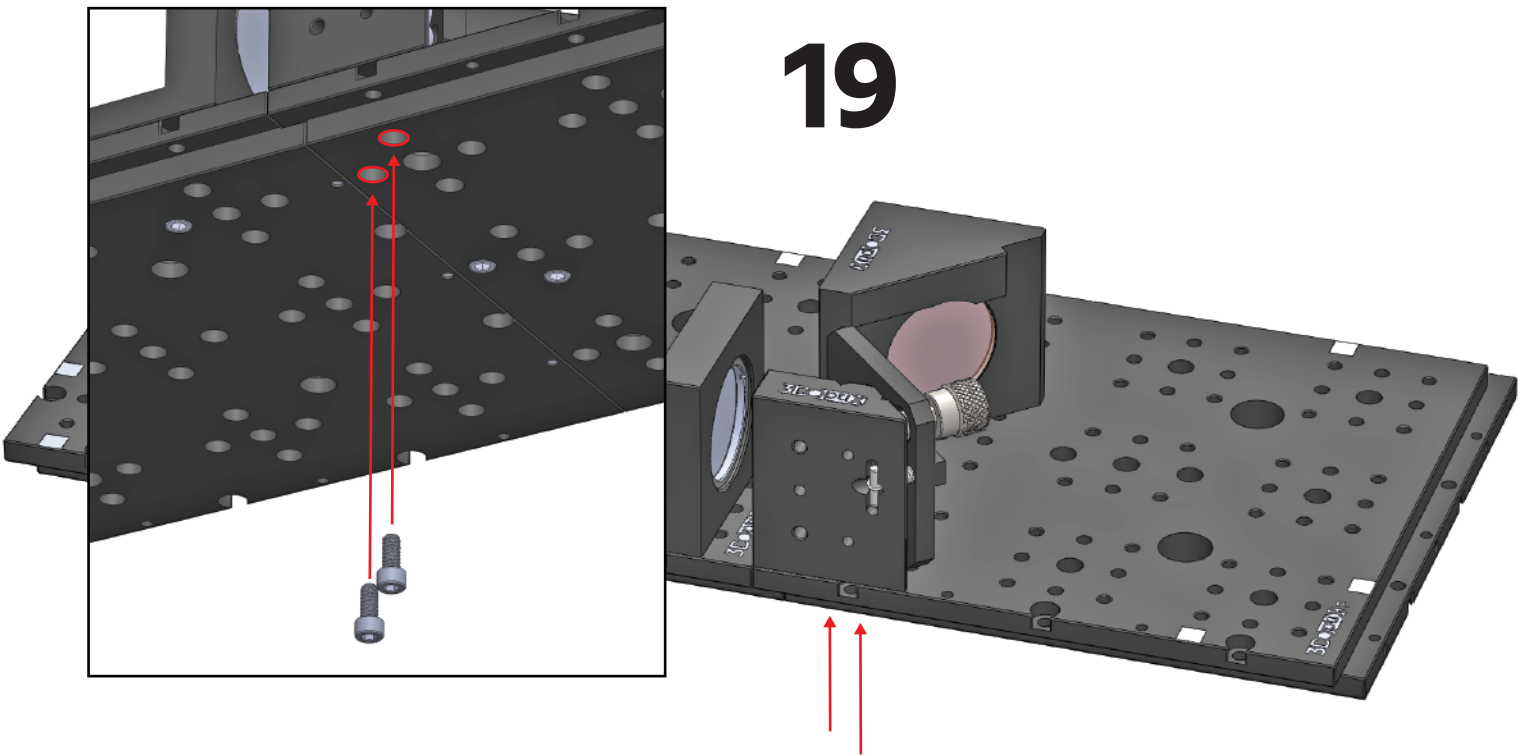
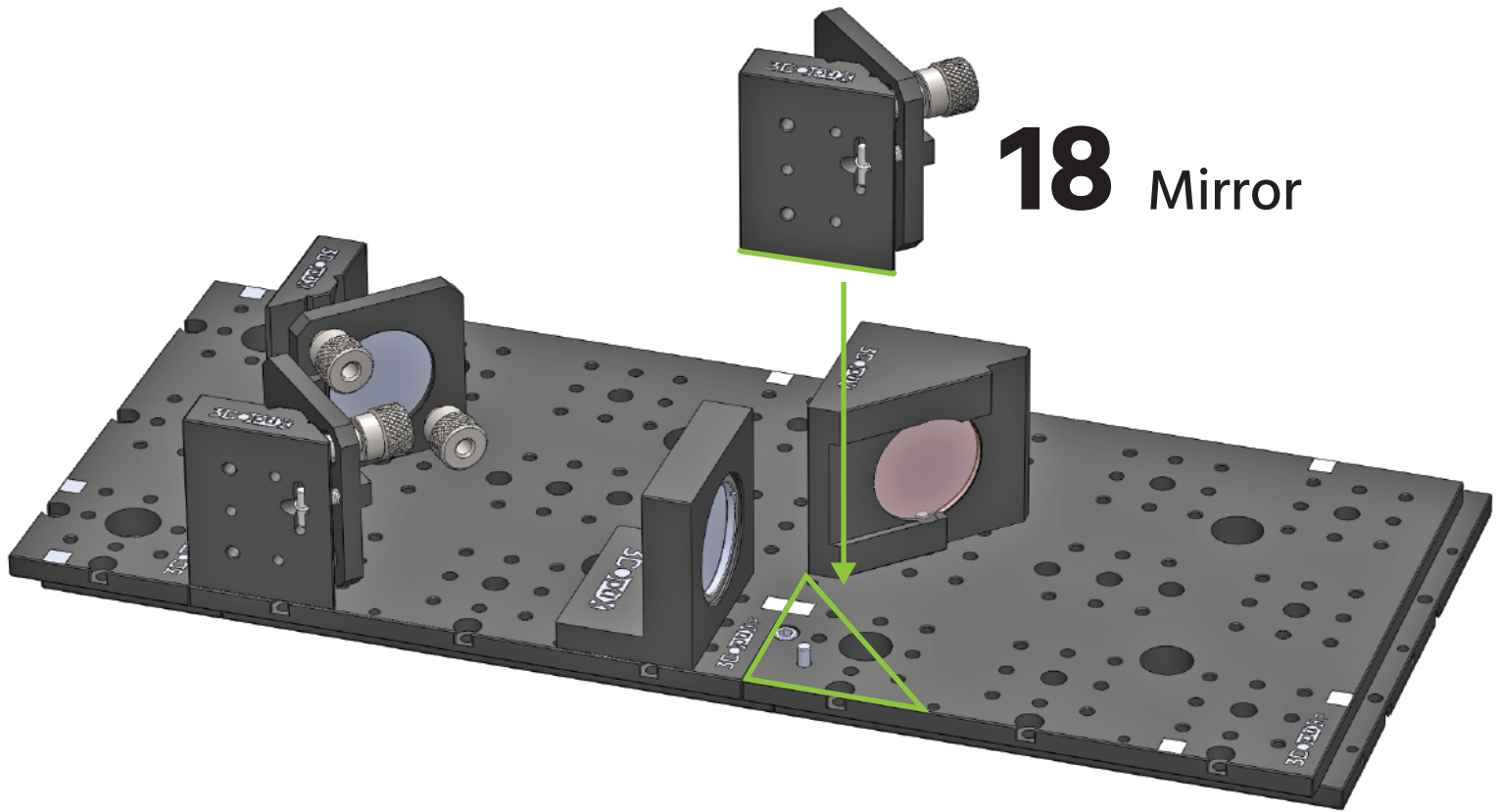


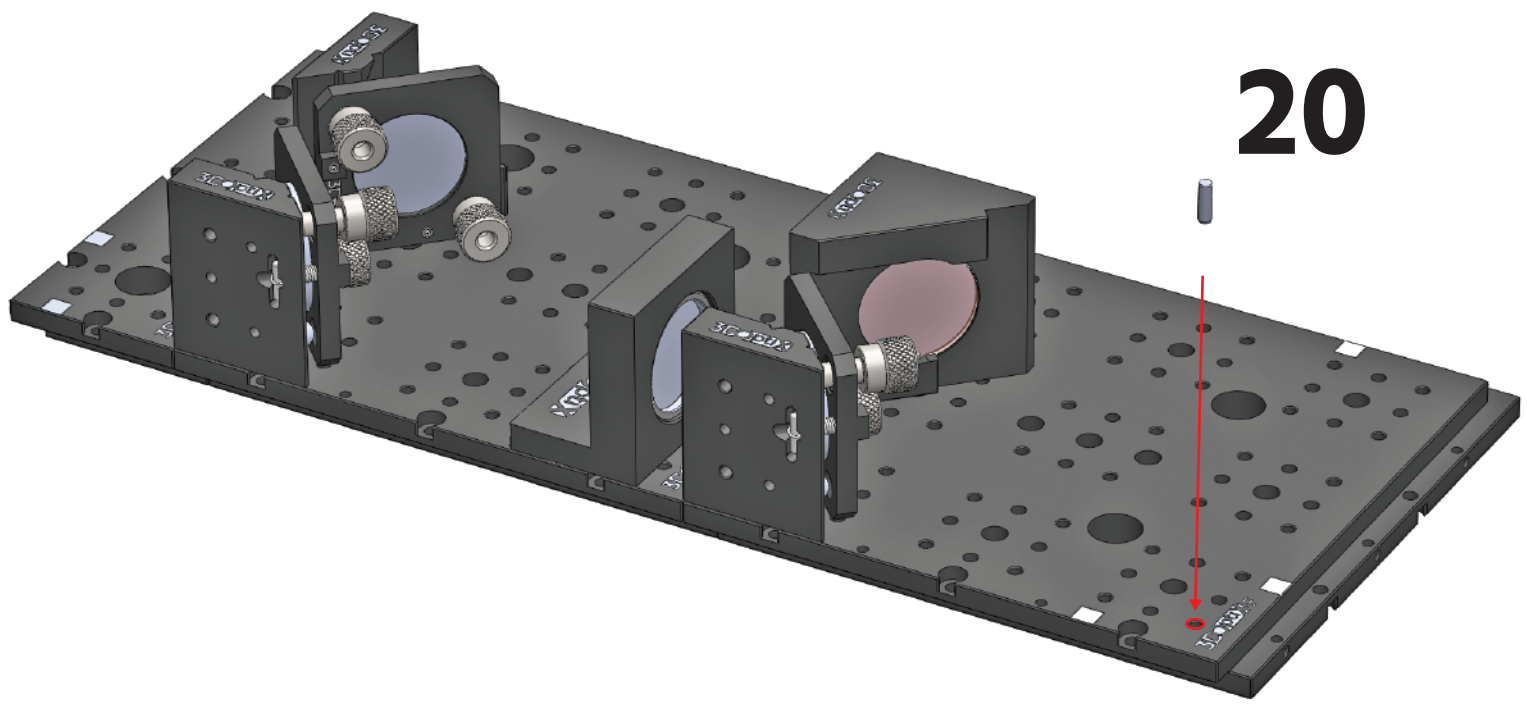


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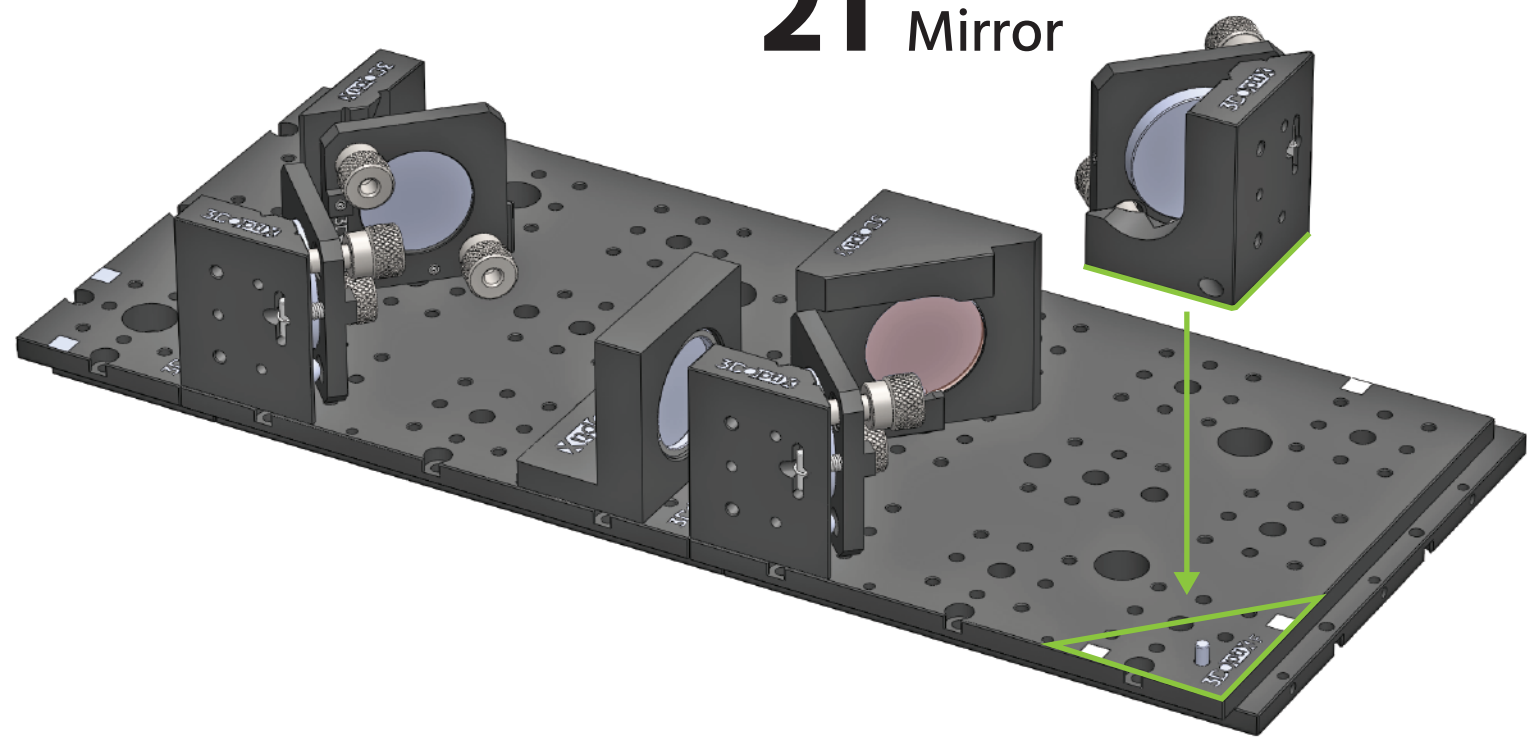
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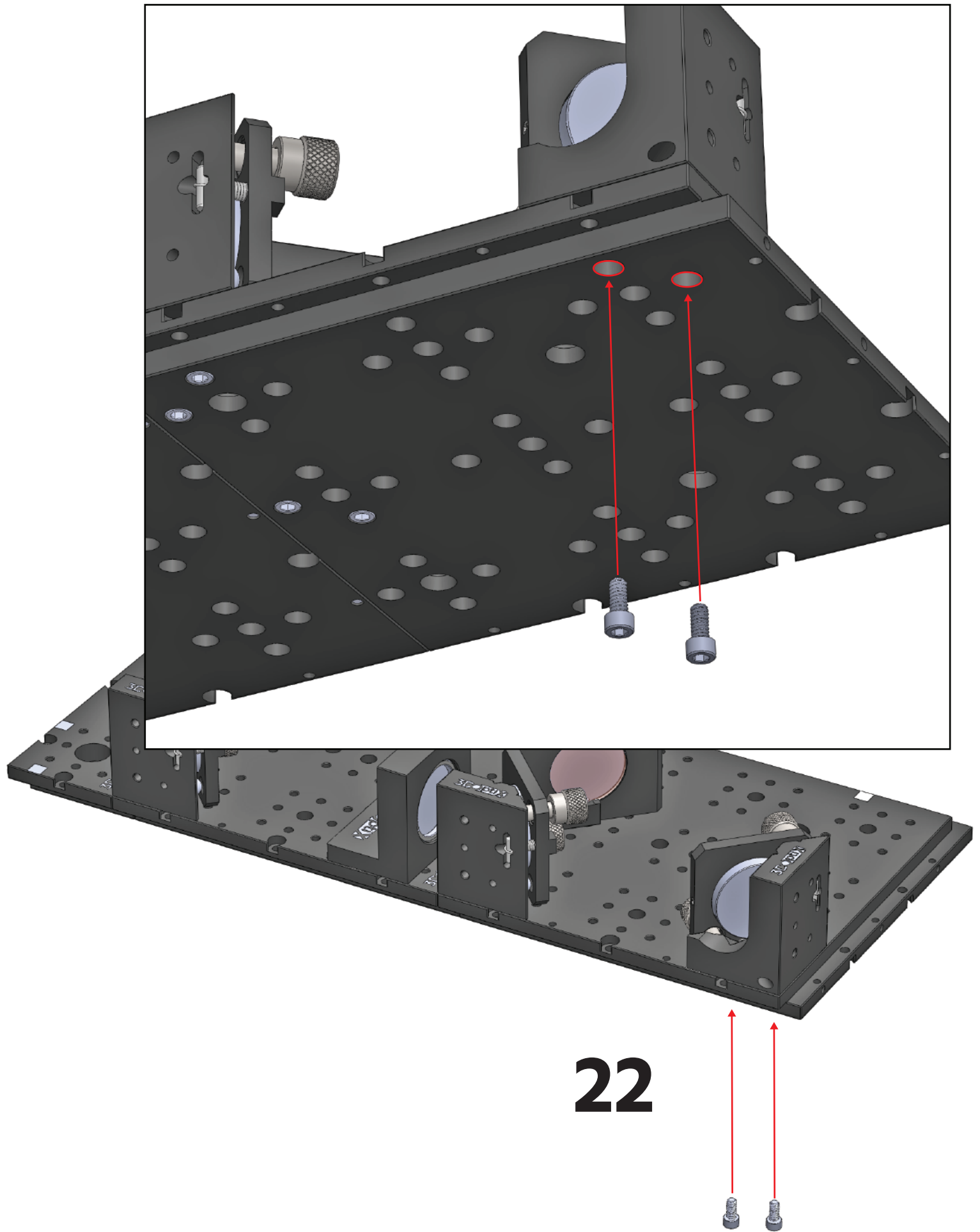


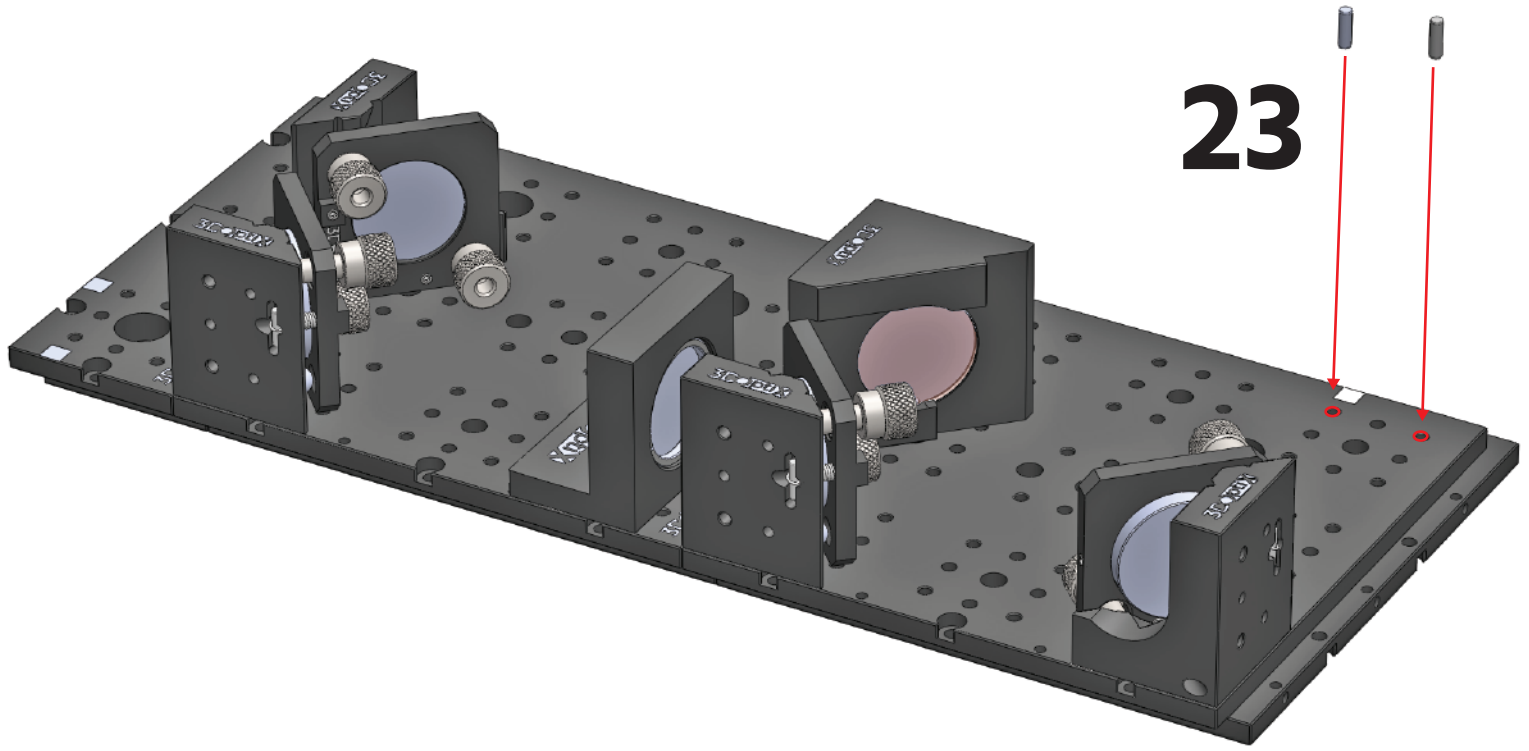


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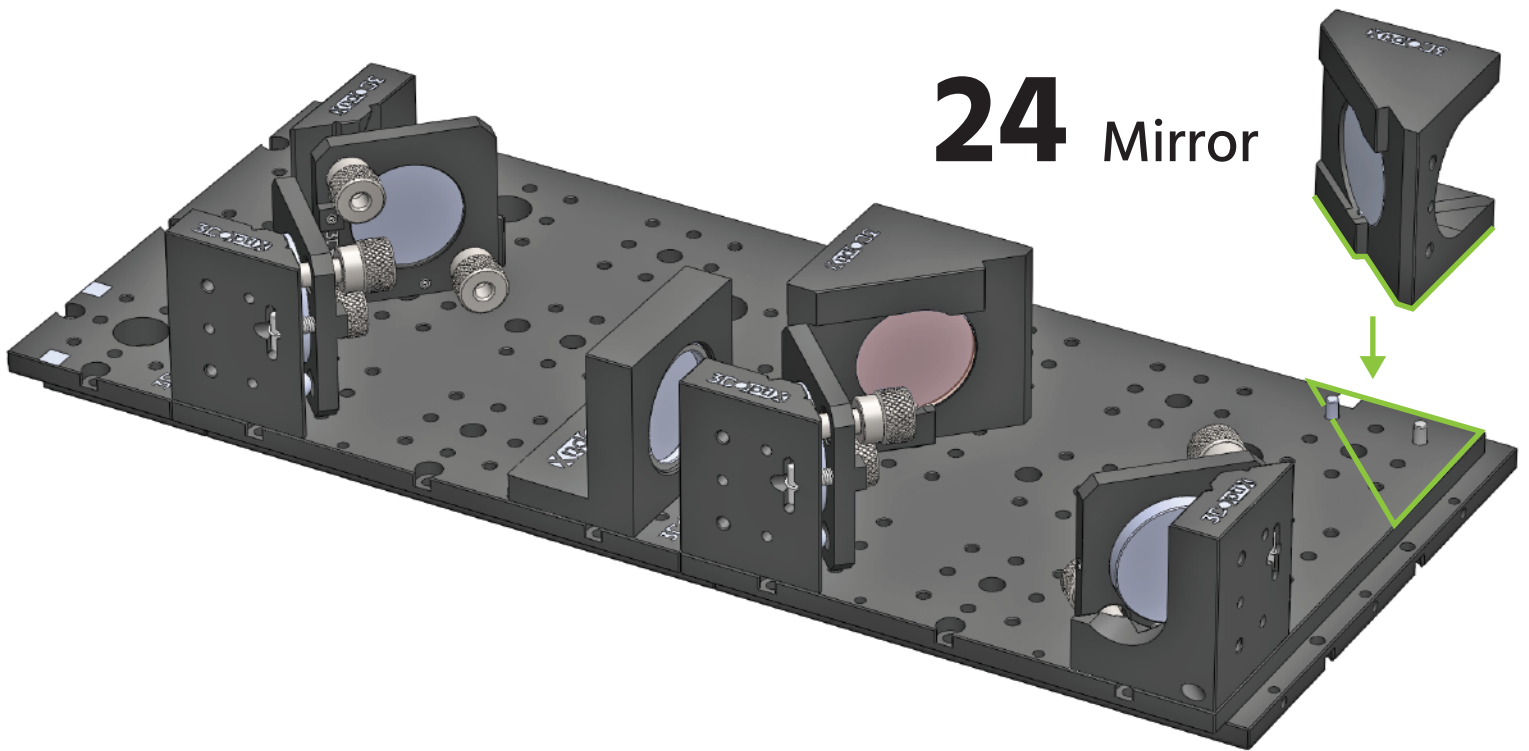
21 Mirror



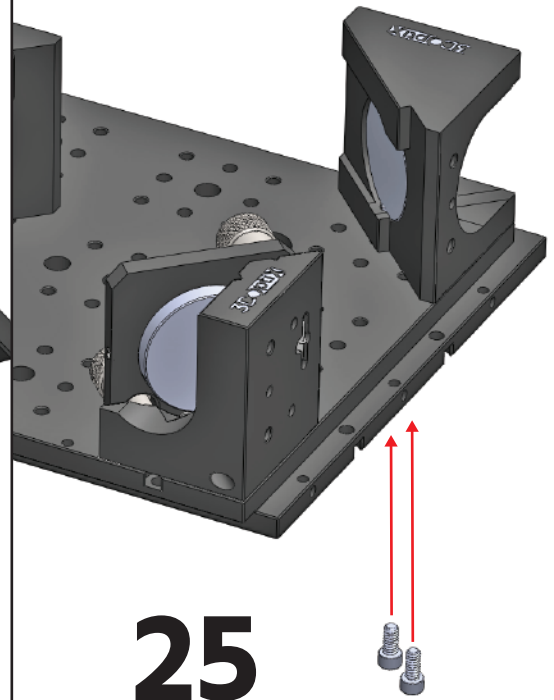
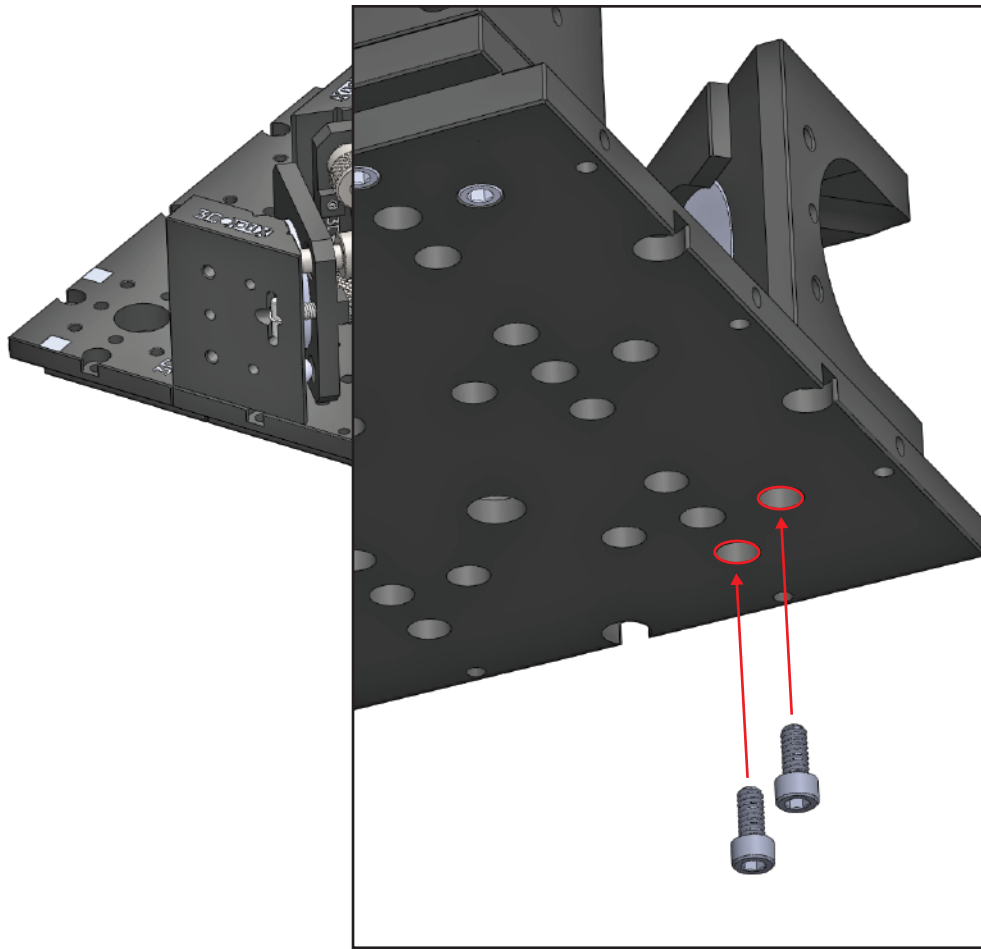




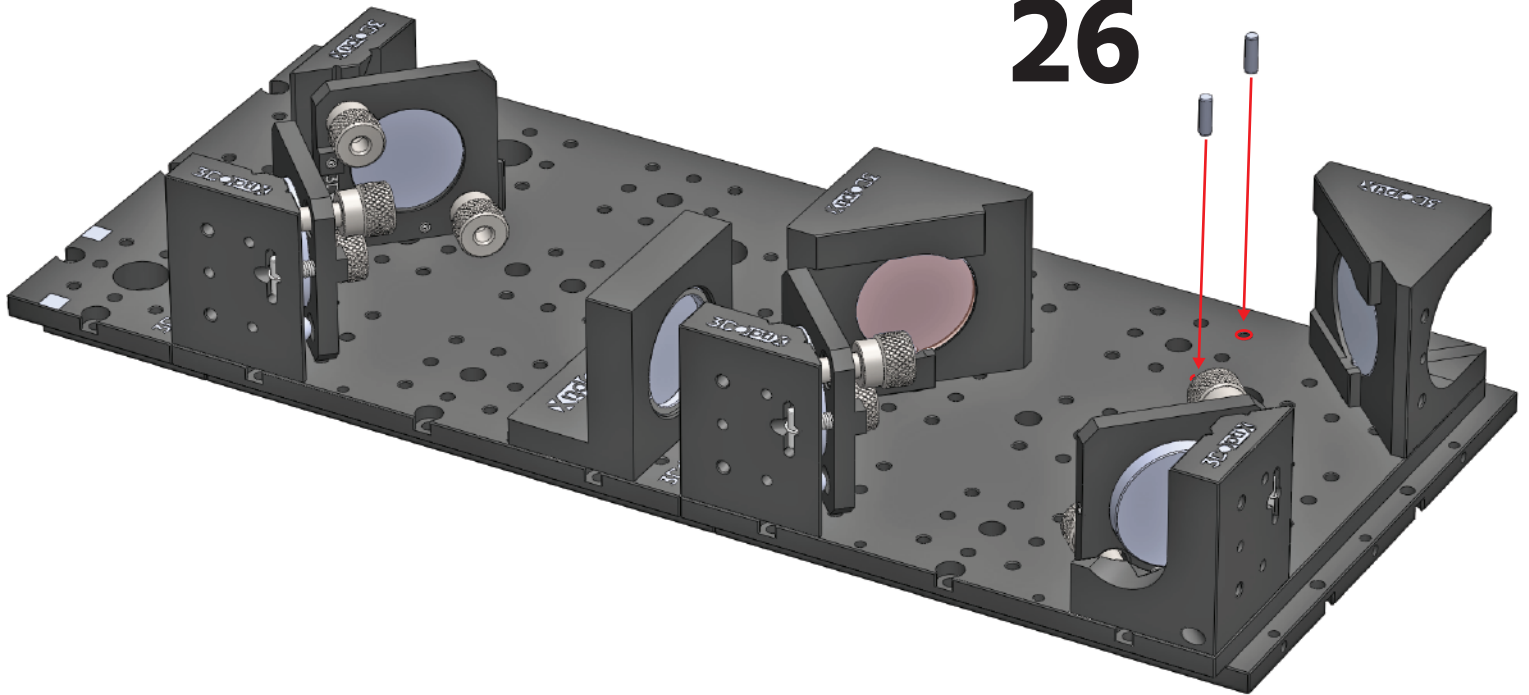
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24 Mirror

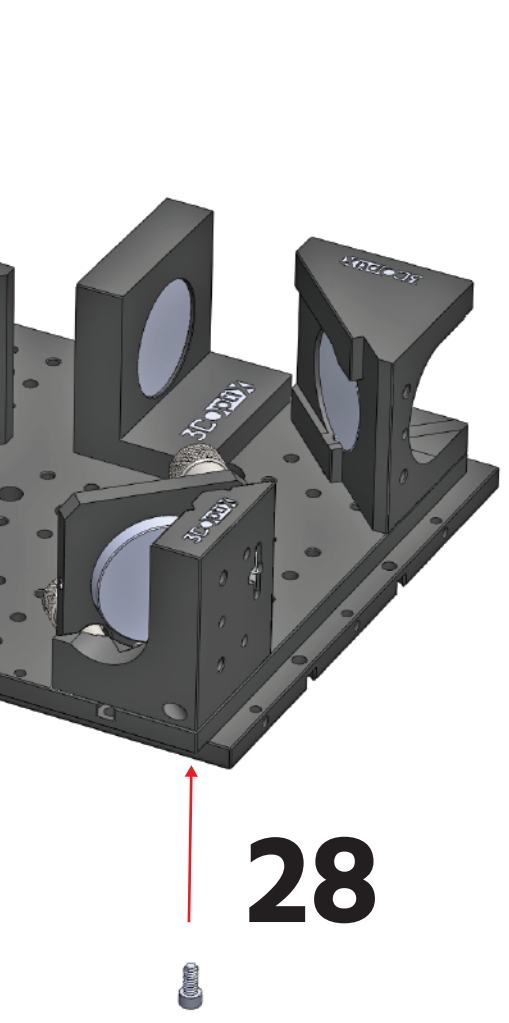
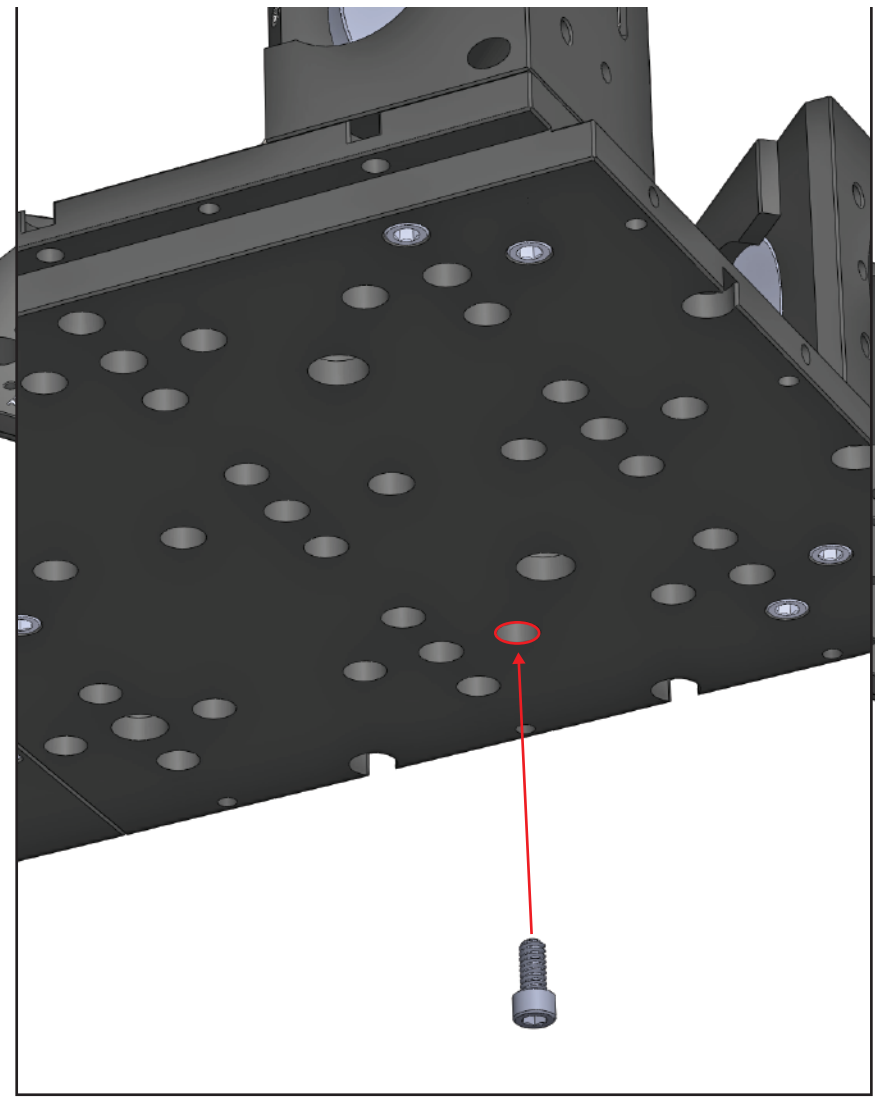
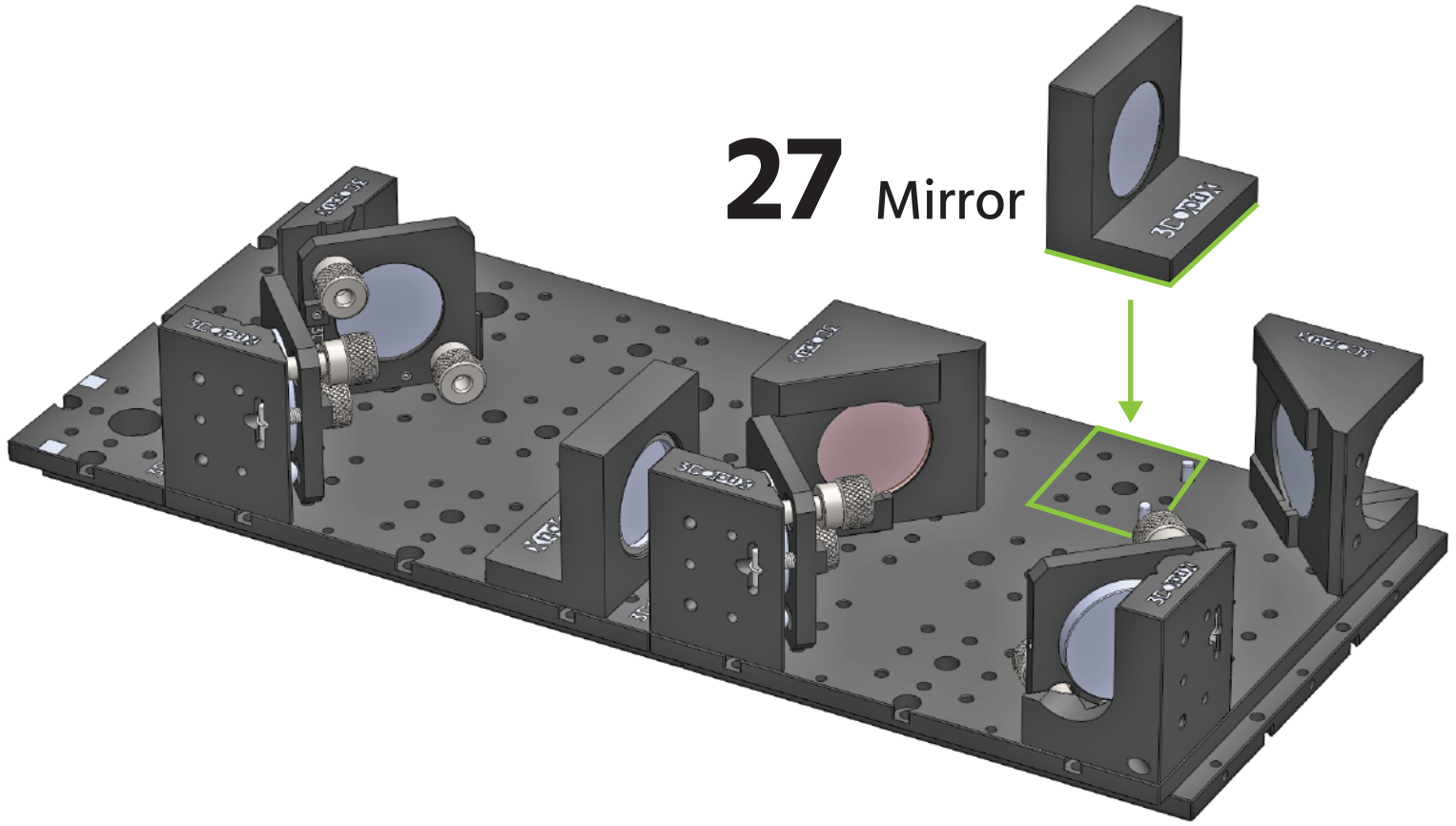


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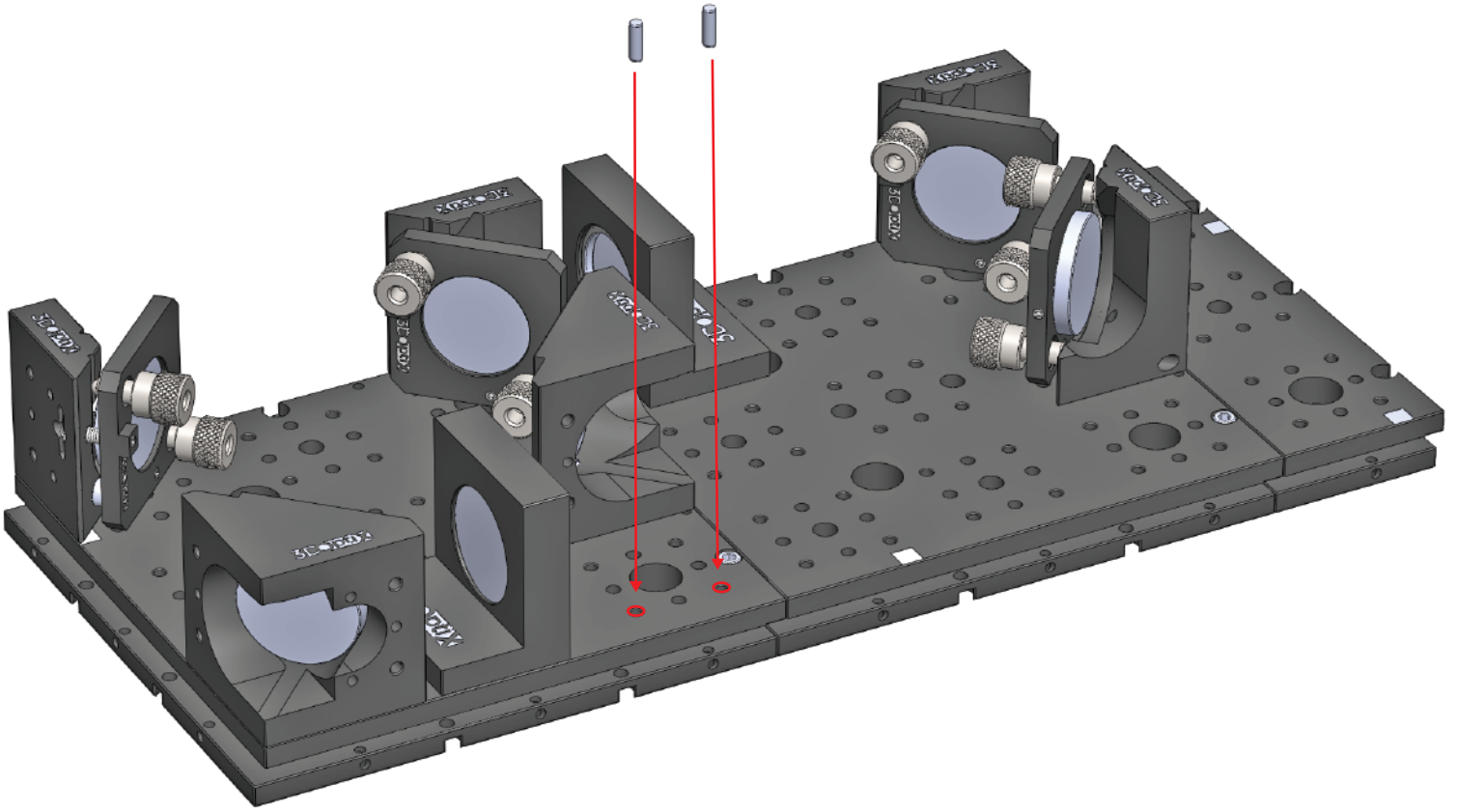
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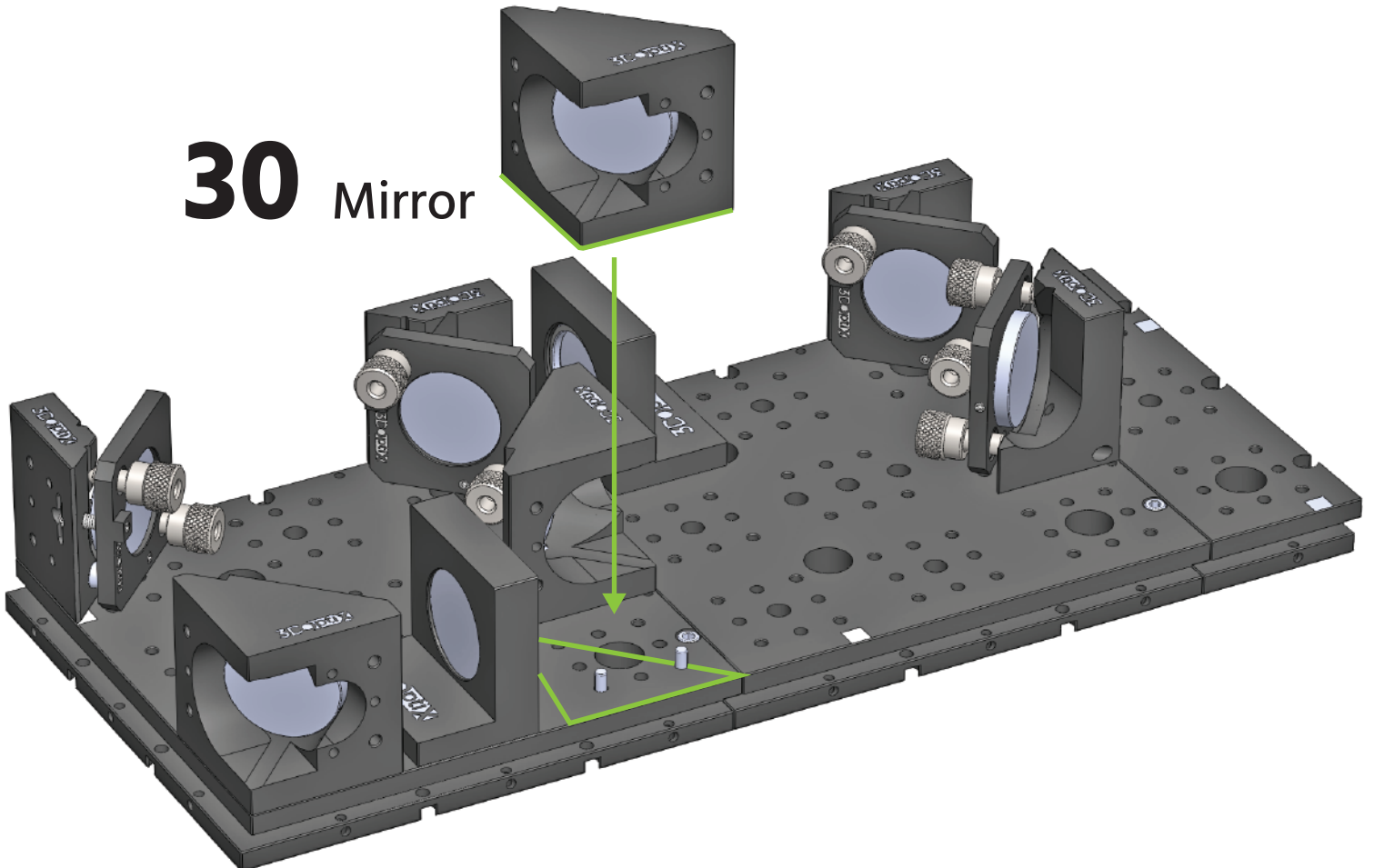


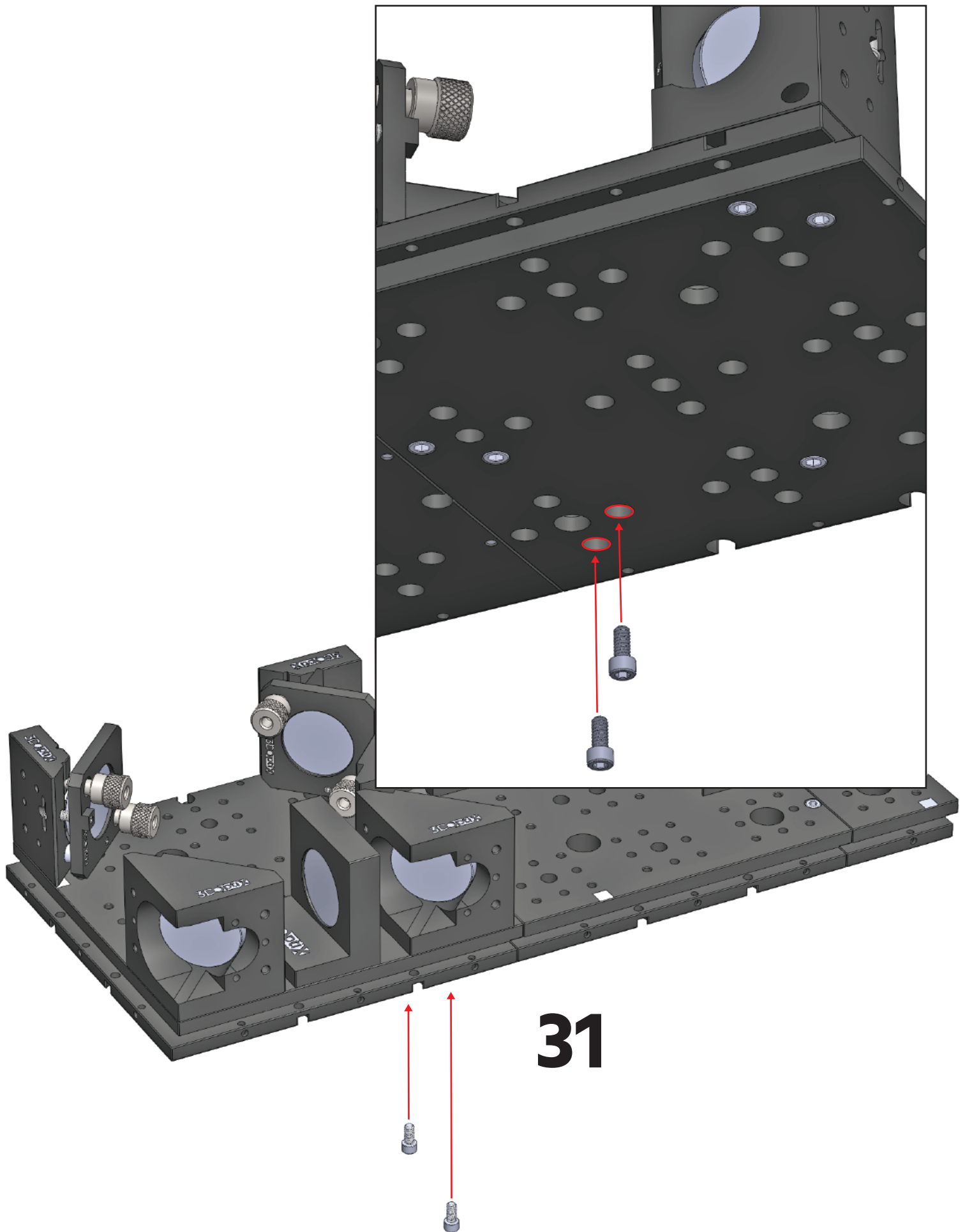
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29



30 Mirror





31