


















## Assembling instruction

\* These instructions are for recreating the portable holographic imaging device used in “Stain-free, rapid, and quantitative viral plaque assay using deep learning and holography.” Please feel free to contact [liyuzhu@ucla.edu](mailto:liyuzhu@ucla.edu) if you have any questions.

\* The dimensions of the 3D printed parts (.ipt) we provided should be further modified to accommodate the printing resolution of different 3D printers you will use.

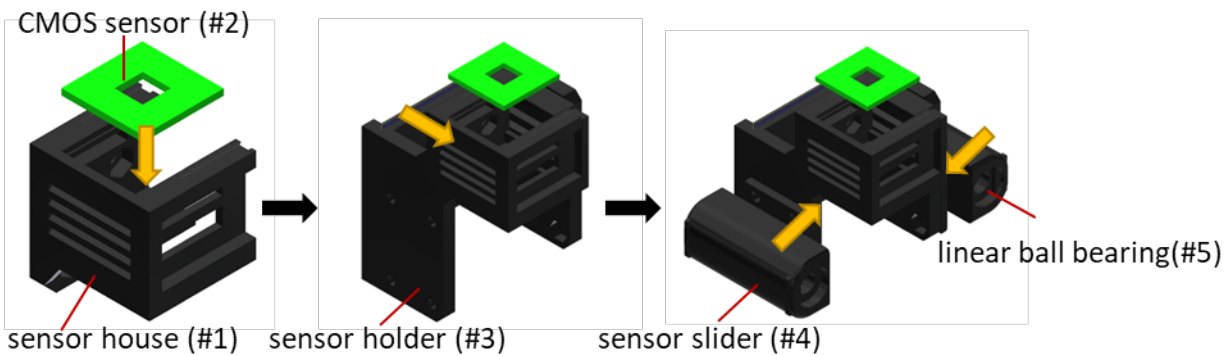
### \* Part list:

Part #	Module name	Part name	Inventor file name or product #	thumbnail
1	sensor module	sensor house	sensor-house-reflection_v5.ipt	
2		CMOS sensor	Basler ace acA3800-14uc Color USB 3.0 Camera	
3		sensor holder	sensor-holder-v3.ipt	
4		sensor slider	slave-slider-house.ipt	
5	motor module	linear ball bearing	LM8UU	
6		motor holder	master-slider-motor_v2.ipt	
7		motor	NEMA17	
8	mirror module of the “motor module	timing belt pulley wheel	GT2 Pully 20 teeth 5 mm	
9		mirror holder of the “motor holder”	master-slider-mirror-v2.ipt	
10		belts	Mc master-Carr_High-Strength Ultra-Quiet Timing Belts	
11		frame holder	frame-holder-v3.ipt	
12		mirror framer holder	frame-holder-v3_MIR.ipt	
13		flanged ball bearing	uxcell F685ZZ	
14	sample holder module	incubator chamber holder	incubator-chamber-holder.ipt	
15		plate holder	plate-holder.ipt	

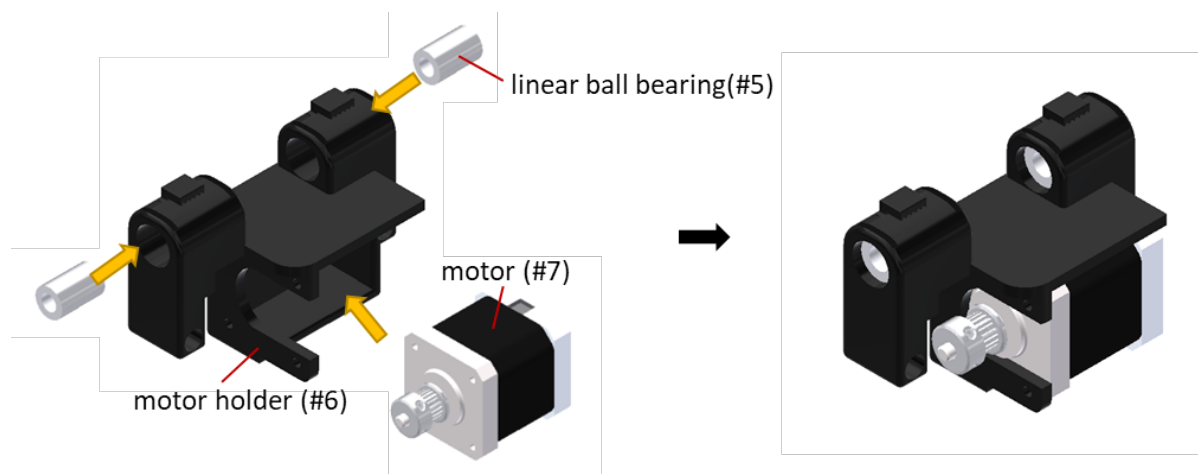
16	light source module	light source holder part 1	LD_holder_p1_v2.ipt	
17		light source holder part 2	LD_holder_p2_vExdention.ipt	
18		light source holder part 3	LD_holder_p3.ipt	
19		light source holder part 4	LD_holder_p4.ipt	
20		light source holder part 5	LD_holder_p5.ipt	

### \* Assembling steps:

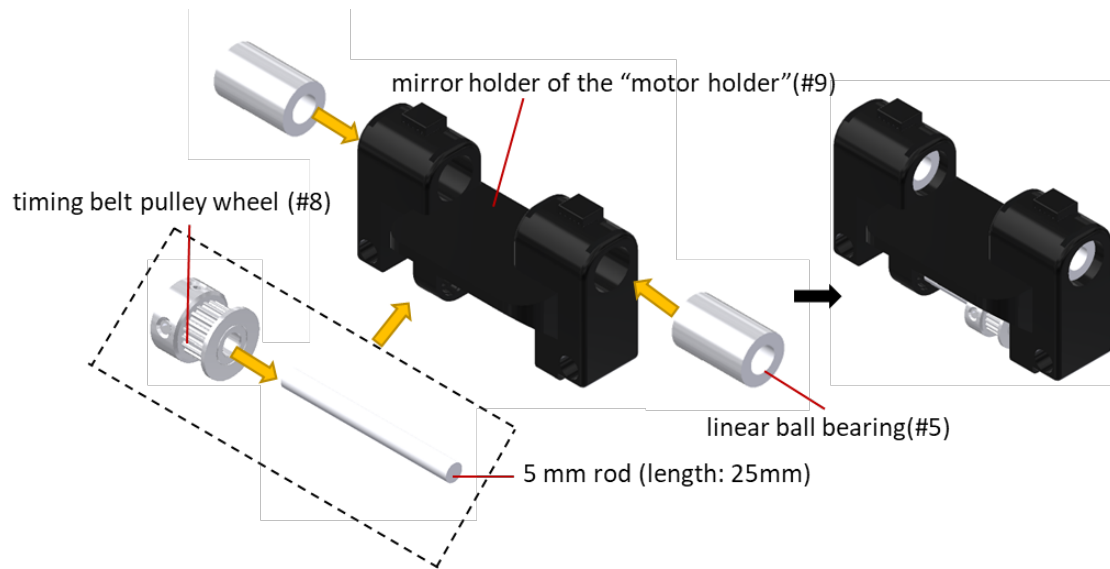
**Step 1: Finish the sensor module as follows.**



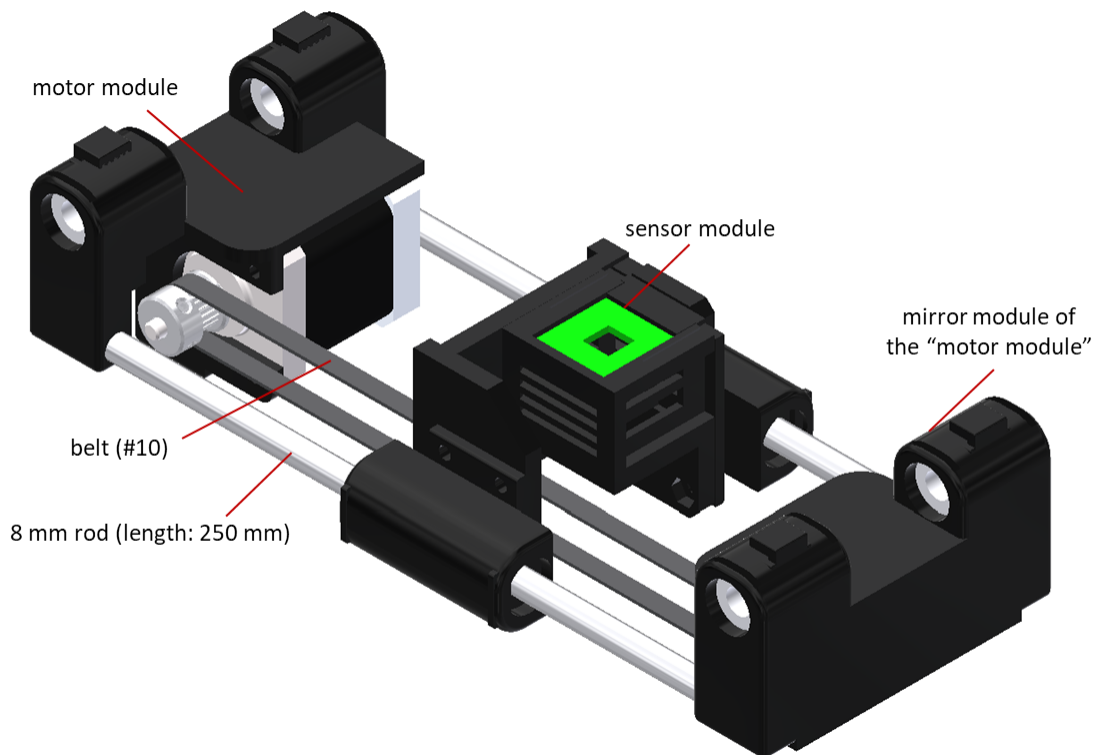
**Step 2: Finish the motor holder module as follows.**



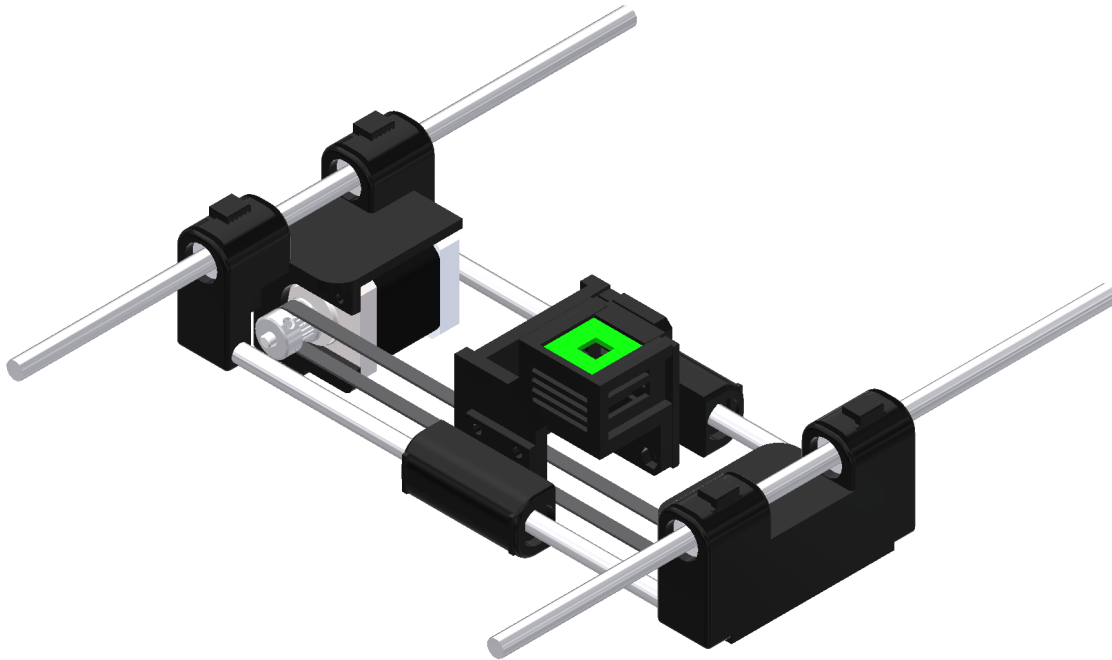
**Step 3: Finish the mirror module of the “motor module.”**



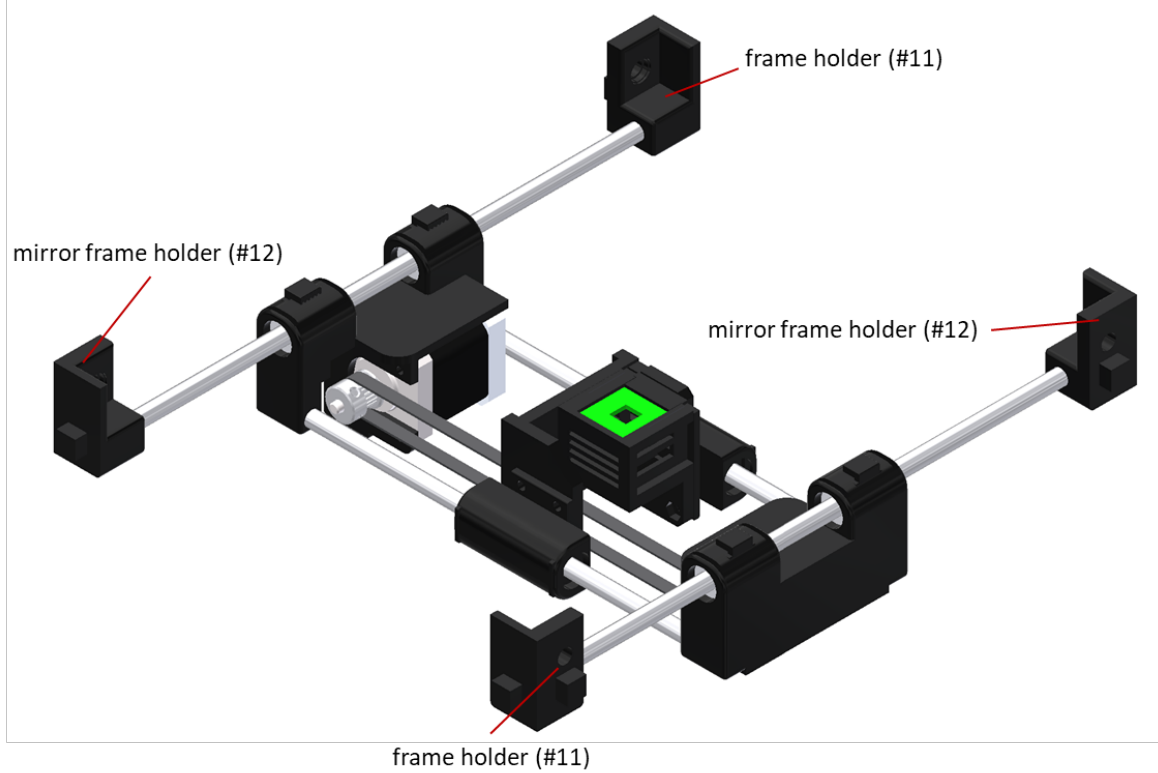
**Step 4: Connect the sensor module, the motor module, and its mirror module using two 8 mm rods (length: 250 mm). And then assemble the belt here.**



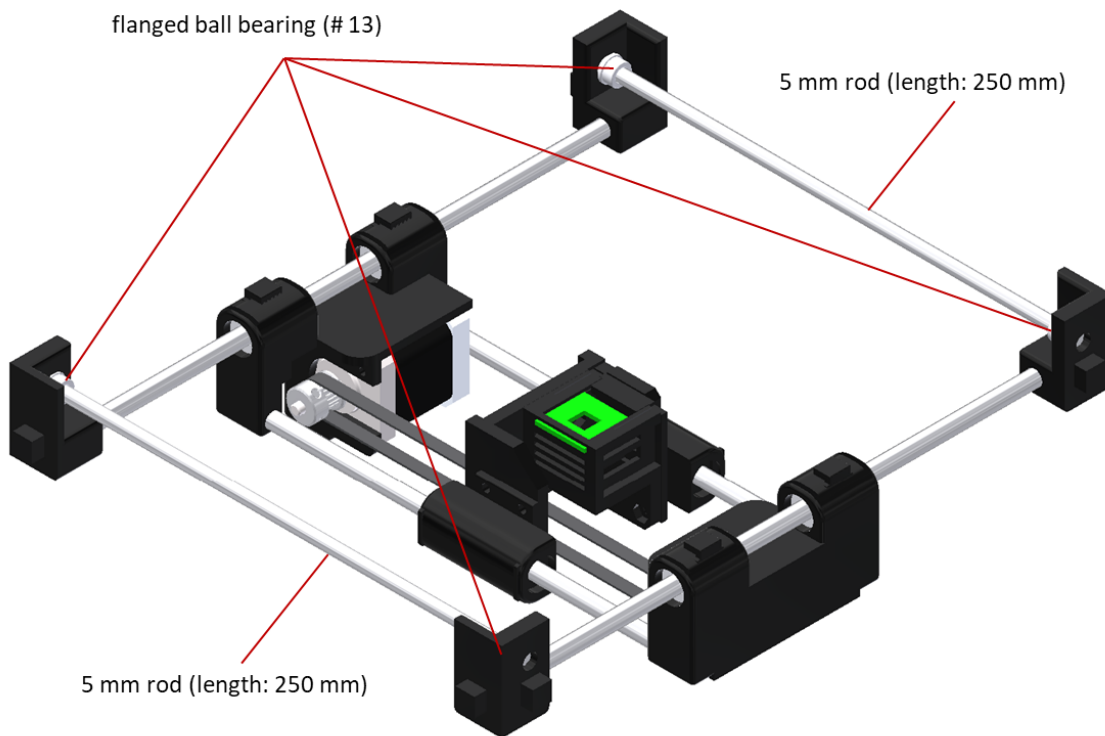
**Step 5: Add two 8 mm rods (length: 300 mm) onto the modules after “Step 3” as follows:**



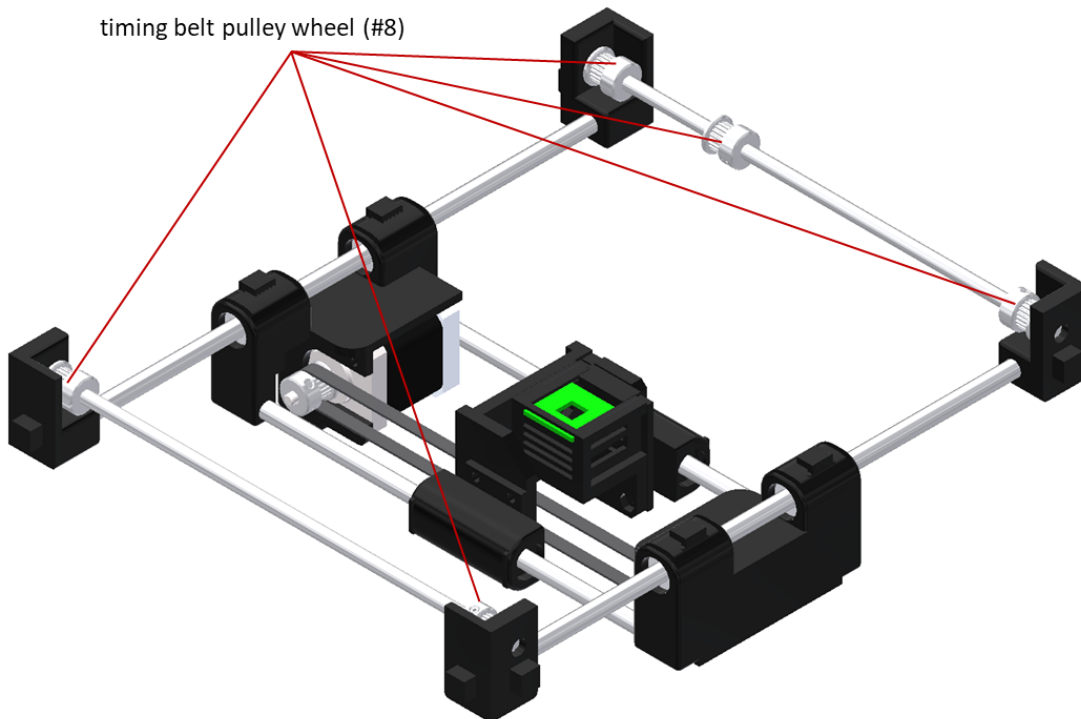
**Step 6: Continue adding two frame holders (#11) and two mirror frame holders (#12) as follows:**



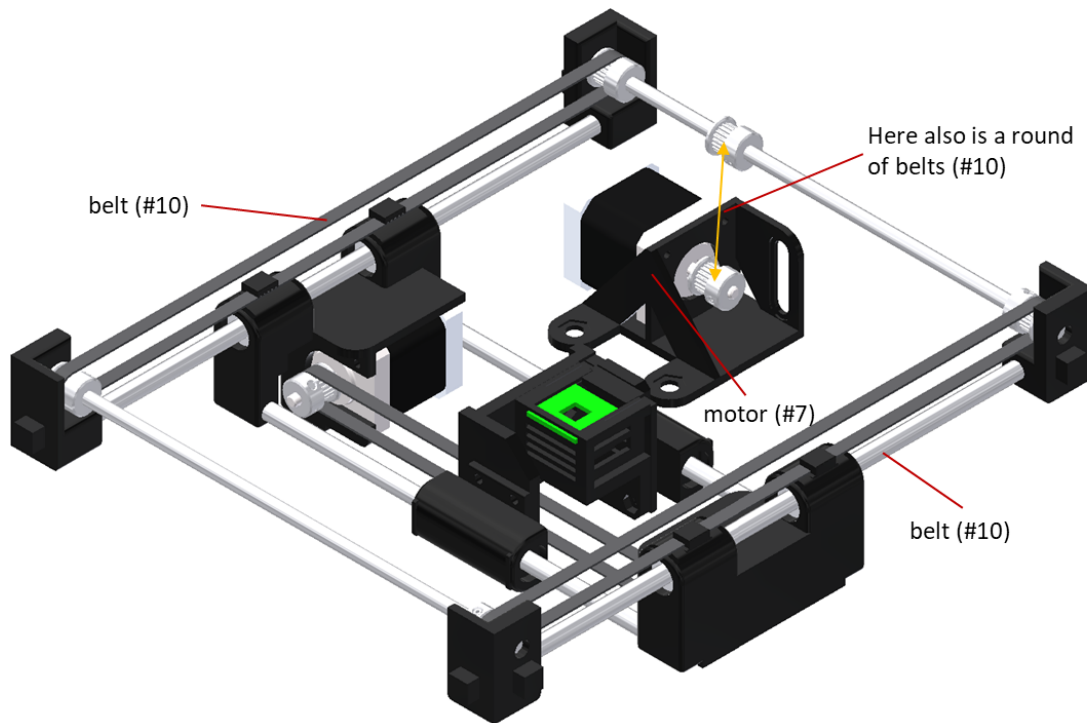
**Step 7: Continue to add four flanged ball bearings (#13) and two 5 mm rods (length: 250 mm) as follows:**



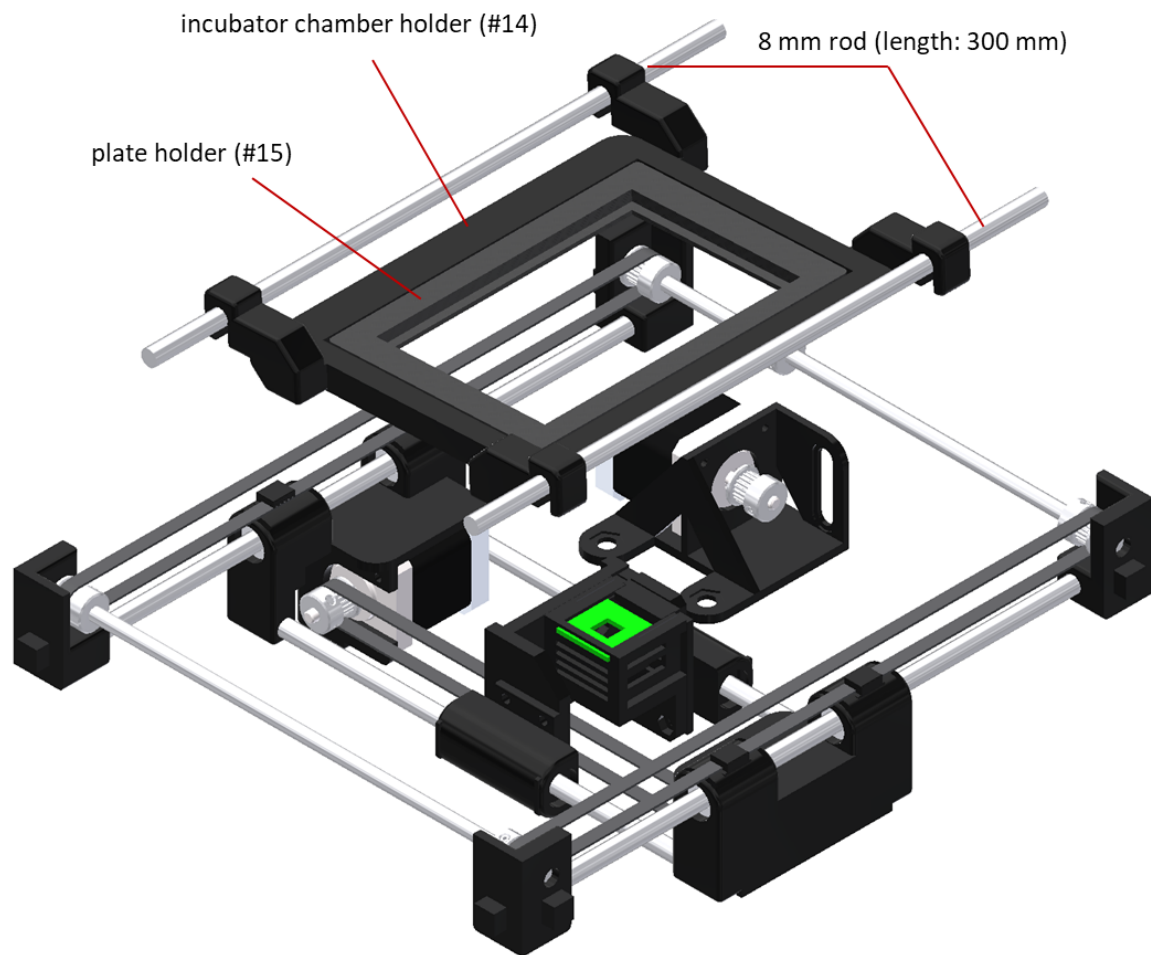
**Step 8: Continue adding five timing belt pulley wheels (#8) as follows:**



**Step 9: Continue assembling the rest of the belts and the second motor as follows. The 2D scanning stage is finished now.**



**Step 10: Continue to add the sample holder module.**



**Step 11: Continue to add the light source module. Now Finished!**

