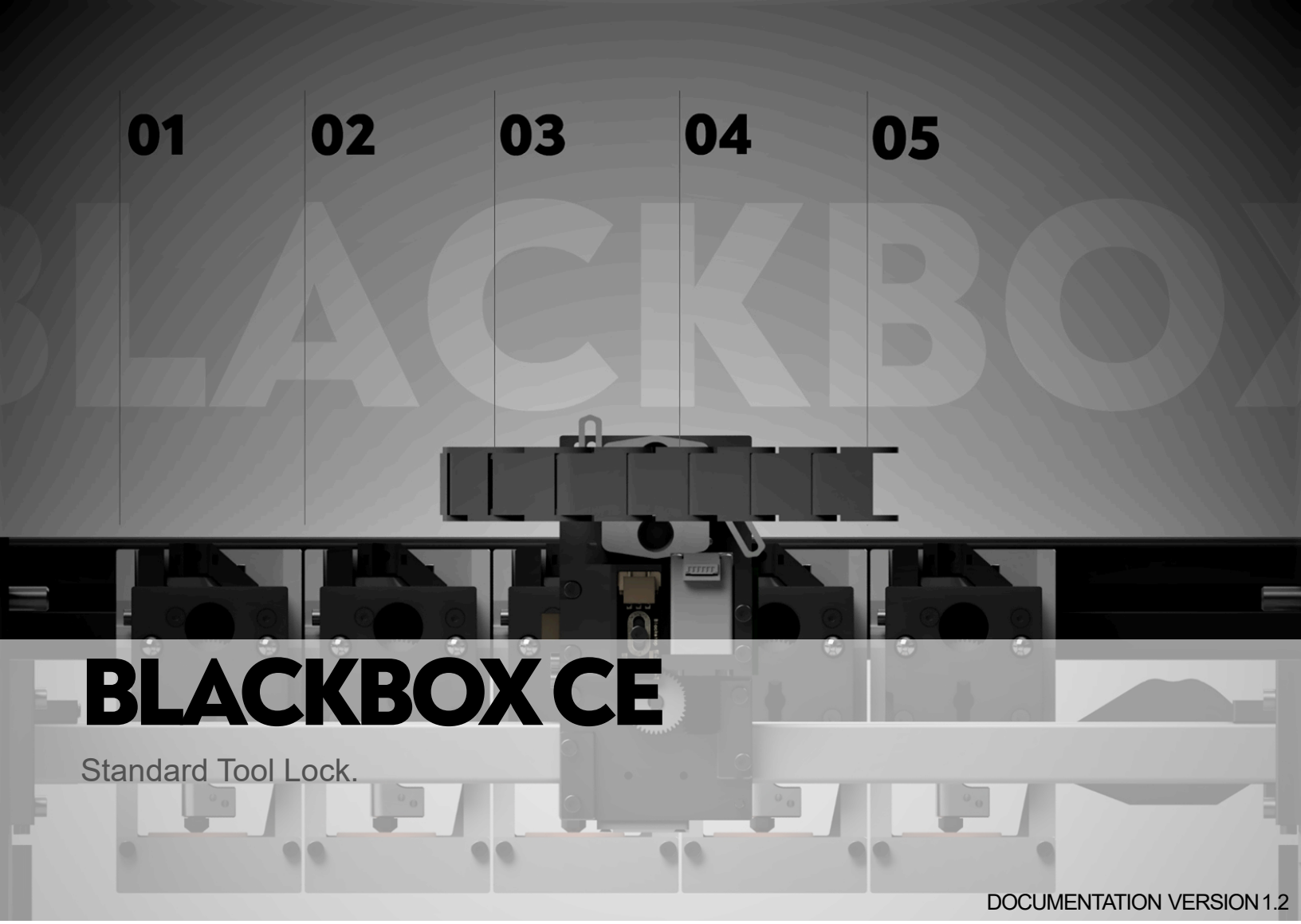


BLACKBOX CE

Standard Tool Lock.

DOCUMENTATION VERSION 1.2

Blackbox CE Mechanical Assembly:

05. Standard Tool Lock

Authored by Daniel Milton Darms

Change Log

Version	Notes
1	Initial Release
1.1	New tool lock index and moved Z switch
1.2	Changed Trigger Magnet size to metric, changed worm gear set screw to 4mm

Tools

Description
Cyanoacrylate Glue (Super Glue / Krazy Glue)
Electric Drill
Hex Wrenches
Threadlocker
Soldering Iron with Heatset insert tip
Tweezers

Parts

QTY	Description
1	Blackstop Hall Effect Endstop Sensor
3	DIN912_M2_6mm_SHCS
3	DIN912_M3_6mm_SHCS
1	DIN912_M3_8mm_SHCS
2	DIN912_M3_25mm_SHCS
1	DIN912_M3_40mm_SHCS
1	DIN916_M3_2mm_Set_Screw
1	DIN7991_M3_35_FHHS
1	ISO7380_M2_5mm_BHHS
1	Lock_Motor_Nema8_LDO
1	M3x4.6x4 Heat Set Insert
1	Neodymium_Cylinder_Magnet_3mm
1	Worm1:40_4mmBore
1	WormWheel1:40_5mmBore

Printed Parts

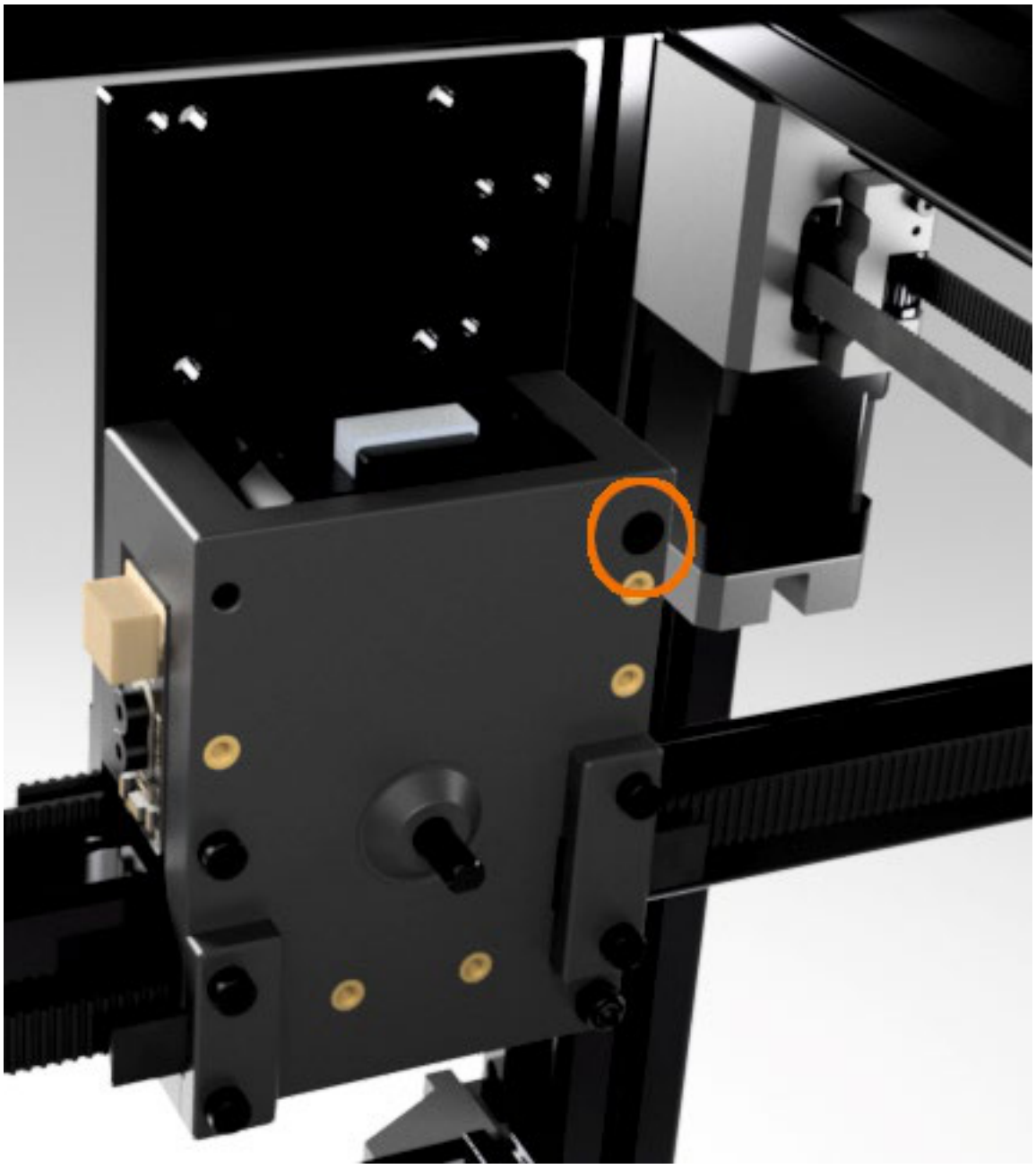
QTY	Description	Material	Ver	Link
1	Print_Standard_Lock_Motor_Installation_Tool_(1.7)	PLA	1	
1	Print_Tool_Lock_Mount_Standard	>= ABS	21	
1	Print_ToolLockIndex_V2	>= ABS	2	

Step 1 – Preparation

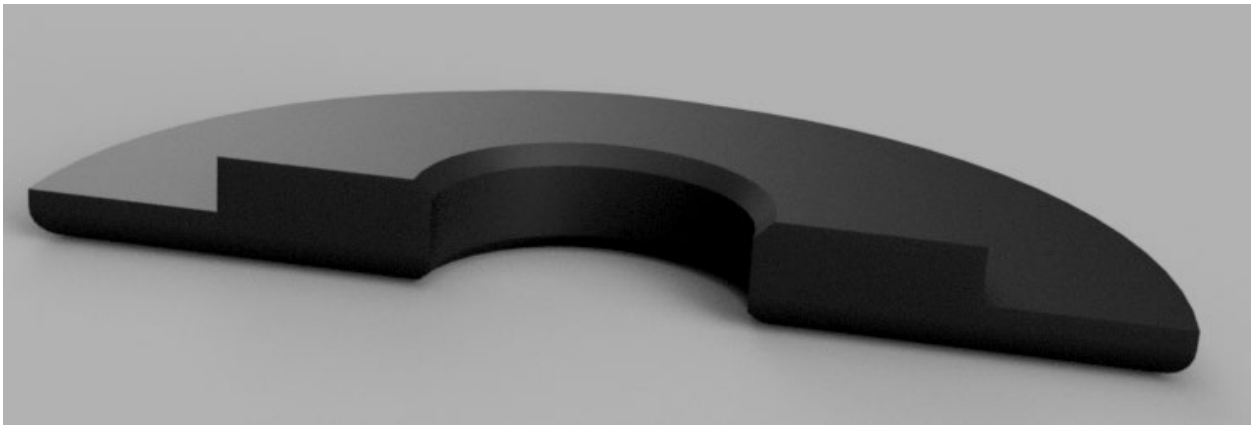
It is best to lay out all the required hardware identified in each step. The Installation Tools may be printed in a less expensive material such as PLA.

Step 2 – Standard Tool Lock

Locate a DIN7991_M3_35_FHHS and fully secure in the location shown below.



Locate Print_Standard_Lock_Motor_Installation_Tool_(1.7).

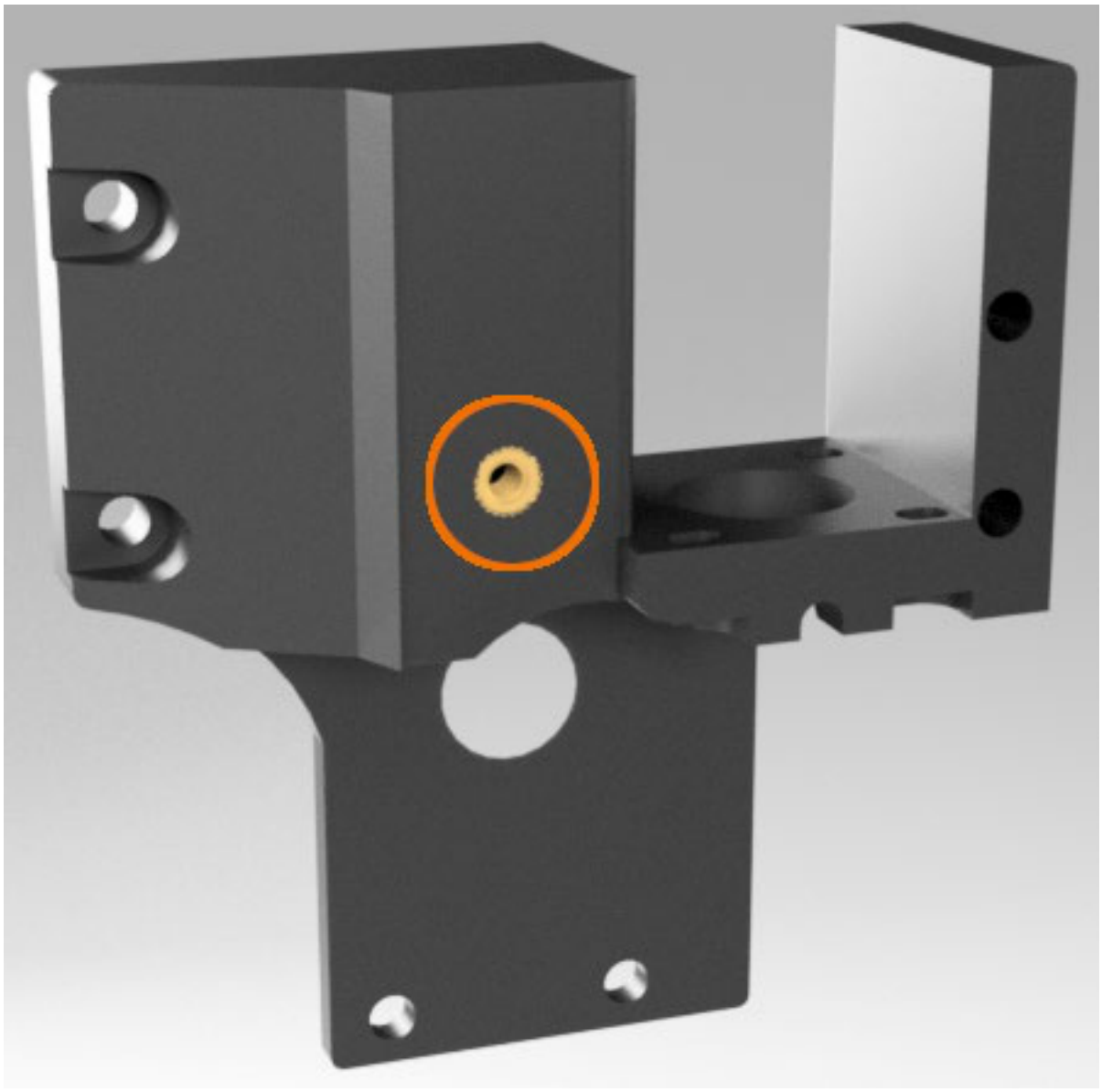


Snap the printed installation tool onto LockMotor_Nema8_LDO as shown.

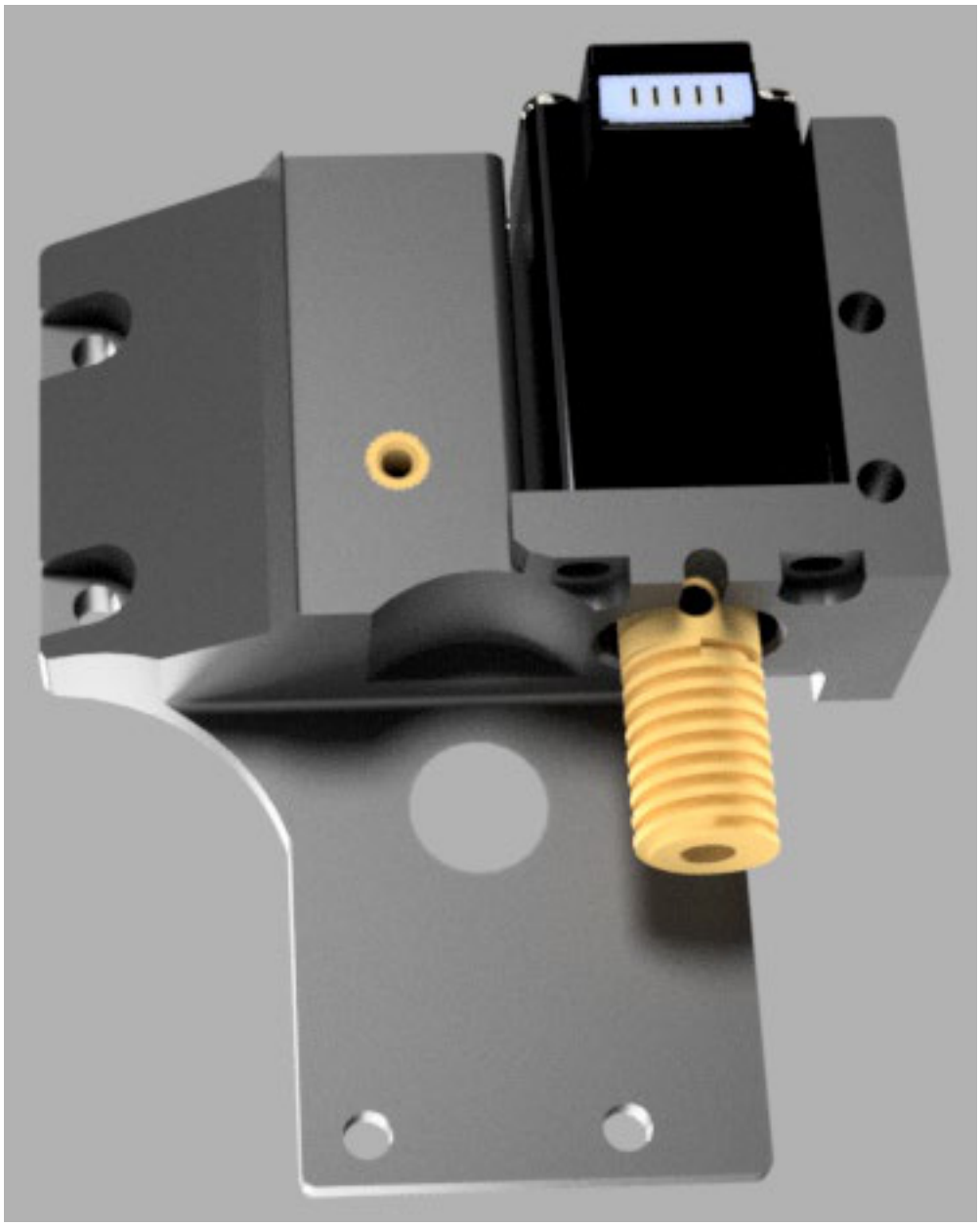
Locate the Worm1:40_4mmBore and slide it onto the motor shaft until it is flush with the printed installation tool.

Rotate the worm until the hole for the grub screw is located over the flat part of the motor shaft. Coat a DIN916_M3_2mm_Set_Screw with medium strength thread locker and secure the worm to the motor shaft. Start by securing the set screw facing the flat of the motor shaft. As this screw tightens, wiggle the worm to assure the flat end of the set screw mates flush with the flat of the NEMA 8 motor shaft. Keep the base of the worm tight with the printed Installation Tool to set the proper pulley height. Tighten the M3x2mm set screw completely.

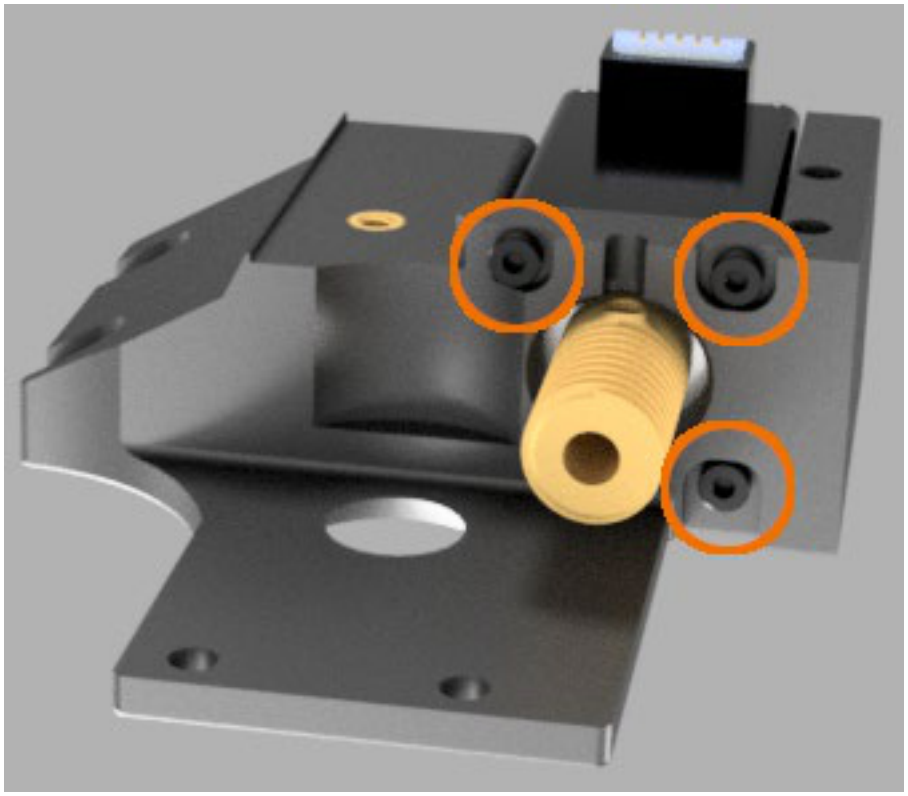
Remove the printed installation tool. Locate Print_Tool_Lock_Mount_Standard and install a M3_4.6x4mm_Heat_Set_Insert as shown.



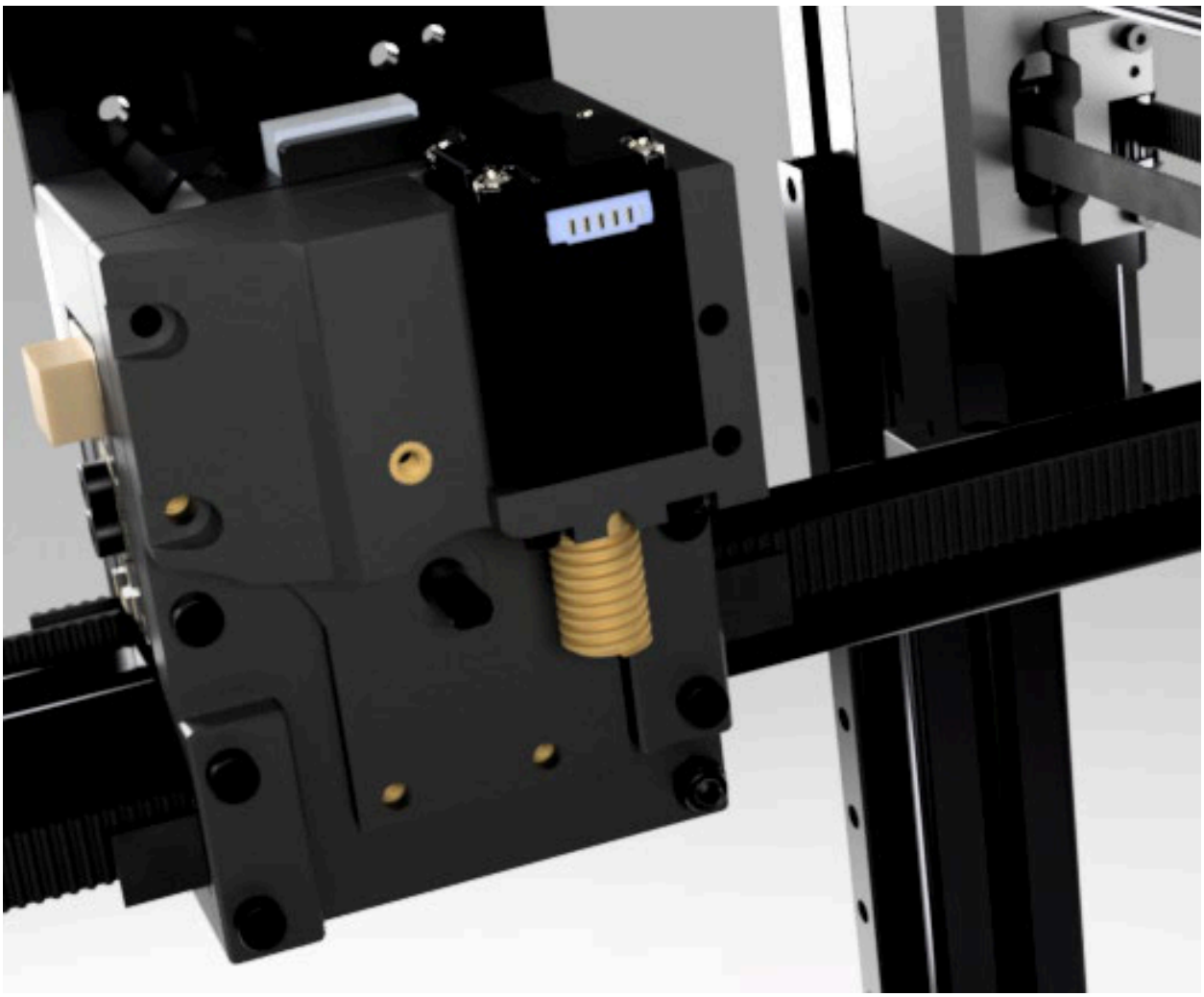
Place the NEMA 8 motor assembly into the printed standard lock mount and center the motor in the cradle. Pay attention to the wiring harness connector orientation.



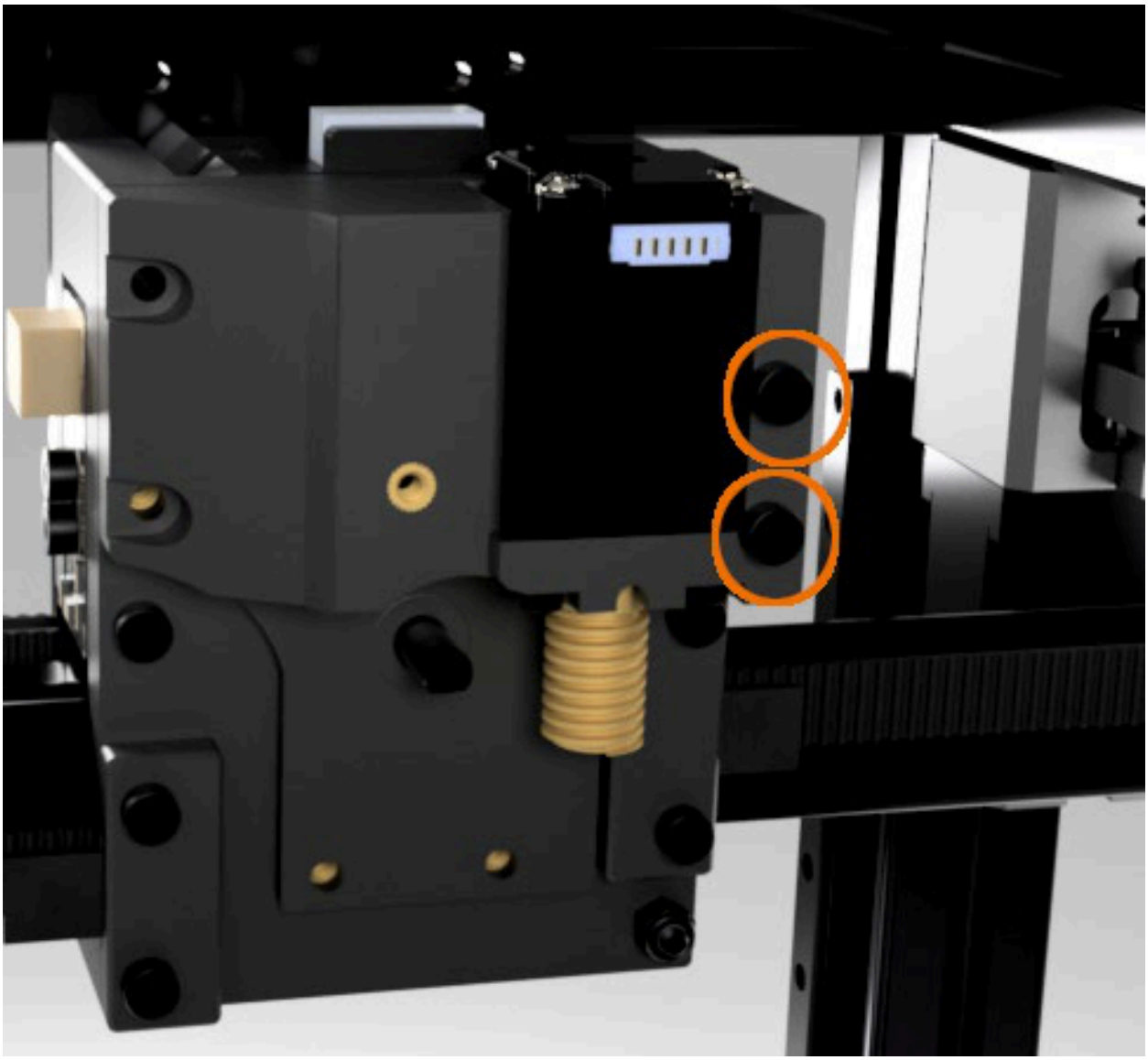
Secure the motor to the mount with three DIN912_M2_8mm_SHCS as shown.



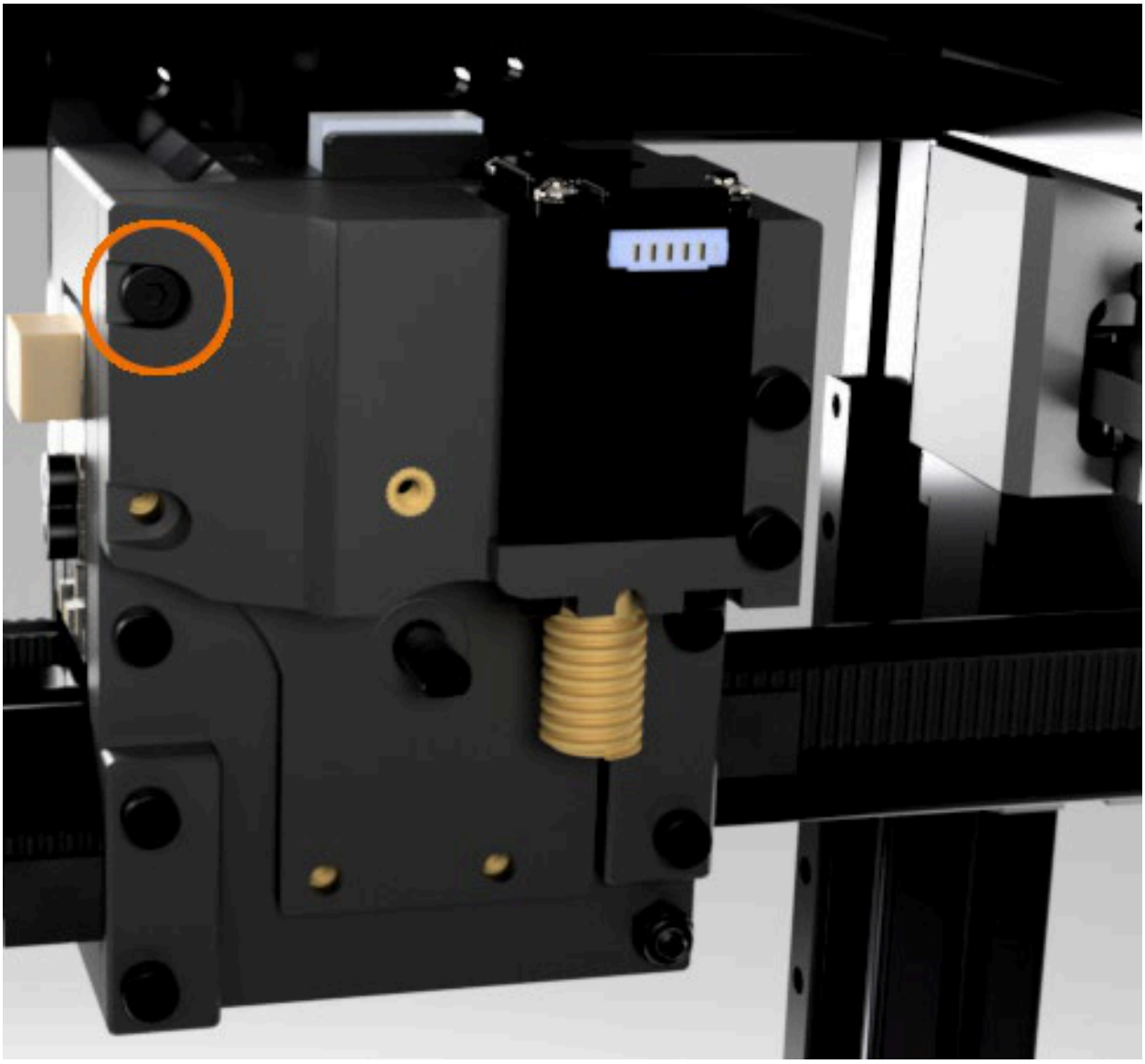
Place the standard mount assembly onto the printed X-Bracket assembly as shown.



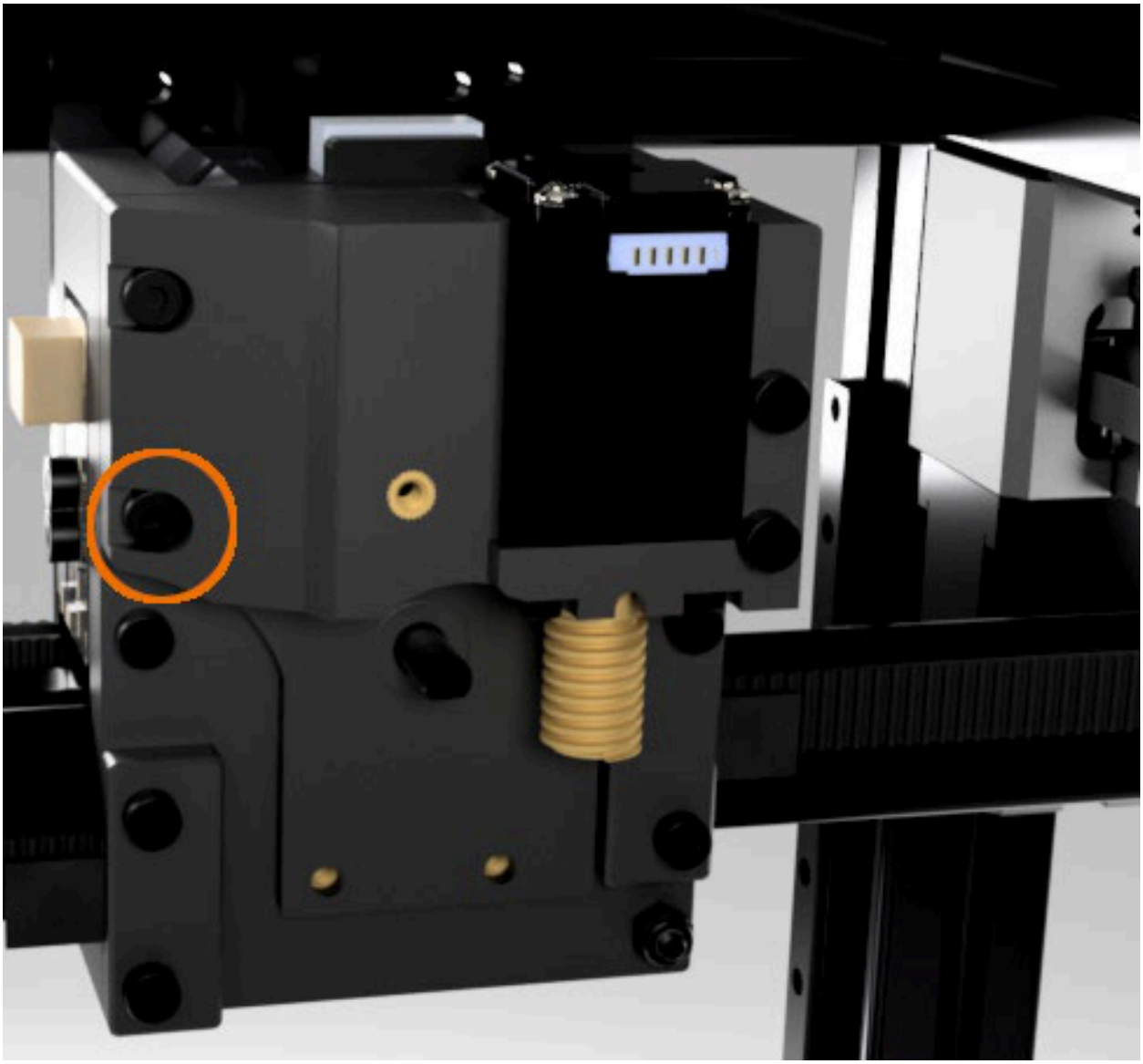
Secure the standard lock assembly to the printed X-Bracket assembly with two DIN912_M3_25mm_SHCS as shown.



Install and fully tighten a DIN912_M3_40mm_SHCS into the location shown.



Install and fully tighten a DIN912_M3_8mm_SHCS into the location shown.

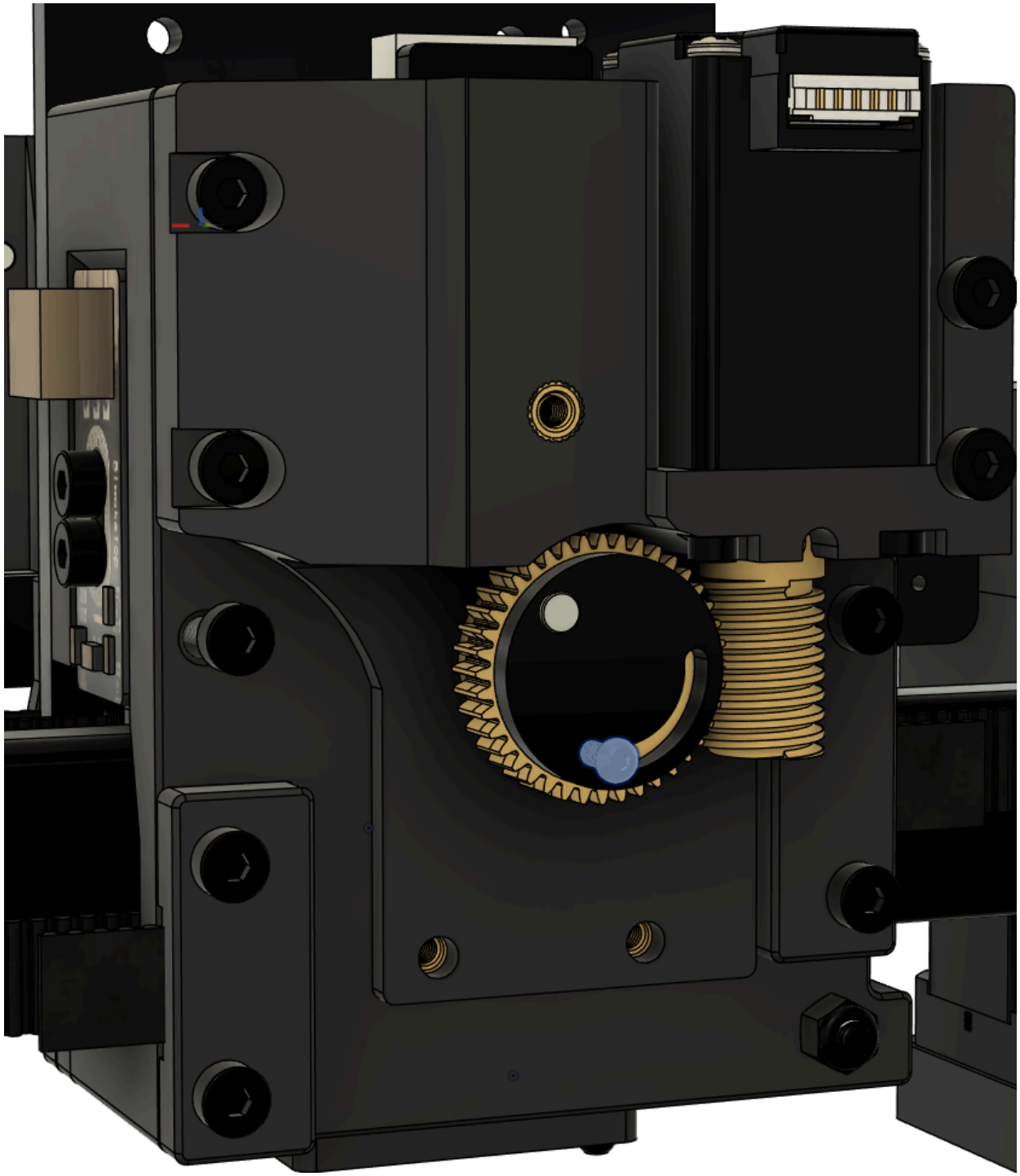


Locate the WormWheel1:40_5mmBore and place it on the t-lock shaft as shown. Push the worm wheel flush to the printed standard lock mount and orient the grub screw hole to face the flat of the end of t-lock shaft.

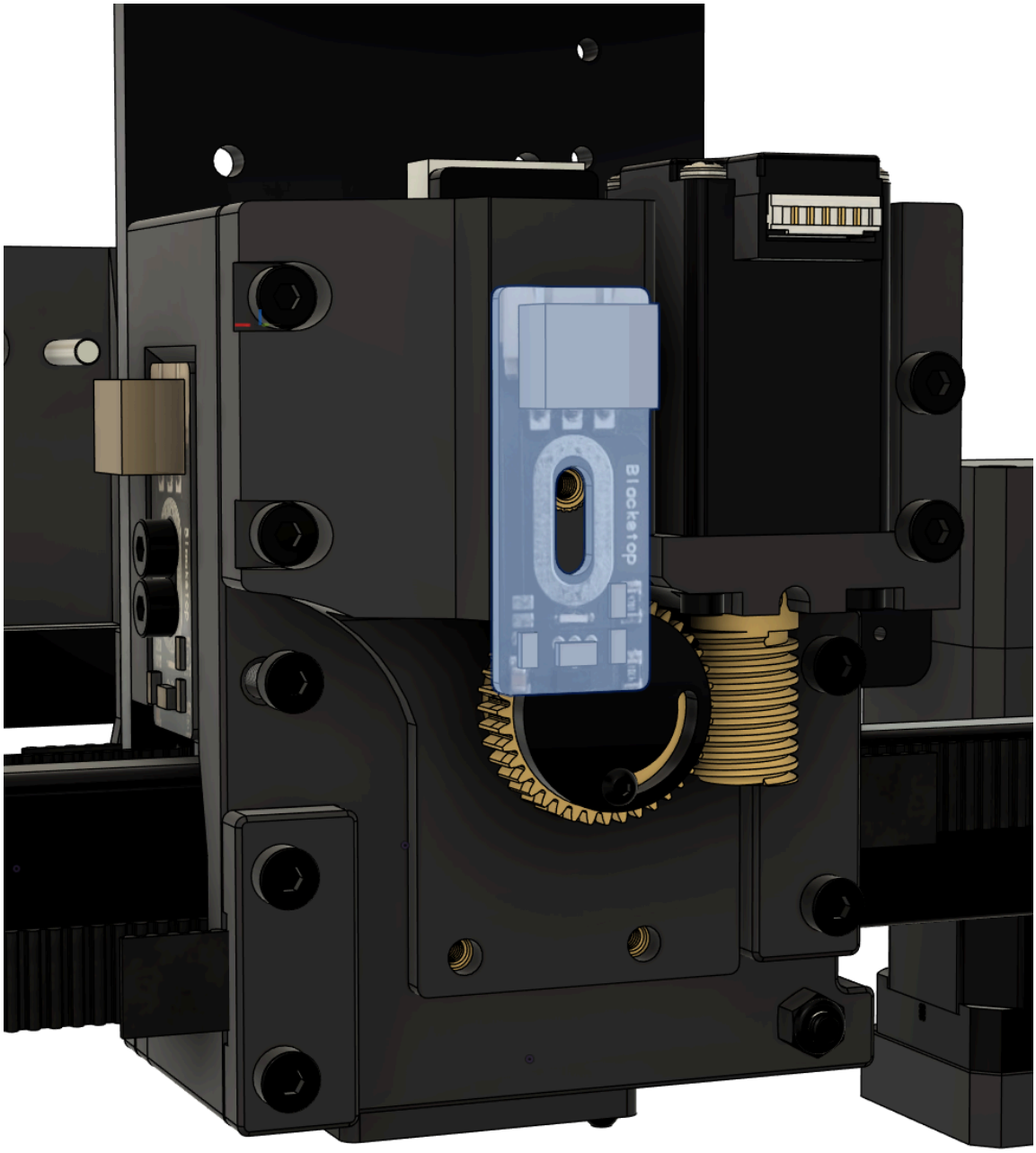
Check that the worm wheel is centered to the worm and then coat a DIN916_M4_5mm_Set_Screw with medium strength thread locker and secure the worm wheel to the t-lock shaft. Start by securing the set screw facing the flat of the t-lock shaft. As this screw tightens, wiggle the worm wheel to assure the flat end of the set screw mates flush with the flat of the t-lock motor shaft. Tighten the M3x5mm set screw completely.

Locate Print_ToolLockIndex_V2 and secure a Neodymium_Cylinder_Magnet_3mm into the location shown with CA adhesive. NOTE: The magnet should be flush to the back side of the printed part. Note that the back side of this part has a raised feature for centering.

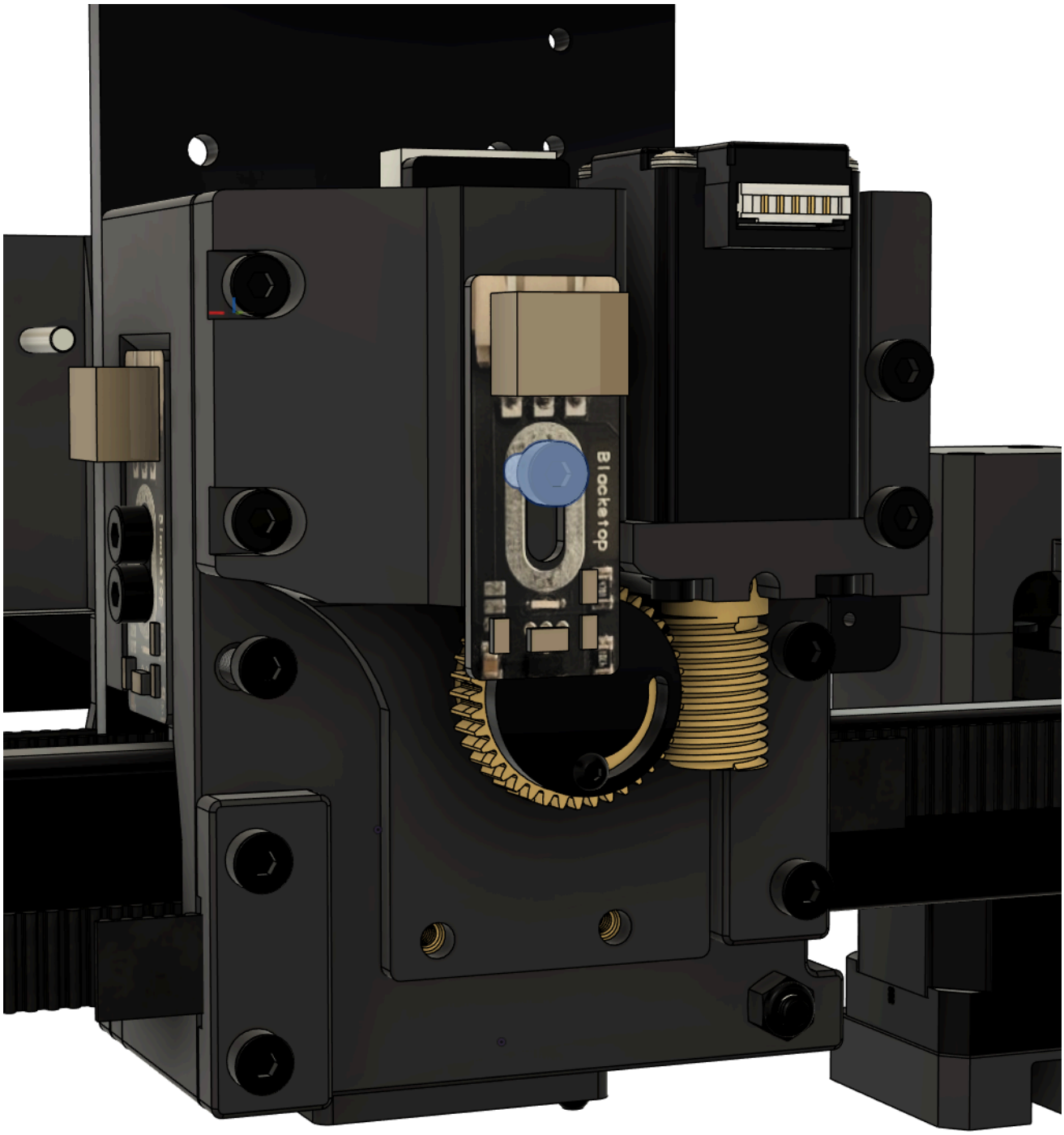
Place the printed lock index assembly onto the end of the t-lock shaft. Secure the lock index to the worm wheel with (1) ISO7380_M2_5mm_BHHS as shown. NOTE: The final position of the lock index will be set later during the commissioning of the machine.



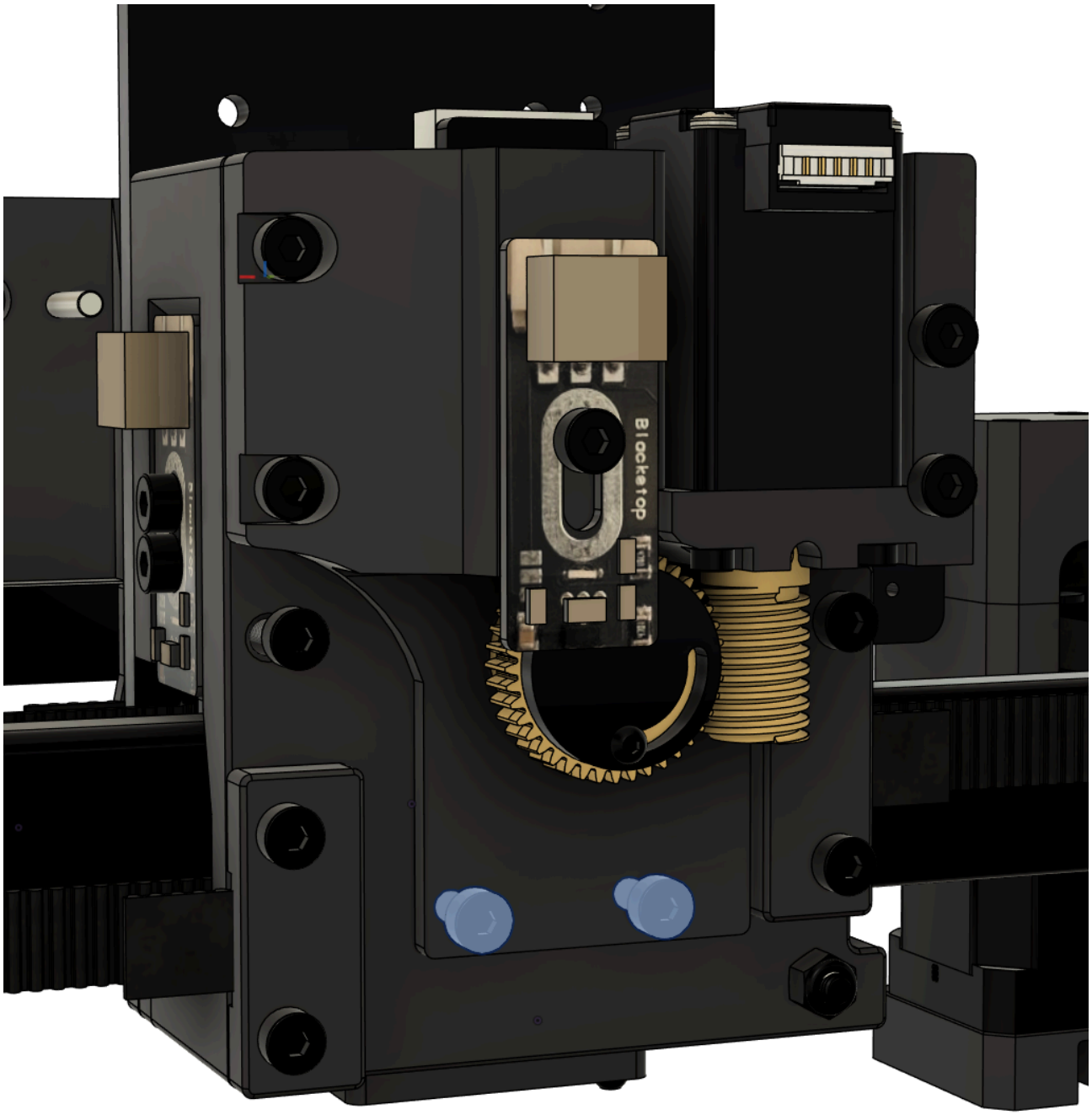
Place a BlackStop on to the standard lock assembly as shown.



Fasten the BlackStop to the standard lock assembly with a DIN912_M3_6mm_SHCS as shown.



Install (2) DIN912_M3_6mm SHCS in the remaining two fastening locations.



Congratulations! You have completed all the steps for the assembly of the Standard Remote Lock.