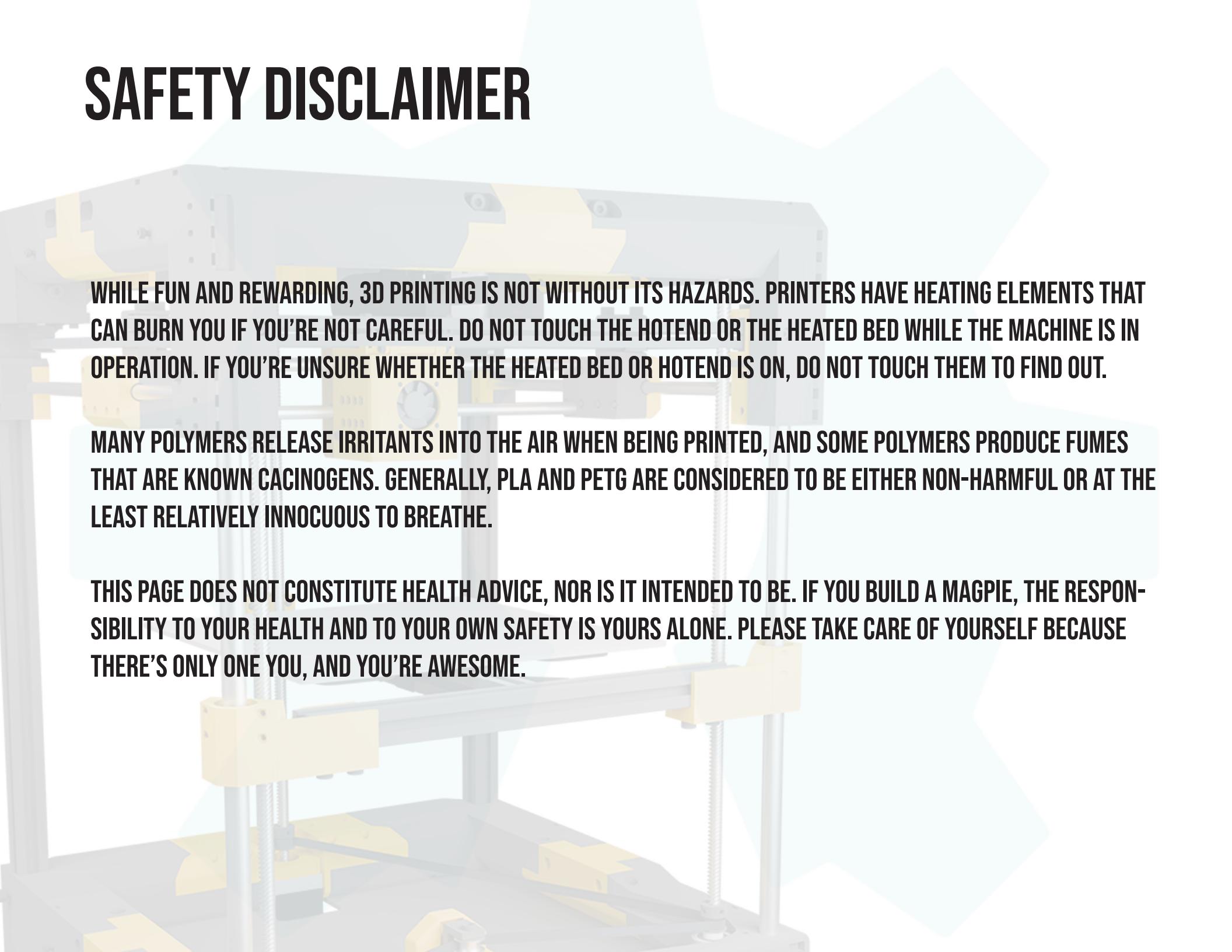


# THE MAGPIE

OPEN-SOURCE & EASY TO BUILD

Version 1.0

# SAFETY DISCLAIMER

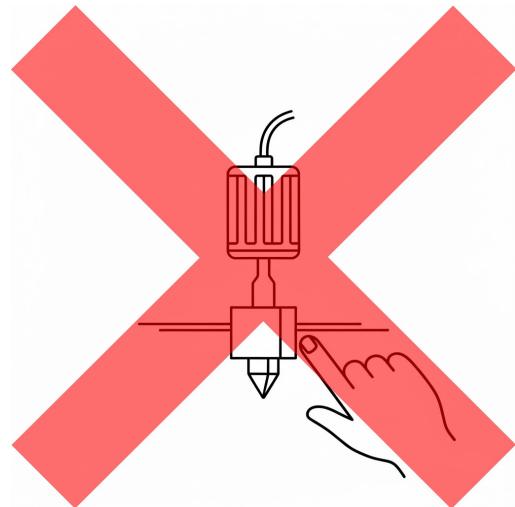


WHILE FUN AND REWARDING, 3D PRINTING IS NOT WITHOUT ITS HAZARDS. PRINTERS HAVE HEATING ELEMENTS THAT CAN BURN YOU IF YOU'RE NOT CAREFUL. DO NOT TOUCH THE HOTEND OR THE HEATED BED WHILE THE MACHINE IS IN OPERATION. IF YOU'RE UNSURE WHETHER THE HEATED BED OR HOTEND IS ON, DO NOT TOUCH THEM TO FIND OUT.

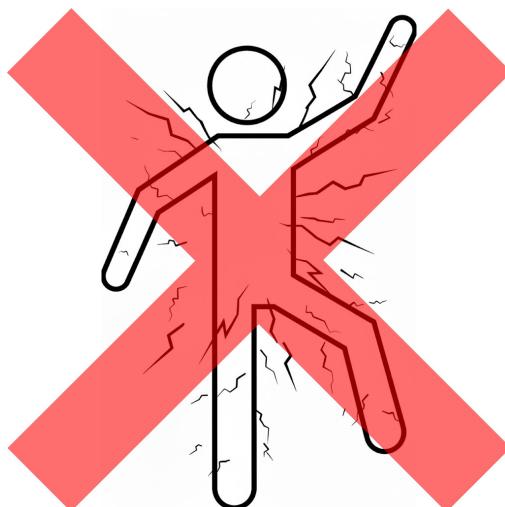
MANY POLYMERS RELEASE IRRITANTS INTO THE AIR WHEN BEING PRINTED, AND SOME POLYMERS PRODUCE FUMES THAT ARE KNOWN CACINOGENS. GENERALLY, PLA AND PETG ARE CONSIDERED TO BE EITHER NON-HARMFUL OR AT THE LEAST RELATIVELY INNOCUOUS TO BREATHE.

THIS PAGE DOES NOT CONSTITUTE HEALTH ADVICE, NOR IS IT INTENDED TO BE. IF YOU BUILD A MAGPIE, THE RESPONSIBILITY TO YOUR HEALTH AND TO YOUR OWN SAFETY IS YOURS ALONE. PLEASE TAKE CARE OF YOURSELF BECAUSE THERE'S ONLY ONE YOU, AND YOU'RE AWESOME.

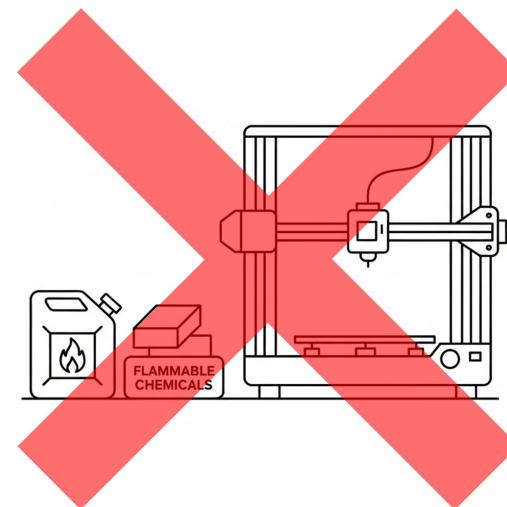
# SAFETY TIPS



DON'T TOUCH THE HOTEND



DON'T PLAY WITH MAINS POWER  
UNLESS YOU KNOW WHAT YOU'RE  
DOING



DON'T PRINT NEAR THINGS  
THAT WANT TO BE ON FIRE

# PRINTED PARTS SETTINGS

## MATERIAL CONSIDERATIONS

ACCEPTABLE MATERIALS ARE: ASA, ABS, PETG, PCTG, PLA

DO NOT ENCLOSE THE PRINTER IF PRINTED FROM PLA

## PRINT SETTINGS:

“VORON STANDARD”

LAYER HEIGHT: 0.2MM

EXTRUSION WIDTH: 0.4MM, FORCED

INFILL PERCENTAGE: 40%

INFILL TYPE: GRID, GYROID, HONEYCOMB, TRIANGLE, OR  
CUBIC

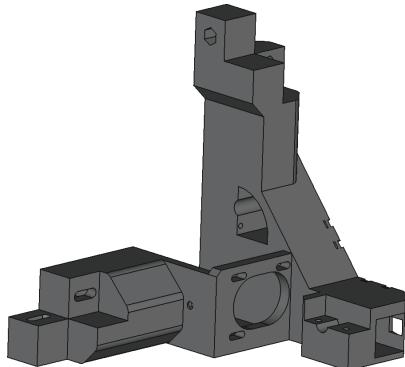
WALL COUNT: 4

SOLID TOP/BOTTOM LAYERS: 5

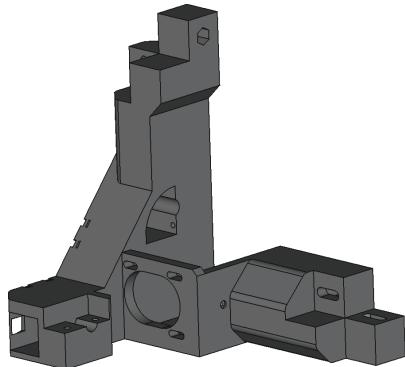
SUPPORTS: NONE

# TOP FRAME ASSEMBLY

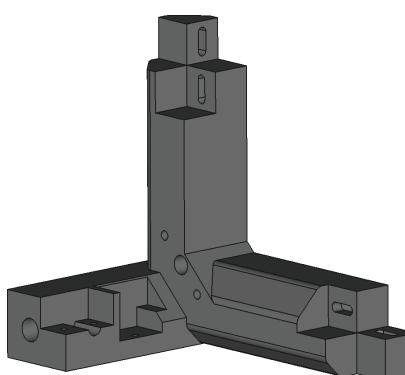
## REQUIRED PIECES:



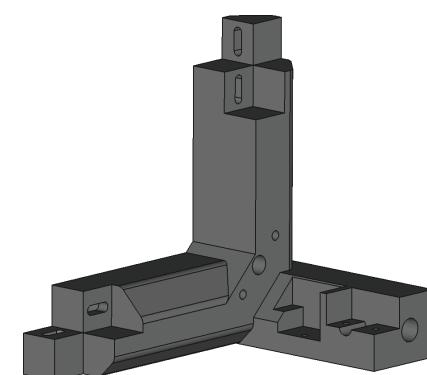
REAR LEFT CORNER



REAR RIGHT CORNER

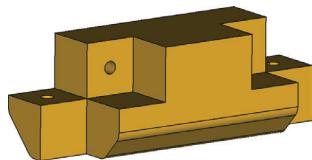


FRONT LEFT CORNER

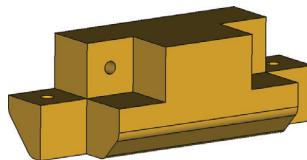


FRONT RIGHT CORNER

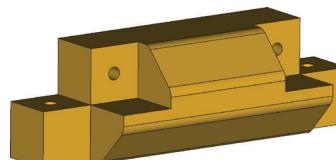
SIDE CONNECTOR (1 OF 2)



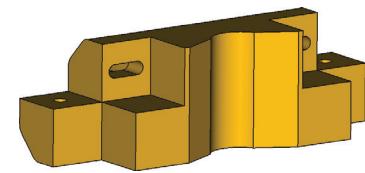
SIDE CONNECTER (2 OF 2)



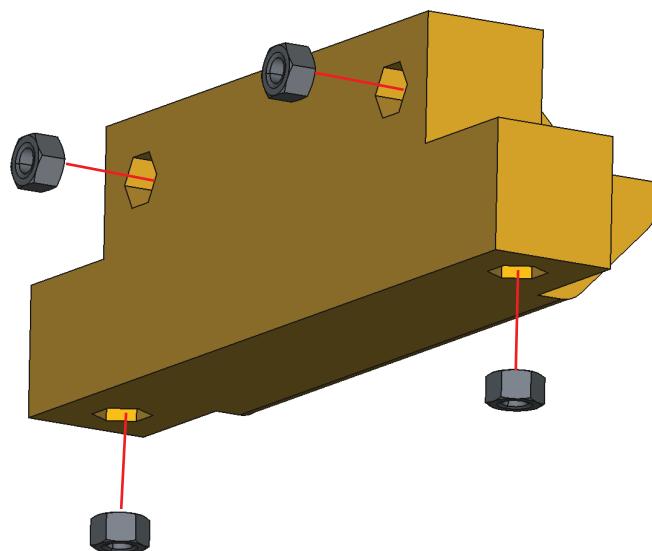
FRONT CONNECTOR



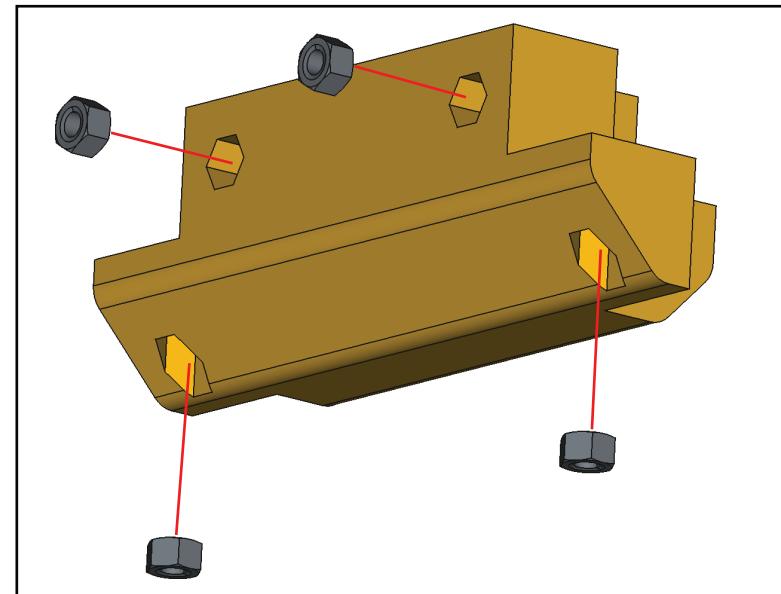
REAR CONNECTOR



# TOP FRAME ASSEMBLY

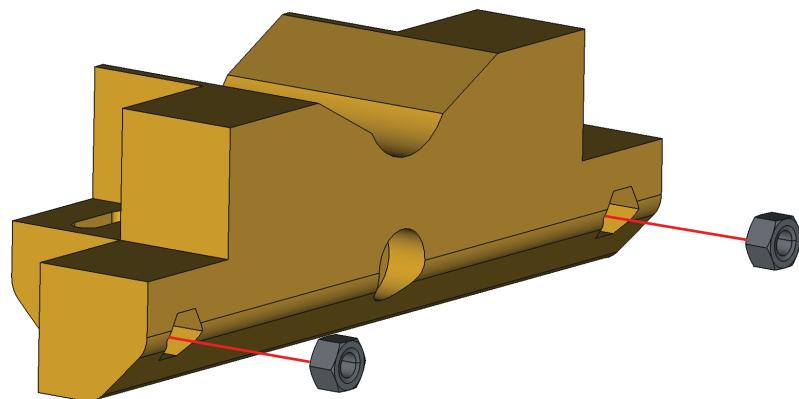


FRONT CONNECTOR

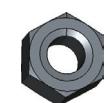


SIDE CONNECTOR

X2

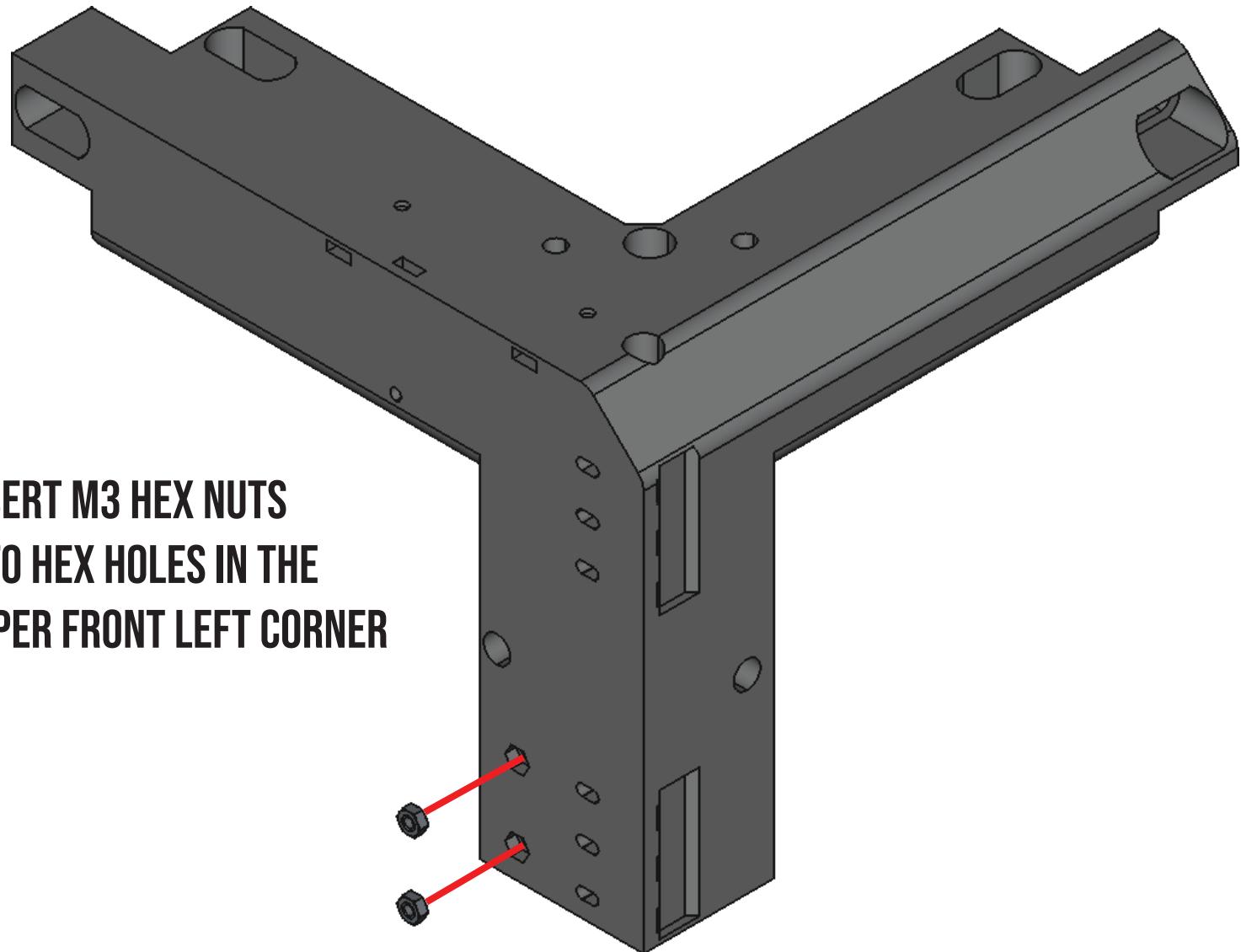


REAR CONNECTOR



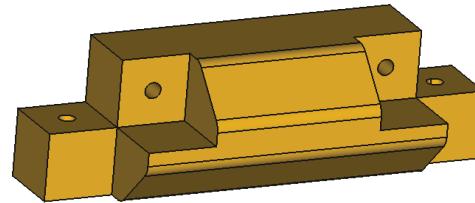
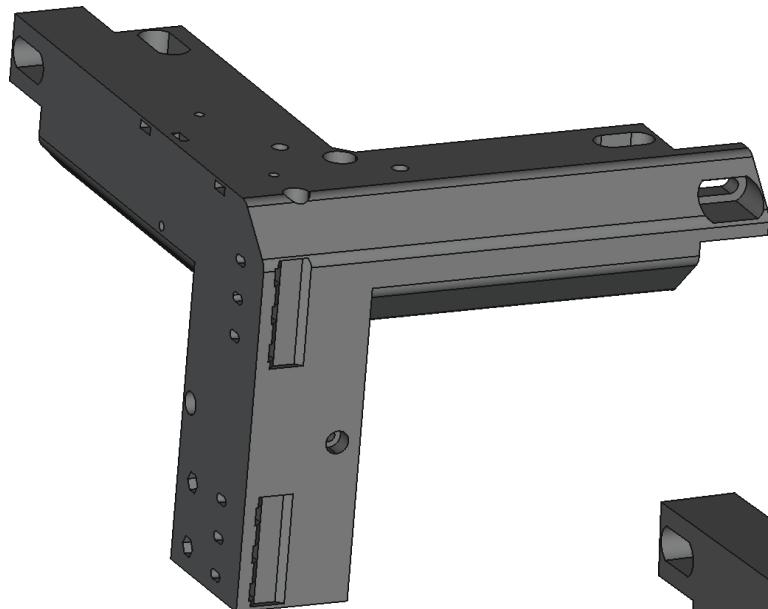
M5 HEX NUT

# TOP FRAME ASSEMBLY

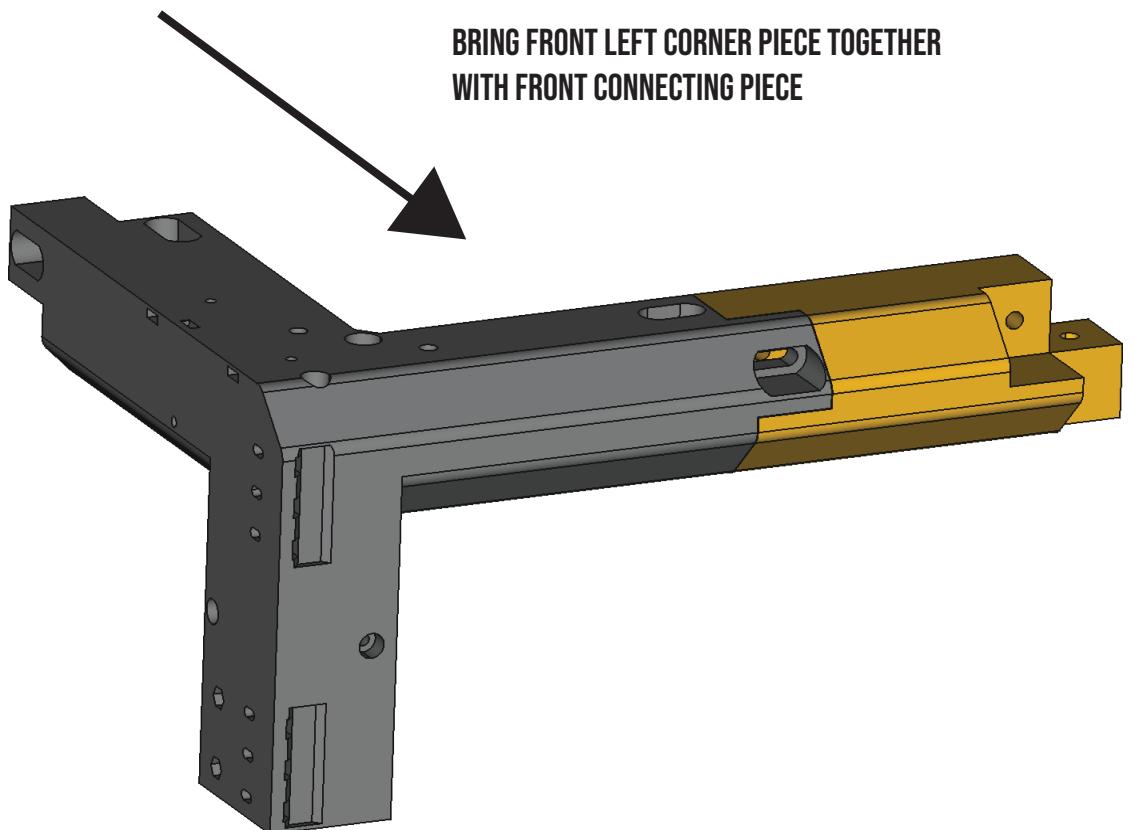


 M3 HEX NUT

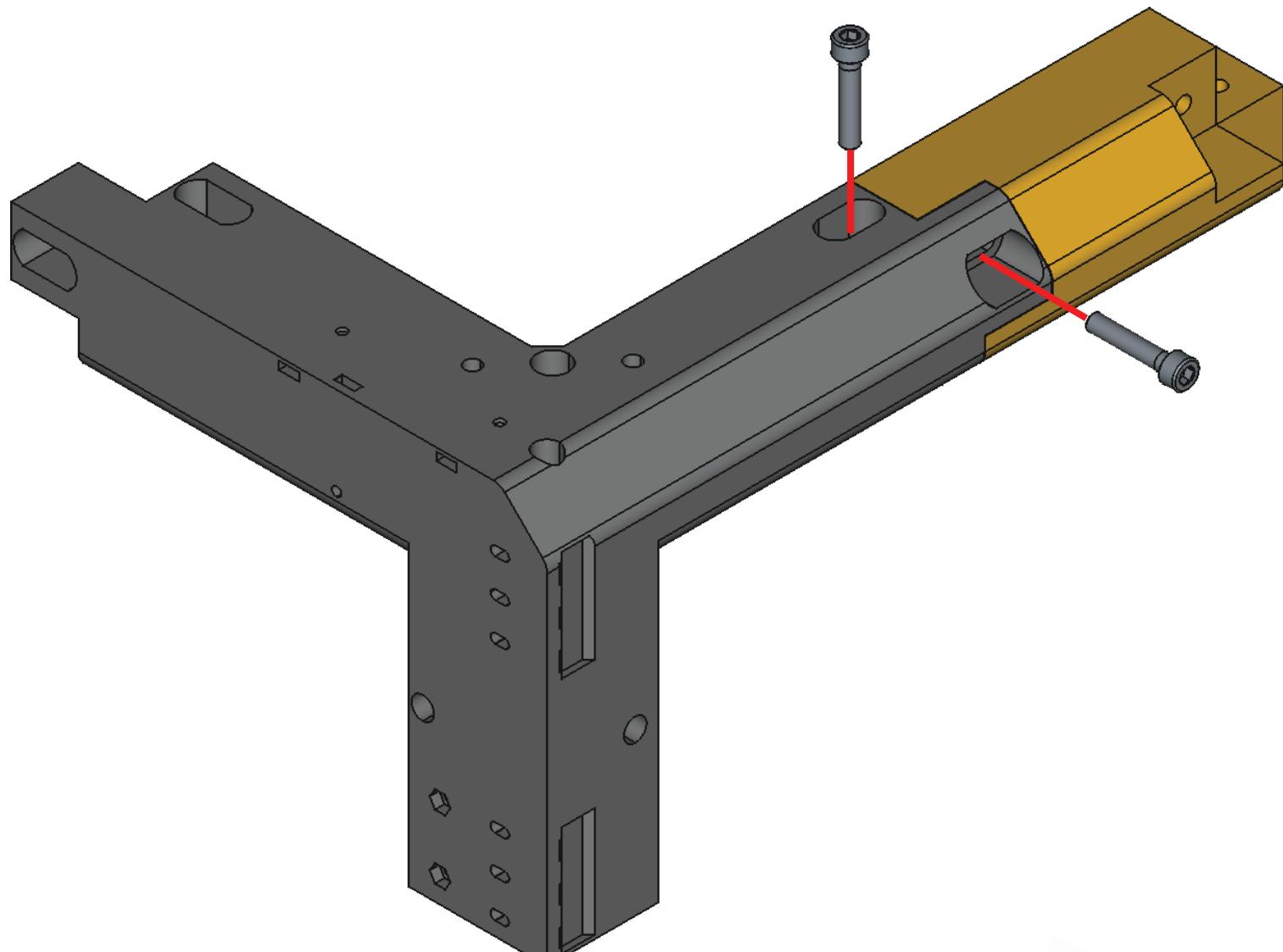
# TOP FRAME ASSEMBLY



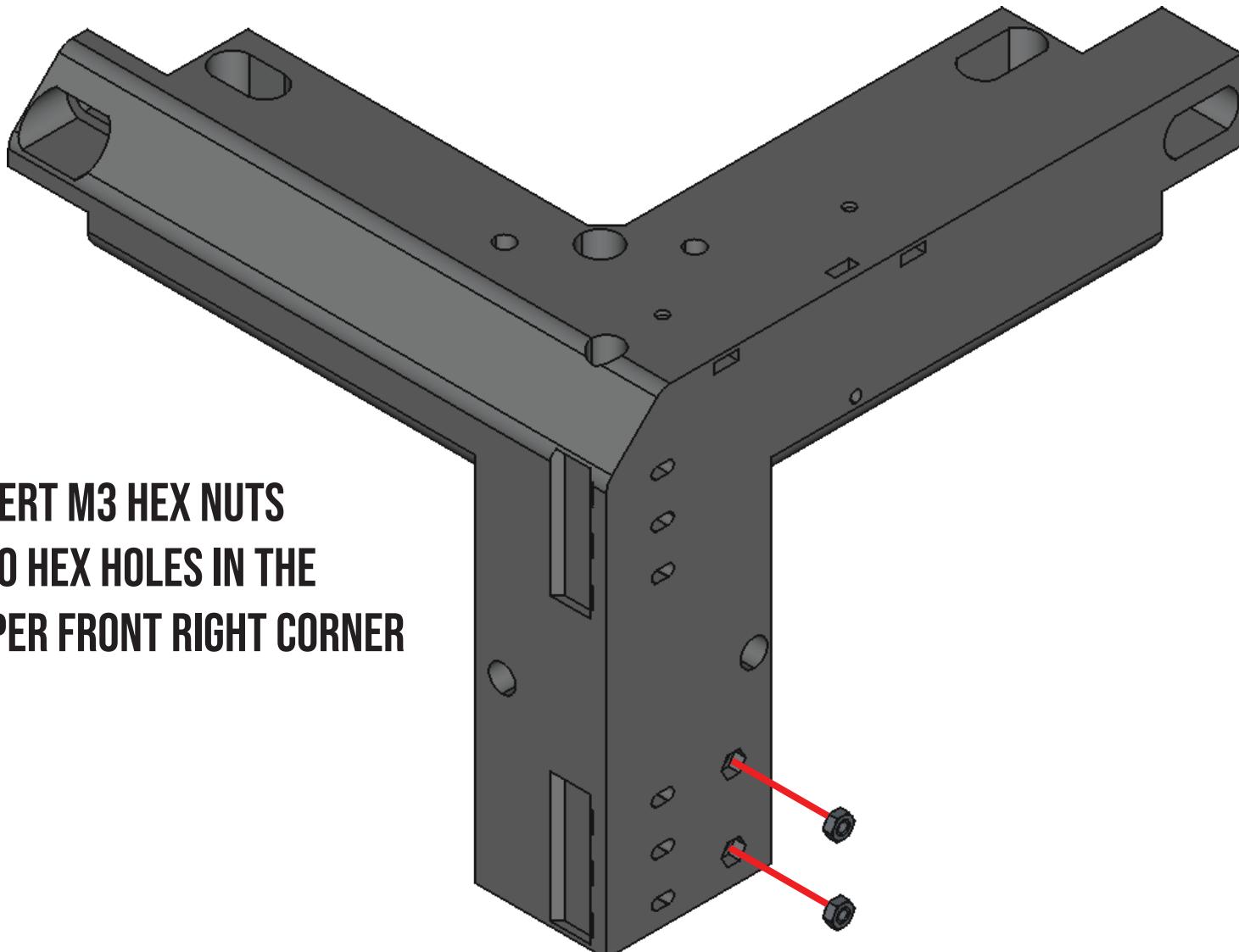
BRING FRONT LEFT CORNER PIECE TOGETHER  
WITH FRONT CONNECTING PIECE



# TOP FRAME ASSEMBLY



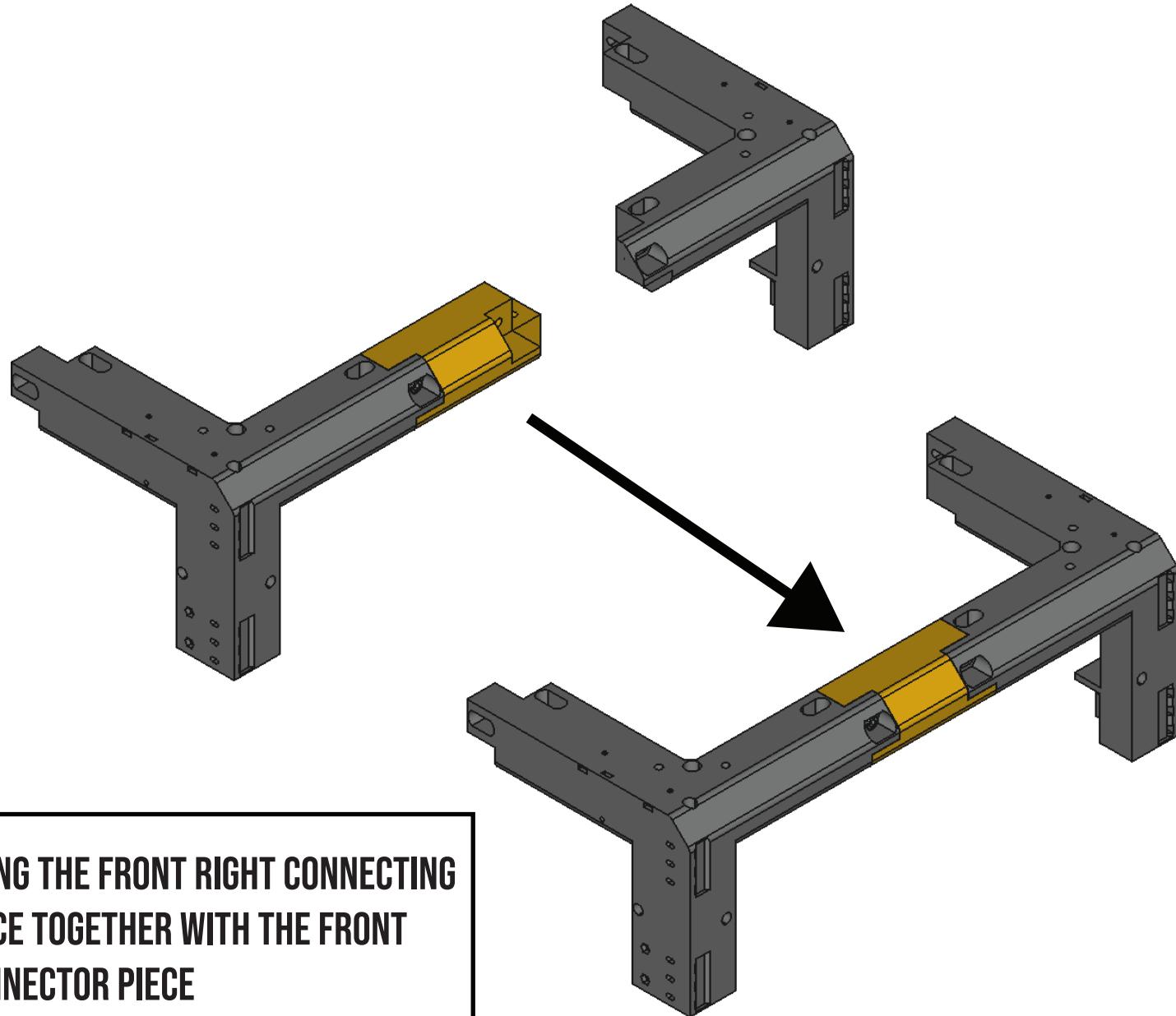
# TOP FRAME ASSEMBLY



INSERT M3 HEX NUTS  
INTO HEX HOLES IN THE  
UPPER FRONT RIGHT CORNER

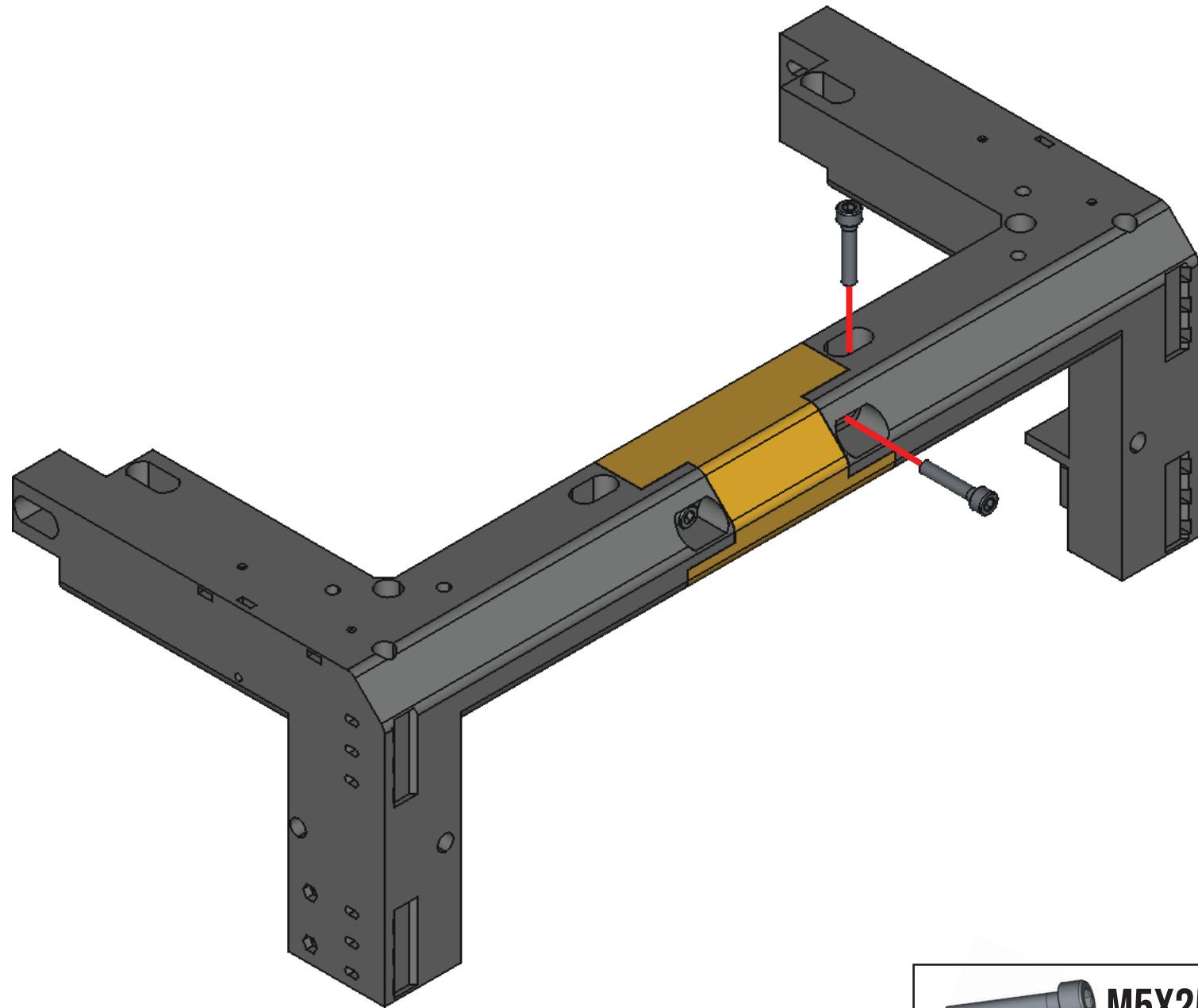
 M3 HEX NUT

# TOP FRAME ASSEMBLY



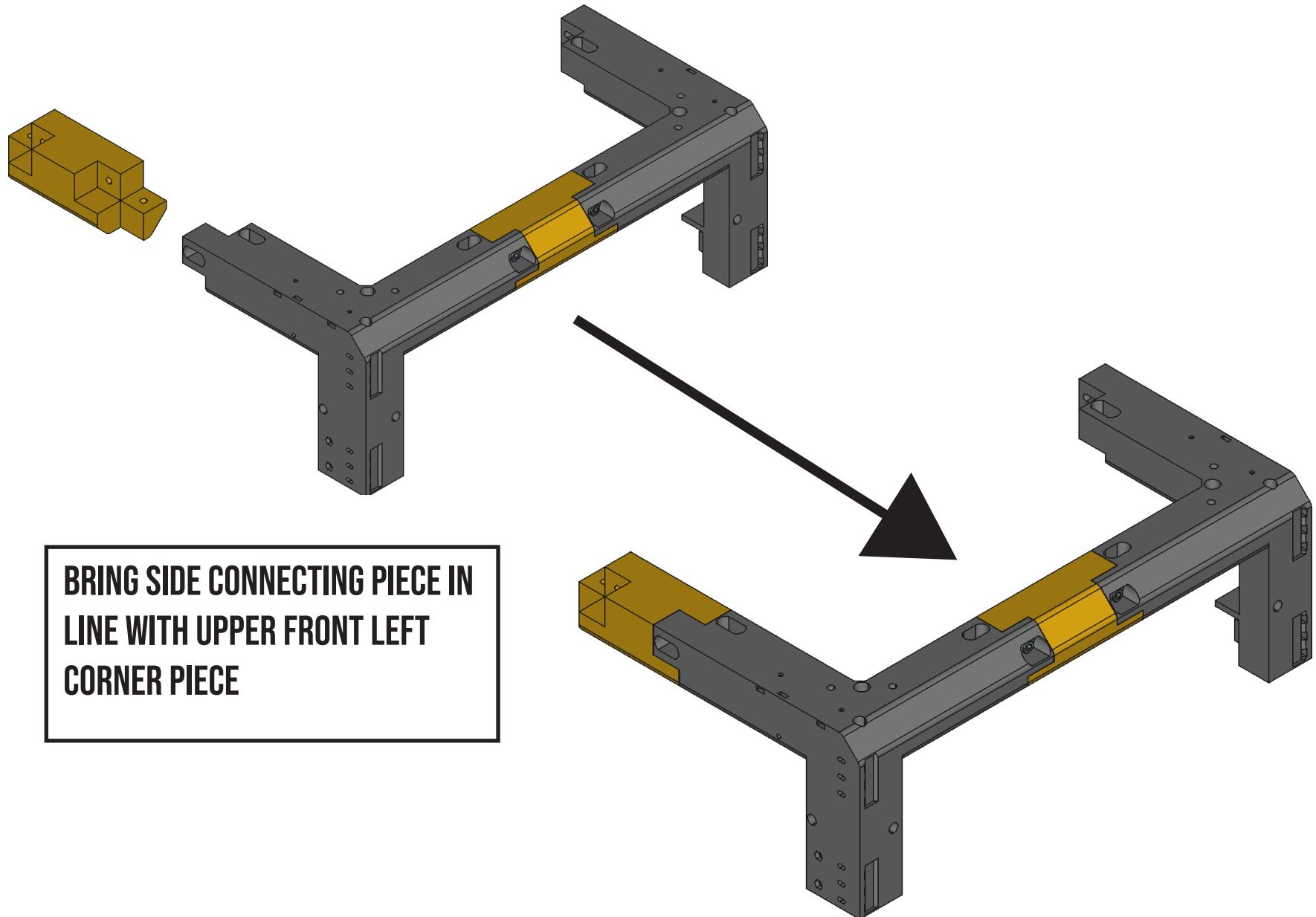
BRING THE FRONT RIGHT CONNECTING  
PIECE TOGETHER WITH THE FRONT  
CONNECTOR PIECE

# TOP FRAME ASSEMBLY

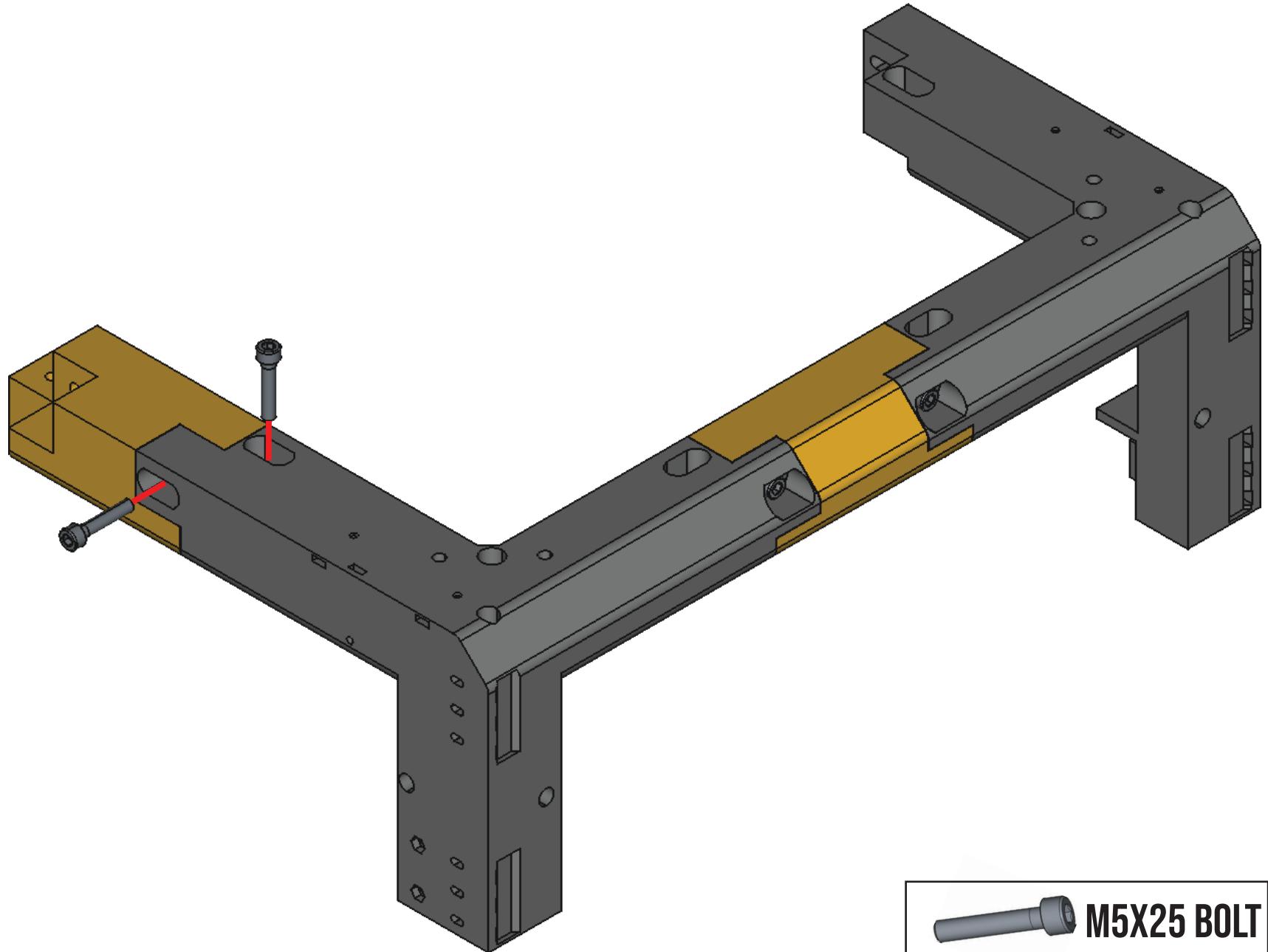


**M5X25 BOLT**

# TOP FRAME ASSEMBLY

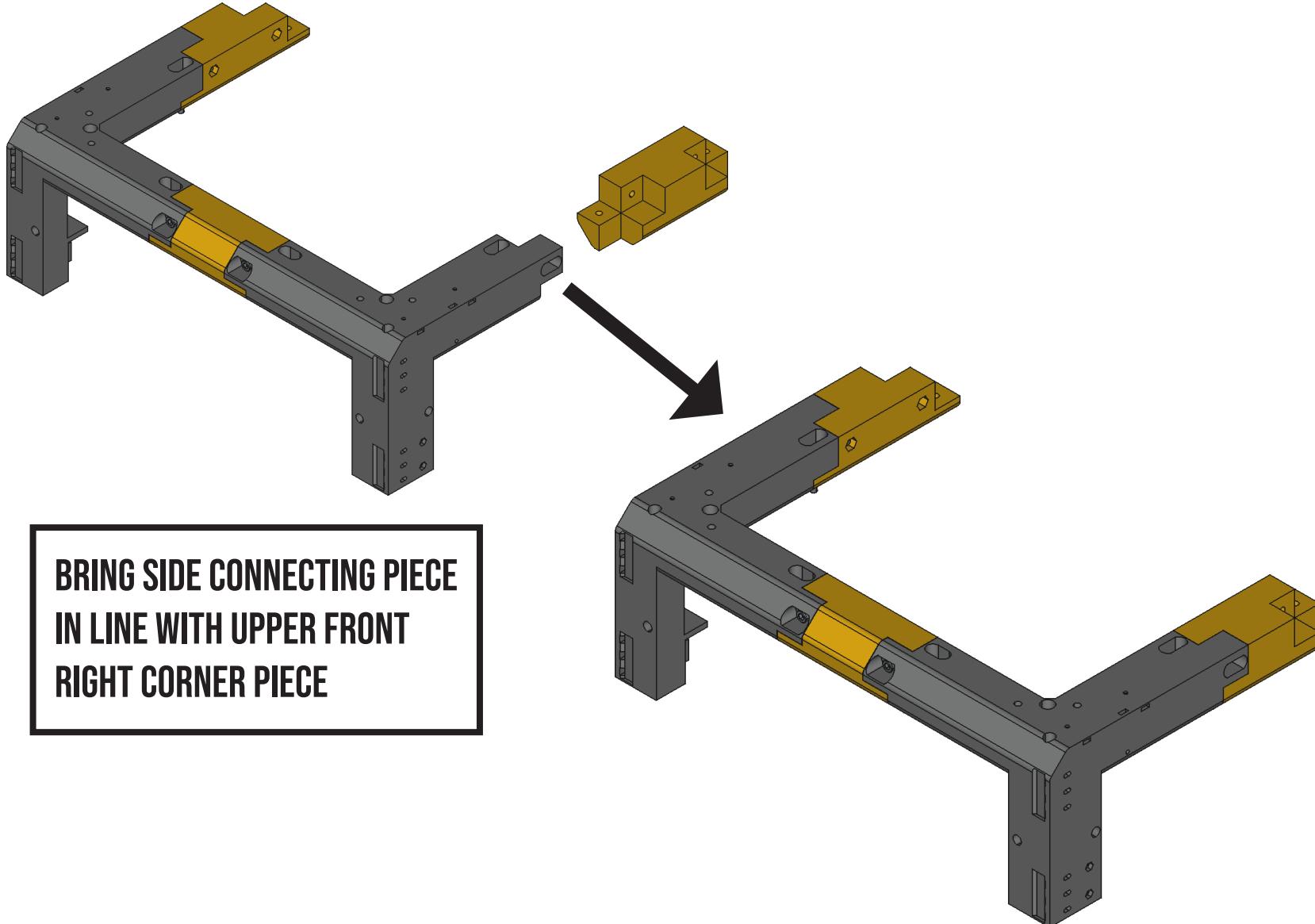


# TOP FRAME ASSEMBLY

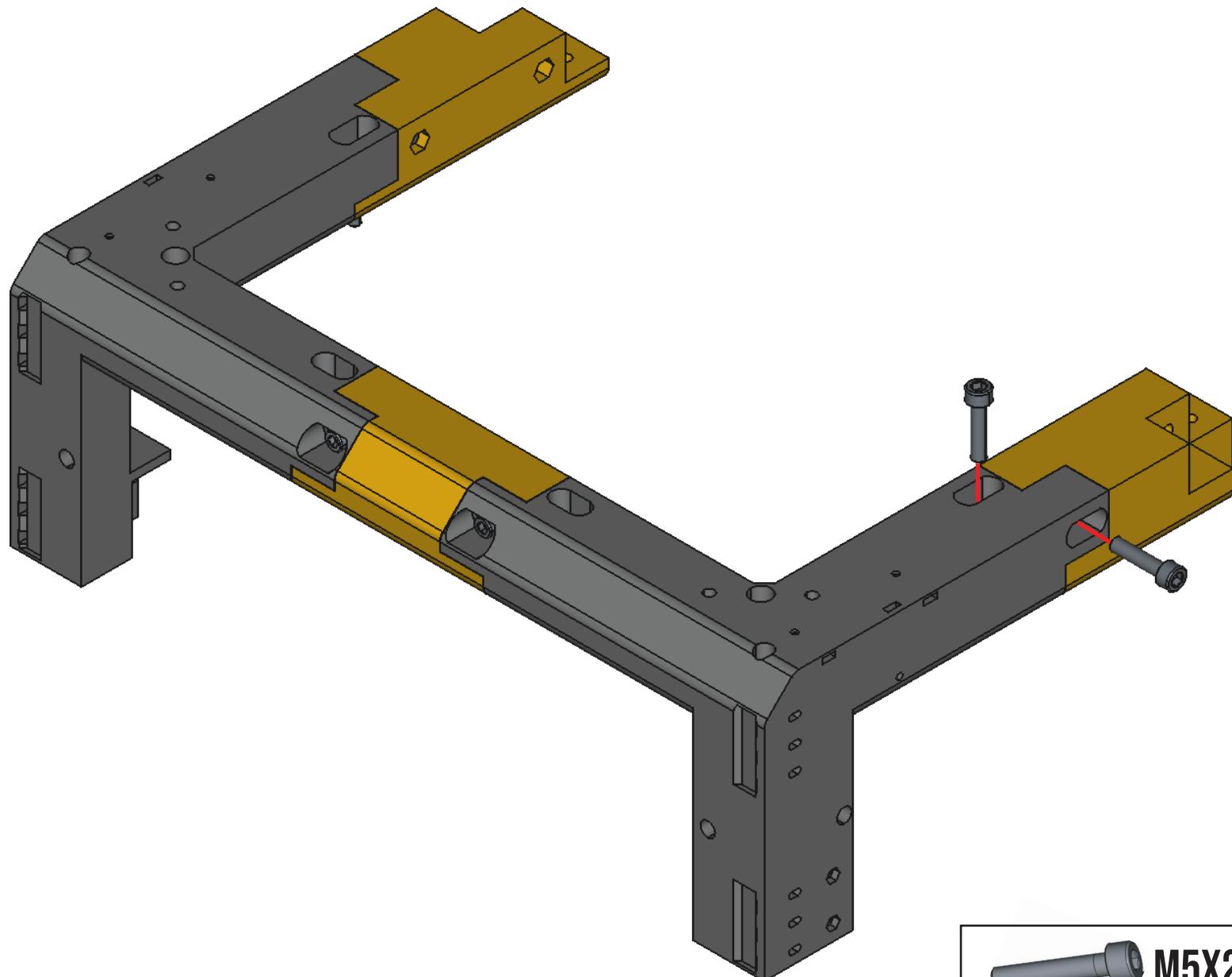


 M5X25 BOLT

# TOP FRAME ASSEMBLY

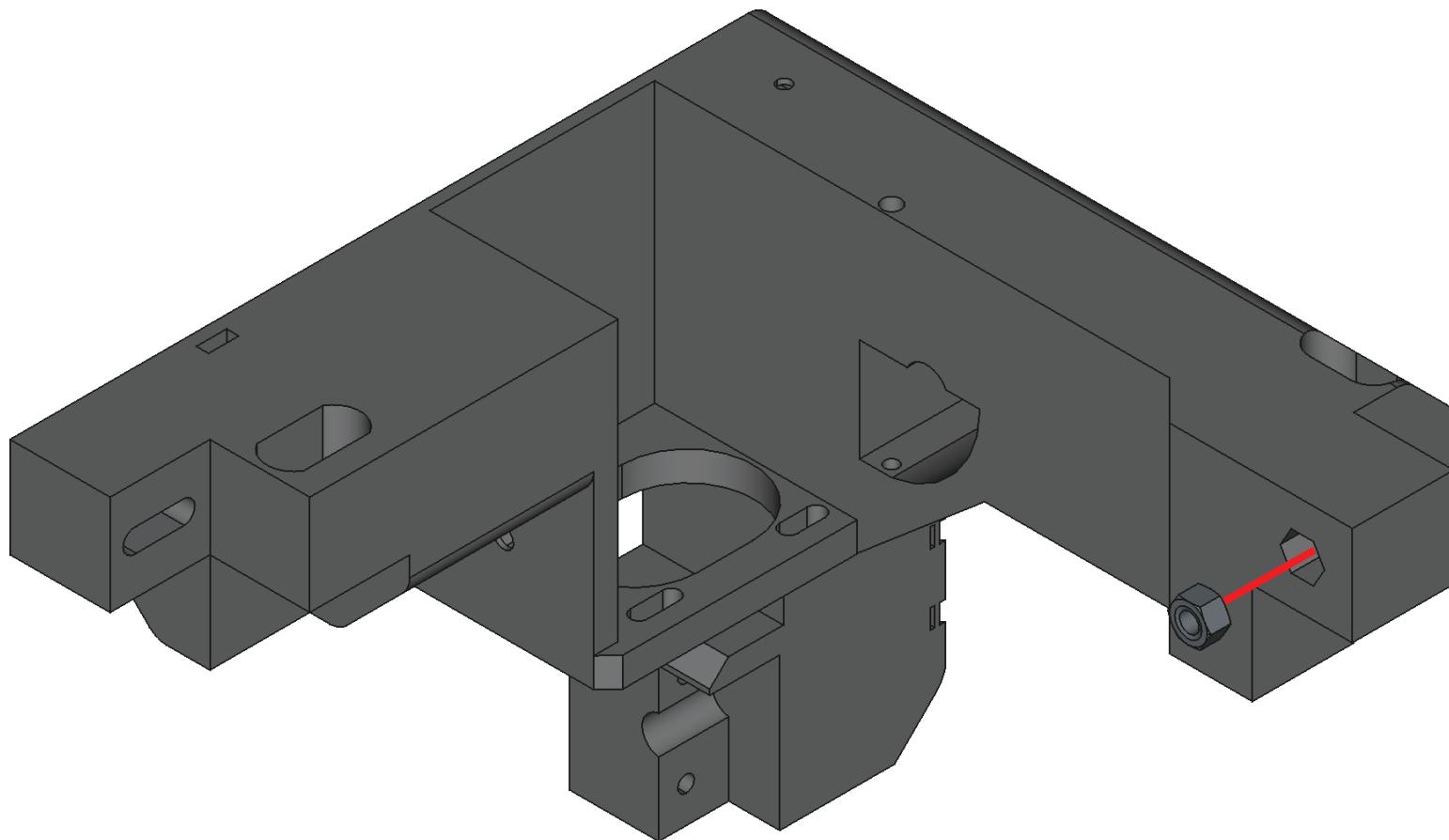


# TOP FRAME ASSEMBLY



**M5X25 BOLT**

# TOP FRAME ASSEMBLY

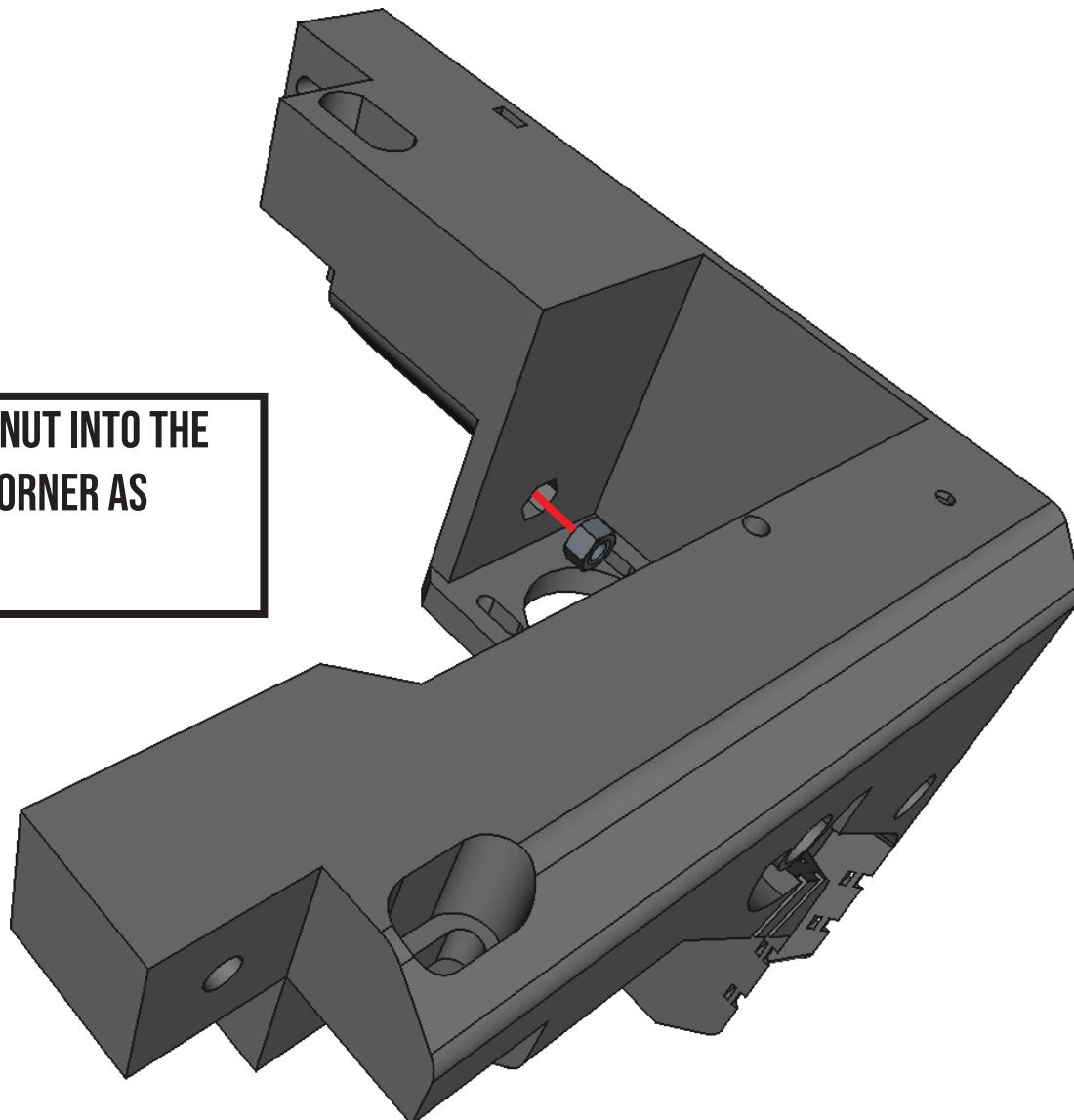


PUT THE M5 HEX NUT INTO THE  
TOP REAR LEFT CORNER AS  
SHOWN



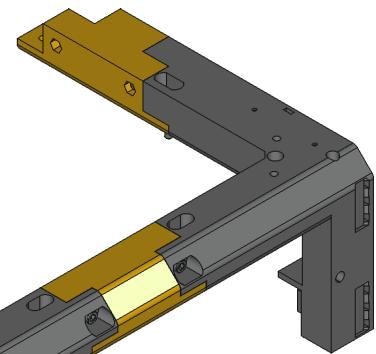
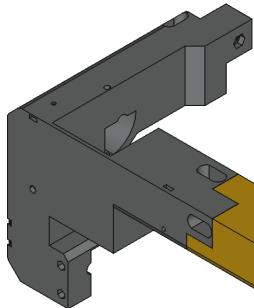
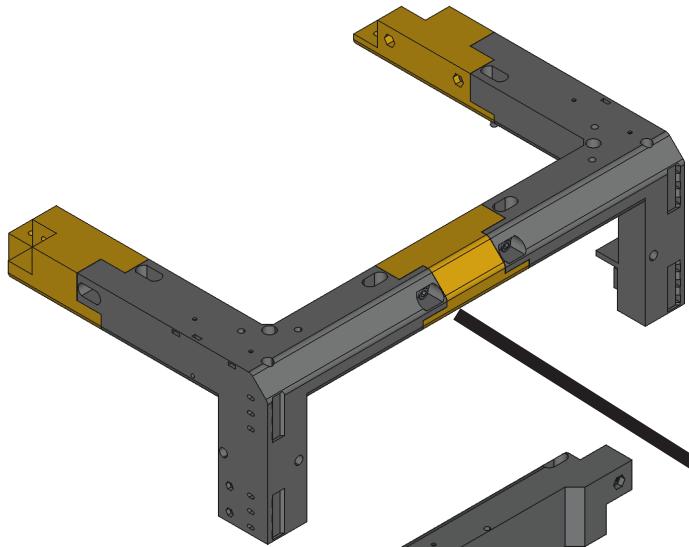
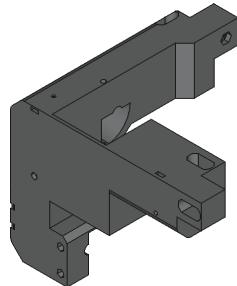
# TOP FRAME ASSEMBLY

PUT THE M5 HEX NUT INTO THE  
TOP REAR LEFT CORNER AS  
SHOWN



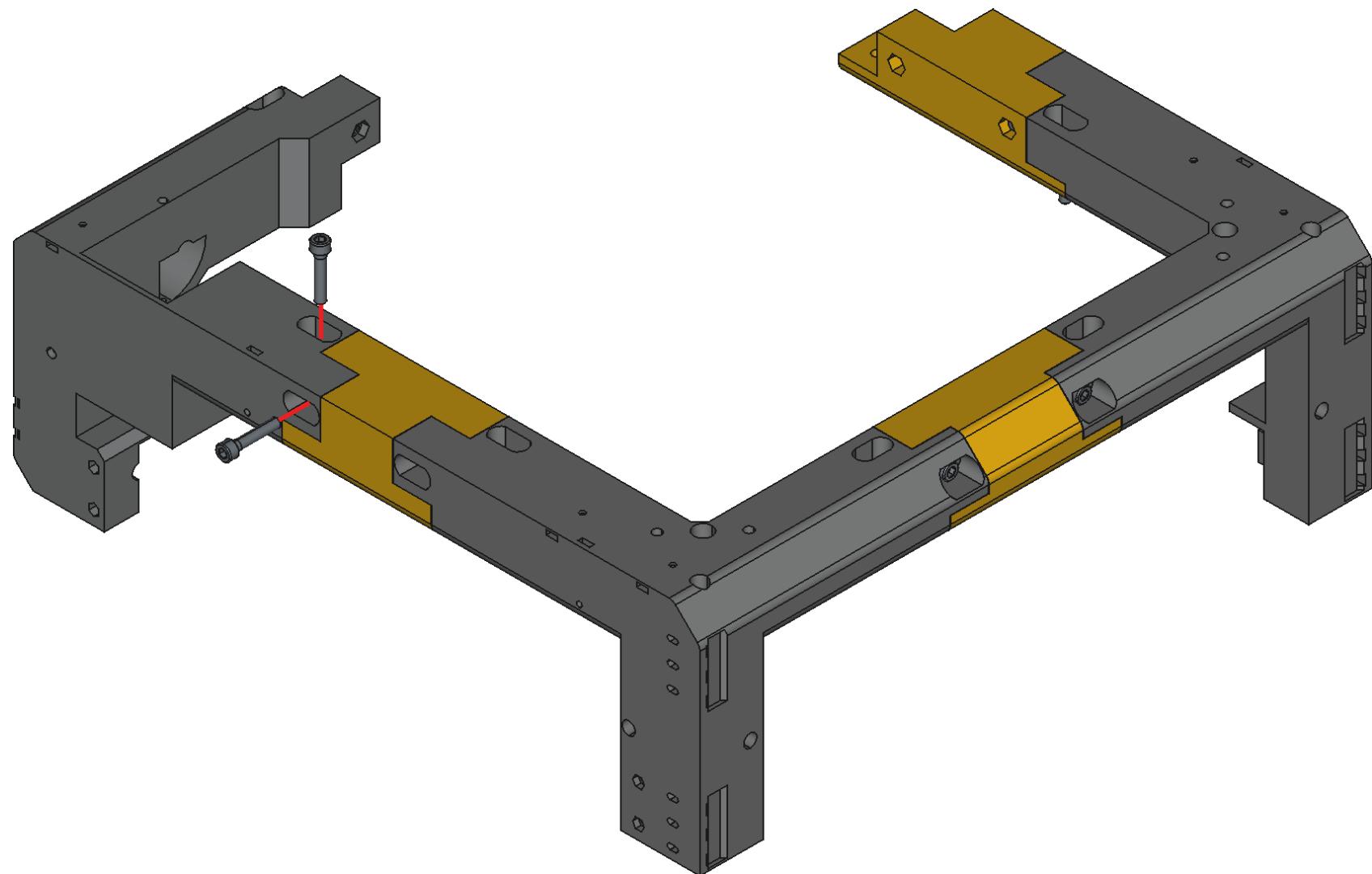
M5 HEX NUT

# TOP FRAME ASSEMBLY

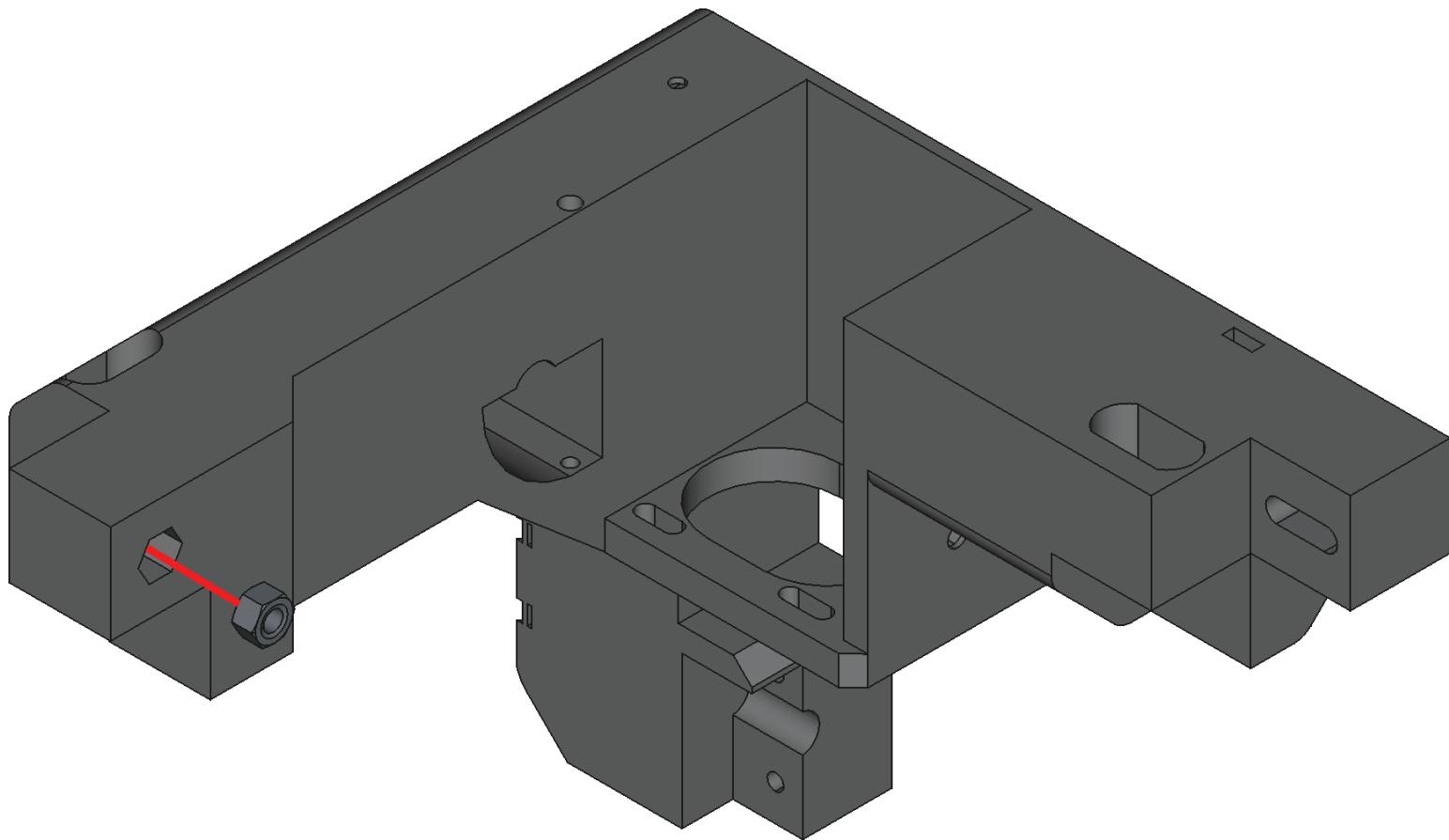


BRING TOP REAR LEFT CORNER IN  
LINE WITH ASSEMBLY

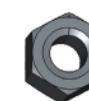
# TOP FRAME ASSEMBLY



# TOP FRAME ASSEMBLY

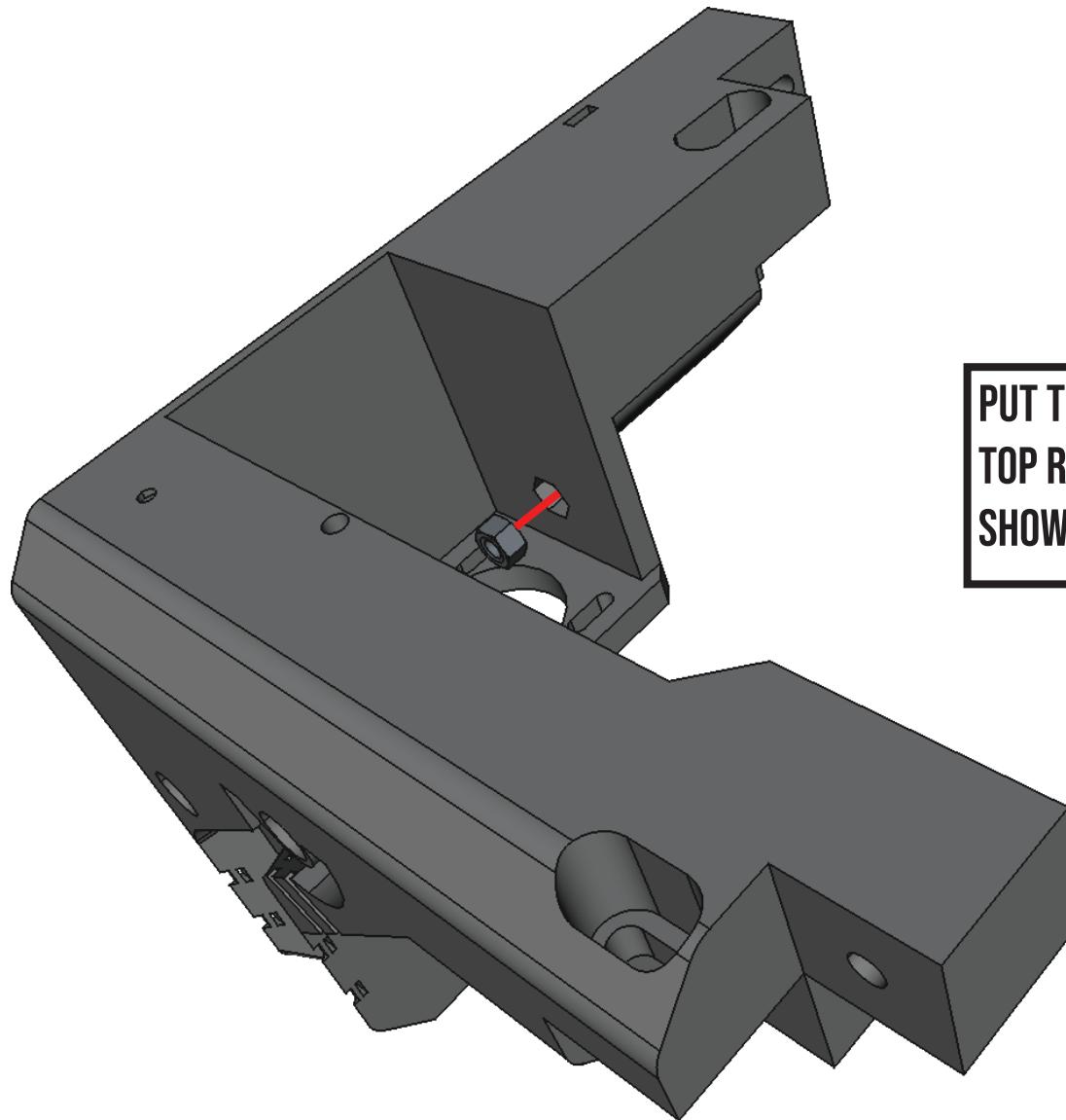


PUT THE M5 HEX NUT INTO THE  
TOP REAR RIGHT CORNER AS  
SHOWN



M5 HEX NUT

# TOP FRAME ASSEMBLY

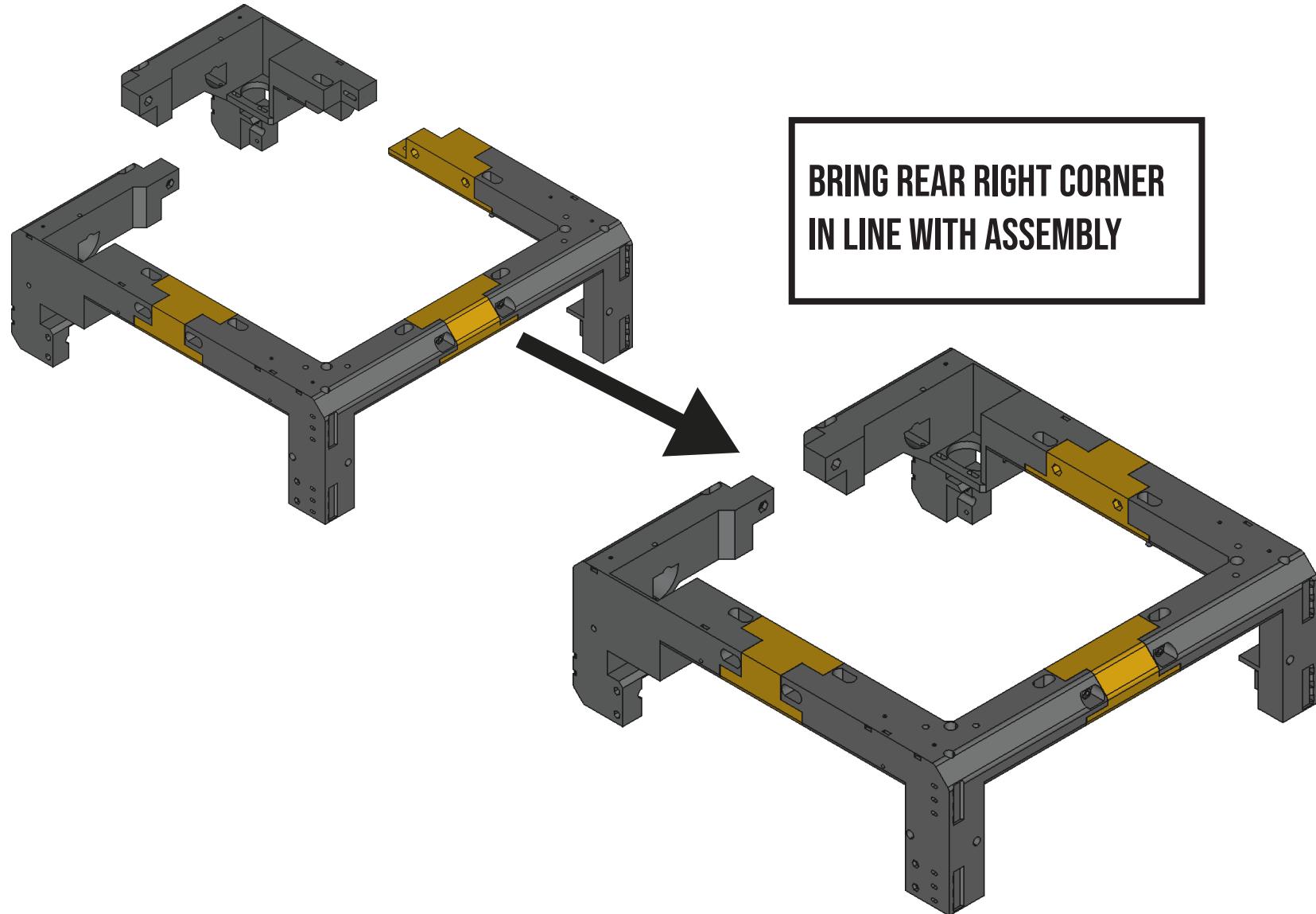


PUT THE M5 HEX NUT INTO THE  
TOP REAR RIGHT CORNER AS  
SHOWN

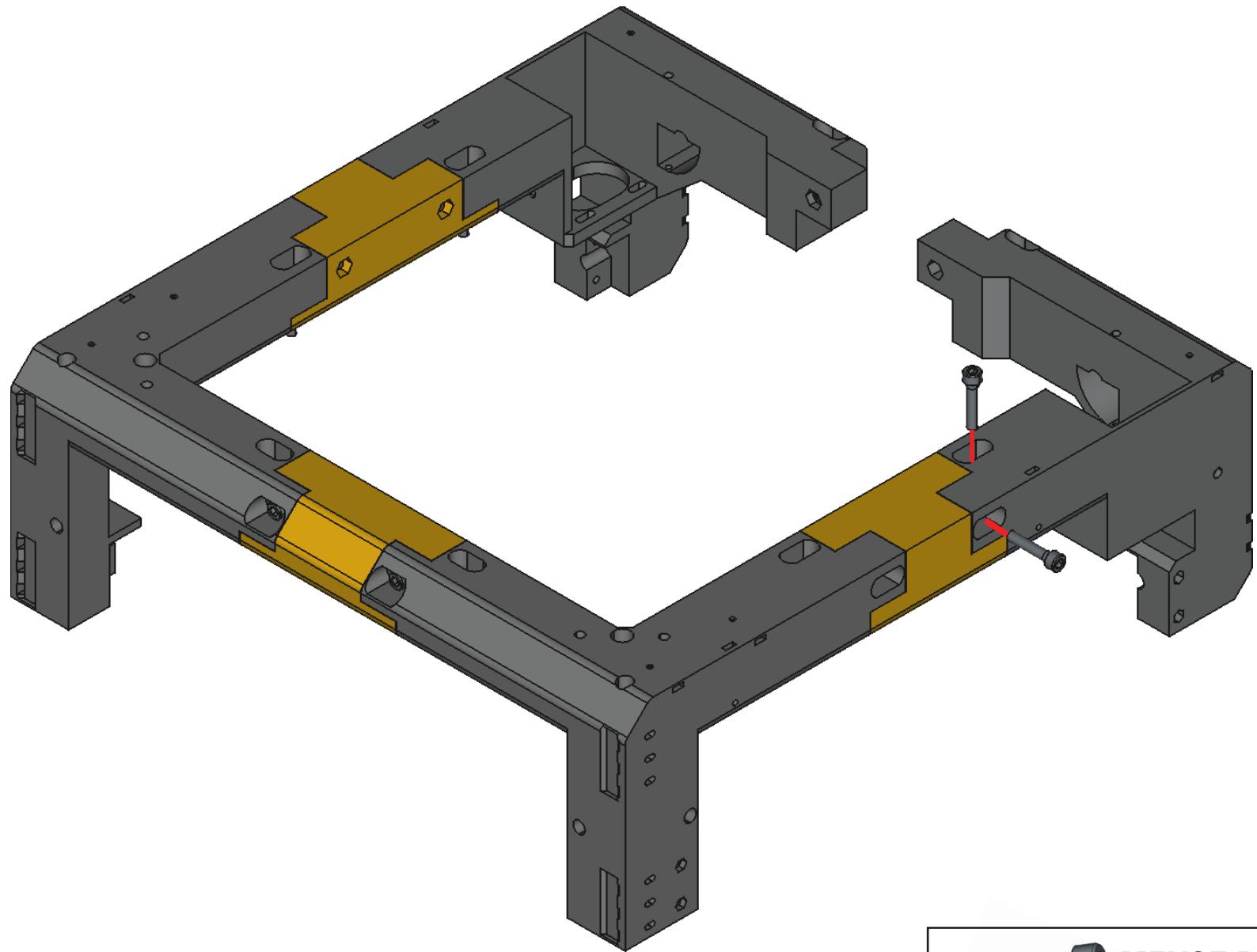


M5 HEX NUT

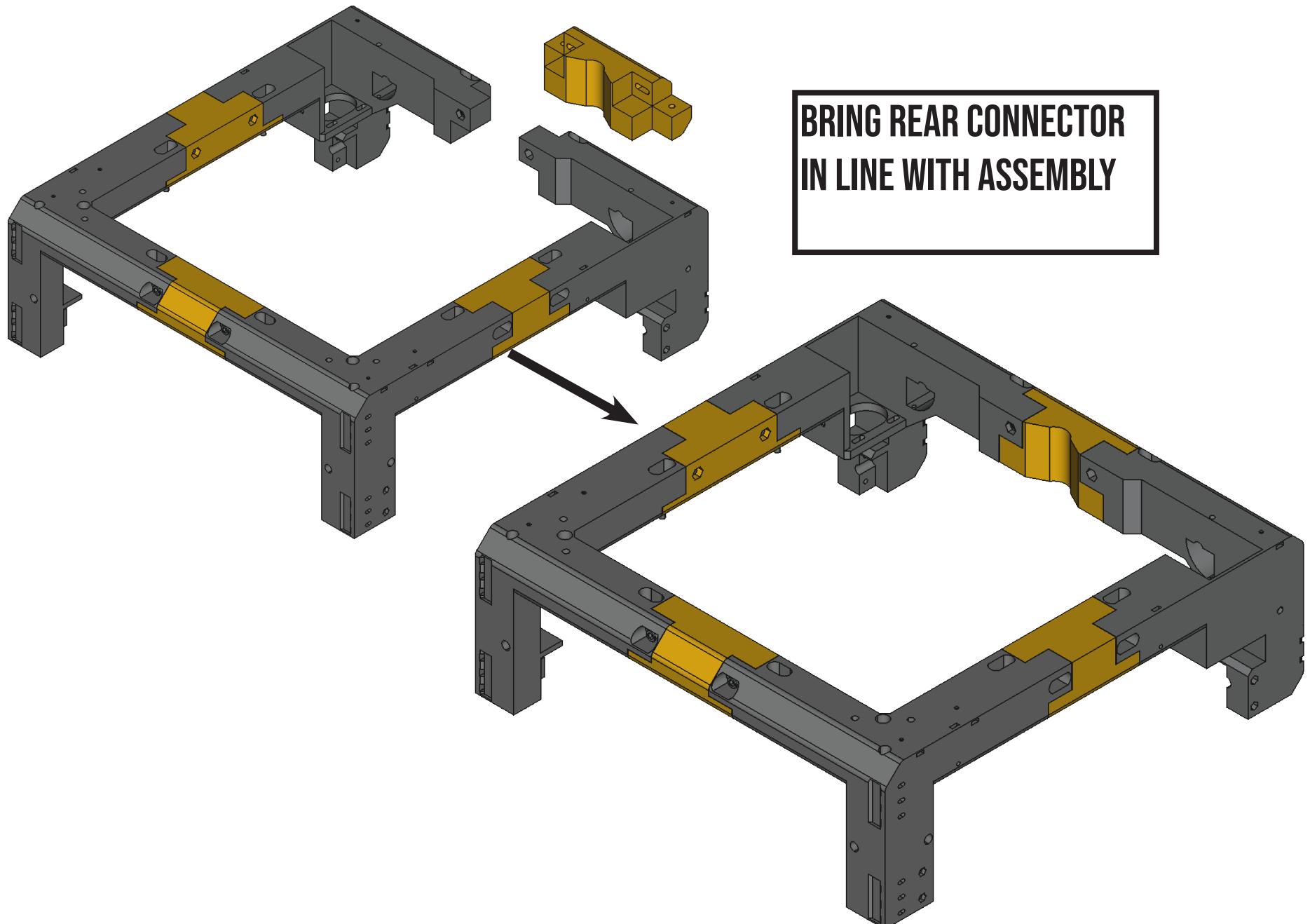
# TOP FRAME ASSEMBLY



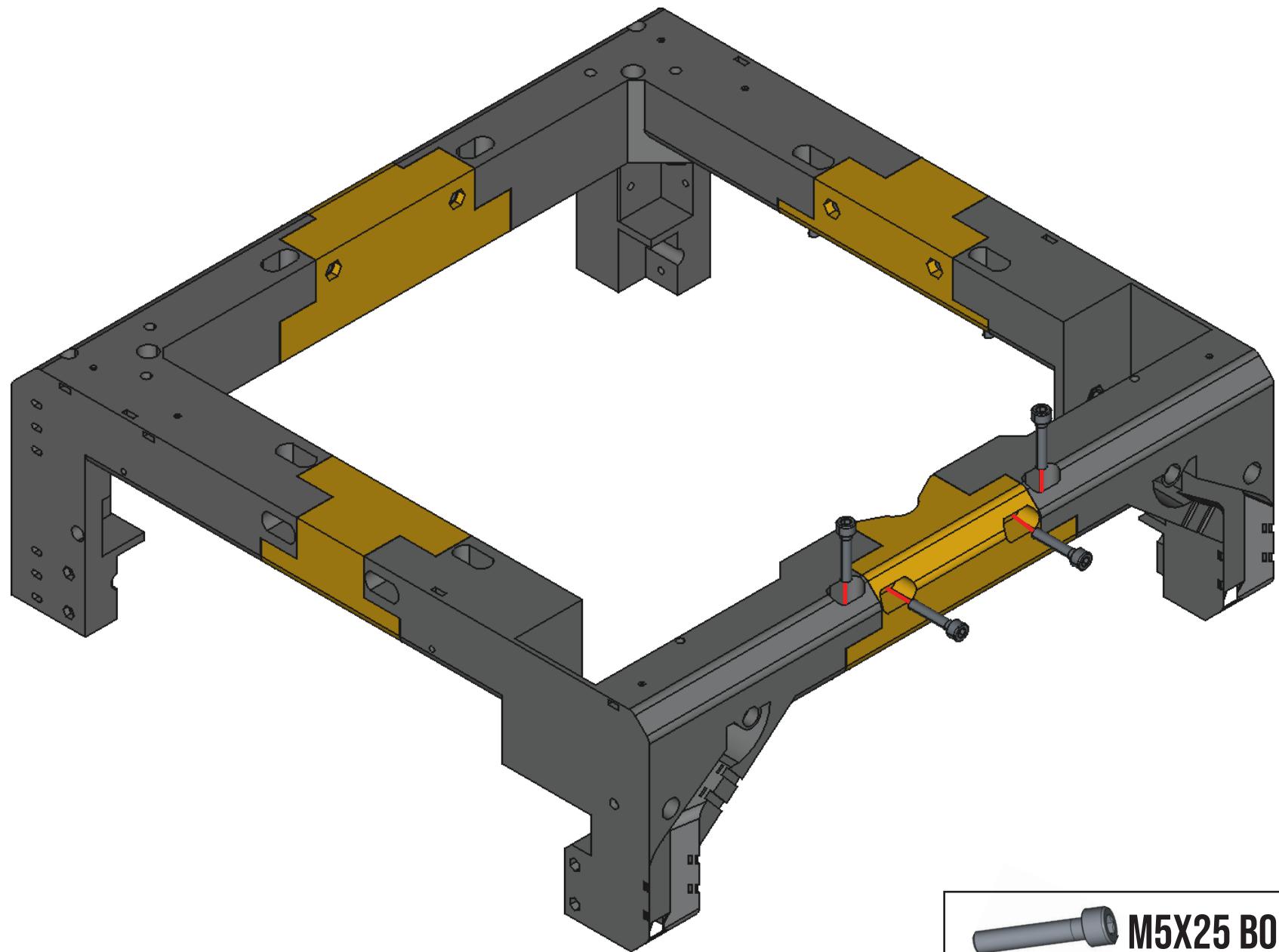
# TOP FRAME ASSEMBLY



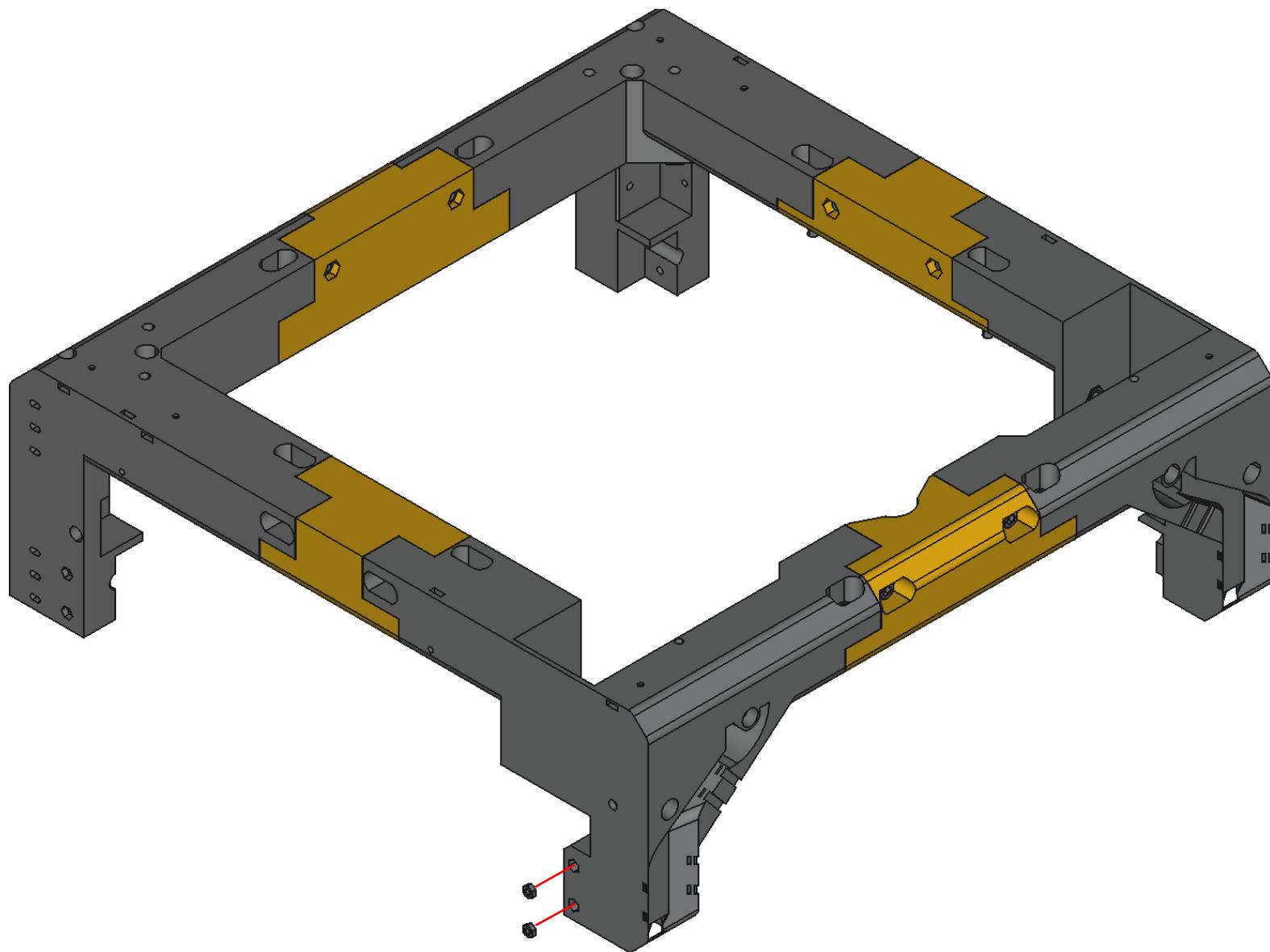
# TOP FRAME ASSEMBLY



# TOP FRAME ASSEMBLY

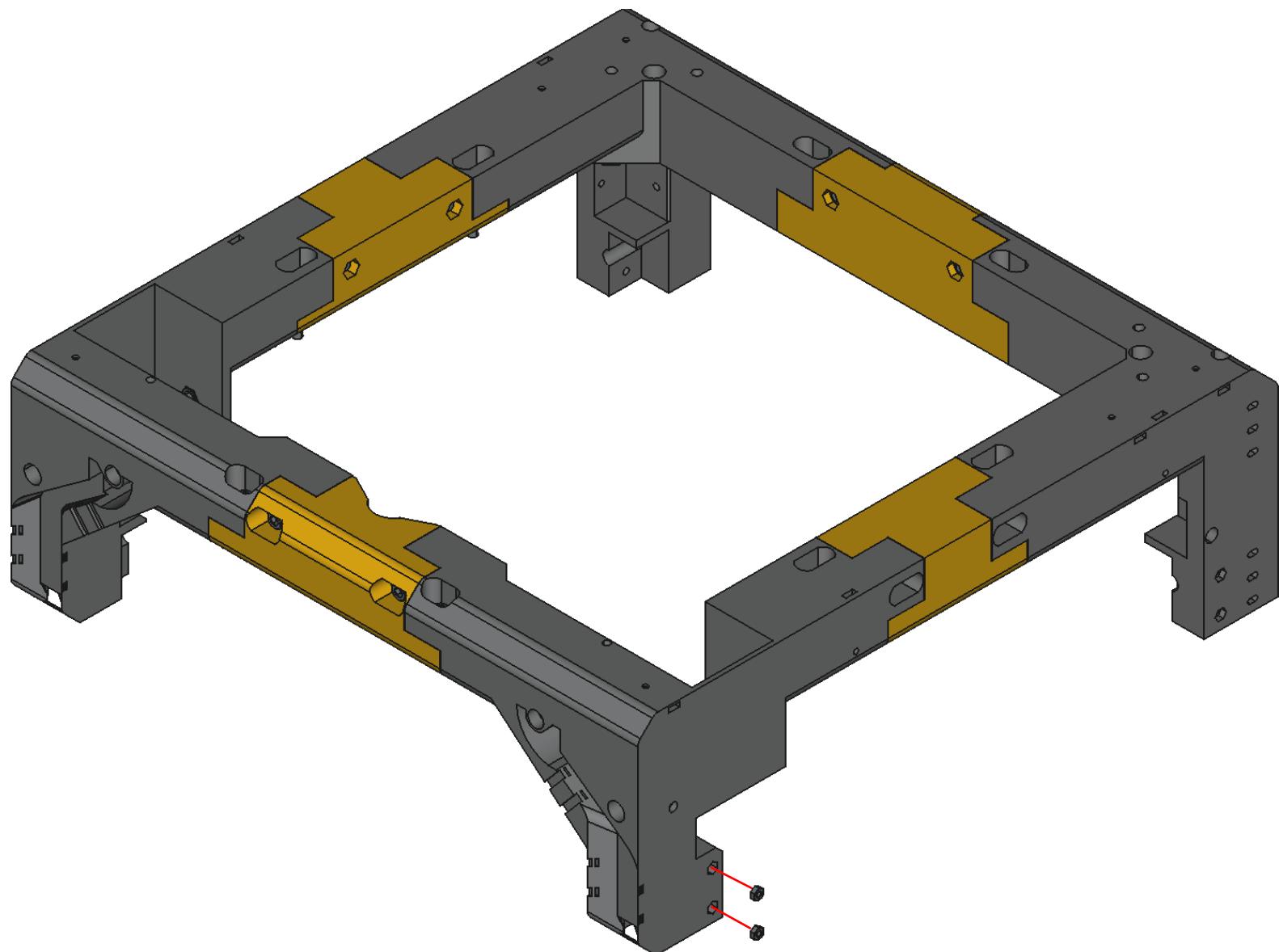


# TOP FRAME ASSEMBLY



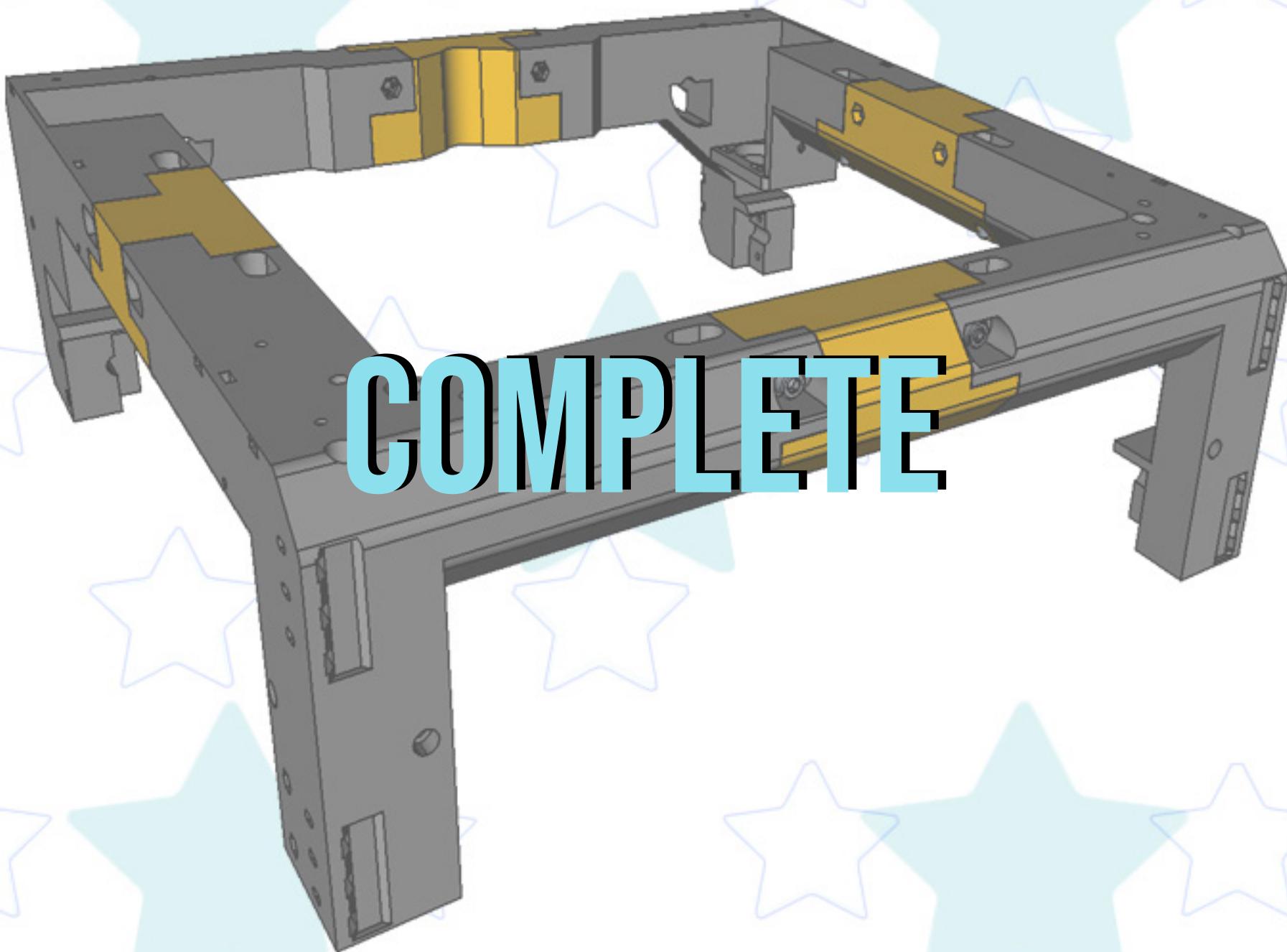
 M3 HEX NUT

# TOP FRAME ASSEMBLY



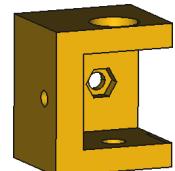
 M3 HEX NUT

# TOP FRAME ASSEMBLY

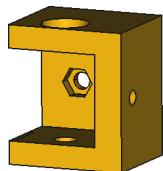


COMPLETE

# X/Y GANTRY & MOTION COMPONENTS

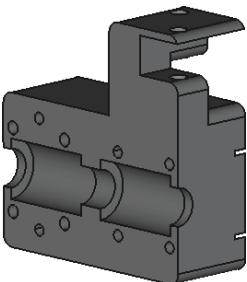


X1

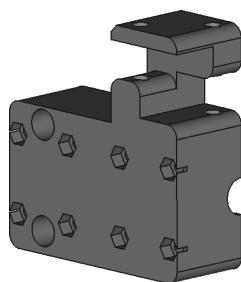


X1

RIGHT IDLER CARTRIDGE



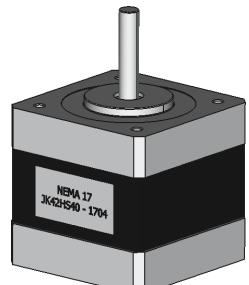
X1



X1

Y-CARRIAGE LEFT

Y-CARRIAGE RIGHT



NEMA 17 STEPPER

X2



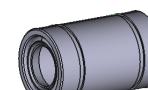
F695 BEARING

X16



GT2 MOTOR PULLEY  
(20 TEETH)

X2



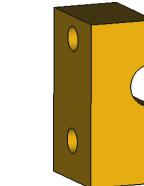
LM8UU LINEAR BEARING

X6



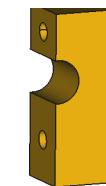
M5 WASHER (OR PRECISION SHIM)

X14



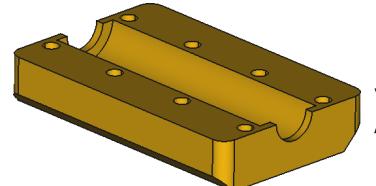
X2

FRONT ROD HOLDER



X2

BACK ROD HOLDER



X2

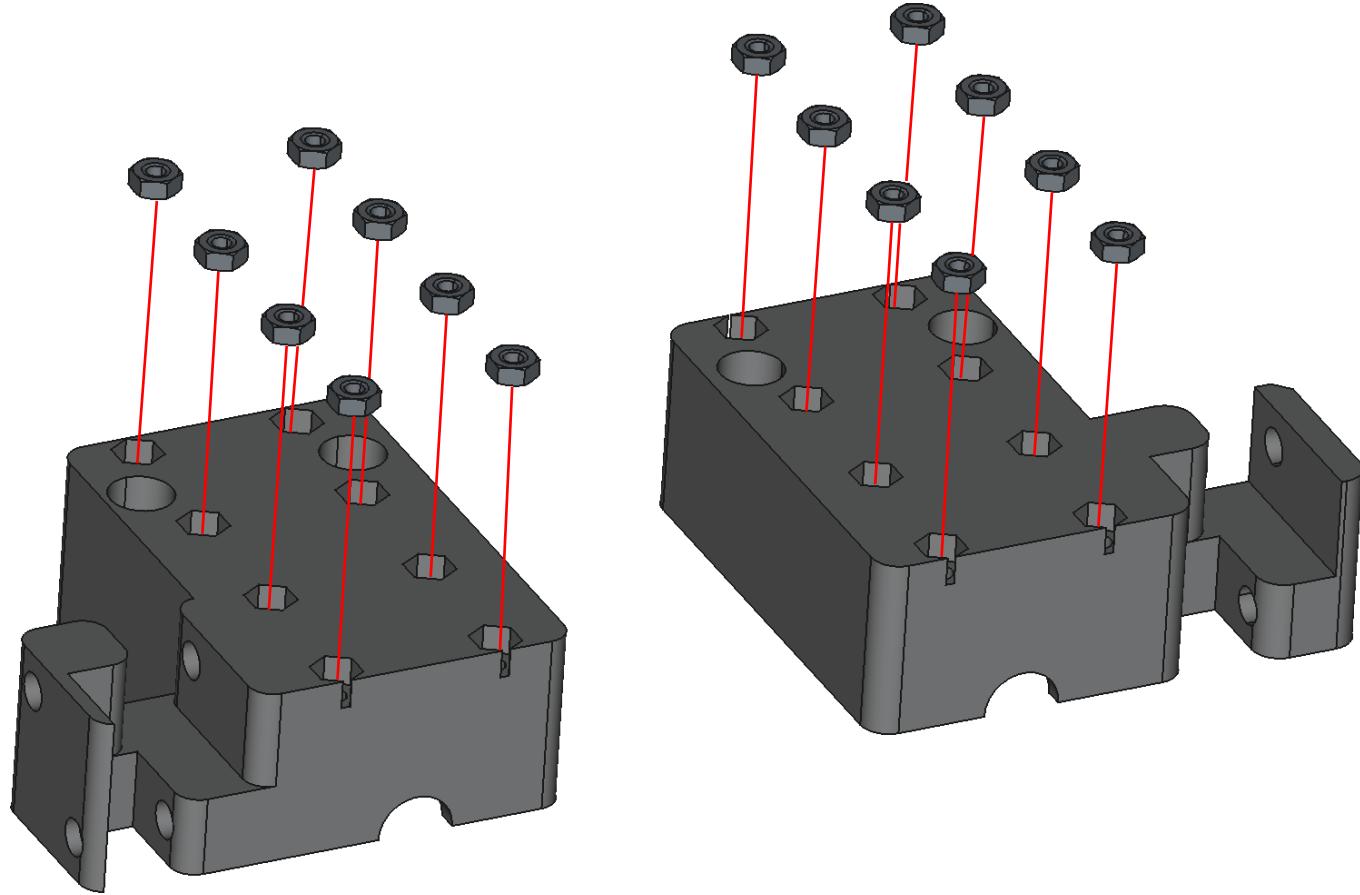
Y CARRIAGE CLAMP



X4

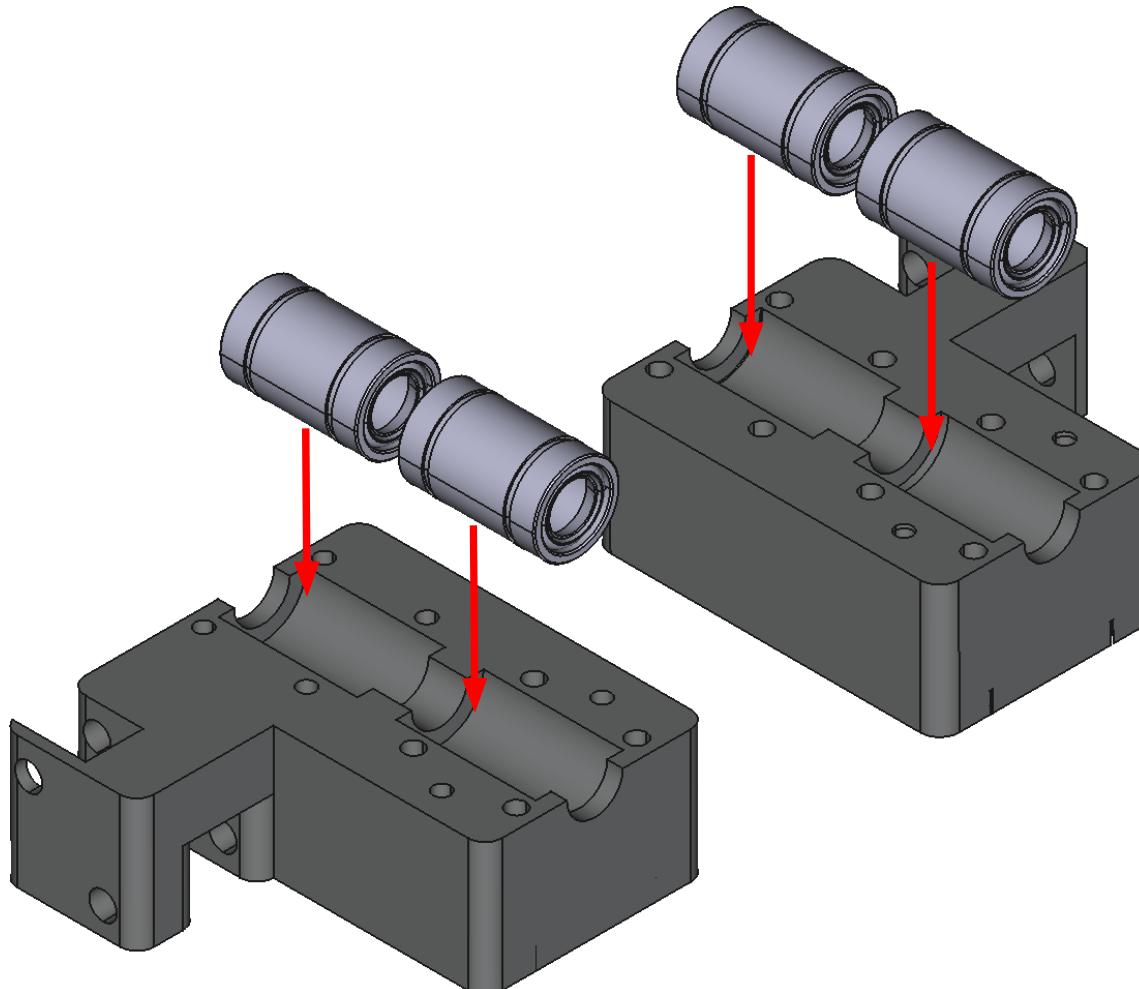
320MM LONG LINEAR ROD WITH 8 MM DIAMETER

# X/Y GANTRY & MOTION COMPONENTS



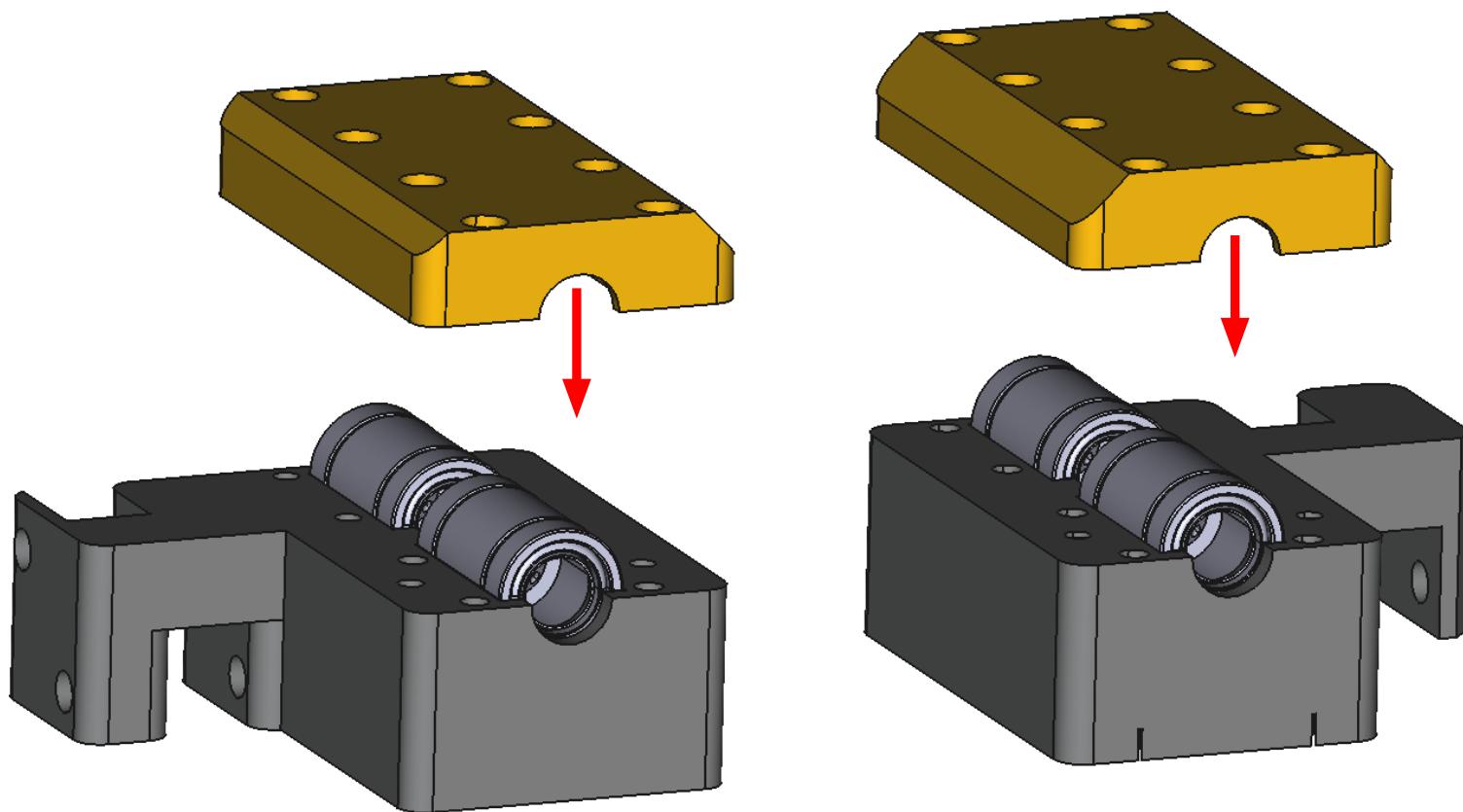
 M3 HEX NUT

# X/Y GANTRY & MOTION COMPONENTS

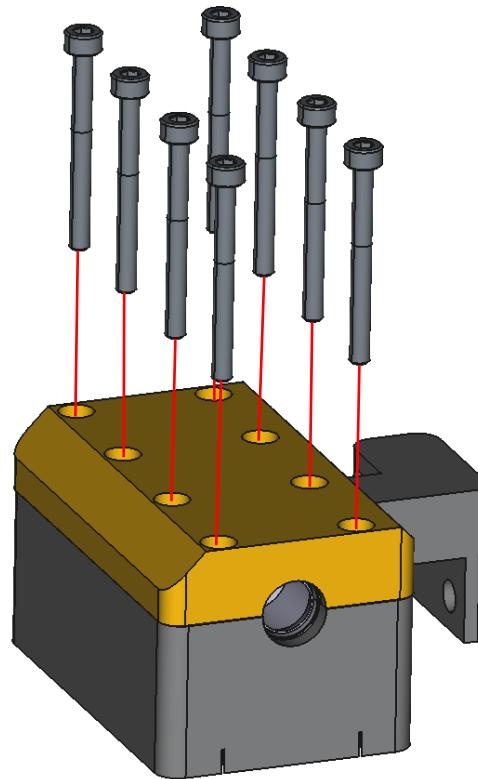
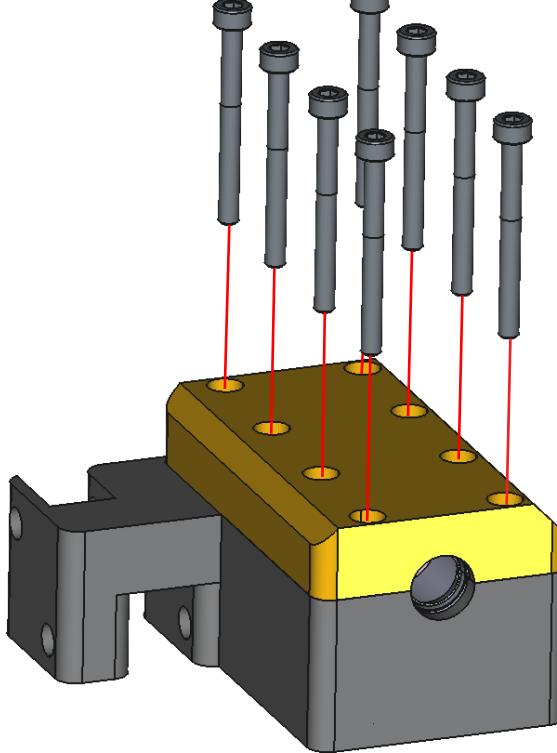


**LM8UU BEARING**

# X/Y GANTRY & MOTION COMPONENTS



# X/Y GANTRY & MOTION COMPONENTS

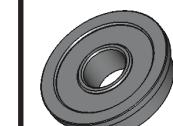
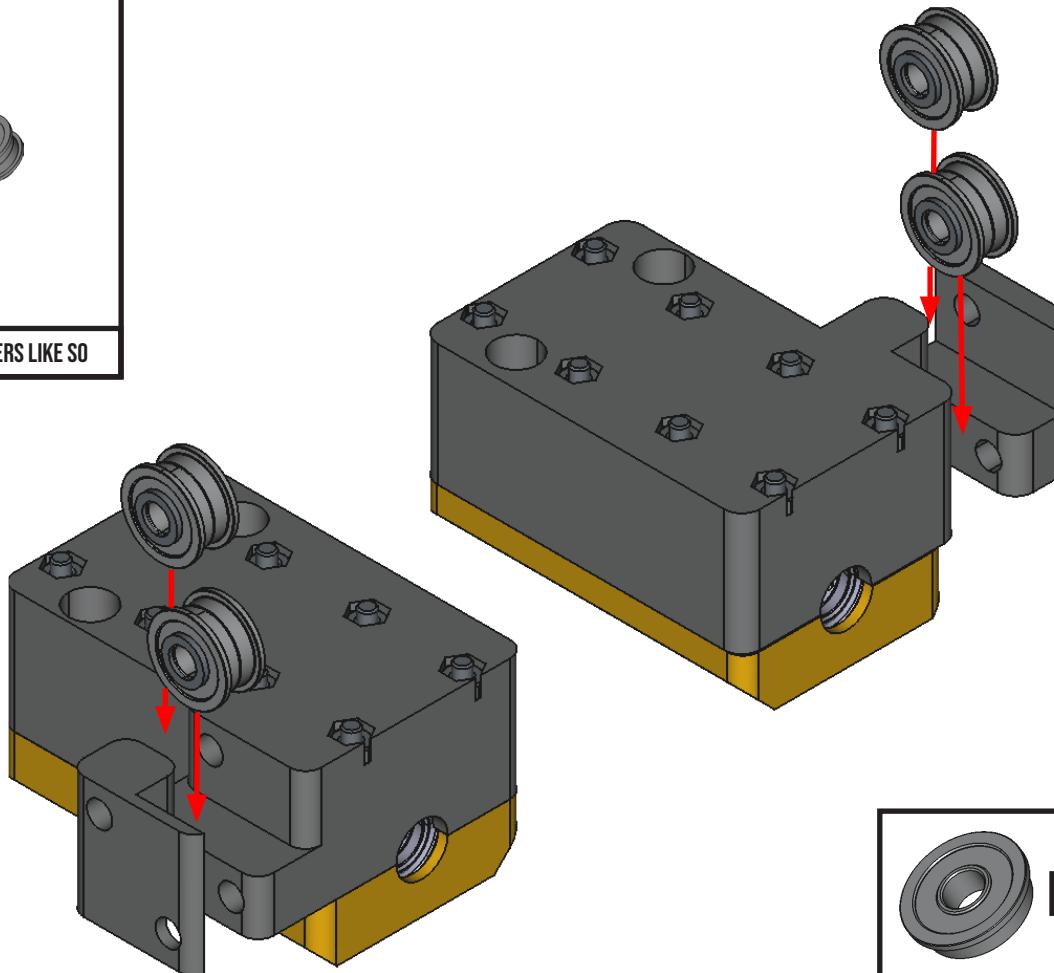
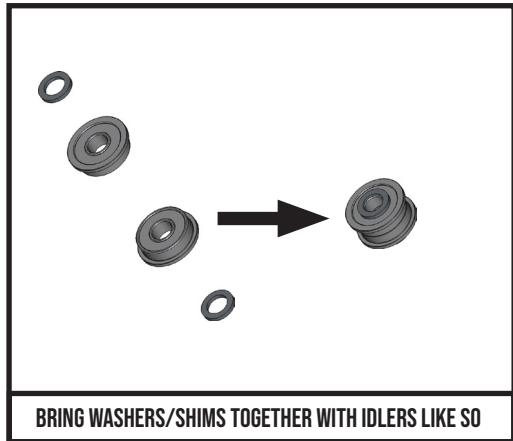


THE REASON FOR THE LARGE AMOUNT OF SCREWS IS JUST SO THAT THE LOAD IS ADJUSTABLE IN DIFFERENT PLACES ON THE BEARINGS.



M3X30 BOLT

# X/Y GANTRY & MOTION COMPONENTS

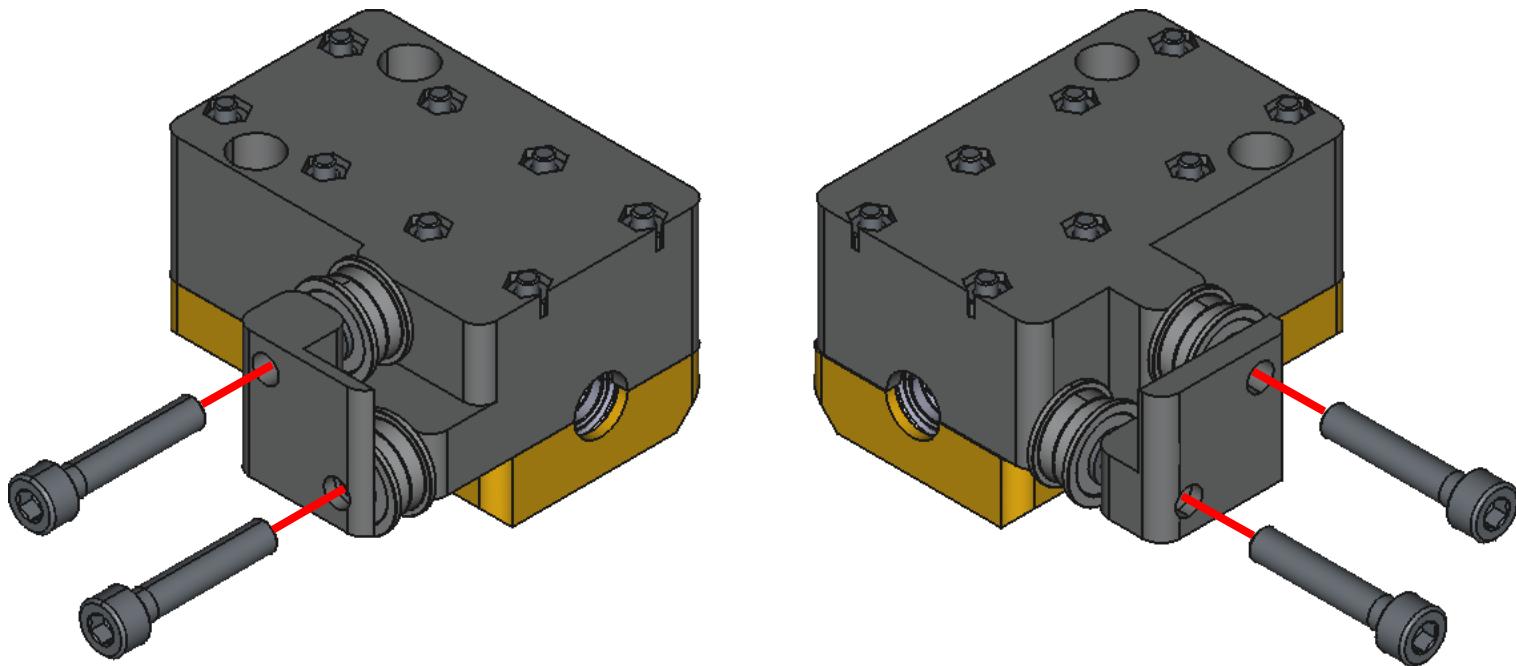


F695 BEARING



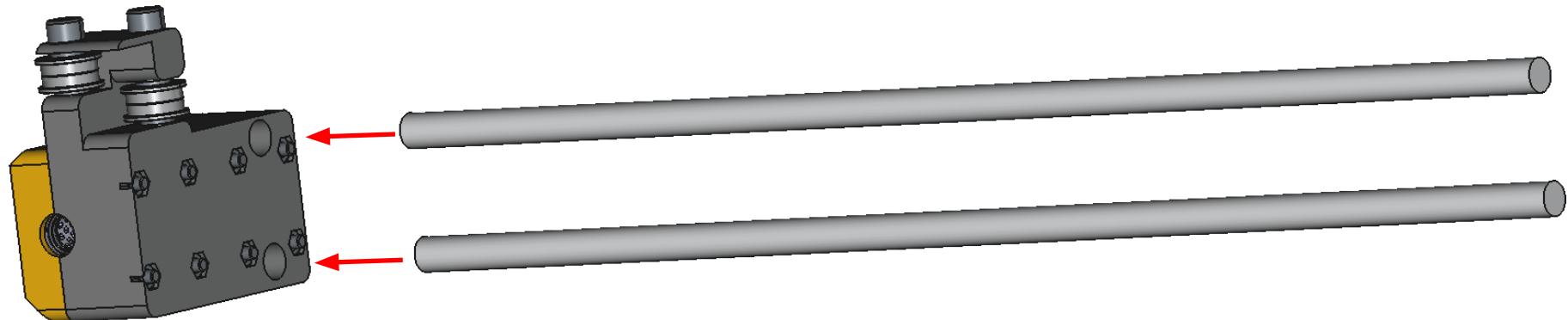
M5 WASHER/SHIM

# X/Y GANTRY & MOTION COMPONENTS



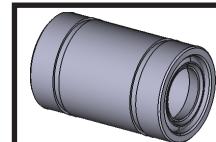
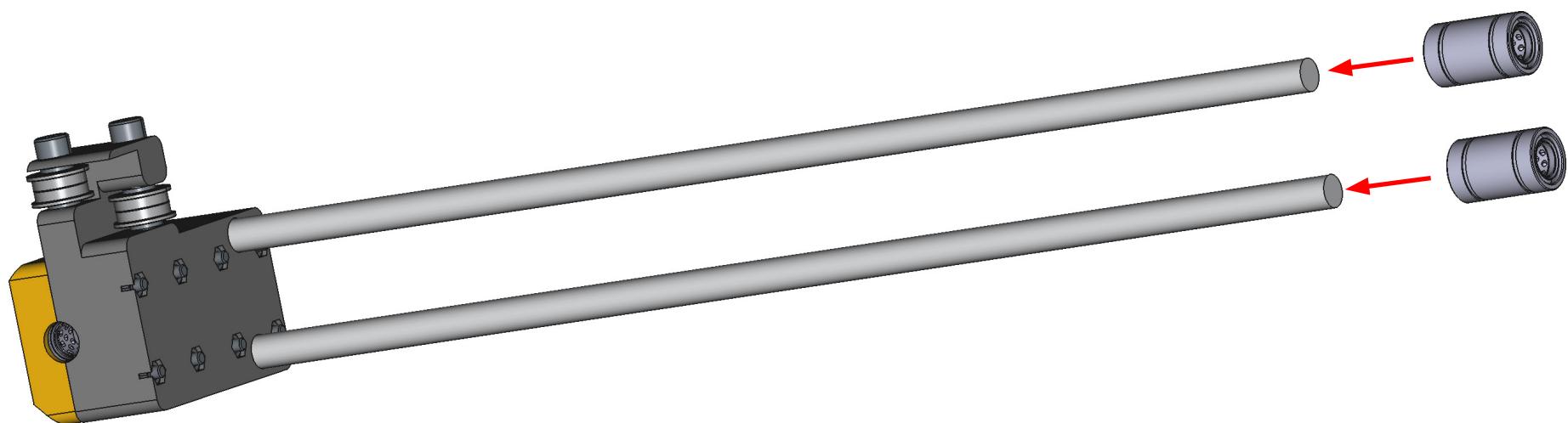
# X/Y GANTRY & MOTION COMPONENTS

PRESS THE LINEAR RODS INTO THE HOLES  
ON THE LEFT Y-CARRIAGE AS SHOWN.



320MM LONG LINEAR ROD WITH 8 MM DIAMETER

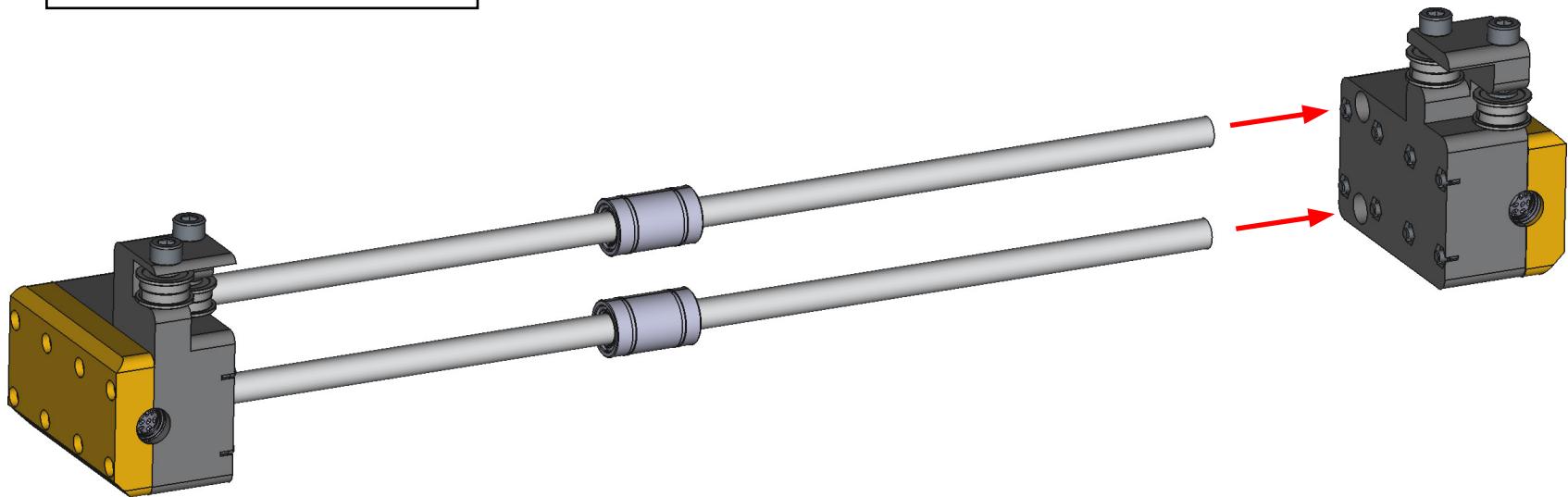
# X/Y GANTRY & MOTION COMPONENTS



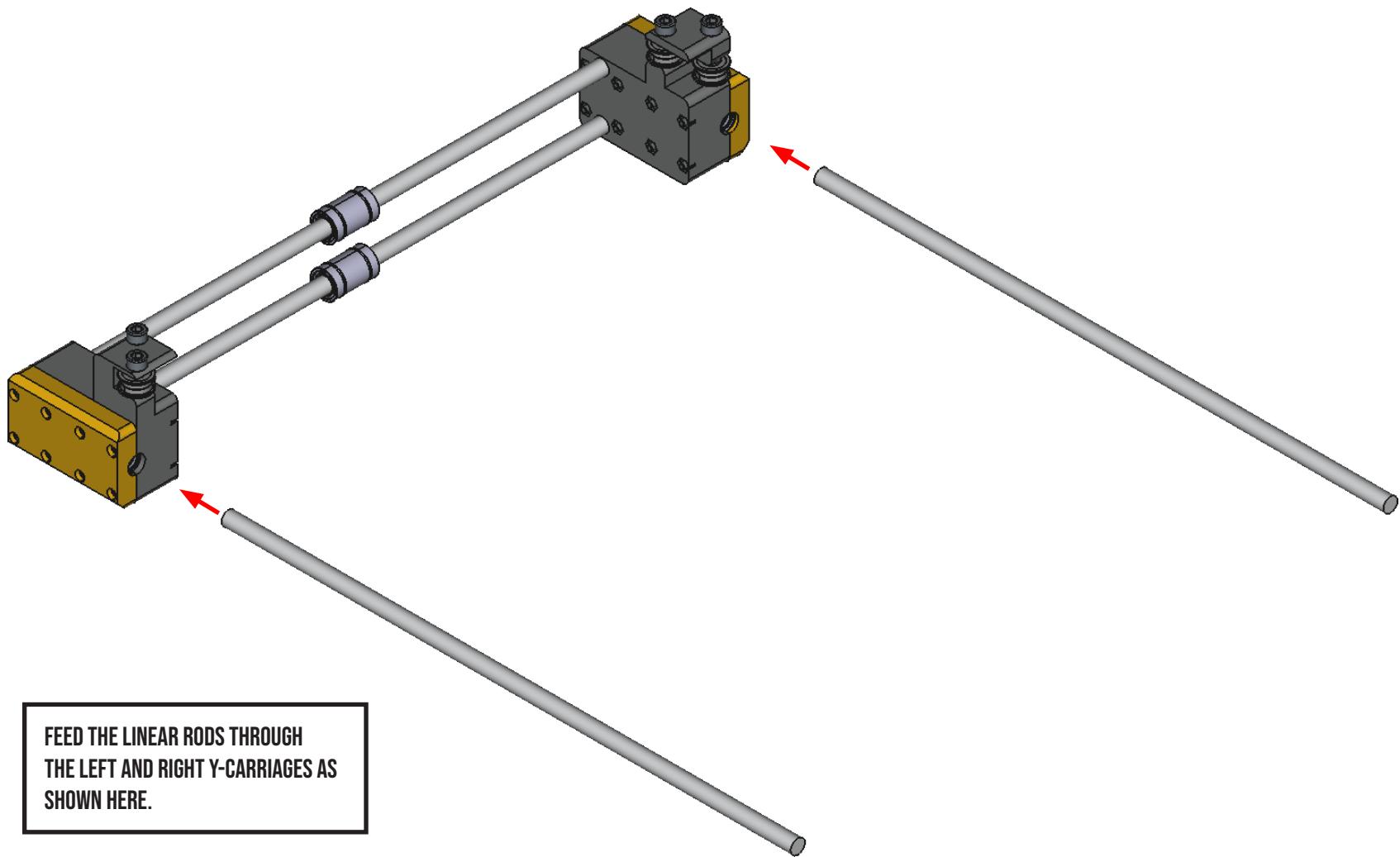
**LM8UU BEARING**

# X/Y GANTRY & MOTION COMPONENTS

PRESS THE LINEAR RODS INTO THE HOLES  
ON THE RIGHT Y-CARRIAGE AS SHOWN.



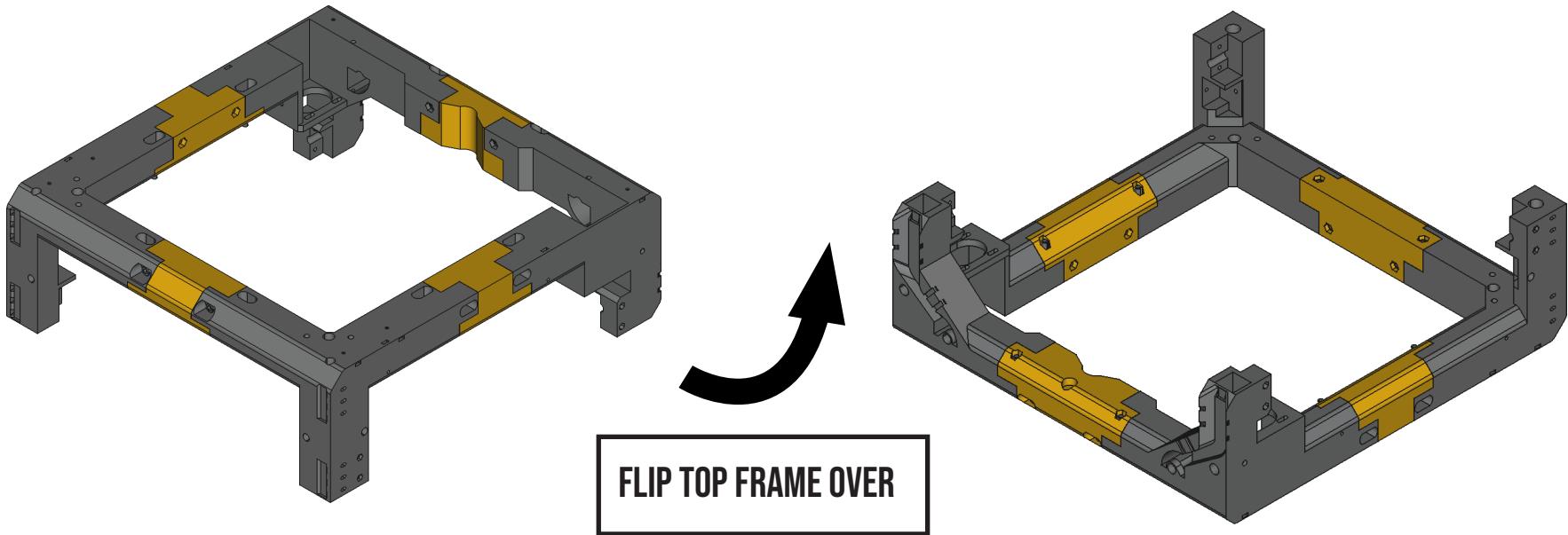
# X/Y GANTRY & MOTION COMPONENTS



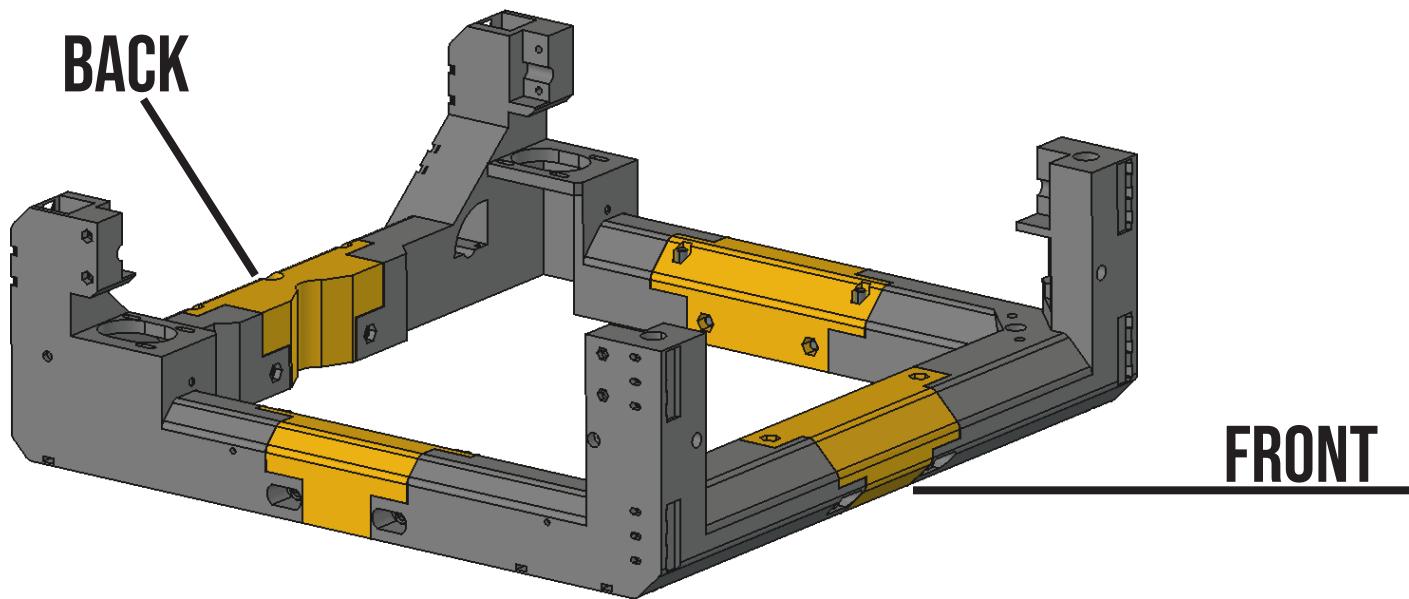
FEED THE LINEAR RODS THROUGH  
THE LEFT AND RIGHT Y-CARRIAGES AS  
SHOWN HERE.

320MM LONG LINEAR ROD WITH 8 MM DIAMETER

# X/Y GANTRY & MOTION COMPONENTS



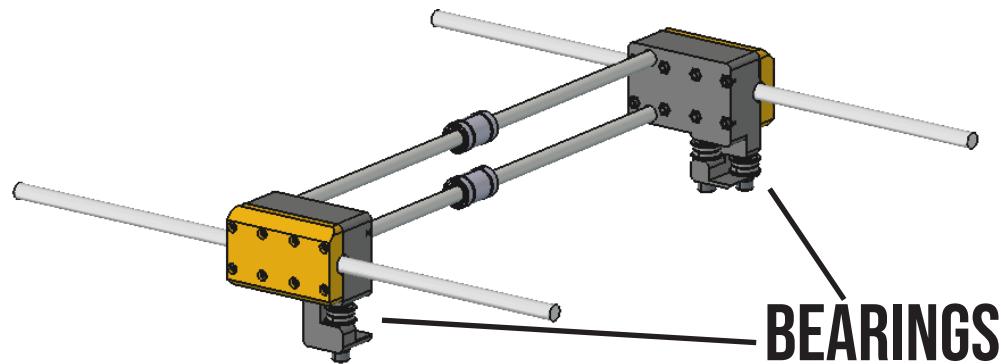
# X/Y GANTRY & MOTION COMPONENTS



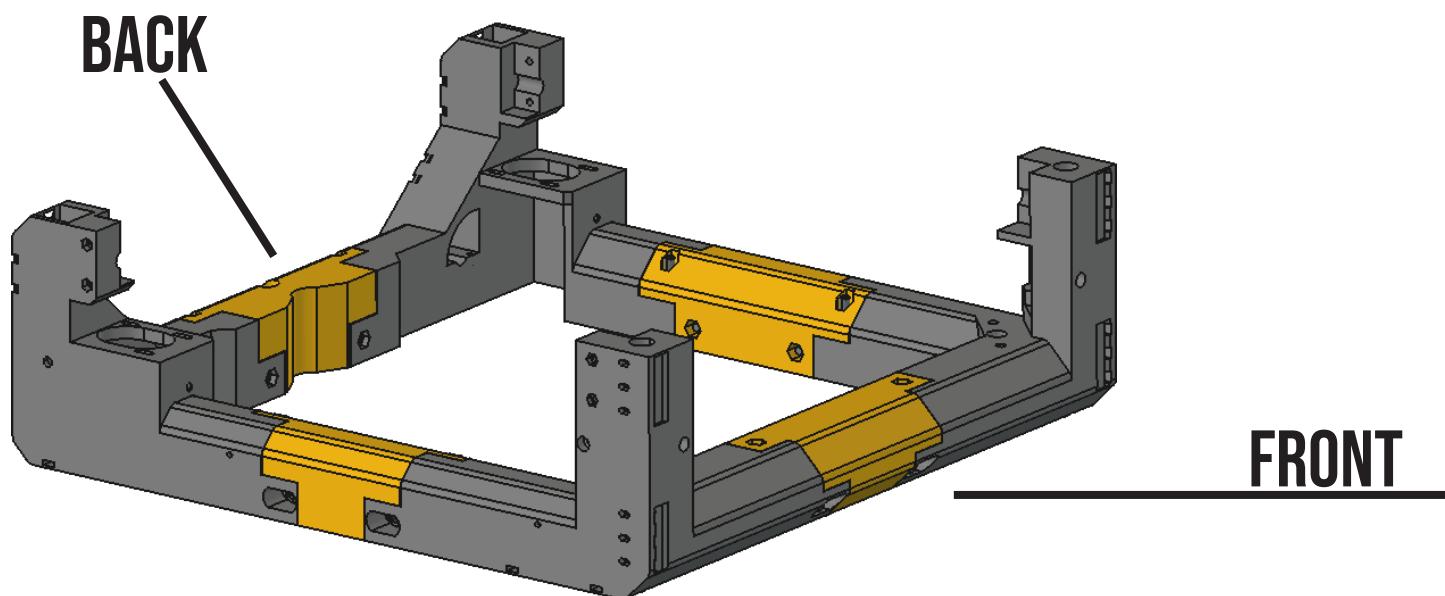
TAKE NOTE OF THE TOP FRAME AND ITS  
ORIENTATION.

PAY CLOSE ATTENTION TO WHICH SIDE IS  
THE FRONT AND WHICH IS THE BACK

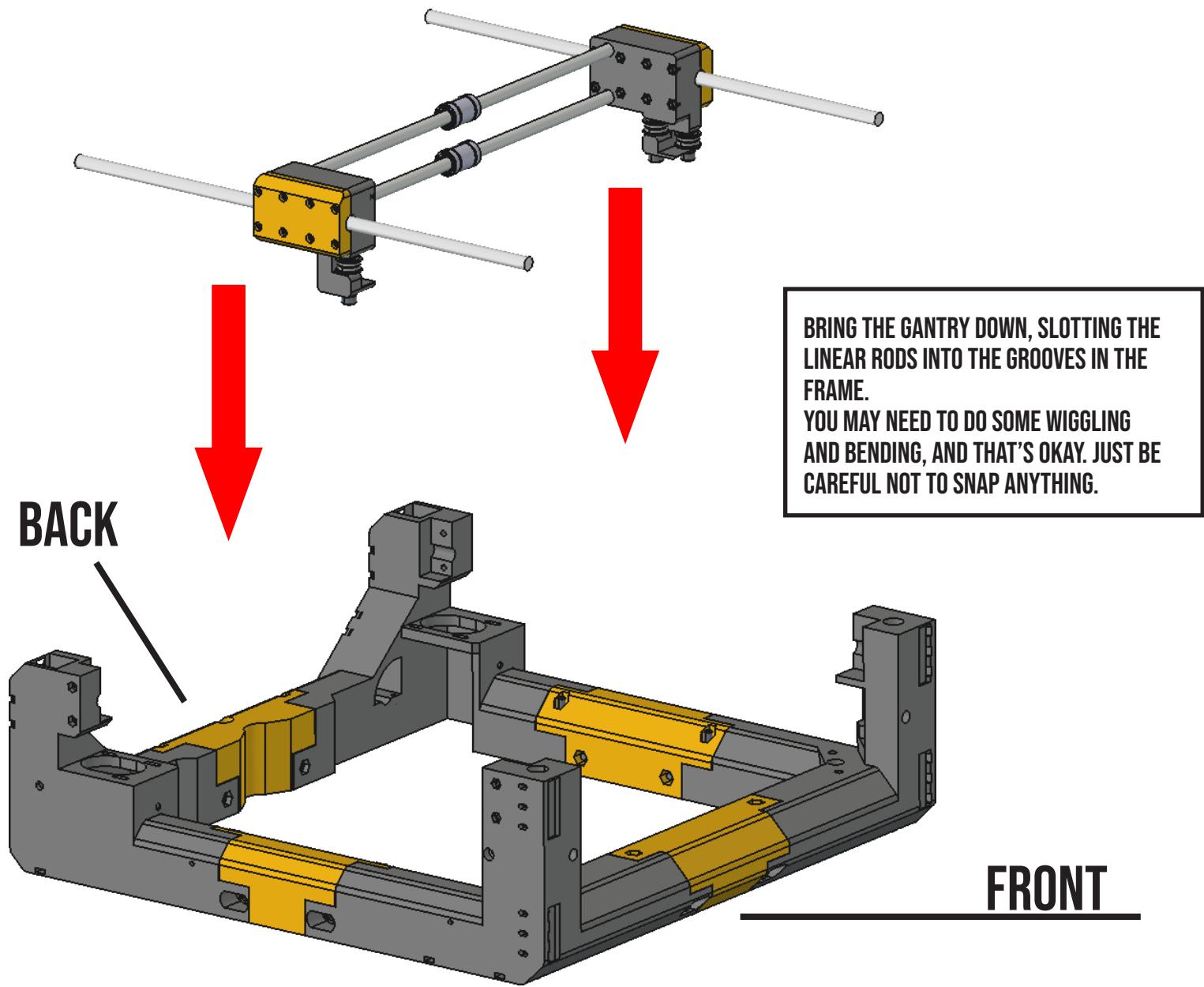
# X/Y GANTRY & MOTION COMPONENTS



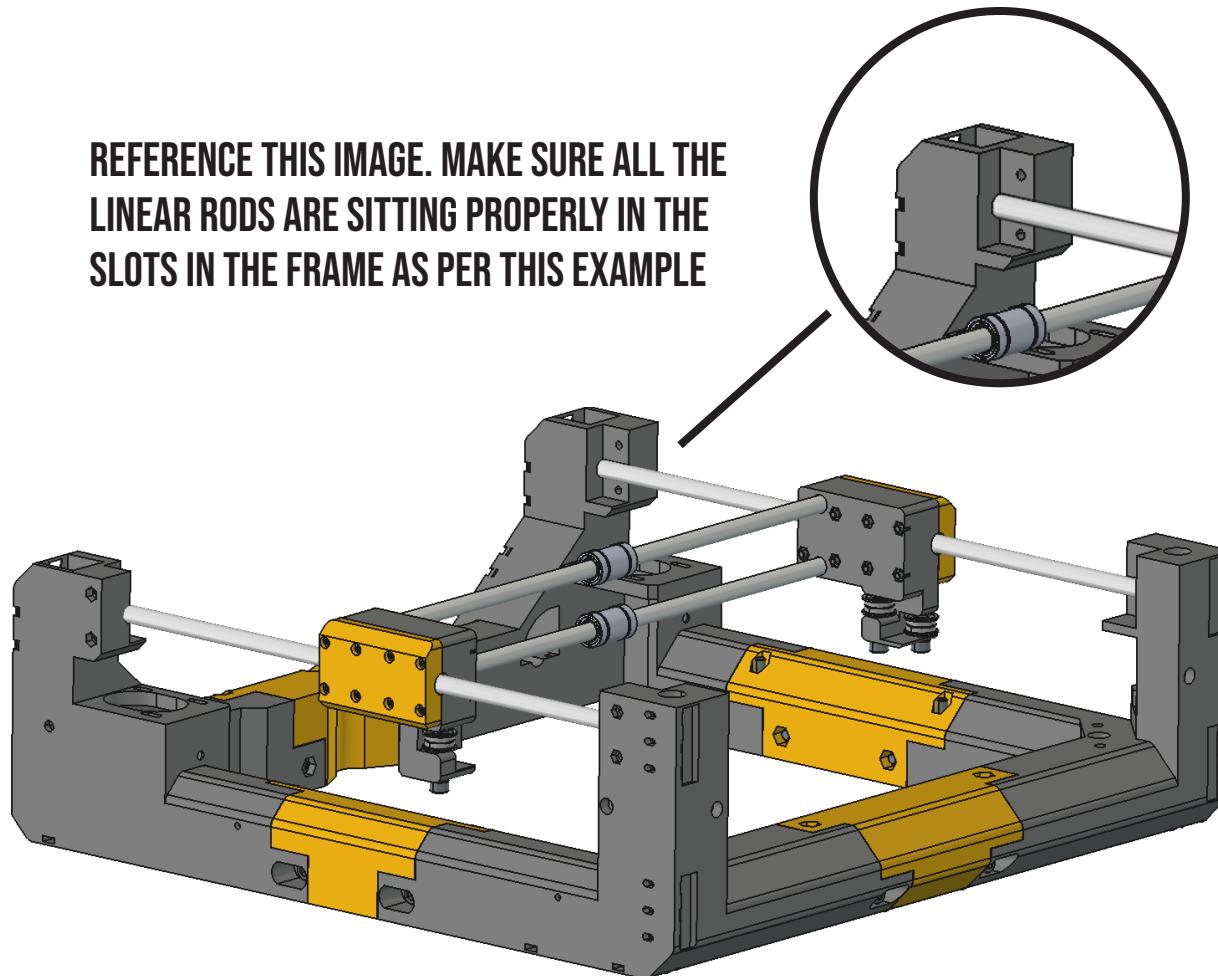
MAKE SURE TO ORIENT THE LEFT AND RIGHT Y CARRIAGE SO THAT THE BEARINGS ARE CLOSER TO THE FRONT OF THE FRAME AS SHOWN.



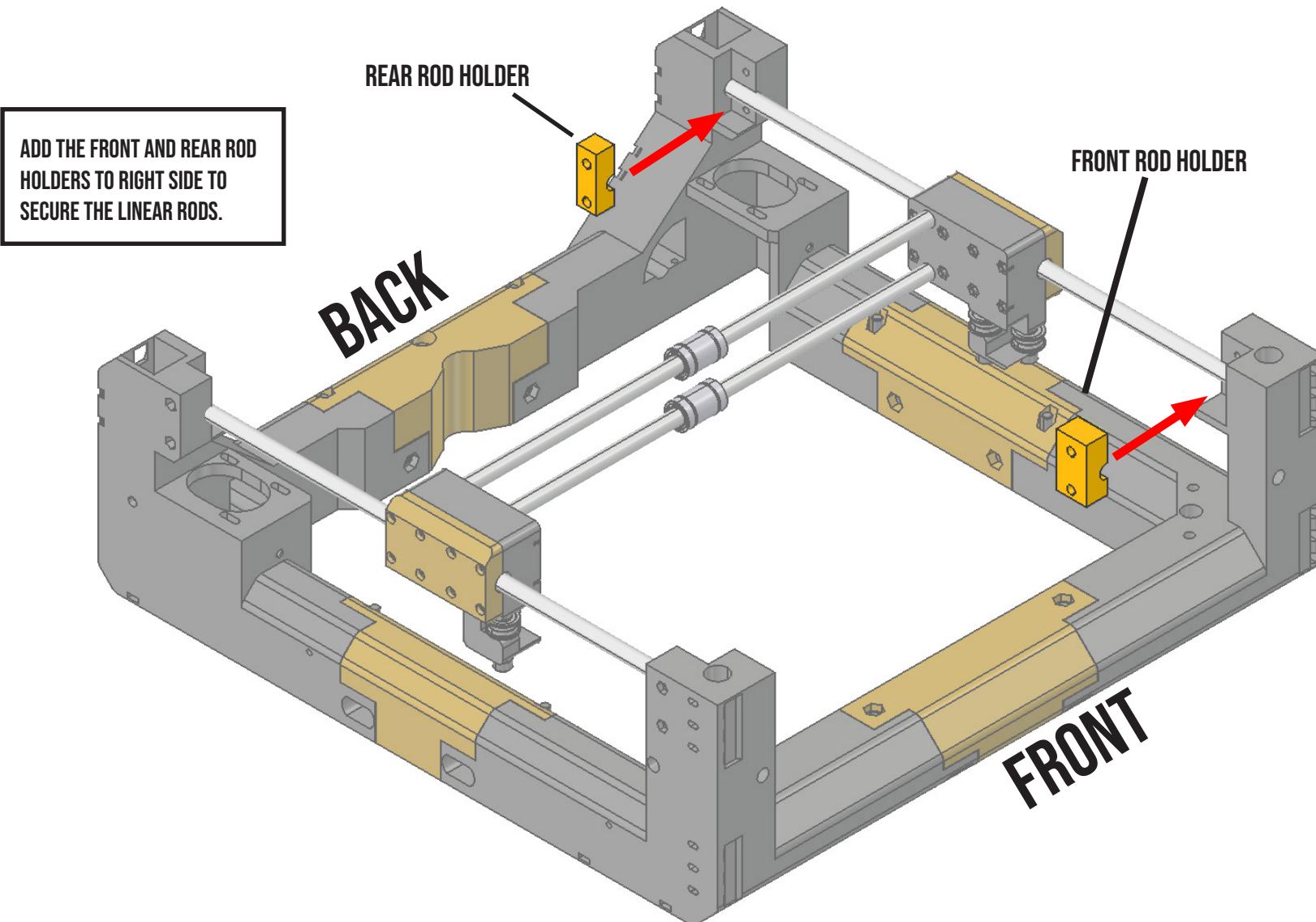
# X/Y GANTRY & MOTION COMPONENTS



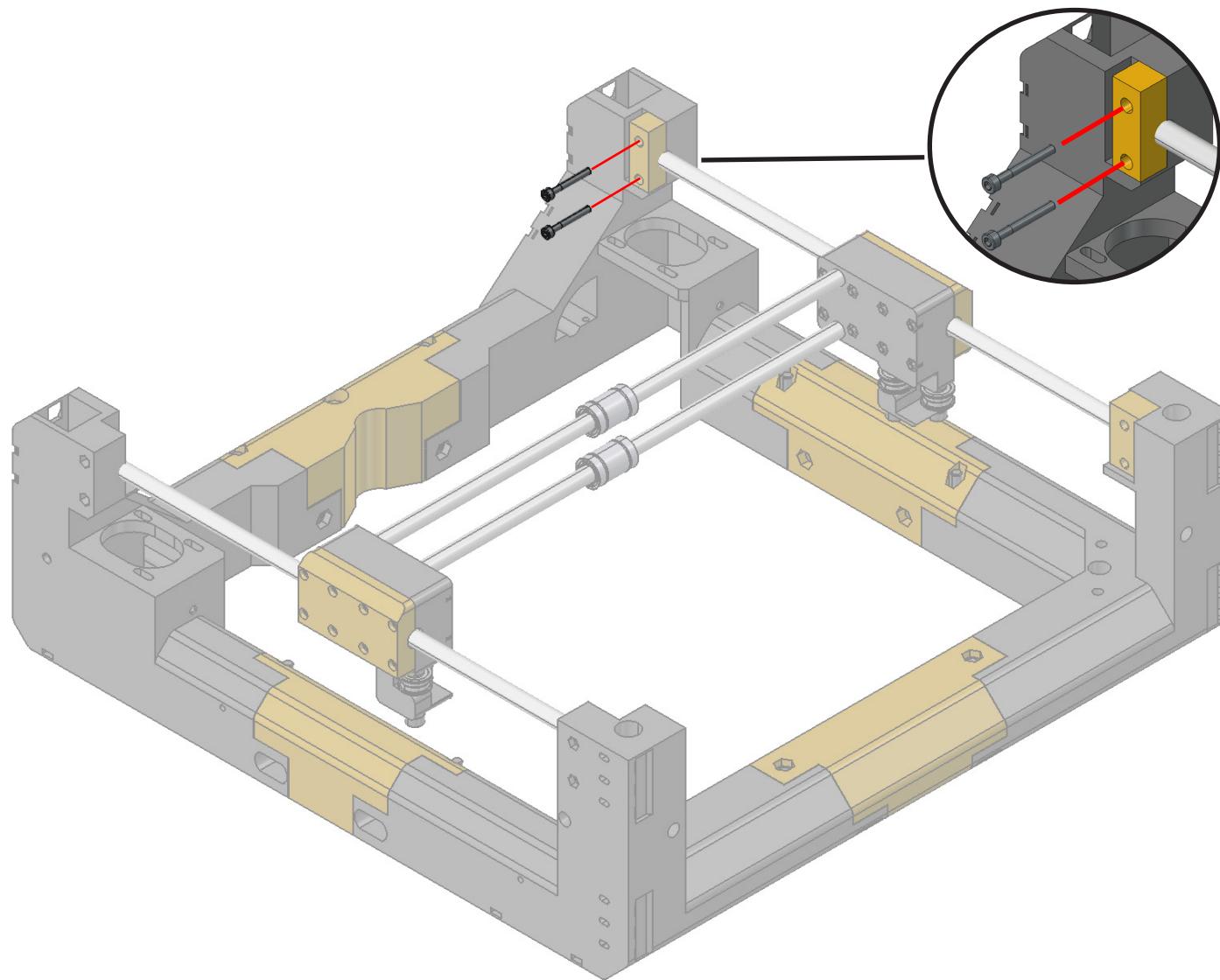
# X/Y GANTRY & MOTION COMPONENTS



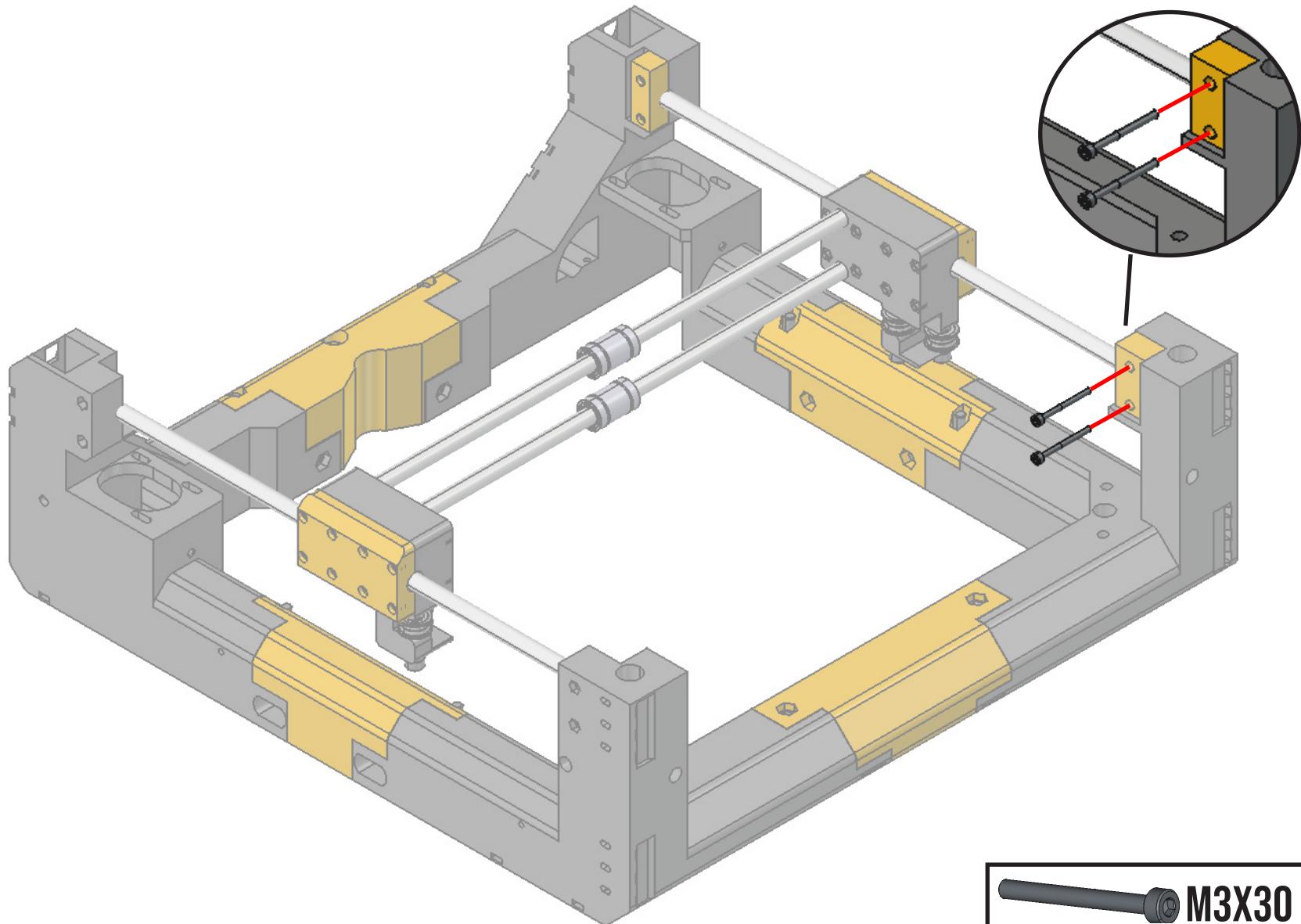
# X/Y GANTRY & MOTION COMPONENTS



# X/Y GANTRY & MOTION COMPONENTS

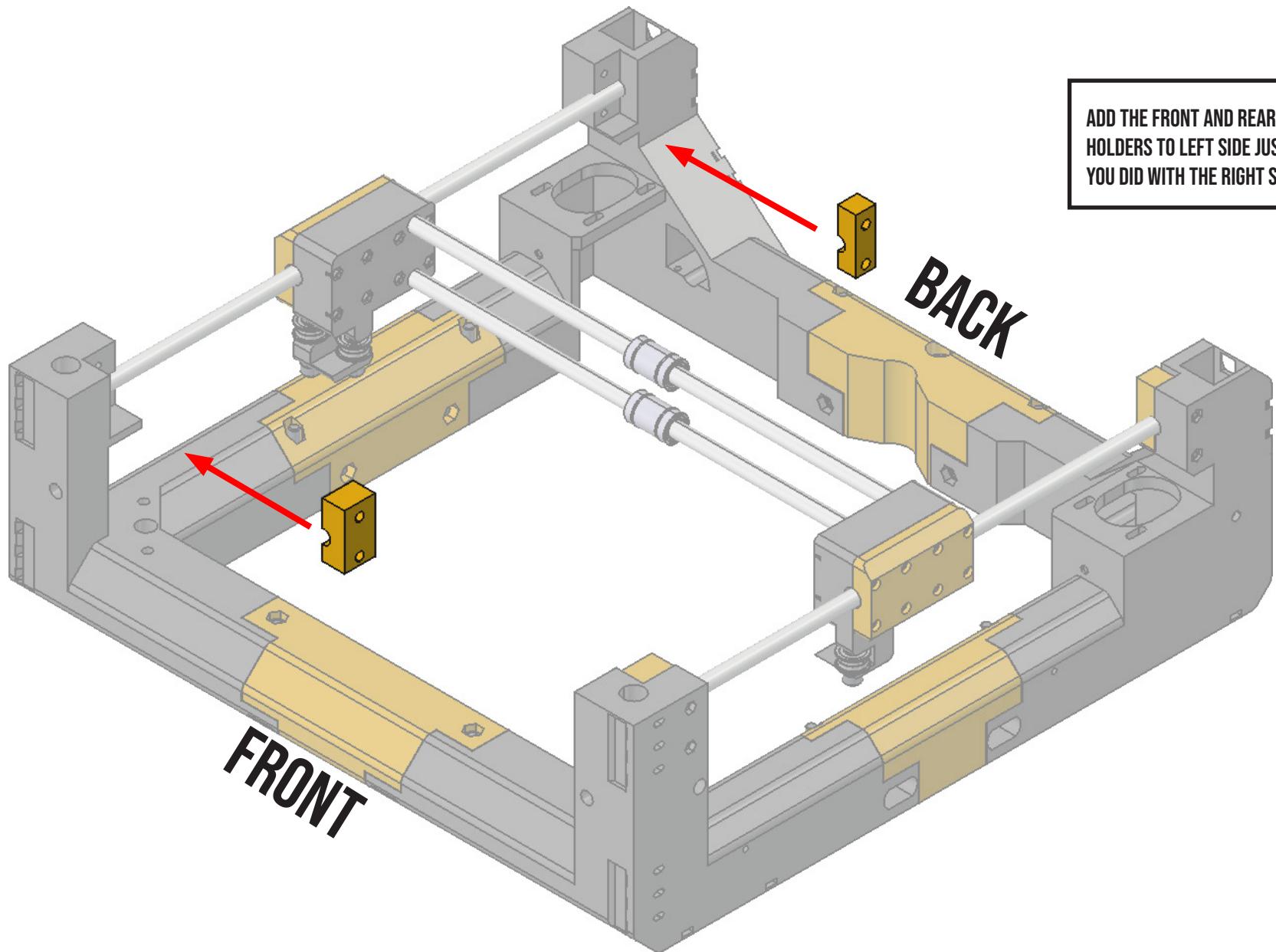


# X/Y GANTRY & MOTION COMPONENTS



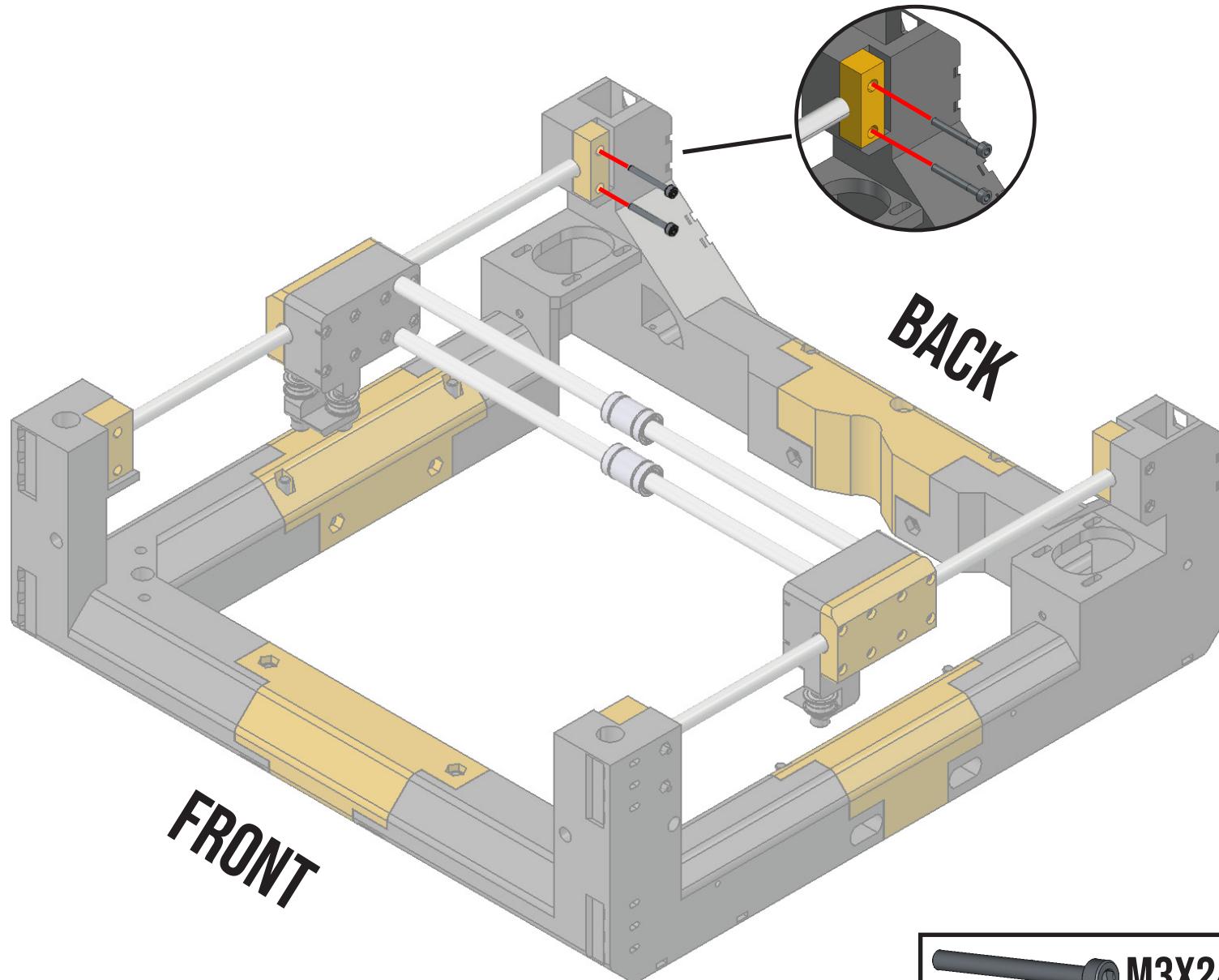
 M3X30 BOLT

# X/Y GANTRY & MOTION COMPONENTS

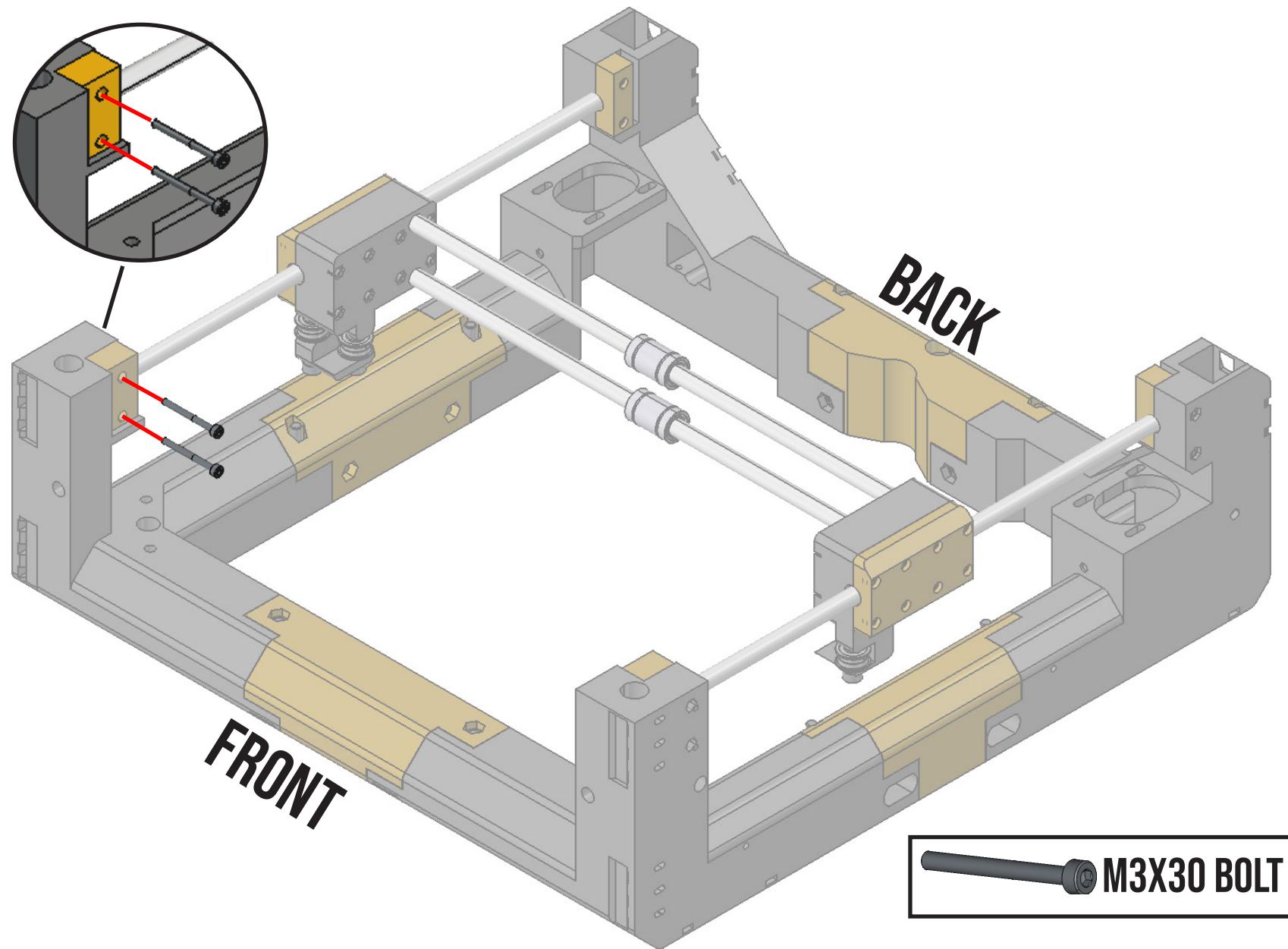


**ADD THE FRONT AND REAR ROD HOLDERS TO LEFT SIDE JUST AS YOU DID WITH THE RIGHT SIDE.**

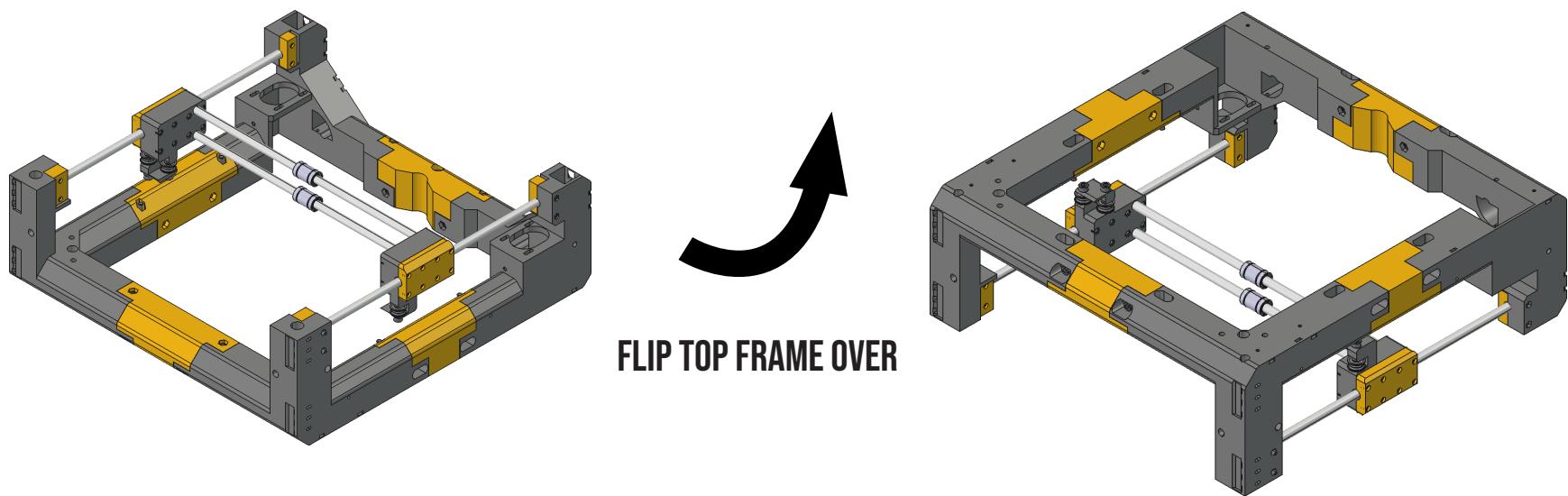
# X/Y GANTRY & MOTION COMPONENTS



# X/Y GANTRY & MOTION COMPONENTS

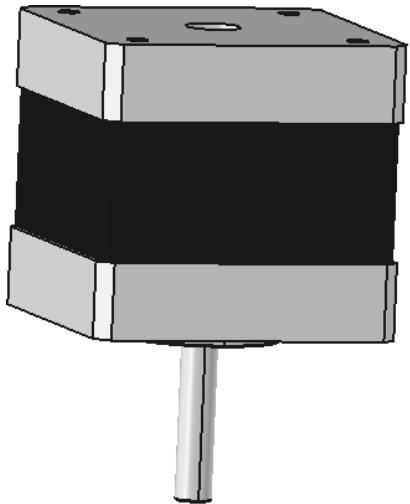


# X/Y GANTRY & MOTION COMPONENTS

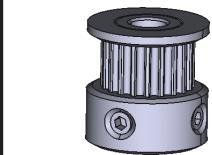
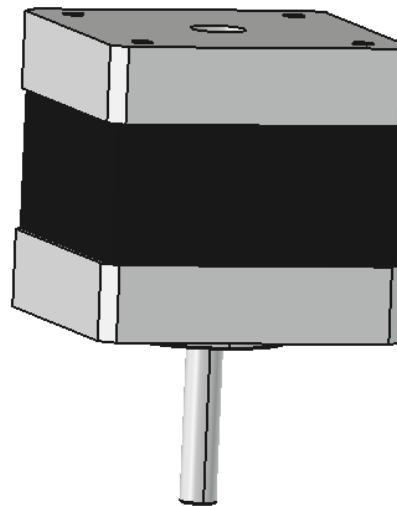


# X/Y GANTRY & MOTION COMPONENTS

LEFT STEPPER MOTOR



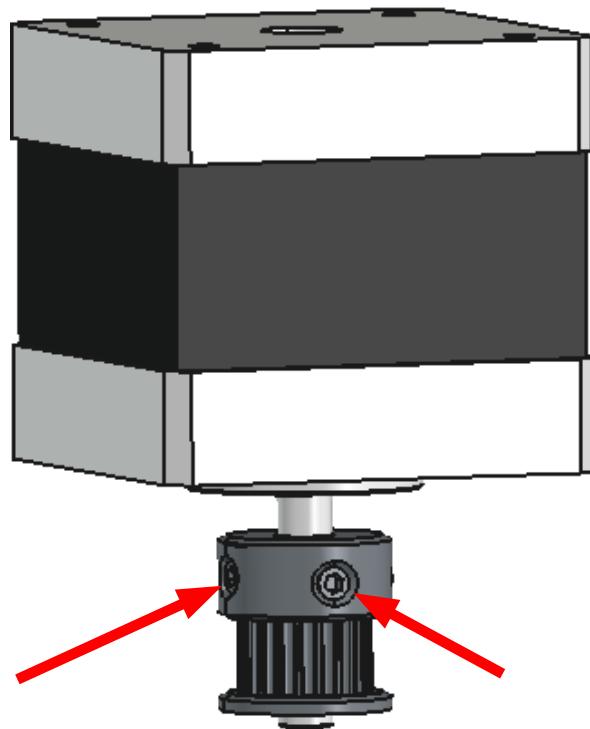
RIGHT STEPPER MOTOR



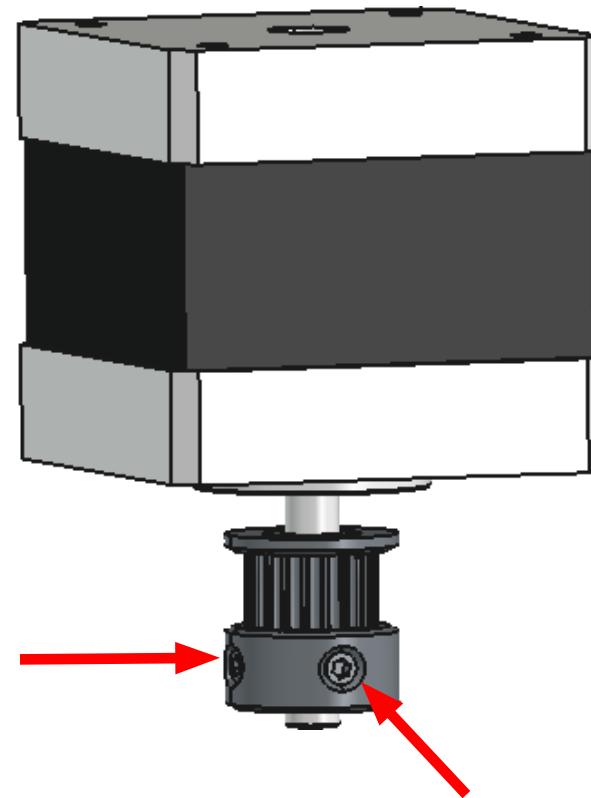
GT2 MOTOR PULLEY  
(20 TEETH)

# X/Y GANTRY & MOTION COMPONENTS

LEFT STEPPER MOTOR

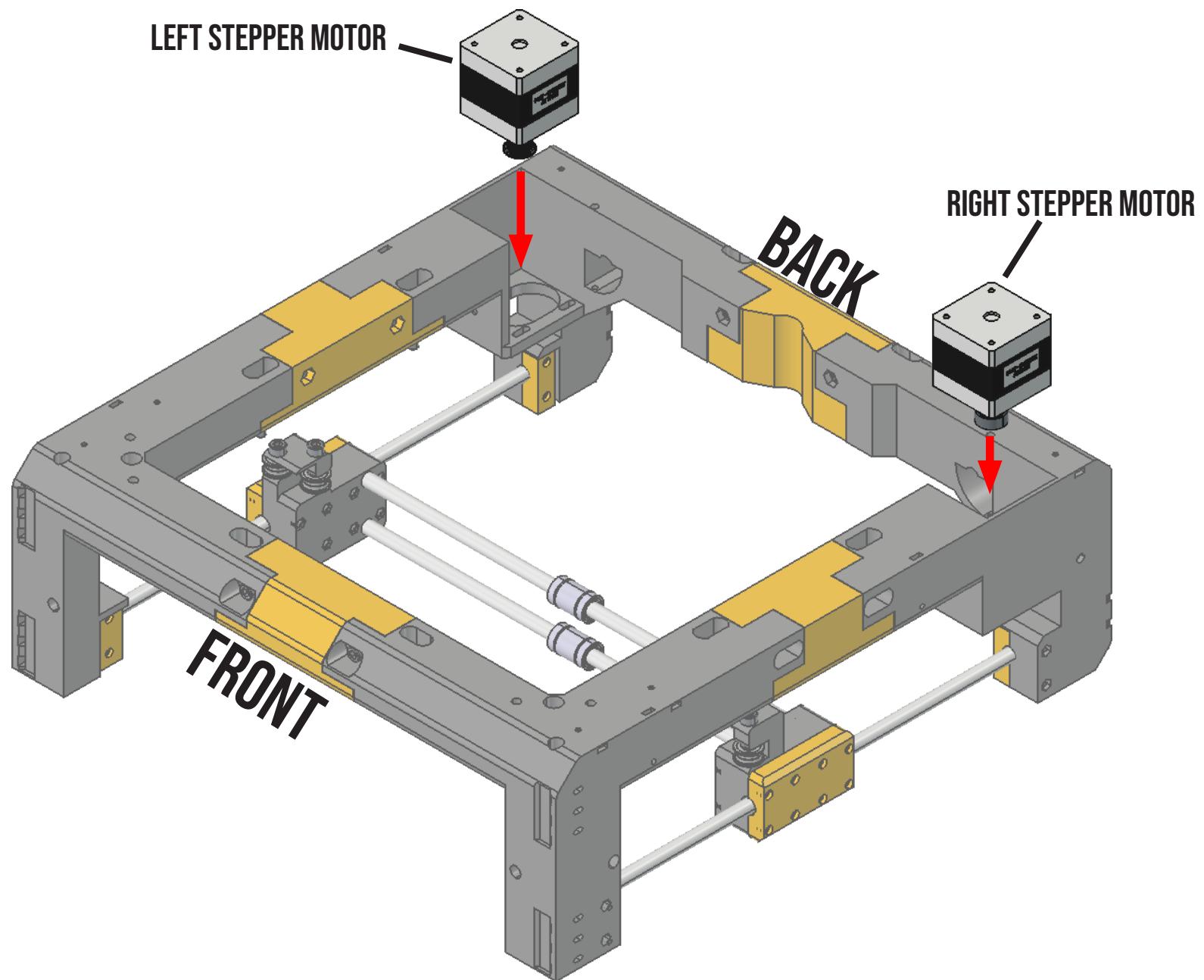


RIGHT STEPPER MOTOR

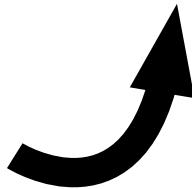
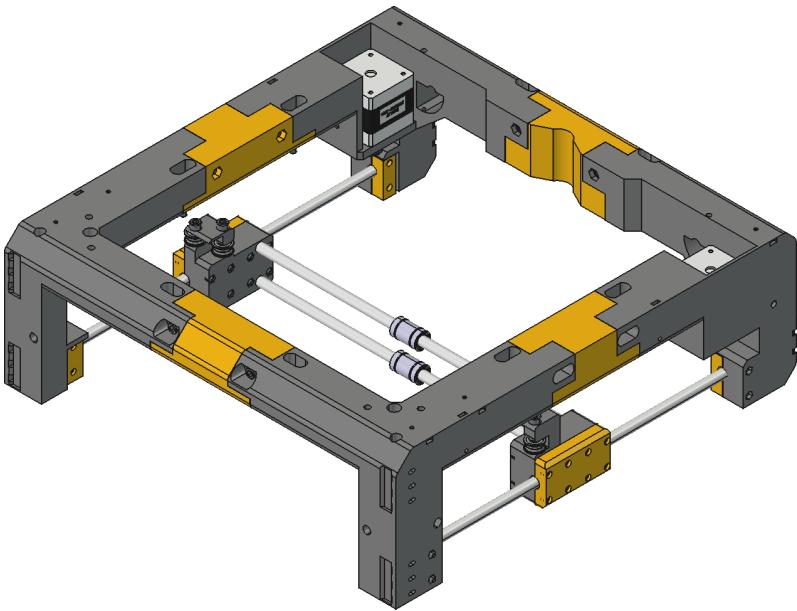


**TIGHTEN SET SCREWS**

# X/Y GANTRY & MOTION COMPONENTS

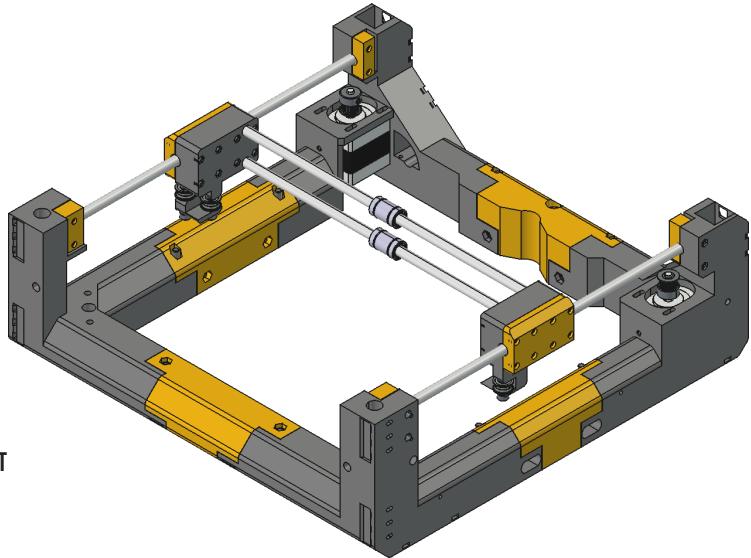


# X/Y GANTRY & MOTION COMPONENTS

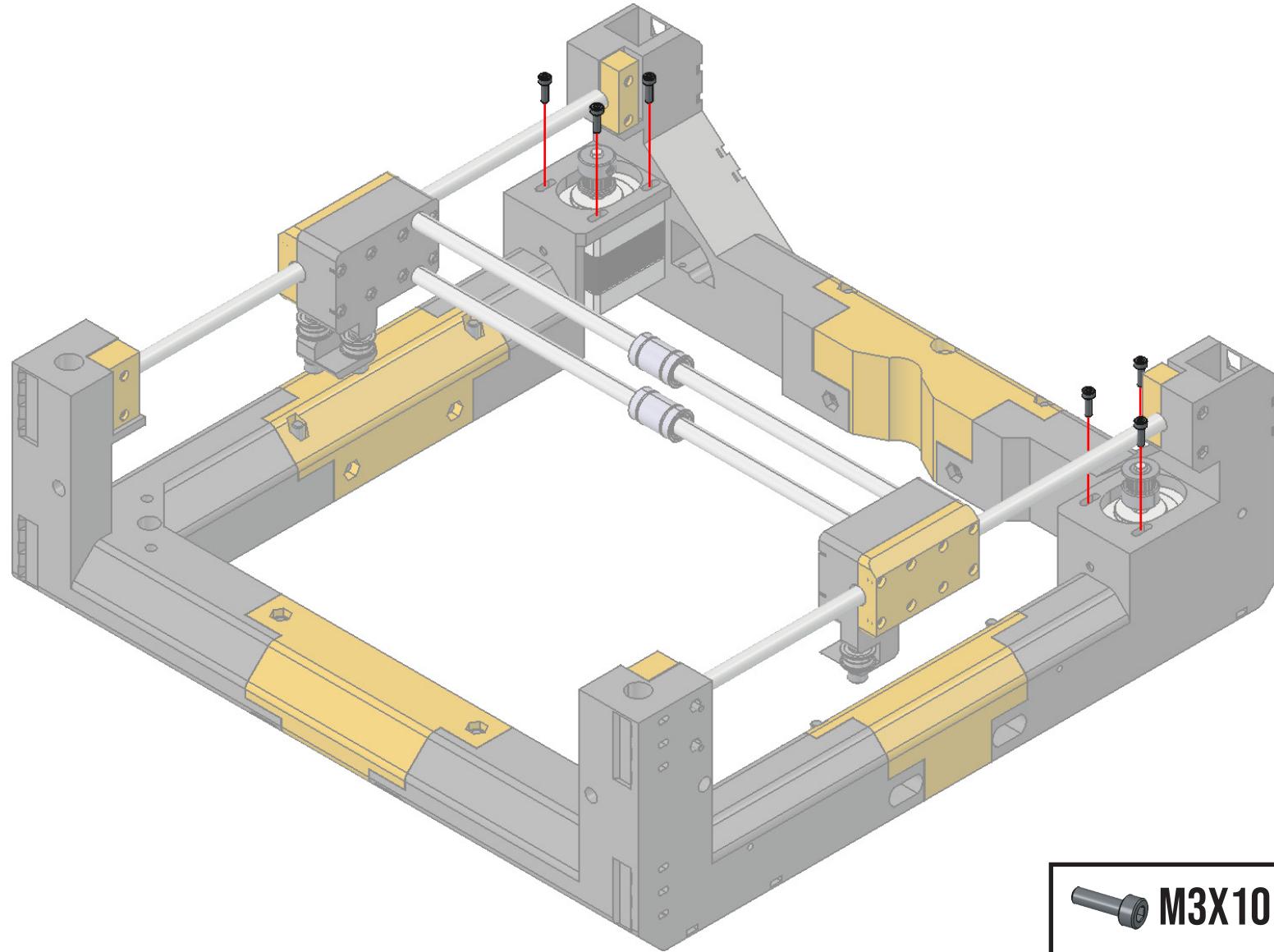


**FLIP TOP FRAME OVER**

\*YOU'LL PROBABLY HAVE TO HOLD THE  
STEPPER MOTORS IN PLACE AS YOU FLIP IT

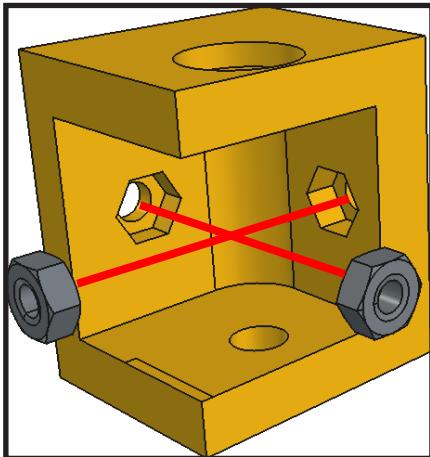


# X/Y GANTRY & MOTION COMPONENTS

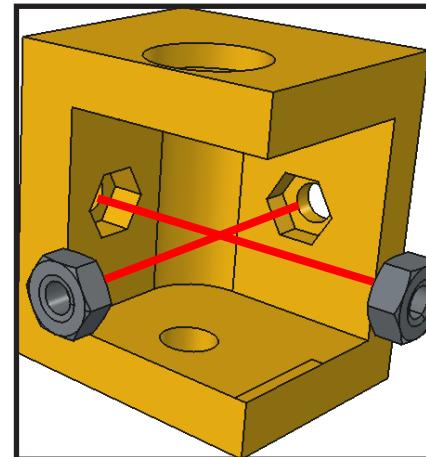


# X/Y GANTRY & MOTION COMPONENTS

LEFT IDLER CARTRIDGE



RIGHT IDLER CARTRIDGE



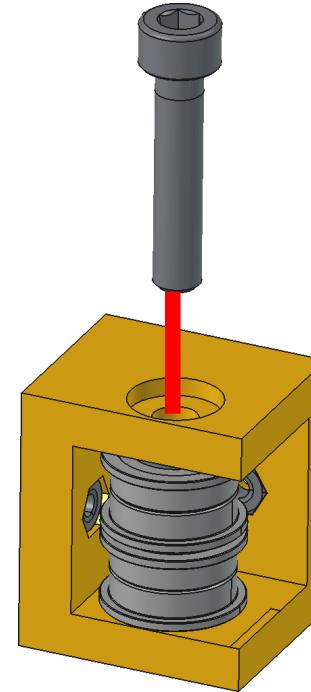
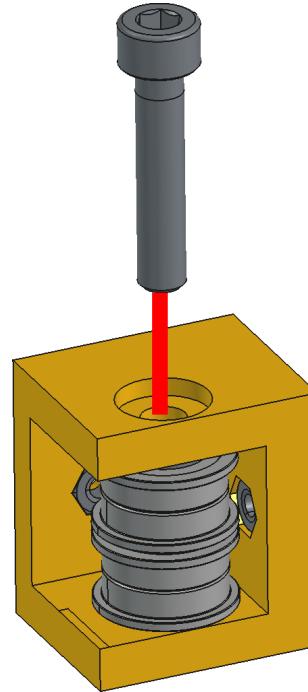
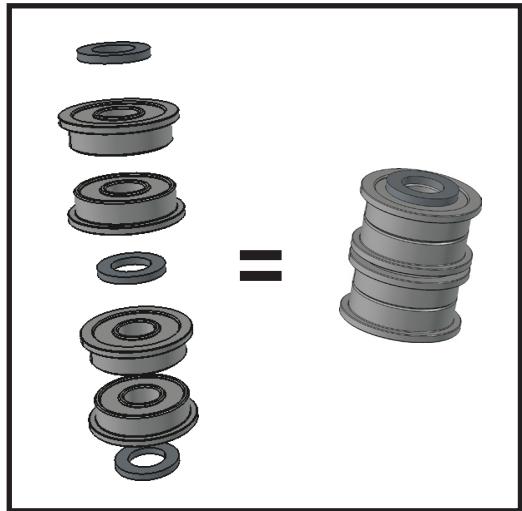
INSERT NUTS INTO THE PARTS AS SHOWN

THE LEFT AND RIGHT IDLER CARTRIDGE ARE IN FACT DIFFERENT, AND  
WON'T FIT WHERE THEY AREN'T SUPPOSED TO. WHEN YOU INSERT THEM  
INTO THE FRAME, JUST SWAP THEM IF THEY DON'T FIT.



M3 HEX NUT

# X/Y GANTRY & MOTION COMPONENTS



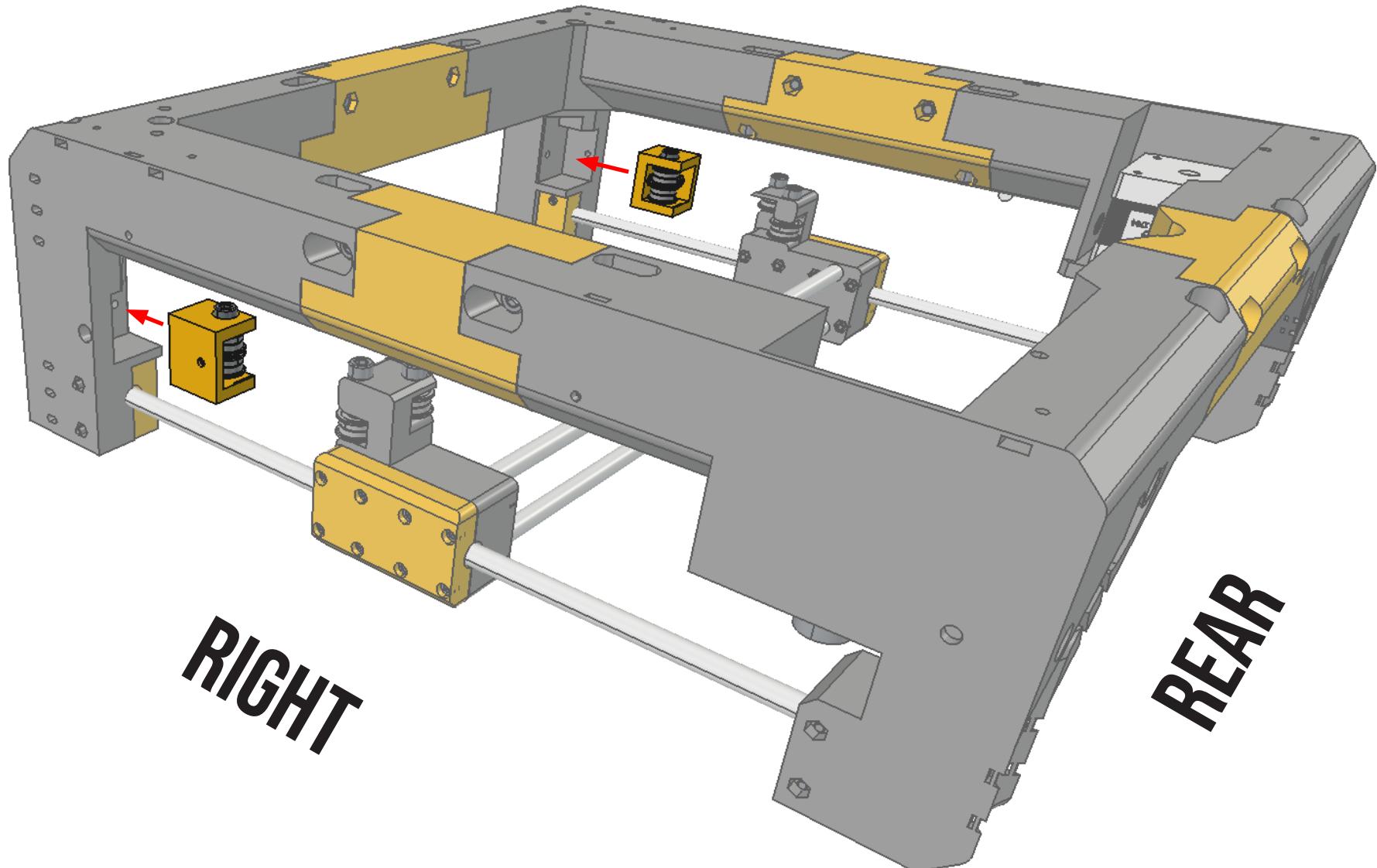
M5X25 BOLT



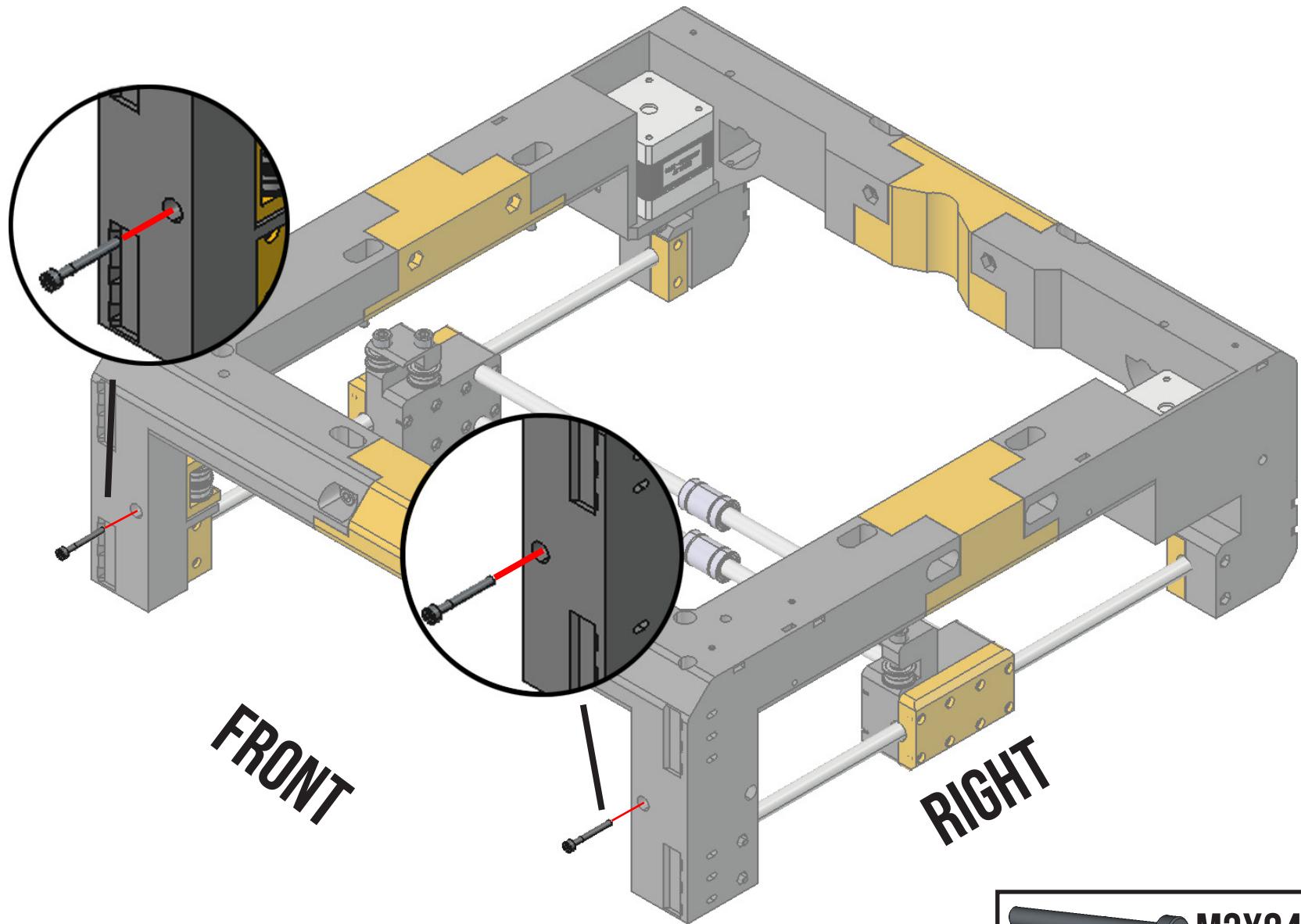
F695 BEARING

M5 WASHSER/SHIM

# X/Y GANTRY & MOTION COMPONENTS

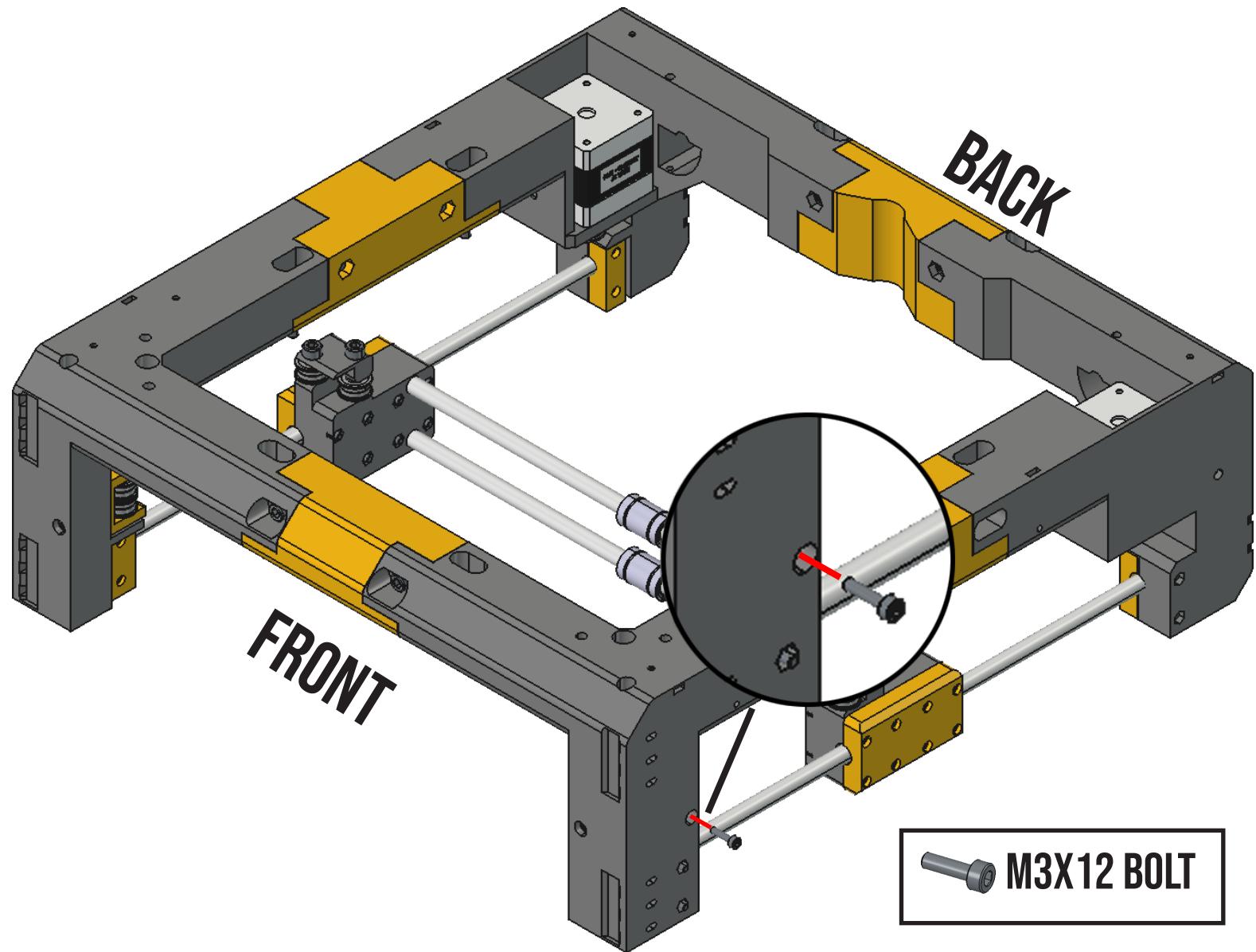


# X/Y GANTRY & MOTION COMPONENTS

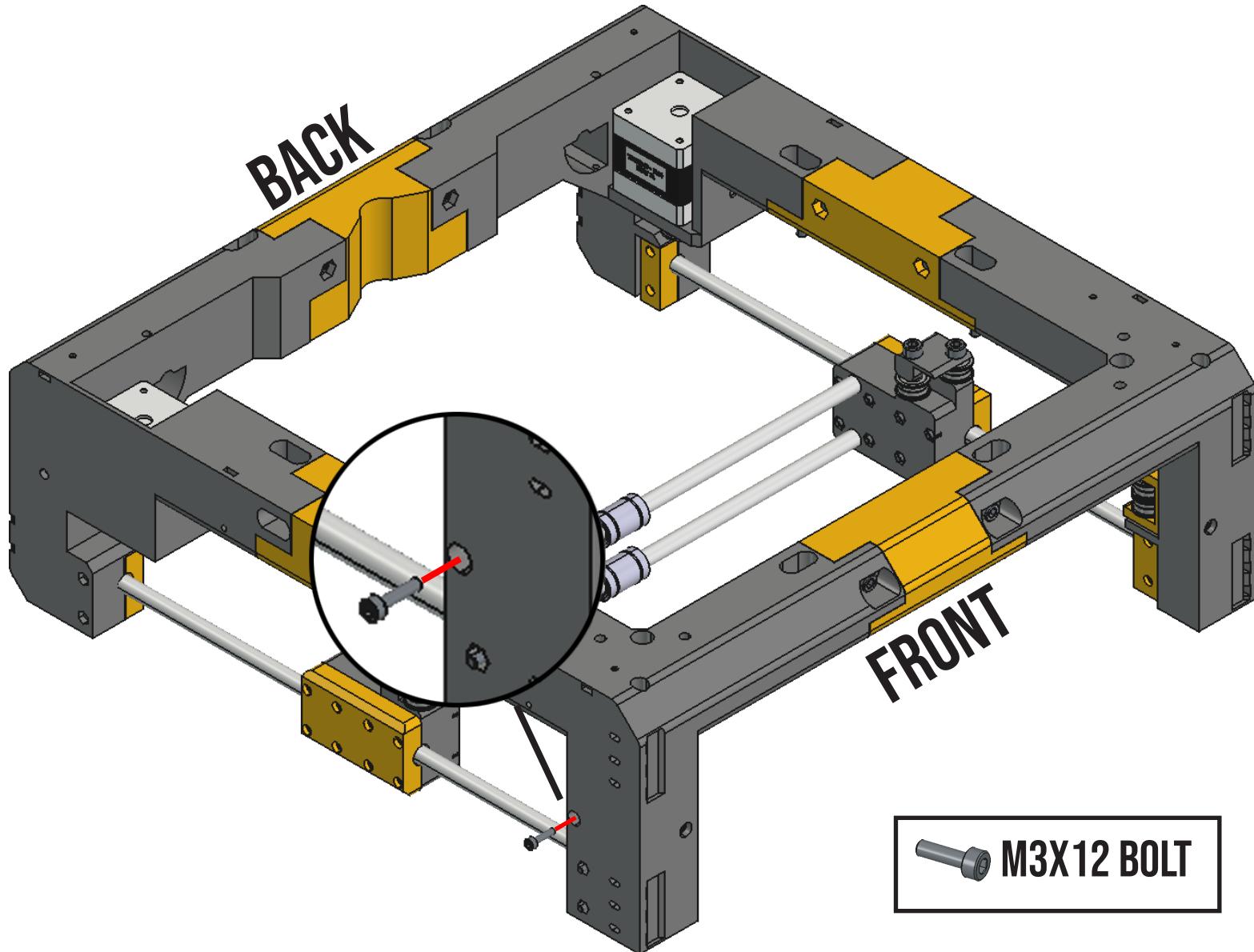


**M3X24 BOLT**

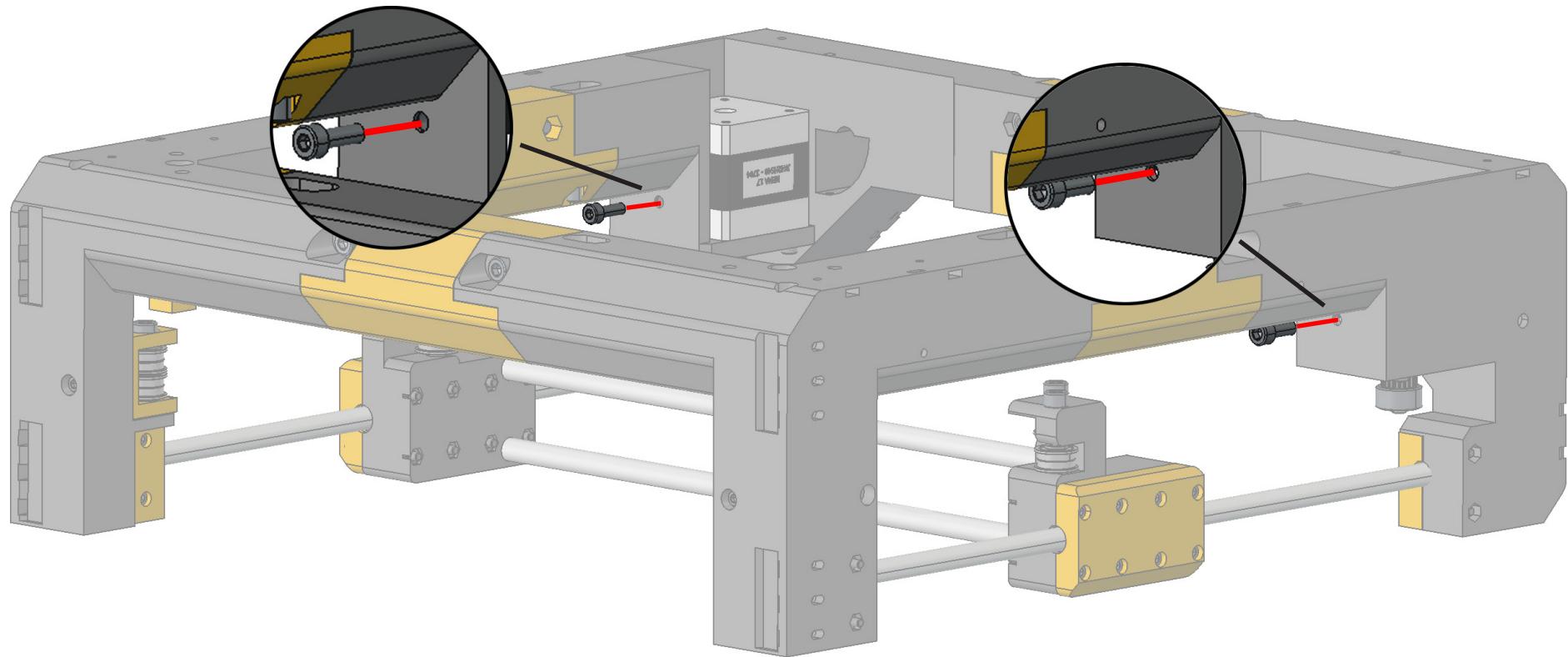
# X/Y GANTRY & MOTION COMPONENTS



# X/Y GANTRY & MOTION COMPONENTS



# X/Y GANTRY & MOTION COMPONENTS



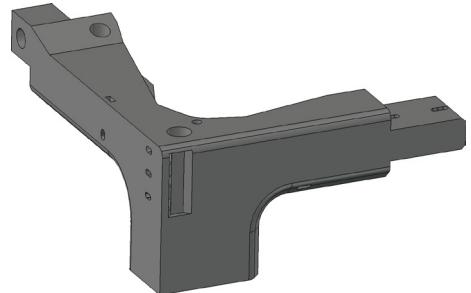
**M5X12 BOLT**

# X/Y GANTRY & MOTION COMPONENTS

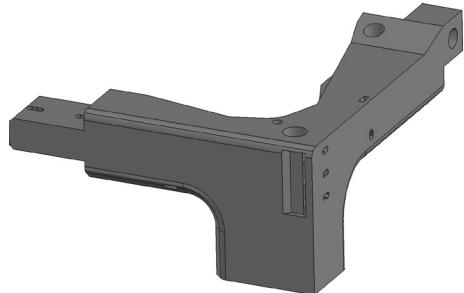
COMPLETE



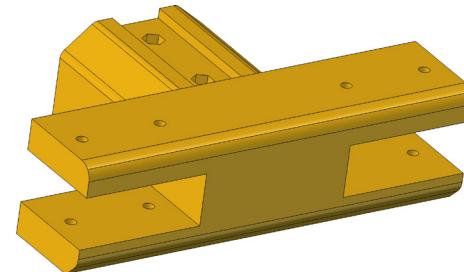
# BOTTOM FRAME ASSEMBLY



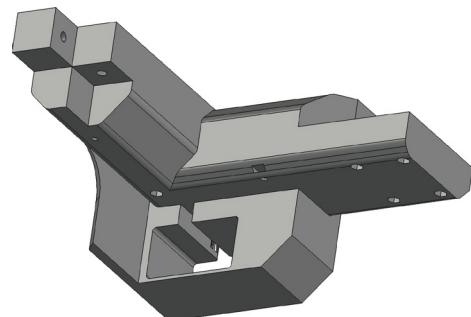
BOTTOM FRONT LEFT CORNER



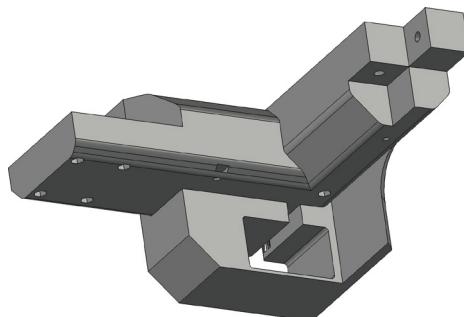
BOTTOM FRONT RIGHT CORNER



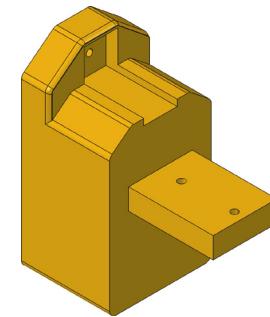
FRONT FRAME TENSIONER



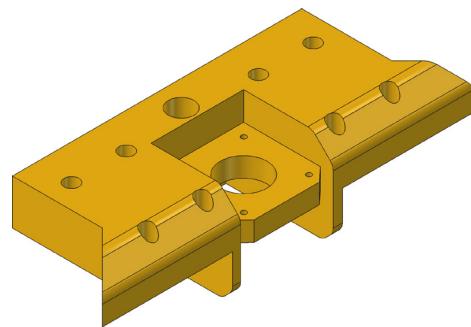
BOTTOM REAR LEFT CORNER



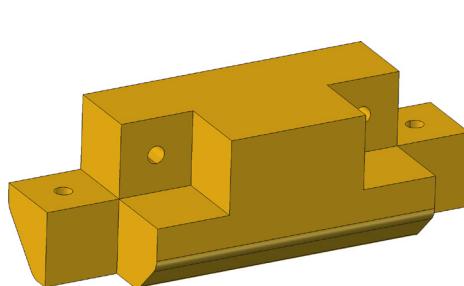
BOTTOM REAR RIGHT CORNER



TENSIONER EXTENSION



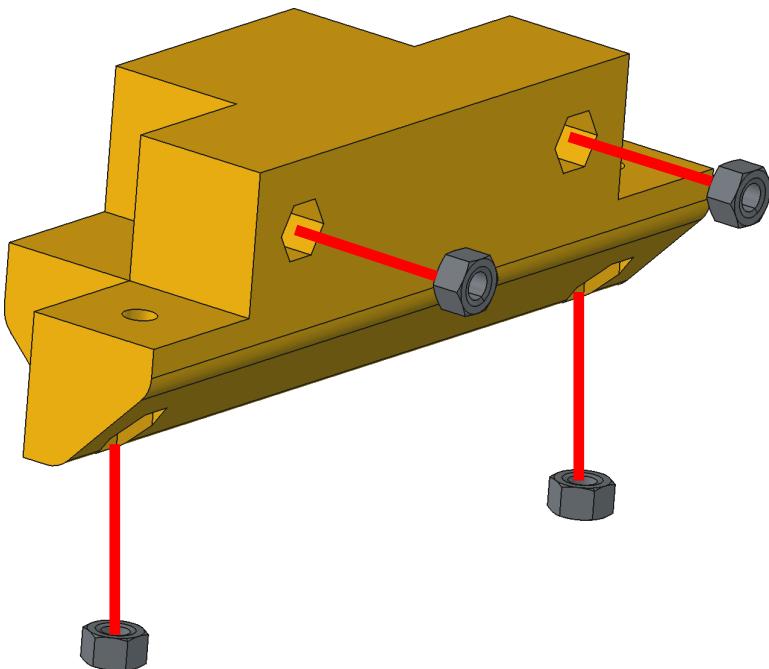
BOTTOM REAR CONNECTOR



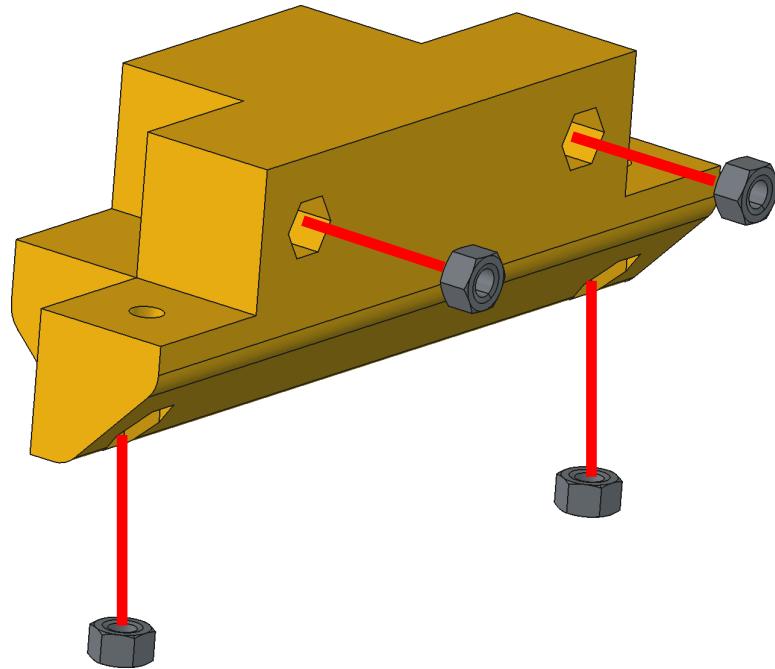
BOTTOM SIDE CONNECTORS

X2

# BOTTOM FRAME ASSEMBLY

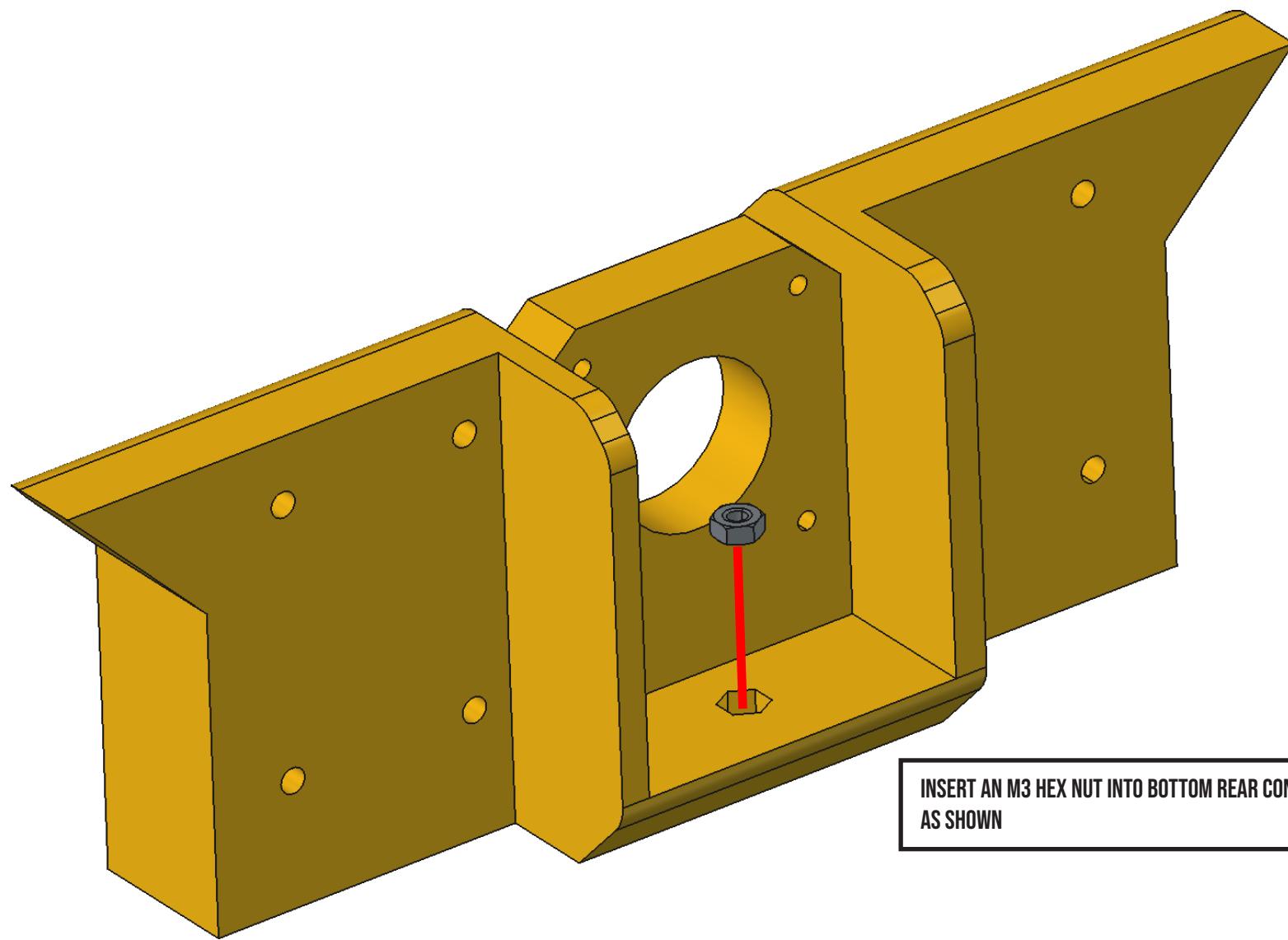


INSERT M5 HEX NUTS INTO THE HEXAGONAL HOLES IN BOTH OF THE BOTTOM SIDE CONNECTORS



M5 HEX NUT

# BOTTOM FRAME ASSEMBLY

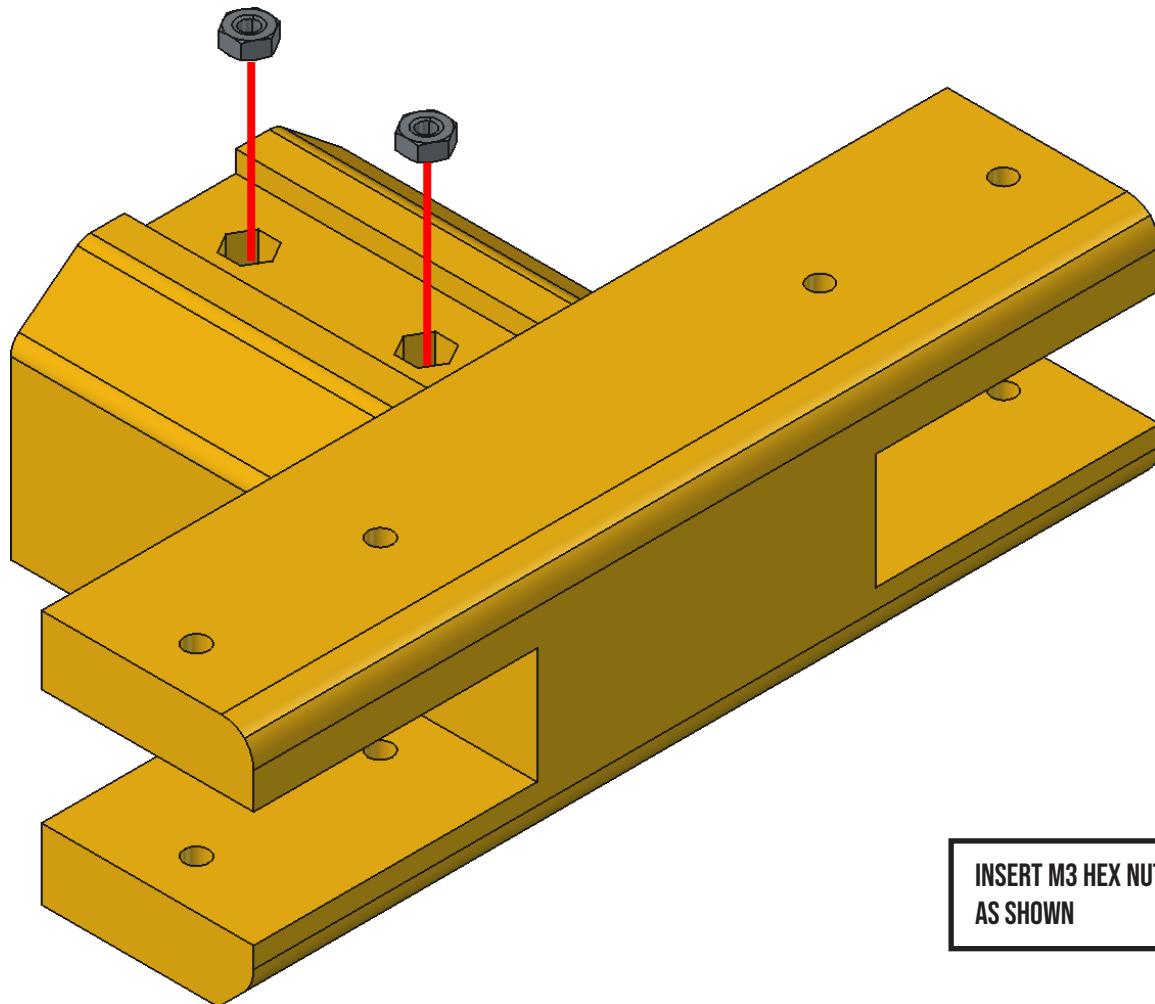


INSERT AN M3 HEX NUT INTO BOTTOM REAR CONNECTOR  
AS SHOWN



M3 HEX NUT

# BOTTOM FRAME ASSEMBLY

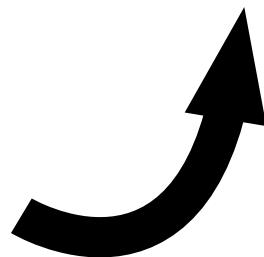
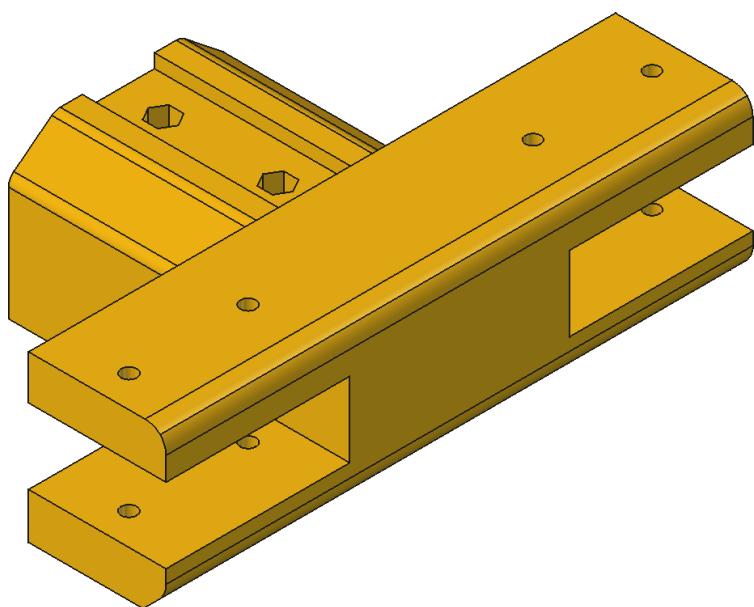


INSERT M3 HEX NUTS INTO THE FRONT FRAME TENSIONER  
AS SHOWN

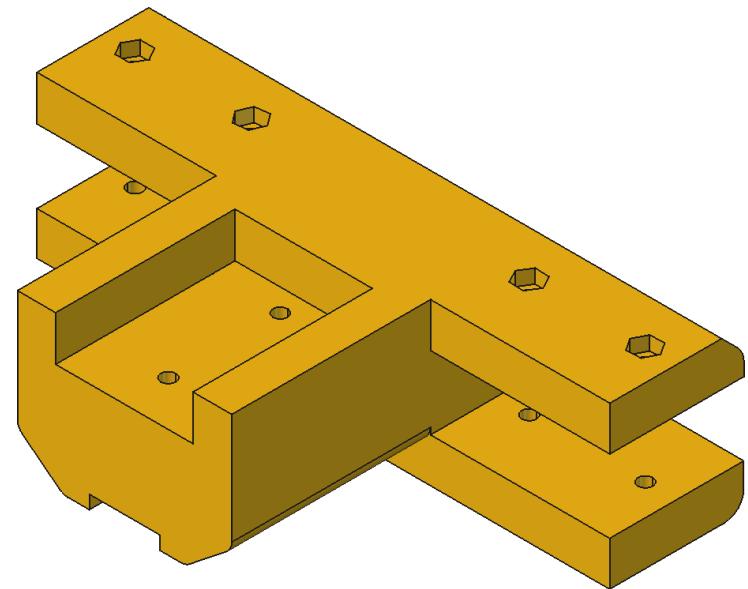


M3 HEX NUT

# BOTTOM FRAME ASSEMBLY

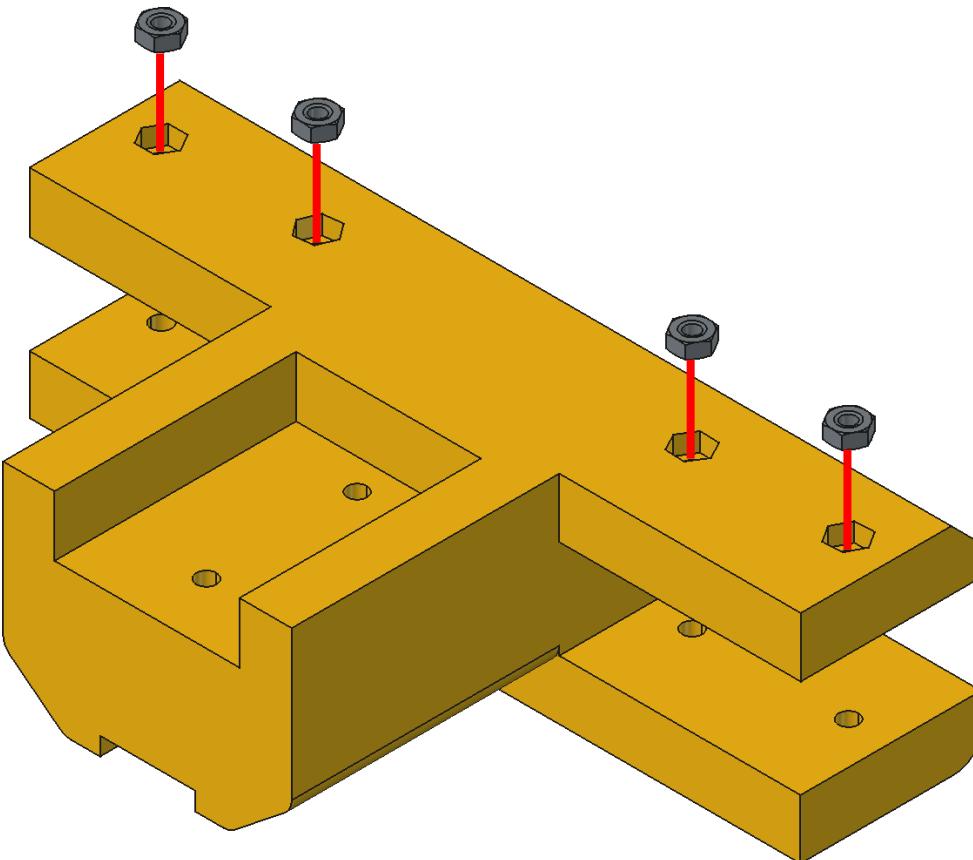


**FLIP**



**M3 HEX NUT**

# BOTTOM FRAME ASSEMBLY

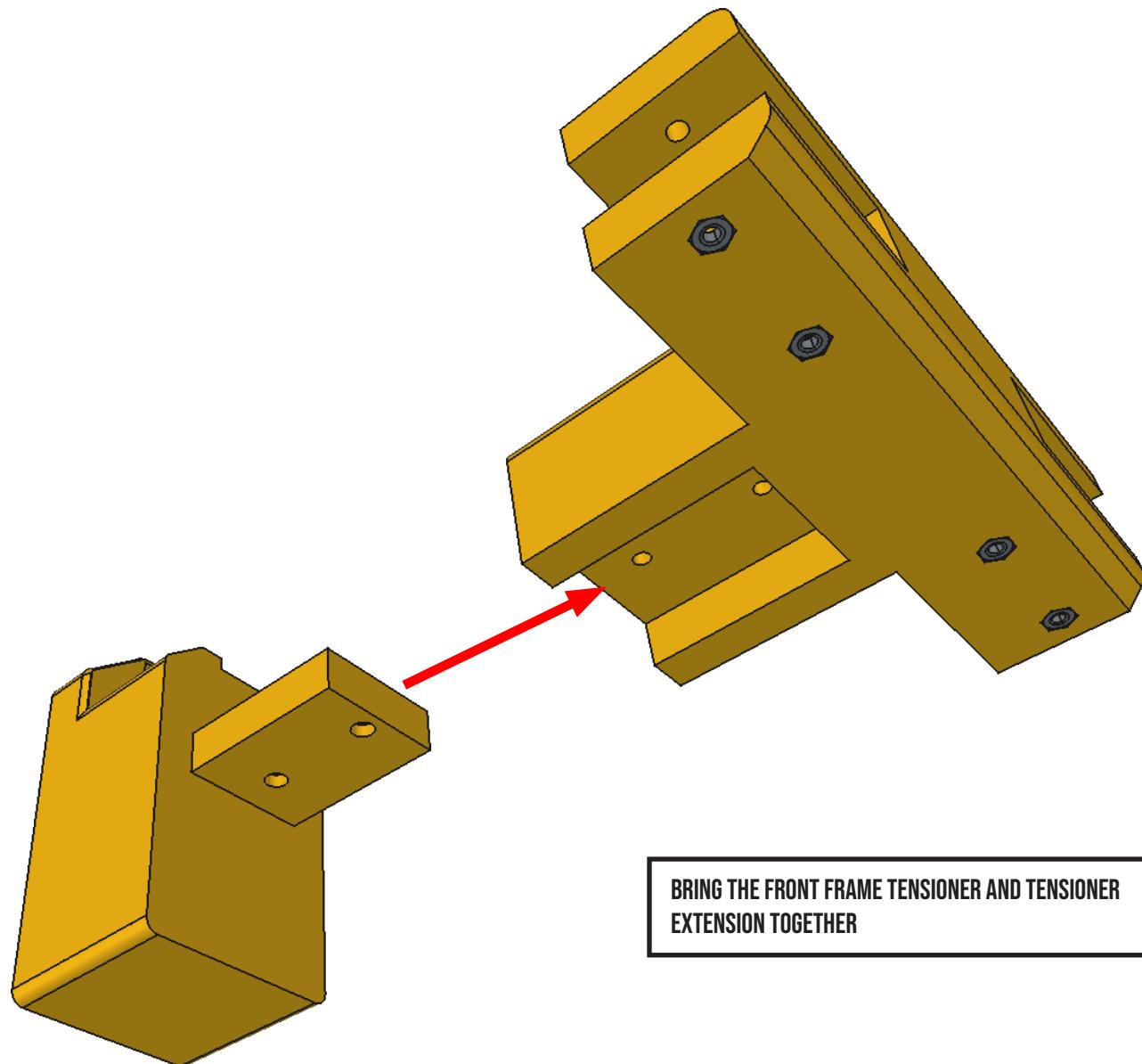


INSERT M3 HEX NUTS INTO THE FRONT FRAME TENSIONER  
AS SHOWN

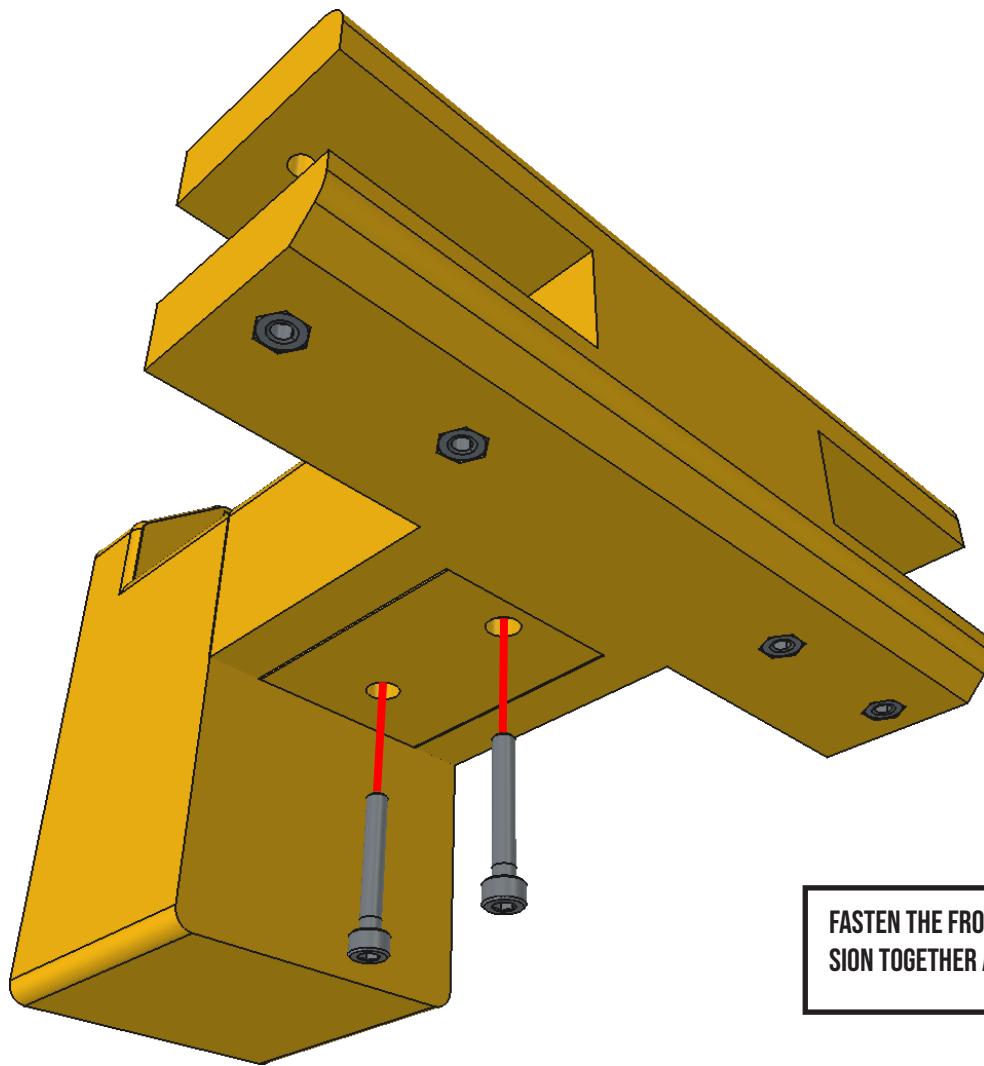


M3 HEX NUT

# BOTTOM FRAME ASSEMBLY



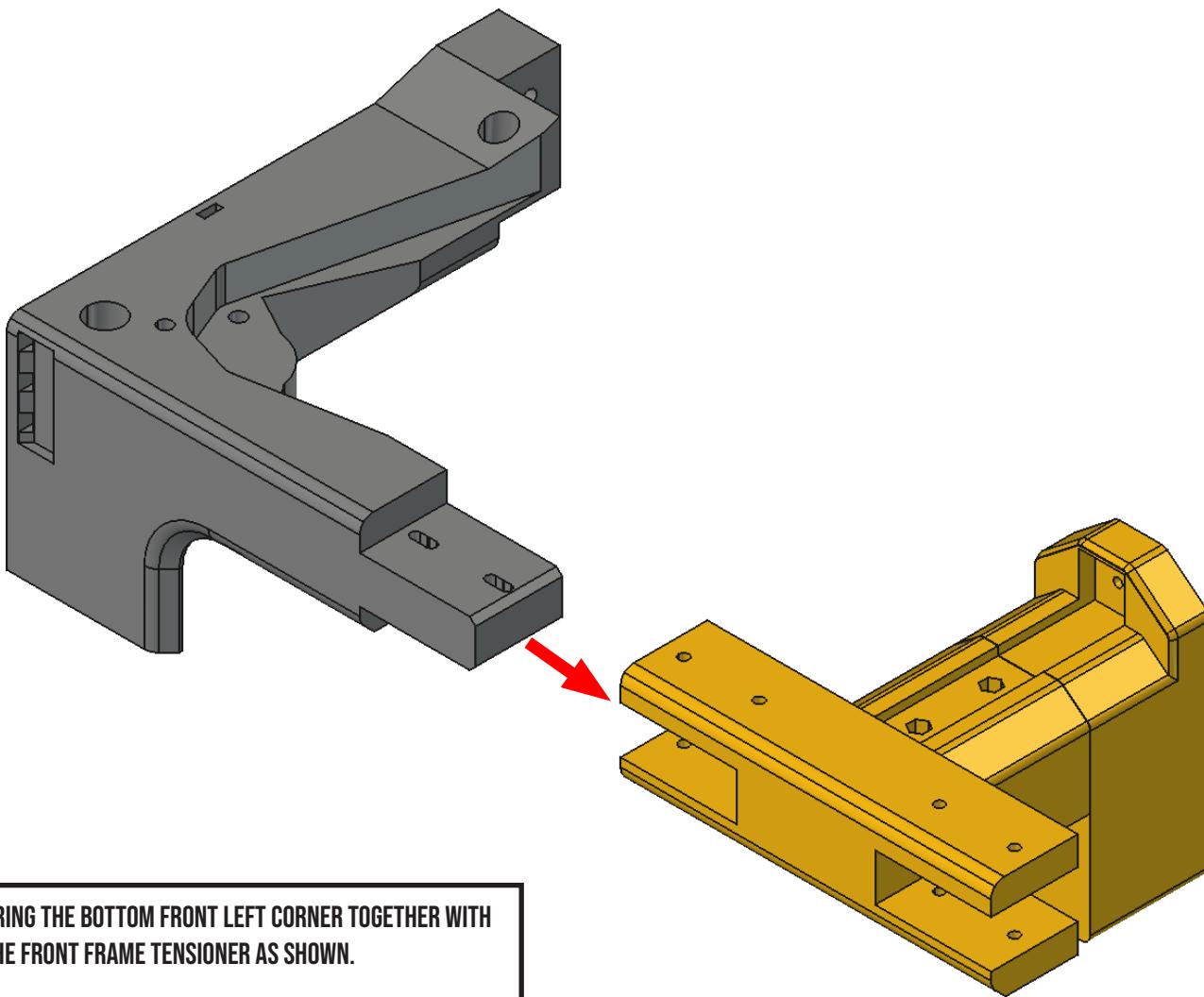
# BOTTOM FRAME ASSEMBLY



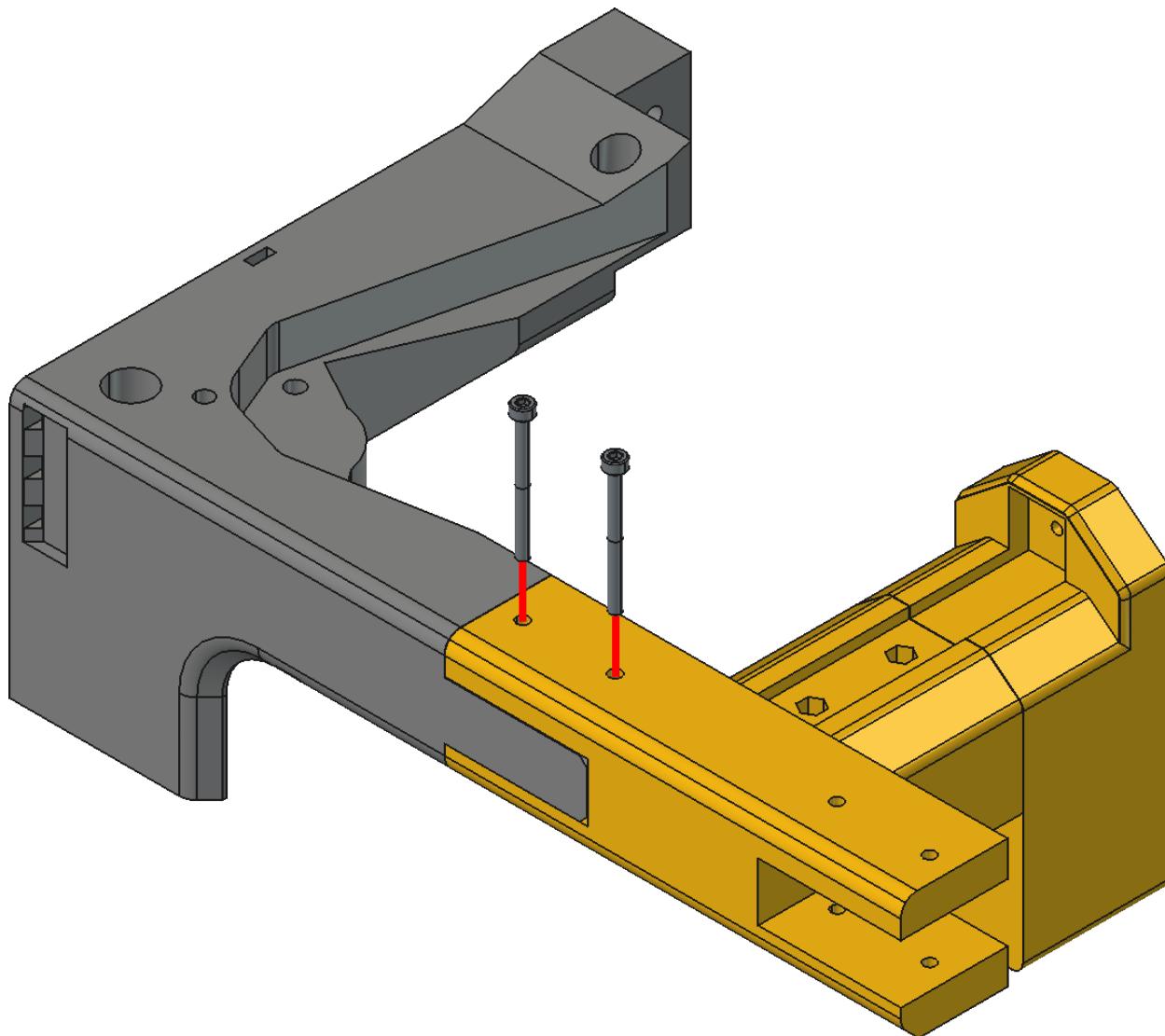
FASTEN THE FRONT TENSIONER AND TENSIONER EXTENSION TOGETHER AS SHOWN.



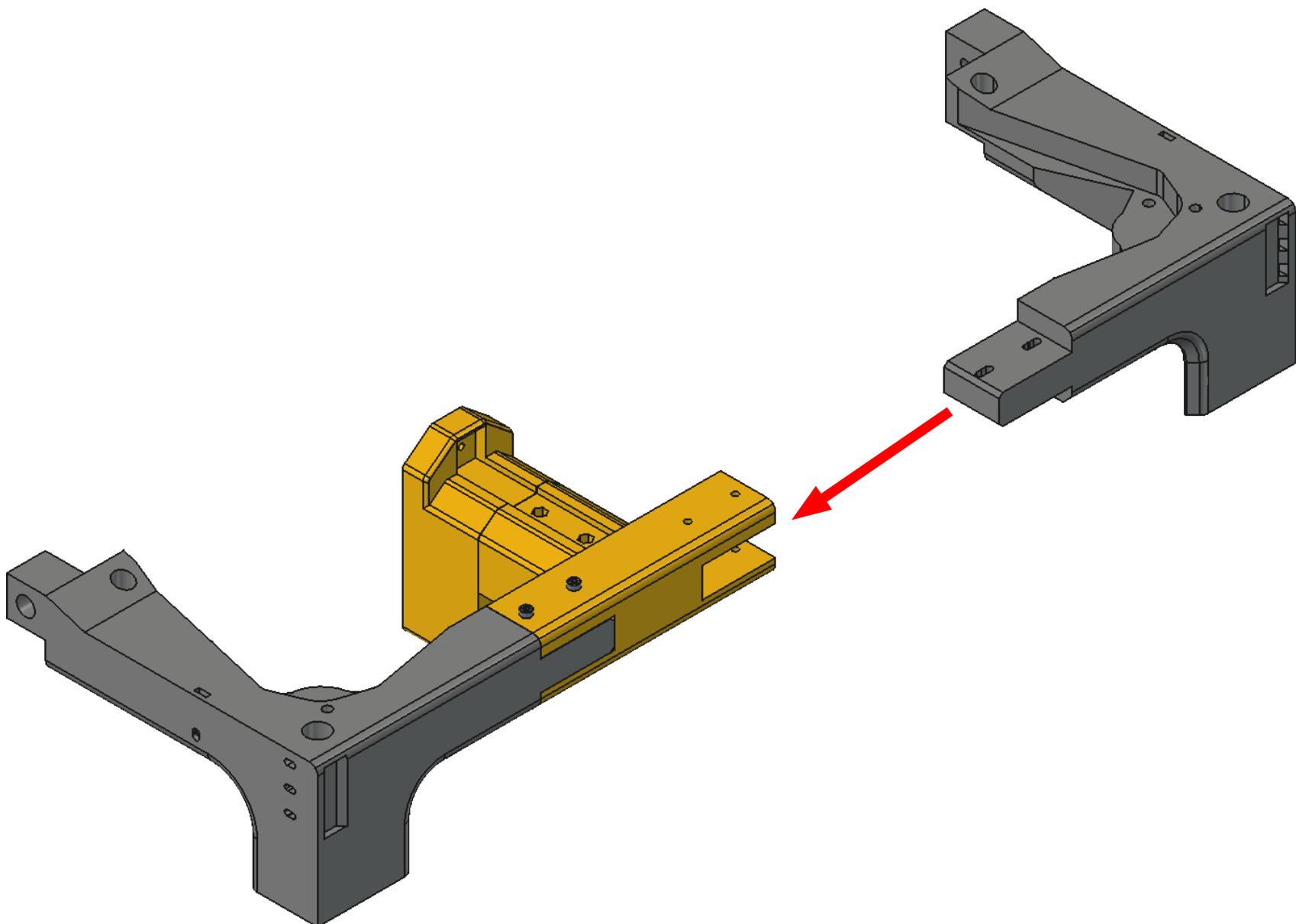
# BOTTOM FRAME ASSEMBLY



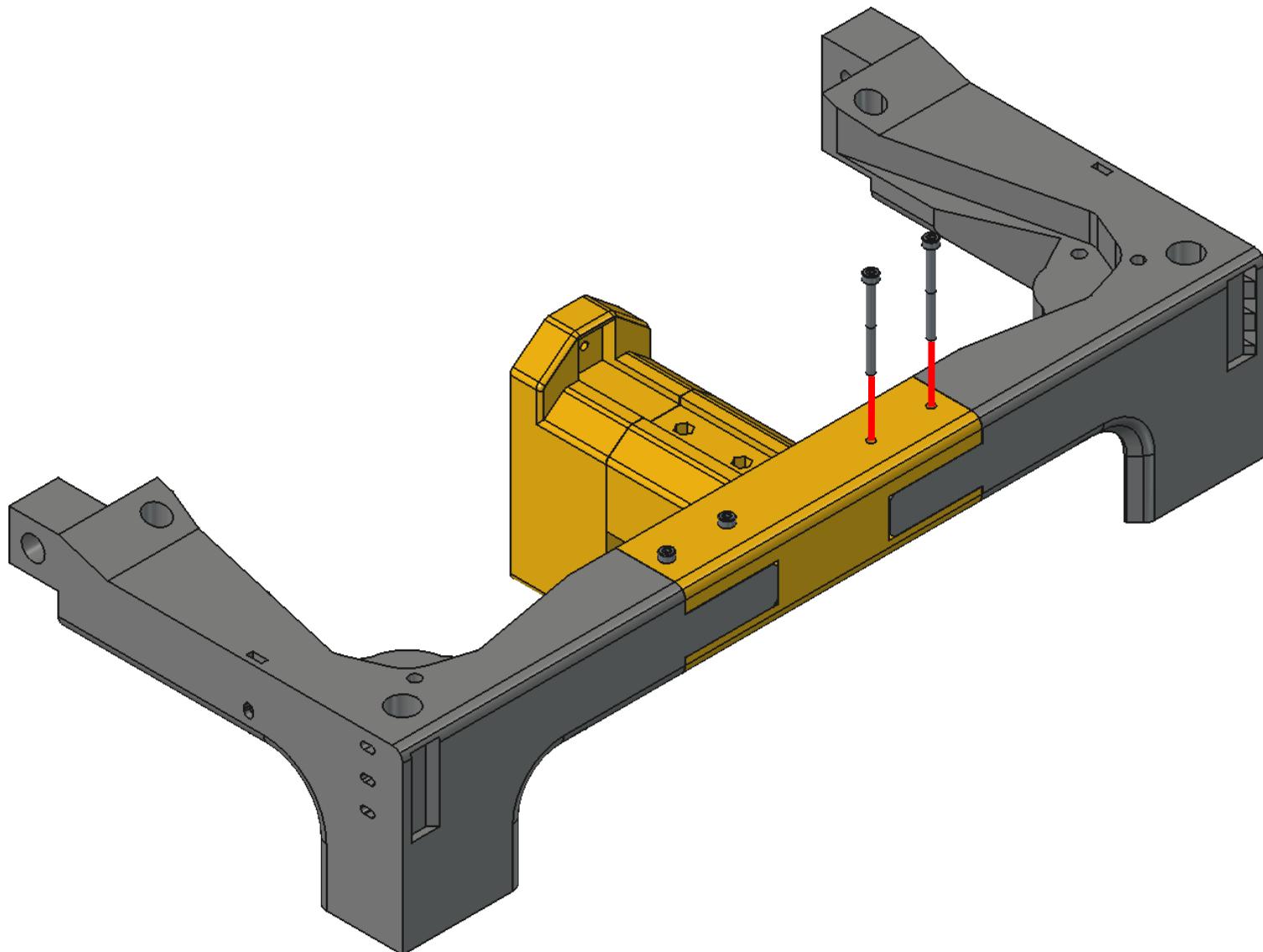
# BOTTOM FRAME ASSEMBLY



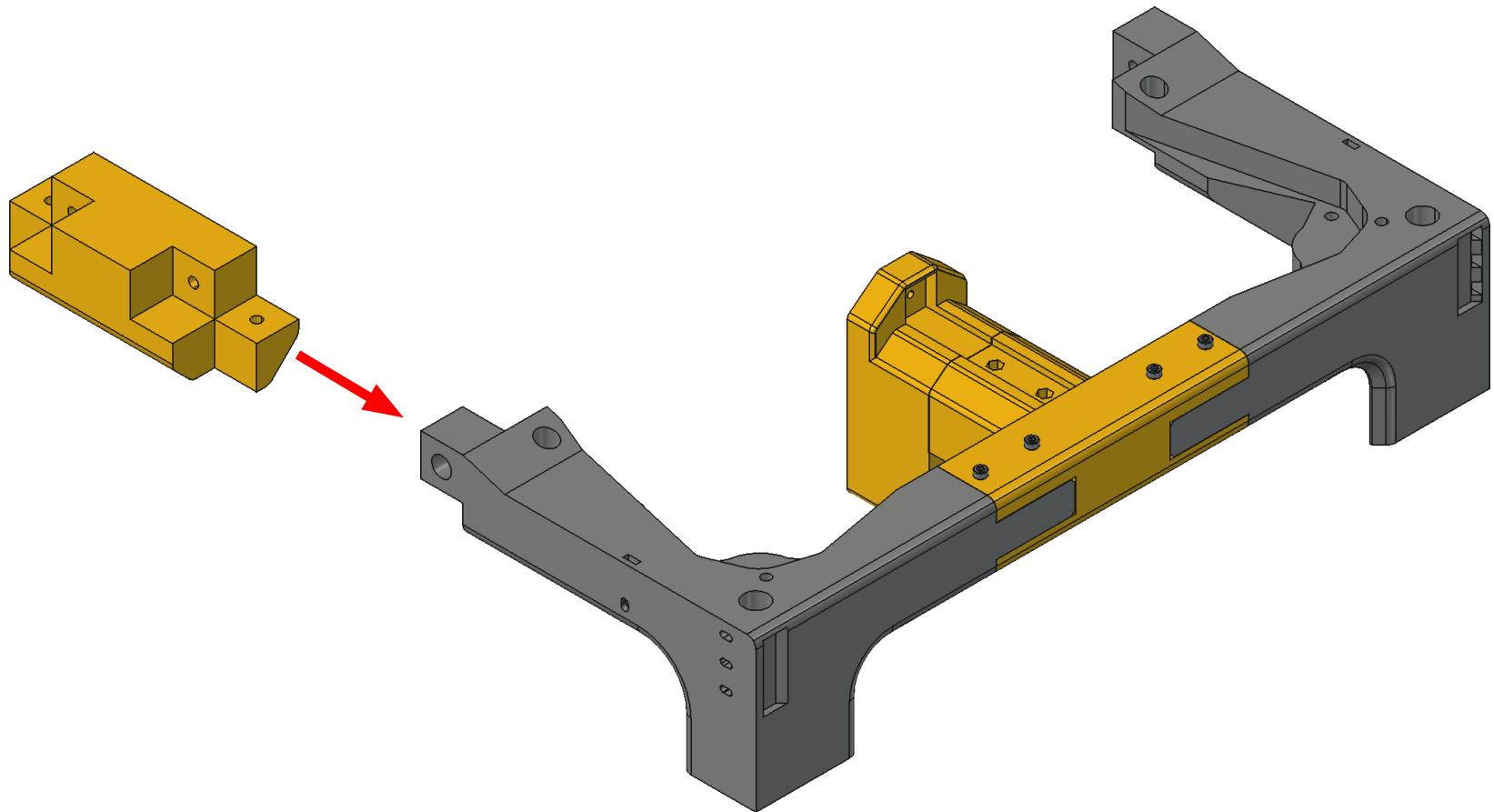
# BOTTOM FRAME ASSEMBLY



# BOTTOM FRAME ASSEMBLY

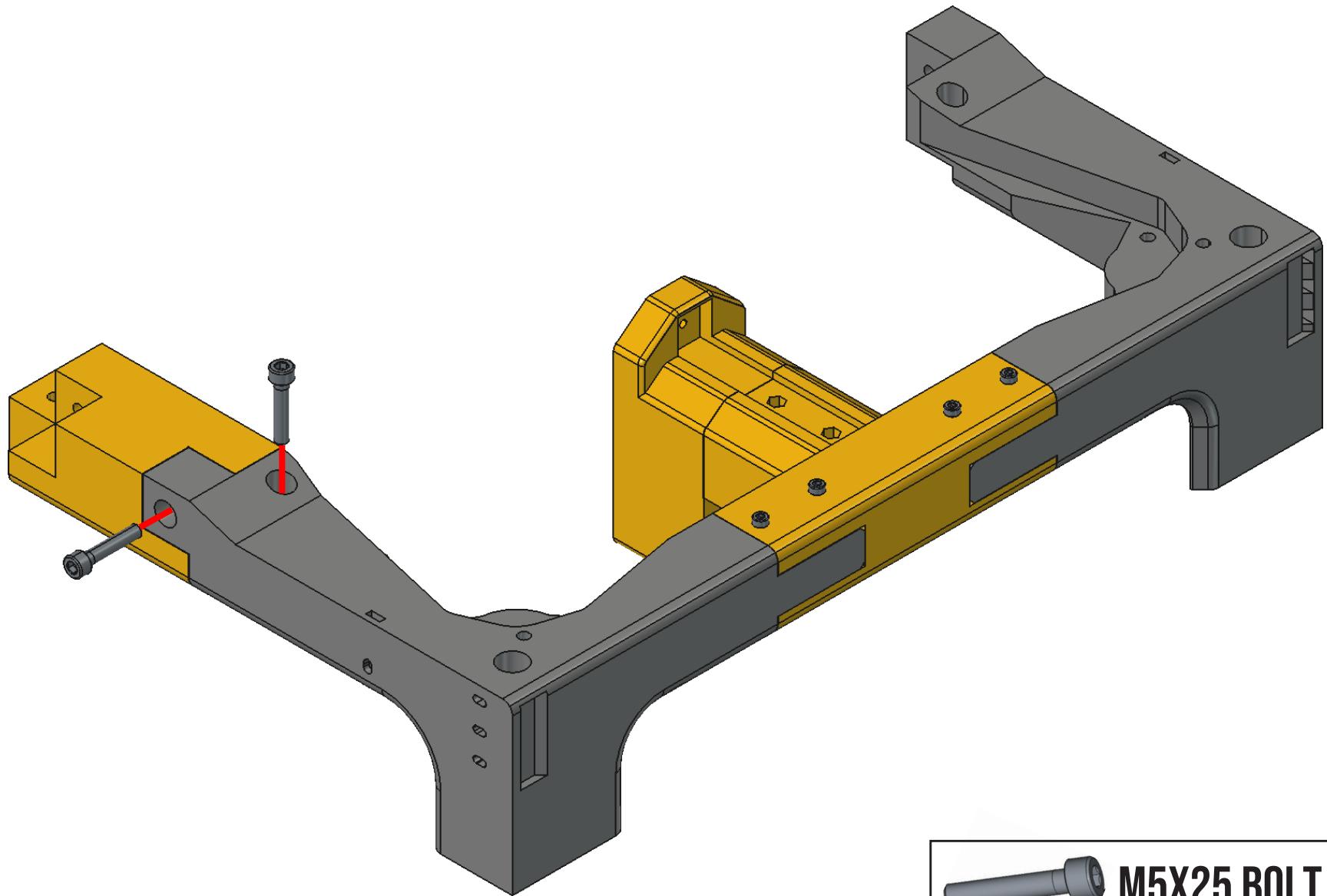


# BOTTOM FRAME ASSEMBLY



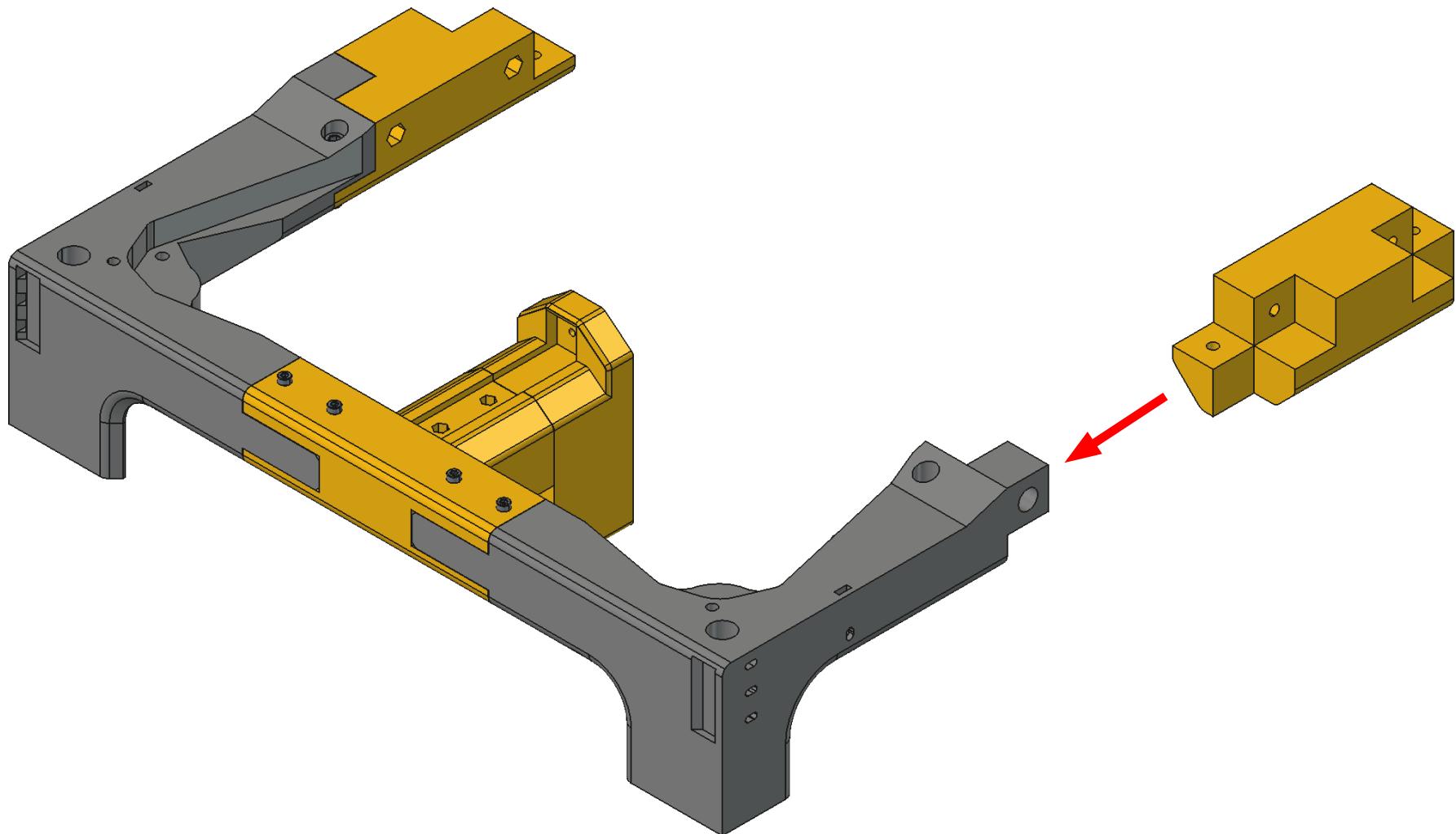
BRING THE FIRST SIDE CONNECTOR TOGETHER WITH THE  
ASSEMBLY AS SHOWN

# BOTTOM FRAME ASSEMBLY

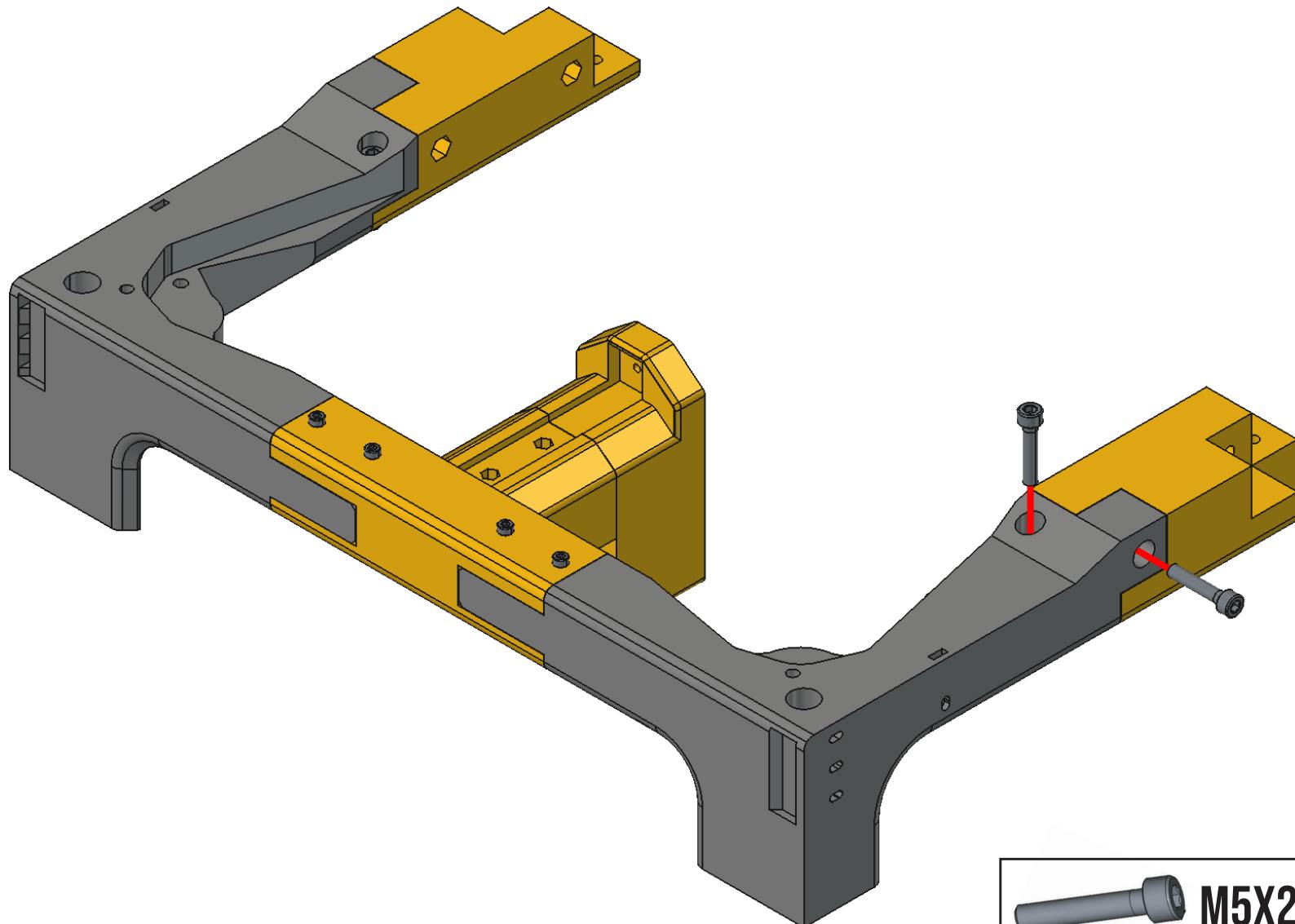


**M5X25 BOLT**

# BOTTOM FRAME ASSEMBLY

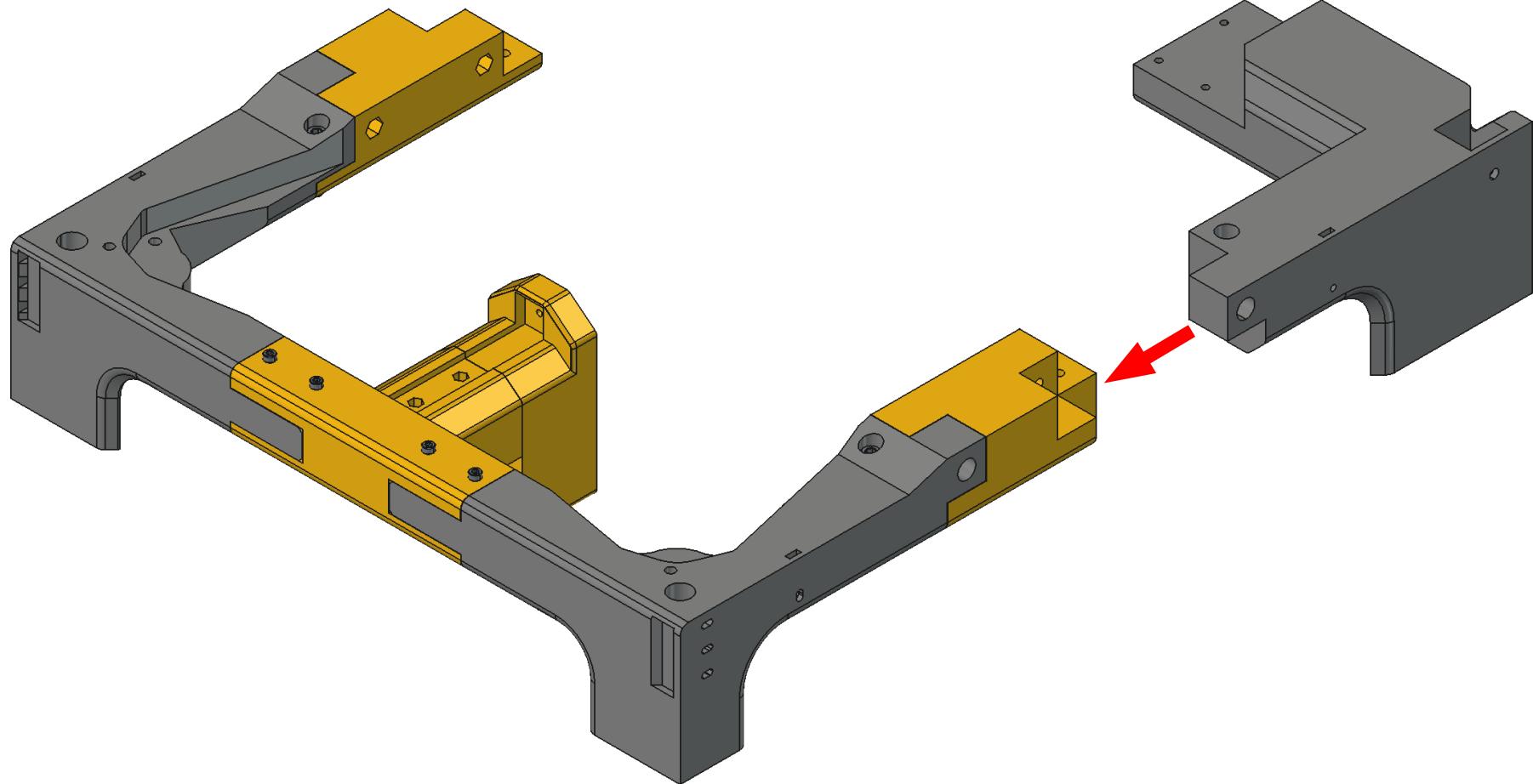


# BOTTOM FRAME ASSEMBLY

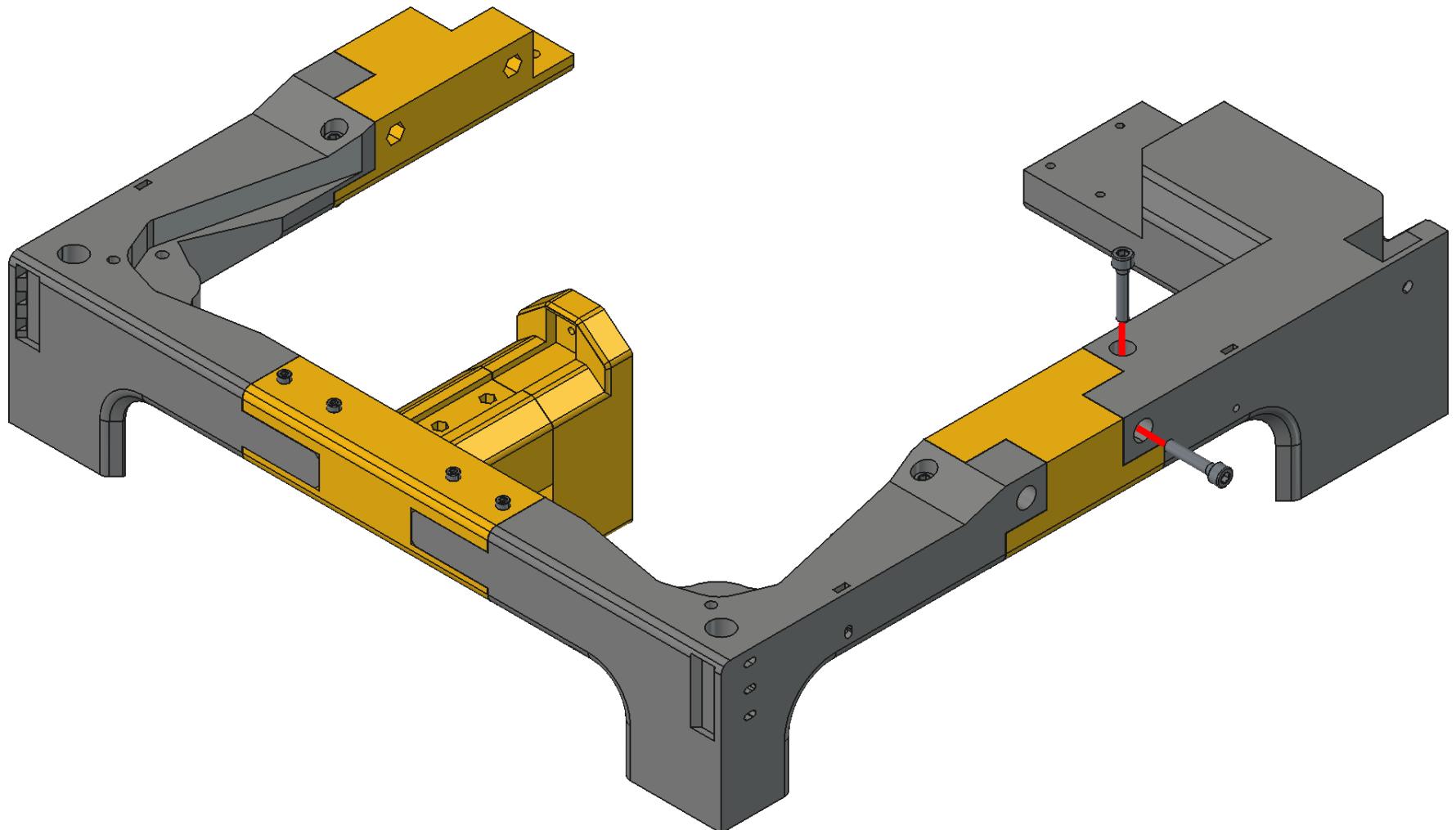


**M5X25 BOLT**

# BOTTOM FRAME ASSEMBLY

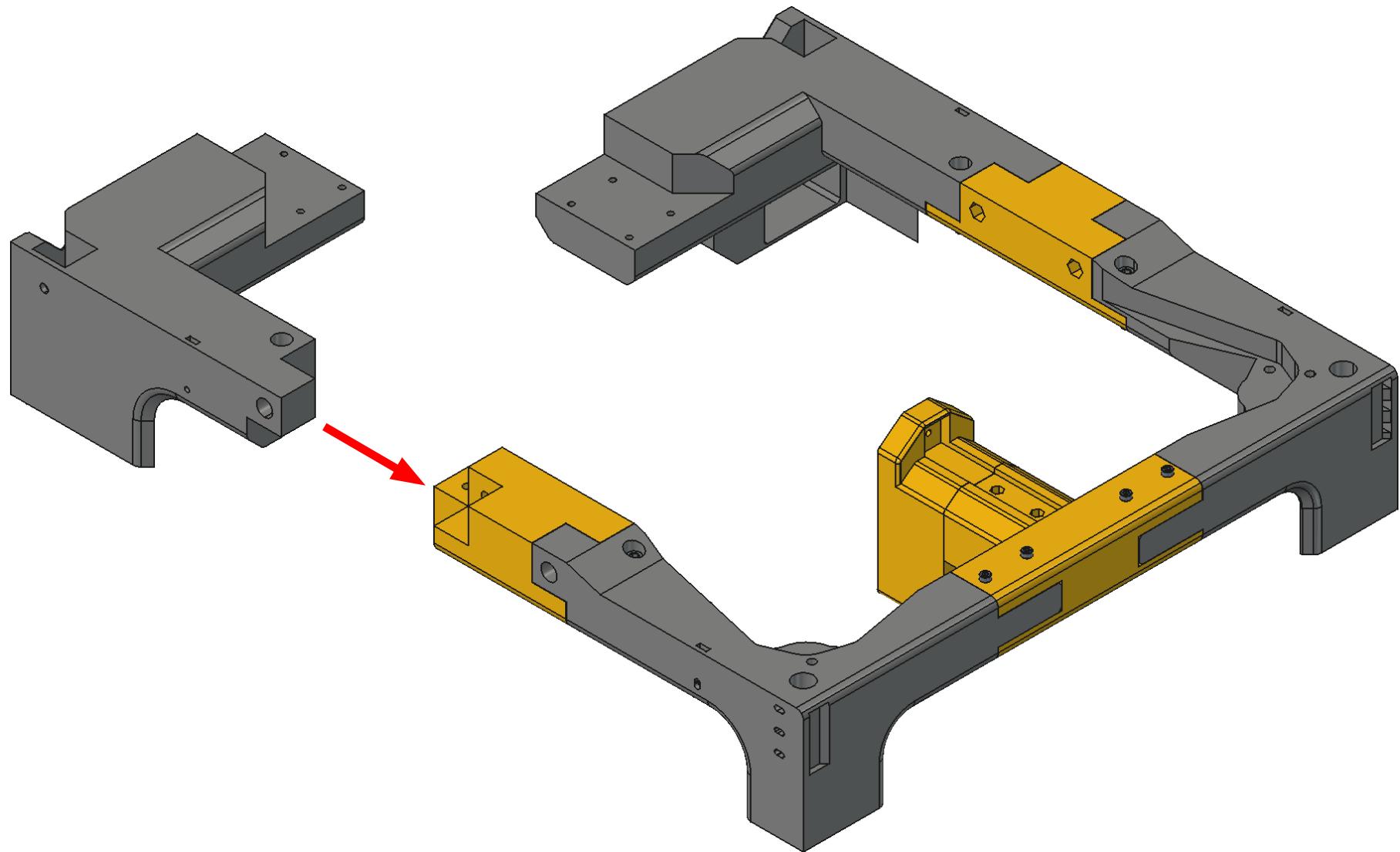


# BOTTOM FRAME ASSEMBLY

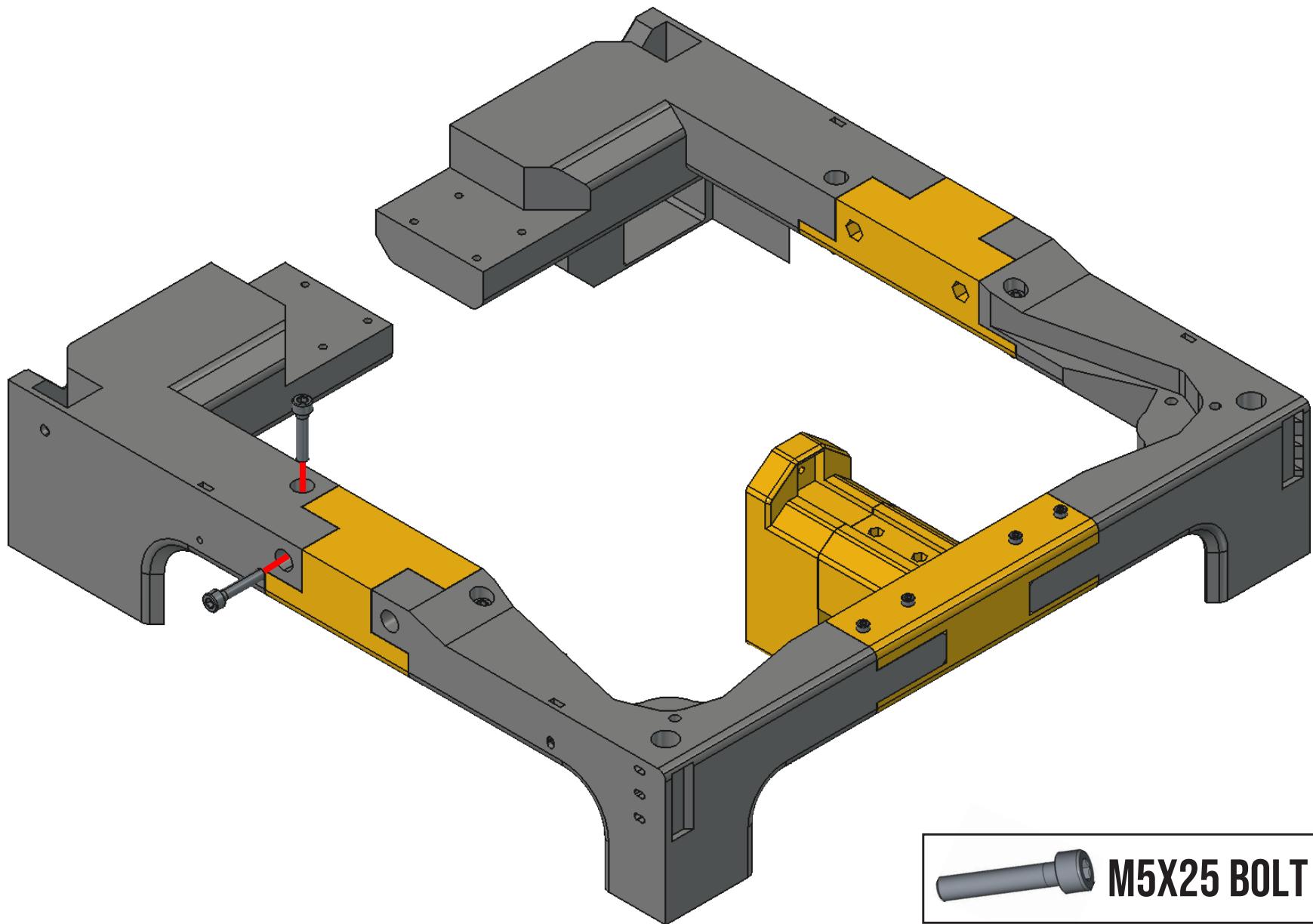


**M5X25 BOLT**

# BOTTOM FRAME ASSEMBLY

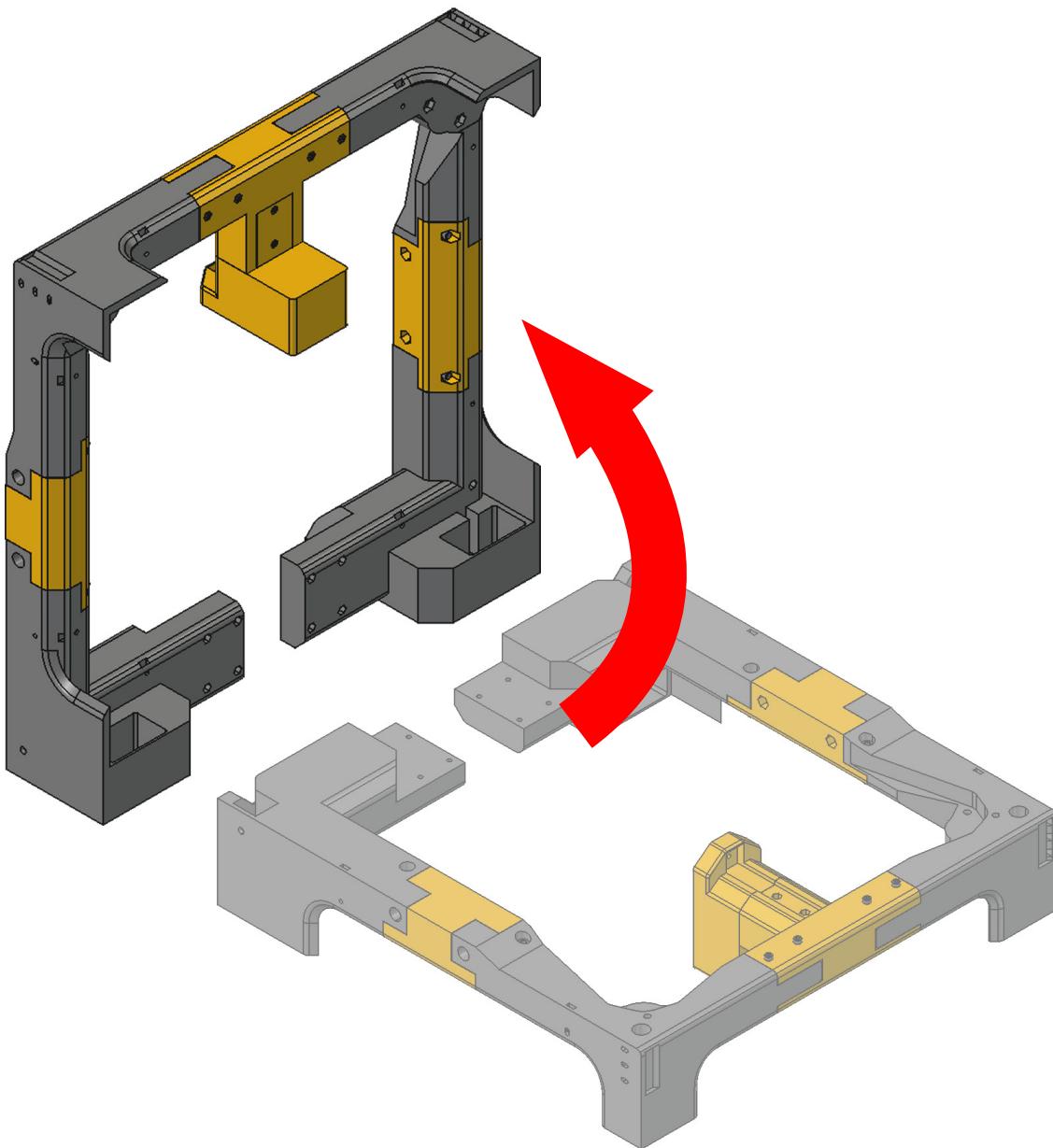


# BOTTOM FRAME ASSEMBLY

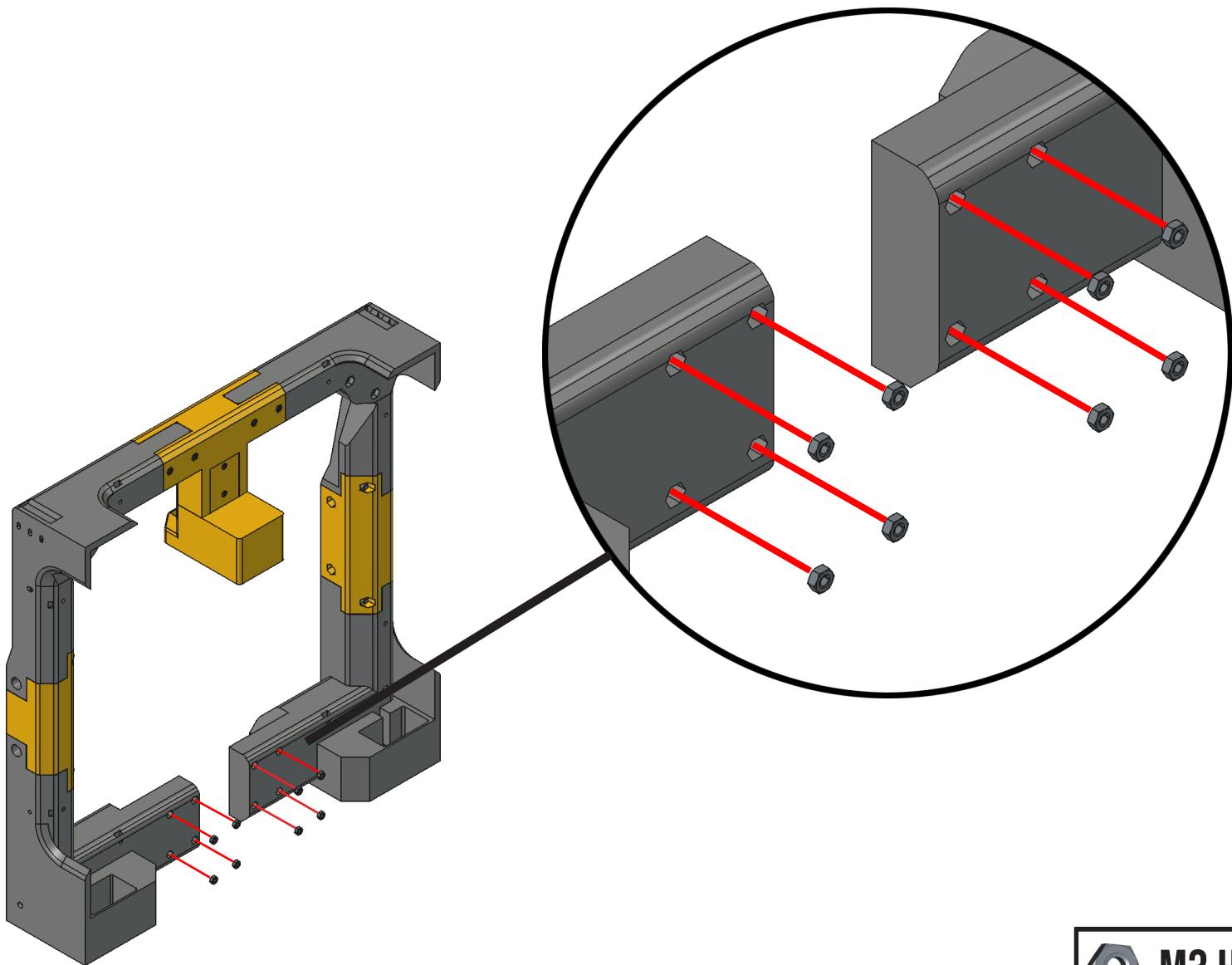


**M5X25 BOLT**

# BOTTOM FRAME ASSEMBLY

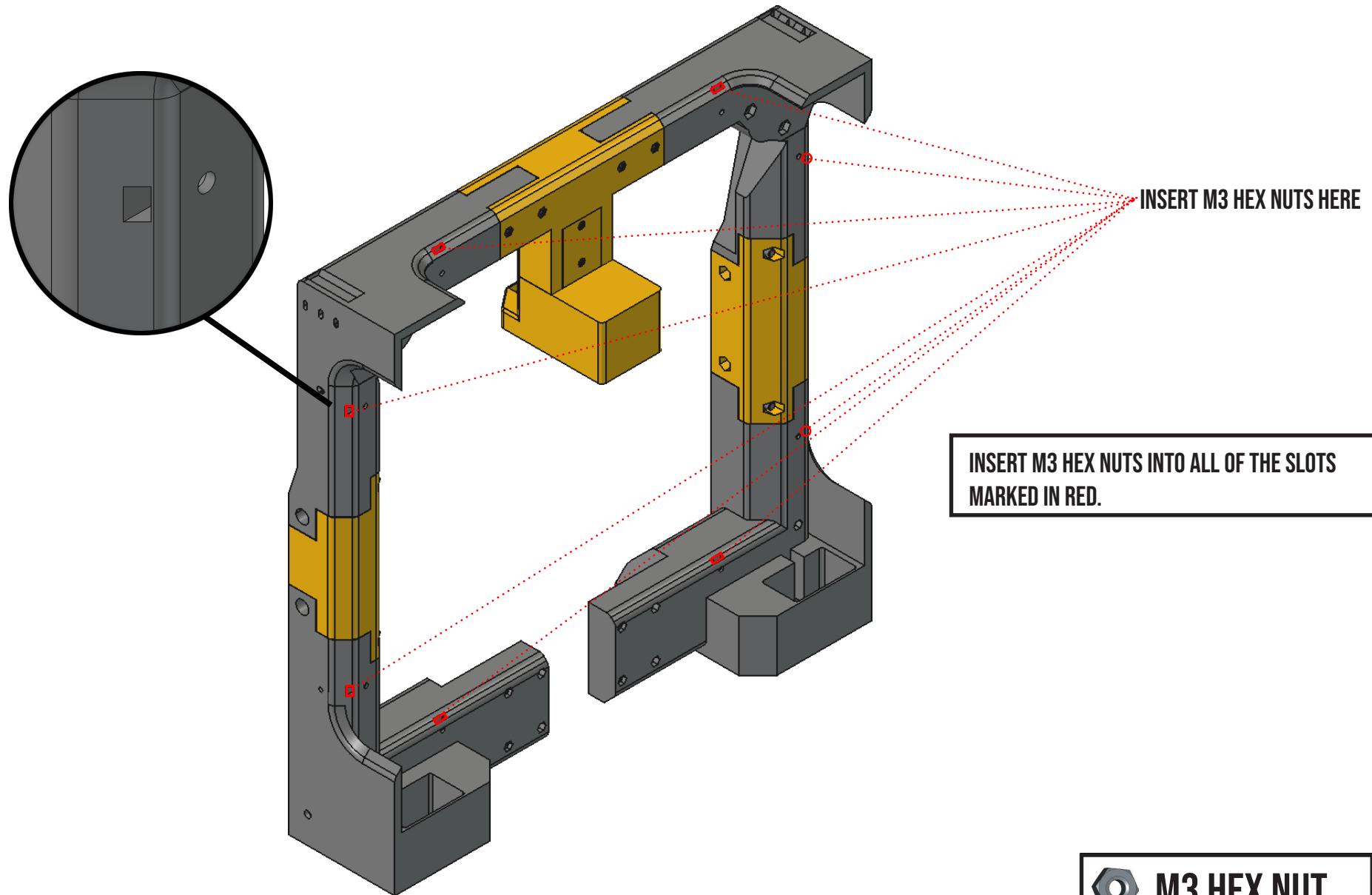


# BOTTOM FRAME ASSEMBLY

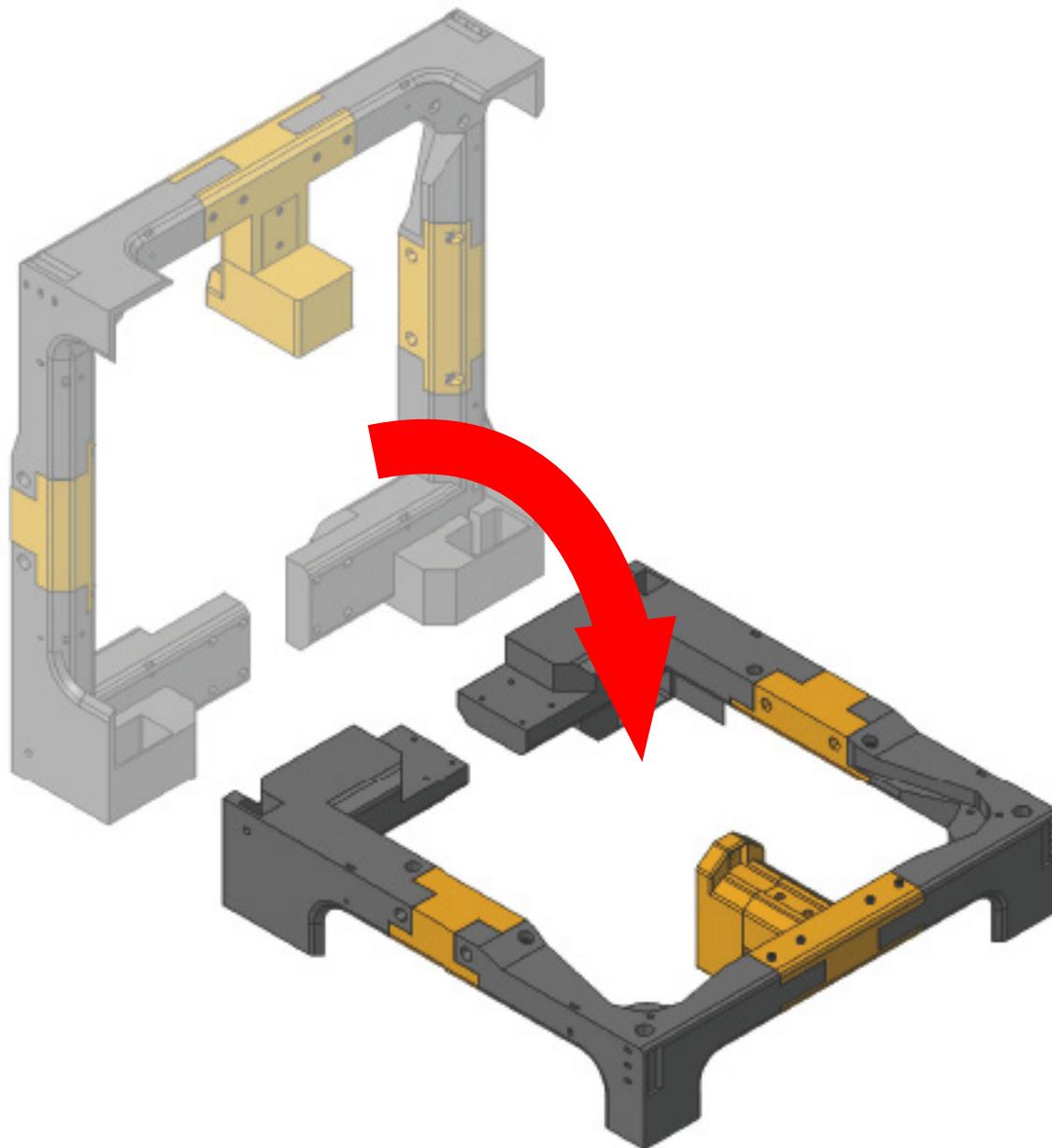


 M3 HEX NUT

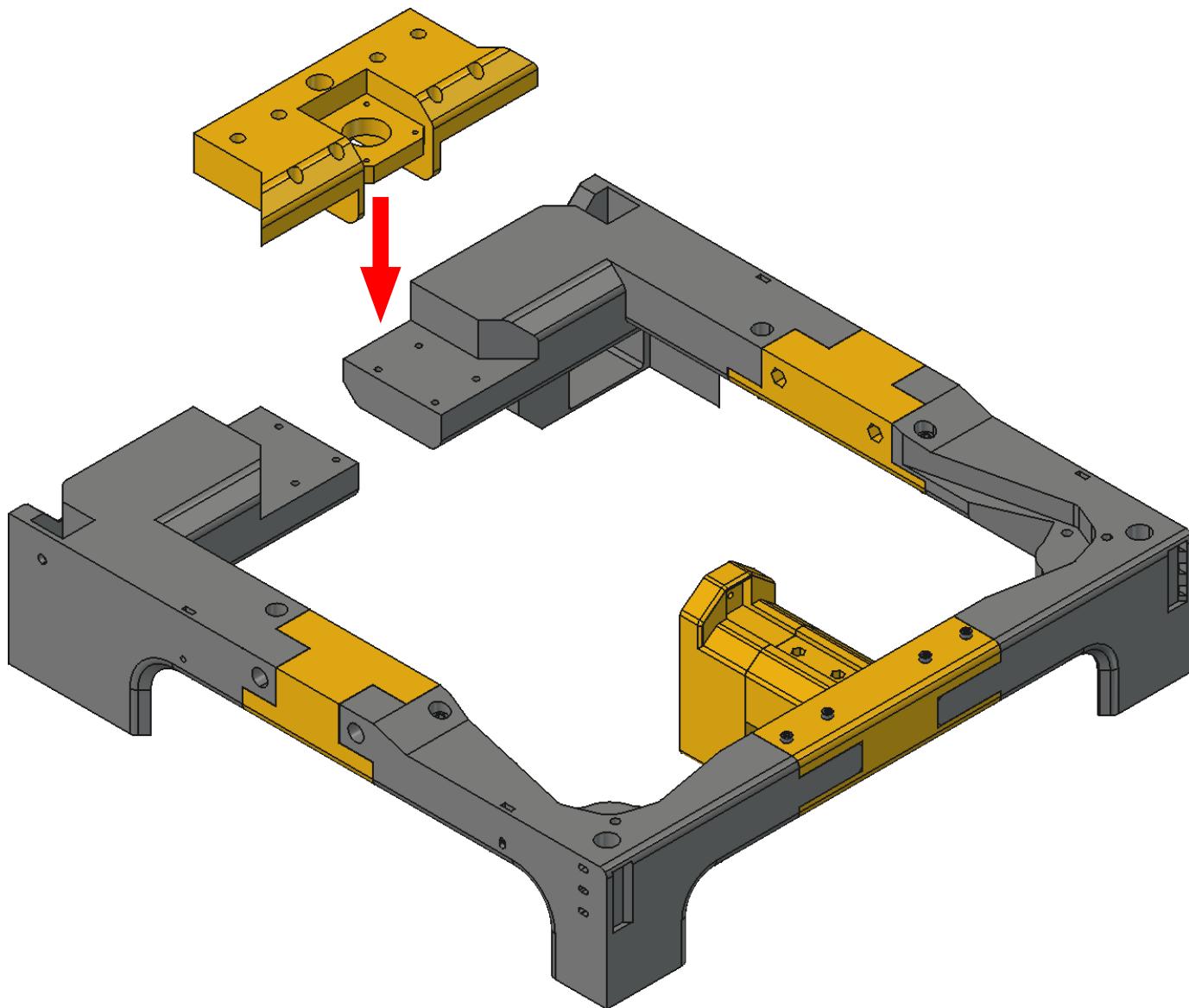
# BOTTOM FRAME ASSEMBLY



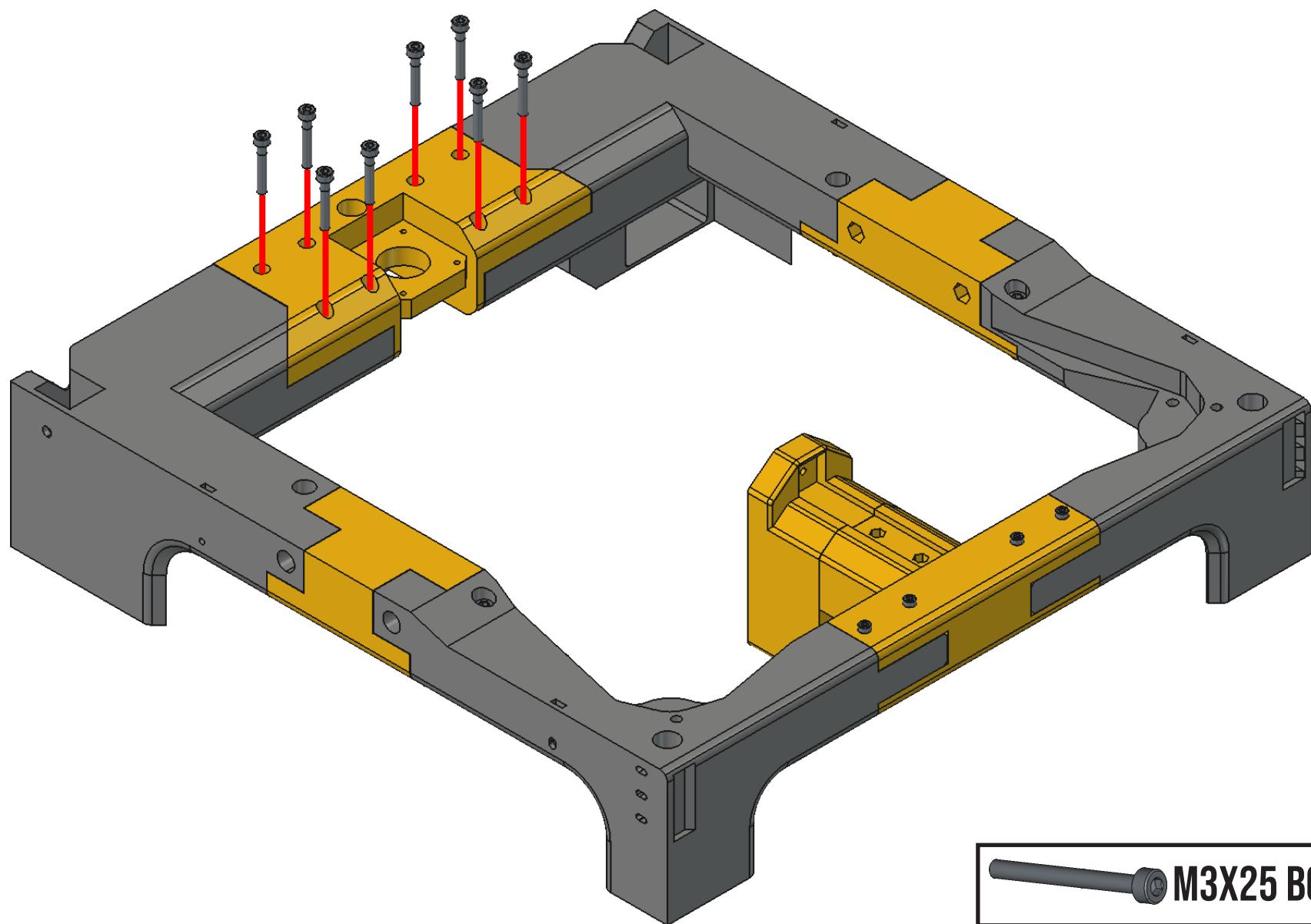
# BOTTOM FRAME ASSEMBLY

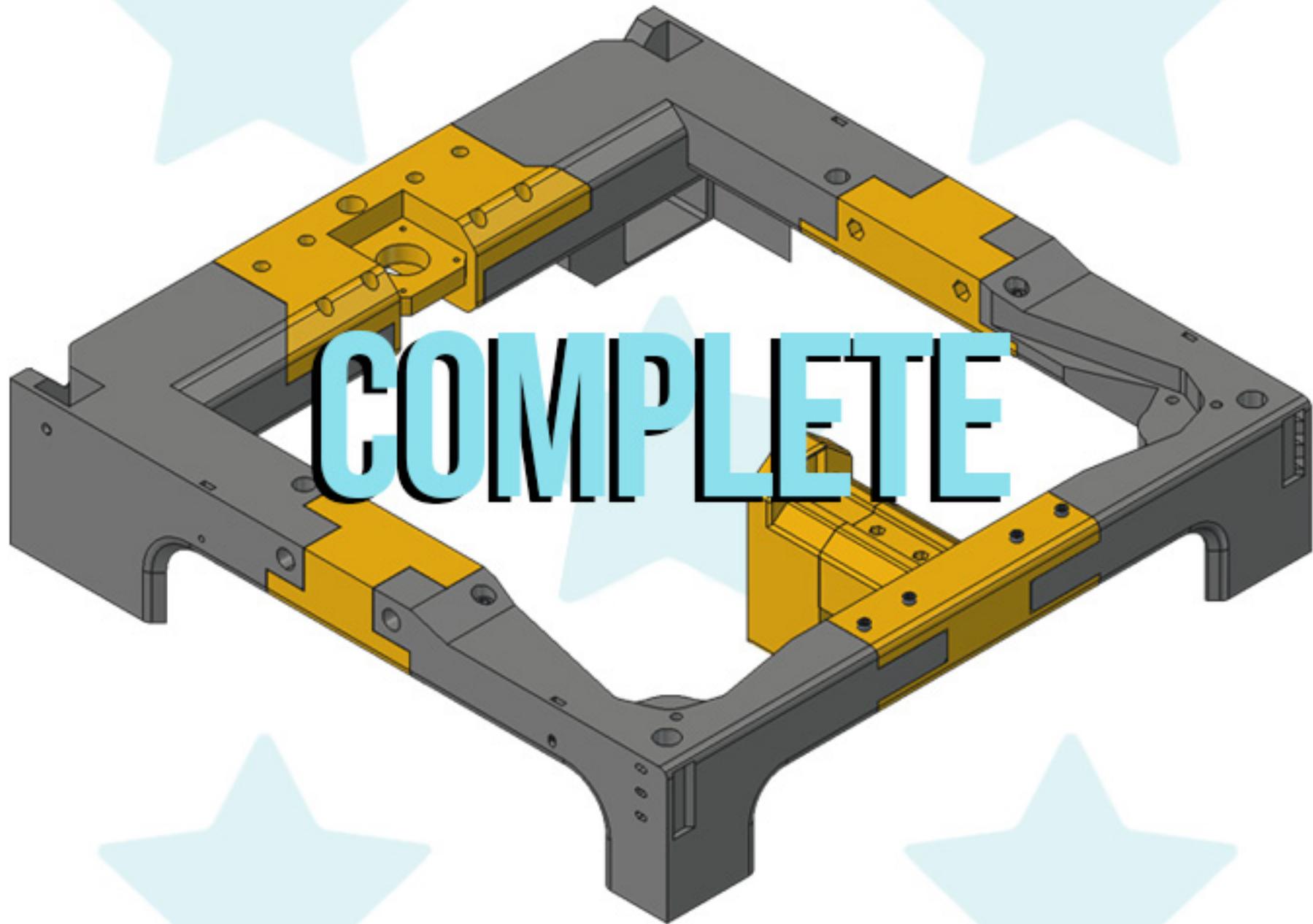


# BOTTOM FRAME ASSEMBLY



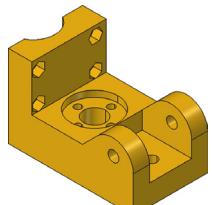
# BOTTOM FRAME ASSEMBLY



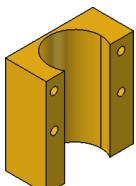


**COMPLETE**

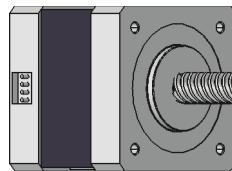
# Z-AXIS ASSEMBLY



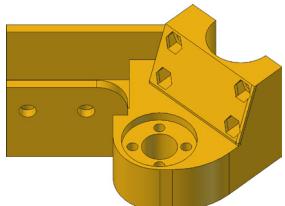
REAR BED CONNECTOR



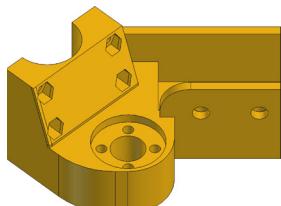
REAR BED COUPLER



NEMA 17 WITH 400MM LEADScrew



LEFT BED CONNECTOR



RIGHT BED CONNECTOR



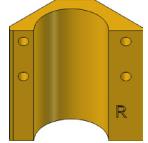
8MM X 400MM LEADScrew



12MM X 400MM LINEAR ROD



LEFT BED COUPLER



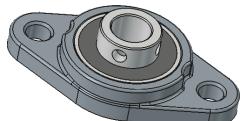
RIGHT BED COUPLER



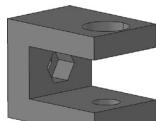
400MM 2020 ALUMINUM EXTRUSION



5MM BORE IDLER PULLEY



KLF08 BEARING



IDLER HOLDER



GT2 20T PULLEY  
8MM INNER DIAMETER



8MM POM NUT



1 METER CLOSED LOOP BELT