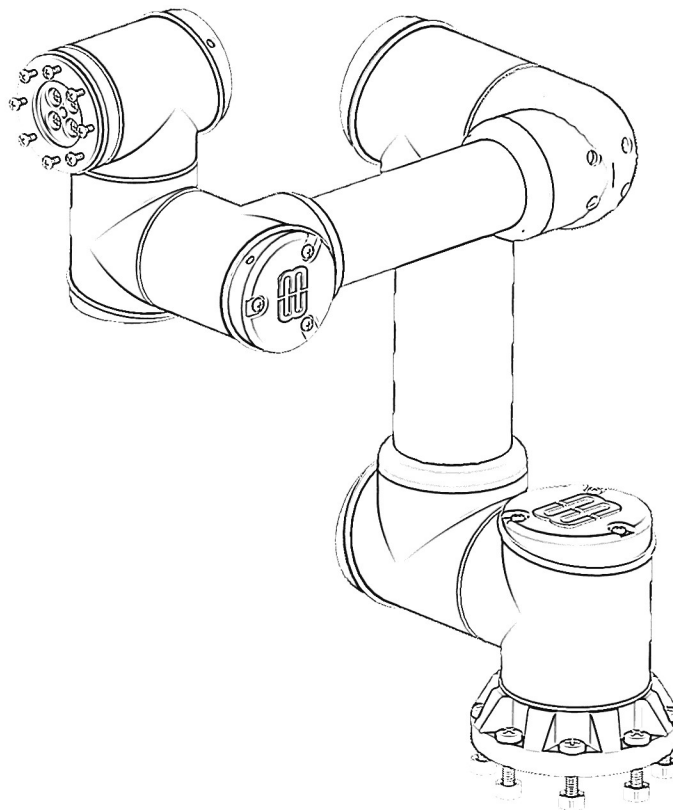


# TOOLBOX ROBOTICS

## Collaborative Robotic Arm EB100

Assembly document with instructions





## Tools

### Necessary tools

Screw cross head screwdriver



Spanner 5/16



Metal saw



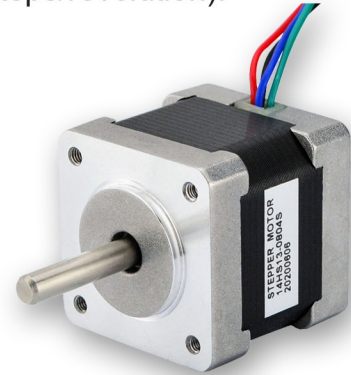
## Electromechanical

### NEMA 14 stepper motor (x3)

NEMA 14 is a hybrid stepping motor with a 1.8° step angle (200 steps/revolution).

#### Specification:

- 4 wires
- 1.8 deg. Step angle (200 steps/rev)
- Holding torque of 0.18 Nm
- Rated current: 0.8 A
- Dimensions: 35 x 35 x **34mm** or 35 x 35 x **42mm**
- Rod diameter:  $\Phi 5$  mm



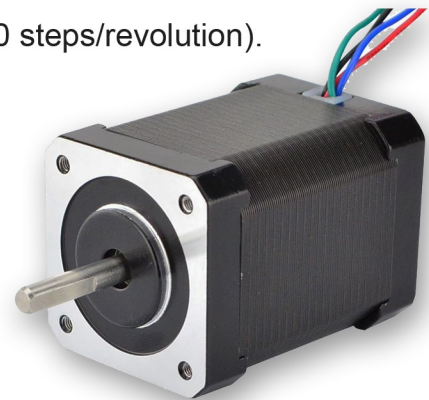
---

### NEMA 17 stepper motor 60mm (x3)

NEMA 17 is a hybrid stepping motor with a 1.8° step angle (200 steps/revolution).

#### Specification:

- 4 wires or 6 wires
- 1.8 deg. Step angle (200 steps/rev)
- Holding torque of 0.65 Nm
- Rated current 2.1 A
- Dimensions: 42 x 42 x **60mm**
- Rod diameter:  $\Phi 5$  mm



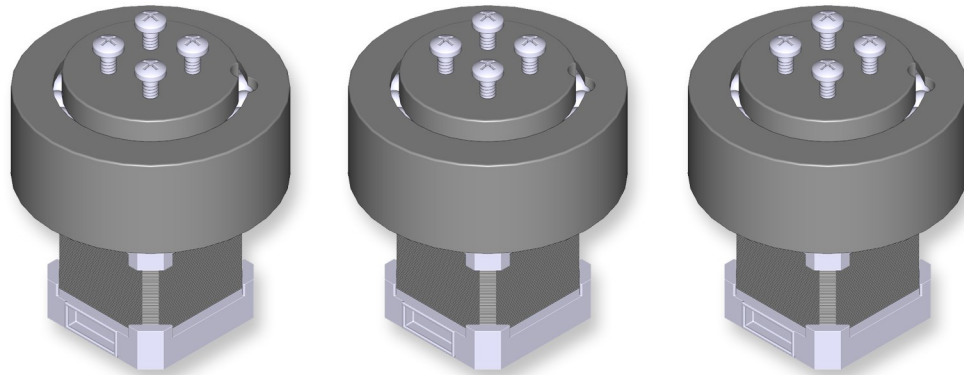
## Planetary Gears Actuators

### You will need

---

**Planetary Gears  
Actuator  
EBA14**

**(x3)**

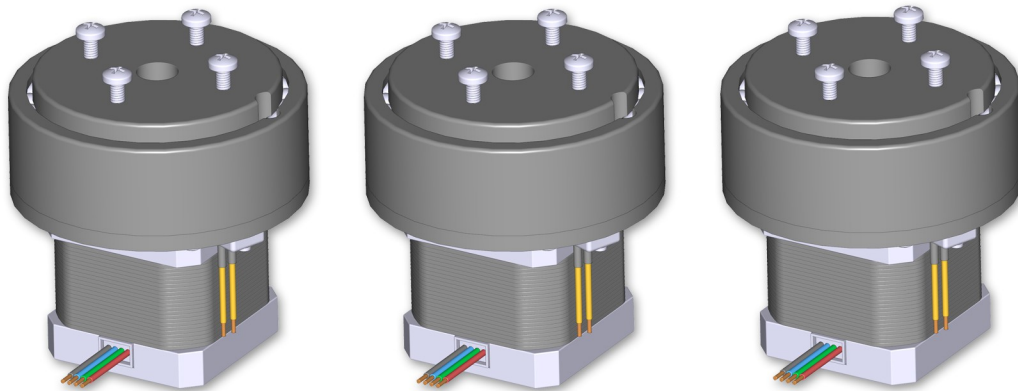


Planetary Gears Actuator EBA14 Nema 14

---

**Planetary Gears  
Actuator  
EBA17**

**(x3)**



Planetary Gears Actuator EBA17 Nema 17

## Materials

### You will need

---

#### **3D filament 1.75 Black**

- 1KG PLA+ or ABS (x2)
- $\pm 0.02$  MM



#### **3D filament 1.75 Grey**

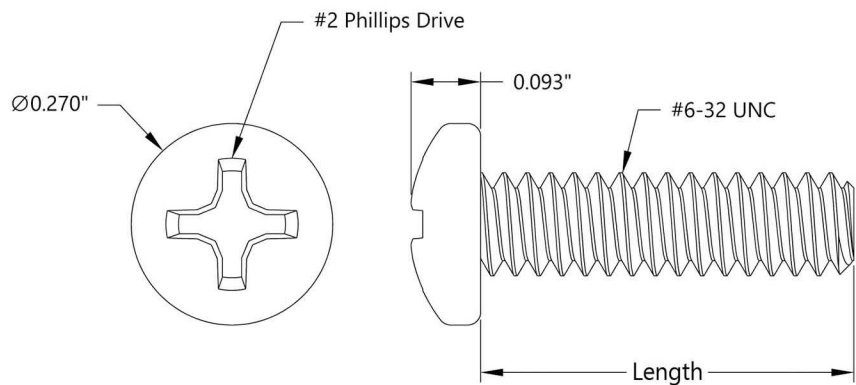
- 1KG PLA+ or ABS (x1)
- $\pm 0.02$  MM



## Hardware

### Screws and bolts

6-32 Pan Head Screws are a great alternative. Pan heads provide more surface area under the head which is preferred when working with plastic and soft materials that are prone to distorting from the pressure of tightening a screw. The head height is less than a socket head screw so if you're limited on clearance in that orientation, these may provide that bit of extra space to make your project come together.



## Hardware

### Screws, nuts and washers

#6-32 x 1/2in #6-32 x 3/4in #6-32 x 1-1/2in #6-32 #6-32



#6-32 x 1in



Use a metal saw to cut these screws

#6-32 x 7.5mm #6-32 x 8.5mm #6-32 x 9.5mm



#6-32 x 12.5mm



1/4 x 1-1/2in

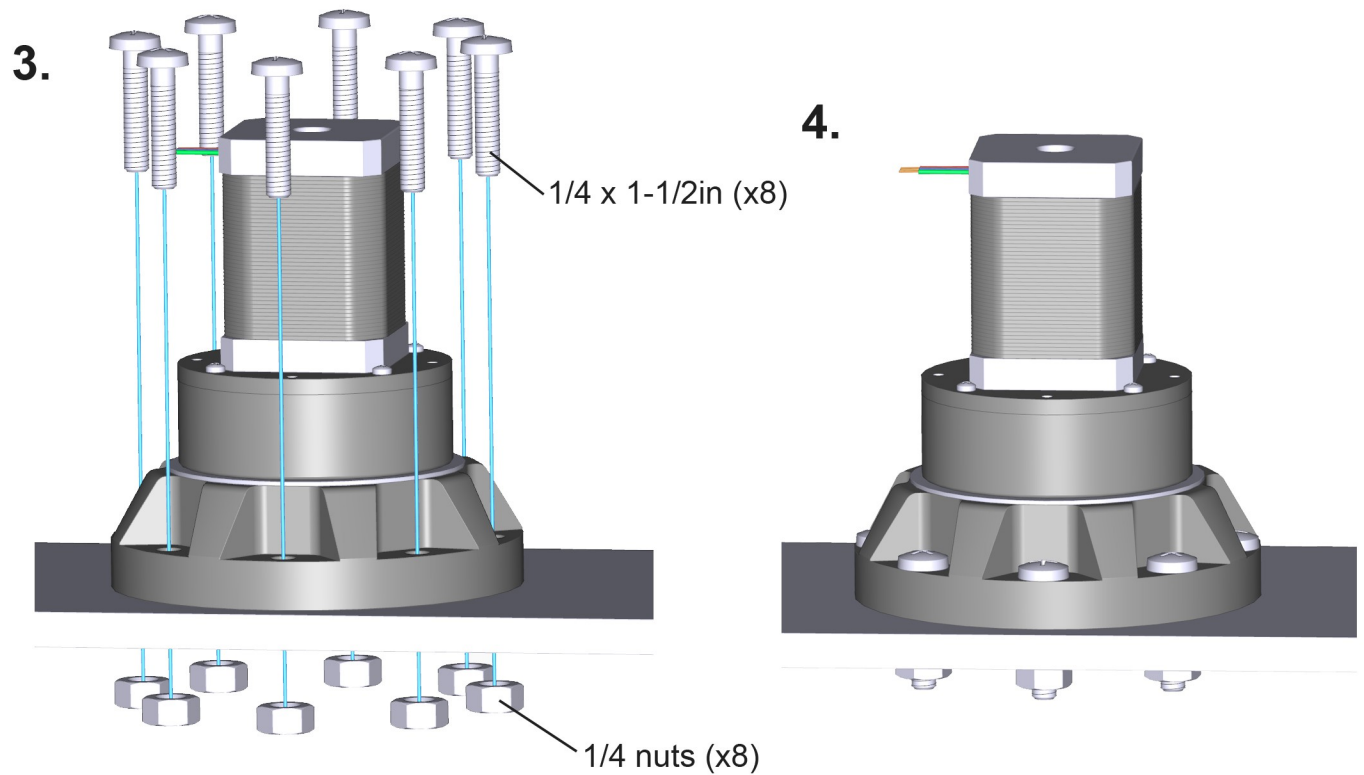
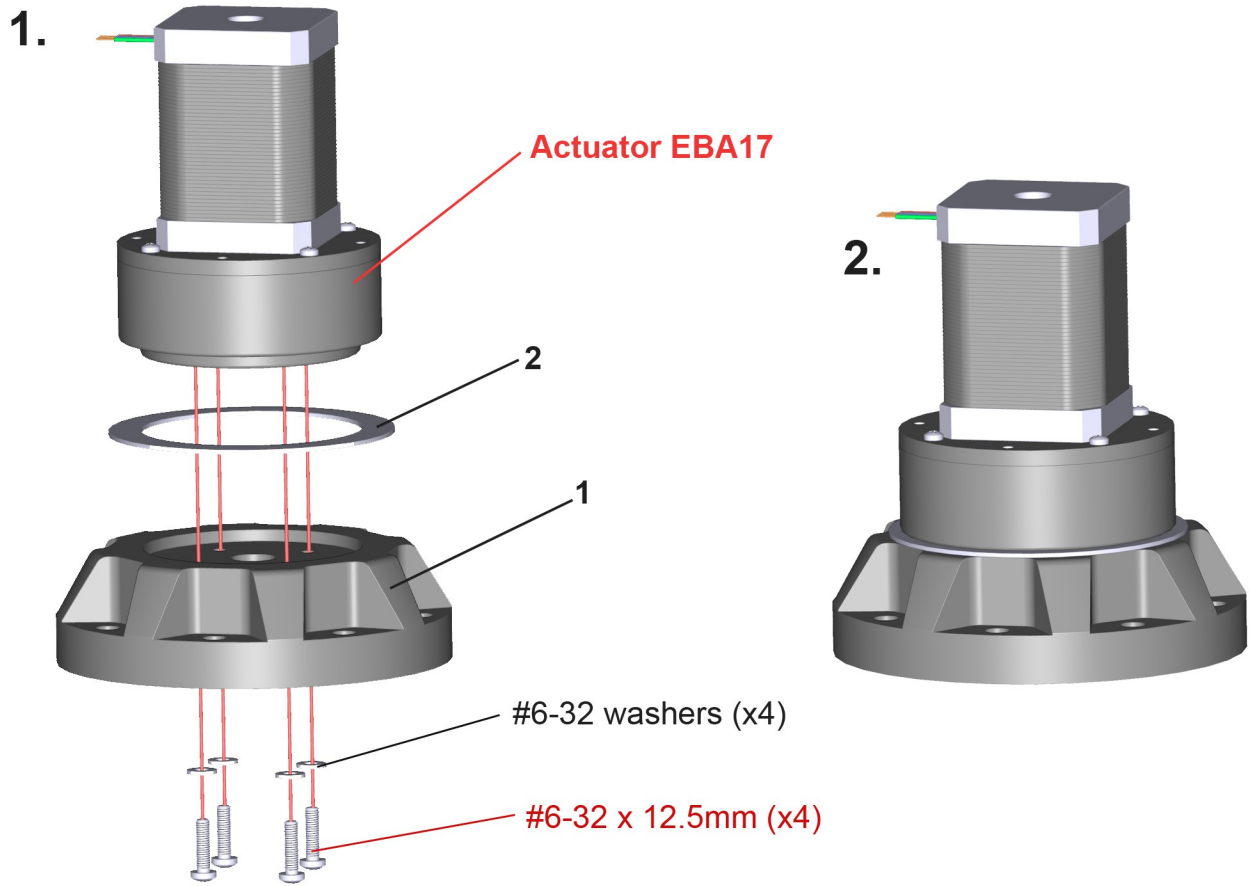


1/4

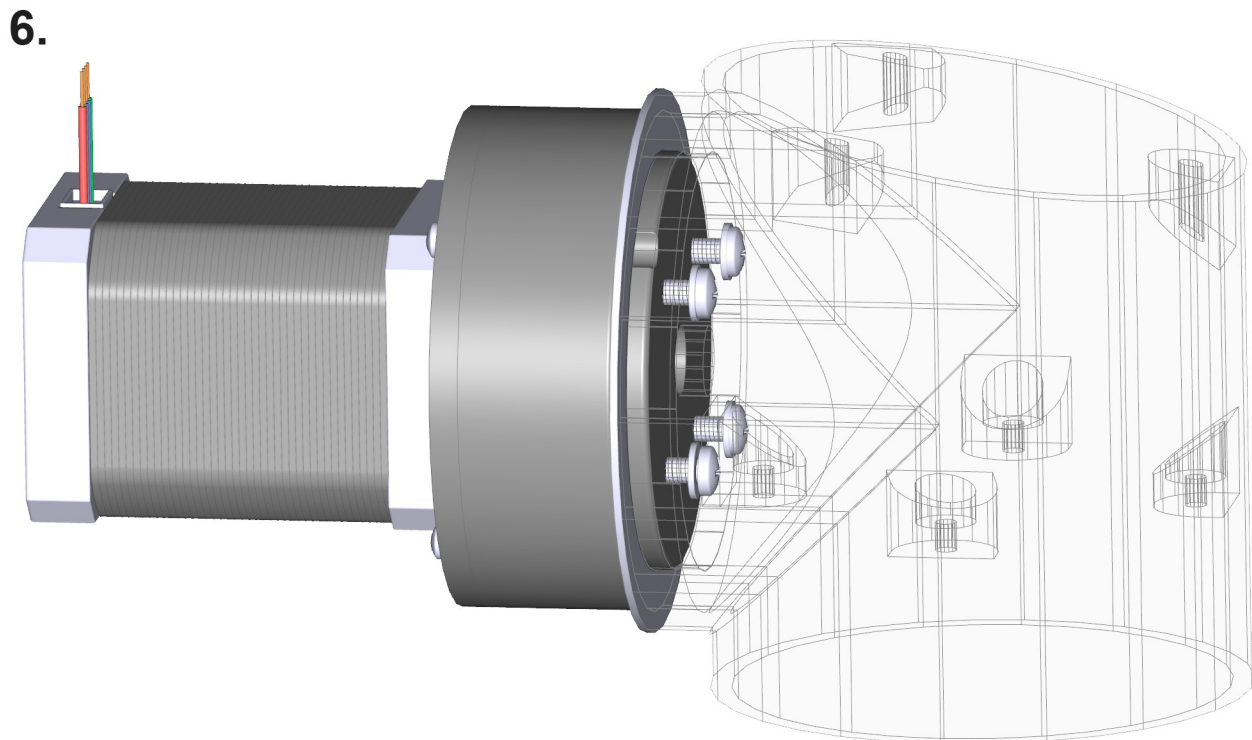
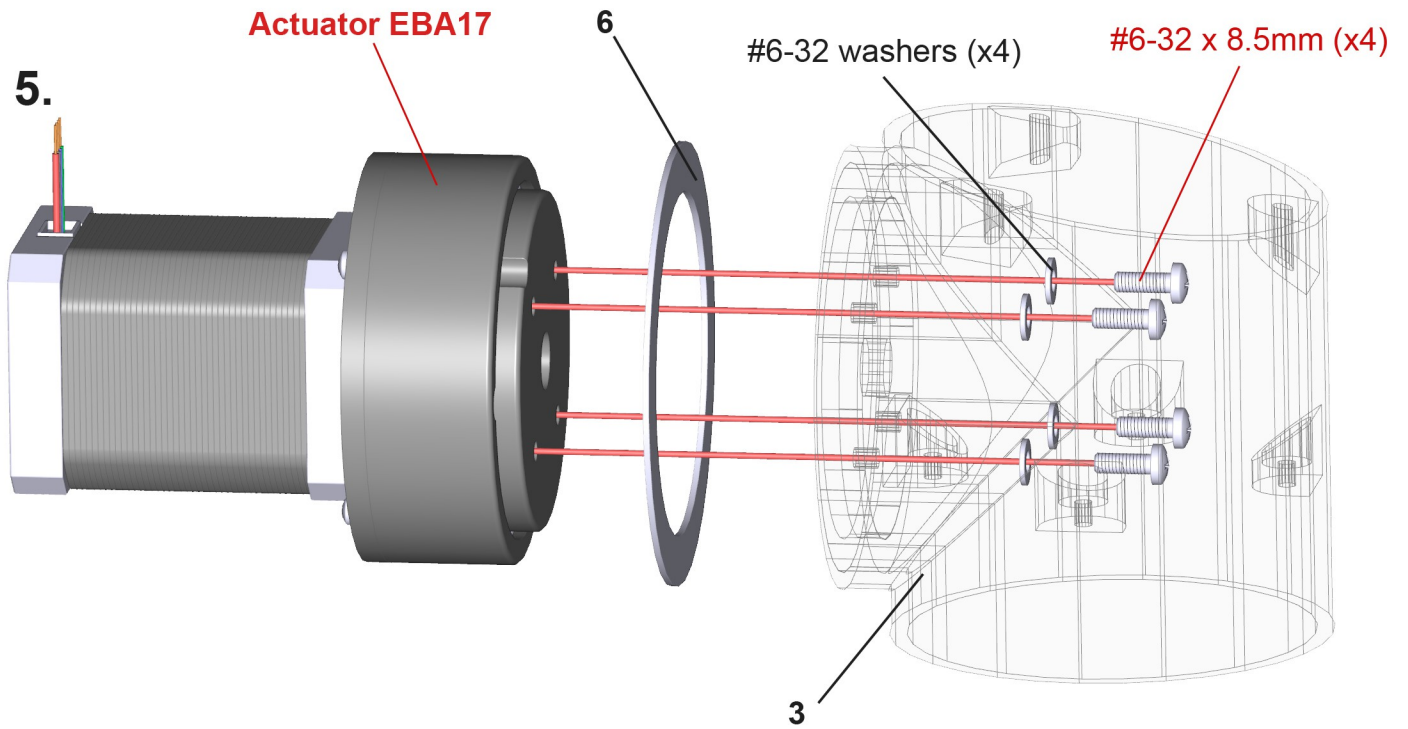




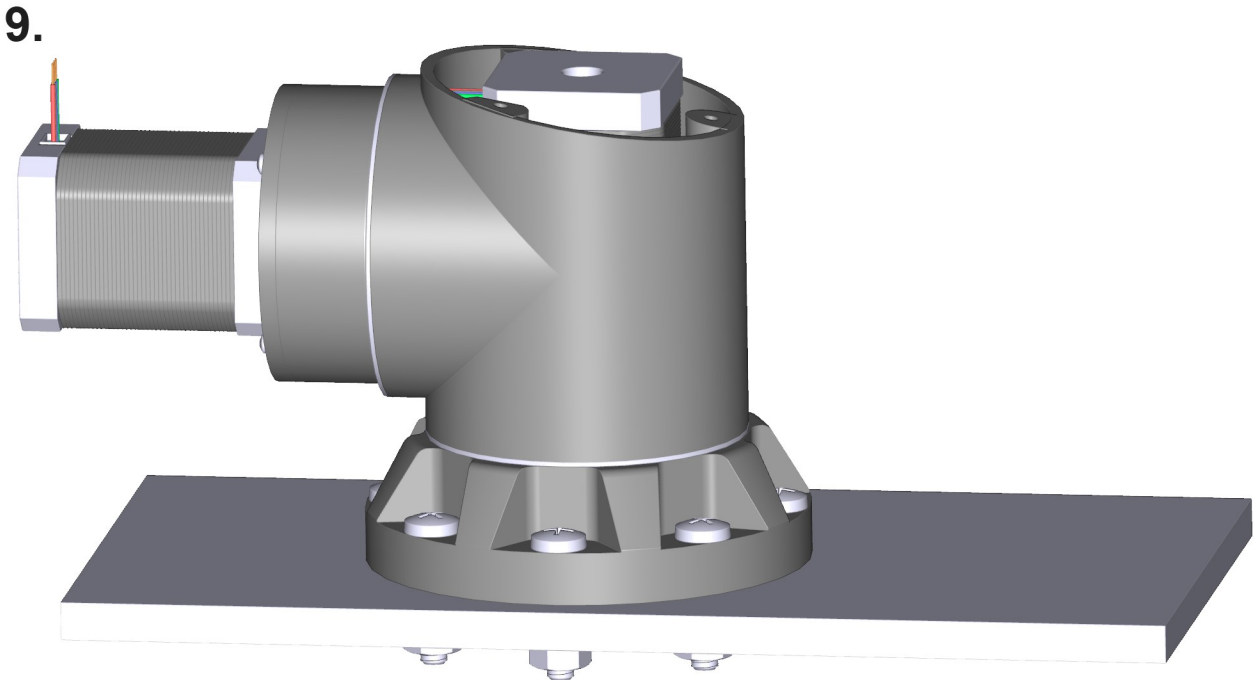
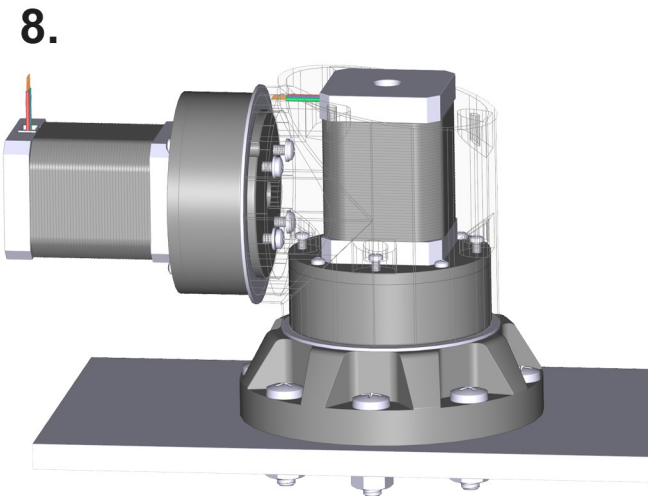
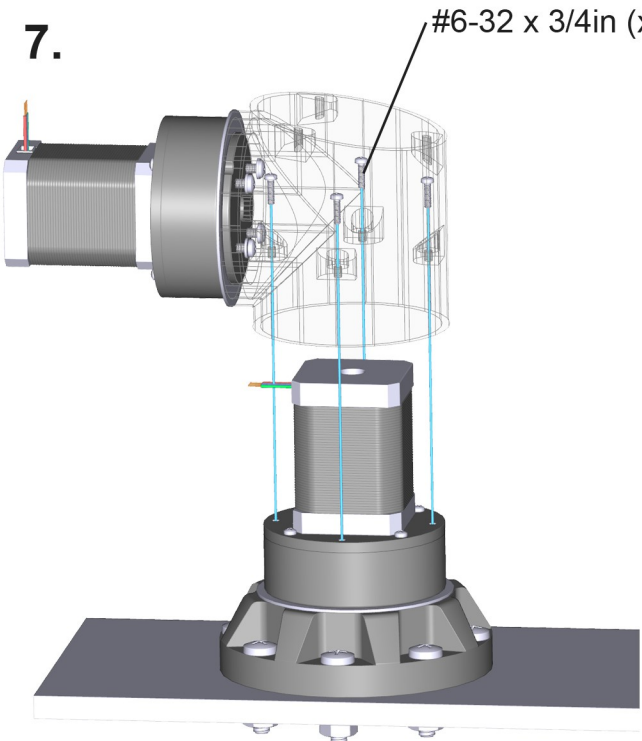
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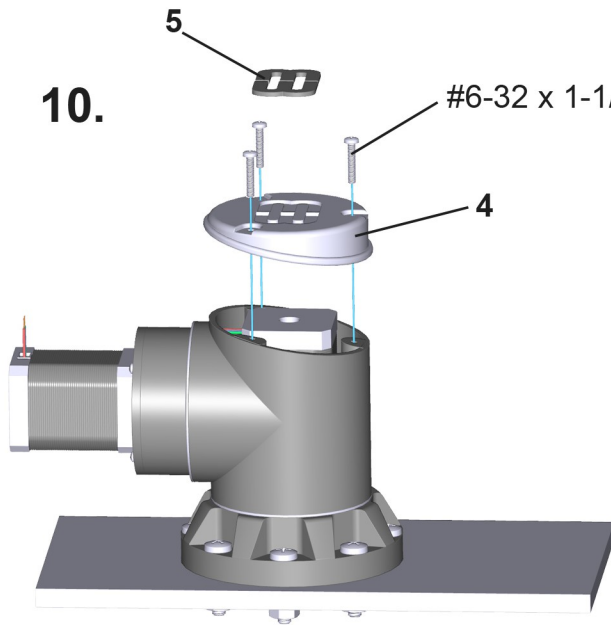
## Step 1



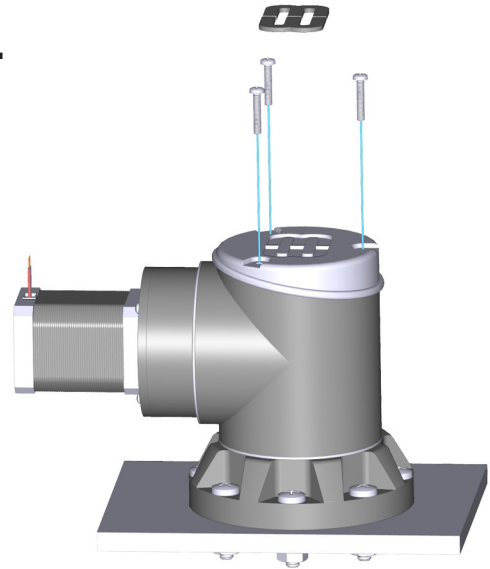
## Step 1



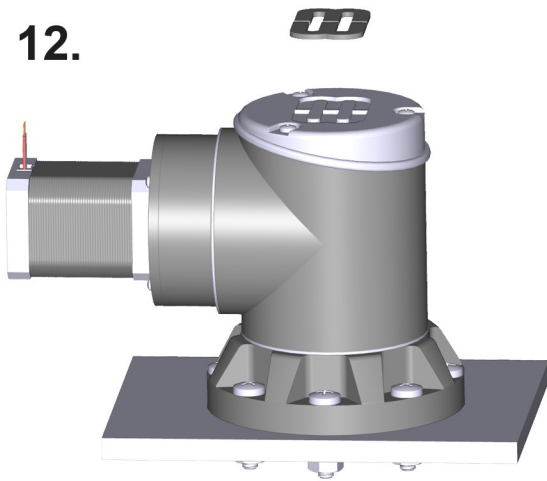
## Step 1



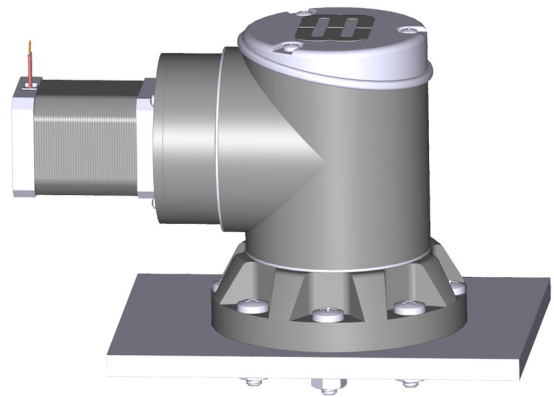
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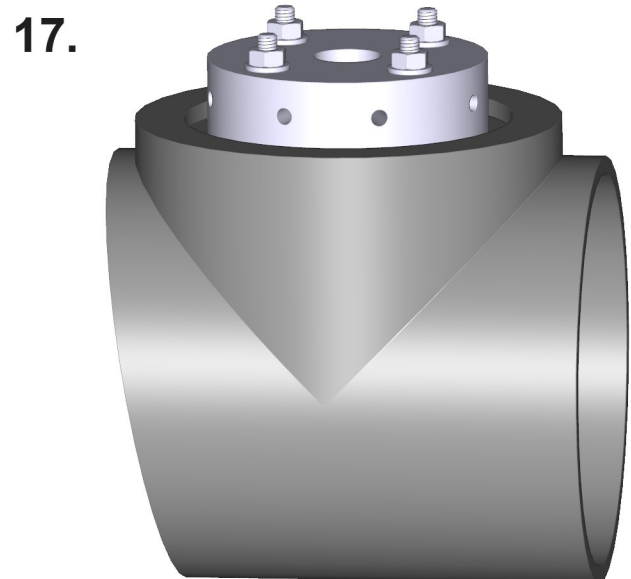
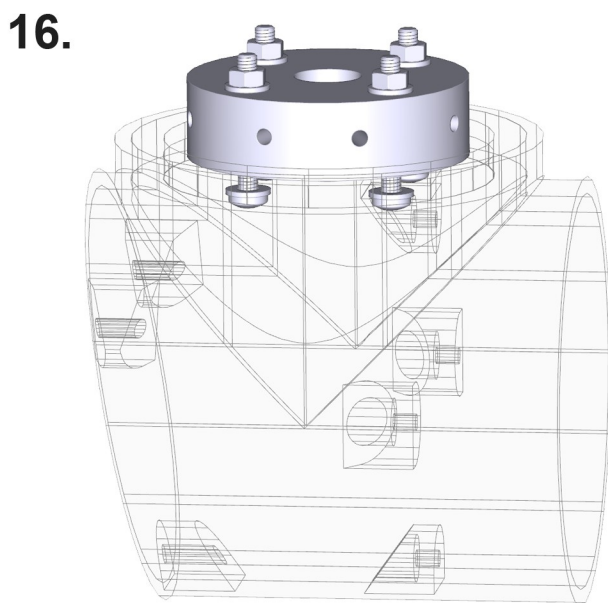
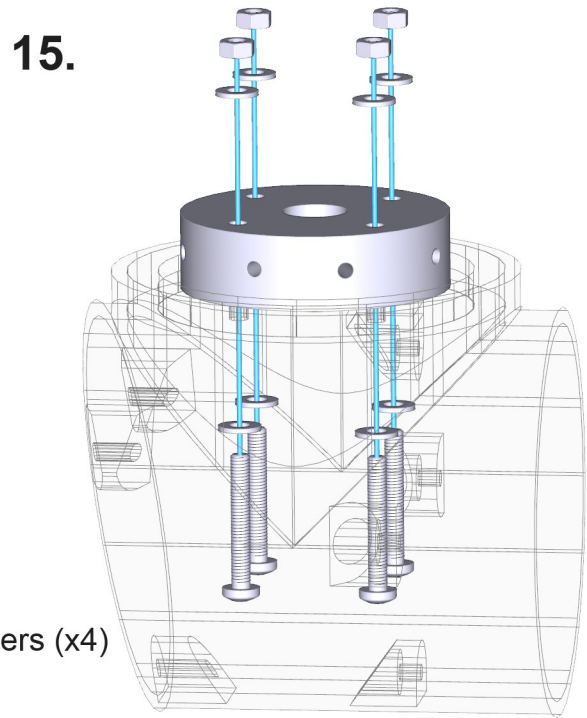
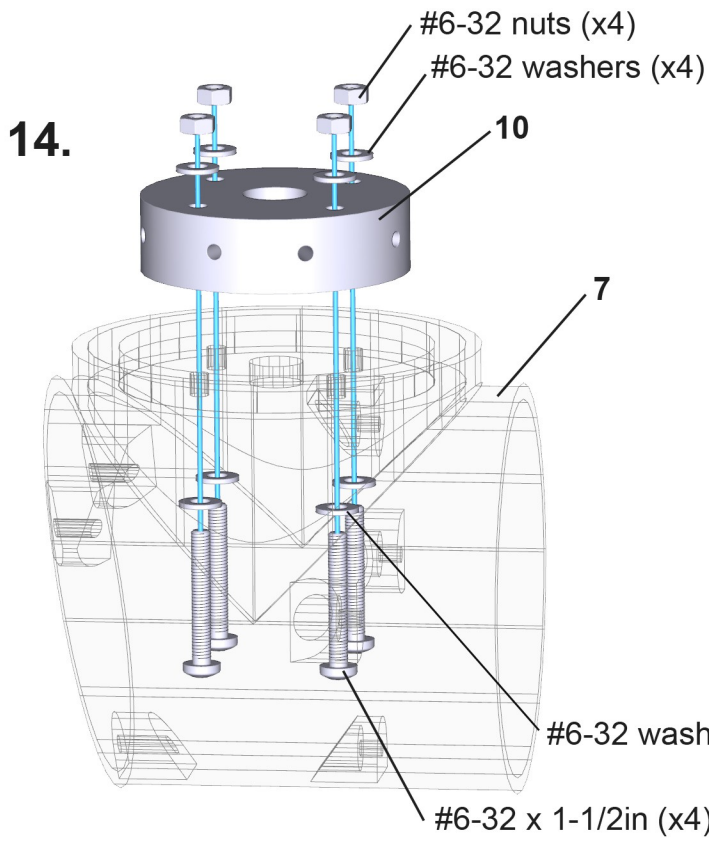
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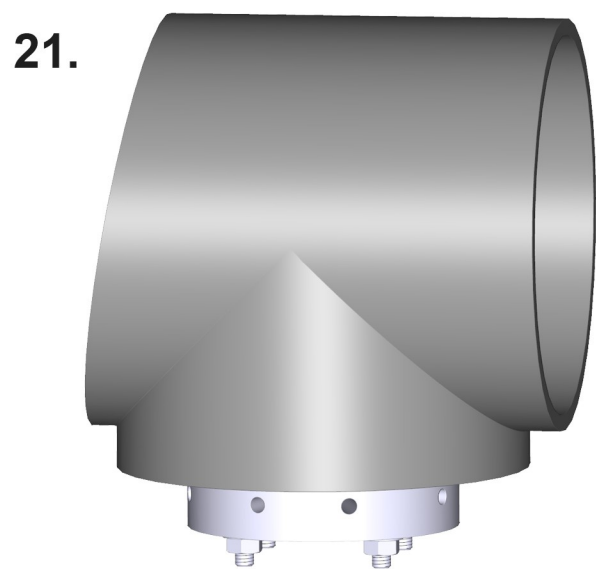
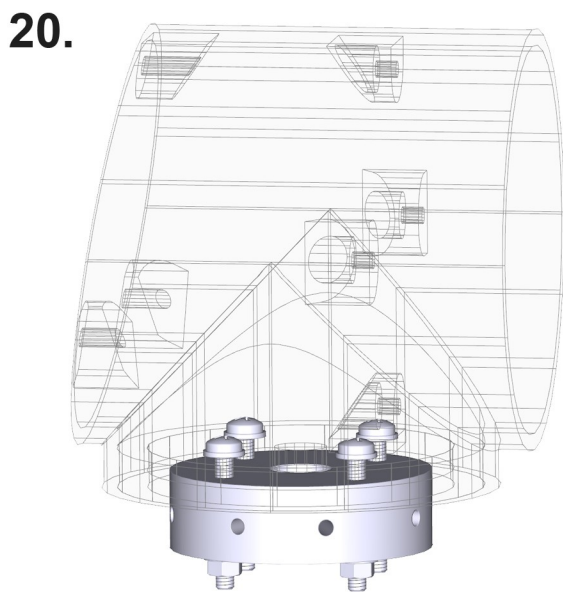
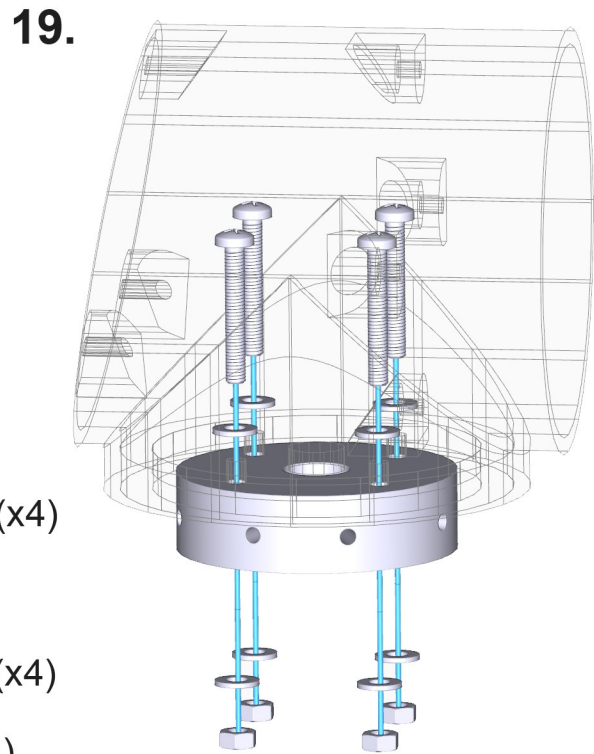
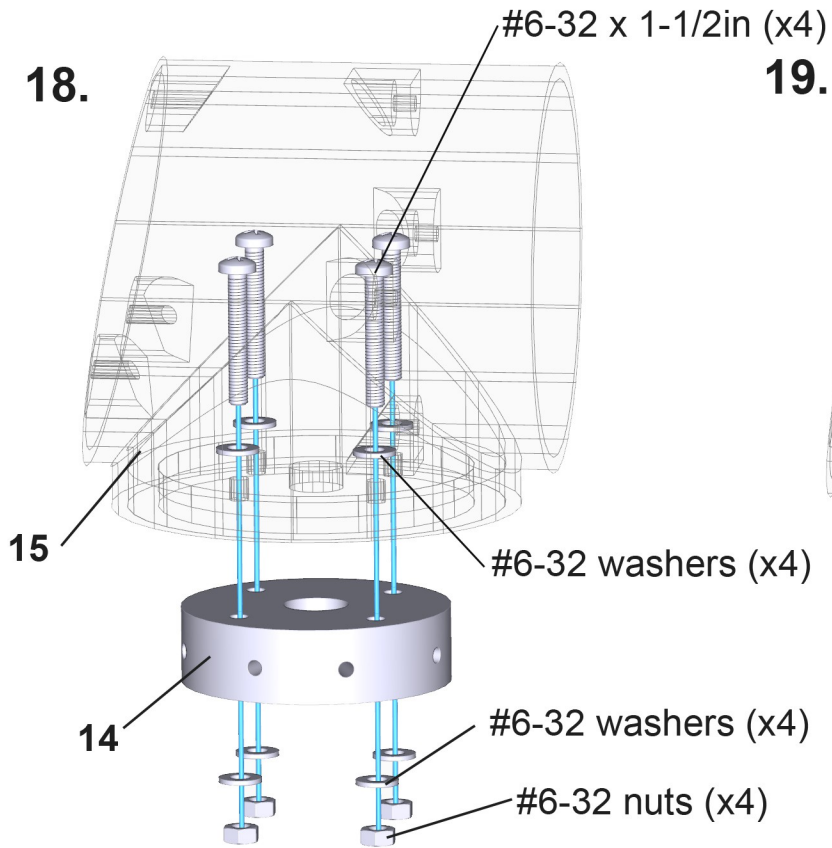
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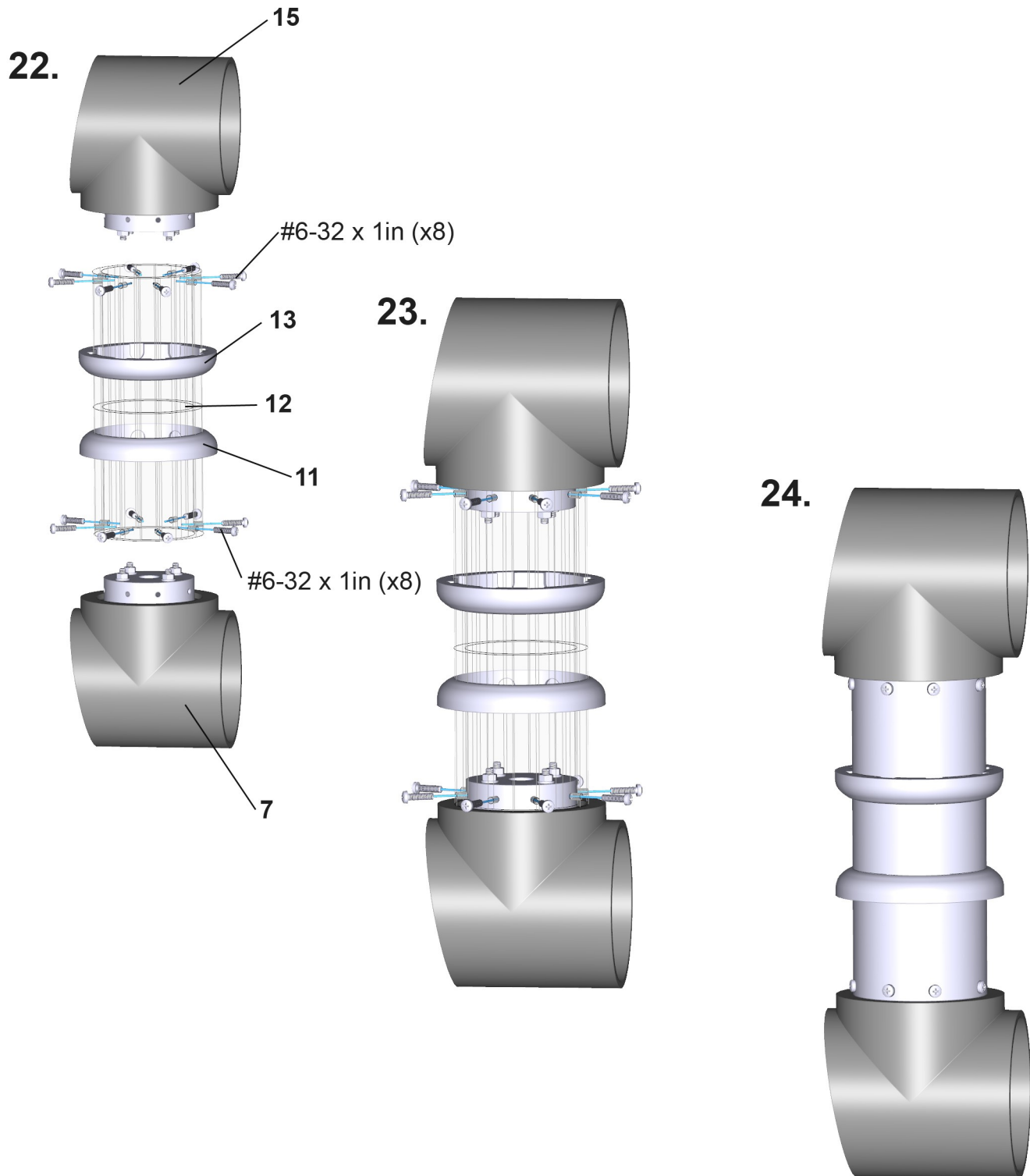
## Step 2



## Step 2

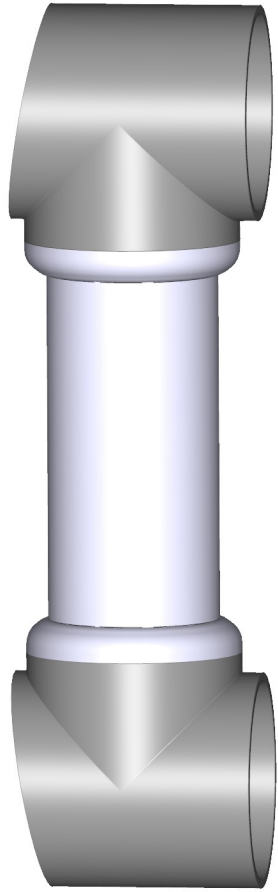


## Step 2

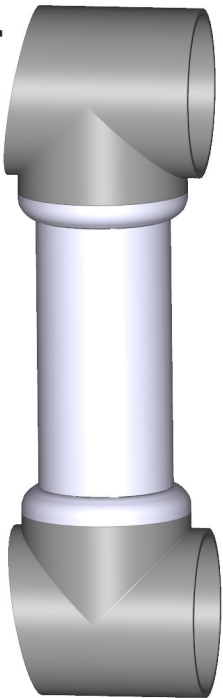


## Step 3

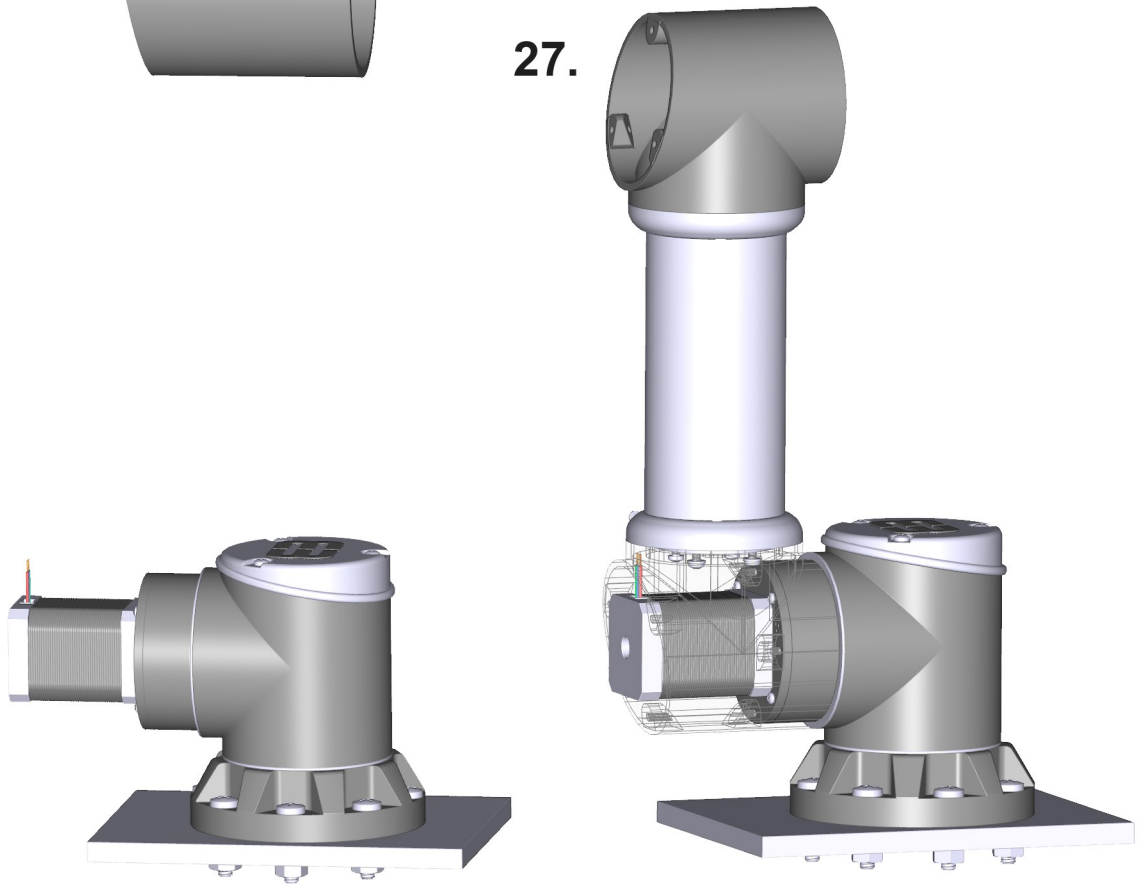
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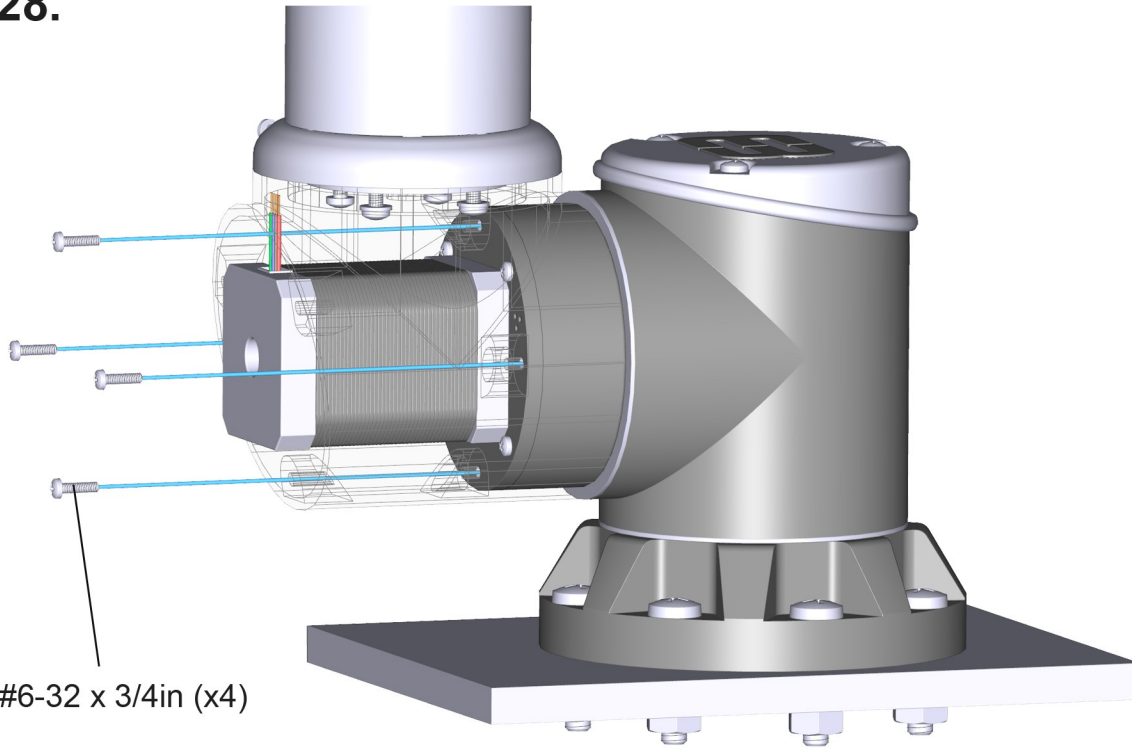
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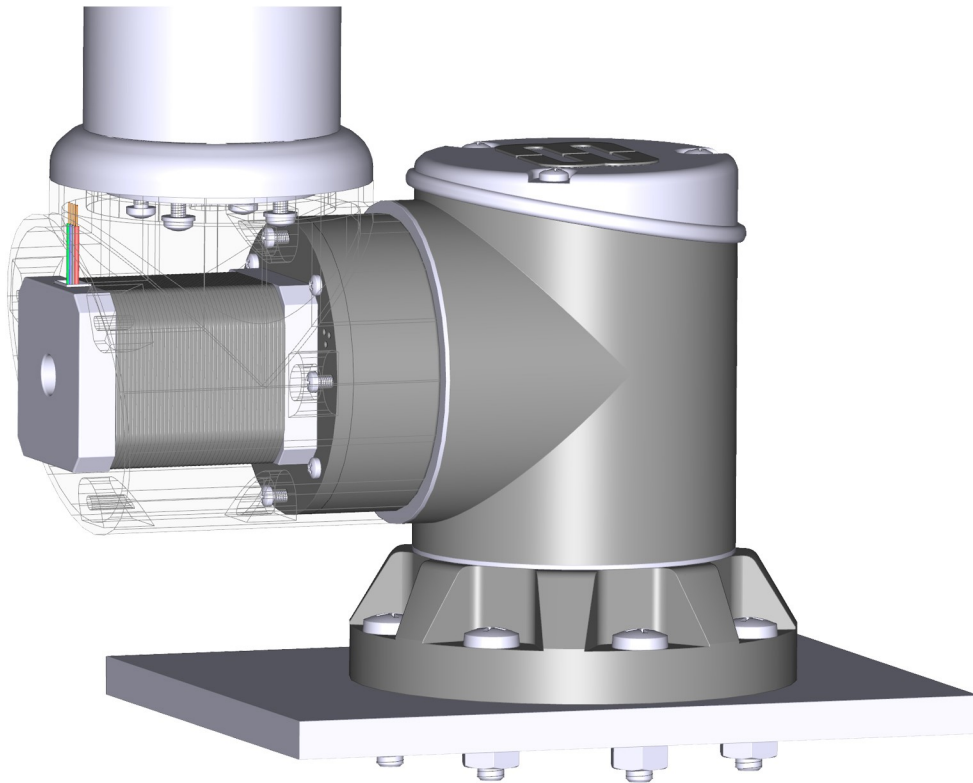


## Step 3

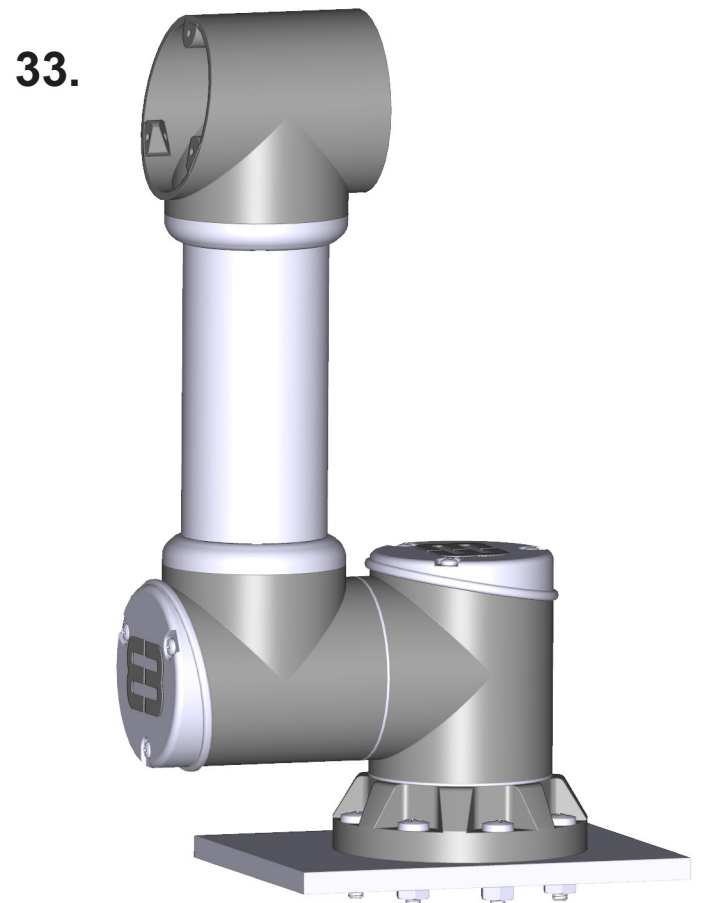
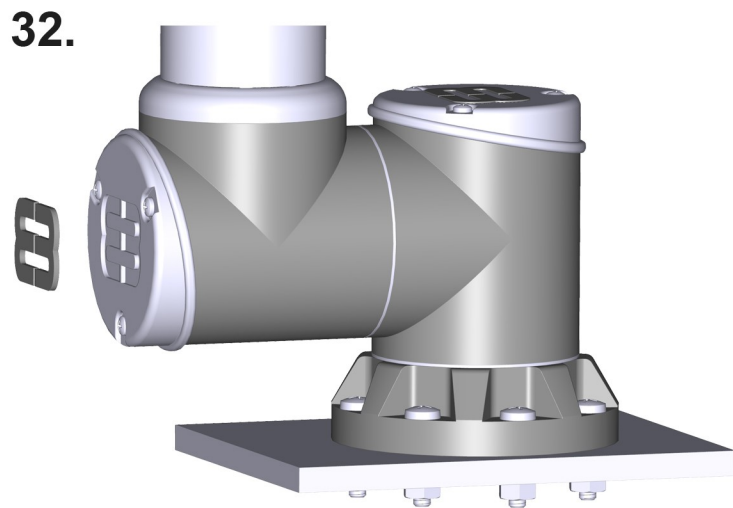
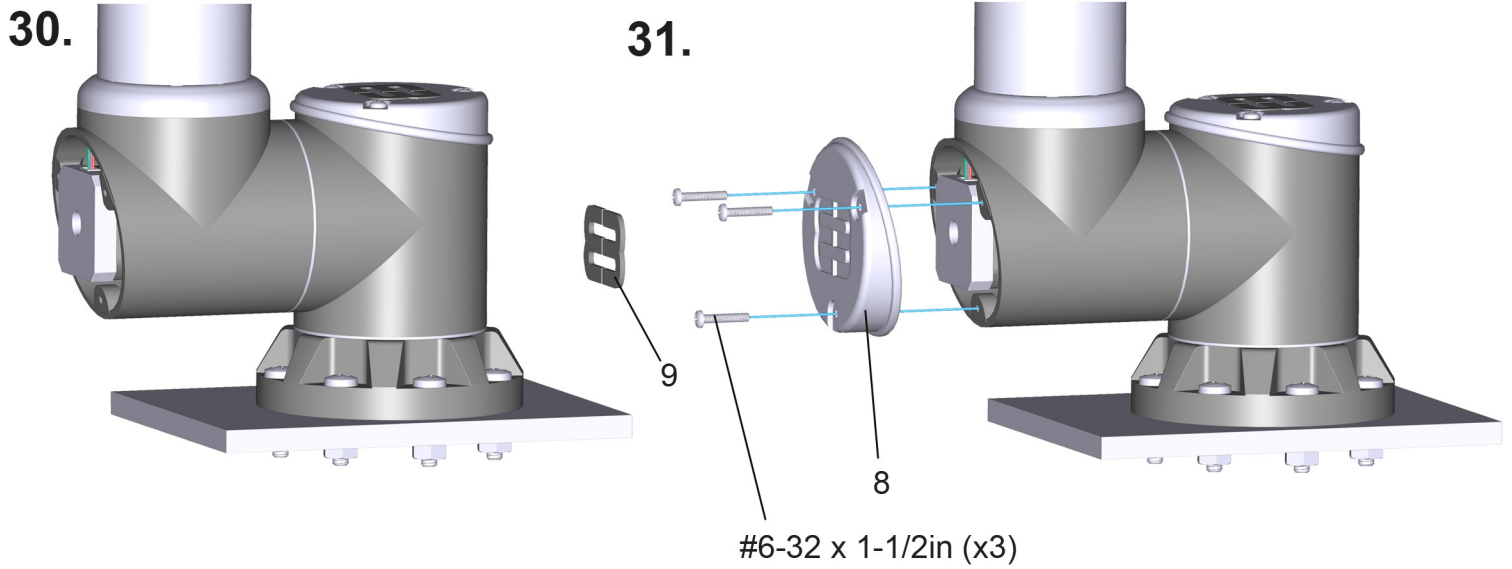
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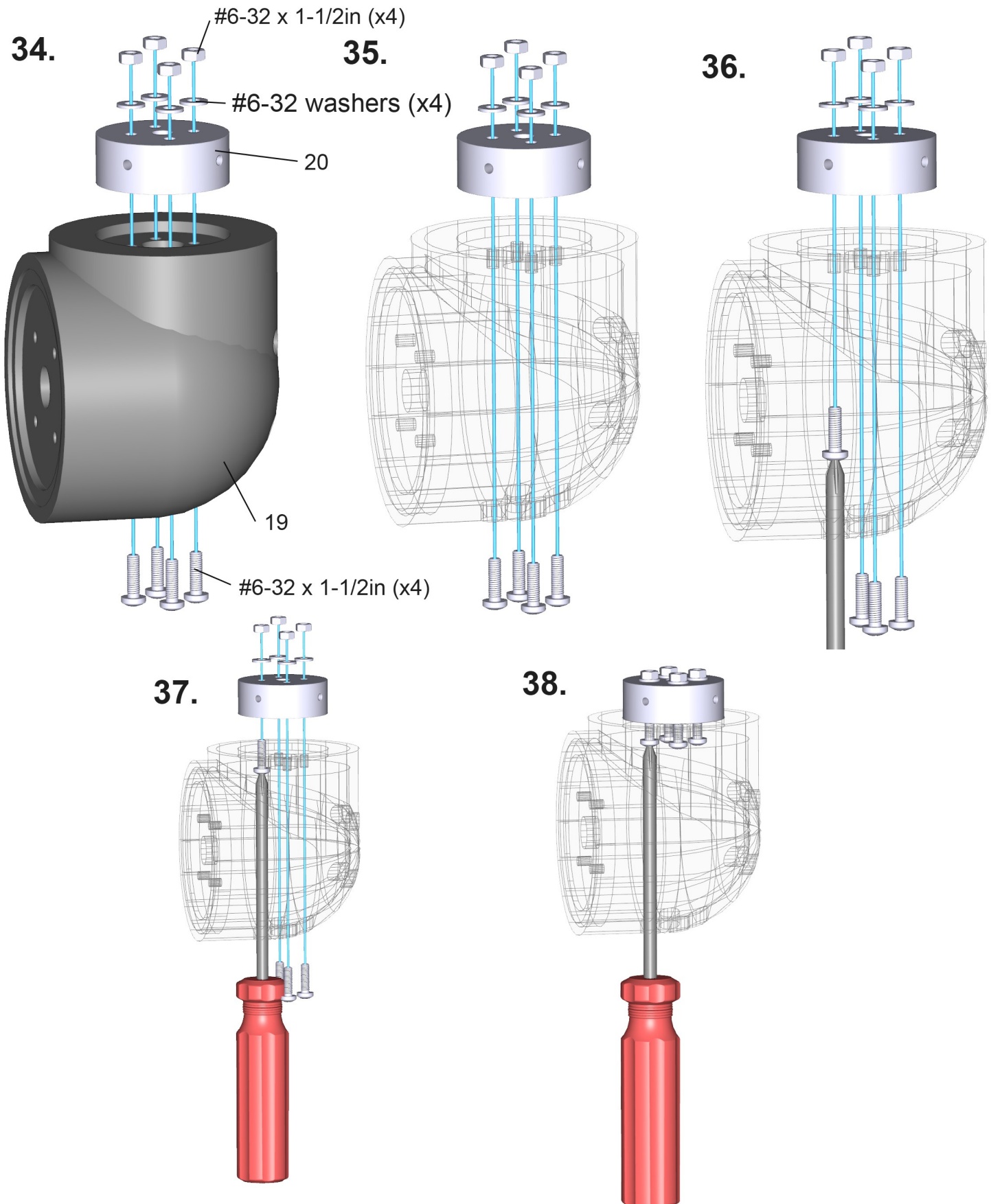
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## Step 3

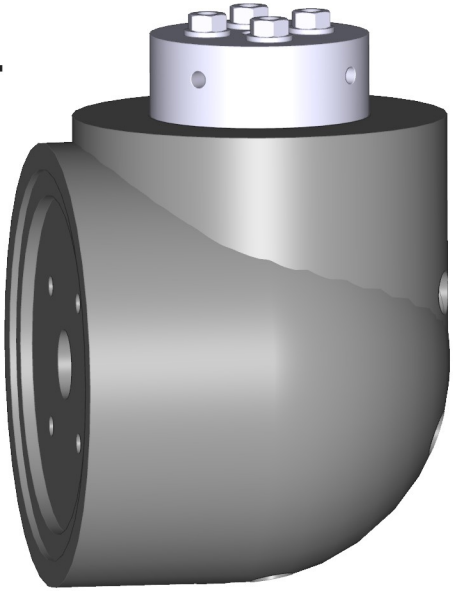


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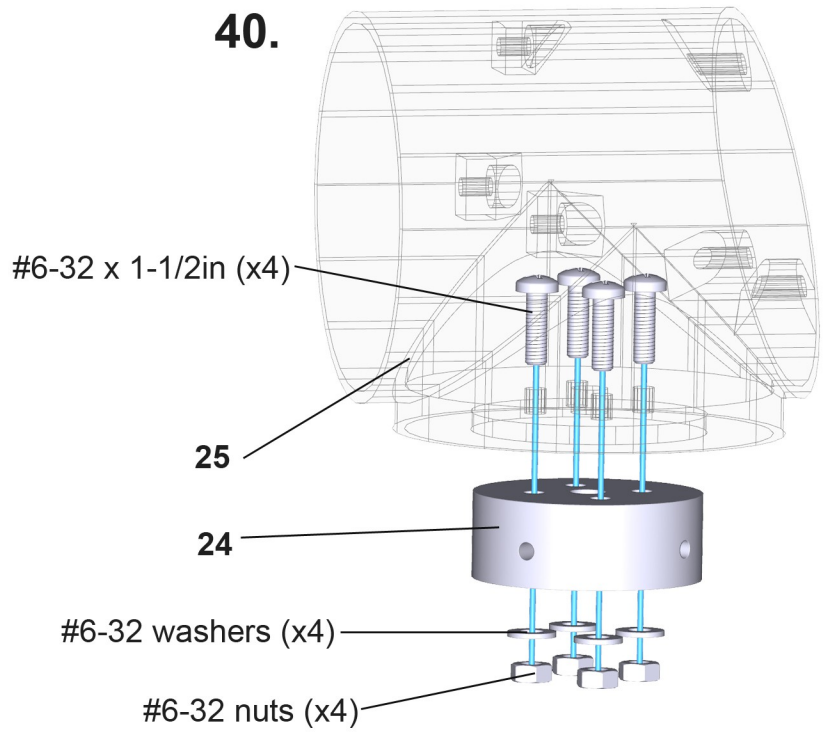


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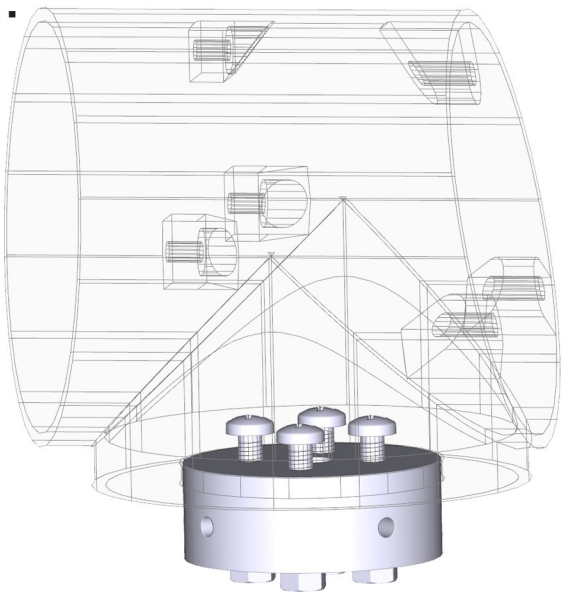
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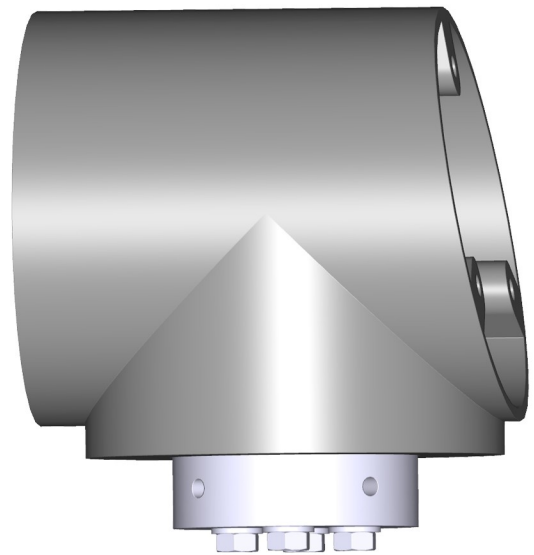
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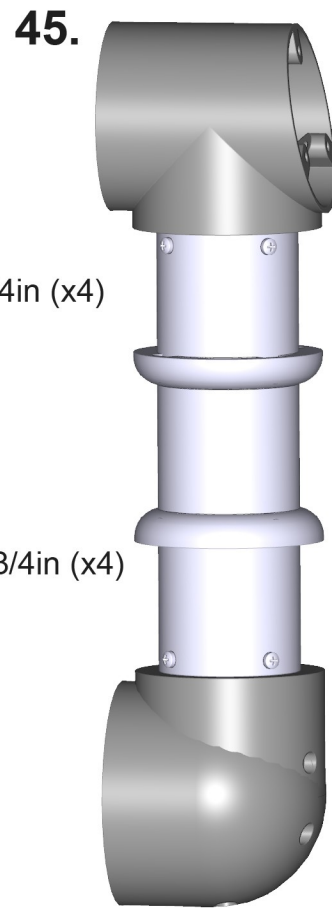
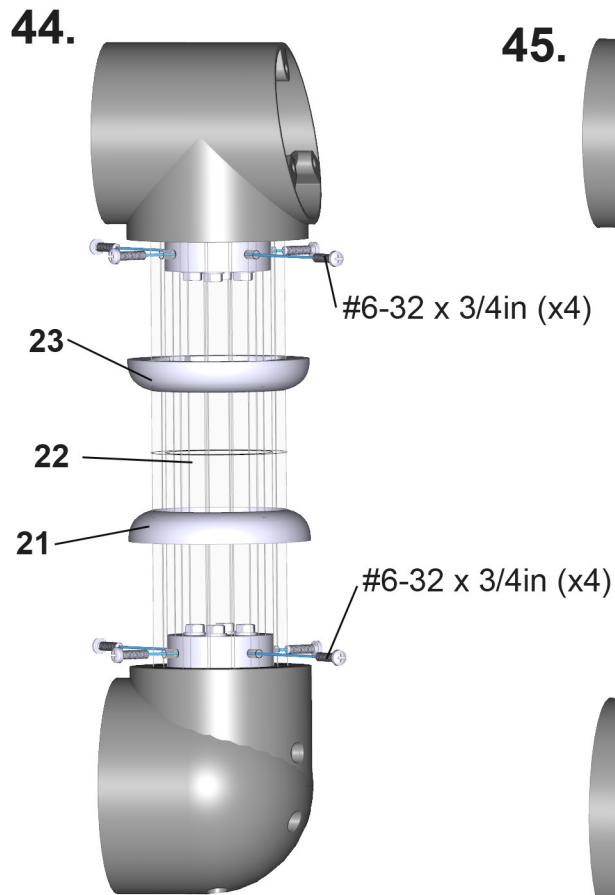
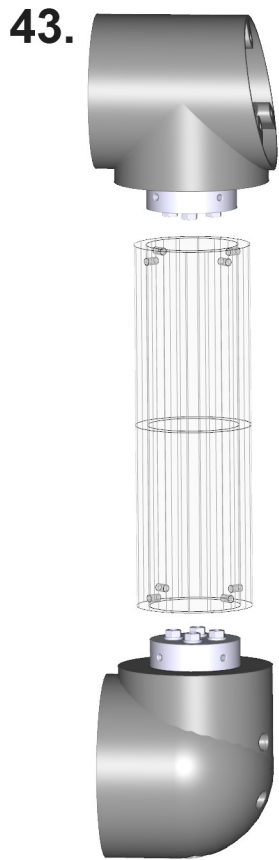
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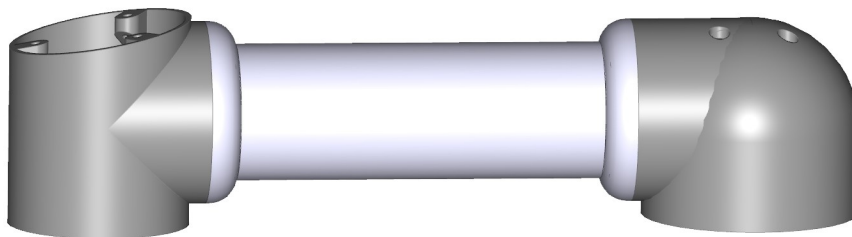
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## Step 4

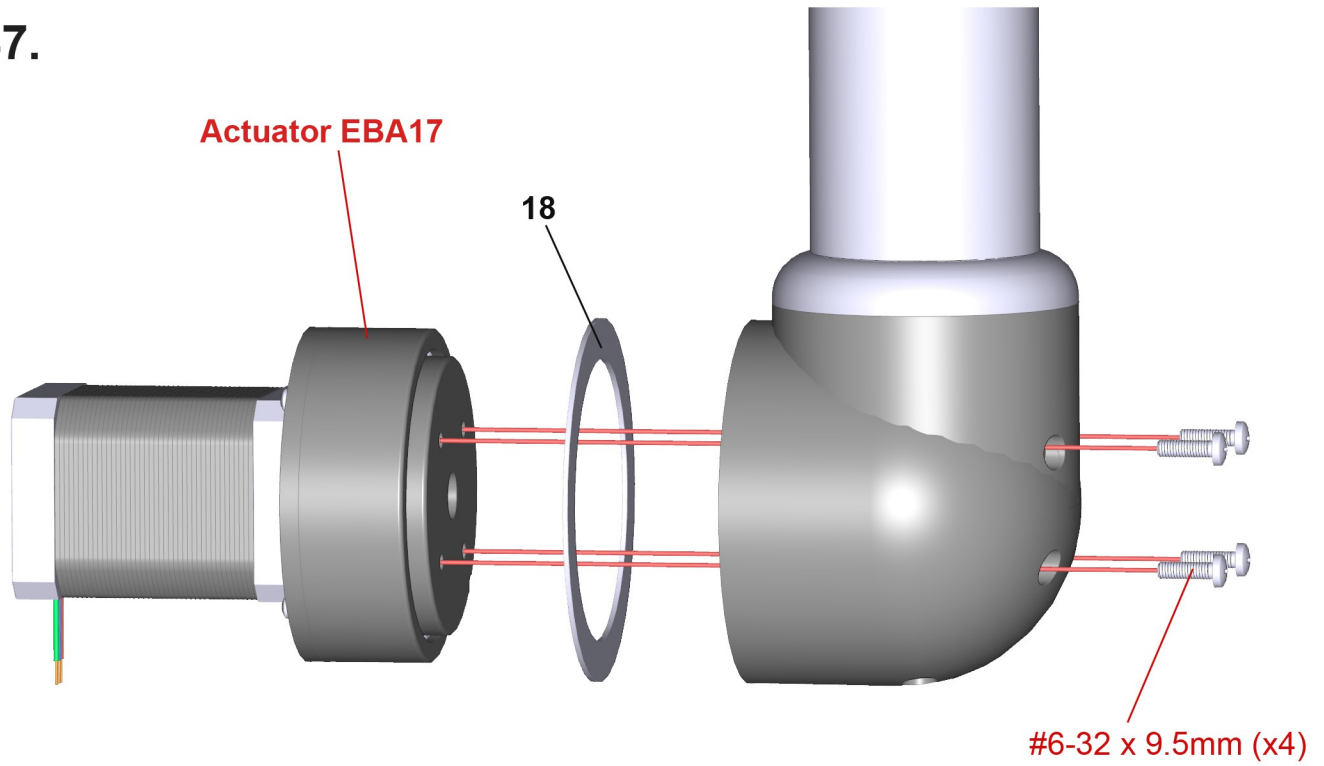


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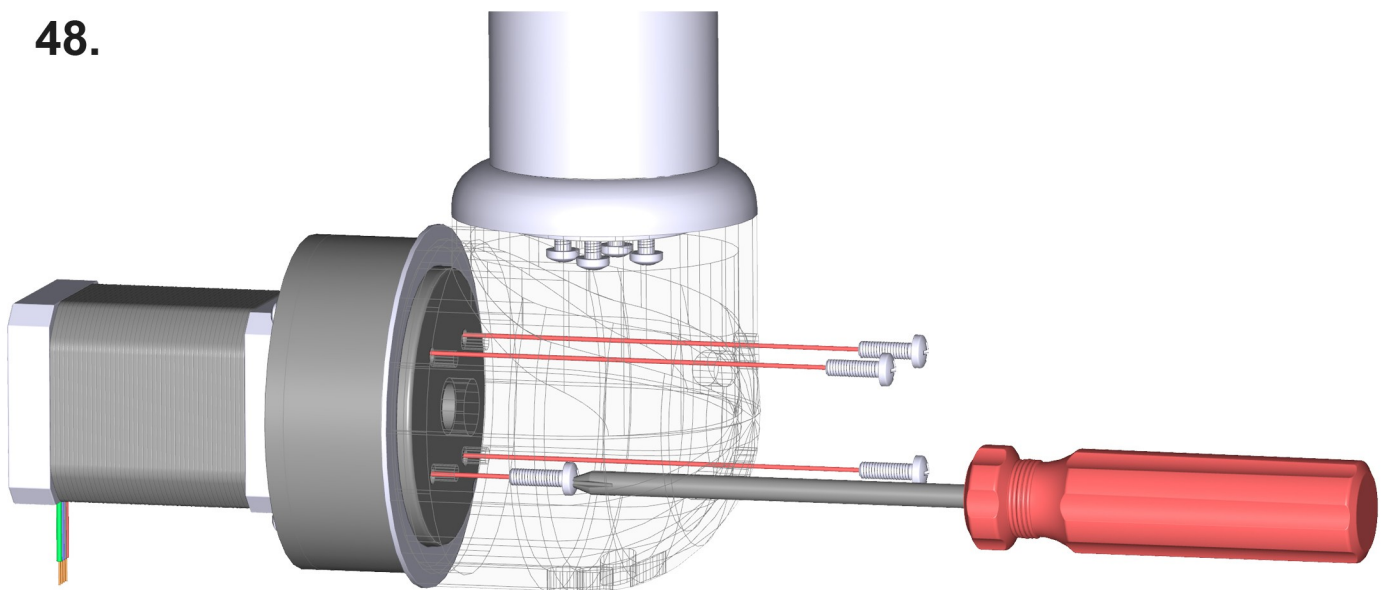


## Step 4

47.

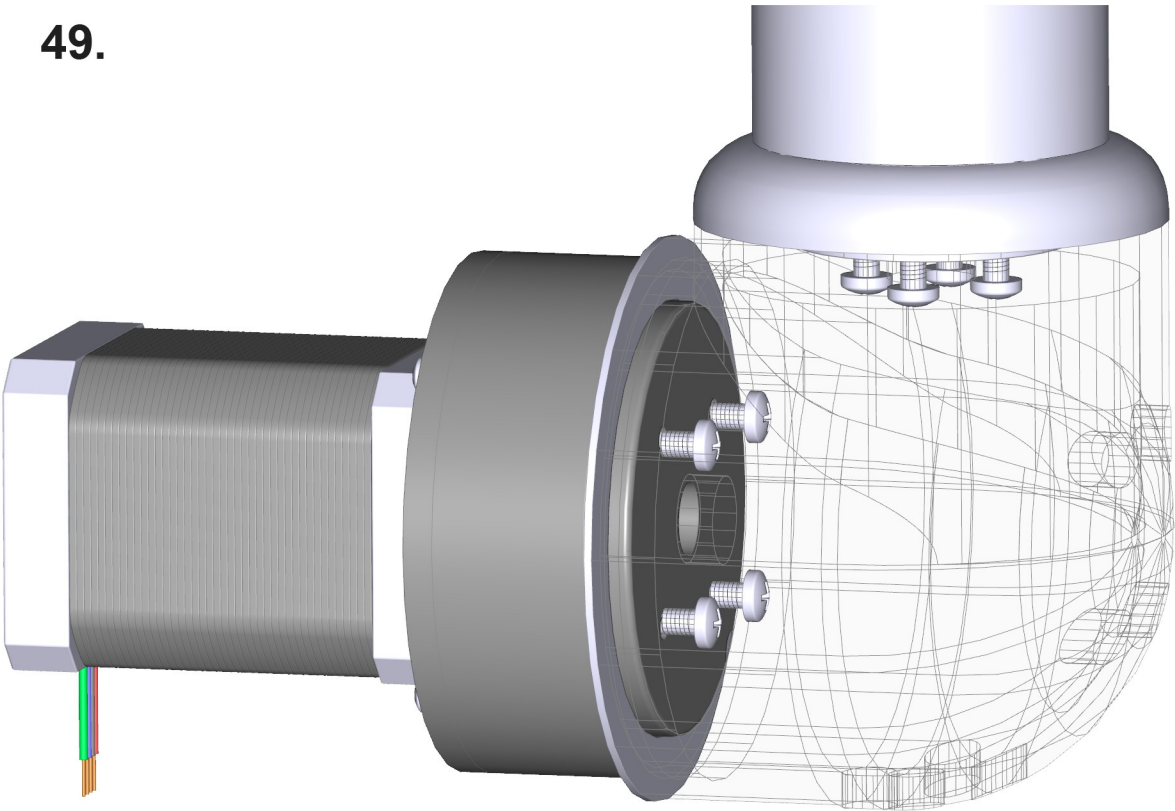


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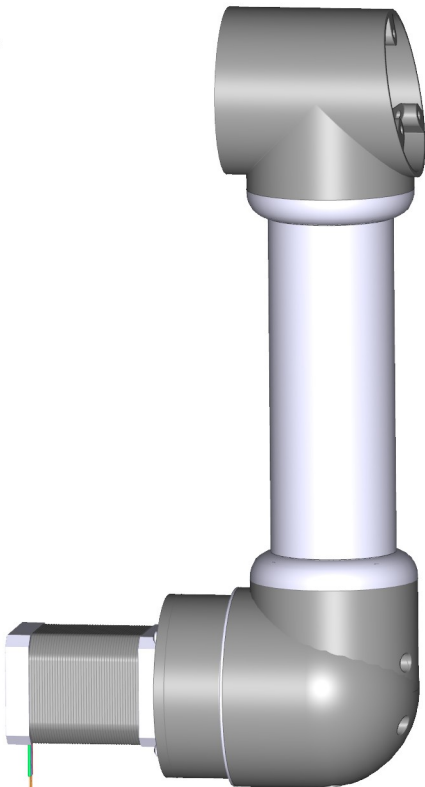


Step 4

49.

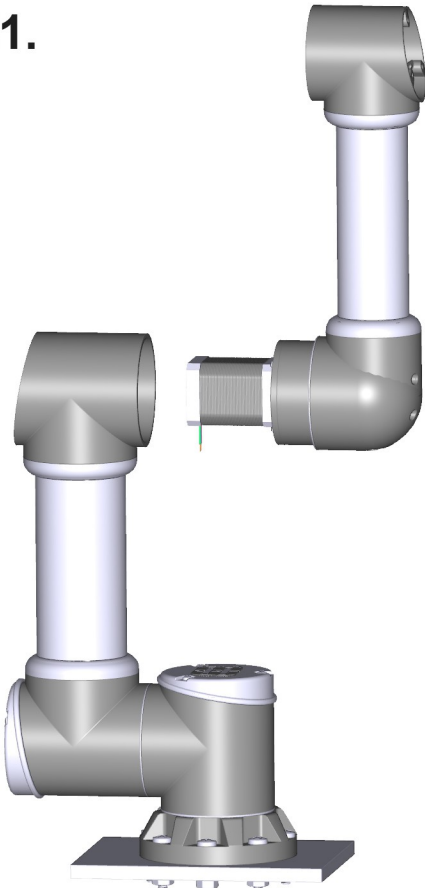


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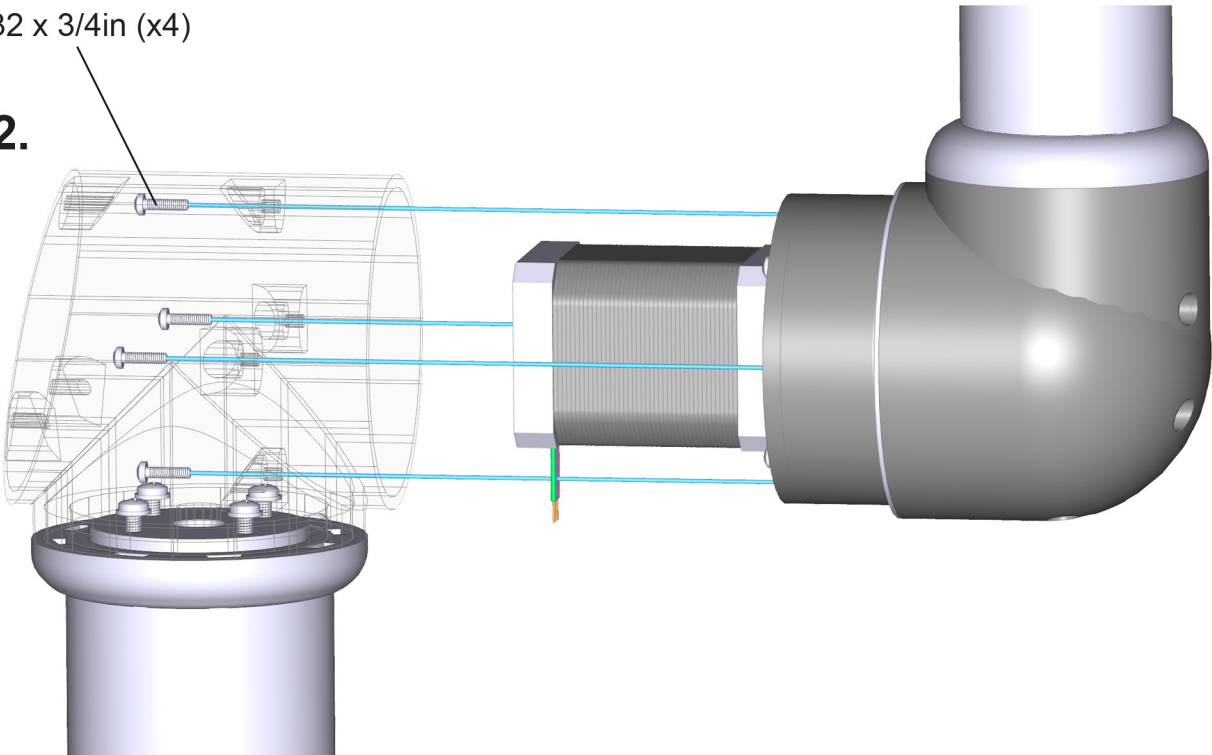
## Step 4

51.



#6-32 x 3/4in (x4)

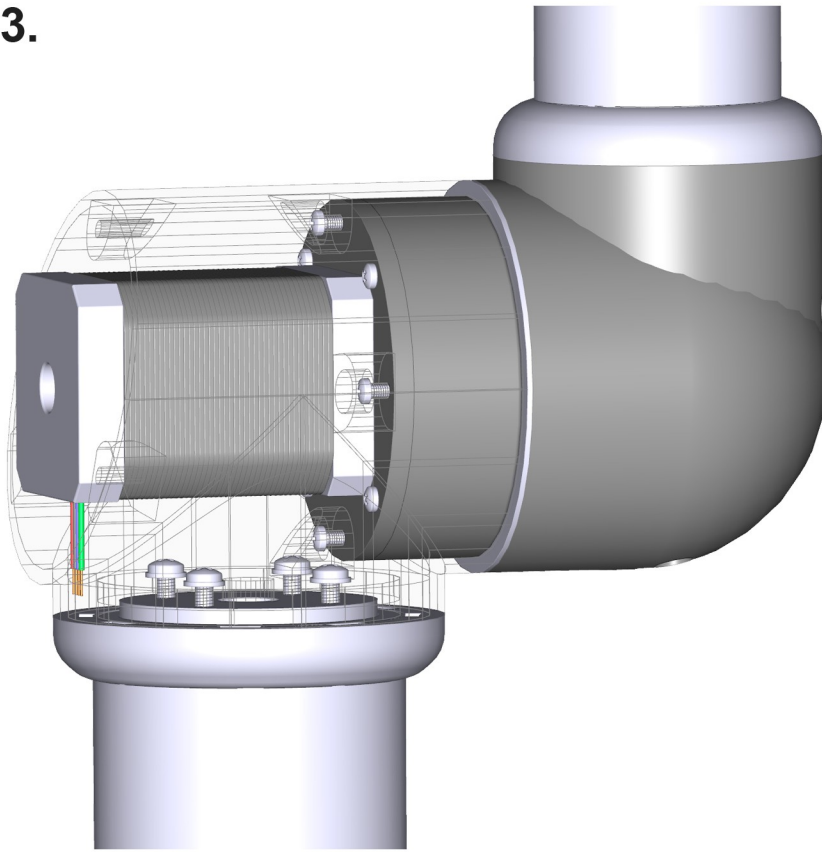
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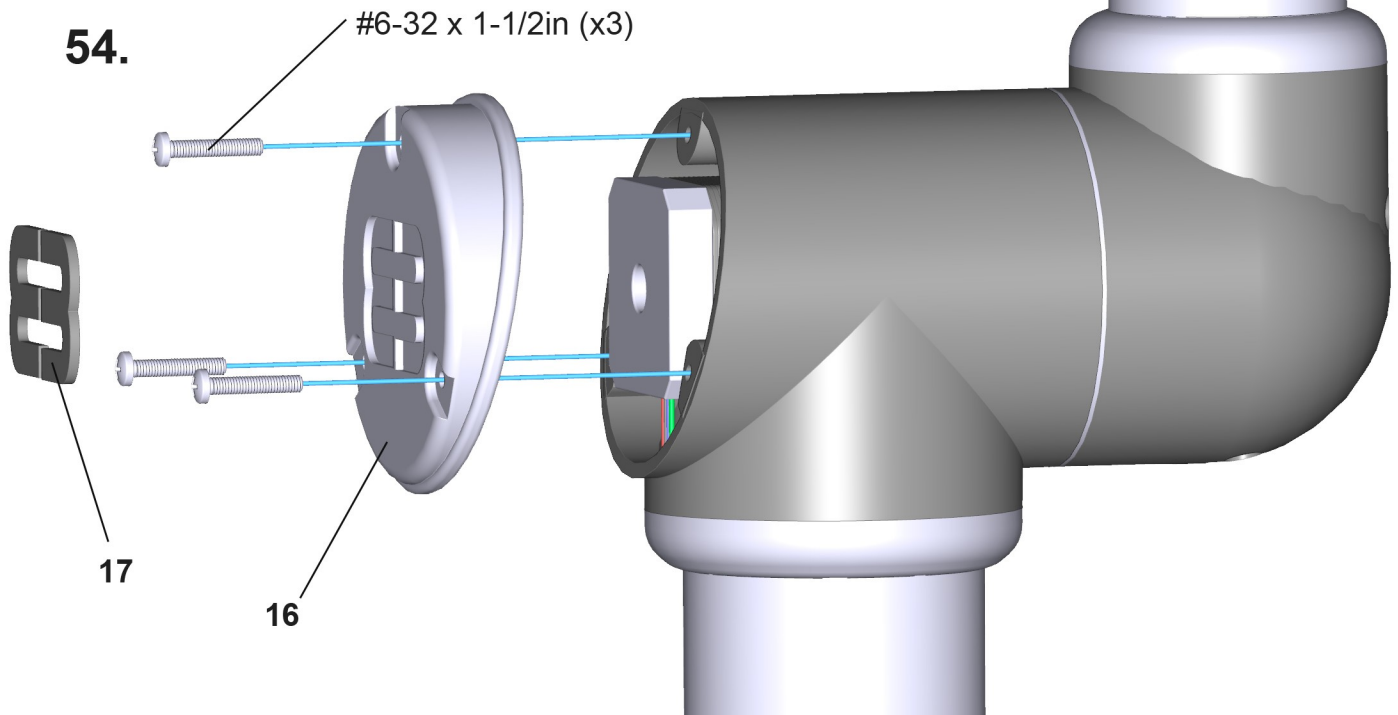


## Step 4

53.

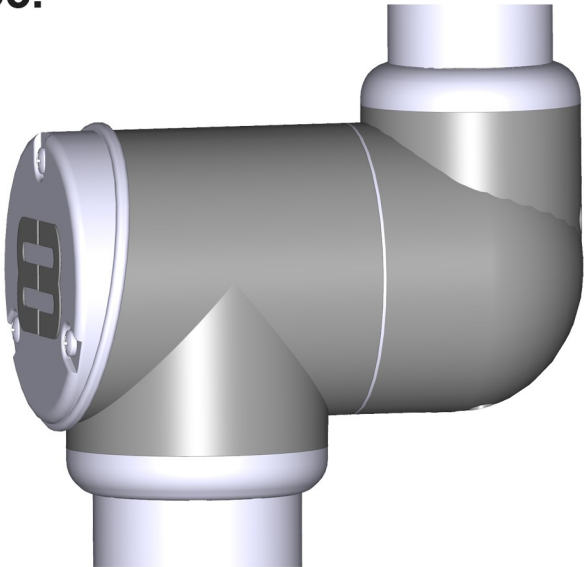


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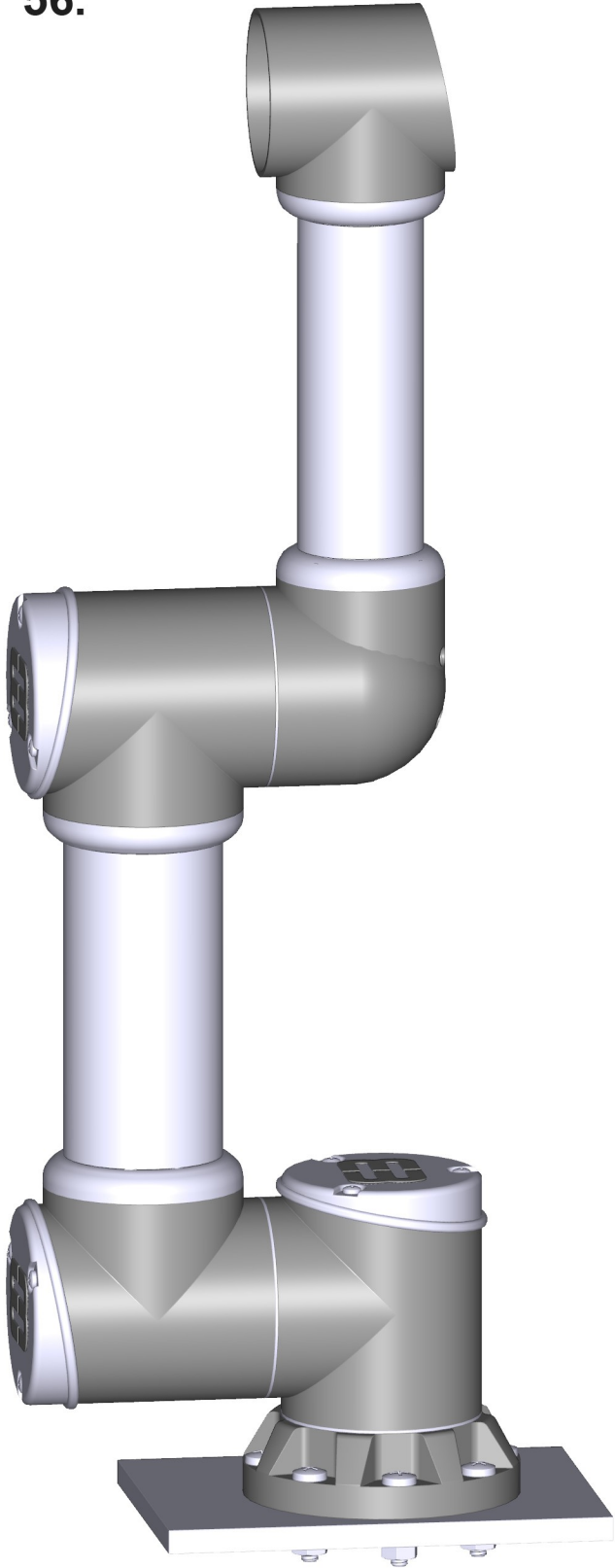


## Step 4

55.

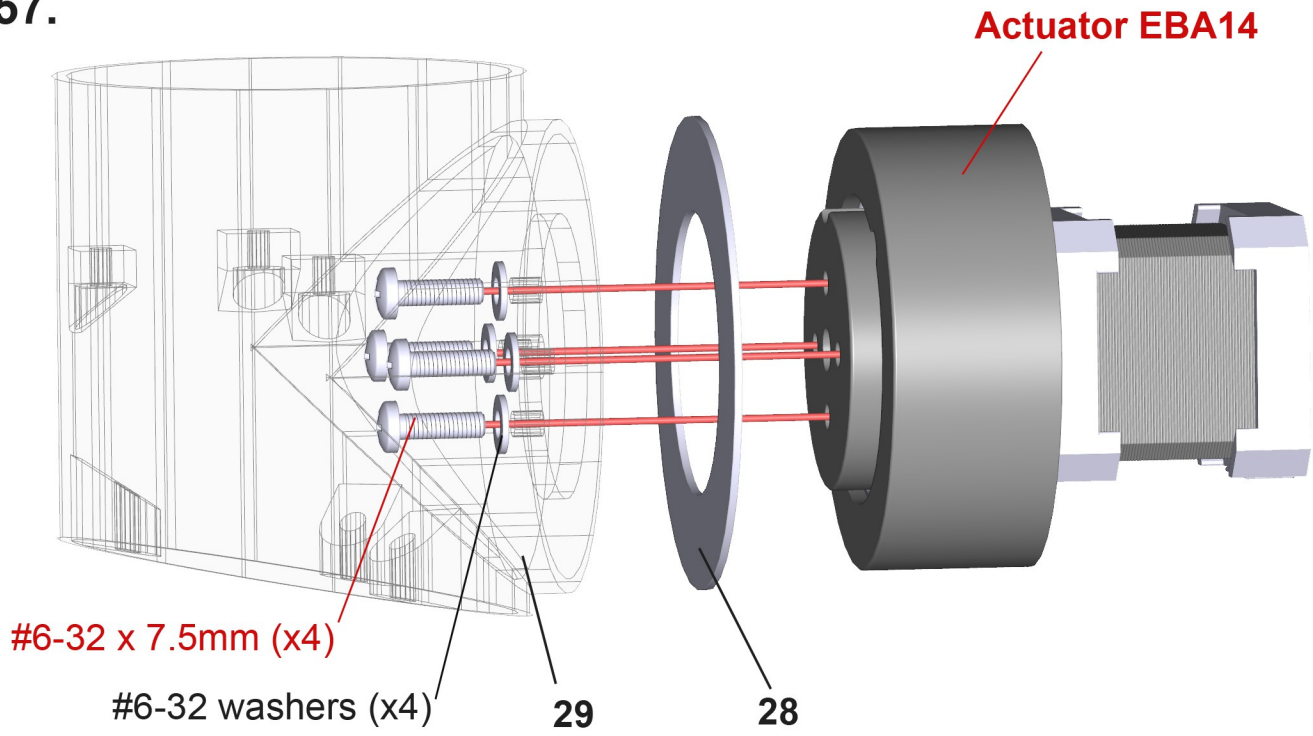


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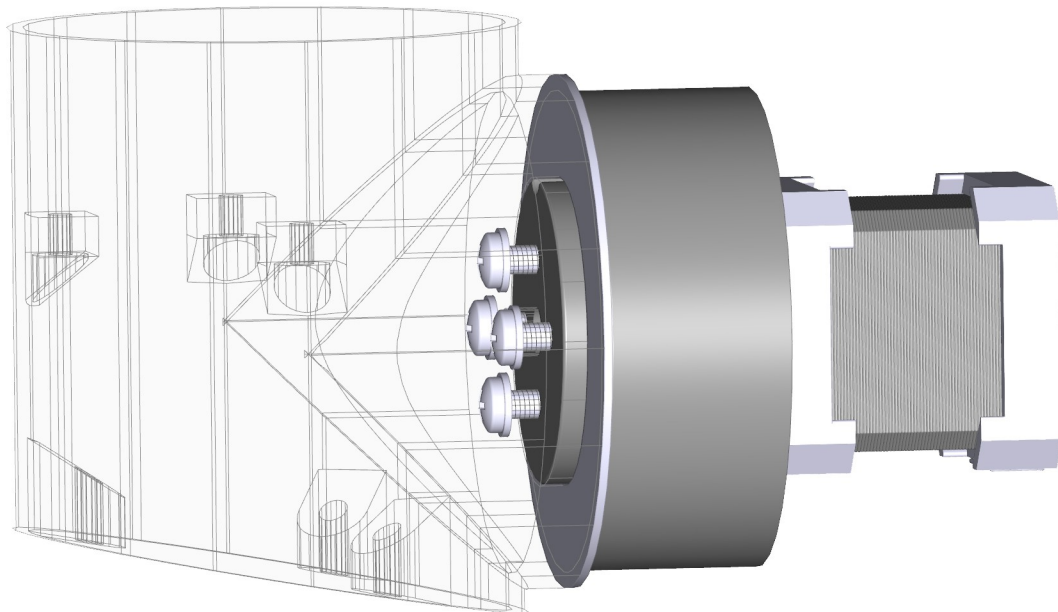


## Step 5

57.

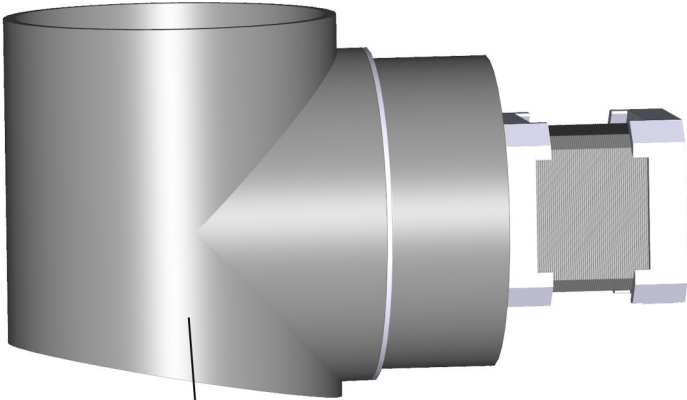


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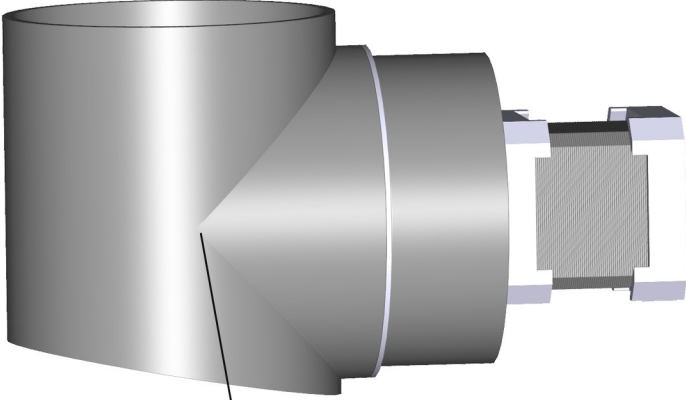


Step 5

59.

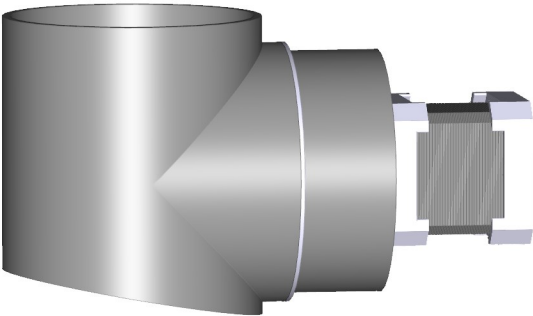
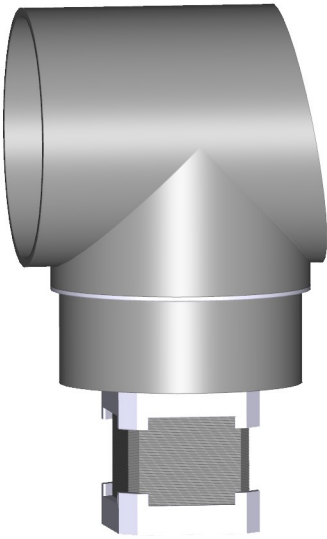


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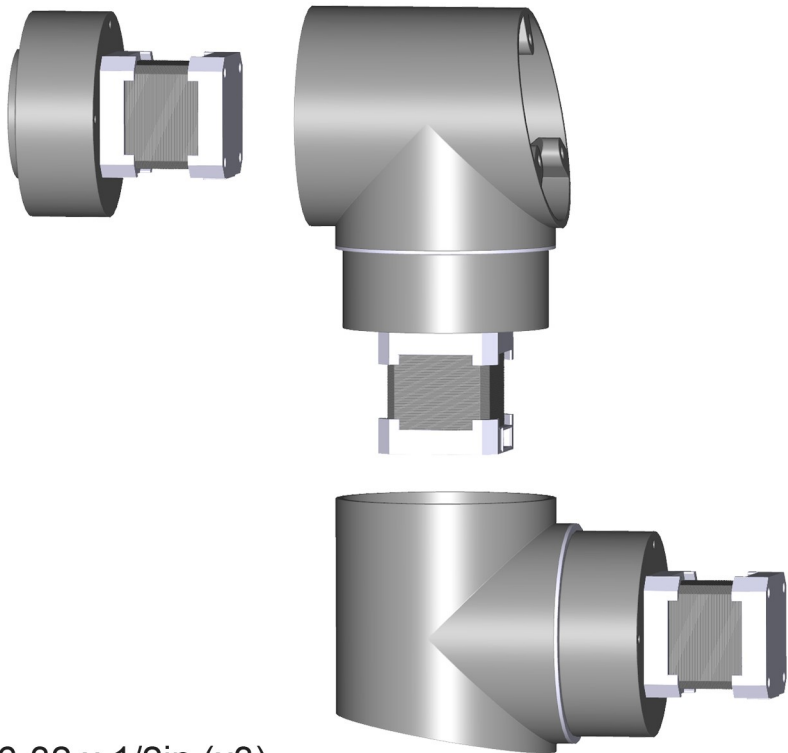
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60.



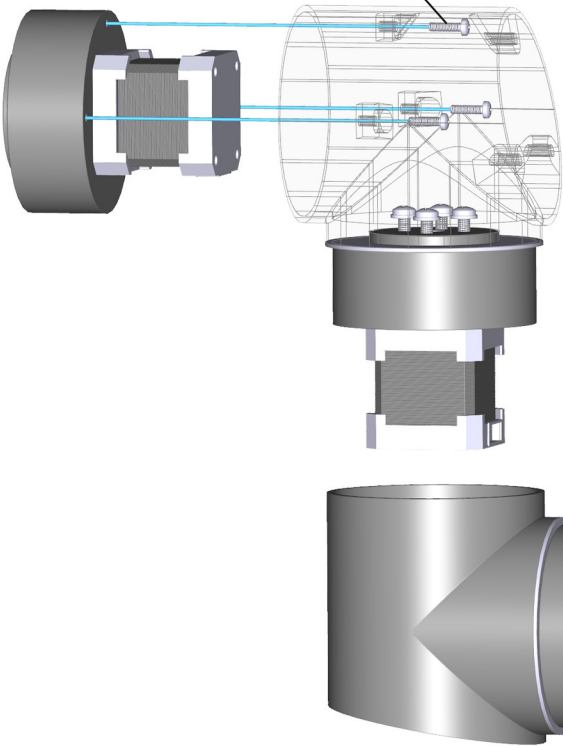
## Step 5

61.

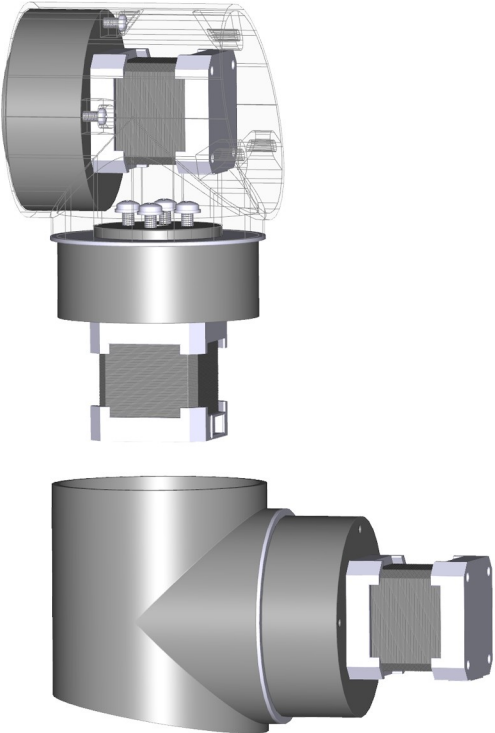


#6-32 x 1/2in (x3)

62.

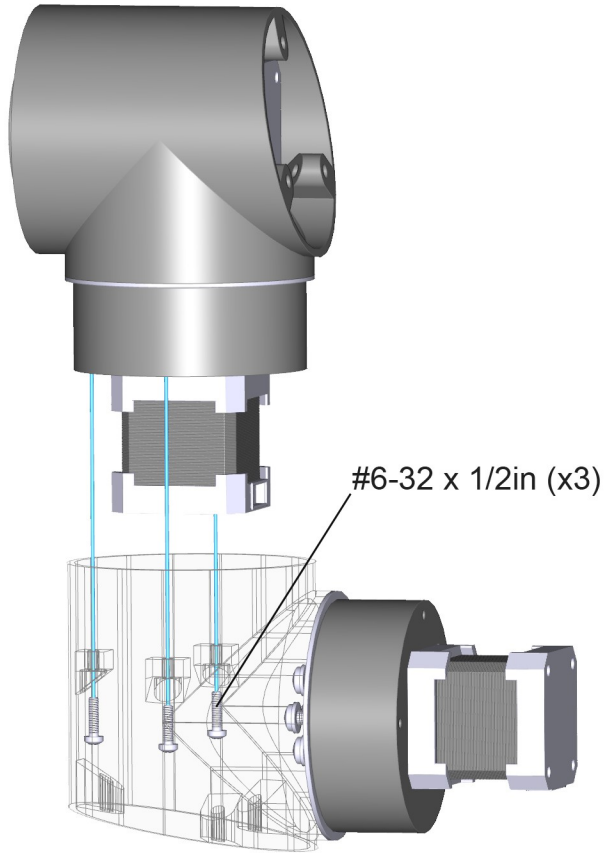


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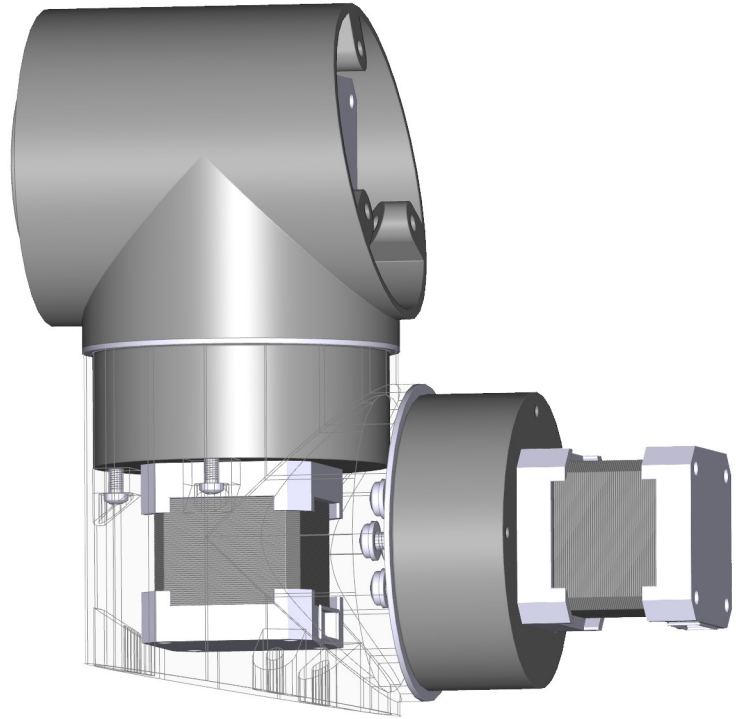


## Step 5

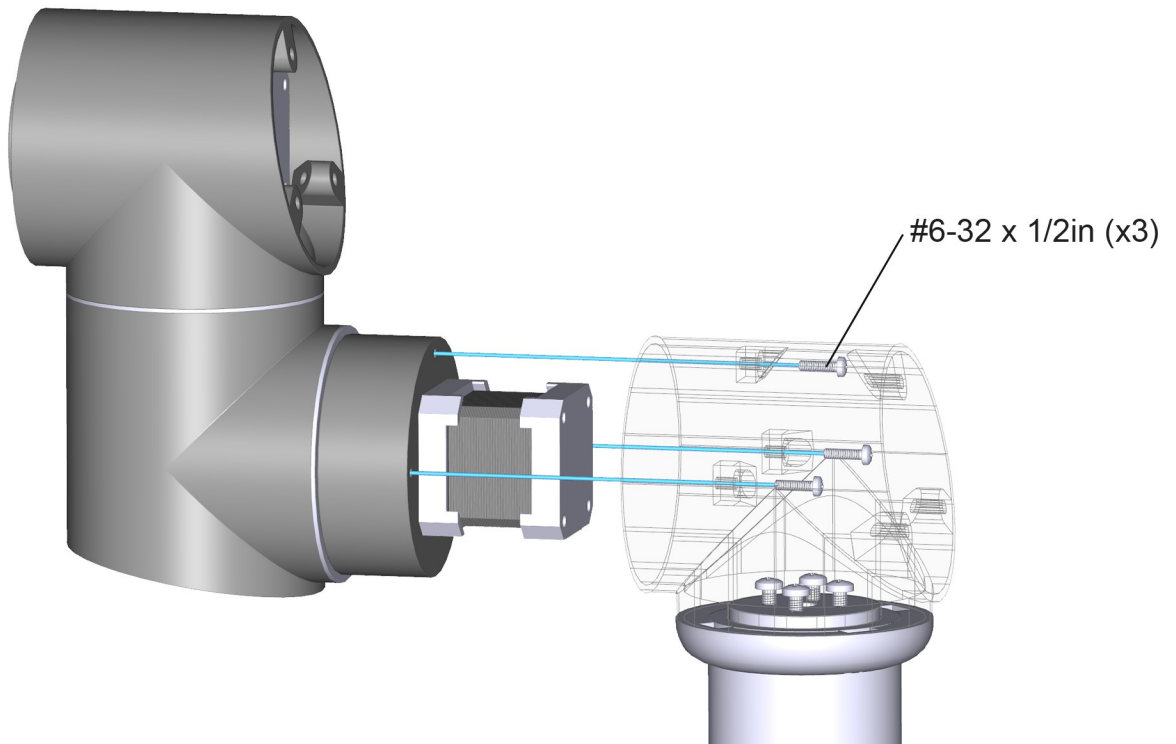
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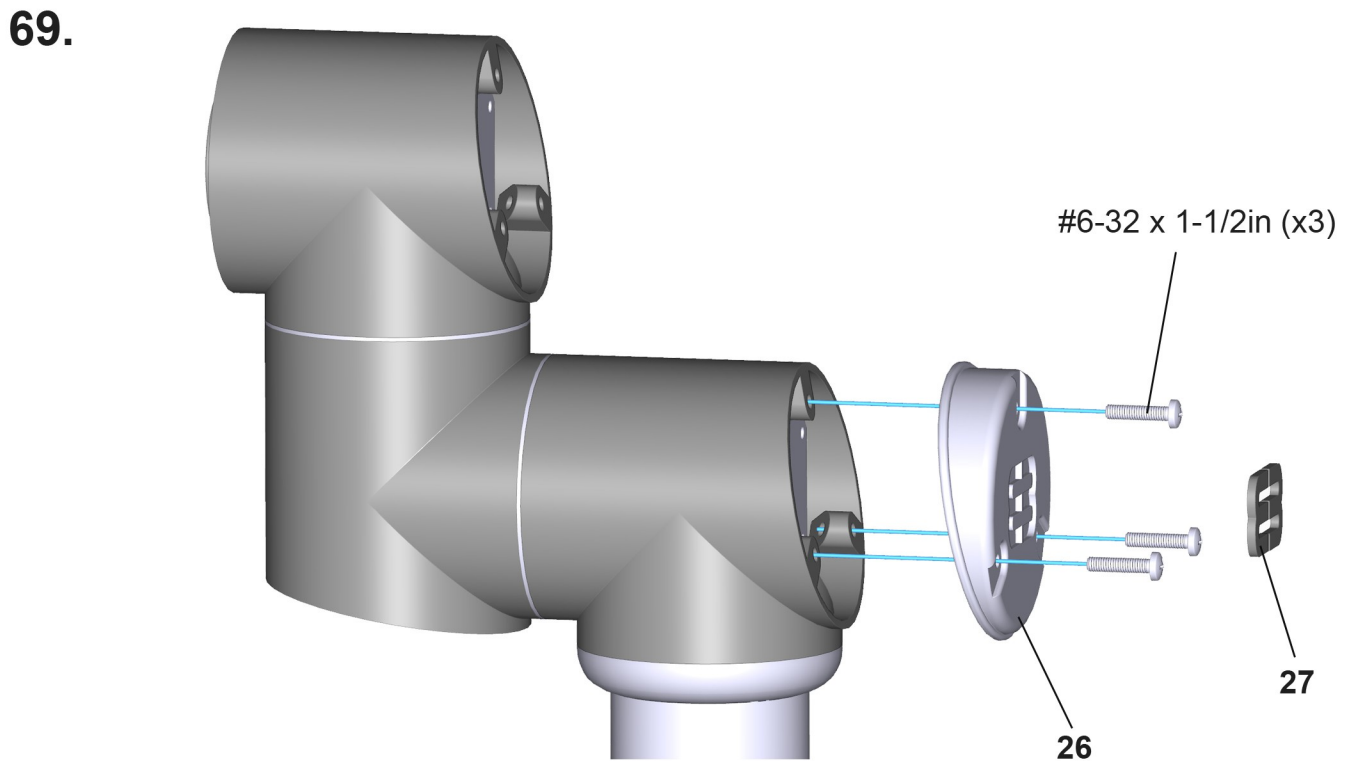
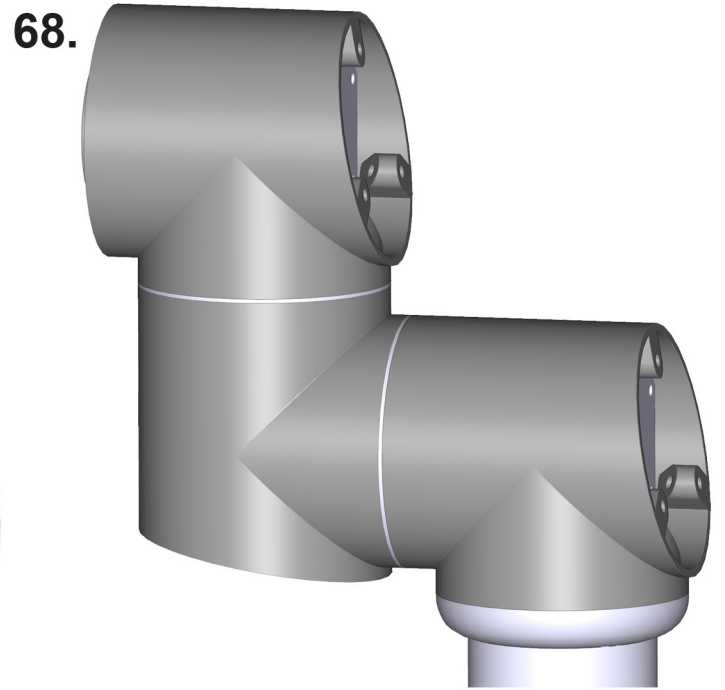
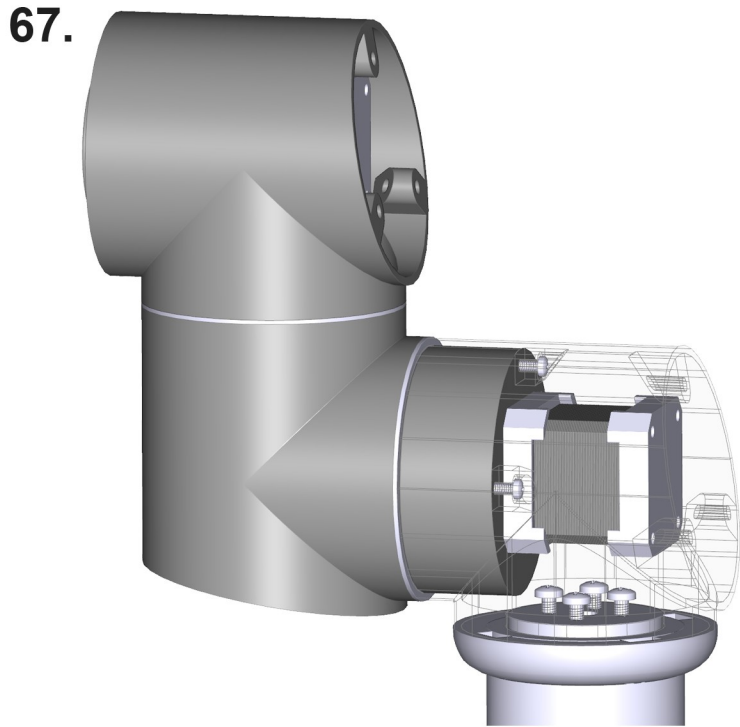
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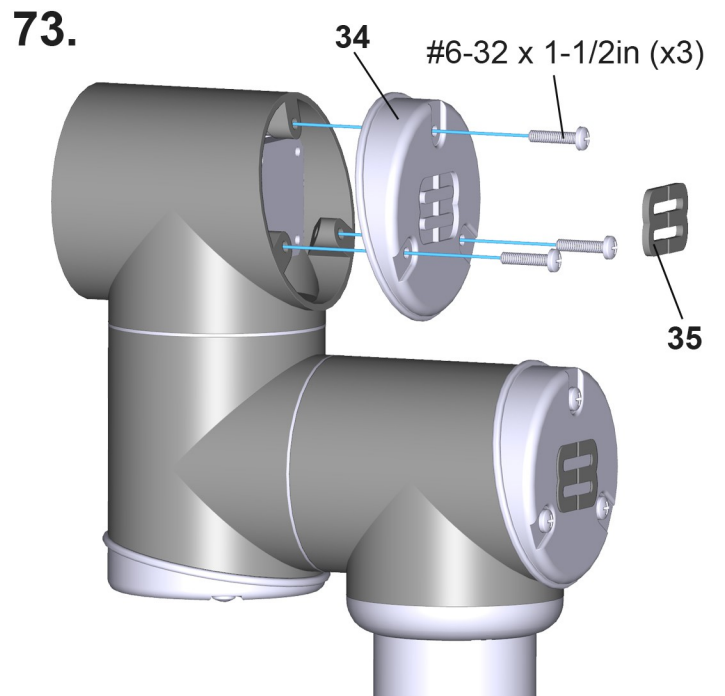
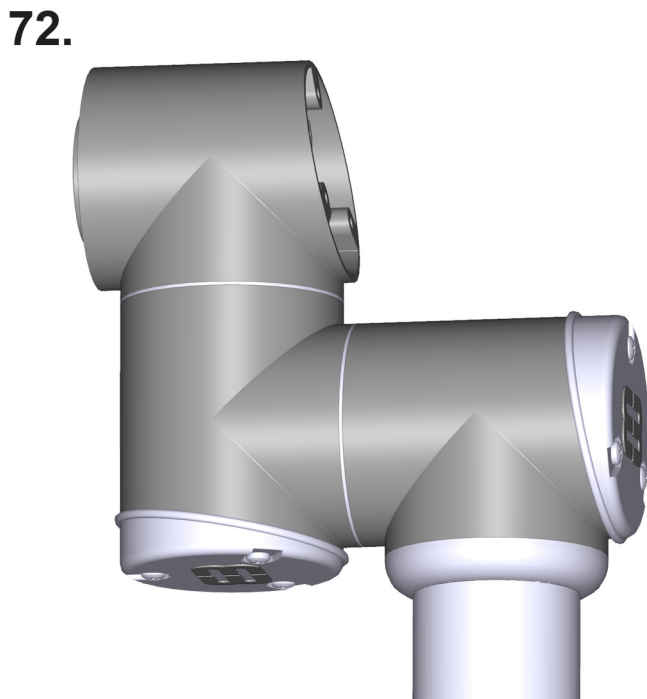
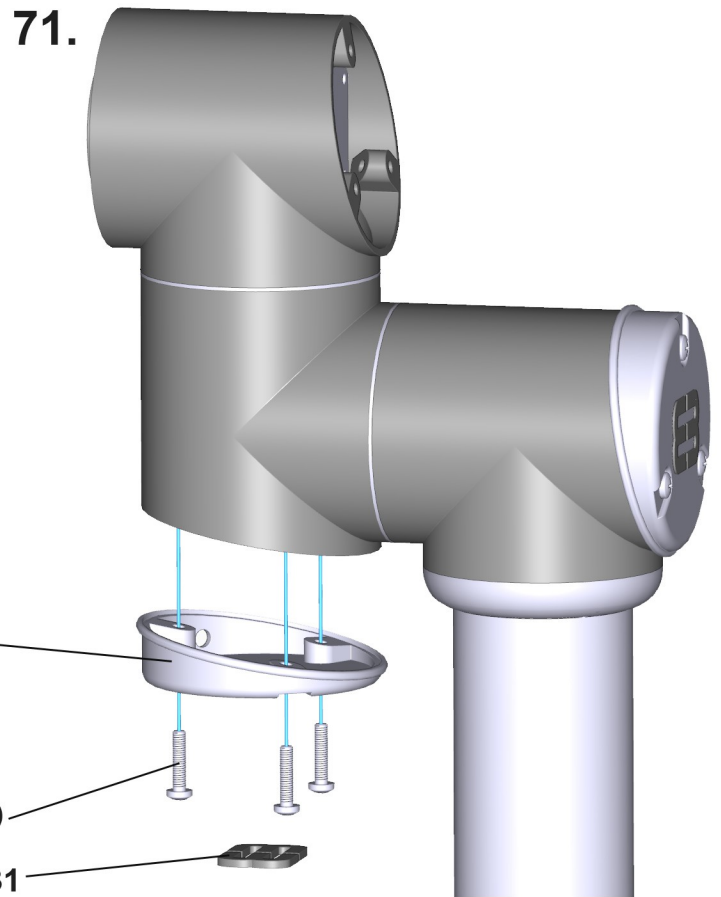
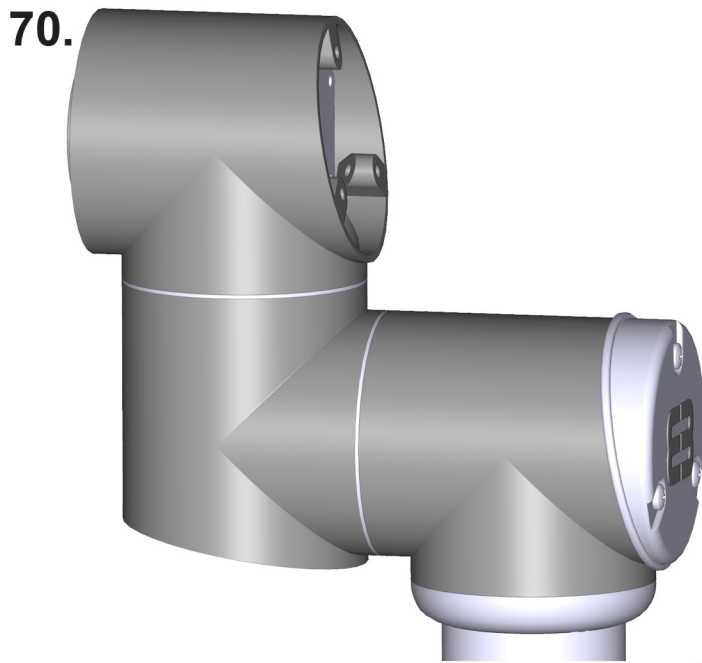
66.



## Step 5



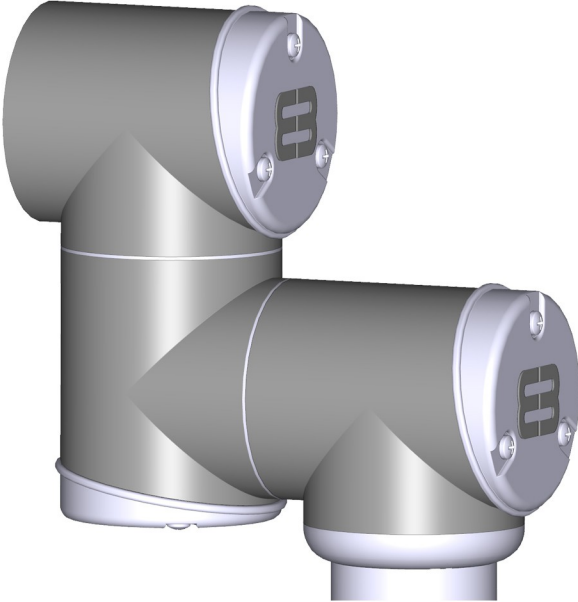
## Step 5





## Step 5

74.



75.

