

**CAD**

10/3/12

# Constrain Bearings

## Step 1

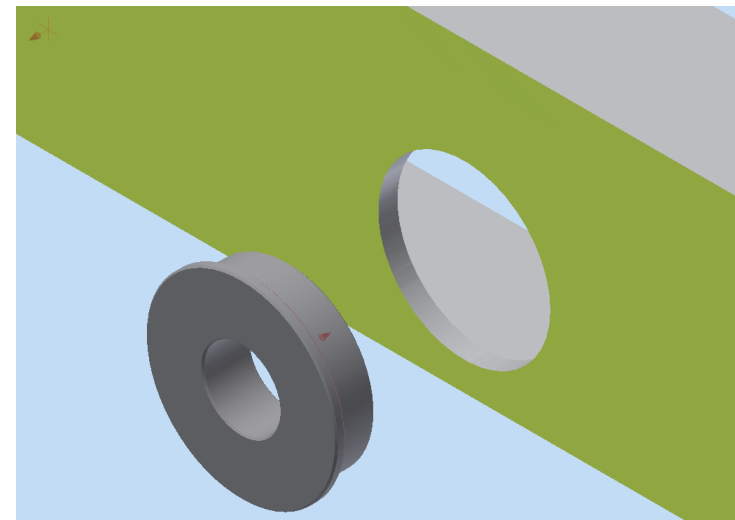
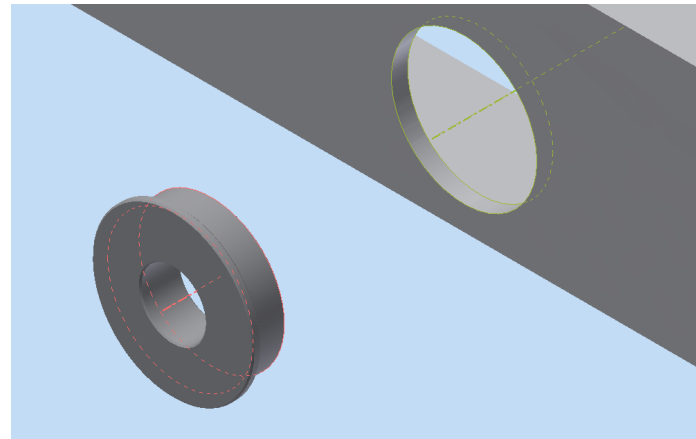
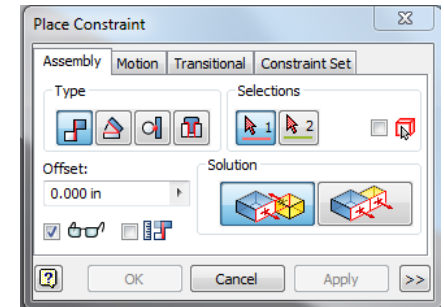
Constrain > Mate

- Center axis of bearing
- Center axis of hole

## Step 2

Constrain > Mate

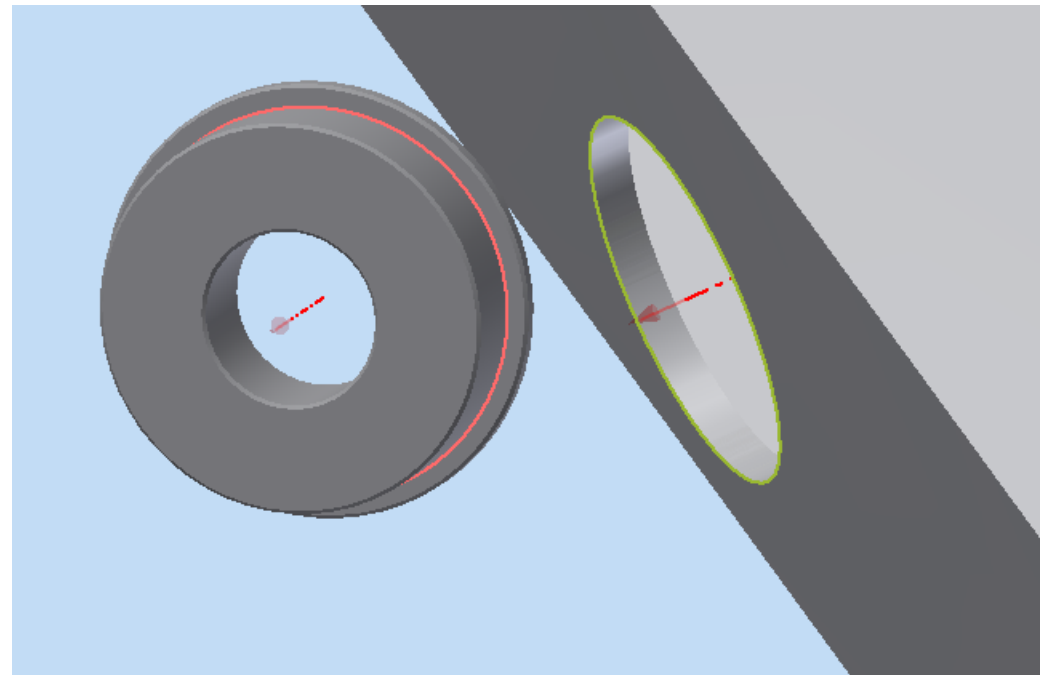
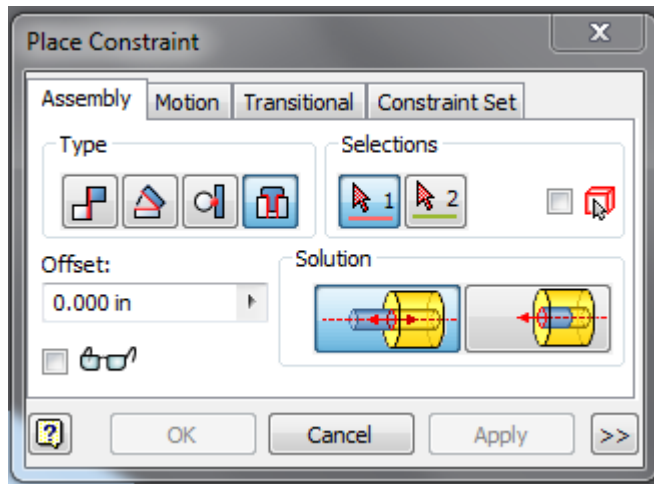
- Face of bearing
- Face of channel



# Insert

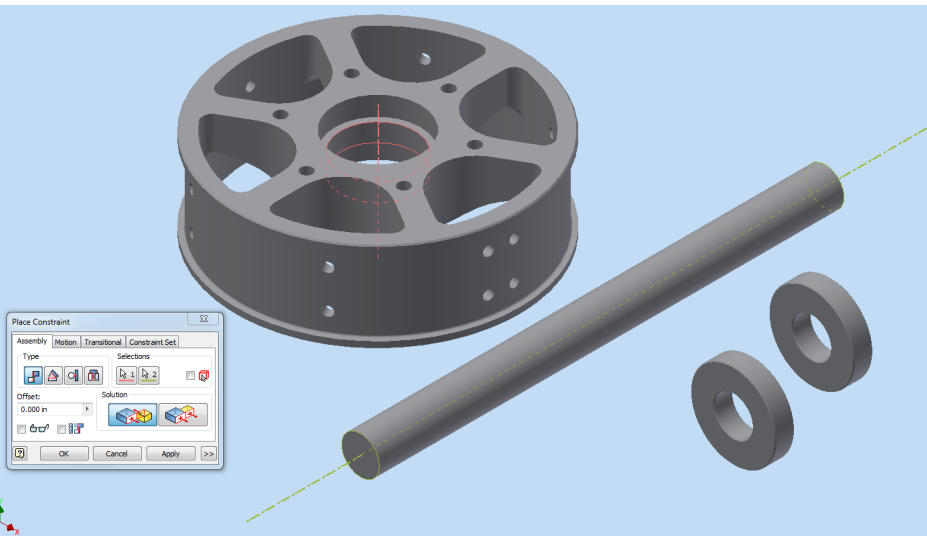
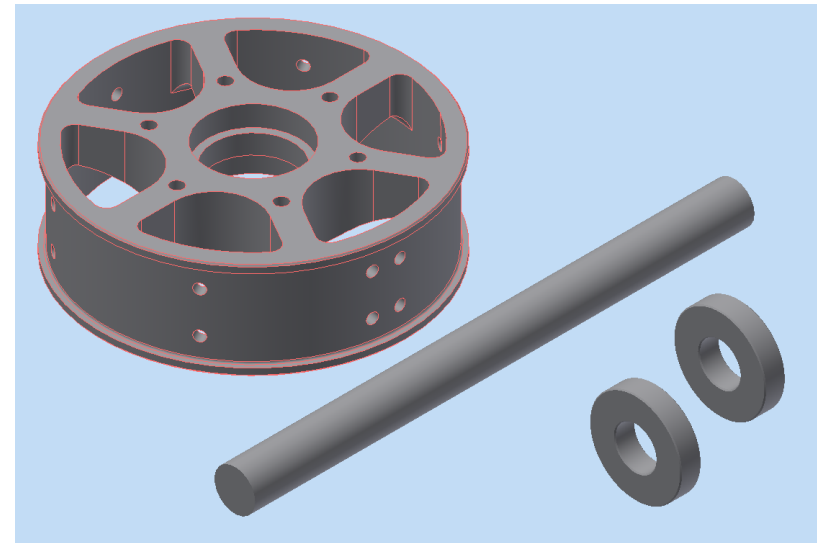
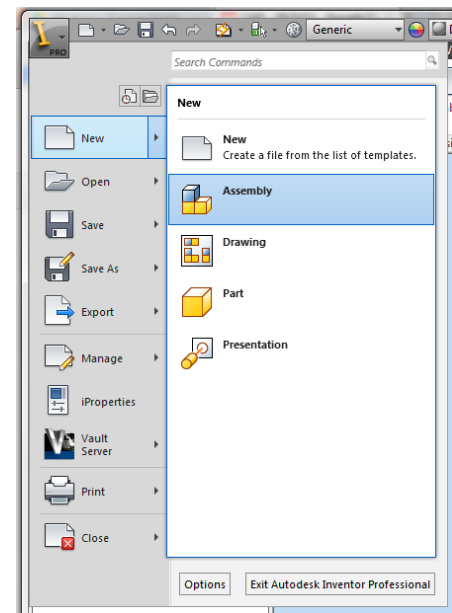
Click Insert:

Select two circles that  
you want to constrain:



# Wheel Assembly 1

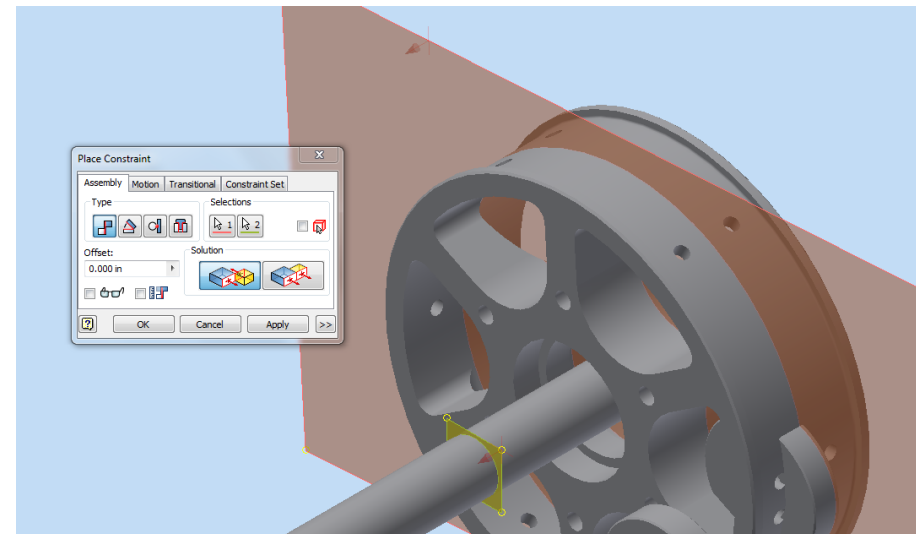
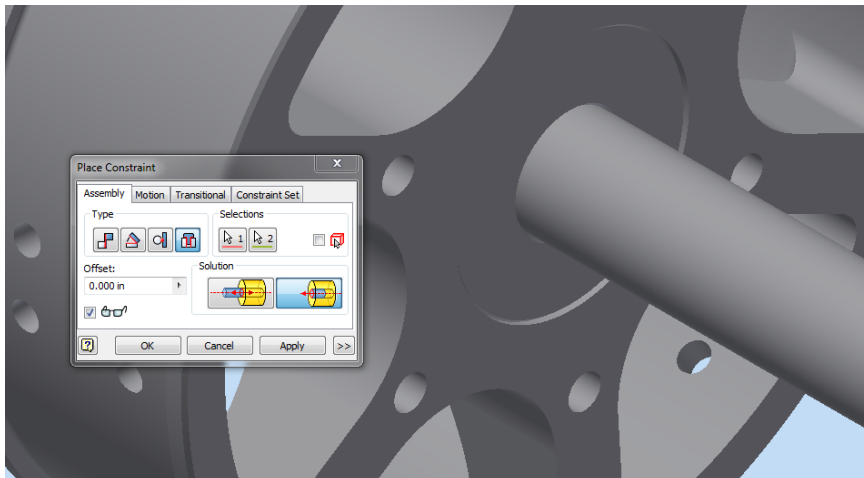
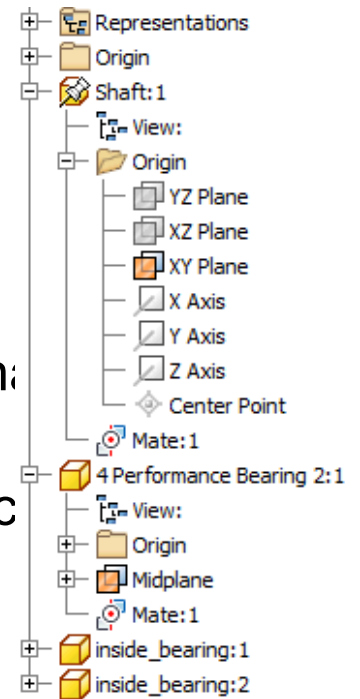
1. Create new Assembly
2. Name it: **MyWheelAssembly**
3. Place: Shaft, 2 Inside Bearings, 4" Performance Wheel
4. Constrain Shaft and Wheel on the same axis



# Wheel Assembly 2

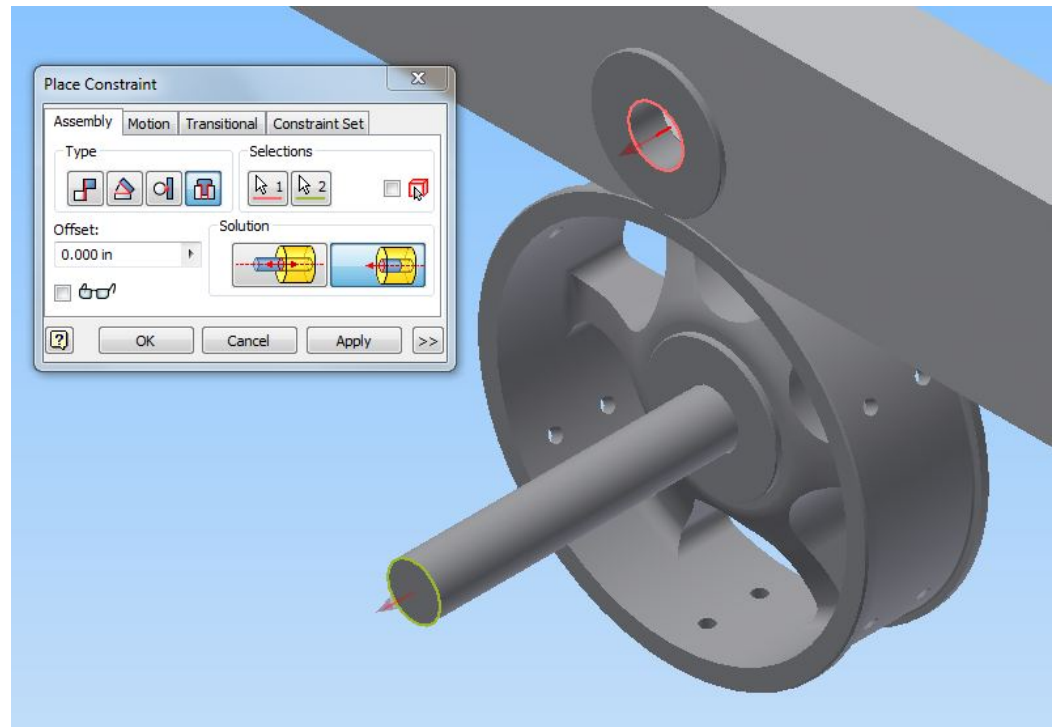
Purpose: We want to know where the wheel goes on the shaft

1. Make wheel and shaft visible
  - a. On the left panel: select shaft > open Origin > right click on XY
  - b. Wheel > Midplane
2. Mate them up!
3. Insert the bearings



# Assemble Wheel Assembly

1. New Assembly > MyRobot
2. Place **MyChassis**
3. Place 4 instances of **MyWheelAssembly**
4. Insert **MyWheelAssembly** on to the chassis
  - a. Insert Constraint
  - b. Select bearing race
  - c. Select end of shaft



**Let's Build Our Robot!**

# Setup

Purpose: Access files

1. Find downloaded file.
2. Right Click > Extract All > Browse to "Robotics" > Training

Purpose: Setting up a new project

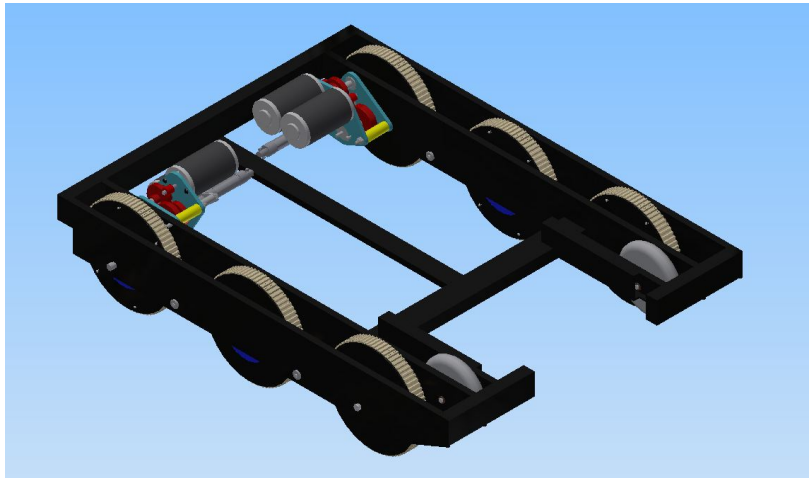
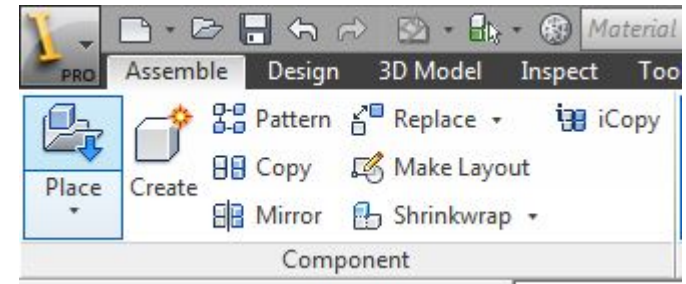
1. Close everything
2. Click Project > Browse > Locate "robotAssemble"
3. Open "Robot" assembly



# Place "Base"

Purpose: Start the assembly process

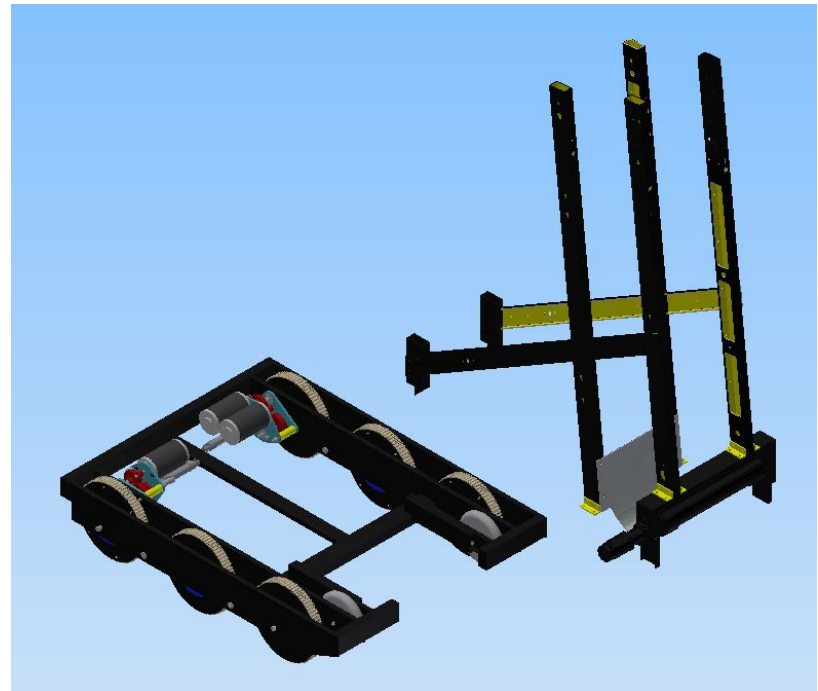
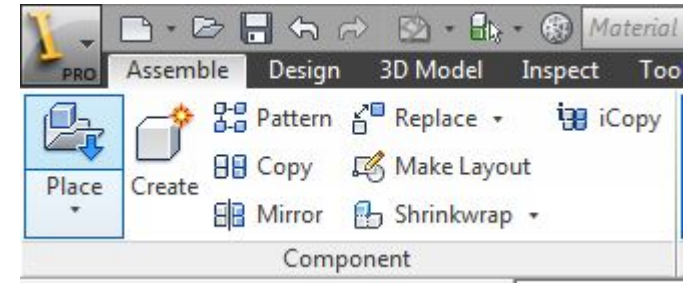
1. Create a new assembly called "robotBuild"
2. Start the "Place" command
3. Find the file "Base"
4. Place "Base"



# Place "Conveyor"

Purpose: Place the Conveyor

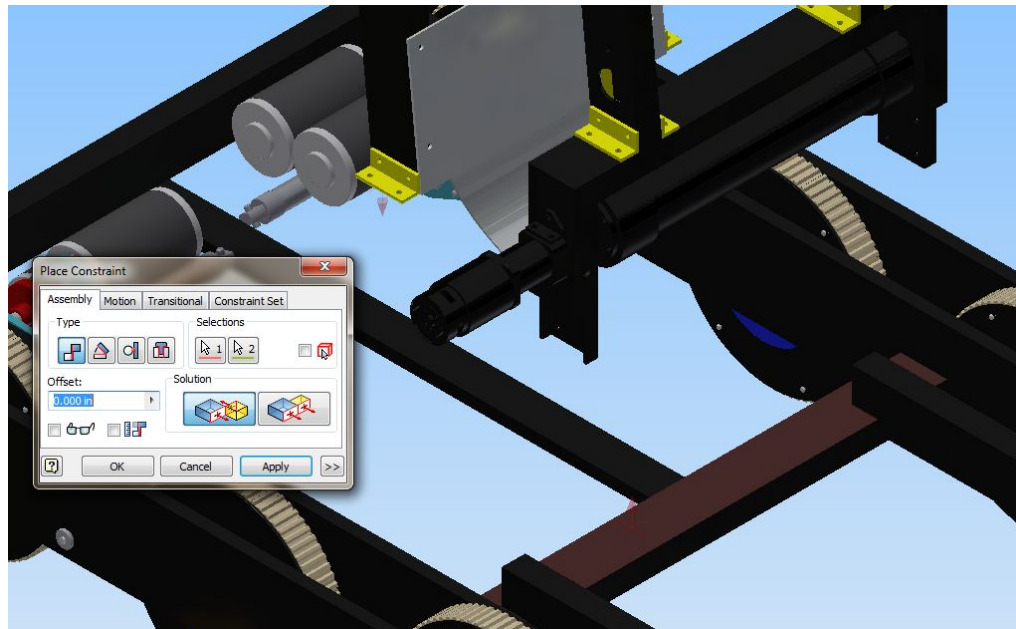
1. Start the "Place" command
2. Find the file "Conveyor"
3. Place "Conveyor"



# Constrain Conveyor

Purpose: Constrain the conveyor to the base.

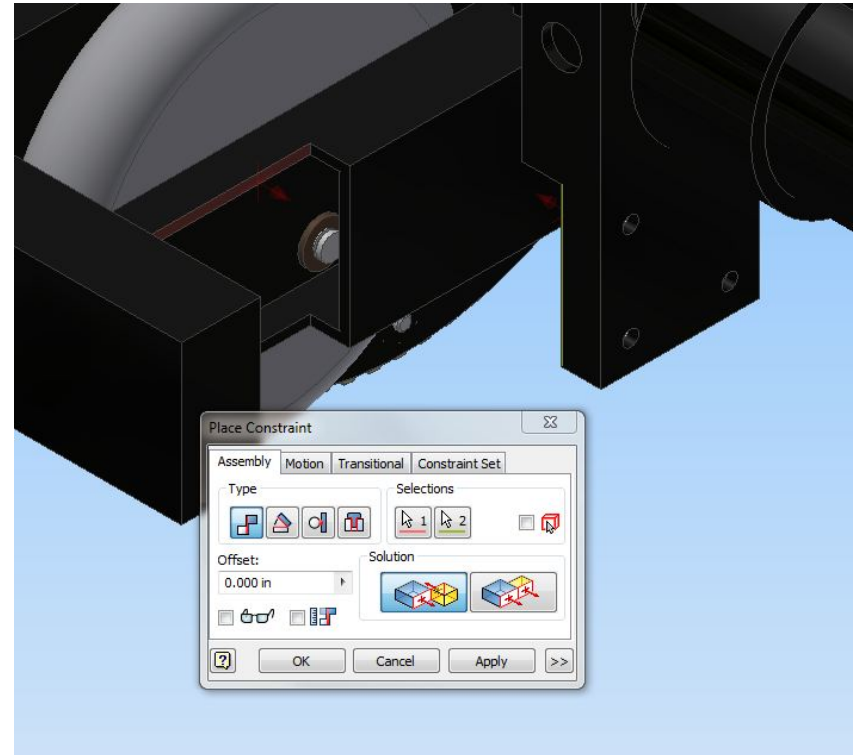
1. Start the "Constrain" command
2. Choose "Mate"
3. Constrain bottom bracket to cross rail on base.



# Constrain Conveyor

Purpose: Constrain the conveyor to the base.

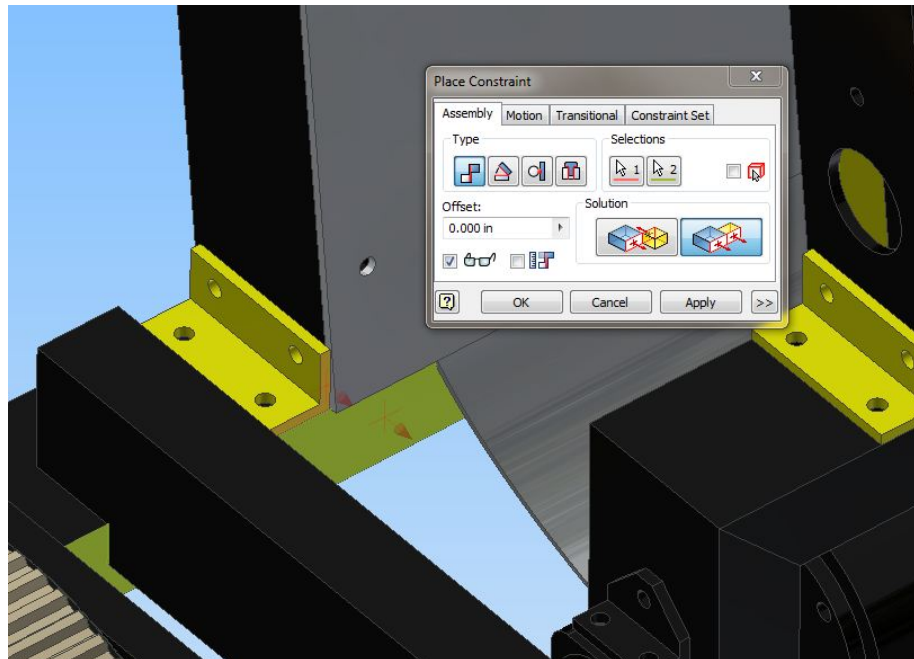
1. Start the "Constrain" command
2. Choose "Mate"
3. Constrain intake gate to the base.



# Constrain Conveyor

Purpose: Constrain the conveyor to the base.

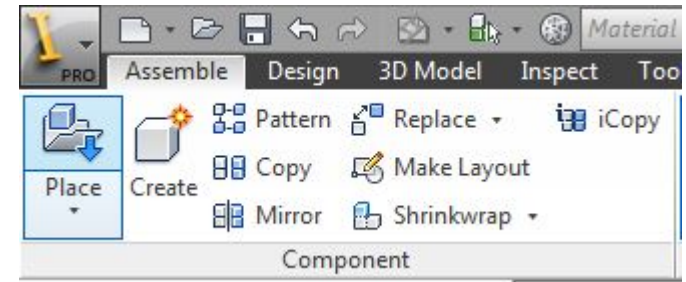
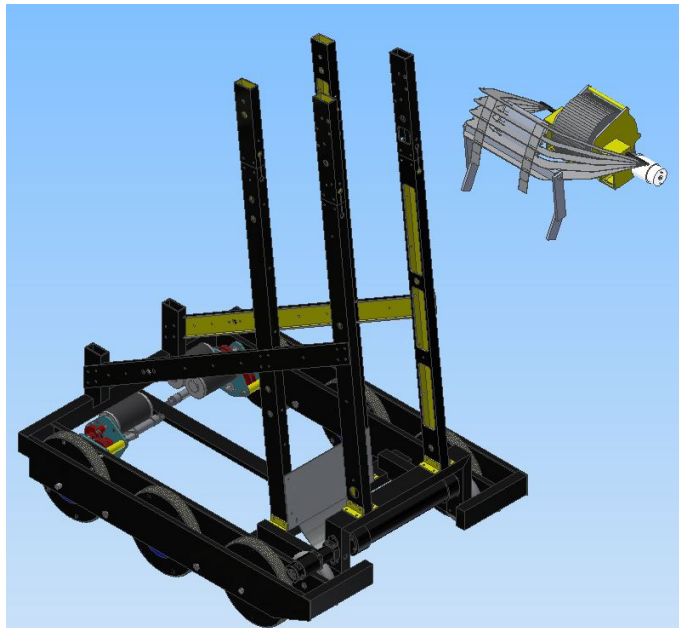
1. Start the "Constrain" command
2. Choose "Flush"
3. Constrain bracket to cross support.



# Place "Shooter"

Purpose: Place the shooter

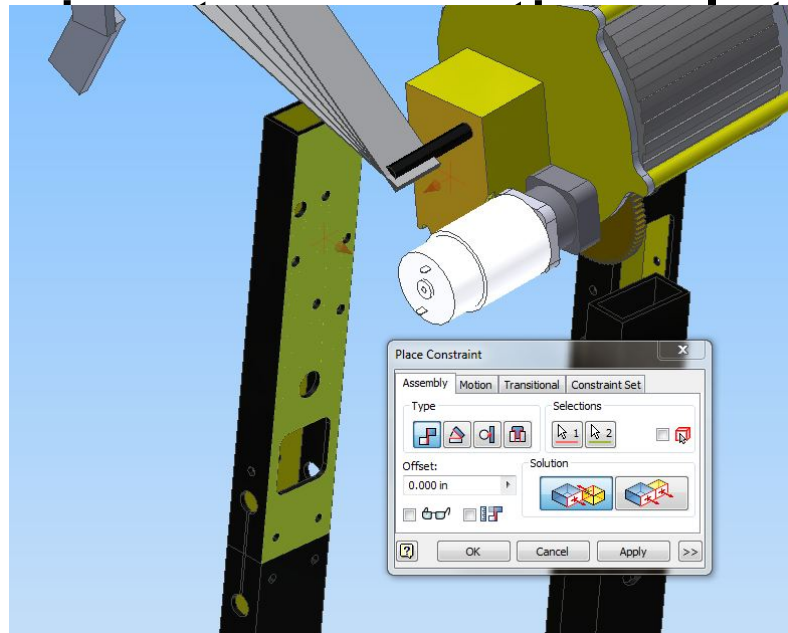
1. Start the "Place" command
2. Find the file "Shooter"
3. Place "Shooter"



# Constrain Shooter

Purpose: Constrain the conveyor to the shooter.

1. Start the "Constrain" command
2. Choose "Mate"
3. Constrain conveyor to

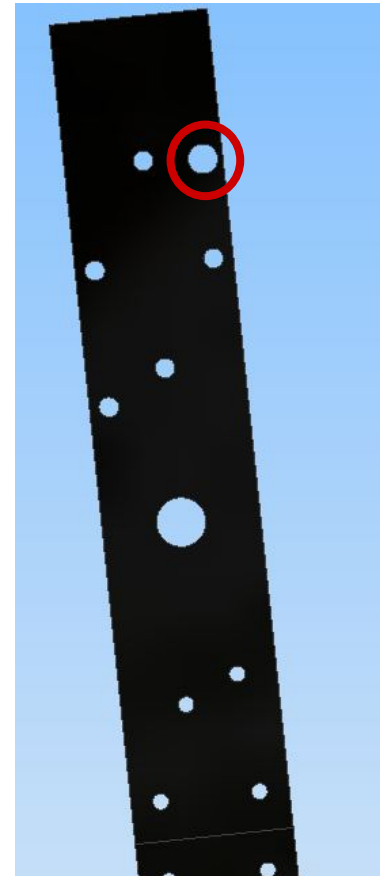
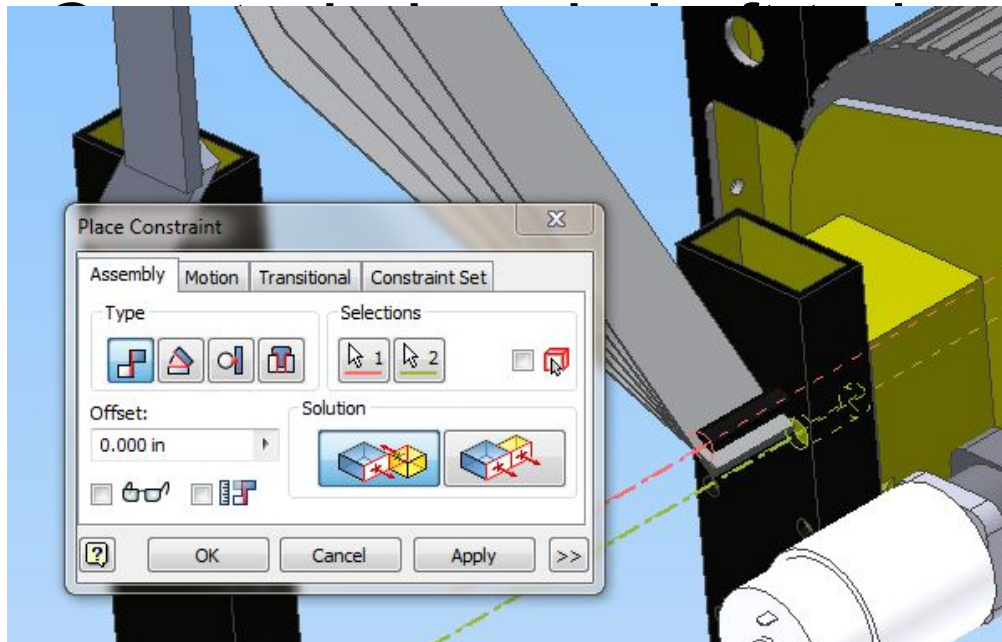




# Constrain Shooter

Purpose: Constrain the conveyor to the shooter.

1. Start the "Constrain" command
2. Choose "Mate"
3. Click on the hole.

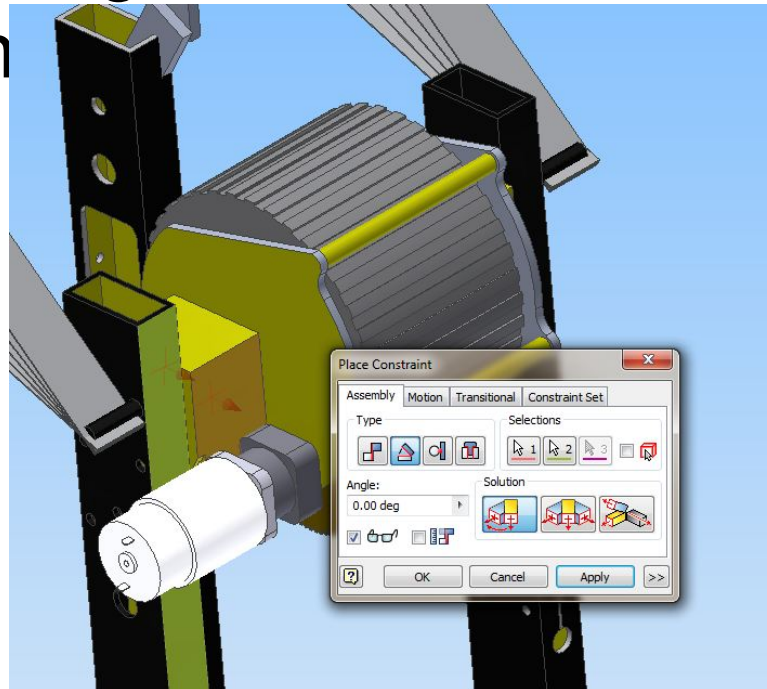




# Constrain Shooter

Purpose: Constrain the conveyor to the shooter.

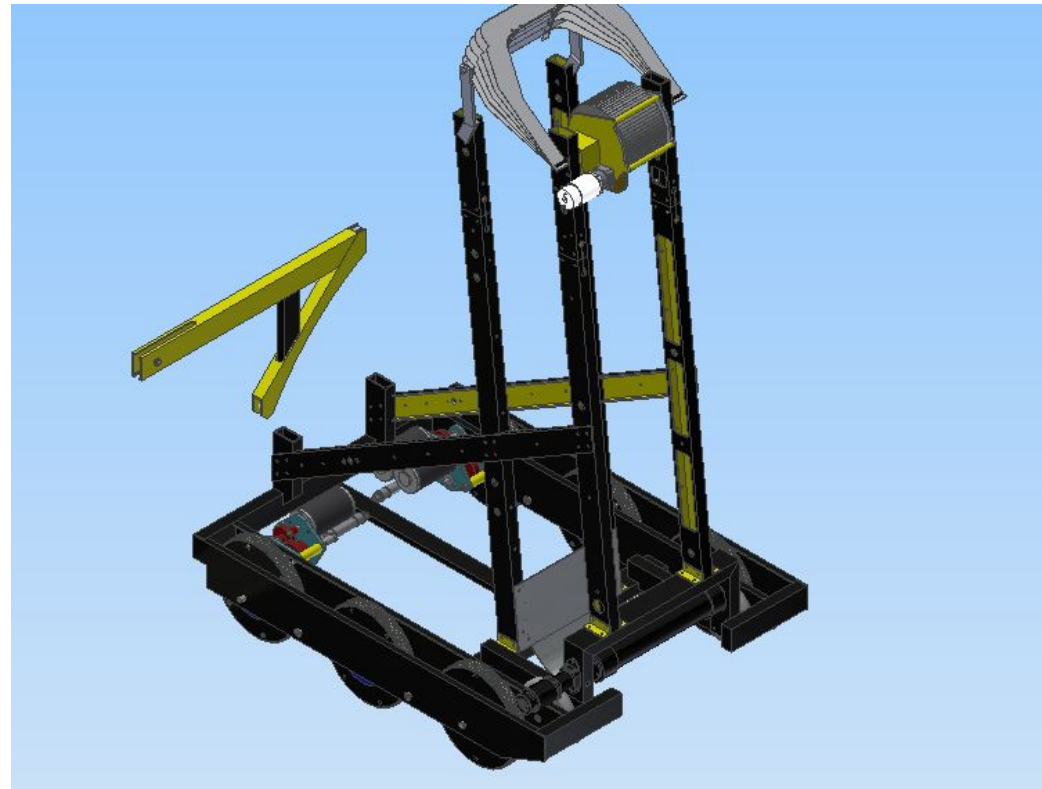
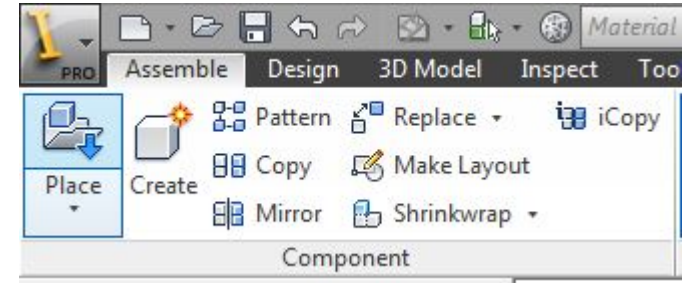
1. Start the "Constrain" command
2. Choose "Angle" > 2 faces
3. Constrain conveyor at 0 deg.



# Place "Tail"

Purpose: Place the tail

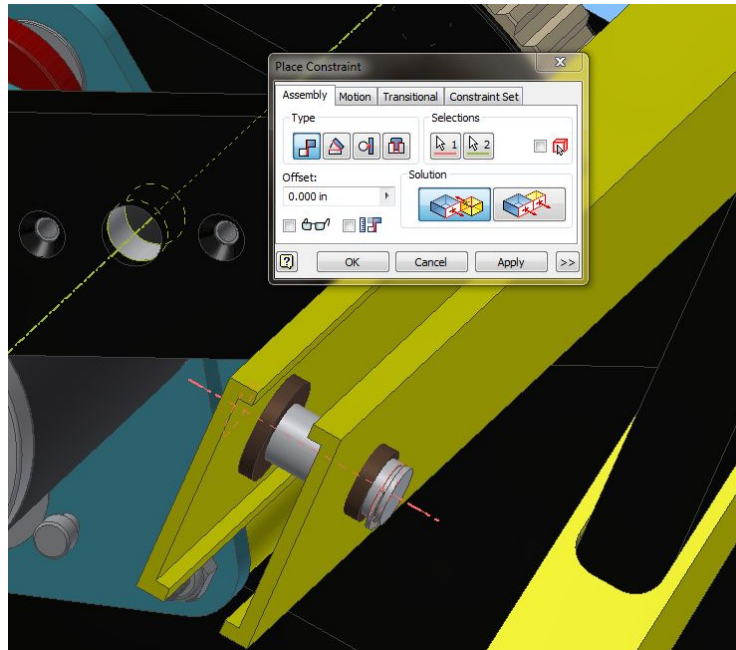
1. Start the "Place" command
2. Find the file "Tail"
3. Place "Tail"



# Constrain Tail

Purpose: Constrain the tail to the gusset.

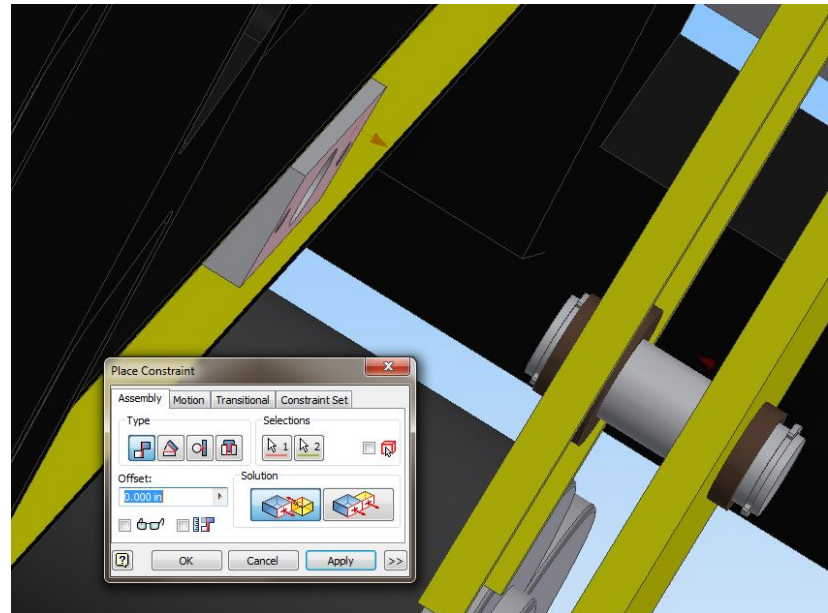
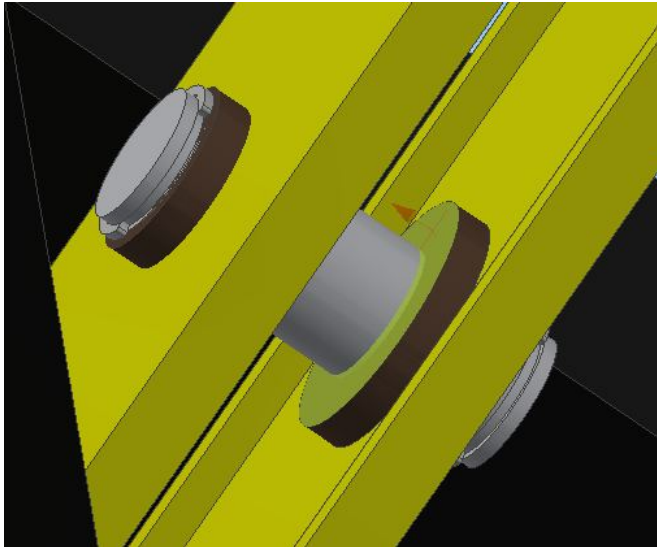
1. Start the "Constrain" command
2. Choose "Mate"
3. Mate tail's shaft to block in gusset.



# Constrain Tail

Purpose: Constrain the tail to the gusset.

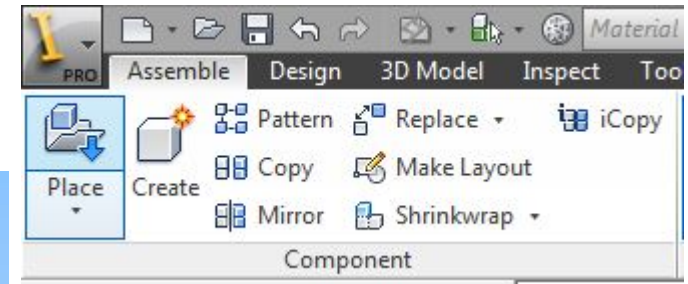
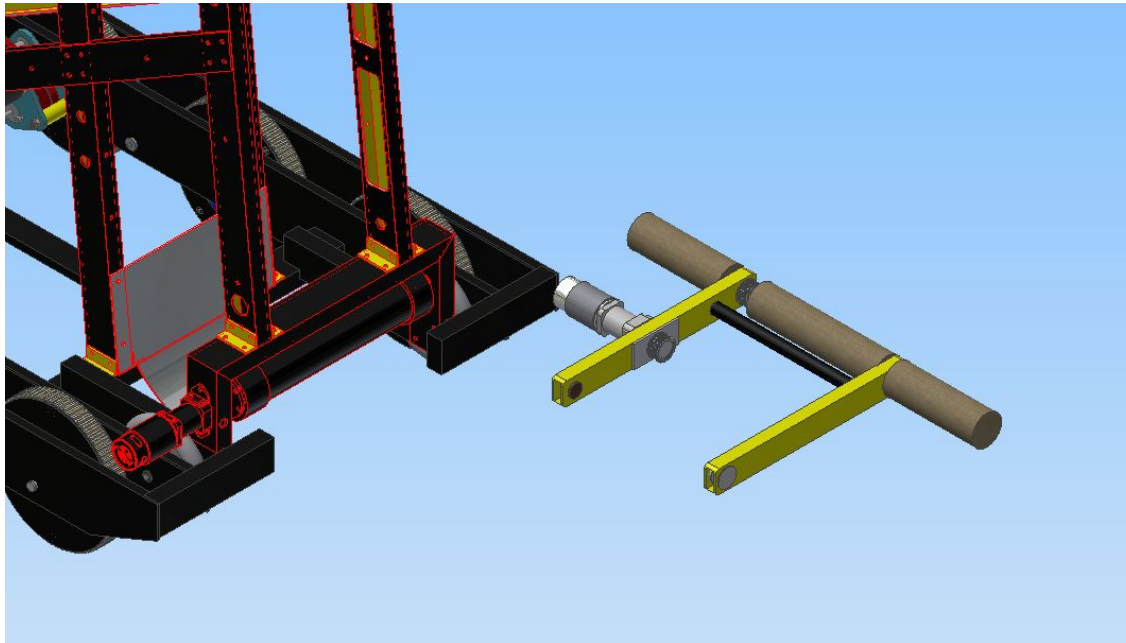
1. Start the "Constrain" command
2. Choose "Mate"
3. Mate inside of bushing to gusset's block.



# Place "Shooter"

Purpose: Place the collector.

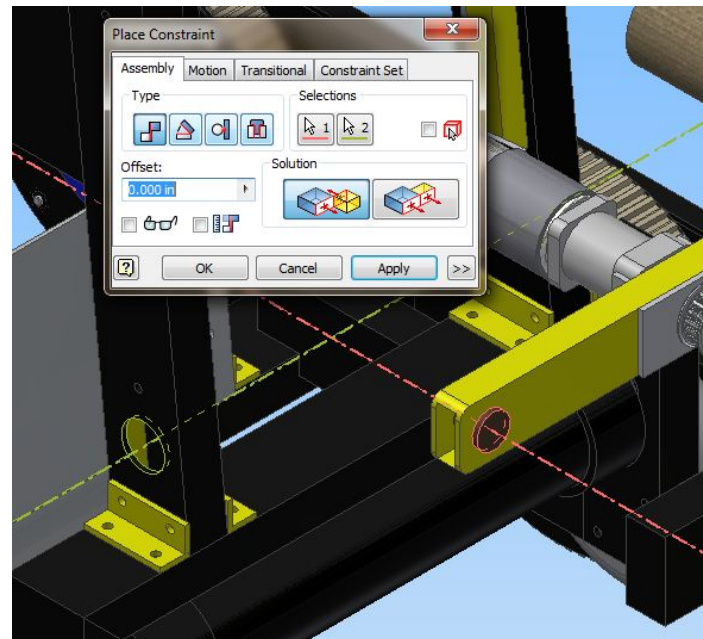
1. Start the "Place" command
2. Find the file "Collector"
3. Place "Collector"



# Constrain Collector

Purpose: Constrain collector to the conveyor.

1. Start the "Constrain" command
2. Choose "Mate"
3. Constrain pivot of collector to conveyor.

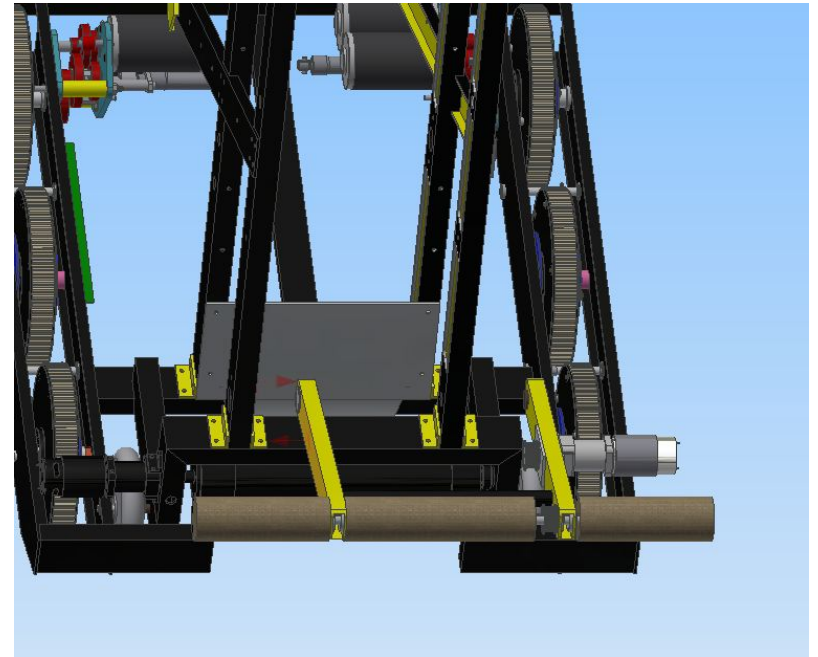
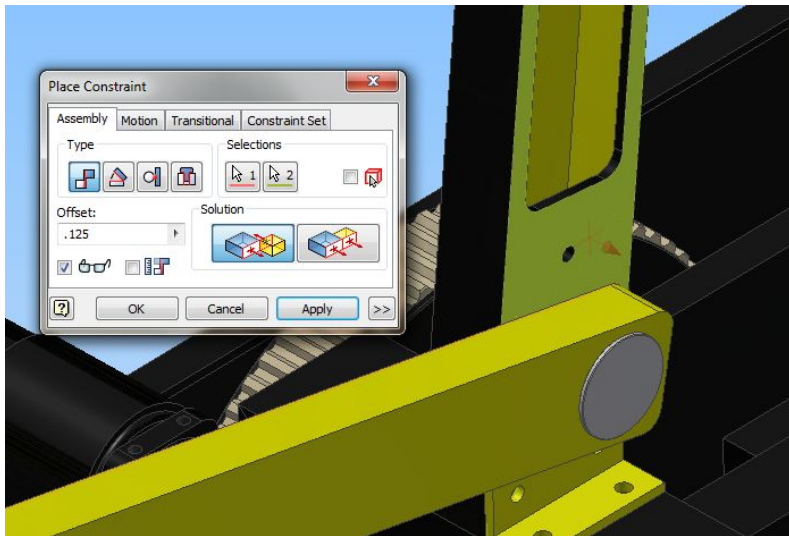




# Constrain Collector

Purpose: Constrain collector to the conveyor.

1. Start the "Constrain" command
2. Choose "Mate"
3. Constrain side of collector to conveyor (0.125").



# We're DONE!

