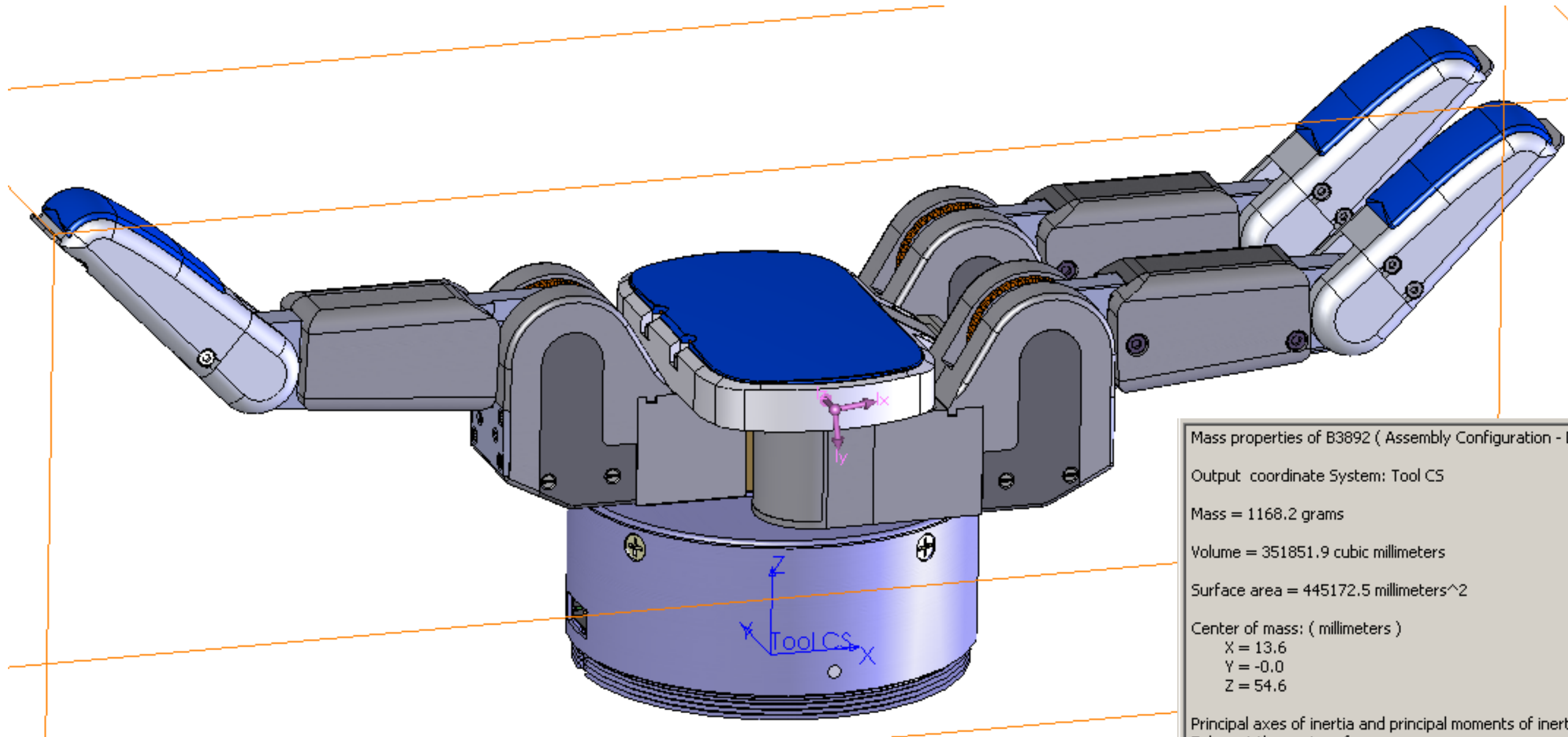# BarrettHand 280 Mass Parameters

In all cases the Tool Coordinate System is located at the
center of the round base cup on the bottom mounting surface.

Spread open.
Fingers open.

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
   X = 13.6
   Y = -0.0
   Z = 54.6

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
   I_x = (1.0, -0.0, 0.1) P_x = 1270192.5
   I_y = (0.1, -0.0, -1.0) P_y = 4539031.7
   I_z = (0.0, 1.0, -0.0) P_z = 4745351.1

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
   L_{xx} = 1307280.4 L_{xy} = -8724.8 L_{xz} = 346103.3
   L_{yx} = -8724.8 L_{yy} = 4745328.9 L_{yz} = -791.7
   L_{zx} = 346103.3 L_{zy} = -791.7 L_{zz} = 4501966.0

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
   I_{xx} = 4788310.9 I_{xy} = -9369.3 I_{xz} = 1212773.6
   I_{yx} = -9369.3 I_{yy} = 8442132.0 I_{yz} = -3380.5
   I_{zx} = 1212773.6 I_{zy} = -3380.5 I_{zz} = 4717742.5
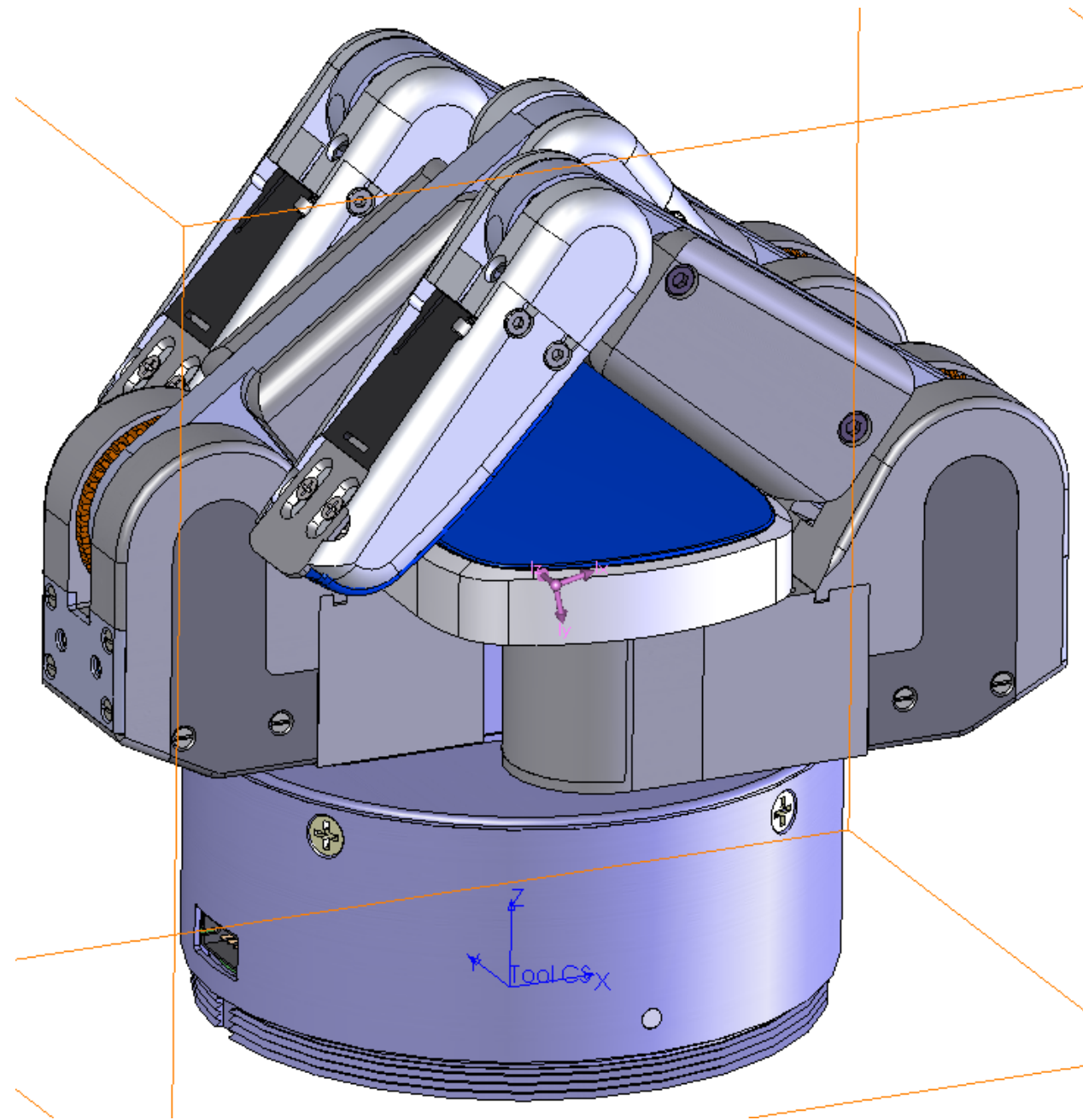
BarrettHand 280 Mass Parameters
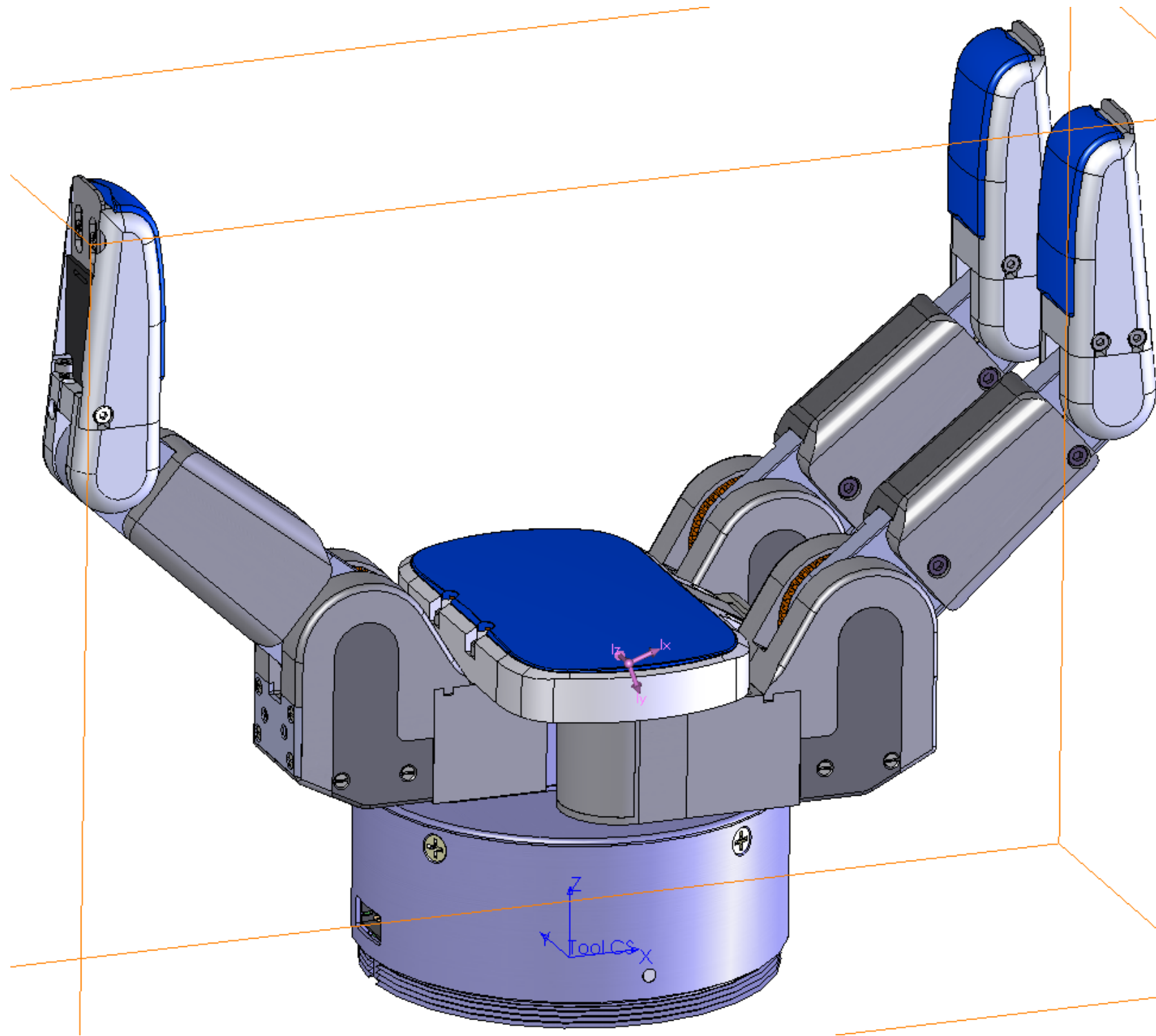
Spread open.
Fingers partially closed.

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
  X = 12.1
  Y = -0.0
  Z = 61.8

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
  Ix = (0.9, -0.0, 0.3)   Px = 2064828.2
  Iy = (0.3, -0.0, -0.9)   Py = 3482573.2
  Iz = (0.0, 1.0, -0.0)   Pz = 4483539.6

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.

Lxx = 2226138.7	Lxy = -7884.9	Lxz = 450161.3
Lyx = -7884.9	Lyy = 4483511.8	Lyz = -1029.0
Lzx = 450161.3	Lzy = -1029.0	Lzz = 3321290.6

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.

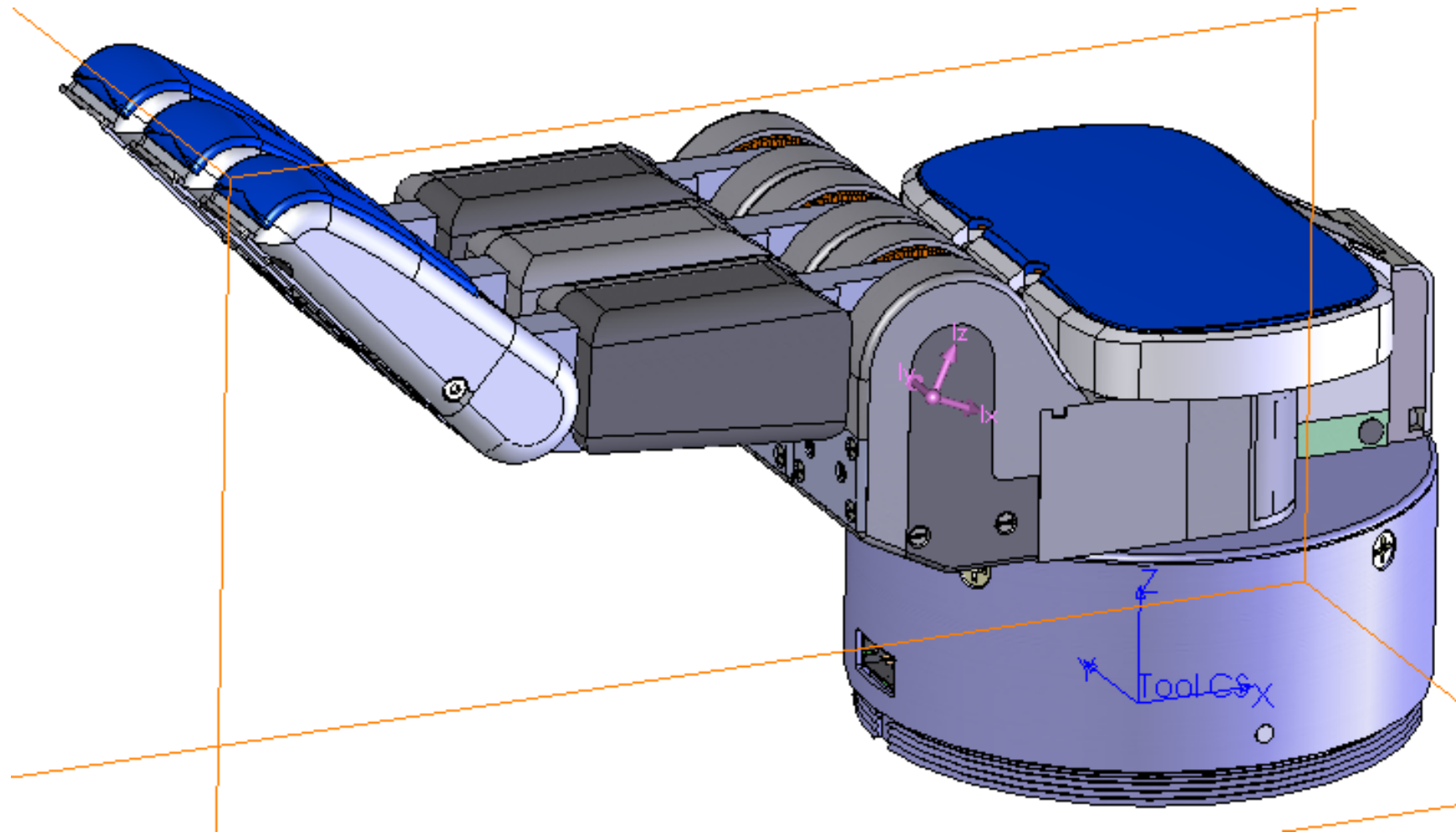|		
Ixx = 6692178.3	Ixy = -8458.2	Ixz = 1323385.3
Iyx = -8458.2	Iyy = 9120287.0	Iyz = -3961.2
Izx = 1323385.3	Izy = -3961.2	Izz = 3492030.0

BarrettHand 280 Mass Parameters

Spread open.
Fingers fully closed.

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
   X = 6.0
   Y = -0.0
   Z = 57.0

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
   Ix = (1.0, -0.0, 0.2)   Px = 1517577.4
   Iy = (0.2, 0.0, -1.0)   Py = 1619228.3
   Iz = (0.0, 1.0, 0.0)   Pz = 2072940.6

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
   Lxx = 1521620.6   Lxy = -3668.4   Lxz = 19801.8
   Lyx = -3668.4   Lyy = 2072914.4   Lyz = -1028.8
   Lzx = 19801.8   Lzy = -1028.8   Lzz = 1615211.3

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
   Ixx = 5315983.0   Ixy = -3951.5   Ixz = 417320.7
   Iyx = -3951.5   Iyy = 5908921.2   Iyz = -3731.5
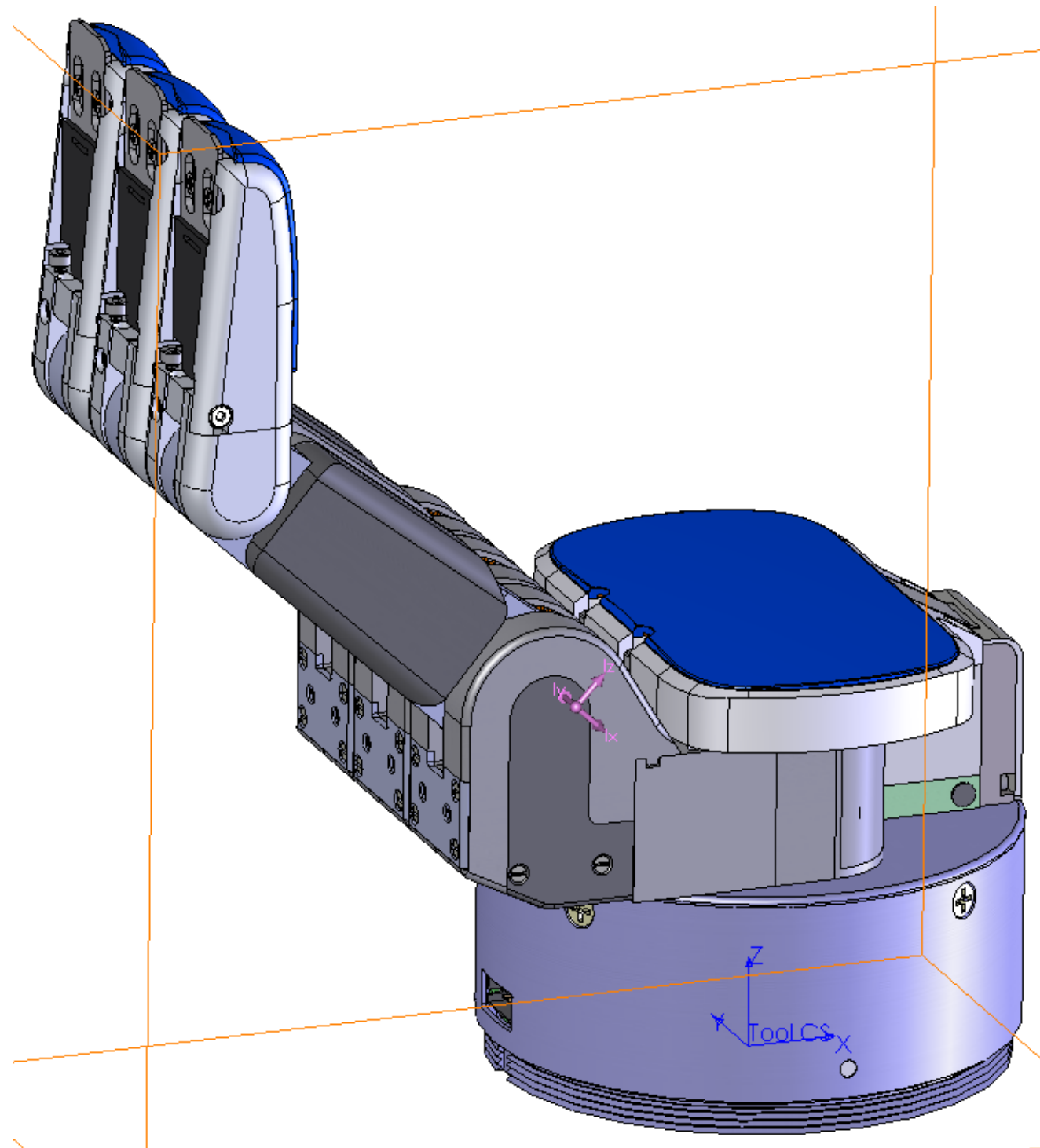   Izx = 417320.7   Izy = -3731.5   Izz = 1656859.5

BarrettHand 280 Mass Parameters

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
    X = -35.2
    Y = 0.1
    Z = 54.6

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
    Ix = (0.9, -0.0, -0.4)   Px = 865561.6
    Iy = (0.0, 1.0, 0.0)   Py = 3510674.4
    Iz = (0.4, -0.0, 0.9)   Pz = 3708995.6

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
    Lxx = 1307259.4   Lxy = -3602.5   Lxz = -1029959.9
    Lyx = -3602.5   Lyy = 3510678.1   Lyz = 3191.3
    Lzx = -1029959.9   Lzy = 3191.3   Lzz = 3267294.2

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
    Ixx = 4788310.9   Ixy = -9369.3   Ixz = -3276951.7
    Iyx = -9369.3   Iyy = 8442132.0   Iyz = 12125.2
    Izx = -3276951.7   Izy = 12125.2   Izz = 4717742.5
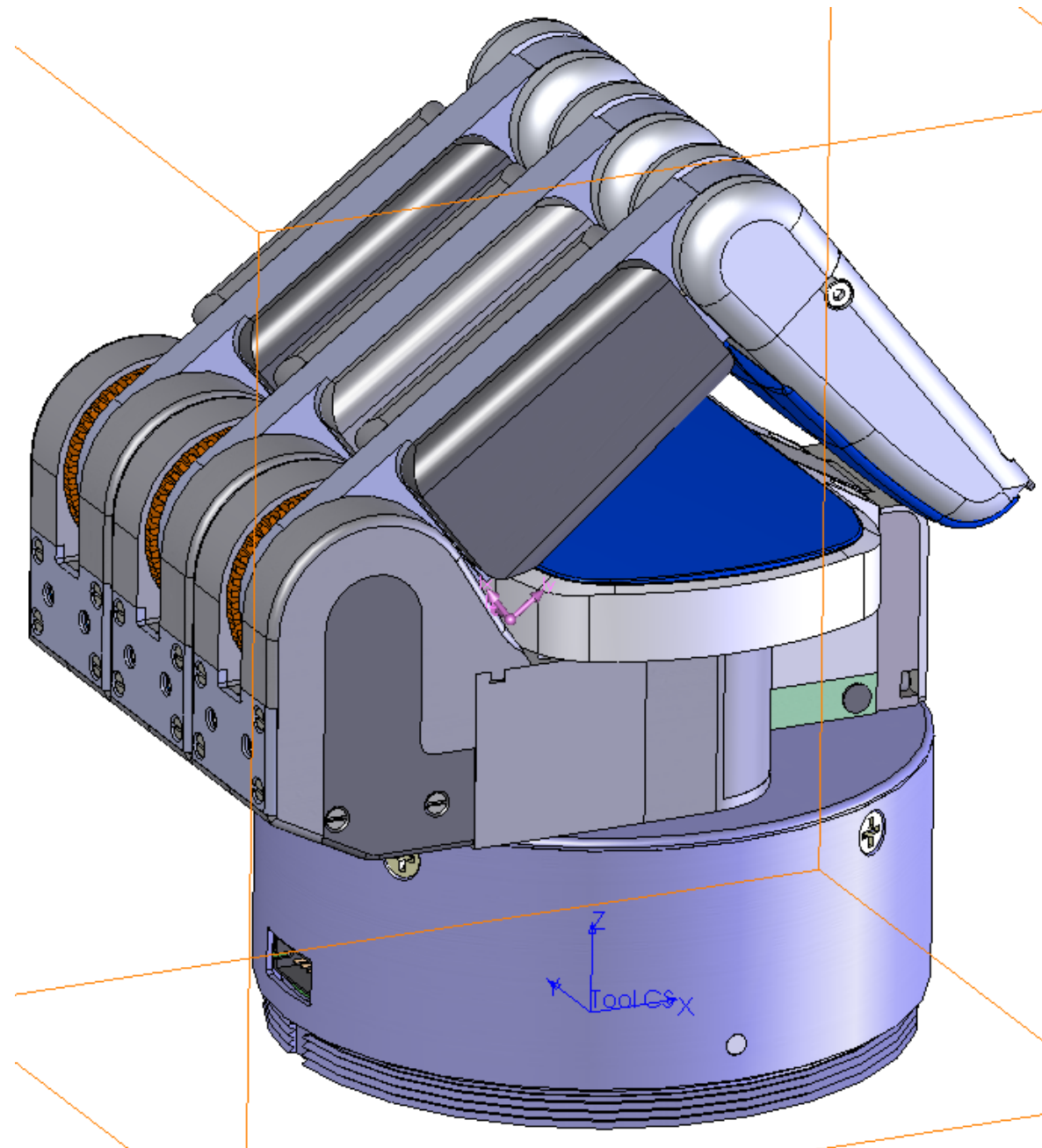
Spread closed.
Fingers open.

BarrettHand 280 Mass Parameters

Spread closed.
Fingers partially closed.

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
    X = -30.7
    Y = 0.1
    Z = 61.8

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
    Ix = (0.7, -0.0, -0.7)   Px = 916032.5
    Iy = (0.0, 1.0, 0.0)   Py = 3550914.2
    Iz = (0.7, -0.0, 0.7)   Pz = 3698739.6

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
    Lxx = 2226117.7   Lxy = -3428.5   Lxz = -1388972.5
    Lyx = -3428.5   Lyy = 3550905.4   Lyz = 3748.2
    Lzx = -1388972.5   Lzy = 3748.2   Lzz = 2388663.2

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
    Ixx = 6692178.3   Ixy = -8458.2   Ixz = -3608786.8
    Iyx = -8458.2   Iyy = 9120287.0   Iyz = 13867.4
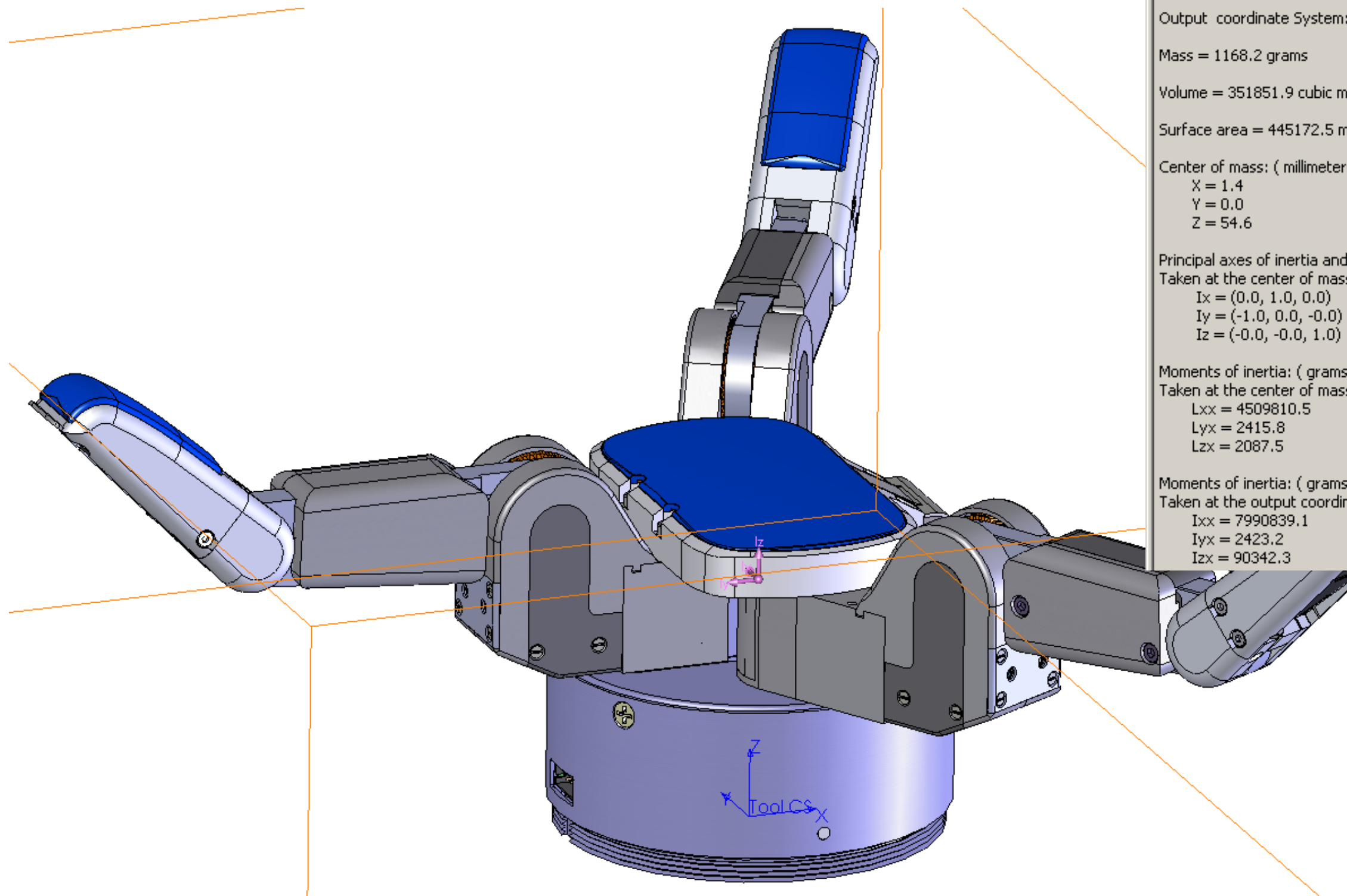   Izx = -3608786.8   Izy = 13867.4   Izz = 3492030.0

BarrettHand 280 Mass Parameters

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
$X = -12.4$
$Y = 0.1$
$Z = 57.0$

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
$I_x = (-0.6, 0.0, 0.8)$ $P_x = 1429618.4$
$I_y = (0.8, 0.0, 0.6)$ $P_y = 1569840.8$
$I_z = (0.0, 1.0, -0.0)$ $P_z = 1935657.7$

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
$L_{xx} = 1521599.6$ $L_{xy} = -1926.0$ $L_{xz} = -66601.0$
$L_{yx} = -1926.0$ $L_{yy} = 1935620.7$ $L_{yz} = 3851.0$
$L_{zx} = -66601.0$ $L_{zy} = 3851.0$ $L_{zz} = 1477896.6$

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
$I_{xx} = 5315983.0$ $I_{xy} = -3951.5$ $I_{xz} = -890593.1$
$I_{yx} = -3951.5$ $I_{yy} = 5908921.2$ $I_{yz} = 13178.3$
$I_{zx} = -890593.1$ $I_{zy} = 13178.3$ $I_{zz} = 1656859.5$

Spread closed.
Fingers fully closed.

BarrettHand 280 Mass Parameters

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
    X = 1.4
    Y = 0.0
    Z = 54.6

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
    Ix = (0.0, 1.0, 0.0)   Px = 2991299.0
    Iy = (-1.0, 0.0, -0.0)   Py = 4509811.3
    Iz = (-0.0, -0.0, 1.0)   Pz = 5950473.1

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
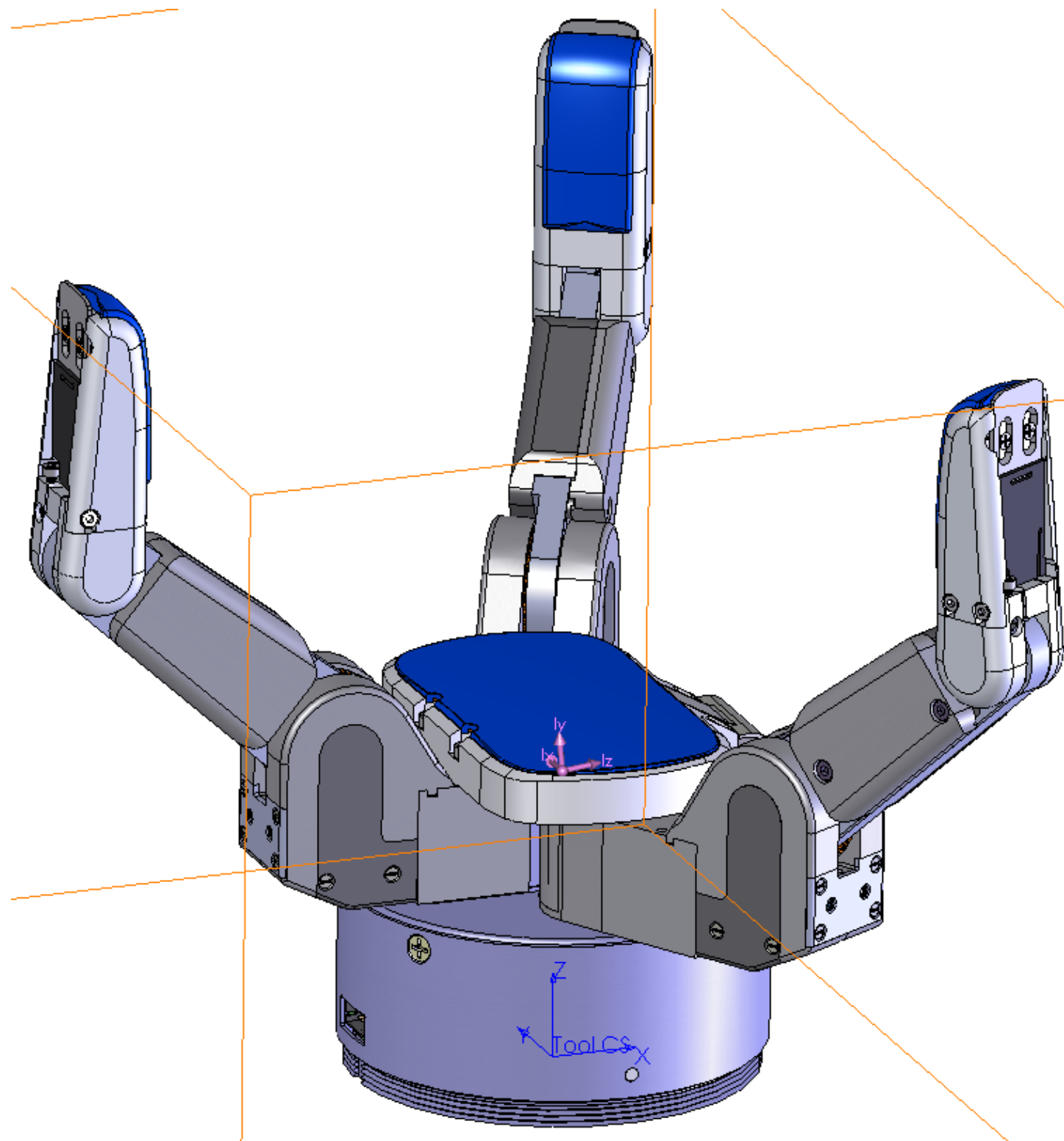   Lxx = 4509810.5   Lxy = 2415.8   Lxz = 2087.5
    Lyx = 2415.8   Lyy = 2991302.9   Lyz = 204.0
    Lzx = 2087.5   Lzy = 204.0   Lzz = 5950470.1

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
    Ixx = 7990839.1   Ixy = 2423.2   Ixz = 90342.3
    Iyx = 2423.2   Iyy = 6474568.9   Iyz = 496.0
    Izx = 90342.3   Izy = 496.0   Izz = 5952707.6

Spread at 120°.
Fingers open.

BarrettHand 280 Mass Parameters

Mass properties of B3892 (Assembly Configuration - Default)

Output coordinate System: Tool CS

Mass = 1168.2 grams

Volume = 351851.9 cubic millimeters

Surface area = 445172.5 millimeters^2

Center of mass: (millimeters)
    X = 1.4
    Y = 0.0
    Z = 61.8

Principal axes of inertia and principal moments of inertia: (grams * square millimeters)
Taken at the center of mass.
    Ix = (0.0, 1.0, 0.0)   Px = 3297300.6
    Iy = (-0.1, 0.0, 1.0)   Py = 4571868.2
    Iz = (1.0, -0.0, 0.1)   Pz = 4664938.9

Moments of inertia: (grams * square millimeters)
Taken at the center of mass and aligned with the output coordinate system.
    Lxx = 4663928.9   Lxy = 2415.8   Lxz = -9622.2
    Lyx = 2415.8   Lyy = 3297304.9   Lyz = 165.3
    Lzx = -9622.2   Lzy = 165.3   Lzz = 4572873.9

Moments of inertia: (grams * millimeters)
Taken at the output coordinate system.
    Ixx = 9129966.6   Ixy = 2423.2   Ixz = 90342.3
    Iyx = 2423.2   Iyy = 7765580.2   Iyz = 496.0
    Izx = 90342.3   Izy = 496.0   Izz = 4575111.5

Spread at 120°.
Fingers partially closed.