Left Hand   Right Hand

DH Parameter

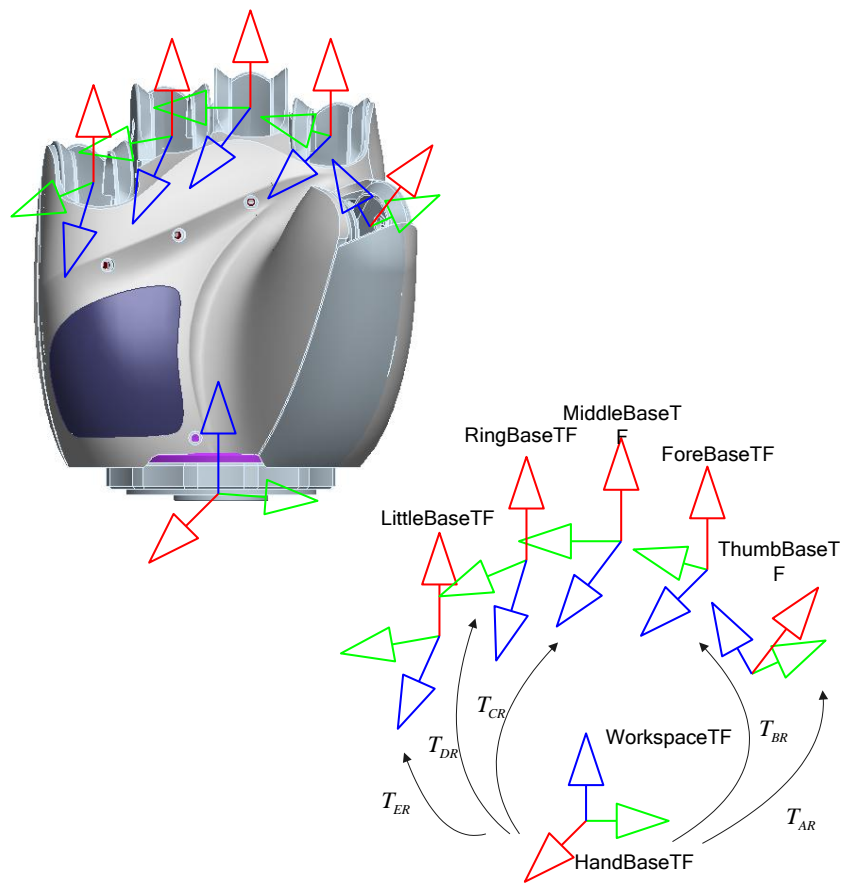| Joint	D[mm]	φ	a [mm]	α
0	0	0	0	0
1	0	0	0	$\pi/2$
2	0	0	55	0
3	0	$-\pi/2$	25	0
4	25	π	0	$-\pi/2$

Joint Limits

Joint	Lower Limit	Upper Limit
0	$-15°$	$15°$
1	$5°$	$85°$
2	$5°$	$65°$
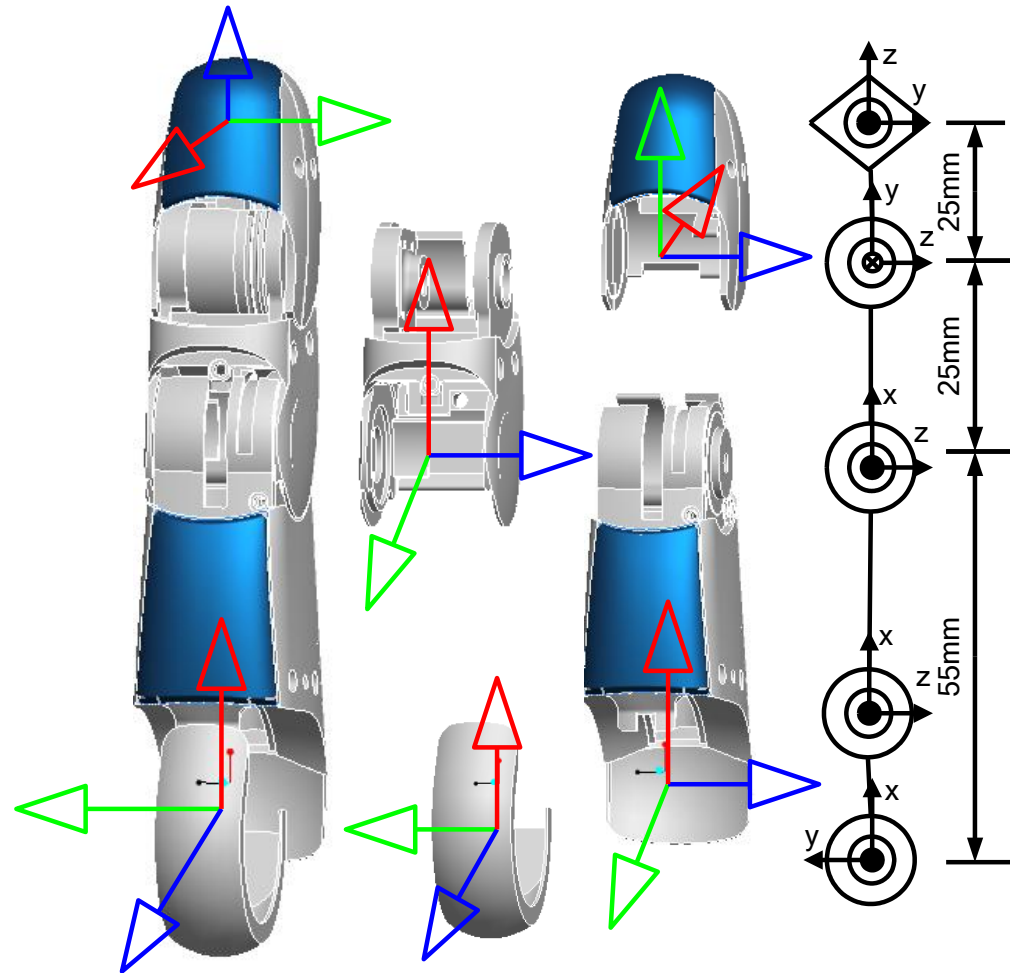
Righthand

HandbaseTF

ThumbBaseTF:

$$T_{AR} = \begin{bmatrix} 0.429051 & -0.571047 & -0.699872 & 0.062569057 \\ 0.187173 & 0.814200 & -0.549586 & 0.044544548 \\ 0.883675 & 0.104803 & 0.456218 & 0.080044647 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

ForeBaseTF:

$$T_{BR} = \begin{bmatrix} 0 & -0.087156 & 0.996195 & -0.002529881 \\ 0 & -0.996195 & -0.087156 & 0.036800135 \\ 1 & 0 & 0 & 0.108743545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

MiddleBaseTF

$$T_{CR} = \begin{bmatrix} 0 & 0 & 1 & -0.0037 \\ 0 & -1 & 0 & 0.01 \\ 1 & 0 & 0 & 0.119043545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

RingBaseTF:

$$T_{DR} = \begin{bmatrix} 0 & 0.087156 & 0.996195 & -0.002529881 \\ 0 & -0.996195 & 0.087156 & -0.016800135 \\ 1 & 0 & 0 & 0.114043545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$
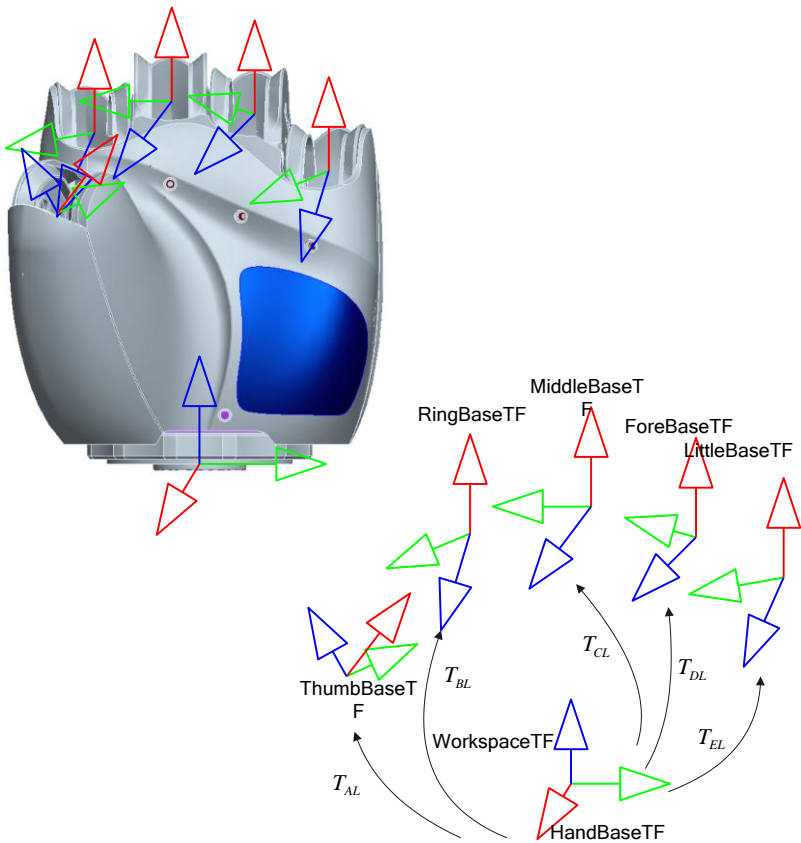
LittleBaseTF:

$$T_{ER} = \begin{bmatrix} 0 & 0.173648 & 0.984808 & 0.000971571 \\ 0 & -0.984808 & 0.173648 & -0.043396306 \\ 1 & 0 & 0 & 0.095043545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Lifthand

HandbaseTF

ThumbBaseTF:

$$
T_{AL} = \begin{bmatrix} 0.429051 & 0.571047 & -0.699872 & 0.062569057 \\ -0.187173 & 0.814200 & 0.549586 & -0.044544548 \\ 0.883675 & -0.104803 & 0.456218 & 0.080044647 \\ 0 & 0 & 0 & 1 \end{bmatrix}
$$

ForeBaseTF:

$$T_{BL} = \begin{bmatrix} 0 & 0.087156 & 0.996195 & -0.002529881 \\ 0 & -0.996195 & 0.087156 & -0.036800135 \\ 1 & 0 & 0 & 0.108743545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$
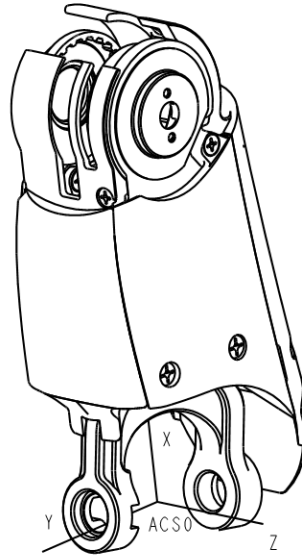
MiddleBaseTF:

$$T_{CL} = \begin{bmatrix} 0 & 0 & 1 & -0.0037 \\ 0 & -1 & 0 & -0.01 \\ 1 & 0 & 0 & 0.119043545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

RingBaseTF:

$$T_{DL} = \begin{bmatrix} 0 & -0.087156 & 0.996195 & -0.002529881 \\ 0 & -0.996195 & -0.087156 & 0.016800135 \\ 1 & 0 & 0 & 0.114043545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

LittleBaseTF:

$$T_{EL} = \begin{bmatrix} 0 & -0.173648 & 0.984808 & 0.000971571 \\ 0 & -0.984808 & -0.173648 & 0.043396306 \\ 1 & 0 & 0 & 0.095043545 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

MASS =   4.4370598e-02 KILOGRAM

CENTER OF GRAVITY with respect to ACS0 coordinate frame:

X   Y   Z   3.0164510e+01 -1.0130813e+00   5.0813186e-01   MM

INERTIA with respect to ACS0 coordinate frame: (KILOGRAM * MM^2)

INERTIA TENSOR:

Ixx Ixy Ixz   4.5592704e+00   9.0783105e-01 -9.3997710e-01
Iyx Iyy Iyz   9.0783105e-01   4.9045259e+01   1.7052714e-02
Izx Izy Izz -9.3997710e-01   1.7052714e-02   5.0524234e+01

INERTIA at CENTER OF GRAVITY with respect to ACS0 coordinate frame: (KILOGRAM * MM^2)

INERTIA TENSOR:

Ixx Ixy Ixz   4.5022750e+00 -4.4809447e-01 -2.5988461e-01
Iyx Iyy Iyz -4.4809447e-01   8.6611001e+00 -5.7883319e-03
Izx Izy Izz -2.5988461e-01 -5.7883319e-03   1.0105992e+01

PRINCIPAL MOMENTS OF INERTIA: (KILOGRAM * MM^2)

I1   I2   I3   4.4426943e+00   8.7084970e+00   1.0118176e+01

ROTATION MATRIX from ACS0 orientation to PRINCIPAL AXES:

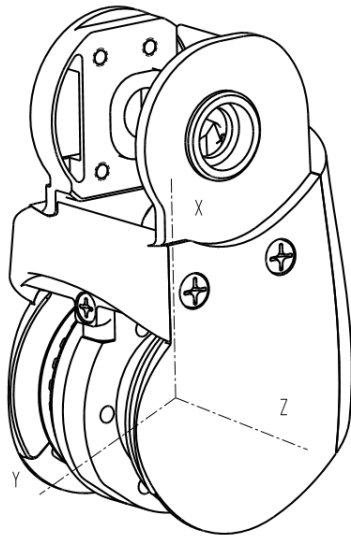|		
0.99336	-0.10498	-0.04706
0.10558	0.99436	0.01050
0.04569	-0.01540	0.99884

ROTATION ANGLES from ACS0 orientation to PRINCIPAL AXES (degrees):

angles about x   y   z   -0.603   -2.697   6.033

RADII OF GYRATION with respect to PRINCIPAL AXES:

R1   R2   R3 1.0006347e+01   1.4009543e+01   1.5100922e+01   MM

MASS =   2.7110192e-02 KILOGRAM

CENTER OF GRAVITY with respect to ACS0 coordinate frame:

X   Y   Z   5.7271879e+00 -1.6164173e+00 -1.1567914e+00   MM

INERTIA with respect to ACS0 coordinate frame: (KILOGRAM * MM^2)

INERTIA TENSOR:

Ixx Ixy Ixz   2.2900229e+00   4.0604622e-01   1.4362094e-01
Iyx Iyy Iyz   4.0604622e-01   4.2155489e+00 -4.3115648e-02
Izx Izy Izz   1.4362094e-01 -4.3115648e-02   4.4292927e+00

INERTIA at CENTER OF GRAVITY with respect to ACS0 coordinate frame: (KILOGRAM * MM^2)

INERTIA TENSOR:

Ixx Ixy Ixz   2.1829113e+00   1.5507292e-01 -3.5988470e-02
Iyx Iyy Iyz   1.5507292e-01   3.2900382e+00   7.5765516e-03
Izx Izy Izz -3.5988470e-02   7.5765516e-03   3.4692263e+00

PRINCIPAL MOMENTS OF INERTIA: (KILOGRAM * MM^2)
I1   I2   I3   2.1605724e+00   3.3113060e+00   3.4702974e+00

ROTATION MATRIX from ACS0 orientation to PRINCIPAL AXES:

0.99029	0.13664	-0.02552
-0.13615	0.99048	0.02005
0.02802	-0.01638	0.99947

ROTATION ANGLES from ACS0 orientation to PRINCIPAL AXES (degrees):

angles about x   y   z   -1.149   -1.463   -7.856

RADII OF GYRATION with respect to PRINCIPAL AXES:
R1   R2   R3 8.9272587e+00   1.1051809e+01   1.1314023e+01   MM
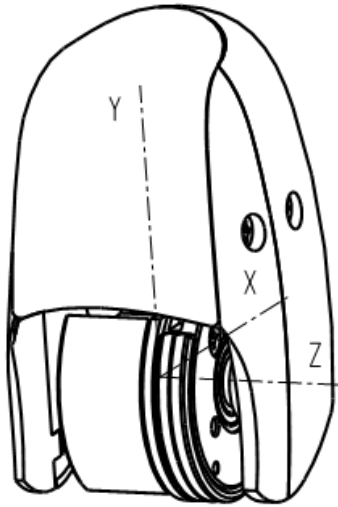
MASS =   1.8179709e-02 KILOGRAM

CENTER OF GRAVITY with respect to ACS0 coordinate frame:

X   Y   Z   -8.3348211e-01   6.1007977e+00   1.7728256e+00   MM

INERTIA with respect to ACS0 coordinate frame: (KILOGRAM * MM^2)

INERTIA TENSOR:

Ixx Ixy Ixz   2.5867271e+00   1.5840536e-01 -7.8205885e-04

Iyx Iyy Iyz   1.5840536e-01   8.4596248e-01 -4.8358115e-03

Izx Izy Izz -7.8205885e-04 -4.8358115e-03   2.5838485e+00

INERTIA at CENTER OF GRAVITY with respect to ACS0 coordinate frame: (KILOGRAM * MM^2)

INERTIA TENSOR:

Ixx Ixy Ixz   1.8529460e+00   6.5963257e-02 -2.7644732e-02

Iyx Iyy Iyz   6.5963257e-02   7.7619597e-01   1.9178957e-01

Izx Izy Izz -2.7644732e-02   1.9178957e-01   1.8945753e+00

PRINCIPAL MOMENTS OF INERTIA: (KILOGRAM * MM^2)

I1   I2   I3   7.3986607e-01   1.8536170e+00   1.9302342e+00

ROTATION MATRIX from ACS0 orientation to PRINCIPAL AXES:

-0.06243	-0.97376	-0.21886
0.98432	-0.09632	0.14778
-0.16498	-0.20620	0.96450

ROTATION ANGLES from ACS0 orientation to PRINCIPAL AXES (degrees):

angles about x   y   z   -8.711   -12.642   93.668

RADII OF GYRATION with respect to PRINCIPAL AXES:

R1   R2   R3 6.3794479e+00   1.0097562e+01   1.0304135e+01   MM