

Inertia Documentation

Introduction / Login

NOTICE: The prior Inertia application has been replaced with an Internet based on-line version.

The application requires a license key to operate, and it can be found at <http://inertia.c-motion.com>

The login screen only requires the license key, which is provided by C-Motion when access to the application is purchased. The license is only saved on the PC as a web cookie for a few hours, so save it carefully to keep running the application.



Subject Data

The right side of the screen is used to input the measurements that you have taken of a subject.

The fields at the top are critical, and the 3 tabs (Torso, Arms, Legs) are for the input of anthropometric measurements. All fields must be filled in for the calculations to work.

The forth tab shows the resulting inertial properties once you click the “Calculate Inertial Values” button. The export buttons save the results as text files, in the same format(s) as the earlier application.

The pink area at the top is where warning or error messages about the data you've entered. Any system errors appear here too.

Inertia: A Mathematical Inertial Model of the Human Body

Warning: chest perim is large for shoulder width.
Warning: chest width is small for chest perimeter.
TORSO chest width modified to 312.58027376557
Warning: Right arm length #14 is large
Warning: Left foot length #22 is large
Warning: Right foot length #22 is large

Subjects*

SAMPLE SUBJECT

SAMPLE 2

Clear Subject Data

* Note: Subjects are stored as 3-hour cookies.
They will be deleted when expired or when cache is cleaned and must be manually saved if you want to keep any subject data.

Browse...

No file selected.

Import CSV Subjects

Export Subjects (CSV)

Browse...

No file selected.

Import a Fortran Subject

Export a Subject (Fortran)

Subject Data

Name/Identifier:

SAMPLE SUBJECT

Mass (Kg):

93

Height (mm):

1922

Density Measures From:

Chandler

Save Subject Data

Torso Measures

Arm Measures

Leg Measures

Results

Calculate Inertial Values

Export Inertial Values

Export Values to Visual3D

Inertial Head Metrics

Segment Mass (kg):

5.6592

Distance Proximal Joint to Mass Centre (m):

0.1242

Segment Length (m):

0.2540

Frontal Moment of Inertia (kg.m²):

0.0332

Lateral Moment of Inertia (kg.m²):

0.0332

Longitudinal Moment of Inertia (kg.m²):

0.0184

Pelvis Metrics

Segment Mass (kg):

10.8431

Distance Proximal Joint to Mass Centre (m):

0.0792

Segment Length (m):

0.1679

Measurements and Ranges

This application is for use with adults (post-pubescent) and is not intended for use with children.

Mass: need to be able to enter to one decimal place e.g. 75.2 kg Default: Range Mass 70: 40 – 130
Standing Height: 1700: 1300 – 2100
HEADING: TORSO LENGTHS Acromion to Hip Center 550: 400 – 700
Acromion to Apex of Head 270: 170 – 370
HEADING: TORSO PERIMETERS Hip Perimeter 900: 700 – 1300
Umbilicus Perimeter 800: 500 – 1300
Lower Ribcage Perimeter 800: 500 – 1300
Nipple Level Perimeter 900: 600 – 1200
Neck Perimeter 350: 250 – 500
Top of Ear Perimeter 570: 450 – 700
HEADING: TORSO WIDTHS Hip Width 350: 200 – 500
Umbilicus Width 300: 200 – 500
Lower Ribcage Width 300: 200 – 500
Nipple Level Width 320: 200 – 500
Shoulder Center Width 350: 250 – 500
HEADING: LEFT ARM LENGTHS Shoulder to Wrist Center 500: 400 – 650
Wrist Center to Finger End 180: 140 – 250
HEADING: LEFT ARM PERIMETERS Upper Arm Perimeter 280: 180 – 500
Elbow Perimeter 270: 170 – 400
Max Forearm Perimeter 270: 170 – 400
Wrist Perimeter 170: 120 – 250
Knuckle Perimeter 200: 140 – 300
HEADING: RIGHT ARM LENGTHS Use same default and ranges as for

left arm HEADING: RIGHT ARM PERIMETERS Use same default and ranges as for left arm HEADING:
LEFT LEG LENGTHS Hip to Ankle Center 850: 650 - 1100 Ankle Center to Toe End 200: 150 - 330
HEADING: LEFT LEG PERIMETERS Crotch Perimeter 600: 300 - 900 Mid-Thigh Perimeter 530: 300 - 900
Knee Perimeter 380: 200 - 600 Max Calf Perimeter 370: 200 - 600 Min Ankle Perimeter 230: 150 - 350
Heel Perimeter 330: 200 - 500 Ball of Foot Perimeter 240: 150 - 350 HEADING: RIGHT LEG LENGTHS
Use same default and ranges as for left leg HEADING: RIGHT LEG PERIMETERS Use same default and
ranges as for left leg Fred Yeadon, May 2013

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