

Acclaim Format - ASF line Details

This document is intended to be read in conjunction with the format definition published by Acclaim Technologies. Root defines the base position and orientation of the entire skeleton. When reading the hierarchy the first child of a parent is the primary route thru the skeleton. The root is implied as the first parent although it is really a node. Dof specification allows for xyz translation and rotation as well as movement along the bone. This movement is translation not scaling data. The root of the skeleton will have xyz translation and rotation dof in order to position and orient the skeleton in global space.

root section

:root	The <i>root</i> bone (segment) is the only one defined in the ASF file for which <i>global</i> translations and rotations are recorded in the motion capture (AMC file). All other “bones” are moved relative to their immediate “parent” in the hierarchy. In the complete Acclaim specification, the position and orientation of the root can be pre-set, which therefore has the effect of offsetting all the motion captured data by the same amount.
order TX TY TZ RX RY RZ	The <i>order</i> line tokens determine: <ul style="list-style-type: none">• order in which root translations and rotations are written in the AMC file• sequence in which root rotations are calculated about <i>fixed, global axes</i> The translation and rotation tokens may be interleaved in any sequence, but it is usual for translations to precede rotations.
axis XYZ	The <i>axis</i> line token indicates the sequence in which the root pre-set orientation is calculated. When the pre-set orientations are zero (see below), this token has no effect.
position 0.0 0.0 0.0	Pre-set <i>position</i> of root
orientation 0.0 0.0 0.0	Pre-set <i>orientation</i> of root

bone sections

name bonea	alphabetic identifier for bone.
direction 1.0 0.0 0.0	In an ASF skeleton, the position (origin) of a bone is determined by a vector offset from the position (origin) of the bone’s parent, in the <i>parent’s</i> coordinate system. The <i>direction</i> line indicates the unit of this vector.
length 1.0	The <i>length</i> vector is the <u>initial</u> length of the bone’s position vector (see above). If no “l” degree-of-freedom (see below) is used, this bone length remains constant throughout the motion.
axis 0.0 0.0 0.0 XYZ	The <i>axis</i> line indicates the initial orientation of a bone’s axes relative to <i>fixed, global axes</i> . After initialisation, bone axes are fixed to the bone and move with it. [In the Acclaim format definition, a bone’s axes can have any initial orientation, including global (axis 0.0 0.0 0.0 XYZ).
dof rx ry rz	The <i>dof</i> line tokens determine: <ul style="list-style-type: none">• what degrees-of-freedom exist between a bone and its parent• the order in which these degrees-of-freedom are written in the AMC file• the sequence in which rotations are applied to the bone Rotation degrees-of-freedom are applied sequentially about the bone’s <i>parent’s</i> axes.

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Examples of extract of files in Acclaim Format for motion capture. Two files are provided.

ASF File	AMC File
<pre># AST/ASF file generated using VICON BodyLanguage :root order TX TY TZ RX RY RZ axis XYZ position 0 0 0 orientation 0 0 0 :bonedata begin id 1 name lhipjoint direction 0.655637 -0.713449 0.247245 length 2.52691 axis 0 0 0 XYZ end begin id 2 name lfemur direction 0.34202 -0.939693 0 length 7.59371 axis 0 0 20 XYZ dof rx ry rz limits (-160.0 20.0) (-70.0 70.0) (-60.0 70.0) end <File Cut Here> begin id 30 name rthumb direction -0.707107 -6.34907e-011 0.707107 length 0.845506 axis -90 -45 -2.85299e-015 XYZ dof rx rz end :hierarchy begin root lhipjoint rhipjoint lowerback lhipjoint lfemur lfemur ltibia ltibia lfoot lfoot ltoes rhipjoint rfemur rfemur rtibia rtibia rfoot rfoot rtoes lowerback upperback upperback thorax thorax lowerneck lclavicle rclavicle lowerneck upperneck upperneck head lclavicle lhumerus lhumerus lradius lradius lwrist lwrist lhand lthumb lhand lfingers rclavicle rhumerus rhumerus rradius rradius rwrist rwrist rhand rthumb rhand rfingers end</pre>	<pre>#!OML:ASF :DEGREES 1 root 10.4194 16.7048 -30.1003 -2.48972 -9.82194 -3.00914 lowerback 7.86573 1.57272 6.3571 upperback 3.47255 2.55226 1.65684 thorax -0.599593 1.31944 -2.05527 lowerneck -12.4901 4.06706 1.03438 upperneck 1.61784 5.61246 -6.40733 head 2.97226 2.54741 -1.92752 rclavicle -1.6201e-014 -1.43125e-014 rhumerus -9.40273 14.8795 -82.1974 rradius 46.2257 rwrist -16.7798 rhand -25.9429 18.5743 rfingers 7.12502 rthumb 0.600913 -11.4046 lclavicle -1.6201e-014 -1.43125e-014 lhumerus -51.9812 32.3861 64.939 lradius 20.3824 lwrist 12.631 lhand -21.8909 22.8474 lfingers 7.12502 lthumb 4.5141 52.7793 rfemur 16.1777 1.96704 29.9133 rtibia 11.5302 rfoot -15.9687 0.925564 rtoes 4.33359 lfemur -28.0191 -1.02078 -20.1783 ltibia 22.3977 lfoot -12.1104 13.478 ltoes -10.2227 2 root 10.4117 16.684 -29.9168 -2.69729 -10.0082 -2.83243 lowerback 7.44596 1.65374 6.09331 upperback 3.91254 2.58553 1.67171 thorax 0.0784557 1.35992 -1.86912 lowerneck -13.0403 4.1508 1.03655 upperneck 1.41954 5.71695 -6.43796 head 3.01316 2.59206 -1.92353 rclavicle -3.06128e-014 -7.95139e-016 rhumerus -8.66985 14.6305 -81.9822 rradius 46.032 rwrist -16.5037 rhand -25.3579 18.1254 rfingers 7.12502 rthumb 1.16593 -11.8512 lclavicle -3.06128e-014 -7.95139e-016 lhumerus -51.4595 32.9736 65.2094 lradius 20.3072 lwrist 12.3811 lhand -21.901 23.0332 lfingers 7.12502 lthumb 4.50436 52.9653 rfemur 17.2048 2.06921 29.6756 rtibia 11.2385 rfoot -15.6726 0.950482 rtoes 2.11338 lfemur -27.7269 -0.953135 -20.5822 ltibia 22.4395 lfoot -12.3785 13.6867 ltoes -8.45391 3 root 10.4037 16.6749 -29.7319 -2.73684 -10.1104 -2.67905 < File Cut Here></pre>