

**FORMULA SAE
ANTHROPOMETRIC REFERENCE DATA
5TH PERCENTILE FEMALE
&
95TH PERCENTILE MALE**

Formula SAE Rule A1.2.2 states, among other things, that, “The vehicle must accommodate drivers whose stature varies from a 5th percentile female to a 95th percentile male...” This requirement is included to clarify the type of person covered by Rule A1.2 “Vehicle Design Objective” which states “... teams are to assume that they work for a design firm that is designing, fabricating, testing and demonstrating a prototype vehicle for the non-professional, weekend, competition market.” Cars built just to fit the members of a specific team, not the wider potential market, do not meet the requirements of the Rules.

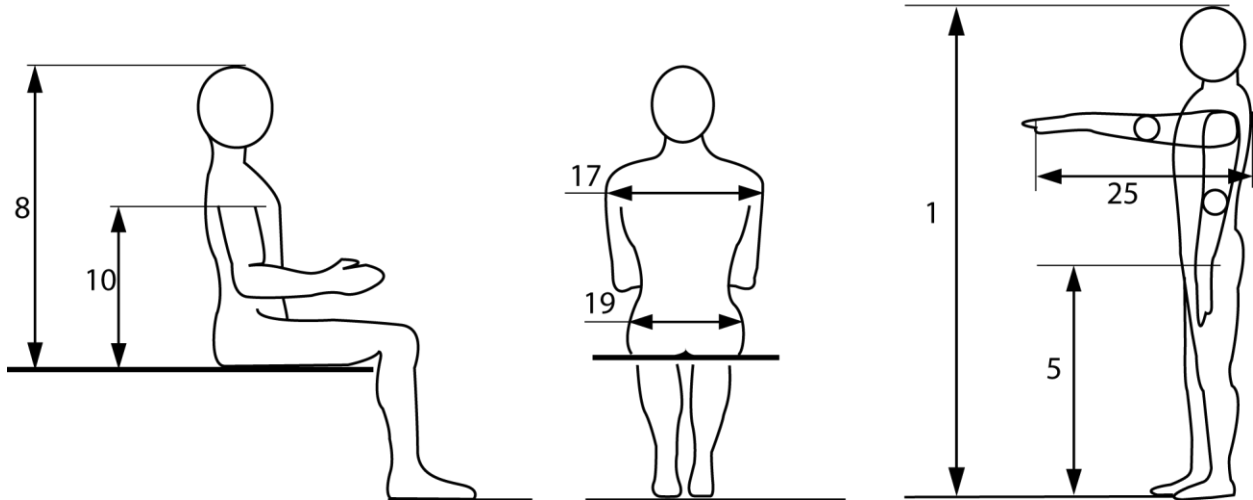
To assist the teams, the following data has been assembled to give some significant dimensions for a 5th percentile female and a 95th percentile male. While this data is primarily based on North American subjects, the information we have from the UK indicates that the UK subjects are a just fraction of an inch shorter in height and even less in sitting height. Therefore, we believe that this data is representative for North America (the USA and Canada), Western Europe, Australia and New Zealand, which are the major potential markets for a vehicle of this type.

Attached is a chart giving some basic dimensions:

Dimension #	Dimension	Measurements			
		95th Percentile Male		5 th Percentile Female	
		Metric	Imperial	Metric	Imperial
	Weight	102 kgs	225 #	49 kgs	108 #
1	Standing Height	186.5 cms	73.4 ins	151.5 cms	59.6 ins
5	Hip Height	100.0 cms	39.4 ins	74.0 cms	29.1 ins
8	Erect Sitting Height	97.0 cms	38.2 ins	79.5 cms	31.3 ins
10	Sitting Shoulder Height	64.5 cms	25.4 ins	50.5 cms	19.9 ins
17	Sitting Shoulder Width	50.5 cms	19.9 ins	37.5 cms	14.8 ins
19	Hip Width	40.5 cms	15.9 ins	31.0 cms	12.2 ins
25	Shoulder Grip Length	71.5 cms	28.1 ins	55.5 cms	21.9 ins
30	Foot Length - bare	28.5 cms	11.2 ins	22.0 cms	8.7 ins
31	Foot Width - bare	11.0 cms	4.3 ins	8.5 cms	3.3 ins

The numbers in the diagram below refer to the “Dimension #” in the left hand column of the chart above.

FORMULA SAE ANTHROPOMETRIC REFERENCE FIGURES



In designing your car for this range of builds, you do not have to have the same seat or seat insert for all drivers. The idea is that the one basic car design should be able to accommodate, and hence be saleable to, drivers of a range of statures from the 5th percentile female to the 95th percentile male.

Apart from the mandated requirement that your roll hoops meet the “Percy” rule (B3.9.3), covering this range of statures will mean attention to driver visibility, steering wheel and shifter locations, pedals, and lap and shoulder belt angles. And do not forget the head restraint!

Updated: 23-Nov-2015, B. Riley