



SURFACE VEHICLE RECOMMENDED PRACTICE

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Motor Vehicle Fiducial Marks and Three-Dimensional Reference System

RATIONALE

Corrected figure reference and added clarification of verbiage.

1. SCOPE

This SAE Recommended Practice describes a procedure for locating the three-dimensional reference system on a motor vehicle as built.

1.1 Purpose

For complete motor vehicle dimensional checks, a method is required for locating the three-dimensional reference system on a motor vehicle so that points of interest (for example, driver eye location, seating reference point, centerline of motor vehicle, etc.) can be determined.

2. REFERENCES

There are no referenced publications specified herein.

3. DEFINITIONS

3.1 THREE-DIMENSIONAL REFERENCE SYSTEM

The relationship of three orthogonal planes is established by the manufacturers in the initial design stages of the vehicle, and remain fixed for the life of the program (see Figure 1). The planes are used to determine dimensional relationships for components in and around the vehicle and are defined as follows:

3.1.1 ZERO "Y" PLANE

Centerline body zero plane is a vertical plane which passes through the longitudinal centerline of the car.

3.1.2 ZERO "X" PLANE

Vertical body zero plane is a plane normal to the "Y" plane. This plane is typically in front of the vehicle to eliminate the use of negative numbers.

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3.1.3 ZERO “Z” PLANE

Horizontal body zero plane is a plane normal to the “X” and “Y” planes. Its relationship to the horizontal is determined by the fiducial mark (see 3.2). This plane is typically slightly below the vehicle for all loaded conditions to eliminate the use of negative numbers.

3.1.4 NEGATIVE COORDINATE

The negative and positive directions are specified in Figure 1.

3.1.5 COORDINATE ORIGIN

All points of interest are described as coordinates dimensioned from the intersection of the zero planes (origin) in the three-dimensional reference system. X, Y, and Z coordinates are dimensioned to their respective planes.

3.2 FIDUCIAL MARKS

These are identifiable holes, surfaces, marks, or indentations on the vehicle body, visible and accessible from outside the vehicle as described by the manufacturer.

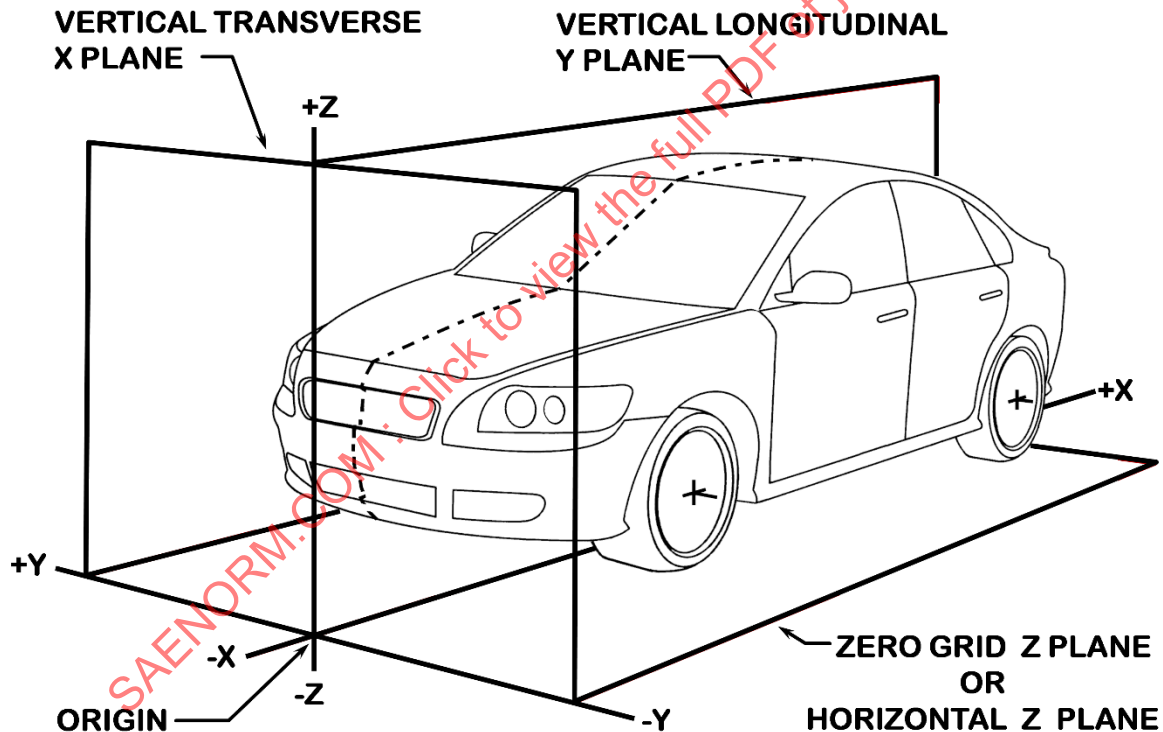


Figure 1 - Three-dimensional reference system

4. REQUIREMENTS

The minimum of three fiducial marks shall be specified, one on each side of the “Y” plane (usually symmetrical for convenience) and an additional one forward or rearward of the first two, all as far apart as allowable and usable.