

3D CAD for SAE J826 H-Point Machine

RATIONALE

The SAE HADD Committee recently developed the computer-aided design (CAD) data representing the complete SAE J826 H-point machine (HPM). Prior to this activity, CAD versions of the HPM were created by end users based on scans of the physical parts. This standard provides traceable documentation for the SAE HPM CAD files that can be used as a 3D design tool or can verify the shape/size compliance of existing components.

This project coincides with the SAE HADD Committee's creation of CAD surface data for the SAE J826 3D H-point machine (HPM-1) cushion and back pan outer shells published in SAE J826/1, as well as the 2D CAD template for SAE J826 H-point machine published in SAE J826/2. Previous documentation describing the production SAE J826 HPM was contained in a series of two-dimensional layout drawings from 1974, the final assembly fixturing jig, and in other minor build and SAE J826 revisions made over the years.

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1. SCOPE

This document describes the 3D computer-aided design (CAD) parts and file formats for the HPM-1 H-point machine available from SAE. The intended purpose for this information is to provide a master CAD reference for design and benchmarking.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J826 Devices for Use in Defining and Measuring Vehicle Seating Accommodation

SAE J826/1 CAD Model for SAE J826® 3D H-Point Machine

SAE J826/2 2D CAD Template for SAE J826® H-Point Machine

SAE J1100 Motor Vehicle Dimensions

SAE J3103 Benchmark H-Point Procedure

3. DEFINITIONS

The following terms are defined in SAE J826 and SAE J1100. When appropriate, added explanation is provided.

3.1 ACCELERATOR HEEL POINT, AHP

3.2 ANKLE (FOOT) ANGLE, A46

3.3 BALL OF FOOT, BOF

3.4 FLOOR REFERENCE POINT, FRP

3.5 H-POINT

3.6 HEEL OF SHOE

3.7 HIP ANGLE, A42

3.8 KNEE ANGLE, A44

3.9 SEATING REFERENCE POINT, SGRP

3.10 SHOE PLANE

3.11 THIGH ANGLE, A57

3.12 THIGH LINE

3.13 TORSO (BACK) ANGLE, A40

3.14 TORSO LINE

3.15 LEG LINE

4. 3D CAD DATA FOR HPM-I

4.1 Part Descriptions

A description of the physical manikin as well as procedures for installation and calibrating the HPM-I are documented in SAE J826. This document supplements SAE J826 by providing size and shape details of individual parts and the assembly of these parts into the complete H-point machine. It is important to note applications used to import or open these CAD files may affect the total number of resulting parts in the assembly. A description of the primary 3D CAD assembly, subassemblies, and parts is included in the following tables for reference.

NOTE: The SAE locator bars represent references used in the manufacture and calibration of the HPM-I and are not included with the physical H-point device.

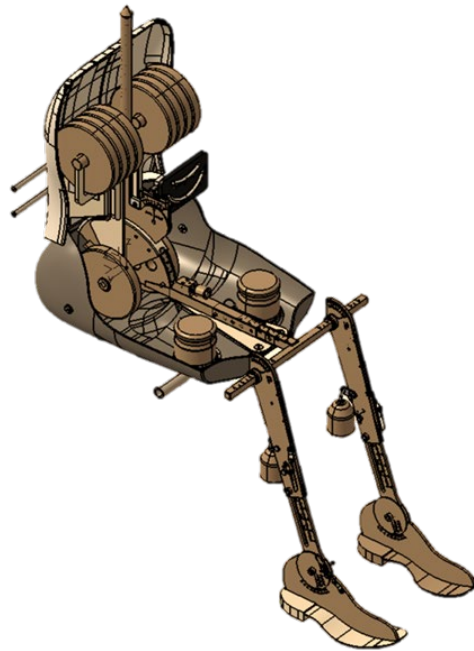


Figure 1 - HPM-1 assembly

Table 1 - Bill of materials for the SAE J826 H-point machine

Level/Description	Type	Quantity	Name
1) BACK PAN ASSEMBLY	Assembly	1	
1) BACK ANGLE HEADROOM PROBE ASSY	Assembly	1	
1) SEAT PAN ASSEMBLY	Assembly	1	
1) THIGH BAR ASSEMBLY	Assembly	1	
1) LOWER LEG LH ASSEMBLY	Assembly	1	
1) LOWER LEG RH ASSEMBLY	Assembly	1	
1) LOWER LEG EXTENSION ASSEMBLY LH	Assembly	1	
1) LOWER LEG EXTENSION ASSEMBLY RH	Assembly	1	
1) FOOT ASSEMBLY LH	Assembly	1	
1) FOOT ASSEMBLY RH	Assembly	1	
1) WEIGHTS - BUTTOCKS TORSO	Assembly	1	
1) SAE_LOCATOR_BARS-SW	Part	1	SAE_LOCATOR_BARS-SW
TOTALS	Assembly	11	
	Part	1	

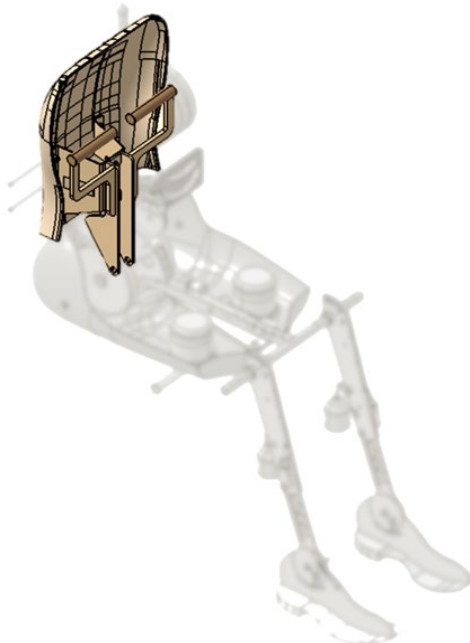


Figure 2 - Back pan assembly

Table 2 - Bill of materials for the back pan assembly

Level/Description	Type	Quantity	Reference
2) BACK PAN	Assembly	1	
3) SAE BACK PAN	Part	1	DWG-048-01
3) 5_16-18 x 1.00 BOLT LG FHC	Part	6	91253A583
3) 5_16-18 NYLOX NUT	Part	6	91831A030
2) TORSO WEIGHT HANGER ASSEMBLY	Assembly	1	
3) HANGER BRACKET	Part	1	DWG-013-02
3) TORSO HINGE PLATE	Part	2	DWG-013-03
3) TORSO WEIGHT SUPPORT	Part	2	DWG-013-04
3) HANGER GUSSET	Part	1	DWG-013-05
3) HANGER SPACER THREADED	Part	1	DWG-013-06
3) HANGER SPACER	Part	1	DWG-013-07
3) YOKE	Part	2	DWG-013-08
3) SAE LABEL	Part	1	LABEL
3) TECHNOSPORTS LABEL	Part	1	LABEL
3) 1_4-28 x 1.00 LG. SE	Part	1	1_4-28 x 1.00 LG. SE
3) 1_4-28 THIN HEX NUT	Part	1	1_4-28 THIN HEX NUT
TOTALS	Assembly	2	
	Part	27	