



SURFACE VEHICLE RECOMMENDED PRACTICE

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Vendor Component Program Data File Interface for OEM Assembly Operations

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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FOREWORD

SAE J2286 describes the file-based interface between the OEM Shop Floor Program and the Vendor Component Program. This document is intended to document existing systems only.

SAE J2286 content was developed by tailoring the Interface Design Document Data Item Description, DI-MCCR-80027, and Data Base Design Document Data Item Description, DI-MCCR-800028, which is used with DOD-STD-2167A.

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1. SCOPE

1.1 Identification

This interface document SAE J2286 revises the requirements for file formats as were originally described in SAE J1924. This document describes Interface 1 (I/F 1) in SAE J2461. This document does not imply the use of a specific hardware interface, but may be used with other hardware interfaces such as SAE J1939, ISO 15765 or ISO 14229. The requirements of SAE J2286 supersede the requirements defined by SAE J1924.

1.2 Introduction

SAE J2461 establishes the requirements for Interface 1 (I/F 1), as a replacement of the file-based interface described by SAE J1924, as shown by Figure 1. Interface 1 (I/F) is a bi-directional link between the OEM Shop Floor Program (CSCI 1) and the Vendor Component Program (CSCI 2). Using I/F 1, the OEM Shop Floor Program communicates the desired parameters and programming limits for an assembly job to the Vendor Component Program (VCP). In response, the VCP returns programming results to the OEM Shop Floor Program (CSCI 1).

I/F 1 maintains the file structures described in SAE J1924 as closely as possible. The parameter file setup record was changed to reflect the common means communication provided by CSCI 3, the communication Device Driver. A new record type was added to better define how data files, external to the parameter file, would be used. This clarifies SAE J1924 by clearly defining whether the parameter value string 123.123 refers to a numeric value or a filename.

Besides correcting errors, other changes to SAE 1924 include:

- a. Deletion of tattletale records
- b. Better descriptions of fields and records
- c. An additional field in a Definition File record
- d. Directory structure and file naming conventions supporting future growth
- e. VCP command line content and file directory structure

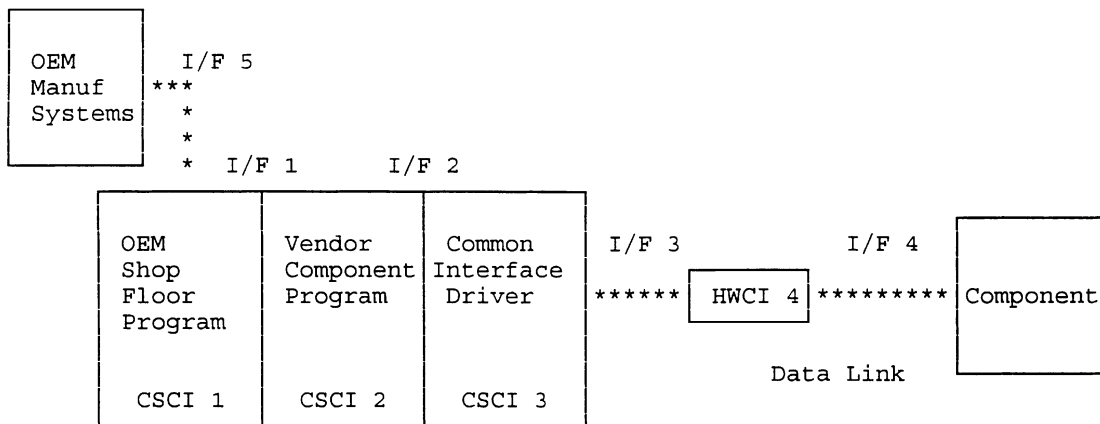


FIGURE 1 - VEPS COMPUTER PROGRAMS AND INTERFACES

2. REFERENCES

2.1 Applicable Publications

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 724-776-4970 (outside USA), www.sae.org.

SAE J1708	Serial Data Communications Between Microcomputer Systems in Heavy-Duty Vehicle Applications
SAE J1924	OEM/Vendor Interface Specification for Vehicle Electronic Programming Stations (Cancelled)
SAE J2461	Vehicle Electronic Programming Stations (VEPS) System Specification for Win32™

2.1.2 DOD STD 498 Related Documents

Available from U.S. Government, DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-2179, <http://dodssp.daps.dla.mil/>.

DOD-STD-498 Defense Software Development (MIL-STD-498 replaced DOD-STD-2167A in 1994)

DI-IPSC-81434 Interface Requirements Specification

DI-IPSC-81436 Interface Design Document

DI-IPSC-81435 Data Base Design Document

2.1.3 AIAG Publications

Available from AIAG, 26200 Lahser Road, Suite 200, Southfield, MI 48033-7100, Tel: 248-358-3570, www.aiag.org.

3. ABBREVIATIONS AND ACRONYMS

ASCII—American Standard Code for Information Interchange

CSCI—Computer Software Configuration Item

EDI—Electronic Data Interchange

HWCI—Hardware Configuration Item

I/F—Interface

OEM—Original Equipment Manufacturer

VCP—Vendor Component Program

VDT—Video Display Terminal

VEPS—Vehicle Electronics Programming Station

4. REQUIREMENTS

4.1 Interface Summary

Table 1 summarizes I/F 1, a bi-directional, file-based interface between CSCI 1 (the OEM Shop Floor Program) and CSCI 2 (the Vendor Component Program or VCP). The *parameter file* is passed from CSCI 1 to CSCI 2 which effects its instructions. CSCI 2 returns the results of the instructions to CSCI 1 using the *verification file*. The *definition file* documents the parameters supported by CSCI 2; customized definition files may provide CSCI 2 with additional information regarding OEM preferences for his vehicles.

Table 1 defines the interface file types and general definitions.

TABLE 1 - INTERFACE FILE TYPES AND INITIATION CONDITIONS

FILE [.EXT] (Information Flow)	CONTENT	INITIATION CONDITIONS	RECIPIENT RESPONSE
parameter [.par] (CSCI 1 to CSCI 2)	Parameter Programming Values and communications setup	Evocation of the VCP by the OEM Shop Floor Program	The VCP will program the component to the desired parameter settings
Definitions [.def] (Vendor to OEM CSCI 2 to CSCI 1)	File naming defaults, parameter data type, scaling and limits	Released by Vendor to OEM with the modified VCP	Use of a modified definition file is solely at the discretion of the vendor
Verification [.ver] (CSCI 2 to CSCI 1)	Resulting parameter values and programming status (errors)	Generated by VCP at completion of component programming	Defined by OEM Shop Floor Program
Remarks [.rem] (Vendor to OEM)	VCP and Component Notes	Vendor release of VCP to OEM	Read.ME
External Data [.dat] (CSCI 1 to CSCI 2)	Programming values not practical for parameter file format	Evocation of the VCP by the OEM Shop Floor Program	The VCP will program the component to the desired parameter settings

4.2 General File Characteristics

Each interface file is an ASCII text file with multiple records. The file structure is similar to Comma Separated Value (CSV) format. The comma (,) is used as the field delimiter and separates each field in a record. An end of line marker <CR><LF> terminates each record, and an end of file marker terminates the file.

4.2.1 Text File Format

Record fields may contain any printable (0x20 to 0x7E) ASCII characters. A field may contain a comma (0x2C) if the entire comment is enclosed with a pair of double quotes (0x22). Additionally, the use of the double quote enclosing the entire field is not required but is allowed in fields without a comma in the field.

An example of a comment field using commas and double quotes are as follows:

```
P,B020,B,501,"Tire Size,Revs/Mile"<CR><LF>
```

NOTE: Entire comment field enclosed in " because of comma in field.

The last field of a record may be delimited by one or more of the ASCII space characters (0x20). If a comment is not included, then a comma may or may not follow the data field. Fields that do not apply for a record may contain ASCII space (0x20) or TAB (0x09) characters. Records shall be terminated by both a carriage return (0x0D) and a line feed (0x0A). A control-Z (0x1A) shall mark the end of each field. All records with only white space or blank lines shall be ignored.

4.2.2 Case Sensitivity

The files may contain either upper or lower case alphabetic characters. However, the OEM and vendor programs are not required to make "case sensitive" tests. The programs shall interpret the upper and lower case alphabetic characters contained in record fields as being the same. For example, the programs shall interpret "WxYz" as equivalent to "wXyZ". Both values are equivalent to "WXYZ".

This requirement may be relaxed only when the goal is to program freeform text as the value of the parameter—in such cases the parameter value field may contain both upper and lower case characters that need not be the equivalent of an all uppercase character string. This is described in 4.2.3.4.

4.2.3 Parameter Value Data Type Conventions

The parameter value data types shall conform to the following paragraphs.

4.2.3.1 Numeric Data Types

Parameters with numeric data types shall be composed as:

`<digit> [<digit>*] [.] <digit>*` The character `<digit>*` implies zero or more occurrences of `<digit>`.

where digit is an ASCII numeral: {0,1,2,3,4,5,6,7,8, or 9}

4.2.3.2 Enumerated Data Types

A range of integers, `[0:N-1]`, is the preferred method for encoding an enumerated data type of N elements. To retain past usage, sets of ASCII strings such as {RED, BLUE, BLACK, WHITE} may also be used. The ASCII strings providing values for enumerated data types may contain either upper or lower case alphabetic characters—lower case alphabetic characters shall be interpreted the same as upper case alphabetic characters. The advantage of a range over strings is that integer ranges have upper and lower values that can be used for simple rationality checks. (See 4.4.)

4.2.3.3 Boolean Data Types

Boolean data types are a special case of enumerated data types. Parameters conveying Boolean data utilize the ranges `[0:1]` or `[N:Y]` as data values. The use of the range `[0:1]` is preferred.

4.2.3.4 Textual (ASCII) Types

Textual data may also be used to supply parameter values. Text containing lower case alphabetic characters, the space character (0x20), or the field delimiter (,) shall be enclosed by the double-quote ("), ASCII 0x22 per 4.2.1.

4.2.3.5 External File Data Types

A valid file including an optional path may be provided in a parameter value file to identify the file containing the data to be used for the parameter value. External data files may be used only in conjunction with record type "F". See 4.4.4, 4.5.3, and 4.6.4 for more information regarding the use of external data files.

4.2.4 File Names

As a default, all vendor supplied files shall conform to the following naming conventions: except for external data files, the file name shall encode the vendor's company name, the product family supported by the VCP, the VCP version number, and the type of file. The first three letters of the file name shall contain the vendor's company mnemonic. The next two characters shall identify the product supported by the VCP. The last three characters shall encode a version number of the VCP. External data files may have any name the Vendor determines to be appropriate, as long as the file names are unique from the vendor-product-version scheme.