

**VOLVO**

## **EDI- Engineering Data Implementation Package**

9308-2  
(980330)

Volvo Information Technology AB

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## **Engineering data ENG DAT**

This message is only implemented after special agreement with the different Volvo companies. The ENG DAT message is used as a delivery note for the different technical documents that are distributed in an exchange between a Volvo company and its partners.

### **1.0 Instructions for implementation**

The test is divided into six steps:

1. Signing the agreements
2. Volvo transmits to the supplier
3. The supplier evaluates the received ENG DAT file including the CAD files
4. The supplier transmits to Volvo
5. Volvo evaluates the received ENG DAT file including the CAD files
6. End of test phase

Below you will find a detailed description of each step in the test.

#### ***1.1 Signing agreements***

- 1.1.1 the supplier fills out the forms “Application Agreement” and “Specification of CAD/CAM Parameters” and returns the forms to Volvo. The supplier fills out the form “Communication Agreement” and returns it to Volvo IT.
- 1.1.2 the person responsible for implementation at Volvo, contacts the supplier, in order to reach an agreement on the date for starting the implementation. At this occasion, parameters not included in the agreements above, will be exchanged.

#### ***1.2 Volvo transmits to the supplier***

- 1.2.1 Volvo sends the ENG DAT message and the CAD files to the supplier according to the agreements. The initial test always consists of an ENG DAT file and CAD file (-s). The formats of the CAD files are in accordance with the agreement between Volvo and the supplier.

#### ***1.3. The supplier evaluates the received ENG DAT file, including the CAD files***

- 1.3.1 The supplier converts the ENGDAT message and analyses the syntax, as well as the logical content of the file. The supplier checks the file for:
- Loss of information
  - incorrect information
- 1.3.2 The supplier transfers the received CAD files to their CAD-system and processes the files according to the parameters in the ENGDAT message. The supplier checks the files for:  
Decompression of the CAD files. Easy of handling

#### ***1.4. The supplier transmits to Volvo***

- 1.4.1 The supplier contacts Volvo to settle a date for the tests. On this occasion, parameters not included in the agreements, will be exchanged.
- 1.4.2 The supplier creates an ENGDAT message of their own.
- 1.4.3 The supplier transmits the ENGDAT file and the CAD files, to Volvo as agreed.

#### ***1.5. Volvo evaluates the received ENGDAT and CAD files***

- 1.5.1 Volvo analyses the syntax of the ENGDAT message. If any violation of the syntax rules occurs, Volvo contacts the supplier.
- 1.5.2 Volvo analyses the content in the ENGDAT message and the CAD files. If the CAD files cannot be further processed, in accordance with the ENGDAT message, Volvo contacts the supplier for feedback.

**Step 4 and 5 will be repeated until the information flows without any interruptions.**

#### ***1.6. Closing up the test phase***

- 1.6.1 Volvo contacts the supplier for discussions of possible problem areas. Thereafter the test phase will be closed.
- 1.6.2 Volvo updates the supplier to production status.

## **2.0. Quality demands in respect to implementation of ENGDAT**

Volvo has some basic demands on the supplier's applications for exchanging Engineering documents.

The applications and the ENGDAT messages must fulfil the following requirements:

**ODDC:** Volvo uses the ODDC codes in order to decrease error occurrences and to make automatic processing of the ENGDAT messages and the Engineering documents possible. The use of ODDC codes at Volvo demands that our supplier's EDI applications must be able to read and create ENGDAT messages containing ODDC codes.

(ODDC code tables; see appendix 1 in 'Volvo Application of ODETTE').

**E-MAIL:** E-mail is used at Volvo for reaching the ultimate receiver. A unique Volvo ID is used for every person at Volvo (e.g. PC12345). Do not use the "normal" e-mail address since the internal system at Volvo cannot handle this in the context of ENGDAT. When Volvo is the sender, the sending person's Volvo ID is always included in the message. When Volvo is the receiver the sending supplier must always include the Volvo ID of the ultimate receiver at Volvo.

The same principal as stated above, can be used for our suppliers, if they so wish. If our suppliers wish to use the e-mail address for their internal addressing, it must be agreed upon in advance with the person responsible for implementation at Volvo. Ultimate receivers at both sites must initially exchange their respective e-mail address.

The E-mail address is limited to 35 and must conform to the ODETTE-ISO/EDIFACT, 9735 standard

E.g. @ will be replaced by (A) by Volvo if the receiving supplier use an e-mail address containing this character.

### **Compression according to the ZIP - de facto standard**

Volvo uses compression according to ZIP on all Engineering documents. For more information regarding the use of ZIP, see page.

### **File format:**

Volvo sends and receives CAD files in record format 'U', (U=unstructured format).

Volvo sends and receives ENGDAT files in accordance with the 'Application Agreement'

### 3.0 General Arrangement

Volvo intends to implement EDI communication in accordance with the ODETTE standard with their suppliers.

Establishment of computer-to-computer communication will take place in two stages:

1. Establishment of communication
2. Implementation of Odette message.

#### Stage 1 COMMUNICATION

All Volvo companies communicate via Volvo IT department.

In normal circumstances, ONE of Volvo's companies tests the communication with your company. Before this communication test takes place supplier is asked to fill out a communication form.

When the technical preparations for EDI communication have been completed and the agreed information has been registered in each system, a communication test will be performed. The test consists of:

- Communications test
- Test files are transmitted or received for formal checks of both syntax and agreed message content.
- The relevant company within Volvo will test for approval before activation (production) starts.

### 4.0 Communication

#### 4.1 Specifications

##### Network service and protocol

Volvo communicates point-to-point over OFTP 2 or AS2.

If a partner prefers to use a third party, e.g. a clearing centre or a VAN, he may do so but the partner must then accept sole responsibility for his relationship with the third party.

To the commercial agreement between the supplier and Volvo is appended a part, which specifies that the supplier takes the total cost within the VAN.

##### File names

Odette's ENGDAT specification stipulates that only the first 3 positions in the file name can be defined in advance. These 3 positions are **always** 'ENG'.

For a more detailed description of file names, see Chapter 7 and Odette's ENGDAT specification Version 1.

#### **File format**

Volvo supports different file formats. The standard format is fixed blocked 80 positions, but those partners who wish to use another format may choose among:

- Fixed (F) record format of arbitrary length.
- Variable (V) record format of arbitrary length. Each record should contain one segment.
- Undefined (U) format.

#### **Code representation**

Both ASCII and EBCDIC standards are supported by Volvo. ASCII is the standard option, so those partners who wish to use EBCDIC have to stipulate this.

### **4.2 Agreement regarding communication**

Volvo has chosen to coordinate all communication through Volvo Data. Therefore it is enough to return only one communication agreement, irrespective of how many Volvo companies a supplier wants to communicate with.

## **6.0 Explanation of M and C**

### ***Explanation of M and C***

In detailed applications in this documentation we are using M and C to describe which segments and data elements that are mandatory (M) and conditional (C).

Each data element's length and representation is also described. Descriptions within brackets are in accordance with the Odette's specification.

See example below.

### ***CDT CONSIGNOR DETAILS M (M)***

Volvo's identity of the supplier.

**3296 Internal ID. No**

**M an..10 (C an..17)**

The supplier number allocated to the goods consignor actually sending the goods. Without leading spaces and zeros.7.0      Application of Engineering Data (ENGDAT Version 1) within Volvo

## **7.1    *General***

This document describes the application by Volvo of the Odette ENGDAT message.

The specification includes a detailed description of the data elements used.

The Odette ENGDAT message version 1, issued by the Odette secretariat in June 1992, will constitute the basis for the application.

## **7.2    The purpose of the message**

The purpose of the message is to provide the end-receiver with information on the technical documents included in the transmission.

The ENGDAT message is distinguishable from other Odette messages by the fact that the information about the constituent documents and the actual information itself are sent as separate files. The technical documents do not include address information, or any MID segment. The virtual file name is thus used to hold together the logical package, i.e. ENGDAT and associated technical documents.

## **7.3    *Structure of the file names***

A virtual file is created as follows:

ENG<EXCHANGE REFERENCE><NUMBER OF FILES>  
<FILE NUMBER>

Example: ENG01015000000009950003001

<b>ENG (AN3):</b>	Message identification. Only used for the ENGDAT message.
<b>Exchange Reference (AN17):</b>	Transmission identification. Set by the sender and must be unique for each transmission between the sender and the receiver.
<b>Number of files (N3):</b>	Number of files in the transmission, including ENGDAT
<b>File number (N3):</b>	Sequence number, i.e. the serial number that is put on every file. The sequence number of ENGDAT is always 001. Technical documents in a transmission have sequence numbers between 002 and 999.

It is possible to identify this as an ENGDAT file through the sequence number (001).



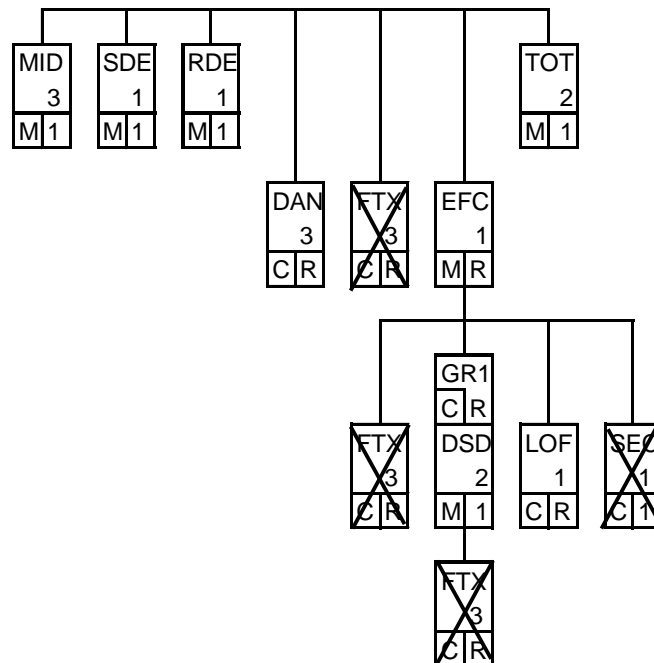
For more detailed information, please refer to ENGDAT specification, version 1.

## 7.4 File structure

Heading and trailing service segments shall be included in the file that describes the technical documents, which are transferred between Volvo and its partners.

Detailed information in how this ISO/EDIFACT syntax standard should be applied, is given in Chapter 5.

The structure below has been taken from the international Odette specification.



Crossed out segments will not be used by Volvo.

### ***MID MESSAGE IDENTIFICATION M(M)***

The unique identification of the message.

**1004 Document Number**

**M an17 (M an..17)**

Unique identification for each transmission. Must be identical to Exchange Reference.

**2007 Document Date, coded** **M n6 (M n6)**

The date on which the message is created. Format of the date is YYMMDD.

**2002 Time** **M n4 (C n4)**

The time at which the message is created. The format of the time is HHMM.

Example of the MID-segment:  
MID+000000000000009550+940524:1125'

***SDE SENDER DETAILS M(M)***

Identification of sender.

**3036 Party Name** **C an..35 (C an..35)**

Name of sending organisation.

**3296 Internal ID.No** **M an..17 (C an..17)**

Identification of sender at receiver's end.

**3412 Department or Employee** **C an..35 (M an..35)**

Department of sender.

**3412 Department or Employee** **C an..35 (C an..35)**

Name of sender.

**3928 Telephone Number** **C an..17 (C an..17)**

Format: country code, area code, subscriber number.

**3896 Electronic Mail Address** **C an..35 (C an..35)**

Electronic mail address.

**Conditions:**

Where Volvo is the sender, the electronic mail address is always given. The mail address is an address linked to the ENGDAT application. Example P101234.

Example of the SDE-segment:  
SDE+: VOLVO CAR CORPORATION:::::1234  
++53430: ERIK OLSSON:46

31591235:::PI01234'

***RDE RECEIVER DETAILS M (M)***

- |             |   |                            |
|-------------|---|----------------------------|
| <b>3036</b> | <b>Party Name</b>                                   | <b>C an..35 (C an..35)</b> |
|             | Name of receiving organisation.                     |                            |
| <b>3296</b> | <b>Internal ID.No</b>                               | <b>M an..17 (C an..17)</b> |
|             | Identification of receiver at sender's end.         |                            |
| <b>3412</b> | <b>Department of Employee</b>                       | <b>C an..35 (C an..35)</b> |
|             | Department of receiver.                             |                            |
| <b>3412</b> | <b>Department of Employee</b>                       | <b>C an..35 (C an..35)</b> |
|             | Name of receiver.                                   |                            |
| <b>3928</b> | <b>Telephone Number</b>                             | <b>C an..17 (C an..17)</b> |
|             | Format: country code, area code, subscriber number. |                            |
| <b>3896</b> | <b>Electronic Mail Address</b>                      | <b>M an..35 (C an..35)</b> |
|             | Electronic mail address.                            |                            |

**Conditions:**

Where Volvo is the receiver, the electronic mail address should always be given. The format for the e-mail address, at Volvo, in the Engdat message is as in the following example.

Example PC02552

Example of the RDE-segment:

RDE+: PLAST OCH PLAT AB:::987  
++CADAM:EVA PERSSON:46 31112233'

***DAN DOCUMENT REFERENCE C(C)***

Document or project to which ENGDAT refers.

**Conditions:**

This segment will only be used after special agreement.

**Note:**

The segment should be repeated for each new document type to which reference is made.

<b>1001</b>	<b>Document Name, coded</b>	<b>C n3 (C n3)</b>
	Code for document type. See ODDC 1.	
<b>1000</b>	<b>Document Name</b>	<b>C an..17 (C an..17)</b>
	A document name can denote projects, orders, etc.	
	<b>Conditions:</b> If the code for the document type is absent, this data element should be used.	
<b>1004</b>	<b>Document Number</b>	<b>C an..17 (C an..17)</b>
	Identification number for the document in question. If it is an Odette document, the number is obtained from data element 1004 in the MID segment from the document in question.	
<b>2007</b>	<b>Document Date, coded</b>	<b>C n6 (C n6)</b>
	Printout date of the document referred to. The format of the date is YYMMDD.	
	Example of the DAN-segment: DAN+: PROJECT+9093'	

## ***EFC ENGINEERING FILE CHARACTERISTICS M (M)***

Features of documents included in the transmission.

<b>1899</b>	<b>File Sequence Number</b>	<b>M n..3 (M n..3)</b>
	Sequence number of documents included in the transmission. The number must correspond to the number specified in the file name. The sequence number is always > 001. See Chapter 7.3.	
<b>6913</b>	<b>File Format, coded</b>	<b>M an3 (C an..3)</b>
	Translation format of documents included in the transmission. See Appendix number 1 or ODDC 77.	
<b>9906</b>	<b>Format Version</b>	<b>C an..10 (C an..10)</b>
	Version of translation format.	
	<b>Conditions:</b> This data element must be specified if referring to a CAD/CAM document and the translation format is not Native. Version refers to version of the	

standard; IGES, VDAFS etc, and not the version of the processor.

- 1939 Data Code, coded** **M an..3 (M an..3)**
- The character code of the documents included in the transmission. See Appendix number 1 or ODDC 78.
- 4882 Generating System** **C an..35 (C an..35)**
- System used to generate technical documents.
- Conditions:**  
The generating system must be specified on those occasions where data element 6913 = Native.
- 4880 Generating System's Version** **C an..35 (C an..35)**
- Version of generating system.
- Conditions:**  
If data element 4882 is used, data element 4880 must be specified. The method of specifying the version is adapted according to each system's internal (official) way of doing this e.g. V4R1M3 (CATIA), V3R1M0 (CADAM).
- 4889 Generating Command** **C an..35 (C an..35)**
- Command used when the document (file) is created.
- 9909 File Status, coded** **M an..3 (M an..3)**
- Describes document status, i.e. the processors in which they may be used. See Appendix 1 or ODDC 79.
- Note:**  
For Volvo, shall all CAD/CAM documents included in the transmission have the same status.
- 4894 Data Type** **C an..35 (C an..35)**
- Document type. Specifies whether the document is a drawing or a model.
- Conditions:**  
Document type must be specified when the document is a CAD/CAM document.

2D DRAW  
3D MODEL  
3D/2D MIXED MODEL/DRAWING

**C an..35 (C an..35)**

Specifies which of the authorised compression techniques has been used.

**Note:**

A bilateral agreement should be established between Volvo and its partners.

Example of the EFC-segment:

EFC+2+IGS::4.0+ASC++INF++2D+ODZIP001'

**GR1 SEGMENT GROUP 1 C(C**

A conditional segment group used to describe the technical documents, models/drawings, included in the transmission.

### Conditions:

The segment group should only be used on those occasions where CAD/CAM documents are included in the transmission.

### ***DSD DRAWING SPECIFICATION DETAILS M (M)***

Describes a CAD/CAM document in current transmission.

**Note:**

The segment is obligatory when segment group GR1 is used.

**C an..10 (C an..35)**

Volvo's document identification (drawing number, model number).

**Conditions:**

This data element must be used when there is unique document identification on the drawing/model.

**M an..35 (M an..35)**

Description of drawing.

**Conditions:**

When data element 1809 is absent, data element 1808 must be used.

**7860 Design Revision Number** **C an..14 (C an..35)**

Edition of drawing documentation.

**Conditions:**

This data element is used together with data element 1809.

**1376 Engineering Change Number** **C an..17 (C an..17)**

Change number.

**2001 Date, coded** **C n6 (C n6)**

Date on which above drawing edition (data element 7860) has been completed. The format of the date is YYMMDD.

Example of the DSD-segment:

DSD+++01234567+++P06::940120'

***LOF LINKS TO OTHER FILES C(C)***

Logical links to other files in the transmission.

**Conditions:**

This segment will only be used after special agreement.

**1899 File Sequence Number** **M n3 (C n3)**

File number in the transmission to which there is a logical link.

**Note:**

Reference is always made to one of the preceding documents, e.g. a file with sequence number 3 refers to the file with sequence number 2.

**4883 Link Purpose, coded** **C an3 (C an3)**

Logical link between documents. See Appendix number 1 or ODDC 80

Example of the LOF-segment: LOF+2+DRA'

## ***TOT TOTALS M (M)***

### **6060 Quantity**

**M n..3 (M n..15)**

The total number of files, including ENGDAT, included in the transmission.

Example of the TOT-segment:  
TOT+3'

## **7.6 Example of the message**

The example describes a transmission of an ENGDAT message from 1234 Volvo Lastvagnar AB to supplier 987. In addition to ENGDAT, transmission 00000000000009950 also includes a drawing (2D) in Iges format and a model (3D) in Native format. The model has been created in a Catia system. ENGDAT refers to project 9093. Both the drawing and the model have document identification '01234567' and the logical link between these can be deduced from the LOF segment.

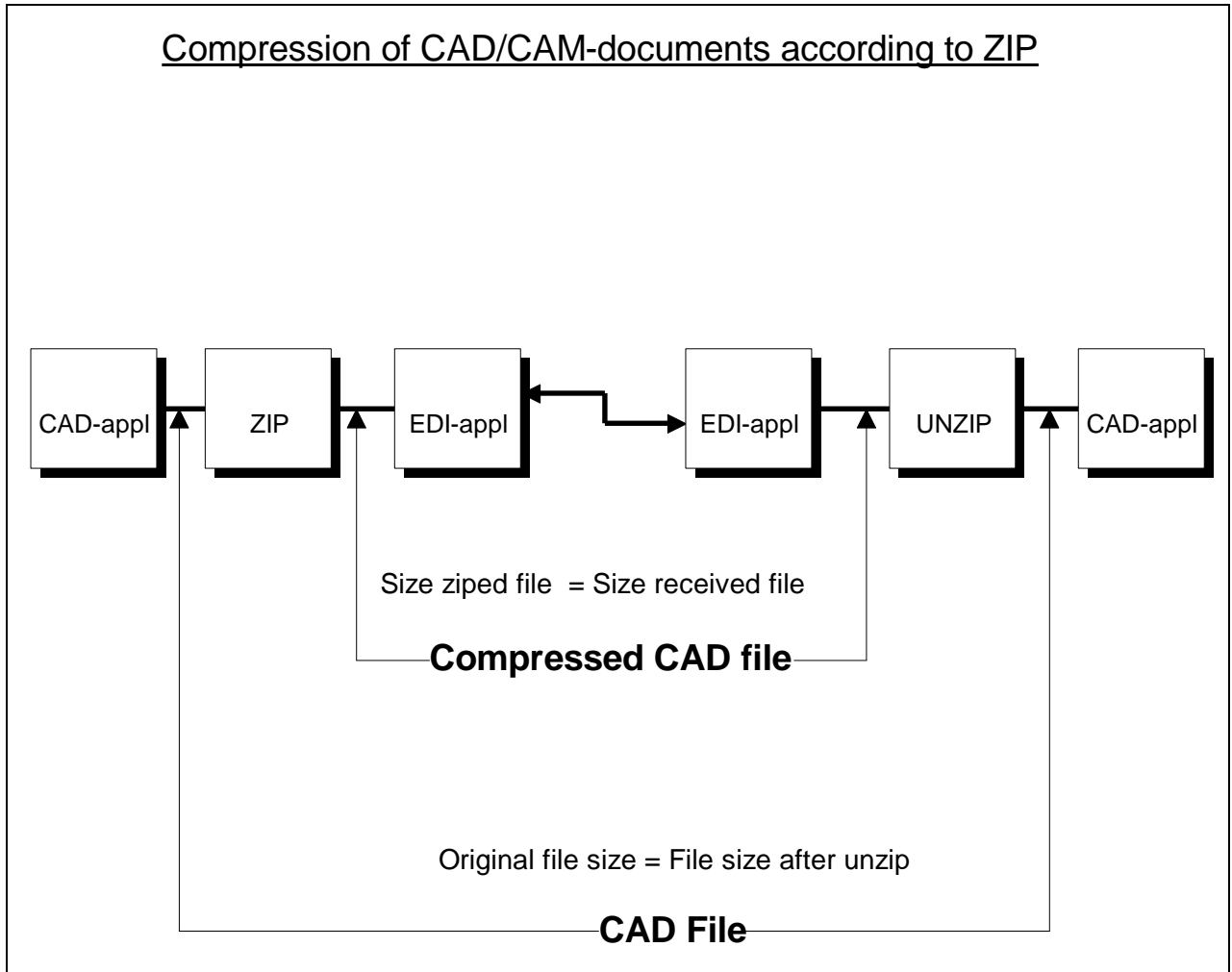
--- Initial service segment according to ISO/EDIFACT ---

```
MID+00000000000009950+940524:1125'  
SDE+:VOLVO TRUCK CORPORATION:::::1234++53430:  
ERIK OLSSON:46 31591235:::::PI01234'  
RDE+:PLAST OCH PLAT AB:::::987++CADCAM:EVA  
PERSSON:46 31112233'  
DAN+:PROJECT+9093'  
EFC+2+IGS::4.0+ASC++INF++2D+ODZIP001'  
DSD+++01234567+++P03::940101'  
EFC+3+NAT::3.1+BIN+CATIA:V4R1M3+INF++3D  
+ODZIP001'  
DSD+++01234567+++P06::940120'  
LOF+2+DRA'  
TOT+3'
```

--- Ending service segment according to ISO/EDIFACT -



## 8.0 Data compression for engineering files



### 8.1 Data compression for CAD/CAE Data files - Recommended practices. (Odette Group 11, 19941127)

#### 8.1.1 Recommended compression product.

The ZIP / PKZIP / GZIP (industry standard) compression program is recommended as a base for data compression. The program can be used on most hardware and operation systems, including: DOS, OS/2, VMS, Windows NT and numerous UNIX systems. To avoid problems due to different use of ZIP options and releases in use at sender & receiver site, the following basic recommendations must be followed.

#### 8.1.2 Recommended ZIP (UNZIP) restrictions.

<b>NUMBER OF FILES</b>	Only one file should be contained in each compressed file
<b>FILE TYPE</b>	Both binary and text files can be compressed. Compressed file is of binary type, transmission protocol mode must be transparent/binary.
<b>COMPRESSION REL.</b>	ZIP rel 1.9 or GZIP (GNU Zip) Rel 1.0.3 or PKZIP Rel 2.04 should be used OR OLDER Releases
<b>DECOMPRESSION REL.</b>	UNZIP Rel 5.0 or GZIP 1.0.3 (same program as for compression) PKUNZIP 2.0.4 or newer must be used for decompression of the different ZIP releases used.
<b>COMPRESS OPTIONS</b>	Standard compression must be used, i.e. NO options related to optimisation shall be used.
<b>EXTRACTION</b>	Self-extraction option shall NOT be used.
<b>STRUCTURE</b>	Original file names (including paths/structure) are not preserved. File structure attributes are generally not preserved between different operating systems in use.
<b>ZIP ENCRYPTION</b>	NOT to be used

### **8.1.3 ZIP / GZIP / PKZIP availability**

ZIP / GZIP are distributed as “share ware” programs. This means that use, copying and further distribution is free of charge. USE of PKZIP needs registration with a nominal charge of USD 50, which allows use at multiple PCs within a corporation.

To obtain ZIP / GZIP the user needs access to Internet by the use of anonymous ftp:

**ZIP:** host Internet address: ftp.pub.net directory path:/pub/archiving/zip/

**GZIP:** host Internet address: prep.a.i.mit.edu directory path:/pub/gnu/gzip/

**PKZIP:** PKWARE Inc.  
9025 N. Deerwood Drive  
Brown Deer, WI 53223, US

Telephone: +1-414-354-8699

#### **8.1.4 Record delimiter representation**

To avoid possible problems caused by different record delimiter representations on different computer platforms, the sending and receiving site must establish an agreement, detailing how to represent control characters in text files before using data compression, i.e. removal and/or appending control characters.

#### **8.1.5 Compression standard identification**

To inform the receiving party that a document has been compressed and in that case, which standard that has been used, the ENGDAT message uses **tag 4891**. For use of ZIP compatible products, adhering the restrictions identified in clause 1-5, this is identified with the character string **“ODZIP001”** in tag 48919.0 Test experience

To minimise the errors that might occur during the implementation, we have listed the most frequently occurred errors from earlier tests.

#### **The form, “Application Agreement ENGDAT”**

Logical address missing  
“Suppliers identity on Volvo” missing  
Data Code missing  
File Format missing

#### **The form, “Specification of CAD/CAM parameters”**

“EOL-character” missing  
“Compression” method missing

#### **Syntax analyses of the ENGDAT message**

Incorrect logical addresses in the UNB segment.  
(There is often confusion between logical address and physical address)  
Incorrect virtual file name in OFTP, not according to the standard as follows:  
ENG<Exchange reference><number of files><file number>  
Non-unique “exchange references”  
Wrong numbering of the ENGDAT file, should always be <file number> 001  
Supplier number in RDE/SDE tag 3296, missing, or not according to “Application Agreement ENGDAT”  
Non-permitted characters

#### **Logical check of ENGDAT**

Exchange reference in the Virtual file name and the document number in the MID segment are not identical  
The Volvo identity of the supplier is missing, (SDE tag 3296)  
Incorrect structure of phone number; <land code><space><area number>< subscriber number>

E-mail address of the receiving person at Volvo, missing  
ODDC codes not used, or incorrectly used  
File format of CAD-files not according to the supplier register in the EXTER system

### **Miscellaneous**

Misunderstanding regarding ENGDAT. (The difference between the ENGDAT message and an ordinary text file )  
Number of files in the package is not according to the number of files in the virtual file name  
Engineering files are not compressed.

## **10.0 Example of the information content in an ENGDAT as used by Volvo**

### **Sender:**

Sender	(Name)	=Volvo Truck Corporation
Sender	(Id)	=Volvo Truck Corporation's identity at the supplier
Sender	(Dept.)	=26600
Sender	(Person)	=Jüri Aadli
Sender	(e-mail)	=T083805

### **Receiver**

Equivalent as for sender, according to the agreements.

### **Properties of CAD files:**

Translation format	⇒	CAD/CAM Agreement
Character representation	⇒	CAD/CAM Agreement
Validity	⇒	INF (For information only)
Document type	⇒	2D, 3D or 3D/2D
Compression technique	⇒	ODZIP001 (according to „Specification of CAD/CAM parameters”)

### **Description of the CAD documents:**

Identity	⇒	99999999
Issue	⇒	009
Date of release	⇒	961103

## **Appendix 1**

### ***Country codes and currency codes***

Extract from ODDC 6 and ODDC 7.

<b>AT</b>	Austria	<b>ATS</b>	Schilling
<b>BE</b>	Belgium	<b>BEF</b>	Belgian Franc
<b>CA</b>	Canada	<b>CAD</b>	Canadian Dollar
<b>CH</b>	Switzerland	<b>CHF</b>	Swiss Franc
<b>DE</b>	Germany	<b>DEM</b>	German Mark
<b>DK</b>	Denmark	<b>DKK</b>	Danish Krone
<b>ES</b>	Spain	<b>ESP</b>	Pesetas
<b>FI</b>	Finland	<b>FIM</b>	Finish Mark
<b>FR</b>	France	<b>FRF</b>	French Franc
<b>GB</b>	United Kingdom	<b>GBP</b>	Pound Sterling
<b>IE</b>	Ireland	<b>IEP</b>	Irish Pound
<b>IT</b>	Italy	<b>ITL</b>	Lire
<b>JP</b>	Japan	<b>JPY</b>	Yen
<b>NL</b>	The Netherlands	<b>NLG</b>	Guilden
<b>NO</b>	Norway	<b>NOK</b>	Norwegian Krone
<b>PT</b>	Portugal	<b>PTE</b>	Escudos
<b>SE</b>	Sweden	<b>SEK</b>	Swedish krone
<b>US</b>	United States	<b>USD</b>	US Dollar

### *Sort codes*

Extract from ODDC 25.

<b>CEN</b>	100 pieces
<b>FTK</b>	Square foot
<b>GRM</b>	Gram
<b>KGM</b>	Kilogram
<b>LTR</b>	Liter
<b>MIL</b>	1000 pieces
<b>MTK</b>	Square meter
<b>MTR</b>	Meter
<b>PCE</b>	Piece

### *Codes for additional expenses*

Volvo's application of ODDC 9.

<b>0100</b>	Sundries
<b>0200</b>	Transports
<b>0300</b>	Packages
<b>0800</b>	Initial expenses
<b>1200</b>	Finish expenses

### *Codes for file format*

Extract from ODDC 77.

<b>NAT</b>	Native
<b>IGS</b>	IGES
<b>VFS</b>	VDAFS
<b>VIS</b>	VDAIS
<b>SET</b>	SET
<b>UNI</b>	UNISURF
<b>SPA</b>	SPAC
<b>STP</b>	STEP
<b>DXF</b>	DXF
<b>TI4</b>	TIFF CCITT GR4 raster format
<b>TI3</b>	TIFF CCITT GR3 raster format
<b>CAP</b>	Cals Type 1 Product CCITT GR4 raster format
<b>CAT</b>	Cals Type 1 Tech Pub CCITT GR4 raster format
<b>FOR</b>	FORMTEK GR4 raster format
<b>FRM</b>	FRAMEMAKER text format
<b>INL</b>	INTERLEAF text format
<b>WOW</b>	WORD FOR WINDOW text format
<b>WOP</b>	WORD PERFECT text format
<b>EXE</b>	(PC) text format
<b>CGM</b>	CGM printer format
<b>TIP</b>	TIFF printer format
<b>PSC</b>	POSTSCRIPT printer format
<b>CAL</b>	CALCOMP printer format
<b>BEN</b>	BENSON printer format
<b>HPG</b>	HPGL printer format
<b>DMI</b>	DMIS input
<b>DMO</b>	DMOS output

### ***Data code***

Extract from ODDC 78.

<b>ASC</b>	ASCII, 7-bit
<b>646</b>	ISO 646 IRV, (International Reference Version)
<b>885</b>	ISO 8859-1, (Latin-1) used for ASCII 8-bit
<b>EBC</b>	EBCDIC
<b>BIN</b>	BINARY
<b>OTH</b>	Other

### ***File status codes***

Extract from ODDC 79.

<b>QUO</b>	For offer/quotation
<b>TOD</b>	For tool design
<b>TOM</b>	For tool manufacturing
<b>MAN</b>	For manufacturing
<b>INF</b>	For information only
<b>NED</b>	New design revision
<b>ENC</b>	For engineering consultation
<b>USP</b>	Unspecified

### ***Codes for link purpose***

Extract from ODDC 80.

<b>PAF</b>	Parent file
<b>SUF</b>	Sub file
<b>LAY</b>	Layer convention
<b>MOD</b>	Model
<b>DRA</b>	Drawing
<b>TEC</b>	Technical regulation
<b>PLF</b>	Plot file
<b>COJ</b>	Conversion journal

For more information, see Odette codes, ODD