

VOLVO

EDI- Engineering Data Implementation Package

9308-2
(980330)

Volvo Information Technology AB

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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 ENGDAT file including the CAD files
4. The supplier transmits to Volvo
5. Volvo evaluates the received ENGDAT 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 ENGDAT message and the CAD files to the supplier according to the agreements. The initial test always consists of an ENGDAT 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 ENGDAT 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 27 characters at Volvo Cars and 35 at Volvo Trucks 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, and between the various companies within Volvo.

The technology will be progressively introduced and will basically apply to all suppliers and companies within Volvo.

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

1. Establishment of communication
2. Implementation of Odette messages

Stage 1 COMMUNICATION

All Volvo companies communicate via Volvo IT.

In normal circumstances, ONE of Volvo's companies tests the communication with your company. Before this communication test takes place, a number of identities and parameters must be finalised and documented. Detailed information is given under inserts 2 and 3.

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.

Stage 2 APPLICATIONS

The ODETTE message which are implemented at Volvo are currently:

DELINS	Delivery schedule
CALL-OFF	Call-of schedule
AVIEXP	Despatch advice
INVOIC	Commercial invoice
SYNCRO	Sequence/direct delivery
ENGDAT	Engineering data

In theory, it is sufficient if a message has been tested and approved by one company within Volvo, to permit the message to be used in production for all companies in the groups, but we would recommend that all suppliers should always test together with each individual company in Volvo before a message is taken into production. This is to give the individual companies at Volvo the opportunity of testing the application in their internal systems.

When the first contact is made, it is a good idea to pass on information about and discuss the messages, which are going to be implemented between the parties. At this time, the sender and recipient should make a note of details such as:

- File names and
- Versions handled in each message

In normal circumstances, DELINS is implemented first, followed by AVIEXP and INVOIC. When the implementation of a message has been completed, either the Volvo Company or the supplier can take the initiative and conduct a test and implement the next message.

Delivery schedule DELINS

Implementation of the delivery schedule is primarily aimed at ensuring that data from the various companies in Volvo can directly update the supplier's order system via computer-to-computer communication. Each supplier is of course free to perform a complete implementation of such direct updating in stages.

Call CALL-OFF

This message, which is a special implementation of DELINS, is used to update the delivery schedule with call-off information and changes in quantity and/or delivery date. The call-of schedule can update a varying number of weeks in the delivery schedule and should not replace the entire delivery schedule, it only updates within the specified time interval.

The message can be sent with optional frequency, but transmissions are usually made weekly.

Despatch advice AVIEXP

Despatch advice shall normally be sent within an hour of goods consignment.

Implementation of the AVIEXP message is normally done once the delivery schedule is in production.

Commercial invoice INVOIC

Implementation of the INVOIC message is normally done once delivery schedule DELINS and despatch note AVIEXP have been put into production.

Sequence/direct control SYNCRO

This message is normally only implemented after special agreement. The message is implemented in parallel with the DELINS message.

Despatch order KANBAN

Use of the KANBAN message is agreed individually with each supplier as appropriate. The KANBAN message can either be used in parallel with DELINS or as the only call off information.

Engineering data ENGDAT

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

4.0 Communication

4.1 Specifications

Network service and protocol

Volvo communicates point-to-point over the public switched network service based on X.25. As file transfer protocol, OFTP will be used (Odette ref: OD.G4/86/090).

Asynchronous access (X28) may be used in exceptional cases. This should be approved by the suppliers client within Volvo. 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. Volvo stipulates however, that the third party must communicate to Volvo using X.25 and OFTP, i.e. the same principles that govern direct communications.

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

Volvo will base file transmission on predefined file names, specific for each application. Defining these names is part of the necessary preparation before an application can be used. The file names will be registered at Volvo, so Volvo is not able to receive file names with other names than those agreed upon.

Note:

Please note that the ENGDAT application is exception from the above rule. 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

The enclosed form is intended as a basis for an agreement relating to communication. Suppliers wishing to initiate Odette communication with Volvo are requested to fill in the form and return it to:

Volvo Information Technology AB
"Communication Agreement"
Dept. 9385
S - 405 08 GOTHENBURG
SWEDEN

We will then contact the supplier and arrange for a communication test.

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.

Comments regarding the form:

Physical address

Odette's implementation group has developed recommendations for so-called physical addressing. Each country works out its own addresses based on these recommendations. In Sweden, where the physical address is based on the tax authority's company code, it looks like:

PHYSICAL ADDRESS O094200009999999999XXXXXX

where, O = Qualifier for Odette.

0942 = Number for the Swedish Tax Board company code.

00009999999999 = The Swedish Tax Board company code.

XXXXXX = Internal code per company.

This syntax for the physical address must be used. If necessary, ask your software supplier for help. For other countries, please contact your national Odette organisation.

Network user identification (NUA)

This is the user's subscription number in X.25 network. The layout is defined in the X.121 standard by CCITT. The first four digits is a network identifier (DNIC), e.g. the Swedish Datapak 2 has 2403. The DNIC is followed by the network terminal number (NTN) with a maximum length of 10, sub-address included.

Stand-by

The stand-by is the hours that the communication system is available. Volvo has a 24-hour stand-by, and if possible, we want the partner to have the same. If not, it is important that a stand-by is agreed upon with Volvo. For instance, the partner might be available every night between 1700-0700. Files shall not be queued up for several days at Volvo.

Password

For communication using OFTP there are two passwords defined, one for each partner. These are alphanumeric with a maximum length of 8 characters. On the form Volvo's send password is already filled in. The partner shall fill in his password in the corresponding space.

4.3 Security

A few comments about access violation when using Odette and X.25. There are, of course, some risks in using a public network for communication, but we believe that the security level in the OFTP is enough for the time being. The OFTP makes it possible to use both user identifications and passwords. Volvo's application also checks the NUA of the incoming call. Even if someone should be able to access an Odette system the possible damages are small. It is only possible to pick up files or to send false files. To be able to make any sense of the contents of a file, it is necessary to know both Odette syntax and some specific information concerning the companies involved. To have a good stand-by in the application thereby avoiding that files are queued for a long time, improves the security a great deal.

Some applications, like customs data handling, carry rigorous requirements in the form of seals and so on. In such cases, these requirements are met by applications outside Volvo Data's central EDI system.

Communication agreement

	Volvo	Communication partner
Company Name Address	Volvo Information Technology S-405 08 GOTHENBURG SWEDEN	Supplier Number
Physical address	O094200005561032698000RVD	
Network Service	DATAPAK 2 (The Swedish Public X 25 service)	
Network address (NUA)	24037221208	
Communication Product name	RVS	
Communication Product, Origin	Volkswagen Germany	
Stand-by	00-24 Sunday 00-17	
Contact Name	EDI group Department 9642	
Phone No/ Fax No E-mail	+46 31 66 22 00 +46 31 66 22 01 support.edi@volvo.com	
Test Contact Name	EDI group Department 9642	
Phone No/ Fax No E-mail	+46 31 66 22 00 +46 31 66 22 01 support.edi@volvo.com	
Password to be received		VOLRVD
General		Test Report
Network standard	X 25, native	
Protocol standard	OFTP	
Test start date		
Prod start date		
Remarks		

Communication agreement

	Volvo	Communication partner
Company Name Address	Volvo Information Technology S-405 08 GOTHENBURG SWEDEN	Supplier Number
Physical address	O0942000055610326980ISDN1	
Network Service	ISDN	
Network address (NUA)	+46 31 649852	
Communication Product name	RVS	
Communication Product, Origin	Volkswagen Germany	
Stand-by	00-24 Sunday 00-17	
Contact Name	EDI group Department 9642	
Phone No Fax No E-mail	+46 31 66 22 00 +46 31 66 22 01 support.edi@volvo.com	
Test Contact Name	EDI group Department 9642	
Phone No Fax No E-mail	+46 31 66 22 00 +46 31 66 22 01 support.edi@volvo.com	
Password to be received		VOLCAD
General		Test Report
Network standard		
Protocol standard	OFTP	
Test start date		
Prod start date		
Remarks		

5.0 Application of ISO/ EDIFACT and OFTP

5.1 General

At the end of 1987, the ISO (International Standardisation Organisation) adopted a general set of rules for the construction of standardized data messages between the industrial, commercial and transport sectors. The rules and syntax were presented in ISO/EDIFACT DIS 9735.

Odette has decided to apply certain ISO/EDIFACT recommendations. This application is presented in the document entitled

” Odette application of ISO/EDIFACT - June 1988 Version 3 ” .

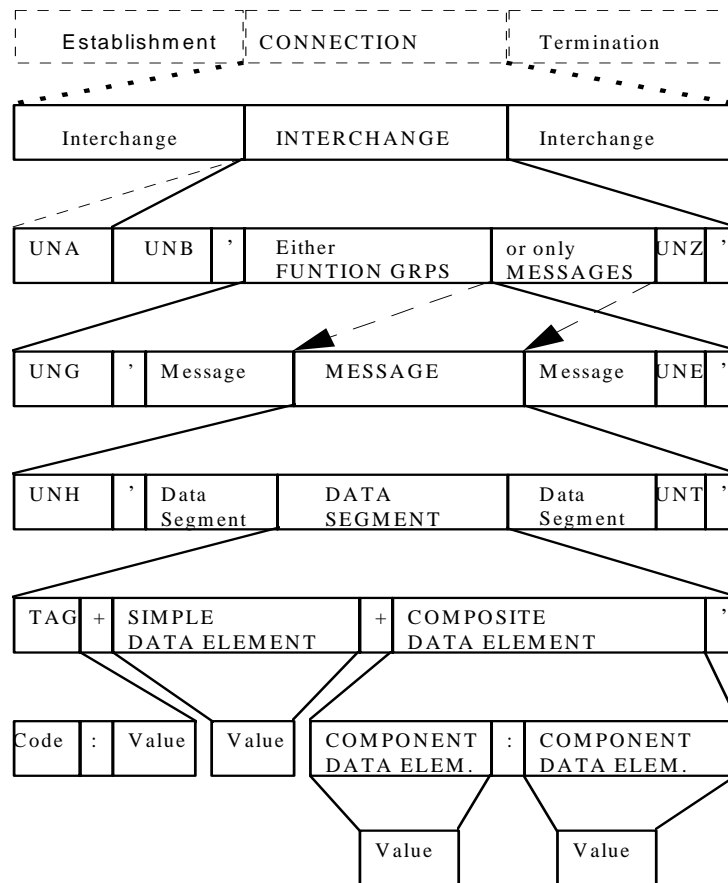
Among the cornerstones of the syntax we find the following:

- Transfer structure
- Service segment (UNB, UNH, UNT, UNZ etc.)
- Separators
- Character sets (abc, ABC)
- Partner Identification

For further information, we recommend you to study the ISO/EDIFACT specification.

5.2 Transfer structure

Transfer according to ISO/EDIFACT follow a hierarchical pattern. The diagram below is from the ISO/EDIFACT specification.



5.2.1 Service segment

Only UNB and UNH and the corresponding final trailer segments UNZ and UNT are used. For a better understanding of the details below, please refer to ISO/EDIFACT 9735 or Odette’s implementation of ISO/EDIFACT.

5.2.2 Separators

The following characters are reserved for special use in ISO/EDIFACT:

- + Segment tag and data element separator
- : Component data element separator
- ‘ Segment terminator
- ? Release character

5.2.3 Character sets

Volvo supports both level A and level B. Level A only involves UPPER CASE letters.

The character sets are specified in section 5 in ISO/EDIFACT. It is crucial that only internationally recognised characters (A-Z) are used.

Volvo recommends the use of only level A wherever possible.

5.2.4 Identification of partners

ODETTE has tried to use existing code systems for identification of partners.

This applies to both physical and logical addresses. However, the various data messages make use of current methods of identifying partners.

This means for instance, that each supplier receives a supplier number from each customer and that it is the responsibility of the supplier to keep track of this number.

As regards physical and logical addressing, the rules defined for each country participating in Odette are to apply.

For Sweden, the Mechanical engineering Association has defined the following structures, one for the Physical and two for the Logical Address.

PHYSICAL ADDRESS O094200009999999999XXXXXX

where, O = (letter O) for Odette

0942 = Code for the Swedish National Tax Board

00009999999999 = National Tax Board company code

XXXXXX = Internal code/company

(The Physical Address is used in the OFTP software)

Logical address (UNB 0004/0010)

Together with the qualifier, these data elements produce a unique global identity for the sender or recipient. It is important that the logical address is based on the recommendations specified by the national Odette organisations.

Qualifier (UNB 0007)

Refers to the logical address (0004/0010). A level of significance is given to the logical address, depending on the value allocated to the qualifier. A value of OD or 30 shows that Odette's rules apply to the logical address.

Logical addresses with the qualifier OD are in accordance with the former rules for the logical address. This qualifier have been replaced by qualifier = 30. If the software or the network restricts the use of qualifier 30, shall a special agreement established.

Volvo will use the latter for new installations.

Internal code per company (UNB 0008(0014))

Can be used to address a unit/business process within a company.

Examples of logical addresses

LOGICAL ADDRESS UNB 0004/0010 using qualifier
UNB 007 =OD 09420000999999999999YYYYYY

where, 0942 = Code for the Swedish National Tax Board
0000999999999999 = National Tax Board company code
YYYYYY = Internal code per company

LOGICAL ADDRESS UNB 0004/0010 using qualifier
UNB 0007 =30 09420000999999999999

where, 0942 = Code for the Swedish National Tax Board
0000999999999999 = National Tax Board company code
UNB 0008/0014 using qualifier UNB 0007 = 30
YYYYYY = Internal code per company

5.3 Detailed application

Here follows a detailed example of the relevant service segments (UNB, UNH, UNT and UNZ). The example refers to the delivery schedule for the Volvo Truck Corporation (VTC).

The syntax follows the same principles when dealing with application of despatch advice and invoices. The difference is that the sender and receiver change places, and also that other application references are used. For more detailed information see message description.

UNB, INTERCHANGE HEADER M (M)

The first record in a data file relating to VTC should have the following layout:

```
UNB+UNOA:1+094200005560139700:30:001001+
094200005566778899:30:YYYYYY+940614:1735+
1'
```

S001 SYNTAX IDENTIFIER M (M)

0001 Syntax identifier M a4 (M a4)

Format UNOA or UNOB. UNO, standing for Edifact syntax, followed by a code for character set level A or B.

0002 Syntax Version number M n1 (M n1)

Syntax version. So far version 1.

S002 INTERCHANGE SENDER M (M)

0004 Sender Identification M an..24 (M an..35)

Logical address, detailed information see Chapter 5.2.4

0007 Partner identification code qualifier M an2 (C an..4)

Detailed information see Chapter 5.2.4

0008 Address for reverse routing C an14 (C an..14)

Detailed information see Chapter 5.2.4

S003 INTERCHANGE RECIPIENT M (M)

0010 Recipient Identification M an..24 (M an..35)

0007 Partner Identification code qualifier M an2 (C an..4)

Detailed information see Chapter 5.2.4

0014	Routing Address	C an14 (C an..14)
	Detailed information see Chapter 5.2.4.	
S004	DATE/TIME OF PREPARATION M (M)	M n6 (M n6)
0017	Date	
	Date of preparation (YYMMDD).	
0019	Time	M n4 (M n4)
	The time at which the message was created. The time is written HHMM.	
0020	INTERCHANGE CONTROL REFERENCE	M an..14 (M an..14)
	Unique serial no./recipient and interchange type.	
0026	APPLICATION REFERENCE	C an..14 (C an..14)
<i>UNH, MESSAGE HEADER M (M)</i>		
	The beginning of every message in a transferred data file must have a UNH segment. The introduction for the DELINS message would look like this: UNH+1+DELINS:3::OD'	
0062	MESSAGE REFERENCE NUMBER	M an..14 (M an..14)
	Unique serial number within the interchange. If the same type of message occurs several times during the transfer, each new occurrence of the message will get the next serial no. In the sequence.	
S009	MESSAGE IDENTIFIER M (M)	
0065	Message type	M an..6 (M an..6)
0052	Message version number	M n..3 (M n..3)
	Current version of the message.	
0051	Controlling agency	M an..2 (M an..2)
	For Odette use OD.	

UNT, MESSAGE TRAILER M (M)

Every message in the transmission is concluded with a trailer segment. This segment contains the following information: UNT+657+1'

0074 NUMBER OF SEGMENTS IN THE MESSAGE M n..6 (M n..6)

No. of segments in the message (incl.UNH and UNT).

0062 MESSAGE REFERENCE NUMBER M an..14 (M an..14)

Unique serial number within the interchange. Must match corresponding reference in UNH (see above).

UNZ, INTERCHANGE TRAILER M(M

Every transmission is concluded with a trailer segment. This segment contains the following information: UNZ+2+1'

0036 INTERCHANGE CONTROL COUNT M n..6 (M n..6)

No. Of messages in the transmission (irrespective of message type).

0020 INTERCHANGE CONTROL REFERENCE M an..14 (M an..14)

Must match corresponding reference in UNB (see above).

5.4 Explanation of the EDI form. (Applications Agreement)

The EDI form shall be filled in when the supplier wishes to send or receive EDI messages. There are forms for several different companies, as well as one for those companies who have not yet started with Odette, but where Volvo Transport needs the despatch advices. It is important that the form is correctly filled in, to avoid delayed installation.

Contact name	Existing contact persons.
Phone No. Fax No.	Fill in the contact persons phone No and Fax No.
Volvos ID on supplier	Fill in Volvo's supplier number on your company.
Logical address	See Chapter 5.2.4
Code representation	See Chapter 4.1
File format	See Chapter 4.1
Virtual File Name	See Chapter 7.3
Message type and version	Mark a cross, message type and ONE version.
Partners identity on Volvo	Write your company's identity of the Volvo Company.

Application Agreement ENGDAT-message

Volvo Truck Corporation Gothenburg

Send this form to:						
Volvo Truck Corporation Dept 32310 ARH7 405 08 Göteborg Fax No + 46 31 66 10 50 Email: support.edi@volvo.com						
Supplier name						
Address						
Contact name						
Phone No.						
Fax No.						
E-mail						
Volvos ID on supplier (Supplier No)						
Technical details:						
Logical Address UNB 0004/0010						
Qualifier UNB 0007						
Your internal address UNB 0008/0014						
Code representation		ASCII/EBCDIC				
File format		F/80 V/recl U/recl				
Virtual file name according to the Odette specification, ENGDAT V1.						
Message type and version that should be transferred between companies:						
ENGDAT		Partners identity on Volvo	Logical Address	Qual	Internal address	Volvos fa No
Version 1			09420000556013970 0	30	001001	1001

Application Agreement ENGDAT-message

Volvo Construction Equipment

Send this form to:						
Volvo Construction Equipment Dept IEU S-631 85 Eskilstuna Fax No + 46 16 15 29 43 Email: support.edi@volvo.com						
Supplier name						
address						
Contact name						
Phone No.						
Fax No.						
E-mail						
Volvos ID on supplier (Supplier No)						
Technical details:						
Logical Address UNB 0004/0010						
Qualifier UNB 0007						
Your internal address UNB 0008/0014						
Code representation		ASCII/EBCDIC				
File format		F/80 V/recl U/recl				
Virtual file name according to the Odette specification, ENGDAT V1.						
Message type and version that should be transferred between companies:						
ENGDAT		Partners	Logical Address	Qual	Internal	Volvos
Version 1		identity on			address	fa No
		Volvo				
			09420000556310131	30	010215	10215
			9			

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

ENG (AN3):	Message identification. Only used for the ENGDAT message.
Exchange Reference (AN17):	Transmission identification. Set by the sender and must be unique for each transmission between the sender and the receiver.
Number of files (N3):	Number of files in the transmission, including ENGDAT
File number (N3):	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).

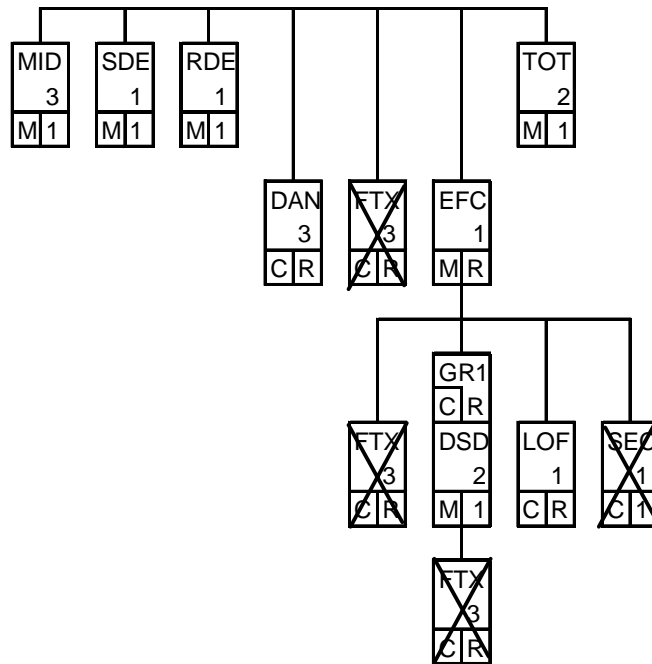
For more detailed information, please refer to ENGDAT specification, version 1.

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.

7.5 Detailed application of ENGDAT**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)**3036 Party Name C an..35 (C an..35)**

Name of receiving organisation.

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

Identification of receiver at sender's end.

3412 Department of Employee C an..35 (C an..35)

Department of receiver.

3412 Department of Employee C an..35 (C an..35)

Name of receiver.

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

Format: country code, area code, subscriber number.

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

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.

- 1001 Document Name, coded** **C n3 (C n3)**
Code for document type. See ODDC 1.
- 1000 Document Name** **C an..17 (C an..17)**
A document name can denote projects, orders, etc.
- Conditions:**
If the code for the document type is absent, this data element should be used.
- 1004 Document Number** **C an..17 (C an..17)**
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.
- 2007 Document Date, coded** **C n6 (C n6)**
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.

- 1899 File Sequence Number** **M n..3 (M n..3)**
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.
- 6913 File Format, coded** **M an3 (C an..3)**
Translation format of documents included in the transmission. See Appendix number 1 or ODDC

77.

9906 Format Version **C an..10 (C an..10)**

Version of translation format.

Conditions:

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.

Valid document types for a CAD/CAM document:

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

4891 Compression **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'

GRI 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.

1809 Drawing Number **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.

1808 Drawing Description **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*

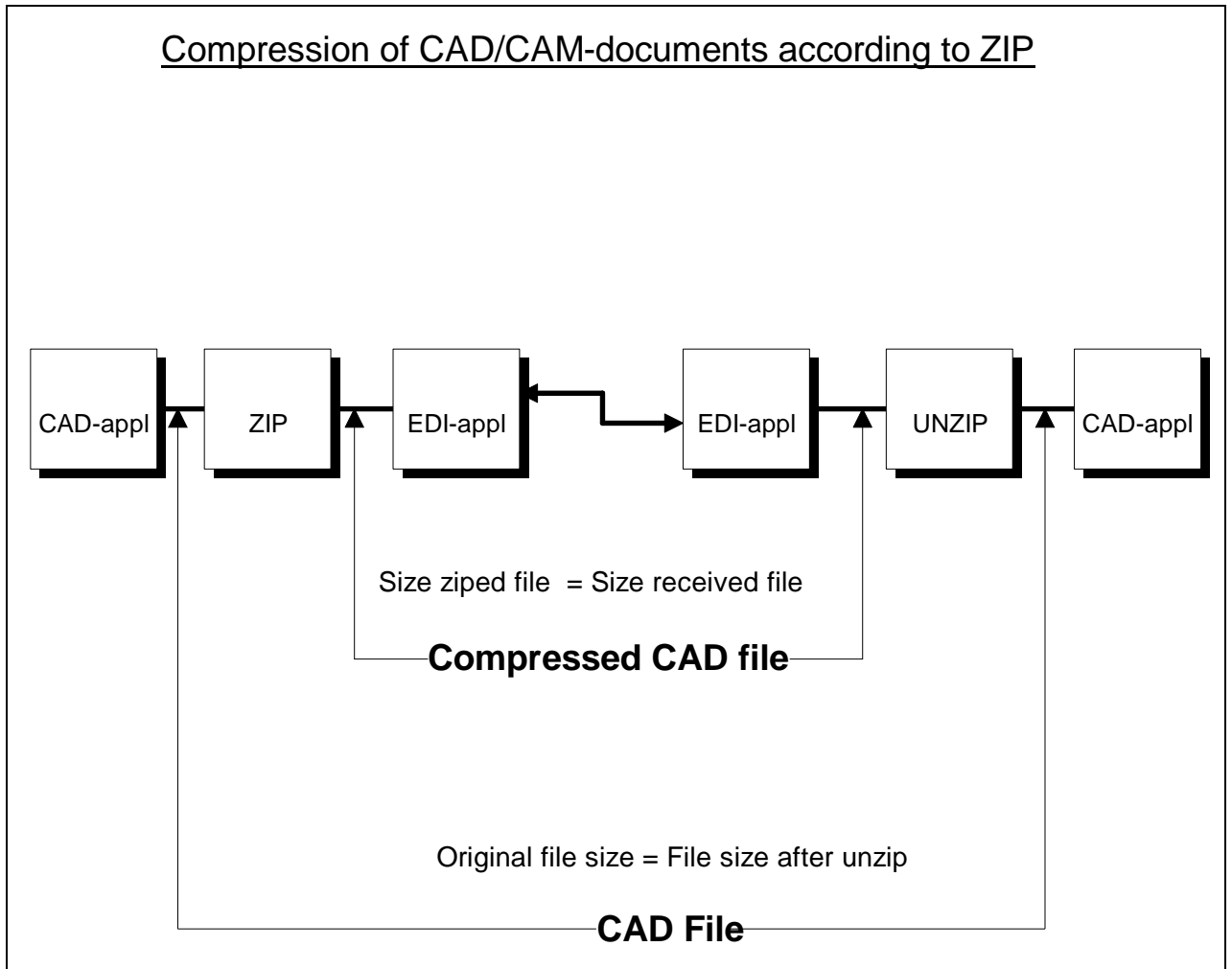
The example describes a transmission of an ENGDAT message from 1234 Volvo Lastvagnar AB to supplier 987. In addition to ENGDAT, transmission 00000000000009950 also includes a drawing (2D) in Iges format and a model (3D) in Native format. The model has been created in a Catia system. ENGDAT refers to 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.

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

Telefax: +1-414-354-8559

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 4891

9.0 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 analyse 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.

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

Sort codes

Extract from ODDC 25.

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

Codes for additional expenses

Volvo's application of ODDC 9.

0100	Sundries
0200	Transports
0300	Packages
0800	Initial expenses
1200	Finish expenses

Codes for file format

Extract from ODDC 77.

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

Data code

Extract from ODDC 78.

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

File status codes

Extract from ODDC 79.

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

Codes for link purpose

Extract from ODDC 80.

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

For more information, see Odette codes, ODDC

Appendix 2 Contact persons

If you have any questions, please contact:

ENGDAT specification:

Your national Odette organisation

ENGDAT, application programme:

Your software supplier

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