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GLOBAL TRANSPORT LABEL SUPPLIER IMPLEMENTATION GUIDELINE

This standard describes the technical requirements for the implementation of the Global Transport Label (GTL) for the suppliers of Purem by Eberspächer worldwide.

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1 PURPOSE

This standard describes the technical requirements for the implementation of the Global Transport Label (GTL) for the suppliers of Purem by Eberspächer worldwide.

2 DEFINITIONS / TERMS / ABBREVIATIONS

AIAG	Automotive Industry Action Group
ASCII	American Standard Code for Information Interchange
ASN	Advanced Shipping Notification
DataMatrix	2D dot matrix code according to ISO / IEC 16022
DMC	Data Matrix Code
DUNS-No.	Company number (DUNS-Number) registered by "DUN & BRADSTREET"
EDI	Electronic Data Interchange
EDIFACT	Electronic Data Interchange for Administration
e.g.	for example (e.g.: abbreviation of Latin "exempli gratia")
Fig.	Figure
KLT	dt. Kleinladungsträger / engl. Hand held tote
GTL	Global Transport Label
HHT	Hand held tote (A small box)
IEC	International Electrotechnical Commission
ISO	International Association for Standardization
JAMA	Japan Automobile Manufacturers Association
JAPIA	Japan Auto Parts Industries Association
min.	minimum
mm	millimeter
nm	nanometer
ODETTE	Organization for Data Exchange by Tele Transmission
pt	point / points
SLC	Small Load Carrier
VDA	Verband der Automobilindustrie (German Assoc. of the Automotive Industry)
WebFDI	Webbased Electronic Data Interchange

3 IMPLEMENTATION PROCEDURE

The changeover (start date) to the GTL must be agreed with Purem by Eberspächer.

Before adaption to the GTL, the supplier must send a print sample to Purem to check the barcode specifications in accordance with ISO / IEC 15415, 15416, 15417 and 16022. Furthermore, an EDI test must be carried out using EDIFACT D97A. If the checks are positive, the GTL will be approved, hereafter the use of the new label is mandatory.

4 INTRODUCTION TO THE GLOBAL TRANSPORT LABEL

4.1 GLOBAL STANDARD

Modern supply processes for automotive parts require efficient communication between the parties involved. Clear, systematic labeling of products and transport units allows easy identification. Packaging units must always be labeled with uniform, standardized, and barcode-readable transport labels.

Representatives from Europe (Odette), Japan (JAMA / JAPIA), and North America (AIAG) have jointly developed a "Global Transport Label" standard that can be used worldwide for supplier and customer relationships. For this standard, the new VDA guideline 4994 "Recommendation for utilization of the Global Transport Label (GTL)" has been published in March 2016. Purem by Eberspächer has complied with this standard in the design of its transport label, which suppliers must use for labeling of goods. This guideline describes the requirements of Purem by Eberspächer for the Global Transport Label (GTL) according to VDA recommendation 4994. It deals with the technical information required for the implementation of the GTL and specifies the contents of the fields and the barcodes of labels in various dimensions.

The Global Transport Label (GTL) of Purem by Eberspächer corresponds to VDA recommendation 4994 (layout, font size, written form and distances). Where special regulations for Purem by Eberspächer are needed, this is described. All other regulations of the VDA4994 are valid for Purem by Eberspächer unmodified. Suppliers can arrange deviations bilateral if they are reasonable or technically needed from a process view.

4.2 FUNCTION OF THE GLOBAL TRANSPORT LABEL

The Global Transport Label is used to identify product and transport packaging in the company's internal material flow and on the transport route between the sender of the goods, the forwarding agent and the recipient of the goods. It enables a unique package identification, contains information on the material and supports efficient handling through machine-readable data on 1D - and 2D barcode symbols.

Depending on the packaging level, the label usually fulfills different control functions:

- Transport packaging / loading unit: Containers or packages are referred to as loading units, which are usually individually loaded or unloaded during transport with industrial trucks. Examples are loading units made of pallets, hand held totes (HHT) and packaging aids (lids etc.) or large load carriers. They form the outer packaging: the label is used to clearly identify the load unit, including information on logistics and the material. The main focus of use is shipping, the entire, sometimes multi-stage transport chain from the supplier to Purem, the incoming goods at Purem and - as long as the loading unit is not separated or it is a simplified loading unit - internal handling up to the storage of the loading unit at Purem by Eberspächer.
- Product packaging / inner packaging: The label is used to clearly identify the package and material identification with additional logistics information. The main focus of the use of the label is the in-house handling of a single package at the supplier and at Purem by Eberspächer up to the point of consumption. The label on the inner packaging is often referred as the "SLC Label" or the "KLT Label" or in English "HHT Label".

In case of simplified (single-stage) loading units, both aspects are combined. On single-level packaging, the outer packaging / loading unit is also the inner packaging.

5 SIZE, LAYOUT AND APPLICATION OF THE LABEL

5.1 DIMENSIONS

The size of the label can depend on the packaging size and on the region in the world in which it is used. The following list is considered a comprehensive enumeration, following VDA 4994:

- A5, 210mm x 148mm see Figure 2;
- Based on A5, the North American region can also use the half-letter format 215.9 mm x 139.7 see Figure 3;
- A6, 148mm x 105mm or 152.4mm (6 inches) x 101.6mm (4 inches) - see Figure 4;
- SLC1: Label for small load carriers (HHTs) 210mm x 74mm - see Figure 5;
- SLC2: Label for flat small load carriers 210mm x 42mm see Figure 6.

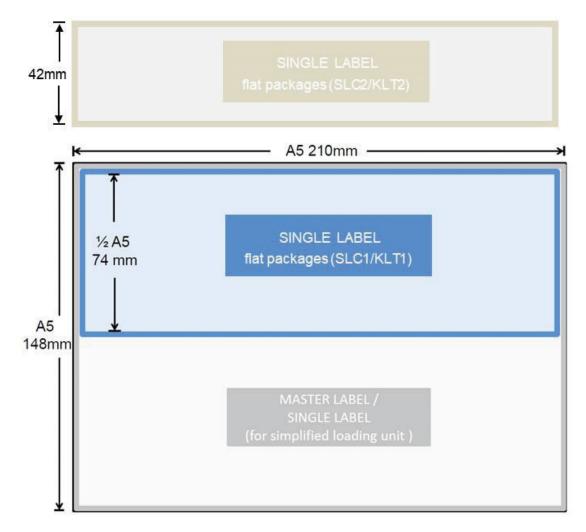


Fig. 1: Dimensions of transport label according to VDA-Norm 4994

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Fig. 2: Label dimension "A5"

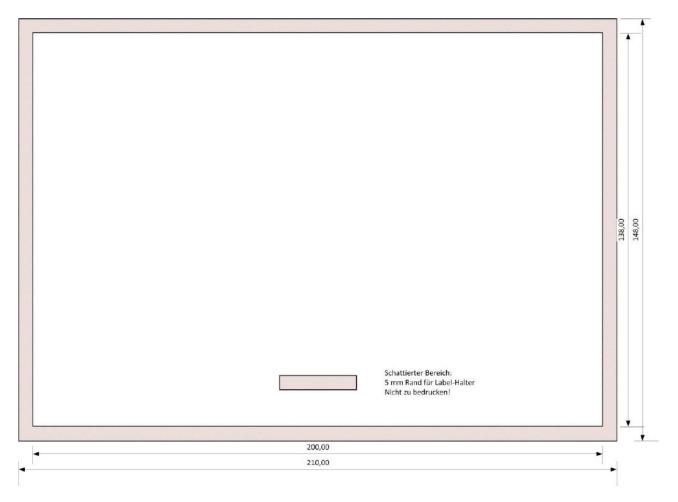


Fig. 3: Label dimension "Half Letter"

			-
		129,7 mm (5.1 in)	139.7 mm (5.5 in)
	A 5 mm (0.2 inch) margin has been designed for top and bottom and 8 mm to the left and right border of the label to suit all label holders and printers. Nothing shall be printed within these spaces.	•	_
	200 mm		
6	► 215,9 mm (8.5 in)		



Fig. 5: Label dimension "SLC1 / HHT1"

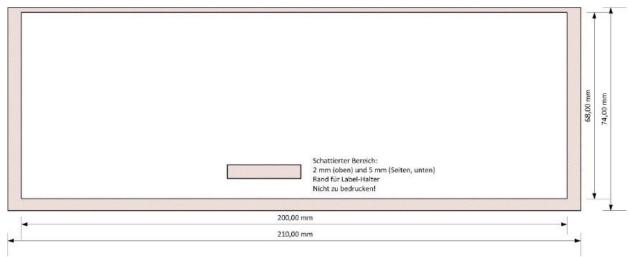
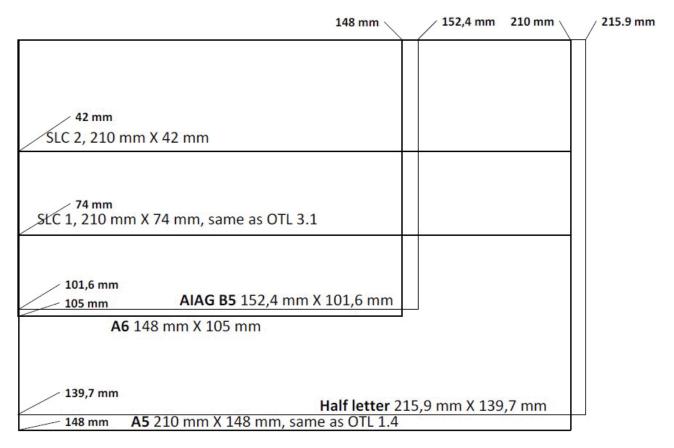


Fig. 6: Label dimension "SLC2 / HHT2"



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Fig. 7: Comparison of the label dimension



5.2 DATA FIELDS ON LABELS

The information printed on the label is divided into logical fields of data according to the applicable layout template. The following information blocks are defined:

- A1 Goods dispatcher
- A2 Goods recipient
- A3 Label type and 2D barcode symbol
- B1 Customer reference 1
- B2 Customer routing information
- B3 Logistics reference
- C3 Customer's article number
- D1 License Plate / Package ID
- D2 Customer reference 2
- E1 Optional information as defined by supplier
- E2 Customer reference 3

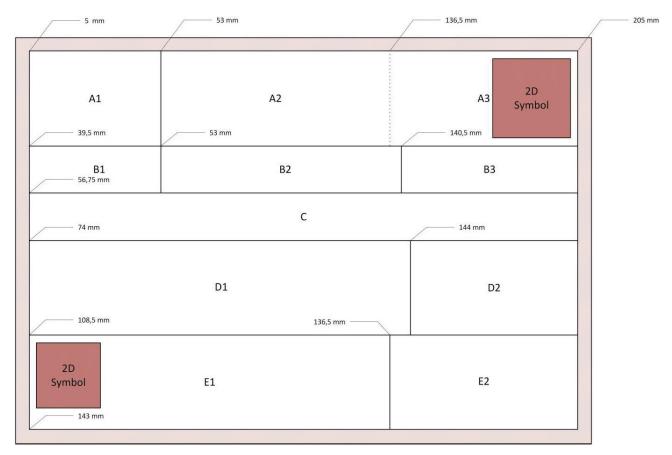


Fig. 8: Dimensions and layout of data fields - label format "A5"

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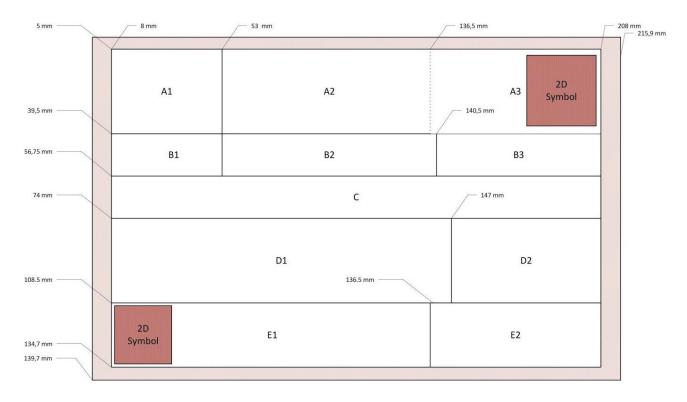
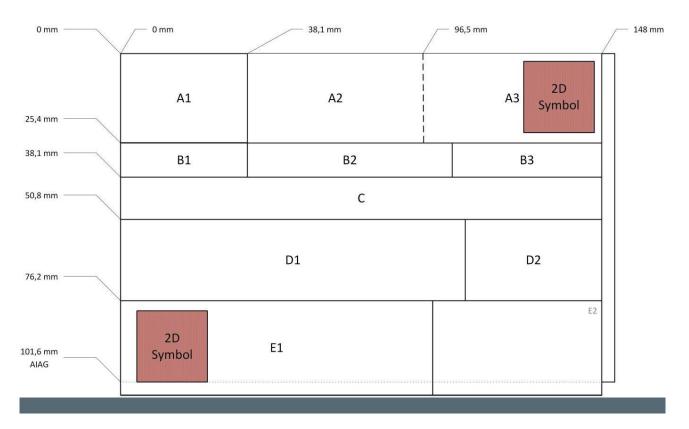


Fig. 9: Dimensions and layout of data fields - label format "Half Letter"

Fig. 10: Dimensions and layout of data fields - label format "A6 / AIAG B5"





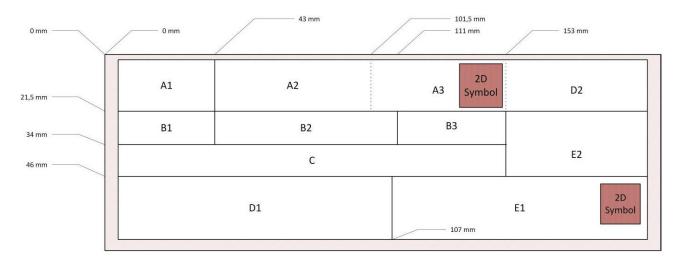
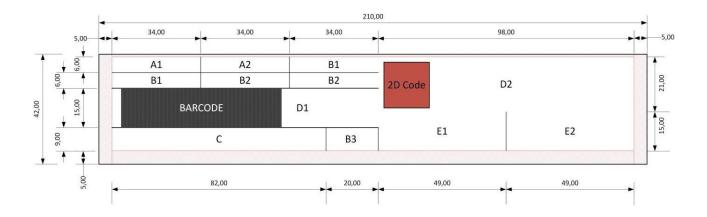


Fig. 12: Dimensions and layout of data fields - label format "SLC2 / HHT2"



Note: Due to the small size, the SLC 2 label only contains a subset of the information printed on the other labels. Also, to avoid reading problems with the 2D Symbol certain lines on the label, which separate the blocks, are not printed.

5.3 PAPER QUALITY

To ensure the legibility of the barcodes on the GTL, laser quality is recommended for printing. The following paper quality must be used:

- Insert label = min. 160 g/m2
- Adhesive label = min. 80 g/m²
- Combined label = approx. 130–170 g/m²
 - Carrier material = approx. 50-90 g/m²
 - Label material = approx. 80 g/m²
- Paper = white, machine-finished, moisture-resistant
- Adhesive = permanent adhesive, moisture-resistant, easy to remove

5.4 LABELS FOR TRANSPORT PACKAGING UNITS (TPU)

There are 3 different forms of the GTL in use: Master-, Mixed- and Single-Label

5.4.1 MASTER LABEL

The Master Label is used for homogeneous loading units. The loading unit contains parts with the same part number packed in inner packaging (e.g. SLC / HHT). These inner packaging are marked by their own Labels (Single Label).

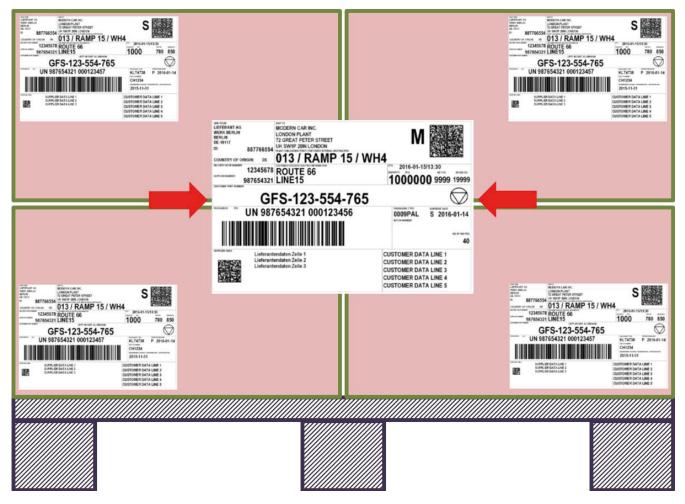
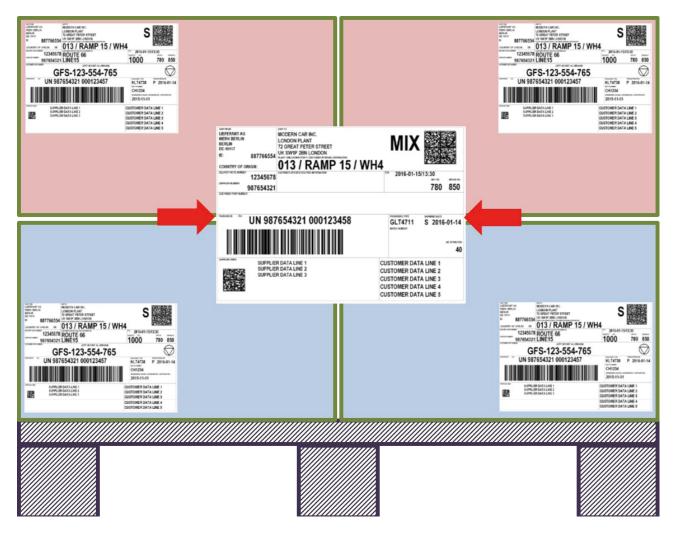


Fig. 13: Master Label

5.4.2 MIXED LABEL

The loading unit is not homogeneous but contains parts with different part numbers that are packed in inner packaging. The inner packaging is marked by own labels (Single Label). In difference to the Master Label, the Mixed Label does not contain information regarding to the material (part number, batch, index etc.).

Fig. 14: Mixed Label



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5.4.3 SINGLE LABEL

Single Labels for simplified loading unit or inner packaging are used for containers without subunits (e.g. cage pallets or hand held totes).

Fig. 15: Single Label without superordinate Master Label

LIFERANT AG MODERN CAR INC. WERK BERLIN LOHDON PLANT ERLEN 200000 PLANT DE-1017 887766554 OCUNTRY OF OFFICIR DE 12345678 887654321 ROUGEN CAR INC. CONTRY OF OFFICIR 12345678 B87654321	S WH4	
Conserved 12945070 ROUTE 66 987654321 LINE15 CONSERVE AND CONTRACTOR ALIMINARY GFS-123-554-76 Verset A UN 987654321 000123457	5	
SUPPLIER DATA LINE 1 SUPPLIER DATA LINE 2 SUPPLIER DATA LINE 3	2015-11-01 CUSTOMER DATA LINE 1 CUSTOMER DATA LINE 2 CUSTOMER DATA LINE 3 CUSTOMER DATA LINE 4 CUSTOMER DATA LINE 5	

Fig. 16: Single Label with superordinated Master Label

-	Construction Construction Construction Construction Construction Construction Construction				
		иния или иних или в ини в и порежителя и в и порежи в ини в и порежи в и порежи	1000000 9999 19999		
	New Desce	UN 987654321 00012345		The second se	
-	Markar Markar Markar Supervised 1 103 / FAMP 15 / WH4 Supervised Supervised 1 Usation and the second se			Contract Content Contract Contract Contract Contract Contract Contract Contrac	-

5.5 LABELS FOR SMALL LOAD CARRIERS (HHTS)

The DIN A5 label might be used for SLC / HHTs, provided that the label can be inserted into the label frame without having to be folded. Instead of using folded labels, the SLC1 / HHT1 or SLC2 / HHT2 label size should be used. The use of adhesive labels on SLCs / HHTs is prohibited.

5.6 LABEL ON TRAYS AND SPECIAL LOADING UNITS WITH LOW HIGHT

The usage of the new MAT label (VDA 4992) is possible. Generally, labels that differ from A5 or SLC / HHT format need to be agreed with Purem by Eberspächer.

5.7 LABEL ATTACHMENT

The GTL has to be attached on all parts-carrying packages (loading unit, container or shipping box). Correct attachment of the GTL is an important part of the packaging and a prerequisite for automated processing in the supply chain, e.g. scanning in Goods Receipt. Empty containers and auxiliary packaging such as lids and packaging materials are not provided with a label.

Existing identification areas or pockets are to be used. If these are not available, the label must be stuck to the cardboard box or securely attached to the load carrier and, if necessary, secured against loss with weather-resistant and residue-free removable adhesive dots (max. Ø 30mm).

The adhesive dots must not cover any information on the label. For use with returnable containers, adhesive labels must be easy to remove without leaving behind any residue. The method to be used must be approved by Purem by Eberspächer. Before applying new labels, all old (and thus invalid) labels must be removed from the packaging. For shipments to and from North America, labels of size Half Letter or 6x4" can be used. For trouble-free machine reading, however, the labels must be attached horizontally on the packaging.

The application of the main label (Single- Master or Mixed) on the pallet must be on the long and on the short side. The position must be at the top in the middle. The main label must not be covered.

The single label must be attached to the SLC / HHT visible from the outside on the long side that is readable from the outside. In the case of internal HHT, the single label must also be attached to one of the two long sides, even if they are not visible from the outside. The following illustration is used to illustrate how the master and single labels are attached to the pallet:

Fig. 17: Arrangement of label on pallet (illustration)



6 IDENTIFICATION OF THE PACKAGES AND LOADING UNITS

The license plate / Package ID is the decisive element. It is a package serial number that is made up as follows: **Data identifier (1J, 5J or 6J)**

+ UN

+ globally unique company identification number / DUNS No. (9-digit number filled in)

+ sequential package serial number (9-digit number, with leading zeros filled in).

Example: "1JUN98765432100000001"

The data identifier (DI) is a classifying characteristic and precedes the actual barcode content. The data identifier can be divided into the following two cases:

- 1J: Single-layer packaging: Large load carrier
- 6J: Two-layer packaging: Master Label has the qualifier 6J, Single Labels have the qualifier 1J. (The load unit contains one material number)
- 5J: Mixed packaging: Single labels with qualifier 1J on each subordinate box and a Mixed-label with qualifier 5J on the load unit. (The load unit contains multiple part numbers)

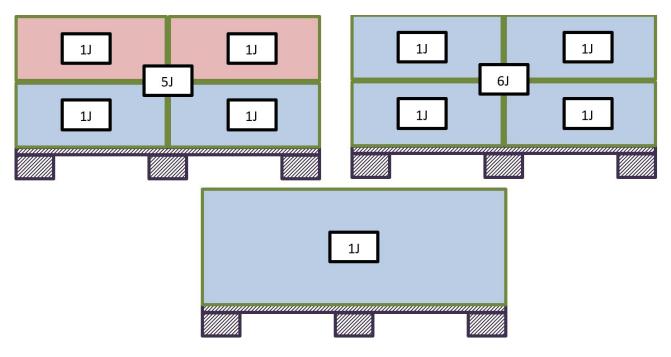


Fig. 18: Overview of license plate qualifiers

The globally unique company identification number is the nine-digit numerical D-U-N-S code (Data Universal Numbering System) allocated by Dun & Bradstreet. Purem by Eberspächer accepts only the license plate based on the DUNS number. The serial number of the package is devised by the dispatcher of the goods and must have 9 digits (with added leading zeros, where required).

The package serial number is not allowed to repeat within one year. The total length of the ID including the data identifier (DI) must have 22 characters. Also, the assignment of the single labels to the master / mixed label of a handling unit is based on the license plate.

For the physical assignment of the Unique ID to a load carrier, the packing data in the EDI message **DESADV Global EDIFACT D.97A** must match the content of the label (for clarification see Figure 19 and Figure 20).

Fig. 19: Assignment of the single label to the higher-level master / mixed label

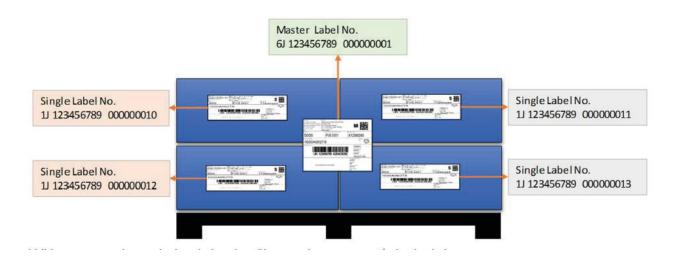
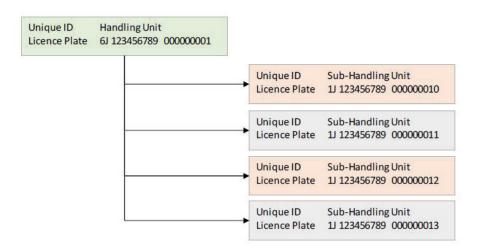


Fig. 20: Structure of an ASN (EDI message DESADV Global EDIFACT D.97A)



7 DESCRIPTION OF DATA FIELDS

Generally, the regulations of the VDA recommendation 4994 apply. Customer information, like e.g. vendor code, unloading point, material number etc., needs to be taken out of the currently valid call-off. In case of names and addresses, sensible abbreviations need to be chosen, so that the maximum length specified in the VDA recommendation 4994 can be fulfilled. The language for German speaking receiving plants language is German, for all other plant's language is English. For all text content, use font **Arial Narrow**, bold (alternative font: Helvetica Condensed, bold). Text must be printed in capital letters. The **font size is 6 pt**. The data fields and lines must be identified with headings or titles as specified in the table below. These titles are to be printed in German or English, depending on the country of the receiving plant. A reference table with translations is included in appendix 2. The table below lists the contents of the individual fields in detail. For details regarding the origin of the data and how it relates to the information contained in the DESADV message, see Appendix. A1 - Goods dispatcher: The regulations of the VDA recommendation 4994 apply.

Function:	Information regarding goods dispatcher and country of origin	
Title:	SHIP FROM	
Content:	L1: Name of goods sender L2: Name of goods sender, continued or blank L3: Town/city, L4: Country code (ISO 2 alpha code) and postal code, L5: ID (supplier number) of the ship from L6: Country of origin of goods (ISO 2 alpha code),	
Example	SHIP FROM LIEFERANT AG WERK BERLIN BERLIN DE-10117 ID: 887766554 COUNTRY OF ORIGIN: DE	

Fig. 21: Description of data field "Goods dispatcher"

A2 - Goods recipient: The regulations of the VDA recommendation 4994 apply.

Fig. 22 Description of data field "Goods recipient"

Function:	Information regarding goods recipient, unloading point, storage location
Title:	SHIP TO
Content:	 L1: Name of goods recipient L2: Name of goods recipient, continued or blank L3: Address of goods recipient L3: Country, postal code and town/city of goods recipient L4: Plant, unloading point, customer internal destination, separated by forward slashes "/" Note: The separating line between A2 and A3 is not printed. If the identifiers of the plant, unloading point and customer internal destination exceed the space available in A2, they may extend into field A3. There must, however, always be a blank space of at least 3mm width before the 2D symbol.
Example	SHIP TO MODERN CAR INC.

	MODERN CAR INC.
	LONDON PLANT
	72 GREAT PETER STREET
	UK SW1P 2BN LONDON
	PLANT / UNLOADING POINT / CUSTOMER INTERNAL DESTINATION
	013/RAMP 15/WH4
25	OUNTOURD ADDORED DOUTRID BEODULTION

A3 - Label type and 2D barcode symbol: The regulations of the VDA recommendation 4994 apply.

Fig. 23: Description of data field "Label type and 2D barcode symbol"

Function:	Identification of label type (Master, Mixed, Single) and 2D code	
Title:	none	
Content:	Label type codes: M = Master, MIX = Mixed, S = Single Data Matrix symbol 1 (see User data for coding in DataMatrix) On DIN A5 and DIN A6 labels, there should be a 10mm right margin to the 2D code.	
	Note: The separating line between A2 and A3 is not printed. If the identifiers of the plant, unloading point and customer internal destination exceed the space available in A2, they may extend into field A3. There must, however, always be a blank space of at least 3mm width before the 2D symbol.	

B1 - Customer reference 1: The regulations of the VDA recommendation 4994 apply. The delivery note number to print is created by the dispatcher, the vendor code is to be taken out of the valid call-off.

Function:	Reference data #1 of customer		
Title:	DELIVERY NOTE NUMBER / SUPPLIER NUMBER		
Content:	Associated delivery note number, assigned by ship from		
	Supplier number assigned to the seller by the customer. This supplier number may differ from ship-from's identifier, depending on the numbering concept applied by the customer		
Example	DELIVERY NOTE NUMBER 12345678		
	SUPPLIER NUMBER 987654321		

B2 - Customer routing information: The regulations of the VDA recommendation 4994 apply. This field is to be filled as far as it has been transferred either in the call-off or in advance by Eberspächer Exhaust Technology.

Fig. 24: Description of data field "Customer routing information"

Function:	Details required by the customer for the internal routing of the container	
	after receipt of the goods.	
Title:	CUSTOMER ROUTING INFO	
Content:	Customer-specific routing information ID and reference number(s), assigned by customer. This information is supplied as part of the call-off and does not need to be interpreted by the supplier. The data must be passed 1:1 through the IT system of the supplier for printing on the label. The customer can change the systematic or syntax of the information without the need for any adjustments in the IT system by the supplier. Point of use Internal point of use at the customer's premises	
Example	This field is only completed, if the respective information has been communicated by the customer as part of the call-off. Otherwise, the field remains blank. CUSTOMER SPECIFIC ROUTING INFORMATION ROUTE 666 LINE15 Two-line version	

B3 Logistics reference: The regulations of the VDA recommendation 4994 apply. The "ETA" is mandatory.

Fig. 26: Description of data field "Logistics reference"

Function:	Logistics reference details for customer		
Title:	ETA, QUANTITY, QUANTITY UNIT, NET, GROSS WEIGHT		
Content:	 Expected time of arrival - ETA: expected/request delivery time of the goods at the customer's premises. This field is also used for cross-dock processes, for instance to define shipping priorities. This information is only useful for labels on loading units. Quantity: Number of parts contained in package; on Master Labels: total number of parts in loading unit. QUANTITY UNIT: Quantity unit code (see Table 2). The quantity unit is printed dynamically in the title. Net weight: Net weight of the parts in the package or in the loading unit, in KG, including decimal point where required. Gross weight: Gross weight of package or loading unit in KG, without decimals; if the gross weight is < 1kg, it is stated as 1kg.³ 		

Example	ETA 20)16-01-15/1	3:30	
	QUANTITY (PCE)	NET KG	GROSS KG	
	100	7,8	10	A5 label
	eta 2016-01-1 ouantity pce gross k 100 ret k	° <u>10</u>	label	

C – **Customer's article number:** The regulations of the VDA recommendation 4994 apply. The part number needs to be taken unchanged out of the valid call-off. The customer description of the part number needs to be printed additionally if required by Eberspächer Exhaust Technology.

Fig. 27: Description of data field "Customer's article number"

Function:	Customer's article number; safety symbol (if required): circle with triangle (see figures)	
Title:	ARTICLE NUMBER	
Content:	Article number: Customer-assigned article number of part. Safety symbol where applicable. Certain parts are subject to special documentation requirements. If required by the customer, packages containing such parts must be labelled accordingly. The safety symbol must be printed in the field with a blank area of 2mm to the right.	
8	The customer's part designation may be printed to the right of the heading.	

D1 - Package ID / License Plate: The regulations of the VDA recommendation 4994 apply.

Fig. 28: Description of data field "Package ID / License Plate"

Function:	Transmission of unique package ID (license plate)	
Title:	PACKAGE ID	
Content:	 Package ID in plain text, formatted (with spaces between IAC, CID and serial number; see also chapter 6), preceded by data identifier in brackets. Globally unique package ID in the form of a barcode, encoded according to code 128. 6mm blank area to the left and right. For details regarding the package ID, see chapter 6. For details regarding the barcode, see chapter 7. 	

D2 – Customer reference 2: The regulations of the VDA recommendation 4994 apply. The packaging type needs to be the Eberspächer packaging number of the main packaging material (e.g. L.2000 etc.). The part / hardware / software status is in case of parts with a drawing, the drawing version of the part included in the delivery. If there is no drawing (e.g. in case of standard parts) the status shall be the date of the last change. If there hasn't been any change, the date of the first delivery of this part shall be used.

Fig. 29: Description of data field "Customer reference 2"

Function:	Reference data #2 of customer		
Title:	See figure		
Content:	 Package type, qualified date, parts generation status, batch number On Master and Mixed Labels attached to loading units: Package type, shipping date, number of inner packages The following applies to inner packages and simplified loading units: If there is an expiry date, it must be printed. The expiry date must be preceded by the letter "E". If there is no expiry date, and if the shipping date is known at the time of printing the label, the shipping date should be printed. The shipping date must be preceded by the letter "S". If none of the above dates are known or apply, the production date should be printed. The production date must be preceded by the letter "P". See also chapter 8. 		
Example	PACKAGING TYPE SHIPMENT DATE 0009PAL S 2016-01-14 BATCH NUMBER NO OF INN PCK 40 Field D2 on Master Label PACKAGING TYPE SHIP / EXPIRY / PROD DATE 54321 S 2003-10-03 BATCH NUMBER 0335434567 PART- / HARDW REVISION		

E1 – Optional information as defined by supplier: The regulations of the VDA recommendation 4994 apply.

Fig. 30: Description of data field "Optional information as defined by supplier"

Function:	Other customer reference information		
Title:	not defined		
Content:	This field contains customer data that is transmitted in the PCI segment (qualifier 16 or 3) of the customer call-off.		
	PCI+16:		
	Maximum size: 5 lines. For each line, the customer transmits one DE 7102 in the PCI segment. In order to ensure that the code is correct, the DE 7102 must not exceed 25 characters per line. If the customer transmits more characters per line, all characters that exceed the prescribed length are lost when the label is printed.		
	PCI+3:		
	The customer can use all 10 x 35 characters (DE 7102) in the PCI segment. The content is printed as DMC. Note: PCI+3 is only supported in JIT delivery instructions according to VDA recommendation 4985.		
	CUSTOMER DATA LINE 1 CUSTOMER DATA LINE 2 CUSTOMER DATA LINE 3 CUSTOMER DATA LINE 4 CUSTOMER DATA LINE 5		

E2 - Customer reference 3: The regulations of the VDA recommendation 4994 apply.

Fig. 31: Description of data field "Customer reference 3"

Function:	Other customer reference information		
Title:	not defined		
Content:	This field contains customer data that is transmitted in the PCI segment (qualifier 16 or 3) of the customer call-off.		
	 PCI+16: Maximum size: 5 lines. For each line, the customer transmits one DE 7102 in the PCI segment. In order to ensure that the code is correct, the DE 7102 must not exceed 25 characters per line. If the customer transmits more characters per line, all characters that exceed the prescribed length are lost when the label is printed. PCI+3: The customer can use all 10 x 35 characters (DE 7102) in the PCI segment. The content is printed as DMC. Note: PCI+3 is only supported in JIT delivery instructions according to VDA recommendation 4985. 		
	CUSTOMER DATA LINE 1 CUSTOMER DATA LINE 2 CUSTOMER DATA LINE 3 CUSTOMER DATA LINE 4 CUSTOMER DATA LINE 5		

Table 1: Field contents for SLC2 / KLT2 Label

Block	Title	Content(s)
A1	SHIP FROM ID	Ship from unique identifier
A2	SHIP TO	Name1 of goods recipient
B1 (1)	DELIVERY NOTE	Delivery note number
	SUPPLIER NUMBER	Supplier number
B3	QUANTITY	Quantity per package and quantity unit
1.7.	10200 E27 (1)	Customer-assigned article number
	And the second se	The customer's part designation may be printed to the right of
С	ARTICLE NUMBER	the heading
		Package ID in plain text, formatted for printing (with spaces between IAC, CID and serial number; see also chapter 6), preceded by data identifier in brackets. Data identifier concatenated with the globally unique package ID (licence plate) in the form of a barcode, encoded according to code 128. On SLCs, the barcode has a height of 15mm. For A5 Labels, it must be minimum 17mm high.
D1	PACKAGE ID	There must be a blank area of 6mm to the right and left.
	PACKAGE TYPE	mere must be a blank area of offin to the fight and felt.
		Package type, qualifying date, parts generation status, batch number.
		The following applies to inner packages and simplified loading units: If there is an expiry date, it must be printed. The expiry date
D2	EXPIRY DATE SHIPMENT DATE	must be preceded by the letter "E". • If there is no expiry date, and if the shipping date is known at the time of printing the label, the shipping date should be printed. The shipping date must be preceded by the letter "S". If none of the above dates are known or apply, the production date should be printed. The production date must be preceded
	PRODUCTION DATE	by the letter "P".
	BATCH	Batch number
	ENGINEERING CHANGE ID	Engineering change ID May be used by the supplier for internal purposes, e.g. for 2D code. On DIN A5/A6 Labels, the symbol is aligned to the left, with a left margin of 10mm. On labels of size 210mm x 74mm or 210mm x 42mm, the symbol is aligned to the right with a right margin of 10mm.
<u>E1</u>	Not defined.	The use of 1D barcodes is not permitted in this field. This field contains customer data that is transmitted in the PCI segment (qualifier 16 or 3) of the customer call-off. PCI+16: Maximum size: 5 lines. For each line, the customer transmits one DE 7102 in the PCI segment. In order to ensure that the code is correct, the DE 7102 must not exceed 25 characters per line. If the customer transmits more characters per line, all characters that exceed the prescribed length are lost when the label is printed. PCI+3: The customer can use all 10 x 35 characters (DE 7102) in the
E2	Not defined.	PCI segment. The content is printed as Data Matrix Code.

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UN/EDIFACT	ANSI X12.3	Form DE	Form EN	Meaning
PCE / C62	PC	ST	PC	Piece
MTR	MR	Μ	M	Meter
CMT	CM	CM	CM	Centimetre
MMT	MM	MM	MM	Millimetre
MTK	SM	M2	M2	Square meter
MTQ	CR	M3	M3	Cubic meter
LTR	C8	L	L	Litre
LEF	X7	BL	LF	Leaf
PR	PR	PA	PA	Pair
RO	RL	RO	RO	Roll
KGM	KG	KG	KG	Kilogram
GRM	GR	G	G	Gram
KMT	DK	KM	KM	Kilometre
TNE	MP	T	Т	Ton (metric)

Table 2: EDIFACT units, ANSI units and abbreviations / codes used on labels

Note: The data identifier used in the Data Matrix Code requires the unit of measure to be coded according to ANSI X12. On the other hand, on the label the unit of measure should be understandable to the human reader. The table above contains the cross references of applicable codes.

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8 BARCODE, 2D CODE

The quality of the barcodes directly affects the scan rate and the performance of the automatic data acquisition. The dimensions of the codes are of fundamental importance for the speed and first pass read rate. The structure of the barcode and its conformity with the applicable standard must be verified with an IT tool.

The barcode quality must be verified as follows: For code 128 according to ISO / IEC 15416; for 2D codes according to ISO / IEC 15415. These standards include test specification to determine the quality of the barcode.

To validate the barcode, the measured print quality must be minimum grade 3.0 (B). This is to ensure that the print quality does not drop below 1.5 (C) at the point of scanning (measured with an instrument aperture of 0.254mm (0.01 inch) and a light wavelength of 660nm +- 10nm).

8.1 1D-BARCODE

Linear barcodes must be designed using the Code 128 symbology and comply with the ISO / IEC 15417 standard. In this symbology, bars and spaces are designated as elements. The narrowest element defines the X-dimension of the barcode. If the narrowest element is 0.25 mm wide, element width 1 would be 0.25 mm, width 2 0.50 mm, width 3 0.75 mm etc. The regulations of the VDA recommendation 4994 apply.

For the barcode of the license plate the x dimension needs to be between 0,51 mm and 0,64 mm. Additionally the barcodes need to have a minimum height of 17mm for Master Label for homogeneous loading unit and Single Label for simplified loading unit or inner packaging and a height of minimum 15mm for Single Label in KLT format for inner packaging. The recommendation is a barcode height of 20mm.

8.2 DATAMATRIX SYMBOL

8.2.1 SYMBOL SIZE

The data matrix code is a DataMatrix ECC 200 code (see also ISO / IEC 16022). The nominal height / width of the modules (x) is 0.4mm and should not exceed 0.5mm. The blank area around the DataMatrix code must correspond to minimum twice the module widths at all sides of the code. Based on the available area (A6 and KLT labels: 20mm x 20mm) and the minimum size of the modules (0.4mm), the matrix consists of 52 x 52 modules. The maximum size of the DataMatrix symbol is thus 304 characters (including control characters).

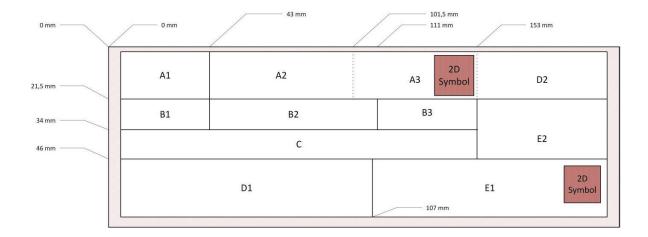
8.2.2 POSITIONING

The position of the data matrix code (without the quiet zone) is at least 0.7 mm above the lower edge of the block A3. The left side of the DMC begins at 170 mm for the DIN A5 label and at 133 mm for the KLT2 label. The exact dimensions depend on the printer.

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Fig. 32: Positioning DMC (2D Symbol) on A5 Label and SLC1/KL1 Label



8.2.3 CHARACTER SETS

- Characters 0....127 are defined in accordance with ISO / IEC 646, with GO Set and CO Set. In CO Set, characters 28...31 are modified and represent FS, GS, RS and US. Characters 32...127 correspond to the EDIFACT UNOB character set.
- Characters 128...255 conform to ISO 8859-1 (also known as extended ASCII). This character set corresponds to that defined by EDIFACT UNOC.

8.2.4 MESSAGE STRUCTURE ACCORDING TO ISO 15434

Each DataMatrix symbol contains one message whose structure is based on ISO / IEC 15434. In each DataMatrix code, the data flow might start with control character "Macro 06" (character 237), indicating that data identifiers according to ISO / IEC 15418, part ANS 10.8.2 Data Identifiers are being used. In each symbol, control character "Macro 06" replaces the ISO / IEC 15434 control sequence with preamble" []>RS06GS 4 " preceding the data and post-amble "RSEOT." at the end of the data string. As an alternative to "Macro 06", the above control characters might be used. The separator between the data elements preceded by individual ASC data identifiers (DIs) is the Group Separator "GS". For the encoding of data in DataMatrix symbols in the form of ISO 15434 messages, it is necessary to include a message envelop consisting of a header and a trailer between which the user data is placed.

The message has the following structure:

- Message header: [)>RS (string, hex 5B 29 3E 1E / dec 91 41 62 30)
- Format header: 06 (for structure with DI)
- Group Separator: GS (hex 1D / dec 29)
- DI with user data
- Group separator
- DI with user data
- Group separator
- DI with user data
- Group separator
- etc.
- Message trailer: RS (hex 1E / dec 30)
- Record separator: EOT (hex 04 / dec 04)

8.2.5 USER DATA FOR CODING IN DATAMATRIX

See also the cross reference in the appendix.

Table 3: User data for DataMatrix code in field A3

Section	Data field	EDIFACT DESADV D97.A	DI	Example incl. DI	max. Length
A1	Ship-from unique ID	SG2/NAD+SU DE 3039	3L	3L9987654321	13
A1	Country of origin	-	4L	4LDE	5
A2	Ship-to plant number	SG2/NAD+ST DE 3039 8V		8V0110120131	13
A2	Unloading point	SG2/NAD+ST/LOC+11 DE 3225	2L	2L0815-1234567	15
A3	Label type	SG14/PCI+17 DE 7511		part of License Plate	
B1	Supplier number	SG2/NAD+SE DE 3039	V	V123456789012	14
B1	Delivery note number	BGM DE1004	2S	2S123456789012	19
B2	Place of consumption	SG18/LOC+159 DE 3225	22L	22L12345678901234	18
B3	Expected date/time of arrival	DTM+132 DE2380	8D	8DCCYYMMDDHHMM132	18
B3	Quantity	SG15/QTY+12 DE 6060 (M-Label)	Q	Q100000	9
B3	Unit of measure	SG15/QTY+12 DE 6411 (M-Label)	3Q	3QPC	5
B3	Gross weight	-	2Q	2Q9999	7
С	Customer's part number	SG15/LIN DE 7140	Р	P1152205620700A	16
D1	License plate (UUID)	SG14/GIN DE 7402	1J/5J/6J	1JUN987654321123456789	26
D2	Package type code	SG11/PAC DE 7065	В	B000PAL01	10
D2	Batch number	SG15/PIA DE 7140	1T	T1234567890-123456	19

Note: The total capacity of the DMC including control characters is 300. One must be careful not to exceed this number.

If the customer specific data in section E2 have to be printed as a 2D DMC, the symbol is generated as follows:

Table 4: Customer specific data in 2D DMC

User data	Source or equivalent in DESADV (VDA 4987)	DI	Comment	Sample data
Identification of specification	none	12P	ID - CUS for customer specific data. The fixed content CUS must not be used by the supplier to identify the 2D symbol in the supplier area E1!	12PCUS
Data line 1	SG13/PCI+3 DE 7102#1	11Z		11ZABCDEFG
Data line 2	SG13/PCI+3 DE 7102#2	12Z		12Z1234567890
Data line 10	SG13/PCI+3 DE 7102#10	20Z		20ZXYZ12345

Also for this symbol the syntax is identified with the preamble [)>RS06GS.

9 SAMPLES OF LABELS

Fig. 33: A5 Master Label for homogeneous loading unit

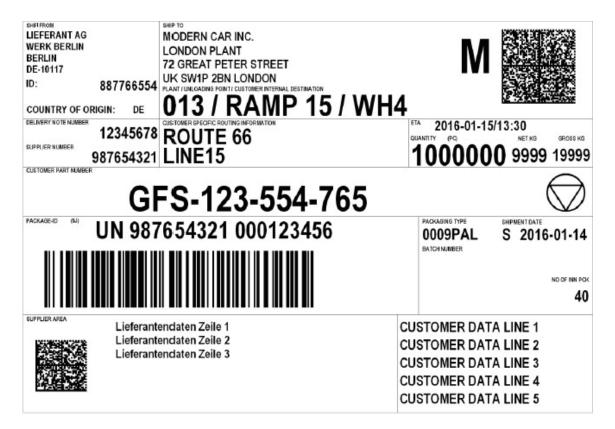


Fig. 34: A5 Mixed Label for mixed loading unit





Fig. 35: A5 Single Label for simplified loading unit or inner packaging

Fig. 36: Single Label A6 / AIAG B5

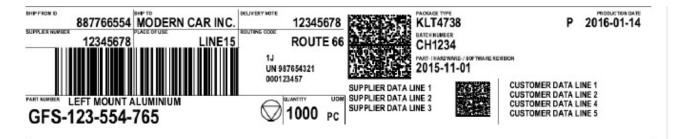


Remark: The separator lines left of section A2 and on top of section E1 / E2 will not be printed in order to enhance readability of the DMC.

Fig. 37: Single Label in SLC1/HHT1 format for inner packaging



Fig. 38: Single Label in SLC2/HHT2 format for inner packaging



APPENDIX

I	Example line of										in 2D-			max.
Section	content on a A5 abel	Data field	Short description	EDIFACT DELFOR D97.A	EDIFACT DESADV D97.A	Master	Mixed	SHU	SV1 SV	2 SV3	Barcode	DI	Example incl. DI	Length
A1	1	Ship-from name 1	Name of supplier	SG2/NAD+SU DE 3036	SG2/NAD+SU DE 3036	М	М	М	MN	М				
A1	2	Ship-from name 2	Name of supplier continued	SG2/NAD+SU DE 3036		0	0	0	0 0	0				
A1	4	Ship-from post code	Post code of supplier	SG2/NAD+SU DE 3251	SG2/NAD+SU DE 3251	М	М	М	M M	М				
A1	3	Ship-from location	Supplier's location	SG2/NAD+SU DE 3164	SG2/NAD+SU DE 3164	М	М	М	MM	М				
A1	4	Ship-from country	ISO 3166-1 alpha-2 code of the supplier	SG2/NAD+SU DE 3207	SG2/NAD+SU DE 3207	М	М	М	M M	М				
A1	5	Ship-from unique ID	Supplier ID number	SG2/NAD+SU DE 3039	SG2/NAD+SU DE 3039	М	М	М	M M	М	Yes	3L	3L9987654321	13
A1	6	Country of origin	ISO 3166-1 alpha-2 code of the country of origin	-	-	0	0	0	0 0	0	Yes	4L	4LDE	5
A2	1	Ship-to name 1	Name of ship-to	SG7/NAD+ST DE 3036	SG2/NAD+ST DE 3036	М	М	М	N M	Μ				1
A2	2	Ship-to name 2	Name of ship-to continued	SG7/NAD+ST DE 3036		0	0	0	0 0	0				
A2	3	Address of goods receipt	Adress of goods receipt	SG7/NAD+ST DE 3042		м	М	М	N O	0				
A2	4	Ship-to post code	Ship-to's post code	SG7/NAD+ST DE 3251	SG2/NAD+ST DE 3251	м	М	М	N O	0				
A2	4	Ship-to location	Ship-to's location	SG7/NAD+ST DE 3164	SG2/NAD+ST DE 3164	М	М	М	N O	0				
A2	4	Ship-to country	ISO 3166-1 alpha-2 code of the ship-to	SG7/NAD+ST DE 3207	SG2/NAD+ST DE 3207	М	М	М	N O	0				
A2	5	Ship-to plant number	Ship-to's plant ID number		SG2/NAD+ST DE 3039	м	М	М	NM	м	Yes	8V	8V0110120131	13
A2	5	Unloading point	Unloading point (where the means of transport is being unloaded)		SG2/NAD+ST/LOC+11 DE 3225	м	М	М	NM	м	Yes	2L	2L0815-1234567	15
		0.1	Additional Internal destination at customer's side after unloading											
A2	5	Customer internal destination	(warehouse / storage)	-	-	Ν	Ν	Ν	N N	Ν	No	20L	20L123123123123	16
A3	1	Label type	Type of Label: M=Master, MIX=Mixed, S= Single	-	SG14/PCI+17 DE 7511	М	Μ	Μ	M N	Μ	Yes		part of License Plate	
B1	1	Supplier number	Supplier number of the ship-from plant assigned by customer	SG2/NAD+SE DE 3039	SG2/NAD+SE DE 3039	М	М	М	N M	Μ	Yes	V	V123456789012	14
B1	2	Delivery note number	Delivery note number, issued by supplier	-	BGM DE1004	М	Μ	Μ	N N	Μ	Yes	2S	2S123456789012	19
B2		Customer specific routing	Customer specific routing	-	-	N	Ν	Ν	N N	Ν	No	23L	23L050115-1420RNP	18
B2	2	Place of consumption	Place where items are used in production	SG7/LOC+159 DE 3225	SG18/LOC+159 DE 3225	М	Μ		N M	Μ	Yes	22L	22L12345678901234	18
B3	1	Expected date/time of arrival	Date/time of arrival, calculated on supplier side based on a route	SG18/DTM+2 DE2380	DTM+132 DE2380	0	0	0	N O	0	Yes	8D	8DCCYYMMDDHHMM132	18
B3		Quantity	Quantity per loading unit (Master label) or per pack (Single label)	-	SG15/QTY+12 DE 6060 (M-Label)	М	Ν	Μ			Yes	Q	Q1000000	9
B3		quantity	single	-	SG11/QTY+52 DE 6060 (S-Label)				M N	Μ				
B3		Unit of measure	Abbreviation of the unit of measure	-	SG15/QTY+12 DE 6411 (M-Label)	М	Ν	Μ			Yes	3Q	3QPC	5
B3	2	Unit of measure	single	-	SG11/QTY+52 DE 6411 (S-Label)				M M	Μ				
B3	_	Gross weight	Gross weight of the loading unit or inner packaging item	-	-	0	0	0	0 0	0	Yes	2Q	2Q9999	7
B3		Gross weight	inner	-	-									
B3		Net weight	Net weight of the loading unit or inner packaging item	-	-	0	0	0	0 0	0				
B3	1	ivet weight	inner	-	-									
С	2	Customer's part number	Part number assigned by customer	SG12/LIN DE 7140	SG15/LIN DE 7140	М	Ν	М	M M	М	Yes	Р	P1152205620700A	16
С	1	Customer's part description	Part description according to customer's nomenclature	SG12/IMD DE 7008	SG15/IMD DE 7008	М	Ν	Μ	0 0	0				
С	2	Safety sign	Symbol to mark safety relevant parts	-	Master data	0*	O*	O*	0* 0	• O*				
D1	1	License plate (UUID)	Globally unique package ID of the package / loading unit	-	SG14/GIN DE 7402	М	Μ	Μ	M M	Μ	Yes	1J/5J/6J	1JUN987654321123456789	26
D2	1	Package type code	Type of package code according to receiver's codification	-	SG11/PAC DE 7065	М	Μ	М	M M	М	Yes	В	B000PAL01	10
D2	1	Shipment date	Date and time of scheduled shipment	SG16/DTM+11 DE2380	DTM+11 DE 2380	М	М	М	N N	М				
D2	2	Batch number	Batch number	-	SG15/PIA DE 7140	0*	Ν	O*	0* 0	• O*	Yes	1T	T1234567890-123456	19
D2	3	Number of inner package items	Number of inner packages in a loading unit	-	SG11/QTY+189 DE 6060	М	М	Ν	N N	Ν				
E1	1	Supplier specific information	Supplier specific information for supplier's use only	-	-	0	0	0	0 0	0				
E1	2	MAT label indicator	Indicates that the label contains MAT data as well	-	-	-	-	0	0 0	0			33TY	4
E2	1-5	Customer specific information	Additional, customer specific information for customer's use only	-	-	-	-	-		-				1

APPENDIX

DEUTSCH	ENGLISCH
VERSENDER	SHIP FROM
EMPFÄNGER	SHIP TO
URSPRUNGSLAND	COUNTRY OF ORIGIN
WERK	PLANT
ABLADESTELLE	UNLOADING POINT
INTERNER BESTIMMUNGSORT	INTERNAL DESTINATION
LIEFERSCHEIN	DELIVERY NOTE
LIEFERANTENNUMMER	SUPPLIER NUMBER
KUNDENSPEZIFISCHES ROUTING	CUSTOMER SPECIFIC ROUTING
ETA (ERWARTETES EINTREFFDATUM)	ETA
MENGE	QUANTITY
NETTO	NET
BRUTTO	GROSS
SACHNUMMER DES KUNDEN	CUSTOMER PART NUMBER
PACKSTÜCK-ID	PACKAGE ID
PACKMITTELTYP	PACKAGING TYPE
VERSANDDATUM	SHIPMENT DATE
PRODUKTIONSDATUM	PRODUCTION DATE
VERFALLDATUM	EXPIRY DATE
CHARGENNUMMER	BATCH NUMBER
TEILEGENERATIONSSTAND	ENGINEERING CHANGE
HARDWARESTAND	HARDWARE REVISION
SOFTWARESTAND	SOFTWARE REVISION
LIEFERANTENSPEZIFISCHE DATEN	SUPPLIER AREA



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