

BOSCH Guideline GTL (Global Transport Label)

Basis: VDA 4994

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Document history

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1.0	25.02.2020	Guideline creation
1.1	06.07.2020	Adaptation to VDA 4994 V1.2 Chapter 7.2.3: Adaptation Data Matrix Code Chapter 10 added
1.2	08.06.2021	Chapter 7.2.3: Update Table 3: Data elements in the DMC Chapter 7.2.3: New example for DMC Chapter 10.3: Rename Data Identifier 14D to 'Expiry date'
1.3	11.01.2022	Chapter 11.3: Abbreviations of units of measure for DMC and label Chapter 11.4: RoHS in Data Matrix Code Chapter 7.2.3: Update
1.4	18.01.2023	Chapter 4.1: Dimensions (VDA 4994) (New label sizes KLT3 and Blister) Chapter 4.2: Data fields on labels (BOSCH) (New labels KLT3 and Blister) Chapter 4.2.1 not applicable Chapter 4.6: Label pasting (BOSCH) (Supplement Label Attachment) Chapter 7.2.1: Symbol size and print quality Chapter 7.2.3: Update Chapter 10: Third packaging level (BOSCH)
1.5	05.07.2024	Chapter 3: Consignments and transport (VDA 4994) (No BOSCH-specific regulations compared to the VDA 4994 guideline.) Chapter 4.4: Types of labels (BOSCH) (A5 format mandatory for Master/Mixed-GTL, Notes on delivery related information) Chapter 5: Description of data fields (BOSCH) (Figure 24, 25: Marking of not delivery related data Figure 28: Single Label in KLT3 (Tray)-format Figure 29: Single Label in Blister-format) Chapter 7.2.3: Message structure and user data (Table 3: Data elements in the DMC) Chapter 10.3: Neutral label (Table 5: Data elements of Neutral Label)

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List of Abbreviations

AIAG	Automotive Industry Action Group
ASCII	American Standard Code for Information Interchange
ASN	Advanced Shipping Notification
DESADV	Despatch advice, an international standard for the format for the exchange of electronic data in business transactions. DESADV corresponds to the ASN.
DI	Data Identifier (ISO/IEC 15418)
DMC	Data Matrix Code (ISO/IEC 16022)
DUNS-Number	Data Universal Numbering System (developed and regulated by DUN & BRADSTREET')
ESD	Electrostatic discharge
GLN	Global Location Number
GS1	Global Standards One
GTL	Global Transport Label
HU	Handling Unit
MAT Label	Material label (VDA 4992)
NVE	Shipping unit number (Nummer der Versandeinheit)
Odette	Odette is a pan-European collaboration and services platform to create standards for the automotive industry.
PPU	Product Packaging Unit
SKU	Stock keeping unit
SLC	Small Load Carriers
SLC1	Label for Small Load Carriers
SLC2	Label flat Small Load Carriers
TPU	Transport Packaging Unit
UHF	Ultra High Frequency
VDA	Verband der Automobilindustrie: Joint interest grouping of German automobile manufacturers and suppliers

1 Introduction

This guideline describes the BOSCH requirements of the Global Transport Label (GTL) and contains the technical specifications that are required to implement GTL. The guideline specifies the label, label placement, field and barcode contents in accordance to VDA recommendation 4994.

The GTL is found on the delivered item and is aligned with the advanced shipping notification that is transmitted via electronic data interchange (EDI). Therefore the Shipping notification (DESADV Global EDIFACT D.07A) and GTL must contain the same information. It includes texts for manual processing and barcodes for machine capture via scanner and camera technologies.

The use of the GTL serves to clearly identify packages (shipping units and individual packages), to enable process optimization in goods receipt area (no relabeling and mechanical processing), and continuous tracking of the goods along the entire supply chain (traceability) including production lines.

The BOSCH Global Transport Label is in accordance with the VDA recommendation 4994. BOSCH specific regulations are maintained in the following chapters:

- Chapter 1 Introduction
- Chapter 4.2 Data fields on labels
- Chapter 4.3 Technical Requirements
- Chapter 4.4 Types of labels
- Chapter 4.6 Label pasting
- Chapter 4.7 Handling Unit structure and transfer into the ASN
- Chapter 5 Description of data fields
- Chapter 6 Identification of packages and loading units
- Chapter 7 Barcode, 2D code and optional RFID tag
- Chapter 10 Neutral label on third packaging level
- Chapter 11 Appendices
- Chapter 3/ 8/ 9 of the VDA recommendation are not applicable

For easier orientation we added the information (BOSCH) or (VDA 4994) to the chapter titles:

(BOSCH) BOSCH specific requirements additional to the VDA recommendation 4994

(VDA 4994) Chapter corresponds with VDA recommendation 4994 V1.2 2020-04

The start date from which the GTL is used has to be agreed on in advance between supplier and BOSCH. The GTL has to be approved by BOSCH plant. Therefore it has to be tested with a BOSCH contact person before the go-live. After approval of the GTL the usage is mandatory for the supplier.

2 Function of labels (VDA 4994)

Labels are used to identify product and shipping packages in the internal material flow and along their route from the dispatcher of the goods (normally the factory of the supplier) to the shipping company and eventually to the recipient of the goods (normally the factory of the customer). Labels allow for the unique identification of packages around the globe. In addition to the clear-text information, labels also contain machine-readable data in the form of 1D and 2D barcodes for automated handling.

Depending on the actual purpose of the package unit, the label has different control functions:

- **Product Packaging Unit (PPU):** Examples: cardboard boxes and plastic boxes (also known as Small Load Carriers – SLC). In this case the label provides unique identification of the product, together with additional logistics data. The label generally supports the internal handling of the PPU by the supplier up to the point of consolidation into transport packaging units and by the customer once the transport packaging units are broken down again.
- **Transport Packaging Unit (TPU):** Examples: pallets, loaded with PPUs and auxiliary packaging material (lids, etc.), metal containers or large load carriers (LLC). In this case, the label provides unique identification of the package unit, including details regarding its logistics and material properties. The information on the label is generally used to control consignments along single-stage or multi-stage transport chains from the supplier to the customer and to support the receipt of the goods by the customer with subsequent internal handling including storage in the customer's warehouse.

In cases where the PPU is also the TPU, the labels combine the features and functions of the above two packaging levels. This type of packaging unit is usually described as a **Simplified Loading Unit**.

3 Consignments and transport (VDA 4994)

No BOSCH-specific regulations compared to the VDA 4994 guideline.

4 Size, layout and application of labels

4.1 Dimensions (VDA 4994)

Labels can vary in size according to the size of the packaging unit they will be attached to and can sometimes vary according to the region of the world in which they are to be used.

The following sizes or formats are considered to be a fairly exhaustive list:

- a. A5: 210mm x 148mm
- b. Half letter: 216mm x 140mm
- c. A6: 148mm x 105mm or 152.4mm (6 inches) x 101.6mm (4 inches)
- d. SLC1: Label for small load carriers 210mm x 74mm
- e. SLC2: Label for flat small load carriers 210mm x 42mm
SLC3: Label for flat narrow load carriers 210mm x 30mm
Blister: Label for blisters stacked on a pallet 150 mm x 25 mm

As A6 and B10 are virtually identical in size, they are described together.



Figure 1: Label size A5



Figure 2: Label Half-Letter size

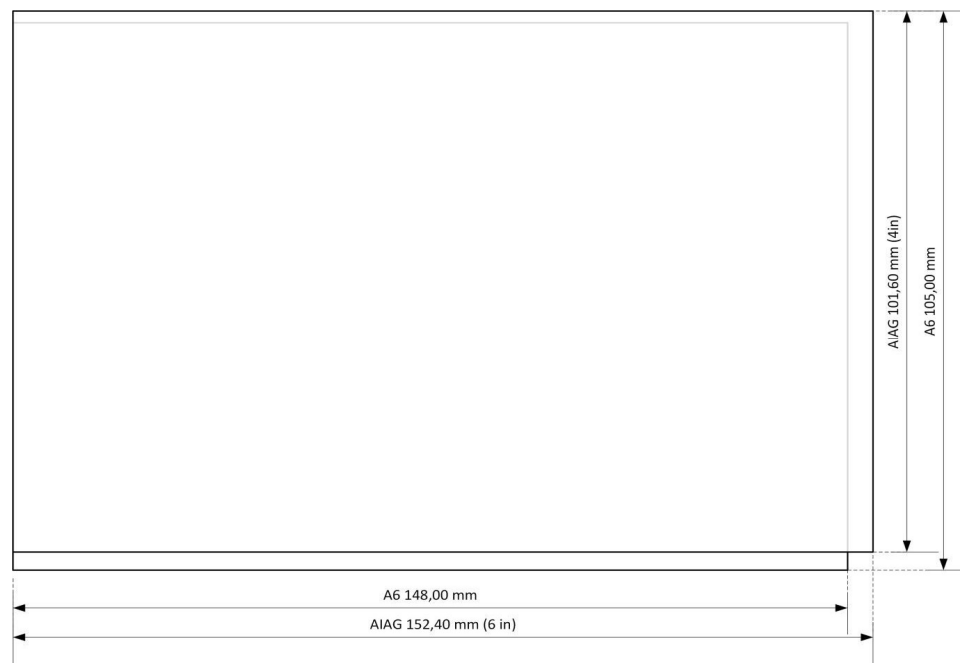


Figure 3: Label size A6/ AIAG

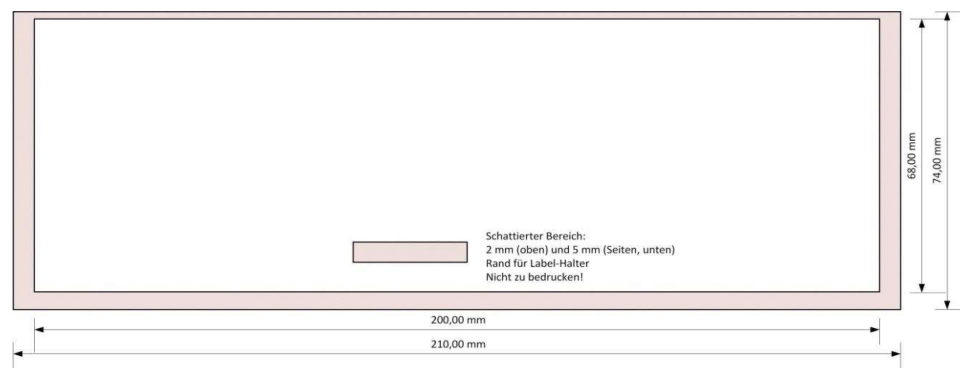


Figure 4: Label size for small load carriers (SLC 1)

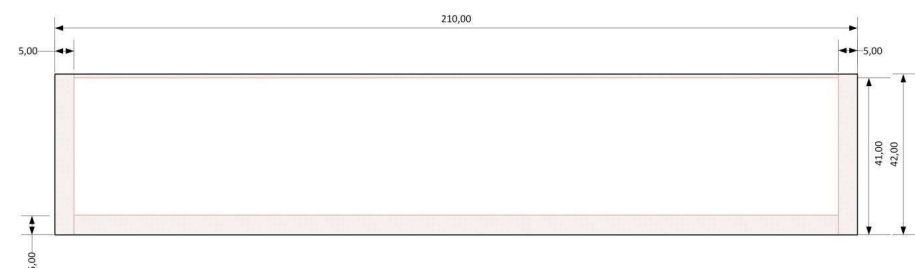


Figure 5: Label size for flat small load carriers (SLC 2)



Figure 6: Label size for flat narrow load carriers (SLC 3)

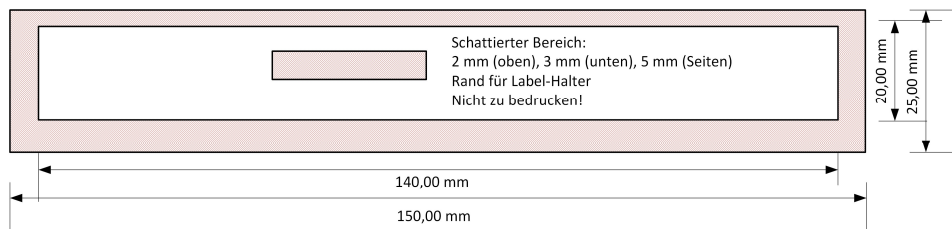


Figure 7: Label size for blisters stacked on a pallet

In case of smaller labels please refer to VDA recommendation 4992 – MAT-Label.

Size comparison between different label sizes:

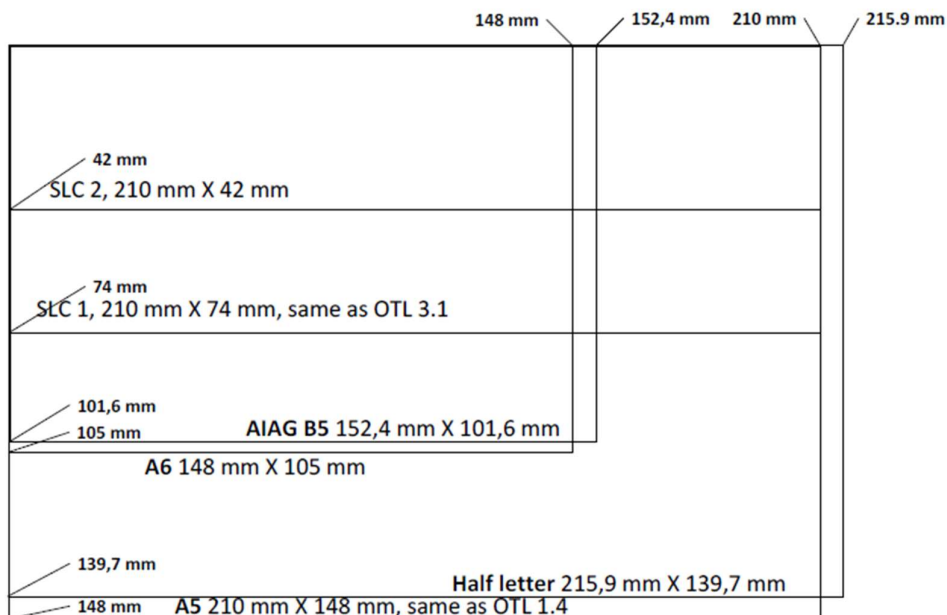


Figure 8: Comparison of the different label sizes

4.2 Data fields on labels (BOSCH)

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 sender (ship from)
- A2 - Goods recipient (ship to)
- A3 - Label type and 2D barcode symbol
- B1 - Customer reference 1
- B2 - Customer routing information
- B3 - Logistics reference
- C - Customer's article number
- D1 - Package ID
- D2 - Customer reference 2
- E1 - Optional information as defined by supplier
- E2 - Customer reference 3

For more information, see chapter 5.

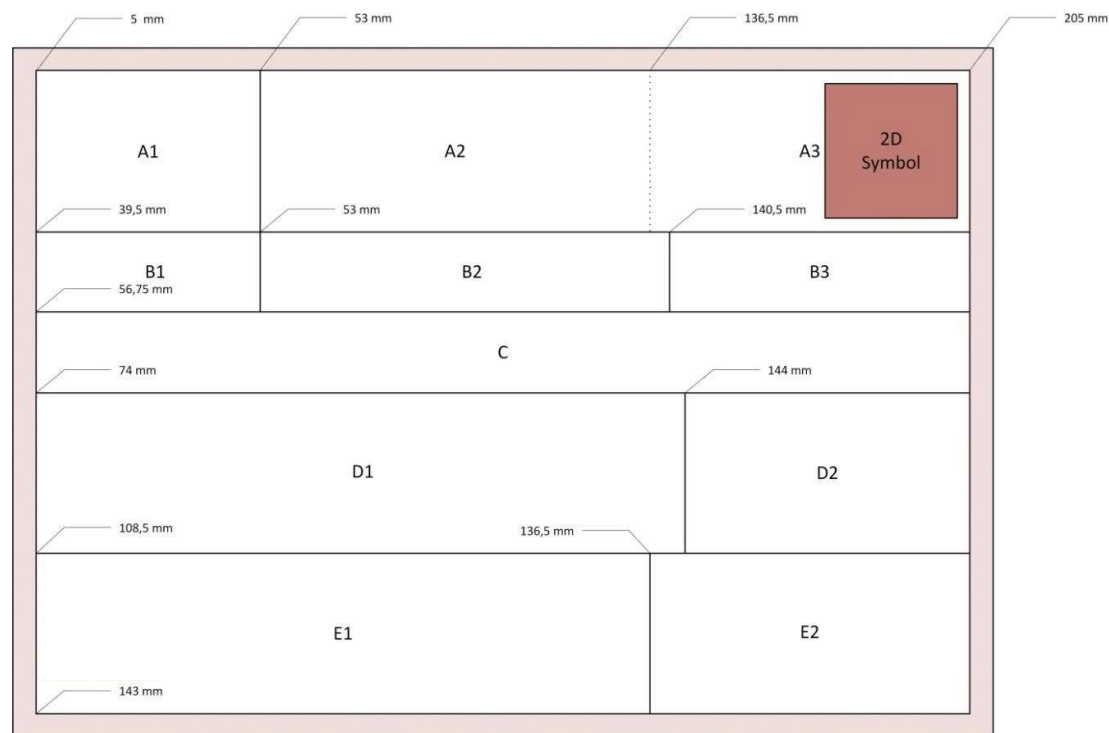


Figure 9: Dimensions and layout of data fields - label format A5

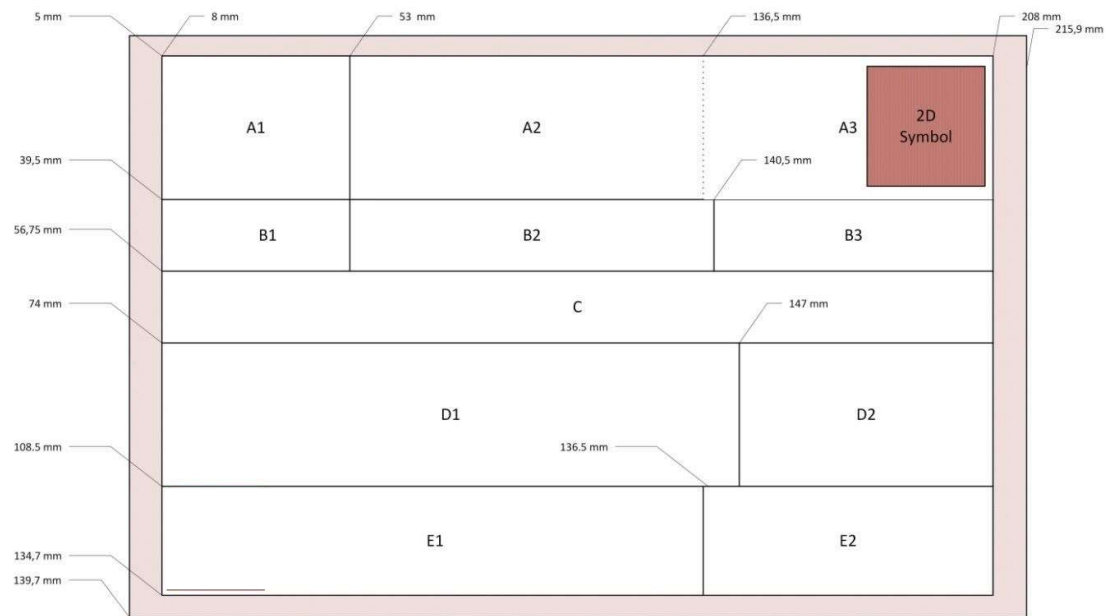


Figure 10: Dimensions and layout of data fields - label Half-Letter format

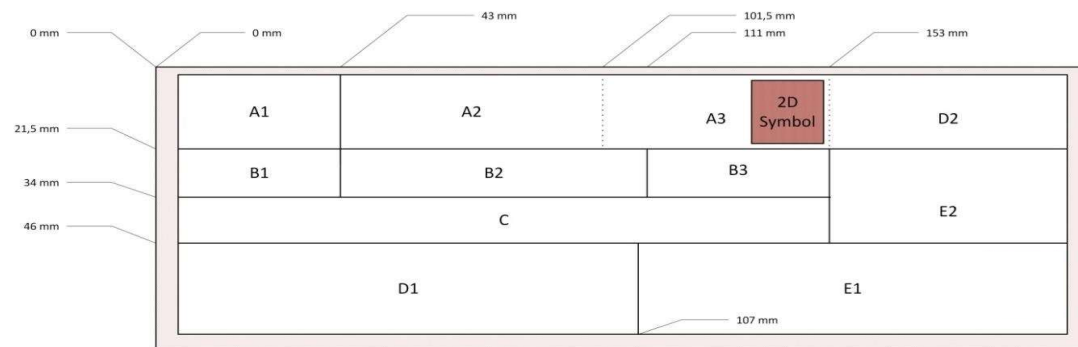


Figure 11: Dimensions and layout of data fields - label format SLC 1

Note: Due to the small size, the SLC 2 label, SLC3 label and the blister 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 (see examples later in this document).

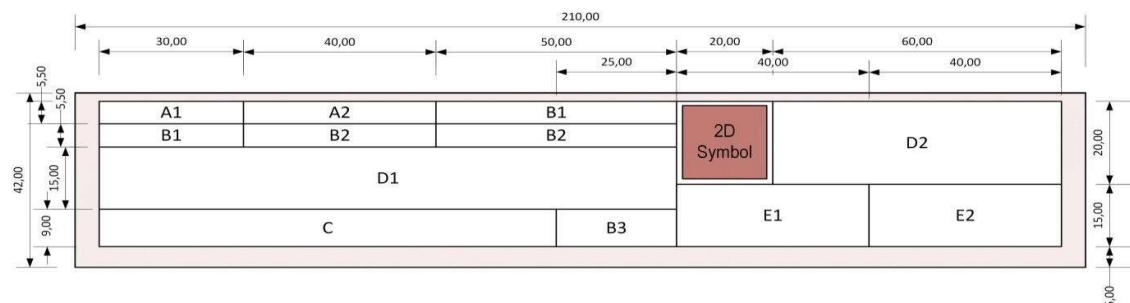


Figure 12: Dimensions and layout of data fields - label format SLC 2

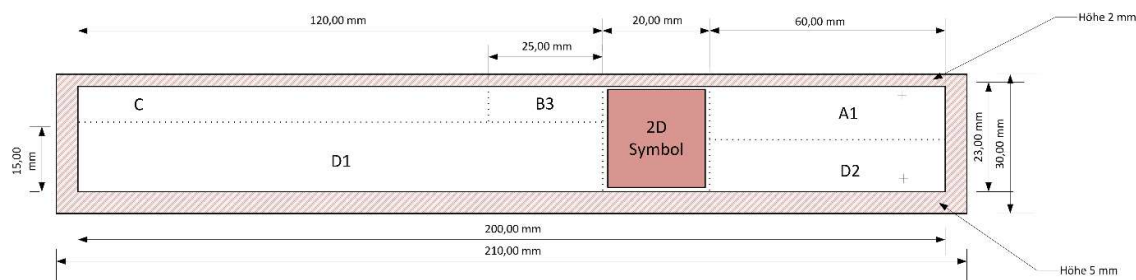


Figure 13: Dimensions and layout of data fields - label format SLC 3

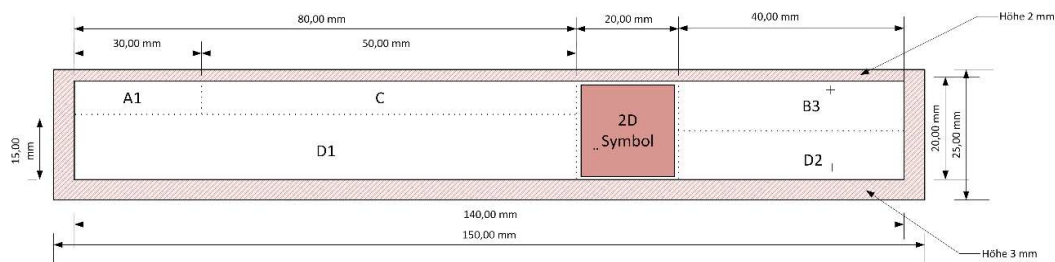


Figure 14: Dimensions and layout of data fields - Blister-Labels

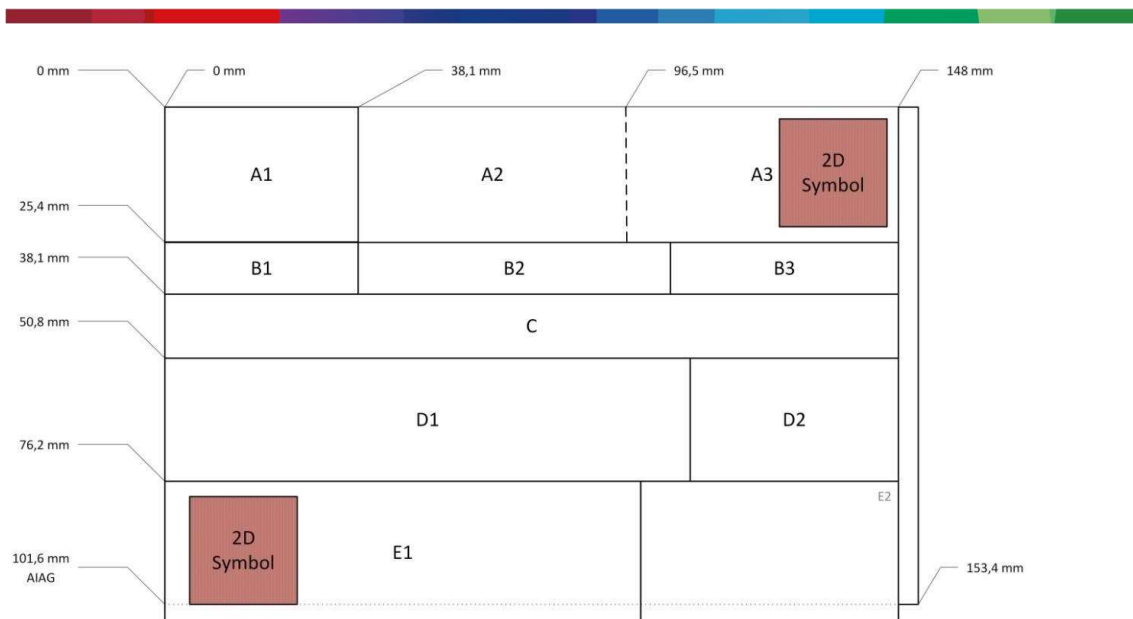


Figure 15: Dimensions and layout of data fields - label format A6

4.3 Technical Requirements (BOSCH)

In order to ensure the readability of barcodes on GTL, the use of a laser printer is recommended. Paper quality has to be according to the information below:

Label	Anforderung
Insert label	Min. 160 g/m ²
Adhesive label	Min. 80 g/m ²
Combined label	Approx. 130-170 g/m ²
- Carrier material	Approx. 50 - 90 g/m ²
- Label material	Approx. 80 g/m ²
Paper	white, machine-finished, moisture-resistant
Adhesive	permanent adhesive, moisture-resistant, easy to remove

Table 1: Technical requirements

Please note the paper weight of the insert label must be at least 160g/qm.

Depending on customer requirements, insert labels might be secured with adhesive dots or might be produced from heavier paper.

For use with returnable containers, adhesive labels must be easy to remove without leaving behind any residue.

If the labels have to be attached to boxes without label holders, then adhesive components will need to be used (sticky labels, adhesive dots).

For shipments to and from North America, label sizes Half Letter or 6x4" might be used, if approved by the customer.

Before applying new labels, all old (and thus invalid) labels must be removed from the packaging.

4.4 Types of labels (BOSCH)

A5 format is the only allowed label format for Master GTLs and Mix GTLs (other formats are not allowed). It can be designed as an insert label (if a suitable label frame/holder is available) or as a self-adhesive label. Depending on the type, the following specifications must be observed:

Labels for TPUs:

- **Master Label** for homogeneous TPU: TPU holds individual PPUs which all contain the same article number (e. g. packed in SLCs). The individual PPUs are equipped with separate Single labels: a Single Label denominates the label on the PPU, i.e. innermost packaging unit containing the parts.
- Master Label for mixed TPU (**Mixed Label**): TPU holds individual PPUs which do not all contain the same article number. The individual PPUs are equipped with separate Single Labels.
- **Single Label** for simplified TPU: TPU contains only parts with the same article number but which are not packed in individual PPUs (e. g. lattice boxes containing unpacked bulk goods).

Delivery related information (e .g. delivery note number, shipment date) must always be printed on the master label and the mixed label as well as on the single label if this is used as the main shipping label (e. g. for load carriers with unpacked bulk goods or when shipping individual KLT boxes). If single labels are used for inner packaging (e. g. SLC/boxes), no delivery related information is required on the labels.

Master label (figure below can be used for orientation; label pasting is explained in chapter 4.6)

In case of non-mixed packages (i. e. homogeneous loading units), product packaging unit contain Single Label.

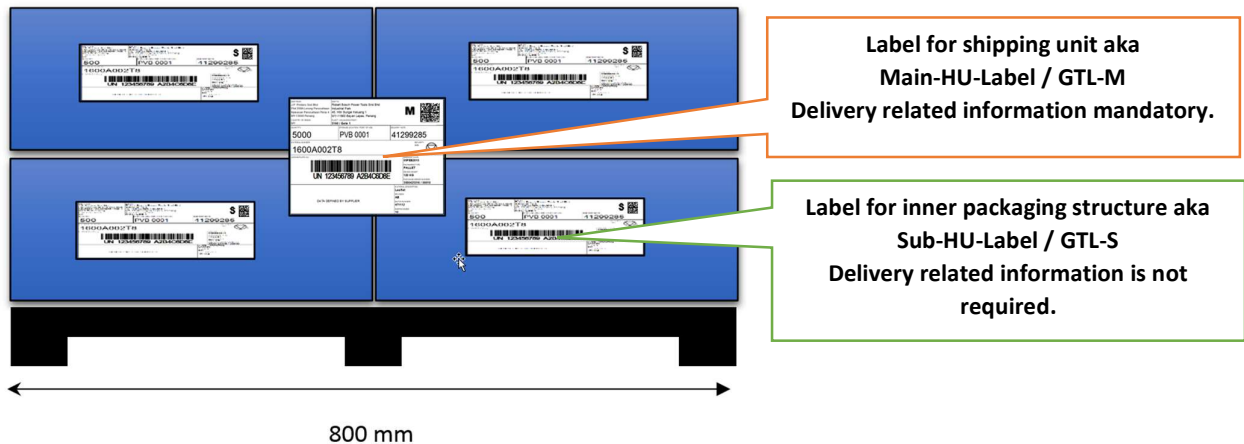


Figure 16: Example usage of the Master label on a homogeneous pallet (1200x800)

Mixed load label (figure below can be used for orientation; label pasting is explained in chapter 4.6)

In case of mixed packages (i. e. non-homogeneous loading units), product packaging unit contain Single Label.

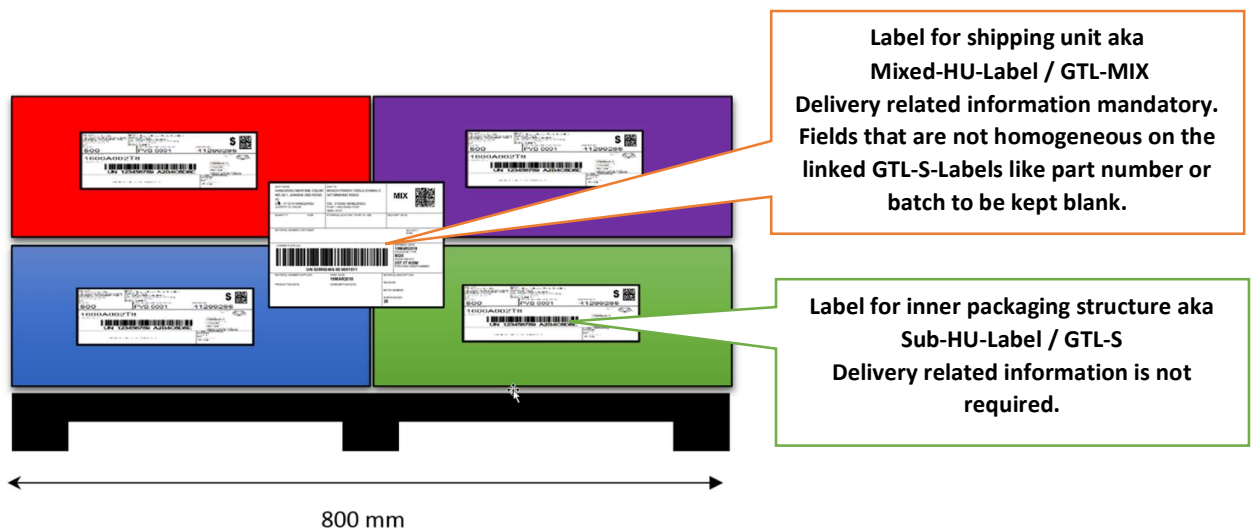


Figure 17: Example usage of the Mixed load label on a non-homogeneous pallet (1200x800)

Single Label (figure below can be used for orientation; label pasting is explained in chapter 4.6)

In case of homogeneous packages (e. g. boxes, lattice boxes, SLC, etc.), with no product packaging units.

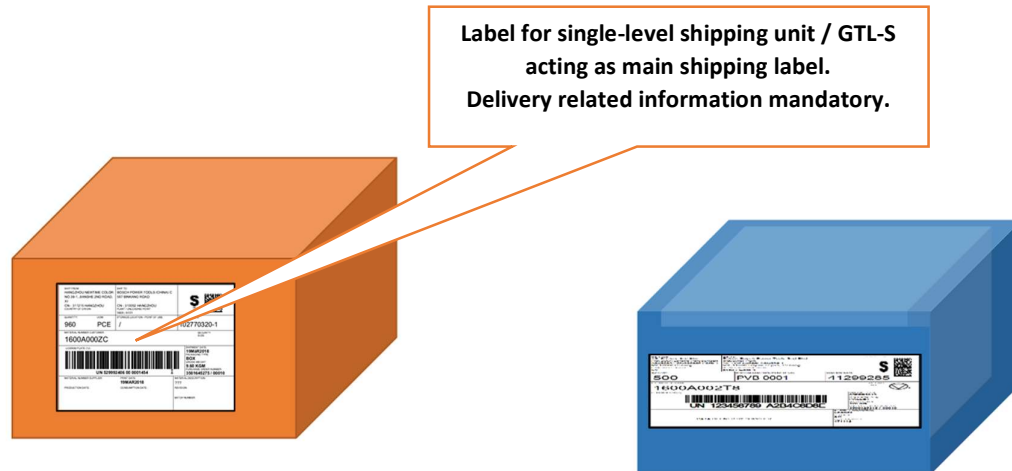


Figure 18: Example usage of the Single Label A5 or small container

4.5 Labels for small load carriers - SLCs (VDA 4994)

For containers according to VDA small load carrier system (VDA 4500), the DIN A5 label might also be used for SLCs, provided that the label can be inserted into the label frame without having to be folded.

Instead of using folded labels, the SLC or SLC2 2 label size should be used. Please follow customer's instructions regarding use of SLC and SLC2

The use of adhesive labels on SLCs is prohibited. Prior to returning the empty containers to the sender, all labels must be removed.

If disposable or reusable containers are used which, due to their height, do not even permit the use of the classic SLC label, a 210x42 mm (SLC2) label can be used.

4.6 Label pasting (BOSCH)

A GTL must be attached to all packages carrying parts (loading unit, container or shipping carton).

The right pasting of the GTL is an important component of packaging, and a prerequisite for automated processing in the supply chain, e. g. camera recording at goods receipt. Empty containers as well as auxiliary packaging, such as lids and packaging materials do not have to be labelled. The GTL must be fastened in such a way that it cannot be torn off or lifted off.

The Master or Mixed Label must be attached at the top center on the narrow and on the long side. Single labels should not be covered, if possible. Master or Mixed Label cannot be covered by items used for securing the loaded goods (e. g. not by straps or stretch foil). For simplified loading units the Single Label must be attached like Master Label.

When using sticky dots, the barcode and DMC must not be covered.

Single labels on the SLC must be clearly visible from the outside on the long side of the pallet. SLC on the inside must be marked in the same way.

The following figure illustrates the pasting of Master and Single label on a pallet.



Figure 19: Arrangement of labels on pallet (illustration)

4.7 Handling Unit structure and transfer into the ASN (BOSCH)

The matching of Single Labels to the Master/Mixed Label of a handling unit is based on a unique number. This Unique ID can either be a License Plate number based on the DUNS number (according to ISO/IEC 15459) or a SSCC18 (from GS1; structure of the GLN type 2). For further details see chapter 6. **A Unique ID from other number ranges is not permitted!**

For the physical matching of the Unique ID to the delivered goods, the packing data in the EDI message DESADV Global EDIFACT D.07A must match the content of the label (for clarification, see Figure 20: Matching of Single Label and higher-level Master/Mixed Label and Figure 21: Example structure of ASN (EDI Message DESADV Global EDIFACT D.07A)).

EDI Message Guides for data exchange can be found under:

<https://www.bosch.com/company/supply-chain/information-for-business-partners/#logistics-regulations-and-standards>



Figure 20: Matching of Single Label and higher-level Master/Mixed Label

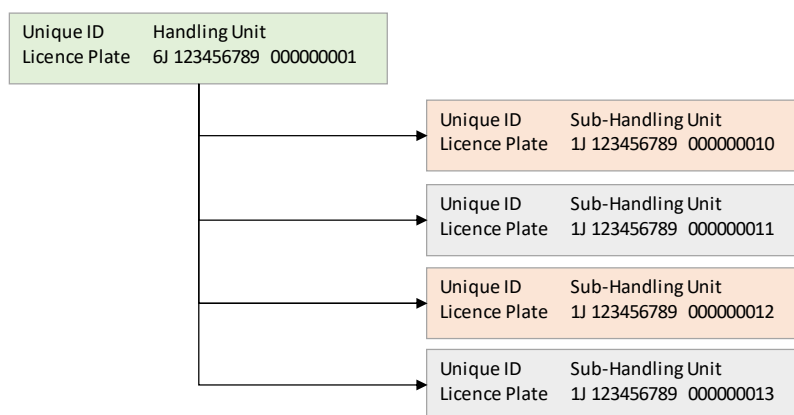


Figure 21: Example structure of ASN (EDI Message DESADV Global EDIFACT D.07A)

5 Description of data fields (BOSCH)

In principle, data field are to be filled according to the VDA recommendation 4994 (chapter 5).

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 font size for the individual data fields according to VDA recommendation 4994 (compare GTL V1.1 – Appendix 1 - 2018-07.xlsx) can be found in the Appendix in chapter 10.2.

Completely filled labels can look like the following:

SHIP FROM LIEFERANT AG WERK BERLIN BERLIN DE-10117 ID 887766554		SHIP TO ROBERT BOSCH GMBH WERK STUTTGART ROBERT-BOSCH-PLATZ 1 DE-70839 GERLINGEN-SCHILLERHÖHE PLANT/UNLOADING POINT/INTERNAL DESTINATION 011 / ABLAD123 / LAGER		M		
COUNTRY OF ORIGIN DE						
DELIVERY NOTE 12345678	CUSTOMER SPECIFIC ROUTING ROUTE 66 LINE 15		ETA 2016-01-15/13:30	QUANTITY (PCE) 1000	NET KG 780	GROSS KG 850
CUSTOMER PART NUMBER F00VH20140		BEFESTIGUNG XYZ ALUMINIUM				
PACKAGE ID (6J) UN 987654321 000123457						
SUPPLIER AREA 		Lieferantendaten Zeile 1 Lieferantendaten Zeile 2 Lieferantendaten Zeile 3		KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4 KUNDENDATEN ZEILE 5 		

Figure 22: Master Label for homogeneous loading units

SHIP FROM LIEFERANT AG WERK BERLIN BERLIN DE-10117 ID 887766554		SHIP TO ROBERT BOSCH GMBH WERK STUTTGART ROBERT-BOSCH-PLATZ 1 DE-70839 GERLINGEN-SCHILLERHÖHE PLANT/UNLOADING POINT/INTERNAL DESTINATION 011 / ABLAD123 / LAGER		MIX 
COUNTRY OF ORIGIN DE		DELIVERY NOTE 12345678		ETA 2019-09-15/13:30
SUPPLIER NUMBER 1122334		CUSTOMER SPECIFIC ROUTING ROUTE 66 LINE 15		QUANTITY () NET KG 780 GROSS KG 850
CUSTOMER PART NUMBER				
PACKAGE ID (SJ) UN 987654321 000123457 			PACKAGING TYPE GLT4711 BATCH NUMBER SHIPMENT DATE S 2019-09-13	
SUPPLIER AREA  Lieferantendaten Zeile 1 Lieferantendaten Zeile 2 Lieferantendaten Zeile 3			KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4 KUNDENDATEN ZEILE 5 	

Figure 23: Mixed Label for mixed loading units

If single labels/GTL-S are used for inner packaging only, the delivery related data marked in yellow must not be filled. If they are used as the main shipping label, however, the fields are mandatory.


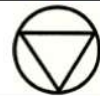


SHIP FROM LIEFERANT AG PLANT BERLIN BERLIN DE-10117 ID 887766554		SHIP TO ROBERT BOSCH GMBH PLANT STUTTGART ROBERT-BOSCH-PLATZ 1 DE-70839 GERLINGEN-SCHILLERHÖHE PLANT/UNLOADING POINT/INTERNAL DESTINATION 011 / ABLAD123 / LAGER		S 	
COUNTRY OF ORIGIN DE		DELIVERY NOTE		CUSTOMER SPECIFIC ROUTING	
SUPPLIER NUMBER 1122334		ETA 2019-11-01/13:30		QUANTITY (PCE) 1000 NET KG 780 GROSS KG 850	
CUSTOMER PART NUMBER		BEFESTIGUNG XYZ ALUMINIUM			
F00VH20140					
PACKAGE ID (1J) UN 987654321 000123457 		PACKAGING TYPE 0009PAL BATCH NUMBER CH1234 ENGINEERING CHANGE/HARDWARE REVISION/SOFTWARE REVISION / /		EXPIRY DATE E 2022-01-14	
SUPPLIER AREA		LIEFERANTENDATEN ZEILE 1 SUPPLIER DATA LINE 2 LIEFERANTENDATEN ZEILE 1		KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4 KUNDENDATEN ZEILE 5 	

Figure 24: Single Label for homogeneous loading units or inner packaging

SHIP FROM LIEFERANT AG PLANT BERLIN BERLIN DE-10117 ID 887766554		SHIP TO ROBERT BOSCH GMBH PLANT STUTTGART ROBERT-BOSCH-PLATZ 1 DE-70839 GERLINGEN-SCHILLERHÖHE PLANT/UNLOADING POINT/INTERNAL DESTINATION 011 / ABLAD123 / LAGER		S 	
COUNTRY OF ORIGIN DE		DELIVERY NOTE		CUSTOMER SPECIFIC ROUTING	
SUPPLIER NUMBER 1122334		ETA 2019-11-01/13:30		QUANTITY (PCE) 1000 NET KG 780 GROSS KG 850	
CUSTOMER PART NUMBER		BEFESTIGUNG XYZ ALUMINIUM			
F00VH20140					
PACKAGE ID (1J) UN 987654321 000123457 		LIEFERANTENDATEN ZEILE 1 SUPPLIER DATA LINE 2 LIEFERANTENDATEN ZEILE 1		KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4 KUNDENDATEN ZEILE 5 	

Figure 25: Single Label in SLC 1 format for inner packaging

VERSENDER ID 12345678901234567	EMPFENDER KUNDE AG	LIEFERSCHENNUMMER A1B2C3D4E5F6G7	PACKMITTELTYP 6280RL	VERSANDDATUM S 2016-01-14
LIEFERANTENNUMMER 1122334	VERWENDUNGSTELLE	KUNDENSPEZ. ROUTING	CHARGE NUMMER CH1234	
 SACHNUMMER WIDERSTAND 50 OHM F00VH20140		1J UN 987654321 000123457	 TEREGENERATIONS - HARDWARE - SOFTWARESTAND E234567 / HH123456 / S123456	KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4
		MENGE  1000	ST	

Figure 26: Single Label in SLC 2 format

Note: Lines in data field A2 and above E1/E2 in the SLC 2 label format are not printed, they are included to improve readability.

Part Number: F00VH20140	QTY (PC): 1000		Supplier: Great Gearboxes GMBH
			Supplier No.: 12345678901234567
Package ID: 1J UN 987654321 000123457			Batch: CH1234
			Expiry Date: 2023-01-14

Figure 27: Single Label in KLT3 (Tray)-format

SUPPLIER: Great Gearboxes Ltd.	PART: F00VH20140		1000 PC
			BATCH NO.: CH1234
1J UN 987654321 000123457			EXPIRY DATE: 2023-01-14

Figure 28: Single Label in Blister-format

6 Identification of packages and loading units (BOSCH)

The identification of the individual packages and loading units plays a central role in controlling the various process steps in the incoming goods department. For this reason, each package and each loading unit must be uniquely identifiable worldwide. This must be guaranteed by the supplier for at least 6 years to ensure the traceability of a material.

As an alternative to the License Plate (package ID = data block D1), BOSCH accepts the SSCC18 number as the globally unique identification number of a package or loading unit.

The License Plate (see VDA 4994 Chapter 6) and SSCC18 (Serial Shipping Container Code) number ranges are therefore permitted. The SSCC18 is based on the GS1 standard with GLN (Global Location Number) type 2 structure using the shipping unit number (NVE).

In order to switch to the BOSCH GTL, a print sample must be sent by the supplier to the receiving BOSCH plant to ensure verification of the contents and legibility of the barcodes. If the check is positive, the BOSCH label is approved by the receiving plant. After approval, the GTL is to be used for all deliveries to the corresponding factory.

Exceptions to this process require a separate agreement.

7 Barcode, 2D code and optional RFID tag (BOSCH)

7.1 1D barcode (BOSCH)

The barcode for the package ID (License Plate/SSCC18) is a code 128 barcode.

In the readable versions, the data identifier (1J, 5J, 6J) for the package ID is omitted. Otherwise, the barcode corresponds to the readable version of the package ID. Spaces are only included to make the printed text more readable but are omitted in code 128.

The width of the barcode of the package ID must be at least 130 mm for the A5 label. For all other formats a minimum width of 100 mm must be observed. The minimum height for the A5 label is 20 mm, for all other formats 15 mm. The quiet zone (regardless of format) must be at least 6 mm to the left edge and at least 5 mm to the right edge. The minimum distance to the text (regardless of format) at the top and bottom is 1 mm.

It is not allowed to add additional 1D Barcodes with different content on the GTL.

7.2 2D Data Matrix symbol (BOSCH)

7.2.1 Symbol size and print quality

The Data Matrix code is a Data Matrix ECC 200 code (see also ISO/IEC 16022). For SLC1 labels the height and width including quiet zone is max. 20 mm, for DIN A5 labels max. 34 mm. The height and width of each module is min. 0.3 mm.

To ensure robust readability on manufacturing equipment, the print quality of the DMC must achieve grade "B" or better according to ISO 15415.

7.2.2 Positioning

The position of the Data Matrix code (without quiet zone) is at least 0.7 mm above the bottom border line of block A3. The left side of the DMC starts at 170 mm for the DIN A5 label and 133 mm for the KLT2 label. The exact dimensions depend on the printer.

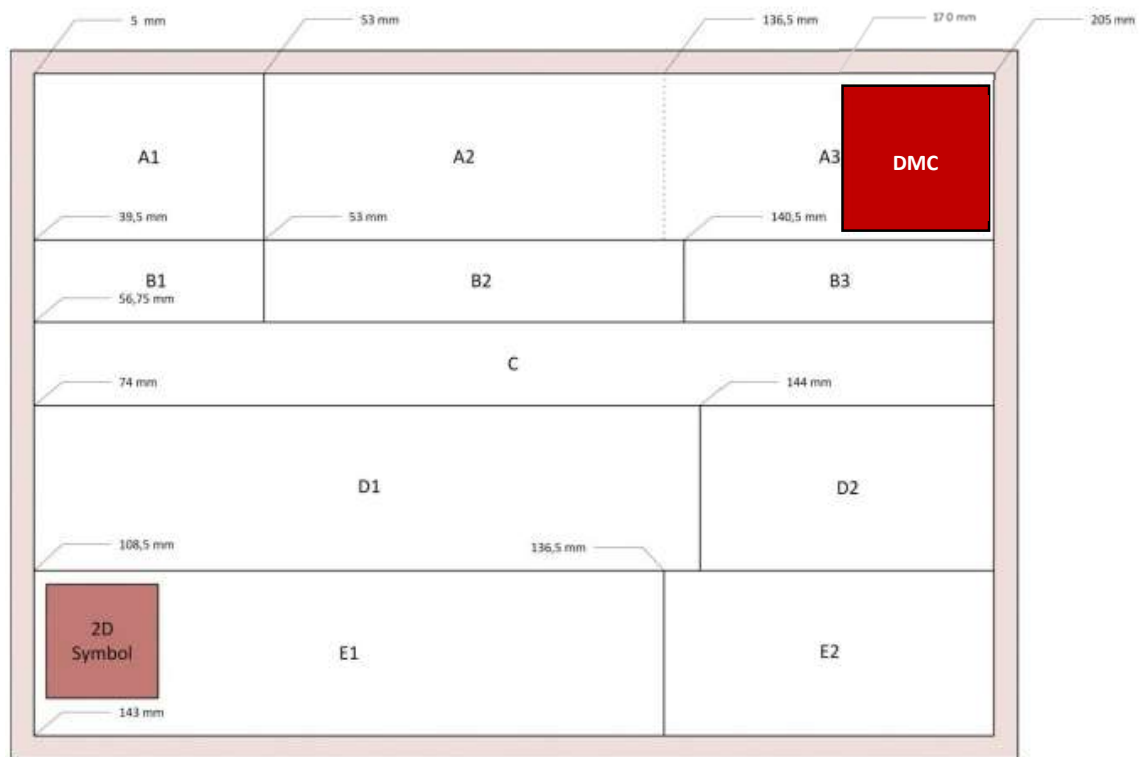


Figure 29: Positioning DMC on A5 Label

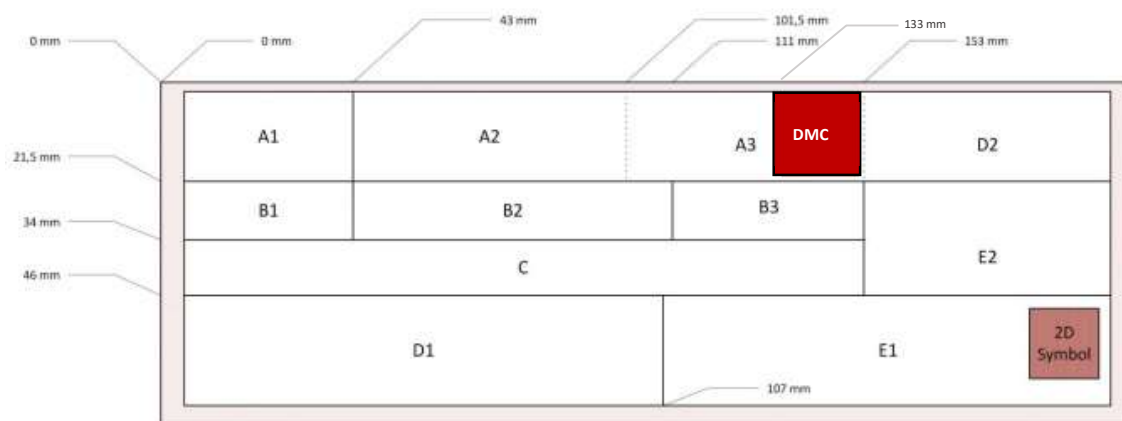


Figure 30: Positioning DMC on SLC 1 Label

7.2.3 Message structure and user data

The Data Matrix Code follows the same syntax as proposed in the VDA recommendation 4994, the content of the code is Bosch specific.

The format indicator "06" (according to ISO/IEC 15434) is used to construct the DMC. This consists of the character string []><RS>06<GS> at the beginning of the code, followed by the user data according to ISO/IEC 15418 and the character strings <RS> and <EOT> at the end.

ASCII	Hex	Decimal	Description
[]>	5B, 29, 3E	91, 41, 62	Compliance Indicator
R S	1E	30	Format Trailer Character
06	30, 36	48, 54	Format identifier for 'ASCII Dis'
G S	1D	29	Data Field Separator
E O T	04	4	Message Trailer

Table 2: Control indicators

The user data will be included after the format identifier '06' and 'GS' with preceding data identifier in the syntax, each separated with a separator 'GS'. For fields that are not filled, the data identifiers must always be specified. In this case the content remains empty. The same applies to the data elements on the master label if the content on the related single labels are different (e. g. different batches per box (SLC) of a pallet, the data element in the DMC remains empty).

Please note information on label (incl. DMC) must match with the ASN data and must be consistent with MAT-label if in use on third level.

Data fields according to VDA 4994 chapter 7.2.4 may only be added after consultation with the division coordinator for receiving.

Sequence of data fields	Data Identifier	Master	Mixed	Single	Condition	Format
Identification of specification	12P	M	M	M		Constant value 12PGTL3
Specification version	9K	M	M	M		e. g. 9K15 for version 1.5
License Plate or SSCC18 (Package ID)	1J, 5J or 6J	M (6J)	M (5J)	M (1J)		e. g. 1JUN551236867029738321
Used by / expiry date	14D	C	n/a	C	Preferably, SLED to be specified. Currently in clarification within Bosch when and for which material the SLED will be mandatory in the future.	Format 14DCCYYMMDD e. g. 14D20251023
Production date	16D	M	n/a	M		Format 16DCCYYMMDD e. g. 16D20240108
Article number BOSCH	P	M	n/a	M		Only capital letters and numbers, without hyphen, blanks and full stops e. g. PF00VH20140
Bosch Engineering Change Number / level	2P	C	n/a	C	Value must be provided if the material is Engineering Change Level relevant or revision level relevant	Format alphanumeric, capital letters e. g. 2PF030AB031701
Supplier batch	1T	C	n/a	C	Value must be provided if aligned between Bosch and supplier for traceability	Format alphanumeric, capital letters and special characters e. g. 1T9815123
Quantity	Q	M	n/a	M		Format only numbers, full stop as separators (at least one digit before separator) e. g. Q288 or Q0.33
Unit of measure	3Q	M	n/a	M		see table 7 Unit of measure for DMC and labels format capital letters e. g. 3QPC
Order No. BOSCH	K	M	n/a	n/a		e. g. K55284673
Order item BOSCH	4K	M	n/a	n/a		e. g. 4K00010
Delivery note (Supplier)	2S	M	M	n/a		e. g. 2S12345678
Kanban-ID BOSCH	15K	C	n/a	C	Value must be provided in case of Kanban process	
Supplier No. at BOSCH	V	M	M	M		e. g. V144837
Supplier No. (DUNS)	13V	n/a	n/a	n/a		e. g. 13V
Gross weight in KG	7Q	M	M	M		Format only numbers, full stop as separator e. g. 7Q25.5
Shipment Identification code assigned by supplier	2K	C	C	n/a	Value can be included if it can be provided by supplier	Format alphanumeric, capital letters
Additional Part Information	23P	C	n/a	C	Value must be provided if aligned between Bosch and supplier on material-specific basis for traceability	Format alphanumeric, capital letters e. g. 23PNEST4
RoHS directive	30P	M	n/a	M		Table 8 Overview of valid RoHS-values e. g. 30P2019/65/EU
Manufacturer (DUNS)	12V	M	n/a	M		e. g. 12V300271681 if supplier is equal to manufacturer then supplier DUNS must be provided

Part number manufacturer	1P	M	n/a	M		e. g. 1P3397044952853 if supplier is equal to manufacturer then part number of supplier must be provided Format alphanumeric, capital letters and special characters
Indicator, if GTL is the smallest packaging unit	33T	M	M	M		"Y" if this is the label of the smallest packaging unit, otherwise "N" format capital letter e. g. 33TY

Table 3: Data elements in the DMC

M = mandatory

C = conditional

n/a = not applicable (value not required in DMC but data identifier needs to be included in the data string)

Example of a valid Data Matrix code according to Table 2: Control indicators and Table 3: Data elements in the DMC:

Master Label:

[>^R_S06^G_S12P^G_S9K15^G_S6JUN551236867029738561^G_S14D20251231^G_S16D20211231^G_SPF00VH20
140^G_S2P^G_S1T^G_SQ6912^G_S3QPC^G_SK55284673^G_S4K00010^G_S2S12345678^G_S15K^G_SV144837^G_S13V^G_S7Q211
^G_S2K^G_S23P^G_S30P2019/65/EU^G_S12V300271681^G_S1P3397044952853^G_S33TN^R_SEOT

Mixed Label:

[>^R_S06^G_S12P^G_S9K15^G_S5JUN551236867029738987^G_S14D^G_S16D^G_SP^G_S2P^G_S1T^G_SQ^G_S3Q^G_SK^G_S4K^G_S
2S12345678^G_S15K^G_SV144837^G_S13V^G_S7Q211^G_S2K^G_S23P^G_S30P^G_S12V^G_S1P^G_S33TN^R_SEOT

Single Label:

[>^R_S06^G_S12P^G_S9K15^G_S1JUN551236867029738321^G_S14D20251231^G_S16D20211231^G_SPF00VH20
140^G_S2P^G_S1T9815123^G_SQ288^G_S3QPC^G_SK^G_S4K^G_S2S^G_S15K^G_SV144837^G_S13V^G_S7Q8^G_S
2K^G_S23PNEST4^G_S30P2019/65/EU^G_S12V300271681^G_S1P3397044952853^G_S33TY^R_SEOT

7.2.4 Segmentation of Information in 2D code

The data elements in the barcode that contain data identifiers are segmented hierarchically into a tree structure (looping structure) within the Data Matrix code. The data identifier (F) is used for this purpose.

The segmentation assigns the data fields to the linked hierarchical levels, e. g. article and serial numbers are linked to containers carrying parts and these are linked to higher-level load carriers. The individual structural levels are provided with corresponding level codes (see EDI syntax ANS X12, data element 735). The following levels can be used:

Level	Level-name	Level-code	Description
Higher-level load Master-/ Mixedload	Tare	T	The tare level is used to identify pallets. If there are no identifiable pallets, this level may be omitted.
Container carrying parts	Pack	P	The pack level is used to identify the cartons within which the item is shipped, e. g., label serial numbers. In most cases there will be some sort of packs.
Article	Item	I	Stock keeping unit (SKU) identification data.

Table 4: Level Codes

After completion, the entire data string is embedded in the syntax ISO/IEC 15434. A Data Matrix code of a master or mixed label can be executed as a set code with the information of the subordinate single units or without this information only for the relevant level.

Set codes contain the data segments of the subordinate single labels, surrounded by the data segment of the higher-level unit. Three levels are used for segmentation, the "TARE" level of the higher-level master and mixed units, the "PACK" level for partially-bearing containers and the "ITEM" level for articles (see Table 4: Level Codes).

7.3 RFID tags used in conjunction with smart labels (BOSCH)

VDA Recommendation 4994 (Chapter 7.3) applies with reference to VDA 5500.

As an additional requirement, the UHF tags must be legible on metallic containers and ESD containers.

8 Delivery scenarios and requirements regarding the information on the labels (VDA 4994)

- Not applicable -

9 Label for shipments of empty packages (VDA 4994)

- Not applicable -

10 Third packaging level (BOSCH)

10.1 Introduction

This chapter describes the requirements for a label for containers (inner packaging) on the third packaging level, which are relevant for traceability.

For the labeling of the third packaging level, the MAT label is to be used as far as possible. Alternatively, the Neutral Label can be applied.

Example:

- Boxes (SLC) are stacked on a pallet (Level 1 with GTL Master).
- The boxes (Level 2 with GTL Single) contain blisters/coils with connector strips
- The blisters/coils (level 3) are marked with the MAT label or the Neutral label.



Figure 31: Pallet with boxes/SLC (left side) and boxes containing blister (right side)

The MAT label or Neutral label is specifically designed to match the GTL. The GTL (Level 1 and 2) is physically attached to the packages and correlates with the information of the electronically transmitted shipping notifications (DESADV Global EDIFACT D.07A). Below level 2, the MAT label or neutral label is used, for which no data needs to be transmitted electronically. It allows the traceability of the parts contained in the outer packaging by pairing with the GTL Single. For this purpose, the supplier must ensure a minimum uniqueness of the package ID of 5 years.

Before changing to the MAT label or the neutral label for inner packaging, the supplier must send a sample in electronic form to BOSCH to ensure that the contents and the legibility of the 2D code are checked. If the check is positive, the receiving plant releases the BOSCH label. After approval, the label must be used for all deliveries with the same inner packaging.

Exceptions to this regulation require a separate agreement.

10.2 MAT label

The MAT label is to be executed in accordance with the VDA 4992 guideline as standard.

In exceptional cases, the BOSCH MAT label may also be used by bilateral agreement between the supplier and BOSCH. However, the BOSCH MAT label is still to be used for electronic components.

10.3 Neutral label

In contrast to the VDA4992 MAT label and BOSCH MAT label, the Neutral Label is reduced to elementary basic data and does not contain any customer-specific data. As a result, the space required for the Data Matrix Code (DMC) is much smaller and it can therefore be used on all containers on which there is not enough space for a MAT label. It also allows suppliers to label materials that are not specifically manufactured or packaged for BOSCH, e. g. screws or nuts as standard mechanical parts.

The label has two sizes:

- 17 mm x 70 mm for a label with text and DMC
- 17 mm x 17 mm for a label only with DMC

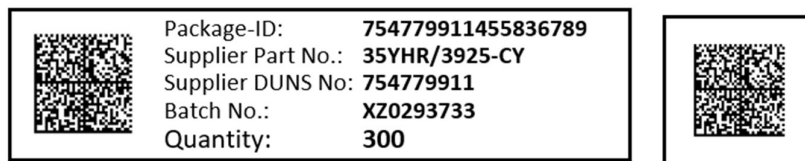


Figure 32: Layout Neutral Label

The application of the Neutral Label on the innermost packaging is determined together with the requesting plants. Depending on the type of packaging, the correct format must be used. BOSCH prefers the larger label with text information. The label must be designed in such a way that it can be removed easily and without residue from reusable containers.

The size of the DMC is approximately 10.8 mm x 10.8 mm each (36 x 36 modules), including the quiet zone a maximum of 13 mm x 13 mm with a height and width of the modules of at least 0.3 mm.

The DMC follows the same syntax as proposed in VDA recommendation 4994. However, it only contains supplier-specific information.

The format indicator "06" is used to build the DMC (according to ISO/IEC 15434). This consists of the character string []><RS>06<GS> at the beginning of the code, followed by the user data according to the specifications of ISO/IEC 15418 and the character strings <RS> and <EOT> at the end (see Table 2: Control indicators).

The individual data elements in the user data area are inserted into the syntax with the leading Data Identifier and separated from each other by the separator "GS". Adding further fields is not allowed.

Sequence of data fields	Data Identifier	DMC	Text (17 x 70)	Remarks
Identification of specification	12P	X	-	Constant 12PNL01
Specification version	9K	X	-	e. g. 9K10 for version 1.0
Unique-ID	3S	X	X	9 digit DUNS-number of plant of manufacturer + package ID like defined in VDA4994
Articlenumber Manufacturer	1P	X	X	Also to be filled if manufacturer = supplier
Manufacturer (DUNS)	12V	X	X	Also to be filled if manufacturer = supplier
Expiry date	14D	X	-	Format CCYYMMDD (e. g. 14D20221231)
Production date	16D	X	-	Format CCYYMMDD (e. g. 16D20201231) Optional if MHD (14D) not filled, otherwise empty.
Supplier batch	1T	X	X	Alphanumeric, capital letters
Quantity	Q	X	X	Q9999 (maximum 6 digits) Point instead of comma as separator (e. g. Q2.5) Unit of measure as defined in higher-level GLT Single (3Q)

Table 5: Data elements of Neutral Label

Note: For pairing the data of Neutral Label with the data of the GTL Single of the outer packaging, the following must be ensured

- Match of the manufacturer number (DUNS) of the Neutral Label with the manufacturer number (DUNS) of the GTL Single of the outer packaging.
- The manufacturer's part number must be identical on both labels.

Example of a valid Data Matrix code according to Table 2: Control indicators and Table 5: Data elements of Neutral Label:

[]>^R_S06^G_S12PNL01^G_S9K10^G_S3S551236867029738561^G_S1PF00VH20140^G_S12V551236867^G_S14D20221
231^G_S16D^G_S1TXZ0293733^G_SQ300^R_S^EO^T

11 Appendix (BOSCH)

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11.2 Font size Global Transport Label (VDA 4994)

Data field	Short description	A5	SLC 210x 74	Small 210x 42	A6
Ship-from name 1	Name of ship-from	10	10		10
Ship-from post code	Post code of ship-from	10	10		10
Ship-from location	Ship-from's location	10	10		10
Ship-from country	ISO 3166-1 alpha-2 code of the ship-from	10	10		10
Ship-from unique ID	Ship-from ID number	10	10		10
Country of origin	ISO 3166-1 alpha-2 code of the country of origin	10	10		10
Ship-to name 1	Name of ship-to	12	12	12	12
Ship-to post code	Ship-to's post code	12	12		12
Ship-to location	Ship-to's location	12	12		12
Ship-to country	ISO 3166-1 alpha-2 code of the ship-to	12	12		12
Ship-to plant number	Ship-to's plant ID number	30	18		18
Unloading point	Unloading point (where the means of transport is being unloaded)	30	18		18
Customer internal destination	Additional Internal destination at customer's side after unloading (warehouse / storage)	30	18	12	18
Label type	Type of Label 6J = Master ('M') 5J = Mixed ('MIX') 1J = Single ('S')	48	48		48
Supplier number	Supplier number of the ship-from plant assigned by customer	18	12	12	10
Delivery note number	Delivery note number, issued by supplier (maybe in some cases DESADV number?)	18	12	12	10
Customer specific routing	Customer specific routing	36 22 ¹	24 18	12	24 22
Place of consumption	Place where items are used in production	36 22	24 18		24 22
ETA - Requested/expected time of arrival	Time of arrival, requested by customer	14	12		14
Quantity	Quantity per loading unit (Master label) or per pack (Single label)	30	24	18	24
Unit of measure	Abbreviation of the unit of measure	6	6	6	6
Gross weight	Gross weight of the loading unit or inner packaging item	20	12		14
Net weight	Net weight of the loading unit or inner packaging item	20	12		14
Customer's part number	Part number assigned by customer	36	24	18	28
Customer's part description	Part description according to customer's nomenclature	10	10	10	10
Safety sign	Symbol to mark safety relevant parts				
License plate (UUID)	Globally unique package ID of the package / loading unit	24	12	8	20
Package type code	Type of package code according to receiver's codification	16	12	12	12
Shipment date	Date and time of scheduled shipment	16	12		12
Expiry date	Best before date	16	12	12	12
Production date	Date of production	16	12	12	12
Batch number / lot number	Batch number / lot number	16	12	12	12
Hardware status	Hardware status	16	12		12
Software status	Software status	16	12		12
Engineering change ID	Engineering change ID	16	12	12	12
Number of inner package items	Number of inner packages in a loading unit	24	24		24

Data field	Short description	A5	SLC 210x 74	Small 210x 42	A6
Supplier specific information	Supplier specific information for supplier's use only	tbd	tbd	tbd	tbd
Customer specific information	Additional, customer specific information for customer's use only	14	12		14

¹ one line/two lines

Table 6: Font size Global Transport Label

11.3 Abbreviations of units of measure for DMC and label

The following abbreviations of the units of measure must be used:

DMC (cp. UN/EDIFACT and ANSI X12.3)	Label DE	Label EN	Meaning
PCE, C62, PC, EA ¹	PCE, ST, EA ¹	PCE, PC, EA ¹	Piece
SET, ST	SET	SET	Set
MTR, MR	M	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	T	Ton (metric)

¹ Only for internal use with processing via SupplyOn

Table 7: Unit of measure for DMC and labels

11.4 RoHS in Data Matrix Code

Selectable values	Meaning
NC	NC = not compliant Material does not comply with any RoHS directive
NA	NA = not applicable RoHS directive does not apply for this material
2019/65/EU (equivalent to RoHS II 2015/863) 2011/65/EU 2002/95/EG SJ/T11364-2014 SJ/T11363-2006	Material is compliant with this specific RoHS directive
empty	Not allowed for GTL

Table 8: Overview of valid RoHS-values (as of 11/2021)

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