ZF LIFETEC EUROPE

REQUIREMENTS FOR VDA 4994 LABELING STANDARD

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

GS1 Global Standards One

IEC International Electrotechnical Commission

ISO International Association for Standardization

Odette is a pan-European collaboration and services platform to create standards for the automotive industry.

PDS Product Data Sheet

SKU Stock keeping unit

SLC Small Load Carriers

SLC1/KLT1 Label for Small Load Carriers

SLC2/KLT2 Label flat Small Load Carriers

UHF Ultra High Frequency

1 Revision changes.

Revision	Revision date	Chapter	Revision description
1.0	2025.05.01	All	Initial release for ZF LIFETEC.
2.0	2025.09.24	6.11-6.12 7.1-7.2 8.0	Label visualizations changed. Improved description of Data Matix and 1D code structure. Label optional content added. Site specific content added.
3.0	2026.03.20	7.2.3 6.1.2 9.2	Master label DMC minimum content added. Mix label usage clarification. D-U-N-S origin clarification.

2 Introduction / Purpose

The document supports logistics processes and effective and efficient capture of data for production counts, warehouse input/output, cycle counting, shipper generation, forwarding, freight transfer control, receiving, Electronic Data Interchange (EDI) with Advance Shipment Notice (ASN), and other inventory controls.

ZF LIFETEC Global Transport Label is in accordance with the VDA recommendation 4994.

The document describes ZF LIFETEC specific customer Requirements of European facilities.

Deviations from VDA 4994 latest version and ZF LIFETEC specific customer requirements are subject to approval by the Logistics Manager at the receiving facility AND the ZF LIFETEC Automotive buyer. The approval has to be proceeded in writing form (mainly in PDS document).

This labeling specification applies to all products being shipped to any of ZF LIFETEC location in Europe, regardless of the supplier's location.

The data printed on labels originates from the same data pool as the information printed on dispatch advice (DESADV, VDA 4987) and shipping documents (shipment documents according to VDA 4939).

2 Function of labels

No specific customer requirements

3 Consignments and transport

No specific customer requirements

4 Size, layout, and application of labels

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.

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

4.1 Dimensions

ZF LIFETEC is following the recommended dimensions according to VDA 4994

- Format A5 (210 mm x 148 mm)
- Format A6 148mm x 105mm x 101.6mm
- Format A6 148mm x 152.4mm (6 inches) x 101.6mm (4 inches)
- SLC1 /KLT1 Label for small load carriers 210mm x 74mm
- SLC2 /KLT2 Label for flat small load carriers 210mm x 42mm

4.2 Data fields on labels

According the VDA 4994, 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:

Block	Status	Description
A1	Mandatory	Goods sender (ship from)
A2	Mandatory	Goods recipient (ship to)
A3	Mandatory	Label type and 2D barcode symbol
B1	Mandatory	Customer reference 1
B2	Mandatory	Customer routing information
B3	Mandatory	Logistics reference
C	Mandatory	Customer's article number
D1	Mandatory	Package ID
D2	Mandatory	Customer reference 2
E1	Optional	Optional information as defined by supplier/ Customer
E2	Optional	Customer reference 3

4.3 Technical requirements

4.3.1 Label Application

Label	Requirement
Insert label	Min. 160 g/m²
Insert label with Adhesive dots	Min. 80 g/m²
Adhesive label	Min. 80 g/m²
Combined label	130-170 g/m²
Paper	white, machine-finished, moisture-resistant
Sticking	permanent adhesive, moisture-resistant, easy to remove

4.4 Labels for transport packaging units (TPU)

No specific customer requirements

4.5 Labels for small load carriers (KLTs)

No specific customer requirements

5 Description of data fields

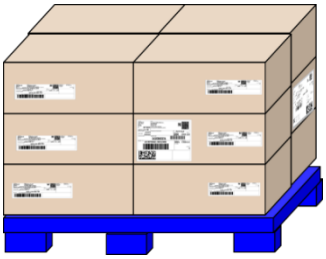
No specific customer requirements.

See detailed description at [VDA 4994 - Global Transport Label V2.0 2023-07]

6 Identification of packages and loading units

6.1.1 Homogenous material

For homogenous material = homogenous single units



Detailed description of label positioning/placement on the box /Pallet is in latest verion of the document „Packaging Data Sheet & Packaging Guidelines Europe".

Master label

VDA 4994 label - format DIN A5

SHIP FROM
Stara Boleslav
HLAVENIEC 161

CZ-294 74
ID: A278

COUNTRY OF ORIGIN: CZ

SHIP TO
ZF AUTOMOTIVE SYSTEMS POLAND SP. Z O.O..
Plant Częstochowa SBS
Legionów 63, Częstochowa
PL 42-200 CZĘSTOCHOWA
PLANT / UNLOADING POINT / CUSTOMER INTERNAL DESTINATION

M

CZE / GATE 3 / STOCK 12

DELIVERY NOTE NUMBER
12345678
SUPPLIER NUMBER
A278

CUSTOMER SPECIFIC ROUTING INFORMATION
ROUTE 66
TRACK 15

ETA 2025-09-10/13:30
QUANTITY (PC) 1000
NET KG 1200
GROSS KG 1210

CUSTOMER PART NUMBER
IGNATOR
33023540A

PACKAGE-ID (6J)
UN 367970717 000123456

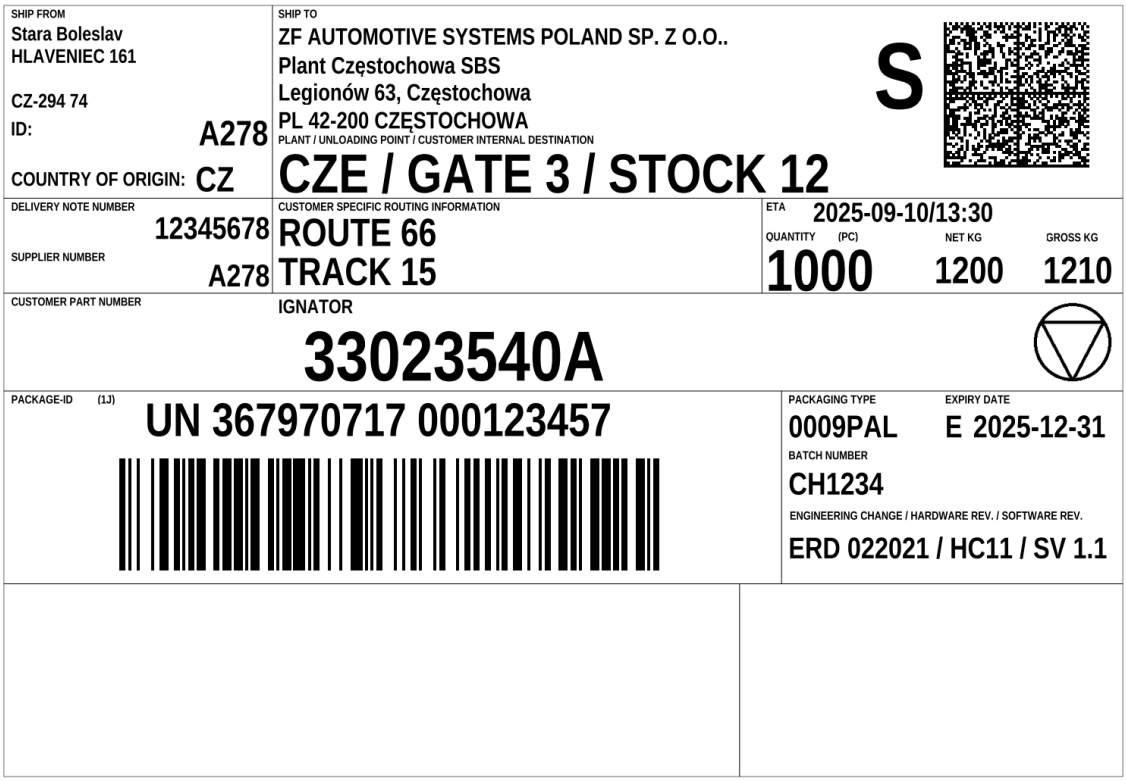
PACKAGING TYPE
0009PAL
EXPIRY DATE
E 2025-12-31
BATCH NUMBER
CH1234
NO OF INN PCK
56

Single label - small container

Standard VDA 4994 label - small load carriers (74 x 210 mm)

Standard VDA 4994 label - small load carriers (42 x 210 mm)

Standard VDA 4994 label - format DIN A5

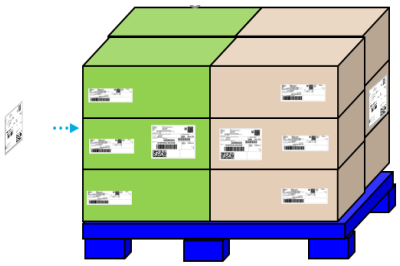


VDA 4994 label format half US-Letter (8.5 x 11 inches / 215.9 x 279.4 mm)

SHIP FROM Stara Boleslav HLAVENIEC 161 CZ-294 74 ID: A278 COUNTRY OF ORIGIN: CZ	SHIP TO ZF AUTOMOTIVE SYSTEMS POLAND SI Plant Częstochowa SBS Legionów 63, Częstochowa PL 42-200 CZĘSTOCHOWA PLANT / UNLOADING POINT / CUSTOMER INTERNAL DESTINATION **CZE / GATE 3 / STOCK 12**	**S**
DELIVERY NOTE NUMBER SUPPLIER NUMBER 12345678 A278	CUSTOMER SPECIFIC ROUTING INFORMATION ROUTE 66 TRACK 15	ETA 2025-09-10/13:30 QUANTITY (PC) 1000 NET KG 1200 GROSS KG 1210
CUSTOMER PART NUMBER	IGNATOR **33023540A**	
PACKAGE-ID (1J) UN 367970717 000123457		PACKAGING TYPE 0009PAL EXPIRY DATE E 2025-12-31 BATCH NUMBER CH1234 ENGINEERING C. / HARDW. REV. / SOFTW. REV. ERD 022021 / HC11 / SV 1.1

6.1.2 MIX Material label

Mixed material on the pallet – non homogenous single unit



Detailed description of label positioning/placement on the box /Pallet is in latest verion of the document „Packaging Data Sheet & Packaging Guidelines Europe".

There may be valid reasons for using mix-type labels, depending on the specific packaging or logistical circumstances.

- **Placing several different material numbers on one pallet**, resulting in a mixed load that cannot be labelled as a single-material handling unit.
- **Placing material that consists of several batches within one handling unit**. In such cases, the pallet contains only one material number, but multiple batches.

For materials that consist of **multiple batches**, it is acceptable for the **mix label not to contain batch information**.

All batch-related data **must be included on the individual single labels** applied directly to each inner packaging unit.

NOTICE !!!

Suppliers labeling deliveries through the SupplyOn portal currently do not have the ability to print a MIX label for pallets containing multiple batches. Therefore, separate Master Labels must be created for each material group, representing a separate batch.

On a Mixed Shipping Unit following labels must be used:

- Single Labels on each Packaging Unit.
- Master Labels for each group of Packaging Units containing same Part Number.
- Mix Master Label – indicative picture below.

single labels for non-homogenous material

6.1.3 Label for Primary Metal supplier

No specific customer requirements

6.1.4 Label for empty packaging

No specific customer requirements

7 Barcode, 2D code and optional RFID tag

7.1 Definition 1D barcode

The 1D barcode for the package is a 128 barcode.

The identifiers are immitted 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

Package-ID Content:

1JUNXXXXXXXXXYYYYYYYYY (PACKAGE-ID): 22 characters allowed.

1JUN – (4 characters) prefix for Single label

5JUN – (4 characters) prefix for MIX palette

6JUN – (4 characters) prefix for Master label

XXXXXXXXX – 9 characters DUNS number (see Appendix 2)

YYYYYYYYY – 9 characters incremental serial number of boxes. Can not be repeated.

Example: **1JUN987654321000123456**

NOTICE: The component of the PACKAGE-ID number (YYYYYYYYY) which is the serial number of the box must be unique and cannot be repeated even in deliveries to different ZF-LIFETEC facilities.

7.2 Definition data matrix symbol

The Data Matrix Code follows the same syntax and content as proposed in the VDA recommendation 4994

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

Data Matrix has a mandatory Quiet Zone - a light area around the symbol which must not contain any graphic element that may disrupt reading of the barcode. It has a constant width equal to the X-dimension of the symbol on each of the four sides.

Data Matrix Content:

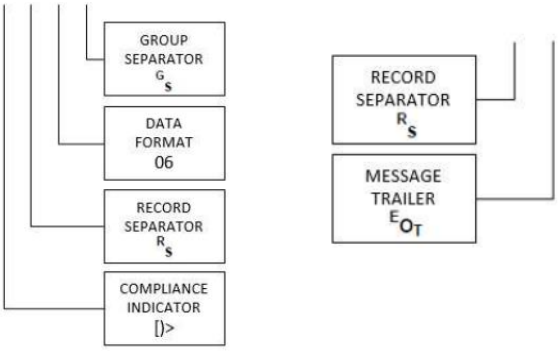
Data Matrix is built from header, data identifiers, label content divided by group separators.

M 

Data matrix syntax structure

[)><RS>06<GS>**12P**GTL3<GS>**9K**01<GS>**3L**A278<GS>**4L**CZ<GS>**8V**CZE<GS>**2L**GATE 3<GS>**20**LSTOCK 12<GS>**VA**278<GS>**2S**12345678<GS>**22L**TRACK15<GS>**23L**ROUTE66<GS>**8D**202509101330132<GS>**Q**1000<GS>**3Q**PC<GS>**2Q**1210<GS>**P**33023540A<GS>**6JUN**367970717000123456<GS>**B**0009PAL<GS>**14D**202512312359<GS>**16D**202509010000<GS>**1T**CH1234<GS>**20P**HC11<GS>**21P**SV 1.1<GS>**2P**ERD 022021<RS><EOT>

[)><RS>06<GS> ..... <RS><EOT>



Special Characters Reference Table

ASCII/ISO 646 Character	DECIMAL	HEX
[	91	5B
)	41	29
>	62	3E
$^{R}_{S}$	30	1E
$^{F}_{S}$	28	1C
$^{G}_{S}$	29	1D
$^{E}_{OT}$	04	04

For list of data identifiers check Appendix 1.

7.2.1 Symbol size

No specific customer requirements

7.2.2 Character sets

No specific customer requirements

7.2.3 Master box label Minimum required Data Matrix code content

The Master Label must contain all information defined by the VDA 4994 guideline.
In particular, the following data elements are mandatory, as they are essential for completing the inbound logistics process. Missing any of these fields makes the warehouse receipt process difficult or impossible:

Data Field	Identifier
Customer's Part Number	P
Supplier Number	V
Package-ID	6J
Batch Number / Lot Number	1T
Delivery note number	2S
Quantity	Q
Used by / expiry date (only when applicable)	14D

7.2.4 Single box label Minimum required Data Matrix code content

Mandatory information contained in the single box label DMC. Total length of minimum required standard for VDA4994 is 87 digits.

Data Field	Identifier	Max Digits
Customer's Part Number	P	14
Supplier Number	V	28
Package-ID	1J	26
Batch Number / Lot Number	1T	19
Used by / expiry date (only when applicable)	14D	12

7.2.5 Single box label optional content.

Due to a specific requirement of the ZF-LIFETEC plant, the cavity number may be required to be placed in the E2 area of the single label.

In Data Matrix should be coded after data identifier 23P and preamble CAV and repeated in section E2 of label as plain text.

Example.

[)><RS>06<GS>**12P**GTL3<GS>**9K**01<GS>**3L**A278<GS>**4L**CZ<GS>**8V**CZE<GS>**2L**GATE 3<GS>**20**LSTOCK 12<GS>**V**A278<GS>**2S**12345678<GS>**22L**TRACK15<GS>**23L**ROUTE66<GS>**8D**202509101330132<GS>**Q**1000<GS>**3Q**PC<GS>**2Q**1210<GS>**P**33023540A<GS>**6JUN**367970717000123456<GS>**B**0009PAL<GS>**14D**202512312359<GS>**16D**202509010000<GS>**1T**CH1234<GS>**20P**HC11<GS>**21P**SV 1.1<GS>**2P**ERD 022021<GS>**23PCAV.**11<RS><EOT>

7.3 RFID tags used in conjunction with smart label

Currently there are no SMART labels delivery process. Independent from that the regulations of the VDA recommendation 4994 apply in case of a future usage of RFID tags.

7.3.1 Function of passive RFID transponders

No specific customer requirements

7.3.2 Air interface and frequency range Structure and size of memory banks

No specific customer requirements

8 Site specific requirements

Specific legal requirements define specific labeling requirements for plants listed in this section.

8.1 Aschau and Laage

8.1.1 Dimension

Aschau and Laage plants require both label types Master and Single in following format:

- SLC1 /KLT1 Label for small load carriers 210mm x 74mm.

8.1.2 Data Matrix content.

Cavity

Data Matrix should contain cavity number. Information should be coded under data identifier 23P and repeated as text in E2 section of label.

See example.

Batch

Must be issued for every shipment to an Inflator plant. Is ten digits long, to read from left to right and designed as follows:

digit 1 to 4 = supplier code:

Number is issued by ZF and never changes distinct no. for every single location of the supplier

digit 5 to 10 = batch identification number:

is issued by the supplier and changes must be distinct shall not be reused. The traceability to production data and to the material data must be defined in the packaging data sheet from Inflators (see tab "Traceability").

LTI Number

digit 11 to 14 = "Logical Transport Item-Number" for TU.

The fist TU starts with LTI no. 1.

This is a consecutive no. for every single TU within one batch (If the whole batch is on one TU à LTI no. 1 must be issued).

8.1.3 Information about hazardous materials.

If the goods are hazardous materials the label needs to contain all information in accordance with regulations, laws and contain safety symbol.

8.1.4 Master and single label.

Example of Master label

Example of Single label

9 Appendixes

9.1 Appendix 1 – List of Data Identifiers

No special requirements. Please follow VDA 4994 specification. See below

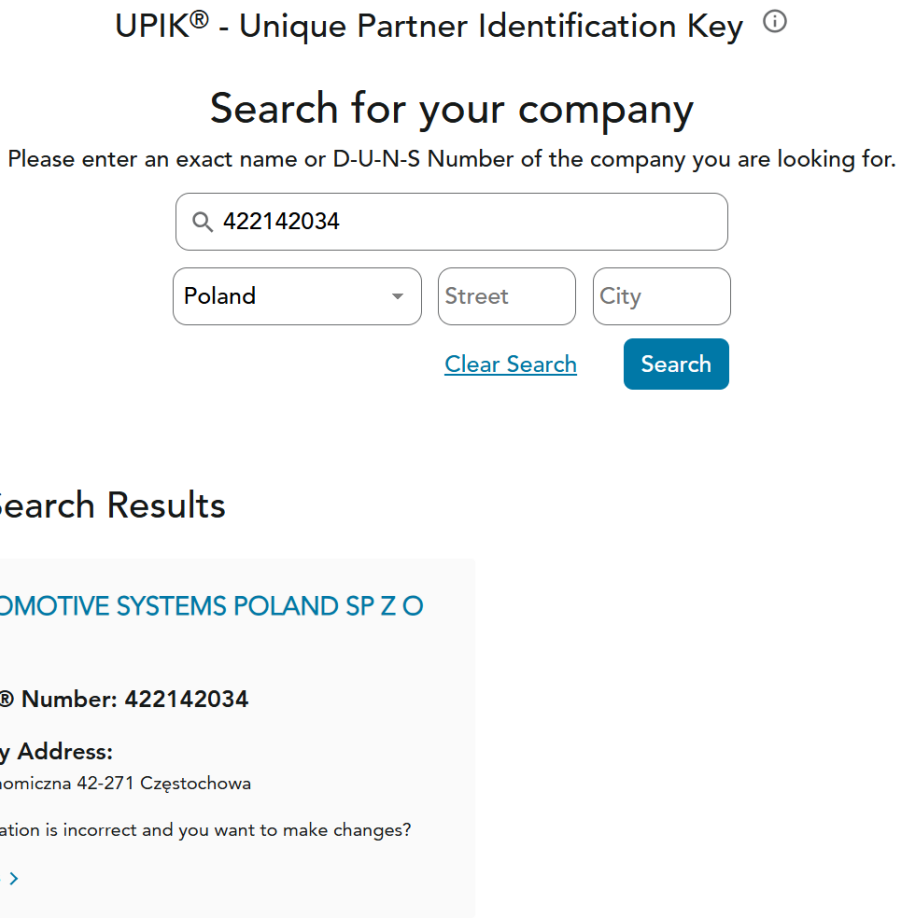
User data	Source or equivalent in DESADV (VDA 4987) (V2.6, 2021-06)	DI	Comment	Sample data
Identification of specification	none	12P	Identification of specification (Identifies the content version according to this document. GTL3 is a fix content until a new specification requires another fix ID). The fixed content of GTL3 must not be used by the supplier to identify the 2D symbol in the supplier area E1!	12GTL3
Specification version	none	9K	Specification version (Identifies the revision of this specification. 01 is a fix content until a new version of this document with impact to the syntax in code will be published).	9K01
Supplier number of the shipping plant	SG2/NAD+SF DE 3039	3L		3L998877665
Country of origin	SG19/ALI DE 3239	4L	Country of origin, in ISO 3166 2 alpha code	4LDE
Goods receiver ID	SG2/NAD+ST DE 3039	8V		8V0110120131
Unloading point ID	SG2/NAD+ST/LOC+11 DE 3225	2L		2L0815-12345
Storage location ID	SG2/NAD+ST/LOC+7 DE 3225	20L		20L12315
Supplier number of the ship from	SG2/NAD+SF DE 3039	V		V123456789012
Despatch advice number	SG20/RFF+AAU DE 1154	2S		2S123456789012
Point of use/consumption	SG22/LOC+159 DE 3225	22L		22LB3P234
Customer specific routing	SG20/RFF+AMU DE 1154	23L		23L050115-1420RNP

Expected delivery date	DTM+2/132 DE 2380	8D	8D followed by date and time in format CCYYMMDDHHMM and qualifier DE 2005 qualifier value in corresponding DTM segment: 2 (agreed delivery date and time) or 132 (estimated delivery date). Depending on the delivery scenario, the DESADV contains the one or the other date.	8D2015122214302
Quantity	SG17/QTY+52 DE 6060 (M label) SG12/QTY+52 DE 6060 (S label)	Q	Data identifier, followed by quantity	Q250
Measure unit	SG17/QTY+52 DE 6411 (M-Label) SG12/QTY+52 DE 6411 (S-Label)	3Q	Measure unit of the quantity qualified with DI Q, coded according to ANSI X12.3 DE 355 Unit of Measure Code - see **Fehler! Verweisquelle konnte nicht gefunden werden.**	3QPC
Gross weight	SG17/MEA+AAZ+AAB DE 6314 loading unit SG12/MEA+AAY+G DE 6314 inner package	2Q		2Q9999
Article number	SG19/LIN DE 7140	P	Customer part number	P123-234-564
Package ID	SG16/GIN+ML DE 7402 (2)	J/1J/5J/6J	DI + IAC + CID + SN The serial number must not be longer than 9 digits For DI - refer to Table 4	1JUN987654321123456789
Package type	SG12/PAC DE 7065	B		B0009PAL
Used by / expiry date		14D	Format CCYYMMDDHHMM	14D201512312359
Date of manufacture	SG15/DTM+94 DE 2380	16D	Format CCYYMMDDHHMM	16D201512241600
Batch	SG15/GIR+1 DE 7402	1T		1T1234567890123456
Hardware version	SG19/PIA+1 DE 7143 = BT	20P		20P12345
Software version	SG19/PIA+1 DE 7143 = AG	21P		21PV3R5B123
Revision/parts generation version	SG19/PIA+1 DE 7143 = EC	2P		2PEC123
Additional part number related information	SG14/PCI+17 DE 7102	23P	Format an..30	23PWerkzeug1, Nest 2

9.2 Appendix 2 - 1 DUNS number

A valid D-U-N-S Number is required from entity that supplies components to our organization and operates as our commercial business partner.

Obtaining a D-U-N-S Number is free of charge, it is recognized worldwide, and its authenticity can be verified through publicly available online sources, such as the UPIK platform provided by Dun & Bradstreet [UPIK-Plattform - Dun & Bradstreet]



9.3 Appendix 3 - SupplyOn

Supply on is ready to provide us the label according to this specification, and with data matrix code.

9.4 Appendix 4 - ZF ASN requirements

The procedures for ASN creation are at following link http://zf.com/EDI

9.5 Norms

ISO/IEC standards that needs to be followed in order to achieve printing quality of the DMC

- ISO/IEC 16022 — Data Matrix bar code symbology specification
- ISO/IEC 15415 — 2-D Print quality standard
- ISO/IEC 15418 — Symbol data format semantics (GS1 application identifiers and ASC MH10 data identifiers and maintenance)
- ISO/IEC 15424 — Data Carrier Identifiers (including Symbology Identifiers) IDs for distinguishing different barcode types
- ISO/IEC 15434 — Syntax for high-capacity ADC media (format of data transferred from scanner to software, etc.)
- ISO/IEC 15459 — Unique identifiers
- ISO TR 29158 AIM DPM – Association for Automatic Identification and Mobility Direct Part Mark