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Procurement Logistics –

Logistics requirements for suppliers

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List of abbreviations

AIAG	-	**A**utomotive **I**ndustry **A**ction **G**roup
ASN	-	**A**dvanced **S**hipping **N**otification
AWG	-	German law on foreign trade and payments (**A**ußen**w**irtschafts**g**esetz)
AWV	-	German foreign trade and payments regulation (**A**ußen**w**irtschafts**v**erordnung)
BN	-	**B**rose **N**orm / standard
BroTAP	-	**Bro**se **T**ransport **A**dvice **P**ortal
BTM	-	**B**rose **T**ransport **M**anagement
CCRA	-	**C**anadian **C**ustoms **R**evenue **A**gency
CET	-	**C**entral **E**uropean **T**ime
DAP	-	**D**elivered **a**t **P**lace (Incoterm)
DDP	-	**D**elivered **D**uty **P**aid (Incoterm)
DIN	-	**D**eutsches **I**nstitut für **N**ormung (German Institute for Standardisation)
EAR	-	U.S. **E**xport **A**dministration **R**egulations
EDI	-	**E**lectronic **D**ata **I**nterchange
EDL	-	**E**xternal service provider
E.g.	-	For example
EPAL	-	**E**uropean **P**allet **A**ssociation e.V.
ESD	-	**E**lectro**s**tatic **D**ischarge
EU	-	**E**uropean **U**nion
EU-VO	-	**E**uropean **U**nion Regulation
EXO	-	**Ex**pendable **O**verseas
FCA	-	**F**ree **Ca**rrier (Incoterm)
FIFO	-	**F**irst-**I**n, **F**irst-**O**ut
FWO	-	**F**or**w**arding **O**rder (number)
GADSL	-	**G**lobal **A**utomotive **D**eclarable **S**ubstance **L**ist
GLT	-	**L**arge load carrier (German: **G**roß**l**adungs**t**räger)
GST	-	**G**oods and **S**ervices **T**ax
GTCP	-	**G**lobal **T**erms and **C**onditions of **P**urchase
GTL	-	**G**lobal **T**ransport **L**abel
HPE	-	German Federal Association **H**olzpackmittel, **P**aletten, **E**xportverpackung e.V.
HR	-	**H**igh **r**ack
HU	-	**H**andling **U**nit
IBC	-	**I**ntermediate **B**ulk **C**ontainer
ICC	-	**I**nternational **C**hamber of **Commerce**
ID	-	**Id**entification
IPPC	-	**I**nternational **P**lant **P**rotection **C**onvention
ISO	-	**I**nternational **O**rganization for **S**tandardization
ISPM 15	-	**I**nternational **S**tandards for **P**hytosanitary **M**easures Publication No.**15**
ITAR	-	**I**nternational **T**raffic in **A**rms **R**egulations
JIS	-	**J**ust **i**n **S**equence
JIT	-	**J**ust **i**n **T**ime
KLT	-	Small load carrier (German: **K**lein**l**adungs**t**räger)
LT-Management	-	**L**oad Carrier Management
USMCA	-	**United States-Mexico-Canada-Agreement**
OFAC	-	**O**ffice of **F**oreign **A**ssets **C**ontrol
QVP	-	Advance Quality Planning (German: **Q**ualitäts**v**orau**sp**lanung)
PDS	-	**P**ackaging **D**ata **S**heet
SWP	-	Brose **S**upplier **W**ork**p**lace
THC	-	**T**erminal **H**andling **C**harge
VDA	-	**V**erband **d**er **A**utomobilindustrie (Automobile industry association)
WD	-	**W**orking **D**ay
ZIP	-	**ZIP** code

1 INTRODUCTION

The following guidelines and provisions shall be regarded as supplementary contractual agreements to the General Terms and Conditions of Purchase (GTCP). Production materials shall be delivered to Brose in accordance with the current version of these specifications, the associated individual agreements with receiving plants and the Brose GTCP. Production materials are goods that are incorporated into a product for a vehicle or other Brose product. This manual provides Brose suppliers with Broses requirements and their responsibilities. The conclusive acceptance of deviating terms and conditions by Brose shall be excluded unless Brose has previously accepted such deviating terms and conditions in writing.

2 GENERAL CONDITIONS

2.1 Delivery concept

Delivery to Brose is based on the agreed logistics data. These are broken down in detail and documented in the logistics data sheet and/or contract. Brose reserves the right to change the agreed delivery conditions with one month's notice. The supplier shall ensure that further variants developed by Brose can be integrated without any problems.

The delivery concept is composed the following delivery conditions:
Incoterm, named place, annex to Incoterms, delivery address (Brose location, “deliver to”), shipping address of the supplier (if different from the order address), abbreviation for packaging responsibility (packaging key), delivery frequency, container type of the supplier, quantity per packaging unit, number of packaging units per loading unit, packaging policy (method), container circulation in working days (WD).

The delivery conditions are agreed between the receiving Brose plant and the respective supplier for the entire range of parts.

2.2 Explanation of the delivery conditions

2.2.1 Incoterms

In Procurement, Brose is using the Incoterms 2020 (trade clauses) by the International Chamber of Commerce (ICC). The Incoterms generally applied by Brose are presented in the table below. Deviating Incoterms will only be agreed upon after additional approval of the relevant Brose logistics planning if this can lead to cost reductions. The Incoterm DDP "delivered duty paid" can only be used with the approval of Central Logistics, Taxes and Finance. Brose generally insures all transports commissioned by Brose itself and waives any additional insurance coverage by the supplier (waiver customer).

Table 1 - Overview Incoterms Brose

Clause	Export paperwork	Import paperwork	Transport contract	Place of delivery	Transfer of risk and cost
DAP (Delivered at place)	Seller	Buyer	Seller	Place of destination	Place of destination
FCA (Free carrier)	Seller	Buyer	Buyer	Place where the load is handed over to the carrier	Place of delivery

2.2.2 Named place

Incoterms always apply in conjunction with the "Named Place". This is generally the place where the costs are transferred to the buyer according to the chosen Incoterm.

2.2.3 Annex to Incoterm – Consignment Warehouse

In case of the additional logistical condition "Consignment warehouse", Brose maintains a consignment warehouse where the allocation of stocks and scheduling to suppliers takes place within a cooperative system. In addition to the respective Incoterm, the features of the consignment warehouse concept at Brose, apply (cp. **Consignment warehouse**).

2.2.4 Delivery Address

In communication with the supplier Brose uses the unloading point as five-digit alphanumeric code for the corresponding delivery address. Codes and translation for the respective address can be found in the separate Excel-file Brose delivery addresses (see Brose homepage www.brose.com > Purchasing > Download > Handbooks/Templates > Brose manual > Delivery addresses).

2.2.5 Supplier's Dispatch Address

Shipping addresses of the supplier must be recorded in the logistics concept if different from the order address.
If the supplier's loading point changes (e.g. due to relocation), the supplier must give notice six weeks prior to the change.

2.2.6 Packaging Responsibility based on Various Examples

The packaging regulations are agreed upon with the receiving Brose plant and the supplier for all parts alike (cp. **Selecting and specifying packaging**). The supplier is responsible for the procurement of one-way packaging material requirements (packaging key P). For reusable packaging, the following chart shows the ownership ratio, responsibility of the empties returns and empties exchange at 1: n ratio between Brose and the supplier. Packaging keys X, Y and Z serve as the basis for determining the difference between the ownership. Ownership of the reusable containers is recorded through credits and debits in the container accounts (cp. **Container stock management**).
The responsibility for the return of the empties corresponds with the point of transfer of risk according to the incoterm. In this context, the supplier is generally obliged to take along the corresponding empties when delivering full loads. The contractual partner who bears the freight costs for the transport of the goods shall also bear the freight costs for the return of the returnable empties, e.g.:

A) Brose picks up goods "FCA, supplier". Brose also bears the freight costs for returning the returnable empties on this route.
B) Supplier delivers "DAP, D + S". The supplier procures containers for his needs plus the transport of empties and full goods and bears the costs for the transport to and from D + S. Containers and costs of transport from D + S are borne by Brose.

Any deviating regulations must be agreed directly with the respective plant. Cases P and Q govern the disposable packaging and rented empties.

Container procurement	Ownership	Procurement	Procurement scope
	X brose	Brose 100%	Quantity for the entire container cycle
	Y Supplier	Supplier 100%	Quantity for the entire container cycle
	Z brose + Supplier	Brose	Quantity container cycle Brose
		Supplier	Quantity for transport (full & empty) + container cycle supplier
Disposable and rental empties			

- **P - Disposable packaging**
  Valid for suppliers who exclusively deliver in disposable packaging
- **Q - Rental empties**
  The supplier requests the empties at his expense from the service provider, according to his general conditions
  The supplier triggers transfers, according to the guidelines of the service provider, analogous to the handover at the named place

Illustration 1 - Packaging keys and packaging responsibility

2.2.7 Container Circulation Stock

Brose assumes an average consumption of 240 WD (annual planning quantity) as the basis for calculating the container requirement. This average consumption divided by the container capacity results in the number of containers needed per working day. This quantity is multiplied by the number of working days resulting from the following overview. The listed additional requirements are to be considered as approximated values. For batch production, the supplier's entire range of parts must always be considered because mostly the average range across the entire spectrum is less than the total ranges of the individual batches per ID number (Brose's experience: 80 % of the mathematical value is sufficient. Different requirements must be justified correspondingly). For collapsible empties, there must always be a counter check as to whether it is more economical to increase the stock in circulation or to replace the empties 1:1 and thereby accept higher transport costs. If there are any deviations from these requirements, these must be justified in writing.

Table 2 - Case examples of packaging responsibility

	Sample calculations:		
	Example 1	**Example 2**	**Example 3** **Supplier to VMI warehouse**
Delivery rhythm	Once a week	Every 2nd day	Every two weeks
Annual requirement:	100,000 pieces	100,000 pieces	100,000 pieces
Compression factor:	1 : 2	not collapsible	not collapsible
Distance:	550 km	100 km	300 km
Container capacity:	200 pcs./ loading unit (LU)	200 pcs./ loading unit (LU)	200 pcs./ loading unit (LU)
Lot size:	5,000 pcs.	1,600 pcs.	7,600 pcs.
Calculation of daily requirement:	100,000 pcs / 240 wd = (417 pcs/wd) / (200 pcs/LU) = 2.085 LU/ wd	100,000 pcs / 240 wd = (417 pcs/wd) / (200 pcs/LU) = 2.085 LU/ wd	100,000 pcs / 240 wd = (417 pcs/wd) / (200 pcs/LU) = 2.085 LU/ wd
Container requirement in loading units:	2.085 LU/ wd x 25.1 wd = **~52 LU**	2.085 LU/ wd x 10 wd = **~21 LU**	2.085 LU/ wd x 20.56 wd = 42.87 **~43 LU**

The delivery cycle calculated here in working days should consider the supplier's total delivery volume to the respective Brose plant. The frequency stated serves as the basis for calculating the freight costs.

Table 3 - Formulas for determining container requirements

Circulation share	**Formula**	**Example 3**
Basic requirement, supplier	1.5 x delivery frequency [wd]; for lifecycles ≤ 2 wd: 2x delivery frequency [wd]	1.5 x 10 = **15**
Requirement, Brose	For direct delivery = basic requirement, supplier. For delivery via VMI: 1 wd.	**1**
Transport of finished goods to the named placed according to the delivery term	1 wd for every 500 km distance to the defined point according to the delivery condition	300/500 = 0.6 → **1**
Transport of empties from the named placed according to the delivery term	1 wd for every 500 km distance to the defined point according to the delivery condition	300/500 = 0.6 → **1**
Additional requirement (batch production), supplier	For batch production, if: (range of finished batch) – (basic requirement, supplier) > 0, then: (difference of the values x 80 %).	7.600/417 – 15 = **3.2*0.8 = 2.56**
Additional requirements for collapsible containers	(Delivery frequency [wd] x compression factor) - (Delivery frequency [wd]). Evaluation: higher transport cost for 1:1 exchange	**0**
	Working Days Σ	**20.56**

2.2.8 Minimum Order Quantity (MOQ)

The Minimum Order Quantity (MOQ) defines the minimum order quantity, which is the minimum amount of parts per pick up or delivery. It is not equal to the lot or batch size in production. For full flexibility in the call offs there is usually no MOQ defined. In justified exceptional cases (e.g. DAP deliveries, ramp up, end of production) an MOQ can be agreed or adjusted individually between the supplier and the Brose Logistics Planning.

2.2.9 Transport Procedure

The quantities declared must be packaged appropriately in accordance with Brose's requirements and instructions for transport, loaded onto suitable vehicles, stowed and secured by the sender in accordance with applicable statutory provisions. Subsequent modifications are permissible only after prior consultation with the plant logistics. For transports in Europe and North America[1] these kind of changes must also be communicated to the BTM (Brose Transport Management) team (**European Transport Registration** and **Transportation North America**) immediately.

2.2.9.1 European Transport Registration

If delivery term FCA – supplier location is agreed upon, the supplier must register and provide the following information timely according to a defined scheme. In Europe, the supplier must register deliveries via Web-EDI in the notification portal BroTAP (Brose Transport Advice Portal) (https://supplierportal.brose.com) before 11:30 am (CET) on the working day (Monday - Friday) before loading. Loading days are taken from the corresponding routing instructions.

For a successful registration in BroTAP, the following inputs are required in chronological order:

1. **Delivery type**
   - Fulls, Empties
2. **Sender**
3. **Receiver**
   - Plant, Unloading point, etc.
4. **General Information**
   - Identification number, Delivery note number, etc.
5. **Pick-up / Delivery time window**
6. **Cargo information**
   - Amount
   - Weight
   - Packaging type
   - Measurements
   - Stackability
   - etc.
7. **Attachments**
   - Documents for freight forwarders or plants (only .pdf or .jpeg), etc.

In order to guarantee a smooth holiday planning in transport management, each supplier is obligated to maintain the corresponding closing days in the Brose Supplier Portal (https://supplierportal.brose.com). The call-offs of the Brose plants remain binding and the supply must always be ensured.
Any additional costs and / or damages incurred due to late or incorrect registrations (e.g. weight differences, stackability, number of pallets, etc.) shall be borne by the supplier.

Contact BTM Team Europe
Brose Transport Management
Mail: transport@brose.com
Phone: +420 556 84 4870

[1]Within the Brose Group, North America encompasses the members of the USMCA: USA, Mexico and Canada

2.2.9.2 Routing Instruction Europe

The routing order is issued by the BTM team and describes the transport processing, transport times and the carrier used by Brose.

Routing Instruction for Fulls 16/06/2017

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By not refusing below route setup within 3 working days after receipt the concerned parties agree to the indicated routing details. Non permanent deviations due to seasonality, production fluctuations, etc. Need to be reflected in iTMS prior to the transport taking place.

route details					
effective date	20/02/2017	planned frequency per week	5	equipment	Mega
BTM route id	FTL100000	minimum tranportation time [working days]	1	freight payer	
related empties shipmen	no	transportation mode	FTL	version	

pickup and delivery details										
	transport plan 1		transport plan 2		transport plan 3		transport plan 4		transport plan 5	
	day	time window	day	time window	day	time window	day	time window	day	time window
pickup	MON	14:00-16:00	TUE	14:00-16:00	WED	14:00-16:00	THU	14:00-16:00	FRI	14:00-16:00
delivery	MON	20:00-22:00	TUE	20:00-22:00	WED	20:00-22:00	THU	20:00-22:00	FRI	20:00-22:00
MON=Monday TUE=Tuesday WED=Wednesday THU=Thursday FRI=Friday SAT=Saturday SUN=Sunday +1=week after collection +2=two weeks after collection										

	consignor			recipient		
company name	Brose Fahrzeugteile GmbH & Co. KG - Wuerzburg			Brose Fahrzeugteile GmbH & Co. KG - Meerane		
Brose location identifier	2000072			2000020		
street	Ohmstr. 2a			Werdauer Allee 3		
country / zip / city	DE	97076	Wuerzburg	DE	8393	Meerane
main contact person	Max Mustermann			Max Mustermann		
phone number	+49 123 45678			+49 123 45678		
email	max.mustermann@123.com			max.mustermann@123.com		
Opening Hours	MON-FRI: 10:00-18:00			MON-SAT: 06:00-06:00 (non-stop open)		

	carrier			Brose		
company name	Carrier XY			BTM Team - Brose CZ spol. s r.o.		
street	Carrier Road			1. máje 2636		
country / zip / city	DE	1234	Musterstadt	CZ	75661	Rožnov pod Radhoštěm
main contact person	Max Mustermann			xx		
phone number	+49 123 45678			+420 556 84 4870		
email	max.mustermann@123.com			transport@brose.com		

Process Instructions

- The transport order has to be entered by the shipper into BTM System no later than 11:30 o`clock (UTC +01:00 = Berlin time) the day prior to the scheduled pick-up.
- Shipper needs to inform Brose immediately in case of any delays during loading/unloading at its entity.
- Shipper needs to inform the Brose in case of deviation of the advised volume or weight before the pick-up takes place.
- If the shipper orders empties at Brose, the order needs to be placed at Brose latest two days before the scheduled pick-up day at Brose plant (see routing details - empties).

ROUTING INSTRUCTIONS ARE HEREBY ACKNOWLEDGED

Date _____ Name _____ Signature _____

Illustration 2 - Routing Instruction Europe

2.2.9.3 Transportation North America

If delivery terms FCA – Supplier location are agreed upon and the transportation is within North America, the transportation will be coordinated through the BTM North America team. The supplier needs to reach out to the BTM team for routing instructions and is able to see the routing instruction in the Brose Transport Advice Portal BroTAP portal as well. The supplier is responsible for receiving BTM training and to get access to the BroTAP portal via the Brose Supplier Portal (https://supplierportal.brose.com). Additionally, the supplier is responsible to login to BroTAP weekly to confirm the shipments for the following week. If the supplier fails to confirm the transportation for the following week, transportation will not be scheduled, and the supplier will be responsible for on-time delivery of the required materials to the Brose receiving plant.

Contact BTM Team North America
Brose Queretaro
Availability: Monday - Friday 8am-5pm CST
Mail: Transportation-NAFTA@brose.com

Shipments from Mexico to USA / Canada

It is the supplier's responsibility to seal all trailers in accordance with C-TPAT standards. All trailers entering Brose facilities in the USA or Canada must be sealed with an ISO PASS 17712-compliant locking/deadbolt trailer and the seal number must be declared in the shipping documents. Failing to lock the trailers might result in a notification to CBP (U.S. Customs and Border Protection) if the suppliers is C-TPAT certified.

For all suppliers in North America that ship material from Mexico to the USA or Canada using Brose's transportation network, it is mandatory that they use the customs broker designated by Brose. All paperwork must be sent to the designated customs brokers, Welldex or Buckland, no later than 30 minutes after the trailer leaves the supplier's facility.

Illustration 3 - Seal example

The supplier must provide the Brose Transport Management Team with the layout of the carta porte 4.0 at least 2 hours before the scheduled pick-up time; 24 hours for shipments to the USA or Canada.

Failure to comply with these instructions will not only endanger the material being shipped but may also result in delays and additional costs at the border. This will be considered a supplier noncompliance. The supplier might be debited back for any extra cost due to this noncompliance.

2.3 Calculation of logistics costs

2.3.1 Differentiation A price

The A price includes all internal logistics costs incurred at the supplier (material & information flow e.g. labelling) including packaging in the offered containers and loading onto the first means of transport. **Costs for containers and packaging are not included within the A-price.**

2.3.2 Differentiation B price / logistics costs components

A breakdown of logistics costs is required in the form of an offer and/or a Logistics Data Sheet.
The B price per 100 pieces must be divided between the following components:

- Transport costs to Brose or external service provider per 100 pcs
- Packaging costs per 100 pcs
- Additional external logistics service per 100 pcs
- Customs duty per 100 pcs
- Taxes, charges per 100 pcs

The respective price components are explained below. In general, the following applies:

- Deviations only with written documentation.
- Calculation based on the queried conditions.
- Additional proposal from supplier for a cheaper option possible (with the same calculation rules).
- Cost components may only be declared once.
- Only costs, which the supplier also must pay, may be declared (according to agreed delivery conditions).

Table 4 - Overview of logistics costs

	Costs component	Description
Logistics costs/100 pcs	Transport costs to Brose or external service provider /100 pcs.	**Costs for transporting goods:** From dispatch address to destination, according to delivery conditions. This includes: • Pre-run, main run and post-run costs • Toll and fuel costs • Provision costs for containers, and • All transfer costs within the interfaces, such as Crossdock, THC (Terminal Handling Charge), stowing
	Packaging cost /100 pcs.	• **Costs for one-way packaging** material (package and packaging aids). • **Costs for returnable packaging or** returnable load carriers (for the part of the load carrier circulation that the supplier is responsible for or must purchase.) Possible options are current costs, depreciation value, rental costs, transfer costs (incl. administration costs for container management). In general, the assumed circulation volume and depreciation period must be disclosed. Costs have to be reduced correspondingly at the end of the depreciation period. Costs for cleaning returnable containers if this is demonstrably process-related by the supplier
	Additional external logistics service /100 pcs.	**All required external logistics service costs paid by the supplier.** These costs include: • Repackaging costs (from one packaging to another) if these are incurred in the supply chain and are not already included in the VMI warehouse costs. • Crossdock costs
	Customs duty /100 pcs.	**All customs (export and import duty)**, according to customs conditions of the country of export and of import, **All costs and fees connected with customs handling** (e.g. handling costs for the customs agent).
	Taxes, fees /100 pcs.	**All taxes,** according to tax legislation of the country of export and of import, which are **non-refundable**. Information concerning customs duties, taxes and fees of several countries can be obtained from the financial or customs authorities or customs agent responsible for the location of production. Applicable legal regulations must be considered when calculating the logistics costs. No costs that arise because of tax registration by the supplier through a supplier warehouse (transfer of ownership upon picking by Brose).
Σ	**B price /100 pcs.**	Transport costs, Packaging cost, Additional external logistics service, Customs duty, Taxes (non-refundable)

2.4 Information flow: EDI (Electronic Data Interchange)

Brose requires an EDI (Electronic Data Interchange) connection from all suppliers for the electronic exchange of data. For suppliers, which cannot visualize the exchange of standard messages via EDI the use of a web-based application (Supplier Workplace (SWP) or Advance Shipping Notification (ASN)) in the Brose Supplier Portal (https://supplierportal.brose.com) is required. More information regarding the EDI-Onboarding, the approved standards and the EDI message structures can be found on the Brose homepage https://www.brose.com/de-en/edi/. For technical EDI questions the central EDI coordination (EDI@brose.com) can be contacted. For EDI/Supplier Portal set-ups or changes the respective logistics planner should be contacted.

2.4.1 Call-offs

Brose provides the call-offs as an EDI-message. The call-off dates can be expressed in daily, weekly or monthly figures. If a supplier cannot process EDI messages, the delivery call-offs will be provided in the SWP/ASN application. In exceptional cases, transmission by e-mail is possible. The delivery call-off is usually sent daily in the corresponding message format. Each new call-off transmitted replaces the old one.

Unless agreed differently between Brose plant and supplier, the unloading points identified in the delivery call-off shall clearly identify the delivery destination of the goods, where the ordering party receives the goods. The delivery dates indicated on the call-offs represent arrival dates at the named unloading point. Applicable for compliance with delivery deadlines or the delivery date is the receipt of the goods in the named unloading point (cp. **chap. 2.2.4**). If another Incoterm than "DAP receiving plant" is agreed, the supplier shall provide the goods in an appropriate time, considering the usual time for loading, dispatch and transport. For deliveries abroad via a container storage point, the delivery date is the arrival of the goods in the container stowing point. In the occurrence of delivery problems (cp. **Emergency strategy**), the supplier has to inform the receiving Brose plant in advance by phone, followed by a written confirmation. A delivery call-off confirmation is not necessary, as Brose assumes that the specified requirement quantities and delivery dates will be met. In exceptional cases, requests for changes must be coordinated immediately with the responsible materials planning department and, if necessary, confirmed with a copy of the delivery schedule. The delivery quantities and dates communicated in the delivery schedule are binding for the supplier.

When supplying stamped parts, where quantities are determined by weight, Brose refers to DIN 6930-1:2011-10. The following tolerances apply to Brose:

Table 5 - Tolerances Order/delivery quantity stamped parts

Order / Call-Off	For stamped parts order quantities determined by weight: Deviations between order quantity (call-off) and delivered quantity	±10%
Packaging instruction	Deviations from the defined filling quantity of a load carrier	±5%
Delivery documents	Deviations between delivery documents, ASN and physically delivered quantity	±0%

2.4.2 Definition of production release and material authorization

The production and material release defines the timeframe in which Brose guarantees the buy-off of the ordered parts or materials. The standard timeframe for production release is 4 weeks; the standard timeframe for the material authorization is another 8 weeks. Other release time frames have to be agreed as required. The production and material release period starts with the delivery call-off creation date and applies daily for the stated period until there is a new delivery call-off. The maximum release quantity is calculated from the goods-in serial number when creating the call-off plus the required quantities specified in the release period. The figures provided beyond the production release and material authorization periods are target figures and for information only. The quantity stated under production release is ordered. However, the delivery must be based on the latest delivery call-off. The material authorization quantity is to be used for material scheduling only, not for production. If further deliveries are in transit to Brose in addition to those listed, these quantities will be cumulated with the due deliveries. Changes (i.e. repeat-orders or initial orders of new parts as well as deadline shifts or cancellation) that are provided to the supplier as call-off changes are to be appended to the actual call-off by the supplier as long as there is no other call-off provided. A confirmation of the call-off is not necessary because Brose assumes that the quantities and deadlines stated in the call-off will be complied. In exceptional cases, changes must be agreed with the responsible material requirement planning and confirmed with a copy of the delivery call-off.

To avoid a shortfall or surplus of material it is important that the supplier checks the cumulative quantities of the call-off, because the demands are calculated according to the cumulative quantities of receivables. If there are any differences, the supplier is to inform the responsible scheduler.

2.4.3 Advanced Shipping notification (ASN)

Brose requires an advanced shipping notification (ASN) by EDI (alternatively through the SWP/ASN application) with every delivery. For the message standards used by Brose, the latest specifications on the Brose homepage https://www.brose.com/de-en/edi/ shall apply. The Brose homepage also offers an ASN validation service to ensure the conformity with the Brose standards.

The data transmitted in the ASN must match exactly with the data on the delivery documents (cp. **chap. 4.1.6**, **chap. 5.2** and **chap. 5.3**) and on the attached labels (cp. **chap. 5.4**). Due to this, when using the SWP/ASN application to create the ASN, it is also mandatory to use the labels generated from this application. The ASN must be sent on the same day as the shipment of the goods (for SWP/ASN users maximum 1 day in advance). It must contain especially the following data:

- Delivery note number
- Brose order or delivery schedule number (usually: 55xxxxxxxx)
- Brose material ID number
- Weight (gross weight, net weight), only integer values
- Delivery date (date of arrival at unloading point)
- Deliveries that are registered via BroTAP (cp. **chap. 2.2.7**) must include the FWO (**F**or**w**arding **O**rder) number in the ASN
- Exact details must be given for each material ID number with respect to:
  - Quantity of the respective material ID Number
  - The packaging components belonging to the loading/package unit as well as Brose packaging material ID (container code), number of pieces and filling quantity
  - Each HU (handling unit) must be associated with a clear package identification number assigned by the supplier. The package number links the ASN data with the labels of loading units (LU)/large load carrier (GLT) and packaging units (PU)/small load carrier (KLT).
- For material subject to documentation, with batch requirements (D-parts, material with traceability) or with expiration date:
  - The batch number or expiration date of the material ID number
  - Each loading unit may only contain one batch of a material or one expiration date
  - If different batch numbers or expiration dates are delivered for one material number, a separate delivery position must be generated, packed and notified (ASN) for each batch number or expiration date. (See EDI or ASN app guidelines for more details)

Additional logistics requirements:

- Delivery note:
  - Depending on the ASN transmission standard used, different order or delivery schedule numbers are displayed in multiple positions or separated into different delivery notes and notified.
- ASN data/structure and delivery documents
  - The ASN needs to reflect the packaging structure of the loading units. The packaging structure of the loading unit transmitted in the ASN (GLT package number/packaging material ID and referring KLT package numbers/packaging material IDs) needs to match exactly with the delivered packaging structure of the loading unit (package numbers on labels and packaging material ID of packaging components). Especially in case of the delivery of several loading units per material number the correct allocation must be observed.

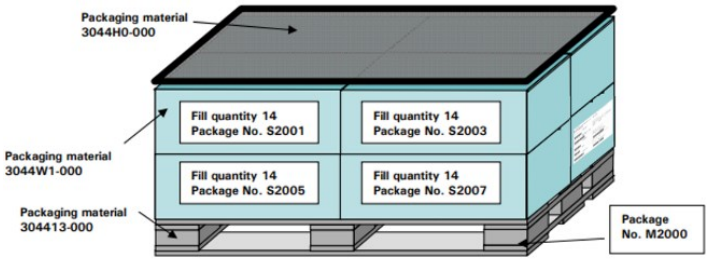


Illustration 4 - Packaging structure loading unit

3 DELIVERY DOCUMENTS AND CONTAINER LABELING

3.1 Delivery documents

For inner-European transports to a Brose consolidation point (Crossdock or for overseas shipment via OCC overseas consolidation center) as well as for direct transports to a Brose receiving plant, the documents/remarks listed in **chap. 4.1.2** must be created and enclosed/attached. Delivery documents need to be generated separately for each plant (legal entity) or unloading place or dock.

All documents must be attached to the goods by default. I.e. goods and documents form a unit and are transported together. A mere handing over of the documents to the truck driver is not accepted. The supplier is responsible for the loss of documents during transport due to insufficient attachment and the resulting additional efforts.
Example: red dispatch folder with delivery note, commercial invoice, pack list and export declaration attached to a loading unit.

Illustration 5 - Example red dispatch folder

Brose is aiming to introduce a digital document upload via the Supplier Portal application ASN from 2025. This will only involve documents that are associated with a delivery / shipping notification. Suppliers will be informed individually by Brose about the new function and its scope.

3.2 Forwarding order (CMR)

Upon delivery to a Brose consolidation point or a Brose receiving plant, the receiver confirms the proper condition and completeness of the consignment by signing the CMR or forwarding order. In addition, the forwarder must obtain an official company stamp on the transport documents as proof of proper delivery. The supplier must ensure that the delivery documents are properly completed. He shall bear the costs for obtaining the information not on the delivery documents.

The forwarding order serves the Brose container management as a basis for the regular coordination of accounts and as a controlling instrument for the quantitative and qualitative control of containers on the arrival of goods.
For this purpose, Brose requires the following information to be entered in the forwarding order:

Table 6 - Required information on shipping orders

Designation	Contents
Sender	Supplier's name and address
Loading point	Dispatch point, possibly different from company headquarters, with international country code and ZIP code
Supplier number	Current supplier name according to delivery schedule
Shipment, load, reference number	Serial reference number allocated to the consignment by the supplier.
Packaging	Type of packaging, container code and / or indication of disposable packaging (cp. container codes from the Catalogue of standard packaging items)
Number	Number of containers

3.3 Delivery note

As a transport document and goods-accompanying slip the current version of the VDA recommendation (VDA 4939) or a compatible delivery note by ODETTE or AIAG must be used. Upon request from the receiving Brose plant, the delivery note can also be replaced by the VDA 4912 goods accompanying slip.
The data on the delivery documents needs to match exactly with the data transmitted in the ASN (cp. **chap. 2.4.3**) and the data on the attached KLT and GLT label (cp. **chap. 3.4**).

The delivery note must contain the following data:

- Delivery note number
- Country Code, postal code, place of dispatch and the supplier number
- Brose order or delivery schedule number (usually 55xxxxxxxx)
- Brose material ID number and exact product description
- Weight (gross weight, net weight), only integer values
- Deliveries that are registered via the BroTAP must include the **F**or**w**arding **O**rder (FWO) numbers from the BroTAP (cp. **chap. 2.2.7**) on the delivery note
- If an expiry date exists, it must be printed on the delivery note

Exact details must be given for each ID number with respect to:

- Quantity of the respective ID Number.
- The packaging components belonging to the loading unit/package unit as well as their respective Brose packaging ID (container code), number of pieces and filling quantity.
- The container code is the basic information for the container management system and therefore must be indicated in the shipping documents for all deliveries. Delivery notes without Brose packaging ID/container codes cannot capture containers at goods receiving Brose or Crossdock. This results in incorrect container account stocks, difficulties in goods receiving and container management. Therefore, no payment can be made!

For material subject to documentation or with batch requirements (D-parts, material with traceability):

- The batch number of the material ID number.
- Each loading unit may only contain one batch of one material. If different batch numbers are delivered for one material number, a separate delivery position must be generated, packed and notified (ASN) for each batch number.
- Any additional markings, such as the safety item marking on the delivery note, can be agreed and requested on a plant-specific basis.

3.4 Container labeling

3.4.1 Label standards and label release

Brose is aiming for a transition from the VDA 4902 label to the Global Transport Label (GTL) according to VDA 4994 (alternatively ODETTE Vers. 3 Rev. 1, AIAG B-16) in 2025. Suppliers who obtain their labels via the Brose Supplier Portal application SWP/ASN will be informed separately and will automatically be switched to the VDA 4994 label in 2025. Suppliers must ensure that their internal processes, which were previously mapped with the VDA4902 label from the Brose Portal, can also be implemented with the VDA4994 label.

Suppliers who generate the container labels themselves will be contacted individually by Brose for conversion. Until then, the existing VDA4902 can continue to be used. New suppliers or existing suppliers who wish to use the GTL in advance require approval and validation from the Brose mailbox label@brose.com. After positive feedback and approval, the use of the GTL label is mandatory. The standard requirements must be met for the entire Brose Group. Exceptions to this rule require a separate agreement.

Brose's requirements for label layouts, content and technical specifications for the implementation of VDA 4994 (new) or VDA4902 (old) are described below.

A basic distinction must be made between 2 label types:

- Master-Label (M): for homogeneous load units with consistently identical sub-packaging units. The inner packaging units are identified by their own single label: e.g., for large load carriers (GLT)/packages/pallet with homogeneous small load carriers (KLT, carton)

- Single-Label (S): for simplified loading units (without sub-packaging). The load unit contains parts of the same part number that are not packed in further inner packaging. e.g., for large load carriers (GLT) without subunits (e.g., wire mesh boxes) and small load carriers (KLT, carton) as a subunit of a pack

The data on the GLT- and KLT-labels must match the data transmitted in the ASN. The packaging structure transmitted in the ASN (GLT packaging number and referring KLT packaging numbers) needs to match exactly with the delivered packaging structure of the loading unit (packaging numbers on labels). Cp. **chap. 2.4.3**

3.4.2 Label layout and content VDA4994 Label

The label layouts and contents required by Brose for the VDA 4994 label are explained below.

Label for GLT large load carrier (master/single) according to VDA 4994 incl. data blocks [2]

„Safety Item“
Special labeling symbol for parts that require documentation

Illustration 6 - GLT Master label according to VDA4994

Label for KLT small load carrier (single) according to VDA 4994 incl. data blocks[2].

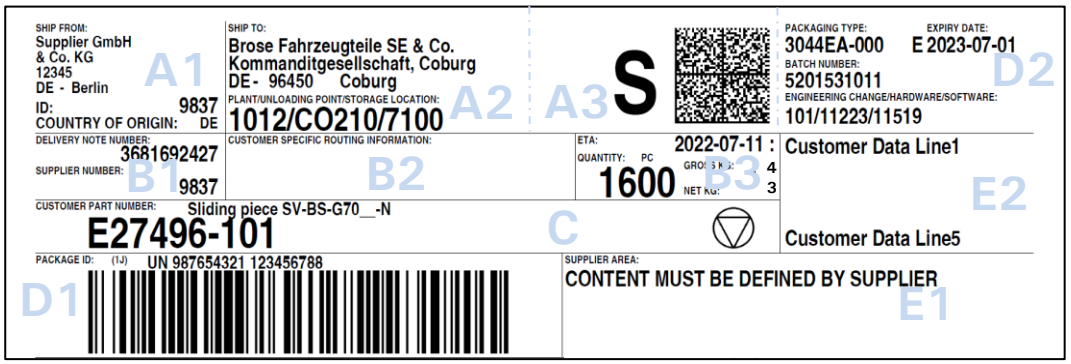


Illustration 7 - KLT Single label according to VDA4994

[2] The markings of the data block A1 - E2 is for illustration purposes only and should not be printed.

The following table defines the use of the data blocks of the VDA 4994 label as well as the data content with the respective data identifier (DI)/prefix in the Data Matrix Code (DMC). The data content and the formal structure of the data elements of the label must be taken from the call-off data, unless the data is to be determined or set by the supplier himself.

Table 7 - Overview of data blocks and data contents

Data block	Field name	Content	(DI)	Example user data	GLT	KLT
-	Identification of specification	Fixed Content (To be coded in advance in the DMC)	12P	12PGLT3	M	M
-	Version of the specification of the VDA	Fix content for version 1.3 (to be coded in advance in DMC)	9K	9K01	M	M
(A1) Goods Despatcher	Ship from	Name supplier Location city ISO country code, postal code,	-	Supplier GmbH & Co.KG Supplier Street 1 12345 DE - Berlin	M[3]	M
	ID	If different from seller: Brose Supplier no. of goods shipper	3L	9837	M	M
	Country of origin / made in	ISO country code of the country of origin of the goods	4L	EN	M	M
(A2) Goods recipient	Ship to	Address Brose receiving plant: Name Brose plant: Location street: ISO country code, ZIP, city	-	Brose Fahrzeugteile SE & Co. Kommanditgesellschaft, Cob Bamberger Straße 44 DE 96450 Coburg	M	O[4] [5]
	Plant / Unloading point / Storage location	Brose factory code/ 5-digit unloading point/ Storage location (if transmitted)	8V 2L 20L	1012 / CO210 / 7100	M M O	O[5] O[5] O[5]
(A3) Label type and 2D barcode (Data Matrix Code)	Marking Label Type	Load unit with the same part numbers in sub-packaging: M = Mater Label Simplified loading unit: S = Single Label Exception: Mixed loading unit (only after release Brose) MIX = Mixed Label	-	M S MIX	M	M
	Data Matrix Symbol	See specification DMC (Contents are all fields with DI)	-		M	M
(B1) Customer reference 1	Delivery note number	Number assigned by the supplier to the delivery note	2S	3681692427	M	O[5]
	Supplier number	Brose supplier no. of the seller must correspond to the supplier no. from the delivery schedules	V	9837	M	M
(B2) Routing information of the customer	Customer specific routing information	When requested by Brose: Only to be filled if information has been provided by Brose - otherwise, empty	23L	-	M[6]	M[6]

[3] M = Mandatory field

[4] O = Optional field: depending on supplier

[5] Optional field: only if an electronic ASN notification of the delivery by the supplier takes place and allocation towards the delivery at the supplier is possible via the License Plate / package number (cp. data block D1)

[6] Mandatory field: no standard requirement, but can be requested additionally by Brose

Data block	Field name	Content	(DI)	Example user data	GLT	KLT
(B3) Logistics Reference	ETA (Expected time of arrival)	Target goods receipt date requested by customer	8D	Format text YYYY-MM-DD 2022-07-11 (Format in DMC YYYYMMDD)	M	O
	Quantity	Master Label: total filling quantity of the loading unit Single Label: Filling quantity of the container/package	Q	12800 (Total load unit) 1600 (inner package)	M	M
	Short form: unit of measure (ME)	Unite of measure, coded	3Q	PC	M	M
	Net KG	Net weight of the package without load carrier in (KG), without decimal places	-	96 (Total load unit) 3 (inner package)	M	M
	Gross KG	Gross weight of the package with load carrier in (KG), without decimal place	2Q	121 (Total load unit) 4 (inner package)	M	M
(C) Customer part number	Part number	10-digit Brose ID number (xxxxxxx-xxx) For parts requiring documentation including special mark of safety-relevant parts - Safety item ▽ The customer's part designation must be printed to the right of the part number heading	P	E27496-101 ▽ Sliding piece SV-BS-G70-N	M	M
(D1) License plate (max.22 digit)	The License Plate clearly identifies the package worldwide. It is also coded as a 1D barcode 128 and consists of the following elements. The plain text contains spaces between the individual elements.		6J / 1J / 5J /	Master Label: (6J) UN 987654321 123456789 Single Label: (1J) UN 987654321 123456788 Mixed-Master Label: (5J) UN 987654321 123456787	M	M
	Data identifier (prefix) (2 digits)	Only in the date title: (6J) on the master label: Load unit with the same part numbers in the sub-packaging (1J) on the single label: simplified loading unit or packages without sub packaging. Exception: (5J) on the mixed master label: mixed loading unit (only after approval by Brose).				
	Issuing Agency Code IAC (2 digits)	UN (= code of the Dun & Bradstreet agency)				
	Company Identification Number (9 digits)	DUNS number of the supplier (assigned by Dun & Bradstreet agency)				
	Package ID (9 digits)	Unique serial number of the package, which the supplier assigns to the package, if necessary, with leading 0. Must not be repeated within 365 days.				

Data block	Field name	Content	(DI)	Example user data	GLT	KLT
(D2) Customer Reference 2	Packing material type	10-digit Brose packaging number (xxxxxx-xxx):[7] Master label: ID sub-pallet Single label: ID container	B	Master Label EURO-Pallet: 304413-000 Single Label Gitterbox: 304409-000 Single Label KLT 4147: 3044EA-000	M	M
	Expiration date	If an expiry date exists, the expiry date (E) must be printed. If no expiry date exists, the shipping/production date must be printed.	14D	Format text YYYY-MM-DD E 2023-07-01 (Format in DMC YYYYMMDD)	M[8]	M[8]
	Shipping/Production Date	If the shipping date is known at the time of label printing: Shipment date (S) otherwise Production date (P)	16D	Format text YYYY-MM-DD S 2022-07-09 or P 2022-07-01 (Format in DMC YYYYMMDD)	M	M
	Batch number (max. 10 digits)	If documentation or batch obligation required by Brose: Number assigned to a batch or production lot by the supplier, otherwise empty.	1T	5201531011 Alternative: -	M[9]	M[9]
	Number of inner packaging materials	In case of homogeneous loading unit with the same part numbers in the sub-packaging, indication of the number of sub-packages in the loading unit (1J) on the master label (6J).	-	24	O	-
	Hardware version / track	If required by Brose: Track for stamped parts produced with tools where the same component is stamped in parallel, otherwise blank.	20P	11223 Alternative: -	M[6]	M[6]
	Software version / tool	If required by Brose: Mold for injection molded parts produced with molds in which the same component is molded in parallel, otherwise empty.	21P	11519 Alternative: -	M[6]	M[6]
	Engineering Change	If requested by Brose: Drawing status delivered, otherwise blank	2P	101 Alternative: -	M[6]	M[6]
(E1) Supplier data	Information that supplier places on the label for its own purposes. 1D barcode(s) are not allowed.		-		O	O
(E1) Cust. Ref. 3	If requested by Brose: Only to be filled if information was provided by Brose, otherwise empty		-		M[6]	M[6]
-	If required by Brose: Label whether container represents smallest packaging unit: Y = yes, container is smallest material packaging; N = no, further sub-packaging with label in container.		33T	Y / N	M[6]	M[6]

[7] Packaging ID:
- for universal load carriers and Brose standard packaging (returnable, non-returnable): see catalog for standard packaging
- for special containers - assigned by the Brose logistics planner

[8] Mandatory field: if an expiry date exists

[9] Mandatory field: if documentation or batch obligation is required by Brose

3.4.3 Label layout and content VDA4902 Label

The label layouts and contents required by Brose for the VDA 4902 label are explained below.

GLT label according to VDA 4902:

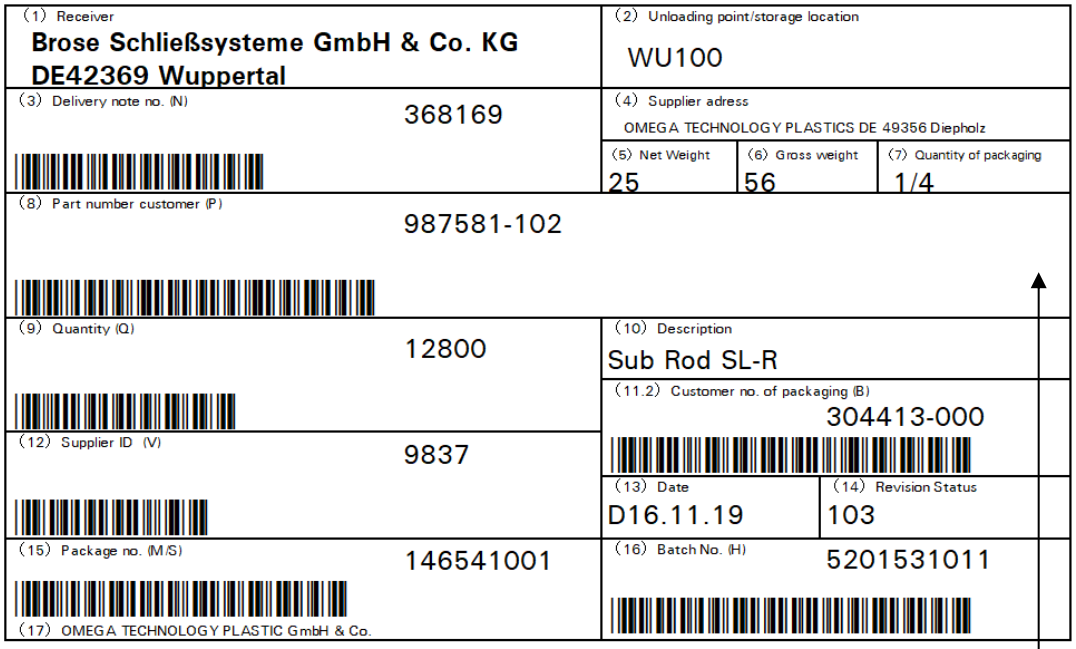


Illustration 8 - GLT label according to VDA 4902

"Safety Item"
Special labeling symbol for parts that require documentation

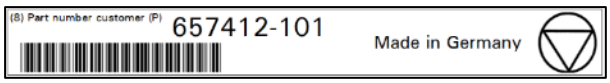


Illustration 9 - Special labeling symbols "Country of Origin" and "Safety Item"

KLT label according to VDA 4902:

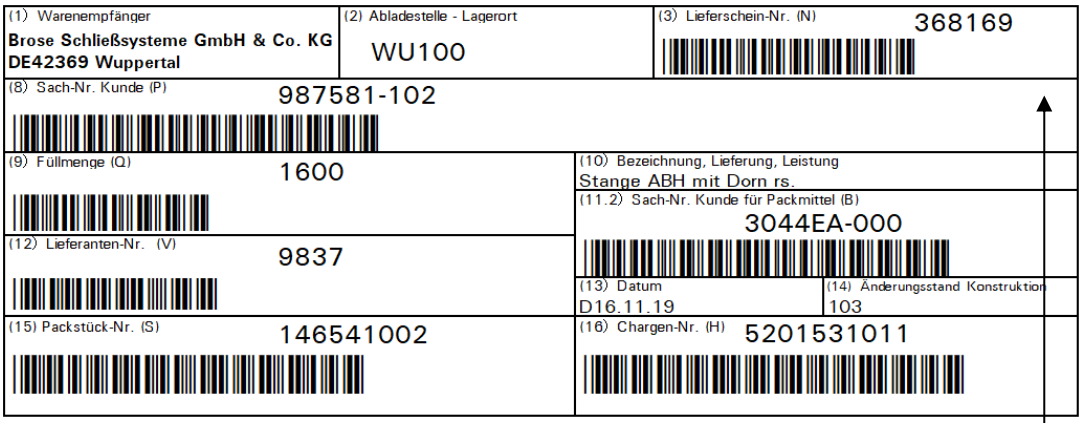


Illustration 10 - KLT label according to VDA 4902

Illustration 11 - Special Labeling symbol "Safety Item"

Overview of data elements:

Table 8 - Overview of data elements on GLT/KLT labels

No.	Field description	Contents	Barcode ID (prefix)	Example	GLT	KLT
(1)	Receiver, short	Address Brose receiving plant short: Name Brose receiving plant Location (Country code, ZIP-code, city) **NOT unloading point location**	-	Brose Schließsysteme GmbH & Co. KG DE 42369 Wuppertal	M[3]	M
(2)	Unloading point/storage location	Usage key for the unloading point or transfer point to Brose (cp. call-off or **chap. 2.2.4**)	-	WU100	M	O[4]
(3)	Delivery Note No.	Number allocated to the delivery note by the supplier	N	368169	M	O[5]
(4)	Supplier Address	Supplier name and address short: Supplier name Location (Country code, ZIP-code, city)	-	OMEGA TECHNOLOGY PLASTIC DE 49356 Diepholz	M	-
(5)	Net weight	Weight of the package without loading unit [kg], only integer values	-	25	M	-
(6)	Gross weight	Weight of the package with loading unit [kg], only integer values	-	56	M	-
(7)	Number of packages	No. of the respective package (single item) / number of packages for this delivery (total number)	-	1/4, 1/1 etc.	M	-
(8)	Part number customer	10-digit Brose ID number If required for overseas shipments, the country of origin can be inserted here. (cp. **chap. 7.3.3**) For parts that are subject to documentation, the special labeling symbol for safety item ▽ must be entered in the far right in field (8) or in field (16) batch number.	P	987581-102 Made in Germany ▽	M	M
(9)	Quantity	Filling quantity of ID number in the package GLT-master label: filling quantity loading unit KLT-single label: Filling quantity of the packaging unit	Q	12800 pcs.	M	M
(10)	Description	Description of the goods	-	Sub Rod SL-R	M	M
(11.2)	Customer's material number for packaging	Packaging ID number assigned by the customer to the packaging: [4] GLT: ID of the sub-pallet, KLT: container ID	B	Pallet: e.g. 304413-000 KLT: e.g. 3044EA-000	M	M
(12)	Supplier no.	ID number allocated by Brose to the supplier	V	9837	M	M
(13)	Date	If an expiry date exists, the expiry date (U) must be printed. If no expiry date exists, the shipping/production date must be printed: If at the time of label printing, the shipping date is known, print delivery date (D), otherwise production date (P)	-	U16.11.22 D16.11.19 Alternatively: P14.1.19	M	M
(14)	Change status, design	Drawing status of what is being delivered: last 3 numbers of the drawing ID, (can deviate from material no.), alternatively, the field is “empty”		103 Alternatively: -	O	O
(15)	Package number (max. 9 characters)	Unique ID (per year), which the supplier allocates to a package. **GLT-master-label:** loading unit with individually marked KLT: barcode ID = M loading unit without KLT: barcode ID = S. **KLT- Label:** Barcode ID = S	see left: M / S	Master M: 146541001 Single S: 146541002	M	M
(16)	Batch No (max. 10 characters)	Number, which the manufacturer allocates to a batch or production lot. If material is not subject to documentation, then field "empty” (if applicable, Safety Item symbol ▽ if necessary and not yet in field 8)	H	5201531011 Alternatively: -	M	M
(17)	Supplier's name	Supplier's name	-	OMEGA TECHNOLOGY PLASTIC	O	O

3.4.4 Label Quality and Sizes

The size and quality of the labels may vary depending on the size of the packaging and the region in which it is used. To ensure perfect machine and manual legibility, the recommendations of the VDA (4902, 4994) and AIAG (B-10, B-16) on format and paper quality must be complied with:

Table 9 - Regional label sizes and quality

	Europe/Asia	North America	Paper quality
GLT (Master) Label GLT (Single) Label	A5 (210 mm x 148 mm)	Half-Letter (215,9 mm x 139,7 mm)	Insert label: min. 120 g/m² Adhesive label: min. 80 g/m² Combined label: 130-170 g/m² Paper: white with black print, machine smooth, moisture resistant Adhesive: permanent adhesive, moisture resistant, easy to remove
	A6 (148 mm x 105 mm)	6 in x 4 in (152,4 mm x 101,6 mm)	
KLT (Single) Label	210 mm x 74 mm <u>For flat KLTs/boxes:</u> 210 mm x 42 mm	8.27 in x 2.91 in (210 mm x 74 mm) 6 in x 4 in (152.4 mm x 101.6 mm) <u>For flat KLTs/boxes</u>: 210 mm x 42 mm (8.27 in x 1.65 in)	

3.4.5 Barcode Specification and Data Structure

The size and quality of the barcode may vary depending on the kind of Barcode specification which is used. To ensure perfect machine legibility by all Brose scanners, the recommendations of the VDA (4902, 4994) and AIAG (B-10, B-16) on Barcode specifications which are summarized in the following shall be complied with:

Table 10 - Barcode specification

Barcode Parameter	VDA 4902 / AIAG B-10	VDA 4994 / AIAG B-16	VDA 4994 / AIAG B-16
Coding	Linear Barcode 39 (ISO/IEC 16388)	Linear Barcode 128 (ISO/IEC 15417)	2D Data Matrix Code ECC200 (ISO/IEC 16022)
Measurements (height of barcode)	GLT Label: Min. 13 mm (0.51 in) KLT Label: Min. 6 mm (0.24 in)	GLT Label: Min. 17 mm (0.67 in) KLT Label: Min. 15 mm (0.59 in)	GLT Label: Min. 20 x 20 mm Max. 33 x 33 mm KLT Label: Max. 20 x 20 mm Matrix: Max. 52 x 52 modules
Module width narrowest bar (X value)	Tolerance between 0.25 mm (0.010 in) and 0.58 mm (0.023 in)	Tolerance between 0.51 mm (0.020 in) and 0.64 mm (0.025 in)	Min. 0,40 mm (0.160 in)
Ratio narrow to wide bars	Tolerance between 2.8:1 and 3.2:1	Tolerance between 2.2:1 and 3.0:1	-
Quiet zone	Left and right min. 10 * X Additional 3 mm (0.12 in) at lower end of KLT label		On all sides min. 2 * X
Bar code quality requirements	ISO 15416		ISO/IEC 15415
	Minimum print quality grade 3 (or B) at the point of printing; 1,5 (C) at the point of scanning by customer (1,5/10/660)		

The detailed requirements for the Data Matrix code can be found in the current VDA 4994 Recommendation on the GLT label. According to this, the design corresponds to Data Matrix ECC200 (cf. ISO/ISE 16022). The syntactic structure of the message is based on ISO/IEC 15434.

The encoding of the data contents is used in conjunction with the control characters in the message header "[)>Rs06Gs" before the data and in the message trailer "Rs EOT" at the end of the data string. The separator between the individual data elements indicated with ASC data identifiers (DI) is the group separator "Gs". Mandatory fields are to be listed as mandatory information incl. data identifier in the data string.

The data structure of the Data Matrix code is as follows:

	ASCII characters	DEC	HEX
Message Header:	[	91	5B
	)	41	29
	>	62	3E
	Rs <rs>	30	1E
Format Header06:			
Group Separator:	Gs <gs>	29	1D
DI with user data:			
Group Separator:	Gs <gs>	29	1D
DI with user data:			
… etc.			
Message Trailer:	Rs <rs>	30	1E
Record Separator:	EOT <eot>	04	04

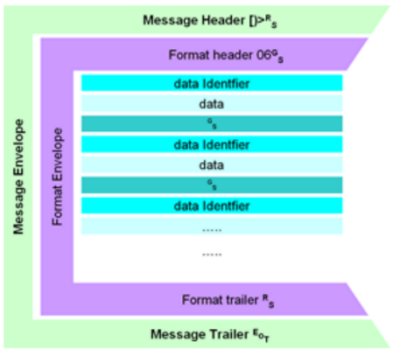


Illustration 12 - Structure Data Matrix Code

If the length of the DataMatrix code including control characters and separators is longer than 253 characters, it must be ensured that the data elements with the information supplier number (V), material number (P), production date (16D) and, if necessary, batch number (1T), expiry date (14D), hardware version / track (20P) and software version / tool (21P) are completely before the 253rd character. This is ensured, for example, by the following sequence:

[)><rs>06<gs>12PGTL3<gs>9K01<gs>V0009837<gs>**P**E27496-101<gs>**16D**20220701<gs>**1T**5201531011<gs>**14D**20230701<gs>**20P**11223<gs>**21P**11519<gs>3L0009837<gs>4LDE<gs>8V1012<gs>2LCO210<gs>2S3681692427<gs>8D20220711<gs>Q12800<gs>3QPC<gs>2Q121<gs>6JUN987654321000123456<gs>B304413-000<gs>2P103<rs><eot>

3.4.6 Label attachment

For the label attachment, the following must be observed:

- 1 Single-label per package (KLT/cardboard). For KLTs and small load carriers, the label must be pushed into the slip pocket provided for this purpose or attached to the predefined marking.
- 2 Master-labels per loading unit (GLT/Gitterbox/Pallet), one each on the bottom right on both front sides (short sides).
- For overseas deliveries 2 Master-labels per loading unit, one each on the short and the long side so that loading units can be identified even when stacked.
- For deliveries in and to Europe and Asia, adhesive labels on reusable GLTs and KLTs are generally forbidden. Only the use of adhesive dots to attach the labels is permitted as long as they do not cover the barcodes. (cp. Illus. 15).
  For deliveries in and to the North America region, adhesive labels are permitted (cp. Illus. 16). The stickers must be such that they can be easily removed from reusable containers without leaving any residue.
- Labels may not extend beyond the outer contour of the packaging and may not cover each other.
- When attaching the labels, it must be ensured that any old (and thus invalid) labels and adhesive residues are removed, pasted over or made unrecognizable. Old fastening elements (e.g. clips, wires) must be removed as well.
- Elements used to secure the loading units (e.g. strapping) should not impede the readability of the labels.
- The tag must be perfectly legible by machine and manually at the destination. The label and its content must be clear and resistant for various transport and environmental conditions. Faded and blurry labels are not permitted. For perfect legibility, the label attachment must not create any waves in the paper.

Deviating agreements regarding label positioning can be made between the supplier and the plant logistics after written approval. Additional tags are only permitted if they have been requested by Brose or comply with legal requirements and may not cover the labels (e.g. hazardous goods labelling).

Permitted	Not permitted
	  

Illustration 13 - Regulations for placement of labels on VDA KLT

For North America-sized containers the labels have to be placed within the according space (Kennedy-Label).

Permitted	Not permitted
	

Illustration 14 - Regulations for placement of labels on North America KLT

3.5 Traceability of supplier parts

For further information about the handling of parts subject to documentation or with specific requirements for verification see Brose homepage www.brose.com > Purchasing > Download > Handbooks/Templates > Brose manual > Brose Quality Management Regulations.

Chapter 9 Appendix I. **Additional requirement 6606082201: Traceability of Supplier Parts (Definition of Component Packaging Labels with 2D-Barcode)** applies to all supplier parts of the business division Drives, for which a particular traceability and archiving by the supplier (material batches, process data, etc.) is required.

4 CUSTOMS AND EXPORT REQUIREMENTS

4.1 General information

The supplier is responsible for the correct – free of charge for Brose - creation of all relevant customs and export documents in accordance with the current legal requirements as well as for the proper customs planning for the export of goods and EU shipments in accordance with the law. Brose reserves the right to charge the supplier for all costs resulting from missing or incorrectly created papers that are relevant for customs handling.

4.1.1 Inner-EU deliveries

Brose requires the delivery of preferred goods, as far as the supplier is based in a country or delivers the goods from a country, which has concluded a corresponding preferred agreement with the EU. In this case, the supplier shall create a long-term supplier declaration for Brose according to EU Directive 1207/2001. If comparable trade agreements are available between the countries of origin and destination, Brose requires the implementation of this agreement content in order to minimize the import cost for Brose. The supplier shall also submit the corresponding declaration to Brose in this case.

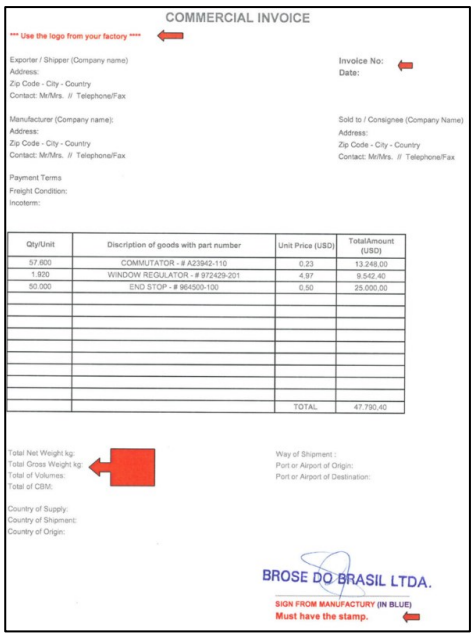
4.1.2 Accompanying papers for international import deliveries

Depending on the means of transportation and country of delivery, the corresponding accompanying papers must be enclosed with the shipment.

- Verification of preference (EUR.1, EUR-MED, A.TR, UZ Form A, declaration of origin on invoice, or similar declarations to show a specific preferred origin)
- Certificate of origin (from the respective national chamber of trade and industry)
- Dispatch note T1 or T2 if applicable, or equivalent (transfer paper)
- Commercial invoice in triplicate
- Consignment notes (e.g. CMR/CIM)
- Carnet-ATA
- Delivery notes
- IPPC-Standard ISPM 15 – Label on wooden load carrier (cp. **Wooden packaging - IPPC-requirements and HPE guideline**)
- Compliance with special requirements of the destination country (e.g. **Additional requirements documentation Brazil**)
- Export registration (e.g. single administrative document (SAD), registration EX1) – or analogous. This also applies to export accompanying documents with a value of goods of less than 1,000 €.
- Non-Wood declaration regarding used packaging (separate document or alternatively, printed on the delivery note)
- Other required import documents because of international trade barriers (e.g. China – CCC-approval, Russia GHOST-R certificate or EU-CE certifications); any required safety datasheets

4.1.3 Additional requirements documentation Brazil

According to Brazilian import legislation, a **packing list** is also required in addition to the documents listed above, which lists the exact content of a goods shipment.
Documents are generally only accepted in the **original (no copies)** and must not contain any handwritten notes!
Moreover, commercial invoices and packing lists must show the company logo, must be signed in **blue ink** (documents with black ink may be copies) and must be **stamped**.
The required information for the invoice and packing list is specified in the following illustrations:



COMMERCIAL INVOICE

*** Use the logo from your factory ****

Exporter / Shipper (Company name)
Address:
Zip Code - City - Country
Contact: Mr/Mrs. // Telephone/Fax

Invoice No:
Date:

Manufacturer (Company name):
Address:
Zip Code - City - Country
Contact: Mr/Mrs. // Telephone/Fax

Sold to / Consignee (Company Name)
Address:
Zip Code - City - Country
Contact: Mr/Mrs. // Telephone/Fax

Payment Terms
Freight Condition:
Incoterm:

Qty/Unit	Discription of goods with part number	Unit Price (USD)	TotalAmount (USD)
57.600	COMMUTATOR - # A23942-110	0,23	13.248,00
1.920	WINDOW REGULATOR - # 972429-201	4,97	9.542,40
50.000	END STOP - # 964500-100	0,50	25.000,00
		TOTAL	47.790,40

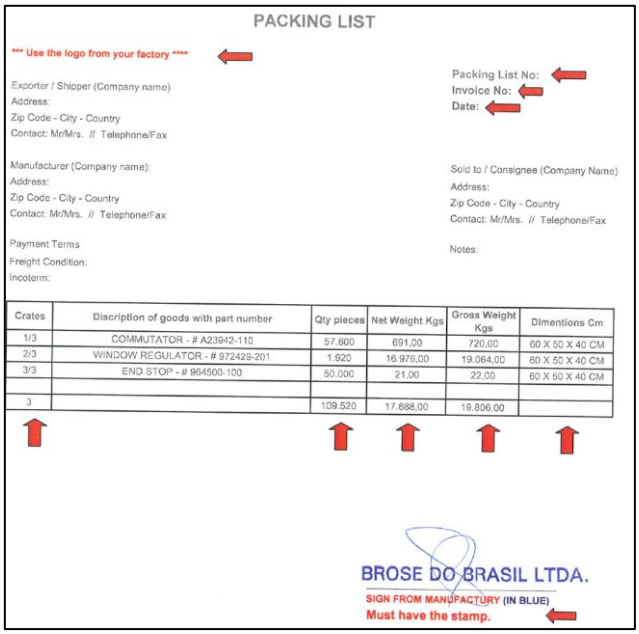
Total Net Weight kg:
Total Gross Weight kg:
Total of Volumes:
Total of CBM:

Way of Shipment :
Port or Airport of Origin:
Port or Airport of Destination:

Country of Supply:
Country of Shipment:
Country of Origin:

BROSE DO BRASIL LTDA.
SIGN FROM MANUFACTURY (IN BLUE)
Must have the stamp.

Illustration 15 - Required information on Brazil invoices



PACKING LIST

*** Use the logo from your factory ****

Exporter / Shipper (Company name)
Address:
Zip Code - City - Country
Contact: Mr/Mrs. // Telephone/Fax

Packing List No:
Invoice No:
Date:

Manufacturer (Company name):
Address:
Zip Code - City - Country
Contact: Mr/Mrs. // Telephone/Fax

Sold to / Consignee (Company Name)
Address:
Zip Code - City - Country
Contact: Mr/Mrs. // Telephone/Fax

Payment Terms
Freight Condition:
Incoterm:

Notes:

Crates	Discription of goods with part number	Qty pieces	Net Weight Kgs	Gross Weight Kgs	Dimentions Cm
1/3	COMMUTATOR - # A23942-110	57.600	691,00	720,00	60 X 50 X 40 CM
2/3	WINDOW REGULATOR - # 972429-201	1.920	16.976,00	19.064,00	60 X 50 X 40 CM
3/3	END STOP - # 964500-100	50.000	21,00	22,00	60 X 50 X 40 CM
3		109.520	17.688,00	19.806,00	

BROSE DO BRASIL LTDA.
SIGN FROM MANUFACTURY (IN BLUE)
Must have the stamp.

Illustration 16 - Required information on Brazil packing lists

4.1.4 Accompanying papers when shipping/exporting capital goods

By capital goods, Brose means plant, machinery as well as its parts and tools, which are needed for the direct or indirect production of series material. When delivering capital goods to a German Brose location but with **direct** invoicing to a foreign Brose location, the supplier shall provide the following documents with the delivery:

- Single supplier declaration according to Directive EC 1207/2001 (cp. **chap. 4.1.1**) with precise description of goods and additional details of the eight-digit goods tariff number (combined nomenclature).
- If applicable, written confirmation of the proportion of US goods in the goods/plant.
- Written confirmation of an existing authorization requirement according to EU export control provisions (EU dual use directive with annex I), the German law on foreign trade and payments (AWG) and the German foreign trade regulations (AWV), stating the export list number. If there is no authorization requirement, Brose expects corresponding written information in the accompanying documents that the capital goods can be shipped / exported without requiring authorization.
- All current customs documents must state the serial numbers of the capital goods in order to guarantee identity.
- The supplier encloses all documents relevant for the destination country to guarantee a smooth import of the goods.

4.1.5 Address Deviations

Addresses of the shipping location, recipient of the payment, or biller that differ from the address of the recipient of the order (e.g. in the case of triangular or series transactions) must be reported to the ordering party immediately prior to the export.

4.1.6 Invoicing/Commercial invoice

Unless stated otherwise in the order, the invoice must be submitted in triplicate. The printed invoice can be omitted only for intra-community deliveries if the billing is issued via EDI (VDA 4938 Self Billing Invoice). Free deliveries must also be shown on the invoice (using the nominal price).

For customs handling, the invoices must contain the following information in a tabular form:

- Brose supplier number
- Brose EORI number (formerly customs number)
- Brose sales tax ID number and supplier's sale tax ID number
- Brose order or delivery schedule number (usually: 55xxxxxxxx)
- Brose material ID number and exact product description

- Note to payee for free deliveries
- Delivery note number, dispatch date
- Quantity, unit of measurement
- Value of goods (single and total price) – free deliveries and services must be designated with the remark "free of charge - value only for customs purposes"
- Price unit, currency unit
- Packaging price (for delivery condition ex. packaging)
- INCOTERM of the underlying transaction according to ICC 2020
- Separate note of the freight costs from the EU outer border to the inner-EU destination
- Number of packages
- For North America In-Bond Shipments: Quantities of smallest external packaging unit e.g. 144 cartons on 12 pallets
- weight (gross weight, net weight), integer values only
- Dispatch address / Unload bay
- For returned deliveries, the Brose delivery note / invoice number of the original shipment

For delivery of duty-free goods, the invoice must state separately:

- the costs not in the price such as commission, licensing costs, packaging costs, Brose resources, and
- the value of repair work according to material and wage costs.

Even for free deliveries (sample shipments, resources, etc.) the proper value must be stated (value corresponds to the series material or usual commercial price), whereby the remark "Free, value stated only for customs purposes" must be included. Incorrect information may lead to a reduction in duty in the destination country!

Note: Overseas deliveries to the USA (sea freight) – Security requirements of the U.S. Customs and Border Protection, Federal Register 73FR71730

Analogous to the security requirements of the U.S. Customs and Border Protection (Federal Register 73FR71730), overseas deliveries to the USA (sea freight) or for deliveries to Mexico via USA sea ports, must state the US-HTS number (US goods tariff number) on the pro-forma invoice or commercial invoice. The supplier will be provided the applicable US-HTS number with the general contract and the delivery call-off. The supplier is responsible for ensuring that the US-HTS number is correctly stated on the commercial invoice or pro-forma invoice for each material number.

4.2 Proof of origin

The supplier shall submit a written declaration regarding the origin of the delivered objects. This shall include both the preferred and non-preferred (under commercial law) origin of the goods delivered to the Brose Group.

4.2.1 Non-preferred (under commercial law) origin

The non-preferred origin is uniformly defined for all member states of the EU in the customs code (ZK) and the ZK-DVO (Article 23 and 24). The non-preferred origin of goods is determined according to the country of its complete production or according to the country of the last significant and economically justified processing or finishing.

4.2.2 Preferred origin

In principle, Brose requires delivery of preferred goods globally.

4.2.3 Verification of preferred origin for inner-EU deliveries

For inner-EU deliveries, Brose expects to receive an original copy of a long-term supplier declaration (LLE) according to EU Directive 1207/2001. Single verifications enclosed with the goods shipment cannot be accepted. At the start of each calendar year, the Brose organization requires an LLE pre-worded by Brose for its entire series business. This must be used and returned to the requester within one month. Late submission of the LLE results in a negative supplier evaluation.
Additionally, for goods of non-EU origin, which have already been cleared in the Community for free sale, the comment "already cleared for inner-Community free sale" and the origin country must be stated on the delivery documents.

4.2.4 Verification of preferred origin for non-EU deliveries

For deliveries from third-party countries (non-EU members) or customs transit from EU suppliers, the preferred origin must be confirmed by a corresponding proof of preference. Proof of preference includes EUR.1, EUR-MED, A.TR, UZ Form A, declaration of origin on the invoice.
The supplier is liable for all damages and/or costs incurred due to improper or delayed submission of the supplier's declaration or the corresponding proof of preference. If necessary, the supplier must provide evidence of the origin of the goods by means of an information sheet certified by the customs office (INF3 or similar).

4.2.5 United States-Mexico-Canada-Agreement USMCA

All North American suppliers shipping within the USMCA (United States-Mexico-Canada-Agreement) countries are to be required to provide USMCA certificates to the customs´ broker designated by Brose as well as other third-party designees working on behalf of Brose.
These certificates must be provided annually. Brose must be notified of changes in the status of materials or goods, which were previously certified as qualifying for USMCA.
The suppliers shall state the respective USMCA status in the quote. All documents used to support the status must be kept for five years. Suppliers based in USMCA confirm the preferred origin for USMCA with a long-term supplier declaration (LTSD). This also applies in cases where only a third country location of the Brose Group is supplied. Eventually, a certificate of origin must be enclosed with every delivery.

4.3 Export-control-regulation of the EU (dual-use) and US-(Re-)Export regulations

The supplier undertakes to comply with the domestic and foreign export control and sanctions laws and regulations applicable in each case, including but not limited to the EU Dual-Use Goods Regulation (Regulation (EU) No. 2021/821) and other national and international regulations, including the U.S. Export Administration Regulations (EAR), the International Traffic in Arms Regulations (ITAR) and the regulations of the Office of Foreign Assets Control (OFAC). It is irrelevant whether the company manufactures products exclusively for civilian purposes.
A standardized list of goods with approval requirements and approval procedures has been defined for all EU member states. The supplier undertakes to notify Brose of any export license requirements for its goods without being requested to do so. In given cases, Brose expects an exact description of the goods, the naming of the export list item and, if applicable, the ECCN number of the American export list. All goods imported from the USA (goods, software and technology), all goods manufactured on the basis of American technology, possibly foreign goods (e.g. German goods) containing more than a specified proportion of American components, possibly goods manufactured by American imported machines or systems requiring a license are subject to the American export regulations. Various US goods may not be exported to certain countries without prior approval from the US authorities.
The supplier agrees to identify all goods (i.e. products, software and technology) subject to export control regulations and to provide Brose with all information relevant to export control, including export control classification under national, EU and U.S. export control regulations (including EAR or ITAR classification), information on any export licenses or other export control restrictions and an accurate description of the goods. This information must be included on all shipping documents.
The supplier shall inform Brose of any changes. The supplier shall be responsible for obtaining all necessary official export licenses, permits, approvals and clearances at its own expense in a timely manner to ensure that the goods are delivered in time for Brose to use them in accordance with the purchase order. The supplier shall provide Brose with a copy of all export licenses. If the supplier is unable to obtain the above required export licenses or if the supplier obtains the above licenses after the agreed delivery date, the supplier shall inform Brose immediately. The supplier shall be liable to Brose and indemnify Brose for all damages, losses and liabilities incurred by Brose as a result of the supplier's failure to comply with the above paragraphs.

4.4 Security in the supply chain – Authorized Economic Operator AEO

With Directive (EC) No. 648 /2005 (to change the customs code), the European Union introduced a series of measures in April 2005 to increase the security standard in international goods transactions. Faster and more targeted checks should guarantee the security of the internal market and the international supply chain. The creation of a so-called "Authorized Economic Operator" is one of the changes necessary because of the increased security requirements in international trade. As AEO-F holder, Brose is required to guarantee complete security of international supply chains, in order to prevent access, in particular, to wares and goods by unauthorized persons and to prevent the resulting misuses and risks.
Brose assumes that suppliers are either authorized as AEO-F (or equivalent e.g. C-TPAT or PIP) or at least as AEO-S (or equivalent e.g. C-TPAT or PIP) or have taken and documented appropriate security measures that ensure the security of the supply chain. Upon request, suppliers are required to provide the corresponding verification of the security of the supply chain to submit a security declaration. In particular, Brose refers to the national and supranational requirements for the screening of business partners and personnel by the applicable "terror lists".

Note: Entry Summary Declarations - ENS from 01.11.2011 - Imports from non-EU countries into the European Union Directive (EC) 648/2005 (13.04.2005), Directive (EC) 1875/2006 (18.12.2006), Directive (EC) 312/2009 (16.04.2009).

From 01.01.2011 an Entry Summary Declaration (ENS) must be sent electronically to the European customs for each shipment from a non-EU country, which reaches the EU via the sea, air or land, which must contain various shipment data. This affects all shipments from non-EU countries (except Switzerland and Norway), which either:

- are imported into the EU.
- arrive in EU by sea/air for onward transport to a non-EU country via road or rail.
- is reloaded at a port (airport) of the EU for onward transport to a non-EU country.
- arrives by ship or plane at a port (airport) in the EU and is transported onwards to a non-EU country using the same means of transport.

Prior registration must be submitted before the shipment reaches the external EU border. The following deadlines are derived:

- Deep Sea Container sea transport – at least 24 hours before loading
- Short Sea Container sea transport – at least 2 hours before arrival in the first EU port
- Break Bulk sea transport – at least 4 hours before arrival in the first EU port
- Long-haul flights (min. 4 hours) – at least 4 hours before arrival in the first EU port
- Short-haul flights (less than 4 hours) – by take-off at the latest

In principle, the ENS must already be submitted in the export country (non-EU country). Suppliers shall provide the transporter (shipping lines, airlines or carriers) with the following data for each shipment to the EU from 01.01.2011:

- Sender (name and address)
- Recipient (name and address)
- Any Notify/ 3rd party (name and address)
- Clear description of the goods
- HS-Code/ customs tariff number (6-digits)
- Package (type and quantity)
- Highlighting
- Container number (FCL)
- Gross weight
- UN-Dangerous Goods Code with net weight per UN number

Non-compliance with the registration deadlines may lead to the following:

- No loading in the port of departure (sea freight)
- Time-intensive and costly inspection by the customs authorities at the EU border or place of unloading
- Non-compliance with agreed delivery deadlines
- Storage costs and delivery bottlenecks

For outgoing airfreight shipments within the EU, Brose expects the respective supplier or service provider to fulfill the EU legal status of "known sender" or "regulated contractor" in full. If Brose is disadvantaged as a result of non-compliance with these requirements, Brose reserves the right to pass on these costs. Please note that non-compliance with these requirements will affect the supplier evaluation.

5 SECURITY OF SUPPLY

5.1 Logistics for JIS plants

With the production-synchronous assembly and delivery of products to the end customer within a prescribed time window, there are no noteworthy finished goods stocks in JIS (Just in Sequence) plants.
The availability of OK parts is correspondingly important.
The supplier is responsible for ensuring that its supply security is guaranteed with its deliveries to the respective Brose location at all times - even in emergencies.
Therefore, the supplier is required to document the entire process chain and to define and implement measures - see checklist JIT (Just in Time) – QVP (Advance Quality Planning), this is provided as required with the documents for advanced quality planning.
The following regulations regarding supply security serve to secure the material flow process chain - availability of OK parts - and are part of the suppliers offer.

5.2 Production capacity

The production capacity must be designed such (in a way) that short-term capacity fluctuations can be compensated. Delivery must be ensured for variety-rich parts even if slow sellers experience an extreme and rapid increase in numbers.

5.3 Emergency strategy

The supplier must have an integrated strategy that ensures the supply of O.K. parts at all times. A risk assessment should identify which processes to be documented in the contingency procedures. Such contingencies may be:

- a delivered batch cannot be used or can only be used in part.
- there are problems with subcontractors.
- employees leave.
- means of transport fails.
- equipment fails.
- packaging fails.
- EDI fails.

In doing so, the supplier must disclose which incidents have occurred and how long it will take to rectify them. The emergency strategies are presented to Brose by the supplier and coordinated with Brose (individual agreements on security of supply).
Defects discovered by the consumer must be investigated for their causes. The causes must be eliminated and the responsibilities for these defects must be clarified by mutual agreement between the supplier and Brose.

Overview of conduct in an emergency:

Table 11 - Overview of correct behavior in emergencies

Causer	Problem	Solution	Responsible for problem solution	Responsible for costs
Supplier	The goods are not available for dispatch to the agreed upon schedule (fault of supplier)	Forwarder informed → Collection delayed → Timely delivery facilitated by the forwarder	Supplier	Supplier
		Queries to Brose scheduler → Late delivery is possible		
		Special transport → Timely delivery secured		
	The goods are not delivered at Brose according to the agreed schedule	Brose informed → Joint clarification of measures together with forwarder → Timely delivery facilitated by forwarder	Supplier	Supplier
		Queries to Brose scheduler → Late delivery is possible		
		Replacement delivery coupled with special transport → Timely delivery is guaranteed		
	Goods are in the wrong packaging, as the defined container is not available in adequate quantities (fault of supplier)	Pack in pre-defined alternate containers (part of the sourcing project)	Supplier	Supplier
		Special transport of empties → Timely provision or delivery of bought-in parts in designated containers is guaranteed		
Brose	The goods are not available for dispatch to the agreed upon schedule due to short-term orders or changes to order by Brose	Production plan is changed by the supplier → Goods are available for collection according to schedule or delivered to Brose	Supplier	Brose
		Special transport → Timely delivery secured	Brose	Brose
	Goods are in the wrong packaging, as the defined container is not available in adequate quantities (fault of Brose, no or delayed delivery of containers)	Definition of alternative containers and repackaging at Brose	Brose	Brose
		Special transport of empties to supplier		
Relating to all problems		The supplier must ensure that there is a sufficient quantity of bought-in parts according to the issued production and material approvals and these are available to Brose as a reserve for short-term production movements.	Supplier	
		The causer of the problem must immediately (within one hour) inform and must agree with all partners by phone and/or email about the type of problem, possible causes, impacts and the required steps for solving the problem and must guarantee the implementation of the solution. The responsibility for problem solving essentially lies with the causer. All participants shall support the problem solving. The resulting costs shall be borne by the causer. For circular runs and one-way routes, it must be ensured in principle that all subsequent suppliers and/or customers are immediately informed of any problems.	Supplier, Brose, logistics service provider	
		100 % availability must be ensured by the supplier between the hours of 7.30 a.m. and 5.00 p.m., local time, of the receiving Brose location.	Supplier	
		All specialist departments can be reached via the gates of the plant.	Supplier	

5.4 Emergency lead time and a possible security-stock

The supplier requires a defined lead-time in order to be able to react to problems in the supply chain. This is the time between notification by the supplier and delivery of the OK goods to Brose.

This has to be represented to Brose by the supplier and documented with the associated processes and times (emergency plan) and ensured through suitable measures (Brose supply security).

Both Brose and the supplier are to check the necessity of a security-warehouse near to the Brose site together.

The parts stored in the security-stock are to be accessible at any time.

5.5 Safety-stock

Each supplier has to inform Brose about the safety-stock level of the finished goods for delivery.

5.6 Change management

The supplier is to ensure that an index change is realized in time with the required quantity and that the following delivery is done with the new index only. The supplier has to notify planned changes to Brose without any delay and present the relevant releases immediately. For further information about reporting changes, see Brose homepage www.brose.com > Purchasing > Download > Handbooks/Templates > Brose manual > Brose Quality Management Regulations.

5.7 Legal consequences for violations of Brose logistics regulations

Violations of Brose's logistics regulations require manual intervention and additional process work on the part of Brose. Logistics complaints draw the attention of the originator to incidents and require him to analyze the logistics errors and initiate sustainable corrective measures. For the purpose of structured complaint handling, the use of the Logistic-Problem solving scheme template (see Brose homepage www.brose.com > Purchasing > Download > Handbooks/Templates > Download-Center > Logistic-Problem solving scheme) or of the application “8D – claim processing” can be requested. Logistics complaints have a negative impact on the monthly supplier evaluation. A detailed explanation of supplier evaluation can be found in the "Supplier Management Manual" (see Brose homepage www.brose.com > Purchasing > Download > Handbooks/Templates > Brose manual > Supplier Management).

If a supplier violates the provisions of the Procurement Logistics Manual, Brose reserves the right to debit any additional costs and/or damages incurred according to the cause. Brose shall be entitled to settle the debits in the credit memo procedure if a separate agreement on the credit memo procedure exists. Performance units (LE) serve as the basis for calculating the charges. These are defined depending on the Brose plant concerned and reflect the internal hourly rates. The following table lists the charged LE per violation.

The supplier shall reimburse Brose for any costs and/or damages incurred which are necessary to correct the corresponding errors. This shall also include the costs incurred in the course of a justified self-execution (in particular for special trips and sorting expenses), even if this self-execution was carried out by Brose's own employees. In the event of fault-based liability, this shall not apply if the supplier proves that the supplier is not at fault.

For the resulting administrative effort of complaint processing, 1.75 LE per complaint will be charged in addition to the LE for the violations listed below. The following work and services are included in the administrative expenses:

- Complaint to the supplier manager (Purchasing) in the plant
- Troubleshooting
- Creation of a complaint in the IT system, block parts and, if applicable, order return / rework
- Letter of complaint, with pictures, to supplier
- Monitoring, internal check of permanent corrective actions by the supplier, close complaint, create, send and book charge
- Archive complaint

Table 12 - Charged LEs per violation

Charge Amount	Violation
1 LE per material number	• Under- / Oversupply, missing parts • Transport fault (caused by supplier) • Delivery / pick-up outside defined timeslot • Late / incorrect advice of transport requirement
1 LE per process	• Partner at supplier almost not available, intensive work to get information • Non-reliable information, translation efforts • Insufficient flexibility regarding requirements or change requests from Brose • Poor / wrong container account-management
1 LE per delivery (delivery note / invoice)	• Wrong (according to instruction), dirty or damaged packaging, use of environmentally compatible packaging is not guaranteed • Missing or wrong labels / mixed materials (label not according to Brose requirements, wrong / insufficient label content), missing label of dangerous materials • Customer Item-Number is missing on debit-note • Missing / wrong content • Missing / wrong Avis
2 LE per delivery	• Missing / wrong delivery documents (delivery note / invoice) • Missing / incorrect ASN • Insufficient tie down (operational safety, road safety)

Below is an example of the calculation for a charge:
A supplier delivers an article number in a disposable packaging instead of the agreed reusable packaging and despite the contractual agreement does not advice the shipment via ASN to the Brose plant in Coburg.

Calculated as follows:

1. Work of 1.75 LE is charged for the organizational work of troubleshooting, creating a complaint, monitoring, creating a charge, archiving the complaint.
2. Work arises from the use of non-agreed packaging for storage and removal, commissioning and additional work for disposal of the disposable packaging. This is calculated at 1 LE.
3. An omitted EDI ASN means that the Brose planning system does not take into account the material requirement plan and the delivery has to be recorded manually in the system when the goods are received. 2 LE are charged for this.

This gives the total: 1.75 LE (item 1) + 1 LE (item 2) + 2 LE (item 3) = 4.75 LE

6 LOGISTICS SERVICES AND OVERSEAS SHIPMENTS

The respective operators are selected by Brose and fixed prices are negotiated for the services offered. Services purchased by Brose are paid for by Brose.
The regulations of this manual also apply to deliveries by service providers.

6.1 Crossdock

- The suppliers use the crossdock named by Brose.
- The supplier ships clearly plant-specifically labeled goods with all delivery documents (consignment note, delivery note, customs documents where required) and ASN.
- Additionally to the registration via BroTAP for European transports (cp. **European Transport Registration**) the supplier reports the load per recipient on the day before delivery in Crossdock, stating the number of loading units with the respective weight.
- The delivery is to be made within a defined timeslot before the relevant transport. The timeslot for the delivery has to be agreed upon between supplier and operator.
- The delivering trucks must be suitable for ramp unloading via the rear.
- The Crossdock operator checks the delivered goods in accordance with the accompanying documents and looks for obvious damages.
- The Crossdock operator loads the transport units and creates all transport documents for each outgoing load to a Brose plant. The goods are loaded as they are delivered. The Crossdock operator **does not** change the packaging structure.
- Reusable packaging is exchanged by arrangement or 1:1 by the respective Crossdock operator locally, e.g. upon delivery to the location Brose Hallstadt via the consignment warehouse D + S Ebersdorf, the empties are exchanged by D + S for Brose Hallstadt 1:1.

6.2 Consignment warehouse

6.2.1 Delivery conditions

In case of the **Annex to Incoterms – Consignment Warehouse** Brose maintains a consignment warehouse where the allocation of stocks and scheduling to suppliers takes place within a cooperative system. In addition to the respective Incoterm, the following agreements apply:

- The transport of the supplier's goods to the consignment warehouse shall take place at the cost and risk according to the agreed Incoterm(s).
- If Brose is responsible for the transport from the supplier to the consignment warehouse, Brose shall guarantee a maximum transport time until arrival at the consignment warehouse.
- The supplier shall be responsible for the customer's stock within defined fluctuations and minimum and maximum stock levels. If min/max-stock levels are not defined, the delivery must be made at least 24 hours before the needed date according to the requirement preview.
- Brose shall bear the costs and risk for storage and handling in the warehouse, as long as the stocks remain below the defined maximum level. Storage costs and risks, which exceed the defined maximum stock level, shall be borne by the supplier.
- The supplier delivers the goods in the agreed packaging. If the supplier culpably does not deliver in the agreed packaging, he bears the costs and the risk of necessary repackaging.
- The goods are commercially recorded as receivables by Brose upon leaving the consignment warehouse.
- The operator of the consignment warehouse shall provide the supplier with a daily report of the movements.
- Withdrawals are booked via a daily summary delivery note, which is the basis of the credit note to the supplier.
- For deliveries via consignment warehouses, particular tax regulations must be observed.

6.2.2 Process sequence

- The supplier ships clearly plant-specifically labeled goods with all delivery documents (consignment note, delivery note, customs documents where required) and ASN and notifies the load per receiving Brose-plant on the day before delivery at the consignment warehouse, stating the number of loading units with the respective weight.
- The delivery must take place within a defined timeslot. The timeslot for the delivery has to be agreed upon between supplier and operator.
- The delivering trucks must be suitable for rear ramp unloading.
- The warehouse operator inspects the goods for obvious damage and the number of loading units against the papers.
- Reusable packaging is exchanged 1:1 by the respective warehouse operator, e.g. upon delivery to the location Brose Hallstadt via the consignment warehouse D+S Ebersdorf, the empties are exchanged by D+S for Brose Hallstadt 1:1.
- The warehouse operator removes the goods required by the Brose plants per Kanban and creates all transport documents for each outgoing load to the Brose plant.
- The supplier receives a movement report every day from the operator as the basis for the credit notes from Brose.

6.3 Overseas shipments / Consolidation Centre

6.3.1 Delivery conditions

The delivery condition for the overseas delivery process via a Brose Overseas Consolidation Centre (OCC) can be agreed as "**FCA [stowing location/consolidation center Brose]**". In this case, the cost/risk transfer is the designated Brose stowing location.

Depending on the logistics concept, the delivery condition **"FCA supplier"** in combination with the unloading Point Brose Overseas Consolidation Centre (OCC) is realized alternatively. The transfer of costs/risk is the named supplier location. In this case, the transport to the OCC must be organized as described in the Transport Procedure.

General "Overseas delivery" flow chart via Brose storage location:

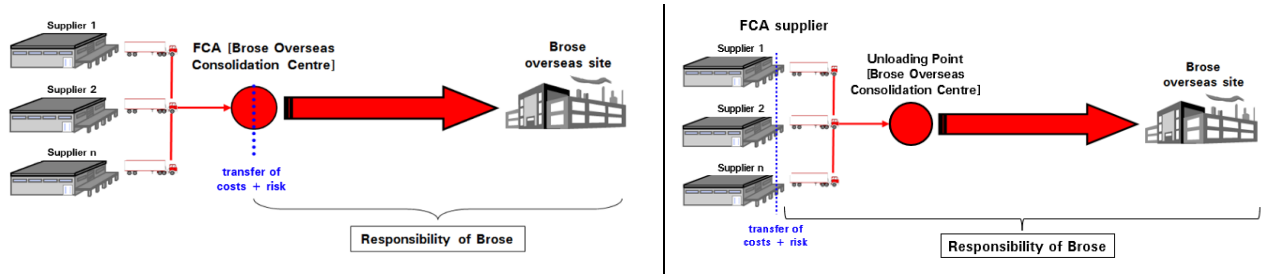


Illustration 17 - Flow charts "overseas shipment"

6.3.2 Process sequence

The following diagram shows an example of the most important steps and requirements in overseas shipping:

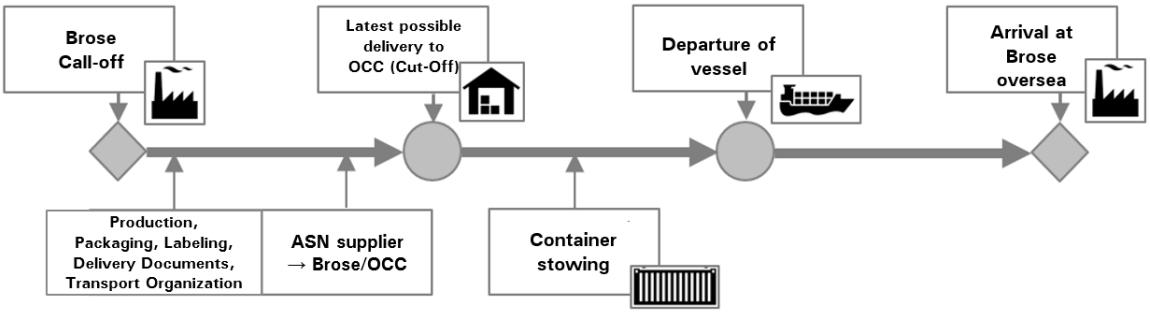


Illustration 18 - Essential steps of overseas shipping

- The dates sent in the Brose call-offs represent arrival dates at the storage location (OCC)
- The supplier has to ensure the seaworthy **Overseas packaging** (stability, protection against humidity, water and salt) as well as the attachment of the **delivery documents and container labeling**
- Documentation:
  - If the documentation from the supplier is not complete, a sea container can be stopped at any time by the authorities in the country or export or recipient. Equally, airfreight shipments ex Brose OCC, which touch US territory, can be stopped and seized by the US authorities if documentation has been omitted.
  - Any additional costs and / or damages resulting from missing / incorrect documents shall be borne by the supplier.
  - To avoid the loss of delivery documents, documents should be sent in digital form by email to autodocs@rauh.biz. Two PDF files (no scanned documents) should be attached to the e-mail. The first PDF contains the invoice(s) and the second PDF contains the MRN including all delivery notes/other documents/packing lists. The following information is also mandatory in the subject line: Supplier name - Brose plant code - Delivery note number(s). The physical shipment then only needs to be accompanied by a shipping document.
- Delivery notification
  - The supplier notifies the overseas deliveries with an ASN to the receiving Brose plant.
  - Overseas shipments, which are not notified via ASN, must be reported per e-mail to the stowing location by the supplier no later than the time of shipping in order to facilitate container load planning.
- The supplier has to ensure on-time delivery to the Brose stowing location. Acknowledgement of correct delivery must be made as described in **Forwarding order (CMR)**. To avoid unnecessary truck downtimes, a time window for delivery at the stowing point shall be booked for shipments ex Europe.
- The respective time schedule (cut-offs, incl. arrival dates at stowing location) has to be coordinated by the supplier with the responsible receiving Brose plant.
- The loading units are loaded according to the FIFO principle and depending on the destination are subject to a defined time limit (cut-offs) for the individual process steps.

7 BROSE PACKAGING SPECIFICATION

7.1 Introduction

Brose's packaging specification serves to develop optimal rational and standardized packaging concepts based on the following specifications. This should ensure a smooth flow of materials between suppliers and Brose, considering all qualitative, ecological and economic aspects. The objectives of the packaging planning are:

- Securing the agreed material flow as well as the shipping and delivery quality
- Protection and conformity of the parts corresponding to the Brose specification
- Compliance with the legal requirements of occupational and environmental safety
- Protecting resources and economic efficiency

With the entry into force of the EU 2025/40 Packaging and Packaging Waste Regulation (PPWR), hereinafter referred to as Eu PPWR, uniform requirements for packaging and packaging waste management apply throughout Europe. The aim of the regulation is to promote a low-carbon circular economy. Among other things, the PPWR includes:

- The use of recyclable materials in accordance with EU criteria
- The avoidance of unnecessary packaging and the optimization of packaging sizes
- Compliance with labeling and information obligations
- The implementation of conformity assessment procedures for packaging, where necessary

The supplier is obliged to comply with the Brose packaging requirements and to observe all relevant national and international regulations. Violations can lead to legal consequences and rejection of deliveries. It is the supplier's responsibility to ensure, both internally and externally, that all delivered parts are correctly and appropriately preserved, protected and packaged so that they arrive safely at their destination at Brose.

7.2 Selecting and specifying packaging

Suitable packaging must be specified for each new product to be supplied. The following steps must be observed:

- The definition and introduction of necessary packaging takes place in consultation with Brose and may only take place after a release by Brose. Basis is the "**Brose Packaging Specification**". Deviations are only permitted after release by the receiving plant or by the responsible logistics planning.
- Within the framework of the initial sampling (new packaging or change to an existing packaging), verification of suitability for the load carriers and storage used must be provided within the PPF/PPAP-documentation. For this purpose, the recent version of the "Packaging Data Sheet" (PDS) is used. It must be verified here that the load carrier or packaging does not affect or change the conformity of the components during transport and the required storage. For this purpose, reference is made to VDA Vol. 2 "Production process and product approval" (VDA 2 PPF). In the event of a single packaging change a shortened PPF/ PPAP (PSW – Part Submission Warrant) sampling with cover sheet and prove of suitability is required.
- The supplier is responsible for the use of packaging according to packaging data sheet and the contract. The loading units should always be created according to the agreed configurations (number and orientation of the containers). If the agreed container is unavailable, it must be delivered in the alternative packaging agreed in each individual case with the logistics planner. The resulting additional costs must be borne by the originator.

The following principles must also be considered:

- The release of packaging shall not exempt the supplier from its responsibility for damage-free delivery of parts.
- Container type, filling quantity, cost and specifications regarding packaging constitute as part of the delivery contract.
- If the supplier does not comply with the agreed packaging and packing density, Brose will reserve the right to charge the resulting handling and decant cost to the supplier respectively to change the B-price retrospectively (due to higher packing density)
- Justified deviations (e.g. alternate packaging with series ramp-ups, extraordinary buffer stocks, and insufficient load carriers from Brose) are to be agreed on in time with the responsible Brose logistics planning resp. the receiving plant. The notation "alternate packaging" is to be printed to the delivery note.
- Generally, standardized reusable packaging must be used, listed in the **Catalogue of standard packaging items**. If the logistics calculation finds that this is not economic (e.g. due to the delivery distance), disposable or non-standard packaging can be used as part of the packaging agreement with Brose.

Process of packaging development

The process for launching packaging units is described below. This generally has to be complied with in the form shown unless Brose approves a different regulation.

- Supplier checks in the **Catalogue of standard packaging items** whether a suitable standard packaging for his delivery concept is available for the product:
  - If it is available, it must be used.
  - The conditions and sources of supply must be aligned with Brose.
  - The supplier recommends the filling quantity for the parts to which he refers in his offer.
- If no suitable packaging is available, the supplier can suggest his own solution after consultation and assessment by Brose, taking the general technical conditions specified in **"Brose Packaging Specification"** into account.
- The final approval shall be based on a packaging test to determine the final packing density and validate the suitability of the packaging by writing in the PDS.
- For the final written packaging approval by Brose, the signed packaging datasheet is handed to Brose by the supplier during the initial sampling as proof of suitability of the load carrier.
- The final packaging approval by Brose takes place as part of the initial sampling. For this purpose, the supplier shall submit a PDS signed by him and agreed with Brose as proof of suitability of the load carrier.
- Changes to the packaging in the series delivery (e.g. packaging concept, packing density) must be notified and re-sampled on the basis of the PDS in coordination with Brose logistics planning.

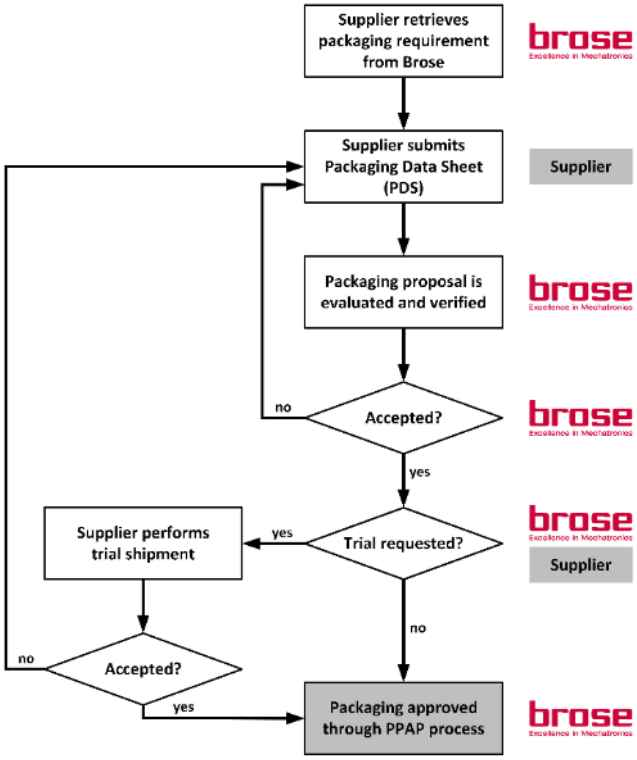


Illustration 19 - Process of packaging development

7.3 General Packaging Requirements

The following requirements must be met, regardless of packing type (disposable or reusable):

- Handling-appropriate structure and ergonomic parts withdrawal.
- Qualitative impairments (deformations, dirt, oils, greases and environmental influences) must be avoided through appropriate precautions. Cardboard packaging (e.g. EXO (expendable oversea) KLTs) can be damaged by moisture. Moist parts (oil, water, environmental influences) must therefore be packaged in a bag.
- The packaging must withstand the standard impact of the specified transport; this must be ensured irrespective of the agreed transport responsibility.
- Containers capacity must be utilized optimally. Rational, stackable loading units must be built.
- Labeling of the packaging materials used (material selection and maximum permitted loads) must take place.
- Transportability of shipping units with floor conveyers and on Brose conveyer and storage equipment.
- Compliance with the prescribed standard dimensions in national and international transportation.
- Resource-saving design by using recyclable materials.
- The agreed packaging units per part number must always be the same corresponding to the content and dimensions.
- According to Brose standard, there is a maximum gross weight for KLTs and GLTs. The maximum gross weight for KLTs is 15 kg. For GLTs, a maximum gross weight of 1,000 kg is allowed. The maximal gross weight is the total weight of the load carrier including its contents. Exceptions must be aligned with the responsible Logistics Planner.
- The overall height of a shipping unit, including the pallet must not exceed 1,000 mm.

7.3.1 Modular design

Loading units combine transport packaging and load carriers to form transport and storage units. If the loading unit consists of small containers (KLT), then these must conform to the prescribed standard dimensions.

Loading unit, comprising:	Cover plate, lid	KLT (small load carrier)	Pallet-system
			

Illustration 20 - Modular structure of loading units

The GLT-systems and bundles of KLT (including the lid) should in best case have the size of the pallet.
The lid overlap must not exceed the max. of 1.5 cm (right and left side together).

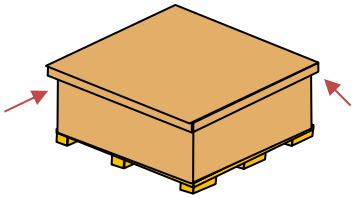


Illustration 21 - Maximum size of GLT/KLT

GLT-concepts:

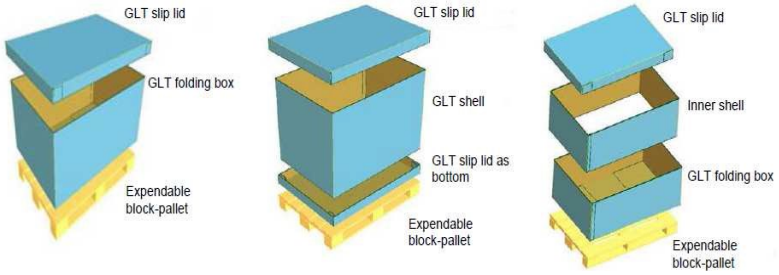
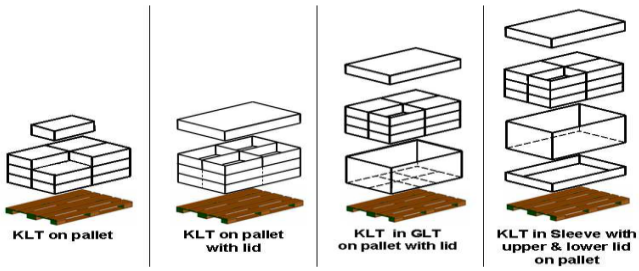


Illustration 22 - GLT packaging concepts

KLT-concepts:



The use of intermediate layers should be examined and evaluated.

Illustration 23 - KLT packaging concepts

7.3.2 Stackability

Incomplete layers, pyramid stacking and the marking of loading units with the note “not stackable” without approval by Brose is not permitted. If it is not possible to fill entire layers because of the call-off quantities, the last layer must be filled up with empty identical containers. These additional containers must be labeled as "empty containers".

Palletized loading units must be suitable for the stress applied during transport. For containers that do not qualify as Brose standard expandable or reusable packaging, it may be required to indicate the weight of the possible superimposed load of the packaging system by printing a handling marking (cp. **Stacking instruction**) on the outer packaging or by attaching an additional label. Only **similar** packaging (e.g. pallet cages/corrugated board/wooden boxes) and LUs with **identical** size shall be stacked; if there are different weights, the heavier LU must be underneath.

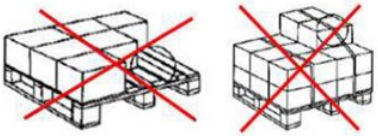
Permitted			
Not permitted			

Illustration 24 - Regulations for loading unit forming

7.3.3 Load carrier securing

To ensure shipping quality and avoid falling packaging units, the load must be secured by strapping with plastic strapping bands. Metal straps and the cutting of strapping bands into cardboard boxes and containers are not permitted. Shrink hoods and stretch films may only be used after consultation with Brose Logistics Planning. The strapping is as follows:

	
1x strapping for empties	Filled containers: 2x strapping

Illustration 25 - Load carrier securing

Additional load securing measures (e.g. additional strapping) must be taken for load weights of over 800kg. The shipping of empty VDA RL KLT 6147 and 6280 is an exception from this, the banding can be omitted.

7.4 Requirements for pallets

The following requirements must be considered:

- All pallets must have a **four-way entry design.**
- **INKA-/Pressed-wood, plywood and cardboard pallets** are not acceptable for any shipment to Brose.
- **Wood-pallets** must have both top and bottom deck-boards and a valid **IPPC mark.**
- **Infestation** of post beetles, termites and other wood-destroying insects are not permitted in any pallet parts.

Pallets must be strong enough to carry the load of approx. 1,000 kg (in bottomless rack storage). For a secure dynamic and static load, appropriate wood material and fastening elements must be used. Fastening elements (helically threaded nails, also called screw nails) for joining the pallet components ensure a secure and stable construction. Boards and blocks must be joined without splintering the wood materials. Dry pallets are stronger; therefore, the moisture-content of pallets should not go beyond 18 %. The PDS (**P**allet **D**esign **S**oftware) tool can be used to analyze the weight the pallet is capable of holding.

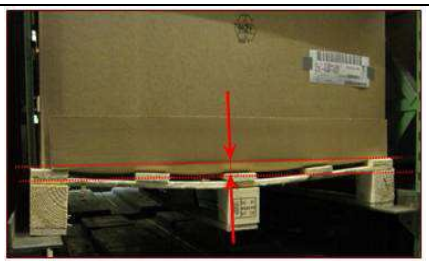
The pallets must have sufficient stability and load capacity for all subsequent logistics processes: • Block storage • Rack storage • Internal transports with e.g. forklifts • External transports on trucks or on ships in overseas containers A significant deflection under load (see picture) is not acceptable for safety and operational reasons.	

Illustration 26 - Bending of pallets

7.4.1 Land freight-pallets

Table 13 - Specifications for pallets for truck transport / land freight

Europe	For further information DIN EN 13698 can be checked. In addition, the construction items are described in: http://www.epal-pallets.org
North America	For details, concepts and technical specification the website of "National Wooden Pallet & Container Association": http://palletcentral.com/ can be referred to. In general, the concept and design of stringer pallets are preferred. Block pallets can be used, as long as they can proof a dynamic loading capacity of: • 48 x 45 Inch (1219 x 1143 mm): 1,000 kg • 32 x 30 Inch (813 x 762 mm): 600 kg
Asia	The pallet standards for inner-Asian transport are similar to European standards. Only the quality of lumber and fastening elements is not regulated for inner-Asian transport. The quality-verification has to be documented and provided to Brose Central Logistics. In addition, some Brose plants use the services of pool-providers for wooden pallets. For further questions, contact the responsible logistics manager or planner.

7.4.2 Overseas-pallets

In worldwide overseas traffic, the **container dimensions** are based on the Anglo-American measuring system. Loading units with **Euro pallet** dimensions are unsuitable for transportation in containers with an inside width of 2,350mm.

- In order to being able to place two loading units next to each other in a container, the **standard length** of the pallets must be reduced to **1,140 mm.**
- In order to make optimum use of the length available in the container, the following **pallet widths** must be considered: **980 mm** (ISO industrial pallet), **820 mm** (for business division Drives) or **790 mm** (Euro pallet).

Suppliers of export overseas-pallets have to consider the following lumber regulations.

Table 14 - Lumber regulations

Area	Standard	Link
Europe	DIN 4074-1& DIN 4074-5	
North America		http://palletcentral.com
Asia	DIN 4074-1 & DIN 4074-5	http://palletcentral.com

Generally, all boards and blocks made of natural wood must be manufactured out of one piece. The overseas pallets shown below can have manufacturing tolerances of length +/- 5 mm and width of +/- 2 mm.

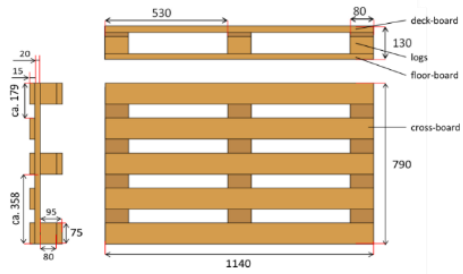
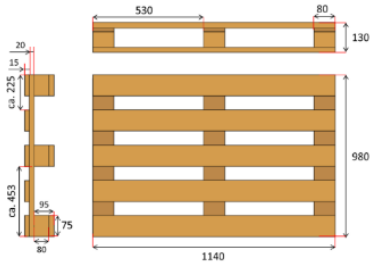
Overseas pallet 1,140 x 790 mm	Overseas pallet 1,140 x 980 mm
	

Illustration 27 - Drawing of overseas pallets

7.4.3 Wooden packaging - IPPC-requirements and HPE guideline

For wooden packaging it is referred to the packaging guidelines of HPE (German Federal Association for wooden packaging material, pallets and export packaging http://www.hpe-standard.com/). Additionally, treatment and marking of wood-pallets must conform to the **International Standards for Phytosanitary Measures** Publication No. 15 (ISPM 15) regulations of wood packaging material in international trade. ISPM 15 has been adopted worldwide as import requirements for wood pallets.

Phytosanitation standard

Pallets or pallet parts must be sterilized prior to export to countries participating in the International Plant Protection Convention (IPPC). The regulations stipulate that the interior of hard woods and soft woods used in pallets and packaging material must be heated to 56°C or 133°F for a minimum of 30 minutes. Each pallet or wooden packaging must be marked with the IPPC mark to verify that it has been heat-treated. The supplier must guarantee the validity of the IPPC marking trough correct storage etc. and is responsible for further consequential damages if not.

Special requirement for India:

India requires wood packaging materials to be treated and marked per ISPM 15. In addition, the shipment must be accompanied by a phytosanitary certificate published by each producer.

Standard format of proper IPPC mark

The internationally applicable IPPC label requires the following information:

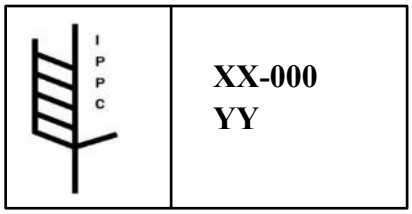


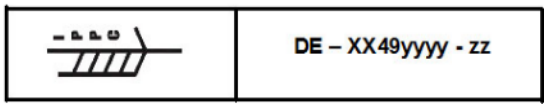
Illustration 28 - International IPPC markings

- **Symbol with the letters IPPC**
- **XX:** ISO country code
- **000:** Company registration number
- **YY:** IPPC abbreviation for treatment code
  # HT for **"Heat Treatment"**
  # MB for **"Methyl Bromide"**
  # DH for **"dielectric heating"**

The German applicable IPPC code requires the following information:

Example 1:

Example 2:



- **Symbol with the letters IPPC**
- **DE:** ISO country code for Germany
- **XX:** Code for the region/federal state
- **49yyyy:** Company registration number of wood manufacturer
- **zz**: IPPC abbreviation for treatment code
  # HT for **"Heat Treatment"**
  # MB for **"Methyl Bromide"**
  # DH for **"dielectric heating"**

Illustration 29 - German IPPC markings

- Given examples illustrate different layouts of the required code-components; however, no variations in the symbol are accepted. The mark must be contained withing a border line with a vertical line separating the symbol from the code.
- The mark must be framed rectangular or squared (alternatively with rounded corners).
- If a mark is applied by stenciling, small gaps in the boarder may be possible. It must not be hand drawn.
- The use of colors red and orange is not allowed.
- The mark must be visible and clearly legible (see following examples of unacceptable marks).

Samples of inappropriate, unacceptable IPPC marks:

Symbol with letters IPPC or code not fully legible

Incomplete IPPC mark

Missing frames

Mark should not be drawn by hand

Stamps in the form of a paper sticker

Illustration 30 - Examples of incorrect IPPC markings

7.5 Reusable packaging

7.5.1 Use of supplier-owned reusable packaging

If the **Packaging Responsibility based on Various Examples** lies 100% with the supplier the number of circulation days must be agreed with the logistics planner. The supplier shall procure the reusable packaging based on the agreed circulation days and the ordered volumes for the total container circulation. In case of volume increases, the supplier is responsible for procuring additional packaging independently and in time. Brose offers its suppliers the opportunity to buy standard containers from several manufacturers for the Brose negotiated prices. In return, Brose will accept this price for the **Calculation of logistics costs** as a limit for the container costs.

7.5.2 Use of (poolable) Brose reusable packaging

The supply of parts to Brose plants is based on the use of poolable containers. Poolable means that all containers, regardless of the respective supplier, are separated across the stock level to avoid costly separation by owner. In general, Brose reusable packaging is only intended for supplying serial parts to Brose plants. As a rule, reusable packaging may not be used for internal material flows of the supplier, intermediate storage or the supply of upstream suppliers. Any exceptions must be agreed in writing with the Brose logistics planner. If the supplier needs more containers due to raised delivery call-offs, he must contact the container manager of the destination plant in time.

7.5.3 Container stock management

All movements of returnable containers between supplier and the Brose plants are recorded using double entry bookkeeping with load carrier accounts and are monitored by Brose load carrier administration. Each supplier is required to reconcile the load carrier movements with the load carrier administration at the receiving plant every month. Brose container management at the plant shall provide the load carrier account statement with the recorded movements of either empties and full shipments or shall require the supplier to send these monthly.

Equally, the form of notification by the container management of the respective plant is also specified. Suppliers, which supply a plant via Crossdock from company D+S, must always compare the container movements with the empties administration at the Brose Coburg plant. Required empties must be requested from the Brose contact person in time. Missing or untimely orders and the resulting costs for special freights shall be borne by the supplier.

The supplier shall carefully check the account statements for any errors or incorrect bookings. The supplier must report identified booking differences. The reporting deadline for objections is two weeks from receipt of the account statements. The supplier accepts the balances reported upon expiration of the objection deadline.

Upon request from the respective empties administration, an empties inventory must be performed. The result of this inventory is then agreed between the parties involved, a subsequent change to the agreed result is not permitted.

7.5.4 Damage to containers, dirt and scrap

Table 15 - Regulations for condition and handling of containers

Damage to containers	The user must ensure that only undamaged containers are used for shipping purposes and that the containers are not damaged neither during filling nor during handling of the container. Without exception, damaged load carriers shall be blocked by the respective user for further circulation and repairs shall be arranged. The costs incurred for repair shall be charged to the causer.
Dirt on containers	Clean means “broom-clean” i.e. loose packaging residue is removed, without old labels and residual parts. For defined circulations in which containers with additional cleanliness requirements (e.g. free of dust, grease and oil) are used, or parts for which the cleanliness requirements are specified in the drawing, the requirements and the corresponding measures must be agreed separately with the receiving/providing location. If the cleanliness of the load carriers does not correspond to the quality requirements of the material to be transported, the supplier shall separate the containers. Further measures (collection, cleaning, costs) shall be agreed in advance with the relevant Brose plant. If the cleanliness of the containers is worse than agreed, this must be claimed to the providing source.
Scrapping containers	Brose owned containers might only be scrapped with the written permission of the Brose container management. In the case of non-compliance, the cost for replacement shall be charged to the supplier.

7.5.6 Exchange criteria for EURO pallets and pallet cages

The delivery condition of EURO pallets and pallet cages is based on the exchange guidelines from the European Pallet Association (EPAL) (see www.epal-pallets.org). Containers, which do not meet this standard, must be claimed. Otherwise, the respective partner, in whose responsibility the containers are, must clean the containers at its own cost.

The following delivery condition for pallet cages is not permitted:

- Fake pallet cages, which do not correspond to the original EPAL features.
- Front-wall flaps are immobile or deformed such that they can no longer be closed or opened.
- Adjustable frames, base frames or feet must be curved such that the box no longer stands on the four feet or can no longer be stacked without danger.
- A board in the base is missing or broken.
- Ripped round steel boards and cable ends protrude inwards or outwards.
- Pallet cages are dirty or corroded such that there is increased risk of contamination of the goods.

7.5.7 Canadian Goods and Service Taxes (GST) requirements for reusable packaging circulation

All Canadian suppliers receiving empty returnable containers from U.S. facilities are required to participate in the flow through GST recovery method. The following process applies:

- Brose shall pay the fees incurred by sending empties to Canada and shall send a debit note, along with copies of the B3 form and the pro-forma or commercial invoice, to the Canadian supplier.
- The Canadian supplier shall include the debit note in its GST claim with CCRA using the flow through method.

7.5.8 KLT 3147 configuration

As a result of an offset KLT 3147 configuration on the pallet (cp. the picture below: 16 KLT per layer, in three rows per layer, middle row arranged lengthways) the risk of the KLT slipping is reduced and therefore the stability and transport safety increased. Brose plants, which use a fully automated storage technology, can only process the configuration shown.

Illustration 31 - KLT 3147 configuration

7.5.9 Stacking Position of cover plates

Cover plates must be stacked with their „opening" on the downside onto the euro-pallets. This prevents the collection of water at the inner side of the cover plate and thus wet cover plates being placed onto the container. This measure helps to prevent the occurrence of rusty parts in the upper layer of the container and especially the KLT. A second euro-pallet (see picture) must be used to prevent damage (i.e. by fork lifter) on the cover plate at the bottom. The complete container must be tied up with the last euro-pallet at the bottom.

Illustration 32 - Handling of stacking cover plates

7.6 (Disposable) Cardboard packaging

In principle, the listed Brose standard disposable EXO containers in the **Catalogue of standard packaging items** shall be used. These were largely based on the VDA-recommendation 4530 "Expendables Small-Load-Carriers (EW KLT)-Systems". If this is not possible, the required disposable packaging is generally procured and made available by the supplier and is at his expense. This disposable packaging must be stackable. Prior agreement and written release from Brose are required. The supplier shall be liable for any damage to and by the use of this supplier owned special packaging.

During transport, packaging items are imposed by the loads, which are stacked upon. It must be proven that stability and compressive resistance are sufficient to ensure transport requirements. Before cardboard packaging items (GLT or KLT) are installed in the logistics process, an official verification of stability, **the BCT** must be provided to Brose. The **Box Compression Test (**BCT) indicates the stability of the packaging-item and the BCT- value quantifies the force that the cardboard box can absorb and pass on. If a BCT cannot be provided, the supplier has to proof the stability in a different way. In this case, an approval from Brose is needed.

Cardboard packaging in the BCT:

The cardboard-item should be placed on those pallets, which will be used for transportation. It must be ensured that the same pallet will be placed on the GLT cardboard-box or the bunch of layers of the KLT-versions. The test conditions are based on real transport conditions and will apply the same situations that appear in reality during transport. Based on the test results the packaging can be rated regarding the suitability for transport.

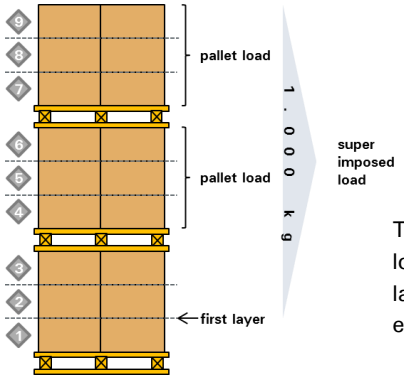
Illustration 33 - Cardboard packaging in BCT

Safety factors:

The structural strength of cardboard is influenced by humidity, temperature and material aging as well as handling, stacking and storage conditions. Safety factors are used as a multiplier in the calculation to make up for the effects of the distribution environment. The following safety-factors are binding.

Table 16 - Overview of safety factors

Safety factor	Transport	Note
2	static	Regulations of BGR 234
3	dynamic	Impacts during transport
4	overseas	Additional transport and humidity impacts



The super imposed load acts on the first layer and must not exceed 1,000 kg.

Illustration 34 - Maximum super imposed load on first layer

7.7 Overseas packaging

Loading units for shipping overseas generally have to be designed such that they are suitable for transport in overseas containers. It must safeguard quality-assured delivery, whereby sea transport (container on deck) and a pre-run and post-run of two weeks each (storage outside and transport by truck) must be assumed. The **Catalogue of standard packaging items** contains a list and detailed description of the Brose Standard overseas container which can be obtained via Brose.
In general, packaging components must be verified by the supplier in respect of the loads in overseas transport. Before being included in the logistics process, there must be consultation with and written consent from Brose for the packaging units.
In the case of non-compliance, Brose reserves the right to charge the respective supplier for additional costs incurred and to include packaging defects in the supplier evaluation.

In addition to the aspects described above, the following requirements must be considered:

- Use of **not** four-way accessible loading units, the use of INKA-/presswood, plywood, plastic, cardboard or EURO pallets is not permitted.
- For wooden packaging, the labeling according to IPPC Standard, ISPM 15 must be affixed. The packaging guidelines of HPE must be observed (cp. **Wooden packaging - IPPC-requirements and HPE guideline**).
- Resistible packaging against transport and climate conditions for protection of goods against wet, damp, salt water and corrosion
- The rust protection in overseas packaging is to be defined and specified in such way that the packaged parts or goods are protected for a total of 6 months. The desiccant, VCI or intercept method can be used for this purpose. If the rust protection cannot be ensured by means of packaging, the parts must be wetted with additional preservation. The packaging rust protection and if required the additional preservation must be specified and coordinated with Brose.

7.8 Airfreight shipment packaging

The loading units for airfreight shipments must be designed in such a way that they are suitable for transport in air cargo containers. The basis for this are the current version of the German Aviation Security Act (LuftSiG) and the regulations for aviation security of the European Union, as well as the notes on the regulations of air cargo of the IATA. In addition, there is a list and detailed description of the standards for air cargo containers. In case of doubt, the receiving Brose plant must be consulted. Deviations from the agreed packaging must be marked and approved in writing by the receiving Brose plant.

7.9 Collective loading units / Mixed pallets

Due to customs- and system-technical reasons material numbers have to be delivered unmixed. A mixing of batches of material subject to documentation or with batch requirements (D-parts, material with traceability) in a loading unit is not permitted, either. Each loading unit may contain only one material number and one material batch.
If complete loading units cannot be formed due to the small call-off quantities, load carriers with different ID or batch numbers can be combined to form a collective loading unit only after written approval by the Brose receiving plant. These must be packed such that the same ID numbers are grouped together (ideally in layers) on the pallet. A mixed pallet must be labelled clearly as such on the outside (short and long side of the container) (e.g. A4 page or Master label printed with "Mixed pallet"). Every packaging unit must be uniquely identifiable by an attached single label. Additionally, for every material number on the mixed pallet an extra master label needs to be created and attached to the pallet. The requirements from **Container labeling** need to be complied with. For the notification of mixed pallets, the EDI Packaging Structure Examples on https://www.brose.com/edi/ must be observed.

7.10 Special load carriers

The use of special load carriers must be agreed with the respective Brose logistics planner. In principle, the supplier's share of the costs for procurement, maintenance and repair shall be regulated on a project-basis. The planning and design costs shall be borne essentially by the supplier. The supplier and Brose shall specify the number of special load carriers required for circulation together. The empties account shall be managed by the supplier and shall be supported by the Brose container management.

7.11 Hazardous goods packaging

In principle, the packaging of hazardous goods and Intermediate Bulk Containers (IBC) must be agreed with Brose in writing due to their complexity. This packaging must also comply with the currently applicable national and international provisions. All relevant test reports and certificates must be provided to Brose.

7.12 ESD packaging, electronics production

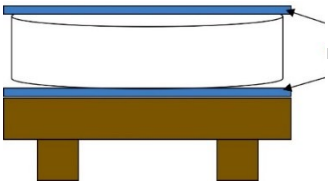
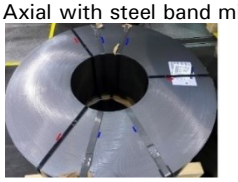
For electronic components or parts, which are installed in ESD-protected (Electronic Discharge-protected) areas, ESD packaging must be used. The requirement is fulfilled either by Brose and/or by the supplier. ESD packaging must be designed such that they comply with the respective applicable VDA recommendation 4504 or the Brose standard: BN 588863. The Brose ESD standard containers are listed in **Catalogue of standard packaging items**.

7.13 Packaging of coils and steel bands

The packaging, preservation and shipping of coils and steel bands must take place generally in accordance with the VDI guidelines: 2373, 2698, 2699 and the Brose Norms 569142-XXX und 590614-XXX. Unless there are specific details confirmed in the order the material is to be dispatched on a wooden pallet, transport boards or on squared timber. Special transport racks are only used for Brose Taicang:

Table 17 - Dimensions of coils and steel bands

<table>
<tr><td>Internal Diameter</td><td>
<table>
<tr><td>Coburg</td><td>Min. 480 mm</td><td>Max. 520 mm</td></tr>
<tr><td>London</td><td colspan="2">510 mm</td></tr>
<tr><td>Ostrava, Taicang, Queretaro Aeropuerto</td><td colspan="2">500 mm</td></tr>
</table>
</td></tr>
<tr><td>External Diameter</td><td>
<table>
<tr><td></td><td>Max.</td></tr>
<tr><td>Coburg, London</td><td>1.600^{-100} mm</td></tr>
<tr><td>Ostrava, Taicang, Queretaro Aeropuerto</td><td>1.500^{-100} mm</td></tr>
</table>
</td></tr>
<tr><td>Maximum weight per packaging unit</td><td>
<table>
<tr><td>Steel</td><td>Aluminum</td></tr>
<tr><td>6.000 kg</td><td>4.500 kg</td></tr>
</table>
</td></tr>
<tr><td>Maximum weight per coil</td><td>
<table>
<tr><td>Steel</td><td>Aluminum</td></tr>
<tr><td>6.000 kg</td><td>4.500 kg</td></tr>
</table>
</td></tr>
<tr><td>Dimensions transport boards/pallets</td><td>max. 1.600 x 1.600 mm</td></tr>
<tr><td>Squared timber</td><td>
• Minimum four squared timber, two lengthwise on the bottom and two crosswise above
• In case of stacking of more than one coil in one packaging unit there must be minimum five square timber. The illustration below shows how the square timber must be assembled in order to avoid any deflection of the lowest coil.
 
• Classification II
• Cross-section 100 x 100 mm,
• Minimum length 1.200 mm – maximum length 1.600 mm
</td></tr>
</table>

	• It is necessary to place a moisture-proof material between the square timber or wooden pallet/transport board and coil or steel bands. This material needs to be robust enough not to be damaged during the transport so that no residue will stick to the coil material. • On top of the coil there has to be also the above-mentioned moisture-proof material.  moisture-proof material
Height of packaging unit	max. 750 $^{+100}$ mm
Under clearance (DIN 15145)	min. 100 mm
Entry width (DIN 15145)	min. 600 mm
strapping	Steel coils: • Axial with steel band minimum 3 times  • Radial with steel band 2-3 times, according to the required fixation during transport. This needs to be decided by the supplier.   Aluminum Coils: • Axial with plastic band minimum 3 times, plastic band axial must not touch the aluminum • Radial with plastic band 1 time 

Other loading devices are only to be used after consultation with the responsible Brose logistics planning. On the surface of the material are no adhesive tapes, labels or stickers allowed. Each unit must show the following information:

- Dimensions, weight, and Brose material number.
- Quality identification in accordance with DVV or the respective DIN.
- Galvanizing number.
- Order number and name or symbol of the supplying plant.
- Sample deliveries (test volumes) must be clearly identified as such. The orderers name must be stated.
- Materials that require documentation have to be identified with a clearly visible „D“.

7.14 Packaging-Marking

All packaging-items must be properly identified. This identification must be performed with clear symbols that are comprehensible for all nations. Specifically, the following shall receive attention:

- Consideration of governmental and recycling requirements
- Provide an overview of the required handling symbols
- Consideration of stackability

All markings and symbols must be applied in a way that they can be clearly and easily identified from a distance.

7.14.1 Country of Origin

The necessity of labelling goods with their country of origin results from the corresponding regulations of the respective importing country. Due to customs regulations, products must be properly labelled with the corresponding country of origin, e.g.: "Country of origin CZ", "Made in Germany". Additional labels can be used for this purpose or the information can be printed on the outer packaging.

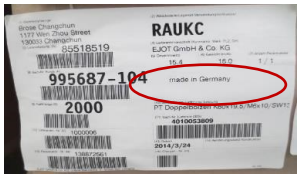
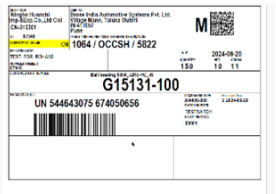
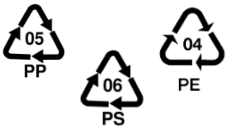
Solution 1): Packaging	Solution 2): Printed on label (cp. Container labeling)
	 

Illustration 35 - Solutions marking country of origin

7.14.2 Recycling symbols

Every cardboard and plastic packaging item brought on the market must be marked with the appropriate recycling symbol. The supplier is responsible for the correct labelling of all relevant recycling symbols in accordance with the current legal requirements. The recycling symbols listed in the following overview serve only as examples.

Table 18 - Overview of recycling symbols

Recycling symbols	Description
	**Universal recycling symbol**
	**“Resy” cardboard recycling symbol** Recycling concept for waste disposal in Germany. Must be placed on cardboard packaging items. http://www.resy.de/
	**Plastic Identification Code** The corresponding plastic identification code (depending on the various kinds of plastic) must be applied to plastic packaging items and can be found in the links below. The picture left is an example. Reference: http://plastics.americanchemistry.com/
	**Cardboard Identification Code** The corresponding cardboard identification code must be applied to cardboard packaging entering any EU country (cp. EU Regulation 94/62/EC).

7.14.3 Marking of handling characteristics

The correct and complete marking of packaging must comply with DIN 55 402 T2 and ISO R 780 (Marking of distribution packages). This helps prevent:

- Incorrect handling, accidents, losses and damage
- Delays or rejections during customs clearance
- Liability waiver for the party, which transported, transferred or stored the goods, and as a result of whose handling damage occurred

The marking must be able to tell

- whether it is at risk of breaking.
- where the top and bottom are and where the centre of gravity is located.
- whether the package is sensitive to heat or moisture.
- where loading tackle may be slung.

Table 19 - Overview of handling markings

ISO symbols	Description
	**Fragile, Handle with care** (optional use) ISO 7000, No. 0621
	**This way up** (Mandatory for overseas packaging and GLT) ISO 7000, No. 0623
	**Keep dry** (Mandatory for paper packaging) ISO 7000, No. 0626
	**Electrostatic sensitive device** (Mandatory for ESD-sensitive parts) Contact should be avoided at low levels of relative humidity, especially if insulating footwear is being worn or the ground /floor is nonconductive.

7.14.4 Stacking instruction

For a safe and secure transport of products, packaging items must be marked with a properly placed stacking instruction. Although different stacking instructions may be used, Brose recommends the stacking symbol which should preferably be printed on the outer packaging item. The stacking instruction must be placed at least on two separate sides of the packaging item.

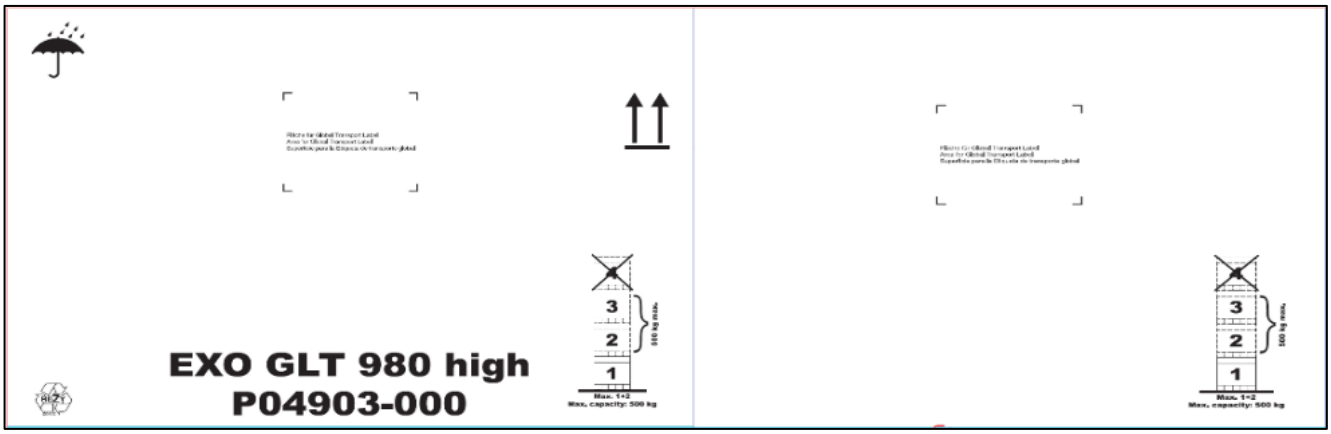
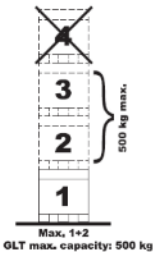
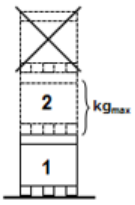
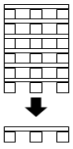


Illustration 36 - Placing of markings on GLT

Table 20 - Overview stacking instruction symbols

Symbol	Description
	**Stacking instruction** According to this picture, a total of 3 stacking layers of GLT is permitted. Each number illustrates one layer. The stacking load of both layers 2 and 3 must not exceed 500kg in total. The max. load capacity of one GLT amounts 500kg. Due to the requirements, a fourth stacking layer is not permitted. In general, the information “max. 1 + 2” indicates that 2 layers are permitted on top of the first layer.  The image of these stacking instructions indicates that 1 more layer is permitted on top of the first one. Max. 1 + 1
	**Stacking instruction collapsed** **“n”** gives information about the maximum number of permitted collapsed containers that may be stacked as one unit. Optional: **Tara** indicates the weight of the packaging-item.

7.15 Materials for packaging items

Pollution-free packaging materials

The material from which packaging, outer packaging, packaging aids or labels are made must not contain any materials / substances for which there are restrictions on use or manufacture or prohibitions.

Also, packaging must not be treated with hazardous materials / substances that leak or are emitted from it. Relevant for the assessment of the hazard of a material / substance or for the determination of the restrictions for placing on the market or use is the national law at all places of the intended supply chain and in each case:

- Regulation (EU) 1907/2006 "Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)" with the associated candidate list (SVHC - Substance of Very High Concern) of the ECHA. If substances/substances are on the list, this is equivalent to a ban on use. For further questions on the part of the REACH requirements the supplier can contact the following e-mail address: IMDS@Brose.com.
- Directive (EU) 2000 / 53 "ELV - End of Life Vehicle Directive" with valid Annex II and the GADSL (Global Automotive Declarable Substance List). This list applies in its current version (http://www.gadsl.org). If declarable substances according to the GADSL are used in packaging materials, information must be provided to IMDS@Brose.com.
- Regulation (EU) 528 / 2012 "Biocidal Products Regulation".
- Regulation (EU) 2019 / 2021 "POP - Persistent Organic Pollutants".

All packaging materials must meet the aspects of logistics, quality, environmental compatibility and economic efficiency. Packaging that does not comply with the conditions may only be used with agreement and written consent from Brose.

The following list provides an overview about the allowed packaging materials. The EU PPWR must be observed.

Table 21 - Overview of packaging materials

Material	Released	Forbidden
Composite materials		Composite materials must always be avoided. A direct permission from Brose must be given for the use.
Plastics, disposable	PE, PP, PS, PET (labeling due to DIN 6120-1)	PUR, PVC, PA, POM = Other EPS and PC only after release
Plastics, reusable	PE, PP, PS, ABS (labeling due to DIN 6120-1)	PUR, PVC
Shrink- & stretch-foils	Accepted after agreement with Brose, material must consist out of PE (transparent)	Adhesive tapes and labels made from other material, O = Other, PP, coloured foil or prints with the exception of legal requirements and ESD foils
Film-bags and sacks	PE (transparent), ESD (pink) (labeling due to DIN 6120-1)	Adhesive tapes and labels made from other material, O = Other, PP, coloured foil or prints with the exception of legal requirements and ESD foils
Tightening straps	PET (green), PP (black)	Polyamide & polyester plastics straps, steel straps, metal clips to fasten the tightening straps
Paper and cardboard	Labeled with recycling symbol: Germany: RESY-sign, EU: cardboard identification code	Coated with wax, paraffin, bitumen or oil Impregnated paper and cardboard, wire-reinforced cardboard
Wood	IPPC-Standard ISPM 15, HPE Guideline	Impregnated, varnished, glued or coated wood
Styrofoam, EPS (foamed plastics)	Only for the use of individual customized packaging items	Styrofoam chips, EPS, PU/PUR
Filling packaging material	Corrugated cardboard, paper	Use of packaging chips of any kind
Trays / Blisters	PET-transparent, ABS/PS black, PAP	PP, PE-HD, PVC
Prints		Inks containing mineral oil for all packaging, documents

7.16 Catalogue of standard packaging items

7.16.1 Standard GLT

Steel GLT, reusable

Table 22 - Steel GLT, reusable

Container	**EURO pallet cage, DIN 15155**	**China-Steelbox, high, non-collapsible**	**China-Steelbox, low, non-collapsible**
Material no. / VS-Code	304409-000 / 09	304849-000 / -	P00347-000 / -
Picture			
Usage in	Europe	Asia, China	Asia, China
Outside dimensions L/W/H [mm]	1,240 x 835 x 970	1,200 x 1,000 x 1,000	1,200 x 1,000 x 780
Inside dimensions L/W/H [mm]	1,210 x 810 x 789	1,150 x 950 x 820	1,150 x 950 x 600
Return factor	1:1	1:1	1:1
Tare weight [kg]	85	105	108
Max. gross weight [kg]	1,000 (for all containers)		
Max. stacking in stock / transit	1+4 / 1+2	1+3 / 1+1	1+4 / 1+2
Superimposed load [kg] in stock / transit	4,000		
Remark	Should be replaced by foldable systems, if possible		

Wooden GLT, expendable

Table 23 - Wooden GLT, expendable

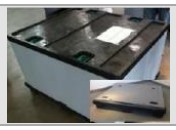
Container	**Wooden overseas-box, high**	**Wooden overseas-box, low**
Material no.	304459-000	304458-000
Picture		
Material	Lumber and presswood	
Outside dimensions L/W/H [mm]	1,120 x 966 x 1,030	1,120 x 946 x 600
Inside dimensions L/W/H [mm]	1,040 x 860 x 830	1,040 x 860 x 400
Tare weight [kg]	66.00	46.00
Superimposed load [kg] in stock / transit	1,100	
Stacking in stock/ transit	1+3 / 1+1	1+3 / 1+2

Plastic GLT, reusable

Table 24 - Plastic GLT, reusable

Container	**KTP-Quad**	**KTP-Super-Quad**	**KTP-System 2000**	**KTP-System 2000**
Material nr. / VS-Code	P00001-000 / MD	P00002-000 / MC	304718-000 / MC	P00330-000
Picture				
Usage in	Europe (for all containers)			
Outside dimensions L/W/H [mm] **Height folded** [mm]	1,230 x 1,020 x 990 235	1,230 x 830 x 980 220	1,200 x 1,000 x 990 205	1,230 x 830 x 750 220
Inside dimensions L/W/H [mm]	1,175 x 965 x 795	1,195 x 795 x 785	1,140 x 940 x 805	1,170 x 770 x 560
Return factor	1:4.19	1:4.45	1:4.82	1:3.45
Tare weight [kg]	49.00	47.00	40.00	34.00
Max. gross weight [kg]	500	650	250	250
Max. stacking in stock / transit	1+4 / 1+2	1+4 / 1+2	1+5 / 1+2	1+4 / 1+3
Superimposed load [kg] in stock / transit	1,250 both	1,650 both	1,250 both	1,200 both
Remark	Should be used as substitues for non-foldable systems, if possible			

Table 25 - Plastic GLT, reusable

Container	**China-F GLT, high**	**China-F LT, low**	**KD 4845-34 Bulk Bin**	**KD 3230-25 Bulk Bin**
Material nr. / VS-Code	P00399-000 / -	P00398-000 / -	304529-000 / FM	304528-000 / SC
Picture				
Usage in	Asia, China		North America	
Material	PP Plastics		PE Plastics	
Outside dimension L/W/H [mm] L/W/H [in] **Height folded** [mm] / [in]	1,200 x 1,000 x 1,000 215 / -	1,200 x 1,000 x 780 215 / -	1,219 x 1,143 x 864 48 x 45 x 34 333 / 13,1	813 x 762 x 635 32 x 30 x 25 333 / 13,1
Inside dimensions L/W/H [mm] L/W/H [in]	1,143 x 943 x 825 -	1,143 x 943 x 605 -	1,123 x 1,054 x 706 44,2 x 41,5 x 27,8	749 x 698 x 490 29,5 x 27,5 x 19,3
Return ratio	1:5	1:4	1:2.6	1:2.3
Tare weight [kg]	36.80	33.00	59.00	31.00
Max. gross weight [kg]	500 (for all containers)			
Stacking in stock / transit	1+2 / 1+1	1+3 / 1+2	1+5 / 1+2	
Superimposed load [kg] In stock / transit	1,500 / 1,000		794 / 794	907 / 907
Remark	General usage for projects with long distance delivery		4845 AIAG-standard 2 label holders, 2 place cards	
	One side open	No side open	Two access doors (1-48/1-45)	One access door (1-32)

Cardboard GLT & Frames

Table 26 - Cardboard GLT & Frames, expendable

Container	**EXO 3.0 GLT 980, high, with base**	**EXO 3.0 GLT 980, low, with base**	**EXO 3.0 VH GLT 980, low, with base**	**EXO 3.0 Frame 980, high, without base**	**EXO 3.0 Frame 980, low, without base**
Material no.	P04903-000	P04902-000	304339-000	P04722-000	P08201-000
Picture					
Usage in	Europe for overseas		Europe for overseas	Global for overseas and domestic	Global for overseas and domestic
Material	Cardboard, 3.92 AAC		Cardboard, 3.92 AAC	Cardboard, 3.92 AAC	Cardboard, 3.92 AAC
Outside dimension L/W/H [mm]	1,128 x 958 x 855	1,128 x 958 x 579	1,128 x 958 x 590	1,128 x 958 x 855	1,128 x 958 x 282
Inside dimension L/W/H [mm]	1,098 x 928 x 855	1,098 x 928 x 569	1,098 x 928 x 580	1,098 x 928 x 855	1,098 x 928 x 282 43.2 x 36.5 x 11.1
Tare weight [kg]	5.492	3.881	3.881	4.000	1.589
Released for bulk	**no**		**up to 500 kg** (after ok shipping trial)	**no**	
Max. gross weight [kg]]	**up to 500 kg** (larger load only after release by Brose logistics planning) **only as a system with EXO 3.0 KLT, interlayers and lid**		**up to 800 kg only as a system with EXO 3.0 KLT, interlayers and lid**	**up to 500kg only as a system with EXO 3.0 KLT, interlayers and lid**	
Stacking in stock/transit	1 + 2		1 + 2	1 + 2	1 + 3
Superimposed load [kg]	500				800
Remark	Chap. 3.4.2 applies. If it is not possible to fill complete GLT due to the call-off quantities, the EXO 3.0 frames 980 (P08201-000) or 790 (P08200-000) must be used. Cp. EXO systems				

Container	EXO 3.0 GLT 790, high, with base	EXO 3.0 GLT 790, low, with base	EXO 3.0 Frame 790, without base	MK 08, high
Material nr.	P04901-000	P04900-000	P08200-000	P04006-000
Picture				
Usage in	Europe for overseas	Europe for overseas	Global for overseas and domestic	Europe domestic
Material	Cardboard, 3.92 AAC	Cardboard, 3.92 AAC		Cardboard, 2.92 AC
Outside dimension L/W/H [mm] L/W/H [in]	1,128 x 771 x 865	1,128 x 771 x 579	1,128 x 771 x 282	1,200 x 800 x 833
Inside dimension L/W/H [mm]	1,098 x 746 x 855	1,098 x 746 x 569	1,098 x 746 x 282 43.2 x 29.4 x 11.1	1,180 x 780 x 828
Tare weight [kg]	4.971	3.495	1.45	9.00
Released for bulk	**no**	**up to 500 kg** (after ok shipping trial)	**no**	**no**
Max. gross weight [kg]	**up to 500 kg** (larger load only after release by Brose logistics planning) **only as a system with EXO 3.0 KLT, interlayers and lid**	**up to 800 kg only as a system with EXO 3.0 KLT, interlayers and lid**	**up to 500 kg only as a system with EXO 3.0 KLT, interlayers and lid**	450
Stacking in transit	1 + 2	1 + 2	1 + 3	1 + 2 / 1 + 1
Superimposed load [kg]	500	500	800	450
Remark	Chap. 3.4.2 applies. If it is not possible to fill complete GLT due to the call-off quantities, the EXO 3.0 frames 980 (P08201-000) or 790 (P08200-000) must be used. Cp. EXO systems			Sys. pallet: P04157-000 System lid: P07031-000 System weight: 20 kg System height: 970 mm

Container	EXO Frame 980*855	EXO Frame 980*570	EXO Frame 790*855	EXO Frame 790*570
Material no.	P04909-000	P04908-000	P04907-000	P04906-000
Picture				
Usage in	Asia and North America for oversea			
Material	Cardboard, 3.92 CAA			
Outside dimension L/W/H [mm] L/W/H [in]	1,123 x 953 x 855 44,21 x 37,5 x 33,7	1,123 x 953 x 570 44,2 x 37,5 x 22,4	1,123 x 771 x 855 44,2 x 30,4 x 33,7	1,123 x 771 x 570 44,2 x 30,4 x 22,4
Inside dimension L/W/H [mm] **L/W/H [in]**	1,098 x 928 x 855 43,2 x 36,5 x 33,7	1,098 x 928 x 570 43,2 x 36,5 x 22,4	1,098 x 746 x 855 43,2 x 29,4 x 33,7	1,098 x 746 x 570 43,2 x 29,4 x 22,4
Tare weight [kg]	6.0	4.0	5.5	3.5
Max. gross weight [kg]	**up to 500 kg bulk material released** (after ok shipping trial)			
	up to 800 kg **only as a system with EXO 3.0 KLT, interlayers and lid**			
Stacking in transit	1 + 2			
Superimposed load [kg]	500			
Remark	Chap. 3.4.2 applies. If it is not possible to fill complete GLT due to the call-off quantities, the EXO 3.0 frames 980 (P08201-000) or 790 (P08200-000) must be used. Cp. EXO systems			

Container	RC 1.0 High Surrounding	RC 1.0 Half-high Surrounding
Material no. / VS-Code	P04306-000	P04308-000
Picture		
Usage in	China domestic	
Material	Cardboard, ECT 19000 N	
Outside dimension L/W/H [mm]	1,164 x 978 x 870	1,164 x 978 x 580
Inside dimension L/W/H [mm]	1,142 x 958 x 870	1,142 x 958 x 580
Tare weight [kg]	7.00	4.70
Max. gross weight [kg]	500	
Stacking in stock / transit	1 + 2 / 1 + 1	1 + 3 / 1 + 1
Superimposed load [kg]	500	

7.16.2 Standard KLT

Plastic KLT

VDA-RL KLT

Table 27 - VDA-RL KLT, reusable

Container	VDA-RL KLT 3147	VDA-RL KLT 4147	VDA-RL KLT 6147	VDA-RL KLT 6280
Material no. / VS-Code	3044DZ-000	3044EA-000 / EA	3044EC-000 / EC	3044ED-000 / ED
	**General use in Europe**			
	Max. gross weight for all containers 15 kg (in regulation to Brose-Standard for KLT) **Material for all containers** plastics, blue			
Outside dimensions L/W/H [mm]	297 x 198 x 147.5	396 x 297 x 147.5	594 x 396 x 147.5	594 x 397 x 280
Inside dimensions L/W/usable H [mm]	243 x 162 x 129.5	346 x 260 x 129.5	544 x 359 x 129.5	544 x 359 x 262
Tare weight [kg]	0.57	1.08	1.87	2.67
Boxes per HU (Euro Pallet, H:1.0m) Layers / boxes per layer	96 6 / 16	48 6 / 8	24 6 / 4	12 3 / 4
Boxes per HU (ISO Pallet, H:1.0m) Layers / boxes per layer	120 6 / 20	60 6 / 10	30 6 / 5	15 3 / 5
Stacking of HUs in stock / transit	1 + 3 / 1 + 2			
Superimposed load [kg]	400	600	600	600

VDA-R KLT, ESD protection

Table 28 - Plastic KLT, VDA-R KLT, ESD protection, reusable

Container	VDA-R KLT 3115	VDA-R KLT 4115	VDA-R KLT 6115	VDA-R KLT 6129
Material no.	304610-000	304611-000	304612-000	304613-000
	**General use in Europe and Asia** **Only used for electronic parts**			
	Max. gross weight for all containers 15 kg (in regulation to Brose-Standard for KLT) **Material for all containers** PP-ESD, black **Surface resistance for all containers** $1x10^4 \leq x \leq 5x10^{10}$ Ohm			
Outside dimensions L/W/H [mm]	297 x 198 x 147.5	396 x 297 x 147.5	594 x 396 x 147.5	594 x 396 x 280
Inside dimensions L/W/usable H [mm]	243 x 162 x 129.5	346 x 264 x 109.5	544 x 364 x 109.5	544 x 364 x 242
Tare weight [kg]	0.63	1.40	2.32	3.30
Boxes per HU (Euro Pallet, H:1.0m) Layers / boxes per layer	96 6 / 16	48 6 / 8	24 6 / 4	12 3 / 4
Boxes per HU (ISO Pallet, H:1.0m) Layers / boxes per layer	120 6 / 20	60 6 / 10	30 6 / 5	15 3 / 5
Stacking of HUs in stock / transit	1 + 3 / 1 + 2			
Superimposed load [kg]	400	600	600	600

Asia KLT

Table 29 - Plastic KLT Asia, reusable

Container	**AI KLT 3147**	**AI KLT 4147**	**AI KLT 6147**	**AI KLT 6180**
Material no.	P01224-000	P01225-000	P01226-000	P01227-000
	**General use in Asia**			
	Max. gross weight for all containers 15 kg (in regulation to Brose-Standard for KLT) **Material for all containers** plastics, blue			
Outside dimensions L/W/H [mm]	300 x 200 x 148	400 x 300 x 148	600 x 400 x 148	600 x 400 x 280
Inside dimensions L/W/H [mm]	285 x 150 x 123	350 x 250 x 123	550 x 350 x 123	550 x 350 x 255
Tare weight [kg]	0.57	0.90	1.87	2.67
Boxes per HU (Euro Pallet, H:1.0m) Layers / boxes per layer	96 6 / 16	48 6 / 8	24 6 / 4	12 3 / 4
Boxes per HU (ISO Pallet, H:1.0m) Layers / boxes per layer	120 6 / 20	60 6 / 10	30 6 / 5	15 3 / 5
Stacking of HUs in stock / transit	1 + 2 / 1 + 1	1 + 3 / 1 + 2	1 + 3 / 1 + 2	1 + 3 / 1 + 2
Superimposed load [kg]	400	600	600	600

North America KLT (AIAG)

Table 30 - Plastic KLT North America (AIAG), reusable

Container	**AIAG 1207-5**	**AIAG 1215-7**	**AIAG-2415-7**
Material no. / VS-Code	304520-000 / S2	304521-000 / FN	304522-000 / FO
	**General use in North America**		
	Max. gross weight for all containers 15 kg (in regulation to Brose-Standard for KLT) **Material for all containers** plastics, dark-blue 9002317		
Outside dimensions L/W/H [mm] L/W/H [inch]	 304.8 x 177.8 x 127 12.0 x 7.0 x 5.0	 381 x 305 x 191 12.0 x 15.0 x 7.5	 609.6 x 381 x 187.9 24.0 x 15.0 x 7.4
Inside dimensions L/W/H [mm] L/W/H [inch]	 285 x 150 x 123 11.2 x 5.9 x 4.84	 239 x 330 x 173 9.4 x 13.0 x 6.8	 544 x 330 x 173 21.4 x 13.0 x 6.8
Tare weight [kg]	0.50	1.00	1.60
Boxes per HU (H: 41 in.) Layers / boxes per layer	168 7 / 24	60 5 / 12	30 5 / 6
Stacking of HUs in stock / transit	1 + 2 / 1 + 1		
Superimposed load [kg]	-	-	-

Brazil KLT

Table 31 - Plastic KLT Brazil, reusable

Container	**KLT BRO-CVDA-M-KU-BLA**	**Caixa Plástica CN-6415**
Material no.	304420-000	P01113-000
	**General use in Brazil**	
	Max. gross weight for all containers 15 kg (in regulation to Brose-Standard for KLT) **Material for all containers** plastics, blue	
Outside dimensions L/W/H [mm]	297 x 197 x 114	600 x 400 x 150
Inside dimensions L/W/H [mm]	263 x 163 x 93	565 x 365 x 139
Tare weight [kg]	0.93	1.9
Boxes per HU (Euro Pallet, H:1.0m) Layers / boxes per layer	80 10 / 8	24 6 / 4
Boxes per HU (ISO Pallet, H:1.0m) Layers / boxes per layer	-	-
Stacking of HUs in stock / transit	1 + 2 / 1 + 1	1 + 3 / 1 + 2
Superimposed load [kg]	400	600

Cardboard KLT - EXO 3.0 KLT, Global

Table 32 - Cardboard, EXO 3.0 KLT Global, expendable

Container	**EXO KLT 3147**	**EXO KLT 4147**	**EXO KLT 6147**	**EXO KLT 6280**
Material no. / VS-Code	P06100-000 / PN	P06101-000 / PM	P06102-000 / PL	P06103-000 / PK
Picture				
Max. gross weight for all containers	15 kg (in regulation to Brose-Standard for KLT)			
Material for all containers	Cardboard, 1.40 B			
Usage in	Global			
Outside dimension L/W/H [mm] L/W/H [in]	 273 x 181 x 138.5 10,7 x 7,1 x 5,5	 364 x 273 x 138.5 14,3 x 10,7 x 5,5	 546 x 364 x 138.5 21,5 x 14,3 x 5,5	 546 x 364 x 280 21,5 x 14,3 x 11
Inside dimension L/W/H [mm] L/W/H [in]	 237 x 169 x 136 9,3 x 6,7 x 5,4	 328 x 261 x 136 12,9 x 10,3 x 5,4	 510 x 352 x 136 20,1 x 13,9 x 5,4	 510 x 352 x 278 20,1 x 13,9 x 10,9
Tare weight [kg]	0.183	0.277	0.411	0.759
Superimposed load [kg]	No single stacking. Only as system with EXO 3.0 GLT / Frame, interlayers and lid.			
Remark	EXO KLT made of corrugated board are damaged by moisture. Moist parts (oil, water ...) must therefore be packaged in a bag.			

Cardboard KLT – RC 1.0 KLT, Asia

Table 33 - Cardboard, RC KLT Asia, expendable

Container	**RC KLT 3147**	**RC KLT 4147**	**RC KLT 6147**	**RC KLT 6280**
Material no. / VS-Code	P05401-000	P05414-000	P05415-000	P05416-000
Picture				
Max. gross weight for all containers	15 kg (in regulation to Brose-Standard for KLT)			
Material for all containers	Cardboard, 1.40 B			
Usage in	China domestic			
Outside dimensions L/W/H [mm] L/W/H [in]	 273 x 181 x 144 10,7 x 7,1 x 5,5	 380 x 285 x 144 14,3 x 10,7 x 5,5	 570 x 380 x 144 21,5 x 14,3 x 5,5	 570 x 380 x 288 21,5 x 14,3 x 11
Inside dimensions L/W/H [mm] L/W/H [in]	 237 x 158 x 141 9,3 x 6,7 x 5,4	 347 x 262 x 141 12,9 x 10,3 x 5,4	 537 x 357 x 141 20,1 x 13,9 x 5,4	 537 x 357 x 285 20,1 x 13,9 x 10,9
Tare weight [kg]	0.20	0.32	0.47	0.86
Superimposed load [kg]	No single stacking. Only as system with RC 1.0 GLT / Frame and lid.			
Remark	RC KLT made of corrugated board are damaged by moisture. Moist parts (oil, water ...) must therefore be packaged in a bag.			

7.16.3 Pallets

Plastic pallets, reusable

Table 34 - Plastic pallets, reusable

Pallet	**AIAG SP 4845-5**	**Pallet 1200x800**	**ESD pallet 1200x800**
Material no. / VS-Code	304527-000 / S3	304828-000 / ME	P00326-000
picture			
Usage in	Use in North America	Europe	
Material	plastics, black	HDPE, re-granulate	HDPE, re-granulate
Outside dimensions L/W/H [mm] L/W/H [inch]	 1,219 x 1,143 x 127 48 x 45 x 5	 1,200 x 800 x 150 -	 1,200 x 800 x 150 -
Tare weight [kg]	22.7	14.5	14.5
Pallet payload in high rack [kg]	1,814 (static)	800	800
Remark	2*Brose-logo-hotstamp (AE826-7) on 48“ sides 2*Seat belt retractor on 45“ sides	For internal production-purposes, especially in clean rooms	For use in areas that require ESD protection

Wooden pallets

Table 35 - Wooden pallets, reusable & expendable

Pallet	**ISO-Flat-Pallet**	**EURO-Flat-Pallet**	**AI-EXO-PAL 1,000**
Material no. / VS-Code	3044N2-000 / N2	304413-000 / 13	143958-000 / -
Picture			
Usability	reusable		expendable
Usage in	Use in European-/Asian-/Brazil transportation	Use in European transportation	Only in Asia; not for overseas
Material	wood		
Outside dimensions L/W/H [mm]	1,200 x 1,000 x 145	1,200 x 800 x 145	1,200 x 1,000 x 130
Tare weight [kg]	30.00	25.00	19.00
Pallet payload in high rack [kg]	1,000		1,000
Components status	7 x deckboard; ...	5 x deckboard / 3 x floorboard / 3 x crossboard / 9 x logs	
Components dimensions **Deck-/Floorboard,** L/W/H [mm] **Crossboard,** L/W/H [mm] **Logs,** L/W/H [mm]	 1200 x 145/100 x 22 1,000 x 145 x 22 145 x 145/100 x 78	 1,200 x 145/100 x 22 800 x 145 x 22 145 x 145/100 x 78	 1,200 x 100 x 12 1,000 x 100 x 15 100 x 100 x 80
Remark	ISO-Flat-Pallet, DIN EN 13 698.2	EURO-Flat-Pallet, DIN EN 13698.1	-

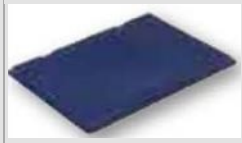
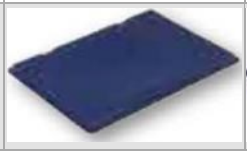
Pallet	**EXO-PAL 1.110**	**EXO-PAL, ALO**	**EXO-PAL 1.108**
Material no.	304122-000	P04000-000	P04002-000
Picture			
Usability / usage in	Expendable / global oversea		
Material	Wood, ISPM-15 (standard for IPPC-measures)		
Outside dimensions L/W/H [mm]	1,140 x 980 x 130	1,140 x 820 x 140	1,140 x 790 x 130
Tare weight [kg]	9.00	16.00	8.00
Pallet payload in high rack [kg]	900	800	800
Components status	5 x deckboard / 3 x floorboard / 3 x crossboard / 9 x logs		
Components dimensions **Deck-/Floorboard,** L/W/H [mm] **Crossboard,** L/W/H [mm] **Logs,** L/W/H [mm]	 1,140 x 75 x 15 980 x 80 x 20 80 x 80 x 80	 1,140 x 100 x 16-18 820 x 100 x 16-18 100 x 100 x 80	 1,140 x 75 x 15 790 x 80 x 20 80 x 80 x 80
Remark	According to aspects of VDA 4525	Use for ALO/DLO-planning	According to aspects of VDA 4525

7.16.4 Lids and interlayers

Plastic lids, reusable

Table 36 - Plastic lids, reusable

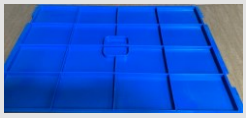
Lid	VDA lid Cover A1208	KLT lid Cover 1210	Cover A1208	Cover 1210
Material no. / VS-Code	3044H0-000 / H0	304609-000 / MF	P04323-000 / -	P04322-000 / -
Picture				
Usage in	Europe and Asia		Asia	
Material	Plastics, blue (RAL 5005 / 5012)		Plastics, black	
Outside dimensions: **L/W/H [mm]**	1,207 x 806 x 94	1,200 x 1,000 x 84	1,205 x 808 x 94	1,229 x 1,030 x 84
Tare weight [kg]	6.10	8.20	6.10	7.20
Remark	VDA 4500 lid (A1208-1) With drain holes in base Recent version from VDA: A1208-1	ISO lid With safety corners		With safety corners

Lid	Top Cap 4845	KLT-Cover 32	KLT-Cover 43	KLT-Cover 64
Material no. / VS-Code	304526-000 / S4	P05431-000 / -	P05432-000 / -	P05433-000 / -
Picture				
Usage in	North America	Asia		
Material	Plastics, black	Plastics, PP, blue RAL 5005		
Outside dimensions L/W/H [mm] L/W/H [inch]	1,219 x 1,143 x 66 48 x 45 x 2.6	297 x 198 x 27 -	396 x 297 x 27 -	594 x 396 x 27 -
Tare weight [kg]	9.07	0.30	0.40	0.70
Remark	- 45 x 48 B CIISS top cap with 2 belts, 4845 AIAG - 2 x Brose logo hot stamp (die AE826-7) on 48 in. sides - 2 seat belt buckles on 45 in. sides	Cover for KLT 300 x 200	Cover for KLT 400 x 300	Cover for KLT 600 x 400

VDA-RL-KLT lids

Table 37 - VDA RL-KLT lids

KLT lid overlay	For KLT 3147	For KLT 4147	For KLT 6147 / 6280
Material no.	P03279-000	P03170-000	P03169-000
Picture			
Usage	Europe		
Material	PP Plastics, blue		
Outside dimensions: L/W/H [mm]	295 x 195 x 25	390 x 295 x 25	590 x 390 x 25
Tare weight [kg]	0.22	0.37	0.69

KLT lid immersible	For KLT 3147 (D35)	For KLT 4147 (D45)	For KLT 6147 / 6280 (D65)
Material no.	P03813-000	P03691-000 / -	P03249-000
Picture			
Usage	Europa		
Material	PP Plastics, blue		
Outside dimensions: L/W/H [mm]	270 x 170 x 10	370 x 270 x 10	565 x 365 x 10
Tare weight [kg]	0.09	0.27	0.67

KLT ESD lid overlay	For KLT 3115	For KLT 4115	For KLT 6155 / 6129
Material no.	3044CX-000	3044CY-000	3044CZ-000
Picture			
Usage	Europe - Wird nur für elektronische Teile verwendet		
Material	PP-ESD, black Surface resistance for all containers $1x10^4 \leq x \leq 5x10^{10}$ Ohm		
Outside dimensions: L/W/H [mm]	295 x 195 x 25	390 x 295 x 25	590 x 390 x 25
Tare weight [kg]	0.22	0.37	0.69

KLT ESD lid immersion	For KLT 3115 (D31)	For KLT 4115 (D41)	For KLT 6155 / 6129 (D61)
Material no.	P03704-000	P03460-000	P03153-000
Picture			
Usage	Europe - Wird nur für elektronische Teile verwendet		
Material	PP-ESD, black Surface resistance for all containers $1x10^4 \leq x \leq 5x10^{10}$ Ohm		
Outside dimensions: L/W/H [mm]	270 x 170 x 10	370 x 270 x 10	565 x 365 x 10
Tare weight [kg]	0.10	0.29	0.75

Cardboard Lids and Interlayers, expendable

Table 38 - Cardboard lids, expendable

Lid	EXO 3.0 Lid 980	EXO 3.0 Lid 790	VH Lid	RC 1.0 Lid
Material no. / VS-Code	P08205-000	P08204-000	304340-000	P04310-000
Picture				
Usage in	Global		Europe	China domestic
Material	Cardboard, 2.70 BC			
Outside dimensions L/W/H [mm] L/W/H [in]	 1,140 x 970 x 142 44,9 x 38,2 x 5,6	 1,140 x 788 x 142 44,9 x 31 x 5,6	 1,140 x 970 x 142 -	 1,200 x 1,000 x 100 -
Inside dimensions L/W/H [mm] L/W/H [in]	 1,128 x 958 x 136 44,4 x 37,7 x 5,4	 1,128 x 776 x 136 44,4 x 30,6 x 5,4	 1,128 x 958 x 136 -	 1,180 x 990 x 100 -
Tare weight [kg]	1.402	1.197	1.402	1.43

Table 39 - Cardboard inlayer, expendable

EXO Inlayer	EXO 3.0 Interlayer 980	EXO 3.0 Interlayer 790
Material no. / VS-Code	P08203-000	P08202-000
Picture		
Usage in	Global	
Material	Cardboard, 2.70 BC	
Outside dimensions L/W/H [mm] L/W/H [in]	 1,083 x 1,085 x 6 42,64 x 42,7 x 0,24	 901 x 1,085 x 6 35,5 x 42,7 x 0,24
Tare weight [kg]	0.922	0.767
Remark	Use in addition to EXO 3.0 KLT + GLT / Frame Interlayers must be on top of every KLT-layer except top layer, folding edges faced downwards	

7.16.5 Supplier-specific disposable packaging

For supplier-specific disposable packaging without explicitly assigned Brose packaging material numbers, the following dummy packaging material numbers must be used in the ASN:

Table 40 - Dummy packaging material numbers disposable packaging

Packaging Component	Dummy Cardboard Box (KLT)	Dummy Cardboard GLT	Dummy Cardboard lid	Dummy wooden pallet
Material No.	304499-000	304498-000	304489-000	304488-000
Picture				
Material	Cardboard			wood
Use in	Global, supplier-specific			
Outer dimensions	various			

7.16.6 EXO - Expendable oversea systems, Cardboard

EXO 3.0 System, Europe

For the expendable oversea packaging system EXO 3.0, several variants exist. The possibilities of compilations between EXO GLT / Frame and EXO KLT sizes are presented in the tables below: **Brose recommends using the variant EXO 3.0 GLT 980 high to minimize the handling effort and costs.**

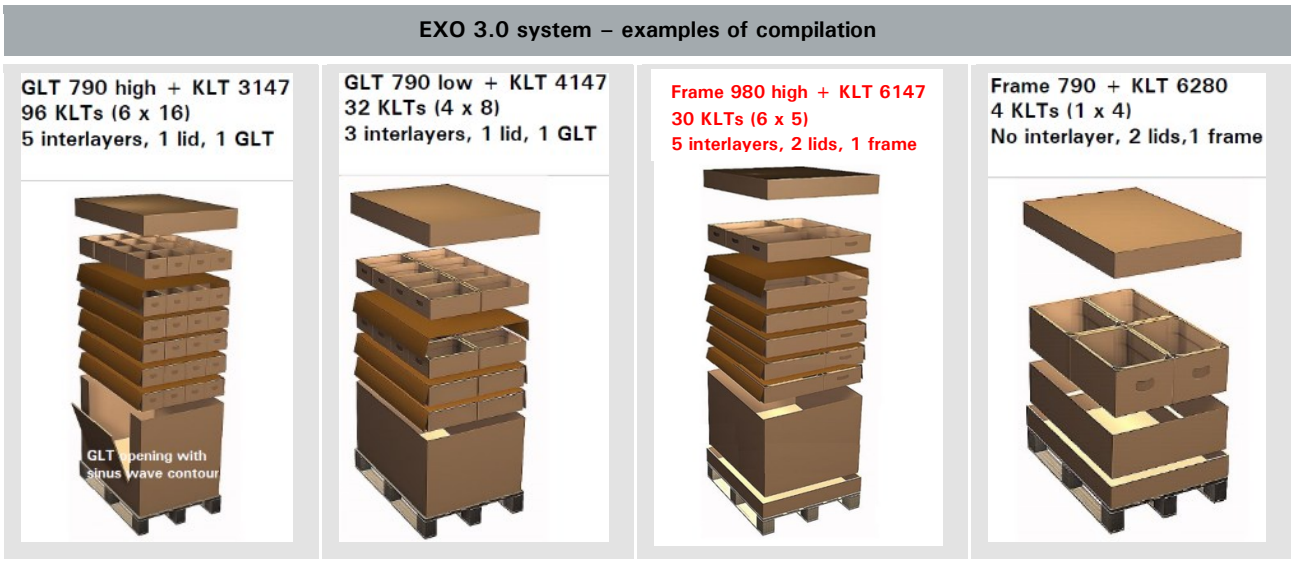


Table 41 - Amount of EXO 3.0 KLT per system Global

Illustration 37 - Examples of EXO 3.0 packaging systems Europe

Container		EXO 3.0-system with EXO KLT 3147	EXO 3.0-system with EXO KLT 4147	EXO 3.0-system with EXO KLT 6147	EXO 3.0-system with EXO KLT 6280
Europe	**Asia & North America**				
Pallet 304122-000 (1.140 x 980 mm)		**Boxes per HU (layers x boxes per layer)**			
EXO GLT 980 high (P04903-000)	EXO Frame 980*855 (P04909-000)	120 (6 x 20)	60 (6 x 10)	30 (6 x 5)	15 (3 x 5)
EXO Frame 980 high (P04722-000)					
EXO GLT 980 low (P04902-000)	EXO Frame 980*570 (P04908-000)	80 (4 x 20)	40 (4 x 10)	20 (4 x 5)	10 (2 x 5)
EXO Frame 980 (P08201-000)		40 (2 x 20)	20 (2 x 10)	10 (2 x 5)	5 (1 x 5)
This system is to be used with the EXO Lid 980 (P08205-000) and the EXO Inlayer 980 (P08203-000)					
Pallet P04002-000 (1,140x790mm)		**Boxes per HU (layers x boxes per layer)**			
EXO GLT 790 high (P04901-000)	EXO Frame 790*855 (P04907-000)	96 (6 x 16)	48 (6 x 8)	24 (6 x 4)	12 (3 x 4)
EXO GLT 790 low (P04900-000)	EXO Frame 790*570 (P04906-000)	64 (4 x 16)	32 (4 x 8)	16 (4 x 4)	8 (2 x 4)
EXO Frame 790 (P08200-000)		32 (2 x 16)	16 (2 x 8)	8 (2 x 4)	4 (1 x 4)
This system is to be used with the EXO Lid 790 (P08204-000) and the EXO Inlayer 790 (P08202-000)					
Stacking of HUs In transit / in stock		1 + 2	1 + 2	1 + 2	1 + 2

Folding Instruction for EXO 3.0 KLTs

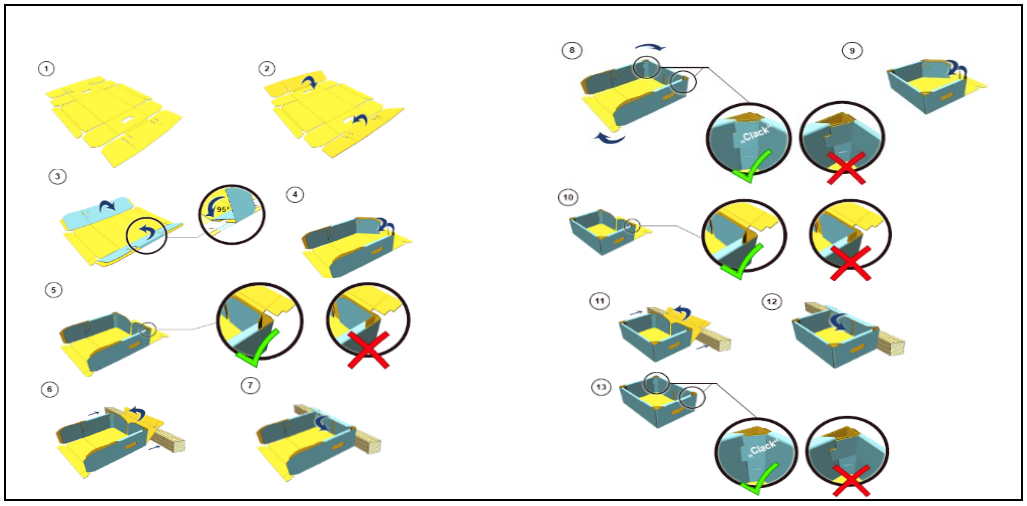


Illustration 38 - Folding instruction EXO KLTs

Requirements for the EXO KLT Handling

Step 1	Step 2	Step 3	Step 4	Step 5
Cut the packing strap of the carton, open the lid, check if the carton is intact and undamaged and find the tape at the bottom of the box for unpacking.	Peel off the tape along the bottom of the box to separate the bottom of the box from the side panel. Only lift the GLT box at the top edge with both hands so that the KLTs are exposed.	After removing the outside GLT, pay attention to the stacking direction and the position of the handle used to hold the KLT. To avoid collapsing, the KLTs must stand straight.	When carrying the KLT, make sure that the KLT is lifted evenly with both hands at the two handles provided. Lifting the KLTs without using the handles provided or even pulling the KLTs is prohibited. Otherwise there is a risk of damage to the KLT, which could cause it to fall apart.	When restacking the KLTs, make sure that they are stacked in a row in the same direction, so that the handles are visible, for example. This prevents the KLT from being damaged by crushing and therefore remains stable.








Illustration 39 - Requirements EXO KLT Handling

Set up and use of new EXO 3.0 Interlayer

Illustration 40 - Set up and use EXO interlayer

1) Place the interlayer vertically in the GLT at the closure side
2) Place the KLT as close as possible to the interlayer in the GLT
3) Lift the interlayer with the folding line above the KLT, close it and insert the folding edge

7.16.7 Purchasing and delivery references for packaging items (Europe)

Table 42 - Purchase and delivery references for packaging Europe

Packaging-module	Material-number	Supplier	Reference	Contact	Location	Delivery Dimension [mm]	Minimum delivery unit	Items/ delivery unit
Steel GLT								
Euro pallet cage, DIN 15155	304409-000	various suppliers regarding the current market price, please refer to Brose Purchasing Logistics in Bamberg						
Plastic GLT, reusable								
KTP-Super-Quad	P00002-000	KTP Kunststoff Palettentechnik GmbH	Ms. Kuester	+48 6834 9210-16	DE 66359 Bous (Saar)	1,230 x 830 x 980	4x pallet	52
KTP-System 2000	304718-000					1,200 x 1,000 x 990		56
KTP-Quad	P00001-000					1,230 x 1,020 x 990		48
Cardboard GLT, expendable								
GLT 980, high	P04903-000	Tricor Packaging & Logistics AG	Mr. Müller	+49 8247 9622 208	DE 86825 Bad Wörishofen	2,100 x 850 x 1,500	1x pallet	30
GLT 980, low	P04902-000					2,100 x 1,200 x 1,500		30
GLT 790, high	P04901-000					1,900 x 850 x 1,500		30
GLT 790, low	P04900-000					1,900 x 1,150 x 1,500		30
Frame 980	P08201-000					2,100 x 850 x 1,500		90
Frame 790	P08200-000					1,900 x 850 x 1,500		140
MK 08, high	P04006-000					1,924 x 1,353 x 1.000	2x pallet	40
VDA-RL-KLT, reusable								
VDA-RL-KLT 3147	3044DZ-000	ISOCO Plastics Technology GmbH	Mr. Schweitzer	+49 36701 67 0	DE 07318 Saalfeld	1,200 x 800 x 1,000	1x pallet	96
VDA-RL-KLT 4147	3044EA-000							48
VDA-RL-KLT 6147	3044EC-000							24
VDA-RL-KLT 6280	3044ED-000							12
VDA-R-KLT, ESD protection								
VDA-R-KLT 3115	304610-000	Bekuplast GmbH	Ms. Leuschner	+49 7371 1296336	DE 49824 Ringe	1,200 x 800 x 1,000	1x pallet	96
VDA-R-KLT 4115	304611-000							48
VDA-R-KLT 6115	304612-000							24
VDA-R-KLT 6129	304613-000							12
EXO KLT, expendable								
EXO-KLT 3147	P06100-000	Mondi Wellpappe Deutschland GmbH	Ms. Jahn	+49 9562 383-154	DE 96237 Ebersdorf	846 x 1,200 x 1,000	1x pallet	600
EXO-KLT 4147	P06101-000					937 x 1,326 x 1,000		600
EXO-KLT 6147	P06102-000					800 x 1,200 x 1,000		300
EXO-KLT 6280	P06103-000					1,200 x 1,685 x 1,000		300
Pallets								
EURO-Flat-Pallet	304413-000	Pacurion GmbH	Ms. Knoebel	+49 2864 729101-0	DE 48734 Rieken	1,200 x 800 x 145	tbd	tbd
ISO-Flat-Pallet	3044N2-000					1,200 x 1,000 x 145		
Pallet, plastics 1208	P00166-000	Georg Utz GmbH	Mr. Roelofs	+49 5923 805 441	DE 48465 Schüttorf	1,200 x 800 x 1,000	1x pallet	tbd
EXO-PAL 1,110	304122-000	Sägewerk Obermühle oHG	Mr. Schreiner	+49 9561 60678	DE 96450 Coburg	1,140 x 980 x 1,000		
EXO-PAL 1,108	P04002-000					1,140 x 790 x 1,000		
EXO-PAL ALO	P04000-000	Liebensteiner GmbH	Mr. Schön	+49 9631 605-200	DE 95703 Plößberg	1,140 x 820 x 1,000		
Lids								
VDA lid / A1208	3044H0-000	ISOCO Plastics Technology GmbH	Mr. Schweitzer	+49 36701 67 0	DE 07318 Saalfeld	1,200 x 800 x 2,000	1x pallet	35
VDA lid / 1210	304609-000					1,200 x 1,000 x 2,000		
Lid 980	P08205-000	Tricor Packaging & Logistics AG	Mr. Müller	+49 8247 9622 176	DE 86825 Bad Wörishofen	1,247 x 1,600 x 1,000		140
Lid 790	P08204-000					1,200 x 800 x 1,000		
Interlayers								
Interlayer 980	P08203-000	Mondi Wellpappe Deutschland GmbH	Ms. Jahn	+49 9562 383-154	DE 96237 Ebersdorf	1,200 x 1,085 x 1,000	1x pallet	130
Interlayer 790	P08202-000					1,200 x 901 x 1,000		130
PE- / VCI-bags								
PE- / VCI-bags	n.n.	Prodinger Verpackung GmbH & Co. KG	Mr. Rueger Ms. Schneyer	+49 9561 851 224 +49 9561 851 200	DE 96450 Coburg	tbd	tbd	tbd

8 APPENDIX

1 Add. Requirement 6606082201: Traceability of Supplier Parts (Definition of Component Packaging Labels with 2D-Barcode) – Version 04

1.1 Scope of application

This additional requirement will apply to all supplier parts of the business division Drives, which require a specific traceability and compulsory archiving at the suppliers' site (material lots, process data, etc.).
For these parts the following text must be written on the Brose part drawing: **"Traceability acc. to additional requirement 6606082201"**. This additional requirement is also implemented in the BOM, listed in a position between 0900 and 0999.

1.2 Identification on the packaging (by supplier)

The identification of each packing unit (pallet, lattice box, etc.) must be marked in principle with the **VDA label according to VDA 4902 version 4 (barcode according to code 39)** or **VDA 4994** (cp. **Container labeling**). To be in line with this additional requirement, traceability for of purchased parts requires a **PDF417 2D code in VDA-Label 4902**. The new **VDA-Global Transport-Label 4994 (GTL)** with 2D Data Matrix Code (DMC) is also permissible but may only be used after written agreed consultation and approval by Brose.

All packaging subunits (smallest packaging unit on a pallet e.g. plastic and cardboard boxes, cartridges, buckets, etc.) have to be identified, each with a label **VDA 4902 Version 4 with integrated code PDF417** or **VDA 4994**.

Sample of KLT Label with pdf417 (2D code) according VDA 4902:

Illustration 41 - Sample VD4902 KLT label with PDF417

Sample of KLT Label with DMC (2D code) according VDA 4994:

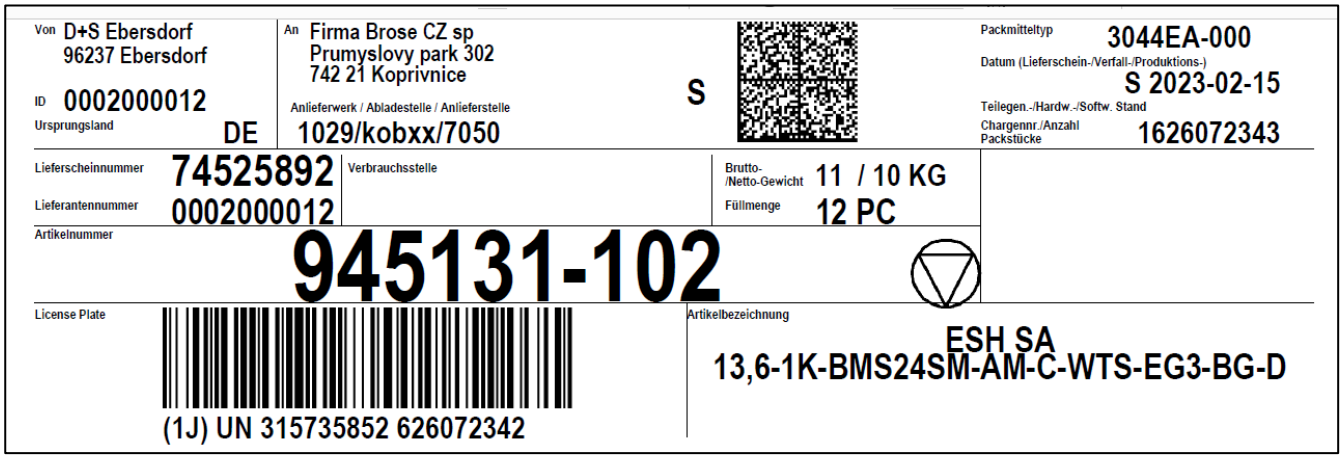


Illustration 42 - Sample VD4994 KLT label with Data Matrix Code

If in any case the identification with label VDA 4902 Version 4 with integrated code PDF417 or the VDA 4994 is not possible, the supplier may use a similar label with PDF417 or DMC but only with written confirmation by Brose Logistic planning and Plant Quality department).

If a packaging unit has no subunits, an additional label with a PDF417 according to the label VDA 4902 Version 4 with integrated code PDF417 has to be placed on the packaging unit or the PDF417 has to be integrated in the existing master label, alternatively the GLT-Label VDA 4994 with DMC can be used.

The label must be placed on the packaging so that it is readable while the parts are withdrawn from the packaging. This means for example no labels on the covers of the packaging or inside the boxes. The label must be removable easily without any residuals. Furthermore, the readability of the 2D-Barcodes must be ensured (code print quality, label material stiff and non-reflective, wrinkle-free, etc.). Important: no perforation in area of 2D code allowed.

Starting with the delivery of C samples (first serial off-tool parts, without requirement for interlinked production lines) all packaging units and subunits must be identified with labels according to the serial format.
In the PPAP (production part approval process) documentation the identification must be listed as an own position, evaluated and released by Brose (size, layout and readability). To check the readability of the labels please attach the label in serial format.

1.3 Specification 2D-Barcode

The 2D-Barcode is used for traceability at Brose. It is important that the barcode is based on ASCII (American Standard Code for Information Interchange) according to GTL specification. The following ASCII control characters must be used:

	DEC	HEX	
[	91	5B	
)	41	29	
>	62	3E	
$^{R}_{S}$	30	1E	Data set separator
$^{G}_{S}$	29	1D	Group separator
$^{E}O_{T}$	04	04	End of transmission

The data structure of the data string of the 2D-Barcode can be illustrated graphically as

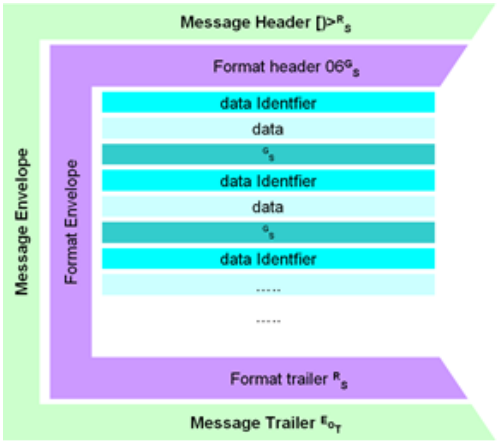


Illustration 43 - Structure of Barcodes

In the data string of the 2D-Barcodes different information can be included. The following 3 topics of information are mandatory and must be included in the data string and have to be printed in plain text on the label in addition.

Table 43 - Mandatory fields of barcodes

Identifier	Description	Length
P	Brose material number 10 digits (xxxxxx-xxx)	max. 18 characters
V	Supplier number defined by Brose	max. 10 characters
1T	Assigned batch number from supplier to define a certain lot or group of items	max. 17 characters

The respective batch sizes shall be communicated by the supplier and documented during the APQP (Advanced Product Quality Planning) process with the supplier. The respective identifier must be put in front of the information.

Additional identifiers according to this additional requirement can be as well:

Table 44 - Other variables of barcodes

Identifier	Description	Length
15D	expiration date (format YYYY-MM-DD or YYYY.MM.DD)	
14D	expiration date YYYY-MM-DD or YYYY.MM.DD or YYYYMMDD	(valid with *VDA 4994)*
20P	track or material (alternative hardware according VDA 4994)	max. 12 characters
21P	tool (alternative Software index according VDA 4994)	max. 12 characters

For components with an expiration date (e. g. glue, etc.) it is mandatory to print the content of identifier 15D or 14D as a plain text on the label in addition: „**Verfallsdatum / Date of expiration: YYYY-MM-DD**“

The following example data string shows the minimum requirements. All data strings of the 2D-Barcode have to be setup analogically.

Examples:
[)>▲06↔PA12345-111↔V8321425↔1TCHARG_12345↔▲ ▯

In this example used control characters:

R_S = ASCII Code 30 (data set separator) ▲
G_S = ASCII Code 29 (group separator) ↔
$^{E}O_T$ = ASCII Code 04 (end of transmission) ▯

Print output PDF417:

Illustration 44 - Printed barcode PDF417

1.4 Print quality of the PDF417 barcode

VDA 4994 recommendation according to ISO/IEC15415 needs to be followed in regards of readability.

1.5 Consideration of existing label layouts and data formats

Existing label layouts and data formats must remain without changes because of compatibility reasons. Only after a written agreement by Brose (Logistic planning) a change is possible. This must be considered also for the Implementation of the VDA 4994. All other requirements (especially regarding print quality and readability of the label) have to be fulfilled. Otherwise, it will be claimed.

1.6 Minimum requirement for traceability of components

In the following, the traceability per package quantity is defined for individual components or rather the marking on the component itself.

Commodities	batch change raw material	tool change / switch / maintenance	new production batch	material batch / components	date of production / processing	tool and, if necessary, cavity marking	production / processing machine, clamping fixture if necessary	chemical analysis of material (durability)	track-separated delivery
injection molded plastic parts	X	X	X	X	X	X	X		
die casting		X	X		X	X	X	X	
function carrier	X	X	X	X	X	X	X		
shaft	X	X	X	X	X		X		
sealing rings / o-rings	X	X	X	X	X	X	X		
screws	X	X	X	X	X	X	X		
magnets	X	X	X	X	X		X	X	
stamping package / single sheets	X	X	X	X	X	X	X		X
wave spring washers / springs	X	X	X	X	X	X	X		
chokes	X	X	X	X	X		X	X	
brush systems incl. brush carbons	X	X	X	X	X	X	X		
machining (milling, turning)		X	X	X	X	X	X		
cable harnesses	X	X	X	X	X	X	X		
cold extruded parts	X	X	X	X	X	X	X		
commutators	X	X	X	X	X	X	X		
resolvers	X	X	X	X	X	X	X	X	
switching and contact units	X	X	X	X	X	X	X		
sintered parts (calottes, G-rotor)	X	X	X	X	X	X	X	X	
stamped and bent parts	X	X	X	X	X	X	X		
deep-drawn parts	X	X	X	X	X	X	X		
overmolded rotor / stator	X	X	X	X	X	X	X		
Potting material / Glue	X		X		X			X	
gear unit	X	X	X	X	X	X	X		
winding wire	X		X	X	X		X		

	reason for batch change
	information available in batch
	special requirements

9 LIST OF ILLUSTRATIONS

10 List of Tables