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Introduction

The Packing Handbook of DEUTZ AG is a reference work for everyone involved with packing in goods transit: customers, suppliers, incoming goods, warehousing, shipping stations, empty goods stations, forwarding agents.

It summarizes all general information that is important for daily work with packaging and products in accordance with DEUTZ specifications and which has to be observed.

Proper and economical packaging for DEUTZ engine parts and DEUTZ engines is an important component of the logistics chain. The packaging must correspond to the various requirements in respect to quality, production technology, warehousing technology, transport and handling. To this end, the people involved with packing in the various processes continually require information. This information is summarised in the Packing Handbook and can be consulted quickly and easily as and when required.

Since the beginning of 1990, Deutz AG has pursued the consistent use of standardised recyclable containers and packing systems, supplemented by special packaging that is adapted to the components and engines.

For this purpose, DEUTZ has its own specialist department involved with all aspects concerning the packing of components and engines.

This recognised technical knowledge and the competence of the DEUTZ Packing Planning is presented in a concise way here. The DEUTZ packing will continue to develop in the future as well and form an important element of the economical material supply. This Packing Handbook will consequently be extended further and updated with the aim of providing all technical areas in the logistics chain with the requisite information.

Not all detailed information on the relevant packing of components and engines can be described within the context of this Packing Handbook. Further information such as specifications or handling guidelines, also from other technical departments at DEUTZ Global Logistics, is available for this.
Packing Planning

Every component and end product has relevant packing data at DEUTZ in order to ensure an economical material flow corresponding to the requirements of modern logistics. On this basis the following points are observed:

- Protection of the products
- Retention and improvement of quality
- Delivery in line with assembly and products
- Assurance of occupational safety, cleanliness and order
- Compliance with statutory/official regulations
- Fulfilment of customer requirements
- Minimisation of packing costs
- Uniformity in the workflows over the entire logistics chain
- Time saving, avoidance of expense
- Rapid material flow
- Ergonomic handling
- Clear, simple and rapid information
- Standardisation

Planning process:

**Step 1:** Classification of the products according to geometry, value, procurement sources, quantities and quality requirements

**Step 2:** Selection of the possible packing system taking into account the spatial circumstances (warehouse, production):
- Use of a standard system (e.g. small load carrier)
- Development of own containers
- Use of standards
- Use of existing packing systems

**Step 3:** Calculation / Profitability calculation with determination of packing type and filling volume per material, representative for product groups

**Step 4:** Presentation in the technical departments internally and externally with meetings and agreements at suppliers, Incoming Goods, Quality Assurance, Warehousing, Production, Purchasing, Materials Scheduling and Controlling.

**Step 5:** Definition of the packing per product with documentation, packing data in SAP and specifications

**Step 6:** Information to all areas involved

**Step 7:** Monitoring the packing
Packing Planning

Packing system in the area of Incoming Packing and Production

Definition of packing specifications
- Precise allocation of container type and filling volume per material according to logistic needs (consumption, inventory, capital)
- Specifications for the packing of high-quality materials
- Standardisation of the labelling (e.g. VDA 4902, AX4, RFID)

Monitoring the packing
- Admonition procedure and supplier monitoring
- Feedback
- Material flow (materials scheduling capacity, Kanban)

Optimisation of the material provision
- Storage space optimisation, warehouse structure, incoming goods, transport
- Storage space optimisation in Production
- Material flow (materials scheduling capacity, Kanban)

Container management
- Exact definition of the container types
- Monitoring of empty goods collection points
- IT container booking
- Container procurement
- Container account management

Packing system in Shipping CBU / CKD

Definition of packing specifications
- Precise allocation of the part or order to the packing type according to specification and customer requirement
- Formulation of specifications
- Standardisation of the shipping papers

Monitoring the packing
- Quality of the packing materials
- Instruction of the shipping stations
- Feedback

Optimisation of the shipping
- Order preview
- Optimisation of the material provision
- Workflow optimisation

Packing material procurement
- Processing the orders
- Selecting suitable materials
- Cost control

INFORMATION SYSTEM

✓ Supplier
✓ Incoming Goods
✓ Quality Assurance
✓ Warehousing
✓ Production
✓ Transport
✓ Freight forwarder
✓ Purchasing
✓ Scheduling
✓ Operational safety
✓ Authorities
Incoming Goods Packing Control

The logistics systems of the DEUTZ AG plants are designed in respect to a specified, standardised packing for an optimal material flow in the area of warehousing, assembly and transport. Each individual part for production and assembly is linked to a packing specification. The defined packing specifications are coordinated to the part geometry, quality and consumption quantities and are communicated to the suppliers in the orders and packing data sheets. Compliance with the packing specifications is a prerequisite for a smooth flow of materials from the supply to the installed engine. If the material flow is disrupted, this will lead to extra expense or quality losses.

Incoming Goods receives material and forwards it to the warehouse, from where it is issued to Assembly and Production in line with needs. The material should therefore be packed in Incoming Goods, before putting into storage, in accordance with the standard (= packing specification). If this is not the case, extra expense will result due to e.g. label printing, counting, weighing, rejection and repacking work.

Workflow of the packing control

Orders
The supplier receives the packing specifications for the ordered part with the relevant framework agreements and individual orders. The required empty containers should be ordered from DEUTZ 14 days before needed and sent by the responsible regional forwarding agent.

Receipt of goods
The driver of the forwarding company will hand over the freight papers to the Incoming Goods office. The material access is then booked with SAP. The goods receipt certificate and containers labels are created by this. An employee at Incoming Goods will then check the delivery based on the packing specification marked on the labels and goods receipt certificate and characterise the goods receipt according to a 10-point catalogue. The papers are then given to the Incoming Goods office for processing. In the second goods receipt stage, container and packing data as well as the classification of the packaging used are booked.

Processing
The incoming goods evaluation is checked on a daily basis. In the case of complaint-relevant evaluations, a complaint letter (mail or fax) for the shipping is printed out. The check in respect to the plausibility of the data for the incoming goods is performed daily. If the complaint concerning the incoming goods is not justified, it is neutralised in SAP by indicating the reason for the deletion. Deleted admonitions are saved for statistical purposes.

Send complaints remain in SAP for 14 days in order to check objections by the suppliers. The complaint can be neutralised within a 14 day period if the supplier objections are justified.

After 14 days without complaint or objection, the supplier will be charged 40€ per repacked transport unit in order to cover the expense for extended administration and repacking.
Incoming Goods Packing Control

Note
The packing control and potential complaints do not serve the purpose of encumbering suppliers. Faults and defects leading to an inadequate delivery are to be revealed by the control and direct information.

Graphic representation of the workflow
Reusable Packaging

Principles for the use of reusable packaging:

- Environment protection is promoted by less packaging waste and raw material resources are conserved on more sustainable basis
- The statutory requirements (Packing Ordinance) are satisfied through the use of reusable packaging
- Secure transport containers support health and safety at work
- There is less waste in the companies without disposable packaging and it is therefore cleaner at all areas
- Materials are protected by the reusable packaging and hence the quality is improved
- The handling is simplified, saving valuable work time
- Packing costs for the parts procurement are low
- Reusable containers are control elements in the assembly and materials scheduling compliant material supply
- DEUTZ reusable containers are valuable and must be treated with care
- Customers and suppliers of DEUTZ AG are supplied with reusable packaging for transport purposes in line with materials and needs. The use of DEUTZ recyclable containers for company-internal use or storage is not permitted
- The basis for a secure and production compliant delivery is a functioning system of container supply

Note:
Deliveries with materials packed with EURO pallets or EURO mesh boxes have no longer been permitted at DEUTZ AG since January 2009. Incoming Euro pallets/mesh boxes must be replaced 1:1 at the Incoming Goods on the same day, a later exchange is not possible. DEUTZ AG will not reimburse replacement fees for EURO empty containers. Please only use DEUTZ’ own pallets (P1X) or containers (K1, C3E5, PCB1) as indicated in the Deutz packing instructions.
Reusable Packaging
Standard pallet DEUTZ P1X

Identification with DEUTZ logo and IPPC stamp

Pallet blocks riveted
Reusable Packaging

Standard container large load carrier (GLT)

**DEUTZ K1 (wood)**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer</td>
<td>120x78x89 cm</td>
</tr>
<tr>
<td>Inner</td>
<td>118x78x73 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>39 kg</td>
</tr>
<tr>
<td>Load max.</td>
<td>800 kg</td>
</tr>
</tbody>
</table>

**DEUTZ C3E5 (steel)**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
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<td>Outer</td>
<td>120x78x97 cm</td>
</tr>
<tr>
<td>Inner</td>
<td>109x78x76 cm</td>
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<tr>
<td>Weight</td>
<td>110 kg</td>
</tr>
<tr>
<td>Load max.</td>
<td>1000 kg</td>
</tr>
</tbody>
</table>

Standard intermediate layers (special workpiece carriers as per Packing Specification, on request)

**ZW1302 plastic hollow cavity pallet**

**ZW1280 wood**

**ZW1281 plastic**
Reusable Packaging

Standard container large load carrier folding frame system

DEUTZ P1X pallets with folding frame (foldable in the middle)

Frame dimensions
- Outer: 1200x800x200 mm
- Inner: 1140x750x200 mm
- Weight: 9 kg
- Load max.: 800 kg

Matching base and intermediate layer
- ZW1299 1130x745x6 mm plywood
- Cover PB44 made from ABS plastic
Recusable Packaging

Container for raw parts

DEUTZ CA2

Dimensions
Outer 100x80x70 cm
Inner 99x79x60 cm
Weight 70 kg
Load max. 1200kg

DEUTZ CB3

Dimensions
Outer 120x100x70 cm
Inner 116x96x60 cm
Weight 100 kg
Load max. 1200kg

DEUTZ CA3

Dimensions
Outer 100x80x70 cm
Inner 96x76x60 cm
Weight 82 kg
Load max. 1200kg
Reusable Packaging

Standard container VDA C-KLT

KLT43..

KLT 4314, 40x30x14 cm (334x247x103mm)
KLT 4321, 40x30x21 cm (334x247x169mm)
KLT 4328, 40x30x28 cm (334x247x236mm)
KL43 cover
ZW4331 intermediate layer

KLT 6414, 60x40x14 cm (532x346x98mm)
KLT 6421, 60x40x21 cm (532x346x164mm)
KLT 6428, 60x40x28 cm (532x346x231mm)
KL64 cover
ZW6431 intermediate layer

KLT64..

Securing and covering plate for pallet
SP1218 / A1218

Small load carrier stack on P1X pallet with KLT4314

The use of R-KLT is possible, RL-KLT cannot be used.
Workpiece carriers as per packing instructions available on request
Reusable Packaging

Standard container KLT (small load carrier)

Label position & stacking

1. KLT 43

KLT4314 four layers max., KLT4321 three layers max., KLT4328 two layers max.

2. KLT 64...

KLT6414 six layers max., KLT6421 four layers max., KLT6428 three layers max.
Recyclable Packaging

Standard container KLT (small load carrier)

Shipping with mixed small load carrier pallets, example:

Small load carriers with the most number of articles in the lower most small load carrier layer, further small load carriers stacked by number. Fill up potential gaps in the small load carrier with empty small load carriers to be able to put on the covering plate.

Every small load carrier on the mixed pallet must be identified with an individual label in order to avoid mixing up parts.
Reusable Packaging

Standard container large load carrier (GLT)

Label position

DEUTZ wooden folding container K1 & pallet frame

![Image of wooden container]

Labels attached

DEUTZ sheet steel container type C3E.

![Image of steel container]

Labels in the holder

**Always remove old labels before use!**
Reusable Packaging

Format of the labels

Minimum requirement per packing item / handling unit:

Deutz TN 08670815
.... item, content: Shipping date: 00.00.00

VDA label 4902 version 3:
Reusable Packaging

Labels for shipping processing via the AX4 platform

The Internet-based platform (AX4) developed by AXIT AG is used to improve the exchange of data between DEUTZ AG, suppliers and freight forwarders (logistics service providers). In this way, all suppliers have the option of handling material orders by DEUTZ AG via the Internet in a transparent and straightforward manner and creating labels before shipping for the DEUTZ standard. Further information on this in the AX4 Handbooks of DEUTZ AG.

Example:
Reusable Packaging

Label position on the large load carrier

1. C3E1 – 7 Sheet steel containers

2. Label for “BOX DRH”

3. Label for K1 wooden boxes and pallet folding frames
Reusable Packaging

Label position on the large load carrier

4. Label position for reading area of barcode scanner

Position from the front view

Position from the face view
LEFT from view front / fold-side container

Gaps min., + 30mm tolerance
Reusable Packaging

Container ordering:

DEUTZ AG provides its suppliers with empty containers free of charge for transport purposes. In order to receive empties, we require your empties request with the current address by mail packorder@deutz.com, at least 10 working days before needed. The fax message must include: your supplier number, type and quantity of the containers. After receiving your order, we place a reservation on one of our empty container stations. You will receive a confirmation by fax with all data for the empty container delivery, which is also noted on the transport order for the forwarding agent responsible. The empty containers will then be sent to you within the next 10 working days. You can find out the sending date after the transport scheduling of the responsible regional forwarding agent.

If you are paying for the freight, the transport must be organised by you, whereby the pick-up must be notified at the relevant empty container station at least 24h beforehand.

If you only send low quantities or small volumes (less than 30kg per packing item = parcel service, less than one pallet), you can supply the parts in a disposable package suitable for the load.
Reusable Packaging

Cleanliness and cleaning of DEUTZ containers

According to DEUTZ Specification 01700000

Principle:

Recyclable transport containers are only to be used for the transport and storage of engine components. The use is specified for certain components through the division into cleanliness stages in the relevant packing specifications. Use other than that intended as a disposal container for domestic refuse, chemical substances or other contaminating materials is not permitted.

Multiple transport containers are part of the capital assets of DEUTZ AG and must be treated with care.

The submitting plant is responsible for the cleanliness of the container used for the packing.

Dirty containers must not be used for the packing of components and must be returned to the submitting plant.

The empty container stations of the DEUTZ plants are responsible for cleaning the containers:

- Removal of packing materials from the containers
- Removal of all labels
- Separation of marked and defective containers
- Sorting out remaining parts
- Sorting the empty containers according to type
- Provision of the empty containers according to cleanliness levels

Handover of the empty containers for washing in suitable facilities if required
Reusable Packaging

Cleanliness and cleaning of DEUTZ containers

Cleanliness specifications

The cleanliness of containers is divided into three categories. The containers of each category are to be used for the packing of components, depending on the quality requirement of the component. Containers with a degree of soiling outside the categories must undergo a suitable cleaning.

Category 1 (Light soiling):

- no goods labels, stickers etc.
- free of intermediate layers, films, paper
- without loose dirt, cuttings etc.
- no liquid residues (oil, grease)
- insides dry
- LIGHT oil wetting allowed

Category 2 (Hand clean):

as category 1 and

- Thoroughly freed of firmly adhering dirt (manual cleaning)
- No oil/grease residues

Category 3 (New/washed):

as category 2, without visually discernible or quality-relevant dirt
Reusable Packaging

Cleanliness and cleaning of DEUTZ containers

Description of the cleanliness levels

A) Small load carrier including lid (KLT)

- **Hand clean**
  - Residual waste and loose particles removed, less residual dirt, discolorations

- **New/ washed**
  - Without particles
  - No residual dirt discolorations possible

- **Soiled for washing**
  - Heavy soiling which cannot be removed manually
  - Oil, grease etc. adhere to small load carrier

**NOT be washed:**
- Locking plates SP1218 and covering plates 1218

B) Large load carrier (GLT)

- **Hand clean**
  - Residual waste and loose particles removed
  - Less residual dirt
  - Less adhesions

- **New/ Washed**
  - Without residual waste and loose particles
  - Without residual dirt
  - Without adhesions

- **Soiled for washing**
  - Heavy soiling outside/inside, oil/ grease/ adhesions can not be removed manually

**NOT be washed:**
- Wooden containers (K1),
- Mesh baskets (C3/CB3/CA3),
- Old containers (CA2)
Reusable Packaging

Cleanliness and cleaning of DEUTZ containers Description of the cleanliness levels

C) Intermediate layers/Workpiece carriers

Hand clean

New/ washed

Loose particles removed
less residual dirt
less adhesions

Without residual dirt
without adhesions

Soiled for washing

Oil/ Grease/ Adhesions not removed manually can

NOT be washed:

Wooden intermediate layers (ZW1280), hollow cavity plates, compartment frames, board
Container Account Management

All containers which DEUTZ supplies to customers and suppliers are economical goods whose value is also an element of the capital assets of DEUTZ AG. Containers from the DEUTZ empty container stock are also recorded correspondingly in the inventory.

DEUTZ empty container stocks that are not in the availability area of DEUTZ AG, i.e. empty container stocks at customers and suppliers, therefore have to be recorded and controlled as well. At DEUTZ all incoming and outgoing containers are logged via its integral SAP databases and transactions.

To monitor and coordinate the containers in circulation, customers and suppliers receive a loaned good account statement at the beginning of each quarter. All container incoming and outgoing movements are listed according to quantities in this account statement. The account statement includes a letter, a balance sheet, an overview of the container movements in the last quarter and a response form.

After receiving the account statement by email, fax or post, the container stocks should be determined based on your own container inventory management or, if necessary, with a physical record. These inventories should only be entered on the response form of the DEUTZ container account statement and sent by mail to packkonto@deutz.com to DEUTZ.

At DEUTZ the quantities determined are then compared and checked. Here container requirement forecasts, average turnaround times, stock and plausibility are checked. If discrepancies are ascertained, the DEUTZ empty container administration will then contact the customer or supplier if charges have to be issued: container rental on account of company-internal use, loss or disappearance of containers, damage, usage other than that intended.

Container account statements that are not answered will be claimed with up to three admonition stages. After the third admonition without response, the charge for the return procurement value of the containers according to the balance will appear on the customer or supplier account.
Import Packing

Sea- And Airfreight Packing For Suppliers From

Outer Europe

Asia-Pacific

Asia

Africa

North and South America

**IMPORTANT NOTE**

ALL packing materials in use made from wood such as boxes, crates, pallets, boards must be

- free of bark

- treated against pests (heat treated / methyl bromide gas)

- free of harmful chemicals

- matching the guidelines of the United Nations Food and Agriculture Organization (FAO International Standards for Phytosanitary Measures = ISPM 15 / European Guidelines No. 2000/29/EG, confirmed by IPPC stamp on woods and IPPC certificate of packing manufacturer

*All consignments which do not follow those rules might be blocked by European customs, sent back to suppliers charged or destroyed by order of authorities directly.*
Import Packing

Sea- and Airfreight Packing: Large Parts

Suitable packing with protection against dust, dirt, moisture and damage.

Packing material:
- NEFAB box type Ex Pak S with DEUTZ logo
- max. dimensions 120x80x100 cm
- intermediate layers made of corrugated board or dry plywood
- max. gross weight 1000kg
- stable, safe 4-way pallet
- wood free of bark and treated against pests
- dry preservation with VCI plastic bag and VCI paper sheets

Only one kind of part (part number) per box, DRY & CLEAN parts, FREE of water, oil, grease, wax, metal chips and particles

Examples
Import Packing

Sea- and Airfreight Packing: Small Parts

Suitable packing with protection against dust, dirt, moisture and damage, cardboard boxes stapled in sea-freight box

Freight box outer packing:
- NEFAB box type Ex Pak S with Deutz logo
- max. dimensions 120x80x100cm
- intermediate layers made of corrugated board or plywood
- max. gross weight 1000kg
- stable, safe 4-way pallet
- wood free of bark and treated against pests
- dry preservation with VCI plastic bag and VCI paper sheets

Cardboard box stapled in freight box:
- 53x34 or 32x24 cm outer dimensions, height on request max. 23 cm.
- made out of stable corrugated board or millboard
- parts set up safely, intermediate layers when necessary
- only one kind of part (part number) per box
- max. 15 kg per cardboard box

Examples

Only one kind of part (part number) per box / bag DRY & CLEAN parts FREE of water, oil, grease, wax, metal chips and particles
Import Packing

Sea- and Airfreight Packing: VCI Preservation

How does VCI work?
VCI generally come in solid form, for convenience in handling. Volatility is simply a means of transport. Protective vapours disseminate within an enclosed space until equilibrium, determined when the partial vapour pressure is reached. The inhibiting process starts when the vapours come into contact with the metal surface and condense to form a thin barrier of micro-crystals. In the presence of even minute traces of moisture, the crystals dissolve and develop strong ionic activity.
The result of such activity is adsorption of protective ions onto metal surfaces, with the concurrent formation of a molecular film that promotes breakdown of contact between the metal and an electrolyte. The presence of an invisible monomolecular film does not alter any of the important properties of the metal, even in precise electronic applications, where properties such as conductivity, or dimensional tolerances are critical, and where even minute deviations could cause malfunction.
VCI migrates to distant metallic surfaces. This ability enables VCI to protect metals without direct contact with metals. VCI needs only to be placed in the vicinity of the metals to provide protection. VCI will migrate to metallic surfaces through the vapour phase and the inhibitor will be adsorbed on the surface. The protective vapours will distribute within the enclosed space until equilibrium is reached. Equilibrium is set by the compound's partial vapour pressure.
Too high vapour pressure will cause the inhibitor to be released to such an extent that a protective concentration cannot be maintained. On the other hand, a low-vapour-pressure inhibitor is not used up as quickly and can thus assure more-durable protection, but more time is needed for a protective vapour concentration. This raises the risk of corrosion during the initial period of saturation, and if the space is not sealed, a protective concentration may never be reached.

VCI Packing Materials:
VCI paper or VCI plastic bags are usually used for packing. This standard dry-preservation is known worldwide and there are different suppliers for VCI. DEUTZ recommends the brands of

EXCOR (www.excor.com) or Brangs & Heinrich (www.brangs-heinrich.de)

VCI paper can be used to wrap parts or as layer inside the container with sheets. Plastic bags with VCI are used for covering the whole interior of a bin to make it resistant to moisture from the outside.
Import Packing

Sea- and Airfreight Packing: NEFAB Box
Box suggested by DEUTZ for all exports with IPPC certificate inbound Germany from outer Europe

For worldwide purchase contact see local dealer list at: www.nefab.com
Import Packing

Sea- and Airfreight Packing: Labelling

Labelling sea/airfreight box, water-resistant printed

CONSIGNEE: Deutz AG
street
postal code / city
GERMANY

CONSIGNEE: Deutz AG, address

ORDER NO.: Deutz order no.

PORT/ DESTINATION:

DIMENSIONS:

GROSS WEIGHT:

KEEP AWAY FROM MOISTURE!
HANDLE WITH CARE!

MADE IN ........

Single cardboard boxes

- Deutz part number
- Supplier
- Content (number of items)
- Date of manufacturing
Import Packing

Sea- and Airfreight Packing: Packing Set-up

- Box lid
- Foil sheet
- Sheet of VCI paper (inside plastic bag)
- VCI-plastic bag
- Plastic bag folded to inside
- Build up layers
- Vertical cardboard when necessary
- As necessary corrugated board or plywood
- VCI Paper corrugated board or bubble foil
- Stable 4 way pallet

Part/cardboard box
Engine Packing (CBU)

Determination of the packaging used:

The packing of engines (CBU) is oriented to the requirements of the customer, the transport route and the technical possibilities resulting from the geometrical data of the engine.

The criteria for selection are:

- dimensions: length, width, height, form of the oil pan and weight of the engine
- recyclable steel transport frames or wooden transport frames
- mounting / Engine suspension
- geographical location of the recipient site
- land transport (truck), container transport, sea or air transport (general cargo)
- economic viability
- availability of an existing frame type for the relevant engine design

The customers of DEUTZ AG select in coordination with Sales/installation consultants the relevant engine transport frame from the packing area of the notebook which documents the available modules (=packaging variants).

Reference dimensions for engine & transport frame

A) Engine

Geometry of engine
length width total over all
add-on parts

(V-belt side)

Engine
Mounting
BK
Engine

Height oil pan to
crankcase

LM
L1
HÖ

BM
L2
BS
(Flywheel side)
Engine Packing (CBU)

Reference dimensions for engine & transport frame

B) Transport frame

- **LM** = Max. length of engine over all add-on parts
- **BM** = Max. width of engine over all add-on parts
- **BSR** = Width of gap transport bracket/ engine suspension from hole to hole (centre) flywheel side
- **BKR** = Width of gap transport bracket/ engine suspension from hole to hole (centre) V-belt side
- **HÖ** = Height from lower edge of oil pan (oil sump), to lower edge of crankcase (sealing surface): mounting bracket

C) Sample dimensions on the steel transport frame

The potential dimensions L1, L2, BKR and BSR are to be defined according to design and potential fastening points into variants e.g. L1a, L1b, L1c

Engine Packing (CBU)
Reference dimensions for engine & transport frame
D) Dimensions on the engine

- **BM**: Dimensions on the engine
- **BKR**: View V-belt side
- **HÖ**: Engine left and right
- **BSR**: View flywheel side
- **LM**: Engine left and right
- **L1**: Engine left
- **L2**: Engine right
Engine Packing (CBU)

Steel transport frame

Simple steel pallet

Patented steel pallet with folding supports and clamping lock

Steel frame for double-layer loading
Engine Packing (CBU)

Wooden transport frame, variant examples

Simple 2-way frame

Simple 4-way frame

Frame with open cross-member structure

Frame with pallet base
Engine Packing (CBU)
Example of carrying and loading sequence

1. Engines at conveyor end
2. Aligning
3. Attachment of fasteners
4. Mounting
5. End check
6. Transfer to exit
7. Buffer before exit
8. Outgoing goods
9. Floor conveyor truck on WA
10. Automatic loading onto truck
11. Unloading with roller conveyor in store
12. Transfer to store
13. Exit from store
14. Preparation for shipping
15. Loading onto truck
Engine Packing (CBU)

Processing steel transport frames in circulation

In order to avoid later irregularities in the transport frame account management, we request that you observe the following points:

**Outgoing transport frames at DEUTZ AG**
The number of frames being shipped can be seen on the shipping papers. These documents are enclosed with every delivery. Changes to the unit number data on the shipping papers are **not permitted.**

**Transport frame returns to DEUTZ AG**
For the return of the DEUTZ transport frames or the fastening material, you will receive a filed out form, in which the number per type of frames to be returned or the fastening material are to be entered. This printed form is to be enclosed as an accompanying paper for **every** consignment.

We point out that empty transport frames or fastening material may only be returned to the address indicated on the printed form as described in the Appendix to the Packing Handbook.

In order to ensure an optimum transport price, the forwarding agent who has sent the engines must be commissioned with the return of the empty items.

The empty items should be loaded as follows:

**Steel transport frame**
Stack to maximum 2000 mm without strapping band

**Fastening material**
Separated according to type (front/rear/right/left) in a suitable container.

**For technical production reasons, transport frames and fastening material can only be returned separately.**

DEUTZ AG provides containers for the return of the fastening material; these can be requested by fax: **0049 (0) 221 / 822 3372.**
Engine Packing (CBU)

Processing steel transport frames in circulation

Account statement

The entire incoming and outgoing movements of the transport frames are summarised in the "Account Statement for Transport Containers".

An account statement is sent to the customer once a quarter for confirmation purposes. The confirmation must be made immediately or resultant differences must be indicated straightaway. If no differences have occurred and the confirmation (account statement with your stamp) is present, the shipping and return receipts confirmed in this account statement can be erased.

Use other than that intended

The use of DEUTZ’ own transport frames/containers for other purposes is prohibited, i.e.:

DEUTZ steel transport frames must not be given to third parties.

Steel transport frames that are demonstrably destroyed, damaged or lost will prompt DEUTZ AG to invoice the casual party

Steel transport frames must be returned to DEUTZ AG after a maximum turnaround time of four weeks so that the supply of engine assemblies with means of transport can be ensured and engines can be delivered on schedule.
Engine Packing (CBU)

Accessories enclosure:

On the sales side the criteria of customer wishes, parts scope, bulkiness and weight are used to determine whether a disposable enclosure or a collective enclosure should be sued when delivering the engines.

A) Individual enclosure:

Before packing, all parts are checked by two employees for parts number, designation, quantity and damage (visual inspection, dual checking principle). Only after this are the parts packed vibration-free and padded in the shipping cartons. Only packaging material from the DEUTZ order list is approved. The packing may only be carried out by trained personnel. Problems arising when packing components due to technical or qualitative reasons must be reported to the Shipping Management of DEUTZ AG Logistics.

Workflow / Material flow:

1. Taking the order-relevant, picked parts spectrum out of the warehouse.

2. Provision of the packing units according to an article list on the packing table.

Grouping, storage condition until engine shipping.
Engine Packing (CBU)

**Accessories enclosure:**

B) Collective enclosure:

A packing item is formed for each order, containing all loose parts for the entire order. This enclosure must be provided separately on a shipping pallet. Orders with collective enclosure are prepared and handled before packing in the same way as for the individual enclosure. The smallest possible packaging material is selected for packing in the carton/sea crate. A weight restriction of max. 1t/pallet must be observed here. The packing items must be secured on the shipping pallet with a strapping band or shrink-wrapping.

4. Individual and collective enclosure shipping:

Individual enclosure on the engine:

The individual enclosure boxes or cartons must not be fastened on the engine. Exception: flat and lightweight containers in the polythene bag (max. 500g) which are fastened securely with adhesive tape on the protective film of the engine. Enclosures (max. 500g) for engines without film protection hood are fastened with clips at a suitable place to prevent damage. Individual enclosures > 500g must be fixed on the transport frame with cable ties/adhesive tape, without the contour (total length/width) of the frame dimensions being exceeded. If the dimensions of the packing items do not allow this, the individual enclosure must be provided with the order separately on a disposable pallet. The individual packing items must be secured together, as with the collective enclosure.

**The following generally applies:**

The geometrical data of the packing items from the orders must be checked before putting into storage and entered in the shipping and warehousing IT. If discrepancies between the data and the actual circumstances are discerned before loading (loading volume too large), the order data must be adapted.

Examples:

![Not on engine](image)

![Projection](image)

![Loose stowage](image)

![Exception on engine](image)

The collective enclosure is provided for the order on disposable pallet.
Engine Packing (CKD)

Various customers and licensees order their engines as "Completely Knocked Down" supply scopes. This means that DEUTZ ships the engines and the engines are then constructed at the customer or licensee in their own assembly. The parts are shipped in the export and the packing is carried out by service providers who procure these parts from the series production business. The same conditions apply here for the packing, as for the procurement of engine parts from outside Europe. Customers and order-specific special features are taken into account when packing the components. Comparable, general instructions for the packing are available to the import for this, in order to ensure optimum parts protection.

1.) DIN, standard and small parts (bulk goods such as screws, buts, washers, sealing rings etc.)

- Weigh loose parts, count
- Fill parts into polythene bag, close bag and mark with parts number and quantity
- Line carton with VCI paper
- Place filled polythene bag in carton
- Fold VCI paper closed, close carton
- Place carton in transport unit (crate)

2.) Stack packaging in individual carton (e.g. sleeve, hose line, holder, console, crankshaft, pistons, piston rings, bearing shells, bearings, fuel pumps, small V-belt pulley, tensioning pulley, precision parts, exhaust turbocharger)

- Line carton with VCI paper
- Place filled polythene bag in carton
- Place/ Lay/ Stand parts in the carton
- If required use intermediate layer/ divider/ padding material
- Fold VCI paper closed, close carton
- Place carton in transport unit (crate)

3.) Simple packing in the sea box (e.g. metal plates, V-belts, plastic lines, oil lines, lube oil pumps)

- Line sea crate with VCI film bag
- Place parts in transport unit
- Close VCI film bag, put on covering film
Engine Packing (CKD)

4.) Simple layer packing in the sea crate (e.g. oil filter, air filter, fuel filter, pre-separator, camshaft, connection housing, flywheel, large V-belt pulley, front cover)

- Line transport unit (crate) with VCI film bag
- Place parts slip-free in the transport unit (parts mutually support one another)
- According to requirements, use corrugated board/ hard-fibre/ wood + VCI sheet as intermediate layer
- Close VCI film bag, put on covering film

5.) Layer packing with vertical inserts/compartment frames (e.g. starter, Geno, crankcase, flywheel, cylinder tube, injection pump, cooler, MAG, cylinder head, oil bath air filter, exhaust turbocharger)

- Line transport unit (crate) with VCI film bag
- Insert corrugated board as base layer, add VCI sheet
- Line up parts in the layer, insert dividing board/compartment frame between parts
- Cover layer with VCI
- Depending on load, corrugated board/ hard-fibre/ wood + add VCI sheet
- Form further layers, cover last layer with VCI sheet and corrugated board
- Close VCI film bag, put on covering film

6.) Crate packing diagram
Engine Packing (CKD)

7. Notes on the CKD packing

- Series packing material such as VCI paper, wooden pallets and neutral packing must be reused (material must be clean).
- Packages for individual shipping Southeast Asia (China, Korea) must be supplemented with wax linen.
- Use as few packing materials as possible, as many materials as necessary.
- Parts shipping in series recyclable packaging (small load containers, K1, Gibo) is possible after time comparison and coordination with DEUTZ Global Logistics.
- Line cartons in individual shipping (without sea crate) with VCI paper or insert VCI film bag, wrap round the outside with suitable film or coated cartons.
- Changes to packing materials and methods of working must be approved by DEUTZ Global Logistics.
- Question and optimisations in respect to packaging must be clarified with DEUTZ Global Logistics before shipping.
Appendix

Notes on Corrosion Protection

1. The Problem of Corrosion

Corrosion on components leads time and again to complaints and faults, in particular during the corrosive climate in the months from October to May. The reasons for corrosion are discussed in detail, analysed and the causal agent is sought depending on the individual case. Finally recurrent errors in the handling of the components and corrosion protection are explained and recorded. At the same time, the corrosion protection is often associated with the transport packing.

However, corrosion protection, which is both a component of the parts quality as well as the parts packing, is crucial. It is often not clear when and how corrosion has resulted, as packing alone is not the cause of corrosion but rather all external factors that give rise to corrosion: Damp, air, pollutants, storage, climate, transport, handling. The search for the causes of corrosion and their avoidance is therefore a general task, which requires a common basis in order to correctly tackle the problem of corrosion.

2. Causes and Formation of Corrosion

Corrosion according to DIN EN ISO 8044: “Corrosion is the interaction between a metal and its environment which results in changes in the properties of the metal and which may often lead to impairment of the function of the metal, the environment, or the technical system of which these form a part. In most cases this reaction is of an electro-chemical nature; but sometimes it can be also of a chemical or metal-physical nature”.

Corrosion can be a chemical reaction between a metal and a reactive or unstable gas, liquid or another substance. Corrosion can be caused by an electrical reaction between two different metals. Corrosion can be an electro-chemical reaction between dust or fungi and a metal surface.

Corrosion changes the chemical and physical structure of the metal
Appendix

Notes on Corrosion Protection

3. Types of Corrosion

Types of corrosion occurring in practice
*Overall corrosion / general rust "flash rust"*

The surfaces are discoloured but not damaged. A cleaning or reworking is usually possible.

**Pitting corrosion**

The surfaces have undergone significant attack and have a rough surface as though "eaten", usually irreparable.

Stress corrosion cracking, crystalline corrosion, crevice corrosion and contact corrosion have so far not been determined as a damage characteristic in the area of transport and packing.

4. Causes of Corrosion, Examples

**Processing residues (wash water):**
The component was not completely dried after processing and liquid runs out of the bore holes over the component during shipping and storage. Evaporation of the liquid resulted in corrosion.

*Cause*: Residual moisture

*Measures*: Drying after processing, blowing out all holes and cavities, additives in the wash water, suitable dry preservation

**Incorrect storage (rain water, ice, snow)**
The components were exposed to the weather without protection before and during shipping. The short-term preservation was consequently washed off and massive corrosion resulted in a short time due to air and moisture.

*Cause*: Effects of the weather

*Measures*: Dry, protected storage and transport
Appendix

Notes on Corrosion Protection

4. Causes of Corrosion, Examples

**Condensation (climate)**
The component packed in a damp environment or (air) humidity from the environment has precipitated on the component due to the climate: dew, “perspiration” condensation

*Cause:* Air humidity around component over several weeks

*Measures:* Pack in a dry environment, closed packaging with suitable dry preservation

**Ambient air & storage time**
The components were in the dry store only with short-term preservation over a longer period of time. After the active period of the short-term preservation, corrosion begins evenly on all surfaces.

*Cause:* Storage too long, incorrect preservation

*Measures:* Long-term preservation, stock checking

**Body fluids**
The component was touched with moist hands or sweat dripped on the surfaces. Corrosion results partially at the contact points

*Cause:* Incorrect handling

*Measures:* Gloves, suitable clothing, air-conditioned rooms

**Damp packaging**
Water has penetrated the packaging during transport and the components were in direct contact with water. Corrosion results at the contact points

*Cause:* Storage or transport during precipitation

*Measures:* Dry storage, loading and transport in a dry, additional packaging material e.g. film
Appendix

Notes on Corrosion Protection

5. Corrosion Protection Methods

Treated surfaces
Metallic surfaces are sealed using various methods so that no ambient influences can have a corrosive effect. Materials are brought into direct, permanent contact with the metal here. Galvanisation: e.g. chrome plating, nickel plating, zinc plating, chromating
Painting: Priming, rust protection coat, paint coat, stove enamel finishing
Oil blackening.
Corrosion is possible due to mechanical damage (scratches, cracks, fractures) to the applied surfaces.
Release for application: The surface treatment is clearly specified in the documentation (parts drawing, production specifications, standard) and required by DEUTZ on the construction side.

Additives in cleaning media (wash water)
Components are washed after processing, the wash water containing 2-5% corrosion protection additive. After the components have been completely dried, residues of the additive remain on the components and form a very thin, usually invisible, temporary corrosion protection film. This protective film protects the surfaces for several weeks against corrosion from ambient influences (air humidity and the harmful materials it contains). The prerequisite for a good effect is storage in heated and closed rooms. Direct contact with water (rain, fog, condensation) removes the protective film as does touching the surfaces. The components can be used without further cleaning. The corrosion protection is adequate for short storage times < 6 weeks and road transport. Additives and wash water must not have any corrosive constituents and must be applied according to the manufacturer's instructions.
Release for application: The additives in the wash medium are described in the technical description and safety data sheet. All ingredients must be known and corresponding protective measures must be indicated. The release is issued by a note on the design drawing, and/or in the production specifications, or in the order text, as the cleaning media are a component of the production process.

Adhesive corrosion protection agents (oil, grease, wax, paraffin)
Metallic surfaces are sealed with liquid substances so that corrosive ambient influences are countered. Chemicals usually containing oil and/or grease are used for this, these being applied using an immersion bath, spray or brush. Corrosion protection oils are primarily utilised nowadays, with greases and waxes only being used for long-term preservation. The agents can be applied easily and have to be thoroughly removed before using the component so that the component functioning is not impaired. The components have to be dry before application, so that moisture is not trapped and no corrosive joints result. The corrosion protection film is damaged by touching the preserved components. Oils and greases attract particles (dust, cuttings etc.) and packaging (cardboard, film) adheres to the surfaces, thereby causing undesired reactions that are corrosive on the metal surfaces. Likewise, moisture entrapped by oils can lead to corrosion on the surfaces.
Release for application: Only by clear indication on the design drawing for the component.

Desiccant bag (“silica Gel”)
Such agents are not corrosion protection but only serve to absorb the air humidity in a package for a limited period of time. Many desiccant bags are produced on a mineral salt basis and can promote corrosion when stored or transported for longer periods. Desiccant bags whose filling is made from alumina are safe, but only for absorbing air humidity.
Release for application: Only as additive in packing instructions.
Appendix

Notes on Corrosion Protection

5. Corrosion Protection Measures

Dry preservation with VCI paper or VCI film
VCIs are volatile corrosion inhibitors contained in various packaging materials such as paper, film or deposits. Gaseous corrosion inhibitors form from air and VCI within a closed VCI packaging. The active agents in the closed packaging form an invisible protective film on metallic surfaces. The VCI saturated ambient air in the closed packaging also displaces air humidity.

The VCI corrosion protection volatilises after opening the packaging as soon as the components come into contact with ambient air. The components do not need to be treated before use after unpacking. The corrosion protection is sufficient for medium storage times of up to 12 months and longer (depending on the type of storage and if it is suitable without restrictions for sea, air and road transport. The prerequisite for VCI corrosion protection is the correct application in accordance with the manufacturer’s instructions and the packing of dry, residue-free components.

**Release for application:** VCI packages are generally released at the incoming and outgoing goods. However, the datasheets and technical specifications of the manufacturers of the relevant VCI packaging materials must be available. If this does not involve manufacturers approved by Deutz (Cortec/ Excor, Finck&Co, Brangs&Heinrich), individual releases for the relevant application will be necessary.

Dry conservation with Intercept film
Intercept corrosion protection is based on a reaction between particles in the ambient air and the porous copper particles contained in the Intercept film. In contrast to conventional preservation, treatment occurs without further chemicals and the air around the components is free of the agents causing corrosion. Gas emissions and other undesirable side effects do not occur. Intercept does not have any negative effects on non-metals such as plastic, rubber, fabric. The ultraviolet resistance of the Intercept film is also ensured after years when stored in the open air. The effect of Intercept does not volatilise when opening and closing the package again either. A guarantee for up to 12 years corrosion protection is given by the manufacturer. For safe packaging, desiccant bags with alumina for absorbing residual moisture within the foil packaging must be used. The number of such bags must be specified.

**Release for application:** A corresponding warranty declaration and the handling instructions of the manufacturer (Comtrade / Partner) must be available for the relevant application. An internal cost invoice may have to be compiled if the costs vary significantly in comparison to other preservation methods and requirements.
# Appendix

## 1. Overview of the DEUTZ Packaging

### Large load carriers

<table>
<thead>
<tr>
<th>Carrier</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container</td>
<td>For crankshaft 1012/13</td>
<td>0867 5202</td>
<td>C3E1</td>
</tr>
<tr>
<td>Container</td>
<td>For camshaft 1012/13</td>
<td>0867 5203</td>
<td>C3E2</td>
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<tr>
<td>Container</td>
<td>For crankcase 1012/13</td>
<td>0867 5264</td>
<td>C3E3</td>
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<td>Container</td>
<td>For crankcase 1011</td>
<td>0867 5265</td>
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<td>Container</td>
<td>Steel container, folding</td>
<td>0867 5320</td>
<td>C3E5</td>
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<tr>
<td>Container</td>
<td>For camshaft 912/913</td>
<td>08675350</td>
<td>C3E6</td>
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### Pallets, wooden frames and accessories

<table>
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<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>800 x 1200 mm</td>
<td>Transport container</td>
<td>0867 5226</td>
<td>C3E5</td>
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<td>1200 x 800 x 930 mm</td>
<td>Transport container</td>
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<td>1200x800x1000 plastic</td>
<td>Transport container</td>
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### Small load carriers & accessories

<table>
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<th>Description</th>
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<tr>
<td>400 x 300 x 147 mm</td>
<td>Transport carrier</td>
<td>0867 5571</td>
<td>KL4314</td>
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<tr>
<td>400 x 300 x 213 mm</td>
<td>Transport carrier</td>
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<td>KL4321</td>
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<td>400 x 300 x 280 mm</td>
<td>Transport carrier</td>
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<td>GREY</td>
<td>For oil dipsticks</td>
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**The engine company.**
# 1. Overview of DEUTZ Packaging

## Workpiece carriers

<table>
<thead>
<tr>
<th>Workpiece carrier</th>
<th>Description</th>
<th>Code</th>
<th>Notes</th>
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<tr>
<td>For control rod 1012/13</td>
<td>0867 5201</td>
<td>PB4</td>
<td>K1</td>
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<td>Workpiece carrier cover for C3E1 - 6</td>
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<td>PB41</td>
<td>Steel container C3E1,2,3,4,5</td>
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<td>WST055 Cylinder head gasket TCD 2013 4V / 4-cyl.</td>
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<td>WST054 Cylinder head gasket TCD 2013 4V / 6-cyl.</td>
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<tr>
<td>Workpiece carrier Workpiece carrier deflection lever measuring mechanism 2011</td>
<td>0867 5390</td>
<td>WST051 Deflection lever front cover 2011</td>
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<tr>
<td>Workpiece carrier Insertion compartments 1160x740x175mm 4-com.</td>
<td>0867 5410</td>
<td>WST059 VAH ALU f. TCD2012/13 2V 6-cyl.</td>
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<td>WST062 VAH plastic f. TCD2013 4V 4-cyl.</td>
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<td>0867 5415</td>
<td>WST063 Oil cooler housing 2012/13 Hengst 414/415</td>
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<tr>
<td>Workpiece carrier For oil cooler housing 2012/13 2V with cup-shaped filter</td>
<td>0867 5416</td>
<td>WST064 Oil cooler housing 2012/13 Hengst 412/413 cup-shaped filter</td>
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<tr>
<td>Workpiece carrier For oil cooler housing 2013 4V Hall 41</td>
<td>0867 5417</td>
<td>WST065 Oil cooler housing 2013 4V Hengst 416/417 TRUCK</td>
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<tr>
<td>Workpiece carrier Impact protection crankcase 91X</td>
<td>0867 5419</td>
<td>WST066 Crankcase 91X impact protection</td>
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1. Overview of DEUTZ Packaging

### Intermediate layers

<table>
<thead>
<tr>
<th>Intermediate layer</th>
<th>For container C3E3</th>
<th>0867 5164</th>
<th>ZW</th>
<th>C3e3</th>
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<td>For flywheel 912/913</td>
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<td>Intermediate layer</td>
<td>For crankcase 1012/13</td>
<td>0867 5337</td>
<td>ZW1291</td>
<td>Abrasion-proof crankcase Porz</td>
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<tr>
<td>Intermediate layer</td>
<td>Insert compartments/Cavity</td>
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<td>ZW1293</td>
<td>For compartment division Gibo/Pallet</td>
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<td>ZW1294</td>
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<td>Intermediate layer</td>
<td>Comprising 0867 5356 + 0867 5357</td>
<td>0867 5362</td>
<td>ZW1295</td>
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<td>Intermediate layer</td>
<td>For clean parts</td>
<td>0867 5366</td>
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<td>PB1</td>
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<tr>
<td>Intermediate layer</td>
<td>1160 x 740 x 5mm plastic hollow cavity</td>
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<td>ZW1302</td>
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<tr>
<td>Intermediate layer</td>
<td>1470 x 980 x 4mm PE black</td>
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<td>ZW1304</td>
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<tr>
<td>Intermediate layer</td>
<td>1170 x 770 x 10 plywood with strips</td>
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<td>ZW1306</td>
<td>Oil pan Agri Power 2013 4V</td>
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<tr>
<td>Intermediate layer</td>
<td>1150 x 745 x 6 plywood</td>
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<td>ZW 1299</td>
<td>For PCB 1 base + intermediate layer</td>
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### Prisms

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<tr>
<th>Prisms</th>
<th>Middle prisms blue</th>
<th>0867 5272</th>
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<th>Crankshaft 1012/13 f. C3E2</th>
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<td>0867 5277</td>
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<td>Crankcase 1012/2013 4-cyl. F. C3E1</td>
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<tr>
<td>Prisms</td>
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<td>Prisms</td>
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<td>Prisms</td>
<td>Base prisms brown 1190mm</td>
<td>0867 5282</td>
<td>-</td>
<td>Crankcase 1013 4-cyl. F. C3E1</td>
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<tr>
<td>Prisms</td>
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<td>0867 5283</td>
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<td>Crankcase 1013 4-cyl. F. C3E1</td>
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<tr>
<td>Prisms</td>
<td>Base prisms natural 780mm</td>
<td>0867 5358</td>
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<td>Crankcase 1012/2013 6-cyl. F. C3E1</td>
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<td>Prisms</td>
<td>Middle prisms natural 780mm</td>
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<td>-</td>
<td>Crankcase 1012/2013 6-cyl. F. C3E1</td>
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<tr>
<td>Prisms</td>
<td>Middle prisms natural 1,190mm</td>
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<td>-</td>
<td>Crankcase 1012/2013 4-cyl. F. C3E1</td>
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<tr>
<td>Prisms</td>
<td>Prism yellow 1190mm (both sides)</td>
<td>0867 5425</td>
<td>-</td>
<td>Camshaft 91x 3/4 Cyl C3E2 &amp; C3E6</td>
</tr>
<tr>
<td>Prisms</td>
<td>Prism yellow 780mm (both sides)</td>
<td>0867 5426</td>
<td>-</td>
<td>Camshaft 91x 5/6 Cyl C3E2 &amp; C3E6</td>
</tr>
</tbody>
</table>

### Labelling

| Insertion pocket | 216 x 100 metal parts blank | 0101 7044 | - | Label holder f. C3E1-5 |
| Insertion pocket | Red painted for Euro mesh box | 0101 1620 | - | Label holder f. C3, C3B... |
| Label loop       | 1.8 x 50 mm oval | 0100 8295 | - | Hook for label pockets |
| Adhesive labels  | Goods labels for engine shipping | 0101 1731 | - | Shipping material |
| Label            | 3x cross perforated, DIN A4 single sheet | 0101 7524 | - | Label material WE |
| Label            | Blank | 0101 7032 | - | Shipping paper/ Container label |
| Form             | Technical order confirmation | 0103 1437 | - |
| Accompany paper pocket | Self-adhesive 230x165mm C5 neutral | 0101 7542 | - | Label pocket for containers etc. |
| Shipping certificate empties | 2x cross perforated, DIN A4 single sheet | |

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The engine company.
1. Overview of DEUTZ Packaging

**Standard cardboard**

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimension</th>
<th>Code</th>
<th>Type</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Paperboard containers</td>
<td>200 x 133 x 120 mm</td>
<td>0100 7056</td>
<td>universal</td>
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<td>300 x 240 x 200 mm</td>
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<tr>
<td>Paperboard containers</td>
<td>570 x 230 x 133 mm</td>
<td>0100 7073</td>
<td>universal</td>
<td>Shipping, enclosure / spare parts shipping</td>
</tr>
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<td>Paperboard containers</td>
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<td>400 x 400 x 80</td>
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<td>Shipping, enclosure / spare parts shipping</td>
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<td>Paperboard containers</td>
<td>750 x 700 x 1050 mm</td>
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<td>universal</td>
<td>Engine paperboard / shipping</td>
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<tr>
<td>Paperboard containers</td>
<td>1100 x 880 x 1120 mm</td>
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<td>Paperboard containers</td>
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<td>Paperboard containers</td>
<td>600 x 400 x 400 mm</td>
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<td>580 x 240 x 235 mm</td>
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<td>Paperboard containers</td>
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<td>Paperboard containers</td>
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# 1. Overview of DEUTZ Packaging

## Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<th>Notes</th>
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<td>GSW 16-32</td>
<td>0100 9519</td>
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<td>For 19 mm steel band</td>
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<td>8 x 10</td>
<td>0138 5262</td>
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<td>8x8x230 folded</td>
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<td>Transparent 50 mm</td>
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<td>Paper wet adhesive or printed</td>
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<td>For plastic strapping band</td>
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<td>Apex steel 19 mm</td>
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<td>With printed label container for repair</td>
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<tr>
<td>PVC band</td>
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<tr>
<td>Grooved nail</td>
<td>120 x 3.8</td>
<td>0101 1760</td>
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<td>2.5 x 60</td>
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<td>Round-head nail</td>
<td>3.1/80</td>
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1. Overview of DEUTZ Packaging

### Boxes

**STANDARD shipping**

| Box ExPak S | 1400x1000x1070 | 0150 1436 | Export / Import FAW KG |
| Box ExPak S | 1400x1100x870 | 0150 1435 | Export / Import FAW KG & CKD |
| ExPakS | 2100x1130x700 | | Shipping |
| ExPakS | 1370x1070x730 | 0150 1443 | Shipping |

**EXTERNAL suppliers**

**COOLING SYSTEMS**

| Box ExPak S | 1900x1500x580 | Nefab Zg. 1566 | Cooling systems ULM enclosure |
| Box ExPak P | 1550x1150x420 | Nefab Zg. 1744 | Cooling systems Cologne enclosure |
| Box ExPak P/S | 1800x1220x530 | Nefab Zg. 1498 | Cooling systems Ulm enclosure old |
| Box ExPak P | 1230x1090x530 | | Cooling systems Ulm enclosure new |

**ENGINES**

| ExPakPS3 | 1180x780x1000 | | Box sea/air freight |
| ExPakS | 1370x1070x920 | 0150 1436 | Box sea/air freight |
| ExPakP | 380x280x250 | 0150 1437 | Box sea/air freight |
| ExPakP | 1180x780x1000 | 0150 1043 | Box sea/air freight |
| ExPakP | 1180x780x750 | 0150 1418 | Box sea/air freight |
| ExPakP | 1180x780x815 | 0150 1423 | Box sea/air freight |
| ExPakS | 1760x1250x1250 | 0150 1506 | Box sea/air freight |
| ExPakS | 1560x1250x1250 | 0150 1505 | Box sea/air freight |
| ExPakS | 1360x1250x1300 | 0150 1504 | Box sea/air freight |
| ExPakS | 1360x1250x1030 | 0150 1503 | Box sea/air freight |
| ExPakP | 900x770x1050 | 0150 1350 | Box sea/air freight |
| ExPakP | 980x830x1050 | 0150 1350 | Box sea/air freight |
| ExPakP | 1280x750x1400 | 0150 1353 | Box sea/air freight |
| ExPakP | 880x690x1050 | 0150 1367 | Box sea/air freight |
| ExPakPS | 1580x750x1400 | 0150 1347 | Box sea/air freight |
| ExPakPS | 1850x1050x1400 | 0150 1033 | Box sea/air freight |
| ExPakS | 1850x1050x1400 | 0150 1033 | Box sea/air freight |
| ExPakP | 1250x1050x1050 | 0150 1029 | Box sea/air freight |
| ExPakS | 1450x1050x1400 | 0150 1031 | Box sea/air freight |
| ExPakS | 1780x980x1400 | 0150 1368 | Box sea/air freight |
| ExPakPS | 1580x980x1400 | 0150 1369 | Box sea/air freight |
| ExPakPS | 1650x1050x1400 | 0150 1032 | Box sea/air freight |
| ExPakPS | 1250x1050x1400 | 0150 1030 | Box sea/air freight |
| ExPakP | 1110x750x1150 | 0150 1300 | Box sea/air freight |
| ExPakP | 1410x750x1150 | 0150 1299 | Box sea/air freight |
| ExPakP | 1380x980x1400 | 0150 1370 | Box sea/air freight |
| ExPakP | 1180x750x1400 | 0150 1371 | Box sea/air freight |
| ExPakP | 1080x730x1050 | 0150 1373 | Box sea/air freight |
| ExPakP | 980x560x1050 | 0150 1372 | Box sea/air freight |
| ExPakP | 720x560x1050 | 0150 1348 | Box sea/air freight |
| ExPakP | 1100x750x1050 | 0150 1028 | Box sea/air freight |
### 1. Overview of DEUTZ Packaging

#### Engine transport frames

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1. Overview of DEUTZ Packaging

Engine transport frames

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### Appendix

2. Empty container storage sites

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3. Container

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## Appendix

### 2. Empty container storage sites

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### 4. WST-ZW empty in containers (2 containers per storage site)

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### Container

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Appendix

3. FAQ

Packaging regarding material deliveries

*Where do I find packing instruction?*
The packing instructions are included with the DEUTZ purchase order.

*Who is responsible for packaging at Deutz?*
The Global Logistics / Packing Systems department.

*Are packing instructions binding?*
As content of the DEUTZ purchase order, the packing instructions are a component of the supply agreement and binding in the same way as parts specifications.

*What do I do if the parts do not match the packing instruction?*
Inform the Global Logistics / Packing Systems department and coordinate the packaging.

*Can packing instructions be adapted?*
Containers and filling volumes can be adapted in coordination with the Global Logistics / Packing Systems department.

*Do the packing specifications also apply for deliveries to DEUTZ Service?*
In general, all packaging of series production can also be used for DEUTZ Service. The special individual part packages from the specifications of DEUTZ Service must be observed.

*Are there special packing instructions for DEUTZ Service?*
DEUTZ Service makes special agreements for the individual part packaging directly with the suppliers.
Appendix

3. FAQ

**Empty containers, container traffic**

*Who pays the freight costs for DEUTZ containers?*
The freight payer for full goods deliveries also pays for the empty container freight.

*How do I order DEUTZ empty containers?*
Informally by mail *packorder@deutz.com* indicating the supplier number and type + quantity of the empty containers.

*Which forwarding agent is responsible for us?*
The responsible regional forwarding agent is appointed by the DEUTZ Transport/Freight department, Tel. 0049 (0) 221 822 3713.

*When will I receive the ordered DEUTZ containers?*
As a rule, within a time period of no later than ten working days after ordering.

*We have received defective/dirty DEUTZ containers, what do we do?*
The containers can be returned with a separate delivery note in conjunction with full goods deliveries to an empty container warehouse of DEUTZ AG. Containers that are damaged or lost by forwarding agents, suppliers or customers will be invoiced to the causal party for the new procurement value.

*We have received the wrong containers, how do I send these back?*
The containers can be returned with a separate delivery note in conjunction with full goods deliveries to an empty container warehouse of DEUTZ AG.

*Quantities different to those actually requested are on the empty container delivery note, why?*
The amount of containers ordered did not correspond to the container requirement forecast or not enough empty containers were available at the time of loading.

*Why were no delivery papers present in my empty container consignment?*
Delivery papers are handed over at every loading. Delivery papers can be submitted incorrectly as a result of subcontracting forwarders and the handover of delivery papers to the head offices of the forwarding agents.

*Why do I receive less empty containers than requested?*
The amount of containers ordered did not correspond to the container requirement forecast or not enough empty containers were available at the time of loading.

*DEUTZ empty containers have been damaged or lost, what has to be done?*
The damage or loss must be reported in writing to the DEUTZ Container Management.

*Can DEUTZ containers be sent to another address?*
When there is a known own supplier number officially defined as a pick-up station by DEUTZ Purchasing.
Appendix

3. FAQ

Empty containers, container traffic

What packing can be used if no containers are available?
After release by DEUTZ alternative recyclable containers or load-compliant disposable packaging (cardboard boxes).

Are costs incurred for the use of Deutz containers?
DEUTZ AG provides containers free of charge for transport purposes. If the inventory control ascertains that containers are used for storage or for other company-internal purposes, container rentals or compensation fees will become due.

Container account

When is the loaned goods statement sent by DEUTZ?
The account statement is sent every quarter of the year.

How often do we receive a loaned goods statement?
Four times a year.

A container debt of DEUTZ containers has been identified in our loaned goods statement, is that the case?
As DEUTZ procures the DEUTZ containers itself before providing them, it cannot be the case that DEUTZ owes its own DEUTZ containers to a supplier / customer.

Does the loaned goods statement mean that we have to send back loaned goods directly?
No, only the container inventory has to be indicated first of all. The return of empty containers will then be requested, if applicable.

Do we ourselves have to keep stock of the DEUTZ containers?
In your own interest, incoming and outgoing containers should be registered so that you can verify the whereabouts of DEUTZ’ own containers at all times.

Can a weekly / monthly loaned goods statement be sent?
This is not possible owing to the high administrative expense. Individual information on container account statuses are possible at any time.
Appendix

3. FAQ

Engine transport frames

*How do I send back engine transport frames?*
Engine transport frames and fasteners should be returned to DEUTZ AG regularly and without delay after the installation of the DEUTZ engines at the customer. For this, you should issue your own delivery note with the type (DEUTZ parts number) and quantity of the engine transport frame being sent. As a result, the responsible forwarding agent (see further FAQ) is then commissioned for the transport.

*Where are engine transport frame returned to?*

Returns Engine Transport Frames Cologne (grey & galvanised racks, wood):
Stute Schreinerei c/o DEUTZ AG
Ottostr.1
51147 Köln-Porz-Eil
Tel. 0049 (0) 221 822 3769
Fax. 0049 (0) 221 822 3431

Returns Engine Transport Frames Ulm (blue racks):
DEUTZ AG
Shipping
Nicolaus-Otto-Str. 25
D-89079 Neu-Ulm
Tel. 0049 (0) 731 404 9371
Fax. 0049 (0) 731 404 9311

*Who pays the freight costs for returning engine transport frames to DEUTZ?*
The customer pays the freight in the case of engine deliveries with agreed Incoterm FCA (= "free carrier" deliveries). DEUTZ pays the freight in the case of engine deliveries with agreed Incoterm CPT (="carriage paid to" deliveries).

*Do wooden engine transport frames have to be returned to DEUTZ?*
Wooden transport frame can be returned on account of the statutory obligation for the return of packaging, but do not have to be returned.

*Do engine fasteners have to be returned to DEUTZ?*
Engine fasteners (transport brackets, transport holders etc.) which are not used for installing the engine should be returned to DEUTZ in suitable containers.
Appendix

3. FAQ

Engine transport frame

We receive engines on wooden engine transport frames instead of steel, why?
If steel transport frames are in circulation at customers or empty transport frames are not
returned regularly in good time to DEUTZ, DEUTZ Assembly will often have no steel
transport frames available. Wooden frames are used as an alternative packaging so that
the engine construction does not stop and the engines can be sent to the customers.

_The engine transport frames used are unsuitable for our purposes, how can that be
changed?_
When ordering engines, the customer specifies the engine transport frames from the
modules on offer for the packaging together with DEUTZ Sales. If it turns out in practice
that the transport frames are unsuitable, a suitable packaging module must be selected via
DEUTZ sales and the corresponding change made to the orders.
Appendix

4. Addresses / Contacts

**Packing Planning / Container Traffic**
DEUTZ AG
Global Logistik / Verpackung
Ottostr. 1
D-51147 Köln-Porz-Eil
Tel. 0049 (0) 221 822 3704, 3133, 2984, 3710
packtech@deutz.com

**Empty Container Centre Cologne**
DEUTZ AG
Leergutzentrum
Hansestr. 70c
D-51149 Köln-Porz-Gremberghoven
Tel. 0049 (0) 221 822 3116
Fax. 0049 (0) 221 822 3431
packorder@deutz.com

**Empty Container Warehouse DEUTZ Service**
DEUTZ AG
Leergutplatz
Dillenburger Str. 106
D-51105 Köln-Kalk
Tel. 0049 (0) 221 822 6516
Fax. 0049 (0) 221 822 6519

**Empty Container Ulm**
DEUTZ AG
Leergutplatz
Nicolaus-Otto-Str. 25
D-89079 Neu-Ulm
Tel. 0049 (0) 731,404 9243
Fax. 0049 (0) 731 404 9311

**Plant Herschbach Incoming Goods, Shipping & Empty Containers**
DEUTZ AG
Komponentenwerk
Industriegebiet Sonnenberg 1
56249 Herschbach (Westerwald)
Tel. 0049 (0) 2626 765 128
Fax. 0049 (0) 2626 765 122
Appendix

4. Addresses / Contacts

Returns Engine Transport Frames Cologne (grey & galvanised)
Stute Schreinerei c/o DEUTZ AG
Ottostr.1
51147 Köln-Porz-Eil
Tel. 0049 (0) 221 822 3769
Fax. 0049 (0) 221 822 3431

Returns Engine Transport Frames Ulm (blue)
DEUTZ AG
Versand
Nicolaus-Otto-Str. 25
D-89079 Neu-Ulm
Tel. 0049 (0) 731 404 9371
Fax. 0049 (0) 731 404 9311

Stute Logistics Center Cologne, Incoming Goods & Shipping for Plant Cologne-Porz
Stute Verkehrs GmbH
Logistikzentrum Köln-Porz
Niderkasseler Str. 24
D-89079 Neu-Ulm
Tel. 0049 (0) 2203 9646-0

Incoming Goods Plant Ulm
DEUTZ AG
Wareneingang
Nicolaus-Otto-Str. 25
D-89079 Neu-Ulm
Tel. 0049 (0) 731 404 9380
Fax. 0049 (0) 731 404 9212

Incoming Goods Plant Cologne Deutz
DEUTZ AG
Wareneingang Geb.142
Danzier Str. Tor 18
D-51063 Köln-Mühlheim
Tel. 0049 (0) 221 822 2046
Fax. 0049 (0) 221 822 2074

Shipping Ulm
DEUTZ AG
Versand
Nicolaus-Otto-Str. 25
D-89079 Neu-Ulm
Tel. 0049 (0) 731 404 9371
Fax. 0049 (0) 731 404 9311
Appendix

4. Addresses / Contacts

CKD Shipping Cologne : SLW
SLW