

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels		
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### Document history

Version	Changes from last revision and why
10.0	<ul style="list-style-type: none"> <li>- Imperial measurement are added on height and weight</li> <li>- Weight and dimensions are updated</li> <li>- Headlines under section 4.2 are structured</li> <li>- Reference to GI280A0000-05 “Wooden packaging – Quality and requirements for non-returnable packaging” added to the document</li> <li>- Reference to “GP405A0036-03 Health &amp; Safety Hazards, Risks and Opportunities added to the document”</li> <li>- Reference to UIC Norm 435-2 “EUR pallet quality standard” added as reference document</li> <li>- Wording under point 4.0 changed for strapping of items with plastic strap and request of steel is more specific described</li> </ul>

## 1.0 Purpose

To define transport levels and to establish general lines for transport safeguarding of finished goods (products/components) to be forwarded from production sites and from the Distribution Centres.

## 2.0 Scope

The scope for this standard is Grundfos sales companies, Grundfos production companies, Grundfos distribution centres and external suppliers.

## 3.0 Responsibilities

The managers of **departments receiving goods, shipping departments, and distribution centres** shall ensure that all packaging material which is received and sent complies with the requirements of this Group Instruction.

**The purchasing department** shall ensure that Grundfos’ suppliers know and obey the requirements of this Group Instruction.

The department must also make agreements with the suppliers that extra costs in connection with non-compliance with this Group Instruction will be entered to the suppliers’ accounts.

## 4.0 Requirements

### 4.1 General

All products/finished goods shall be transported safeguarded to withstand the hazards to which they will be exposed in transit.

Loaded EUR pallets are the preferred transport unit.

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels	<b>Version</b>	10.0
<b>Document ID</b>	PROCESSDOC-63-39	<b>Page</b>	1 of 6

The below directions **must** be followed:

- The weight of one loaded EUR pallet for transportation must not exceed 1000 kilos (2200lbs). (dynamic load)
- From loading bearing perspective maximum weight is 1500 kilos (3300lbs) based on UIC Norm. (static load)
- The weight of one loaded EUR pallet for **air freight** must not exceed 600 kilos (1300lbs).
- In general pallets are packed to a height of maximum 1150 mm (45,28 inch) corresponding to one EUR pallet with five collars.
- However max. loaded pallet height with frames is approved with 8 frames 1750mm (68,90 inch) for customer required loading units.
- In transit, loaded EUR pallets may be stacked on top of each other to a maximum height of.
  - 2250 mm - for ordinary containers.
  - 2600 mm - for high cube containers/truck trailers.
- Consignments forwarded on pallets **fitted with collars** shall always be packed in one of the following ways: See also special for Air freight under **4.2.3**
  - Method no. 1: The top collar shall be covered by a hardboard lid placed inside the collar, two bearers shall be placed on top of the collar, and two straps shall be strapped round the bearers, collars.
  - Method no. 2: The top collar shall be covered by either Chipboard/Particleboard or an OSB (oriented structural board) plate. The board/plate, the frames of the pallet shall be strapped with double crossed straps.
- The packages shall be stacked on the EUR pallet so that the edges of the packages are as close as possible to the edges of the pallet. Empty spaces in the middle of the pallet shall be filled out to prevent the goods from skidding.
- If possible, the packages shall be stacked within the dimensions of the EUR pallet, i.e. the load should not hang out from the pallet.
- If it is impossible to keep packages within the dimensions of the EUR pallet, they can be supported by a board of dimensions corresponding to the dimensions of the flat pallet plus the projection.
- Components placed on pallets shall be fixed in transit in order to prevent them from being jumbled together or from skidding.
- Corrugated fibreboard boxes **must** be forwarded with the lid upwards.
- Packages of same dimensions shall always be stacked corner upon corner. Each layer may be stabilized by a cardboard liner or - if the items are heavy - a plywood board.
- Packages of various sizes shall be stacked with as many corners and edges as possible right on top of each other.
- The heaviest packages shall **always** be placed at the bottom.
- Special stacking methods or patterns required for specific products shall be respected.
- Plastic straps needs to be prioritized when strapping is required. Metal straps should only be used when type of goods requires steel strapping to protect transport safety. i.e. metal coils in the inbound flow  
**Important:** To avoid injuries the activity of opening straps always needs to be risk assessed and sufficient control measures needs to be in place e.g., sufficient tools to open the straps, cut resistant gloves and face

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels	<b>Version</b>	10.0
<b>Document ID</b>	PROCESSDOC-63-39	<b>Page 2 of 6</b>	

protection. – Risk assesment to be done according to G405A0036-03 Health & Safety Hazards, Risks and Opportunities

## 4.2 Transport safeguarding levels

### 4.2.1 Transport safeguarding level 1 - Internal transport- Plant (transport within the area of the company)

When consignments are forwarded on pallets **fitted with collars**, two bearers shall always be placed on the top collar, and two straps shall be strapped round the top bearers.

Transport over short distance can be exempted from strapping if transported in a box trailer except rotors, stators and round plates which must be always be strapped.

### 4.2.2 Transport safeguarding level 2 - External transport - Truck (transport outside the company's area in Europe)

#### Truck

Transport safeguarding level 2 shall be applied

- for consignments to sister companies in Europe.
- when goods are collected (ex. work).
- when special conditions have been agreed.

All parcels sent to the Distribution Centre (DC) for storage and for forwarding shall be registered.

#### Packing

- Consignments forwarded on pallets **fitted with collars** shall always be packed in one of the following ways:
  - Method no. 1: The top collar shall be covered by a hardboard lid placed inside the collar, two bearers shall be placed on top of the collar, and two straps shall be strapped round the bearers, collars.
  - Method no. 2: The top collar shall be covered by either Chipboard/Particleboard or an OSB (oriented structural board) plate. The board/plate, the frames of the pallet shall be strapped with double crossed straps.
- Consignments on pallets **without collars** may be covered by either a Chipboard/Particleboard or an OSB (oriented structural board) plate on top, wrapped in stretch film or shrink film - maybe reinforced by edgings, and strapped with double crossed straps.

#### Transport safeguarding

- As far as possible, the goods shall be packed parallel against the front side of the truck floor.
- High stacks of unstable goods shall be carefully lashed to the bottom or to the side of the truck.
- Hollow spaces of more than 144 mm between products or pallets, if any, shall be filled out with fillers (e.g. air bags or upright pallets).
- Loose packages shall be placed in pallet with collars.

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels	<b>Version</b>	10.0
<b>Document ID</b>	PROCESSDOC-63-39	<b>Page</b>	3 of 6

## Wooden boxes

Single-packs made of wood, such as:

- crates.
- boxes made of solid wood.
- plywood boxes with flat pallets as bottoms.

Wooden boxes shall be strapped with at least two straps.

The number of straps around long boxes (e.g. for SP pumps) should correspond to the number of wooden stringer boards, and the straps should be placed between the stringer boards.

### 4.2.3 Transport safeguarding level 3 - External transport – Air (transport outside the company's area, overseas as general cargo)

Transport safeguarding level 3 should be applied for

- all destinations where reloading will take place.
- air transport.

## Packing

- Consignments forwarded on pallets **fitted with collars** shall always be packed in one of the following ways:
  - Method no. 1: The top collar shall be covered by a hardboard lid placed inside the collar, three bearers shall be placed on top of the collar, and three straps shall be strapped round the bearers, collars.
  - Method no. 2: The top collar shall be covered by either Chipboard/Particleboard or an OSB (oriented structural board) plate. The board/plate, the frames of the pallet shall be strapped with double crossed straps.
- Consignments on pallets **without collars** may be covered by either a Chipboard/Particleboard or an OSB (oriented structural board) plate on top, wrapped in stretch film or shrink film - maybe reinforced by edgings, and strapped with double crossed straps.
- Air freight tape (part no V7117835) MUST be applied to all air freight HU

## Air transport

- Containers of plywood or corrugated fibreboard shall be fitted with plywood covers and strapped with two times two straps.
- Air freight goods (single cardboard boxes) shall be forwarded as single parcels and are therefore not placed on pallets.

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels	<b>Version</b>	10.0
<b>Document ID</b>	PROCESSDOC-63-39	<b>Page</b>	4 of 6

#### 4.2.4 Transport safeguarding level 4 - External transport – Sea (transport outside the company’s area, overseas, container and general cargo)

Transport safeguarding level 4 should be applied for

- all destinations where reloading will take place.
- all overseas destinations.

##### Packing

- Consignments forwarded on pallets **fitted with collars** shall always be packed in one of the following ways:
  - Method no. 1: The top collar shall be covered by a hardboard lid placed inside the collar, two bearers shall be placed on top of the collar, and two straps shall be strapped round the bearers, collars.
  - Method no. 2: The top collar shall be covered by either Chipboard/Particleboard or an OSB (oriented structural board) plate. The board/plate, the frames of the pallet shall be strapped with double crossed straps.
- Consignments on pallets **without collars** may be covered by either a Chipboard/Particleboard or an OSB (oriented structural board) plate on top, wrapped in stretch film or shrink film - maybe reinforced by edgings, and strapped with double crossed straps.

##### Transport safeguarding

- All hollow spaces in containers shall be filled out (with air bags or pallets).
- The weight distribution in the container should be even so that the centre of gravity is in the middle.
- High and unstable goods shall be properly lashed to the bottom or sides and stabilized by air bags – or full stack shall be strapped with minimum 2 straps
- The goods shall be protected against moisture and condensation.

#### 4.2.5 External customers

Customer requirements for packaging shall be respected, and the customer should be charged for extra costs, if any.

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels	<b>Version</b>	10.0
<b>Document ID</b>	PROCESSDOC-63-39	<b>Page</b>	5 of 6

## 5.0 Definitions

Example strapped OSB plate with double crossed straps:



## 6.0 Records

Type of record	Where	How long	Responsible
-	-	-	-

## 7.0 References

Document Number	Document Title
GS280A0010	Packaging - Types of packages - Definition of packages
GS280A0018	Wooden packaging - Quality and requirements - Definition of approved pallets, frames and bearers
GS420P0001	Packaging - Test schedule - Loaded Pallets/single packages
GI280A0000 -03	Packaging Marking of Consignments
GI280A0000 -05	Wooden packaging – Quality and requirements for non-returnable packaging
UIC norm 435-2	EUR pallet Quality Standard
GP405A0036-03	Health & Safety Hazards, Risks and Opportunities

<b>Document title</b>	GS280A0011 Packaging - Transport levels - Definition of transport levels	<b>Version</b>	10.0
<b>Document ID</b>	PROCESSDOC-63-39	<b>Page</b>	6 of 6