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**Revision**

Compared to VN 1577-2 (November 2009), the following alterations were made:

Additions in items 1.1, 5.2, 5.3 and 5.4.

Earlier editions: 03-08, 2009-11

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## 1 General conditions

### 1.1 Special notes

1. Fundamentally, the regulations set forth in Part 1 of VN 1577 apply to rolls and cylinders provided that they are valid for rolls and cylinders.
2. If the end customer gives other instructions for packaging, it must be pointed out to him that Voith Paper's packaging instructions are different.
3. VN 1578 must be observed throughout Voith Paper and by external suppliers within the manufacturing location, as well as on site (during installation or roll change).
4. When transporting rolls with mounted bearings, use the supplied transport securing device.
5. Roll cases are only provided for one-time transport.
6. Rapid temperature changes lead to damage or destruction of the roll cover.

### 1.2 Corrosion protection

Because of the long transport and storage time, all rolls must be protected against corrosion. Corrosion protection is to be applied in accordance with VN 1576-2. The processing instructions for the relevant anti-corrosion agent must be strictly followed.

### 1.3 External packaging inspections (for direct deliveries)

1. Voith has the right to inspect the packaging at any time at the contractor's premises.
2. If repeated inspections are necessary for which the contractor is culpable, the contractor bears the resultant costs (e.g. labor, traveling expenses, material costs).
3. Packaging inspections shall not relieve the contractor of his contractual obligations.

### 1.4 Guarantee

The contractor guarantees contractual performance of the packaging according to the state of the art, in particular the best quality and suitability of the packaging material, as well as suitability of the packaging, taking into account the goods to be packed and the actual stresses, for the guarantee periods set forth in the relevant contracts.

## 2 Packaging materials

### 2.1.1 Wood

All wood used (cases, pallets, dunnage, etc.) must be treated in accordance with the IPPC Standard and marked accordingly.

### 2.1.2 Foils and films

1. Aluminium composite foil designed as sealing layer foil.
2. VCI film
3. Wrapping paper (board)
4. Flexible lamella packaging (e.g. Lamiflex, Lamipack)

### 2.1.3 Padding and filler materials

Padding paper, air bags, air cushion foil, foam foils and foam mats are to be used as filler material.

ATTENTION: Styrofoam chips must never be used.

The use of hygroscopic filler and padding materials (e.g. wood wool, hay, straw, waste paper, etc.) to fill out empty spaces and/or for padding is not allowed.

## 3 Goods Classes (GK)

As the materials to be packed are of different physical and chemical sensitivities, they are grouped in the following Goods Classes, depending on their properties.

If the contractor cannot clearly determine the Goods Class, Voith must be consulted.

Goods Classes GK1-9 are established in VN1577-1.

**Rolls (coated and uncoated) always correspond to GK6.**

Note: For foils coated with rubber, polyurethane and ceramic, use exclusively packaging category VK8 or VK8b.

#### 4 Packaging matrix

##### 4.1 General

Should several carriers be deployed for shipment of the goods, the packaging must be in accordance with the highest packaging category/transport class.

Goods class GK	Modes of transport					Storage acc. to VN 1576-2
	Truck	Rail	Ocean	Container <sup>1)</sup>	Air	
	Packaging category (VK)					
GK 6	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	A Coated rolls
GK 6	VK 3a, VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	VK 8a, VK 8b, VK 8c	B Uncoated rolls

<sup>1)</sup> Like Transport Class 3 (sea freight) but transported in the shipping company's container.  
A shipping company's container is not considered to be packaging, but a means of conveyance or transport container.

#### 5 Packaging categories (VK)

The packaging categories are defined in VN 1577-1.  
Packaging categories applicable to rolls

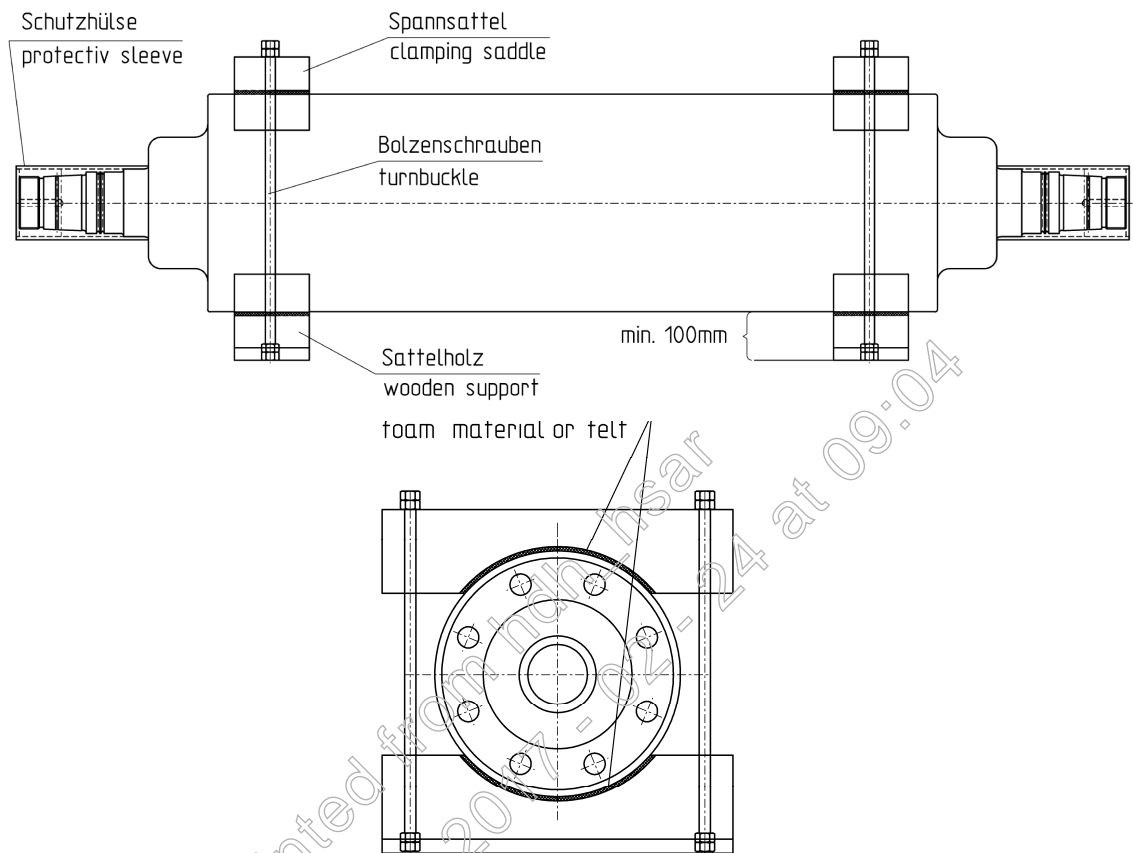
Packaging category description	Page
Packaging category VK 3a: Wooden supports for rolls	4
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## 5.1 Packaging category VK 3a: Wooden supports for rolls

### Application

For door-to-door transport (truck transport), uncoated rolls may be packed on wooden supports (trestles). The wooden supports must be designed so that contact with the rolls (if several rolls are transported by truck) is avoided. Avoid slippage of the wooden supports on the truck by adjusting the weight distribution.

Abbildung 1: Design of the supports



## 5.2 Packaging category VK 8a: Seaworthy case for rolls (with lining, up to 15 tonnes)

Always design the case in accordance with the total gross weight. Roll cases are only provided for one-time transport.

### 5.2.1 Case bottom

Dimension longitudinal runners according to the roll weight (at least 80 mm thick), bottom boarding at least 24 mm thick.

For cases >5t and/or width > 2000mm: Front-end beam bolted to longitudinal runner (through bolt with washer + nut). Transverse bottom runners up to 5t, 100x100 mm thick, from 5t, 100x120mm thick, must be bolted to the longitudinal and intermediate runners or be nailed multiple times.

Securing block for transverse runner: Width like longitudinal runner, height 100 mm, length 400 - 1000 mm, fork-lift truck width must remain free.

From 2t: Securing block or lock for longitudinal runner: Height like longitudinal runner, width 80 mm, length results from case width.

Special note for heavy-lift packaging  $\geq 5$  t: For heavy-lift packaging, the cases must be provided with special heavy-lift hardware and/or case angles.

### 5.2.2 Side walls, face walls and cover

These must be designed to meet the requirements.

For cases > 2 t and / or length > 3000 mm truss-type stiffening is required.

**5.2.3 Stack pressure**

Strap frames, diagonals and case cover pressure blocks must be designed for a stack pressure of at least 1 t/m<sup>2</sup>. The case cover pressure blocks, including case cover pressure block supports, must be installed at distances of 600 - 700 mm and nailed to the side walls.

**5.2.4 Lining**

The inside walls and the cover of the case are to be lined, using waterproof specialty paper or equivalent materials, with sufficient overlap. The lining must not be pierced or damaged.

**5.2.5 Contact surface**

To prevent the roll shell from touching the case, provide contact surfaces in the case at the roll ends. For rolls with mounted bearings, take special care that the roll is not fixed on the supports in the case.

Coated rolls may only be supported on their journals or hubs. Depositing on the roll face is forbidden. In special cases (O P&J, shortened), use special devices.

Select the design of the support in accordance with the load and the available contact surface (at least 50 mm). Where required, use hardwood. Furthermore, lay out the contact surface with foam material or felt.

After the roll has been placed in the case, the preservation of the roll must be checked for damage and repaired, if necessary.

The distance of the rolls from each other and from the side walls must be at least 100 mm.

The distance of the rolls from the bottom and from the cover must be at least 100 mm.

**5.2.6 Marking for handling**

Roll cases must be provided with the following markings for handling:

- Protect from moisture
- Center of gravity
- Attach here
- Top
- Allowed temperature range (values are explicitly stated)
- Lifting by forklift is not allowed
- Symbol for storage class

For the design of the symbols, refer to section relating to Marking and Signing.

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Figure 2: Case design up to 3t

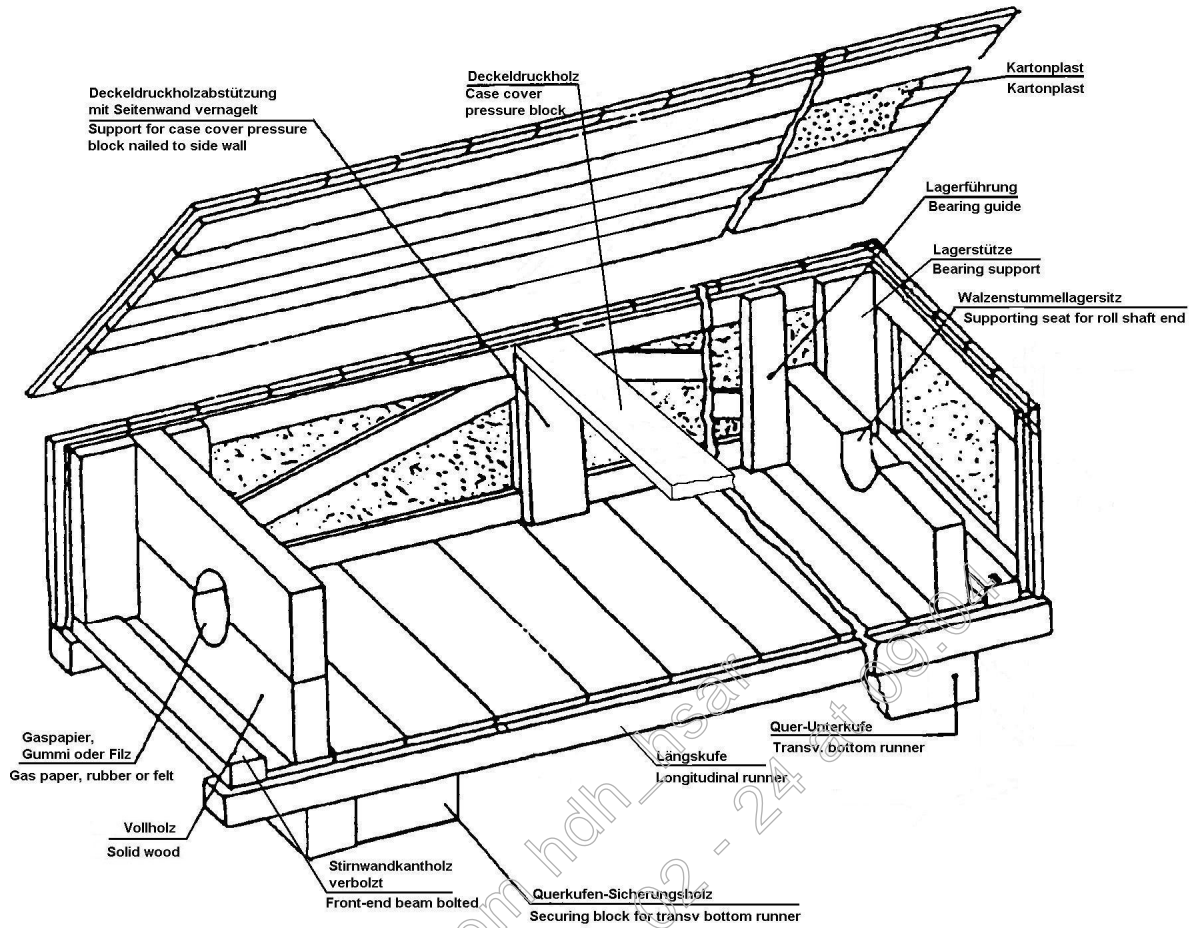
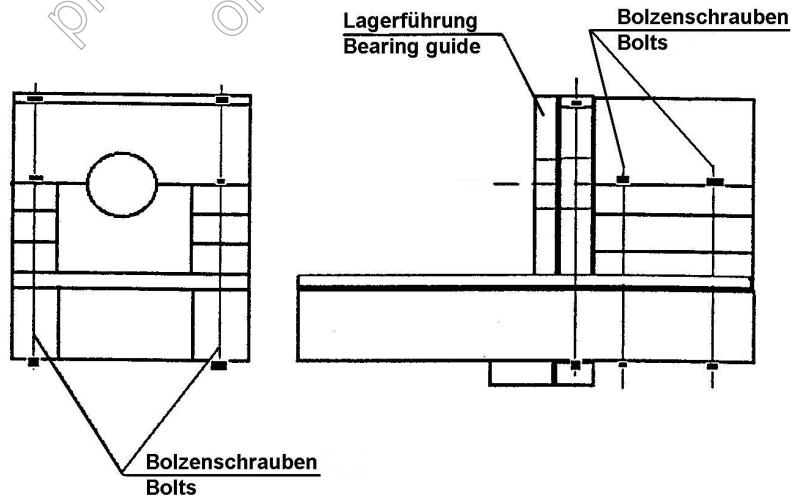


Figure 3: Case design (roll bearings) from 3t



### 5.3 Packaging category VK 8a: Seaworthy case (with lining), from 15 to 30 tonnes for rolls

Always design the case in accordance with the total gross weight.  
Roll cases are only provided for one-time transport.

#### 5.3.1 Case bottom

Dimension longitudinal runners according to the roll weight (at least 120 mm thick), bottom boarding at least 24 mm thick.

Front-end beam bolted to longitudinal runner (through bolt with washer + nut).

Transverse bottom runners up to 100x120 mm thick, must be bolted to the longitudinal and intermediate runners or be nailed multiple times.

Securing block for transverse runner: Width like longitudinal runner, height 100 mm, length 400 - 1000 mm, fork-lift truck width must remain free.

Securing block or lock for longitudinal runner: Height like longitudinal runner, width 80 mm, length results from case width.

The cases must be provided with special heavy-lift hardware and/or case angles.

#### 5.3.2 Side walls, face walls and cover

These must be designed to meet the requirements. Truss-type stiffening is required.

Side walls: Strap frames and diagonals on the inside. Between the strap frame and the boarding, line with waterproof specialty paper or equivalent materials with sufficient overlap. The lining must not be pierced or damaged.

Face walls: Strap frame of the face wall at least 50x50 mm thick. The strap frame must be stiffened on wide cases at a distance of max. 1200mm with vertical square timbers.

When there is vertical boarding, fit straps horizontally in addition at a distance of max. 1200mm. Care must be taken that the vertical straps are always full-length.

Cover: Longitudinal and transverse boarding, in between hollow chamber plates (Kartonplast); if Kartonplast consists of several parts, at least 150mm overlapping and sealed with adhesive tape. The cover must rest on the strap frames of the face walls and on the case cover pressure blocks.

#### 5.3.3 Stack pressure

Strap frames, diagonals and case cover pressure blocks must be designed for a stack pressure of at least 1 t/m<sup>2</sup>. The case cover pressure blocks, including case cover pressure block supports, must be installed at distances of 600 - 700 mm and nailed to the side walls.

#### 5.3.4 Lining

The inside walls and the cover of the case are to be lined, using waterproof specialty paper or equivalent materials, with sufficient overlap. The lining must not be pierced or damaged.

#### 5.3.5 Contact surface

To prevent the roll shell from touching the case, provide contact surfaces in the case at the roll ends. For rolls with mounted bearings, take special care that the roll is not fixed on the supports in the case.

Coated rolls may only be supported on their journals or hubs. Depositing on the roll face is forbidden. In special cases, use special devices.

Select the design of the support in accordance with the load and the available contact surface (at least 50 mm). Where required, use hardwood. Furthermore, lay out the contact surface with foam material or felt.

After the roll has been placed in the case, the preservation of the roll must be checked for damage and repaired, if necessary.

The distance of the rolls from each other and from the side walls must be at least 100 mm.

The distance of the rolls from the bottom and from the cover must be at least 100 mm.

#### 5.3.6 Marking for handling

Roll cases must be provided with the following markings for handling:

- Protect from moisture
- Attach here
- Allowed temperature range (values are explicitly stated)
- Symbol for storage class
- Center of gravity
- Top
- Lifting by forklift is not allowed
- Drive side

For the design of the symbols, refer to section relating to Marking and Signing.

Figure 4: Case execution, reinforced (over 15 to)

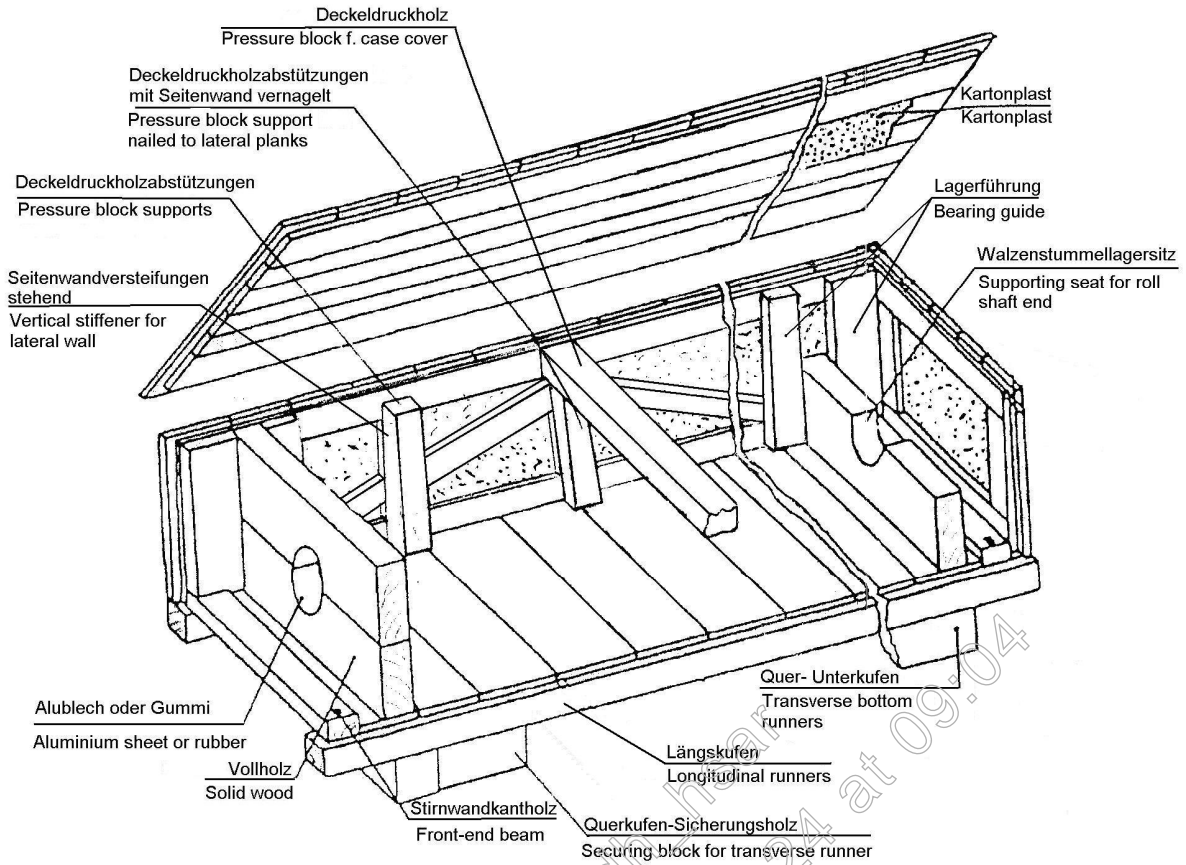
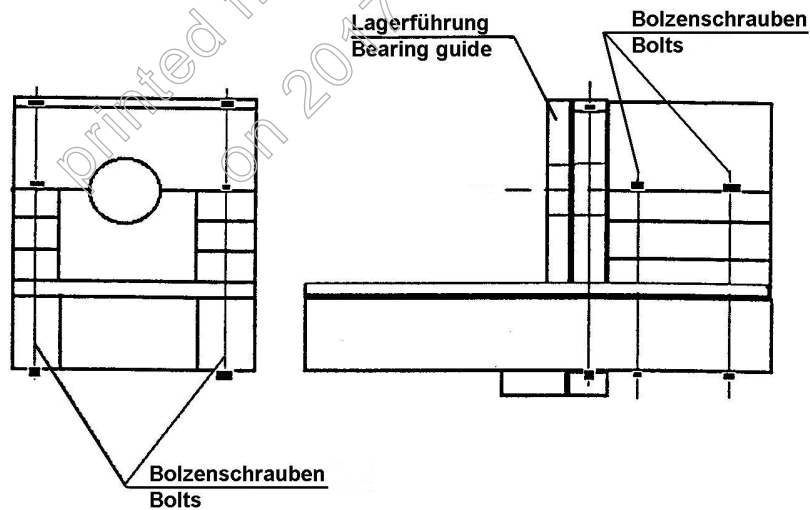


Figure 5: Case design (roll bearings)





#### 5.4 Packaging category VK 8a: Seaworthy case (with lining) from 30 tonnes upwards for rolls

##### **Always design the case in accordance with the total gross weight.**

Roll cases are only provided for one-time transport.

##### 5.4.1 Case bottom

Dimension longitudinal runners according to the roll weight (at least 150x240 mm thick, structural composite timbers), bottom boarding at least 24 mm thick.

Front-end beam bolted to longitudinal runner (through bolt with washer + nut).

Transverse bottom runners (Figure 6) of 200x200 mm thickness must be bolted to the longitudinal and intermediate runners or be bolted multiple times. At the suspension points, 2 transverse bottom runners (Figure 6) each are to be mounted beside each other.

Securing block for transverse runner (Figure 7): Width like longitudinal runner, height 200 mm, length 400 - 1000 mm, fork-lift truck width must remain free.

On delivery, a lengthwise formwork (Figure 8) must be fitted to the transverse bottom runners or to the wooden safety device.

Securing block or lock for longitudinal runner: Height like longitudinal runner, width at least 150 mm, length results from case width. The cases must be provided with special heavy-lift hardware and/or case angles. (Use case angles over 30 tonnes.)

##### 5.4.2 Side walls, face walls and cover

These must be designed to meet the requirements. Truss-type stiffening is required.

Side walls: Strap frames and diagonals on the inside. Between the strap frame and the boarding, line with waterproof specialty paper or equivalent materials with sufficient overlap. The lining must not be pierced or damaged.

Face walls: Strap frame of the face wall at least 50x80 mm thick. The strap frame must be stiffened on wide cases at a distance of max. 1200mm with vertical square timbers.

When there is vertical boarding, fit straps horizontally in addition at a distance of max. 1200mm with at least 100x120mm. Care must be taken that the vertical straps are always full-length.

Cover: Longitudinal and transverse boarding, in between hollow chamber plates (Kartonplast); if Kartonplast consists of several parts, at least 150mm overlapping and sealed with adhesive tape. The cover must rest on the strap frames of the face walls and on the case cover pressure blocks.

##### 5.4.3 Stack pressure

Strap frames, diagonals and case cover pressure blocks must be designed for a stack pressure of at least 1 t/m<sup>2</sup>. The case cover pressure blocks, including case cover pressure block supports, must be installed at distances of 600 - 700 mm and nailed to the side walls.

##### 5.4.4 Lining

The inside walls and the cover of the case are to be lined, using waterproof specialty paper or equivalent materials, with sufficient overlap. The lining must not be pierced or damaged.

##### 5.4.5 Contact surface

To prevent the roll shell from touching the case, provide contact surfaces consisting of hardwood (e.g. beech) Figure 9, in the case at the roll ends. For rolls with mounted bearings, take special care that the roll is not fixed on the supports in the case.

Coated rolls may only be supported on the journals or hubs. Depositing on the roll face is forbidden. In special cases, use special devices.

The support is to be lined with foam or felt according to the load and the contact surface available.

After the roll has been placed in the case, the preservation of the roll must be checked for damage and repaired, if necessary.

The distance between the roll and the side walls or to the vertical lugs must be at least 100 mm.

The distance of the rolls from the bottom and from the cover and to the horizontal lugs must be at least 200mm.

**5.4.6 Marking for handling**

Roll cases must be provided with the following markings for handling:

- Protect from moisture
- Attach here
- Allowed temperature range (values are explicitly stated)
- Symbol for storage class
- Center of gravity
- Top
- Lifting by forklift is not allowed
- Drive side:

For the design of the symbols, refer to section relating to Marking and Signing.

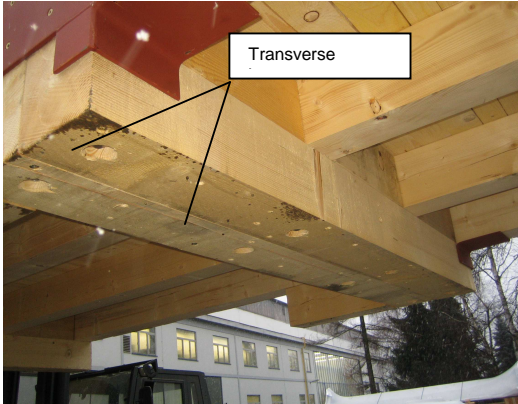


Figure 6

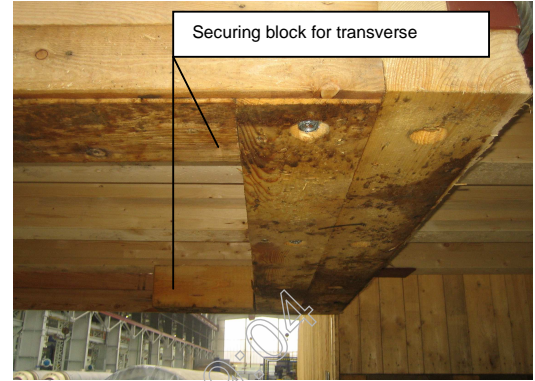


Figure 7



Figure 8

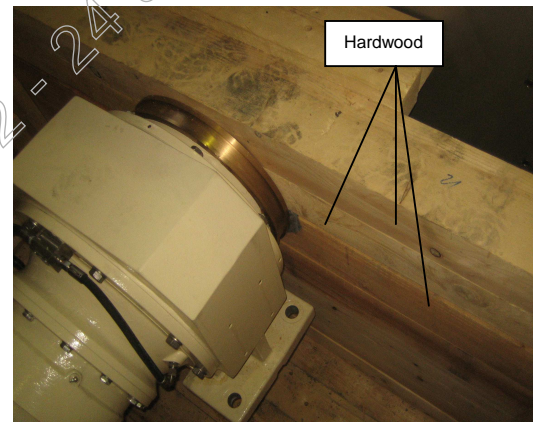
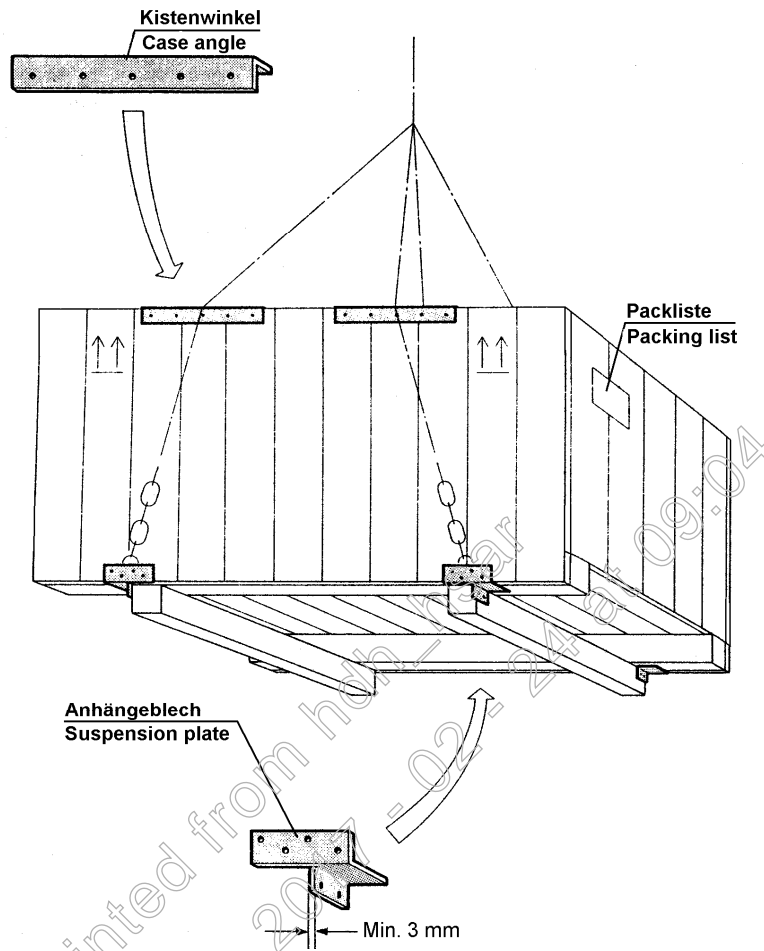


Figure 9

### Heavy-lift hardware (suspension plates and case angles)

Refer to VN 1577-1

Figure 10: Fitting of heavy-lift hardware

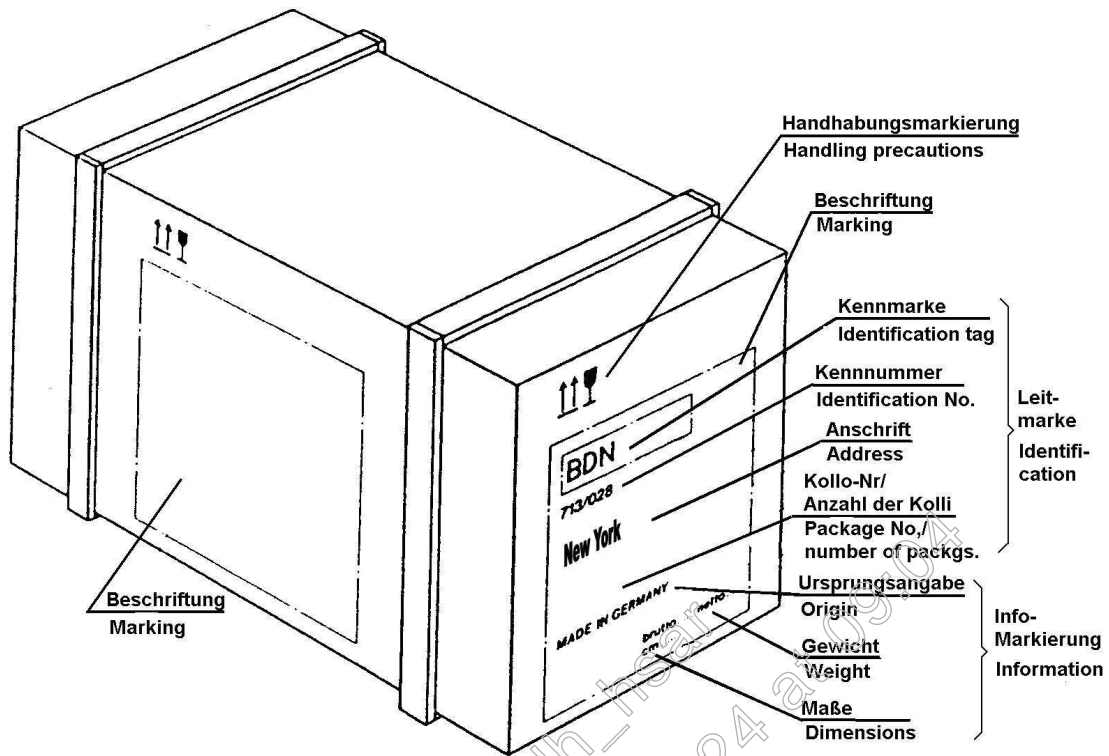


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6 Marking and signing instructions

See also VN 1577-1

Figure 11: Example for lettering and handling marking



















Examples for labeling of cases for rolls



The "center of gravity" symbol must be put on packages weighing more than 500kg on at least two bordering sides.

Figure 12: Symbol for handling marking

Designation	Symbols Design to DIN 30600 / ISO7000 example of template manufacture	Designation	Symbols Design to DIN 30600 / ISO7000 example of template manufacture
Vor Nässe schützen Keep dry		Anschlagen hier Sling here	
Vor Hitze (Sonneneinstrahlung) schützen Keep away from heat		Zerbrechliches Packgut Fragile, Handle with care	
Keine Handhaken verwenden Use no hooks		Oben This way up	
Schwerpunkt Center of gravity		Stechkarre hier nicht ansetzen No hand truck here	
Klammern in Pfeilrichtung Clamp here		Sperrschicht nicht beschädigen Do not destroy barrier	
Elektrostatisch gefährdetes Bauelement Electrostatic sensitive device		Zulässiger Temperaturbereich Temperature limitations	
Gabelstapler hier nicht ansetzen Do not use fork lift truck here		Zulässige Stapellast Stacking limitation	
Vor Hitze und radioaktiven Strahlen schützen Protect from heat and radioactive sources		Aufreißen hier Tear off here	

The symbol corresponding to the required storage instructions must be applied to the package in accordance with the Packing List.

The symbols are made known for the specific order.