



Guidelines for Safety at Work

Racking and Shelving

Inspection and repair

From expert inspection to replacement of defective racking and shelving parts in accordance with DIN EN 15635.



Verband für Lagertechnik
und Betriebseinrichtungen



Verband für
Lagerhaltung
und Betriebsmittel

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Safety and economic efficiency

The storage installation as an important constituent

Prevention, inspection and repair combine to avoid damage in the warehouse.

06

Your responsibilities

Compulsory inspection for storage equipment

To provide protection for those working in the storage installation, appropriate measures need to be taken – you need to be familiar with these measures.



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The approved racking and shelving inspector

Knowhow always up-to-date

The legally secure expert inspection is carried out by a racking and shelving inspector approved by the Association – there are good reasons for this.



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Measures to be taken in case of damage

How to act in a legally secure way

The standardized regulations range from fulfilling the safety measures to repairs.

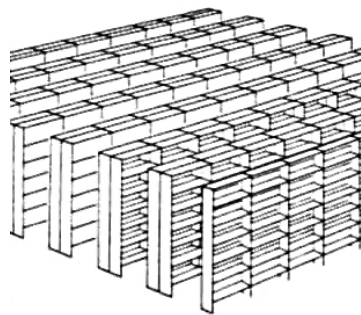
Safety and economic efficiency

The storage installation as an important constituent

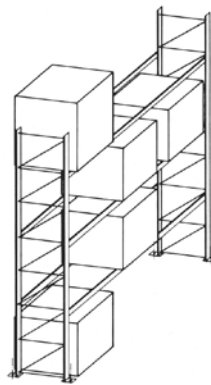
Is your storage installation safe?

The productivity of a company is substantially influenced by the storage function throughout the total logistics chain. This applies equally to industrial, commercial and service organizations.

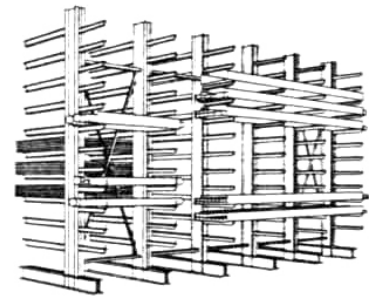
Racking and shelving of diverse types offer many advantages for storage purposes and are used in a variety of types, such as pallet racking, shelving or cantilever racking. This applies to both stationary and mobile versions.



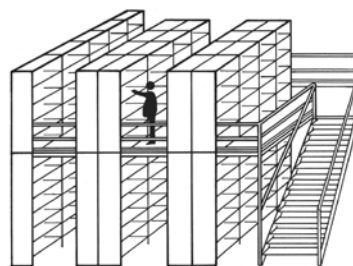
Shelving



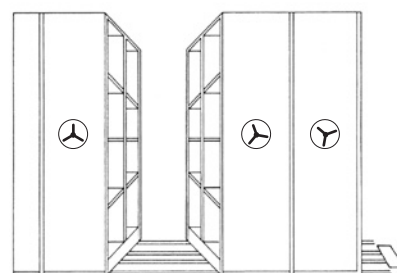
Pallet racking



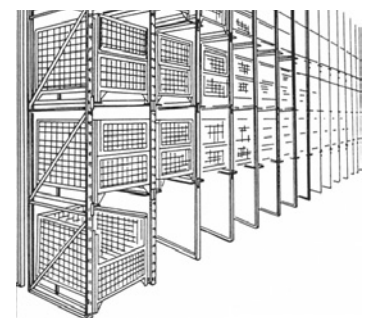
Cantilever racking



Multiple storey installations



Mobile racking



Drive-in racking



To avoid damage and injury in storage and archive installations, the following measures must be observed:

i Prevention

Personnel must be instructed to ensure correct behavior and operating techniques.

i Inspection

Regular checks must be made to monitor proper conditions.

i Repairs

If damage or incorrect operation is discovered, these must be immediately rectified / corrected.

These guidelines have been prepared by the Storage and Associated Equipment Association (*Verband für Lagertechnik und Betriebseinrichtungen*) in order to inform you on the correct approach. Legal provisions, recommendations of the Employer's Liability Insurance Association (*Berufsgenossenschaft*) and standardized state-of-the-art regulations have all been taken into account in the preparation of these guidelines.

Your responsibilities

Compulsory inspection for storage equipment

Why you must ensure that racking and shelving installations are inspected?

The employer's obligation to assess working conditions is laid down in § 5 of the German Occupational Safety and Health Law (*Arbeitsschutzgesetz*). The danger assessment is put into concrete form in the Ordinance Regulating Industrial Safety (*Betriebsicherheitsverordnung*).

§ 4 of this ordinance reads: "The employer must take the necessary measures to ensure that employees are only provided with work equipment (...), the use of which in accordance with designated use safeguards safety and health."

The cases in which inspections are necessary are laid down as follows in § 10 of the Ordinance Regulating Industrial Safety: "If work equipment is subject to damage-producing influences which could lead to dangerous situations, the employer is obliged to have the work equipment checked by suitably qualified persons within the time limit prescribed in § 3."

In accordance with the specifications of the Employer's Liability Insurance Association, the inspection obligation applies to all racking and shelving. These include:

- **Pallet racking**
- **Shelving**
- **Multiple storey installations**
- **Cantilever racking**
- **Drive-in and drive-through racking**
- **Live storage racking**
- **Manual mobile racking**
- **Archive racking**

What checks must be regularly carried out?

Since August 2009, the current version of Standard DIN EN 15635 (www.din.de) must be used for racking and shelving. The Standard emphasizes that the racking and shelving are laid out explicitly for careful and correct usage. Additional forces or impact forces must not be applied, e.g. through operating errors.

In Section 9 of the Standard, regular checks are demanded of the user. This includes differentiating between immediate reporting, visual examinations and expert inspections.



Immediate reporting

Every employee is required to report any damage noticed immediately.

Visual examinations

Visual examinations are to be carried out weekly by trained staff. Other intervals can be selected, provided they are based on a risk analysis. A formal report must be written and preserved.

Expert inspections

An inspection must be carried at least once a year by a professional person. In accordance with the specification of the Employer's Liability Insurance Association, a professional person corresponds to the qualified person referred to in Regulations for Operating Safety (*Technische Regel für Betriebssicherheit*) TRBS 1203.

Qualified Person

Regulation TRBS 1203 requires that the qualified person must possess specialized knowledge, which has been obtained via a completed professional or vocational training and vocational experience. Furthermore, the qualified person must have up-to-date vocational experience in the area of the object to be inspected and have undertaken appropriate further training. The qualified person must not be subjected to specialist directives.



The racking and shelving inspector approved by the Association

Knowhow always up-to-date

Why should there be a racking and shelving inspector approved by the Association?

The racking and shelving inspector approved by the Association fulfills all legal requirements.

The specialized knowledge demanded by TRBS 1203 includes the following items:

- Technical knowledge of the actual racking / shelving system. This includes knowledge of all racking / shelving components in respect of dimensions, load bearing performance and combination possibilities. In addition, the inspector must have knowledge of correct installation and correct operation. It is imperative that the inspector has access to the structural calculations and knowledge of the limit states.
 - Racking and shelving inspectors approved by the Association receive suitable further training in the form of a training course of several days including a final examination. The content of the training course has been drawn up by the Storage and Associated Equipment Association and leading institutions. Only those who have provided proof of their specialized knowledge are allowed to use the title racking and shelving inspector approved by the Association. The inspector must identify himself with a photo ID and is listed by the Association. The authorization is limited to five years, and can be renewed for a further five years following a re-training course. This ensures that the inspector's knowledge is always state of the art.
- If you as a user are looking for legally secure expert inspection followed by repair of the racking / shelving installation, you are on the safe side if you use a racking and shelving inspector approved by the Association (vR).
- They are familiar with all regulations and standards, requirements of the Employer's Liability Insurance Association and the legal requirements.
 - The expert inspection is carried out systematically using a standardized inspection report document. This report has been drawn up by experts of the Association.
 - Even if technical documentation is no longer available at the user's premises, the vR is usually able to access appropriate data.
 - Only the vR has access to the structural calculations of the racking and shelving involved.
 - Layouts are often available to the vR and can be used to support the inspection.
 - Only the vR is able to refer to his Back Office at all times in order to call up relevant information on possible consequences of damage to the installation.
 - The vR is familiar with all original components and is able to recognize these clearly, leading to a quick and correct repair.
 - Through the specialized product knowledge of the vR, incorrect purchases are avoided.



European Standard DIN EN 15635 requires the user to maintain racking and shelving in proper condition. < www.din.de >

Measures to be taken in case of damage

How to act in a legally secure way

What needs to be done when damage to racking / shelving is detected?

In accordance with the requirements of the Employer's Liability Insurance Association and the Standard DIN EN 15635, any damage detected to racking / shelving affecting safety must be rectified immediately. This applies whether the damage is detected by the fork truck driver, the manager of the storage installation or the racking and shelving inspector approved by the Association. Proceed as follows:

- When damage is detected, it must be immediately reported to the safety officer
- Initiation of measures to ensure safety
- A written report must be produced with obligation to preserve
- In case of repeated occurrence of damage, investigation of cause
- Initiation of a damage control procedure in accordance with DIN EN 15635, Section 9.4.5

Not all types of damage are explicitly named and described within the Standard. It is therefore very important to be able to rely on the specialized knowledge of the racking and shelving inspector approved by the Association.

Why should parts be replaced with original spare parts?

Section 9.7.1 of DIN EN 15635 reads:

"(...) damaged components should not be repaired because it is very difficult to carry out effective quality control of cold reduced parts. (...)"

Furthermore:

"(...) Repair of damaged parts is not permitted, unless this has been approved by the supplier of the equipment. (...)"

In connection with alterations to racking / shelving, DIN EN 15635 Section 7 also includes the following statement:

"When a racking / shelving installation is altered, this can result in an alteration to the loading capacity. In all cases of alterations, the supplier or a suitable specialist must be consulted. Any recommendations must be followed before alterations are carried out. Alterations must be carried out in accordance with the instructions of the supplier, which shall include the following points:

- a) Before starting alteration work, the racking / shelving must be unloaded;
- b) Extensions or alterations to the storage equipment via welding or bolting is not permitted unless explicitly agreed to by the supplier of the equipment;
- c) Information notices concerning permissible loads must be altered as necessary following all changes to the racking / shelving arrangement; (...)"



In connection with construction supervision approvals for racking / shelving, the highest construction supervision authority in Germany, the German Institute for Construction Engineering (*Deutsches Institut für Bautechnik*), requires in its Regulations for Use, Care and Maintenance, item 5:

“Racking / shelving constructions must be inspected within the framework of the inspection intervals specified in DIN EN 15635. Any damage detected must be eliminated in accordance with DIN EN 15635, Section 9.7.3. Damaged components should preferably be replaced with original components. If this is not possible in individual cases, the stability proof for the racking / shelving must be rechecked, taking the repair measures into account.”

Corrective maintenance via replacement with original components is therefore the most secure method.

The inspection report is used for visual inspection of damage in accordance with Association standards:

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www.verband-lb.de

<p>Regal</p> <p>Typ _____</p> <p>Bozzahr _____</p> <p>Auftrags-/Projekt-Nr. _____</p> <p>Inspektionsplan-Nr. _____</p> <p><input type="checkbox"/> Fachbodenregale <input type="checkbox"/> Palettenregale <input type="checkbox"/> Mehrgeschossanlagen <input type="checkbox"/> Kragarmregale <input type="checkbox"/> Einfahrregale <input type="checkbox"/> Durchfahrregale <input type="checkbox"/> Durchlaufregale <input type="checkbox"/> mechanisch verfahrbare Regale <input type="checkbox"/> Sonstiges _____</p>	<p>Hersteller</p> <p>Name _____</p> <p>Straße _____</p> <p>PLZ/Ort _____</p> <p>Bereich _____ Telefon _____</p> <p>E-Mail _____ Regalnummer _____</p> <p>Betreiber</p> <p>Name _____</p> <p>Straße _____</p> <p>PLZ/Ort _____</p> <p>Anspruchspartner _____ Telefon _____</p> <p>E-Mail _____</p>
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Inspektionsprotokoll
Sichtprüfung nach den Verbandsvorgaben

		i.O.	nicht i.O.			i.O.	nicht i.O.	
1	Schweißarbeiten			4	Verankerung, Unterfüllung der Ständer			
	1 Schweißnähte gegen Durchfallen	<input type="checkbox"/>	<input type="checkbox"/>		4 Fachboden	<input type="checkbox"/>	<input type="checkbox"/>	
	2 Schweißnähte gegen Verdrehen	<input type="checkbox"/>	<input type="checkbox"/>		5 Anzahl der Fachböden	<input type="checkbox"/>	<input type="checkbox"/>	
2	Anstellmethode	<input type="checkbox"/>	<input type="checkbox"/>	6 Regalbreite	<input type="checkbox"/>	<input type="checkbox"/>		
	3	Bearbeitungen an Ständern			7 Verankerung regalmittler Bereich	<input type="checkbox"/>	<input type="checkbox"/>	
		1 Verschleiß	<input type="checkbox"/>	<input type="checkbox"/>	6	Mehrgeschossanlagen	1 Zustand der Fachbodenabstände	<input type="checkbox"/>
2 Ständerlöcher		<input type="checkbox"/>	<input type="checkbox"/>	2 Zustand der Ränge / Ständerbereiche			<input type="checkbox"/>	<input type="checkbox"/>
3 Fachwerk	<input type="checkbox"/>	<input type="checkbox"/>	3 Überhöhung	<input type="checkbox"/>			<input type="checkbox"/>	
4 Träger	<input type="checkbox"/>	<input type="checkbox"/>	4 Zustand der Träger / Ständer	<input type="checkbox"/>	<input type="checkbox"/>			
5 Fachböden	<input type="checkbox"/>	<input type="checkbox"/>	7	Einfaß-/Durchfahrregale	1 Hinweis auf Beschädigung	<input type="checkbox"/>	<input type="checkbox"/>	
6 Regalbreite	<input type="checkbox"/>	<input type="checkbox"/>			2 Korrosion / Entladung	<input type="checkbox"/>	<input type="checkbox"/>	
7 Regalhöhe	<input type="checkbox"/>	<input type="checkbox"/>			8	Dokumentationen liegen vor	1 Betriebsanleitung / Handbuch	<input type="checkbox"/>
8 Sonstige Schäden	<input type="checkbox"/>	<input type="checkbox"/>	2 Protokolle der regelmäßigen Sichtkontrolle	<input type="checkbox"/>			<input type="checkbox"/>	
9 Bearbeitungen durch Bohren, Schweißen, Anlöten	<input type="checkbox"/>	<input type="checkbox"/>	9	Sonstiges			<input type="checkbox"/>	<input type="checkbox"/>
4	Belastung der Regale	1 Belastungsschilder aktuell und korrekt			<input type="checkbox"/>	<input type="checkbox"/>		
		2 Zulässige Lasten/Größen vorhanden			<input type="checkbox"/>	<input type="checkbox"/>		
		3 Zulässige Lasten/Größen eingehalten	<input type="checkbox"/>	<input type="checkbox"/>				
5	Regalbestand gemäß Spezifikationen	1 Schweißnähte eingetrennt	<input type="checkbox"/>	<input type="checkbox"/>				
		2 Locherlöcher / Stöße der Regale	<input type="checkbox"/>	<input type="checkbox"/>				
		3 Verbleibe	<input type="checkbox"/>	<input type="checkbox"/>				

Beurteilung (vgl. Anzahl separate Seiten)

Empfehlungen

Verbandsprüfer Regalinspektion

Für den Betreiber, Empfangsbestätigung

NOTE

In 1966, the leading manufacturers of storage and associated equipment combined together to establish the Storage and Associated Equipment Association. From this time onwards, the Association has done its utmost for the quality and safety of the products of its members. Together with leading institutions, the Association has developed the training course “Racking and shelving inspector approved by the Association”.



Verband für Lagertechnik und Betriebseinrichtungen



nächste
Inspektion

laufende Nr.

www.Verband-LB.de



Verband für Lagertechnik und
Betriebseinrichtungen
Hochstrasse 113
58095 Hagen
www.Verband-LB.de

