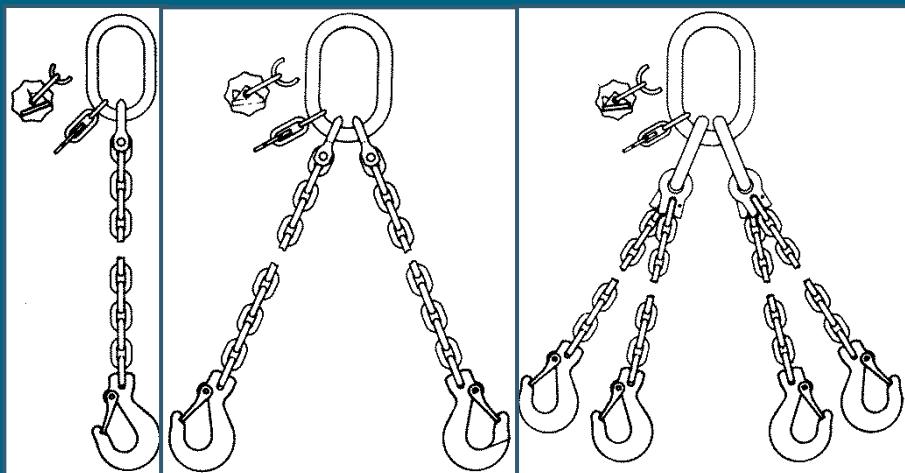


VOLKSWAGEN

AKTIENGESELLSCHAFT

USA

Translation of the Original
Operating Manual



Operating Manual Sling chains VW AG | VAS 501011



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1. Introduction

Before using the sling chain for the first time, read through the operating manual completely. The operating manual explains how to safely use, maintain, inspect and dispose of the sling chain. This operating manual is an integral part of the product and must be available to all users. Always keep the operating manual in a safe place for later use.

1.1 Manufacturer/service

Carl Stahl Hebetechnik GmbH

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73079 Süßen, Germany

Telephone

+49 (0) 7162 4007 – 0

E-Mail

carlstahl@carlstahl.com

Internet

www.carlstahl-hebetechnik.de



INFO

We are happy to answer any questions you may have about your product.

1.2 EC Declaration of Conformity

Representation of content:

For the product described below

Name	Sling chain
Type	25101000041311_VAS 501 011

it is hereby declared that they comply with the essential requirements established by the harmonization legislation referred to below:

DIRECTIVE 2006/42/EC

Indication of the relevant harmonized standards used or of the specifications for which conformity is declared:

Reference	Date issued	Title
Harmonized standards for the Machinery Directive:		
EN ISO 12100:2010	2011-03	Safety of machinery - General principles of design - Risk assessment and risk reduction
EN 818-2:1996+A1:2008	2008-12	Short link round-steel chain for lifting purposes - Safety - Part 2: Medium tolerance round-steel link chains for chain slings - Grade 8
EN 818-6:2000+A1:2008	2008-12	Short link round-steel chain for lifting purposes - Safety - Part 6: Sling chains - Specifications concerning information on use and maintenance to be provided by the manufacturer
EN 1677-2:2000+A1:2008	2008-06	Single parts for slings - Safety - Part 2: Forged hooks with safety latch, Grade 8
EN 1677-4:2000+A1:2008	2009-03	Single parts for slings - Safety - Part 4: Single links, Grade 8
EN 13157:2004+A1:2009	2010-07	Cranes - Safety - Manually operated cranes
Other technical specifications applied (not published in the EU Official Journal):		
not applicable in this case		

Authorized representative within the meaning of Annex II, No. 1. A. No. 2, 2006/42/EC for the compilation of technical documentation:

Company	Carl Stahl Hebetechnik GmbH
Address	Tobelstr. 2 73079 Süßen, Germany

The sole responsibility of issuing this Declaration of Conformity regarding the fulfillment of the essential requirements and the preparation of the technical documentation shall be borne by the manufacturer (or installer):

Company	Carl Stahl Hebetechnik GmbH
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Address	Tobelstr. 2 73079 Süßen, Germany
---------	-------------------------------------

This declaration certifies compliance with the aforementioned harmonization legislation, but does not include any guarantee of product characteristics.

Additional information:

This declaration applies to all models manufactured in accordance with the corresponding manufacturing drawings which form part of the technical documentation. Further information on compliance with the above references can be found in the accompanying documentation supporting the statement of conformity.

The full Declaration of Conformity has been attached as a separate document.

2. Information Processing

This operating manual contains symbols, designations, work instructions and bullet points as described in Chapters 2.1 to 2.2.

2.1 Symbols and designations

Warning notices

The warnings are classified and displayed as follows:



DANGER

A warning with the signal word "DANGER" indicates a hazard that can lead directly and with certainty to death or serious permanent injury.



WARNING

A warning with the signal word "WARNING" indicates a hazard which may possibly lead to serious injuries or death.



CAUTION

A warning with the signal word "CAUTION" indicates a hazard which may possibly lead to minor or moderate injuries.

ATTENTION

A warning with the signal word "ATTENTION" indicates a hazard that could potentially result in property damage.

In a **warning** work steps are marked with ► and structured chronologically.

Pictograms for specific hazards



Meaning:

Beware of suspended loads.



Meaning:

Warning of crushing hazard.



Meaning:

Warning of hand injuries.

The pictograms are used in conjunction with the associated classification and the corresponding signal word.

Useful information and tips



INFO

The symbol indicates useful information and tips.

Disposal



NOTES ON DISPOSAL

of packaging materials and load handling equipment.

2.2 Work instructions and bullet points

All work instructions are structured and numbered in chronological order, e.g.:

1. Work step 1
2. Work step 2

The result of a process is indicated by an arrow:

- Result or device reaction

Work instructions that do not have to be executed in a particular sequence are marked as follows:

- Work step
- Work step

The result of a process is indicated by an arrow:

- Result or device reaction

Bullet points are indicated by indentations:

- Listing

3. Safety

Before using the sling chain, read the following safety instructions carefully.

Chapter 3.1 lists basic rules of conduct that you must observe when handling the sling chain. The instructions marked with a  symbol must be followed in order to prevent any risk to persons. Warnings that pertain to the individual work instructions are always listed before the actual work step.

3.1 Basic safety instructions

The sling chain is built, tested and has left the company in perfect condition with respect to safety. To maintain this condition, you must follow the instructions in this operating manual.

- Read this operating manual carefully
- Observe the warning and safety instructions
- Make sure that this operating manual is always available and kept on location
- Make sure that only qualified personnel carry out work with and on the sling chain
- When using the equipment, observe the locally applicable occupational safety requirements and the operating company's work instructions
- Observe the on-site conditions
- Observe the maximum load capacity
- Damage that impairs safety must be repaired immediately by an authorized specialty company
- Only use the sling chain with a clearly legible identification tag
- Suspension links / fittings or shackles must be free-moving in the crane hook
- Attach unused strands to the suspension link and ensure that the load capacity of the strands used is reduced
- Do not place hands or fingers between the strapping and the load
- If the edge radius is smaller than the nominal chain diameter, use an edge protector or other intermediate pad or select a larger chain size
- Carl Stahl sling chains are designed for a dynamic load with 20,000 load cycle changes. Higher loads can be counteracted by using a larger nominal thickness (consult the manufacturer if necessary).

Classification of the qualification fields for load handling equipment

Field of work	Qualification	Expert knowledge
Delivery and Transport	Dealer, freight forwarder	<ul style="list-style-type: none"> - Documentation of load securing supervision - Safe handling of the load handling equipment
Storage	Warehouse clerk	<ul style="list-style-type: none"> - Safe handling of the load handling equipment
Commissioning, maintenance and repair	Qualified personnel	<ul style="list-style-type: none"> - Qualified expert: professional training and experience, sufficient knowledge in the field of load handling equipment - Safe handling of the load handling equipment - Product-specific knowledge
Use, simple visual inspection	Qualified personnel	<ul style="list-style-type: none"> - Safe handling of load handling equipment, professional training and experience
Disposal	Qualified personnel	<ul style="list-style-type: none"> - Knowledge of the regulations for proper disposal and recycling

Tab. 1: Overview

3.2 Designated use

The following items are considered to be designated use:

- Vertical lifting and lowering of unguided loads
- Observe the permissible load capacity: net weight of the separate components + load weight
- The permissible temperature range for the respective grade can be found in Chapter 4
- The lifting process must be carried out impact-free
- For use with VAS501009

In addition to the items listed here, further information must be obtained from the technical data and considered (Chapter 4).

3.3 Improper use

The following items are considered to be improper use:

- Exceeding the maximum load capacity
- The carriage of persons and animals
- The transport of liquids and hazardous substances
- The use of force to free loads that are stuck in place
- Structural changes
- Use in explosive, salty, corrosive, toxic and/or alkaline environments
- Twisting the sling chains
- Running the round steel chain over sharp edges
- Welding on attached load without insulating connection
- Loading the hooks on the tip

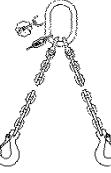
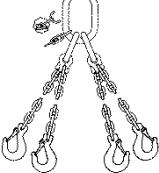
Chapter 3 does not guarantee to be exhaustive. Anything that is not specifically permitted falls under misuse.

4. Technical Data Sling Chains Grade 8 CondorLift

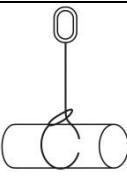
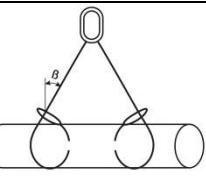
Supplementary technical information on CondorLift brand sling chains, grade 8.

Operating temperature without limits: -40°C to 200°C.

Load capacity table for sling chains / ring chains:

	Sling chains				Ring chains	
	1 Strand	2 Strand	3- and 4-strand	Infinite		
						
Incline angle	0°	0 - 45°	45° - 60°	0 - 45°	45° - 60°	-
Load factor	1	1.4	1	2.1	1.5	1.6
Chain nominal thickness	Load capacities in kg					
6	1,120	1,600	1,120	2,360	1,700	1,790
8	2,000	2,800	2,000	4,250	3,000	3,200
10	3,150	4,250	3,150	6,700	4,750	5,040
13	5,300	7,500	5,300	11,200	8,000	8,480
16	8,000	11,200	8,000	17,000	11,800	12,800
18	10,000	14,000	10,000	21,200	15,000	16,000
22	15,000	21,200	15,000	31,500	22,400	24,000

Load capacity table for ring chains / choke hitches:

	Ring chains				Choke hitch		
	single		double		single	double	
							
Incline angle	0 - 45°	45° - 60°	0 - 45°	45° - 60°	0°	0 - 45°	45° - 60°
Load factor	1.1	0.8	1.7	1.2	0.8	1.1	0.8
Chain nominal thickness	Load capacities in kg*						
6	1,230	890	1,900	1,340	890	1,230	890
8	2,200	1,600	3,400	2,400	1,600	2,200	1,600
10	3,450	2,520	5,350	3,780	2,520	3,460	2,520
13	5,830	4,240	9,000	6,360	4,240	5,830	4,240
16	8,800	6,400	13,600	9,600	6,400	8,800	6,400
18	11,000	8,000	17,000	12,000	8,000	11,000	8,000
22	16,500	12,000	25,500	18,000	12,000	16,500	12,000

* The reduction of 20% for sharp edges is already taken into account in the load capacity specification.

Operating temperature with limits:

Operating temperature	below -40 °C	-40 °C to 200 °C	200 °C to 300 °C	300 °C to 400 °C	over + 400 °C
Load capacity	prohibited	100%	90%	75%	prohibited

5. Delivery and Transport

5.1 Scope of delivery

Check the delivery for completeness.

If any parts are missing or damaged, contact the manufacturer/dealer (Chapter 1.1).

5.2 Transport

The delivery takes place using proper packaging.

Always transport the sling chain in proper packaging.

5.3 Storage

ATTENTION

Device damage due to improper storage!

Improper storage can damage the sling chain.

- ▶ Store the sling chain at a suitable storage location.
 - ▶ Store the sling chain in a clean and dry area inside.
 - ▶ Protect the sling chain from:
 - Temperature conditions that fall below or exceed the permissible temperature range (see Chapter 4).
 - Humidity
 - Contamination
 - Damage
 - Corrosion
-

6. Assembly and Function

A sling chain consists primarily of the following components:

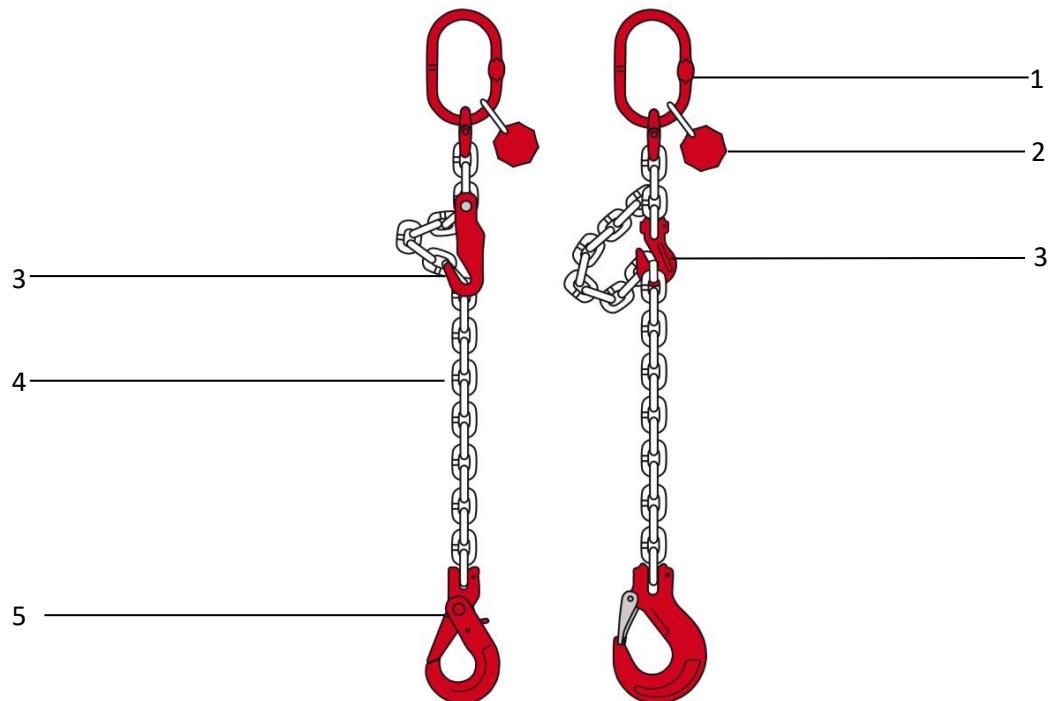


Fig. 1: Assembly

Position	Name
1	Suspension link
2	Identification tags and test data tags
3	Shortening element e.g. reducing claw or reducing hook
4	Round steel chain
5	End fitting part e.g. automatic fork head hook or fork head hook

Tab. 2: Assembly and Function

7. Use

7.1 Inspection before use

An inspection must be carried out before each use. You must carry out the inspection before the first use (initial commissioning), before each recurring use or after a repair. The exact details of the respective inspections can be found in the maintenance / inspection plan. Please read Chapter 8, in particular Sections 8.2 - 8.4.

The purpose of the inspection is to ensure that the sling chain is in good condition and ready for use.

Observe the following before using the sling chain:



DANGER

Danger to life due to falling loads!

A falling load can result in serious injury or death.

- ▶ Never stay under loads while they are suspended.
- ▶ Never walk under loads while they are suspended.
- ▶ Make sure you have enough working space.
- ▶ Ensure that there are no persons in the work area.



WARNING

Risk of crushing due to lack of space!

There is a risk of crushing due to insufficient clearance at the load lifting point, on the load transport route and at the load unloading point.

- ▶ Monitor your working environment.
- ▶ Ensure sufficient clearance at the load lifting point, on the load transport route and at the load unloading point.

7.2 Symmetrical load

A load is considered symmetric if the following conditions are met:

- The load is less than 80% of the indicated load capacity
- The incline angles of all strands are not less than 15°
- The incline angles of all strands are the same or deviate from each other by max. of 15°
- In the case of 3- and 4-strand sling chains, the corresponding angles in the sling plane deviate from each other by a max. of 15°

If a load cannot be classified as symmetric, the load is considered asymmetric and the load is asymmetrically distributed among all strands.

In order to determine how many strands are load-bearing, an assessment by a competent person is required to assess the lifting process. In case of uncertainty, only one strand should be classified as load-bearing.

7.3 Reduction factor

If a load is lifted with slings which are guided over an edge where the radius of the edge is equal to or less than the radius / thickness of the slings, one of the following conditions must be met.

- Use edge protection
- Use the next largest sling chain
- Reduce the maximum load capacity by 20%

7.4 Chain reducers

Any existing chain reducers can be used to vary the chain length. This is necessary to compensate for any imbalances in the arrangement of attachment points. This ensures that the load is distributed evenly over all strands and that the load can be lifted horizontally. The reduction is achieved with a reducing claw or a reducing hook. When using reducing claws or reducing hooks, the continuous line of force must always be observed.

7.5 Direct type of attachment

With this type of attachment, the end fittings are connected directly to the attachment points on the load. The positioning of hooks and attachment points must always be considered. The load must always be applied at the base of the hook. The hook tip may not be stressed. The safety catch or flap must be closed. If multi-strand sling chains are used, the hook tips must point to the outside.

7.6 Type of attachment looped around (slinging operation)

With this type of attachment one or more strands of the sling chain are passed under the load or through the load and the lower end is hooked back onto the crane hook or suspension link. Therefore, this method can be used when no suitable attachment points are available. It also has the added advantage that the sling chains hold the load together.

If the double looped attachment type is used, a higher level of safety is achieved with loose bundles through additional looping of the load.

This type of attachment may only be used if slippage (e.g. due to component geometry) is impossible. Not suitable for lifting loose bundles.

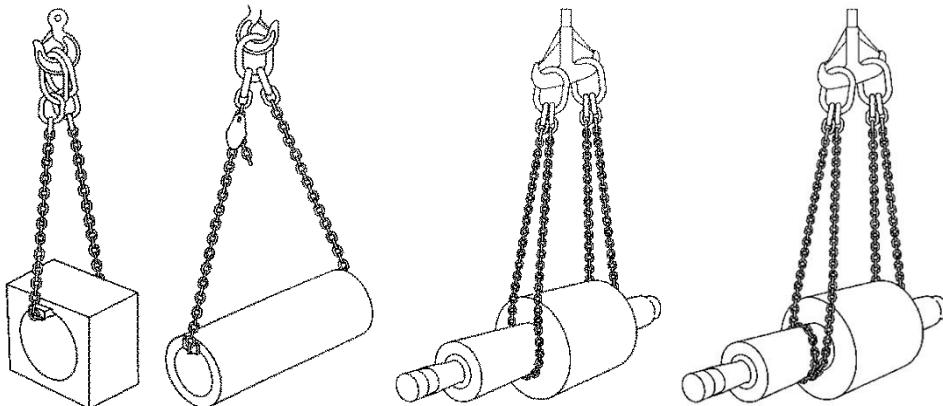


Fig. 2: Type of attachment looped + double looped

7.7 Type of attachment tied (choke hitch)

With this type of attachment one or more strands of the sling chain are passed under the load or through the load and the lower end is hooked back into the chain. This method can be used when no suitable attachment points are available. It also has the added advantage that the sling chains hold the load together. The load capacity of the choke hitch is 80 % of the indicated load capacity, see Chapter 4.

If two sling chains are used, it must be ensured that:

- Rolling or lateral movement of the load during the initial lifting is prevented by tying it in the opposite direction.
- Do not tie with more than 2 chain strands, otherwise the load will not be evenly distributed over the chain strands.
- The angle must not be adjusted with force.

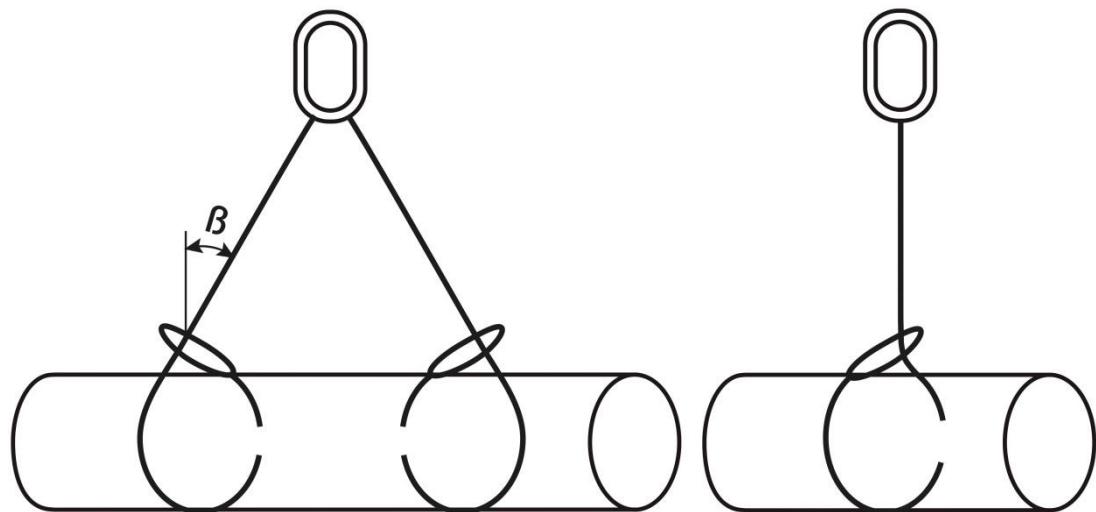


Fig. 3: Type of attachment tied

8. Maintenance

The sling chain must be cleaned, maintained and checked regularly. The maintenance / inspection intervals can be found in the maintenance / inspection plan.

8.1 Cleaning

INFO



Regular cleaning and careful handling will ensure that the sling chain is properly maintained for its entire life cycle.

The entire sling chain must be free of dust and dirt and clean if soiled!

8.2 Inspection document

The inspection document serves as proof of the inspections carried out. In addition, all the defects identified must be rectified and the supporting documents submitted to the authorities if necessary. The inspection document is attached as a separate document.

8.3 Maintenance / inspection plan

Maintenance / inspection interval	Type of work
Before first use (initial commissioning)	<ul style="list-style-type: none"> - Visual and functional inspection
Before any recurring use of the sling chain without extraordinary incidents	<ul style="list-style-type: none"> - Visual inspection
Annually	<ul style="list-style-type: none"> - Visual and functional inspection, condition of the components
Extraordinary inspection	<ul style="list-style-type: none"> - Depending on external conditions, the annual inspection cycle may be shortened. This includes the following items: <ul style="list-style-type: none"> - After damage, repair or special occurrences - Continuous use in shift operation - Increased wear - Corrosion, heat effects due to environmental influences - etc.

Tab. 3: Maintenance / inspection plan

8.4 Inspection criteria

The discard condition of the sling chain is determined on the basis of the inspection criteria in the following table. **Fehler! Verweisquelle konnte nicht gefunden werden.**

Component	Inspection criteria	Measures
Suspension link	Any kind of deformation and wear	Decommissioning and contacting the manufacturer/service department
Identification tags and test data tags	Any kind of deformation and wear	Decommissioning and contacting the manufacturer/service department
Reducing element	Any kind of deformation and wear	Decommissioning and contacting the manufacturer/service department
Round steel chain	Any kind of deformation and wear	Decommissioning and contacting the manufacturer/service department
End fitting	Any kind of deformation and wear	Decommissioning and contacting the manufacturer/service department

Tab. 4: Inspection criteria

8.5 Visual and functional inspection

Before each use, the sling chain must be checked and inspected. In the tables in Chapters 8.3 and 8.4, criteria are listed which determine whether the sling chain must be taken out of service.



DANGER

Danger to life due to falling loads!

Deformation and wear of the individual components can reduce the load carrying capacity and lead to falling loads.

- ▶ Check the sling chain for defects.
- ▶ Check the extent to which the individual components are functional.
- ▶ If the sling chain is no longer functional and is irreparably damaged (see Chapter 9.1), remove it from service by tagging it.
- ▶ If necessary, contact the manufacturer/service department (see Chapter 1.1).
- ▶ If necessary, dispose of the sling chain (see Chapter 9.2).

9. Decommissioning and Disposal

9.1 Decommissioning

1. Remove the sling chain from service by tagging it.
2. Contact the manufacturer/service department (see Chapter 1.1).
3. Dispose of the sling chain if necessary.

9.2 Disposal

Disposal of the sling chain



NOTES ON DISPOSAL

If the sling chain is no longer repairable or functional, the sling chain must be disposed of in accordance with the applicable statutory regulations.

Disposal of the packaging material



NOTES ON DISPOSAL

According to the packaging ordinance, the dealer is obliged to reclaim the packaging of his products which do not carry the mark of a system of nationwide disposal (such as the Green Dot of Dual System Germany AG) and to ensure the packaging is reused or disposed of properly.

10. Notes

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