

Multi-shortening claw

>IMVK<, >VMVK<
>VV<, >BSEK<



Assembly instructions

These assembly instructions/manufacturer's declaration must be kept for the time during which the unit is used.

Translation of the ORIGINAL ASSEMBLY INSTRUCTIONS

These assembly instructions apply in addition to the operating instructions for RUD sling chains (ICE-no. 7995555 or VIP/grade-80-no. 7101649).



IMVK - ICE
Grade 120



VMVK - VV
VIP grade 100



BSEK
Grade 80

Multi-shortening claw



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RUD item no.: 7104535-EN / 03.019



Simple testing, administration and documentation of work equipment and components subject to testing.

EG-Einbauerklärung

entsprechend der EG-Maschinenrichtlinie 2006/42/EG, Anhang II B und ihren Änderungen

Hersteller: **RUD Ketten
Rieger & Dietz GmbH u. Co. KG**
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Hiermit erklären wir, dass die nachfolgend bezeichnete unvollständige Maschine den grundlegenden Anforderungen der Maschinenrichtlinie 2006/42/EG (Anhang 1) entspricht. Die nachfolgend bezeichnete unvollständige Maschine darf, in der gelieferten Ausführung erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die diese unvollständige Maschine eingebaut werden soll, den Anforderungen der EG-Maschinenrichtlinie 2006/42/EG entspricht.

Produktbezeichnung: Verkürzungsklaue
IMVK / VMVK / VV / BSEK / V

Folgende harmonisierten Normen wurden angewandt:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN ISO 12100 : 2011-03</u>
_____	_____
_____	_____
_____	_____

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:

<u>BGR 500, KAP2.8 : 2008-04</u>	<u>DIN 5692 : 2011-04</u>
_____	_____
_____	_____
_____	_____

Die speziellen Unterlagen zur unvollständigen Maschine nach Anhang VII Teil B wurden erstellt und werden auf begründetes Verlangen in geeigneter Form übermittelt.

Für die Zusammenstellung der Konformitätsdokumentation bevollmächtigte Person:
Michael Betzler, RUD Ketten, 73432 Aalen

Aalen, den 26.09.2016 Dr.-Ing. Arne Kriegsmann (Prokurist/QMB)
Name, Funktion und Unterschrift Verantwortlicher *Arne Kriegsmann*

EC-Mounting declaration

According to the EC-Machinery Directive 2006/42/EC, annex II B and amendments

Manufacturer: **RUD Ketten
Rieger & Dietz GmbH u. Co. KG**
Friedensinsel
73432 Aalen

We hereby declare that the following incomplete machines correspond to the basic requirements of the Machinery Directive 2006/42/EC (annex 1). The following incomplete machine, in the delivered machine, may only be put into operation when the machine in which the incomplete machine shall be assembled, has been tested according to the requirements of the EC-Machinery Directive 2006/42/EC.

Product name: Shortening claw
IMVK / VMVK / VV / BSEK / V

The following harmonized norms were applied:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN ISO 12100 : 2011-03</u>
_____	_____
_____	_____
_____	_____

The following national norms and technical specifications were applied:

<u>BGR 500, KAP2.8 : 2008-04</u>	<u>DIN 5692 : 2011-04</u>
_____	_____
_____	_____
_____	_____

The special documents about the incomplete machine according to annex VII part B have been created and can be handed over in a suitable form on request.

Authorized person for the configuration of the declaration documents:
Michael Betzler, RUD Ketten, 73432 Aalen

Aalen, den 26.09.2016 Dr.-Ing. Arne Kriegsmann (Prokurist/QMB)
Name, function and signature of the responsible person *Arne Kriegsmann*

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Carefully read the assembly instructions before using the multi-shortening claw. Ensure that you have understood all the contents.

Non-observation of the instructions can lead to injuries or damage and will invalidate the guarantee.

These instructions apply to the following variant of the multi-shortening claw:

- **IMVK** ICE multi-shortening claw in ICE pink (traffic purple, grade 120, D1-12-stamping)
- **VMVK/VV** VIP multi-shortening claw in VIP pink (magenta, grade 100 (VV), H1-10-stamping)
- **BSEK** grade-80-Multi-shortening claw in red (grade 80, H1-8 stamping)

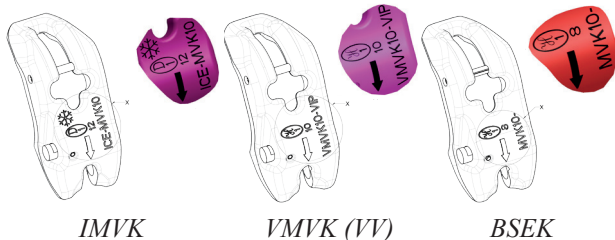


Fig. 1: Overview variants of multi-shortening claws

The right assignment of associated nominal thickness and associated grade is mandatory at all times!

1 Safety information



WARNING

Incorrectly mounted or damaged lifting and lashing means and improper use can lead to injuries and damage to objects after a fall.

Check all lifting and lashing means carefully every time before use.

- Remove all body parts (fingers, hands, arms etc.) from the danger zone during the lifting process (risk of crushing).
- Take extreme circumstances or impact loads into consideration when choosing the used shortening claw and the components.
- Only RUD round steel link chains of the associated nominal thickness and associated grade must be suspended from the multi-shortening claw.
- No technical modifications must be made to the multi-shortening claw.
- No persons are allowed in the danger zone.
- Staying under suspended loads is prohibited.
- Ensure a stable position of the load during lifting. Swinging must be avoided.
- Damaged or worn multi-shortening claws must not be used.
- The multi-shortening claws may only be used by authorised and instructed persons in compliance with the DGUV Regulations 100-500 chapter 2.8 (BGR 500) and in compliance with any valid national regulations if used outside Germany.

2 Intended use

The described multi-shortening claws must only be used for lifting, lashing or transporting loads.

Please note that the multi-shortening claw can align itself in the load direction (see. fig. 16).

Only RUD round steel link chains of the associated nominal thickness and associated grade must be suspended from the multi-shortening claw (see fig. 5-7).

The multi-shortening claws are designed according to DIN 5692 (round steel link chains - forged steel components - chain shorteners).

3 Instructions for assembly and use

3.1 General information

- Temperature suitability **ICE components (IMVK)**: When used at temperatures exceeding 200°C, the load bearing capacities of the ICE multi-shortening claws must be reduced as follows:

- | | | |
|---|---|--------------|
| - | -60°C bis 200°C | no reduction |
| - | 200°C bis 250°C | minus 10 % |
| - | 250°C bis 300°C | minus 40 % |
| - | temperatures above 300°C are not allowed! | |

- Temperature suitability **VIP components (VMVK/ VV)**: When used at temperatures exceeding 200°C, the load bearing capacities of the VIP multi-shortening claws must be reduced as follows:
 - -40°C bis 200°C no reduction
 - 200°C bis 300°C minus 10 %
 - 300°C bis 380°C minus 40 %
 - temperatures above 380°C are not allowed!
- Temperature suitability **Grade 80 components (BSEK)**: When used at temperatures exceeding 200°C, the load bearing capacities of the Grade-80 multi-shortening claws must be reduced as follows:
 - -40°C bis 200°C no reduction
 - 200°C bis 300°C minus 10 %
 - 300°C bis 400°C minus 25 %
 - temperatures above 400°C are not allowed!
- Multi-shortening claws may not be allowed to come into contact with aggressive chemicals, acids and their vapours.
- The load bearing capacities of the components depend on the following variables:
 - Grade of the component (fig. 4)
 - Nominal size of the component (table 2)
 - Present load case (suspension)

The permissible load bearing capacities can be found in the relevant ICE and VIP/Grade-80 operating instructions (or www.rud.de)



NOTE

When using the multi-shortening claw, the chain rated load bearing capacity does not have to be reduced.

3.2 Component overview

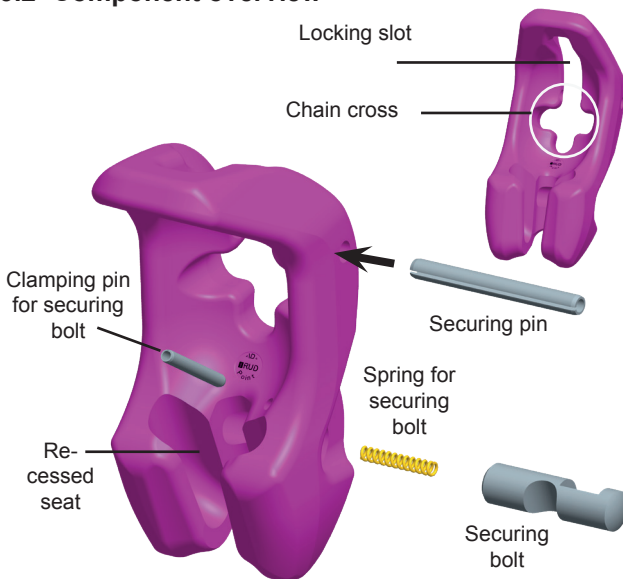


Fig. 2: VMVK (IMVK, BSEK)

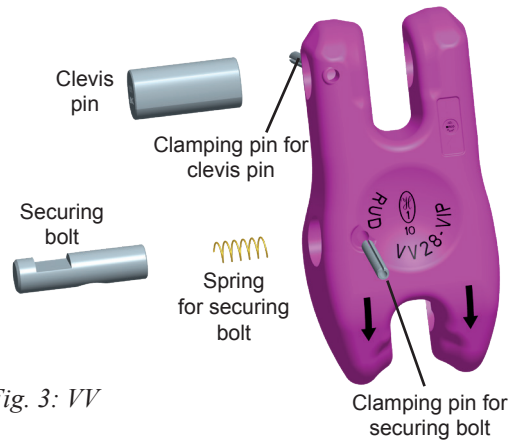


Fig. 3: VV

3.3 Assembly instructions

When assembling the multi-shortening claws pay attention to the correct assignment of chain to component. The grades/nominal sizes of the components can be identified by the labelling/stamping on the component/bolt/chain or by the colour:



ATTENTION

It is important to pay attention to the grade assignment of the components.

- Mount **ICE components (IMVK)** only with grade 120 chains (ICE) from RUD.
- Mount **VIP components (VMVK/VV)** only with grade 100 (VIP) from RUD.
- Mount **Grade-80 components (BSEK)** only with grade 80 chains (grade 80) from RUD.

Mixing of system parts of different grades/nominal sizes is not permitted.

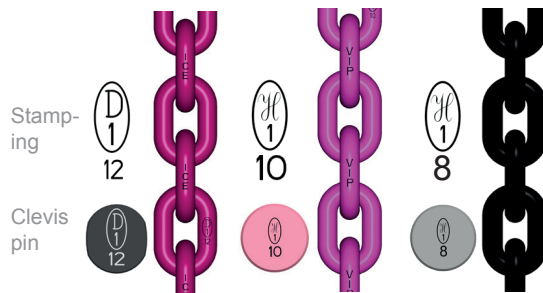


Fig. 4: Overview of chains



Fig. 5: Grade 120 ICE chain, IMVK
ICE pink stamping D1-12 on the back



Fig. 6: Grade 100 VIP chain, VMVK, VV
VIP pink/magenta stamping H1-10 on the back



Fig. 7: Grade-80 chain (black) BSEK
red stamping H1-8 on the back

The following always applies:

- Use the clamping pins and locking pins only once.
- Use only original RUD replacement parts.
- Pay attention to the following points for multi-strand suspensions:
 - Ensure that the hooks point outwards with multi-strand hook suspensions (if necessary use swivel element).
 - Mount the multi-shortening claws in 2-strand suspensions for easier use in the position “back to back” (see fig. 8).

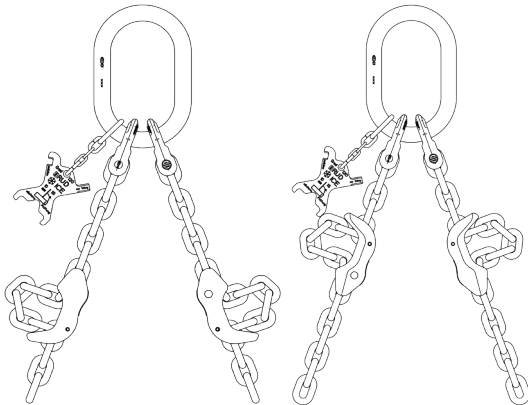


Fig. 8: Multi-strand mounting

- Subsequently check the proper mounting (see section 6 testing/repair).

3.4 Multi-shortening claw for casket chains

Pay attention to the following points for **casket chains**:

- Avoid edge loads and protect the load against damage (fig. 9)

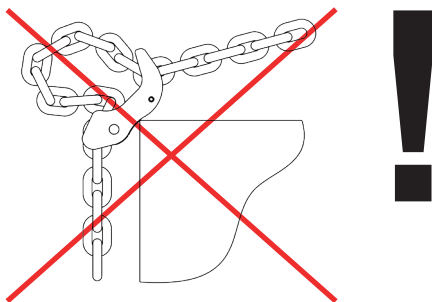


Fig. 9: Avoid edge load

- Mount the multi-shortening claw only in the free not shortened chain strand (fig. 10).

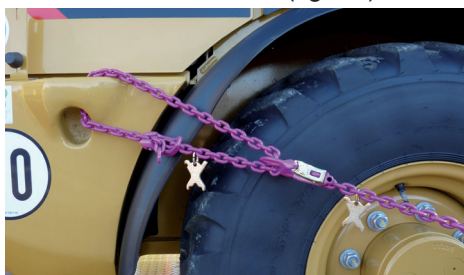


Fig. 10: free not shortened chain strand

- For casket chains the shortest shortening possibility is as follows (fig. 11):
 - recessed seating: last chain link
 - locking slot: penultimate chain link

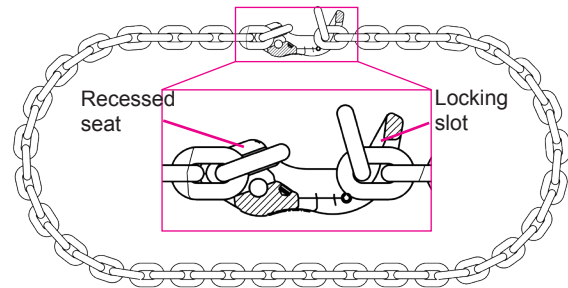


Fig. 11: Assembly casket chain

3.5 Assembly of the multi-shortening claw in the chain strand



ATTENTION

Only RUD round steel link chains of the associated nominal thickness and associated grade must be used in the corresponding multi-shortening claw.

For the assembly proceed as follows:

1. It is important to pay attention to the correct grade and nominal thickness assignment of the components (see section 3.3).
2. Pull the loose chain strand through the chain cross of the multi-shortening claw.

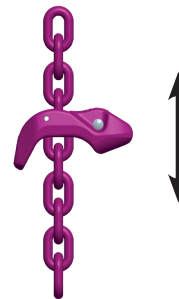


Fig. 12



NOTE

In order to get a shortening as long as possible, mount the multi-shortening claw at maximum in the third chain link from the suspension head.

3. Push the chain through the chain cross all the way to the front into the locking slot (until the stop).

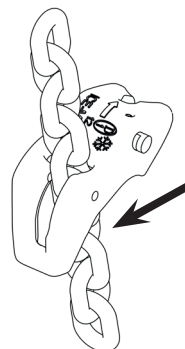


Fig. 13

- Insert the locking pin flush so that it does not protrude.
Like this the multi-shortening claw is firmly fixed in the chain strand.

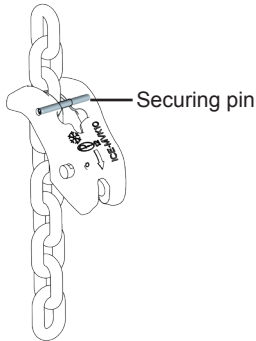


Fig. 14



ATTENTION

Ensure that the locking pin is inserted behind the chain link (and not inside a chain link).

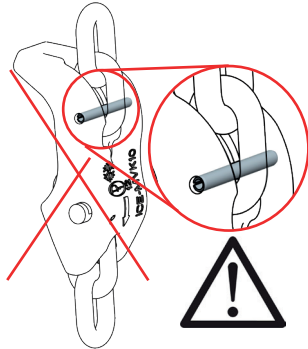
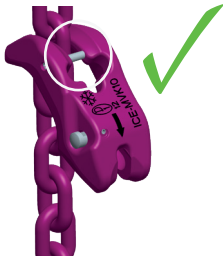


Fig. 15: Assembly locking pin

- Finally check if the multi-shortening claw is firmly fixed by the locking pin in the chain stand.

3.6 Shortening with the multi-shortening claw

- Make sure that the multi-shortening claw is firmly fixed with the locking pin/clamping sleeve in the chain strand (see section 3.5)



ATTENTION

Shortening with the multi-shortening claw is permitted only when the chain is slack!

- Keep the securing bolt pressed.
- Place the desired chain link of the strand to be loaded into the recessed seating.
- Pull the chain strand into the recessed seating.
- Let go of the securing bolt.
The securing bolt engages in the chain strand.

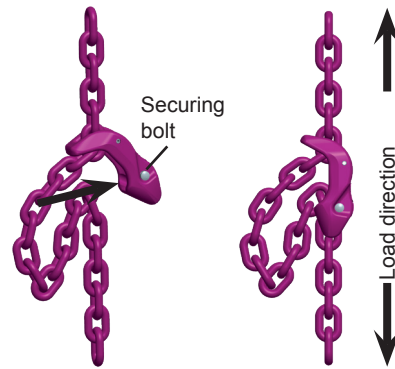


Fig. 16



WARNING

When using the multi-shortening claw, the chain must always be placed in the recessed seating and secured. This is also necessary even for a minimum shortening (see fig. 17).



Fig. 17

- Finally check the locking system.
The chain must be held by the securing bolt in the recessed seating.

3.7 Loosening the multi-shortening claw

The multi-shortening claw is loosened in reverse order.



ATTENTION

Loosening the multi-shortening claw is permitted only when the chain is slack!

- Keep the securing bolt pressed.
- Pull the chain strand upwards out of the recessed seating.

4 Instructions for use

- Before using a VV multi-shortening claw check that prior to each load the clamping pin for the clevis pin and the clevis pins itself is inserted completely (see fig. 2/3)
- Makes sure that the flow of forces happens in the straight strand without twisting, buckling or kinking.
- At regular intervals and every time before commissioning, check the entire attachment material to ensure that it is still suitable for its purpose, for heavy corrosion, wear, deformations etc. (see section 6 testing/repairs).

**WARNING**

Incorrectly mounted or damaged lifting and lashing means and improper use can lead to injuries and damage to objects after a fall.

Check all lifting and lashing means carefully every time before use.

- In accordance with DIN EN 818 and DIN EN 1677, RUD components are designed for a dynamic load of 20,000 stress cycles.
 - Please note that during one lifting process there might be several stress cycles.
 - Please not that due to the high dynamic load with high numbers of stress cycles there is the risk of damage to the product.
 - The BG/DGUV recommends: At high dynamic load with high stress cycles (permanent operation), the working load must be reduced according to the engine group 1Bm (M3 according to DIN EN 818-7). Use a sling chain with a greater nominal size.
- If possible leave the immediate danger zone.
- Always supervise your suspended loads.
- For all lifting means/lashing equipment, pay attention to the operating instructions for RUD sling chains or the equivalent load bearing capacity (ICE grade 120, VIP grade 100 or grade 80).

5 Misapplications

To ensure the functionality of the multi-shortening claw, it must always be mounted and used properly (see sections 3.4 and 3.5).

**WARNING**

Incorrectly mounted or damaged lifting and lashing means and improper use can lead to injuries and damage to objects after a fall.

Check all lifting and lashing means carefully every time before use.

**WARNING**

The following sample applications are prohibited, since they significantly limit the safe use of the multi-shortening claw!

Below there are merely examples for possible misapplications. In general, the multi-shortening claw must be used strictly in accordance with the descriptions of the operating instructions!

Example misapplication 1:

Chain installed in reverse direction in recessed seat and claw ("on the outside")

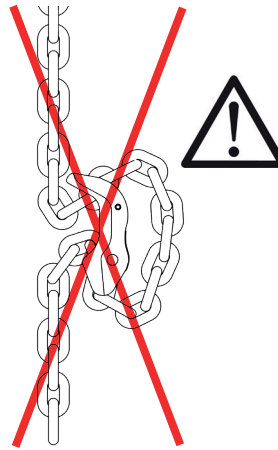


Fig. 18

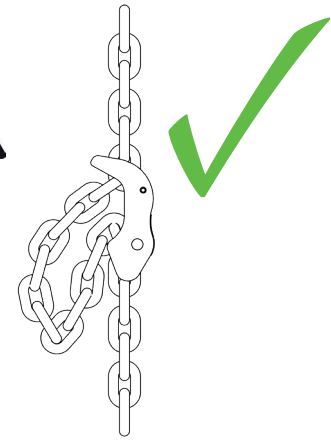


Fig. 19

Example misapplication 2:

Chain installed in reverse direction in recessed seat

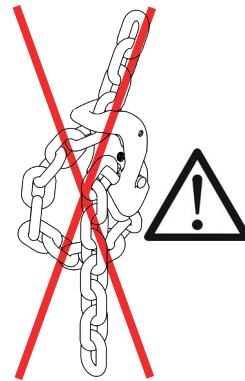


Fig. 20

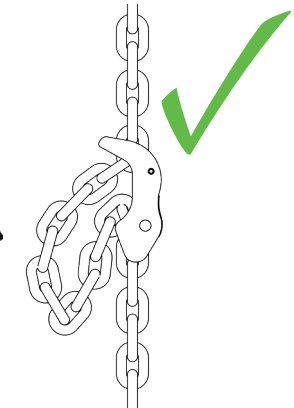


Fig. 21

Example misapplication 3:

Chain mounted correctly, however chain bag used as casket chain

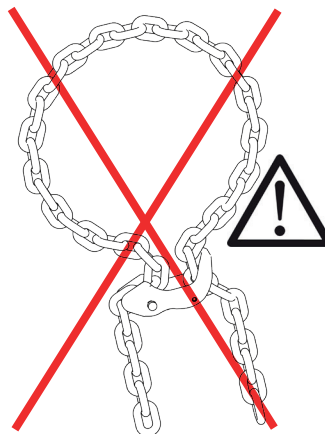


Fig. 22

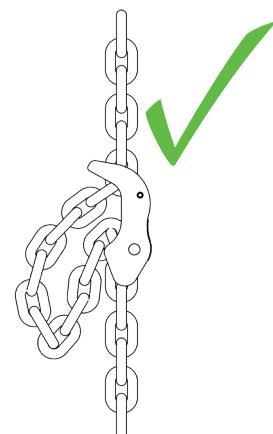


Fig. 23

Example misapplication 4:

Chain mounted correctly, however chain bag used as suspension head/claw as strand connector.

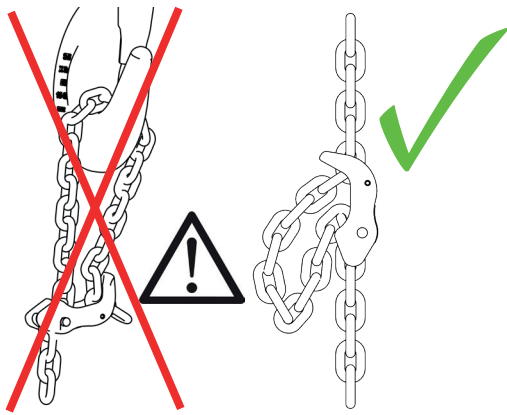


Fig. 24

Fig. 25

Example misapplication 5

Sharp edge / edge load

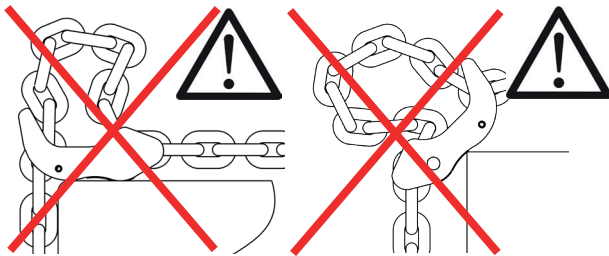


Fig. 26

6 Inspection / repair

6.1 Notes on regular inspection

The operator must determine and specify the nature and scope of the required inspections as well as the terms of periodic inspections by means of a risk assessment (see sections 6.2 and 6.3).

The continuous suitability of the lifting point must be checked at least 1x year by an expert. Depending on the application conditions, e.g. when used frequently or if there is a higher level of wear or corrosion, it may be necessary to carry out inspections at intervals of less than a year. This inspection is also absolutely necessary after damage and special incidents.

The inspection cycles must be specified by the operator.

6.2 Test criteria for the regular visual inspection by the user

- Completeness of the multi-shortening claw
- Complete, legible load-bearing information and manufacturer symbol
- Deformation of the multi-shortening claw
- Mechanical damage such as deep grooves, in particular in areas subject to tensile loads
- Securing bolt must be available and mobile ("locking" and "loosening" must be possible).
- Securing bolt, securing pin and clamping pin must be available.

6.3 Additional test criteria for the expert / repairer

- Cross-section changes due to wear > 10 %
- Heavy corrosion
- Additional inspections may be necessary, depending on the result of the risk assessment (e.g. check for cracks in load-bearing parts).

6.4 Regular oiling

To ensure the function, regularly oil the multi-shortening claw at the securing bolt with lube/multi-purpose grease.

Press the securing bolt several times after oiling to distribute the grease.



NOTE

The securing bolt does not need to be dismantled for this.

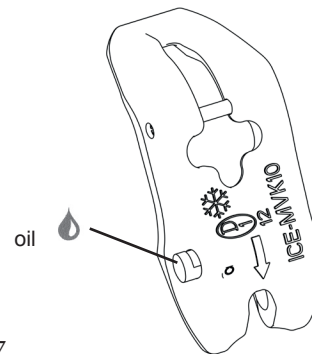


Fig. 27

6.5 RFID

Use only original RUB replacement parts and enter the repairs carried out in the chain index card (of the complete lifting means) and use the AYE-D.NET system.

6.6 General information on replacement parts

- The multi-shortening claw replacement part set must be installed only by authorised persons (with appropriate skills).
- Use only original RUD replacement parts.
- The replacement part sets for the multi-shortening claws consist of the following components:



Fig. 28: components replacement part set IMVK/VMVK/BSEK

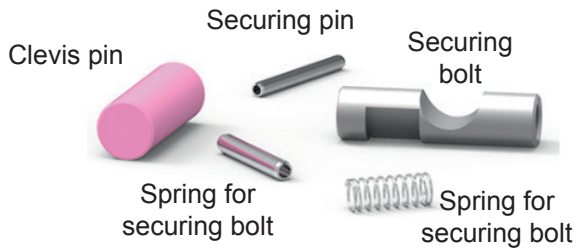


Fig. 29: components replacement part set VV

Compare section 3.2 Overview of components

6.7 Overview replacement part sets

	Designation	Item no. Replacement part set total
ICE	Replacement part set for IMVK 6	7995046
	Replacement part set for IMVK 8	7987081
	Replacement part set for IMVK 10	7987082
	Replacement part set for IMVK 13	7991182
	Replacement part set for IMVK 16	7991183
VIP	Replacement part set for VMVK 6	7995046
	Replacement part set for VMVK 8	7987081
	Replacement part set for VMVK 10	7987082
	Replacement part set for VMVK 13	7991182
	Replacement part set for VMVK 16	7991183
	Replacement part set for VV 20	7987085
	Replacement part set for VV 22	7995921
	Replacement part set for VV 28	7902140
Grade-80	BSEK 6	7995046
	BSEK 8	7987081
	BSEK 10	7987082
	BSEK 13	7991182
	BSEK 16	7991183

Table 1: Replacement part set

6.8 Replacement locking pin

Mount the locking pin always only in a suitable / matching multi-shortening claw (see marking of packaging / size assignment).

The bore for the locking pin is a stepped bore.

1. For easy dismantling, always remove the locking pin with the hammer as shown in fig. 30 (opposite to the bolt).

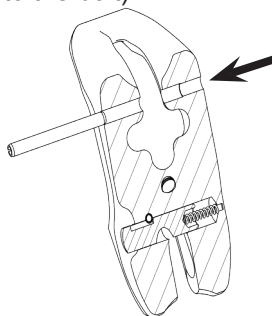


Fig. 30

2. If used again, insert a new matching original RUD locking pin using a hammer (direction as in fig. 31).



NOTE

For each replacement use a new matching original RUD locking pin.

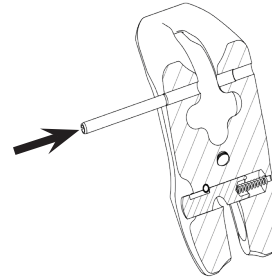


Fig. 31

3. Finally verify the correct mounting of the securing pin.

6.9 Replacement securing bolt

Mount the securing bolt always only in a suitable multi-shortening claw (see marking of packaging / size assignment).

For the assembly proceed as follows:

1. Using a hammer, remove the clamping pin that secures the securing bolt.

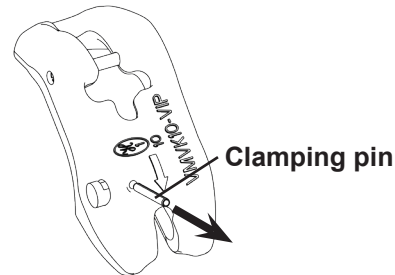


Fig. 32

2. Pull the securing bolt out of the bore and remove the inside spring.

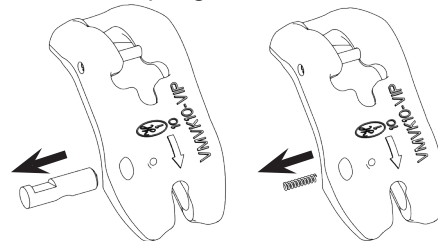


Fig. 33

Fig. 34

3. Clean / oil / grease the relevant points.
4. First insert a new spring into the bore.
5. Insert a new matching original RUD clamping pin.
6. Push a new securing bolt into the bore (Fig. 35).



NOTE

Pay attention to the following points:

- The frontal bore of the securing bolt must be inside the component (space for the spring).
- Align the securing bolt in such a way that the rounded recess is pointing downwards (fig. 35). Only then can the clamping pin to secure the securing bolt be inserted into the appropriate groove using a hammer.

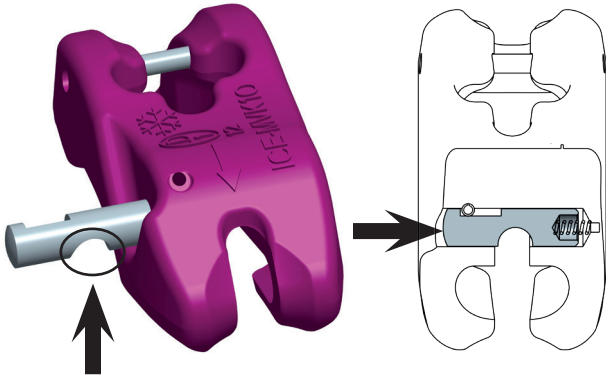


Fig.35

7. Press the securing pin completely inside (against the spring).
8. Using a hammer, insert the pre-mounted RUD securing pin.



NOTE

For each replacement use a new matching original RUD clamping pin.

9. Finally, check the mobility and function of the securing bolt.

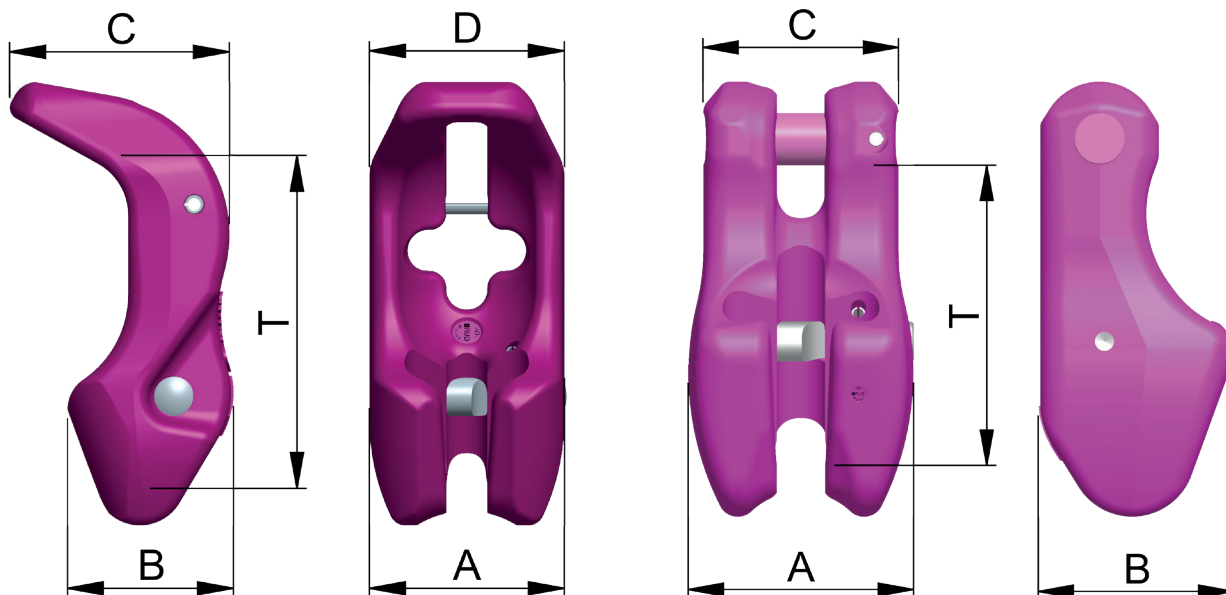


Fig. 36: dimensioning IMVK/VMVK/BSEK

Fig. 37: dimensioning VV

	Designation	Chain nominal size	Load-bearing cap. [t]	A [mm]	B [mm]	C [mm]	D [mm]	T [mm]	Weight [kg/pcs.]	Item no.
ICE	IMVK 6	6	1.8	38	32	41	35	66	0.28	7900985
	IMVK 8	8	3.0	47	40	54	47	88	0.61	7900981
	IMVK 10	10	5.0	60	51	67	60	110	1.6	7900983
	IMVK 13	13	8.0	77	65	87	77	143	2.6	7900984
	IMVK 16	16	12.5	95	81	110	95	176	4.8	7900986
VIP	VMVK 6	6	1.5	34	30	40	35	66	0.25	7984072
	VMVK 8	8	2.5	48	40	54	48	88	0.8	7100760
	VMVK 10	10	4.0	60	49	67	60	110	1.2	7100761
	VMVK 13	13	6.7	74	64	86	76	143	2.4	7100762
	VMVK 16	16	10.0	91	79	105	98	176	4.4	7100763
	VV 20	20	16	117	100	102	--	140	8.8	7994856
	VV 22	22	20	117	100	102	--	140	8.5	7994855
	VV 28	28	31.5	150	130	130	--	170	17.2	7900643
Grade-80	BSEK 6	6	1.12	38	34	40	38	66	0.3	7984073
	BSEK 8	8	2	46	41	52	48	88	0.55	7102686
	BSEK 10	10	3.15	58	50	64	60	110	1.1	7102687
	BSEK 13	13	5.3	74	64	86	76	143	2.4	7102688
	BSEK 16	16	8.0	91	79	105	98	176	4.4	7101419

Table 2: Dimensions table

Subject to technical modifications



NOTE

The permissible load bearing capacities can be found in the relevant ICE and VIP/Grade-80 operating instructions (or www.rud.de).