

MAXI

> VIP-MAXI < Assembly kit 28 mm

User manual

This user manual must be kept on file
for the whole using period.

Translation of the original user instructions

RUD®

RUD Ketten
Rieger & Dietz GmbH u. Co. KG
73428 Aalen
Tel. +49 7361 504-1370
Fax +49 7361 504-1460
sling@rud.com
www.rud.com

RUD-Art.-Nr.: 7900639-EN / 10.016



> VIP-MAXI <
assembly kit 28 mm
chain 28x84 in quality grade 100

RUD®

EG-Konformitätserklärung

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

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

Hiermit erklären wir, dass die nachfolgend bezeichnete Maschine aufgrund ihrer Konzipierung und Bauart, sowie in der von uns in Verkehr gebrachten Ausführung, den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Maschinenrichtlinie 2006/42/EG sowie den unten aufgeführten harmonisierten und nationalen Normen sowie technischen Spezifikationen entspricht.
Bei einer nicht mit uns abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.

Produktbezeichnung: Anschlagkettengehänge Gk10 VIP
ND 4-28 mm, verkürzbar und unverkürzbar

Folgende harmonisierten Normen wurden angewandt:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN 1677-2 : 2008-06</u>
<u>DIN EN 1677-3 : 2008-06</u>	<u>DIN EN 1677-4 : 2009-03</u>
<u>DIN EN 818-1 : 2008-12</u>	<u>DIN EN 818-2 : 2008-12</u>
<u>DIN EN 818-4 : 2008-12</u>	<u>DIN EN 818-6 : 2008-12</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 15428 : 1978-08</u>
<u>DIN 15429 : 1978-07</u>	<u>DIN 5688-3 : 2007-04</u>
<u>DIN 5692 : 2011-04</u>	<u>DIN 685 : 1981-11</u>
<u>PAS 1061 : 2006-04</u>	

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*

RUD®

EC-Declaration of conformity

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

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

We hereby declare that the equipment sold by us because of its design and construction, as mentioned below, corresponds to the appropriate, basic requirements of safety and health of the corresponding EC-Machinery Directive 2006/42/EC as well as to the below mentioned harmonized and national norms as well as technical specifications.
In case of any modification of the equipment, not being agreed upon with us, this declaration becomes invalid.

Product name: Chain sling Grade 100 - VIP
ND 4-28 mm, adjustable/not adjustable

The following harmonized norms were applied:

<u>DIN EN 1677-1 : 2009-03</u>	<u>DIN EN 1677-2 : 2008-06</u>
<u>DIN EN 1677-3 : 2008-06</u>	<u>DIN EN 1677-4 : 2009-03</u>
<u>DIN EN 818-1 : 2008-12</u>	<u>DIN EN 818-2 : 2008-12</u>
<u>DIN EN 818-4 : 2008-12</u>	<u>DIN EN 818-6 : 2008-12</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 15428 : 1978-08</u>
<u>DIN 15429 : 1978-07</u>	<u>DIN 5688-3 : 2007-04</u>
<u>DIN 5692 : 2011-04</u>	<u>DIN 685 : 1981-11</u>
<u>PAS 1061 : 2006-04</u>	

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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(Wrong assembly / misuse)
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Before every use, please read the Safety Instruction of the >MAXI-components< carefully and make sure that you understand all substance.

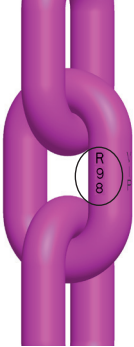
Improper use can result in bodily injury or property damage and eliminates any warranty!

1 Safety hints

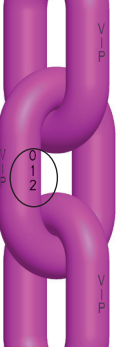


WARNING

*Improper assembled or damaged VIP-MAXI Slings and inappropriate use can result in deadly injury or lead to heavy injuries when load drops.
Inspect VIP-MAXI lifting means before each use carefully!*

- Do not mix with chains and components from other manufacturers and other quality classes, e.g. ICE or Grade 80!
 - Assemble only VIP chains and components of the same nominal diameter.
 - At parallel 2-leg slings all strands must be from the same production batch (= **identical manufacturing and batch numbers and identical number of chain links**). This is also valid when reparings are carried out.
- 

Pic. 1:
Manufacturing number
(character + numeral)



Pic. 2:
Batch number
(numerals only)
- With parallel 2-leg-slings, it is mandatory necessary that the shortening will be done in every strand at the same position, so that both strands will have the same length. In addition to that it must be guaranteed that during the whole lifting operation the end fittings (for example crane hooks, shackle etc.) are load bearing in the center of the masterlink and the end link.

- Leave direct danger zone. Attached loads must not be left unattended.
- RUD >MAXI-components< must only be used by competent and designated persons which have been trained, and outside Germany by respecting the country specific regulations.

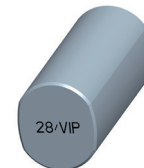
2 Intended use

- VIP-MAXI components must only be used for the intended described usage.
- Assemble and use only RUD VIP-28 chains and components and connecting pins which are embossed with H1-10 and VIP-28.



10

Pic. 3: H-1 stamp



Pic. 4: Connecting pin

3 Rules and standards

When using sling chains pay attention to the following rules and standards:

- European machine guideline 2006/42/EG

When using lifting chain assemblies, attention must be paid according to the regulations:

- BGR 500, chapter 2.8 (DGUV rules 100-500)
- EN 818 (chapter 1, 2, 4 and 6)
- EN 1677
- PAS 1061
- and also to the specific country statutory regulations (outside of Germany).



HINT

We do not take any responsibility for damage occurred by non-conformance of these standards, regulations and hints!



= Identification of the complete assembled chain slings.

= this mark confirms that the technical requirements of the European Directives are fulfilled.

Make sure before the first lift that:

- the chain assembly corresponds to the order specifications;
- the test certificate 3.1 of the factory approval 2.1 (form EN 10204 with the details from EN 818-4) and declaration of conformity is present;
- the details marked on the identification tag of the assembly correspond to the specification on the test certificate and the declaration of conformity.

4 General information

- The weight of the load must be known.
- The centre of gravity of the load must be known.
- Capability of temperature usage:
If sling chains are used in temperatures ranging from 200°C upwards (e.g. in hot environments such as steel production, forges, foundries etc.) the WLL has to be reduced according to the following table:
 - -40°C up to 200°C --> no reduction
 - 200°C up to 300°C --> minus 10 %
 - 300°C up to 380°C --> minus 40 %
 - Temperatures higher than 380°C are prohibited



HINT

With temperatures below -40°, lifting chains must not be used.

- The special fluorescent ICE-pink powder coating signals permanently the maximum temperature at which the ICE chain had been used. Once pink colour changes into brown-black, ICE chains must be replaced or sent back to manufacturer for inspection. (The pink colour changes to brown-black when the chain is used in temperature areas higher than 380°C.)

In this case exchange the VIP chains or send them to the manufacturer for repairing.

- Sling chains of special quality 10-VIP must not be used under chemical influences (acids, alkaline solutions and vapors), e.g. in pickling baths or hot dip galvanizing plants. Attention should be paid to special instructions such as BGR 150 or other country specific statutory regulations.
- Before using sling chains in chemicals, the manufacturer must be contacted first regarding the concentration, period of penetration and temperature of use.
- RUD components are tested in accordance with DIN EN 1677, with a minimum of 20.000 load cycles at 1.5 x WLL

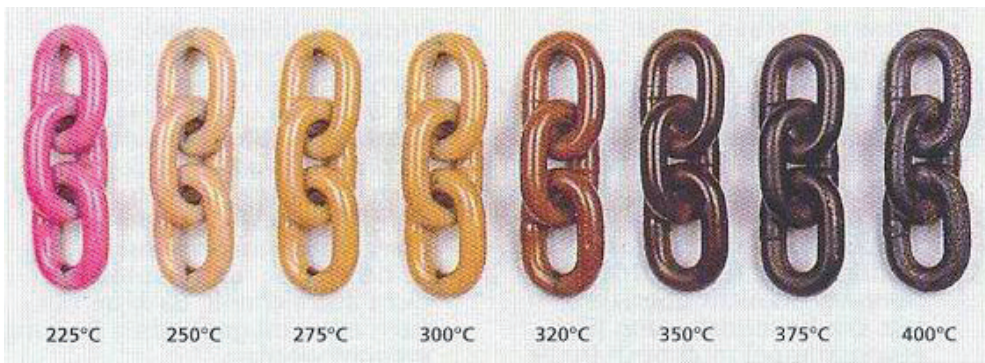
The BG (Employer's insurance association) recommends: For high dynamical operational demands with a high number of load cycles (permanent usage), the bearing stress must be reduced acc. to FEM group 1Bm(M3 acc. To EN 818-7), f.e. by choosing the next bigger nominal size.

5 Assembly and user instruction

5.1 Handling

Pay attention to the following hints in regard of the handling of VIP-MAXI slings and components:

- Lifting chains must be used with straight legs without twists, knots or breaks.
- Load hooks must not be tip loaded and must be equipped with safety latches to avoid unintentional unloading.
- Master links must be free moveable at the base of the crane hook.
- Avoid shock loading f.e. lifting from slack chain.
- Avoid sharp edges because they are bending or damaging chain links and components. In this case use either edge protection, next bigger chain size or reduce the WLL by 20 %.
- Assemble and use only RUD VIP-28 chains and components and connecting pins which are embossed with H1-10 and VIP-28.
- The groove of the roller pin must be seen from the outside.
- Use retaining pins only once!
- Use only original spare parts!
- Finally have the ongoing suitability checked after the assembly by a competent person (acc. to BetrSichV § 2 Begriffsbestimmung Abs. 4).



Pic. 5: Patented VIP overheating indicator for pink powder coated chains

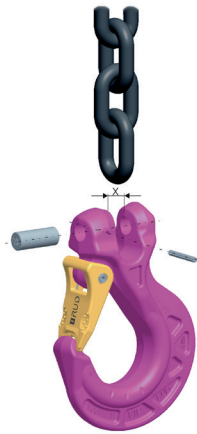
5.2 Assembly system

The VIP-MAXI masterlink has a forged clevis connection which is a mandatory link for the chain and the number of strands.

WLL statements are embossed into the masterlink. The identification tag is only attached at the loose chain strand.

Connecting pin and roller pins are pre-assembled.

The RUD clevis system yields through it's dimensional design to a mandatory fool-proof classification of the correct VIP chain size



Pic. 6: Assembly system

5.3 Lifting method

Assemble the single chain strands as follows (example A and B):



A
One strand
(single fall)

– connect **only the hole in the middle!**

Pic. 7: Single fall

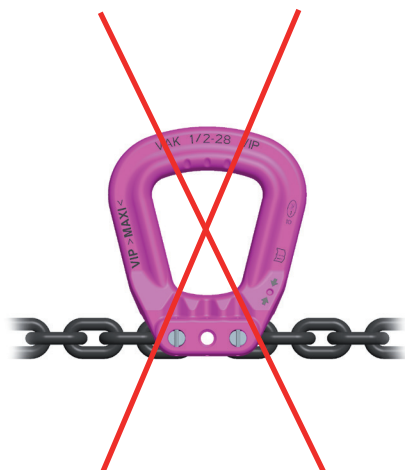


B
Two strands
(double fall) -

Connect **only with the two outside holes!**

Pic. 8: Double fall

Wrong assembly / missuse



Pic. 9: Wrong assembly / missuse

5.3.1 Single Fall

For single fall sling only use the hole in the middle of the masterlink (see picture 7 A).

5.3.2 Multiple leg (symmetrical)

For double fall slings always use the two holes on the outside of the masterlink (see picture 8 B).

For multiple strand slings an inclination angle between 15° and 60° should be chosen.



HINT

*Inclination angles bigger than 60° lead to an overloading of the chain sling.
Inclination angles below 15° can lead to instable loads.*

When using a 4 leg sling/4 lifting points, even at symmetrical loads it might happen that only two diagonal chain strands are load bearing.

At choke hitch lifts the WLL must be reduced to 80 % of the stated WLL.

5.3.3 Multiple strands (unsymmetrical)

When multiple strands are shortened it means that the load distribution to the several chain strands are diverse.



HINT

In case of unsymmetrical loading, the load factors WLL must be reduced by 50 %.

5.3.4 Multiple strands (parallel)



WARNING

*At parallel 2-leg slings (pic. 4) all strands must be from the same production batch (= **identical manufacturing and batch numbers and identical number of chain links**).
This is also valid when reparings are carried out.*

When using parallel multiple strand slings the following points must be observed:



WARNING

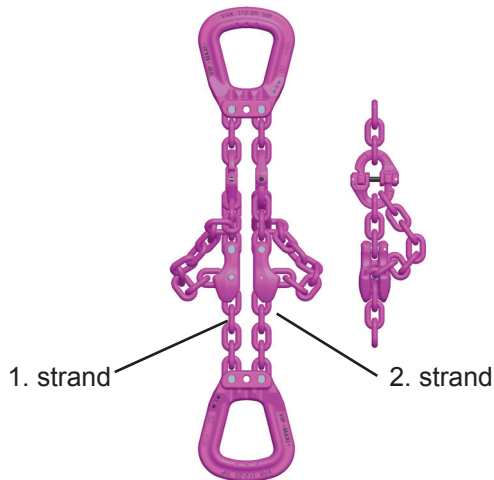
Disregarding the special requirements at parallel 2-leg slings the safety factor against breaking will be reduced dramatically.

- For the shortening operation it is mandatory necessary that shortening of each strand will be carried out at the same position, so that strand 1 and strand 2 do **always have the same length**.



WARNING

By doing a wrong shortening operation, the master link and the end link as well will get into a inclined position. This can cause overloading of the single strand resp. lead to a load drop. The single strands must have always the same length respectively must always be shortened at the same position.



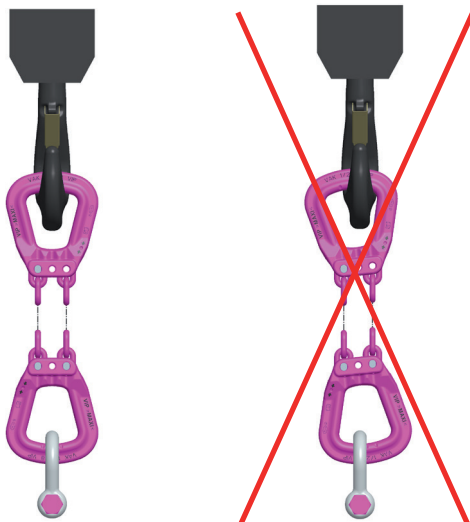
Pic. 10: Exposure shows parallel 2-leg-sling. Identical strand length when shortened

- During the whole lifting operation it must be guaranteed that the connecting parts (for example crane hooks, shackles etc.) are load bearing in the center of the master link and in the end link, too.



WARNING

Off the center support can lead to unequal chain loading. The load resp. the components must be controlled during the whole lifting operation and if necessary be positioned centric again.



Pic. 11: Required centric resp. wrong (excentric) position

5.4 Hints for the storage

Consider the following regulations when storing sling chains.

- Keep chains dry
- Hang chains vertical into a rack
- Protect chains from climatic influences.

6 Single components

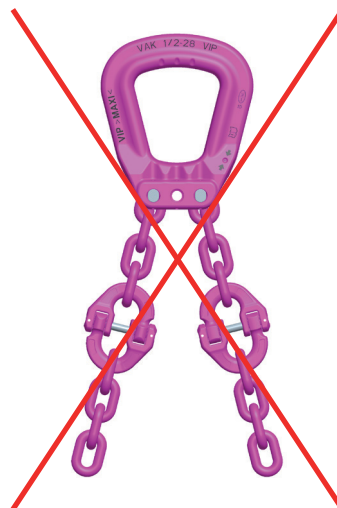
Single dimensions see page 19.

6.1 VIP connector (VVS-28)

When using 2-leg slings, the VIP connecting links must always be assembled with an odd number of chain links to the master link. In this way the necessary parallel position of the connecting links will be achieved.



Pic. 12: Parallel assembly of connecting links



Pic. 13: Wrong assembly of connection links

When using a VIP connector (f.e. for the connection of eye components or wire rope / webbing slings) pay attention to the additional user instruction VVS (Ref. No. 7901477).

6.1 VIP Shortening claw (VV-28)

Proceed assembly of VV-28 as follows:

1. VIP-shortening claws of size 28, when used in double leg slings, must be assembled in such a way that the pockets of the claws show to the outside (compare picture 15).
2. Assemble the VV-28 with the chain to the corresponding masterlink.



Pic. 14:
single fall with
shortening claw



Pic. 15:
double fall
with shortening claw

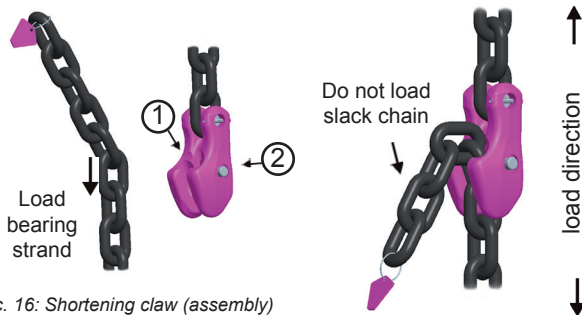
3. Place the required chain link of the slack chain into the pocket of the VIP shortening claw, see Pic. 16,

①.



HINT

Press locking pin during positioning of chain link (see Pic. 16, ②).



Pic. 16: Shortening claw (assembly)

4. Release locking pin after positioning.
5. Check if chain is correct positioned in the pocket.



HINT

The load bearing strand must stick out under the shortening claw (see Pic. 16).

6. Check the locking device.

6.2 VIP lenth ajustement (VLE)

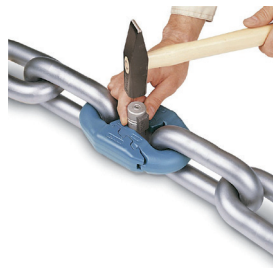
When using a VIP- lenth ajustement device (see Pic. 30, page 19) pay attention to the additional user instruction VKSPS/VLE.

To adjust the VLE 28 you will need two flat spanners of the size 120.

6.4 VIP-Dominator (VDM 28 (34))

The VDOM 28 (34) is suitable to assemble endless chains.

Assembly sequence:



Punching of
securing pin!

Pic. 17 up to 20: Assembly of VIP-Dominator



Pic. 21:
Endless chain
with Dominator

Pay attention to the additional VIP-Dominator user instruction

6.5 VIP-Shackle VC-SCH 6

When using a VC-SCH 6 shackle please pay attention to the user instruction VV-SCH / VC-SCH (Ref. No.: 7900746).

7 Inspection and test

7.1 Visual and function test

For controlling sling chains, regular inspection by an expert have to be carried out within a period of 12 months. Depending on the conditions of use, e.g. permanent usage, increased wear or corrosion the inspection needs to be carried out earlier.

The inspection must also be carried out after accidents and unusual incidents

- The expert has to record the examination in the chain card life or in the RUD-ID-NET®-Applikation.
- Protocols of tests and any other records have to be kept at least until the next inspection.
- Should any of the following damage occur, the sling chain should immediately be taken out for maintenance and service:
 - a) The identification tag is unreadable or the tag is missing.
 - b) Twisting, deformation and breakage of chains, components and master links.
 - c) Lengthening of the chain by plastic deformation of individual links by more than 5 % referred to the pitch of 3d.
 - d) Wear occurs at the chain links caused by abrasion on the outside and between chain links hanging together.

For measuring the wear with a caliper, the chain must be loose. A wear up to 10 % (dm) is permissible.

- e) Cuts, notches, grooves, failure, increased corrosion, discolouring due to heat, bent or twisted chains and components. Especially deep notches in the tensile strength region and sharp-edged notches in lateral direction are not allowed.
- f) At the lifting hook, the widening of the hook must not exceed 10 % of the nominal value. The hook securing (safety latch) must still slip into the hook tip in order to occur from closure. Carefully examine bowl of the hook for notches at the max. until the forged and patented wear mark has reached.

- g) New up from 2011 – additional „Fast-Check“ for the daily usage: wear up to the reach of the wear lenses. When material has been removed down to these markings, part must be exchanged.

7.2 Examination for cracks

Inspections going further than just visual checking, the corresponding national regulations have to be fulfilled.

RUD recommends, respectively to BGR 500 chapter 2.8 (DGUV rules 100-500), to do a crack test inspection at least after 3 years.

A proof load test for chains and components is insufficient because cracks can only be recognized with a magnetic crack test.

8 Repair and Maintenance

Repair works have only to be done by experts, disposing of the knowledge and skills required. Components and chains with failures, being bent, twisted and considerably deformed must be replaced.

With the chain, the complete leg has to be replaced. Minor faults such as notches and grooves have carefully to be grind off (no notch effect). The cross section of the material must not be decreased by more than 10 %. Welding on chains and components are forbidden.

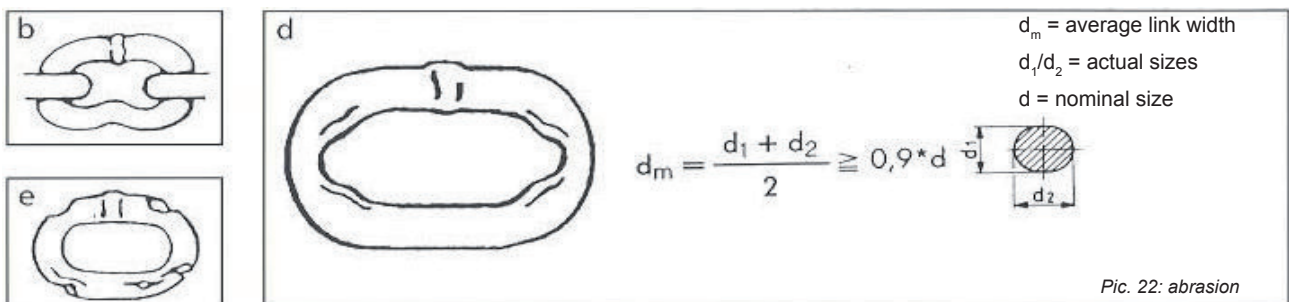


WARNING

At parallel 2-leg slings all strands must be from the same production batch (= **identical manufacturing and batch numbers and identical number of chain links**).

This is also valid when repairings are carried out.

Maximum of allowed wear of the pin diameter = 10 %. Fundamentally, use new connecting bolts and tensioning sleeves when changing these parts. Use only original RUD spare parts! It is only allowed to connect VIPchains with VIP components (pink coloured and VIP stamped). Any repairs, maintenance carried out have to be recorded in the chain card file resp. into the RUD-ID-NET®-Applikation.



9 Documentation

9.1 Chain card file

The chain card file contains the continuous history of a chain sling. The contents are: first record (paragr. 2), inspection/test dates (paragr. 3) as well as repair and maintenance (paragr. 4). If there are any repairs, the reason must be indicated. The records in the chain card file give proof on steady super-vision measurements of the user during the use of the sling chains.

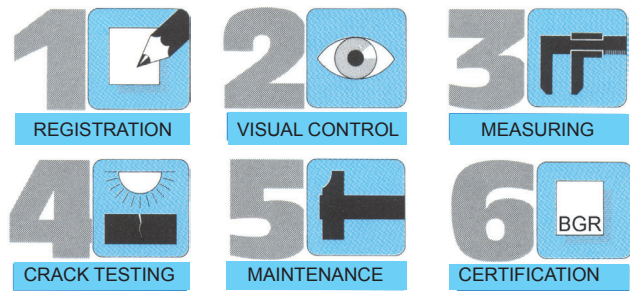
Carefully adhere to statutory requirements and the approval code of practise issued by the trade association.

Our test personnel are well educated specialists according to EN 473 working with the most modern equipment. Test certificate according to BGR 500 (DGUV rules 100-500) as well as actual EU law. Testing equals safety and keeps the value added.

The RUD inspection service offers you the complete safety service directly on the field.

We are testing every lifting mean according to the beside mentioned 6 points safety program.

Service-Telefon: 0049 7361/504-1351



HINT

It is not allowed to combine MAXI chains and components with chains and components quality class 8.

9.2 RUD-ID-NET®-Applikation

The MAXI components will be equipped with a RUD-ID-Point® and can clearly be related by the identification number. This number can be determined with the RUD-ID-EASY-CHECK® readers and data can be transferred into the RUD-ID-NET®-Applikation.



The application will support your product administration and documentation.

For further information please go to the RUD webpage or ask your RUD authorized distributor.

Inclination-angle β	0°	0°	0-45°	>45-60°	0-7°	>7-45°	0-45°	
Load factor	1	2	1.4	1	4	2.8	2.1	
WLL [t]	31.5	63**	45	31.5	126	88	67	
	*** 	*** 	*** 	*** 	*** 	*** 	*** 	
Inclination-angle β	0-7°	>7-45°	>45-60°	0-7°	>7-45°	0-7°	>7-45°	0-7°
Load factor	2	1.4	1	4	2.8	4	2.8	2
WLL [t]	63*	45*	31.5*	126*	88*	126*	88*	63*

table 1: WLL overview (symmetrical load)



ATTENTION:

- In case of unsymmetrical loading, the load factors must be reduced by 50 %.
- *Choke hitch and endless chain: Bollard-, bolt- or shackle diameter $3 \times t > 250 \text{ mm}$. In case of a smaller diameter (edge load) the load factors must be reduced by 20 %.
- **At parallel 2-leg slings all strands must be from the same production batch (= identical manufacturing and batch numbers and identical number of chain links). This is also valid when repairings are carried out.
- RUD components are tested in accordance with DIN EN 1677, with a minimum of 20.000 load cycles at $1.5 \times \text{WLL}$
- ***When lifting in a basket hitch, make sure that loads do not move hazardous or drop (see German work safety regulation "Betr SichV", attachment 1 acc. §7).

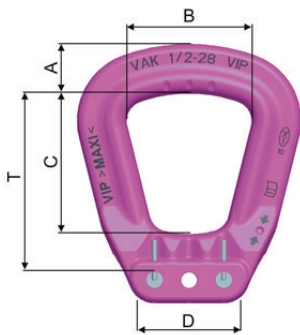
Type	WLL [t]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	T [mm]	weight [kg]	Ref. No.
VAK-1/2-28*	31.5/45/63	100	250	280	208	120	76	-	360	64.3	7900642
VBK-1/2-28**	31.5/45/63	60	190	265	240	120	55	-	322	35	8504022
VB-28	31.5	62	130	150	130	80	100	52	209	13.7	7900641
VCGH-28	31.5	150	101	69	88	-	90	295	275	26.4	7900638
VV-28	31.5	150	130	130	-	-	-	-	170	16.9	7900643
VVS 28	31.5	69	228	58	47	67	81	-	189	10.6	7901445
VC-SCH 6.0	31.5	53	34	78	39	37	34	121	120	5.9	7984333
VLE 28	31.5	650	172	138	120	-	-	-	478	44	7900772
VMK 28x84	31.5	28	37	-	-	-	-	-	84	18.6	7900670
VIP-Domi	31.5	-	119	40	-	-	-	-	126	4.1	58917

table 2: Dimensioning

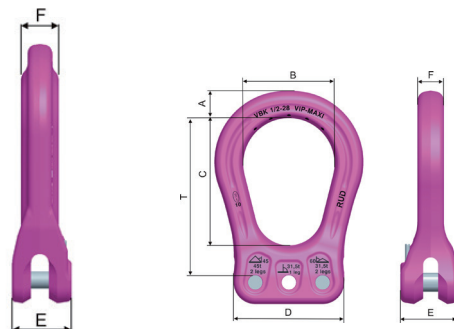
Subject to technical alterations

* VAK-1/2-28: Suits Single-crane hooks (size 40 + 50) and suits Double-cranehooks (size 40 + 50)

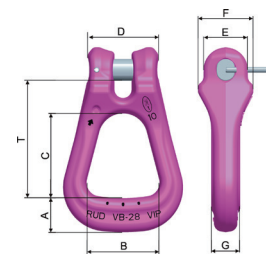
** VBK-1/2-28: Suits Single-crane hooks (size 12 - 32) and suits Double-cranehooks (size 12 - 32)



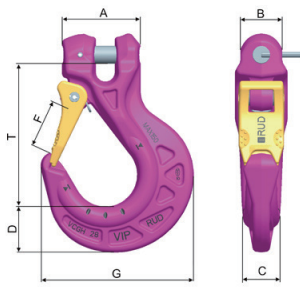
Pic. 23: VAK-28



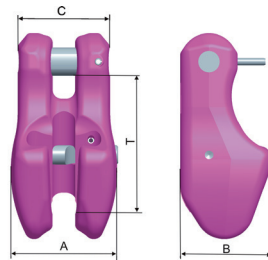
Pic. 24: VBK-28



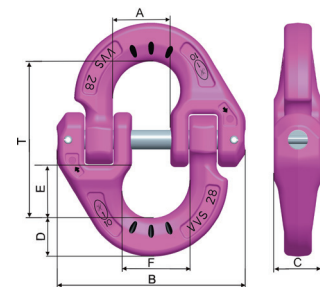
Pic. 25: VB-28



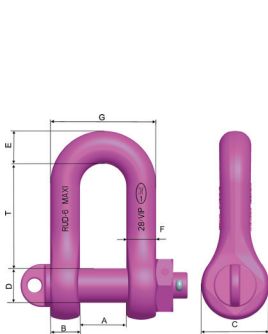
Pic. 26: VCGH-28



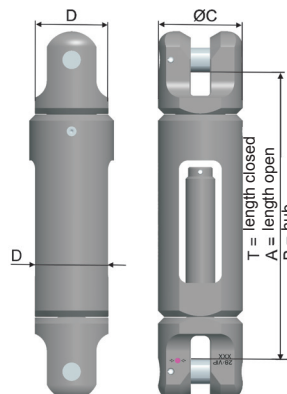
Pic. 27: VV-28



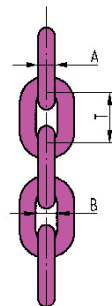
Pic. 28: VVS 28



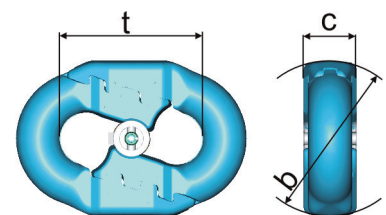
Pic. 29: VC-SCH 6.0



Pic. 30: VLE 28



Pic. 31: VMK 28x84



Pic. 32: VIP Dominator