> ICE-Balancer <

User instruction

This safety instruction / declaration of the manufacturer has to be kept on file for the whole lifetime of the product.

Translation of the original user instruction

EN

ICE-Balancer

RUD Ketten
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RUD BLUE-ID SYSTEM

Simple test, management and documentation subject to mandatory testing operating resources, equipment and components.

EG-Einbauerklärung

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

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

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: ICE-Wippe
IW

Folgende harmonisierten Normen wurden angewandt:
DIN EN ISO 12100 : 2011-03

Folgende nationalen Normen und technische Spezifikationen wurden außerdem angewandt:
BGR 500, KAP2.8 : 2008-04

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

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: ICE-Balancer
IW

The following harmonized norms were applied:
DIN EN ISO 12100 : 2011-03

The following national norms and technical specifications were applied:
BGR 500, KAP2.8 : 2008-04

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

Before use or assembly of ICE-Balancer please read user instruction carefully. Make sure that you have understood all subject matters. Non-observance can lead to personal and material damage and eliminates warranty.

1 Safety instructions

ATTENTION
Wrong assembled or damaged components as well as improper use can lead to injuries of persons and damage of objects when load drops.
Please inspect all components before each use.

- Keep all body parts like fingers, hands, arms, etc. out of the hazardous area during the lifting operation.
- Any technical modifications at the ICE-Balancer are prohibited.
- Keep persons out of the hazardous area.
- Detention under a floating load is forbidden.
- Jerkily lifts with shock loads must be avoided.
- When the lift starts, pay attention to a stable position of the load. Avoid swinging of the load.
- Damaged or worn ICE-Balancer must no longer be used.
- Bear in mind extreme circumstances or shock loads when choosing the used components.
- The ICE-Balancer must not be used under load with an limit inclination angle of 10° (see picture 11).
- The inclination angle ß must not exceed 45° (see picture 13 and 14).
- ICE-Balancers must only be used by designated and trained persons by observing the BGR 500 / DGUV 100-500 requirements, chapter 2.8, and outside Germany acc. to the country specific regulations.

2 Intended use

ICE balancers will be installed into 4-leg sling assemblies (2x 2-leg), to achieve an equal load distribution to all 4 legs (picture 17). The length tolerances of the single legs will be compensated by the disposition of the ICE-Balancer.

Please observe that the ICE balancer does not exceed the limit inclination angle of 10° (picture 11). By the special bottom shape of the ICE balancer you can realize very easy the limit inclination angle of 10°.

During use make sure that the 2-leg sling with the balancer will not be used seperatly.

Observe the safety instructions: „Lifting means used for lifting of loads must especially avoid that loads shift unattended or drop in free fall.“

ICE-Balancers must only be used in the here explained usage.

You can calculate with 4 load bearing strands if the following criteria are fulfilled (BGR 500 / DGUV 100-500):

- Two 2-leg slings, therof one sling with a balancer.
- Both 2-leg slings will be attached to one hook (single or double crane hook)
- Symmetrical load spreading
- Max. inclination angle ß 45°

WARNING
The 2-leg sling with the balancer must not be used seperatly as 2-leg sling. Lifting means for lifting of loads must avoid that loads can shift unintentional. (compare with work safety requirement, attachment 1, chapter 3.2.3)

3 Assembly- and instruction manual

3.1 General information

- Capability of temperature usage
  When used at temperatures higher than 200°C the working load limits (WLL) of the ICE-Balancer must be reduced as follows:
  -60°C up to 200°C no reduction
  200°C up to 250°C minus 10 %
  250°C up to 300°C minus 40 %
  Temperatures exceeding 300°C are prohibited!
- ICE-Balancer must not be used with aggressive chemicals such as acids, alkaline solutions and their vapours.
- The balancer head consists of the following components:

Size 6-16 mm
IAK-/ISAK-Master Link
VV-SCH/VC-SCH
ICE-Balancer
IVS ICE-Connecting Link

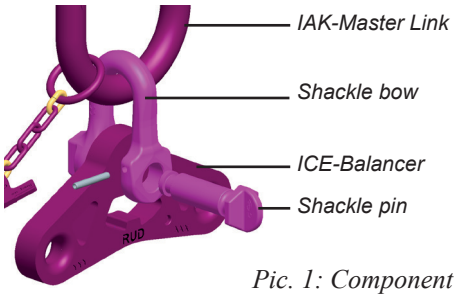
3.2 Hints for the assembly

3.2.1 Assembly of masterlinks and shackles

Please observe obsolutely the correct sizing of masterlinks, shackles and balancers during assembly and repairing (see table 2).

During the assembly of the balancer head please proceed as follows:

1. Please meet the following component adjustment while balancer head is assembled (picture. 1):



Pic. 1: Component adjustment

2. Attach shackle bow into IAK-Master Link.
3. Move shackle bow plus IAK Master link over the top hole of the balancer.
4. Close shackle by moving the shackle pin through the balancer connecting hole.
5. Turn shackle pin completely in and secure it always with a cotter or a sleeve pin. The shackle must now be firm connected to the balancer.

HINT
The bow of the shackle must always be secured:
Cotter pin for VC-SCH 5.0 and VC-SCH 6.0
Sleeve pin for VV-SCH 10, 13 and 16

Pic. 2: Assembled balancer with shackle

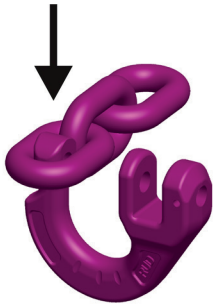
3.2.3 Assembly of chain strands (by using connectors)

The chain strands will be connected to the balancer by using IVS ICE-Connecting Links.

Sequence of assembly:

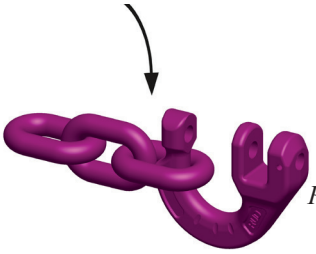
In the following description the assembly of the connecting link will be described exemplarily with the example of a ICE-Balancer and an ICE chain.

1. Install last chain link into the nose (Pic. 3). In this case there is no additional connector necessary.



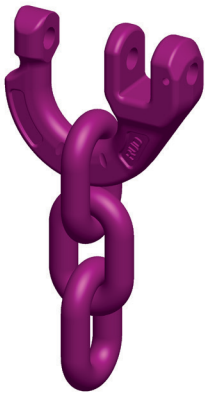
Pic. 3: Install chain into nose

HINT
At the beginning of the bow rounding, chain link can be turned by 90° within the bow (Pic.4).



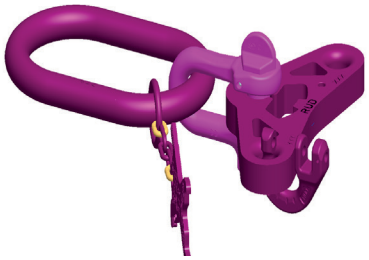
Pic. 4: Turn chain link

2. Position chain strand to the bottom of the bow part (Pic. 5).



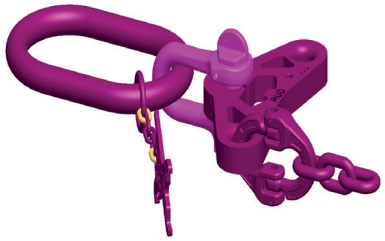
Pic. 5: In connect half attached chain

3. Put into the second bow part a desired connecting part, f.e. a masterlink (Pic. 6).



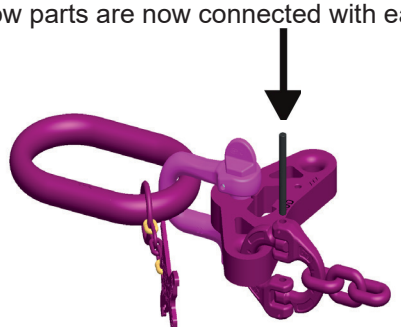
Pic. 6: Assembly of the second bow part

4. Assemble both bow parts together in such a way that components are aligned (Pic. 7).



Pic. 7: Alignment of second bow part with first bow part

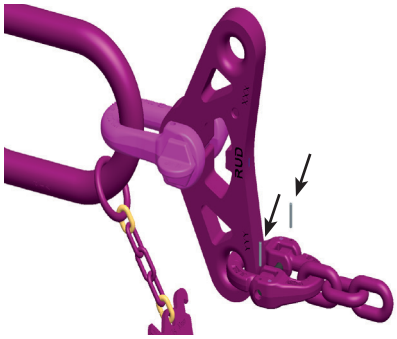
5. Install pin into the bore of the eye (Pic. 8). Both bow parts are now connected with each other.



Pic. 8: Assembly of connecting pin

6. Secure the assembled connecting link as follows (Pic. 9):

   - Position the securing pin resp. the sleeve pin in such a way, that the slot faces the outside.
   - Knock sleeve pin in with a hammer.



Pic. 9: Securing of connecting pin

7. Finally check the correct assembly (see chapter 4 Inspection criteria).

3.3 General information regarding use

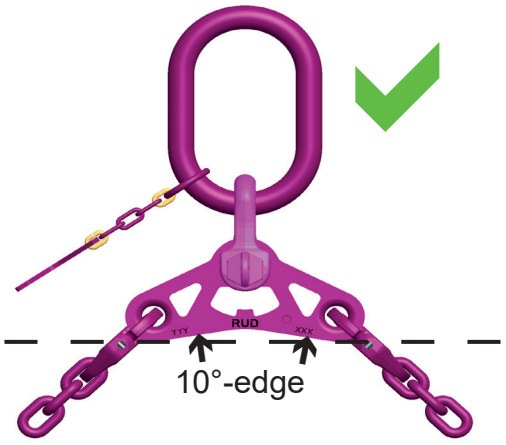
The whole lifting mean must be inspected regularly by a competent person in regard of proper installation, strong corrosion, cracks at load bearing parts and deformations (e.g. by the person responsible for attachment). See section *4 Inspecting and repairing*.

WARNUNG
Wrong assembled or damaged components as well as improper use can lead to injuries of persons and damage of objects when load drops.
Please inspect all components before each use.

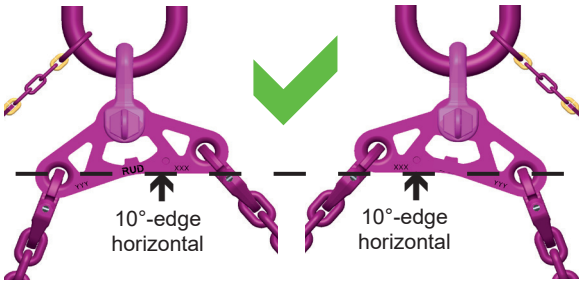
- RUD components have been designed as per DIN EN 818 and DIN EN 1677 for a dynamic load of 20,000 load cycles.
  - Observe and be aware that multiple load cycles can occur during a lifting operation.
  - Observe the risk of product damage caused by high dynamical influences at high load cycle numbers.
  - BG/DGUV Germany's employer insurance association recommends: At high dynamical loading with a high number of load cycles (permanent use), the stress at WLL acc. to FEM class 1Bm (M3 acc. to DIN EN 818-7) must be reduced.
    Use a lifting chain with a higher WLL.
- Make sure that the load force happens in the straight leg without being twisted, fold-over or kinked.
- Leave hazardous area when possible.
- Monitor always attached or lashed loads.
- Read for all lifting means the RUD sling chain safety instructions for RUD lifting means.

3.4 Hints for the usage (limit of inclination angle)

- Before each usage please control the correct assembly of the ICE-Balancer.
- Observe that the inclination angle of the ICE balancer does not exceed 10° (see pictures 10-12)



Pic. 10: In the ideal case no skewing of the balancer should occure 10° edge



Pic. 11: Limit skewing inclination of 10° reached (can be recognised by horizontal alignement of edge)

HINT
The maximum allowed balancer skewing of 10° can be recognised by the specific shape of the ICE-Balancer. The limit skewing angle of 10° can be easily recognized.

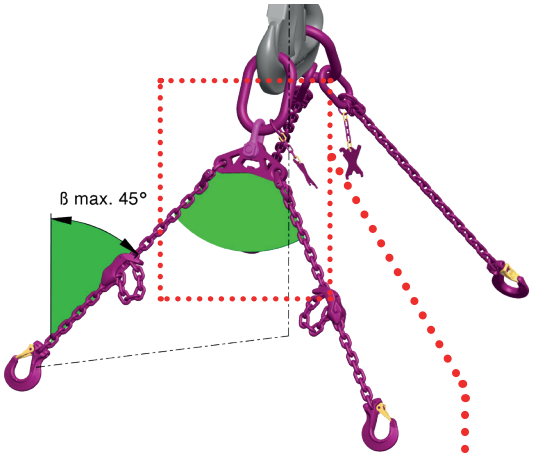
- A skewing of the balancer under load by more than 10° is prohibited (Pic. 12)!
  The 10° edge is no longer aligned horizontal!
  The skewing of the balancer is too big.

Pic. 12: Skewing of the balancer by more than 10° is prohibited.

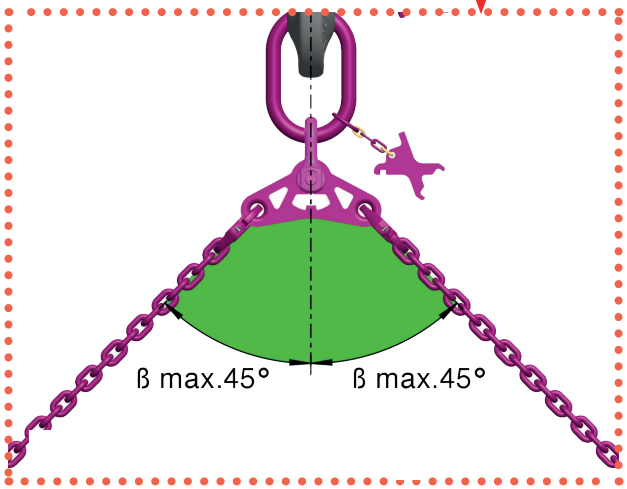
WARNING
Skewing of the balancer by more than 10° is prohibited. Should the limit skewing angle exceed 10°, an ICE-CURT-GAKO length adjustment has to be installed into the 2-leg balancer sling or a shortening element must be used. Make chain strand either longer or shorter until the balancer is within the 10° range.

3.5 Hints for the usage (Inclination angle β)

- Pay attention that the inclination angle ß will not exceed 45° (see picture 13 and 14).



Pic. 13: Max. inclination angle β = 45°



Pic. 14: Detailed view Pic. 13

4 Inspecting and repairing

4.1 Hints for the regularly inspection

The operator has to determine and dictate the necessary inspection periods and the deadlines by a risk assessment (see sections *4.2 and 4.3*).
The persisting appropriateness of the lifting mean must be checked by a competent person (auditor) at least once per year.
Depending on the conditions of use e.g. frequent use, increased wear or corrosion, it may be necessary to carry out inspections at shorter intervals than once per year. A verification is also required following damage and after special events.

4.2 Inspection criteria for the regularly examination carried out by the operator:

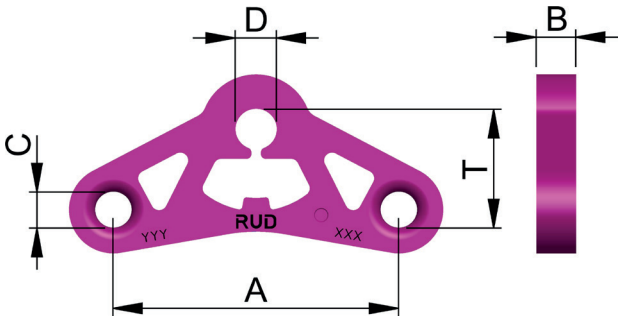
- Completeness of the ICE-Balancer.
- Deformations at the component.
- Check readability of nominal size and manufacturer sign
- Mechanical damage like notches especially at areas with tensile stress.

4.3 Additional inspection criteria for the competent person resp. auditor

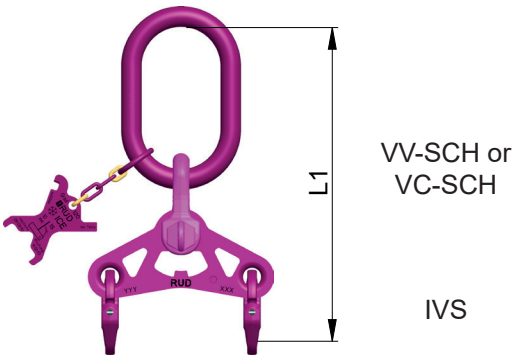
- Reduction of cross section cause by wear of more than 10 %
- Strong corrosion
- Additional inspections may be necessary depending on the result of the risk assessment (e.g. incipient cracks at load bearing parts).

4.4 Hints for the Repairing

- Repair works can only be carried out by the manufacturer or by experts disposing necessary knowledge and required skills.
- Only RUD original spare parts must be used and all repairing and overhauling operations must be documented in the chain card file (of the complete lifting mean) or use the RUD BLUE-ID-System.



Pic. 15: Dimensioning of the ICE-Balancer



Pic. 16: Assembled chains

Chain [mm]	Nomination	WLL of balancer [t] inclination angle of legs 0-45°	WLL of balancer [t] inclination angle of legs 0° (±7°) parallel	A [mm]	B [mm]	C [mm]	D [mm]	T [mm]	weight [kg/pc.]	Ref. no.
6	IW-6	2.5	3.6	110	15	14	21	46	0.49	7904367
8	IW-8	4.25	6.0	150	20	18	26	59	1.15	7904370
10	IW-10	7.1	10.0	180	25	23	32	76	2.4	7904372
13	IW-13	11.2	16.0	240	30	28	38	91	4.37	7904375
16	IW-16	17	25.0	300	35	32	41	120	8.8	7904255

Table 1: Dimension chart of balancer *Subject to technical modifications*

Chain [mm]	Nomination ICE-Balancer head	Dimensions IAK- and IA-Link [mm]	Top connection	Bottom connection	Pitch of balancer head L1 [mm]	Weight of balancer head [kg/pc.]	Ref. no. balancer head
6	IWK-2S-6	18x90x160	VV-SCH10 (4 t)	IVS-6	300	2.33	7904654
8	IWK-2S-8	26x100x180	VV-SCH13 (6.7 t)	IVS-8	363	5.39	7904655
10	IWK-2S-10	32x110x200	VV-SCH16 (10 t)	IVS-10	423	9.99	7904656
13	IWK-2S-13	36x140x260	VC-SCH 5.0 (25 t)	IVS-13	554	17.5	7904657
16	IWK-2S-16	46x190x350	VC-SCH 6.0 (31.5 t)	IVS-16	698	37.54	7904658
6	IWSAK-2S-6	26x190x350	VV-SCH 13 (6.7 t)	IVS-6	504	5.85	7907155
8	IWSAK-2S-8	32x190x350	VV-SCH 16 (10 t)	IVS-8	543	9.0	7907156
10	IWSAK-2S-10	36x250x460	VC-SCH 4.0 (16 t)	IVS-10	701	17.17	7907157
13	IWSAK-2S-13	40x250x460	VC-SCH 5.0 (25 t)	IVS-13	754	24.4	7907158
16	IWSAK-2S-16	47x250x460	VC-SCH 6.0 (31.5t)	IVS-16	808	37.2	7907159

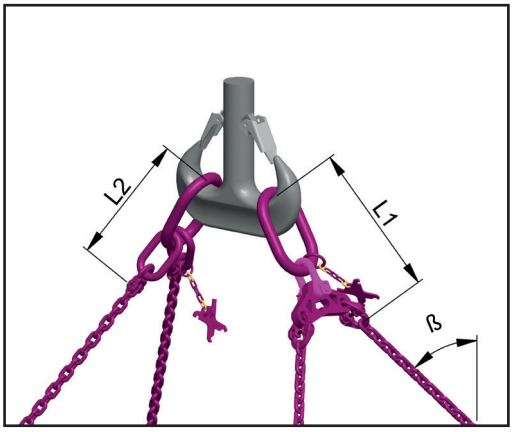
Table 2: Datas of ICE-Balancer head *Subject to technical modifications*

Chain [mm]	Nomination ICE-2-Leg Masterlink for balancer assembly	Dimensions IAK- and IA-Link [mm]	Pitch 2-leg IAK L2 [mm]	additional number of chain links for length adjustment IVS	Weight 2-leg IAK [kg/pc.]	Ref. no. 2-leg IAK
6	IAK 2S-6	18x90x160	266	2	1.8	7904659
8	IAK 2S-8	26x100x180	308	2	4.09	7904660
10	IAK 2S-10	32x110x200	368	2	7.37	7904661
13	IAK 2S-13	36x140x260	467	2	12.44	7904662
16	IAK 2S-16	46x190x350	603	2	24.87	7904663
6	ISAK-2S-6	26x190x350	456	3	5.1	7907150
8	ISAK-2S-8	32x190x350	478	3	8.64	7907151
10	ISAK-2S-10	36x250x460	628	2	14.6	7907152
13	ISAK-2S-13	40x250x460	667	2	20.12	7907153
16	ISAK-2S-16	47x250x460	713	2	28.98	7907154

Table 3: Datas of ICE-2-leg Masterlink (for balancer assembly)
Subject to technical modifications

Total weight to be lifted **[t]** at 4-leg slings (2-leg + 2-leg with balancer)			
Chain [mm]	**maximum allowed inclination angle β = 15°**	**maximum allowed inclination angle β = 30°**	**maximum allowed inclination angle β = 45°**
6	6.9	6.2	5.1
8	11.6	10.4	8.4
10	19.3	17.3	14.1
13	31.0	27.7	22.6
16	48.3	43.3	35.3

Table 4: Area of inclination angles
Subject to technical modifications



Pic. 17: Pitch

Example ICE-10 mm:

When using a standard 4-leg sling in the worst case scenario, the user can calculate with only 2 load bearing legs (WLL at 0-45°: 7.1 t)

BGR 500 / DGUV 100-500, chapter. 2.8 clause 3.5.3:

When lifting with multiple strands only two strands can be assumed to be load bearing.

This is not valid if it is guaranteed that the load will be distributed equally to 2 additional legs [...].

By using the ICE-balancer, the load distribution of a 2 x 2-leg sling will be forwarded to all 4 chain legs.

--> The here of resulting WLL will then be at an inclination angle ß 0-45° 14.1 t.

ATTENTION
When using two 2-leg slings at a symmetrical load distribution, one with a balancer, and both slings are attached into the same hook, 4 load bearing legs can be assumed. The inclination angle ß must not exceed 45°.