

Complies with the machinery directives 2006/42/EC




**NB: Please ensure that the safety instructions have been fully read and understood before initial use of the ICE-Balancer. Failure to do so may result in serious injuries and/or material damage and eliminates manufacturers warranty.**

## User Instructions - Part 1

### Safety instructions

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

**ATTENTION: Please inspect all components prior to use. Damaged, incorrect assembly or improper use may result in serious injuries and/or material damage.**

### EC-Declaration of the manufacturer

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

We hereby declare that the design and construction of the equipment detailed within this document, adheres to the appropriate level of health and safety of the corresponding EC regulation.

Any un-authorized modification and/or any incorrect use of the equipment not adhered to within these user instructions waives this declaration invalid.


The equipment must be regularly tested and inspected as per BGR 500. Failure to carry out the recommended maintenance and testing waives this declaration invalid.

### Designation of the equipment:

Type: **ICE-Balancer**

Manufacturer's mark: 

Drawings (iges, dxf and step), product information and other support material can be downloaded from [www.rud.com.au](http://www.rud.com.au).



**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:  
EN 12100

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

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:  
Reinhard Smetz, RUD Ketten, 73432 Aalen

Aalen, 24.08.2012      Dr. Ing. Rolf Sinz, (Prokurist/QMB)  
Name, function and signature of the responsible person

## User Instructions - Part 2

### 1. Safety Instructions

**Please take into consideration extreme circumstances or shock loads when choosing components.**

The ICE-Balancer must not be used under load with an inclination angle of greater than 10° (see pic 11).

The inclination angle  $\beta$  must not exceed 45° (90° internal sling angle) refer pic 13 and 14.

ICE-Balancers must only be used by designated and trained persons by observing the BGR 500 requirements, chapter 2.8, and outside Germany acc. to the country specific regulations. For Australia, please refer to AS 3775.2.

### 2. Intended Use

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

Please ensure that the ICE-Balancer does not exceed the limit inclination angle of 10° (pic 11). By the special shape of the ICE-Balancers you can easily realise the limit inclination angle of 10°.

During use ensure that the 2-leg sling with the balancer is not used separately.

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 conditions stated in this instruction.

You can calculate with 4 load bearing strands if the following criteria are followed (BGR500):

- Two 2-leg slings, one sling with a balancer.
- Both 2-leg slings attached to one hook (single or double crane hook)
- Symmetrical load spreading/sharing
- Max. inclination angle  $\beta$  45° (90° internal sling angle)



#### WARNING

The 2-leg sling with the balancer should not be used separately as a 2-leg sling. Lifting means for lifting of loads must avoid that loads can shift unintentionally.

### 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:
  - IAK-Master Link
  - VV-SCH / VC-SCH
  - ICE-Balancer
  - IVS ICE-Connecting Link

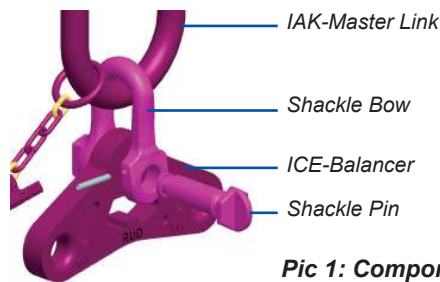
### 3.2 Assembly Instructions

#### 3.2.1 Assembly of masterlinks and shackles

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

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

1. Align the components to be assembled (**Pic 1**).



**Pic 1: Component assembly.**

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



#### NOTE

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.**

## User Instructions - Part 2

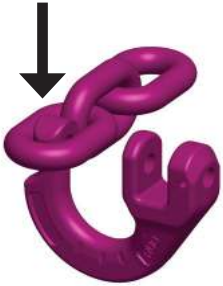
### 3.2 Assembly Instructions

#### 3.2.2 Assembly of chain strands (using connectors)

The chain strands are connected to the balancer using IVS ICE-Connecting Links.

#### Sequence of assembly:

1. Install last chain link into the nose of connector.

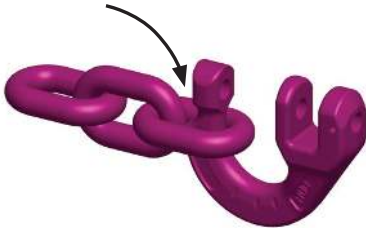


**Pic 3: Install chain into nose of connector.**



#### NOTE

At the beginning of the bow rounding, the chain link can be turned 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: Lower bow connected to chain.**

3. Assemble the second bow part of the connector into the balancer plate (Pic. 6).



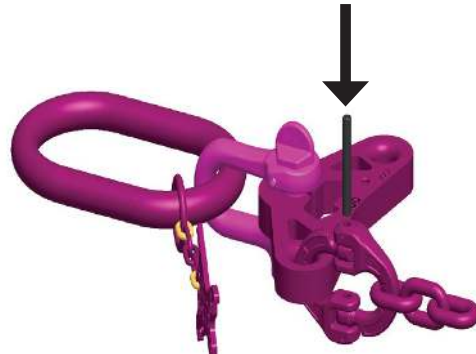
**Pic 6: Assembly of the second bow part.**

4. Assemble both parts of the connector ensuring all components are aligned (Pic 7).



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

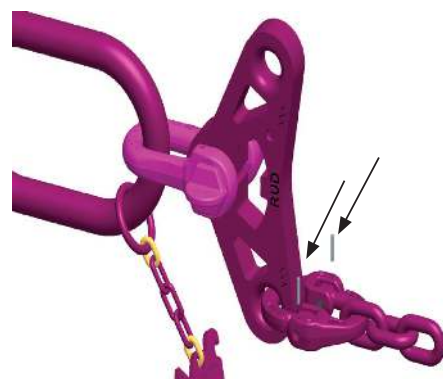
5. Install load pin into the bore of the eye (Pic. 8). Both bow parts are now connected with each other.



**Pic 8: Assembly of connecting pin.**

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

- Position the securing pin.
- Knock sleeve pin in with a hammer.



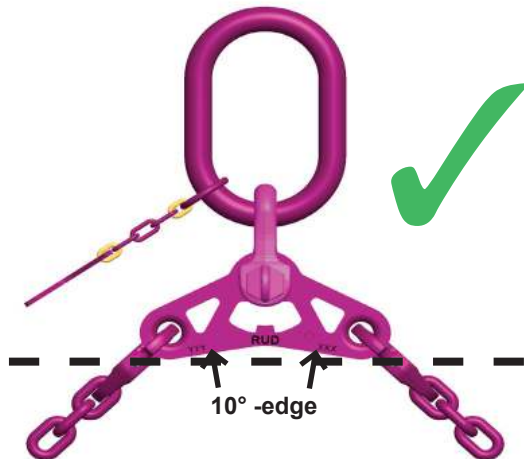
**Pic 9: Securing of connecting pin.**

7. Finally check the correct assembly (see section 4 inspection criteria).

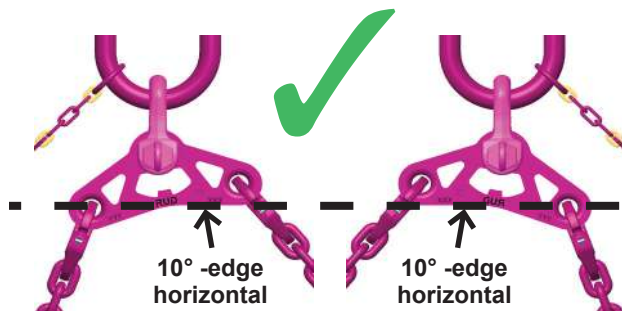
## User Instructions - Part 2

### 3.3 Usage (limit of inclination angle)

- Before each use please ensure the correct assembly of the ICE-Balancer.
- Observe that the inclination angle of the ICE balancer does not exceed 10° (see pics 10 to 12).



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



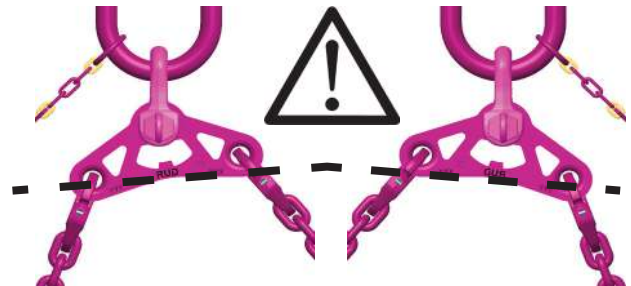
**Pic 11:** Limit skewing inclination of 10° reached (can be recognised by horizontal alignment of edge).



#### NOTE

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 recognised.

- 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.



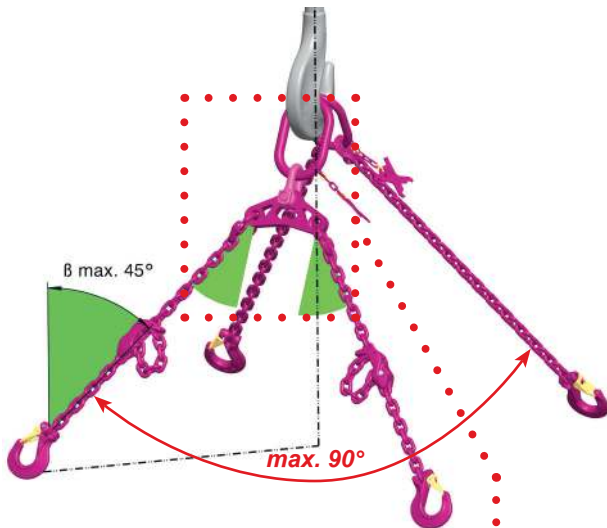
#### WARNING

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

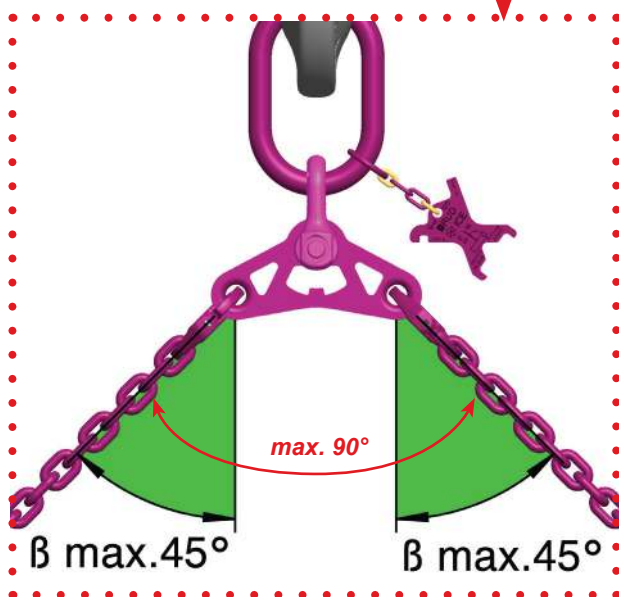
## User Instructions - Part 2

### 3.4 Usage (Inclination angle $\beta$ )

- Pay attention that the inclination angle  $\beta$  will not exceed  $45^\circ$  ( $90^\circ$  internal sling angle) refer pic 13 and 14.



Pic 13: Max. inclination angle  $\beta = 45^\circ$



Pic 14: Detailed view Pic. 13

- Ensure the load is transferred without twists or kinks in the chains or components.
- Before each use, the complete ICE-Balancer assembly, including all components shall be thoroughly inspected (see section 4 inspection criteria). Refer to AS 3775.2 for care and use.

**ATTENTION: Please inspect all components prior to use. Damaged, incorrect assembly or improper use may result in serious injuries and/or material damage.**

- Leave hazardous area when possible.
- Always monitor attached components or lashed loads.
- Read all relevant safety instructions/user instructions.

### 3.4 Regular inspection

An annual inspection or sooner if conditions dictate should be carried out by a competent person examining the continued suitability. Also, inspect after damage and special occurrences.

### 4 Inspection criteria

Check and control the following points before each initial operation, in periodical periods after the assembly and after special incidents:

- The ICE-Balancer should be complete
- Deformation of component parts
- Complete, readable WLL statements as well as manufacturers identification
- Mechanical damage, such as strong notches, particularly in high stress areas
- Reduction of cross-section due to wear  $>10\%$
- Evidence of corrosion (pitting)
- Evidence of cracks

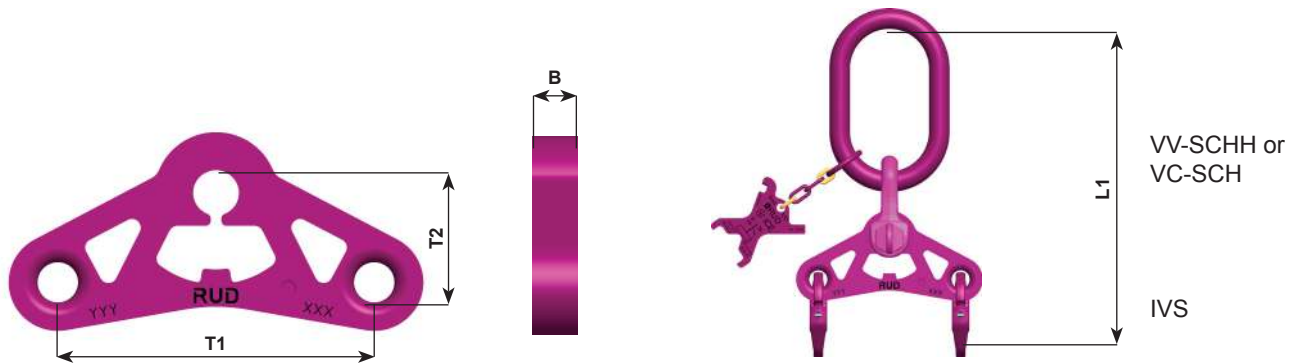
### 5 Repairing

- Repair can only be carried out by the manufacturer or by competent person.
- 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 the RFID-System®.

RUD VIP and ICE chains and components are designed for a dynamic load of 20.000 cycles according to DIN EN 818 and 1677 standard. The German Employer's insurance Association (BG) recommends:

- When high dynamic stress combines with high number of load cycles, the bearing stress must be reduced to Mechanism group 1Bm (M3 acc. to EN 818-7).

## User Instructions - Part 3



Pic 15: ICE-Balancer (Dimensions)

Pic 16: Assembled ICE-Balancer

Chain (mm)	Type	WLL (t) Inclination angle of legs 0 - 45°	WLL (t) Inclination angle of legs 0° (±7°) parallel	B (mm)	T1 (mm)	T2 (mm)	Weight (kg/pc.)	Reference Number
6	IW-6	2.5	3.6	15	110	46	0.49	7904367
8	IW-8	4.25	6.0	20	150	59	1.15	7904370
10	IW-10	7.1	10.0	25	180	76	2.4	7904372
13	IW-13	11.2	16.0	30	240	91	4.37	7904375
16	IW-16	17.0	25.0	35	300	120	8.8	7904255

Table 1: Dimensions of ICE-Balancer

Chain (mm)	Type	IAK / IA-Link (mm)	Top connection	Bottom connection	Additional number of chain links for length adjustment IVS	Pitch L1 (mm)	Weight (kg/Sp.)	Reference Number
6	IWK-2S-6	18 x 90 x 160	VV-SCH10 (4 t)	IVS-6	3	301	2.33	7904654
8	IWK-2S-8	26 x 100 x 160	VV-SCH13 (6.7 t)	IVS-8	3	363	5.39	7904655
10	IWK-2S-10	32 x 110 x 200	VV-SCH16 (10 t)	IVS-10	3	423	9.99	7904656
13	IWK-2S-13	36 x 140 x 260	VV-SCH 5.0 (22.4 t)	IVS-13	3	555	17.5	7904657
16	IWK-2S-16	48 x 190 x 350	VV-SCH 6.0 (31.5 t)	IVS-16	3	698	37.54	7904658

Table 2: ICE-Balancer\*

Chain (mm)	Type	IAK / IA-Link (mm)	Pitch L2 (mm)	Weight (kg/pc.)	Reference Number
6	IAK-2S-6	18 x 90 x 160	265	1.8	7904659
8	IAK-2S-8	26 x 100 x 180	309	4.09	7904660
10	IAK-2S-10	32 x 110 x 200	369	7.37	7904661
13	IAK-2S-13	36 x 140 x 260	467	12.44	7904662
16	IAK-2S-16	46 x 190 x 350	603	24.87	7904663

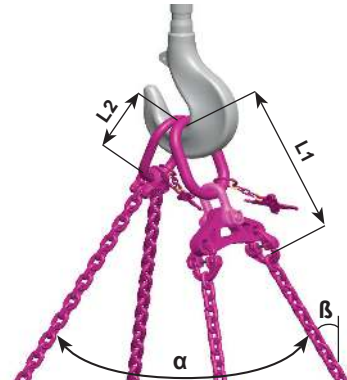
Table 3: ICE-2-leg Masterlink (for balancer assembly)\*

# ICE-BALANCER

## User Instructions - Part 3

Total weight to be lifted (t) 4-leg slings (2-leg + 2-leg with balancer)			
Chain (mm)	maximum allowed inclination angle $\beta = 15^\circ$ $\alpha = 30^\circ$	maximum allowed inclination angle $\beta = 30^\circ$ $\alpha = 60^\circ$	maximum allowed inclination angle $\beta = 45^\circ$ $\alpha = 90^\circ$
6	6.9	6.2	5.0
8	11.6	10.4	8.4
10	19.3	17.3	14.0
13	30.9	27.6	22.6
16	48.2	43.2	35.2

Table 4: Area of inclination angles\*



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.

Refer AS 3775.2 / BGR 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.

### ICE 16 mm standard 4-leg sling:

WLL = 21.6 t @ 60° inclined sling angle.

### With ICE-Balancer:

WLL = 43.2 t @ 60° inclined sling angle.



### 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  $\beta$  must not exceed 45° (90° internal).

