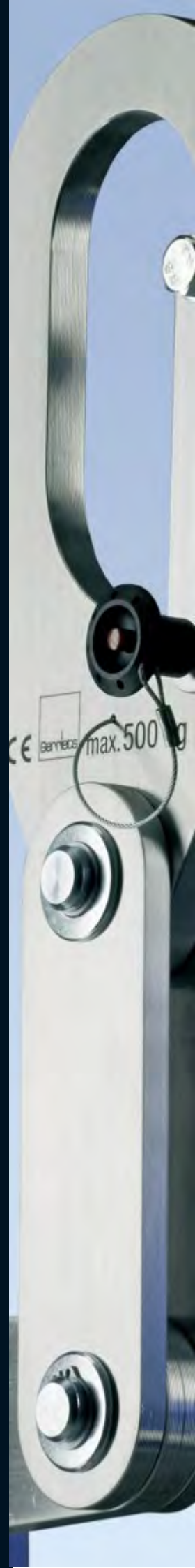


EN Operating manual**Batten Clew**

The Gerriets logo features the brand name 'Gerriets' in a white, sans-serif font, positioned to the right of a solid blue square.





Legend

Cord operation types

	Walk-along track
	Side cord operation
	Bottom cord operation
	Internal cord operation
	Top cord operation
	Double top cord operation

Dimensions & weights

	Length
	Width
	Height
	Special length
	Diameter
	Radius
	Gauge
	Weight
	Load capacity
	Roll length, rope length
	Pipe batten on-centre distance

Drives

	Walk-Along
	Manual drives
	TRAC-DRIVE
	FRICTION-DRIVE
	Timing belt drive
	Chain drive

Presentation of safety instructions

Safety instructions are labelled with a pictogram and a signal word. The signal word describes the severity of the imminent risk.

	DANGER Immediately imminent risk to the life and health of persons (serious injuries or death).
	WARNING Possibly imminent risk to the life and health of persons (serious injuries or death).
	CAUTION Possibly dangerous situation (minor injuries or damage to property).
	NOTE Application tips and particularly useful information.
	IMPORTANT Obligation to behave or act in a particular way for the safe handling of the machine.

Warning of specific risks

	Risk due to electrical voltage
	Risk from open fire
	Risk from raised load
	Risk of cuts
	Risk of hand injuries
	Risk of drawing-in
	Risk from corrosive liquids
	Risk from hot surfaces
	Risk of slipping

Miscellaneous

	Colours
	Pull speed
	Traction force
	Packaging unit
	Information



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2 Safety instructions

3 Operation

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1 Introduction

1.1 General information

The Gerriets Batten Clew is a device designed to distribute a large load across multiple load points as evenly as possible by means of the lever principle. It was designed (primarily) to distribute loads over several load-bearing elements (load bars) in the theatre and stage area.

The batten clew consists of an assembly of levers and joints which distribute the applied load to the clew located above it in accordance with the lever arm lengths. Depending on the load, this simple lever principle is applied several times and theoretically distributes any load of any size over a corresponding number of equal single loads. Before the Batten Clew is selected and installed, the overall system shall be carefully dimensioned to ensure a permissible distribution of the load among the respective load points.



 ENGINEERING/RIGGING
PRODUCT OF THE YEAR 2013

 Winnar InnovatieGalerij CUE 2014
Categorie 'Podiumtechniek'



1 Introduction

1.2 Utilisation

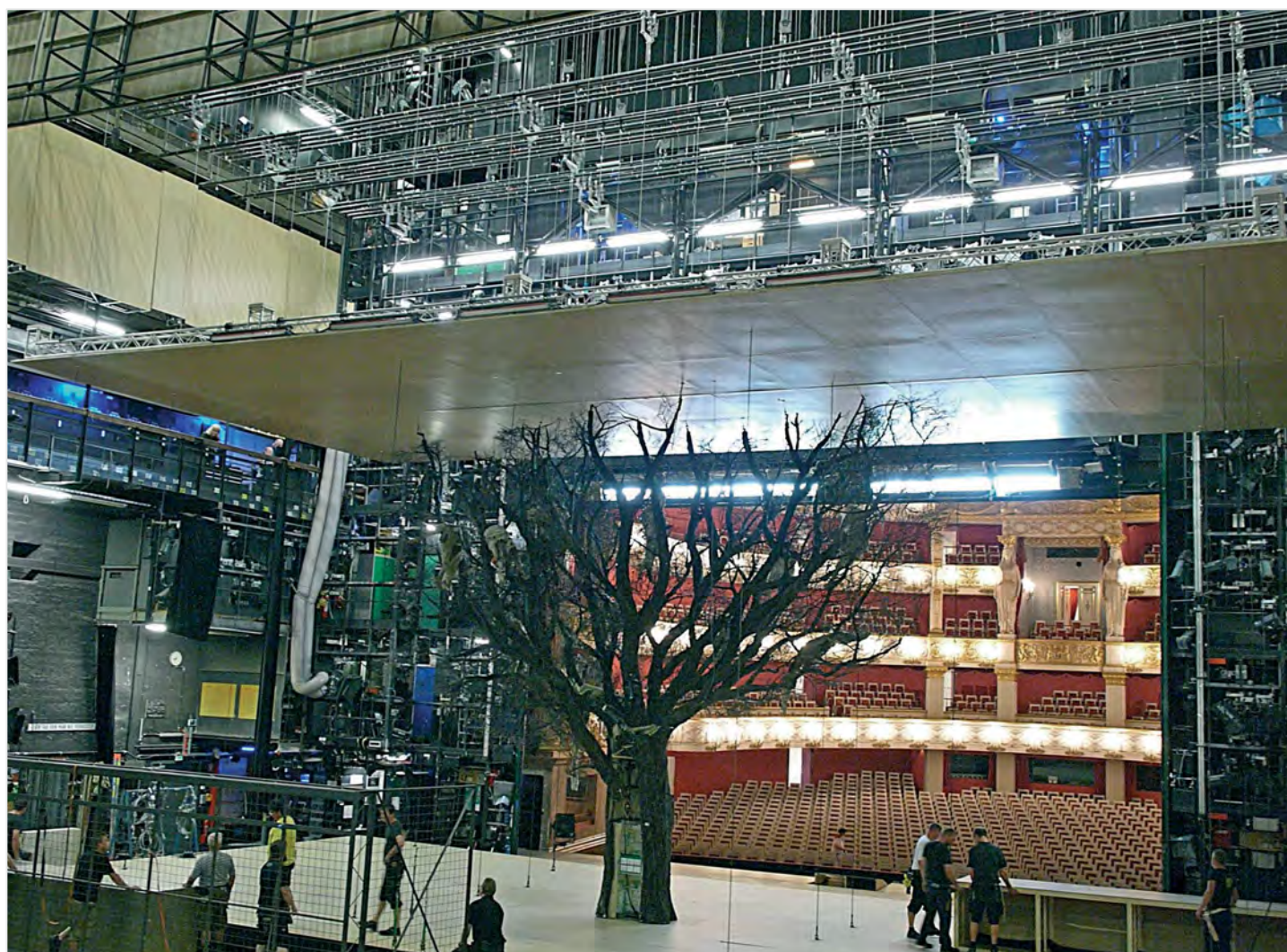
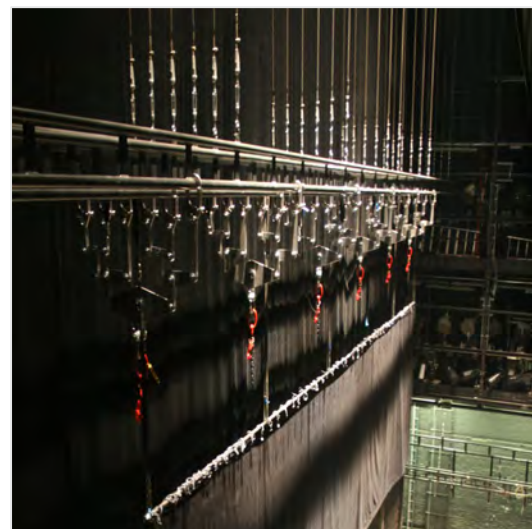
The Gerriets Batten Clew was developed for use on stages and in studios in order to distribute larger loads over several individual load bars in an existing overhead rigging system with load bars.

By using several Batten Clews it is thus possible that e.g. large ceilings can be introduced into the overhead rigging system and moved, whereby the design of the Batten Clew as a multi-joint linkage prevents individual load bars from being overloaded or individual load bars from being brought directly into overload during a joint movement. In use, the Batten Clew thus ensures a maximum degree of availability for the overall system.



NOTE:

Use of the Gerriets Batten Clew outside the utilisation is not permitted!



1 Introduction

1.3 Scope of application

As standard, the batten clew is designed for load bar profiles with diameters from 48.3 mm to 70 mm. In addition, the batten clew is also available on request as a special design for further bar profiles with various diameters, for example for rectangular and double bars.

The Gerriets Batten Clew is available in various structural versions, which depend on the existing load bar spacing and the bar shape and thus permit versions for the use of the Batten Clew on 2 to 12 load bars.

As standard, the Batten Clew is available from a load bar spacing of 200 mm up to 400 mm in 50 mm increments. Larger spacings are manufactured as special parts on request.

The safety hooks, with which the Batten Clew is attached to the load bar are dimensioned in the closed condition with a 12-fold safety factor in relation to the calculated breaking force.

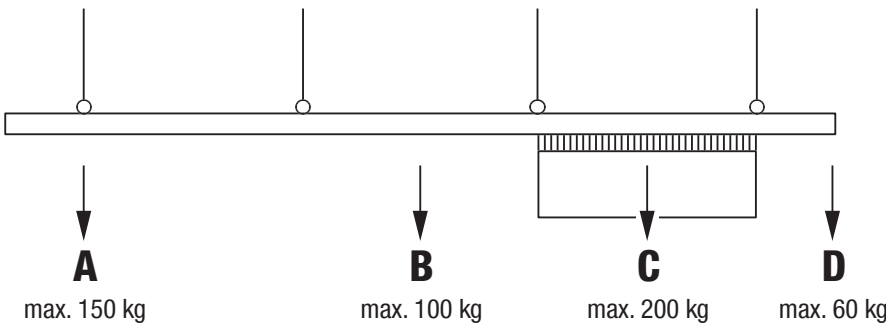


NOTE:
When using the Gerriets Batten Clew, ensure that the safety hooks are closed properly. A Batten Clew with safety hooks that are not properly closed must not be used!



IMPORTANT
Sound knowledge of the possible load distribution on a load bar is required in order to use a batten clew!

MANUAL COUNTERWEIGHT NO. 1-25 / PAYLOAD 350 kg



Example

A batten clew applies a point load to the load bar in accordance with the scenery hoist shown above, i.e. the greatest load can be applied to the bar if it is mounted directly beneath the ropes. If required, a second batten clew with a maximum of 150 kg can be suspended beneath another rope of this hoist.

1 Introduction

1.4 Configuration and system design

The use of the Gerriets Batten Clew to combine several load bars is designed for and applicable to the following possible applications:

- Load bar systems with regulated overhead rigging controls.
- Load bar systems with unregulated overhead rigging controls.
(Please note that unregulated load bars may only be coupled to one another by a Batten Clew to the extent that it can be ensured that the individual load bars cannot be moved apart beyond the maximum permissible compensation amount of the batten clew.)
- Load bar systems with manual counterweight systems
(However, only insofar as it can be ensured that the load bars in engagement can be operated within the maximum permissible vertical offset.)

The design and construction of the Gerriets Batten Clew ensures a maximum vertical compensation range within the physical limit values, i.e. depending on the accuracy of the control of the overall system, the version of the Batten Clew must be designed in such a way as to achieve the necessary operational safety combined with high availability.

For this purpose it is imperative to take into account the corresponding values for the synchronous running behaviour of the drives as well as the overrun behaviour of the drives in the event of a fault before the Batten Clew is selected and provided (cf. the manufacturer and user information of the manufacturer of the overhead machinery).

The possible vertical compensation range provided by the Gerriets Batten Clew is 1/10 of the respective horizontal load bar spacing, so that, for example, with a load bar spacing of 200 mm a vertical compensation range of +/- 20 mm results, without any restrictions in the load capacity of the Gerriets Batten Clew having to be taken into account.

In the case of larger vertical deviations of the load bars in relation to one another, the maximum permissible payload is reduced. It must be ensured that the control of the load bars is set in such a way that the maximum deviations occurring in the absolute positions of the bars are smaller than the maximum possible compensation range of the batten clew (which amounts to 10 % of the average batten spacing).



Photo: Staatstheater München



1 Introduction

1.5 Possible versions of the Gerriets Batten Clew

	i	Item No.			
	2-Way Batten Clew	33100 00102	1,000 kg*	200 mm (standard)	6.3 kg
		33100 01102		250 mm	6.4 kg
		33100 02102		300 mm	6.5 kg
		33100 03102		350 mm	6.9 kg
		33100 04102		400 mm	7.1 kg
	3-Way Batten Clew	33100 00103	1,500 kg*	200 mm (standard)	11.2 kg
		33100 01103		250 mm	11.7 kg
		33100 02103		300 mm	12.0 kg
		33100 03103		350 mm	13.0 kg
		33100 04103		400 mm	13.4 kg
	4-Way Batten Clew	33100 00104	2,000 kg*	200 mm (standard)	15.3 kg
		33100 01104		250 mm	16.1 kg
		33100 02104		300 mm	16.8 kg
		33100 03104		350 mm	18.3 kg
		33100 04104		400 mm	19.0 kg
	5-Way Batten Clew	33100 00105	2,500 kg*	200 mm (standard)	24.7 kg
		33100 01105		250 mm	25.8 kg
		33100 02105		300 mm	26.9 kg
		33100 03105		350 mm	29.1 kg
		33100 04105		400 mm	30.2 kg
	6-Way Batten Clew	33100 00106	3,000 kg*	200 mm (standard)	29.9 kg
		33100 01106		250 mm	31.5 kg
		33100 02106		300 mm	33.2 kg
		33100 03106		350 mm	35.0 kg
		33100 04106		400 mm	36.5 kg
	8-Way Batten Clew	33100 00108	4,000 kg*	200 mm (standard)	55.8 kg
		33100 0 1108		250 mm	57.4 kg
		33100 0 2108		300 mm	62.8 kg
		33100 0 3108		350 mm	61.8 kg
		33100 0 4108		400 mm	63.2 kg
	10-Way Batten Clew	33100 00110	5,000 kg*	200 mm (standard)	82.1 kg
		33100 01110		250 mm	84.3 kg
		33100 02110		300 mm	86.5 kg
		33100 03110		350 mm	90.9 kg
		33100 04110		400 mm	93.1 kg
	12-Way Batten Clew	33100 00112	6,000 kg*	200 mm (standard)	104.3 kg
		33100 01112		250 mm	107.5 kg
		33100 02112		300 mm	110.9 kg
		33100 03112		350 mm	114.5 kg
		33100 04112		400 mm	117.5 kg

* Maximum permissible loads of the lower attachment point with a high-strength shackle in accordance with DIN 13889 (when attached to flybars, with permissible pipe batten on-centre distance).

Important: the maximum load capacity of the flybars must be observed!



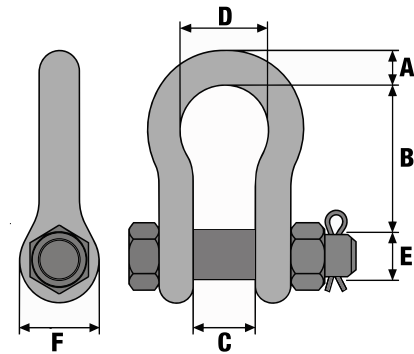
1 Introduction

1.6 Welded shackle

- In accordance with EN 13889
- Made of high-strength, quenched and tempered steel
- Bolt and bow eye painted
- Galvanized
- With nut and cotter pin



IMPORTANT
Maximum permissible loads of the lower attachment point with a high-strength shackle in accordance with DIN EN 13889 (when attached to flybars, with permissible pipe batten on-centre distance).



Load capacity [kg] (WLL) ⁽¹⁾	ELL/R ⁽²⁾ [kg]	Dimensions ⁽³⁾ [mm]						Weight [kg]
		A	B	C	D	E	F	
1.000	500	10	36	16	26	11	25	0,2
1.500	750	11	42	18	29	13	27	0,2
2.000	1.000	13	48	21	33	16	30	0,3
3.250	1.625	16	60	27	43	19	40	0,6
4.750	2.375	19	71	32	51	22	48	1,1
6.500	3.250	22	84	36	58	25	54	1,6
8.500	4.250	25	95	43	68	29	60	2,4
9.500	4.750	29	108	46	74	32	67	3,4
12.000	6.000	32	119	52	82	35	76	5,1

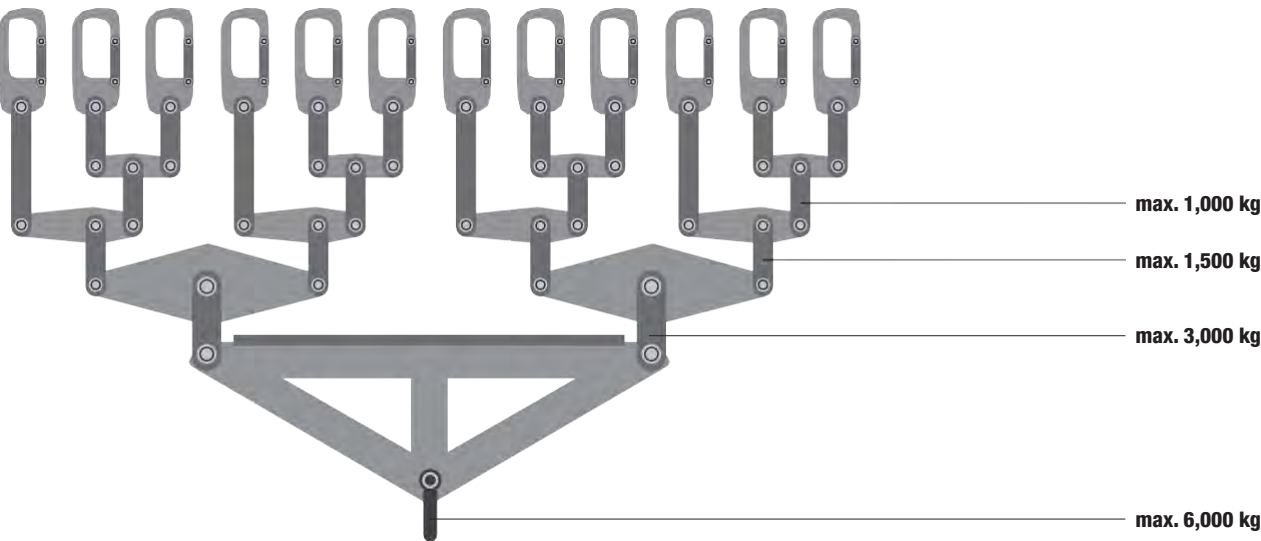
¹ WLL (Working Load Limit): Maximum permissible working load in operation.

² ELL/R (Engineering Load Limit / Recommended): Recommended working load.

³ The forging tolerances are approx. 3–6 %.

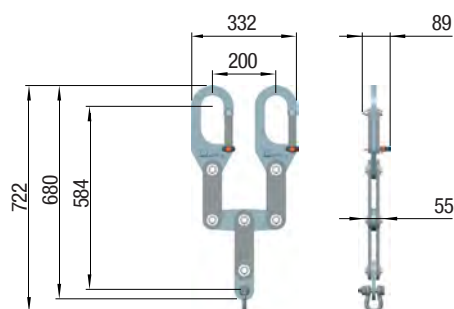
1.7 Load distribution diagram

Example load distribution diagram for 12-way batten clew.

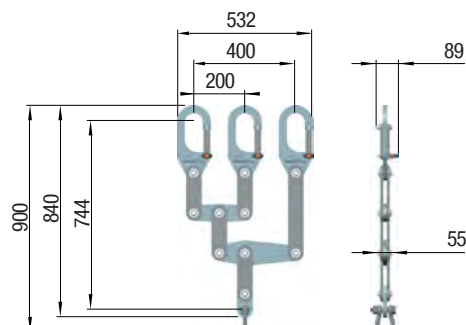


1 Introduction

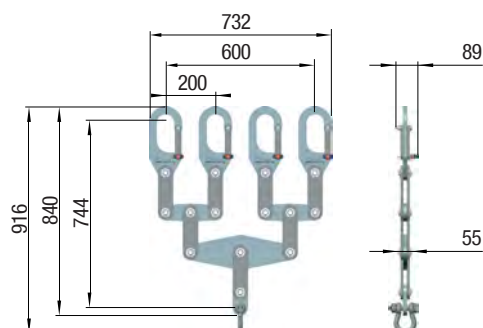
1.8 Dimensions – example for pipe batten on-centre distance 200 mm



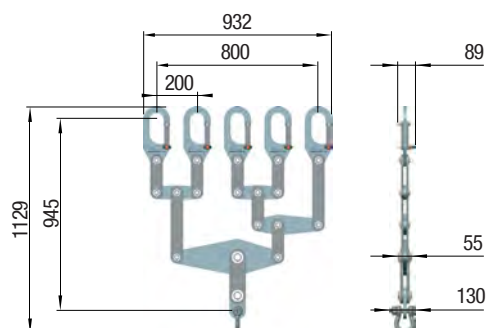
2-way batten clew



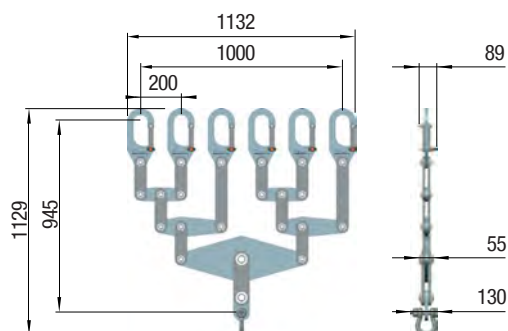
3-way batten clew



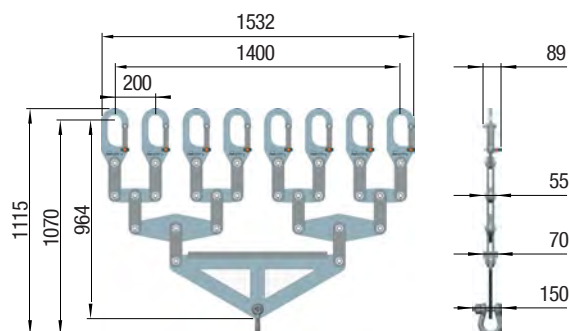
4-way batten clew



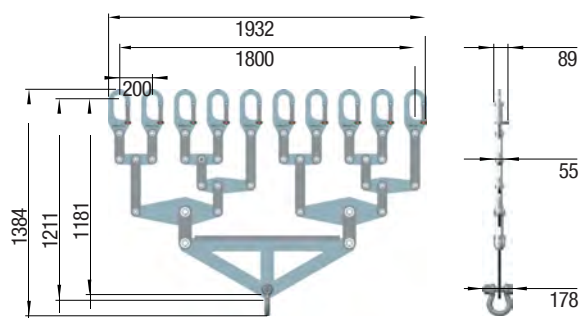
5-way batten clew



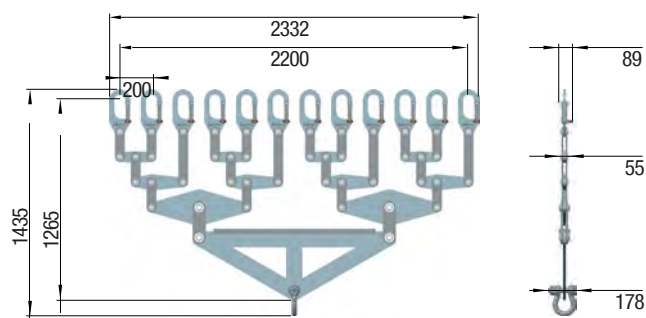
6-way batten clew



8-way batten clew



10-way batten clew



12-way batten clew

All dimensions in mm



2 Safety instructions

Information



NOTE

The following information is intended to help you, install and operate the Batten Clew without damage to persons and material.

2.1 Commissioning and operation



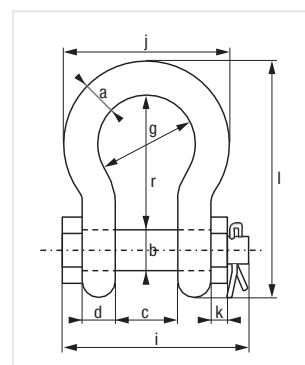
The Batten Clews are delivered fully assembled and tested by Gerriets. Following a visual inspection of the individual components the Batten Clew can be suspended in the load bars provided for it. Once the safety hooks are hooked into the load bar, the self-locking bolt is guided through both closures and the hole in the hook and then secured with the spring cotter pin (**NOTE:** The bolt lock is released by pressing the red push pins). This procedure must be repeated for each safety hook.

After installation, a visual inspection must be carried out to check that all bolts are secured on both sides with washers and wave retaining rings. Once the visual inspection has been completed, the load can be attached to the lower load eye by means of a high-strength shackle in accordance with DIN 13889.



IMPORTANT

- **Shackles may only be used in accordance with their operating manual !** Shackles should be inspected before use. It must be ensured that:
- **All markings are legible.**
- **Bow and bolt are of the same size, the same type, and the same grade .**
- **The threads of the bolt and the bow are not damaged.**
- **A shackle with nut and split pin is never used without the split pin.**
- **Bow and bolt are not bent or excessively worn.**
- **Bow and bolt do not show any cracks, notches, or other material defects present.**
- **The shackle is not heat treated, as this has a negative effect on the working load limit (WLL).**
- **The shackle is never welded, heated, or bent, as this has a negative effect on the working load limit (WLL).**



Important:

Do not put the Batten Clew into operation, until you are certain, that no danger to persons and property arises from it.

The persons operating the Batten Clew must be instructed in the function and design of the entire load system including overhead rigging system, load-bearing elements, and load (e.g. scenery element or ceiling).

No persons may be present in the potential danger area while the load system is being set up!



NOTE

The operator (employer) bears overall responsibility for the operation of a technical installation.

After this Batten Clew system has been handed over to you by Gerriets GmbH, you can assume, taking the above information into account, that no avoidable hazards arise from the properly installed system.

In particular, we draw your attention to compliance with the following sets of rules:

- BGV A1: Principles of prevention.
- BGV C1 / GUV-V C1: Event and production venues for scenic performances.
- BGI 810-0: Safety at productions and events - guideline.
- BGI 810-2: Television, radio, and film; occupational safety in production facilities. Suspensions.
- BGI 810-3: Safety at productions and events - loads above persons.



IMPORTANT

We recommend from the use of a 4-way batten clew onwards at least 2 persons for suspending the Batten Clew on the load bars.

Wear protective gloves when suspending the Batten Clew – there is a risk of crushing.

2 Safety instructions

2.2 Safety-related information



DANGER

Any use deviating from the utilisation (see 2.1) - in particular the lifting and moving ('flying') of persons is not permitted and can lead to serious accidents.



For an occupationally safe operation with the Gerriets Batten Clew a proper installation and commissioning are essential. Therefore, always follow all steps of this operating manual.

Before commissioning the Gerriets Batten Clew, pay particular attention to the following points, before the installed and mounted Gerriets Batten Clew is made available for operation:



1. The safety hooks with which the Batten Clew is suspended in the load bars must always be secured against unintentional opening with the bolt and closure. It must be ensured that the bolts are fully inserted and secured against axial disengagement with the self-locking plug-in bolt.

SAFETY INSTRUCTION:

If this is not observed, the safety hooks can detach from the load bar, e.g. in the event of temporary underload. The Batten Clew with the suspended load could then fall down.



2. Before commissioning the Gerriets Batten Clew, it must be ensured, that all safety hooks have been properly fitted and closed.

SAFETY INSTRUCTION:

Omitting individual safety hooks when suspending the Batten Clews (i.e. for example suspending a 3-way batten clew in only 2 safety hooks) results in the Batten Clew not being loaded in accordance with its design and construction. The load could fall down as a result.



3. The Gerriets Batten Clews may as a matter of principle only be loaded with minimal angular pull. The permissible values in accordance with the information in this operating manual must be ensured.

SAFETY INSTRUCTION:

Operation of the Gerriets Batten Clew above the permissible value for an angular pull of the load bars (= vertical deviation of more than 10% of the load bar spacing, see 1.4 above) may lead to overloading of the overhead rigging system and the Batten Clew. The overhead rigging system, as well as the Gerriets Batten Clew could be damaged and lose their load capacity – the load as well as the affected hoist could fall down as a result.



4. Mechanically damaged or deformed parts may not be used within the scope of the use and operation of the Gerriets Batten Clew.

SAFETY INSTRUCTION:

Use of the Gerriets Batten Clew with mechanically deformed or damaged parts would restrict the load capacity and may result in the Batten Clew and the suspended load falling down.



5. When providing the Gerriets Batten Clew, always ensure that it is attached exclusively as shown in 1.3. Use of the Gerriets Batten Clew, in which it is used 'upside down', i.e. with the load eye facing upwards, is not permitted!

SAFETY INSTRUCTION:

If used 'upside down', the Batten Clew would not be loaded in accordance with its design and construction – the Batten Clew and the load could fall down as a result.



6. When providing the Gerriets Batten Clew, always ensure that it is loaded exclusively in accordance with its specified payload.

SAFETY INSTRUCTION:

If the Batten Clew is loaded above its specified design and construction, this may result in the Batten Clew and the load suspended in it falling down.

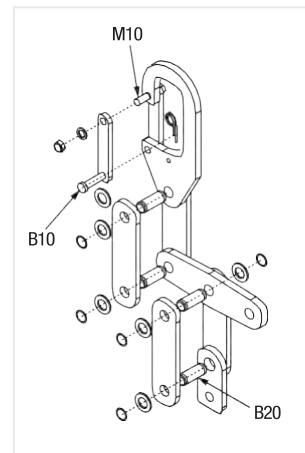
3 Operation

3.1 Maintenance / servicing

The ease of movement of all bolts and their locking devices must be checked. If a bolt can only be moved with difficulty or shows signs of galling, it must be replaced together with all adjacent parts. The same applies to all bolted connections within the batten clew, such as the locking screw and locking bolt.

Maintenance cycle:

- Visual inspection comprises the visual examination of the batten clew for cracks, deformations, and notches.
If none are present, the batten clew can be used without hesitation.
- Checking the ease of movement of the bolted connections: it must be checked here whether all bolts B20, M10 and B10 can still move freely in their holes. No metallic abrasion may be visible, and no signs of galling may be visible on the bolts or aluminium surfaces.
If damage has occurred here, the bolts and the adjacent parts such as connectors and clew or hook must be replaced.
- As a matter of principle, any form of damage means, that the affected component must be replaced.
- The hooks must be examined regularly once a year and also after every overload by means of the dye penetrant testing procedure in accordance with DIN EN 571-1 by qualified inspection personnel.



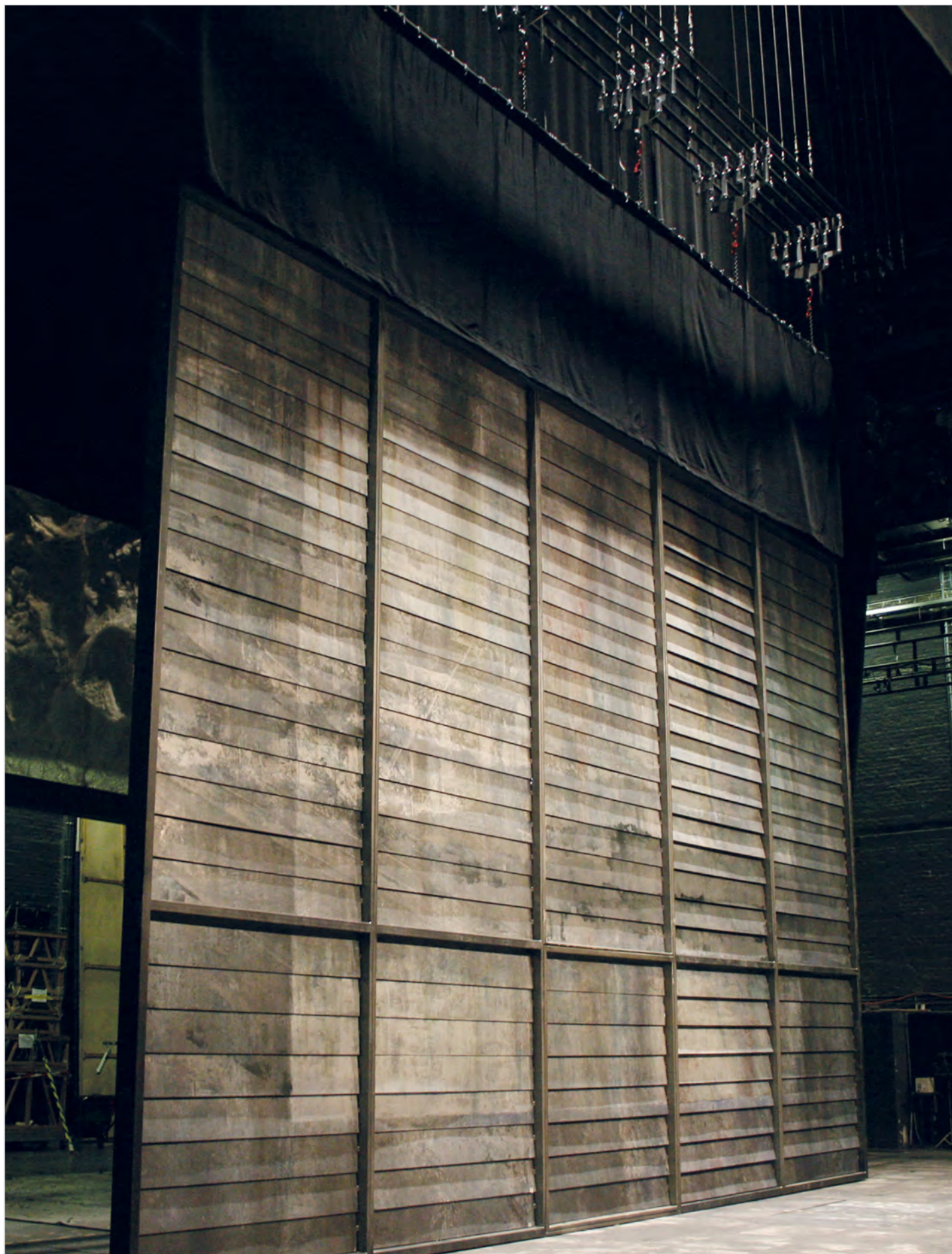
3.2 Storage

After use, the batten clews must be stored in a clean, dry place. Ensure that no damage can occur during storage, e.g. by placing heavy objects on the batten clew.

3.3 Disposal

It must be ensured, that the steel parts (bolts, cotter pins, washers, nuts etc.) and the aluminium parts are fed separately into the respective recycling chain.

Reference



Staatsoper im Schillertheater - Berlin, Germany / Photo: © Staatsoper Berlin



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	Friday:	08.00-12.00 13.00-15.30
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	Managing director:	Hannes Gerriets
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