WIRTH GMBH

# Operating Manual

# Counterweight balancer 2500 kg

## For lifting construction elements with integrated crane eye

Serial No.: _____

Technical Documentation
BA 000 208
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This technical documentation corresponds to the status as per the issue date.

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# 1 General Information on the OKTOPUS®

## 1.1 Manufacturer's information

Manufacturer's name and registered office:

WIRTH GMBH
Division Vacuum Lifting Technology
Brehnaer Straße 1
D-06188 Landsberg

Device characteristics:

| | |
|---|---|
| Product description: | Counterweight balancer |
| Type: | Counterweight balancer 2500 kg |
| Serial number: | (see type plate) |
| Year of manufacture: | (see type plate) |
| Weight: | ca. 425 kg (without counterweight) |
| | ca. 1175 kg (with 30 pieces counterweights) |
| | 1 piece counterweight = 25 kg |
| Working Load Limit: | see section 2.3 Symbols and markings |
| CE mark: | according to EC-Declaration of Conformity Annex 1 |

Inspection tag corresponding with Annex 2 attached to the device.

## 1.2 Service workshop

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## 1.3 Scope of application

This operating manual represents the current state of technology and the safety measures defined by the European Machinery Directive valid at the date of issue of this manual.

Diverging or amending national regulations may not be taken into account.

To comply with these amending or diverging regulations is exclusively the responsibility of the user.

# 2 Proper use of the Counterweight balancer

## 2.1 Functional principle, use and safety concept

The Counterweight balancer 2500 kg is a load lifting attachment. It is mounted to a hoist and is used for lifting and positioning construction elements with integrated crane eye in areas that are difficult to access (e.g. eaves). Motor-driven counterweights allow balancing the load.

Specific safety requirements, which have been taken into account during construction, execution, technical documentation and in drawing up the operating instructions, result from the function of the counterweight balancer being a load lifting attachment.

Therefore, strict adherence to the instructions and information for a proper and safe use given in the operating manual is a prerequisite for the manufacturer's warranty during the stipulated warranty period.

Combining the counterweight balancer with a hoist is the responsibility of the user of the counterweight balancer. The user himself is responsible for proper implementation of the relevant guidelines and instructions. The instructions given in this operating manual by the manufacturer of the counterweight balancer are considered to be additional support.

Prior to initial startup of the machine the suitability of the combination counterweight balancer/hoist in operating conditions has to be checked by skilled personnel.

Furthermore, the counterweight balancer has to undergo regular inspections by an expert (see point 4.1). An expert is a person that due to his technical training and experience has sufficient knowledge in the area of load lifting attachments and is familiar with relevant occupational and safety instructions, regulations and generally recognized codes of practice which enables him to assess operational safety of load lifting attachments.

The initial inspection of the combination hoist/counterweight balancer as well as the successful performance of the annual inspection of the counterweight balancer by an expert has to be documented.

The manufacturer of the counterweight balancer offers expert inspections as a service and documents the inspections on the counterweight balancer by placing the inspection tag on the inspection card according to Annex 2 with the indication of the next test date.

If you need any further information, please contact us or visit our website www.wirth-gmbh.com.

## 2.2 Safety instructions

(1) Only employ **cranes with a sufficiently high Working Load Limit** in all possible working positions. Notice that the load to be lifted is the weight of the counterweight balancer plus the weight of the attached element plus, if applicable, the weight of the slings!
(2) **Never operate** a damaged, not fully functional or incomplete counterweight balancer!
(3) Prior to initial startup **have an expert check and document** the combination counterweight balancer/crane!
(4) **Prior to using** counterweight balancer and crane check the function of the **control and display elements** as well as the **warning devices**!
(5) Only operate the crane with an **operating license**!
(6) Never stand or walk **under the suspended load**!

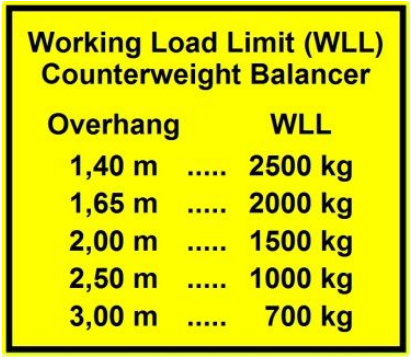
(7) Only operate counterweight balancer and crane if you are familiar with **the control and display elements as well as the operating manuals**. You have to know how the functions affect the entire construction!
(8) Make sure that **nobody climbs** the counterweight balancer and the lifted load and **tries to ride along.**
(9) **In case of incidents** and maintenance work turn off the counterweight balancer.
(10) Never employ the counterweight balancer in **explosive areas or in the area of aggressive media!**
(11) Only work at **wind speeds less than 36 km/h**, otherwise you risk uncontrollable swinging of the load!
(12) Do **not** lift the load **higher than necessary!**
(13) **Always** wear suitable protective clothing, helmets, gloves and safety shoes in order to prevent injuries such as bruisings and cuts!
(14) **Never** leave the lifted load unsupervised!
(15) Comply with the stipulated **maintenance information:**
- **daily visual and functional inspection** of the control elements!
- depending on the operating conditions, **but at least annually**, inspection by an expert!

(16) Never modify the counterweight balancer in a way that safety is impaired. **Otherwise the manufacturer's warranty will be void!**
(17) Do not remove information signs, safety signs and inspection tags from the counterweight balancer. **Otherwise the manufacturer's warranty will be void!**

## 2.3 Symbols and markings

| Signal word | Meaning | Consequences of non-compliance |
|---|---|---|
| DANGER | Warns of imminent threat of danger | Death or serious injury or substantial material damage as consequence. |
| WARNING | Warns of potential threat of danger | Death or serious injury or substantial material damages are possible. |
| ATTENTION | Warns of possibly dangerous situation | Light injury or material damages are possible. |

Next to the type plate the following safety-related signs and pictographs are attached to the OKTOPUS®:




(Working Load Limit)


(General information)

(Before operating, read and comply with operating manual as well as safety instruction!)

(Suspension point crane hook)

(Caution against crushing hazard)

(Beware of dangerous electrical voltage)

(Caution against crushing hazard)

Inspection card in accordance with Annex 4

(Inspection card)

## 2.4 Structure of the counterweight balancer

The functional main assemblies of the counterweight balancer are (see fig. 1):

- the crane eye (1), to attach the counterweight balancer to the crane,
- the crane hook counterweight balancer (17), to attach the load,
- the trolley (14), to balance the load and
- the cable remote control (3), to operate the trolley.

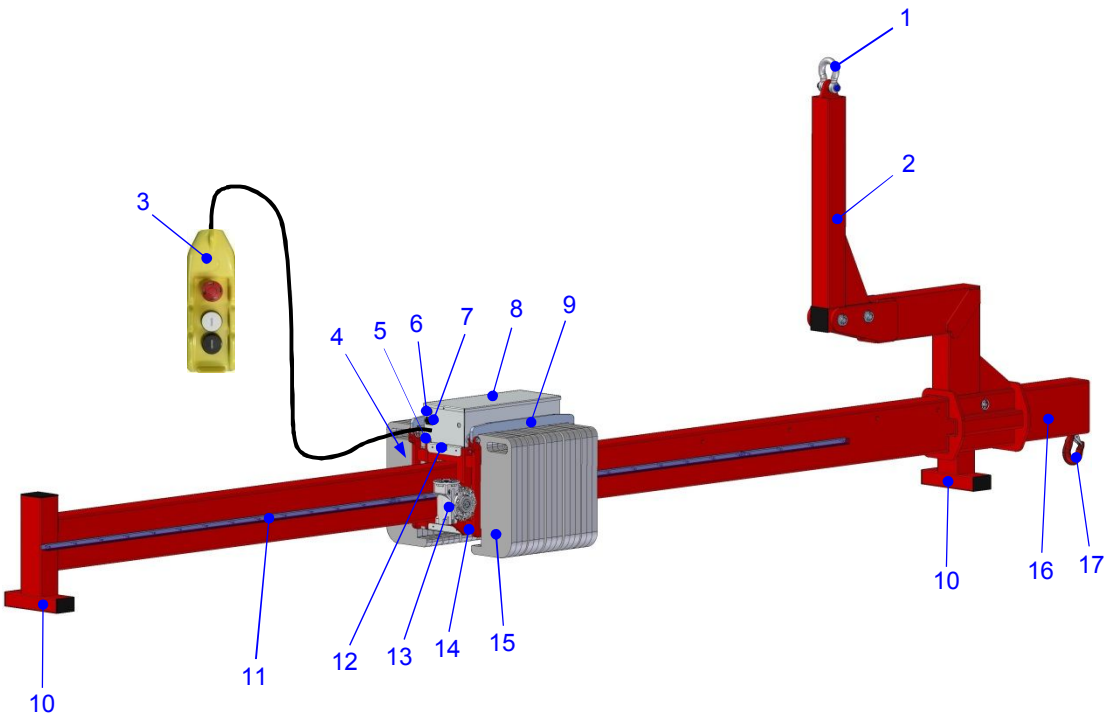



Fig. 1: Counterweight balancer 2500 kg

| | | | |
|---|---|---|---|
| 1 | Crane eye (shackle) | 10 | Base |
| 2 | Crane arm | 11 | Toothed rack |
| 3 | Cable remote control | 12 | Limit switch |
| 4 | Holder cable remote control | 13 | Drive counterweights |
| 5 | Socket battery charger | 14 | Trolley |
| 6 | Main switch | 15 | Counterweight |
| 7 | Charge indicator | 16 | Overhang |
| 8 | Bonnet | 17 | Crane hook counterweight balancer |
| 9 | Safety clamp counterweights | | |

The Counterweight balancer 2500 kg is designed as an attachment and is mounted to a crane according to fig. 2.

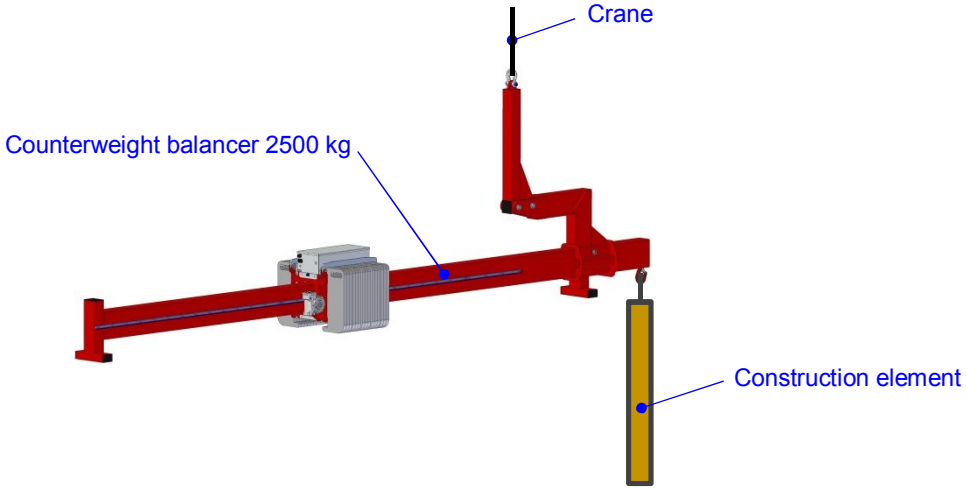



Fig. 2: Attachment Counterweight balancer 2500 kg

## 2.5 Operating conditions and restrictions

The counterweight balancer 2500 kg may only be operated by instructed personnel.

Ambient temperature has to be at least 0 °C and must not exceed 40 °C (applies for 1013 mbar and sea level). The capacity of the used batteries decreases at low temperatures. The airborne sound emitted by the Counterweight balancer 2500 kg amounts to < 70 dB (A), which means that special protective measures are not required.

Operating restrictions result from the limited Working Load Limit of the Counterweight balancer 2500 kg (see section 2.3 Symbols and markings) as well as the performance data of the used crane and the conditions of the construction site.

## 2.6 Functional dimensions of the counterweight balancer

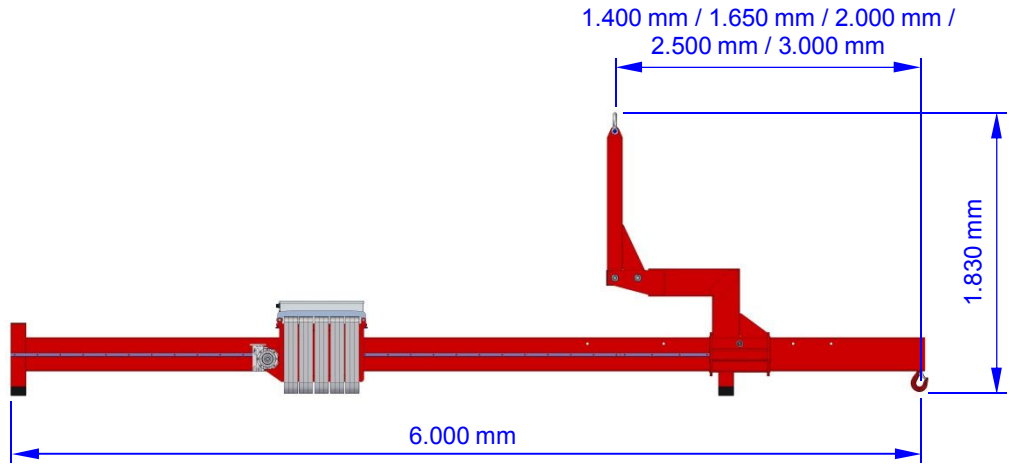



Fig. 3: Functional dimensions of the counterweight balancer

## 2.7 Transport and storage

The counterweight balancer may only be moved with a suitable hoisting device/means of transport of appropriate working load limit.

ATTENTION **For transport purposes take the counterweight balancer out of operation! Turn the main switch into position OFF!**

ATTENTION **To avoid damage to the batteries of the counterweight balancer by deep discharge during storage, the batteries have to be charged at least every two weeks!**

ATTENTION **To avoid damages to the device that may occur during storage for a longer period you should preserve the counterweight balancer (if applicable)!**

For storage purposes the height of the counterweight balancer can be reduced to approx. 980 mm. Perform the following steps one after another to reduce the height of the counterweight balancer:

- Place the counterweight balancer on a firm, even surface.
- Move the counterweights into the position shown in figure 4.
- Remove the locking bolt with lynch pin B (see fig. 7).
- Fold the crane arm into the position shown in figure 4.

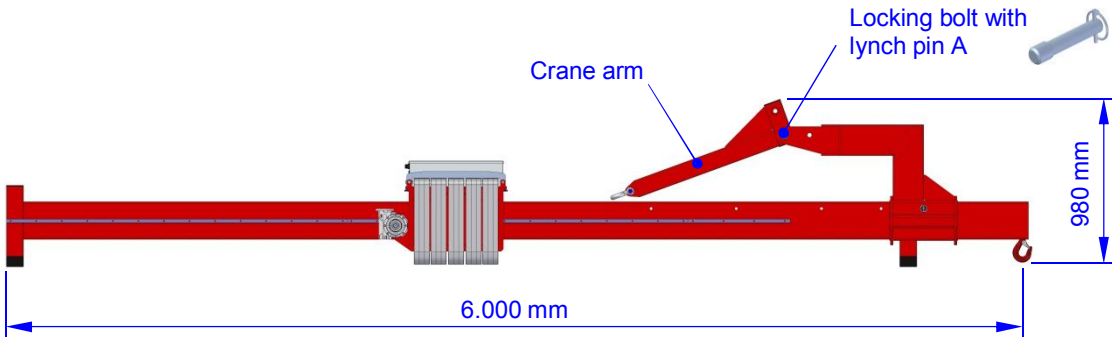



Fig. 4: Storage of the counterweight balancer

# 3 Instructions for using the OKTOPUS®

## 3.1 Power supply

Power supply is effected by a 24 V / 55 Ah battery (2 pieces 12 V batteries in series).

The battery's charge level is monitored through a charge indicator according to figure 5. Light-emitting diodes (LED) in the signal colors green, yellow and red indicate the current charge level after the counterweight balancer has been turned on.

The following charge levels can be read from the charge indicator:

⇒ If at least one green LED is illuminated the battery is charged. You can operate the counterweight balancer.

⇒ If the third LED from the left is illuminated (yellow LED), you should charge the battery.

⇒ If the second LED from the left (yellow LED) is flashing, or the second LED from the left (yellow LED) and the red LED are flashing alternately, the battery needs to be charged instantly in order to avoid deep discharge and by that possible damage.

The charge indicator is arranged on the counterweight balancer according to figure 1.

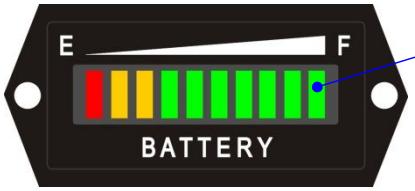



Fig. 5: Charge indicator

WARNING

**Do not use the counterweight balancer, if the yellow LED is flashing, or the yellow and the red LED are flashing alternately. Possibly sucked loads shall be lowered. The counterweight balancer has to be charged instantly in order to avoid deep discharge and by that possible damage to the battery.**

ATTENTION

**The user has to ensure that the battery is properly charged when operating the counterweight balancer.**

ATTENTION

**The charge indicator only indicates the current voltage level of the battery. It does not give any reliable information regarding the battery's capacity.**

ATTENTION

**The charge indicator responds rather slowly. In order to assess the voltage level realistically after the charging process (see point 4.3) you have to drive the trolley of the counterweight balancer back and forth for approximately 2 minutes, and then use the indicated charge level of the battery as a basis for assessing how to employ the counterweight balancer.**

## 3.2 Control panel

The counterweight balancer is operated by a cable remote control according to figure 6.

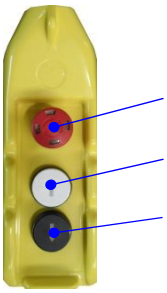



Fig. 6: Control panel

## 3.3 Preparation of the counterweight balancer

In order to **assemble** the counterweight balancer, perform the following steps one after another:

⇒ Place the counterweight balancer on a firm, even surface.

⇒ If the crane arm is in transport position (see fig. 4), fold it into the position shown in figure 7 by performing the following steps:
- Fold the crane arm into the position shown in figure 7.
- Mount locking bolt B that is included in the delivery. Secure the locking bolt with the lynch pin that was also included in the delivery.

⇒ Adjust the required overhang by performing the following steps:
- Dismount locking bolt C.
- Slide the crane arm to the required position.
- Mount locking bolt C that was removed beforehand. Secure the locking bolt with the lynch pin.

⇒ Mount as many counterweights as necessary depending on the load to be lifted and the selected overhang. Perform the following steps:
- Open both safety clamps of the trolley.
- Attach the counterweights to the holders. Make sure that always the same number of counterweights is attached on both sides of the trolley.
- Close the safety clamps and secure them with the locking bolts and lynch pins that were removed beforehand.
- Note that the Working Load Limits stipulated on the decal only apply when arranging all 30 pieces counterweights.

WARNING

**Using less than 30 pieces counterweights leads to reduced Working Load Limits contrary to the Working Load Limits stipulated on the decal!**

WARNING

**Only operate the counterweight balancer if its crane arm is completely secured using the fasteners provided in the delivery!**

WARNING

**When attaching the counterweights make sure that they are always completely engaged and secured with the safety clamps (see fig. 7) in order to prevent them from falling out. Always lock the safety clamps using the locking bolts and lynch pins provided in the delivery!**

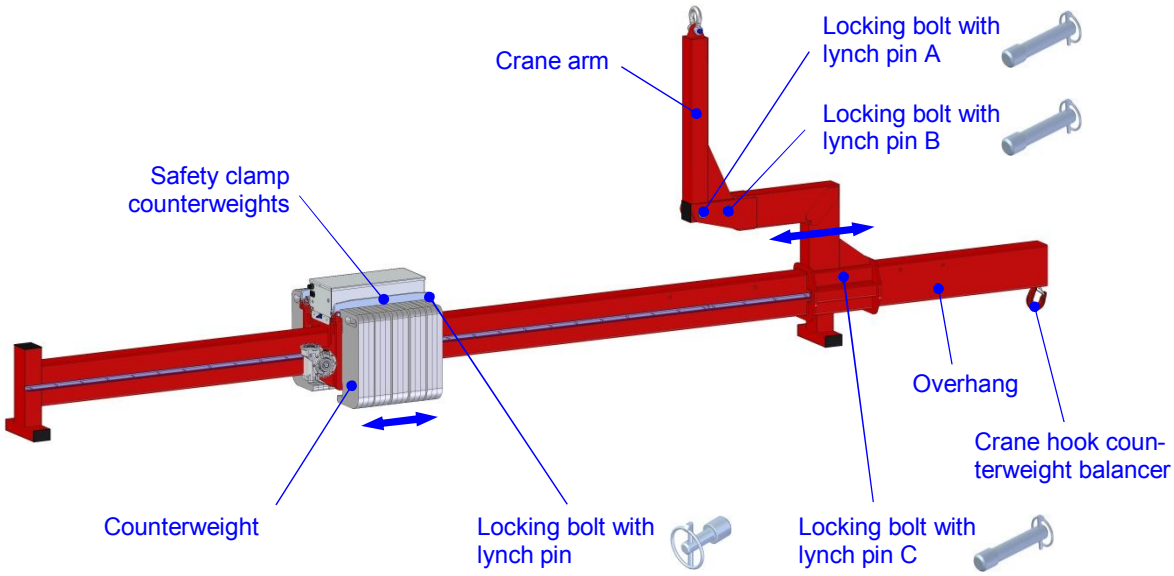



Fig. 7: Counterweight balancer assembled

## 3.4 Inclination of the counterweight balancer

The movable counterweights allow balancing the counterweight balancer including a possible attached load. For safety reasons the inclination angle of the main girder is limited to ±10° by sensors. When the main girder reaches an inclination angle of ±10° the trolley with the counterweights stops. It can be moved now into the opposite direction only.

The five drilled holes in the main girder for fixing the crane arm as well as the main girder are provided with markings (numbers from one to five). The markings serve as **rough orientation** in order to balance the OKTOPUS®. They only apply if **all counterweights are mounted** and if there is **no construction element** attached to the crane hook of the counterweight balancer.

*Example: The crane arm is fixed to the drilled hole marked with* 4 .

In this case the main girder of the counterweight balancer (without load attached) is balanced, when the marking 4 is visible on the right side of the trolley (see fig. 8).

ATTENTION

**Add further markings, if you do not attach all counterweights to the trolley. Observe the reduced Working Load Limits!**

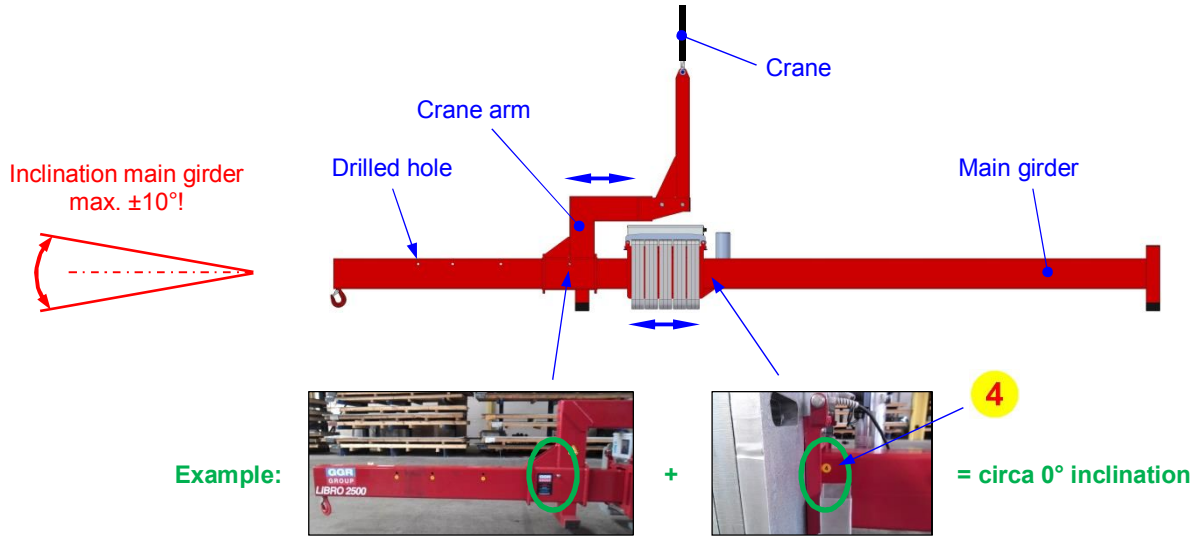



Fig. 8: Inclination counterweight balancer

## 3.5 Startup

In order to startup the counterweight balancer, proceed as follows:

- Turn the main switch to position “ON“.
- Check the battery’s charge level on the charge indicator:
  - ⇒ operational readiness is indicated by an illuminating green LED,
  - ⇒ if the second LED from the left (yellow LED) is flashing or the second LED from the left (yellow LED) and the red LED are flashing alternately the battery has to be charged!

## 3.6 Handling construction elements

Prior to attaching construction elements:

⇒ The counterweight balancer has to be prepared according to section 3.3 of this operating manual and subsequently has to be coupled to the crane (see fig. 2). The coupling has to be performed with the crane hook at standstill and the counterweight balancer taken out of operation.

⇒ The counterweight balancer has to be started up.

WARNING **Always lift the counterweight balancer slowly and carefully with the crane. Balance it during the lifting movements by driving movements of the trolley!**

WARNING **Always wear a helmet, suitable protective clothing (long trousers), gloves and safety shoes when handling loads!**

Lifting and positioning of construction elements is carried out as follows:

⇒ Move the counterweight balancer with the help of the crane to the elements. Adjust the position of the crane hook of the counterweight balancer by driving the counterweights by pressing the buttons “Trolley forwards” and “Trolley backwards”.

⇒ Couple the construction element to be lifted to the counterweight balancer.

⇒ Slightly lift the counterweight balancer with the load and balance the load by shifting the counterweights.

⇒ Do not lift the load higher than necessary!

⇒ Move the load into the required position by driving and lifting movements of the crane as well as manual guidance of the counterweight balancer.

⇒ Place the construction element at the required place in that way that it does not pose a threat after being released from the counterweight balancer.

⇒ Release the construction element from the counterweight balancer. Balance the main girder of the counterweight balancer by moving the counterweights in that way that the crane hook is unloaded when taking off the element. This measure prevents the main girder from suddenly swiveling up or down when taking off the element. Therefore, use the markings according to point 3.4 of this operating manual. If necessary, add some markings before attaching the element.


**Always release the counterweight balancer carefully from the construction element. Make sure that the crane hook is unloaded when taking off the element! Otherwise this could lead to the device turning over uncontrollably.**

# 4 Service and Maintenance

## 4.1 General remarks

Since the counterweight balancer is a load lifting attachment both the manufacturer and the operator carry a high responsibility to guarantee the relevant safety standard throughout the entire operating time. Thus, service and maintenance are of great importance.

In order to maintain a high level of operational safety the Counterweight balancer 2500 kg has to be inspected by the service workshop of Wirth GmbH or by an especially qualified person

⇒ at least every 12 months or in shorter intervals, if required by national standards or regulations or

⇒ after special incidents.

Additional operative and scheduled maintenance and service work may only be performed by a skilled expert. Maintenance and service work may only be performed when the counterweight balancer is taken out of operation.

WARNING **Before performing any repair and maintenance work switch off the counterweight balancer by turning the main switch to position "OFF"!**

Defective parts may only be replaced with original spare parts. They will be provided on request after consulting with the service team of the counterweight balancer manufacturer. Using not original spare parts leads to exemption from liability by the manufacturer.

In order to perform maintenance and service work an appropriate tool kit has to be used.

WARNING **Maintenance has always to be followed by a functional check.**

If damages cannot be repaired by the operator's staff the Wirth GmbH service workshop needs to be informed.

## 4.2 Mechanical system

The mechanical system is sturdy and provided with surface protection. Maintenance works on your side comprise

⇒ **daily** visual inspection of the mechanical components of the counterweight balancer for damages before startup.

The counterweight balancer is a load lifting attachment. Therefore, repairs on the mechanical function parts shall exclusively be carried out by the manufacturer.

WARNING **Do not perform any repairs at mechanical functioning parts!**

## 4.3 Electrical and electronic components

The counterweight balancer is powered by maintenance-free lead-batteries with acid gel as electrolyte. The battery casings are hermetically sealed.

Maintenance work focusses on:

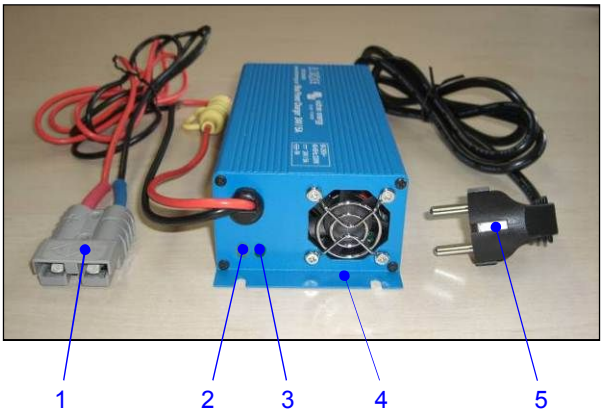
⇒ **daily** visual inspection of the external functional and alarming equipment:

- limit switch of the trolley,
- socket battery charger,
- charge indicator.

⇒ the visual inspection of the battery's charge level shown on the charge indicator (see fig. 5).

⇒ charging the battery

For charging the battery a charging unit 24 V / 8 A is included in the delivery by the counterweight balancer manufacturer (see fig. 9)




1 Charge plug charging unit
2 Yellow LED
3 Green LED
4 Battery charger
5 Mains plug

Fig. 9: Battery charger (example illustration)

WARNING

**Before connecting the battery charger check if it is compatible with your mains supply! The performance data is stipulated on the battery charger.**

ATTENTION

**If you want to use a battery charger other than the one included in the delivery of the counterweight balancer, it is absolutely necessary to contact the Wirth Service Team beforehand!**

The charging process is carried out as follows:

- Turn off the counterweight balancer by turning the main switch to position "OFF"!
- Connect the charge plug of the charging unit with the socket battery charger of the counterweight balancer.
- Connect the mains plug of the battery charger with a socket and by that with the mains supply in order to start the charging process.
- The charging process is completed when the yellow LED is constantly illuminated.
- Perform the following steps to disconnect the charging unit from the OKTOPUS®:
  1. disconnect the charging unit from the mains grid,
  2. disconnect the charging unit from the battery.

**LED Display**

⇒ The green LED is illuminated when the charging unit is connected to the mains supply.

⇒ The yellow LED flashes in short intervals during the first charging phase and in longer intervals during the second. At the end of the charge cycle the yellow LED is illuminated permanently.

For maintenance work and in case of a breakdown of the battery charger please contact our Service Team.

ATTENTION **The sealed lead-gel battery requires strict adherence to the charging instructions.**

ATTENTION **In order to avoid damage to the batteries due to deep discharge the batteries of the counterweight balancer have to be charged at least every two weeks.**

WARNING **The battery charger has to be protected from spray water and has to be set up in a way that the air vents and the fan are unobstructed and cannot be pierced through by pointed objects.**

# 5 Handling incidents

In case of mechanical and/or electrical incidents immediately leave the hazard zone. Locate and eradicate the cause for the alarm. If you cannot remedy the fault, stop operating the counterweight balancer immediately and secure it against further use.


**In case of faults that cannot be remedied, working with the counterweight balancer shall be stopped immediately. The counterweight balancer has to be secured against further use. Contact the Wirth GmbH service workshop.**

If the display of the charge indicator is not illuminated when turning on the counterweight balancer please contact the Wirth GmbH Service Team immediately.

# 6 Disposal and Recycling

For the packaging of the counterweight balancer materials such as wood, cardboard, paper and foil are used. These materials have to be recycled according to national regulations.

Assign a waste management company to dispose of the counterweight balancer. If you have any queries, please contact Wirth GmbH.


**In order to protect the environment assign a waste management company that is familiar and complies with the national regulations to dispose of the counterweight balancer!**