

# ASSEMBLY AND OPERATING MANUAL

## LTW PIPE GRAB TYPE GZ 2,5 t



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### **1. Preface**

We recommend you to keep the assembly and operating instruction of the pipe grab **GZ 2,5 t** in a suitable place so that it is directly available in the event of uncertainty.

Keep the manual with care, as you may need it for the following Purposes:

- For operation, maintenance and inspection of the pipe grab
- For independent study
- For training purposes

***A copy of the manual should remain on the construction site!***

### **2. Introduction and general information**

#### ***2.1. Introduction***

This manual is intended as aid to the responsible staff for operation, supervision and maintenance for the pipe grab. It contains detailed description of the various operating steps, information on initial and subsequent operation of all items and apparatus belonging to the equipment, instructions on maintenance and servicing, in so far as operating staff are responsible for this.

In the event of malfunctions that you are unable to remedy, you should inform us and make use of our After-Sales Service.

#### ***2.2. Liability and warranty***

All details of instruction for the operation and maintenance of the pipe grab are given to our best knowledge and belief and on the bases of our experience.

We are liable for any errors or omissions on exclusion of all further claims in accordance with the warranty obligations entered into in the main contract. Claims for any further compensation for damages of whatever legal grounds are excluded. Authoritative is solely the German text, which we can supply on request.

***The following liability or warranty claims are excluded:***

- If the information and instructions contained in this manual are disregarded
- If the pipe grab and its accessories is incorrectly operated
- If the handling of the pipe grab deviates from the description procedure
- If the pipe grab is used for unintended purposes
- If protective devices are not used or disabled
- If changes in function on any kind are effected without our written consent
- If functional changes of any kinds had been made
- If the pipe grab has not been maintained properly
- If non-original parts have been used for repair works



### **2.3. General information for understanding and handling of this assembly**

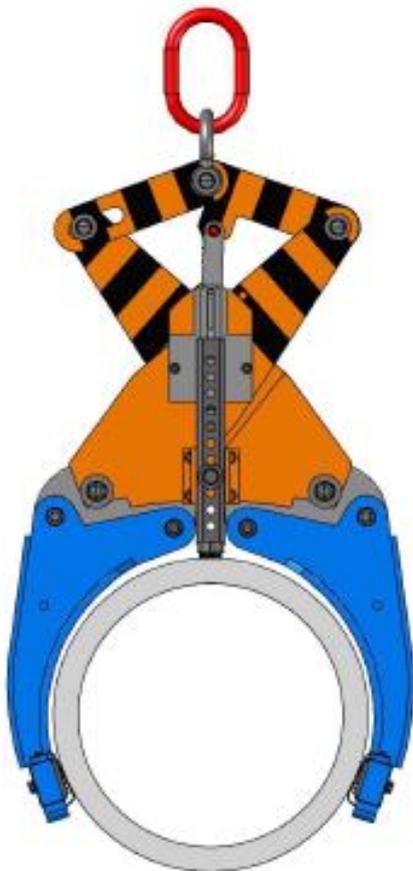
- Please read this manual carefully, before your use the pipe grab the first time. Please observe the highlighted safety instructions!
- Even if you have already operated a pipe grab, do not put this manual unread aside.
- Please note, that the LTW pipe grab Type GZ 2,5 t has been designed and manufactured in accordance to the machinery directive 2006/42/EG. Please observe all regulations of the BG and applicable norms and regulations DIN EN ISO 12100 & DIN EN 13155 as well as BGR 500, when using the Pipe Grab.
- In order to avoid accidents and to attain optimal performance no changes and modification should be made on the pipe grab.
- Comply with the rules, in order to prevent accidents or individual injury or damage to health
- The user is responsible to keep the relevant environmental provisions, and to fulfil the duty of disposal.

**3. Description of function, parts and technical data**

***3.1. Illustration of the pipe grab***

**arm I - 50**

Ø 275 – 650



**arm II - 80**

Ø 580 – 950





### 3.2. How the pipe grab works

The intended use of pipe grab GZ 2,5 t is only for the transport of concrete pipes. Transport of pipes made of other material, such as asbestos cement, pvc or similar may cause pipe breakage. For clay pipes or stoneware pipes special equipment is required.

The load must be slung, when the pipe is in a horizontal positioning. Avoid swinging movements (oscillatory motions) during the transport. The grab arms are only allowed to contact the pipe with the steel jaws. Pipes are only allowed to be lifted, if the pipes are free from dirt, oil, grease or similar! Furthermore, do not lift the pipes if these are coated in the grab range.

For transport of the pipe grab connect to the O-ring (master ring) and make sure, that you have suitable lifting equipment.

Pipe grabs are working like a scissors principle; i.e. when the pipe is lifted, the weight of the pipe causes the grabber arms to lock automatically. Opening and closing movements are controlled by a switching system. The steel jaws take up the pipe below the pipe diameter.

Before starting, the pipe grab has to be adjusted to the outer diameter of the pipe. This is done by choosing the pair of arms matching to the required pipe. Three different pair of arms are available.

Lower the open pipe grab over the pipe's centre of gravity. By completely relaxing the grab subsequently lifting the pipe, the pipe grab will close automatically. The pipe is gripped.

Once lifted, the safety lock (safety latch) automatically engages and can only be released manually, thus preventing an uncontrolled early opening of the pipe grab during operation.

Do not apply forces into the safety latch; make sure, that it will not be damaged!

The pipe will be lowered at its final destination. When the pipe is set down, the safety latch need to be pulled manually (the safety mechanism opens), in order to relax (release) the pipe. Make sure, that the pipe is resting on firm level ground. The pipe grab can now be lifted and is ready to grab the next pipe.

### 3.3. Technical data

<b>Max. permitted load</b>	<b>2.500 kg</b>
<b>Deadweight, incl. arms type II - 80</b>	<b>145 kg</b>
<b>arm Type I - 50</b>	<b>Ø 275 – 650</b>
<b>arm Type II - 80</b>	<b>Ø 580 – 950</b>

# ASSEMBLY AND OPERATING MANUAL

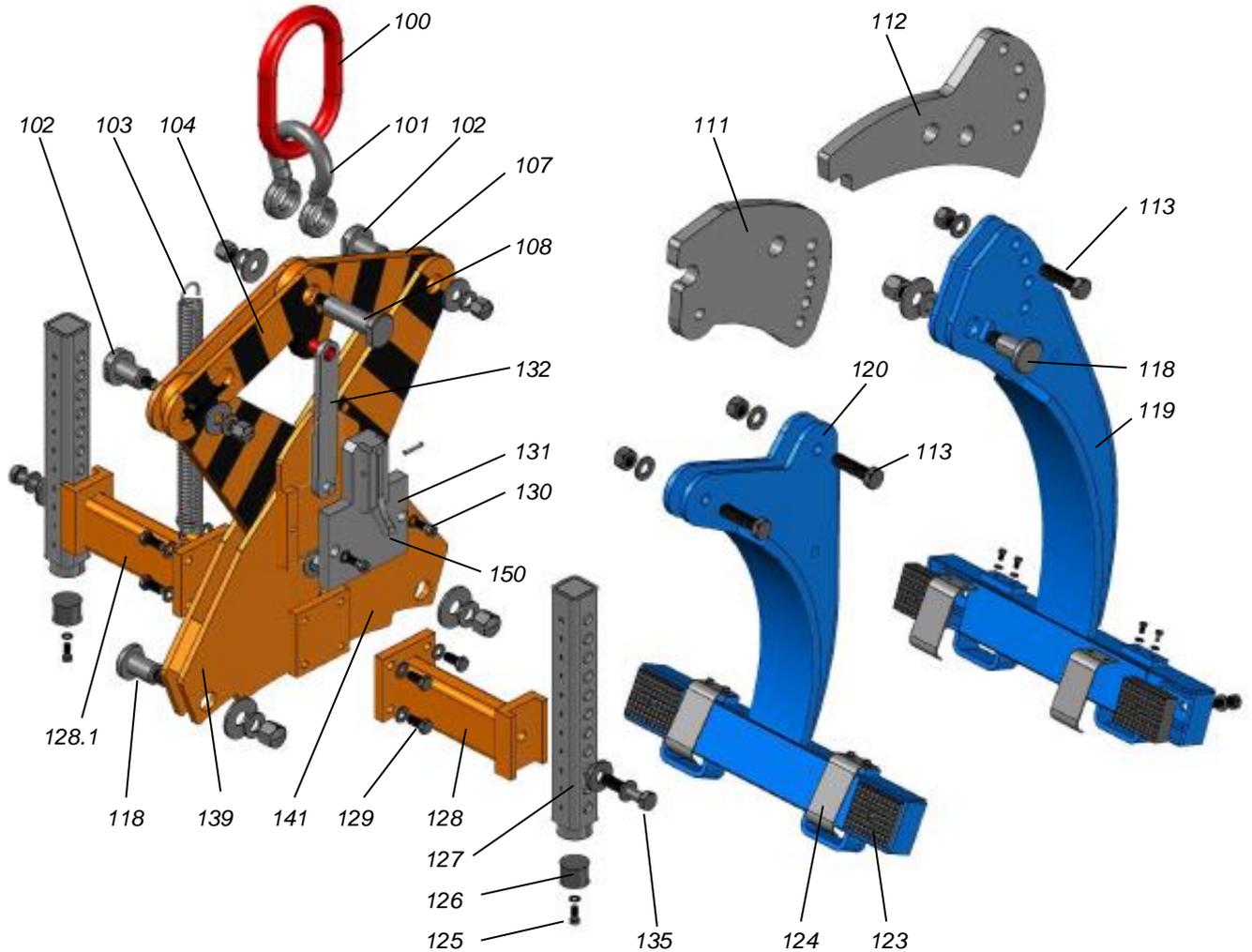
## LTW PIPE GRAB TYPE GZ 2,5 t



### 3.4. component parts

arm type I – 50

arm type II – 80



pos.	description	qty.	pos.	description	arm 50 / 80	pos.	description	qty.
100	master link	1	108	shackle bolt M16 30*93	1	127	support cpl.	2
101	shackle	1	111	adjustment arm 50	2 / 0	128	support holder cpl.	1
102	bolt M16 30*43	3	112	adjustment arm 80	0 / 2	128.1	support holder cpl. with spring holder	1
103	spiral spring	1	118	bolt M20 30*42	2 / 4	131	switch plate	1
104	flap with slot	2	119	arm type II - 80	0 / 2	132	switch rod	1
107	flap with spring holder	1	120	arm type I - 50	2 / 0	139	base plate 1 cpl.	1
						141	base plate 2 cpl.	1

### 3.5. spare parts - subassembly

pos.	description	qty.
<b>127</b>	<b>support cpl. with:</b>	<b>1</b>
125	hexagon screw M8*20	1
126	rubber buffer	1
<b>128</b>	<b>support holder with:</b>	<b>1</b>
129	hexagon screw M12*25	4
	spring washer A12	4
<b>128.1</b>	<b>support holder with spring</b>	<b>1</b>
129	hexagon screw M12*25	4
	spring washer A12	4
<b>119</b>	<b>arm type II – 80 cpl. with:</b>	<b>1</b>
112	adjustment plate arm 80	1
113	hexagon screw M18*65 cpl.	1
118	bolt M20 30*42 cpl.	1
123	steel jaw cpl.	2
124	leaf spring cpl.	2
<b>120</b>	<b>arm type I – 50 cpl. with:</b>	<b>1</b>
111	adjustment plate arm 50	1
113	hexagon screw M18*65 cpl.	2
123	steel jaw cpl.	2
124	leaf spring cpl.	2
<b>123</b>	<b>steel jaw cpl. with:</b>	<b>1</b>
	hexagon screw M12*50	1
	spring washer A12	1
<b>124</b>	<b>leaf spring cpl. with:</b>	<b>1</b>
	hexagon screw M6*10	2
	spring washer A6	2
<b>131</b>	<b>switch plate cpl. with:</b>	<b>1</b>
	switch plate	1
	distance spring	1
130	cylinder head screw M10*20	2
150	safety latch cpl.	1
<b>150</b>	<b>safety latch cpl. with:</b>	<b>1</b>
	safety latch	1
	spring for safety latch	1
	spring dowel pin 6*32	1



### special accessoires for stoneware pipes

pos.	description	qty.
<b>123 G</b>	<b>rubber jaw cpl. with:</b>	<b>4</b>
	hexagon screw M12*40	4
	spring washer A12	4

### 3.6. spare parts – bolts / screws

pos.	description	for connection between
102	<b>bolt M16 30*43</b> with: washer 58*5*18 spring washer A16 nut M16	<b>grab head</b> flaps – base plate base plate – base plate
108	<b>shackle bolt M16 30*93</b> with: washer 58*5*18 spring washer A16 nut M16	<b>grab head</b> shackle – flaps
118	<b>bolt M20 30*42</b> with: washer 68*5*22 spring washer A20 nut M20	<b>grab head / -arm</b> base plate – arm arm 80 – adjustment plate
113	<b>hexagon screw M18*65</b> with: washer 58*5*18 spring washer A18 hexagon nut M18	<b>grab arms</b> arms – adjustment plate
130	<b>cylinder head screw M10*25</b> with: toothed washer A10	<b>grab head</b> base plate – switch plate
135	<b>hexagon screw M16*90</b> with: washer 58*5*18 spring washer A16	<b>grab head</b> support – support holder



## 4. Safety instructions

### 4.1. General information

The rules, instructions and safety provisions referred to in this section must be observed at any time.



The pipe grab may only be used operated by persons specially trained and instructed for this. Lack of knowledge can result in damage to the equipment and put the operator at risk.

Before using the pipe grab, operating and maintenance staff must be familiarized in detail with the equipment and its parts.

Before the equipment is used for the first time, staff must be informed and instructed of danger areas in safety training session. This training must be repeated as required.



### ***4.2. Special safety instructions***

- Make sure, that you only lift pipes, the pipe grab has been adjusted to!
- The maximum permitted load is 2500 kg.
- Pipes exceeding 3.2 m in length must be handled with 2 pipe grabs and a special lifting beam.
- The lifting device must be on firm level ground and approved to bear the total load.
- Attach the lifting hook of the lifting device to the master link of the pipe grab. Make sure, that the load hook safety catch is working properly!
- The grab arms may only touch the pipe with its jaws.
- The red-stripped scissor arms of the pipe grab must not overlap.
- The load must be slung, when the pipe is in a horizontal position.
- Traffic- and escape routes must be kept clear at all times.
- Keep all persons out of the crane's pivoting range and away from the area beneath suspended loads
- Avoid unneeded oscillations during transport of the pipe.
- Watch out for overhead power lines (power cables).
- If the field of view is restricted, a marshalling person is required.
- The pipe grab and the pipes are only to be placed on firm and level ground.
- Do not pull the safety latch, prior before the pipe grab is completely down and relaxed.

Please note, that the LTW pipe grab Type GZ 2,5 t has been designed and manufactured in accordance to the machinery directive 2006/42/EG. Please observe all regulations of the BG and applicable norms and regulations DIN EN ISO 12100 & DIN EN 13155 as well as BGR 500, when using the pipe grab.



### 5. Assembly and preparation for use

#### **5.1. General information**

We recommend to check the entire consignment for completeness and any transport damages immediately upon arrival. Please refer to the accompanying delivery notes and other documents.

Complaints can only ever be accepted if they are reported to the forwarding agent of LTW Tiefbauvertriebs GmbH on the day of the equipment arrival.

The pipe grab must be handled, set up and prepared for use of the assignment in accordance with the following instructions.

#### **5.2. Initial use**

The pipe grab is supplied in a full assembled state.

Before using the pipe grab the first time, the prepared pipe grab needs to be inspected by an expert. At least once a year, or when assembling and adjusting to another pipe diameter, the pipe grab must be checked and inspected again by an expert to ensure it is safe to be used.

A competent person (expert) is, who by virtue of their technical training and experience has sufficient knowledge in the field of pipe grabs, and is sufficiently familiar with the relevant occupational health and safety regulations, accident prevention regulation and general accepted rules of technologies (e.g. DIN and VDE Standards) so that he can assess the safe working condition of pipe grabs. Detected faults must be immediately eliminated prior before using the pipe grabs.

#### **5.3. Preparation for use**

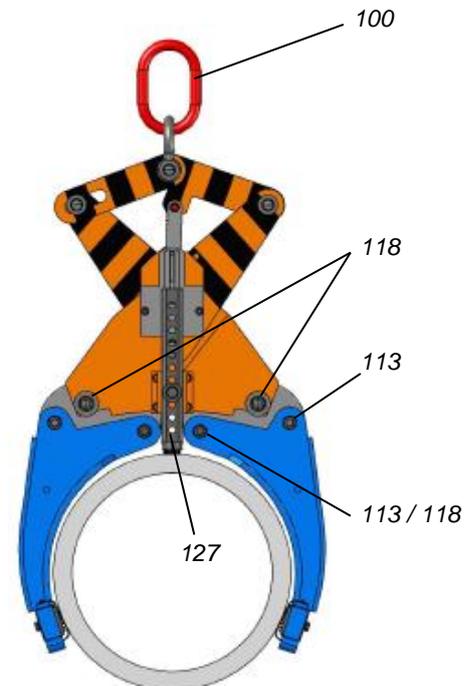
assembly table:

#### **Kombi - Greifarme / Bras réglables**

Typ I - 50 (275 - 650) ∅ Rohr aussen ∅ Tuyaux extérieur	Einstellung / Réglage			Typ II - 80 (580 - 950) ∅ Rohr aussen ∅ Tuyaux extérieur
	Stützen Pos. Appuis Pos.	Arm Pos. Bras Pos.	Stützen Pos. Appuis Pos.	
275 - 300	10	D - D	8	580 - 620
		D - D	6	620 - 680
300 - 325	10	C - D	5	680 - 740
325 - 380	9	C - D		
380 - 460	8	C - C	4	740 - 780
460 - 520	6	B - C	3	780 - 840
520 - 575	4	B - B	2	840 - 900
575 - 650	3	A - B	1	900 - 950

### Assembly

- Attach the pipe grab with suitable lifting gear to the **master link 100**
- Release and extract **bolt 118** (M20 30\*42 – connection grab head to the grab arms)
- Insert the selected pair of arms **type I -50** or **II - 80** which match the external pipe diameter with the top inserts („nose“) in the grab head (see adjustment table).
- **Never mix arms; only associated must be used (50 or 80). It's strictly prohibited to mix them!**
- Positioning of the hole in the grab arm must be identical to the hole in the grab head
- **Only the specified positioning from the adjustment table are allowed!**
- Insert **Bolt 118** and connect grab arm and grab head
- Select the required support position (**position 1-10**) and the grab arm position (**A to D**) as per the adjustment table, depending on the pipe diameter.
- **Release 113** and adjust to the required letter or the type of letters. **Insert device 113** and lock it.
- Adjust the **support 127** to the required figure and fix it in the notch of the **support holder 128**



### Example:

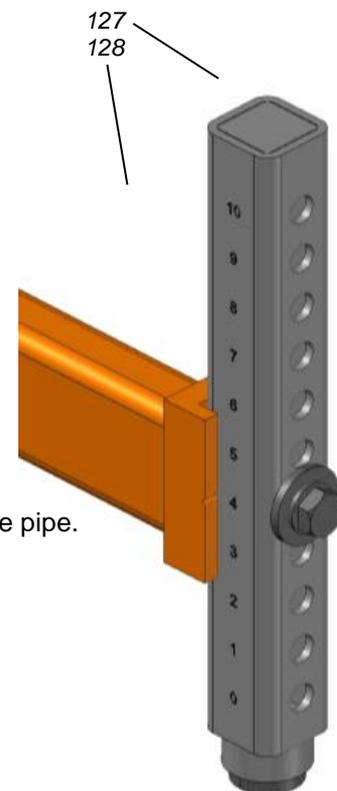
Ext. Pipe Diam.	∅ 550
Type of arm	Type I - 50
Range	520 - 575
Adjustment	Support Pos. 4
	Grab arms Pos. B-B

### Adjustment control

The jaws must be in the lower third of the pipe when the pipe Grab is positioned on the pipe. Before lifting, please check if there is a small gap of 5-30 mm in between the rubber buffer of the support (127) and the pipe. If not, the setting values (adjustment) need to be controlled!

### Important!

If you re-adjust, an expert needs to approve!



### 6. Operation



#### Schematic illustration of the processes

The pipe grab operates according to a set sequence of actions. The sequence is fixed. To achieve a desired position, you can alternately load and relax the pipe grab.

1. Adjust the pipe grab to the required external pipe diameter.
2. Position the open pipe grab in the centre of the pipe. The grab head is in a relaxed position; the step switch allows that the arms are open.
3. When lifting the pipe, the grab automatically closes. The pipe is gripped.
4. **Control the red-striped marks!**  
**If the red-striped bearing plates are overlapping (these is not allowed), do not lift the pipe!**
5. Pipe transport.
6. Lower pipe at the final destination.
7. Pipe grab gets fully relaxed when the pipe is set down.
8. **Pull up and hold the safety latch!**  
The latch preventing an uncontrolled opening of the grab. Pull the safety latch up, so that the automatic locking mechanism now opens the arms of the pipe grab.
9. Raise slightly the pipe grab, the grab arm will release and **now the safety latch can be released** (before you hold/kept it up).
10. The pipe grab can now be lifted; the safety latch is locking automatically.
11. For the next pipe, please start again as outlined under item 2.



## **7. Malfunction, causes and remedies**

### **7.1. General information**

This section describes possible malfunctions that can be remedied by the operator himself.

During the work process, the following malfunctions may occur despite correctly performed maintenance.

### **7.2. Types of malfunction**

#### **Remedy**

- problems in the set sequence of the grab
- red-striped scissor arms overlap
  
- Pipe slide out of the pipe grab when lifting
- Jaws are worn down

#### **Trouble fixing**

- need to be repaired by LTW supervisor
- jaws are worn down
- incorrect setting of the grab
  
- jaws are worn down
- replace by original part

## **8. Maintenance and servicing**

Careful maintenance of the pipe grab keeps it in working order and safe extends the service life of the individual components.

The section covers tasks and checks which must be carried out by trained operating staff at the given intervals.

***The maintenance and service tasks must be carried out in observance to the rules stated before, by a skilled and person/expert.***

The interval differs from user to user, depending as example on the frequency of the equipment being used and the number of shifts (single or double).

We refer to DIN 31051 – „Maintenance, concepts and measures”.

### **8.1. Maintenance as required**

Check, how far the jaws are worn down.

When 1/3 of the total thickness has been worn, they need to be replaced!

**As for the replacement and supply of parts, only the original replacement parts approved by the manufacturer may be used. Liability and warranty claims are excluded in the event of non-observance.**

### **8.2. Weekly maintenance**

Sliding and rotating parts must be greased with rolling bearing grease

### **8.3. Annual maintenance**

The pipe grab must be checked by a skilled operative/expert to its safe condition.