

Operating Manual

Hydraulic Rod Extracting Unit ZGM-9B Eco / ZGM-9BA Eco (Automatic Type)



The hydraulic extracting unit ZGM-9B(A) Eco complies with the EWG directives 98/37/EWG (safety of machinery) and 2000/14/EC (noise emission)

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2 Safety Instructions

Read the following section carefully. It contains important information for your personal safety and the safety of the ZG 9.

2.1 Responsibility of the Operator

The operator of the ZG 9 is responsible for operating the ZG 9 only for its intended purpose as described above. Instruct co-workers thoroughly and request them to read the operating manual. Do not leave the ZG 9 unattended to prevent misuse by third parties (e.g. children).

2.2 CAUTION-advise in this manual

Please notice the CAUTION advises. CAUTION informs of impending damage for the machine. This may be caused by inappropriate handling of the machine as well as operating the ZG 9 for other than the intended purpose as described in this manual.

2.3 WARNING-advise in this manual

Please notice the WARNING advises. WARNING informs of impending danger for the operator or other persons. This can be caused by inappropriate handling of the machine as well as operating the ZG 9 for other than the intended purpose as described in this manual.

2.4 General Safety Information

Operating the ZG 9 carelessly can lead to injuries as described below:

- Burning by hot exhaustion parts.
- Contusion of limbs by the hydraulic lifting device or clamping devices (ball clamps, jaw clamps, or other).
- Injuries caused by hydraulic oil emerging under high pressure caused by damaged hydraulic pipes or other damaged hydraulic parts.

2.5 Stay at the machine

While operating the ZG 9 always stay within immediate reach of the control lever for the hydraulic lifting device. Stop the ZG 9 immediately in case of malfunction or danger.

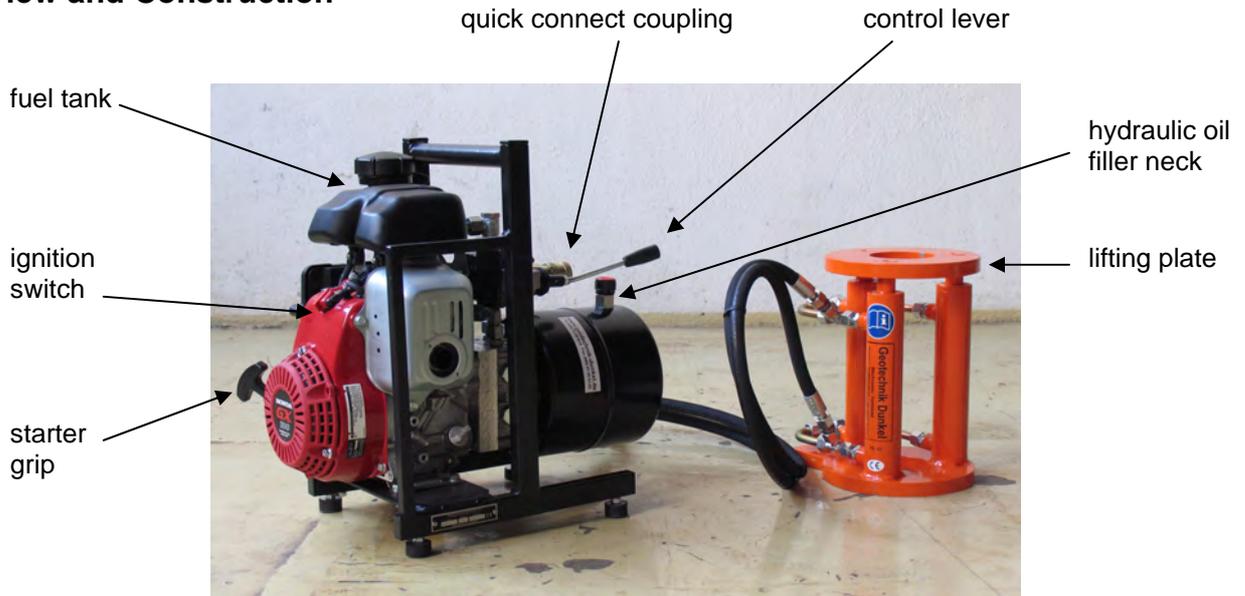
2.6 Maintenance Intervals

Always inspect hydraulic pipes for damages before operating the machine. The ZG 9 should not be operated with broken hydraulic pipes. Further information on service and maintenance see section 7 "Maintenance and Trouble Shooting".

3 Description

This section will give you important information on the construction and operating elements of the ZG 9.

3.1 View and Construction



3.2 Accessories

The following listing contains necessary equipment for pulling out drive rods and window samplers from the soil:

PE base plate 500 x 350 mm (sink in prevention)	article no. 105 410
ball clamp 22-25 mm	article no. 640 011
ball clamp 22-36 mm	article no. 570 143
ball clamp 36-50 mm	article no. 570 144
jaw clamp frame	article no. 570 300
jaw clamp 22-25 mm	article no. 570 322
jaw clamp 32-36 mm	article no. 570 332
jaw clamp 36-46 mm	article no. 570 346
jaw clamp 50-54 mm	article no. 570 350
jaw clamp 60-64 mm	article no. 570 360
jaw clamp 78-88 mm	article no. 570 378

3.3 Special Equipment

The items listed below may facilitate your work and therefore increase your productivity:

PE base plate 500 x 350 mm	article no. 105 410
prevents the lifting device from sinking into the soil	
hydraulic rammer	article no. 555 320

4 Operation

This section will give you important information to operate the ZG 9. Possible hazards for men or machine will be pointed out. Please read section 2 "Safety Instructions" before operating the ZG 9.

4.1 Equipment Check prior to each operation

1. Check hydraulic pipes. The hydraulic pipes should not be damaged. See section 6.1.

WARNING: Damaged hydraulic pipes can break under high pressure and can cause major injuries. The ZG 9 should not be operated with damaged hydraulic pipes!

2. Check engine oil level. See section 6.2.

CAUTION: Running the engine with insufficient oil can cause serious engine damage.

3. Check hydraulic oil level. See section 6.5.

CAUTION: Running the hydraulic pump with insufficient hydraulic oil can cause serious hydraulic pump damage.

4.2 Area of operation

The ZG 9 should not be operated in closed areas.

WARNING: Operating a petrol driven engine in closed areas can lead to highly dangerous intoxication.

4.3 Starting the Unit

1. Install the aggregate at levelled ground.

CAUTION: If the aggregate is not levelled it can be damaged by not receiving enough oil. Hydraulic oil may emerge through the screwed top of the hydraulic oil tanks ventilation hole.

2. Check if the quick connect couplings of the hydraulic lifting unit are locked securely to the hydraulic aggregate.

3. Check the fuel level. Use unleaded fuel only. Open the petrol shut-off.

4. The control-lever must be at its 0-position (units without automatic system automatically re-set to their 0-position. Units with automatic system the control-lever has to be put to its 0-position manually.)

WARNING: Starting the ZG 9 with the control-lever not as its 0-position the hydraulic lifting unit will automatically start going up and down. This can cause danger for men or damage to property.

5. Turn the fuel valve to the ON position.

6. Move the choke lever to the CLOSE position. Do not use the choke if the engine is warm or the air temperature is high.

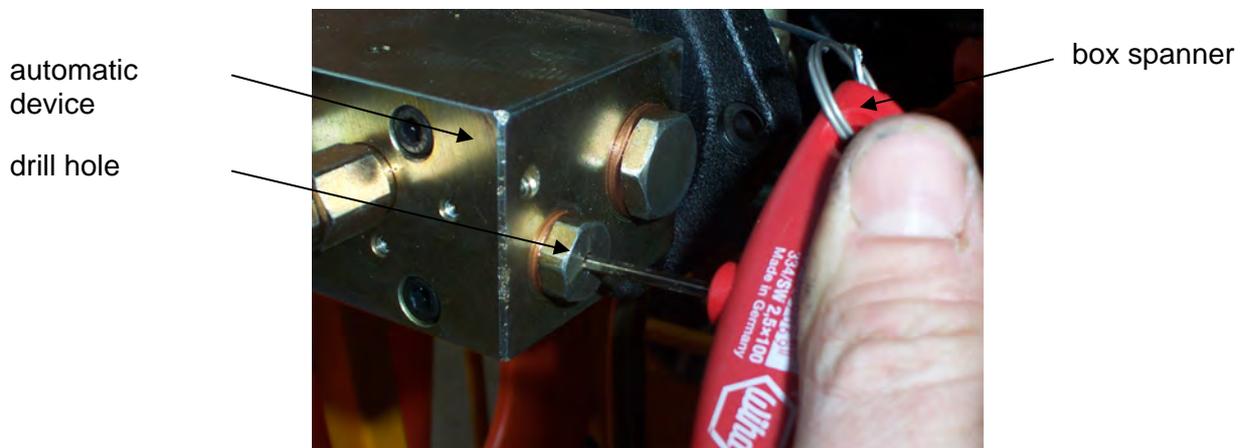
7. Pull the starter grip lightly until resistance is felt then pull briskly.

8. As the engine warms up, gradually move the choke lever to the OPEN position. The engine should run smooth without interruptions.

4.4 Extracting Drive Rods

1. Put the PE base plate (optional accessory) and the hydraulic lifting unit over the drive rods. The PE base plate prevents the lifting unit from sinking into soft soil.
2. Put a fitting clamp tool (see section 3.3 Accessories) on the thrust plate of the hydraulic lifting unit and the passed through probing rods.
3. By operating the control-lever the lifting unit starts going up respectively down. The mounted clamp tools extrude the probing rods from the ground. When the lifting unit reaches the upper respectively lower final point, use the control-lever to change direction of movement of the hydraulic lifting unit (only with ZG 9 without automatic system, type ZGM-B).

The ZG 9 with automatic device has an engaging control lever. Throwing the control lever to the moving position, the lifting unit will start moving up and down continuously. It is not possible to change the direction of the up and down movement with the control lever. To change the direction of the up and down movement of the automatically working lifting unit use the enclosed box spanner in the respective drill hole at the automatic device (see picture below). Put the box spanner in the appropriate side and push about 3 mm inwards with light pressure. The direction of the up and down movement changes.



WARNING: Keep out of the reach of the lifting unit and/or the clamp tools while operating the lifting unit. There is a high potential of severe injuries by contusion! Keep in reach of the control lever to stop the machine immediately in case of danger.

CAUTION: When doing heavy lifting work make sure that the clamp tool is centred on the base-plate. This will prevent the base-plate from damage by one-sided load. When lifting probing rods which are in the ground at an oblique angle the lifting unit should be put at a right-angled position to the probing rods. This will prevent probing rods from being damaged. When operating in soft soils use an appropriate tool (e.g. PE base plate 500 x 350 mm) to prevent the lifting unit and the hydraulic parts from damage.

4. Turn off the engine with the control lever when stop working. The engine can be turned off by setting the ignition-starter switch to its "OFF" position.

WARNING: Do not touch the exhaust pipe of the Honda-engine while operating the ZG 9. It is hot and can cause severe injury by burning.

CAUTION: The lifting unit should be fully retracted when not operating the ZG 9. This will prevent the piston rods of the hydraulic cylinder from damage.

4.5 Switching Off

1. Retract the lifting unit completely.
2. Turn the control lever to its "0"-position
3. Turn the ignition-switch to its "off"-position

4.6 Transportation

1. Close the petrol shut-off.

WARNING: Do not touch the exhaustion pipe of the Honda-engine. It is hot and can cause severe injury by burning.

2. When the engine is turned of it is possible to split the lifting unit from the hydraulic aggregate. Release the pressure from the hydraulic cycle. Position the slot of the outer ring of the quick connect coupling towards the small ball. Move towards the ball and separate the quick connect coupling.

CAUTION: Protect the open hydraulic quick connect couplings from dirt. Cover them with the protecting cap.

NOTICE: High temperatures (e.g. caused by exposure to the sun) can lead to high pressure in the separated hydraulic pipes. It might not be possible to reconnect the quick connect couplings. In this case operate the control lever while connecting the quick connect couplings.

3. Keep the ZG 9 levelled for transportation and protect it from tipping over.

CAUTION: When the ZG 9 is not levelled hydraulic oil, engine oil and petrol can emerge.

CAUTION: Running the engine with insufficient hydraulic oil or motor oil can cause serious engine damage.

5 Technical Data

5.1 Technical Data ZG 9

Lifting capacity:	approx. 9 tons
Lifting height:	150 mm
Lifting speed:	approx. 1.1 m/min
Passage:	90 mm
Engine:	Honda GX 100
Engine output:	3.0 PS
Hydraulic oil volume:	approx. 4 litre/min
Hydraulic pressure:	approx. 230 bar (maximum, short time only!)
Hydraulic oil tank:	approx. 6,4 litre
Length hydraulic pipes:	2000 mm
Weight aggregate:	approx. 27 kg / approx. 29 kg with automatic device
Weight lifting unit:	approx. 21 kg
Sond power level:	97 dB(A)

5.2 Operating Agents

Fuel:	Petrol, unleaded
Hydraulic Oil:	organic ester based (e.g. Plantohyd S, covers 5W-20)
Engine Oil:	e.g. SAE 10W-30, see enclosed Honda manual

6 Maintenance

Periodic inspection and adjustment of the ZG 9 is essential if high level performance is to be maintained. Regular maintenance will also ensure a long service life. Required service intervals and the kind of maintenance to be performed are described below.

NOTE: Always turn off the hydraulic aggregate before doing any maintenance or service work.

6.1 Cleaning

Clean the ZG 9 with pure water only. Remove resinous hydraulic oil residues carefully with diluents.

CAUTION: Intensive rubbing with diluents may damage the lacquer coating.

CAUTION: Close all openings of the ZG 9 while cleaning. Water and other fluids soaking into the engine can lead to severe damage to the machine.

6.2 Maintenance

1. Always inspect hydraulic pipes for damages before operating the machine. The ZG 9 should not be operated with damaged hydraulic pipes.
Hydraulic pipes with damaged wire gauze should not be operated. The wire gauze is located underneath the outer rubber protective coating. Hydraulic pipes should only be repaired by authorised technical personnel.
WARNING: Damaged hydraulic pipes can explode under high pressure and lead to severe injury.
2. Check the engine oil level regularly as recommended in the Honda manual.
CAUTION: Running the engine with insufficient oil can cause serious engine damage.
3. Change oil as recommended in the Honda manual. Please dispose motor oil in a manner that is compatible with the environment. We suggest you take it in a sealed container to your local service station for reclamation. Do not throw it in the trash or pour it on the ground.
4. Service the air cleaner regularly at least every six months to prevent carburettor malfunction. Service more frequently when operating the engine in extremely dusty areas. Also see Honda manual.
5. Check the hydraulic oil level regularly. The hydraulic oil tank does have a hydraulic oil sight gauge. Fully retract the hydraulic cylinders. Level the aggregate. The oil level should be within the upper range of the hydraulic oil sight gauge. Refill hydraulic oil as specified in section 5.2. Change hydraulic oil after 3000 hours of operation or every two years, whatever is first.
NOTE: Too much hydraulic oil in the hydraulic tank can lead to emerging oil through the screwed top of the hydraulic oil tanks ventilation hole.

6.3 Trouble Shooting

Engine does not start:

- Check fuel level.
- Is the fuel valve ON?
- Check engine oil level.
- Is the control lever at its 0-position? (ZG 9 with automatic system ZG-BA)
- Is the spark plug put on tight?
- Is the choke in the right position?

Lifting unit remains in its lifted position and will not retract (only automatic system ZGE-BA):

Contact our technical support!

Disconnected hydraulic quick releases can not be reconnected:

High temperatures (e.g. caused by exposure to the sun) can lead to high pressure in the disconnected hydraulic pipes. It might not be possible to reconnect the quick release. In this case operate the control lever while connecting the quick releases. In extreme cases it can be necessary to carefully loosen the screwing of the quick release until some drops of hydraulic oil can run off to release pressure. Tighten the screwing carefully.

Leaking hydraulic screwing:

Vibration of the engine can loosen the hydraulic screwing. This can lead to leaking. Tighten the screwing with the following torques:

- SW 22 – screwing = 60 Nm
- SW 27 – screwing = 80 Nm

For any further questions please contact our customer service by phone (+49 89 818963-0).

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Declaration of Conformity

The undersigned company

Geotechnik Dunkel GmbH & Co. KG, Eversbuschstreet 194 A, 80999 Munich, Germany

hereby certifies under its own responsibility that the machine

Model	Hydraulic Lifting Unit
Type	ZGM.B(A)
Serial number	> 1654
Year of manufacture	2009

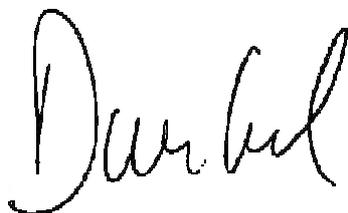
is in accordance with the following European directives

- **98/37/EG, Annex I**
(machinery directive)
- **2000/14/EC**
(noise emission in the environment by equipment for use outdoors)

and complies with the following European standards

- **EN 292-1, EN 292-2, EN 982** (safety of machinery).

The guaranteed sound level - determined according to directive 2000/14 EC - is 97 dB(A).



Munich, 01.01.2009

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