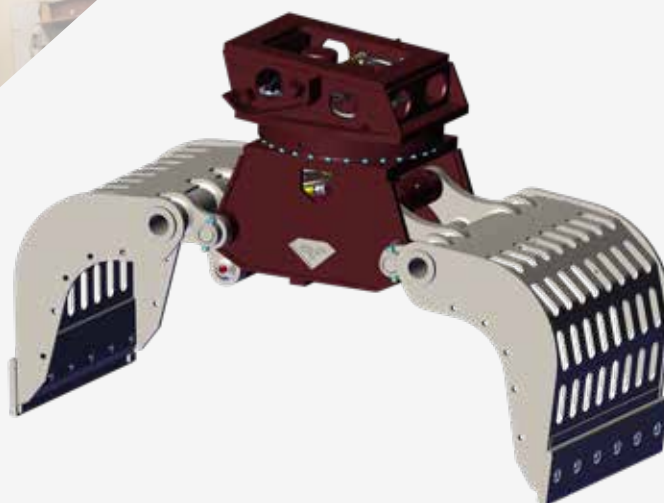




HYDRARAM[®]

DEMOLITION & RECYCLING EQUIPMENT



DEMOLITION GRAB - HDG SERIES

Operation and maintenance manual

Hydraram B.V.

Meander 7, 9231DB, Surhuisterveen Holland

Tel : +31 512 365 981 - info@hydraram.com

www.hydraram.com

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Certified company





Table of contents

1. Introduction	1
1.1. Purpose of the user and maintenance instruction manual	1
1.2. Safekeeping of the instruction manual	2
1.3. Updating the instruction manual	2
1.4. Who is this manual intended for?	2
1.5. Glossary and symbols	2
1.6. Copyright	4
2. General information	5
2.1. Manufacturer's identification data	5
2.2. Attachment identification data and plate	5
2.3. Set-up procedures to be carried out by customer technician	5
2.4. General warranty conditions	6
3. Safety	8
3.1. General precautions	8
3.2. Intended use	10
3.3. Unforeseen improper use	10
3.4. Safety indications relating to use of the attachment	11
3.4.1. Safety procedure prior to initial use of the attachment	11
3.5. Safety indications relating to maintenance of the attachment	12
3.6. Safety pictograms	14
3.7. Lighting	14
4. Description of the attachment	14
4.1. Description of the attachment	14
4.2. Technical specifications	15
5. Installation	17
5.1. Moving and handling	17
5.2. Storage	18
5.3. Hydraulic fluids	18
5.4. Mounting the attachment on the operating machine	19
5.4.1. Making the hydraulic connections	19
5.4.2. Connecting the hydraulic hoses for the 'Open' and 'Close' functions	20
5.4.3. Connecting the hydraulic hoses for the 'Rotate' function	20
5.5. Detaching the demolition and sorting grab from the excavator	20
5.5.1. Mechanical detachment	21
5.6. Detaching the adapter plate	21
6. Operation	21
6.1. Pressure and temperature monitoring	21
6.2. Ambient temperature requirements	22

6.2.1. High ambient temperature	22
6.2.2. Low ambient temperature	22
6.3. Disposal	23
6.3.1. Demolition and sorting grab	23
6.3.2. Hydraulic hoses	23
6.3.3. Hydraulic oil	23
6.3.4. Grease and grease cartridges	23
6.4. Dismantling	23

7. Maintenance	24
7.1. De-energising the attachment	24
7.2. General information	24
7.3. Regular maintenance	24
7.3.1. Changing or replacing wear blades	25
7.3.2. Lubrication schedule	26
7.4. Torque	27
7.5. Troubleshooting	28

1. Introduction

1.1. Purpose of the user and maintenance instruction manual

This manual forms an integral part of the attachment and is intended to provide all the information necessary to:

- Inform operators correctly regarding safety issues;
- Handle, pack and unpack the attachment safely;
- Install the attachment safely;
- Ensure users are fully aware of its operating features and limits;
- Ensure the attachment is used correctly and safely;
- Ensure maintenance operations are carried out correctly and safely;
- Dismantle the attachment safely and in accordance with the standards and regulations regarding health and safety in the workplace and environmental protection.

! IMPORTANT!

Under current law, the personnel responsible for using and operating this attachment are obliged to read the contents of this document carefully and to ensure the operators and maintenance technicians have read the parts relating to their specific duties. The time spent doing this will ensure correct and safe operation of the attachment.

This document assumes that the applicable laws on safety and occupational hygiene are adhered to where the attachment is to be used. The instructions, drawings and documentation contained in this manual are of a confidential, technical nature and may not be reproduced in whole or in part.

This manual is subject to the following limitations:

- It may never take the place of an adequately experienced user;
- For particularly demanding operations, the manual can only provide a summary of the main steps.

The manual should be regarded as an integral part of the attachment and must be kept for future reference until the attachment is dismantled for disposal. The manual must be stored correctly and kept where it may be readily consulted when using the attachment with the operating machine.

The company Hydraram may not be held liable in the following cases:

- Improper use of the attachment;
- Use contrary to specific national law;
- Incorrect installation (in the case where the attachment was installed by unauthorised personnel);
- Power supply defects;
- Serious failures to perform the required maintenance;
- Unauthorised modifications and operations;
- Use of replacement parts or materials not specific to the model;
- A total or partial failure to follow the instructions provided;
- Use of the attachment with an incompatible machine;
- Exceptional events.

1.2. Safekeeping of the instruction manual

The manual must be stored carefully and kept together with the attachment whenever the latter changes hands throughout its working life. The manual will last longer if it is handled carefully with clean hands and not placed on dirty surfaces.

No parts of the manual should be removed, torn out or modified arbitrarily. This manual should be stored in a cool, dry place near to the attachment it refers to. The manufacturer can supply additional copies of the manual upon request.

1.3. Updating the instruction manual

The manufacturer reserves the right to change the design of, and make improvements to, the attachment without notifying customers and without updating manuals that have already been delivered to the user. Moreover, if the manufacturer makes changes to the attachment already in use at the customer's premises that require changes to one or more chapters of the manual, the manufacturer shall be responsible for sending the manual holder the chapters affected by the change, together with a copy of the new manual revision list.

1.4. Who is this manual intended for?

This manual is intended for: Installation personnel, Operators and Technicians qualified to carry out maintenance on the attachment.

➤ **OPERATOR** refers to the person assigned to operate, adjust, clean and perform regular maintenance on the attachment.

➤ **QUALIFIED PERSONNEL** or **QUALIFIED OPERATOR**, refers to those persons who have attended specialisation and training courses etc. and who have experience in the installation, operation and maintenance, repair or transport of the attachment.

➤ **EXPOSED PERSON** refers to any person located inside an area inside and/or near an operating machine where their presence may be hazardous to their safety, health or well-being.

The attachment is intended for industrial use and, thus, professional and not general use. As a result, it may only be operated by qualified persons and persons who specifically:

- are adults;
- are physically and mentally able to perform work of particular technical difficulty;
- have been adequately instructed in the use and maintenance of the attachment;
- have been judged suitable by the employer to perform the work entrusted to them;
- are capable of understanding and interpreting the manual and the safety instructions;
- are familiar with the emergency procedures and how to implement them;
- are able to operate the specific type of attachment;
- are familiar with the regulations in force;
- have understood the operating procedures defined by the manufacturer of the attachment.

1.5. Glossary and symbols

This section defines the abbreviations used and the meaning of the symbols used to indicate the operator qualification level and the status of the attachment. Their use allows for information regarding the correct and safe use of the attachment to be communicated quickly and clearly.

OPERATOR AREA

The area where the operator must work during normal use of the attachment.

DANGER ZONE

An area inside and/or near the attachment where the presence of an exposed person is a risk to the health of that person.

EXPOSED PERSON

Any person wholly or partially located inside a danger zone.

MAN-OPERATING MACHINE INTERACTION:

Any situation where an operator interacts with the attachment during any of the operational phases at any time during its life cycle.

OPERATOR QUALIFICATION LEVEL

Minimum skill level that the operator must have to perform the operation described.

NUMBER OF OPERATORS

The number of operators required to perform the operation described. This number is derived from a careful analysis by the manufacturer, meaning that the presence of a different number of personnel could prevent the expected result from being achieved or expose the personnel to danger.

STATUS OF THE OPERATING MACHINE

The status of the operating machine includes its operating mode, for example, automatic, jog, stopped, etc., the condition of the safety devices on the operating machine, such as safety devices enabled, safety devices disabled, emergency stop button pressed, power source insulation type, etc.

RESIDUAL HAZARD

A hazard that it has not been possible to eliminate or reduce sufficiently during the design stage, and against which the existing safety device are not (or are not completely) effective. Information on the presence of such hazards is provided in the manual, as well as instructions and precautions on how to avoid it.

SAFETY COMPONENT

This is a component used to guarantee a given safety function and whose failure or poor operation may have a negative impact on the safety and/or health of exposed persons: its specific function is to guarantee safety and is ancillary to the main function of the machine.

P.P.E.

Acronym for Personal Protective Equipment.

⚠ WARNING!

Descriptions preceded by this symbol contain very important information/instructions regarding safety. Failure to observe them may:

- Endanger the well-being of the operators;
- Render the warranty null and void;
- Result in the manufacturer not accepting liability.

❗ IMPORTANT!

This symbol is used to indicate particularly important information regarding the use of the attachment that the operator must make sure that they have read and understood thoroughly.

1.6. Copyright

The copyright of this manual is the property of Hydraram. This manual is intended for use by operating and maintenance personnel. It contains instructions and technical diagrams that may not be copied, in whole or in part, distributed or examined by unauthorised persons for competitive purposes or divulged to any other third party.

2. General information

2.1. Manufacturer's identification data

Hydraram B.V.

Meander 7 9231DB Surhuisterveen - The Netherlands

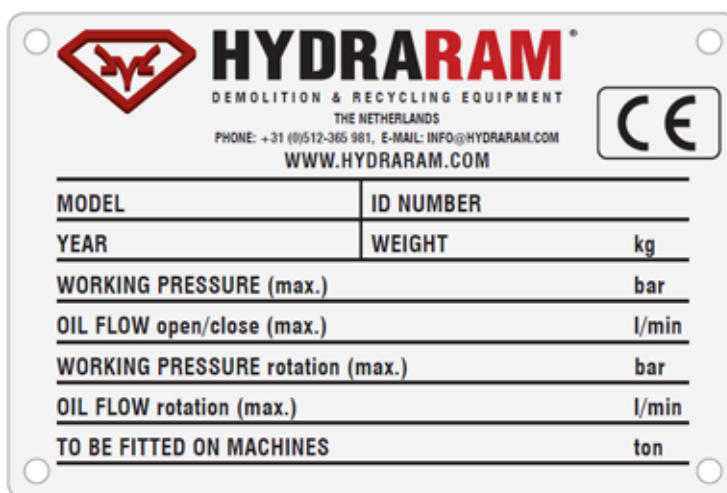
AFTER-SALES SERVICE / SPARE PARTS / CALL CENTRE

Tel: +31 (0)512-365981 - info@hydraram.com

www.hydraram.com

2.2. Attachment identification data and plate

Each attachment is identified by a CE plate indelibly marked with all the relevant machine information. Always provide this information when contacting Hydraram or the customer service centre. The plate is secured to the attachment in a protected position where it is easy to read. This position may vary depending on the model.



2.3. Set-up procedures to be carried out by customer technician

Except where otherwise stipulated in the contract, the customer shall be responsible for:

- Preparing the working environment/area and operating equipment in conformity with the legally applicable specific safety regulations in the country where the attachment is to be used;
- Checking that the attachment is coupled to the operating machine in compliance with the legally applicable specific safety regulations in the country where the attachment is to be used;
- Providing the hydraulic supply system for the attachment, in conformity with the regulations applicable in the country of use and the instructions in this manual.

⚠ WARNING!

It is the specific responsibility of the customer/user to integrate these instructions into the system/plant user and maintenance manual and to provide any additional information the operator may require.

2.4. General warranty conditions

Hydraram guarantees that all products are free from material or manufacturing defects. Under the terms of this warranty, Hydraram's responsibilities are limited to the repair or replacement with a similar part at the company's plant, on condition that the product is returned within 8 days of the date on which the defect is detected, and provided the defect is correctly identified by photographs or the product is returned with all shipping expenses prepaid.

The company will replace or repair, at its own discretion, any part that, after examination, is determined to demonstrate material or manufacturing defects. In any event, Hydraram's responsibility shall be limited to the original purchase price of the product; any costs incurred in relation to the necessary inspections or report generation are excluded. No repairs will be carried out on site; the warranty applies exclusively when the product is returned to the company.

Any claim made under warranty will only be taken into consideration once a written appeal is made to the dealer or manufacturer. This must be done directly after the damage or fault occurs and at least within 24 hours of any irregularities and problems arising.

All claims under conditions of the warranty must contain the following data; the type of machine the product has been mounted on, the serial number of the grab, the record of the defective part(s) and a description of the fault, photographs, copy of the delivery papers and invoice and a copy of the invoice of the piece of equipment concerned.

This warranty replaces any other warranties, expressed or implied, including, but not limited to, guarantees of marketability and suitability, irrespective of purpose; furthermore, under the terms of this warranty Hydraram's obligations and responsibilities shall not include any shipping or other expenses, i.e. installation costs or liability for any direct, indirect or resultant damages or for delays caused by any such defect.

This warranty applies exclusively to new products manufactured by Hydraram. Products manufactured by third parties are covered exclusively by warranties offered to Hydraram by the respective suppliers and will be subjected to any inspections or checks as requested by such parties.

Products manufactured or welded by Hydraram as standard units are guaranteed for twelve (12) months from the delivery date. This guarantee period is completely independent of the effective date the product was put into operation.

Minor repairs can be carried out in consultation with the dealer; the necessary parts which fall under the warranty, will be delivered without charge. For larger repairs the grab should be sent to your dealer or manufacturer for repairs or modifications. The work and necessary parts are free of charge. However, transport costs and call-out charges to and from your dealer or manufacturer are not covered.

The manufacturer is not liable for consequential loss caused by a defective demolition and sorting grab (consequential loss to excavators, consequential loss due to a stationary excavator or the suspending of work activity).

If the customer tampers with the product or attempts to disassemble in any other location than the supplier's premises or repair workshop, and/or without notifying the manufacturer in advance, this warranty shall be considered null and void. Hydraulic cylinders or components returned under the guarantee must not be disassembled and must be returned intact to Hydraram. Any welding, modifications or repairs to

the attachment must be authorised in writing in advance by Hydraram; any service operations performed without such authorisation shall result in this warranty being considered null and void. Hydraram may not be held liable for any costs/charges deriving from the customer's failure to meet these warranty conditions.

Hydraram reserves the right to make changes or modifications to the accessories, which, in the company's reasonable opinion, may improve the performance and efficiency of the machine or improve production techniques, at any time. Hydraram is under no obligation to implement such changes or modifications retroactively on any machines that are already in use. Any operations that are expressly forbidden, either verbally or in any written document, or repairs or assembly procedures that are not recommended or authorised by Hydraram shall result in the warranty being considered null and void.

The warranty does not include any parts that are subject to normal wear and tear, or any that are broken or damaged due to improper use of the attachments supplied by Hydraram. In this case, the customer shall arrange for delivery and collection at our factory at their own expense; if the customer requests repairs at their own premises (assuming this is possible), they shall be required to pay for the seller's travel expenses. If, during the warranty period and as a result of customer negligence or any other factor out of the control of Hydraram, the company is unable to intervene promptly in the aftermath of breakdown or fault condition, the customer shall be responsible for any further deterioration or damages resulting from the continued use of the Hydraram products. Any such additional damage is not included in the terms of the warranty.

The company Hydraram may not be held liable for any expenses for repairs performed by, or requested by the customer in workshops other than the authorised structures or in the event where such activities were not authorised in advance. The customer may not claim compensation for any damages deriving from machine downtime during the warranty period.

❗ IMPORTANT!

This warranty is valid only if the product has been entirely paid for in conformity with the required supply conditions and is returned within 2 weeks from the date of purchase. Failure to pay for the products within the agreed terms shall result in the warranty being considered null and void, even if the goods in question are entirely paid for at a later date.

2.5. Exclusions from Warranty

- Damage caused by faulty assembly of a machine and or the hydraulic system, improper maintenance without expertise and transport damage.
- Defects resulting from improper repairs and/or maintenance including that carried out by an unauthorised third party.
- Defects arising from neglect or improper execution of preventive maintenance procedures e.g. regular lubrication or greasing.
- Defects to parts which are subject to normal wear like blades.
- Consequential loss caused by failure to replace normal wearing parts in time.
- If defective or worn down parts are replaced by non-original parts, the entire warranty and liability will cease to apply.

3. Safety

3.1. General precautions

Operator safety is one of the manufacturer's main concerns. When designing and manufacturing a new attachment, we attempt to foresee all possible danger situations and, naturally, to adopt suitable safety measures, paying particular attention to operations that are especially hazardous. The manufacturer may not be held liable for the consequences of any failure to adhere to the safety and accident prevention instructions set out in this manual.

❗ IMPORTANT!

Before using the attachment, operators must read the instructions contained in this manual carefully read and ensure they adhere to the instructions it contains.

The manufacturer has fitted the attachment with all the protection and safety devices considered necessary and, in addition, has provided sufficient information for its safe and correct use. To this end, wherever necessary, each chapter contains the following information regarding every possible man-attachment interaction:

- Minimum operator qualifications required;
- Number of operators necessary;
- Status of the attachment;
- Residual risks;
- Necessary or recommended personal protective equipment;
- Prevention of human errors;
- Prohibitions/obligations regarding reasonably foreseeable incorrect behaviour.

⚠ WARNING!

This information must be adhered to scrupulously.

The user may supplement the manufacturer's information with additional instructions, provided that they do not conflict with that set out in the manual, in order to contribute to the safe use of the attachment. All personnel assigned to work on the attachment must ensure they are wearing appropriate clothing.

- Avoid the use of clothing that could become entangled with parts of the attachment;
- Avoid wearing ties or other loose items of clothing;
- Avoid wearing rings or bracelets that could cause hands to be trapped in the components of the attachment.

Wherever necessary, the manual provides additional recommendations for preventive measures to taken by the user, personal protective equipment, helpful information for avoiding human errors and instructions designed to prevent reasonably foreseeable prohibited behaviours. It is, however, extremely important to adhere scrupulously to the following instructions:

- It is strictly forbidden to operate the attachment with the fixed protection panels removed;

- It is strictly forbidden to inhibit or bypass the safety devices installed on the attachment;
- Washing must be performed with the hydraulic separation devices disconnected;
- Do not modify any parts of the attachment;
- The manufacturer may not be held responsible for malfunctions caused by failure to respect the above instructions. In the event it is necessary to modify the attachment, we strongly recommend contacting the manufacturer directly.

❗ IMPORTANT!

The manufacturer may not be held liable for personal injury or damage caused by the attachment in the case of:

- Use of the attachment by inadequately trained personnel;
- Improper use of the attachment;
- Defects in the hydraulic power supply;
- Incorrect installation;
- Lack of the required maintenance;
- Unauthorized service or modifications;
- Use of non-original or unsuitable spare parts;
- Total or partial failure to follow the instructions;
- Use contrary to specific national law;
- Disasters or exceptional events.

Control and checks

Checks must be performed by an expert; they must be visual and functional, with the purpose of guaranteeing the safety of the attachment. They include:

- A check of all the load-bearing structures, which must be free from cracks, breakages, damage, deformation, corrosion, wear or alteration with respect to their original specifications;
- A check of all the mechanical components;
- A check of all the safety devices installed on the attachment;
- A check of all connections with pins and screws;
- A functional check of the attachment;
- A check of the status of the attachment;
- A check to ensure that the hydraulic system is airtight and that it operates correctly.

⚠ WARNING!

If anomalies are found, they must be eliminated before putting the attachment back into operation.

If the person performing the check finds any dangerous cracks or faults, they must notify the manufacturer of the attachment immediately. In the event of a malfunction, stop using the attachment immediately and carry out the appropriate checks and/or repairs.

Make sure that there are no objects between the parts of the attachment. After any maintenance work, check that there are no objects remaining between moving parts.

To guarantee maximum safety when transporting the attachment, it is **FORBIDDEN**:

- To tamper with any part of the attachment;
- To leave moving parts unattended;
- To use the attachment when it is not working at 100% efficiency;
- To modify the attachment with respect to its intended use without explicit authorisation from the manufacturer or without assuming full liability as per current legislation;
- To attempt to move the moving parts manually in the absence of power.

3.2. Intended use

The attachment described in this manual was designed to be mounted and used on earthmoving machines of compatible weight specified in section 4.2. The dimensions and consistency of the material to be processed must be compatible with the technical specifications of the equipment specified in section

4.2. **This attachment is intended exclusively for professional use in following ways:**

- Demolition of timber structures
- Demolition of masonry
- Sorting
- Loading work

3.3. Unforeseen improper use

It is strictly prohibited for anyone to use the attachment for any purpose other than that expressly permitted and documented. Any improper use of the latter will absolve the manufacturer of all and any damage to property and persons and render any guarantees null and void. The attachment must always be used in the manner and at the times and places required by good practice and in conformity with the applicable legislation, even if there are no laws regulating the sector in the country of use.

Specifically, the attachment must not be used:

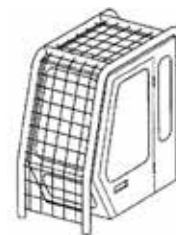
- Any other purpose not mentioned in this manual;
- In an explosive or corrosive atmosphere or where there are high concentrations of dust or oily substances suspended in the air;
- In an atmosphere where there is a risk of fire;
- With its safety devices disabled or not working.
- To lift or transport persons or animals.
- To pick up heavy loads which exceed the maximum allowance of lifting power.
- To lift or extract parts stuck in the ground.
- To reach elevated positions by climbing onto the equipment.
- To pull, push from the front or the side, strike or impact structures to be demolished.
- As a support point for moving the operating machine.
- Submerged underwater, as that can damage the components of the grab and the hydraulic system.

WARNING!

The arm must be moved safely, with slow, accurate movements. Avoid abrupt movements.

3.4. Safety indications relating to use of the attachment

Overhead working may result in falling debris or blocks of material. Make sure that the machine the attachment is installed on has the necessary protections for performing this type of work and that the cab has falling object protective structures (FOPS).



- Before operating the attachment, the operator must read this manual carefully and have thorough knowledge of the operating machine's technical specifications and controls.
- It is recommended that the operator be trained to make best use of the attachment. Unauthorized and/or unqualified personnel may not use the attachment.
- Do not approach to within 20 metres of the range of action of an operating machine when working with an attachment.
- Before starting work with the attachment, warn any persons in its vicinity.
- Wear personal protective equipment whenever the attachment is in use.
- The attachment may only be operated by a qualified operator who has read and understood the contents of this manual.
- Do not allow unauthorized personnel to operate the attachment or perform any type of maintenance on it.
- The operator must quickly release his/her grip on the attachment in the event of danger.
- Do not use the attachment if it is not working properly.
- The attachment may only be used when it is installed on the operating machine using the upper bracket and the pins provided.
- Make sure that the floor can support the load of the operating machine.
- Make sure in advance that the work area contains no pipes with pressurised gas or fluids that could be damaged during demolition: risk of explosion.
- Ensure the operating machine remains at a distance of at least 10 metres from live, overhead electrical lines.
- To avoid generating and spreading dust while working, it can be necessary to dampen the work area with water.
- In the event of a malfunction of the attachment or damage to its components, contact the maintenance manager without attempting to repair it.
- Do not remove the safety devices or protective guards.
- Do not rotate the machinery above people, machines nor vehicles.

3.4.1. Safety procedure prior to initial use of the attachment

Before taking the machine into operation and to ensure the good functioning of the machine, it is important that the following points are checked and correspond to the technical specifications as shown on the information plate and in the manual:

- The type and weight of the sorting grab must conform to weight and machine class of the intended excavator.
- The oil flow and the pressure for rotating the selector grab should be checked and adjusted.
- The return pressure of the rotating oil at a continuous level may be at a maximum of 25 bar, and only briefly (maximum of 10% of the working time) at 100 bar.
- The oil flow and pressure of the pinching (opening and closing) of the sorting grab needs to be controlled and adjusted.
- Check if the hydraulic quick release hitch is in good order and screwed on firmly.

- Check if the ball valves and valves are in the correct position.
- Check if the connecting pins between the excavator and the sorting grab are well secured, as well as the wedge and the security pin of the quick release hitch system.
- Ensure that the hoses have the correct length and are at no risk of interfering with any of the moving parts. Make sure they cannot wear or damage from contact with the grab or material that is moved by the grab.

3.5. Safety indications relating to maintenance of the attachment

- Maintenance must only be performed by qualified personnel. Unauthorized and/or unqualified personnel may not adjust or repair the attachment.
- Use the most suitable tools for the tasks required.
- All adjustments, maintenance, repair or cleaning must be performed while the operating machine's engine is off, the attachment must be stably supported on the ground and there must be no residual hydraulic pressure. Any residual hydraulic pressure must be released by opening and closing the attachment several times while the engine is off and while depressurising the oil tank. All maintenance operations must be marked on the card in the cabin.
- When cleaning, assembling, disassembling, performing maintenance and transporting, ensure that the attachment is perfectly stable and lock it with the pins provided to prevent it rotating (if present). All moving parts must be secured by external constraints (such as slings or supports).
- All service operations on the rotation slew ring must be performed by a specialized technician equipped with a torque wrench for tightening the screws.
- For the hydraulic connections, only use hydraulic hoses and fittings that conform to the SAEJ517 or DIN20066 standards for the specified pressures. Failure to observe the above could compromise the safety of the attachment.
- Always check the hoses are intact and that they have not been damaged in any way. If necessary, ensure they are replaced immediately. Search for leaks using small pieces of paper or cardboard and never with fingers to avoid injuries to the skin due by high pressure oil.
- The oil can reach very high temperatures. Before performing any service on external surfaces, wait for them to completely cool.
- Never perform hasty or makeshift repairs that could compromise the correct operation of the attachment. If in doubt, always request service by specialized personnel.
- It is forbidden to perform checks and/or replace parts during operation.
- All checks and maintenance that require the removal of the safety protections shall be performed entirely at the user's risk. Therefore, we recommend that such operations be performed exclusively by specialised and authorised technicians.
- In the case of operations or repairs that need to be performed in positions that are not directly accessible from the ground, use ladders or lifting devices that are safe and that conform to national safety regulations.
- In the event of repairs near or below the attachment, make sure that there are no moving parts that can start working and that parts that are unstable by nature are not positioned on or near the attachment; always block them using adequate tools.
- Unless expressly specified by this manual, do not repair or adjust the attachment (or parts of it) during operation, in order to avoid being hooked by moving parts.
- Wear personal protective equipment whenever the attachment is in use, or when working in its vicinity.
- Only use original spare parts to replace worn parts.







- Do not make any adjustments or changes that the manufacturer has not previously agreed to and approved in writing.
- The grab must be lubricated once every 8 operating hours with the same lubricant recommended for the excavator. For the position of the grease nipples and frequency of lubrication, see the schedule on page 26.
- When the cutting blades of the grab shells are worn down to such a degree that the grab can no longer close fully, all work should be suspended immediately and the replaceable wear blades must be changed or replaced since neglect or excessive wear can lead to damage.
- Make sure the nameplate of the machine is present and legible before and after every use. Replace any damaged nameplates or order new ones using the parts list.

⚠ WARNING!

- These safety standards supplement and do not replace current local safety standards.
- Any tampering by the user shall absolve the manufacturer of all and any liability and shall render the user solely responsible to the competent authorities for the prevention of accidents.







❗ IMPORTANT!

Hydraram declines all liability for any accidents, injuries to personnel or damage to property resulting from the failure to adhere to the general safety instructions and the standards set out in this document.

Symbol	Description	Symbol	Description
	“Read the manual” Read this Use and Maintenance Manual carefully.		“Safety distance” Remain at a safe distance from the range of operation of the operating machine.
	“Burn hazard” Surfaces that can reach high temperatures resulting in burn hazards. Wait for the attachment to cool before carrying out any work on it.		“Danger of ejected material” Remain at a safe distance from the range of operation of the operating machine.
	“Crushing hazard” Do not approach the operating machine during the work cycle. In the event of maintenance, wear personal protection.		“Greasing points” Indicates the points to be lubricated.

3.6. Safety pictograms

The following pictograms indicate when it is obligatory to wear personal protective equipment (PPE)

Symbol	Description	Symbol	Description
	Protective goggles obligatory		Work clothing obligatory
	Ear defenders obligatory		Protective gloves obligatory
	Safety shoes obligatory		Hard hat obligatory

3.7. Lighting

Lighting in the work area must conform to applicable legislation law in the country where the attachment is being used and must provide good visibility at every point, not create dangerous reflections and allow for clear visibility of the controls and the entire work area up to the safety limits required for objects that may be ejected. Since the attachment has no independent lighting, the environment must be provided with general lighting of 250 to 400 lux at every point in the work area.

4. Description of the attachment

4.1. Description of the attachment

The Sorting and Demolition Grab - HDG Series is an attachment that has been fully designed and manufactured by Hydraram intended for modern industrial demolition sites which involve significant moving and sorting efforts and experts in recycling scrap. The attachment consists of a main body and grab shells. The body is fitted with a rotation plate for continuous hydraulic rotation, so as to reduce moving operations as much as possible and provide the highest level of precision.

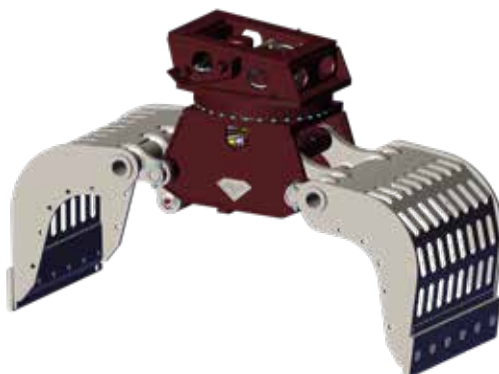
The closing force is produced by a thrust from the hydraulic cylinder, which enables the device to grab and lift loose material off the ground. Each shell is fitted with a blade at the tip, which completes the grabbing action when the shells are moved into a closed position. Always pick up a long load at its center of gravity to prevent the excavator from rotating or tipping. It is possible to rotate the demolition and sorting grab infinitely.

4.2. Technical specifications



		HDG-8R	HDG-10R	HDG-15R	HDG-25R	HDG-34R	HDG-42R	HDG-46R
Excavatorclass	t	0.7 - 1.2	0.7 - 2.0	1.2 - 3	3 - 5	3.5-5.5	4 - 6	5 - 9
Weight	kg	100	120	200	290	340	400	450
Workingpressure	bar	300	300	300	300	300	300	300
Oilflow at open/close	l/min.	15	20	25	35	35	40	50
Workingpressure rotation	bar	210	210	210	210	210	210	210
Oilflow rotation	l/min	5	5	10	10	10	12	12
Shell width	mm	300	350	450	500	500	600	700
Spread opened	mm	600	770	750	1160	1160	1400	1500
Height	mm	700	700	700	850	770	950	1000
Capacity	ltr	30	50	70	100	120	150	200
Closing force	kN	8	12	18	22	24	26	28

		HDG-52R	HDG-62R	HDG-88R	HDG-110R	HDG-130R	HDG-150R	HDG-180R
Excavatorclass	t	7 - 11	10 - 15	12 - 18	14 - 22	15 - 24	17 - 25	18 - 28
Weight	kg	560	680	980	1140	1220	1380	1520
Workingpressure	bar	320	350	350	350	350	350	350
Oilflow at open/close	l/min.	70	90	100	120	120	120	150
Workingpressure rotation	bar	210	210	210	210	210	210	210
Oilflow rotation	l/min	15	15	25	25	25	25	35
Shell width	mm	700	600	800	800	900	1000	900
Spread opened	mm	1550	1800	1800	1950	1950	1950	2100
Height	mm	1100	1150	1200	1300	1300	1300	1500
Capacity	ltr	200	300	400	500	600	700	750
Closing force	kN	30	36	45	50	50	50	62



		HDG-210R	HDG-240R	HDG-280R	HDG-310R	HDG-340R	HDG-380R	HDG-420R
Excavatorclass	t	20 - 30	22 - 32	24 - 36	25 - 38	28 - 42	30 - 45	32 - 52
Weight	kg	1640	1830	1980	2030	2280	2840	3060
Workingpressure	bar	350	350	350	350	350	350	350
Oilflow at open/close	l/min.	160	170	170	170	200	200	200
Workingpressure rotation	bar	210	210	210	210	210	210	210
Oilflow rotation	l/min	35	35	35	35	25	25	25
Shell width	mm	1000	1200	1200	1200	1200	1200	1360
Spread opened	mm	2100	2100	2250	2200	2200	2200	2200
Height	mm	1500	1500	1500	1650	1700	1700	1750
Capacity	ltr	800	850	900	900	950	1000	1100
Closing force	kN	68	72	80	80	90	95	100

		HDG-480R	HDG-520R	HDG-580R	HDG-640R	HDG-820R	HDG-1400R
Excavatorclass	t	35 - 54	42 - 64	45-80	50 - 85	80 - 140	120 - 240
Weight	kg	3420	4360	4700	5420	8120	14200
Workingpressure	bar	350	350	350	350	350	350
Oilflow at open/close	l/min.	200	250	250	300	320	350
Workingpressure rotation	bar	210	250	210	250	250	250
Oilflow rotation	l/min	35	35	50	35	35	35
Shell width	mm	1500	1500	1500	1500	1600	1800
Spread opened	mm	2400	2600	2850	3000	3500	4400
Height	mm	1800	1900	1825	2000	2300	3000
Capacity	ltr	1300	1500	1550	1600	2000	4600
Closing force	kN	110	148	152	155	180	220

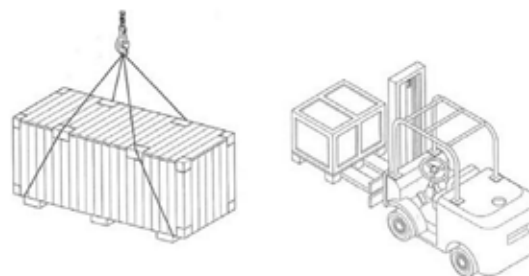
5. Installation

5.1. Moving and handling

The attachment may be shipped on wooden beams or pallets, or in a crate, depending on the destination and the customer's request.

Lifting the attachment in its packaging using cables and a gantry crane or a forklift truck.

The attachment unloading, lifting and handling operations must be carried out by personnel qualified to operate lifting equipment. Before starting operations, identify all the areas that will be affected by the attachment moving and handling operations, including loading it on the transport vehicle and installing it on the machine, and note any hazardous points.



- It is forbidden to climb on the attachment or loiter and/or pass underneath it during movement or handling.
- Unauthorized persons are forbidden to enter the movement and handling area.
- All operators must keep at a safe distance to avoid being hit if the attachment or one of its parts should fall.
- The the equipment and vehicles used to lift and transport the attachment must have sufficient load bearing capacity.
- When using lifting cables, check that they are certified and are labelled with manufacturer's information and load bearing capacity. Check for damage, broken wires and signs of wear.
- Hook the cables to the relative eyelets.

The same precautions must be taken if using chains. When using a gantry or mobile crane for lifting, ensure that they have sufficient span and load bearing capacity. Perform the set-up by moving the lifting vehicle for short distances until the condition of optimum stability is reached. Slowly lift and handle with the maximum care to avoid oscillations.

Transport of the HDG-series demolition and sorting grab must be done with the shells open to ensure optimal stability. Seal all hose ports and connections with the supplied plugs and cap nuts when the hydraulic hoses are removed to ensure that the shells stay open. If the hoses remain attached to the demolition and sorting grab for transport, ensure the hoses are inserted in the demolition and sorting grab.

An anti-slip mat and should be used if the grabs are transported on a flat surface, such as the back of a truck or lorry. The grabs should be secured with chains or straps to reduce risks of tipping or falling.

The grab may be transported with a fork-lift truck with appropriate load-bearing capacity using slow, careful movements. Refer to section 4.2. to confirm the weight the model to be transported.

⚠ WARNING!

The manufacturer may not be held liable for personal injuries or damage to property in the event that lifting systems other than those described are used.

❗ IMPORTANT

When the attachment arrives, the user must check it for any damage (breakage or significant dents) that may have occurred during shipping or unloading. If damage has occurred, immediately make it known to the transporter and add the words **“ACCEPTED WITH RESERVATIONS”** to the delivery document. In the presence of damage, submit a written claim to the transporter within 24 hours of receiving the attachment. If significant transport damage is noted at the time of delivery and/or any parts are found to be missing notify the Manufacturer immediately. It is also necessary to check the received material against the detailed list on the transport document.

5.2. Storage

If the attachment is to be stored before use, the following precautions must be taken:

- Store the attachment in a protected place;
- Lubricate all parts of the attachment;
- Protect the attachment from shocks and stress;
- Protect the attachment from humidity and large temperature variations;
- Keep the attachment away from corrosive substances.
- Store the grab on a wooden pallet with a level horizontal surface with shells in the open position for optimal stability and reduced risk of oil loss and contamination.
- Any grease cartridges should be stored in a cool, well-ventilated area away from flammable or self-igniting substances and sunlight.

⚠ WARNING!

This condition only ensures the stability of the operating machine when working on flat, horizontal and unyielding ground.

5.3. Hydraulic fluids

All hydraulic oils indicated by the excavator manufacturer can also be used for the demolition and sorting grab.

- The oil must meet viscosity class HLP 32 or higher.
- In the summer and in hot climates, oils with viscosity class HLP 68 or higher must be used.
- In all other cases, the specifications of the excavator manufacturer must be taken into account.

An oil filter must be fitted in the return line of the hydraulic system. The maximum allowable mesh size is 50 microns. It must also be fitted with a magnetic separator.

Other conditions apply when used at lower ambient temperatures. More information is provided in the section entitled Low ambient temperatures.

⚠ WARNING!

Ensure the pressure in the hydraulic system is released before connecting or disconnecting the machine to avoid damage to any surrounding personnel or the environment.

To remove small amounts of hydraulic oil from the working area and surrounding environment use an absorbent material. Once finished, seal it well in an airtight container and contact a licensed waste disposal company.

⚠ WARNING!

Never mix mineral oil with non-mineral oil. Trace amounts of different types of oil pose a risk to the excavator as well as the grab.

HDG-series demolition and sorting grabs are intended for use with mineral oils. Hydraram should be contacted before switching to a non-mineral oil. If non-mineral oil is used, the brand must be indicated when the demolition and sorting grab is brought in for repair.

5.4. Mounting the attachment on the operating machine

Two people are required to complete the attachment of the grab to the excavator. Agree on hand signals to use with your colleague to enable them to assist in correctly positioning the excavator on the demolition and sorting grab. Make sure your colleague is visible at all times since they are within the danger zone.

- Lower the arm of the excavator to position it in the adapter plate holder. **Avoid sudden movements.**

Follow the procedure outlined below if you are using a pin and bushing system:

- Follow the directions provided by a colleague to properly align the holes in the adapter plate and the excavator arm.
- Install and secure the hinge pin.
- Extend the bucket cylinder until the securing hole in the coupling aligns with the securing hole in the adapter plate.
- Install and secure the coupling pin.
- Carefully move the bucket cylinder to both end positions.

If another quick change system is used, we recommend consulting the manufacturer's manual.

5.4.1. Making the hydraulic connections

The excavator must have a suitable hydraulic system to operate the demolition and sorting grab.

Improperly installed piping and incorrectly calculated dimensions may lead to excessive oil temperatures and damage to the demolition and sorting grab. Only use lines with the dimensions specified in the chapter Technical Specifications. Verify the specified dimensions of the hydraulic lines on existing hydraulic systems. All supply and return lines for the hydraulic oil must have a sufficient internal diameter and wall thickness. Ensure the hydraulic hoses cannot be pinched.

- Switch the excavator off.
- Relieve the pressure of the hydraulic system by releasing the pressure in the hydraulic tank.
- Close all valves if quick connects are not used.

ⓘ IMPORTANT

Sand and dirt can enter the hydraulic lines and cause damage. Clean all hydraulic lines and connections before connecting the hydraulic hoses.

- Contaminated hydraulic pipes must be cleaned by a specialist company.
- Clean contaminated hydraulic pipe connections with a suitable universal degreaser/cleanser.
- Refer to information from the cleaning agent manufacturer regarding safety and use.

5.4.2. Connecting the hydraulic hoses for the 'Open' and 'Close' functions

- Remove the caps/blank flanges from ports 'A' and 'B' and store in a safe place.
- Inspect for damage.
- Replace any damaged connections.
- If the two input lines from the excavator arm have the same working pressure, connect the lines to the 'Open' and 'Close' ports being careful not to cause pinching.
- If the pressure in the two input lines differ, connect the hose with the higher operating pressure to the 'Close' port and the hose with the lower pressure to the 'Open' port being careful not to pinch the hoses.

5.4.3. Connecting the hydraulic hoses for the 'Rotate' function

- Remove the cap nuts and plugs from the connections for the 'Rotate' function and store them for future use.
- Inspect the connections for damage.
- Replace damaged connections.
- Attach the hoses to the connector for the 'Rotate' function.
- Connect both hoses for the 'Rotate' function to the arm carefully to prevent pinching.

⚠ WARNING!

Hydraulic hoses under pressure will thrash about if a bolt connection becomes loose or detached. This can cause serious injury.

- Tighten the mounting screws to the correct torque.

5.5. Detaching the demolition and sorting grab from the excavator

⚠ WARNING!

Sudden movements by the excavator can cause injury.

- Secure the excavator to prevent unexpected movement.
- Follow the instructions from the excavator manufacturer.

Hydraulic hoses under pressure will thrash about if a bolt connection becomes loose or detached. This can cause serious injury.

- Relieve the pressure in the hydraulic system before disconnecting the hydraulic hose.

The hydraulic cylinder, hoses, tubes and fittings become very hot during operation. Contact with these components can cause burns.

- Never touch hot components.
- If works need to be completed on or near hot components, wait for them to cool down first.

- Close all shut-off valves in the excavator arm system if quick connects are not used.
- Disconnect the hoses to and from the demolition and sorting grab on the side of the excavator arm.
- Seal all open hose ends.

5.5.1. Mechanical detachment

The procedure outlined below applies to a pin and bushing system. If another (quick change) system is being used, we recommend consulting the manufacturer's manual.

- Request help from a colleague when detaching the demolition and sorting grab.
- Agree on clear hand signals for moving the excavator arm.

WARNING!

Sudden movements by the excavator can cause the excavator or the demolition and sorting grab to strike your colleague. Move the excavator arm in a very slow and controlled manner and ensure that your colleague remains visible.

WARNING!



Hammering bolts out can cause splinters to fly off which can cause serious damage to the eyes.

- Wear safety goggles when hammering out bolts.

- Remove the bolt clips from the shank.
- Remove the connecting bolt with a steel pin and a hammer.
- Switch the excavator on.
- Retract the bucket cylinder.
- Remove the hinge pin with a steel pin and a hammer.
- Remove the excavator arm from the adapter plate.

5.6. Detaching the adapter plate

- Loosen the fastening screws for the adapter plate.
- Lift the adapter plate using suitable lifting equipment and place it on wooden support blocks.
- Store the mounting screws and washers for future use.

6. Operation

6.1. Pressure and temperature monitoring

The hydraulic system is under high pressure. If the hydraulic connections loosen, the hydraulic oil will spray out under high pressure. This can lead to serious injury.

- Switch the excavator and demolition and sorting grab off immediately if a leak is detected.
- Release the pressure in the hydraulic system.
- Repair any leaks before using the demolition and sorting grab again.

The hydraulic cylinder, hoses, tubes and fittings become very hot during operation. Contact with these components can cause burns.

- Never touch hot components.
- If works need to be completed on or near hot components, wait for them to cool down first.

The temperature of the hydraulic oil must not exceed 80°C. Higher temperatures will damage the seals of the hydraulic components.

- Always monitor the oil temperature.
- Turn the excavator and demolition and sorting grab off when the monitor indicates an increased oil temperature.
- Inspect the hydraulic system and the pressure relief valve.

6.2. Ambient temperature requirements

While working with the demolition and sorting grab, the oil temperature must remain between 0°C and +80°C. The full capacity of the demolition and sorting grab can be utilised at an oil temperature of approximately +60°C. Below is an outline of the standard procedure in normal ambient temperature conditions between 0°C and 30°C:

1. Ensure no persons are in the danger zone.
2. Start the excavator according to the instructions provided by the excavator manufacturer.
3. Allow the excavator to warm up until the specified operating temperature is reached.
4. Place the excavator in the desired position.

6.2.1. High ambient temperature

Only use hydraulic oils with sufficient viscosity if the demolition and sorting grab needs to work in ambient temperatures above 30°C. In summer and in tropical climates, hydraulic oil type HLP 68 meets the minimum requirements.

6.2.2. Low ambient temperature

If the demolition and sorting grab is used in ambient temperatures below 0°C do not use the demolition and sorting grab until the oil temperature is at least 0°C. Failing to meet the 0°C oil temperature requirement puts the hydraulic component seals under risk of damage.

- Start the excavator according to the instructions provided by the excavator manufacturer.
- Allow the excavator warm up until the operating temperature specified by the excavator manufacturer is reached.
- Raise the demolition and sorting grab using the arm of the excavator until it hangs vertically.
- Close, open and rotate the demolition and sorting grab while the excavator is warming up.
- Start the demolition and sorting grab when the temperature reaches 0°C.
- Perform a function test and ensure all hydraulic lines and connections are tight and that the demolition and sorting grab operates smoothly.
- Allow the engine of the excavator and the pumps to remain in operation, even during breaks.
- Start the demolition and sorting grab when the temperature reaches 0°C.
- Perform a function test and ensure all hydraulic lines and connections are tight and that the demolition and sorting grab operates smoothly.
- Allow the engine of the excavator and the pumps to remain in operation, even during breaks.

Before working with the demolition and sorting grab in ambient temperatures below -20°C, ensure the excavator is sufficiently warmed up. Preferably, the excavator and the demolition and sorting grab should

be parked in a heated, covered area when not in use.

⚠ WARNING!

Hot hydraulic oil will damage a cold hydraulic demolition and sorting grab. Do not fill the hydraulic system with hot hydraulic oil.

6.3. Disposal

The user is responsible for the correct disposal of the waste produced by the attachment in conformity with the laws in force in the country of use. Lubricants and replaced parts must be disposed of in conformity with the laws in force in the country where the attachment is used.

📌 IMPORTANT

Hydraulic oil and grease are harmful to the environment and may not penetrate the soil, nor end up in the water table or water supplies.

- Ensure no oil or grease run off.
- Dispose of oil and grease according to applicable environmental regulations.

6.3.1. Demolition and sorting grab

- Remove the demolition and sorting grab from the excavator.
- Remove the adapter plate.
- Remove the hydraulic hoses from the demolition and sorting grab.
- Dispose of the demolition and sorting grab according to applicable regulations or consult a certified specialist company.

6.3.2. Hydraulic hoses

- Drain and collect the oil from the hydraulic hoses.
- Dispose of the hydraulic hoses in accordance with applicable regulations and avoid risks to the environment.

6.3.3. Hydraulic oil

- Collect any spilled hydraulic oil.
- Dispose of it in accordance with environmental regulations.

6.3.4. Grease and grease cartridges

- Dispose of grease and partially empty grease cartridges in accordance with applicable regulations.
- Only completely empty grease cartridges can be recycled.

6.4. Dismantling

When dismantling the attachment, the plastic parts must be separated and sent to the appropriate collection centre, in conformity with the applicable legislation. As for the metal elements of the attachment, it is sufficient to separate the steel pieces from those made of other metals or alloys, so they can be correctly sent for recycling by fusion.

7. Maintenance

7.1. De-energising the attachment

Before performing any type of maintenance and/or repairs, the attachment must be disconnected from the hydraulic power supply. The residual hydraulic pressure must be released by operating the OPEN/CLOSE controls on the attachment several times while the engine is off and while depressurising the oil tank. All maintenance operations must be marked on the card in the cabin.

7.2. General information

This attachment is subject to regular maintenance operations. This include operations such as lubrication, cleaning, adjustment, replacement, inspection, tightening, etc. When performing maintenance and/or repairs, it is best to follow these **recommendations**:

- Before beginning work, display a, “**ATTACHMENT IN MAINTENANCE**” sign in a position where it can be clearly seen;
- Do not use solvents or inflammable materials;
- Take care not to spill lubricants;
- When accessing parts of the attachment, use appropriate tools for the operations to be performed;
- Do not climb on the components of the attachment because they were not designed to carry the weight of people;
- Once the work is complete, replace and secure all the safety panels that were removed and/or opened correctly;
- Carefully clean individual components with an appropriate degreaser and without using compressed air (as this just moves dirt around);
- Determine maintenance intervals based on the specific requirements in relation to the production cycle of the attachment;
- Every day, before using the attachment, the operator should visually inspect the general state of its components and request maintenance if they notice any strange noises or faulty conditions;
- Check that the mechanical parts are always well lubricated (only those components that need lubrication).

⚠ WARNING!

The manufacturer may not be held liable for the consequences of any failure to observe the recommendations listed above, or if the attachment is used in any way that differs from that stated in these instructions.

7.3. Regular maintenance

Regular maintenance must be carried out by a mechanic and includes inspections and checks intended to monitor the state of the attachment. The machine must be isolated for maintenance.

Daily Maintenance

For maintenance work, always place the grab in open position on a flat and stable surface and ensure the excavator cannot move. When servicing the hydraulic system, the hydraulic hoses should be disconnected. Prior to disconnecting the hoses, ensure no pressure remains on the hoses. See the operating instructions of the excavator for more information.

1. Visual inspection of the structure of the attachment to find any faults (specifically the saddle connections between the attachment and the operating machine).
2. Check the play between the pins and bushings of the adapter plate.
3. Check that there are no cracks in the welds
4. Visual check of the cylinder and valves, and that the fittings are tight and hydraulic tubes are undamaged.
5. Check for the metal identification plate with the declaration of conformity of the attachment and its main technical specifications.
6. Check that the hazard warning labels on the attachment are present and in good condition. Replace any that are missing or difficult to read.

The grab must be lubricated once per every 8 operating hours using the same type of grease specified for the excavator. When the interchangeable wear blades on the grab shells have worn away to that extent that the grab can no longer fully close, work must be discontinued and the interchangeable wear blades must be changed or replaced. The interchangeable wear blades also serve as the end stop for the cylinders.

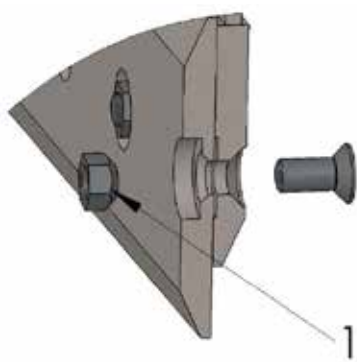
⚠ WARNING!

P.P.E. must be worn during any maintenance operations.

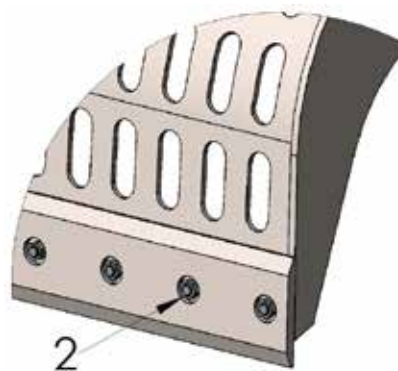
Failure to observe these requirements will release the manufacturer from any liability under the guarantee.

7.3.1. Changing or replacing wear blades

To ensure the wear blades remain securely fastened to the shell during shock and tearing loads, it is recommended to tack weld the interchangeable wear blade to the fixed blade.



1) Ensure the nut is installed with the conical side on the inside of the shell.



2) Bolts must be tightened to the torque indicated on the table on page 27.

7.3.2. Lubrication schedule

The attachment must be lubricated at all the greasing points indicated on the respective plate.



Lubrication interval: prior to every use.

- Place the demolition and sorting grab on the ground.
- Secure the excavator to prevent unexpected movement.
- Only use Q8 Ruysdael CL2 grease for lubrication.
- Place the grease gun on the grease nipples.

Lubricating pivoting points

1 = Lubricate 1 x per 8 operating hours.



Lubricating pivoting points

1 = Lubricate 1 x per 8 operating hours.



Lubricating rotator

1 = Lubricate 1 x per 8 operating hours.



7.4. Torque

The table on this page provides a summary of the torque required for the nuts and bolts on the slewing ring, blades and other components of the HDG-series demolition and sorting grab.

Bolt size	Torque (Nm)	Torque (Kg/m)	HDG Model
	Bolt 10,9	Bolt 10,9	All models
M8	40 Nm	4 Kgm	
M10	80 Nm	8 Kgm	
M12	130 Nm	13 Kgm	
M12x1,25 Caution! Fine pitch	110 Nm	11 Kgm	
M14	200 Nm	20 Kgm	
M16	300 Nm	30 Kgm	
M20	600 Nm	60 Kgm	
M24	1000 Nm	100 Kgm	
M27	1500 Nm	150 Kgm	
M30	2000 Nm	200 Kgm	
M36	3600 Nm	360 Kgm	
M39	4600 Nm	460 Kgm	

7.5. Troubleshooting

Problem	Possible cause	Possible solution
The demolition and sorting grab does not work	Ensure the valve in the Open/Close pipe is closed.	→ Open the return valve.
	Broken connector blocking Open/Close pipes.	→ Replace the defective coupling components.
	Electrical equipment in the system is faulty.	→ Inspect the faulty electrical equipment and repair if necessary.
	The toggle switch is faulty.	→ Inspect the toggle switch and replace if necessary.
	The magnet on the switch on valve is damaged.	→ Replace the magnet.
Insufficient closing force	The pipes for Open and Close are swapped.	→ Connect the cables as required.
	The operating pressure is too low.	→ Correct the operating pressure.
The rotate function does not work	Rotary motor/gear unit/slew ring/rotation transmission defect.	→ Inspect the rotary motor/gear unit/slew ring/rotation transmission and replace the defective parts.
The operating temperature is too high	The oil level in the tank is too low.	→ Check the oil level and top up if necessary.
	The pumping volume of the excavator is too high; there is a constant amount of oil spraying from the pressure reducing valve.	→ Check the speed of the excavator motor and correct. Switch the pump on.
	The pressure reducing valve is faulty or there is a defect in the valve.	→ Fit a new pressure reducing manager or a more accurate pressure relief valve.
Oil leaks at hydraulic connections	Cap nuts are loose.	→ Inspect the cap nuts and tighten.
	Hose connections are loose.	→ Inspect the connections and tighten.
Insufficient closing force	Interval between lubrication is too long.	→ Check lubrication and lubricate.



Hydraram B.V.

Meander 7, 9231DB, Surhuisterveen Holland

Tel : +31 512 365 981 - info@hydraram.com

www.hydraram.com