



OPERATING INSTRUCTIONS (Translation)

All-purpose gear drive
Type 242.0,5 242.1 242.2 242.3



1. USER GROUPS

	Duties	Qualifications
Operator	Operation, visual inspection	Instruction by means of the operating instructions; Authorised person
Specialist personnel	Assembly, disassembly, repair, maintenance	Mechanic
	Tests	Authorised person per TRBS-1203 (Technical expert)

2. SAFETY INSTRUCTIONS

Where to use the all-purpose gear drive

High quality gear drive for lifting loads from 200 - 1800 Nm.

- Operate the equipment in accordance with the information in these operating instructions.
- Only use to lift, lower and pull freely-movable loads.
- Only use when in perfect working order.
- Only allow to be operated by personnel instructed on how to do so.

Safety-conscious work

- First read the operating instructions.
- Always be conscious of safety and hazards when working.
- Observe lifting device and load during all movements.
- Immediately report any damage or defects to the person in charge.
- Repair equipment first before continuing work!

The following are not allowed:

- Overload (→ technical data, type plate, payload plate)
- Mechanical propulsion.
- Impacts, blows.
- carriage persons.
- people are not allowed to stand neither in, nor on, nor under the raised load without additional support.
- Change the load direction of crank shaft.

All purpose gear drive Application

- Not suitable for permanent operation and vibration stress.
- Not approved for use as builders' hoist (DGUV-R 100-500-2.30).
- Not approved for use on stages or in studios (DGUV-V 17).
- Not approved for use as a retractable transportation device for personnel (DGUV-R 101-005).
- Not approved for use in explosive areas/environments.
- Not suitable for aggressive environments.
- Not suitable for lifting hazardous loads.

Organisational measures

- Ensure that these operating instructions are always at hand.
- Ensure that only trained personnel work with the equipment.
- Check at regular intervals whether it is being used in a safety and hazard conscious manner.

Installation, service and repair

Only by specialist personnel!

Only use original spare parts for repairs.

Do not modify or alter safety-relevant parts!

Additional attachments must not impact safety.

Further regulations to be observed are


- German Industrial Health and Safety Ordinance (BetrSichV).
- Country-specific regulations.
- German Accident prevention regulations (DGUV-V 54).

When used as a rope winch:

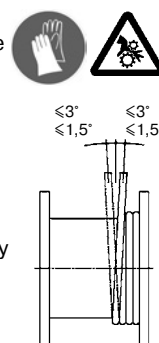
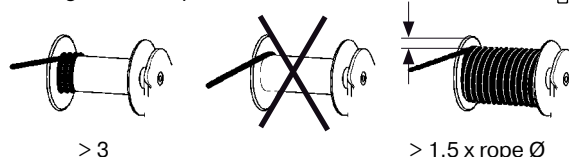
Load

- Do not leave suspended without supervision.
- Do not allow to swing.
- Do allow to fall in the rope.

Rope

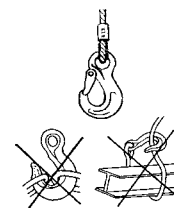
- Compliant with EN 12385-1 and EN 12385-4 and the technical data
- Maintain rope deviation angle non-rotating rope $\leq 3^\circ$ (standard) rotation-resistant rope $\leq 1.5^\circ$
- Use a rotation-resistant rope for unguided loads. This can reduce the resting period of the rope (drive mechanism group).
-  Wear on the rope is reduced if the rope is fully unwound in an unloaded state and then wound back up in layers while under load.

The length of the rope is correct if:



Lifting equipment

- Ensure sufficient load-bearing capacity.
- Only use load hooks with a safety flap.
- Use the approved load hooks with rope thimbles and rope clip.
- Attach the load properly.
- Do not use the winch rope to secure the load.



3. TECHNICAL DATA

Order no.		200143	200144	200145	200146
Type		242.0,5	242.1	242.2	242.3
Output torque	Nm	200	600	1200	1800
Gear ratio	i	6,4	18,5	27,5	42,8
Weight	kg	8	10	18	24
As winch with normal cable drum	mm	200147 ø 70	200148 ø 120	200148 ø 120	200148 ø 120
Capacity 1st rope layer	N	5000	10000	20000	30000
Capacity last rope layer	N	3300	7750	14500	22000
Crank force	N	250	190	320	300
Recommended wire rope DIN 3060 FE zn k 1770 sZ	mm	ø 6,5	ø 9	ø 12	ø 12*
Working temperature	°C	-20 ... +50			
Weight with drum	kg	10	12	20	26

* DIN 3064 SE zn k 1770 sZ

Modifications of the design and execution reserved.

Special design! Pay attention to the serial number plate and the drawing.

4. GENERAL

These high quality all-purpose gear drive with output torques of between 200 – 1800 Nm has an exclusive track record and are robust and reliable. They are suitable for compact installations.

5. CONSTRUCTION


The all-purpose gear drive have a spur gear, a safety crank secured against load induced rebound and maintenance free bearings.

6. INSTALLATION

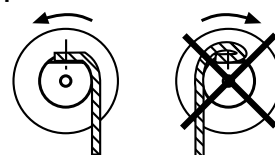
The bore pattern can be used to attach the gear drive. Suitably long screws should be used.

Should the gear drive be welded to a structure, the welds should not be in the area of the gear drive bearings.

7. FITTING THE ROPE (WHEN USED AS A ROPE WINCH)

 If rope is fed in incorrectly → (spare parts diagrams) the brake is ineffective!

It is best to hard-solder the end of the rope and lock it to the rope drum. When the crank is turned in a clockwise direction, the rope should **wind up**.



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8. OPERATION

Unfold the crank handle.

Lift the load: Turn crank clockwise.

Lower the load: Turn crank anti-clockwise.

If the crank is not turned the load is suspended safely.



Attention:

On these gear drives the load direction of the crank shaft is anti-clockwise. If load direction is changed the escapement wheel becomes in-operative.

The capacity of the first layer corresponds to the nominal capacity of the winch. This means that the capacity decreases with every further layer (refer to type-/capacity number plate for capacity of first and last layer).

8. INSPECTION

The equipment must be inspected in accordance with the conditions of use and the operating conditions at least once per year by an authorised person per TRBS 1203 (Technical expert) (testing per BetrSichV, § 10, sect.2 represents implementation of EC Directives 89/391/EEC and 2009/104/EC and the annual occupational safety inspection per DGUV-V 54, §23, sect. 2 and DGUV-G 309-007).

These inspections must be documented:

- Before commissioning.
- After significant alterations before recommissioning.
- At least once per year.
- In the event of unusual occurrences arising that could have detrimental effects on the safety of the winch (extraordinary tests, e.g. after a long period of inactivity, accidents, natural events).
- After repair works that could have an influence on the safety of the winch.

Technical experts are persons, who have sufficient knowledge based on their specialist training and experience, in the areas of winches, lift and pull systems and the relevant official occupational health and safety rules, accident prevention regulations, guidelines and generally accepted engineering rules (e.g. EN standards), to evaluate the operational safety of winches, and lift and pull systems.

Technical experts are to be nominated by the operator of the equipment. Performance of the annual occupational safety inspection as well as the training required to obtain the aforementioned knowledge and skills can be provided by haacon hebetechnik.

9. MAINTENANCE RECOMMENDATION

The operator determines the intervals themselves based on frequency of use and the operating conditions.

- Regular cleaning, no steam jets!
- Carry out visual check on inaccessible brakes / locks every 5 years at the latest, replace brake pads as required.
- General overhaul by the manufacturer after 10 years at the latest.



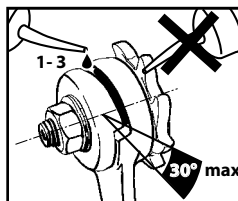
CAUTION!

Only perform inspection, maintenance and repair work on an unloaded hoist. Only allow work on brakes and locks to be performed by qualified specialist personnel.

Maintenance and inspection work	Intervals
Visual check of the rope hooks (load carrier)	Before every use
Function of the winch	
Condition of the rope and lifting equipment	
Brake function under load	
Grease bearing of drive pinion	Quarterly
Check rope for wear acc. to DIN ISO 4309 and service	
Check fastening bolts for secure seating	Annually
Check all parts of the winch and crank for wear, if applicable, replace defective parts and lubricate.	
Check and wait for the lock (see below)	
Check type plate for legibility	
Have an inspection performed by an expert	

Lubricant recommendations: Multi-purpose grease per DIN 51502 K3K-20

Safety crank



If sluggishness occurs during lowering, pour a few drops of oil into the gap in the crank cam.

Safety cranks with a gap aperture $>30^\circ$ should be replaced. Repair must be carried out by only by the manufacturer.



CAUTION!

Only disassemble the crank, ratchet brace and locking pawl when the equipment is not under load!
Do not oil or grease the brake pads!

» Double acting locking, brake head (optional)



ATTENTION!

Only dismantle the brake head in an unloaded state.
Only to be checked and serviced by Technical experts.

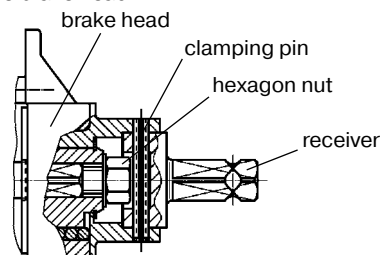
Maintenance and service work	Service intervals
Check braking torque (→ following description) Check all parts of the brake head for wear, relubricate and if necessary replace defective parts.	Annually

Recommended lubricants (brake head):

DIVINOL grease Fibrous 2 acc. to DIN 51502 KP2K-20

Replacement of brake head (→ Spare part drawing)

- Relieve the tension on the winch (secure any loads to be lifted in an appropriate manner) or disassemble the winch and lay it down horizontally.
- Knock out the clamping sleeve.
- Detach the receptacle.
- Loosen the nut (SW 24).
- Dismount the brake head.



Checking the braking torque

- Remove the brake head (see above) with the brake head underside facing up. The cast iron housing must not turn.



All moving parts of the brake head must still be able to move after it is attached.

- Measure the torque on the square output square drive with a torque gauge.
Perform one clockwise measurement and one anticlockwise measurement.
- The torque of a new brake head is $>> 90 \text{ Nm}$.



Do not exceed a braking torque of 90 Nm.
Replace the brake head!

Assemble the brake head in the reverse sequence. When doing so, pay attention to the following:

- The bolt must dip in the brake heads' slot hole (Torque support).
- Tighten hex nut with 90 Nm.

» Double acting locking, crank (optional)



ATTENTION!

Only dismantle the brake head in an unloaded state.



When the load is lowered, the housing of the lock heats up! If, while working with excessive weight, the permissible operating temperature ($-20/+90^\circ\text{C}$) is exceeded, stop using the crank and continue only when the housing has cooled down sufficiently.



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Check daily, before every use

- The crank must be able to **move easily** back and forth in small range.
- The square shaft must not move when the crank arm moves!
- The range of movement must
 - be at least 5° (3 cm on the crank handle).
 - not exceed 20° (9 cm on the crank handle).



- If the crank arm cannot move easily or
- if the movement range becomes larger or smaller than indicated, the brake has been damaged or is inoperable.

The equipment must not be used under any circumstances and should be checked immediately by a technical expert.



An immediate inspection by a professional should be performed if:

- the crank arm bounces when the load is being lowered.
- the crank arm blocks during the rotation of a small load.
- the crank squeaks.

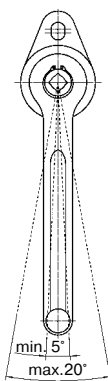
Lubrication

The crank is initially lubricated by the manufacturer with a long-term lubricant. The lubricant durability depends on the operating environment (weather conditions) and usage intensity. In most cases it is sufficient to lubricate the safety crank during the scheduled inspection intervals.

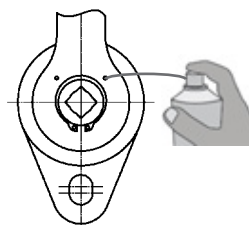
Lubrication with the appropriate oil can be performed by the operator. By doing this, deposits and contamination, as well as old lubricant, will be dissolved and washed out, and the rust protection refreshed.



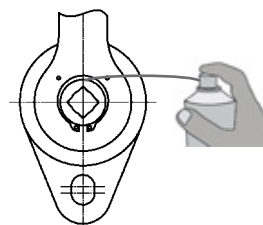
Even a single lubrication with oil will destroy the longterm effect of the original lubricant. Once it is done, oil lubricant has to be repeated regularly in short intervals, especially if under the influence of bad weather or aggressive substances. Furthermore, oil lubrication decreases the ease of operation while working with heavy loads.



Lubrication with fine mechanics oil



Spray oil into lubrication holes



Spray oil into the gaps of the crank arm seat

- Remove all weight from the crank.
- Put the crank in the vertical position **up**.
- Spray the oil generously into the 2 lubrication holes and into the narrow gap between the crank and the security ring.
- Divide the oil evenly by crank arm rotation in both directions. Repeat.
- Use only lubricants mentioned.



Lubrication performed by a non-expert could lead to brake failure. Severe danger of serious accidents.



No degreasing agent, varnish or paint should be poured through the gap on the front and back side into the inner part of the crank. This could lead to brake failure. Severe danger of serious accidents!

Lubricant recommendations (double acting locking, crank):

Fine mechanics and care oils – e.g. WD40 or Ballistol.

Lubricants that are not acceptable:

Greases, pastes and thick oils.
Oils with adhesives (chain oil).
Lubricants that contain MoS₂.

10. SPARE PARTS

When ordering spare parts it is essential to quote:

- The type and serial number of the equipment / item and part number

11. DISASSEMBLY, DISPOSAL

- Make sure to observe the safety instructions.
- Dispose of the equipment and the substances within it in an environmentally responsible manner.

EU Installation Declaration		haacon hebetechnik gmbh Josef-Haamann-Straße 6 D-97896 Freudenberg/Main	haacon
Manufacturer:	haacon hebetechnik gmbh Josef-Haamann-Straße 6 D-97896 Freudenberg/Main	Phone +49 (0) 9375 / 84-0 Fax +49 (0) 9375 / 8466	
The product			
Product name:	All purpose gear drive	Preceding gear box	Winch
Type:	242 2434 T242	4231	4148 4176
Load capacity range:	- 1800 Nm	- 20 Nm	- 1980 Nm
conforms with the basic requirements of the directive Machines (2006/42/EG)			
Appendix I, article			
1.1.2	Basic for the integration of safety		
1.1.3	Materials and products		
1.1.5	Construction of the machine regarding its handling		
1.3.2	Risk of breakage during operation		
1.3.4	Risks by surface, edges and corners		
1.3.7	Risks caused by moving parts		
1.3.9	Risk of uncontrolled movements		
1.7	Information		
4.1.2	Protective measures against mechanical hazards		
4.3.3	Machines to lift loads		
4.4	Operating instructions		
The product is an incomplete machine as per machine directive (2006/42/EG). The product must not be taken into operation until it is determined that the machine, in which it is to be installed conforms with the machine directive (2006/42/EG).			
If the product is changed significantly, it will lose this conformity declared by the manufacturer.			
The manufacturer agrees to submit the specific documentation pertaining to this product to individual state institutions electronically, if so requested.			
The specific technical documentation as outlined in Appendix VII Part B were compiled.			
Responsible for the documentation:	haacon hebetechnik gmbh, Construction Josef-Haamann-Straße 6, D-97896 Freudenberg/Main		
Signed by:			
	Freudenberg, 05.07.2016	 on behalf of Holger Birkholz (Head of Construction)	 on behalf of Thilo Müller (Head of Quality Management)
gb	Edition 6; 07/16	092010 of 05.07.2016	

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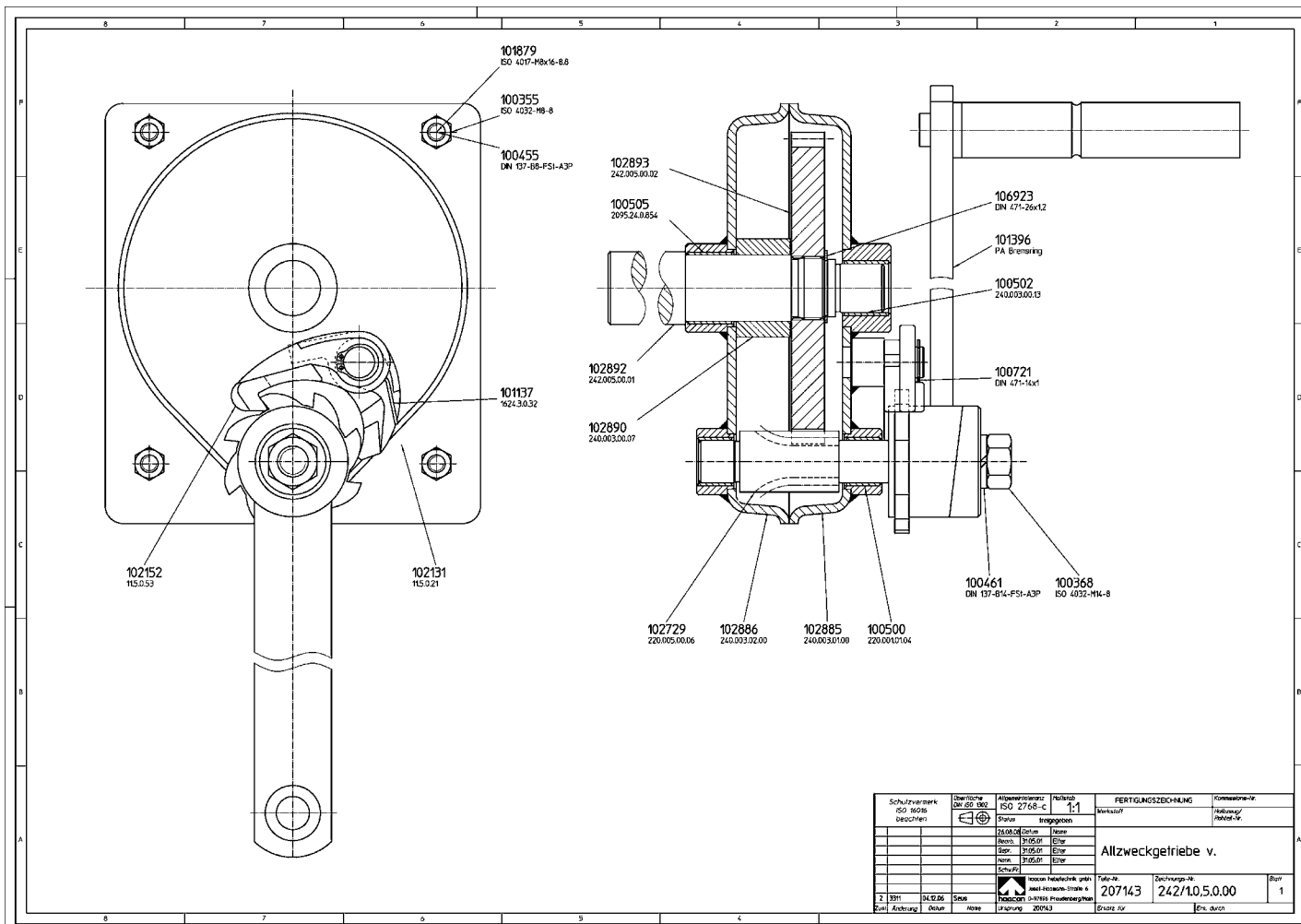
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