

Annual RunUp: Rack & Pinion Hoist

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1. Outline

This procedure is intended for Annual Inspection of all Rack & Pinion Materials Hoists and details the inspection items as listed on Form 0506 “Annual Sheet: Rack & Pinion Hoist”. The results of the inspection are entered into the *TRACS Repair System* as a completed Work Order with the Repair Type of “YEAR”. An Annual Inspection is carried out prior to and with a Run-up Inspection for Rack & Pinion Hoists as detailed in “Form 0507 Run-up Procedure: Rack & Pinion Hoists”

2. Preparation

Draw a copy of “Form 0506 Annual Sheet: Rack & Pinion Hoist” from the office. Record the Hoist Equipment ID from the stamped number “DDGG-XXX” where “XXX” is the unique item number from the top of the rear stabiliser on the motor side. Enter the Hoist details, the Inspector’s name and the date.

Place the Hoist on a firm level surface with sufficient clear working space around the Hoist. Ensure that there is adequate strong direct lighting.

The Inspector should read and thoroughly understand the operation and control of the particular Hoist before use, found in the Operating Instructions for the particular Hoist - see the Equipment Manual.

3. Glossary

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| <i>All Hoists:</i> | A reference to all Rack & Pinion Hoists. |
| <i>Geda Hoists:</i> | A reference to Hoists manufactured by Geda Dechintreiter only. |
| <i>Maber Hoists:</i> | A reference to Hoists manufactured by Maber Costruzioni only. |
| <i>Control Box:</i> | Electrical box mounted on the cable drum, containing the operating indicator lamps, main isolator key switch and landing gate interlock socket. |
| <i>Switch Box:</i> | Electrical box mounted on the Hoist trolley. |
| <i>Run Condition:</i> | Hoist condition where operation is possible and only the green indicator lamp on the <i>Control Box</i> is lit. |
| <i>Hoist Lockout:</i> | Hoist condition where operation is not possible due an <i>Interlock Switch</i> or the EMERGENCY-OFF control on the <i>Rigger’s Control</i> being set. This condition on the <i>Control Box</i> is shown on <i>Geda Hoists</i> when the top red lamp only is lit, and on <i>Maber Hoists</i> as no lamps lit. |
| <i>Interlock Switch:</i> | Electric switch connected to a Hoist part that causes a <i>Hoist Lockout</i> condition when set. |
| <i>Pendant Control:</i> | Hand held control used to operate the Hoist under normal conditions. |
| <i>Rigger’s Control:</i> | Used for erection of the Hoist. The control is platform mounted on <i>Geda Hoists</i> , and as a hand-held pendant on <i>Maber Hoists</i> . |
| <i>Drop Test Control:</i> | Hand-held control used for performing Drop Tests on all <i>Geda Hoists</i> and later series <i>Maber Hoists</i> . |
| <i>Drop Test:</i> | Action where the effectiveness of the Overspeed Governor is tested. |
| <i>Manual Descent Device:</i> | A device for opening the motor brake to return the platform to ground. |

4. Hazard and Risk Assessment

A Hazard Assessment should be conducted before the start of work with this equipment and a Risk Management strategy adopted. Failure to use Risk Management could result in injury and/or death. The checklist should incorporate, but not be limited to the following:

| Hazard | Risk | Control |
|-----------------------------------|----------|--|
| Falling from mast or platform | Moderate | Do not climb out of the platform at height; use the Rigger's Deck for tie or maintenance work. Take care when entering or leaving the Rigger's Deck due to the opening between deck and handrail. Do not stand on the Rigger's Deck handrail. Use Height Safety equipment if adding more than two mast sections. |
| Collapse or Tipping of the Hoist | Moderate | Ensure Hoist is placed on a firm stable floor space and the Hoist base under the mast is in firm contact with the floor. Check all stabilisers are firm against the ground and the Hoist is level in all planes. Check mast bolts are tight. Ensure a tie to a firm structure is placed within the first 3m. |
| Crushing from parts of the Hoist | Moderate | Do not stand under a raised platform without bracing under the platform and electrically isolating the Hoist. Exercise care when lowering or performing a <i>Drop Test</i> on a Hoist. Do not allow body parts to come between Hoist parts. Take care when moving test weights. |
| Electrocution | Low | Inspect power supply lead and plug before use. Check the Hoist for electrical insulation (Mega test) before use. Do not operate with faulty electrical parts. Only use a protected power supply. |
| Part or whole of the load falling | Low | Ensure that test weights used are structurally sound and any loose parts are secured. Ensure the test weight will not move during Hoist operation. Take care when moving test weights. Ensure loose tools are not left on the Hoist during operation |
| Slipping or tripping | Low | Maintain a neat tidy workspace. Hang all leads in the air. |
| Ergonomics | Low | Adopt good lifting techniques when adding/removing mast sections or loading/unloading the platform to reduce the risk of back injury. |

5. General Inspection

The paragraphs below relate to the inspection items on Form 0506 "Annual Sheet: Rack & Pinion Hoist" and are related by the alphabetical reference.

A) Inspect the Annual Inspection plate on the motor cover. Verify that the last Annual Inspection performed date was more than 1 year ago.
Check that the Manufacturer's ID plate is present and readable. *Maber* plates are on the platform mast cover, *Geda* plates are found on the right hand side of the platform *Trolley*.

B) Check the following signs are present and readable.

All Hoists

- 2off double sided "Load Capacity" signs attached to the platform meshed sides.
- 1off "Load Capacity" sign attached to the *Control Box*.
- 1off "Operator required" sign on the *Control Box*
- 1off "Conveyor & Hoist" sign on the *Control Box*.
- 1off "Electrical Hazard" sign on the *Switch Box*.
- 1off "Conveyor & Hoist" sign on the *Switch Box*.

Geda Hoists

- 1off Geda #17918 "Assembly" sign on the platform mast cover
- 1off Geda "Model" sign on the platform mast cover.
- 1off "Rigger's Control" sign on the *Switch Box*.
- 2off #17597 Geda "Warning" signs on the base mast.
- 1off "Governor Direction" sign on the Overspeed Governor cover.

C) Ensure that current copy of the Operating Instructions for the type of Hoist is present in the Instruction Holder attached to the *Control Box*. Check the "Operating Instructions Enclosed" sign on the holder is readable

D) Inspect the general condition of the Hoist. Verify the ability of the Hoist to sustain 12 months of service. Run the Hoist checking for any unusual occurrences.

6. Gearbox Maintenance

All maintenance on the Motor and Gearbox assembly should be done with the platform at the ground on the bottom Working-Limit switch with the power off. Remove the plug from the power supply, switch off the main key switch and put the key in your pocket.

- E) Check the oil level by opening the level cap. Oil should ooze out if at the correct level. Top up if required.
- F) Clean both filler and level caps thoroughly, especially any magnetic caps.
- G) **5yr Maintenance:** Open both the filler plug and the drain plug on the gearbox unit and allow the gearbox oil to empty completely. Clean filler, level and drain caps thoroughly, especially any magnetic caps. Replace the drain plug and fill the gearbox with approximately 400ml of diesel as a flushing oil. Replace the filler cap. Restore power and run the Hoist for 2-3 minutes to dislodge any loose particles in the gearbox. Return the Hoist to the ground and disable as described above. Remove the filler and drain plugs and remove the flushing oil.
- H) Replace the drain plug. Fill with BP “Energol GR-XP 100” or similar gear oil to the gearbox capacity. *Geda Hoists* require 700 to 800ml, while *Maber Hoists* do not state an oil capacity. Replace the filler plug.

7. Overspeed Governor Test

The following procedure details the method used to test the Overspeed Governor Device, which is designed to bring a platform to a damped stop that is travelling downwards at a speed greater than a pre-set trigger speed. This test is also known as a “Drop Test”.

The application of the test may be done on *All Hoists* by manually opening the motor brake and allowing the platform to accelerate downward under the force of gravity until the trigger speed is reached. Alternatively, *Geda Hoists* and later series *Maber Hoists* may have the motor brake released by use of a *Drop Test Pendant*.

At least 3 mast sections will need to be added to have a minimum of 3.5m of working mast for the test. The Hoist must be tied in to an adequate structure within 3m from the ground. The first test is done with no load

- I) Return the platform to the ground and open the Overspeed Governor cover, checking that there are no damaged parts. Replace the cover.
- J) Attach the brake-opening device.
 - All Hoists:* screw in the *Manual Descent Device* and attach a rope to the handle.
 - Geda Hoists:* Remove the cover from the socket on the right-hand underside of the *Switch Box*. Plug in the *Drop Test Pendant*.
 - Maber Hoists:* On later series Hoists, remove the cover from the small plug above the junction of the trailing cable from the cable drum and plug in the *Drop Test Pendant*.
- K) Raise the Hoist to at least 3.5m from the Hoist underside to the ground. Open the motor brake by pulling on the rope attached to the *Manual Descent Device* or by pressing the DOWN BUTTON on the *Drop Test Pendant* depending on the Model of Hoist. Allow the platform to accelerate to the ground under gravity. Visually note where the Overspeed Governor Device is triggered. Measure from this point to where the platform stopped. This distance must be around 300mm.
- L) It will not be possible to drive the Hoist downward due to the mechanical lock provided by the Overspeed Governor. On *Geda Hoists* the Governor cover will have rotated and an *Interlock Switch* will be set, forcing a *Hoist Lockout* condition. Verify that this condition exists. On *Maber Hoists*, a *Run Condition* will be shown. **Do not attempt to operate in a DOWN direction.**
- M) Release the *Overspeed Governor* by pressing the UP BUTTON on either the *Drop Test Pendant* or the *Pendant Control* depending on the Model. Allow the Hoist to raise 300mm only.
- N) Return the platform to ground by opening the motor brake as described in K) but do not allow the Hoist to gain any speed. Descend slowly.
- O) Open the *Overspeed Governor* cover and inspect the internal components and ensure there is no damage to any parts.
- P) Replace the cover and on *Geda Hoists*, reset the *Interlock Switch*. Verify that a *Run Condition* has been restored to the Hoist.
- Q) Repeat the Test from K) to P) with a load equal to the capacity of the Hoist.
- R) On completion of the Test, remove all test equipment and return the Hoist to normal service.
- S) Note any parts used and their Part Numbers
- T) Record the working time of all Personnel used for this Inspection

9. Fault Finding

Refer to separate Form 0510 “Procedure: Fault Finding Rack & Pinion Hoists” in the equipment manual for Rack & Pinion trouble shooting

RUN-UP INSPECTION IS COMPLETE