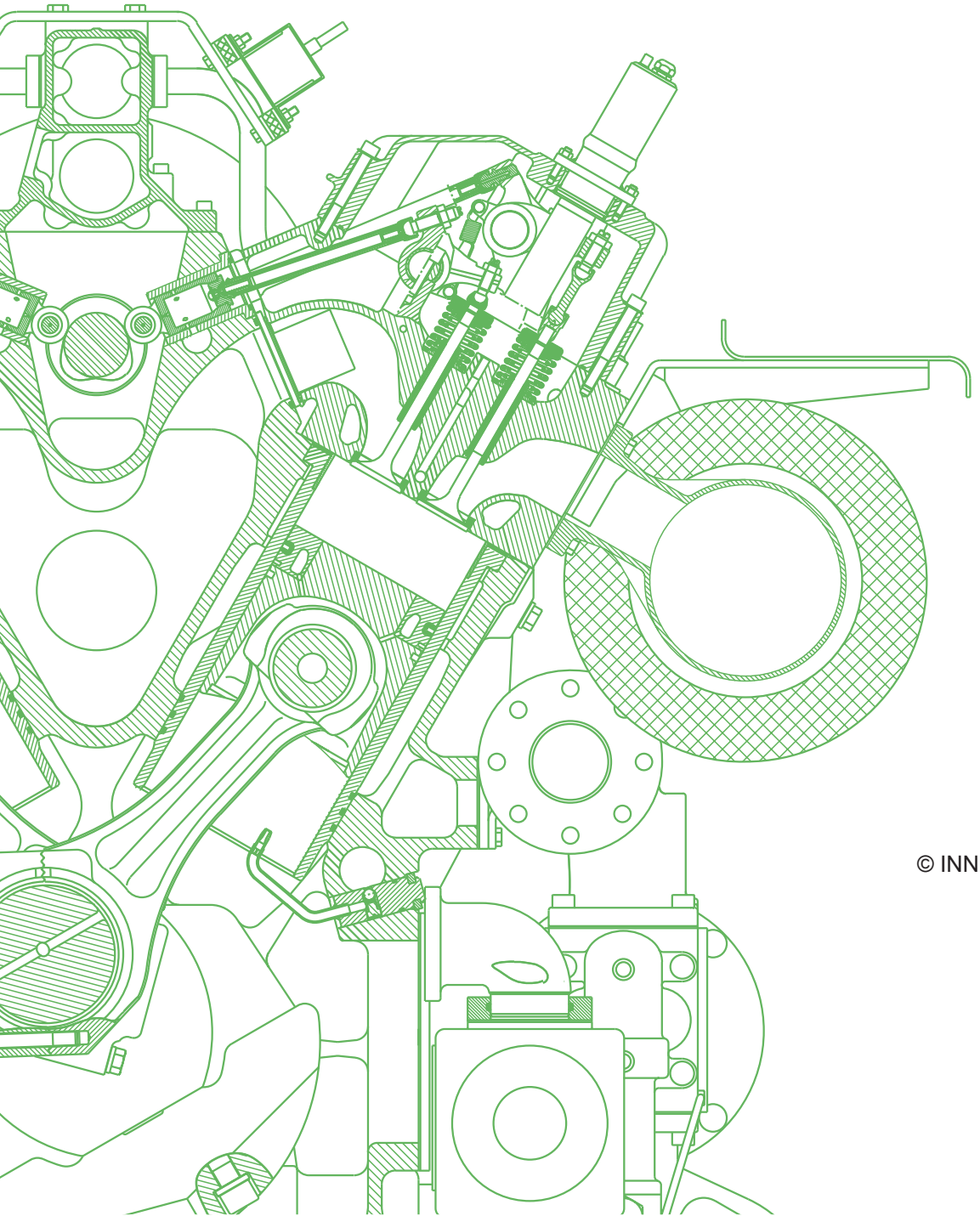
JENBACHER

# W 8035 A0

Maintenance Instruction

## Generator (LVSI804, MVSI804, HVSI804)



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**1 Scope ..... 1**
**2 Purpose ..... 1**
**3 Maintenance interval ..... 1**
**4 Safety information ..... 3**
**5 Additional information ..... 3**
5.1 Transport safety pegs ..... 3
5.2 General overview of the generator ..... 3
5.3 Decommissioning the plant ..... 4
5.4 Recommissioning the plant ..... 4
**6 Work steps ..... 5**
6.1 Daily check ..... 5
7.1.1 Grid fault check (if installed) ..... 6
7.1.2 Record bearing temperature ..... 7
6.2 Relubricating the bearing(s) ..... 8
6.3 Inspecting and cleaning the generator ..... 10
6.4 Measuring the insulation/polarisation ..... 11
6.5 Carrying out a vibration measurement and replacing the earth brush (if fitted) ..... 11
6.6 Replacing the bearing(s) ..... 11
6.7 Overhauling the generator ..... 11
**7 Revision code ..... 11**

**The target recipients of this document are:**

Customers, distribution partners, service partners, commissioning partners, subsidiaries/branches, Jenbach location

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## 1 Scope

This Maintenance Instruction (W) applies to the following generators:

- Cummins Type LVSI804, MVSI804 and HVSI804

## 2 Purpose

This Maintenance Instruction (W) lays down the maintenance interval and describes the following activities:

- ⇨ Daily check
- ⇨ Relubricating the bearing(s)


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## 3 Maintenance interval

| Maintenance work | Maintenance interval | Carried out by *) |
|---|---|---|
| ⇨ Daily check | Daily | K |
| ⇨ Relubricating the bearing(s) | 1,000 Oh 1) | K |
| ⇨ Inspecting and cleaning the generator | 10,000 Oh | INNIO |
| ⇨ Measuring the insulation/polarisation | 10,000 Oh 2) | INNIO |
| ⇨ Carrying out a vibration measurement and replacing the earth brush (if fitted) | 10,000 Oh | INNIO |
| ⇨ Replacing the bearing(s) | 20,000 Oh | INNIO |
| ⇨ Overhauling the generator | 60,000 Oh / 15,000 starts | INNIO |

1) If the equipment is used for less than 1,000 operating hours a year, the generator should be regreased once annually.
2) or more than 3 months' standstill.

### Valid for:

• Type 4: Maintenance schedule A Maintenance schedule E
• Type 6: Maintenance schedule A

| Maintenance work | Maintenance interval | Carried out by *) |
|---|---|---|
| ⇨ Daily check | Daily | K |
| ⇨ Relubricating the bearing(s) | 1,000 Oh 1) | K |
| ⇨ Inspecting and cleaning the generator | 10,000 Oh | INNIO |
| ⇨ Measuring the insulation/polarisation | 10,000 Oh 2) | INNIO |
| ⇨ Carrying out a vibration measurement and replacing the earth brush (if fitted) | 10,000 Oh | INNIO |
| ⇨ Replacing the bearing(s) | 20,000 Oh | INNIO |
| ⇨ Overhauling the generator | 60,000 Oh | INNIO |

1) If the equipment is used for less than 1,000 operating hours a year, the generator should be regreased once annually.
2) or more than 3 months' standstill.

### Valid for:

• Type 4: Maintenance schedule B Maintenance schedule D
• Type 6: Maintenance schedule B Maintenance schedule D

| *) Carried out by | This column defines who carries out the maintenance work. |
|---|---|
| K | This activity is to be carried out by the customer, INNIO or a company selected and authorised by INNIO to carry out this work. |
| INNIO | This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work. |


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## 4 Safety information

**⚠ WARNING**



**Personal injury**

Failure to use personal protective equipment and comply with safety instructions or employee protection information may lead to personal injury.

- Wear the relevant personal protective equipment (PPE).
- Observe the safety instructions as per TA 2300-0005.
- Observe the employee protection information as per TA 2300-0001.

## 5 Additional information

**Relevant documents**

**E 8030** – Operational data generator – Regreasing

**I 8030 0** - Inspection plan by grid code events

**TA 1000-0044** – Transport safety pegs

**TA 1100-0105** – Engine shut-down

**TA 2300-0001** – Employee protection

**TA 2300-0005** – Safety instruction

**TA 2300-0010** – Guidelines for using the LOTO kit

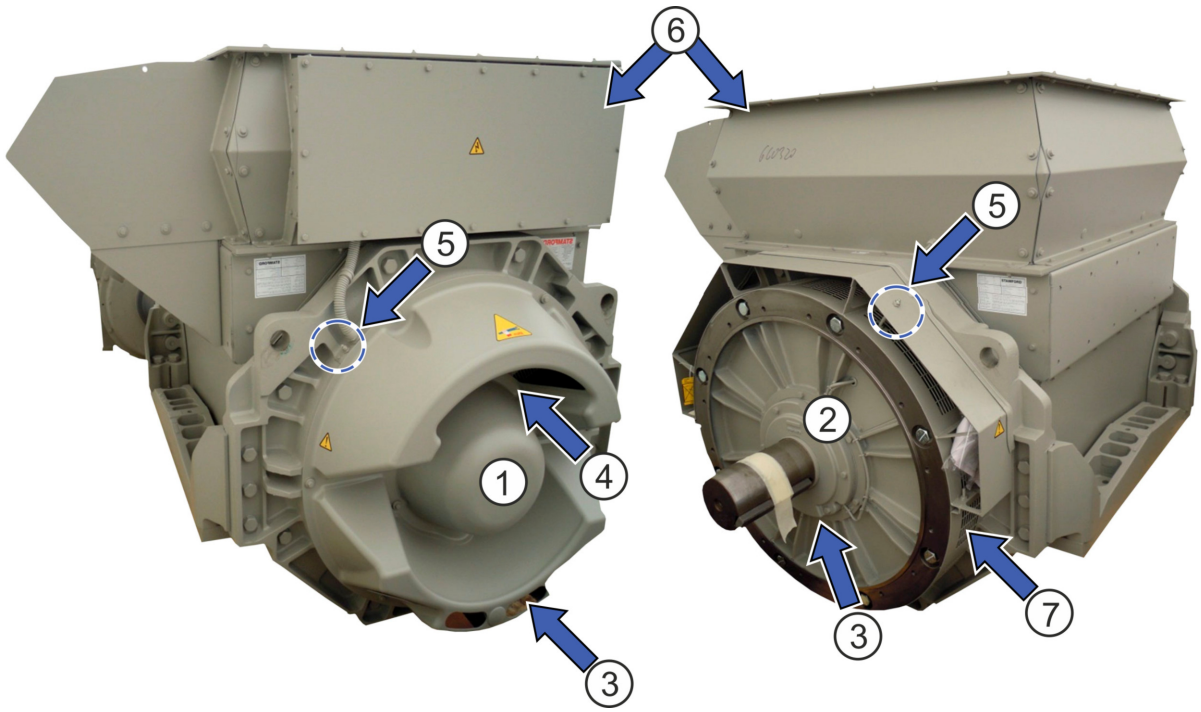
### 5.1 Transport safety pegs

The generator is fitted with transport safety pegs to prevent the bearings from being damaged during transport. Remove all the transport safety pegs before commissioning and keep them for possible future transport – see TA 1000-0044.

### 5.2 General overview of the generator

The generator shown here is a MVSI 804, but the appearance can vary depending on the generator type.


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| | | | |
|---|---|---|---|
| ① | Non-drive end | ⑤ | Grease nipple |
| ② | Drive end | ⑥ | Terminal box |
| ③ | Grease outlet | ⑦ | Ventilation outlet grille |
| ④ | Ventilation inlet grille | | |

## 5.3 Decommissioning the plant

When prolonged scheduled or unscheduled downtimes occur, e.g. after the heating season when operating as a cogeneration plant, the plant must be prepared (preserved) for its downtime according to its geographical location (climate, proximity of the sea, etc.). As conditions can vary enormously, we recommend that you consult a suitable specialist firm concerning the measures to be taken or contract it to carry out the work.

**When the generator is out of service for a prolonged period, the rotor must be rotated every two months to ensure that the rolling elements change position (a small change of position will suffice).**
**Do not rotate the rotor at the fan but use the engine flywheel.**

## 5.4 Recommissioning the plant

When the installation is being recommissioned after 6 months, the bearings must be thoroughly lubricated with the specified quantity of grease to replace the old grease.

Where the plant is to be recommissioned after a long period of downtime (e.g. 2 years), the bearings must be replaced as the grease starts to resinify over time, which makes the bearings unusable.

Of course, before recommissioning the plant, you must make sure that it is back in its normal operational condition.


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# 6 Work steps

## 6.1 Daily check

### Visual Inspection

- Check that the bolts are seated properly and inspect for damage.
- Check the generator (terminal box, generator surface, grease nipples, ventilation grilles, etc.) for dirt and damage.

### Checking for smoke and smells

Shut down the engine immediately if smoke or unusual smells are noticed!

**⚠ WARNING**



**Danger from unauthorised restarting**

Serious injuries such as cutting, crushing, severing or shearing of body parts due to unintentional contact with rotating or moving machine parts.

- ➢ Shut down the engine as described in TA 1100-0105.
- ➢ Secure the engine against unauthorised restarting in accordance with TA 2300-0010.

### Checking for unusual noises during operation

Shut down the engine immediately if unusual noises are noticed. Contact the Jenbacher Customer Service or a company selected by INNIO authorised to carry out work on the generator!

**⚠ WARNING**



**Danger from unauthorised restarting**

Serious injuries such as cutting, crushing, severing or shearing of body parts due to unintentional contact with rotating or moving machine parts.

- ➢ Shut down the engine as described in TA 1100-0105.
- ➢ Secure the engine against unauthorised restarting in accordance with TA 2300-0010.

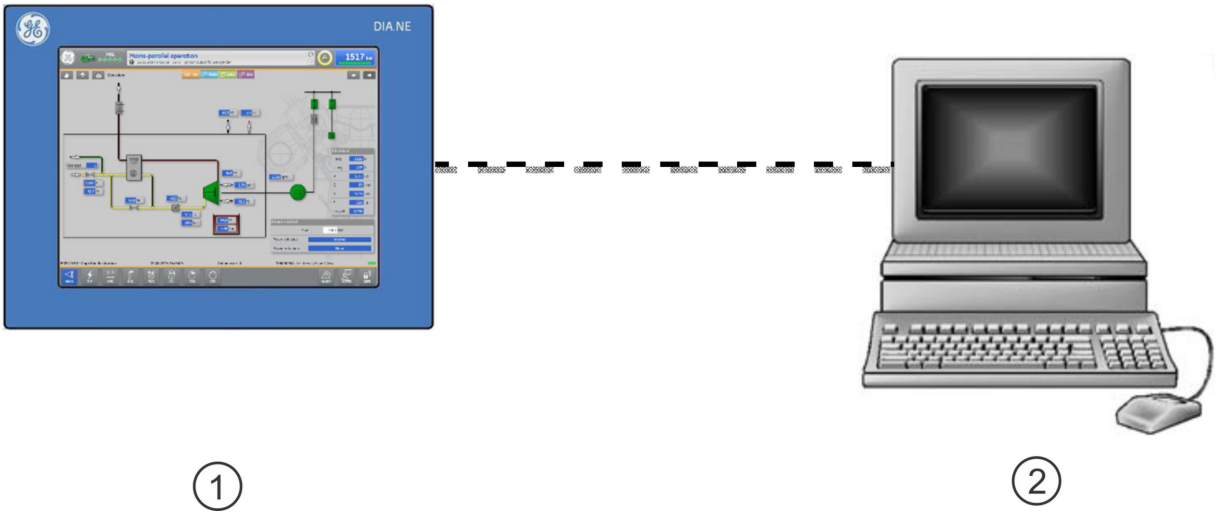

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### 6.1.1 Grid fault check (if installed)

**General:**

If a mains failure occurs that causes a defined changed in the voltage, current or frequency at the generator, a warning or trip message is displayed on the DIA.NE screen (or optionally on a remote computer).

The DIA.NE screen shown below is only a symbolic representation, as different versions of the engine management exist.



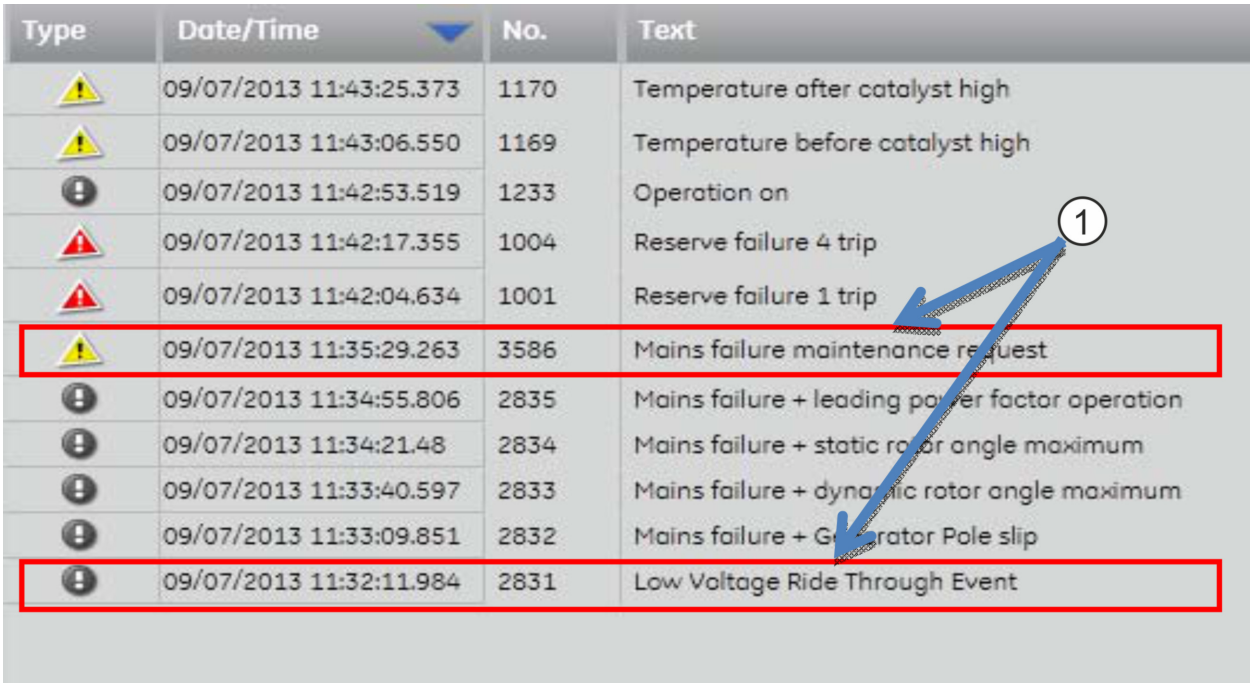

*DIA.NE system*

| | | | |
|---|---|---|---|
| ① | DIA.NE (engine management) | ② | Remote computer (optional) |

**Course of action with DIA.NE systems:**

Press the "Alarm" button in the DIA.NE system and search for the mains failures listed below:


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| Type | Date/Time | No. | Text |
|---|---|---|---|
| ⚠ | 09/07/2013 11:43:25.373 | 1170 | Temperature after catalyst high |
| ⚠ | 09/07/2013 11:43:06.550 | 1169 | Temperature before catalyst high |
| ● | 09/07/2013 11:42:53.519 | 1233 | Operation on |
| ▲ | 09/07/2013 11:42:17.355 | 1004 | Reserve failure 4 trip |
| ▲ | 09/07/2013 11:42:04.634 | 1001 | Reserve failure 1 trip |
| ⚠ | 09/07/2013 11:35:29.263 | 3586 | Mains failure maintenance request |
| ● | 09/07/2013 11:34:55.806 | 2835 | Mains failure + leading power factor operation |
| ● | 09/07/2013 11:34:21.48 | 2834 | Mains failure + static rotor angle maximum |
| ● | 09/07/2013 11:33:40.597 | 2833 | Mains failure + dynamic rotor angle maximum |
| ● | 09/07/2013 11:33:09.851 | 2832 | Mains failure + Generator Pole slip |
| ● | 09/07/2013 11:32:11.984 | 2831 | Low Voltage Ride Through Event |

① Grid faults

If any of the above operational messages are displayed, carry out the measures specified in Inspection Instruction I 8030 0!

These error messages are generally due to a mains failure. Consult the Error message list to find out the exact mains events.

### 6.1.2 Record bearing temperature

Data collection when monitoring the temperature of drive bearings and non-drive bearings:

Enter the measurements in the **operational data booklet**.

**General:**

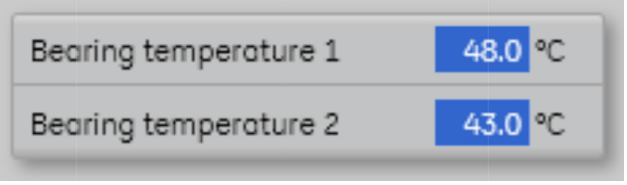
Best practice is to take the first measurement (see Initial Commissioning data sheet) as a baseline in order to establish a trend in the deterioration of the condition of the bearings. Temperature fluctuations without any apparent reason (such as changes in ambient temperature) indicate a malfunction somewhere, in which case the bearing in question should be checked.

Check the temperature of the bearings when re-greasing them. The bearing temperature may increase during the lubrication process, but should return to normal operating values after a few minutes of operation.

**Test method:**

Read off and log the bearing temperature value on the DIA.NE or remote computer.


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*The illustration may vary due to the different DIA.NE system applications.*

**Assessment criterion:**

The temperature rise should remain within the limits. If the temperature increases continuously despite the load being constant, caution should be exercised.

**Bearing temperature limits:**

Warning: > 85 °C

Trip: > 90 °C

**Procedure in the event of deviations:**

If limit values set in the system are reached, a warning message/engine shutdown is activated automatically. If a limit value is found to be exceeded during the inspection, shut down the engine at once. Contact the Jenbacher customer service!

**⚠ WARNING**



**Danger from unauthorised restarting**

Serious injuries such as cutting, crushing, severing or shearing of body parts due to unintentional contact with rotating or moving machine parts.

- ➢ Shut down the engine as described in TA 1100-0105.
- ➢ Secure the engine against unauthorised restarting in accordance with TA 2300-0010.

## 6.2 Relubricating the bearing(s)

**Notes:**

- Failure to observe the following lubrication instructions can result in the escape of grease and/or bearing damage. Keep the bearings and grease free of dirt to prevent damaging the generator.
- Re-grease the bearings when the generating set is running.
- Take particular care to avoid contact with rotating parts when re-greasing. Personal injury and/or damage to the generating can occur otherwise.
- The work must be planned so that the generator does not need to be stopped for at least 6 hours after re-greasing. Furthermore, we do not advise running a generating set under partial load for this length of time either. In principle, the goal is to achieve full-load operation.


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- Check the temperature of the bearings when re-greasing them. The bearing temperature may increase during the lubrication process, but should return to normal operating values after a few minutes of operation.
- Log the re-greasing:

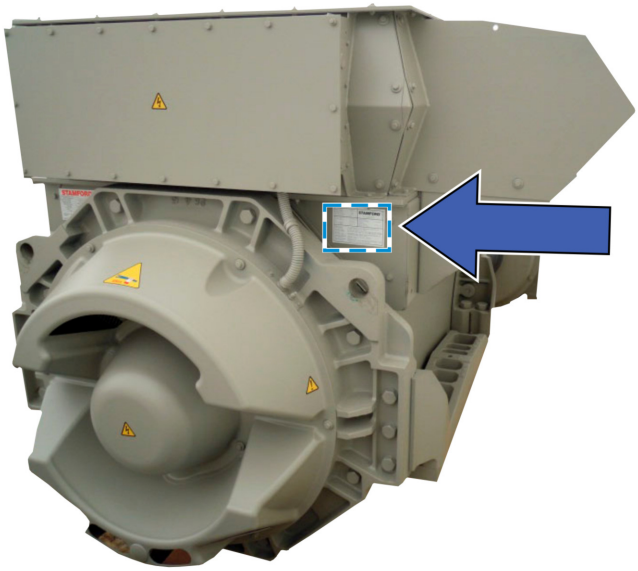
| | |
|---|---|
| | Enter the regreasing time in the **Generator Operational Data Log - Regreasing (E 8030)**. |

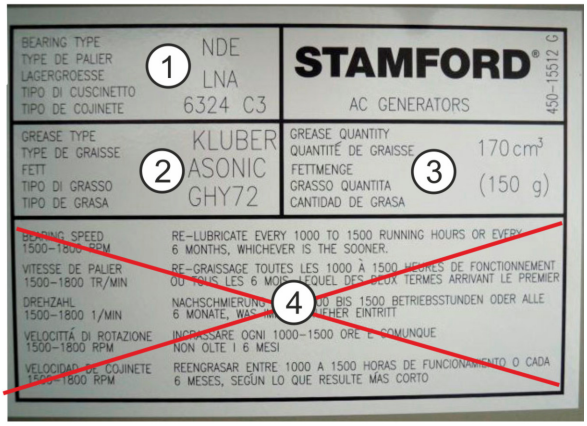
**Required tools:**

Grease pump, grease meter or balance, cleaning cloth (lint-free).

**Regreasing:**

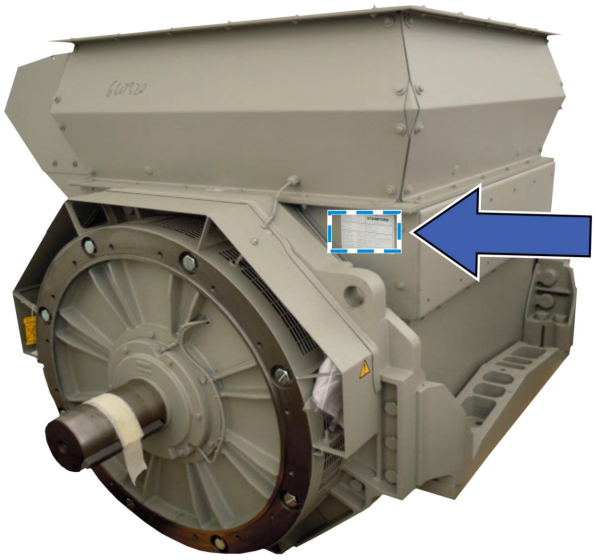
- The prescribed type and quantity of grease can be found on the sticker on the generator. Observe the precise weight or quantity of grease as per the type plate.

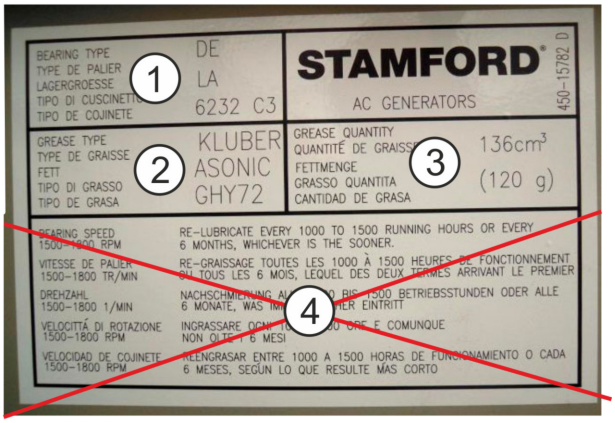





*Type plate - non drive end*


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*Type plate - drive end*

| | |
|---|---|
| ① | Drive end / non drive end |
| ② | Prescribed grease |
| ③ | Grease quantity |
| ④ | **Note:** Relubricating intervals as per Jenbacher Maintenance Instruction. **The intervals specified on the generator type plate do not apply here!** |

- Fill a clean grease pump with the stated quantity of the specified grease quality. If the grease pump has been previously filled with a different quality grease, clean it with the utmost thoroughness.
- Clean the grease nipples with a flint-free cloth before regreasing to ensure that no particles of dirt get into the bearings.
- Regrease the bearings when the generator is running and at operating temperature so that the grease is evenly distributed and overgreasing can be avoided.
- Pump in the grease with the grease gun at the grease nipple. Regreasing should take between 5 and 30 minutes.

**Note:** The bearing temperature may rise by a maximum of 25 °C during regreasing, but must drop back to the value at the start of regreasing. This can take up to 96 hours.

- Remove any escaped lubricating grease on the underside of the casing cover.

## 6.3 Inspecting and cleaning the generator

This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.

- Check the generator for damage
- Check cable for wear (chafing)
- Check rubber buffers (if fitted)
- Check anti-condensation heating (if fitted)
- Check varistor and rectifier diodes
- Cleaning the generator


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## 6.4 Measuring the insulation/polarisation

This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.

## 6.5 Carrying out a vibration measurement and replacing the earth brush (if fitted)

This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.

## 6.6 Replacing the bearing(s)

This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.

## 6.7 Overhauling the generator

This activity is to be carried out by INNIO or a company selected by INNIO authorised to carry out this work.

# 7 Revision code

**Revision history**

| Index | Date | Description / Revision summary | Expert<br>*Auditor* |
|---|---|---|---|
| 6 | 30.04.2019 | GE durch INNIO ersetzt / GE replaced by INNIO | **Fallzberger F.**<br>*Pichler R.* |
| 5 | 31.07.2018 | Strukturelle Anpassungen / Structural adaptions<br>Standard Peaking Wartungsintervall ergänzt / Standard peaking maintenance interval added | **Krainz G.**<br>*Krainz G.* |
| 4 | 24.10.2013 | Grundlegende Überarbeitung / Fundamental revision | **Sadhasivam.V / Bilek**<br>*Krainz* |
| 3 | 03.01.2012 | Schmierfett siehe Aufkleber am Generator / lubricating grease see sticker on the generator | **Bilek**<br>*Bilek* |
| 2 | 23.12.2011 | von W 8030 A0 auf W 8035 A0 umbenannt / W 8030 A0 renamed to W 8035 A0 | **Bilek**<br>*Bilek* |
| 1 | 26.05.2010 | Umstellung auf CMS / Change to Content Management System ersetzt / replaced Index: b1 | **Provin**<br>*Bilek* |


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