

Service Bulletin

Engine type

Type 6 with DIG140 or DIG142 Generators

Subject

GREASE TYPE and QUANTITY CHANGE

SB-076 | 29.10.2010 Rev. 02.11.2010

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There is a need to communicate some new directives regarding re-greasing expectations on the affected units due to concerns relating to bearing life.

AFFECTED: Type 6 engines with DIG140 or DIG142 generators.

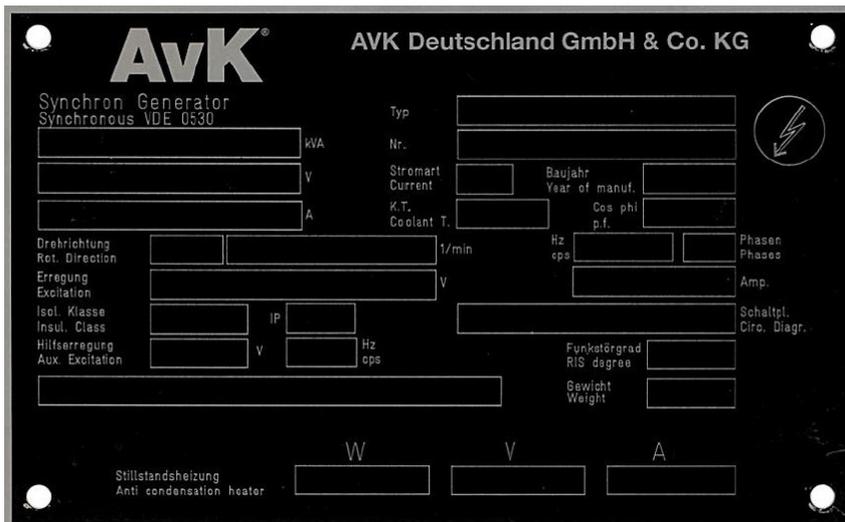
DESCRIPTION: GE Jenbacher have been made aware that some DIG140 and DIG142 generators are experiencing increased bearing temperatures under normal operating conditions or that bearings are not returning to normal temperature after re-greasing. To reduce transient temperature loading of the bearing assemblies, a reduction of the volume of grease at the re-greasing interval has been specified to minimize the likelihood of issues occurring. The specified brand and type of grease has also been changed.

SOLUTION: Comply with the following regulations:

➤ **Update for grease type plates:**

Generator bearings must always be re-greased as instructed on the grease type plate.

Included in this Service Bulletin is a permanent sticker which is to be installed as shown in the pictures below. This should be done at the earliest available opportunity where it is safe to do so. To ensure that the sticker remains permanently attached, before application clean the type plate for dirt, grease, oil and moisture.



III. 01: Old DIG140 grease type plates with sticker installed

AvK		Bunsenstr. 17, D-85053 Ingolstadt, Tel.: +49 841 792 0											
Synchron Generator / Synchronous Generator		Normen / Standards: IEC 60034-1; VDE 0530 T1; ISO 8528-3		Made in Germany									
Maschinen Nr. Machine No.	Muster	Bem. Drehzahl Rated Speed	1500 rpm	Gewicht Weight	11,6 t								
Baujahr Year of Manuf.	2010	Überdrehzahl Overspeed	1800 rpm	Aufstellungshöhe Altitude	< 1000 m								
Typ Type	DIG 140 I/4	Drehrichtung Direction of Rotation	Uhrzeigersinn CW facing DE	Schutzart Degree of Protection	IP 23								
Bem. Leistung Rated Load	4400 kVA; BR	Phasenfolge Time phase sequence	U V W	Kühlart Type of cooling	IC 01								
Bem. Spannung Rated Voltage	11000V; AC	Isol./ Ausn. Klasse Insul./ Util. Class	F/F	Stillstandsheizung/ Anti condensation heater									
Bem. Strom Rated Current	231 A	Temperatur Grenzwert Limit of temperature	145° C	Bem. Leistung Rated Load	1000 W								
cos φ p.f.	0,80	Bem. Err. Spannung Rated Exc. Voltage	48 V	Bem. Spannung Rated Voltage	230V; 1-phase								
Frequenz Frequency	50 Hz	Bem. Err. Strom Rated Exc. Current	4,0 A	Bem. Strom Rated Current	4,4 A								
Strangzahl No. of Phases	3	Luft Eintrittstemp. Gen. Air Inlet Temp. Gen.	40 °C	Nur für Wälzlager / only for antifriction bearings									
Statorwicklung Stator Conn.	Y	Max. Umgebungstemp. Max. Ambient Temp.	40 °C	Bemerkungen / Remarks									
Bem. Klasse Duty Type	S 1	Min. Umgebungstemp. Min. Ambient Temp.	-15 °C	<table border="1"> <tr> <td>Fettmenge AS Grease quantity DE</td> <td>50 grams each lubrication point</td> </tr> <tr> <td>Fettmenge BS Grease quantity NDE</td> <td>50 grams each lubrication point</td> </tr> <tr> <td>Fettsorte Grease type</td> <td>Clueberplex BEM 41-141</td> </tr> <tr> <td>Nachschmierintervall Relubrication interval</td> <td>1000 oph</td> </tr> </table>		Fettmenge AS Grease quantity DE	50 grams each lubrication point	Fettmenge BS Grease quantity NDE	50 grams each lubrication point	Fettsorte Grease type	Clueberplex BEM 41-141	Nachschmierintervall Relubrication interval	1000 oph
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Fettmenge BS Grease quantity NDE	50 grams each lubrication point												
Fettsorte Grease type	Clueberplex BEM 41-141												
Nachschmierintervall Relubrication interval	1000 oph												
<small>Nur bei Wärmetauschern; Eintrittstemperatur des Sekundärkühlmittels For Heat Exchangers only; Secondary Coolant Inlet Temperature</small>													

III. 02: New DIG140 grease type plate with sticker installed

AvK		Bunsenstr. 17, D-85053 Ingolstadt, Tel.: +49 841 792 0											
Synchron Generator / Synchronous Generator		Normen / Standards: Muster		Made in Germany									
Maschinen Nr. Machine No.	Muster	Bem. Drehzahl Rated Speed	1800 rpm	Gewicht Weight	8,3 t								
Baujahr Year of Manuf.	2010	Überdrehzahl Overspeed	2160 rpm	Aufstellungshöhe Altitude	< 1000 m								
Typ Type	DIG 142 d/4	Drehrichtung Direction of Rotation	Gegenuhrlagerläufe CCW facing DE	Schutzart Degree of Protection	IP 23								
Bem. Leistung Rated Load	4450 kVA; BR	Phasenfolge Time phase sequence	W V U	Kühlart Type of cooling	IC 01								
Bem. Spannung Rated Voltage	13800V; AC	Isol./ Ausn. Klasse Insul./ Util. Class	F/F	Stillstandsheizung/ Anti condensation heater									
Bem. Strom Rated Current	186 A	Temperatur Grenzwert Limit of temperature	145° C	Bem. Leistung Rated Load	1000 W								
cos φ p.f.	0,80	Bem. Err. Spannung Rated Exc. Voltage	48 V	Bem. Spannung Rated Voltage	230V; 1-phase								
Frequenz Frequency	60 Hz	Bem. Err. Strom Rated Exc. Current	5,1 A	Bem. Strom Rated Current	4,3 A								
Strangzahl No. of Phases	3	Luft Eintrittstemp. Gen. Air Inlet Temp. Gen.	40 °C	Nur für Wälzlager / only for antifriction bearings									
Statorwicklung Stator Conn.	Y	Max. Umgebungstemp. Max. Ambient Temp.	40 °C	Bemerkungen / Remarks									
Bem. Klasse Duty Type	S 1	Min. Umgebungstemp. Min. Ambient Temp.	-15 °C	<table border="1"> <tr> <td>Fettmenge AS Grease quantity DE</td> <td>50 grams each lubrication point</td> </tr> <tr> <td>Fettmenge BS Grease quantity NDE</td> <td>50 grams each lubrication point</td> </tr> <tr> <td>Fettsorte Grease type</td> <td>Clueberplex BEM 41-141</td> </tr> <tr> <td>Nachschmierintervall Relubrication interval</td> <td>1000 oph</td> </tr> </table>		Fettmenge AS Grease quantity DE	50 grams each lubrication point	Fettmenge BS Grease quantity NDE	50 grams each lubrication point	Fettsorte Grease type	Clueberplex BEM 41-141	Nachschmierintervall Relubrication interval	1000 oph
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<small>Nur bei Wärmetauschern; Eintrittstemperatur des Sekundärkühlmittels For Heat Exchangers only; Secondary Coolant Inlet Temperature</small>													

III. 03: DIG142 grease type plate with sticker installed

Once the sticker has been installed to the grease type plate, the new instructions must always be followed without exception.

➤ **Update of bearing grease type (DIG140 only):**

Clueberplex BEM41-141 grease has been tested and approved for use on bearing assemblies previously greased with Mobil (Esso) Unirex N3 only. If any other grease type has been used for re-greasing, please contact your GE Jenbacher customer service manager immediately and do not proceed with this re-greasing instruction until further notified.

There is no need to clean out the old grease from the bearing assemblies as part of this instruction. The bearing cover should not be opened and the grease should not be changed by any form of flushing process. Thinners, any solvent or other chemicals should not be used to clean the bearing. Do not blow air/oil into the bearing even for the purpose of re-greasing.

If there is a need to remove excess or worn grease from the bearing then this must be done by a Cummins Generator Technologies service engineer or one of their authorized representatives.

➤ **Update of bearing re-greasing quantity (DIG140 and DIG142):**

As shown on the updated grease plate, there is a requirement to reduce the quantity of grease used for re-greasing. Always observe the re-greasing quantity advised on the updated grease type plate.

Before re-greasing, clean the nipple so that dirt cannot enter the bearings. The re-greasing of the bearing must take no less than 5 minutes and no longer than 30 minutes to ensure that the worn out grease is replaced by the new grease. Too much or too little grease per each re-greasing cycle could cause a reduction of bearing life. It is important that the re-greasing interval is strictly observed.

Product range DIG140	
Bearing type DE	NU1038MC3
Bearing type NDE	NU1038MC3+16038C3
Re-greasing intervals	After 1000 operating hours
Amount of grease (grams)	50g at each lubrication point DE and NDE
Type of grease	Klueberplex BEM41-141
Lubrication label	Information located on machine nameplate
Alarm setting	75°C
Shutdown setting	90°C

III. 04: Product range DIG140

Product range DIG142	
Bearing type DE	NU1036MC3+16036C3
Bearing type NDE	NU1036MC3
Re-greasing intervals	After 1000 operating hours
Amount of grease (grams)	50g at each lubrication point DE and NDE
Type of grease	Klueberplex BEM41-141
Lubrication label	Information located on machine nameplate
Alarm setting	75°C
Shutdown setting	90°C

III. 05: Product range DIG142

The only grease approved for use on DIG140 and DIG142 generators is Klueberplex BEM41-141. Once the grease type plate is updated with the sticker provided, no other brand or type of grease should be used, and once the grease change has been made on DIG140 generators, different brands of grease must not be mixed. Mixing greases with different types of thickeners may alter its composition and physical properties. Even if the thickeners are of the same type, differences in the additives may cause detrimental effects. Use only the recommended grease from Cummins written on the machine nameplate/table above.

There is no specific rule for how the grease is to be added to the bearing. Only the given time frame of 5 to 30 minutes per each re-greasing nipple must be observed to allow the distribution of the grease effectively.

As an example for DIG140 the grease could be added in the following way:

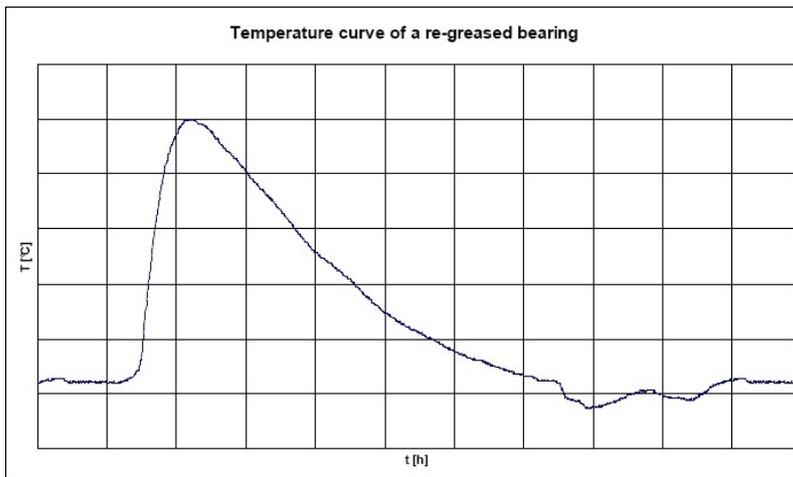
- 1st re-grease the first nipple at the non-drive end (NDE) side
- 2nd re-grease the nipple at the drive end (DE) side
- 3rd re-grease the second nipple at the non-drive end (NDE) side

As an example for DIG142 the grease could be added in the following way:

- 1st re-grease the first nipple at the drive end (DE) side
- 2nd re-grease the nipple at the non-drive end (NDE) side
- 3rd re-grease the second nipple at the drive end (DE) side

The grease must be added when the genset is running to ensure a good distribution of the grease within the bearings. The load condition of the generator during the re-greasing process is not significant. A reduction of the genset load during the re-greasing process is not required.

During the re-greasing, check the temperatures of the bearings and compare them with the temperatures recorded before. Increased temperature readings are usual for the re-greasing process (see illustration 06). The temperature rise could be up to 25K (K is degrees Kelvin the units for measuring temperature rise) and could remain up to 96 hours. This is caused by the churning work of the bearing and the type of grease which is applied. During this period the temperature level could be above the alarm level. The temperature rise and the decrease indicates that the re-greasing of the bearing was successful.



III. 06: Example of the temperature rise of a re-greased bearing

Monitor the temperature during re-greasing. The temperature must reach the same level like before the re-greasing at least 96 hours after starting the process.

Plan the re-greasing so that the generator is not stopped or shut down within the following 6 hours after the re-greasing process.

Please ensure that the given alarm and shutdown values are applied.

To ensure a proper re-greasing a log file is highly recommended. As an example the files on the last two pages could be used.

In the case of any questions, do not hesitate to contact your GE Jenbacher customer service manager.

IMPORTANT: Always follow the safety instructions in accordance with T12300-0005!

