

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

Christian BAUER
GE Energy | Jenbacher Service

T +43 5244 600-2399
F +43 5244 600-42399

christian1.bauer@ge.com
www.gejenbacher.com



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.

AvK®

AVK Deutschland GmbH & Co. KG

Synchron Generator

Synchronous VDE 0530

kVA

V

A

Typ

Nr.

Stromart

Current

K.T.

Coolant T.

Baujahr

Year of manuf.

Cos phi

p.f.

Hz

cps

Phasen

Phases

Drehrichtung

Rot. Direction

Erregung

Excitation

Isol. Klasse

Insul. Class

Hilfserrregung

Aux. Excitation

1/min

V

IP

Hz

cps

Funktorgrad

RIS degree

Gewicht

Weight

Schaltpl.

Circ. Diagram

Stillstandsheizung

Anti condensation heater

W

V

A

SCHMIERUNG

LUBRICATION

An jeder rot gekennzeichneten Schmierstelle einpressen, alle

Press in at all points of Lubrication marked red, every

Fettmenge AS

Grease quantity DE

Fettmenge BS

Grease quantity NDE

Fettsorte

Grease type

Nachschmierintervall

Relubrication interval

50 grams each lubrication point

50 grams each lubrication point

Klueberplex BEM 41-141

1000 oph

AvK®

Nur Spezialfett verwenden

Use only special grease

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

2/7

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
Baujahr Year of Manuf.	2010	Überdrehzahl Overspeed	1800 rpm
Typ Type	DIG 140 I/4	Drehrichtung Direction of Rotation	Uhrzeigersinn CW facing DE
Bem. Leistung Rated Load	4400 kVA; BR	Phasenfolge Time phase sequence	U V W
Bem. Spannung Rated Voltage	11000V; AC	Isol./ Ausn. Klasse Insul./ Util. Class	F/F
Bem. Strom Rated Current	231 A	Temperatur Grenzwert Limit of temperature	145° C
cos φ p.f.	0,80	Bem. Err. Spannung Rated Exc. Voltage	48 V
Frequenz Frequency	50 Hz	Bem. Err. Strom Rated Exc. Current	4,0 A
Strangzahl No. of Phases	3	Luft Eintrittstemp. Gen. Air Inlet Temp. Gen.	40 °C
Statorwicklung Stator Conn.	Y	Max. Umgebungstemp. Max. Ambient Temp.	40 °C
Bem. Klasse Duty Type	S 1	Min. Umgebungstemp. Min. Ambient Temp.	-15 °C
		Gewicht Weight	11,6 t
		Aufstellungshöhe Altitude	< 1000 m
		Schutzart Degree of Protection	IP 23
		Kühlart Type of cooling	IC 01
		Stillstandsheizung/ Anti condensation heater	
		Bem. Leistung Rated Load	1000 W
		Bem. Spannung Rated Voltage	230V; 1-phase
		Bem. Strom Rated Current	4,4 A
		Nur für Wälzlager / only for antifriction bearings	
		Bemerkungen / Remarks	
		Fettmenge AS Grease quantity DE	50 grams each lubrication point
		Fettmenge BS Grease quantity NDE	50 grams each lubrication point
		Fettsorte Grease type	Klueberplex BEM 41-141
		Nachschmierintervall Relubrication interval	1000 oph
		Nur bei Wärmetauschern: Eintrittstemp. des Sekundärkühlmittels For Heat Exchangers only: Secondary Coolant Inlet Temperature	

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

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):

Klueberplex 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:

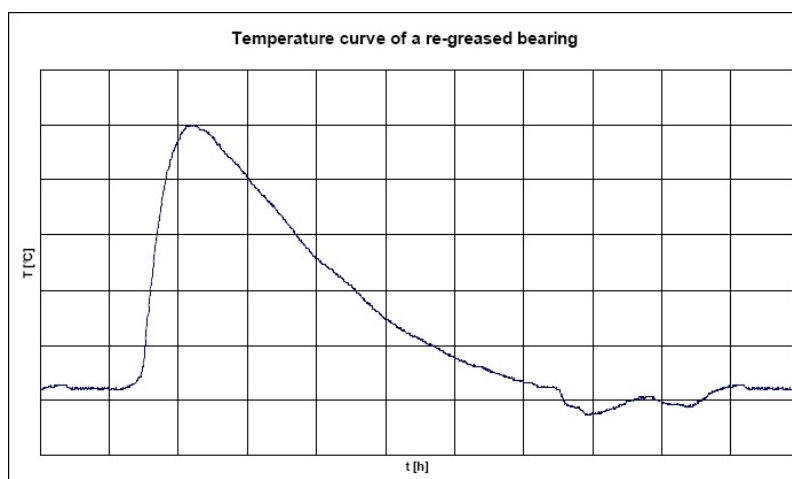
- 1st re-grease the first nipple at the non-drive end (NDE) side
- 2nd re-grease the nipple at the drive end (DE) side
- 3rd re-grease the second nipple at the non-drive end (NDE) side

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!

[illegible]

III. 07: Example of a re-greasing log file – DIG140

[illegible]

III. 08: Example of a re-greasing log file – DIG142