#### **STAMFORD**°



#### Introduction

Scheduled service and repair are vital to the reliable operation of your alternator and the safety of those who come in contact with it.

The service activities included in this guide are intended to maximise the life of the alternator, but will not vary, extend or change the terms of the manufacturer's standard warranty or your obligations in that warranty.

Each service interval should be used as a guide only, and developed on the basis that the alternator was installed and is operated in accordance with the manufacturer's guidelines. If the alternator is located and/or

operated in adverse or unusual environmental conditions, the service intervals may need to be more frequent. The alternator should be continually monitored between service to identify any potential failure modes, signs of misuse, or excessive wear and tear.



#### Disclaimer

This guide contains guidance and instructions for servicing and maintenance of the alternator only.

Before operating the alternator, refer to the Installation, Service and Maintenance manual to make sure that all personnel who work on the equipment have access to the manual and all additional documentation supplied with it. Misuse and failure to follow the instructions, and the use of non-approved parts, may invalidate the product warranty and lead to potential accidents.

The manual is an essential part of the alternator and should be available to all users throughout its life.

This guide states service intervals and key components to inspect throughout the life of the alternator. Refer to the full instructions in the Installation, Service & Maintenance manual when servicing the alternator.

This guide is written for skilled electrical and mechanical technicians and engineers, who have prior knowledge and experience of generating equipment of this type. If in doubt, please seek expert advice or contact your local Cummins Generator Technologies subsidiary.

#### Notice

Information in this guide was correct at time of going to print. It may be superseded due to our policy of continuous improvement.

Please visit:

www.stamford-avk.com for latest documentation.



#### Safety Precautions



#### Safety Information and Notices

Danger, Warning and Caution panels are used in this manual to describe the sources of hazards, their consequences and how to avoid injury. Notice panels emphasize important or critical instructions.

#### **DANGER**

Danger indicates a hazardous situation which, if not avoided, WILL result in death or serious injury.

#### **↑** WARNING

Warning indicates a hazardous situation which, if not avoided, COULD result in death or serious injury.

#### **↑** CAUTION

Caution indicates a hazardous situation which, if not avoided, COULD result in minor or moderate injury.

#### NOTICE

Caution indicates a hazardous situation which, if not avoided, COULD result in minor or moderate injury.



#### **General Guidance**

#### NOTICE

These safety precautions are for general guidance and supplement your own safety procedures and all applicable laws and standards.

#### **Skill Requirements of Personnel**

Service and maintenance procedures must only be carried out by experienced and qualified engineers, who are familiar with the procedures and the equipment.

#### Risk Assessment

A risk assessment has been performed on this product by Cummins, however a separate risk assessment must be performed by the user/operating company to establish all personnel-related risks. All affected users must be trained on the identified risks. Access to the Power PlanUGenerator Set during operation must be restricted to persons who have been trained on these risks.



#### Personal Protective Equipment (PPE)

All persons operating, servicing, maintaining or working in or with a power plant or a generator set must wear appropriate Personal Protective Equipment (PPE) Recommended PPE includes:

- Ear and Eye Protection
- Head and face protection
- Safety footwear
- Overalls that protect the lower arms and legs

Ensure that all persons are fully aware of the emergency procedures in case of accidents.

#### Noise

#### **↑** WARNING

Noise from a running alternator can cause serious injury by permanent hearing damage. To prevent injury, wear appropriate personal protection equipment (PPE).

Maximum A-weighted noise emissions depend on alternator type. Contact the supplier for application-specific details.



#### **Electrical Equipment**

#### DANGER

Live electrical conductors can cause serious injury or death by electric shock and burns. To prevent injury and before removing covers over electrical conductors, isolate the generator set from all energy sources, remove stored energy and use lock out/tag out safety procedures.

All electrical equipment can be dangerous if not operated correctly. Always install, service and maintain the alternator in accordance with this manual. Work that requires access to electrical conductors must comply with all applicable local and national electrical safety procedures for the voltages involved and any site specific rules. Always use genuine branded replacement parts.

#### Lock Out/Tag Out

#### **⚠** WARNING

#### **Reconnected Energy Source**

Accidental reconnection of energy sources during service and maintenance work can cause serious injury or death by electric shock, burns, crushing, severing or trapping.

To prevent injury and before starting service and maintenance work, use appropriate lock out/tag out safety procedures to keep the generator set isolated from energy sources. Do not defeat or bypass the lock out/tag out safety procedures.



#### Lifting

#### DANGER

Falling mechanical parts can cause serious injury or death by impact, crushing, severing or trapping. To prevent injury and before lifting:

- Check the capacity, condition and attachment of lifting equipment (crane, hoists and jacks, including attachments to anchor, fix or support the equipment).
- Check the capacity, condition and attachment of accessories for lifting (hooks, slings, shackles and eye bolts for attaching loads to lifting equipment).
- . Check the capacity, condition and attachment of lifting fixtures on the load.
- Check the mass, integrity and stability (e.g. unbalanced or shifting center of gravity) of the load.

#### **↑** WARNING

Falling mechanical parts can cause serious injury or death by impact, crushing, severing or trapping.

To prevent injury and before lifting the alternator:

- . Do not lift the complete generator set by the alternator lifting fixtures.
- Keep the alternator horizontal when lifting.
- Fit drive end and non-drive end transit fittings to single bearing alternators to keep the main rotor in the frame.

Do not remove the lifting label attached to one of the lifting points.



#### **Alternator Operating Areas**

#### **↑** WARNING

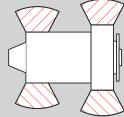
Debris ejected during catastrophic failure can cause serious injury or death by impact, severing or stabbing.

To prevent injury:

- Keep away from the air inlet and air outlet when the alternator is running.
- Do not put operator controls near the air inlet and air outlet.
- . Do not cause overheating by running the alternator outside rating plate parameters.
- . Do not overload the alternator.
- Do not run an alternator with excessive vibration.
- Do not synchronize parallel alternators outside the specified parameters.

Always wear suitable PPE when working in the hatched areas shown in the diagram or directly in-line with any air inlet/outlet.

Make sure this consideration is captured in your risk assessment.





#### **Hazard Warning Labels**

#### **↑** WARNING

Safety Cover Removed

A hazard exposed when a safety cover is removed can cause serious injury or death.

To prevent injury:

- Fit the safety labels at the locations shown on the back of the label sheet supplied.
- Observe the safety labels.
- · Refer to the service manual before removing covers.

The generator set manufacturer is responsible for fitting the self-adhesive hazard warning labels supplied with the alternator.

Replace labels that are missing, damaged or painted over.



#### **Hazard Warning Labels - continued**



### PO/P1 Alternator



# P0/P1

Alternator

Commission Post 6 M

Post Commission 6 Month Service 1,000 Hour 1 Year Service 10,000 Hours 2 Year Service

30,000 Hours 5 Year Service



# PO/P1 Alternato

#### Commission

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Inspect
Alternator rating     Bedplate arrangement     Coupling arrangement     Environmental conditions and cleanliness     Complete machine damage, loose parts and earth bonds     Guards, screens, warning and safety labels     Maintenance access	Synchronisation settings  Test Initial AVR set up AVR settings while alternator is running Customer connections of auxiliaries Function of auxiliaries Synchronisation while alternator is running	Condition of windings  Customer settings for temperature sensors  Test  Insulation resistance of all windings (P0/P1 test for LV)  Insulation resistance of rotor, exciter and EBS  Temperature sensors while alternator is running	<ul> <li>Condition of bearings</li> <li>Customer settings for temperature sensors</li> <li>Test</li> <li>Temperature sensors while alternator is running</li> </ul>
	Orallan	Rectifier	Terminal Box
<ul> <li>Ambient temperature (inside and outside)</li> <li>Electrical nominal operating conditions and excitations while alternator is running</li> <li>Vibration while alternator is running</li> </ul>	Inspect  Air flow (rate and direction while alternator is running)  Condition of fan  Test  Condition of air filter	Inspect Diodes and varistors	Inspect ■ All alternator/customer ■ Connections and cabling

#### Post Commission 250 Hours/6 Months

Post Commission 250 Hours	70 Months		
Alternator	Controls and Auxiliaries	Windings	Bearings
Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)     Electrical nominal operating	Test  AVR settings while alternator is running Function of auxiliaries Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P0/P1 test for LV) Insulation resistance of rotor, exciter and EBS Temperature sensors while alternator is running	Inspect ■ Condition of bearings
conditions and excitations while alternator is running  Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and varistors	Terminal Box Inspect ■ All alternator/customer connections and cabling

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#### □ 1,000 Hours/1 Year Service

3	Alternator	Controls and Auxiliaries	Windings	Bearings
ו עו ו אונפווומ	Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test	Test  AVR settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P0/P1 test for LV) Insulation resistance of rotor, exciter, and EBS Temperature sensors while alternator is running	Inspect ■ Condition of bearings  Test ■ Temperature sensors while alternator is running
	Ambient temperature (inside and outside)     Electrical nominal operating conditions and excitations while alternator is running	Cooling	Rectifier	Terminal Box
	Vibration while alternator is running	Inspect ■ Condition of fan  Test ■ Condition of air filter  Clean ■ Air filter	Inspect ■ Diodes and varistors	Inspect ■ All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

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Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Inspect
<ul><li>Coupling arrangement</li><li>Environmental conditions</li></ul>	Anti condensation heater	■ Condition of windings	■ Condition of bearings
and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside	Test  AVR settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Test Insulation resistance of all windings (P0/P1 test for LV) Temperature sensors while alternator is running	
and outside)  Electrical nominal operating conditions and excitations	Cooling	Rectifier	Terminal Box
<ul> <li>while alternator is running</li> <li>Vibration while alternator is running</li> </ul>	Inspect ■ Condition of fan  Test ■ Condition of air filter	Inspect Diodes and varistors	Inspect  All alternator/customer connections and cabling
	Clean ■ Air filter		

#### P0/P1 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the P0/P1 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents
<b>A051C107</b> (P0/P1 1 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ NDE Bearing Kit
A051C115 P0/P1 2 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ DE and NDE Bearing Kit

#### ≥ 30,000 Hours/5 Year Service

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ma	Alternator	Controls and Auxiliaries	Windings	Bearings	
P0/P1 Alternate	Inspect  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds	Inspect Anti condensation heater  Test AVR settings while alternator is running Customer connections of	Inspect ■ Condition of windings  Test ■ Insulation resistance of all windings (P0/P1 test for LV) ■ Temperature sensors while	Replace ■ Bearings	
	<ul> <li>Guards, screens, warning and safety labels</li> <li>Test</li> <li>Ambient temperature (inside and outside)</li> <li>Electrical nominal operating</li> </ul>	auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	alternator is running  Insulation resistance of rotor, exciter and EBS		
	Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Cooling Inspect Condition of fan  Test Condition of Air filter	Rectifier Inspect Diodes and varistors	Terminal Box Inspect ■ All alternator/customer connections and cabling	

#### SO/S1 Alternator



30,000 Hours

5 Year Service

### SO/S1 Alternator

Commission Post Commission 1,000 Hour 10,000 Hours 6 Month Service 1 Year Service 2 Year Service

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#### Commission

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Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Alternator rating  Bedplate arrangement  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts and earth bonds  Guards, screens, warning and safety labels  Maintenance access	Test Initial AVR set up AVR settings while alternator is running Customer connections of auxiliaries Function of auxiliaries Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (SO/S1 test for LV) Insulation resistance of rotor, exciter and auxiliary	Inspect ■ Condition of bearings
Ambient temperature (inside and outside)	Cooling	Rectifier	Terminal Box
Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is	Inspect ■ Air flow (rate and direction while alternator is running) ■ Condition of fan	Inspect Diodes and varistors	Inspect ■ All alternator/customer connections and cabling
running			

#### Post Commission 250 Hours/6 Months

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Alternator	Controls and Auxiliaries	Windings	Bearings	
Inspect	Test	Inspect	Inspect	
<ul><li>Environmental conditions and cleanliness</li></ul>	<ul> <li>AVR settings while alternator is running</li> </ul>	Condition of windings	Condition of bearings	
Complete machine damage, loose parts, and earth bonds	Function of auxiliaries	Test ■ Insulation resistance of all		
Guards, screens, warning		windings (S0/S1 test for LV)		
and safety labels		<ul> <li>Insulation resistance of rotor, exciter and auxiliary</li> </ul>		
Test				
<ul> <li>Ambient temperature (inside and outside)</li> </ul>				
Electrical nominal operating				
conditions and excitations while alternator is running	Cooling	Rectifier	Terminal Box	
■ Vibration while alternator is	Cooming	Hoddioi	Torminal Box	
running	Inspect	Inspect	Inspect	
	Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>	

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#### □ 1,000 Hours/1 Year Service

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A Ir	Iternator	Controls and Auxiliaries	Windings	Bearings	
] Ir	nspect	Test	Inspect	Inspect	
	Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth	AVR settings while alternator is running     Customer connections of auxiliaries	<ul><li>Condition of windings</li><li>Test</li></ul>	Condition of bearings	
	bonds	Function of auxiliaries	<ul> <li>Insulation resistance of all windings (SO/S1 test for LV)</li> </ul>		
ľ	Guards, screens, warning and safety labels		<ul> <li>Insulation resistance of rotor, exciter, and auxiliary</li> </ul>		
Т	est		<ul> <li>Temperature sensors while alternator is running</li> </ul>		
•	Ambient temperature (inside and outside)				
•	Electrical nominal operating conditions and excitations				
	while alternator is running	Cooling	Rectifier	Terminal Box	
•	Vibration while alternator is running	Inspect	Inspect	Inspect	
		■ Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>	

#### 10,000 Hours/2 Year Service

10,000 Hours/2 Four Oct vice					
Alternator	Controls and Auxiliaries	Windings	Bearings		
Inspect	Inspect	Inspect	Inspect		
Coupling arrangement Environmental conditions	Anti condensation heater	■ Condition of windings	■ Condition of bearings		
and cleanliness	Test	Test			
<ul> <li>Complete machine damage, loose parts, and earth bonds</li> </ul>	<ul> <li>AVR settings while alternator is running</li> </ul>	<ul> <li>Insulation resistance of all windings (S0/S1 test for LV)</li> </ul>			
Guards, screens, warning and safety labels	<ul> <li>Customer connections of auxiliaries</li> </ul>				
	<ul> <li>Function of auxiliaries</li> </ul>				
Test					
<ul> <li>Ambient temperature (inside and outside)</li> </ul>					
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box		
■ Vibration while alternator is	Inspect	Inspect	Inspect		
running	■ Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>		

#### S0/S1 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the S0/S1 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents	
A051C107 (S1 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ NDE Bearing Kit	
A054N489 (S0 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ NDE Bearing Kit	

#### 30,000 Hours/5 Year Service

Albania	Controls and Australian	Miller discour	D. code on	
Alternator	Controls and Auxiliaries	Windings	Bearings	
Inspect	Inspect	Inspect	Replace	
Coupling arrangement	Anti condensation heater	■ Condition of windings	■ Bearings	
<ul> <li>Environmental conditions and cleanliness</li> <li>Complete machine damage, loose parts, and earth bonds</li> <li>Guards, screens, warning and safety labels</li> </ul>	Test  AVR settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries	Test  ■ Insulation resistance of all windings (S0/S1 test for LV) ■ Insulation resistance of rotor, exciter and auxiliary		
Test				
<ul> <li>Ambient temperature (inside and outside)</li> </ul>				
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box	
■ Vibration while alternator is	Inspect	Inspect	Inspect	
running	Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>	
	Test			
	Condition of Air filter			

### UC22/UC27 Alternator



# UC22/UC27

**Alternator** 

Commission

Post Commission 6 Month Service

1,000 Hour 1 Year Service 10,000 Hours 2 Year Service 30,000 Hours 5 Year Service



# UC22/UC27 Alternator

#### Commission

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Inspect
Alternator rating     Bedplate arrangement     Coupling arrangement     Environmental conditions and cleanliness     Complete machine damage, loose parts and earth bonds     Guards, screens, warning and safety labels     Maintenance access	<ul> <li>Synchronisation settings</li> <li>Test</li> <li>Initial AVR set up</li> <li>AVR settings while alternator is running</li> <li>Customer connections of auxiliaries</li> <li>Function of auxiliaries</li> <li>Synchronisation while alternator is running</li> </ul>	Condition of windings  Customer settings for temperature sensors  Test Insulation resistance of all windings (UC22/UC27 test for LY/MV)  Temperature sensors while alternator is running	<ul> <li>Condition of bearings</li> <li>Customer settings for temperature sensors</li> <li>Test</li> <li>Temperature sensors while alternator is running</li> </ul>
<ul> <li>Ambient temperature (inside</li> </ul>	Cooling	Rectifier	Terminal Box
and outside)  Electrical nominal operating conditions and excitations while alternator is running  Vibration while alternator is running	Inspect  Air flow (rate and direction while alternator is running)  Condition of fan  Test  Condition of air filter	Inspect ■ Diodes and varistors ■ Three phase rectifier (if fitted)	Inspect ■ All alternator/customer connections and cabling

#### Post Commission 250 Hours/6 Months

Alternator		Controls and Auxiliaries	Windings	Bearings
Alternator Inspect		Test	Inspect	Inspect
<ul> <li>Environmenta and cleanlines</li> <li>Complete ma loose parts, a bonds</li> </ul>		<ul> <li>AVR settings while alternator is running</li> </ul>	■ Condition of windings	Condition of bearings
Complete ma		Function of auxiliaries	Test	Test
loose parts, a bonds	ina earin	Synchronisation while alternator is running	■ Insulation resistance of all	■ Temperature sensors while
<u> </u>		and material and an analysis	windings (UC22/UC27 test for LV/MV)	alternator is running
and safety lab	Dels		Insulation resistance of rotor, exciter and PMG	
Test			■ Temperature sensors while	
<ul> <li>Ambient temp and outside)</li> </ul>	oerature (inside		alternator is running  Insulation resistance of	
	Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is		rotor, exciter and PMG	
		Cooling	Rectifier	Terminal Box
■ Vibration while running		Inspect	Inspect	Inspect
Turing		Condition of fan	■ Diodes and varistors	All alternator/customer
		- Condition of fair	Three phase rectifier  Three phase rectifier	connections and cabling
		Test	(if fitted)	
		Condition of air filter		

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#### 1,000 Hours/1 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)     Electrical nominal operating	Test  AVR settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (UC22/UC27 test for LV/MV) Insulation resistance of rotor, exciter, and PMG Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running
conditions and excitations while alternator is running  Vibration while alternator is running	Cooling  Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect Diodes and varistors Three phase rectifier (if fitted)	Terminal Box  Inspect ■ All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth	Inspect ■ Anti condensation heater  Test ■ AVR settings while alternator is running	Inspect ■ Condition of windings  Test ■ Insulation resistance of all windings (UC22/UC27 test	Inspect ■ Condition of bearings  Test ■ Temperature sensors while alternator is running
<ul><li>bonds</li><li>Guards, screens, warning and safety labels</li></ul>	Customer connections of auxiliaries     Function of auxiliaries     Synchronisation while	for LV/MV  Temperature sensors while alternator is running	alternator is running
Test  ■ Ambient temperature (inside and outside)	alternator is running		
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box
Vibration while alternator is running	Inspect ■ Condition of fan  Test ■ Condition of air filter	Inspect ■ Diodes and varistors ■ Three phase rectifier (if fitted)	Inspect  All alternator/customer connections and cabling
	Clean ■ Air filter		

#### UC22/UC27 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the UC22/UC27 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents	
A051C212 (UC22 1 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ NDE Bearing Kit	
A051C216 (UC22 2 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ DE and NDE Bearing Kit	
A051C218 (UC27 1 Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>DE and NDE Bearing Kit</li></ul>	
A051C222 (UC27 2 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ DE and NDE Bearing Kit	

#### 30,000 Hours/5 Year Service

mat	Alternator	Controls and Auxiliaries	Windings	Bearings
UC22/UC27 Alternat	Inspect  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)	Inspect  Anti condensation heater  Test  AVR settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (UC22/UC27 test for LV/MV) Temperature sensors while alternator is running Insulation resistance of rotor, exciter and PMG	Replace Bearings  Test Temperature sensors while alternator is running
	Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Cooling  Inspect Condition of fan  Test Condition of air filter	Rectifier  Inspect  Diodes and varistors	Terminal Box  Inspect ■ All alternator/customer connections and cabling

### HC4/HC5/HC6 Alternator



## HC4/HC5/HC6

**Alternator** 

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Post Commission 6 Month Service

1,000 Hour 1 Year Service 10,000 Hours 2 Year Service

30,000 Hours 5 Year Service



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<u>a</u>	Alternator	Controls and Auxiliaries	Windings	Bearings
no4/no3/no0 Aitemat	Inspect  Alternator rating  Bedplate arrangement  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts and earth bonds  Guards, screens, warning and safety labels  Maintenance access	Inspect Synchronisation settings  Test Initial AVR and PFC set up AVR and PFC settings while alternator is running Customer connections of auxiliaries Function of auxiliaries Synchronisation while alternator is running	Inspect Condition of windings Customer settings for temperature sensors  Test Insulation resistance of all windings (HC4/HC5/HC6 test for LV/MV) Temperature sensors while alternator is running	Inspect Condition of bearings Customer settings for temperature sensors  Test Temperature sensors while alternator is running
	<ul> <li>Ambient temperature (inside and outside)</li> </ul>	Cooling	Rectifier	Terminal Box
	Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Inspect  Air flow (rate and direction while alternator is running)  Condition of fan  Test  Condition of air filter	Inspect ■ Diodes and varistors	Inspect ■ All alternator/customer connections and cabling

#### Post Commission 250 Hours/6 Months

Alternator	Controls and Auxiliaries	Windings	Bearings
Alternator  Inspect  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)  Electrical nominal operating	Test  AVR and PFC settings while alternator is running Function of auxiliaries Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (HC4/HC5/HC6 test for LV/MV) Insulation resistance of rotor, exciter and PMG Temperature sensors while alternator is running Insulation resistance of rotor, exciter and PMG	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable bearings
conditions and excitations while alternator is running  Vibration while alternator is running	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Inspect Diodes and varistors	Inspect  All alternator/customer connections and cabling

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#### 1,000 Hours/1 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect     Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)     Electrical nominal operating	Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (HC4/HC5/HC6 test for LV/MV) Insulation resistance of rotor, exciter, and PMG Temperature sensors while alternator is running	Test     Temperature sensors while alternator is running  Replace     Bearing greasee  Clean     Grease exhaust and trap
conditions and excitations while alternator is running  Vibration while alternator is running	Cooling  Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect Diodes and varistors	Terminal Box  Inspect ■ All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

10,000 Hours/2 Tour octvice			
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Test
Coupling arrangement Environmental conditions and cleanliness Complete machine damage, loose parts, and earth bonds Guards, screens, warning and safety labels  Test Ambient temperature (inside and outside)	Anti condensation heater  Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Condition of windings  Test Insulation resistance of all windings (HC4/HC5/HC6 test for LV/MV) Temperature sensors while alternator is running	Temperature sensors while alternator is running  Replace Bearing grease  Clean Grease exhaust and trap
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box
■ Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Inspect Diodes and varistors	Inspect  All alternator/customer connections and cabling

#### HC4/HC5/HC6 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the HC4/HC5/HC6 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents
A051C225 (HC4 1 Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>NDE Bearing Kit</li></ul>
A051C230 (HC4 2 Bearing 30,000 Hour Service Kit)	Rectifier Service Kit DE and NDE Bearing Kit
A051C232 (HC5 1 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit NDE Bearing Kit
A051Z125 (HC5 1 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Re-grease NDE Bearing Kit Cartridge and Cap
A051C234 (HC5 2 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit DE and NDE Bearing Kit Cartridge and Cap
A051Z131 (HC5 2 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit     Regrease DE and NDE Bearing Kit     Cartridge and Cap
A051C237 (HC6 1 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit NDE Bearing Kit Cartridge and Cap
A051Z133 (HC6 1 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Re-grease NDE Bearing Kit Cartridge and Cap
A051C243 (HC6 2 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit  DE and NDE Bearing Kit  Cartridge and Cap
A051Z137 (HC6 2 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit     Regrease DE and NDE Bearing Kit     Cartridge and Cap

#### 30,000 Hours/5 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)	Inspect  Anti condensation heater  Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect ■ Condition of Windings  Test ■ Insulation resistance of all windings (HC4/HC5/HC6 test for LV/MV) ■ Temperature sensors while alternator is running ■ Insulation resistance of rotor, exciter and PMG	Replace Bearings (sealed & re-greasable Bearing grease  Test Temperature sensors while alternator is running  Clean Grease exhaust & trap (re-greasable bearings only
Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and varistors	Terminal Box  Inspect ■ All alternator/customer connections and cabling

#### S4/S5/S6 Alternator



# S4/S5/S6

**Alternator** 

Commission

Post Commission 6 Month Service

1,000 Hour 1 Year Service 10,000 Hours 2 Year Service 30,000 Hours 5 Year Service



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Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Inspect
Alternator rating     Bedplate arrangement     Coupling arrangement     Environmental conditions and cleanliness     Complete machine damage, loose parts and earth bonds     Guards, screens, warning and safety labels     Maintenance access	<ul> <li>Synchronisation settings</li> <li>Initial AVR and PFC set up</li> <li>AVR and PFC settings while alternator is running</li> <li>Customer connections of auxiliaries</li> <li>Function of auxiliaries</li> <li>Synchronisation while alternator is running</li> </ul>	Condition of windings Customer settings for temperature sensors  Test Insulation resistance of all windings Temperature sensors while alternator is running	<ul> <li>Condition of bearings</li> <li>Customer settings for temperature sensors</li> <li>Test</li> <li>Temperature sensors while alternator is running</li> </ul>
Ambient temperature (inside	Cooling	Rectifier	Terminal Box
and outside)  Electrical nominal operating conditions and excitations while alternator is running  Vibration while alternator is running	Inspect Air flow (rate and direction while alternator is running) Condition of fan  Test Condition of air filter	Inspect Diodes and varistors	Inspect ■ All alternator/customer connections and cabling

#### Post Commission 250 Hours/6 Months

	Iternator	Controls and Auxiliaries	Windings	Bearings
	ILCITIALUI			bearings .
j   1	nspect	Test	Inspect	Inspect
3   [	Environmental conditions and cleanliness	<ul> <li>AVR and PFC settings while alternator is running</li> </ul>	Condition of windings	Condition of bearings
<u>ا</u>	Complete machine damage,	Function of auxiliaries	Test	Test
•	loose parts, and earth bonds	<ul> <li>Synchronisation while alternator is running</li> </ul>	<ul> <li>Insulation resistance of all windings</li> </ul>	<ul> <li>Temperature sensors while alternator is running</li> </ul>
•	Guards, screens, warning and safety labels		Insulation resistance of	Clean
	and salety labels		rotor, exciter and PMG	Grease exhaust and trap
1	est		<ul> <li>Temperature sensors while alternator is running</li> </ul>	(Re-greasable bearings only)
	Ambient temperature (inside		■ Insulation resistance of	Replace
١.	and outside)		rotor, exciter and PMG	■ Grease for re-greasable
	Electrical nominal operating conditions and excitations			bearings
	while alternator is running	Cooling	Rectifier	Terminal Box
	Vibration while alternator is			_
	running	Inspect	Inspect	Inspect
		Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>
		Test		
		Condition of air filter		
		Clean		
		■ Air filter		

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#### a 1,000 Hours/1 Year Service

	Alternator	Controls and Auxiliaries	Windings	Bearings
3117 00/00/10	Inspect     Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)     Electrical nominal operating	Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings Insulation resistance of rotor, exciter, and PMG Temperature sensors while alternator is running	Test  Temperature sensors while alternator is running  Replace Bearing grease  Clean Grease exhaust and trap
	conditions and excitations while alternator is running  Vibration while alternator is running	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect Diodes and varistors	Terminal Box  Inspect ■ All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

10,000 Hours/2 Tear Service			
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)	Inspect  Anti condensation heater  Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings Temperature sensors while alternator is running	Test  Temperature sensors while alternator is running  Replace Bearing grease  Clean Grease exhaust and trap
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> <li>Vibration while alternator is running</li> </ul>	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Inspect Diodes and varistors	Inspect  All alternator/customer connections and cabling

#### S4/S5/S6 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the S4/S5/S6 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents
<b>A051C225</b> (HC4/S4 1 Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>NDE Bearing Kit</li></ul>
<b>A051C230</b> (HC4/S4 2 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ DE and NDE Bearing Kit
<b>A051C232</b> (HC5/ S5/S5D 1 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit NDE Bearing Kit
A051Z125 (HC5 / S5 1 RE-GREASABLE Bearing 30,000 Hour Service Kit	Rectifier Service Kit Regrease NDE Bearing Kit Cartridge and Cap
A051C234 (HC5 / S5 2 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Sealed DE and NDE Bearing Kit Cartridge and Cap
A051Z131 (HC5 / S5 2 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Regrease DE and NDE Bearing Kit Cartridge and Cap
A051C237 (HC6/S6/S6L1D G-H Core 1 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Sealed DE and NDE Bearing Kit Cartridge and Cap
A051C243 (HC6/S6/S6L1D G-H Core 2 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Sealed DE and NDE Bearing Kit Cartridge and Cap
A059R029 (S6L1D C-F Core 2 SEALED Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Sealed DE and NDE Bearing Kit Cartridge and Cap
A051Z133 (HC6/S6 1 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit Regrease NDE Bearing Kit Cartridge and Cap
A051Z137 (HC6/S6 2 RE-GREASABLE Bearing 30,000 Hour Service Kit)	Rectifier Service Kit     Regrease DE and NDE Bearing Kit     Cartridge and Cap

#### 30,000 Hours/5 Year Service

CO,CCC HOULD'S TOUL COLLIC			
Alternator	Controls and Auxiliaries	Windings	Bearings
Coupling arrangement     Coupling arrangement     Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)	Inspect  Anti condensation heater  Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of Windings  Test Insulation resistance of all windings Temperature sensors while alternator is running Insulation resistance of rotor, exciter and PMG	Replace  Bearings (sealed & re-greasable)  Bearing grease  Test  Temperature sensors whill alternator is running  Clean  Grease exhaust & trap (re-greasable bearings on
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> <li>Vibration while alternator is running</li> </ul>	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and varistors	Terminal Box Inspect ■ All alternator/customer connections and cabling

### P7 Alternator



P7

Alternator

Commission Post C

Post Commission 6 Month Service 1,000 Hour 1 Year Service 10,000 Hours 2 Year Service

30,000 Hours 5 Year Service



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#### Commission

Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect
<ul> <li>Synchronisation settings</li> <li>Test</li> <li>Initial AVR and PFC set up</li> <li>AVR and PFC settings settings while alternator is running</li> <li>Customer connections of auxiliaries</li> </ul>	Condition of windings  Customer settings for temperature sensors  Test  Insulation resistance of all windings (P7 test for LV/MV)  Temperature sensors while alternator is running	Condition of bearings  Customer settings for temperature sensors  Test Temperature sensors while alternator is running
<ul><li>Function of auxiliaries</li><li>Synchronisation while alternator is running</li></ul>		
Cooling	Rectifier	Terminal Box
Inspect  Air flow (rate and direction while alternator is running)  Condition of fan  Test  Condition of air filter	Inspect ■ Diodes and varistors	Inspect  All alternator/customer connections and cabling
	Inspect Synchronisation settings  Test Initial AVR and PFC set up AVR and PFC settings settings while alternator is running Customer connections of auxiliaries Function of auxiliaries Synchronisation while alternator is running  Cooling  Inspect Air flow (rate and direction while alternator is running) Condition of fan	Inspect Synchronisation settings  Test Initial AVR and PFC set up AVR and PFC settings settings while alternator is running Customer connections of auxiliaries Synchronisation while alternator is running  Cooling Rectifier  Inspect

#### Post Commission 250 Hours/6 Months

FOST CONTINUESSION 250 HOURS/O MIONIUS			
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect     Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)     Electrical nominal operating	Test  AVR and PFC settings while alternator is running Function of auxiliaries Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P7 test for LV/MV) Insulation resistance of rotor, exciter and PMG Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable bearings
conditions and excitations while alternator is running  Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect Diodes and varistors	Terminal Box  Inspect ■ All alternator/customer connections and cabling

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#### b 1,000 Hours/1 Year Service

ļ	Alternator	Controls and Auxiliaries	Windings	Bearings
	Inspect  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels	Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect ■ Condition of windings  Test ■ Insulation resistance of all windings (P7 test for LV/MV) ■ Insulation resistance of rotor, exciter, and PMG	Inspect ■ Condition of bearings  Test ■ Temperature sensors while alternator is running  Clean
ŀ	Ambient temperature (inside and outside)     Electrical nominal operating conditions and excitations while alternator is running	Cooling	Temperature sensors while alternator is running     Rectifier	<ul> <li>Grease exhaust and trap (Re-greasable bearings only)</li> <li>Replace</li> <li>Grease for re-greasable bearings</li> <li>Terminal Box</li> </ul>
	Vibration while alternator is running	Inspect ■ Condition of fan  Test ■ Condition of air filter  Clean ■ Air filter	Inspect ■ Diodes and varistors	Inspect ■ All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

10,000	10,000 Hours/2 Year Service			
Alternato	or	Controls and Auxiliaries	Windings	Bearings
Envir	oling arrangement conmental conditions cleanliness uplete machine damage, e parts, and earth	Inspect Anti condensation heater  Test AVR and PFC settings while alternator is running Customer connections of	Inspect ■ Condition of windings  Test ■ Insulation resistance of all windings (P7 test for LV/MV) ■ Temperature sensors while	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean
Test  Amb	ient temperature (inside outside)	auxiliaries Function of auxiliaries Synchronisation while alternator is running	alternator is running	<ul> <li>Grease exhaust and trap (Re-greasable bearings only)</li> <li>Replace</li> <li>Grease for re-greasable bearings</li> </ul>
cond	ditions and excitations alternator is running ation while alternator is	Inspect Condition of fan  Test	Rectifier  Inspect Diodes and varistors	Inspect All alternator/customer connections and cabling
		■ Condition of air filter  Clean ■ Air filter		

#### P7 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the P7 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents
<b>A051C251</b> (P7 1 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ (A-G) NDE Bearing Kit
A051Z145 (P7 1 SEALED Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>NDE Bearing Kit</li><li>Cartridge and Cap</li></ul>
<b>A051C255</b> (P7 2 BRG 30,000 Hour Service Kit, A-E)	■ Rectifier Service Kit ■ (A-E) DE and NDE Bearing Kit
<b>A051C257</b> (P7 2 BRG 30,000 Hour Service Kit, F-G)	■ Rectifier Service Kit ■ (F-G) DE and NDE Bearing Kit

#### 30,000 Hours/5 Year Service

30,000 nouis/3 real service	<del>-</del>		
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Replace
<ul> <li>Coupling arrangement</li> </ul>	Anti condensation heater	■ Condition of windings	■ Bearings (Sealed &
<ul> <li>Environmental conditions and cleanliness</li> </ul>	Test	Test	re-greasable)  Bearing grease
<ul> <li>Complete machine damage, loose parts, and earth bonds</li> </ul>	<ul> <li>AVR and PFC settings while alternator is running</li> </ul>	<ul> <li>Insulation resistance of all windings (P7 test for LV/MV)</li> </ul>	Test
Guards, screens, warning and safety labels	<ul> <li>Customer connections of auxiliaries</li> </ul>	<ul> <li>Temperature sensors while alternator is running</li> </ul>	<ul> <li>Temperature sensors while alternator is running</li> </ul>
and safety labels	Function of auxiliaries	<ul> <li>Insulation resistance of rotor, exciter and PMG</li> </ul>	Clean
Test	Synchronisation while alternator is running		Grease exhaust & trap
<ul> <li>Ambient temperature (inside and outside)</li> </ul>	Ū		(re-greasable bearings only)
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box
■ Vibration while alternator is	Inspect	Inspect	Inspect
running	Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>
	Test		
	Condition of air filter		
	Clean		
	Air filter		

#### S7 Alternator



S Alternator

Commission Post Commission 1,000 Hour 10,000 Hours 30,000 Hours 6 Month Service 1 Year Service 2 Year Service 5 Year Service

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Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Inspect
Alternator rating     Bedplate arrangement     Coupling arrangement     Environmental conditions and cleanliness     Complete machine damage, loose parts and earth bonds     Guards, screens, warning and safety labels     Maintenance access  Test	<ul> <li>Synchronisation settings</li> <li>Test</li> <li>Initial AVR and PFC set up</li> <li>AVR and PFC settings settings while alternator is running</li> <li>Customer connections of auxiliaries</li> <li>Function of auxiliaries</li> <li>Synchronisation while alternator is running</li> </ul>	Condition of windings  Customer settings for temperature sensors  Test Insulation resistance of all windings (P7 test for LV/MV) Temperature sensors while alternator is running	<ul> <li>Condition of bearings</li> <li>Customer settings for temperature sensors</li> <li>Test</li> <li>Temperature sensors while alternator is running</li> </ul>
<ul> <li>Ambient temperature (inside and outside)</li> </ul>	Cooling	Rectifier	Terminal Box
Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Inspect  Air flow (rate and direction while alternator is running)  Condition of fan  Test  Condition of air filter	Inspect ■ Diodes and varistors	Inspect ■ All alternator/customer connections and cabling

#### ► Post Commission 250 Hours/6 Months

Post Commission 250 Hours/6 Months			
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)  Electrical nominal operating conditions and excitations while alternator is running  Vibration while alternator is running	Test  AVR and PFC settings while alternator is running  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P7 test for LV/MV) Insulation resistance of rotor, exciter and PMG Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable bearings
	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and varistors	Inspect  All alternator/customer connections and cabling

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#### a 1,000 Hours/1 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)	Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P7 test for LV/MV) Insulation resistance of rotor, exciter, and PMG Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> <li>Vibration while alternator is running</li> </ul>	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier Inspect Diodes and varistors	bearings  Terminal Box  Inspect  All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Coupling arrangement  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Cest  Ambient temperature (inside and outside)	Inspect  Anti condensation heater  Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P7 test for LV/MV) Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings onlessed in the condition of the condi
Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and varistors	Inspect  All alternator/customer connections and cabling

#### S7 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the S7 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents
A051C251 (P7/S7 1 RE-GREASABLE Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>NDE Bearing Kit</li><li>Cartridge and Cap</li></ul>
A051Z145 (P7/S7 1 SEALED Bearing 30,000 HourService Kit)	<ul><li>Rectifier Service Kit</li><li>NDE Bearing Kit</li><li>Cartridge and Cap</li></ul>
A051C255 (P7 A-E core/S7 C-F core 2 RE-GREASABLE Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>DE Bearing Kit</li><li>Cartridge and Cap</li></ul>
A051C257 (P7 F-G core/S7 G-J core 2 RE-GREASABLE Bearing 30,000 Hour Service Kit)	<ul><li>Rectifier Service Kit</li><li>DE Bearing Kit</li><li>Cartridge and Cap</li></ul>

#### 30,000 Hours/5 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
nspect	Inspect	Inspect	Replace
Coupling arrangement	<ul> <li>Anti condensation heater</li> </ul>	■ Condition of windings	■ Bearings (Sealed &
<ul> <li>Environmental conditions and cleanliness</li> </ul>	Test	Test	re-greasable)  Bearing grease
Complete machine damage, loose parts, and earth	<ul> <li>AVR and PFC settings while alternator is running</li> </ul>	<ul> <li>Insulation resistance of all windings (S7 test for LV)</li> </ul>	Test
<ul><li>bonds</li><li>Guards, screens, warning and safety labels</li></ul>	<ul> <li>Customer connections of auxiliaries</li> </ul>	<ul> <li>Temperature sensors while alternator is running</li> </ul>	■ Temperature sensors while alternator is running
and salety labels	■ Function of auxiliaries	■ Insulation resistance of	
Test .	Synchronisation while	rotor, exciter and PMG	Clean
<ul> <li>Ambient temperature (inside and outside)</li> </ul>	alternator is running		Grease exhaust & trap (re-greasable bearings only)
Electrical nominal operating conditions and excitations while alternator is running	Cooling	Rectifier	Terminal Box
■ Vibration while alternator is	Inspect	Inspect	Inspect
running	Condition of fan	■ Diodes and varistors	<ul> <li>All alternator/customer connections and cabling</li> </ul>
	Test		
	Condition of air filter		
	Clean		
	■ Air filter		

## P80 Alternator



Commission

Post Commission 6 Month Service

1,000 Hour 1 Year Service 10,000 Hours 2 Year Service 30,000 Hours 5 Year Service



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#### Commission

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Inspect
<ul> <li>Alternator rating</li> <li>Bedplate arrangement</li> <li>Coupling arrangement</li> <li>Environmental conditions and cleanliness</li> <li>Complete machine damage, loose parts and earth bonds</li> <li>Guards, screens, warning and safety labels</li> <li>Maintenance access</li> </ul> Test	<ul> <li>Synchronisation settings</li> <li>Test</li> <li>Initial AVR and PFC set up</li> <li>AVR and PFC settings settings while alternator is running</li> <li>Customer connections of auxiliaries</li> <li>Function of auxiliaries</li> <li>Synchronisation while alternator is running</li> </ul>	Condition of windings  Customer settings for temperature sensors  Test Insulation resistance of all windings (P80 test for MV/HV) Temperature sensors while alternator is running	<ul> <li>Condition of bearings</li> <li>Customer settings for temperature sensors</li> <li>Test</li> <li>Temperature sensors while alternator is running</li> </ul>
<ul> <li>Ambient temperature (inside and outside)</li> </ul>	Cooling	Rectifier	Terminal Box
Electrical nominal operating conditions and excitations while alternator is running     Vibration while alternator is running	Inspect ■ Air flow (rate and direction while alternator is running) ■ Condition of fan  Test ■ Condition of air filter	Inspect ■ Diodes and surge suppressors	Inspect  All alternator/customer connections and cabling

#### Post Commission 250 Hours/6 Months

FUSE CONTINUESSION 230 HOURS/O MONITHS			
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Environmental conditions and cleanliness altern  Complete machine damage, loose parts, and earth  Synci	Test  AVR and PFC settings while alternator is running Function of auxiliaries Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P80 test for MV/HV) Insulation resistance of rotor, exciter and PMG Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable bearings
while alternator is running  Vibration while alternator is running	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and surge suppressors	Inspect ■ All alternator/customer connections and cabling

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#### 1,000 Hours/1 Year Service

Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect  Environmental conditions and cleanliness  Complete machine damage, loose parts, and earth bonds  Guards, screens, warning and safety labels  Test  Ambient temperature (inside and outside)  Electrical nominal operating	Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P80 test for MV/HV) Insulation resistance of rotor, exciter, and PMG Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable bearings
conditions and excitations while alternator is running  Vibration while alternator is running	Cooling Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Rectifier  Inspect  Diodes and surge suppressors	Terminal Box  Inspect ■ All alternator/customer connections and cabling

#### 10,000 Hours/2 Year Service

3	10,000 Hours/2 Year Service			
2	Alternator	Controls and Auxiliaries	Windings	Bearings
r ou Aitematu	Coupling arrangement     Coupling arrangement     Environmental conditions and cleanliness     Complete machine damage, loose parts, and earth bonds     Guards, screens, warning and safety labels  Test     Ambient temperature (inside and outside)	Inspect  Anti condensation heater  Test  AVR and PFC settings while alternator is running  Customer connections of auxiliaries  Function of auxiliaries  Synchronisation while alternator is running	Inspect Condition of windings  Test Insulation resistance of all windings (P80 test for MV/HV) Temperature sensors while alternator is running	Inspect Condition of bearings  Test Temperature sensors while alternator is running  Clean Grease exhaust and trap (Re-greasable bearings only)  Replace Grease for re-greasable bearings
	<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box
	Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter  Clean Air filter	Inspect ■ Diodes and surge suppressors	Inspect  All alternator/customer connections and cabling

#### P80 Alternator 30,000 Hours/5 Year Service Kits

For the 30,000 hour service interval we recommend replacing several components in order to optimise the alternator's performance.

For the P80 alternator, the kits detailed in this table contain all parts necessary to execute the maintenance and repairs.

Kit Number	Contents		
<b>A051C282</b> (P80 1 Bearing 30,000 Hour Service Kit)	<ul> <li>Rectifier Service Kit</li> <li>NDE Bearing Kit</li> <li>Rectifier Service Kit</li> <li>Bearing Kit Frame R, S, &amp; T</li> </ul>		
<b>A051C285</b> (P80 2 Bearing 30,000 Hour Service Kit)			
<b>A051C291</b> (P80 2 Bearing 30,000 Hour Service Kit)	■ Rectifier Service Kit ■ Bearing Kit Frame X, Y, & Z		

#### 30,000 Hours/5 Year Service

30,000 Hours/5 Year Service	•		
Alternator	Controls and Auxiliaries	Windings	Bearings
Inspect	Inspect	Inspect	Replace
<ul><li>Coupling arrangement</li><li>Environmental conditions and cleanliness</li></ul>	Anti condensation heater  Test	Condition of windings  Test	<ul><li>Bearings (sealed &amp; re-greasable)</li><li>Bearing grease</li></ul>
Complete machine damage, loose parts, and earth bonds Guards, screens, warning and safety labels  Test Ambient temperature (inside and outside)	AVR and PFC settings while alternator is running     Customer connections of auxiliaries     Function of auxiliaries     Synchronisation while alternator is running	Insulation resistance of all windings (P80 test for MV/HV)     Temperature sensors while alternator is running     Insulation resistance of rotor, exciter and PMG	Test  Temperature sensors while alternator is running  Clean Grease exhaust & trap (re-greasable bearings only)
<ul> <li>Electrical nominal operating conditions and excitations while alternator is running</li> </ul>	Cooling	Rectifier	Terminal Box
Vibration while alternator is running	Inspect Condition of fan  Test Condition of air filter	Inspect ■ Diodes and surge suppressors	Inspect  All alternator/customer connections and cabling

#### Guaranteed **STAMFORD**®

We guarantee that every product we produce matches the quality, robustness, and proven performance you expect from the STAMFORD range. Built to our quality assured standards, STAMFORD products benefit from a global support network, extensive research and development, and world-leading expertise.

Where people need power, businesses rely on genuine STAMFORD alternators. Proven expertise in design, development, manufacturing, customer support and servicing, ensures quality in every aspect of our business.

Visit **genuine-stamford.com** to find out how we are protecting our customers and their businesses against the dangers of illegal, counterfeit and imitation products and taking action.



#### The Power of More™

Selecting the right alternator for the right application in today's complex world is our goal - making your life simpler. We understand the performance requirements that each application and operating environment demands. Our knowledgeable and experienced Customer Engineers align individual customers' power needs with the most suitable alternator specification.

We take pride in our global reputation for Technical Support and After Sales Service, continually adding new, trained engineers in locations near to our customers, worldwide.

Cummins engineers are experienced professionals trained in electrical, electronic and mechanical engineering and are ready to help at any point in the **STAMFORD** alternator lifecycle, minimising risk of unexpected downtime.

What this means to you:

- 24 hour response to service emergencies,7 days a week
- Trained engineers available locally, speaking the local language
- Commissioning of alternators onsite
- Onsite bearing maintenance and bearing condition monitoring
- Onsite insulation integrity checks
- AVR and accessories set up onsite
- Extensive aftermarket distribution for genuine **STAMFORD** parts

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