

Application Guidance Notes: Technical Information from Cummins Generator Technologies

AGN 230 – S0/S1 Alternators

INTRODUCTION

Cummins Generator Technologies (CGT) are part-way through a product ‘refresh’ programme on the **STAMFORD®** range of alternators, from P0/P1 to P80. The new **STAMFORD®** S-Range will replace our current product line, with the ‘S’ nomenclature [S0/S1/S2/S3/S4/S5/S6/S7/S8/S9]. Future development work may include the introduction of S10 products.

Each development programme will be led from one of our regional design centres, enabling us to leverage our global expertise and knowledge in product development. This new product range will be available from our India, China and European manufacturing facilities.

The first alternators, now available, in the new **STAMFORD®** S-Range are the S0/S1 alternators. These alternators ranges from 7.5 kVA to 62.5 kVA with various voltages, for single phase and 3-phase outputs.

S0/S1 ALTERNATOR DESIGN

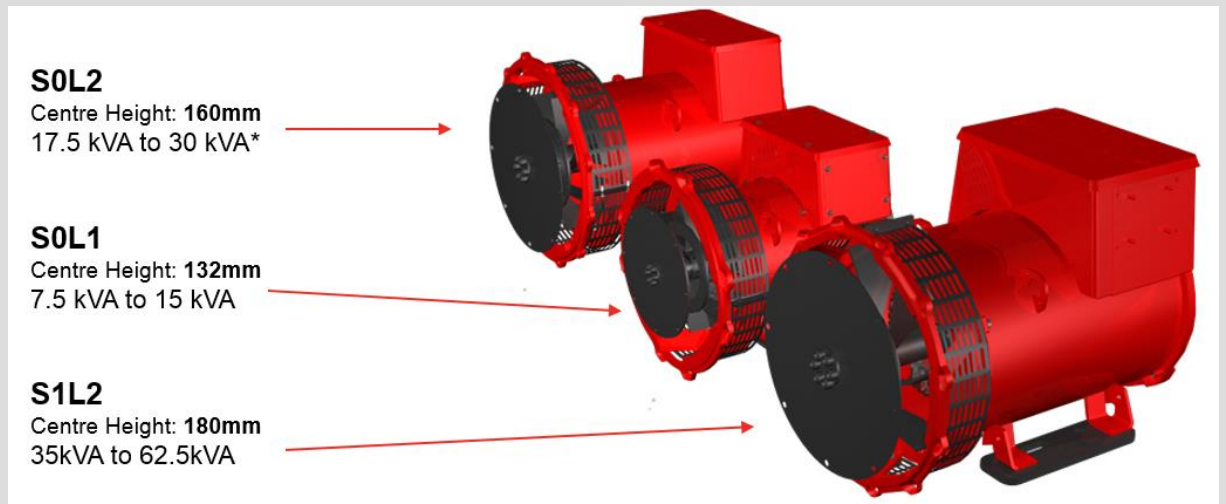
The S0/S1 alternators are designed on three frame sizes:

S0L1 – 132 Centre Height – 7.5kVA to 15kVA

S0L2 – 160 Centre Height – 17.5kVA to 30kVA

S1L2 – 180 Centre Height – 35kVA to 62.5kVA

For ratings of individual S0/S1 alternators, refer to the Stamford Industrial Ratings Book.



The S0/S1 introduces a completely new design using 100% new parts; designed to maximize performance at minimum cost without compromising quality. The new design is also customer friendly, with the following features:

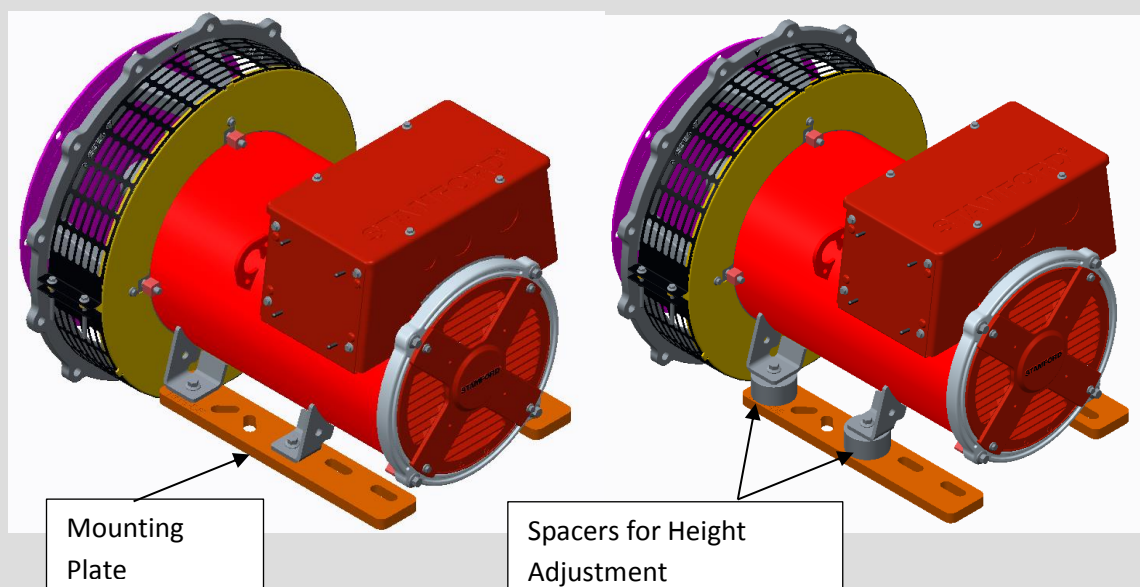
- Flexible mounting arrangements
- Flexible terminal box
- Easy access for coupling

The flexible mounting design offers a foot plate arrangement, which is a bar with various holes, and this is standard on all machines. An optional spacer is available – a cylindrical black component - that increases the centre height.

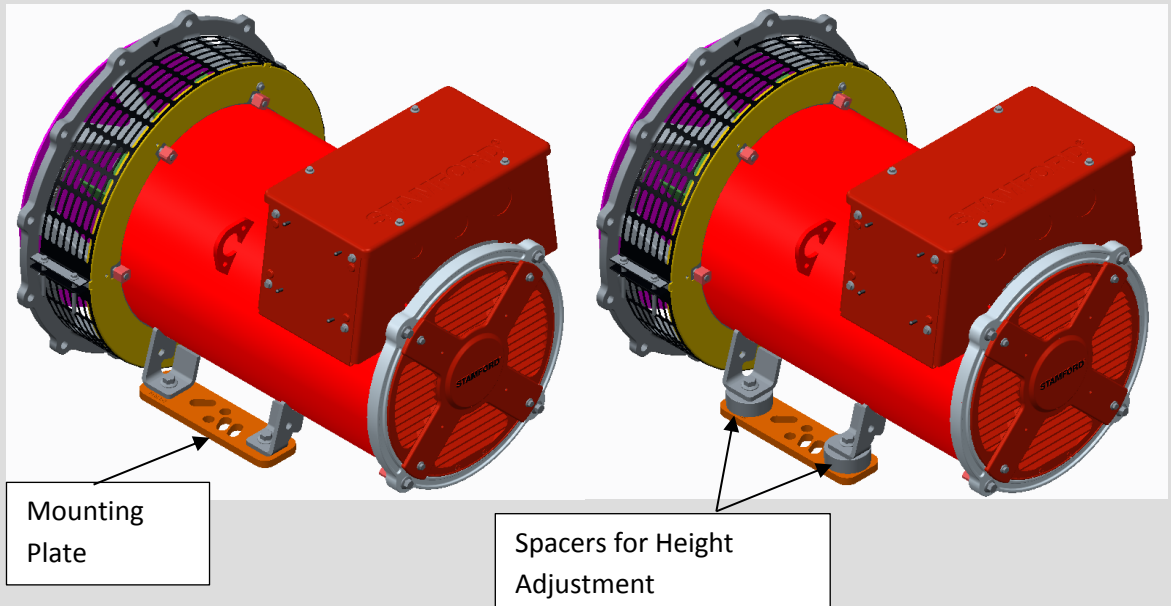
Flexible Mounting Arrangements

The S0/S1 alternators are designed with a flexible mounting arrangement to match all conceivable generating set fitting. Optional spacers can be used to adjust the centre height of the alternators.

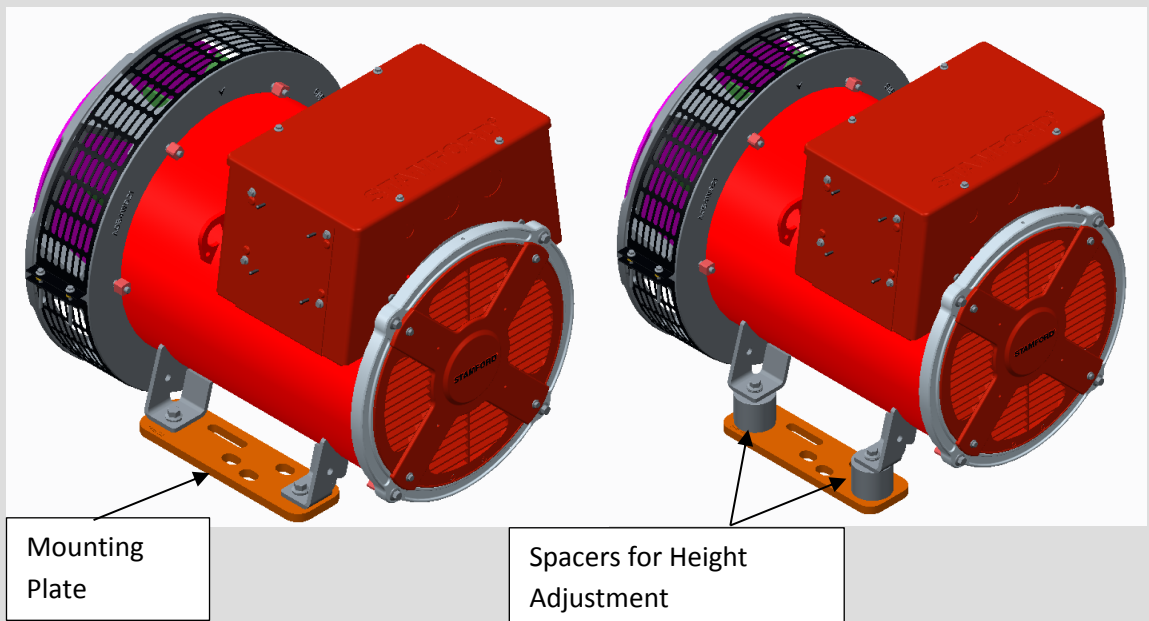
S0L1 Mounting Arrangement



S0L2 Mounting Arrangement



S1L2 Mounting Arrangement



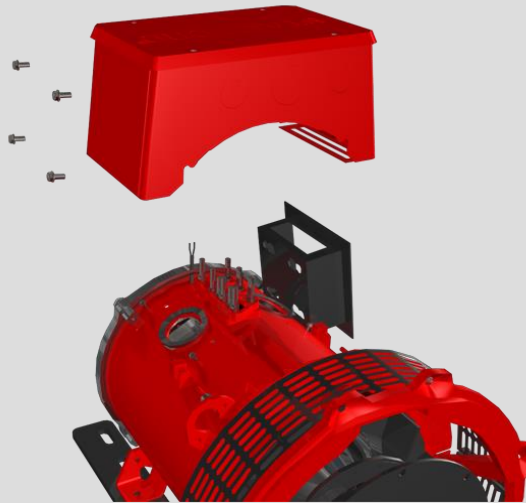
The Centre Heights for standard frame sizes and with the optional spacers are as follows:

S0/S1 Machine Frame	Standard Centre Height	Optional Centre Height
S0L1	132 mm	160 mm
S0L2	160 mm	180 mm
S1L2	180 mm	200 mm and 225 mm

Hard mounting: S0/S1 alternators are not suitable for hard mounting. AVM (Anti Vibration mountings) need to be used below the mounting plate of the alternators.

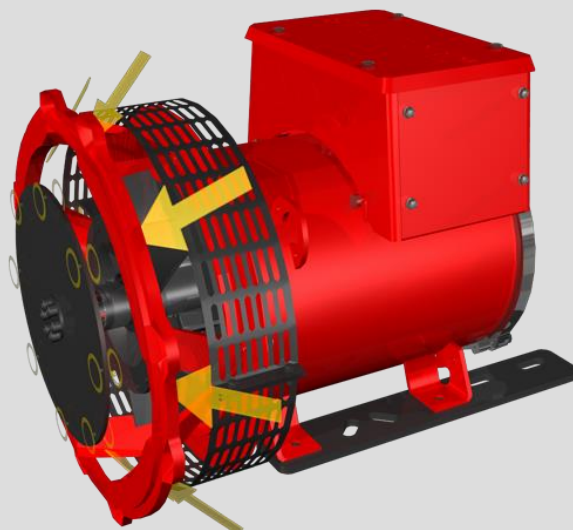
Flexible Terminal Box

The terminal box is spacious, upfittable and has a separate panel for the AVR. To provide flexibility in cable entry options, the terminal box has different size knockouts on three sides.



Easy Access for Coupling

In response to feedback from customers, the hand space in the drive end adaptor is designed with increased space of 20% to 35%, when comparing against the P0/P1 alternators. This should effectively reduce the time taken for engaging the coupling disc with flywheel.



S0/S1 ALTERNATOR OPTIONS AND ACCESSORIES

The S0/S1 alternators are available with the following options and features:

Frame	S0L1	S0L2	S1L2
Adaptor	3	3	3
	4	4	4
	5	5	GM
Coupling Disc	6.5	6.5	
	7.5	7.5	10
	10	10	11.5
	11.5	11.5	GM
Centre Height	132 mm (Default)	160 mm (Default)	180 mm (Default)
	160 mm	180 mm	200mm, 225 mm
Terminal Box	Standard (Default)	Standard (Default)	Standard (Default)
	None	None	Large (NEMA) None
AVR Position	Left, seen from NDE (Default)	Left, seen from NDE (Default)	Left, seen from NDE (Default)
	Right, seen from NDE	Right, seen from NDE	Right, seen from NDE
	Loose	Loose	Loose
AVR	AS540 (Default)	AS540 (Default)	AS540 (Default)
	None	None	None

In addition, there are the following specific options:

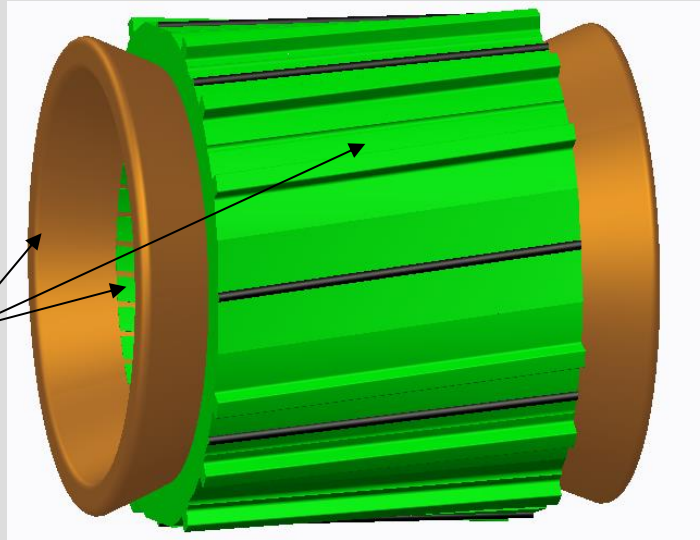
- Gel coat option for humid environments
- Auxiliary winding option

Gel Coat Option for Humid Environment

All S0/S1 alternators are the option of a Gel coating on the stator winding, for operating in high humidity environments. The Gel Coat option is intended as extra protection for the stator winding when the alternator is operating in conditions where the humidity (RH) exceeds 65%. This option should be used in conjunction with fitting an anti-condensation heater, where appropriate, for use when the alternator is stationary.

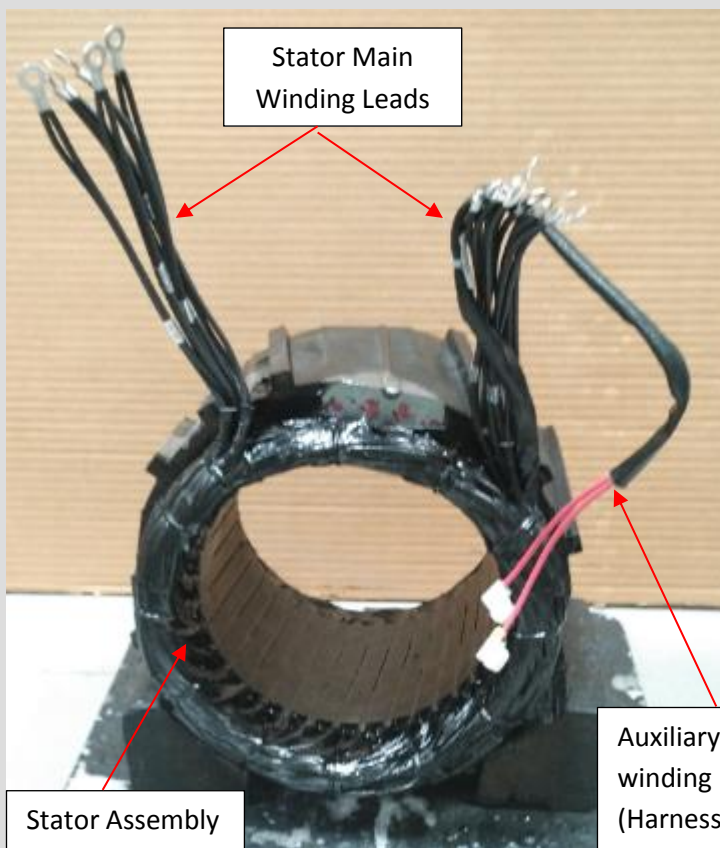
The alternator does not require a de-rate of the output kVA when the Gel Coat option is applied.

Gelcoat is provided on stator exterior, interior and on main windings

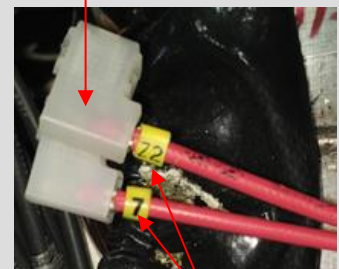


Auxiliary Winding Option

The auxiliary winding is designed to replace the function of the EBS (P0/P1) or PMG. The EBS and PMG options are not available on S0/S1 alternators. The auxiliary winding is mounted inside the stator along with main winding.



Flag Terminals with Insulators



Marker Ferrules '22' & '7'

S0/S1 alternators have the following winding options:

- Standard Winding 311 for 3-phase outputs at 50H and 60Hz
- Standard Winding 05 single-phase outputs at 50Hz
- Standard Winding 06 single-phase outputs at 60Hz

The standard winding options are available on all S0/S1 alternators.

- Auxiliary Winding 711 for 3-phase outputs at 50H and 60Hz
- Auxiliary Winding 705 single-phase outputs at 50Hz
- Auxiliary Winding 706 single-phase outputs at 60Hz

The auxiliary winding options are available on all S0L2 and S1L2 alternators only.

The request for an auxiliary winding must be included at the time of order placement. The auxiliary winding option is not upfittable

APPLICATIONS

The S0/S1 alternators are purposely designed for general industrial continuous and standby operation. They are ideal for small output requirements for:

- Telecommunications
- Mobile Construction
- Combined Heat and Power (CHP)
- Critical Power (UPS)

These S0/S1 alternators are not suitable for Marine or Oil and Gas applications. The P0/P1 alternators are suitable for these applications.