CHALWYN
by AMOT

Flameproof Alternator

Installation, Operation and Maintenance

Alternator Types
ASX-400

CE242 (5) 0509 ASX_0509

DESCRIPTION

Twelve pole rotating field coil type externally excited alternators designed and approved as Category 2G/D equipment and rated for a continuous output of 24 volts/50 Amperes at 6000 rpm.

ASX-400 alternators are marked as follows:-

CHALWYN Ltd., POOLE, ENGLAND

CE 0518 SIRA 07ATEX1171X

TYPE ASX-400 SERIAL NO. xxxxx

Ex d IIB T4 (Ta = -30°c to 50°c)

Ex tD A21 IP66 T135°c

Ex II 2 G D

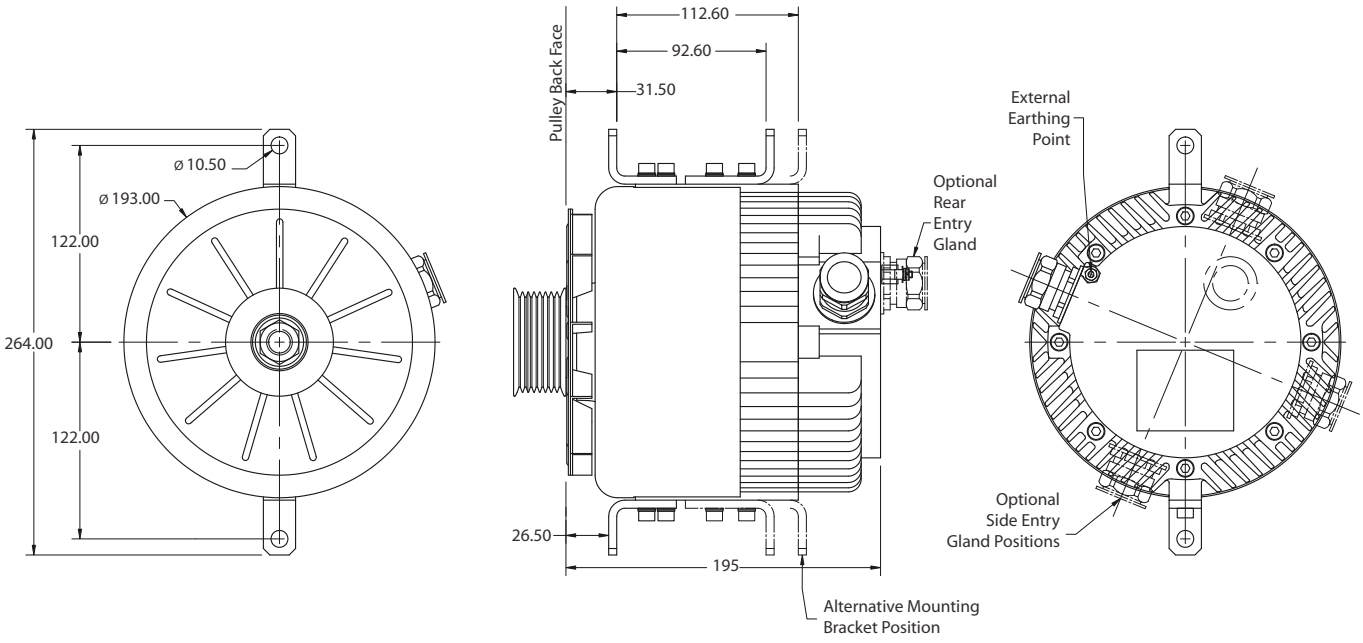
OUTPUT 28V 50A MAX 7000RPM MAX

Internal Cable Temp rise 84°C at Max Power - Use suitable Cable Thread Entries - M25 x 1.5

Minimum grade of cover fasteners 12.9

Warning. Do not open when explosive gas and/or dust atmosphere is present

The outer enclosure of these alternators is manufactured from LM 25 castings. Fan, fan discs, cowls and pulleys are manufactured from carbon steel. Overall dimensions are as given below.



The various alternative “side entry” gland positions are selected by a combination of rotating the alternator rear cover and by moving the rear mounting bracket to the alternative position shown. Similarly alternative “rear entry” gland positions can be achieved.

A number of alternative single or multigroove pulleys are available. Contact Chalwyn Sales for up to date details of the standard range.

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sales@chalwyn.co.uk

APPLICATION

This product is approved for use in Zone 1, Group IIB, T4 hazardous areas and is designed for use as an engine mounted belt driven alternator. It should **NOT** be used for other types of application without the prior approval of Chalwyn Ltd.

A speed signal output is available.

Note: The output demand on the alternator is not to exceed the rated 50 amperes.

SELECTION

At the time of ordering, the following need to be specified :-

(a) Whether “side entry” or “rear entry” cable gland required.

(b) Whether gland is to suit armoured or non armoured cable.

(c) Pulley selection. Take into account alternator speed range (see paragraph 2, Page 4) as well as belt selection. For latest details of the range of suitable pulleys please contact Chalwyn Sales Dept. Note, if a non Chalwyn pulley is to be fitted, please forward details to Chalwyn for approval.

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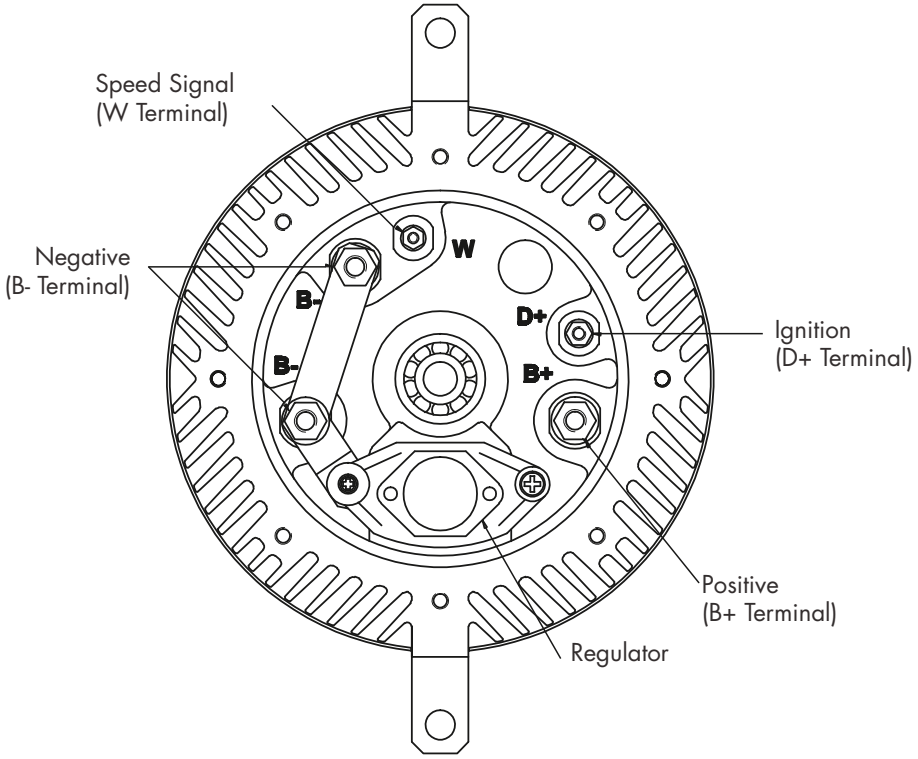
INSTALLATION

ASX-400 – Rear Cover removed to show Terminals



1. Remove any existing non flame proof alternator from the diesel engine.

2. Check the alternator drive pulley ratio. In the case of fixed speed applications the pulley drive should be arranged to give a continuous alternator speed of between 4,000 rpm and 6,000 rpm. In the case of variable speed applications the pulley ratio should be selected to give an alternator speed of 2000 to 2,500 rpm at the engine low idle. This typically equates to a normal operating alternator speed range of about 3,000 rpm to 6,000 rpm. MAXIMUM alternator speed should not exceed 7,000 rpm.

3. Prepare to fit the Chalwyn ASX-400 alternator in place of the standard alternator by modifying the support bracket and belt tensioning link as necessary. Check that adequate belt adjustment is available. Note that the position of the rear alternator mounting bracket may be adjusted using the slots and/or the alternative tapping positions for the bracket fasteners. (See also “Special Conditions for safe use” on page 5).

4. Finalise the position of the selected cable gland entry by a combination of rating the rear cover and switching the alternator rear mounting bracket from

NOTES: CABLE GLAND SUPPLIED WITH ALTERNATOR - OPTIONAL TYPES

Gland CG-01

(a) This is intended for use with non armoured cable with an outer sheath in the size range 12mm to 20.5mm diameter.
(b) Always fit the cable clamp CG-18 supplied with gland CG-01.

Gland CG-17

This is intended for use with armoured cable with an inner sheath in the size range 12 to 20.5mm diameter and an outer sheath in the size range 16 to 27.5mm diameter

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side to side. Ensure that with the combination selected and the finalised cable entry position the cable does not snag on any internal component when the alternator rear cover is fitted to the alternator and that the cable can be routed away from the alternator in such a way as to avoid potential mechanical or heat damage.

5. With the rear cover removed prepare correctly rated cable (10mm^2 conductor section minimum) for fitting to the terminals. Note the B+ and B- terminals are designed for M8 ring connections. The D+ terminal is designed for a M5 ring connection. When slackening or tightening the terminal nuts take care not to slacken the nuts at the base of the terminal posts. Check and tighten these if necessary. If a speed signal is required connect to the 'W' terminal with a M4 ring connection. Again avoid slackening the nut at the base of the post. Use cable ties as appropriate to prevent cable damage.

6. Refit the rear cover after ensuring the 'O' ring seal is undamaged and is properly seated in the seal groove. Torque the rear cover fasteners to 15Nm.

7. Fit alternator to engine. Fit the external earth wire from the M4 tapped hole in the Alternator rear cover to a clean position on the engine as follows. Remove the nut, spring washer and tab washer from the hexagonal terminal post. Use a 4mm^2 section cable and a M4 ring terminal which should be fitted over the terminal stud. Replace the tab washer with the tab orientated towards the rear cover so that it is prevented from rotating by the hexagonal post. Replace the spring washer and nut and tighten securely.
NOTE: Check that the engine is also electrically bonded to its base frame or equivalent.

8. Fit an antistatic (conductive) drive belt and check it is correctly tensioned.

9. The ignition/excitation cable to the Chalwyn alternator must be connected via a warning lamp as in an automotive style arrangement.
This warning lamp to illuminate to indicate :

a) Engine not running. Ignition (excitation) circuit powered.

b) Engine running. Alternator output low (battery discharging).

SPECIAL CONDITIONS FOR SAFE USE:

a) When finalising the installed position of the alternator ensure that over the range permitted for drive belt adjustment, at no point shall the rotating parts of the alternator come within 5mm. of any item against which rubbing could occur.

b) Flamepath gaps within the alternator are smaller than the maximum permitted by EN 60079-1. The flamepath gaps shall not be enlarged during service.

c) Output voltage from the alternator is controlled by an internal regulator. It is recommended however that "over voltage" protection is fitted to any circuit supplied by the alternator in which one or more components could become a potential source of ignition should " over voltage" occur.

OPERATION

Operate engine as per a normal diesel engine. ie. Turn ignition on (ignition warning lamp should illuminate). Crank engine and run up to speed (warning lamp should cease to be illuminated). Should ignition warning light illuminate at any time that the engine is running within its normal speed range, the engine must immediately be shut down for alternator, battery and electrical system checks to determine the reasons for the problem. The engine must not be operated again in a hazardous area until the problem has been identified and rectified.

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MAINTENANCE

Routine maintenance is to be undertaken as follows :

MONTHLY

- Check drive belt is in serviceable condition and is correctly tensioned.
- Check alternator mounting fasteners are tight.
- Check alternator cable is properly supported and free from damage.
- Check air passages under fan cowl are clear of any significant build up of foreign matter.
- Check to ensure good electrical bonding exists between the alternator, engine and engine base frame and,if applicable, the metal braiding of the alternator output armoured cable.

THREE MONTHLY

- Check end float at alternator cooling fan. This must not exceed 0.2mm when alternator is cold.
- Check fan to cowl clearance. At worst point this must be greater than 1.0mm.

YEARLY
(or each 2,000 hours - whichever occurs sooner)

- Remove alternator rear cover. Loosen the two fasteners locating the regulator carefully noting the position of the insulating and steel washers (see diagram under INSTALLATION). Replace regulator and brush assembly with a new assembly ensuring the various washers are replaced correctly and the fasteners are re-tightened.
- Clear any dust from the rear cover area. Check cable condition is acceptable for further service. Check and tighten as necessary all terminals.
- Check in turn that each alternator terminal is electrically isolated from the alternator body.
- Check rear cover ‘O’ ring seal is suitable for further service and is properly located in the seal groove. Refit rear cover torqueing fasteners to 15Nm. Tighten cable gland.

Maintenance Notes:
The M6 socket head cap screws utilised for fastening the end covers must only be replaced by cap screws with a yield strength better or equal to grade 12.9 and standard to the requirements of EN 60079-1:2004.

Any maintenance problems not covered by the above routine maintenance schedule should be discussed with your Chalwyn Distributor before any repair work is undertaken.

When re-installing the alternator always ensure compliance with the “Special Conditions for Safe Use” listed on page 5.

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