

# CHALWYN

DIESEL PROTECTION SYSTEMS

## **Flame proof Alternator**

# **INSTALLATION, OPERATION & MAINTENANCE**

ELECTRONIC - HYDRAULIC - SYSTEMS

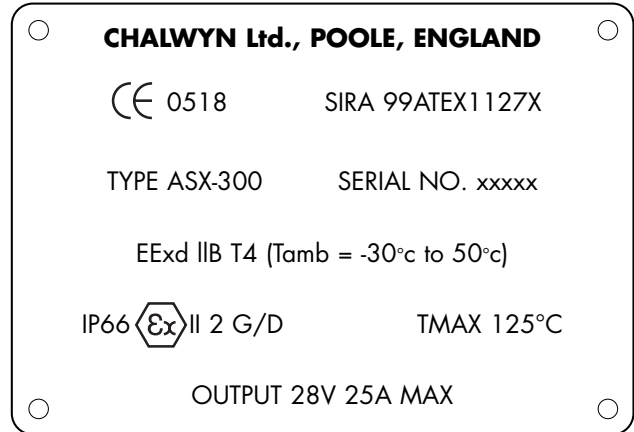
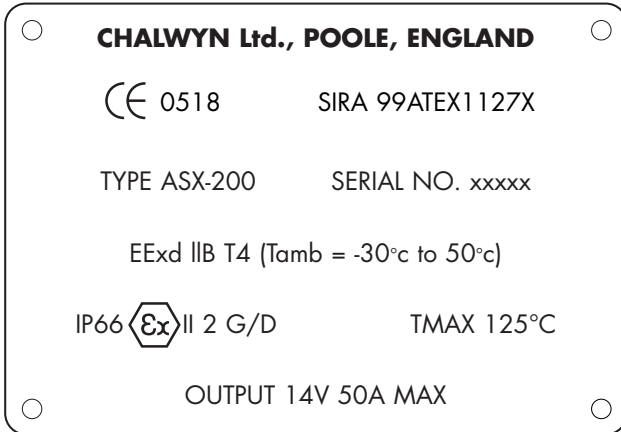
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**Alternator Types**

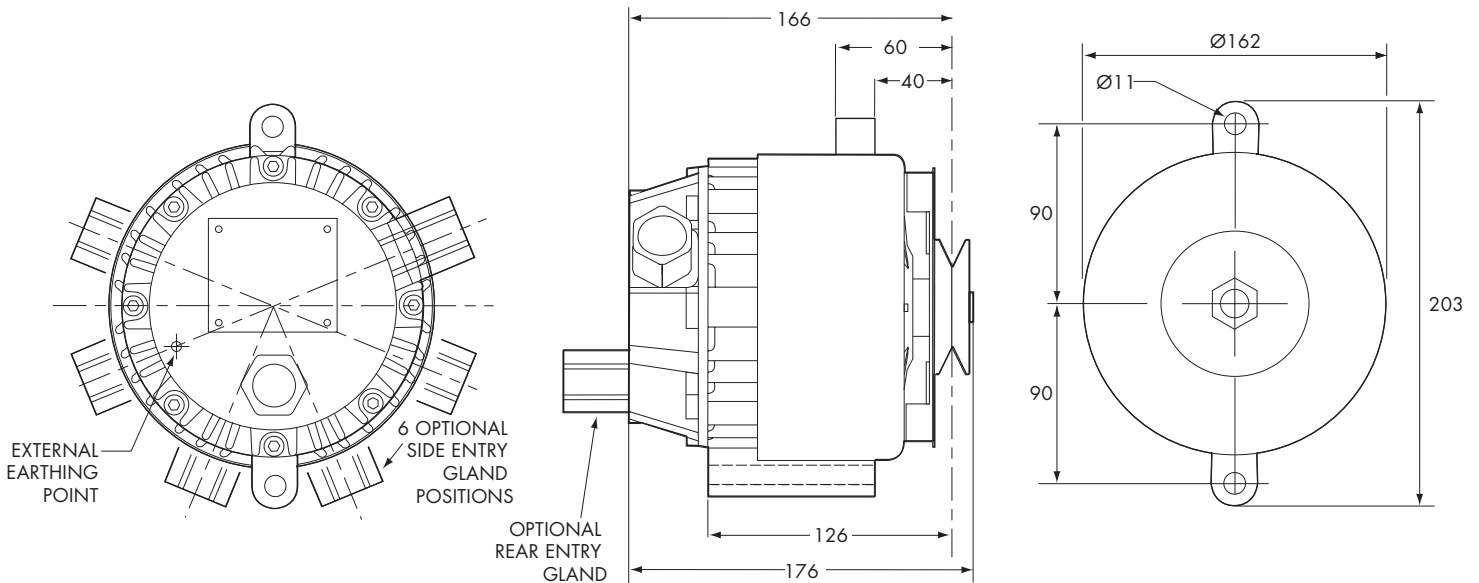
**ASX-200 ASX-300**

## DESCRIPTION

Six pole rotating field coil type externally excited alternators. To provide a speed signal and sufficient power output to charge a typical small to medium sized diesel engine start battery. Designed as Category 2G/D equipment and marked :



Enclosure machined from LM25 die castings. Fan, fan disc, cowl and pulley manufactured in carbon steel. Overall dimensions are as given below. Note, "side" or "rear" entry options available for the cable.



## APPLICATION

Designed for application as a belt driven diesel engine mounted alternator for use in hazardous areas classified as zone 1, group IIB, T4 and suitable for a local ambient temperature range between -30°C and +50°C.

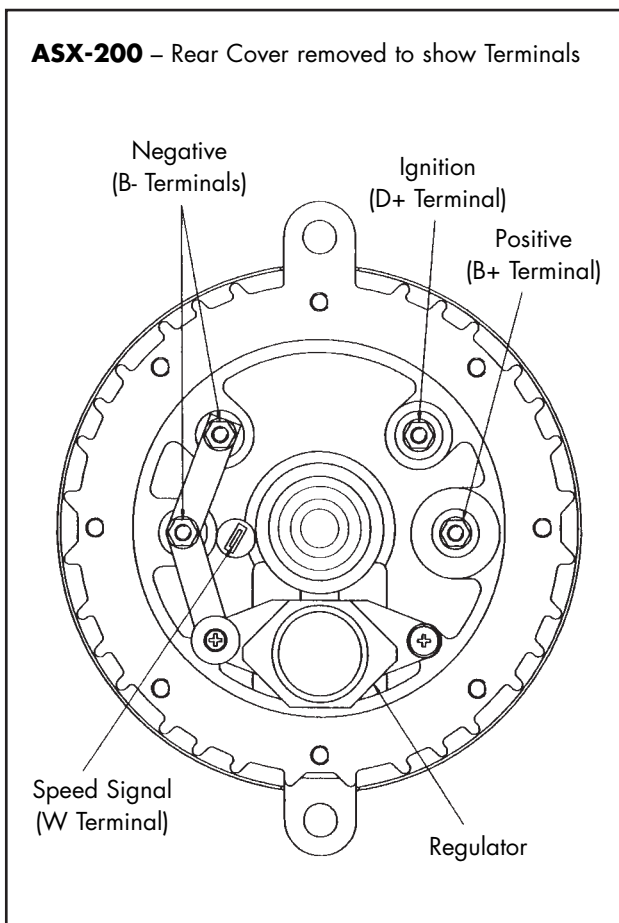
- The output demand not to exceed 50 amps for the ASX-200.
- The output demand not to exceed 25 amps for the ASX-300.

**This equipment must not be used for other applications without the prior approval of Chalwyn Equipment.**

## INSTALLATION

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 5,000 rpm and 7,000 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 3,500 rpm to 8,000 rpm.
3. Prepare to fit the Chalwyn ASX-200 or ASX-300 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. Ensure that with the selected cable entry position, the alternator cable can be routed away from the alternator in such a way as to avoid potential mechanical or heat damage.

**NOTE:** Either the cable "rear" entry or "side" entry type arrangement must be specified at the time the alternator is ordered from Chalwyn. Once selected, the rear cover of the alternator may be rotated to any one of six different positions to give the full range of cable entry options.



4. Remove rear cover of alternator. Prepare correctly rated cable for fitting to the terminals as shown below. Note, the main positive and negative terminals and the ignition (excitation) positive terminal are designed for M5 ring connections. When slackening or tightening the "Nyloc" terminal nuts, particular care should be taken not to slacken the M5 nuts at the base of the terminal posts. Check these are tight after removing the "Nyloc" nuts. When tightening the Nyloc nuts prevent the terminal post nuts from rotating by holding with an open spanner. The speed signal connection should be made using a right angle spade connector to avoid bending the cable ( eg. RS part 161-2008). Use ties to restrain the cables to prevent mechanical damage
5. 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.
6. Fit alternator to engine. Fit external earth wire from M4 tapped hole in the Alternator rear cover to a clean position on the engine. Use a 4mm<sup>2</sup> section cable, ring terminals and shake proof washers. NOTE: Check that the engine is also electrically bonded to its base frame or equivalent.

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

8. 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 Note:

The cable entry point exceeds 70°C under rated conditions, therefore, in accordance with EN 50014:1997 clause 16.8, suitably rated cable shall be selected for installation.

## 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.

## 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.

### 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 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.
- Check air passages under fan cowl are clear of any significant build up of foreign matter.

### Maintenance Note:

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 830 N/mm<sup>2</sup> in accordance with EN 50018:1994, clause 11.3.

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