333 310

# VDO

# FITTING INSTRUCTIONS

## Alternator Tachometer (IC) 0-4000 RPM – 80 mm.

**Application:**
Multi Phase Star Winding Alternator (e.g. Nippon Denso).
Single Phase Star Winding and Delta Winding Alternator (e.g. Bosch, Delco Remy).

**Technical Data:**
12 + 24 volt DC negative earth only. Range 0-4000 rpm. Diameter 80 mm, Depth 80 mm.

**General Installation:**
Select a suitable position, making sure that rear of tachometer has sufficient clearance from existing equipment.
Cut 81 mm diameter hole for in-dash mounting or utilise VDO Bracket, Catalogue No. 230 003 for under-dash installation.
Follow wiring diagram 1 below if alternator has tacho pick-up already fitted. The pick-up terminal will be marked either: – "W" – "STA" – "AC" – "STY" – "SINUS"
If no pick-up is provided, refer diagrams 1, 2, 3 overleaf.

**Wiring Instructions:**
**Important:** Before attempting any wiring, always disconnect battery earth lead. For electrical connections, simply follow appropriate wiring diagram.

**Calculation of Frequency:**
The Hertz Value (number of pulses per second) for full scale deflection of the instrument is calculated using the following formula:

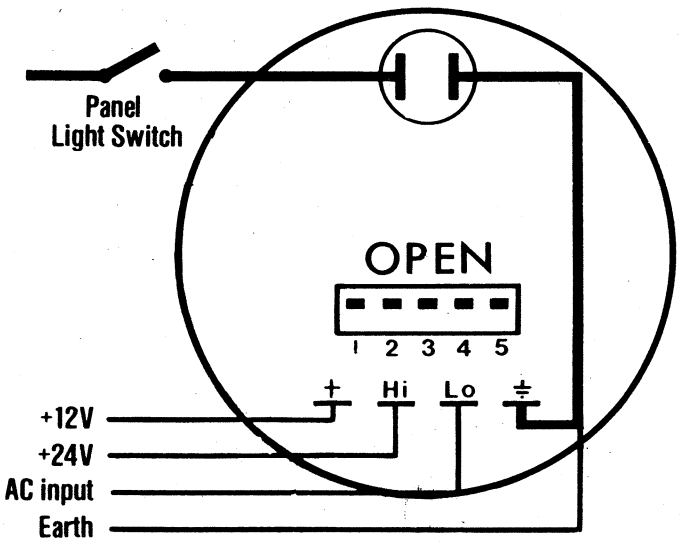
$$Hz = \frac{C.S.P.D. \times F.S.D. \times P/R \times 0.98}{A.P.D. \times 60}$$

Where C.S.P.D. = Crankshaft Pulley Diameter.
A.P.D. = Alternator Pulley Diameter.
F.S.D. = Full Scale Deflection, i.e. 4000 rpm.
P/R = Number of pulses per revolution of alternator rotor.
For single phase pick-up or Delta wired stator: P/R = Number of pole pairs of rotor.
For Star Point pick-up: P/R = 3 x number of pole pairs of rotor. 0.98 = Correction Factor for belt driven alternators.
For gear driven alternators Factor = 1. However, special consideration must be given to ratio between alternator and crankshaft.

**Diameters:**
To be measured to outside of "V" and in same units. Select appropriate switch position in accordance with table below.

| Switch Position | Minimum Hz | Maximum Hz |
|---|---|---|
| 1 | 200 | 500 |
| 2 | 400 | 800 |
| 3 | 600 | 1200 |
| 4 | 800 | 1600 |
| 5 | 1200 | 2500 |

Fine adjustment potentiometer located on side of instrument (adjust with care).




Part No. 36942

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# FITTING INSTRUCTIONS

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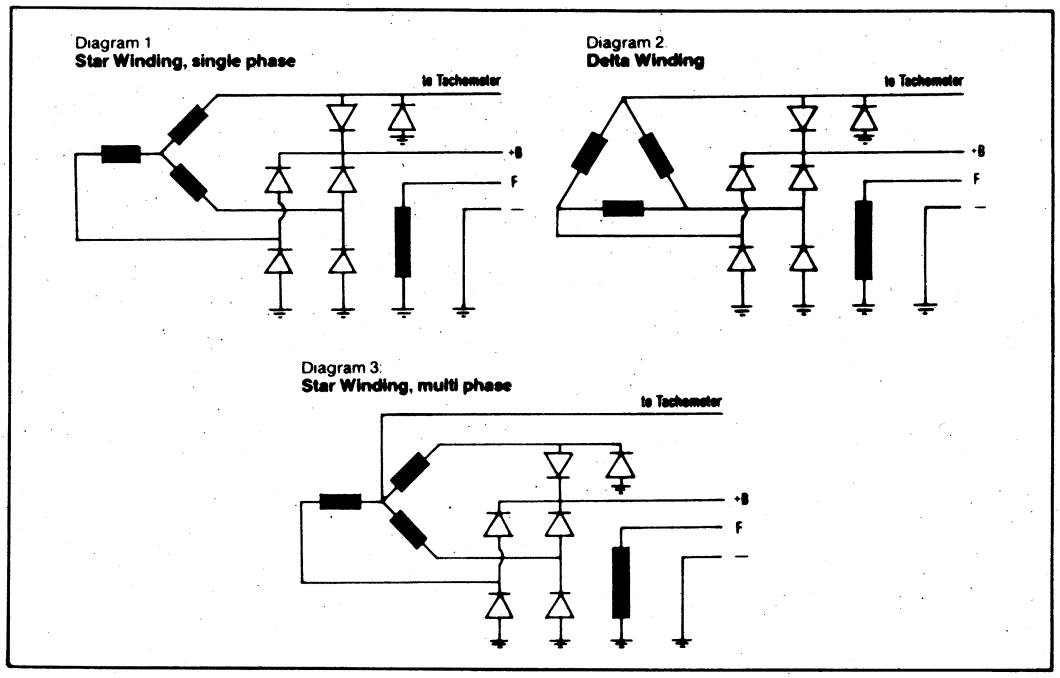
### TO THE AUTO ELECTRICIAN

The signal to the tachometer is alternating current of a frequency which is directly proportional to the speed of the engine. This signal is picked up from either the star-point if available, otherwise, one phase prior to rectification.

The location of the pick-up point depends upon the physical construction of the alternator and the electrical characteristics of alternator-regulator, e.g. most Japanese alternators with mechanical regulators have the star-point wire joining alternator to regulator and thus this connection is readily made.

In the case of alternators without star-point provisions, e.g. with in-built electronics regulators, the alternator must be removed from the vehicle, dismantled, and connection made to a SINGLE phase output prior to the rectifiers, e.g. to where stator winding is soldered to diode bank (select one of three).

**Note:** Some American and European alternators have this point coming out. All Delta wound alternators are treated as single phase.





**VDO INSTRUMENTS AUSTRALIA PTY. LTD.**

**Head Office:**
115 Northern Road,
Heidelberg West, Vic. 3081
Telephone: (03) 450 3209
Telex: AA31558

**Branch Office:**
251 Condamine Street,
Balgowlah, N.S.W. 2093
Telephone: (02) 949 5722
Telex: AA25135