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LIFEGUARD

WELDING MACHINE VOLTAGE REDUCING DEVICE

Specifications:

Manufactured in accordance with SABS 954 - 1969.

Model No.	VRS
Supply:	380 and 525V 50Hz 1 Phase
Welding machine:	Maximum welding current 500 amps Maximum open circuit voltage (ocv) 1 30V Maximum Primary Current 90 amp (20% Duty Cycle)
Quiescent Voltage:	25% nominal OCV
Components:	Contactor Constant Voltage Impedence Choke (CVI) Sensing Unit Ring type Current Transformer Auxiliary Transformer

Introduction

The growing demand for protection against electrocution and mishaps associated with electric shock from welding machines has led to the development of the LIFEGUARD safety device. Thus far one of the main drawbacks in devices of this nature has been the exorbitant cost. By using a design which we believe is unique to this application, Anglo-Allied Engineering has managed to reduce the price to a more realistic level.

Mode of Operation

Under quiescent conditions (not welding) the output voltage of the welding machine is approximately 25% of its normal value. 75% of the supply voltage is dropped across the constant voltage impedance (CVI). In accordance with SABS specification, 32V is deemed to be a safe value.

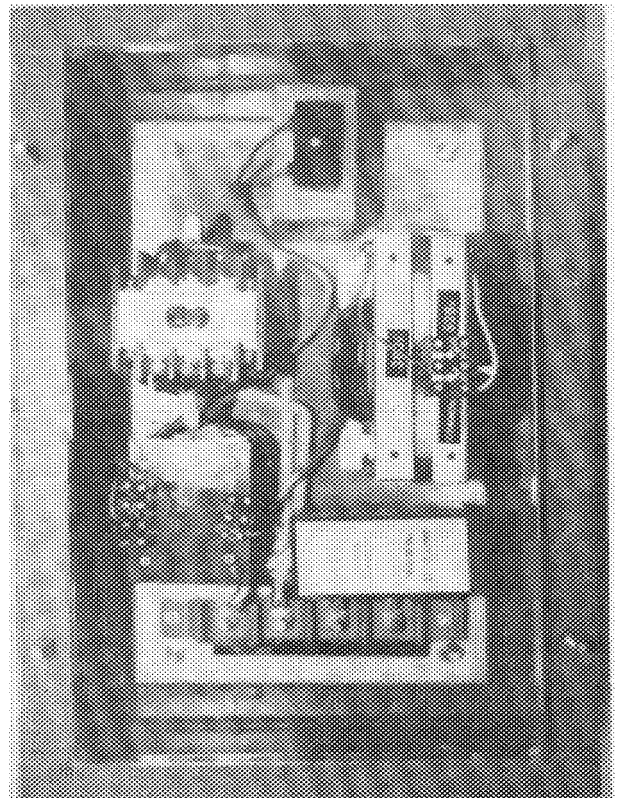
On an 80V welder the quiescent voltage would be 20V.

On striking, the monitoring C.T. sends a signal to the sensing unit which in turn energises the contactor, shorting out the CVI and applying full voltage to the welder.

After the welding operation has been completed the welding machine remains at its normal voltage for a pre-determined time of one second and then reverts to its quiescent value. (SABS 954 - 1968).

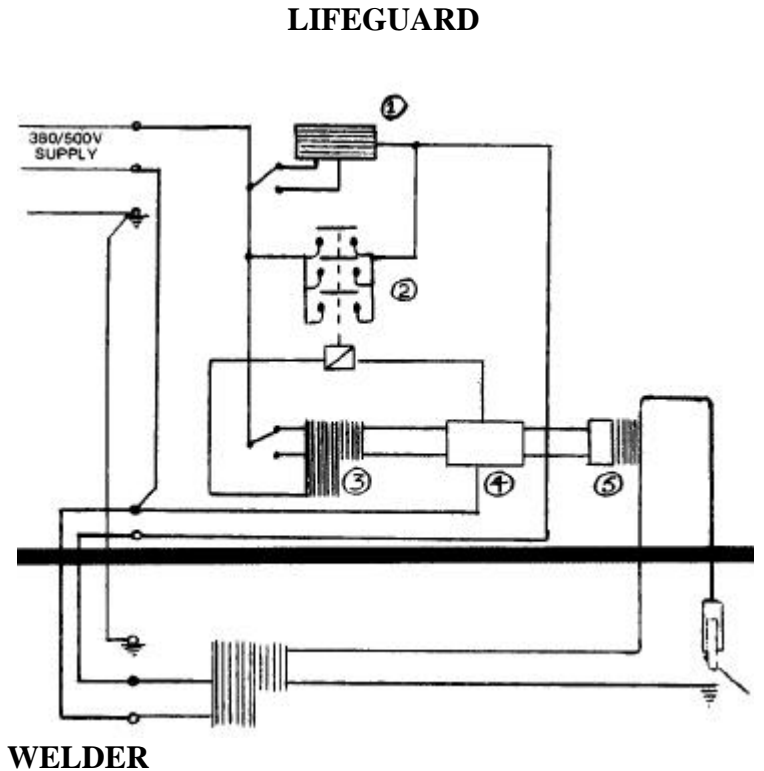
Construction

All the components are housed in a robust sheet steel enclosure to P 54. All cable entries should be via weatherproof glands and the lid of the enclosure has a rubber seal. Four glands are required for the welding cable and incoming and outgoing main leads.



Installation:

1. Select the appropriate voltage on the transformer and CVI.
2. Connect supply cable to terminals marked supply.
3. Connect supply cable from welding machine to terminals marked welder.
4. Loop either welding lead through the CT.
5. Commence welding.



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Features

The monitoring CT and contactor are off the shelf items.

The design of the CVI is such that, as name implies, the voltage drop across it is constant irrespective of the magnetising current of the welder. This ensures that the quiescent voltage of any welder is always a fixed percentage of its normal value.

The life of the main contacts of the contactor are prolonged as the contactor merely shorts out the CVI and does not open-circuit the magnetising current of the welder.

The sensing unit is completely solid state

Dimensions:

Length	:442 mm
Height	.187 mm
Width	.266 mm
Mass	14,5kg

Schematic diagram

- 1.Constant voltage impedance
- 2.Contactor
- 3.Auxiliary Transformer
- 4.Sensing unit
- 5.Current transformer

Maintanance:

The most common fault on the unit are caused by outside interference with the unit .To maintain the unit in working order random checks should be carried out .The unit is very easy to check as the welding operation take place.

- 1.) As the arc is being struck the contactor is energized by the contacts of the sensing module.
- 2.)This shorts the winding of the CVI and as a result full voltage is applied to the primary of the welder.
- 3.)When the welding operation is ceased the contactor operates with a slight off delay.(1 to 1.5 seconds.)
- 4.)An open circuit voltage measurement between the electrode holder and the earth should tell you if the unit has been bypassed. The voltage should be below 32 V ac.

Parts and repairs.

We can supply spare Welding modules **WM1** 18-0-18, Transformers and Chokes.

It is however recommended to replace the Whole unit in the event of failure as this is a safety device.

The faulty unit should then be returned for repair to Anglo Allied Engineering.