



# **GLOBE'S**

## **Power Saver**

## **& Energy Efficient Equipment**



*Join Hands with us*



*in Building a powerful Nation*

# INTRODUCTION

**GLOBE RECTIFIERS** is one of the Biggest **Manufacturer & Exporter** of H.T./L.T.Rolling Contact Servo Controlled Automatic Voltage Regulator / Controller Distribution Transformer With built-In H.T. Automatic Voltage Regulator / Controller, 11/33KV Distribution Transformer Oil Cooled /Dry Type, Electroplating and other Electro chemical processing Rectifiers, Ultra Isolation & Other special Purpose Transformer. Every process regarding manufacturing and quality control of each equipment is being done by a team of qualified and experienced engineers under one roof to achieve better quality and to fulfill customer' requirement & get their 100% satisfaction.

Demand of power in India is progressively increasing over the years. To meet up this demand, the Electricity Boards and other power utilities had to increase their Transmission and Distribution ( T&D) network. Although there has been some investment in power generation, but a gap between power generation and (T&D) have increased substantially due to inadequate investment in T & D. As a result, T&D lines are not only incapable of carrying additional power , but also forced to have high line losses through lengthy feeders, causing alarming voltage fluctuation at consumer end.

This low / high voltage is applied to all electrical machines like Transformer, Motors etc., hence causing loss of substantial electrical energy , besides Causing damage to the equipments. This compel all consumers to pay higher electric Bills, when every one is conscious for conservation of energy, as power Tariff is ever increasing.

In addition to this Low/ high voltage Causes "Low Power Factor" Since "Capacitors Banks" install by the consumer fail to compensate the Reactive Power at desired level. Therefore, only consumer are penalized and pay compensation, even without utilizing the power.





# Rolling Contact Servo Controlled L.T. Automatic Voltage Regulator / Controller

Voltage fluctuation is a common phenomenon in every part of the country. In spite of the best efforts, no state electricity board can ensure constant voltage to the customer because of long and inadequate distribution lines and irregular load pattern on Distribution Transformers. Automatic Voltage Regulator / Controller is an equipment to obtain constant voltage from fluctuating supply system. The industrial units running round the clock usually face the problem of **low & high voltage**. 90% of industrial load is of motors. Electric motors draw considerably high current at low & high voltage. This higher current affects the electric motors in these ways:

- Higher current produces higher losses in Electric motors which cause premature failure of winding.
- These higher currents of electric motors also increase the losses of Cables, Switches, Transformer & other associated equipments.
- This higher current of Electric motors requires 15-20% higher setting of over load relay to avoid frequent tripping of motor's starter. Higher setting of over load relays have very little safety margin against single Phasing and over loading conditions.

With the installation of the AVR/AVC and maintaining 390/400 Volts, the motor will operate smoothly drawing 15-20% lesser current and corresponding the relay setting can be reduced by 15-20%. In case single phasing occurs, the relay will trip in 40-50 seconds. The motor can withstand the high current for this period and will be safe. Also, the relays, contactors, switchgears, etc. incorporated with the motor will be safe.

## Description of **GLOBE'S** Servo Controlled Automatic Voltage Regulator / Controller

**GLOBE'S** servo Controlled AVR/AVC primarily consists of the following :

### 1. Linear, plus/minus type Vertical Rolling Contact Voltage Regulator

In our Regulator we are using heavy section of electrolytic rectangular copper strip instead of copper wire to minimize the losses & increase the efficiency of equipment. We are also using self lubricating Carbon Roller assemblies instead of ordinary carbon brushes which offers more reliability and trouble free performance of the equipment.

### 2. Double Wound Buck/Boost type Series Transformer

In Our Buck/ Boost transformer we are using CRGO lamination to minimize iron losses and coils of Buck / Boost Transformer are wound with heavy section of multi strips electrolytic copper to minimize copper losses for getting better efficiency of the equipment.

### 3. Electronic Control Circuit & Meter Panel.

**GLOBE'S** Automatic Voltage Regulator / Controller consists of very simple electronic control circuit for monitoring and controlling voltage, repair & maintenance of which is very easy.



**The Table below gives approximate quantitative advantages of Automatic Voltage Regulator / Controller at various Fluctuation levels :**

Input Voltage	% Reduction in Breakdown Possible		Approx. Power Saving Possible	
	Motor Load	Lighting Load	Motor Load	Lighting Load
380-400Volts	Nil	Nil	Nil	Nil & No AVR/AVC Required
380-420Volts	5%	10%	3%	5%
380-440Volts	10%	20%	5%	10%
380-460Volts	40%	40%	7%	20%
380-480Volts	60%	60%	10%	30%

### Technical Specifications

**GLOBE'S** AVR/AVC are available in a wide range and various models. The standard three phase models are suitable for balanced & unbalanced supply and loads. The standard models confirm to the following specification.

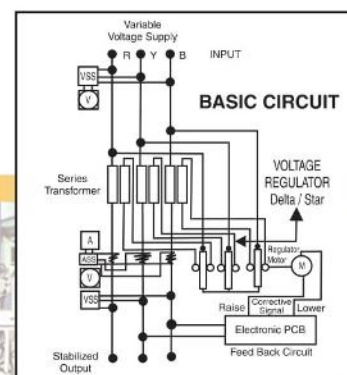
Input Voltage	:	360-450V	350-460V	340-460V	340-480V	320-460V	300-460V
Efficiency ( Approx. )	:	99.5%	99.3%	99%	98.9%	98.7%	98.5%
Output Voltage	:	400V $\pm$ 1%, 3 Phase, 50 Hz.					
Cooling	:	Naturally Oil Cooled.					
Type	:	Indoor					
Temperature Rise ( Max )	:	30°C above ambient					
Mounting	:	On Uni- directional Wheels					
Wave form distortion	:	Virtually Nil					
Duty Cycle	:	100 % Continuous.					

*Note :- Nonstandard input and output models are also available against specific requirements.*



**Inner View of L.T. AVR / AVC**

### Basic Circuit of L.T. Automatic Voltage Regulator / Controller





# H.T. Automatic Voltage Regulator / Controller

H.T. Automatic Voltage Regulator / Controller to be installed on the incoming side of the transformer and provides stabilize input voltage to the Distribution Transformer.

## Advantages of Installing H.T. Automatic Voltage Regulator / Controller :

1. H.T. AVR/AVC supplies rated Stabilized Voltage to the Transformer, there by the utilization of the transformer will be up to full rated capacity and is protected from High/ Low Voltage Fluctuation
2. Where Nos. of Distribution Transformer are installed in a plant, you can put only one HT Automatic Voltage Regulator / Controller.
3. Losses of Transformer will reduce after installation of HT AVR/AVC.
4. Shorter Payback period.
5. In higher capacity, it is technically advisable to install H.T. Automatic Voltage Regulator / Controller because current in L.T. AVR is Very high.

## Construction of H.T. AVR/AVC :

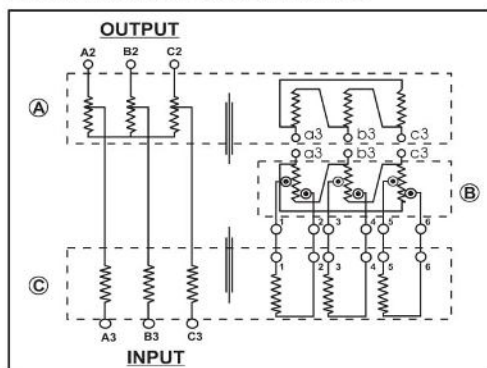
**GLOBE'S** H.T. AVR/AVC primarily consists of the following :

- A. Step Down Transformer
- B. Liner, plus/ minus type vertical Voltage Regulator.
- C. Buck/ Boost Transformer.
- D. Electronic control circuit.

The items (A) & (C) will be housed inside a sheet steel tank fitted with cooling radiators and mounted on uni-directional rollers and item (B) will be housed in separate tank



Basic Circuit of H.T. AVR / AVC



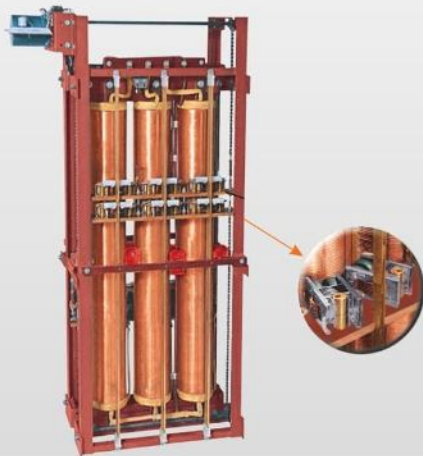
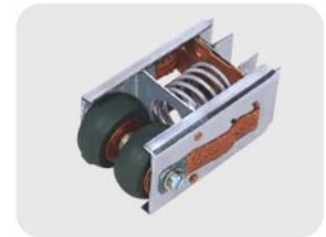
- A Step Down Transformer
- B Voltage Regulator
- C Buck Boost Transformer



### Transformer with Built In H.T. AVR/AVC

**GLOBE** make Transformer with Built-In HT Automatic Voltage Regulator / Controller is a unique product. The equipment is basically a combination of Standard Distribution Transformer and HT Automatic voltage Regulator. The fluctuating voltage from 'Grid' is initially stabilized by the HT AVR and then fed to the Transformer resulting in the constant LT output within  $\pm 1\%$  accuracy.

### Carbon Roller Assembly



**Inner view of Linear Plus/Minus Type  
Vertical Voltage Regulator**

### Advantages

- ✦ Reduction in Breakdown of Electrical Equipments.
- ✦ Uniform Quality of end product.
- ✦ Power Saving (Reduction in Power Bills).
- ✦ Better efficiency in plant.
- ✦ Improvement in Power Factor (Only in case of High Voltage)
- ✦ Reduction in Maximum Demand.
- ✦ 40% Depreciation as per Income TAX ACT.

### Payback Period

Owing to its high efficiency and associated benefits, the payback period for the cost of **GLOBE'S** Automatic Voltage Regulator / Controller is from 6-12 months depending upon the input voltage variation and number of working hours of plant. The HIGHER the input voltage the SHORTER will be payback Period.

## Suggestion For Industrial Units Having OLTC.

The units which have already installed OLTC with their Transformer, also require AVR / AVC due to the reason that the tapping of OLTC is not changed frequently. It is changed only when the problem of very high or very low voltage is felt. On the other hand, the AVR / AVC continuously monitors the output voltage level. However the input voltage range of AVR / AVC can be kept low where OLTC is installed.



### Ultra Isolation Transformer :

Ultra Isolation Transformer is a device which isolate supply system form unavoidable surge & spikes. These Surge & spikes are very harmful for CNC programming and sophisticated system.



**Ultra Isolation Transformer**

### Rectifier Equipments :

**GLOBE** Make Rectifier Equipments are designed for 3 phase 50 Hz AC input supply and are suitable for operations at any voltage between 380 to 440 Volts, Covering a wide range of voltage fluctuation.



It is also recommended that the input to the rectifiers should be connected through a proper protective device, to provide positive protection to the personnel and the system, it can also help in maintenance if fault occurs.

**Rectifier Equipment**

### Other Products :



**Distribution Transformer (Oil Cooled)**



**L.T. Transformer (Dry Type)**

### OUR CLIENTS



# GLOBE'S



For any further details or enquiries please call or contact :



**Saving Energy  
Serving Values**

## GLOBE RECTIFIERS

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