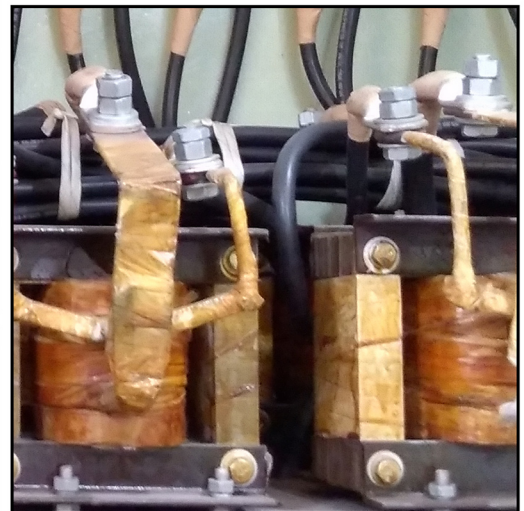
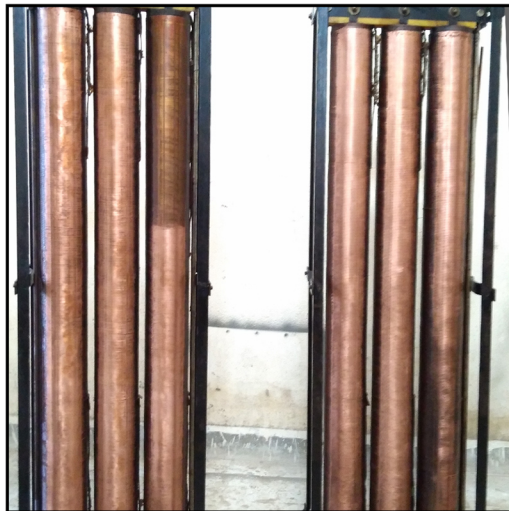


POWERFUL SOLUTION IN  
**POWER TRANSFORMATION  
AND VOLTAGE FLUTUATION**

# ICON

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# USER'S MANUAL GUIDE

for Operation and Maintenance of

## AUTOMATIC VOLTAGE REGULATOR

### CONTENTS

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- INTRODUCTION
- PRINCIPLE OF OPERATION, DESCRIPTION
- COMMISSIONING
- QUICK REFERENCE MANUAL ( with pictures )
- TROUBLE SHOOTING ( GENERAL FAULTS & REMEDIES )
- SAFETY INSTRUCTION
- MAINTENANCE
- DRAWINGS
  1. Control Ckt. Diagram
  2. Power Ckt. Diagram
  3. Rating Plate
  4. Overall General Assembly

## INTRODUCTION :

Quick Reference Manual

## MOTOR BOX ASSEMBLY

### ELECTRICAL ITEMS



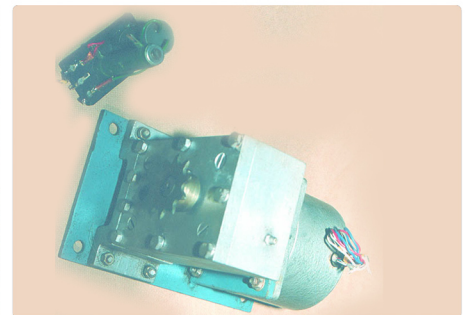
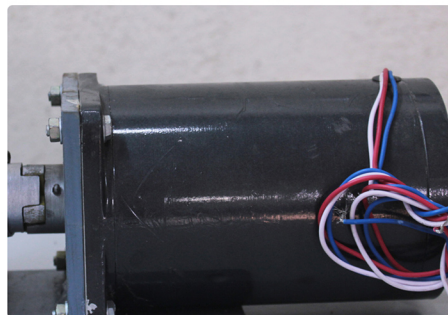
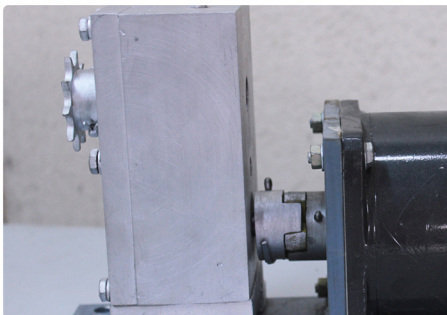
Push Button



Toggle Switch



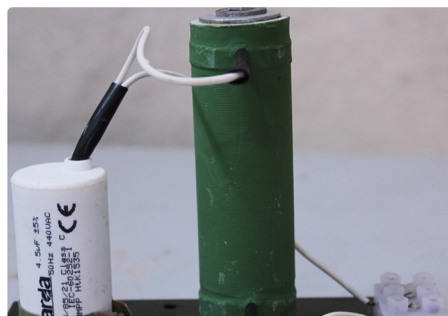
H.R.C. Fuse 2 Amps



Servo Motor with Gear Box & Capacitor Network



Capacitor & Resistor network for Motor



Terminal Strip

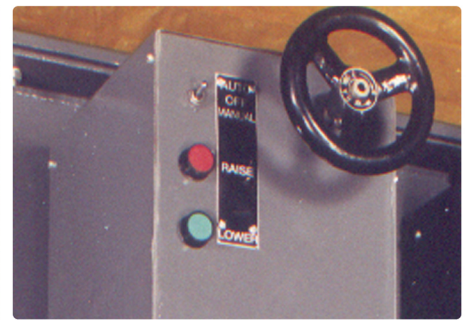
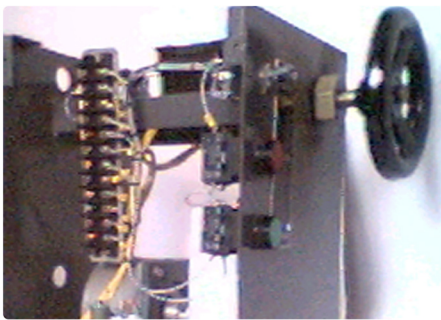


## INTRODUCTION :

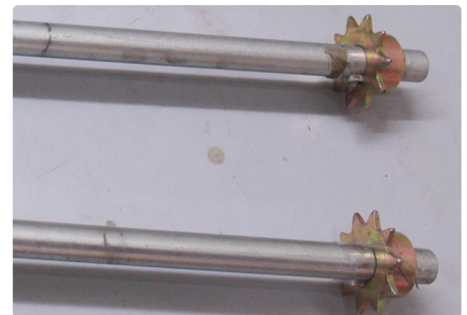
Quick Reference Manual

## MOTOR BOX ASSEMBLY

### MECHANICAL ITEMS



Motor Box



Motor Box Shaft with Clutch & de-clutch system.



M.S. Sprocket for Motor Box Shaft



Standard Cycle Chain for Motor Shaft Drive.



Handwheel



## Quick Reference Manual

### ELECTRONIC RELAY ASSEMBLY

The aforesaid ELECTRONIC RELAY is housed inside a transparent Box and the Potential Meter also housed in front of the Box.

#### TYPE OF RELAY - PCB. 1003

##### CONNECTION TERMINAL

0	0	0	0	0
4	5	6	10	11
L	R	LS	P	P

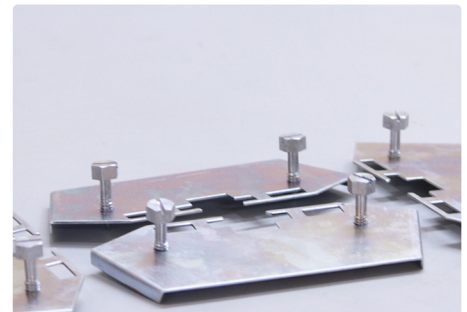
L = LOWER                      L = LOWER  
 R = RAISE                        R = RAISE  
 L8 = COMMON                  L8 = COMMON

**NOTE :** - All Relay supply 230Volts.

#### CARRIER BOARD ASSEMBLY



- TURN BUCKLE WITH CHAIN
- MICRO SW. ADAPTER SET
- TAG & TAIL ASSY.
- CAPTIVE SCREW
- CARBON ROLLER ASSY
- CARRIER BOARD
- BRASS CONTACT POST



Retaining Plate - 100 Amps  
 Retaining Plate - 50 Amps



Carbon Roller Assembly ( IE - Type )



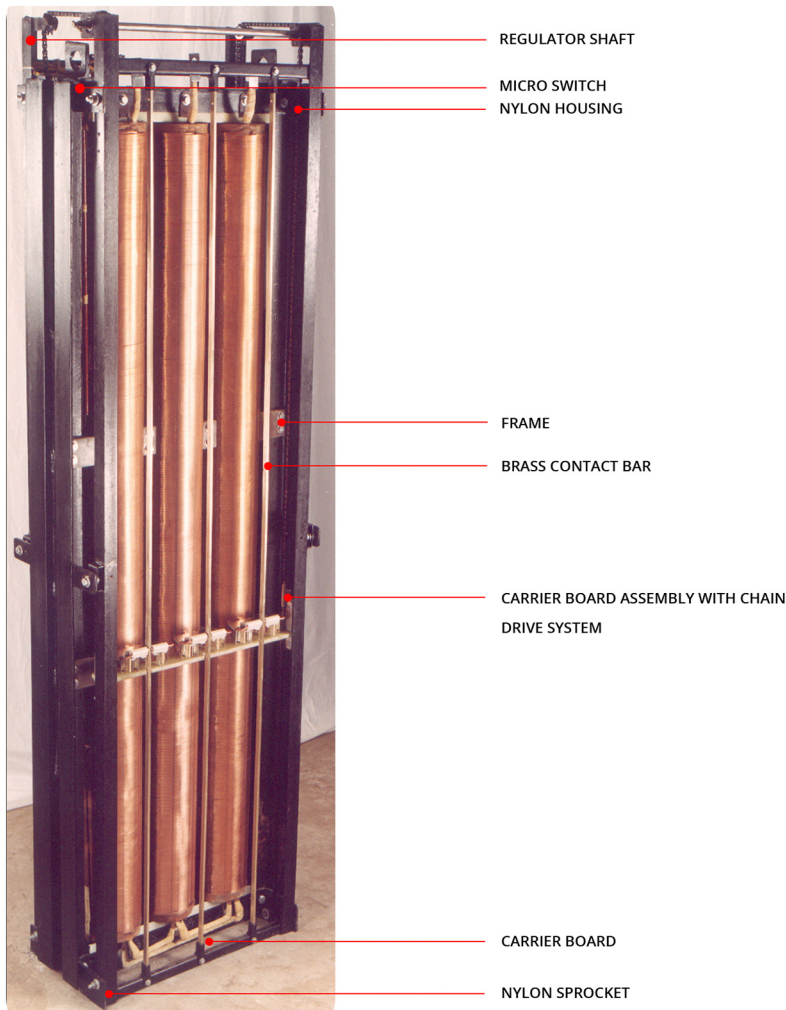
Carrier Board - 100 Amps  
 Carrier Board - 50 Amps



Brass Contact Post

## Quick Reference Manual

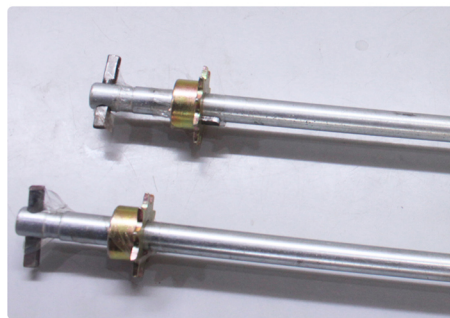
### REGULATOR COIL WITH FRAME ASSEMBLY



Micro Switch ( Limit Switch )



Turn Buckle with Chain Adjuster set



Regulator Shaft Assembly





## Quick Reference Manual

### TROUBLE SHOOTING

#### General Fault and Remedies

#### There is no Automatic functions

**i) Check the Relay supply**

LB (Life) -----Single phase 230V supply coming from Main  
L10 (Neutral) -----Transformer.

**ii) Check the Relay fuse fitted in side the Motor Box**

**iii) Be sure that Relay PCB Card is tightly fitted with the connector.**

**iv) Check the Toggle Switch contact at Auto position.**

#### There is no Motor functions

**i) Check the Motor supply**

L1-----  
L2-----} ----- Single phase 230V un-interrupted supply

**ii) Check the Motor fuse fitted in side the Motor Box**

**iii) Check the MS Sprocket fitted on Gear Shaft.**

**iv) Check the Capacitor Network mounted inside the Motor Box**

**v) Check the Motor Winding continuity with respect of.**

RM-----  
L5-----} ----- will show continuity

LM-----  
L5-----} ----- will show continuity

Put the Toggle Switch at OFF position, be sure that the Capacitor has been discharged and the Motor fuse is open.

**vi) Check the Motor Box Main Shaft Clutch System.**

**vii) Check the Red & Green Push Buttons NO/NC contacts.**

## Quick Reference Manual

### TROUBLE SHOOTING

#### General Fault and Remedies

**There is one direction Motor Drive** ( clockwise or anti clockwise rotation )

**i) A) Check the Limit Switches ( Micro switches ) as follows:**

R ----- at maximum Raise position of the Regulator.  
RM----- ( clockwise drive ) – will show no-continuity.

L ----- will show continuity  
LM-----

R ----- at maximum Lower position of the Regulator.  
RM----- ( anti-clockwise drive )– will show continuity.

L ----- will show no-continuity  
LM-----

( If the above result does not come it may be considered that the mechanical contact of the Limit Switch is not working properly and should replace the same. The switches are fitted on the both side on the top of the Regulator frame assembly inside the tank. Unscrew the jam nut of the Limit Switch replace with a new one use only N/C contact.)



## Quick Reference Manual

### **SAFETY INSTRUCTION**

Before connecting the power and to avoid electric shock make earthing atleast at two points of

Never insert any thing metallic substance or left any tools inside the Regulator tank while doing full inspection.

If your Regulator does not operate normally – in particular if there are any unusual sound or mell coming from it – disconnect the power immediately and contact the manufacturer.

### **MAINTENANCE**

#### Inspection of Carbon Roller & Carbon Brush Assembly

This is a periodical inspection every after 12 months of continuous running of the unit to avoid any loose contact which may occurred flushing over Regulator Coils and contact bars.

Open the Top Cover of the Regulator. Partly drain out the Transformer Oil. Bring the Carrier Board Assembly at top position by rotating the hanwheel. Unscrew the captive screw, take out the Retaining Plate. By slightly back push turning with the help of fingers bring out the Carbon Roller Assembly. Check the uniform radial surface of the Carbon Roller and spring tension of the Assembly. This is important to note that deshaped Carbon Roller may occur flushing over the Regulator Coil.

Check also the Carbon Brush ( Tag & Tail Assembly ) fitted on the same carrier board pulling the tail traveling on the contact bar. Check its uniform surface and spring tension to avoid loose contact.

## Quick Reference Manual

**INSPECTION OF MOTOR BOX ASSEMBLY**

Check up the manual operation of the Regulator by declutching Motor Box Shaft using handwheel only.

Be sure that Gear Box, Chain Drive, Sprockets are working smoothly. If necessary, use grease to avoid any mechanical friction.

Check up the tightness of all the terminals connection and contacts of the Electrical Spares.

Check the Transformer Oil Level, Oil leakage & Dielectric strength of the Transformer Oil.

**FULL INSPECTION OF THE REGULATOR CORE COIL ASSEMBLY**

A full inspection of the Regulator Core Coil Assembly should include all the forgoing check and in addition those given above. For these, it will be necessary to draw the frame assembly from the tank on an Oil Cooled Unit by dismantling all internal connection with the Bushings and fixing with the body.

Check the chain drive system. Check the Coil surface. Clean the deposited Carbon dust. Check all the screws fitted throughout frame