



# OPERATION MANUAL FOR ARC WELDING RECTIFIER

**Model WTR-600**

**WARPP ENGINEERS PVT. LTD.**

*B-1005, Western Edge II, Near Metro Mall, Off. Western Express  
Highway, Borivali (E), Mumbai-400 066.*

*Tel: 91-22-28542272 /73/14. Fax: 91-22-28542275.*

*E-mail: sales@warpp.co.in Web Site: www.warpp.co.in*

# INDEX

<b>Sr. No.</b>	<b>Description</b>	<b>Page No.</b>
1	Introduction	1
2	Installation	2
3	Operation	3
4	Maintenance	3
5	Safety	4
6	Trouble shooting	5
7	Spare part List	8

## ILLUSTRATIONS

1)	Control Circuit Wiring Diagram	9
2)	Power Circuit Wiring Diagram	10
3)	Installation Diagram	11

# INTRODUCTION.

This manual describes the equipment, installation, operation, safety, and maintenance of WARPP make DC arc welding rectifiers. Tease welding equipments are designed for manual metal arc and manual TIG welding application in heavy duty fabrication. Simple design and rugged construction makes it most ideal for maintenance free operation. This equipment is mounted on four wheel chassis with two fixed wheels in the front and two revolving wheels at the back side.

This equipment consists of a three phase step down transformer along with three phase magnetic amplifier (Transductor) and three phase silicon diode rectifier. The welding current is varied by varying the current in the DC coils of the transductor. This current is obtained by a control transformer and an auto transformer along with a single phase silicon diode rectifier. The transformer steps down 415 Volts input supply to a voltage around 100 volts which is fed to the rectifier via the autotransformer. The output of the rectifier is given to the DC coils of the transductor. By varying the autotransformer setting the current fed to the DC coils of the transducer varies and hence the actual welding current varies accordingly. The autotransformer is calibrated for exact output welding current. Main transformer is provided with primary tapping to work on 380/415/440 volts input supply. All the components of the equipment is cooled by an single phase fan. A simple change over of output cables allows the operator to use either straight OR reverse polarity.

## **INSTALLATION.**

1) The machine should be kept in a relatively clean and dry place and a minimum of 0.3 meters of space should be left around the equipment for easy circulation of air.

NOTE THAT THE MACHINE DRAWS FRESH AIR FROM THE FRONT AND FORCES IT THROUGH THE BACK.

2) A separate mains switch should be provided for this equipment. The mains switch should be of good quality with proper contacts. The switch should be easily accessible to the operator.

3) Three core 7/20 gauge cables can be used for the input supply connection. The equipment should be properly earthed and all the electrical connections should be firm and tight. Power connection point is provided on the back cover of the equipment.

4) The equipment must be connected to a proper earth point.

## **OPERATION.**

- 1) After installation of the equipment connect the holder to the negative and job earth cable to the positive output of the equipment. (This connection is termed as straight polarity. Reverse polarity can be made by interchanging the job earth and holder cables).
- 2) Switch on the mains Supply.
- 3) Put the ON-OFF Switch on front panel of the equipment in ON position this will
  - a) Start the cooling FAN
  - b) Energies the main transformer
  - c) Puts on the MAINS indicator.
- 4) Set the current regulator to the required output current.
- 5) Connect the JOB EARTH cable firmly to the job.
- 6) Hold the required electrode in the holder.
- 7) Strike an arc by scratching the electrode to the job.

## **MAINTENANCE.**

- 1) Switch OFF the mains supply.
- 2) Open the top cover
- 3) Clean the equipment by removing dust by a blower.
- 4) Lubricate the fan bearings in regular intervals.

**CAUTION: SWITCH OFF THE SUPPLY BEFORE OPENING THE EQUIPMENT.**

## **SAFETY PRECAUTION:**

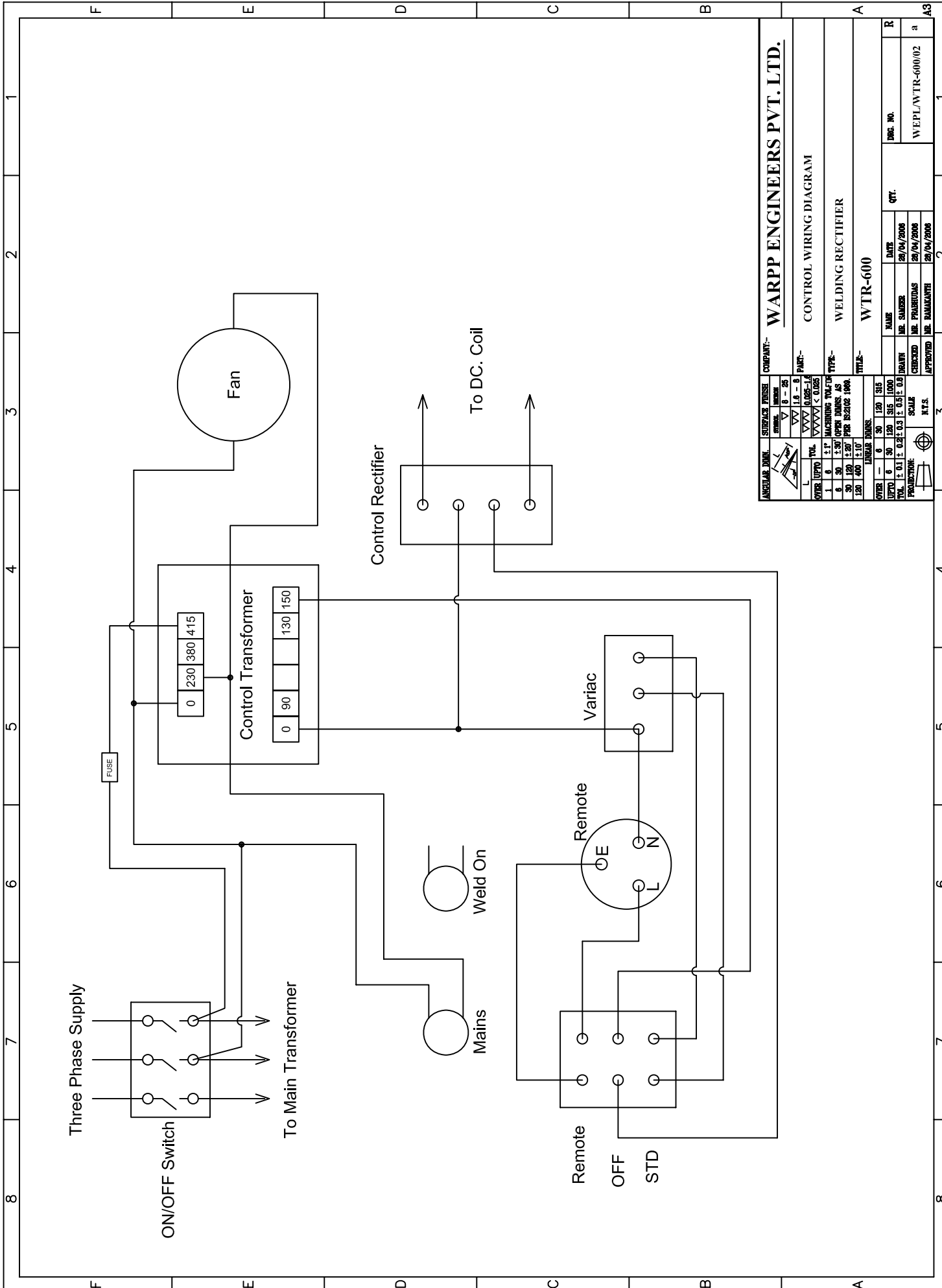
- 1) Welding light is dangerous to the eyes as it has ultraviolet rays. Always use welding screen with proper glass while welding.
- 2) Wear leather gloves, Apron and leather shoes while welding.
- 3) Keep the welding area relatively clean and free from inflammable materials
- 4) Use fully insulated holder.
- 5) Do not touch the electrode with the bare skin.

## TROUBLE SHOOTING.

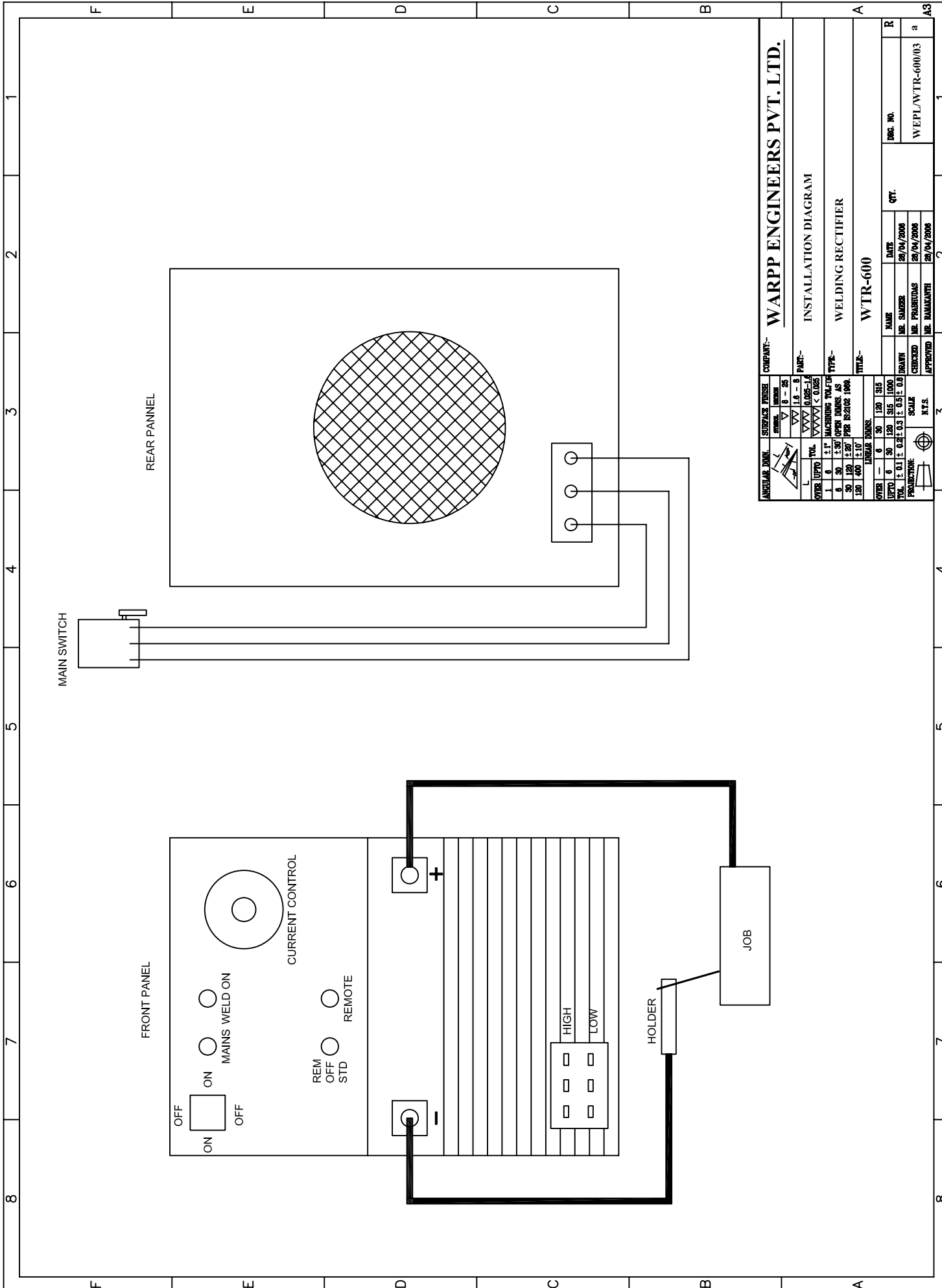
<b>TROUBLE</b>	<b>CAUSE</b>	<b>REMEDY</b>
Mains supply is switched ON and ON-OFF switch is put to ON position but welder does not come ON.	i) Three phase supply is not proper ii) Mains Switch is not proper. iii) Control fuse is blown off	i) Wait till the three phase power is available ii) Check for the proper electrical contacts in the mains switch. iii) Replace the control fuse. (This fuse is mounted on the control transformer.
Equipment comes on but the welding current varies.	i) The mains connection is not proper. (Loose connection) ii) Current regulator is not working properly. (Either the carbon brush is worn out OR it is not making the proper contact.	i) Check the mains for proper and firm connection. ii) Replace the carbon brush.
The equipment comes ON but the control fuse blows.	Welding arc is not smooth and spatter is more	i) Current setting is too high. ii) DC polarity used for that particular electrode is not right. iii) Diodes have failed.
	Welding arc is sluggish.	i) Welding current is low. ii) Loose connection iii) Input supply is less.
	the equipment give minimum current but the current doesn't increases	i) Current regulator burnt OR not working. ii) Control transformer is dead. iii) Control rectifier is failed. iv) Control fuse is blown.

		<ul style="list-style-type: none"> <li>i) Reduce the current.</li> <li>ii) Use proper polarity (Interchange the polarity and check).</li> <li>iii) Replace the diode OR Diodes.</li> </ul>
		<ul style="list-style-type: none"> <li>I) Increase the current.</li> <li>ii) Make firm connection.</li> <li>iii) Check the input supply.</li> </ul> <p>and use proper tapping (380/415/440) by changing the jumper on the main transformer</p>
		<ul style="list-style-type: none"> <li>I) Replace.</li> <li>ii) Replace.</li> <li>III) Replace.</li> <li>iv) Replace.</li> </ul>
Mains fuse blows	<ul style="list-style-type: none"> <li>i) Short circuit in the primary of the main transformer.</li> <li>ii) Short circuit in main diodes</li> </ul>	<ul style="list-style-type: none"> <li>i) Remove the short circuit.</li> <li>ii) Replace the diodes.</li> </ul>





<b>WARPP ENGINEERS PVT. LTD.</b> CONTROL WIRING DIAGRAM		
WELDING RECTIFIER <b>WTR-600</b>		
<b>COMPANY:-</b> WARPP ENGINEERS PVT. LTD. ADDRESS: 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	<b>DATE:</b> 28/04/2006	
<b>DESIGNER:</b> MR. SAMUEL	<b>DATE:</b> 28/04/2006	<b>QTY:</b> a
<b>CHECKED:</b> MR. RAMAKRISHNAN	<b>DATE:</b> 28/04/2006	<b>APPROVED:</b> MR. RAMAKRISHNAN
<b>SCALE:</b> 1:1	<b>PROJECT:</b> WTR-600	<b>DRG. NO.:</b> WEPL/WTR-600/02



ANGULAR DIMS		SURFACE FINISH		COMPACT:-	
SYMBOL		SYMBOL		WARP ENGINEERS PVT. LTD.	
TOLERANCE		TOLERANCE		INSTALLATION DIAGRAM	
FRACTIONAL		FRACTIONAL		WELDING RECTIFIER	
DECIMAL		DECIMAL		WTR-600	
PERCENT		PERCENT		NAME	
HOLE POSITION		HOLE POSITION		DATE	
HOLE DIA		HOLE DIA		MR. SANKAR	
HOLE RADIUS		HOLE RADIUS		28/04/2006	
HOLE LENGTH		HOLE LENGTH		MR. POLURUDAS	
HOLE TAPER		HOLE TAPER		28/04/2006	
HOLE CHAMFER		HOLE CHAMFER		MR. RAMAKRISHN	
HOLE FINISH		HOLE FINISH		28/04/2006	
HOLE TOLERANCE		HOLE TOLERANCE		QTY.	
HOLE POSITION TOLERANCE		HOLE POSITION TOLERANCE		DRG. NO.	
HOLE DIA TOLERANCE		HOLE DIA TOLERANCE		WEPL/WTR-600/03	
HOLE LENGTH TOLERANCE		HOLE LENGTH TOLERANCE		a	
HOLE CHAMFER TOLERANCE		HOLE CHAMFER TOLERANCE		A3	



SPARE PART LIST FOR WTR-600	
Description	PART NO
Control Transformer	C140401
Control Rectifier	C244801
Auto transformer	C140101
Fan	C160302
Primary coil Top	C1104
Primary Coil Bottom	C1103
Secondary Coil	C1113
DC Coil	C1123
Load Coil Without Tappings	C1126
Load Coil With Tappings	C1124
Diode	C150502
Out Put Terminal	C180202
High-Low out put terminal	C180502
Indicator Red 220V 20MA 20MM	C240701
Toggle Switch	C221801
Power plug backalite Male	C240901
Power plug backalite Female	C241001
Rotary Switch	C221402