



Welding Positioner

Operator's Manual



WARPP ENGINEERS PVT. LTD.

36/15 Unique Industrial Estate,
Dhumal Nagar, Waliv Phata, Vasai (East),
Palghar, Maharashtra -401208

Email- service@warpp.co.in

Contact- 8080808734

www.warpp.co.in

PREFACE

Thanks for purchasing our product and looking forward to your precious advice for the improvement of our product. We will dedicate ourselves to producing the best products and offer the best services.

The machine was carefully inspected both mechanically and electrically before it left the factory. The machine should be initially inspected upon receipt, if any damage which may have occurred in transit inform “WARPP ENGINEERS PVT.LTD. OR It’s Dealer immediately. Check for the accessories supplied against those listed in packing slip.

Caution: Before attempting to connect the equipment to any Power source, read instructions carefully.

In case of any defect or deficiency, contact “WARPP ENGINEERS PVT.LTD.” or its authorized Agent. Make sure to quote model number and serial number of the equipment in all correspondence.

THE DESIGN OF THIS EQUIPMENT IS SUBJECT TO CONTINUOUS DEVELOPMENT AND IMPROVEMENTS, CONSEQUENTLY “WARPP ENGINEERS PVT.LTD.” RESERVES THE RIGHT TO INCORPORATE MINOR CHANGES FROM THE INFORMATION CONTAINED IN THIS MANUAL.

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1.SAFETY

Our machines are designed and built with ample safety considerations. However, proper installation & operation of the machine will increase your safety.

DO NOT INSTALL, OPEARTE OR REPAIR THIS EQIPMENT WITHOUT READING THIS MANUAL

Following points to be taken care while installing the machine

- Ensure that children or animals do not have access to the machinery.
- Ensure that the machine is placed properly so that it has enough ventilation and stability so that it does not fall.
- Any safety items fitted must not be bypassed or removed. If they must be removed then the equipment must be put out of operation, until a repair is completed.
- Always keep the workplace clean & free from obstacles
- Make sure that the work area is well lit.
- Ensure that the machine is regularly maintained to ensure that it remains safe.
- Electric shock can kill. Please make sure that you follow the below guidelines.
- All electrical supply terminals shall be well covered and insulated.
- Do not touch both the output terminals with your bare hand as it may lead to electric shock.
- Always use proper hand gloves and other safety equipment while operating the machine
- Use proper shaded welding screen as the arc has ultraviolet rays which can damage the eyesight.
- Do not obstruct any moving parts as it may cause harm.
- Ensure that the clothing is fire resistant to protect your skin from burns and arc rays.

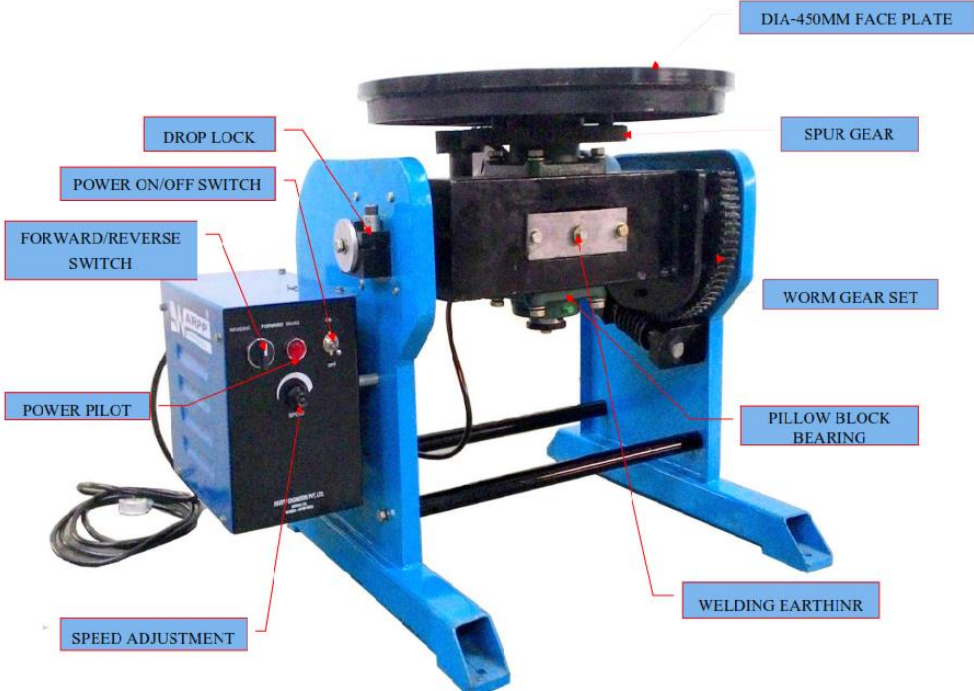
- When compressed gas is to be used, then special precautions are to be taken to prevent explosion.
- Please make sure that no inflammable items are there in the weld area.
- Spatters can cause burns ensure that you use all personnel protective equipment.
- Newly supplied machines, which are packed in either corrugated boxes or wooden boxes shall be shifted using a forklift.
- Proper care shall be taken while shifting or relocating the machines. Use lifting hooks / mechanism provided on the machine.

2. DESCRIPTION & FEATURE

Welding Positioners are devices that provide a comfortable position for a welder to perform welding operations on industrial parts which are tubular or spherical in shape such as flanges and pipelines.

A welding Positioner provides options to rotate the tubular equipment through 360 degrees and the welder can set the angle of the flanges or pipeline according to his/her needs and requirements. This helps in less worker fatigue and improves productivity and quality of joints.

The welding Positioners are useful as they provide better accessibility of welding seam on the pipeline thereby creating increased deposition rates. This helps weld operators that have less experience to perform welding operations easily and can safely manipulate work units while concentrating on welding functions.



3. WORKING CONDITIONS & ENVIRONMENT REQUIRED

- 1) Please note that this equipment to be installed in a clean place free from dirt and moisture.
- 2) Avoid direct exposure to sunlight.
- 3) Care should be taken to see that it is not exposed to rain.
- 4) Whenever the machine to be used at a site make sure proper shade is provided for the machine
- 5) Do not keep the machine near an oven or furnace where temperature may be higher, and it can affect the performance of the machine.
- 6) Always keep the machines at lease with a gap of 300 mm around the machine as it is required for free circulation of air.
- 7) Keep the machine in a flat position.
- 8) Use cables with proper cross section based on the input power requirement of the machine (Please refer to technical specification page for input power of the machine)
- 9) When long cables are used you need to select a higher cross-sectional area of conductors to avoid voltage drops during the usage.

Selection guide for type of MCB

MCB Type	Tripping Current	Application
B Type	3 to 5 times the rated current	Purely resistive load like lighting and general-purpose outlets
C Type	5 to 10 times the rated current	Moderate inductive load like air conditioners, residential / commercial pumps
D Type	10 to 20 times the rated current	Heavy inductive loads like heavy induction motor and welding machines

Selection of cable size for input supply

Please note that the cable size required for input supply depends on following:

- 1) Whether the machine is single phase or three phases
- 2) Input KVA of the machine.
- 3) Distance from electrical supply point.

First calculate the current the machine will draw based on the input KVA given (refer to technical specification page for this)

If the machine is a single-phase machine, then each KVA would require around 4.6 Amps of current. That means if the input KVA of the machine is 5 KVA, then it would draw 23 Amps at full load.

If the machine is a three-phase machine, then each KVA would require around 1.4 Amps of current. That means if the input KVA of the machine is 5 KVA, then it would draw around 7 amps of current at full load.

Cable capacity for copper cable can be taken as 5 Amps / Sq. mm when cable length is less than 10 meters. That means a 1 sq. mm cable can carry a current of 6 Amps of current.

Now you have

input current of the machine based on its input KVA.

You can calculate the conductor size by this formula: Input current / capacity of conductor.

Example

From the above for a single-phase machine of 5 KVA you would need $23/6=3.8$ Sq. mm cable. (You can choose 4 sq. mm cable)

From the above for a three-phase machine of 5 KVA you would need $7/6=1.16$ Sq. mm cable. (You can choose 1.5 sq. mm core cable for each phase)

Note: When the length of the cable is short the required cross section for input cable will come down

Below table will help you in selecting the right size of welding cable based on the length and current to be used

Welding Cable selection chart					
Welding Current in Amps	Recommended Cable size (Sq. mm) based on length (in Meters)				
	1 ~ 15 Meters	15 ~ 30 Meters	30 ~ 45 Meters	45 ~ 60 Meters	60 ~ 75 Meters
100	16	25	25	35	50
150	16	25	35	50	50
200	35	35	50	50	70
300	50	50	70	70	95
400	70	70	70	95	120
600	95	95	95		
800	140	140			
1000	140	190			
1200	190	240			
1500	240	285			

Note:
Table given is just for reference and the actual result may vary depending on the quality of conductor
Multiple cables can be used where every single cable of that capacity is not available

4. TECHNICAL SPECIFICATION

Model	HB-50	HB-150	HB-300	HB-500	HB-1000	HB-2000	HB-5000
Input supply	230 VAC Single Phase	230 VAC Single Phase	230 VAC Single Phase	440 VAC Three Phase	440 VAC Three Phase	440 VAC Three Phase	440 VAC Three Phase
Load capacity at 0° (kg)	50	150	300	500	1000	2000	5000
Load capacity at 90° (kg)	25	75	150	250	500	1000	2500
Rotation Speed (RPM)	0.5-8	0.25-1.13	0.19-0.78	0.15-0.75	0.1-0.42	0.08-0.33	0.05-0.5
Drive method	VFD with Reduction Gearbox	VFD with Reduction Gearbox	VFD with Reduction Gearbox	VFD with Reduction Gearbox	VFD with Reduction Gearbox	VFD with Reduction Gearbox	VFD with Reduction Gearbox
Rotation Motor (KW)	0.18	0.18	0.18	0.18	0.74	1.1	2.23
Tilting Motor (KW)	-	-	-	0.37	1.1	1.5	3.72
Faceplate Dia (mm)	305	450	650	800	1200	1500	2000
Tilting Method	Manual	Manual	Manual	Motorized	Motorized	Motorized	Motorized
Tilting Angle	0° to 90°	0° to 90°	0° to 90°	0° to 135°	0° to 135°	0° to 135°	0° to 135°

5. WORKING PRINCIPLE

A welding Positioner is a device designed keeping in mind the welder's comfort. It helps reduce their fatigue as they can stand in one position and do their job. They do not have to move or bend as this welding positioner can rotate up to 360 degrees.

The object or work piece to be welded is adjusted on the weld Positioner. Welding Positioners are fitted by either pipe joints. This is a basic reason why it finds a wide application in industries that use metal fabrication or CNC machining to shape metal parts or components.

The working principle of a welding positioner is the same for all work pieces whether big or small. They form a plane of rotation, which is perpendicular or Parallel to the floor. You can place large sets of tooling on these Positioners. However, a weld Positioner is more than just a rotating table. Its capacity depends on the static torque output limits. It can rotate at huge speeds bearing a significant amount of weight.

It rotates a table using a motor and lets you adjust the speed and rotational direction using a control dial and 3 position switches.

An optional foot switch can also be used to start/stop the rotation. The table can be set to the necessary tilt angle using tilt adjustment wheel or remote box.

6. INSTALLATION

1. **Installing the Main Unit:**
 - Place the main unit on a flat installation location.
 - Secure the unit by inserting suitable anchor bolts into the holes around the base of the unit.
2. **Connecting the Foot Switch (Optional):**
 - Connect the cable of the foot switch to the mating plug on the main unit.
3. **Earth-ground connection:**
 - Properly connect the earth ground conductor on the Positioner main unit.
 - Directly attach the welding ground cable for the power supply to the ground.
4. **Power supply connection**
 - Use the specified power supply only.
 - Route the power supply cable so it will not be stepped on and place it in a location where nothing will be on top of the cable.
 - Connect the power supply cable after confirming the safety of the surrounding area.
 - Ground the power supply cable properly and fully plug it into the receptacle.
 - Supply power only after confirming that the toggle switch is in the 'off' position.

7. CONTROLS

Panel Control for HB-50, HB-150 & HB-300



Remote Control for HB-500, HB-1000, HB-2000 & HB-5000



8. PARAMETERS AND ITS OPERATIONAL MEANING

DISPAY	Indicates the faceplate rotation speed in RPM
E STOP	This is an emergency STOP button
SPEED	This knob is used for step-less regulation of the speed of the wheels of drive unit
FORWARD / REVERSE SWITCH (Left)	This Switch is used to set the direction of ration for the wheel
FORWARD / REVERSE SWITCH (Right)	This is a spring return switch used as inch Switch for momentary rotation of the wheel.

9. HOW TO OPERATE A POSITIONER?

Here is a step-by-step guide for operating the Positioner:

1. **Turn on the Main Power Supply and Power Switch:**
 - Activate the main power supply and switch on the Positioner.
2. **Prepare the Work Surface:**
 - Ensure the table is horizontal.
 - Attach the workpiece securely to the table.
3. **Adjust the Face Plate Angle:**
 - Tilt the face plate to the desired angle for your operation.
4. **Choose Rotation Direction:**
 - Use the “rotation direction changeover switch” to select the desired rotation direction.
5. **Set Rotation Speed:**
 - Turn the “rotation speed adjustment dial” to its minimum setting.
6. **Rotate the Table:**
 - Step on the foot switch to initiate table rotation.
7. **Fine-Tune Rotation Speed:**
 - Adjust the rotation speed using the “rotation speed adjustment dial.”
8. **Welding Operation with Footswitch (Optional):**
 - If applicable, perform welding operations using the foot switch.
9. **Work Completion:**
 - Return the table to a horizontal position.
 - Remove the workpiece.
10. **Turn Off the Operation Unit:**
 - For safely, switch off the Positioner.

10.Do's & Don't s

Do's:

1. Clean the Face Plate Surface:

- Before loading a job for welding, ensure the face plate surface is clean and free from debris.

2. Proper Earthing:

- Always use the Positioner with proper earthing to prevent electrical hazards.

3. Securely Mount the Job:

- Before switching on the Positioner, ensure your job is properly bolted or mounted on the chuck.

4. Chuck Fitting:

- If you are using a chuck, make sure it is properly fitted on the face plate.

5. Regular Maintenance and Inspection:

- Conduct periodic maintenance and inspections on the machine to keep it in good working condition.

6. Address Faults Promptly:

- If any faults are found, remedy them before using the Positioner.

7. Safety During Repairs and Inspections:

- When repairing or inspecting the machine, shut off the main power supply or unplug it.

8. Proper Grounding:

- Ground the power supply cable properly and fully plug it into its receptacle.

Don'ts:

1. Improper Earth Connection:

- Do not connect the earth conductor to a conduit, gas pipe, or flammable liquid pipe system.

2. Switching On with Remote Switches On:

- Do not power on the supply when any switch on the remote is in the “on” position.

3. Changing Rotation Direction While Rotating:

- Avoid changing the rotation direction while the table is rotating, as it may cause machine malfunction.

4. Switching Speed While Rotating:

- Dangerous: Do not switch the speed while the table is rotating, as sudden speed changes can be hazardous.

5. Exceeding Allowable Load:

- Do not place a load exceeding the allowable limit on the table. Overloading can damage the motor and control devices.

6. Maintenance with Attached Objects:

- Do not conduct maintenance or inspection while an object is still attached to the table.

11. TROUBLE SHOOTING

Here are troubleshooting steps and solutions for common issues related to the Positioner:

1. Table Does Not Rotate:

- **Possible Causes:**

1. Power cord is not properly secured.
2. Blown fuse.
3. Power cord is damaged.
4. Switch or foot switch malfunction.
5. Faulty control board.
6. Faulty motor.
7. Bearing damage.

- **Solutions:**

- Secure the power cord properly.
- Replace the blown fuse.
- Replace the damaged power cord.
- Address the malfunctioning switch or foot switch.
- Replace the faulty control board.
- Replace the motor.
- Replace the bearing assembly.

2. Fuse Blown:

- **Possible Causes:**

1. Faulty control board.
2. Faulty motor.
3. Power cord is damaged.

- **Solutions:**

- Replace the faulty control board.
- Replace the motor.
- Try a different power supply after replacing the fuse.
- Replace the power cord.

3. Table Does Not Rotate Smoothly:

- **Possible Causes:**

1. Bearing nut is loose.
2. Bearing damage.

3. Spatter from welding adhered to the gears.
4. Load exceeding the allowable limit on the table.

- **Solutions:**

- Tighten the bearing nut or replace the bearing assembly.
- Clean and apply grease to the gears if spatter is present.
- Ensure the load on the table is within the allowable limit.

4. Lubricant Leaks:

- **Possible Causes:**

1. Oil seal damage.
2. Packing defect.
3. Insufficient tightening of the oil plug.
4. Oil gauge damage.

- **Solutions:**

- Replace the damaged oil seal.
- Replace the packing.
- Securely tighten the oil plug.
- Replace the oil gauge.

5. Welding Failure:

- **Possible Cause:**

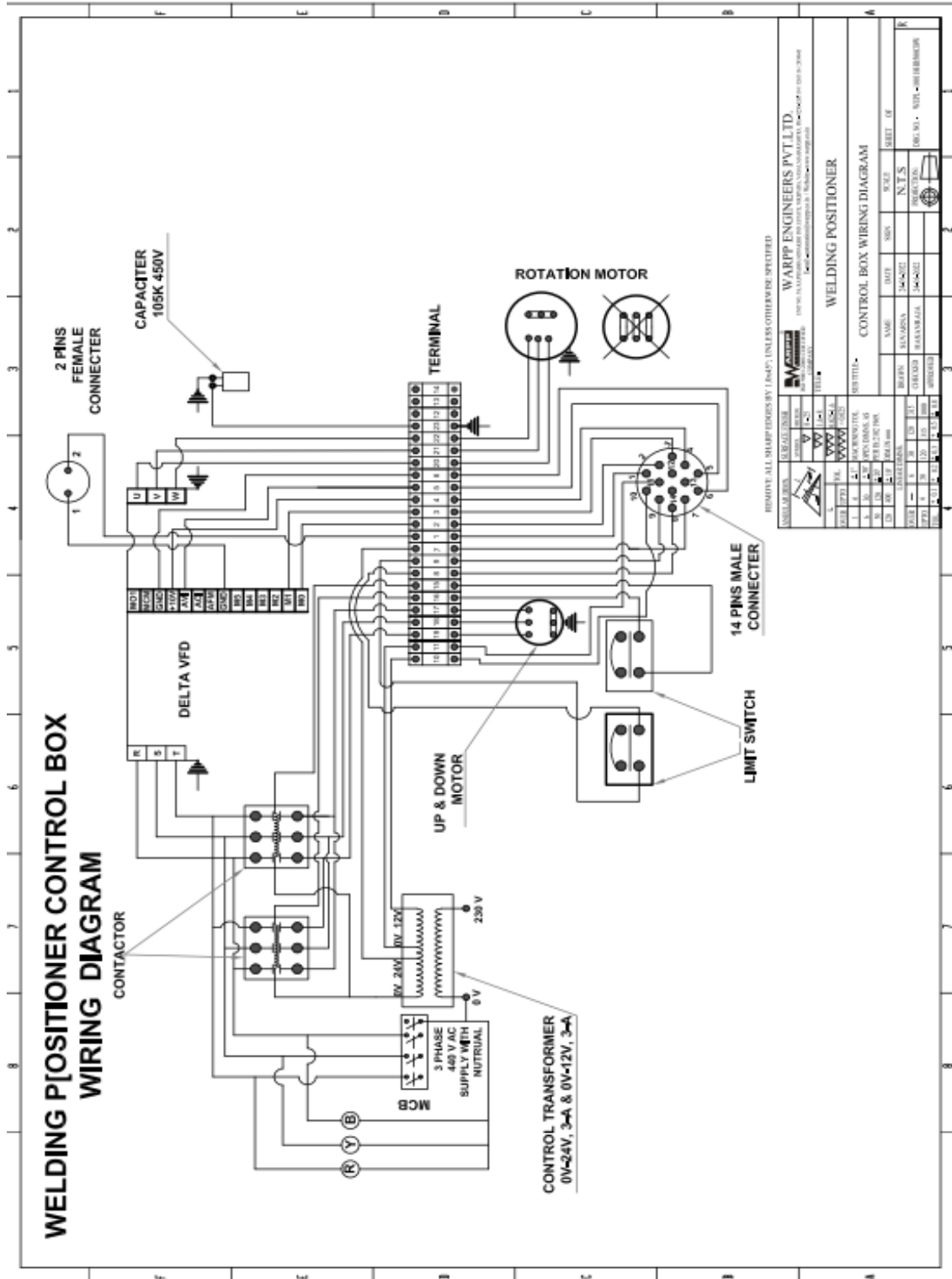
- The welding earth cable is not securely connected.

- **Solution:**

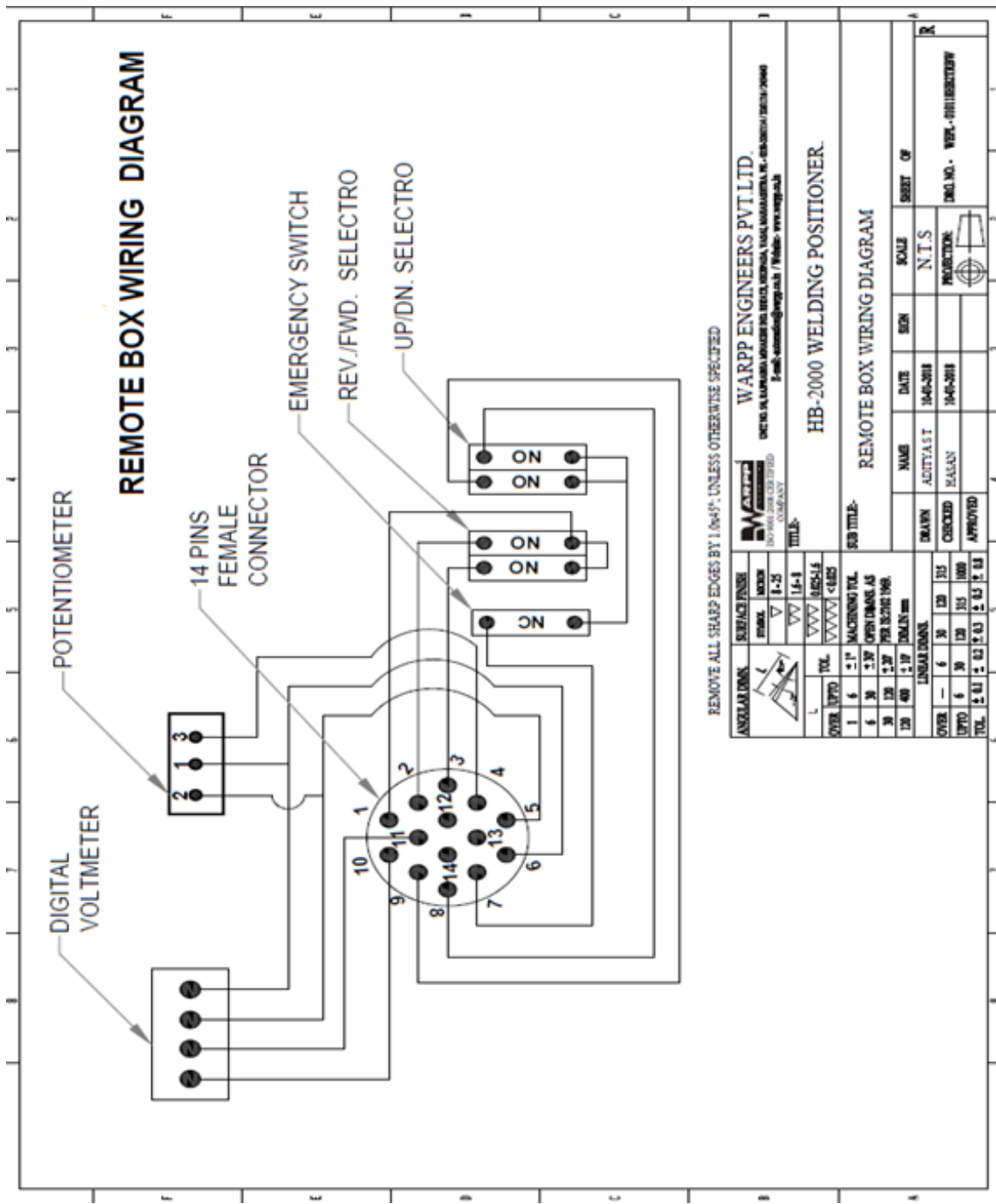
- Securely connect the earth cable for proper welding operation.

12. WIRING DIAGRAM

WELDING POSITIONER WELDING DIAGRAM



REMOTE BOX WIRING DIAGRAM



Note - remote box wiring diagram is same for all the Positioners.

13. MAINTENANCE

Proper maintenance is crucial for ensuring the longevity and efficient operation of Positioners. Here are the recommended maintenance checks and guidelines:

- 1. Oil Change:**
 - Regularly check and change the oil in the gearbox.
 - Except for the first oil change, replace the gearbox oil every **2500 hours or 6 months** (applicable to tilting gearboxes).
- 2. Seal Inspection:**
 - Check if the seal is leaking or irregular. Address any issues promptly.
- 3. Unusual Noises:**
 - During operation, listen for any unusual noises.
 - If you hear abnormal sounds, investigate immediately. Unusual noises may indicate bearing damage.
- 4. Breathing Hole Inspection:**
 - Ensure the breathing hole of the gearbox is obstruction-free.
 - Proper ventilation helps maintain optimal performance.
- 5. External Housing Maintenance:**
 - Keep the external housing clean to aid in gearbox cooling.
 - Regular cleaning prevents overheating and extends the life of the equipment.
- 6. Bolt Tightening:**
 - Periodically check the bolts and re-tighten any that are loose.
 - Loose bolts can compromise stability and safety.
- 7. Lubrication:**
 - The gearboxes come filled with the proper quantity of lubricant from the factory.
 - Do not mix oils of varied brands.
 - Use oil number **320** specifically for the gearbox.
- 8. Oil Replacement:**
 - Before replacing the oil, clean the inside of the gearbox and drain out the old oil.
- 9. Abnormal Noises During Operation:**
 - If you hear any abnormal noise during operation, shut down the equipment immediately.
 - Investigate and resolve the issue before restarting.

14. SPARE PART LIST

	HB -50	HB -150	HB -300	HB -500	HB -1000	HB -5000
MOTOR FOR ROTATION	SP03325	SP03325	SP08358	SP09315	SP00090	SP02782
GEARBOX FOR ROTATION	SP03335	SP03335	SP01534	SP08107 SP09314	SP04961 SP04627	SP02782
MOTOR FOR TILTING	-	-	-	SP03326	SP00090	SP03303
GEARBOX FOR TILTING	-	-	-	SP03003	SP01225	SP03007
SLEW RING BEARING	-	-	-	-	SP04923	SP03537
VFD	SP01080	SP01080	SP01078	SP01083	SP01077	SP07082
MCB	-	SP02485	SP02485	SP04801	-	-

PART NUMBER	DESCRIPTION
SP02025	LIMIT SWITCH
SP03438	SELECTOR SWITCH 3 POSITION ON/OFF/ON
SP00048	14 PIN CONNECTOR FEMALE
SP00047	14 PIN CONNECTOR MALE
SP02858	POWER PLUG METAL TYPE 2 PIN (MALE)
SP02857	POWER PLUG METAL TYPE 2 PIN (FEMALE)
SP03439	SELECTOR SWITCH 3 POSITION CENTER OFF WITH SPRING RETURN BOTH SIDE
SP02834	POTENTIOMETER-10K 10TURN
SP01285	EMERGENCY STOP
SP01887	INDICATOR RYB
SP01468	FOOT OPERATED SWITCH
SP00862	CONTACTOR 25 AMPS 3 POLE, 24 V AC
SP00922	CONTROL TRANSFORMER PRIMARY VOLTAGE -0V, 230V; SECONDARY VOLTAGE 1) 24V,0V,24V,3 AMPS 2) 0V,12V,1AMPS
SA00082	PLC CARD