2015

Sohal®

LX Series Spot Welder

Manual

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THEORY OF SPOT WELDER

Resistive spot welding is a process in which over-laped metal surfaces are tighten in electrodes and joined by heat obtained from flowing of electric current through it.

Work-pieces are held together under pressure exerted by electrodes. Typically the sheets are in the 0.5 to 3 mm thickness range. The process uses two shaped copper alloy electrodes to concentrate welding current into a small "spot" and simultaneously put force on sheets together. Sending a large current through the spot will melt the metal and form the weld. The weld will done from inside where both two sheets meet, The contact resistance plays an important role by consternating heat at the center of workpiece and keep the upper surfaces temperature relatively less.

The amount of heat (energy) delivered to the spot is determined by the resistance between the electrodes and the magnitude and duration of the current. The amount of energy is chosen to match the sheet's material properties, its thickness, and type of electrodes. Applying too little energy will not melt the metal or will make a poor weld. Applying too much energy will melt too much metal, eject molten material, and make a hole rather than a weld.

BENEFITS

1. The attractive feature of spot welding is that a lot of energy can be delivered to the spot in a very short time (approximately 20–200 milliseconds). That permits the welding to occur without excessive heating of the remainder of the sheet.
2. No need of Filler material.
3. Higher production.
4. Fast and easy process.
5. Economic than all other welding processes.

Positioning & Mounting

Place the machine straight. Four mounting hole are provided on base to fix the machine with ground. The machines is designed to work in vertical position. Keep a minimum of 1.5 feet free space around the machine, It helps in cooling and maintenance. Place machine under roof the machine is designed to use inside only. Never fix Power ON-OFF switch on the machine, it's dangerous. Place the power switch on wall or on a stand near the machine to give ease to operator to switch off the power when machine malfunction. Never mount it near grinder, buffing machine etc. Because these produces metal dust that gear reduction in machine's life and sometimes make short circuit in switches and can damage of machine.

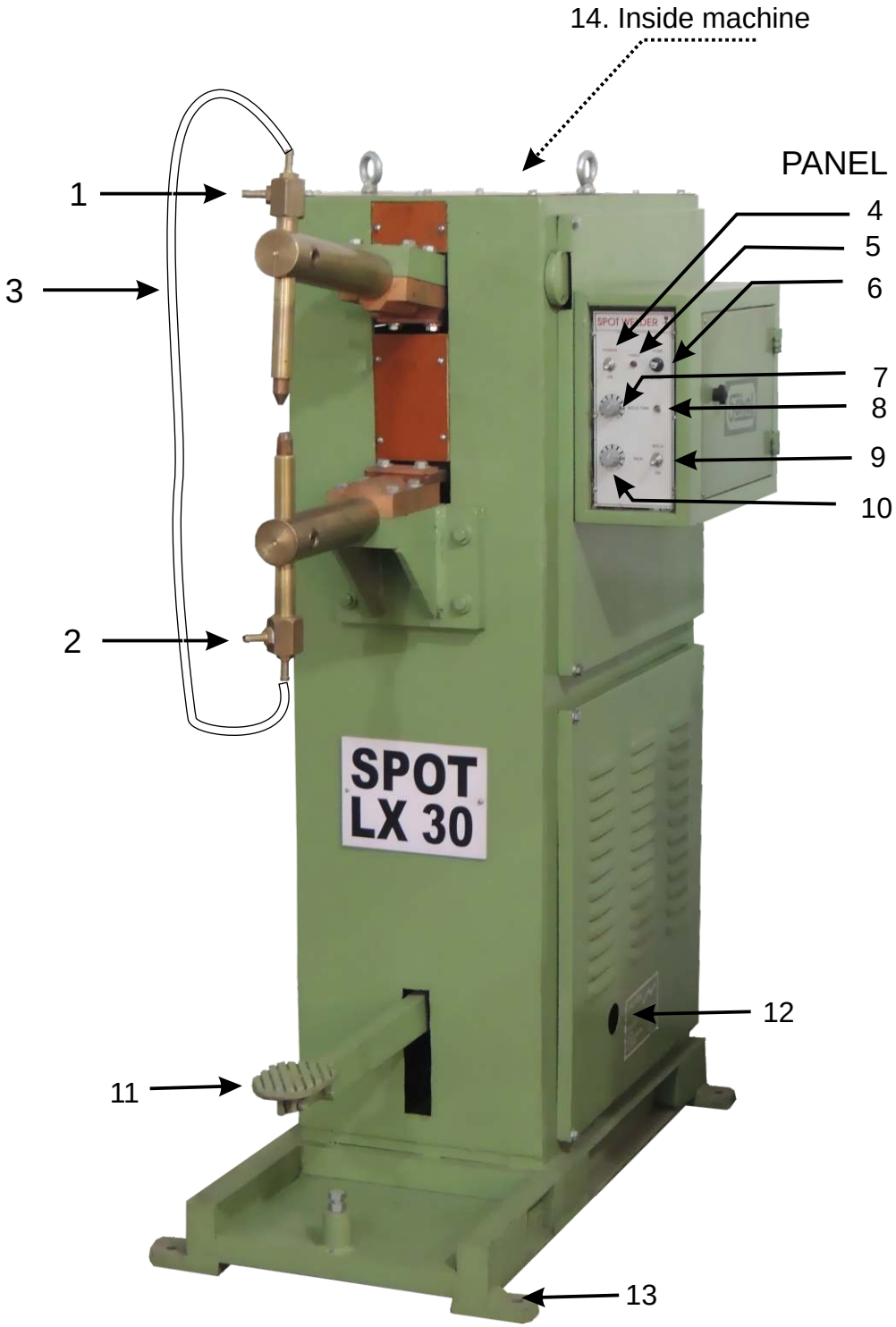
Installation Guide:

Recommended Supply Cable:
2-core 4 mm sq. Copper cable for LX10
2-core 6 mm sq. Copper cable for LX15
2-core 10 mm sq. Copper cable for LX30

Recommended Ground Cable:
4 mm sq. Copper wire for LX10
6 mm sq. Copper wire for LX15
10 mm sq. Copper wire LX30

Recommendation for Electrode Cooling for all models:
Use DM water as coolant. Don't add any chemical in it.
Use a 50 litter tank for coolant recirculation.
A ½ HP water pump is for water circulation in electrodes.

BRIEF DESCRIPTION OF ALL PARTS:



Detail and Function

1. Coolant Inlet: Connect Water pump output here.
2. Coolant Outlet: Return coolant from here to water tank
3. Coolant Link: Joining pipe for complete coolant circulation.
4. Toggle Switch: Control panel On-Off switch.
5. LED: Panel power on LED
6. Fuse: 2 Ampere fuse for a small transformer in-side panel.
7. Weld Timer: Use it to set the period of current sending to work-piece.
8. Timer LED: It's On time represents, On time of Current/Heat.
9. Weld Toggle Switch: Switch to enable weld power during welding. Switch of it for dressing / matching of electrodes or setting job in electrodes.
10. Heat adjustment: This potentiometer is for setting machine output power during weld-time.
11. Paddle: Place the job then push paddle down to clamp and weld the job.
12. Supply Cover: Cover of electric supply connecter.
13. Mounting Hole: These are 4 Mounting holes to fix the machine with ground.
14. Weld Start Switch: This switch is inside machine, when operator press the paddle, job clamps then a spring maintains the pressure on job and a trigger press the weld start switch. This step starts the weld current and current stops flowing after completion of predefined time on panel.

How to Operate:

- 1. Install the machine as described on previous pages.
- 2. Switch On coolant pump. and check the water circulation.
- 3. Switch On machines main switch/MCB.
- 4. Switch On control panel. Check and set weld On switch to Off position.
- 5. Set the electrodes and workpiece placement/movement.
- 6. Switch on Weld On switch from panel.
- 7. Set the timer potentiometer to half and heat potentiometer to zero.
- 8. Place the workpiece between electrodes and push the paddle completely down.
- 9. Repeat the step 8 and gradually increace heat power until the desired satisfied weld does not occur. If more power need. Now increase the weld time from Weld time potentiometer.
- 10. After completing work, Switch Off (Weld Off) then (Panel Power) then (Mains) and then (water pump).

Maintenence

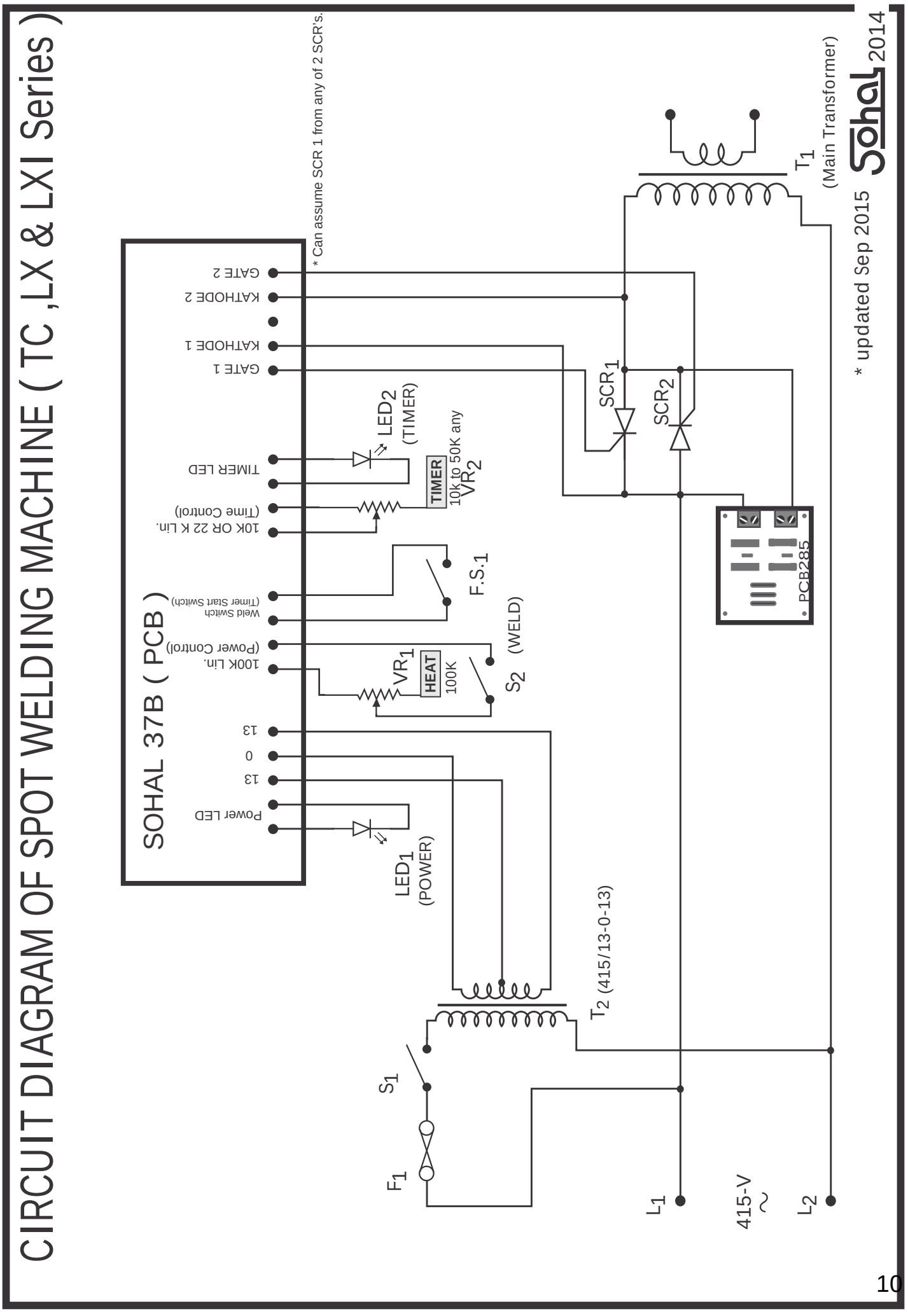
- Keep the machine clean.
- Oil the joints of moving parts daily.

Fault and Solutions

Fault finding :

PROBLEM	CAUSE	SOLUTION
Electrodes getting Hot	No water circulation in electrodes	Check water pump and circullation
No current on workpiece	A thread, teflon tape or a chemical between brass and copper electrode's thread has blocked the current	Open the electrodes and remove the thread or insulating material stick on it. Clean booth threads and re-fasten the electrodes.
Poor weld	Insufficient current and heat time	Increase the heat and weld time
Poor weld and excess sparking in job.	Low clamping force	Open the left cover of machine. Tighten the pressure spring to put more force on job.

Circuit Diagram



Technical Specifications

Following specifications are just guidelines not guaranteed:

LX10 Suitable for 1.0 + 1.0 mm max
LX15 Suitable for 1.2 + 1.2 mm max
LX30 Suitable for 1.7 + 1.7 mm max

LX10 Can weld up-to 1.5 + 1.5 mm max
LX15 Can weld up-to 1.8 + 1.8 mm max
LX30 Can weld up-to 2.2 + 2.2 mm max

Technical Specifications:

Item	Unit	LX10	LX15	LX30
Rated Supply	V	415 ± 10%	415 ± 10%	415 ± 10%
Phase	Ph.	2	2	2
Frequency	Hz.	50	50	50
Load	KVA	10	15	30
Thoat Depth	mm.	270	360	360
Thoat Clearance	mm.	210	250	250
Output Current	A	2400	3800	5600
Clamping Force	Kgf	~80	~128	~128
Weight	Kg	180	234	285

Weight on 28-01-2014

* Sepecification are subjected to change with-out prior notice.

Sohal® ELECTRIC WORKS

LINK ROAD, CHOWK DHOLEWAL, LUDHIANA-141003(PB).

Mfr.:All Kind of Welding Machines, Metal Gathering & Welding Spm's.

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