

**INVERTER WELDING (IR)  
&  
INVERTER Tig + MMA (IRT)**

# **MANUAL**

**2016**



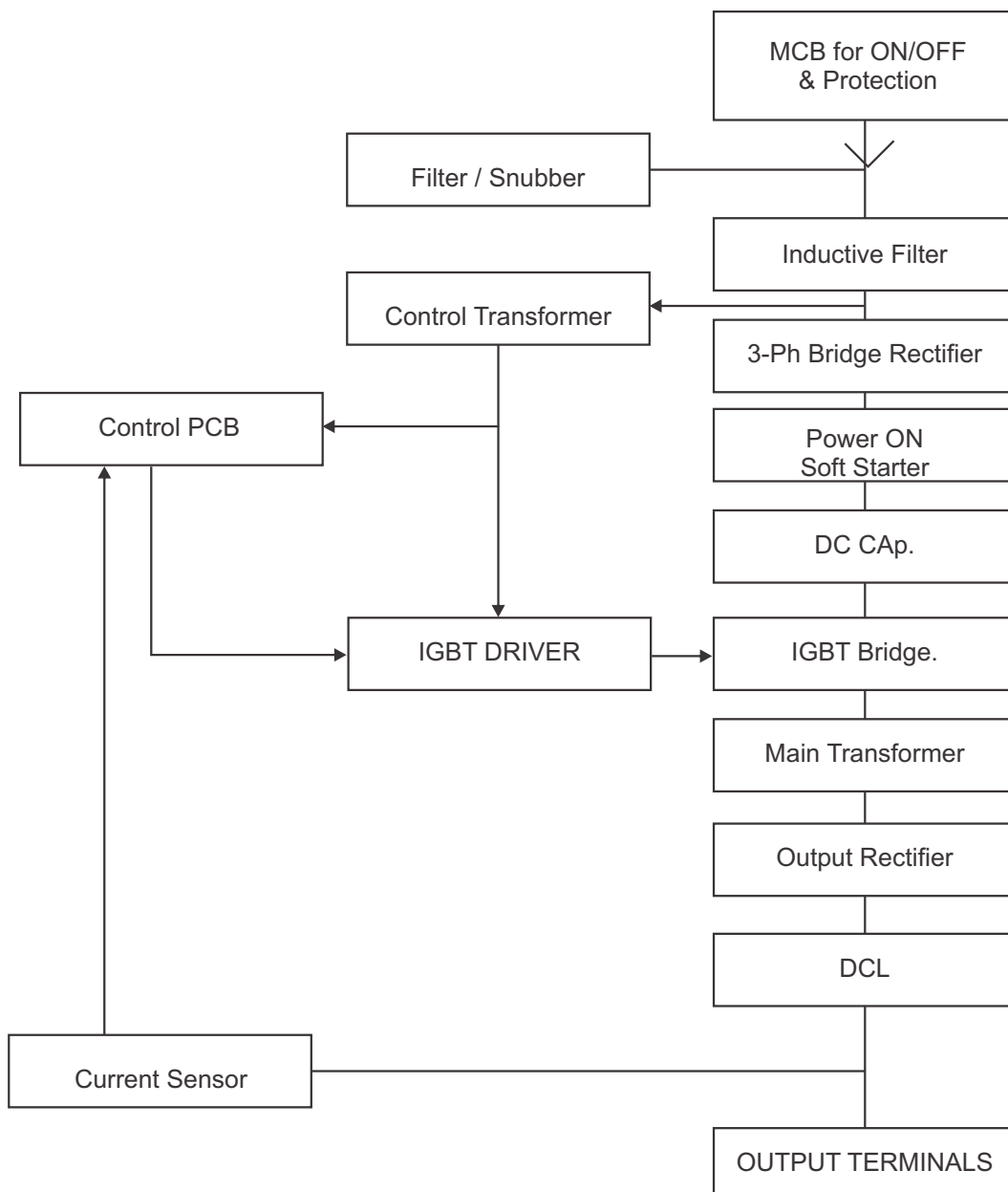
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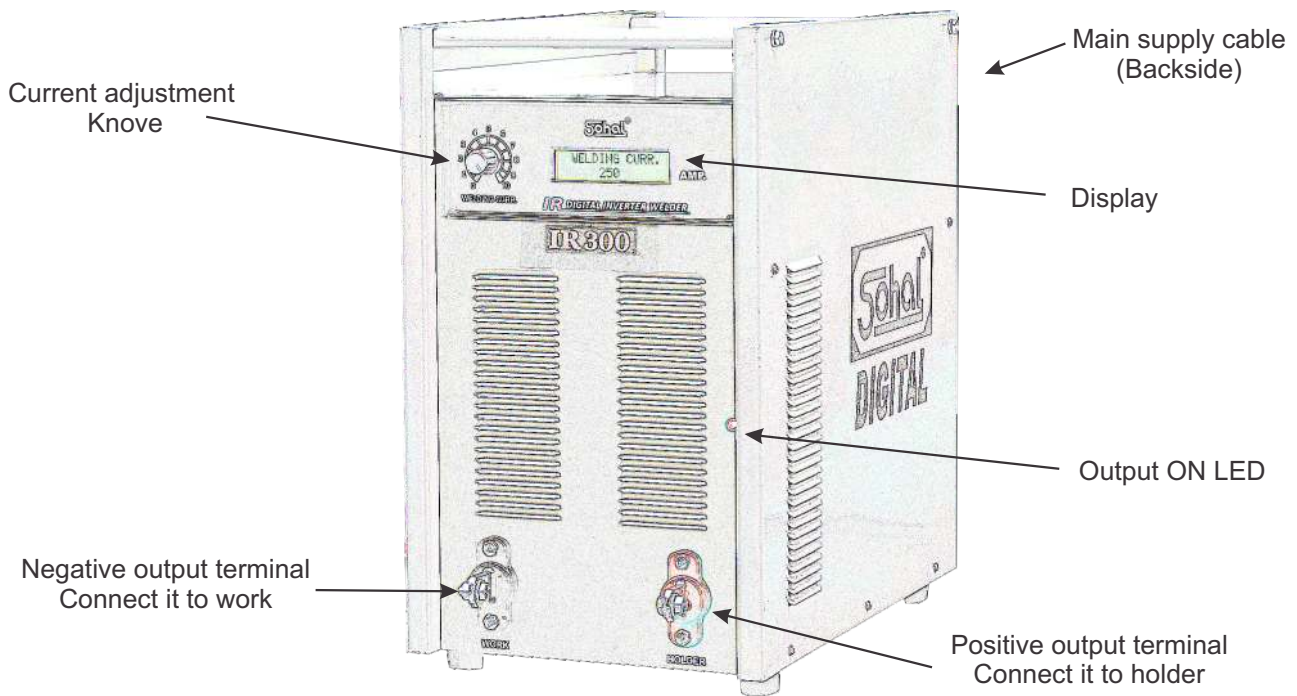
## THEORY

IR series welding machines are based on inverter technology by which the 50/60 Hz input supply is first converted to DC by diodes, then filtered by electrolytic capacitors for ripple free pure DC volts, then this DC volts are inverted to medium frequency (20KHz) AC, then step down by small efficient transformer, then re-converted to Low volt DC suitable for welding.

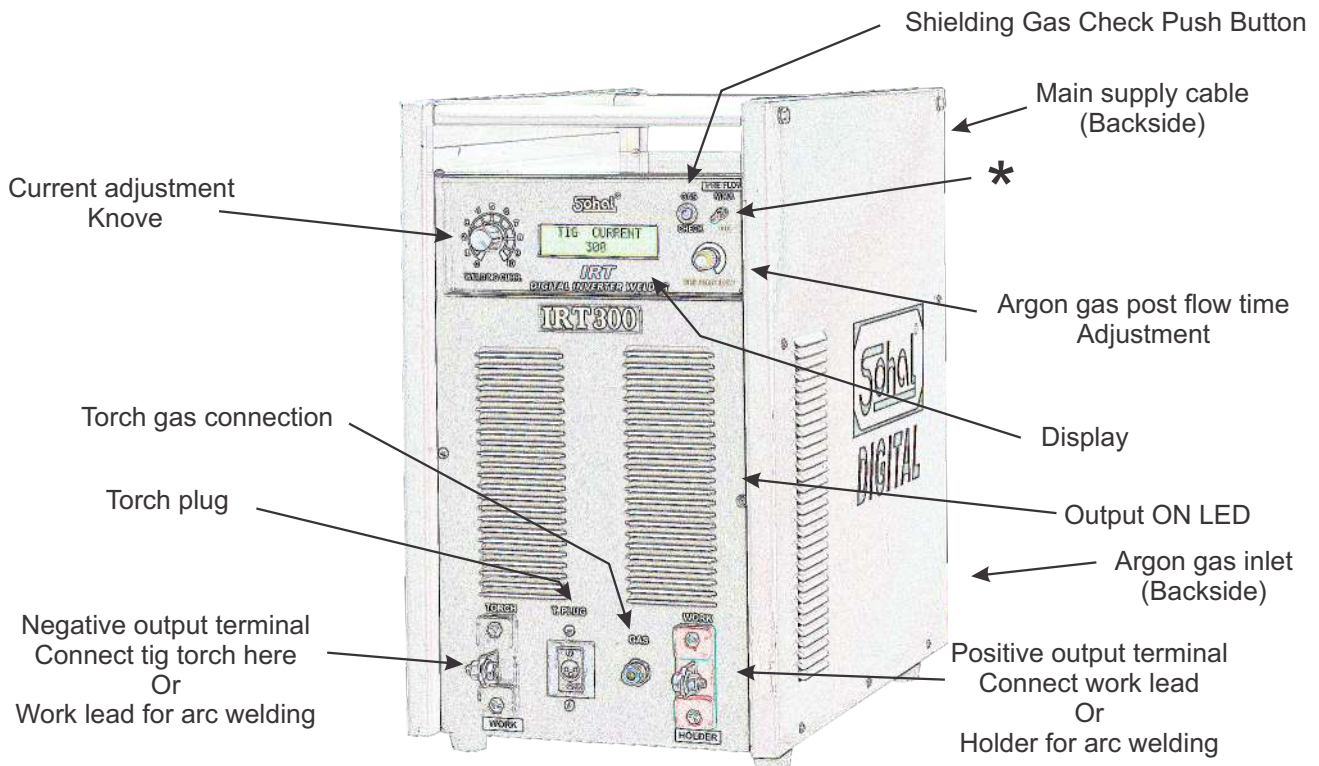
## A MODEL BLOCK DIAGRAM OF MACHINE



Quick kow-how :



MODEL: IR



MODEL: IRT

\* This switch has two functions.

1. Select Electrode or Tig mode.
2. For Argon pre-flow set, rotate post-flow knob in MMA position. Screen show pre flow saving, when message disappear. Set switch to Tig mode and set post-flow.

## Installation Guide:

- Place machine 6 to 12 inches above from ground, This will escape it from sudden water flow, dust and scrap.
- Leave at least 6 inches space all-around the machine for proper cooling.
- Connect power supply through MCB or MCCB, never connect through old(used) knife type power on switch
- Be sure machine body is properly grounded, before switching it on.
- Switch off machine during connecting or removal of output leads.
- Thoroughly tighten the fasteners of output terminals.

## Supply Cable:

4-core 2.5 mm sq. for IR300 & IRT 300

4-core 4 mm sq. for IR400 & IRT 400

4-core 6 mm sq. for IR500 & IRT500

## Welding or Work cable:

35 mm sq. for IR300 & IRT 300

50 mm sq. for IR400 & IRT 400

75 or 50 mm sq. for IR500 & IRT500

## Tig Torch:

Air Cooled for IRT 300

Air Cooled or Water Cooled(preffered) IRT 400

Water Cooled IRT500

## Using IRxxx :

- ⇒ Connect Work lead to working table or job. Keep welding holder away from work connections.
- ⇒ Switch on mains from socket and from backside MCB.
- ⇒ Select and clamp desired welding electrode in holder and set welding current according to rod size as mentioned on it's cartoon.
- ⇒ Make a trial weld, then modify current setting if needed.
- ⇒ Machine is ready for production work.

## Using IRTxxx :

- ⇒ For arc welding, move toggle switch towards MMA on front panel of machine and do the same procedure as written above for IRxxx.
- ⇒

For Tig Welding do following steps.

- ⇒ Connect Work lead from +ve terminal to working table or job.
- ⇒ Connect Tig torch at -ve terminal and connect gas pipe at gas nipple and connect torch plug.
- ⇒ Place a sharp grinded tungsten electrode in torch head and tight 2-4 mm outside of ceramic nozzle.
- ⇒ Connect shielding gas(argon) at gas inlet nipple, backside of machine.
- ⇒ Switch on mains from socket and from backside MCB.
- ⇒ Push Gas Check Button from front panel and adjust the gas flow from gas regulator and flow-meter according to working conditions. Preferably between 2 to 6 liter per minute
- ⇒ **Program Gas Pre-flow time:**
  - 1. Set TIG/MMA switch back to MMA.**
  - 2. Rotate post-flow knob in MMA position. Screen show Pre-flow sec., Set the desired value, if not sure set it to minimum (0.1 sec.). After a second screen shows pre flow saving. when saving message changed to Welding Current. Set TIG/MMA seitch to TIG mode.**
  - 3. Every time when Pre-flow will done. Don't forget to set Post Flow Time.**
- ⇒ Set Post-Flow time between 2 to 5 sec. If want to use machine at full current set it to 5 second.
- ⇒ Set welding current according to job.
- ⇒ Make a trial weld, then modify current setting if needed.
- ⇒ Machine is ready for production work.

## Fault finding :

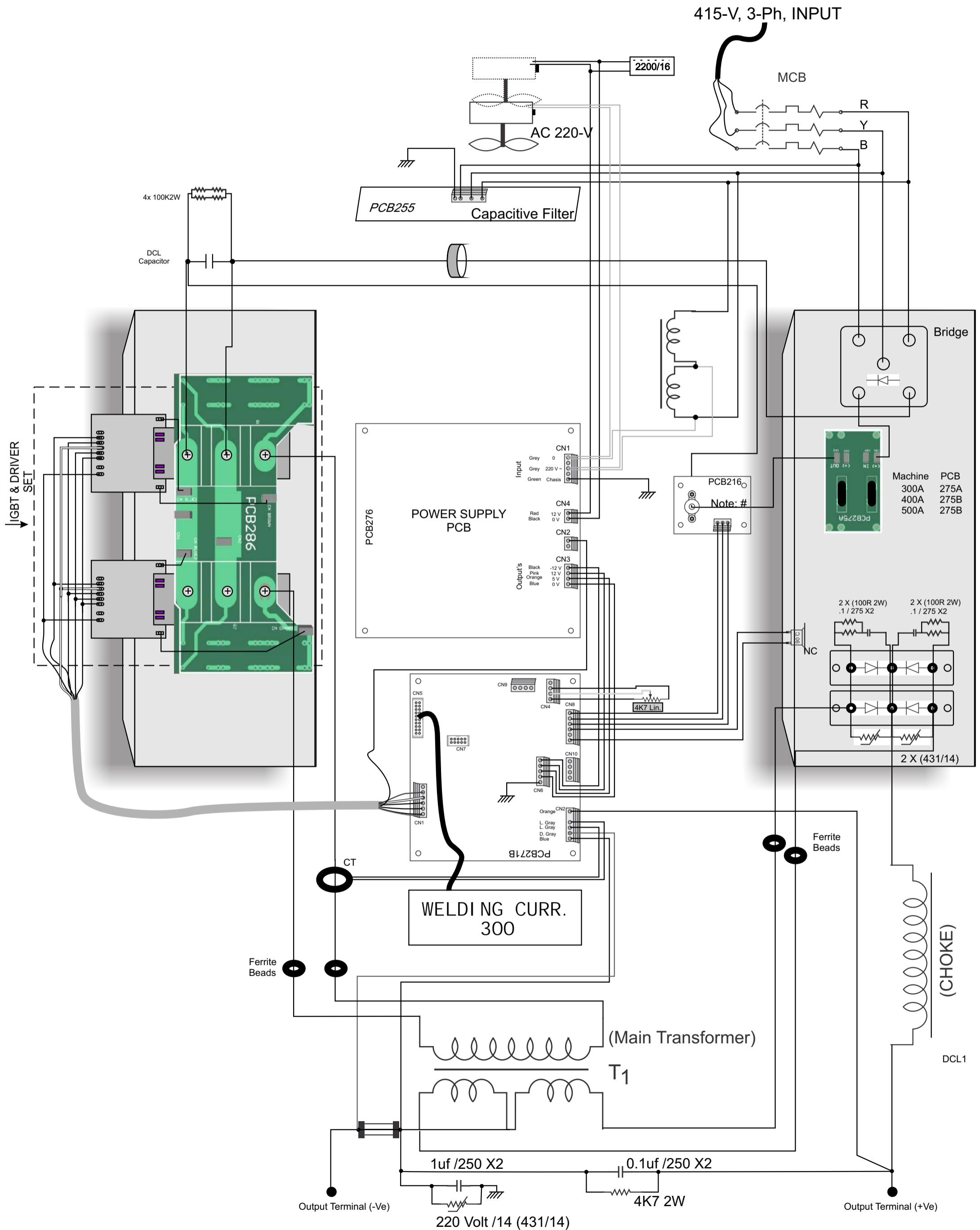
PROBLEM	CAUSE	SOLUTION
The current adjustment knob does not work in proper way and current display does not follow correctly it's movement.	Knob faulty	Replace with new one (potentiometer 5K)
Welding stops automatically with-out no message on display	Loose or damaged connection on output terminals.	Clean terminals by emery paper, replace damaged thimble.
	Welding cable damaged.	Replace cable
	Work lead has not properly connected to job.	Connect work lead properly to job or working table.
Welding stops automatically, display blink and following message on display		
1. Thermostat Cut	Machine is overheated due to working continuously at full or Cooling fan faulty	Wait for 5 minutes to lower the inside temperature, if fan faulty replace it.
2. T. coolant Fail (if Optional pressure switch connected in machine)	Water is not flowing through torch.	Check water valve, pipe bent and no water from source
3. Sensor Overload	DCL, Transformer or PCB 271C faulty	Send machine to Service Center
4. CT overload	Main Transformer faulty or 12-V fan faulty or PCB276 faulty.	Send machine to Service Center
5. +12V Fail OR (-)12V Fail	12-Volt Fan OR PCB276	Replace faulty item.

<b><u>Tig Problems</u></b>		
Tungsten Electrode being black	Less post flow time	Increase post flow time from knob
White ash on job and tungsten electrode burn fast	Wrong polarity of Tig torch	Connect torch to negative terminal
Weld burns	Argon gas problems. Like: Gas is not pure	Change gas cylinder
	Blowing wind flows away the gas	Change the direction of table fan or switch of ceiling fan, if working in open area: shield the job from flowing air
	Fault in torch head	Replace torch or torch head



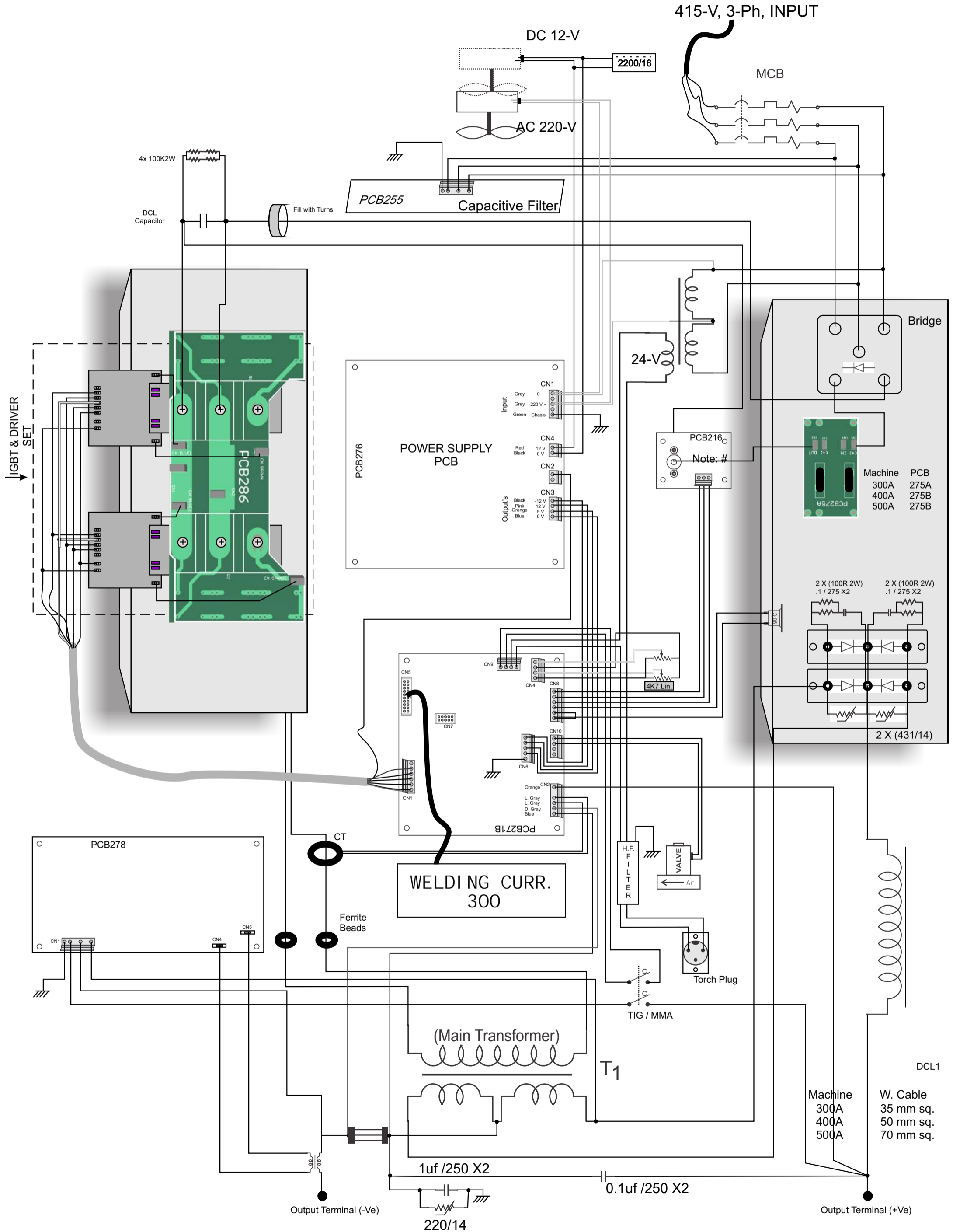
# CONNECTION DIAGRAM OF IR300/400/500

(July, 2014)



# CONNECTION DIAGRAM OF IRT300/400/500

(July, 2014)



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