



MIG400iCCCV

**INVERTER MIG/MMA
Welding Power Source**

Instruction manual



MIG400iCCCV

INVERTER WELDING POWER SOURCE



Instruction manual
For
Installation, Operation & General maintenance

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SAFETY

Users of ESAB welding equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of welding equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

Trained personnel well acquainted with the operation of the welding equipment must carry out all the work. Incorrect operation of the equipment may lead to hazardous situations, which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the welding equipment must be familiar with:
 - its operation
 - location of emergency stops
 - its function
 - relevant safety precautions
 - welding
2. The operator must ensure that:
 - no unauthorized person is stationed within the working area of the equipment when it is started up.
 - no one is unprotected when the arc is struck
3. The workplace must:
 - be suitable for the purpose
 - be free from drafts
4. Personal safety equipment
 - Always wear recommended personal safety equipment, such as safety glasses, flameproof clothing, and safety gloves.
 - Do not wear loose—fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns.
5. General precautions
 - Make sure the return cable is connected securely.
 - Only a qualified electrician may carry out work on high voltage equipment.
 - Appropriate fire extinguishing equipment must be clearly marked and close at hand.
 - Lubrication and maintenance must not be carried out on the equipment during operation.



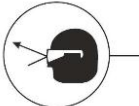
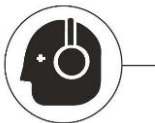
Read and understand the instruction manual before installing or operating.
ESAB can provide you with all necessary welding protection and accessories.

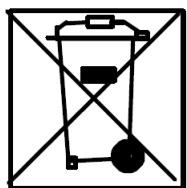


WARNING

Arc welding and cutting can be injurious to yourself and others. Take precautions when welding.

Ask for your employer's safety practices which should be based on manufacturers' hazard data.

	ELECTRIC SHOCK – Can kill • Install and earth the welding unit in accordance with applicable standards. • Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing. • Insulate yourself from earth and the workpiece. • Ensure your working stance is safe.
	FUMES AND GASES – Can be dangerous to health • Keep your head out of the fumes. • Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area.
	ARC RAYS – Can injure eyes and burn skin. • Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing. • Protect bystanders with suitable screens or curtains.
	FIRE HAZARD • Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.
	NOISE – Excessive noise can damage hearing • Protect your ears. Use earmuffs or other hearing protection. • Warn bystanders of the risk.
	MALFUNCTION – Call for expert assistance in the event of malfunction. PROTECT YOURSELF AND OTHERS!
	CAUTION! <i>This product is solely intended for arc welding</i>



Do not dispose of electrical equipment together with normal waste! In accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from the local representative. By applying this Directive you will improve the environment and human health

RATING

RATING OF MIG400iCCCV INVERTER WELDING POWER SOURCE

CHARACTERISTICS	CONSTANT VOLTAGE/ CURRENT TYPE
Input:	
SUPPLY VOLTAGE, PHASE & FREQUENCY	415V± 15%, 3Phase, 50 Hz, AC
MAXIMUM INPUT CURRENT	26.6 A
Output:	
OUTPUT CURRENT RANGE	DC 40-400A
VOLTAGE RANGE	16-34 V DC
TYPE OF WELDING CURRENT CONTROL	STEPLESS
CLASS OF INSULATION	'H'
COOLING	FORCED AIR COOLED
APPROX DIMENSION (LxWxH) IN MM	654 x 322 x 671
WEIGHT (APPROX)	50.5 KG.

INSTALLATION

The complete installation for MIG application should consist the following items:

	Description	Type	Quantity
1.	Welding Power Source	MIG400iCCCV	1
2.	Wire feeder with Interconnections, Wire spool	MIG400i wire feeder	1
3.	MIG Torch for MIG		1
4.	Earth cable with Clamp		1
5.	Heater - optional	110V A.C. for CO ₂	1
6.	GAS with regulator		1

The complete installation for MMA application should consist the following items:

	Description	Type	Quantity
1.	Welding Power Source	MIG400iCCCV	1
2.	Welding Cable with Electrode Holder.		1
3.	Earth cable with Clamp		1

CAUTIONS FOR INSTALLATION

- Provide a Switch Box for every Welding Power Source, and use designated fuse
- Tolerance of Power Voltage Variation is $\pm 10\%$ of rated input voltage.

a) Installation place

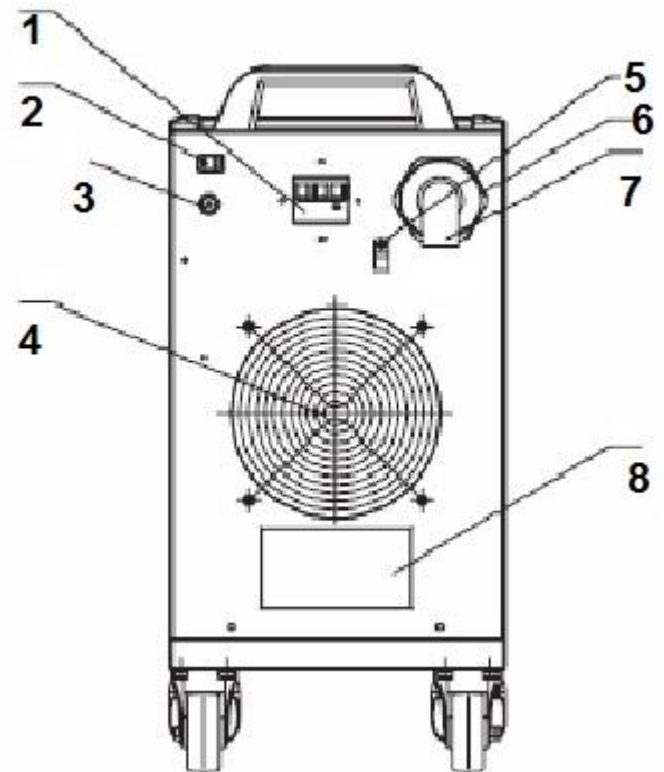
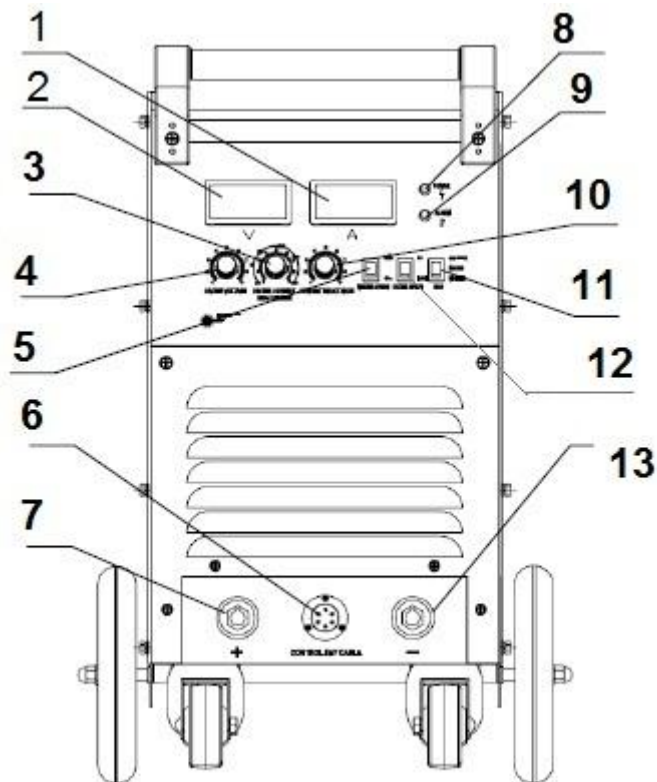
- Install in the place where less moisture and dust exist. Avoid direct sunlight and rain, and maintain ambient temperature within -10° to $+45^{\circ}$ C as much as possible.
- Keep the welding power source at least 20 cm. away from the wall (if any).
- In case of installation of more two units side by side, a distance of more than 20 cm is recommended between the two power sources.
- Use a shield to protect the welding arc in case of excessive air draft.

b) Ventilation

Adequate ventilation is recommended at the place of installation. For example the following guideline should be followed:

- a) In case of the area being more than 300 square meters (per unit), no ventilation is required, provided the room is not completely airtight.
- b) In case of the area being less than 300 square meters and the welding is continuously performed, adequate ventilation is recommended with the help of vent fan or exhaust duct.
- c) While performing the grounding work, it is recommended that a skilled electrician does the work.

WELDING OPERATIONS



1. Current meter
2. Voltage meter
3. Crater Current
4. Crater Voltage
5. MMA/ MIG switch
6. Wire feeder control circuit socket
7. Power Socket +
8. Power indicating light
9. Protection indicating light
10. Current Inductance control
11. Welding mode selection switch
12. Crater OFF/ON (2T/4T) selection switch
13. Power Socket —

1. Power switch
2. Heater socket AC110V)
3. Controlling power trip (3A)
4. Fan
5. Earthing bolt
6. Cable fixed head
7. Power input cable
8. Nameplate

Indicating light

Only Green light on: The power is on.

Green light on, Red light on: The machine is overheated. The machine will go back to working condition, if the inner temperature of machine returns to the allowed level.

MIG MODE

Put MMA/ MIG switch on power source in MIG mode.

Crater Control (2T/4T)

Usually there is a crater at the end of welding. Adjust Crater Voltage and Current to fill up the crater by arc ending current (less than 40%-70% of welding current) and improve the welding quality. It also selects 2T/4T operation of the machine.

Soft wire feeding

In order to get the satisfying welding quality, the machine feed the wire at preset low speed before wire touch the work piece. The speed will reach the normal level after striking arc. It means striking arc fail if the current is not detected during this stage. This kind of striking arc mode can improve the success of striking arc and ensure the reliable and stable arc.

Burn back time

When the trigger of torch is switched off, the wire feeding will continue because of inertia. So the wire will go out to the top end of torch after the welding. It will cause the stick of wire to the work piece, thus bring the difficulty to the next welding. The burn back is set in the machine to solve this problem. The machine will keep output voltage during certain time to keep wire burning.

Current Inductance control

It means electronic reactor. It can adjust wire burning power by changing the current changing speed, and reduce the spatter.

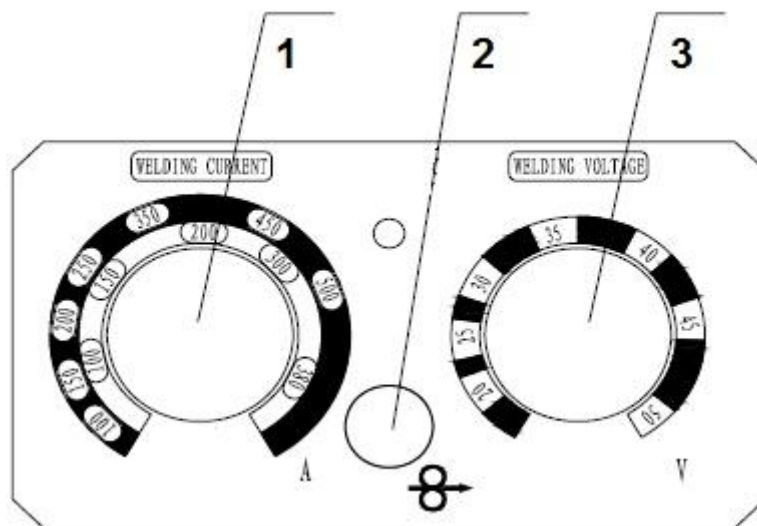
Ball cutting

Usually there is a big droplet at the end of wire after welding. And slag will stick on the low surface of the droplet. It will cause difficulty of striking arc. The ball cutting circuit is designed to cut the droplet automatically after welding.

Post-gas

3 seconds post-gas time is set to protect the welding area after welding.

Control on wire Feeder

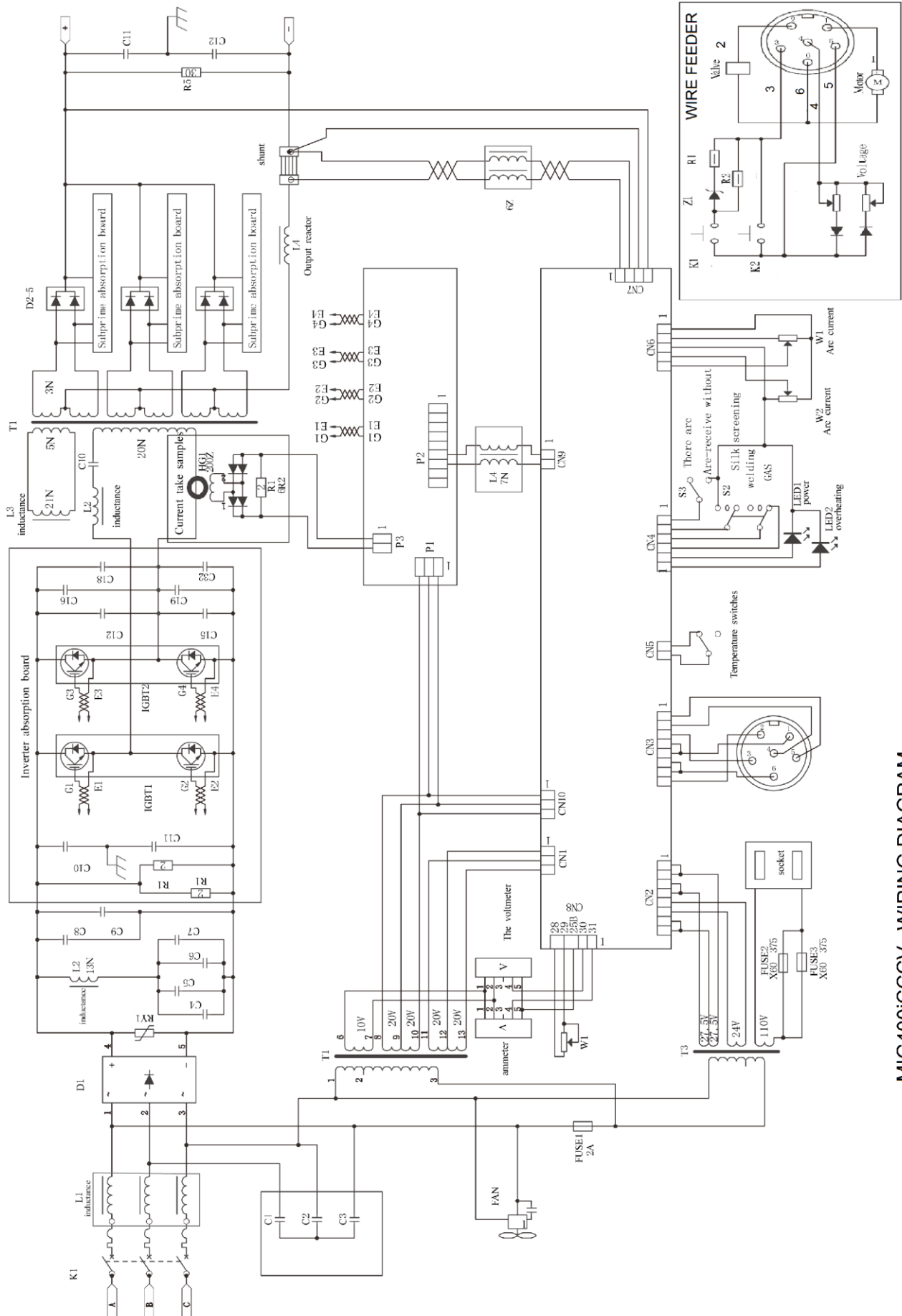


1. Welding Current Setting.
2. Wire Inch Push Button.
3. Welding Voltage Setting.

MMA MODE

Put MMA/MIG switch on power source in MMA mode.

Welding current can be set by MMA current setting knob on the power source.



MIG400iCCCV WIRING DIAGRAM

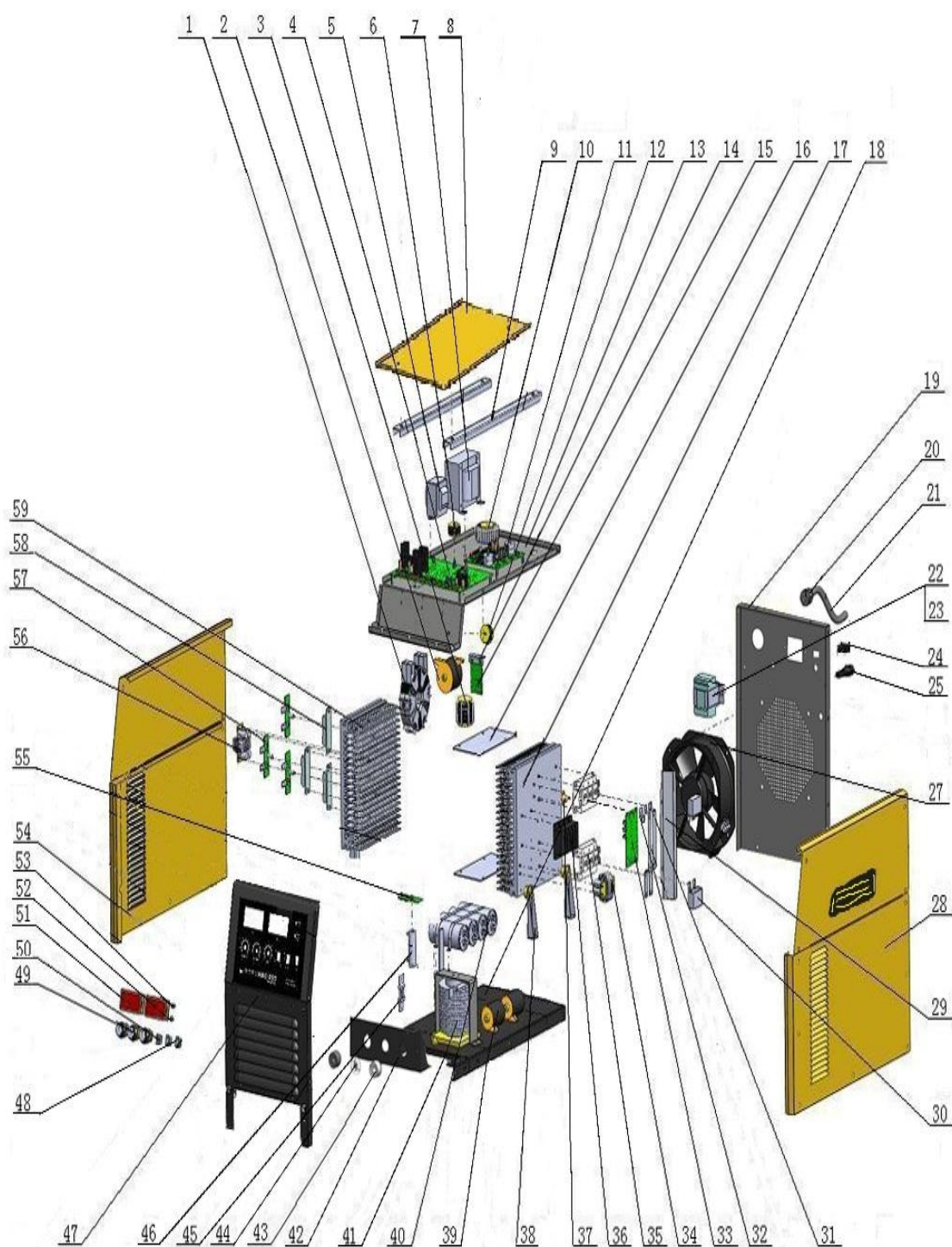
TROUBLESHOOTING

No.	Breakdown	Analysis	Solutions
1	Protecting indicating light ON	Thermal relay is broken.	Replace thermal relay.
		The machine is overheated.	Restart work when the temperature returns to normal level.
2	Fan doesn't work	Fan is defective. / The connecting lead is disconnected.	Replace fan, /Reconnect the lead.
3	No values displayed on current meter or voltage meter	Meters are broken.	Replace meters
		Connecting lead is disconnected.	Reconnect the lead
		Main control PCB is defective.	Replace PCB
4	Current knob doesn't work.	Lead is disconnected	Reconnect lead
		Potentiometer is broken.	Replace potentiometer
5	Machine doesn't work after pressing torch trigger.	Fuse (1A) is broken.	Replace fuse
		Torch trigger is defective.	Connect control cable Torch switch
		Machine Trips	Please work under suitable duty cycle.
		Control PCB is broken.	Replace Control PCB
6	No wire feeding.	Control cable is disconnected.	Reconnect control cable
		Fuse on the back of machine is broken.	Replace fuse
		Wire feeder motor is defective.	Repair or replace motor
		Control PCB is defective.	Replace control PCB
7	No OCV	Over voltage, voltage lack, or lack of phase	Restart the work when the voltage returns to normal level.
		The machine is over heated.	Restart work when the temperature returns to normal level.
		Power switch is defective.	Replace power switch
8	No gas	Fuse (1A) is defective.	Replace fuse
		Gas hose is disconnected.	Reconnect gas hose
		Gas hose is staved or jammed.	Check gas route
		Solenoid is defective.	Repair or replace solenoid

Parts List and Exploded view

No.	QTY	ESAB CODE NO	ESAB ITEM DESCRIPTION
1	1	0800660001	MAIN TRANSFORMER(MIG400iCCCV)
2	1	0800660002	FILTER CAPACITOR(MIG400iCCCV)
3	1	0800660003	RES'NCE INDUCTANCE(MIG400iCCCV)
4	1	0800660004	MAIN CONTROL BRD(MIG400iCCCV)
5	1	0800660005	CONTROL TRANSF. 1(MIG400iCCCV)
6	1	0800660006	PWM CONTROL WIRE(MIG400iCCCV)
7	1	0800660007	CONTROL TRANSF. 2(MIG400iCCCV)
8	1	0800660008	TOP PANEL(MIG400iCCCV)
9	2	0800660009	TOP PANEL STRENGT RIB(MIG400iCCCV)
10	1	0800660010	COMMON MODE CHOKE(MIG400iCCCV)
11	1	0800660011	PWM AND DRIVE BRD(MIG400iCCCV)
12	1	0800660012	CUR&VOLT FEEDBACK WIRE(MIG400iCCCV)
13	1	0800660013	MOUNTING PANEL(MIG400iCCCV)
14	1	0800660014	CUR.INDUCTANCE SUPP(MIG400iCCCV)
15	1	0800660015	CUR SAMPLING BRD(MIG400iCCCV)
16	1	0800660016	RADIATOR CONN.BRD(MIG400iCCCV)
17	1	0800660017	IGBT RADIATOR(MIG400iCCCV)
18	1	0800660018	BOTTOM PANEL(MIG400iCCCV)
19	1	0800660019	BACK PANEL(MIG400iCCCV)
20	1	0800660020	CABLE FIXED HEAD(MIG400iCCCV)
21	1	0800660021	POWER CORD(MIG400iCCCV)
22	1	0800660022	ELCB (MIG400iCCCV)
23	2	0800660023	SWITCH SUPPORT(MIG400iCCCV)
24	1	0800660024	TWO PIN SOCKET(MIG400iCCCV)
25	1	0800660025	FUSE SUPPORT(MIG400iCCCV)
27	1	0800660026	AXIAL FLOW FAN(MIG400iCCCV)
28	1	0800660027	RIGHT PANEL(MIG400iCCCV)
29	2	0800660028	WIND SCREEN(MIG400iCCCV)
30	2	0800660029	ABSORB CAPACITOR(MIG400iCCCV)
31	4	0800660030	IGBT BUSBAR(MIG400iCCCV)
32	1	0800660031	IGBT ABSORB CAP. SUPP(MIG400iCCCV)
33	1	0800660032	PRIMARY ABSORB BRD(MIG400iCCCV)
34	2	0800660033	FILTER INDUCTANCE(MIG400iCCCV)
35	2	0800660034	IGBT(MIG400iCCCV)
36	1	0800660035	3P RECTIF. BRIDGE(MIG400iCCCV)
37	1	0800660036	THERMORELAY(MIG400iCCCV)
38	1	0800660037	RADIATOR SUPPORT(MIG400iCCCV)
39	2	0800660038	FILTER CAPACITOR(MIG400iCCCV)
40	4	0800660039	POLY'LENE CAPACITOR(MIG400iCCCV)
41	1	0800660040	OUTPUT RADIATOR(MIG400iCCCV)
42	2	0800660041	OUTPUT FIXED BRD(MIG400iCCCV)
43	2	0800660042	EU TYP QUICK CONN.(MIG400iCCCV)

44	1	0800660043	AVIATION SOCKET(MIG400iCCCV)
45	1	0800660044	SHUNT(MIG400iCCCV)
46	1	0800660045	RESISTANCE(MIG400iCCCV)
47	1	0800660046	PANEL(MIG400iCCCV)
48	1	0800660047	WAVE SWITCH(MIG400iCCCV)
49	3	0800660048	POTENTIOMETER KNOB(MIG400iCCCV)
50	2	0800660049	WAVE SWITCH(MIG400iCCCV)
51	2	0800660050	DIG.DISPLAY CUR MTR(MIG400iCCCV)
52	1	0800660051	LUMINOUS DIODE(MIG400iCCCV)
53	1	0800660052	LUMINOUS DIODE(MIG400iCCCV)
54	1	0800660053	LEFT PANEL(MIG400iCCCV)
55	1	0800660054	OUTPUT ABSORB BRD(MIG400iCCCV)
56	1	0800660055	COMMUTATION INDUCTANCE(MIG400iCCCV)
57	2	0800660056	SEC. ABSORB BOARD(MIG400iCCCV)
58	2	0800660057	FAST RECOVERY DIODE(MIG400iCCCV)
59	1	0800660058	FAST RECOVERY RADIATOR(MIG400iCCCV)



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