INVERTER BASED CC/CV

WELDING MACHINE

COMBO 400 I

OPERATION MANUAL

M/s WARPP ENGINEERS PVT. LTD.

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User Instruction

(1) When purchasing the products of our company, the user is required to fill the Warranty carefully with official stamps. It will be grateful if the customer will send the first page and a copy of invoice to the after-sales service department of the Company, or entrust the sales units to send them instead. And the second page will be left for registration procedure by the local dealers (maintain stations). If there area no local dealers (maintain stations) existing in some areas, please send the first and second pages together to the after-sales service department of the Company. Otherwise on maintain activities will be provided except maintain services.

(2) Provided some quality problems appear on the products of the Company in one year after purchasing (except for Non-warranty parts), please contact the local dealers (maintain stations) with the Warranty (Retention of users) or a copy of invoice as a certificate so as to get specified maintain service. If the user can not provide the Warranty or a copy of invoice, the Company will calculate the warranty period according to the Date of Manufacture, which shall be one year.

(3) If a product is beyond the warranty period, the local dealers (maintain stations) can also provide maintain services, but extra fees shall be charged according to the specifications of the Company.

(4) If any damage caused by unauthorized fabrication, transit, incorrect Custody or caused by operation not according to the Instruction, if unauthorized alteration of “warranty cards” and no purchasing certificate provided, the Company will reserve the rights not to provide maintain services for free. But maintain services can be provided by charging certain maintain expenses.

The company reserves the modification and power of interpretation for the instruction.

Safety precautions

Please read this instruction carefully for correct use.
The objective of the precautions listed in this instruction is to ensure the safe use of machine and prevent you and others from being harmed or injured.
Safety consideration for the welding machine in design and manufacture. Work to the precautions in this instruction, otherwise it will cause major accident.
If used incorrectly, the harm and damage will occur in three different ways. So the caution symbol and warning labels are listed in this instruction.

Caution symbols	Warning labels	Content
	High danger	If used incorrectly, potential major harm will result in death or serious injury and major danger accident once it occurs.
	Danger	If used incorrectly, potential scourge harm will result in death or serious injury and danger accident once it occurs.
	Caution	If the welding machine is used incorrectly, the harm with mild degree, slight wound and other dangerous accidents and the damage of articles will be caused.

*The symbol above is applicable to the general occasion.

The serious injury mentioned above refers to eyesight damage, trauma, harm, electric shock, fracture and poisoning and so on which will leave sequel and is in need of making treatment in need of making treatment in hospital of going to hospital for long period, slight wound refers to burn and electric shock and so on which is not in need of being in hospital but treatment for long period. The damage of articles refers to the loss of property and damage of machine.

On the usage of machine, the symbols shown as following indicate [must do] and [forbid doing.

	Compulsion	Must do For example [grounding]
	Forbidden	Forbid doing

*The symbols above are used in the general occasions


Danger Work to the following items in case of the major personal accident

1. Safety consideration for the welding machine in design and manufacture.
   Work to the precautions in this instruction, otherwise it will cause death, serious injury and other major personal accident.
2. For the construction power source of input, the choice of equipment location, the application keeping and configure of high pressure gas, the keeping of workpiece after welding and the treatment of rejection and so on, please observe the relative regulations and the standards inside your company.
3. The unconcerned personnel never go in the welding working location.
4. The person using heart pacemaker do not be close to the welding machine in operation and the surrounding of welding operation location without permission of doctor. The produced magnetic field when the welding machine is electrified will produce the bad effect on the action of pacemaker.
5. Invite the professional or expert person to install, examine and repair and maintain the welding machine.
6. To ensure safety, please correctly understand the content in this instruction and invite the personnel with safety usage knowledge and skill to operate this machine.
7. Do not use machine in the work except the welding.


Danger: Work to the following items in case of electric shock


*Once contact the position with electricity, the fatal electric shock or heat injury will be caused.

1. Never contact electrified position.
2. Invite electric personnel to earth welding machine and parent metal according to regulations.
3. In installation and examination and repair, must turn off the power of electric switch box first, then the operation was made after 5 minutes.
4. Never use the cable which lacks of capacity of where conductor exposes for the damage of insulation jacket.
5. For cable connection part, please ensure insulation.
6. Never use welding machine on the condition of dismounting machine shell.
7. Please use dry insulation glove.
8. Please use safety net at high place operation.
9. Make maintenance and examination and repair, only the damaged part can by use until it is repaired well.
10. Please shut off all input powers when the machine is unused.
11. When use AC arc welding machine in the confined place or high place, please use electric shock-proof device.

*Arc light will cause the inflammation of eye or heat injury of skin and other personal damages.
*Splashing and weld slag will burn eye or skin
*Noise will be harmful to hearing

1. When make welding or supervise welding, please use the safety appliance with enough shading degree.
2. Please emphasize particularly on wearing protective glasses.
3. Please wear protective glove, long sleeve clothes, welding spats, apron and other safety appliances in welding, which are made of leather.
4. Protective barrier are set around the welding location to prevent arc light from end angering others.
5. When noise is great, please use sound insulation apparatus.

Caution: To avoid weald dust and gas endanger you and others, please use safety appliance

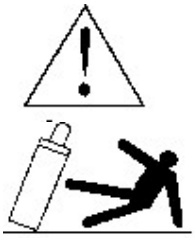
*Weld dust and gas endanger health
*In operation in the confined location, lack of oxygen will result in suffocation.

1. To prevent gas poisoning and suffocation and other accidents, please use regulated exhaustion facilities, and breath protection appliance is coordinated for use.
2. In operation in the confined location, please accept the examination by supervision personnel and fully change gas and coordinate in using breath protection appliance.
3. Never make weld within degrease, cleaning and atomization working area.
4. When weld the steel plate with electroplate or coating, the harmful dust and gas will produce, please use protection appliance for breath.

Caution: To prevent fire, explosion, cracking and other accidents from taking place, please be sure to observe the following regulations.

*Splashing or heat parent metal just welded will cause fire.
*When current loop produce non full contact on the bad connection of cable and steel bar and other parent metals, the heat after electrifying will be caused.
*Never weld on the container filling combustibility substance, otherwise explosion will be caused.
*Never weld seal container, for example groove (box), pipe, otherwise cracking will be caused.

1. Never place combustible in the weld location.
2. Never weld near combustible gas.
3. Never close to the combustible when the heat parent metal is just welded.
4. When weld dooryard, ground and wall, please eliminate the combustible on the back.
5. The connection of cable shall surely be insulation.
6. The connection of cable of parent metal side shall approach welding position as possible.
7. Never weld the gas pipe and seal groove and so on which stores gas.
8. The fire extinguisher shall be placed near weld work location to protect against accident.



Caution: To prevent gas bottle from dumping, gas adjustor from cracking and other accidents, please be sure to observe the following regulations.

*The dumping of gas bottle will result in personal accident.
*If gas bottle stores high pressure gas, incorrect use will cause the ejection, thus causing personal accident.

1. Please use gas bottle correctly according to regulations.
2. Please use the gas adjustor equipped or recommended by our company.
3. Please read the operation instruction for gas adjustor before use, observe precautions.
4. Please use the special gas bottle support structure to fix gas bottle.
5. Never put gas bottle in the place where temperature is high or sunlight shines directly.
6. Make sure you face keep away from the outlet of gas when the valve of gas bottle is opened.
7. Please install the gas bottle protecting jacket when the gas bottle is unused.
8. Never put welding torch on the gas bottle, electrode can not contact gas bottle.

Caution: Contact of rotation position will cause injury, please observe the following regulations

*Never ringer, hair, clothes, etc approach cooling fan and the electrode wheel of electrode feeding machine and other rotation positions.

1. Never use welding machine on the condition of dismounting machine shell.
2. Invite the professional or expert person to install, examine and repair and maintain the welding machine.
3. Never finger, hair, clothes, etc approach cooling fan and the electrode wheel of electrode feeding machine and other rotation positions.

Caution: The end of welding wire will cause injury, please be sure to observe the following regulations
*If the welding wire emits from welding torch, the eye, face and other exposure parts of the body will be stabbed.

1. In affirming whether the welding wire is fed, do not peek into the small hole of current contact nozzle. Otherwise welding wire will prick eye and face.
2. When welding wire is fed by hand or welding torch is opened, please do not put the end of welding torch dose to eye, face and other exposure parts of the body.

Caution: Plasma weld will result in burn, please be sure to observe the following regulations

*Never put such any part of body as finger close to plasma work, otherwise burn will cause.

1. In cutting work, the finger shall leave the nozzle and electrode on the end of cutting torch.
2. Never make cutting work near place where parent metal is held by hand.
3. When change nozzle and electrode, please first turn off power.

Caution: To prevent fire caused by the deterioration of insulation of welding power, please be sure to observe the following regulations.

* If splashing produced in welding and iron powder produced in snagging work go in the power, the deterioration of insulation will be produced, thus causing fire

1. To prevent splashing and iron powder and so on from going in the power, please separate weld power from weld work and snagging work.
2. To prevent insulation deterioration caused by powder accumulation, please be sure to maintain and examine and repair regularly.
3. If splashing, iron powder, etc go in the power, please be sure to turn off power switch of welding machine and switch of distributor case, then blow off with air.

Working Directions

- Duty cycle

  Duty cycle refers to the ratio that practical work time accounts for the whole work time
  (10 minutes is 1 cycle). For example, 60% duty cycle means that weld is made for 6 minutes and then zeros load is for 4 minutes. Rating duty cycle compares with rating current. When the equipment is used below rating current, if even the equipment may be used in case of high duty cycle. Attachment is the calculation equation of duty cycle as following:

$$\text{duty cycle of current used in practice} = \frac{(\text{Output voltage rating})^2 \times \text{Rated load succession rate}}{(\text{Actual available output current})^2}$$

- Placement of Welding Machine

  In placement, please pay attention to the following items:
  (a) Lay in the place as possible where the ground is flat and vibration is little and which is more than 20cm far from wall.
  (b) Please put it in the clean and dry place where iron powder, dust, paint are little.
  (c) Please put the machine in the place where rain pouring can be avoided and which is not subject to the erosion of sea water

■ Connection

1. Grounding
   The grounding terminal is set on the bottom of side plate of back of machine shell, please earth with copper wire with above 4m ㎡ area.

   Rated input voltage 300 ~ 600 V and grounding resistance 10Ω.

   ※ Please entrust full-time staff (electrician) to earth.

2. Connection of power
   One welding machine is equipped with one distribution box including switch, fuse and other current protectors, whose output end is connected with input end of welding machine. As for the capacity of distribution box and cable section, please refer to table 2. Especially for fuse and other current protectors, for the sake of safety, please use the protector with proper capacity rather than the protector with the too great capacity.

3. Connection of welding end

One end connects with the cable of welding tongs, another end connects with welded object by connection cable. To ensure safety, in operation the welded object must be earthed.

.Use and Characteristic

COMBO -series inverter CO2 welding machine is a kind of general semi-automatic high performance welding machine with CO2 as protective gas. Solid cored and flux-cored welding wires of diameter between 1.0 ㎜ and 1.6 ㎜ can be used to weld low carbon steel and low alloy steel components: Inverter welding machine of this type has proper static external characteristics and excellent dynamic properties, whose features are as follows:

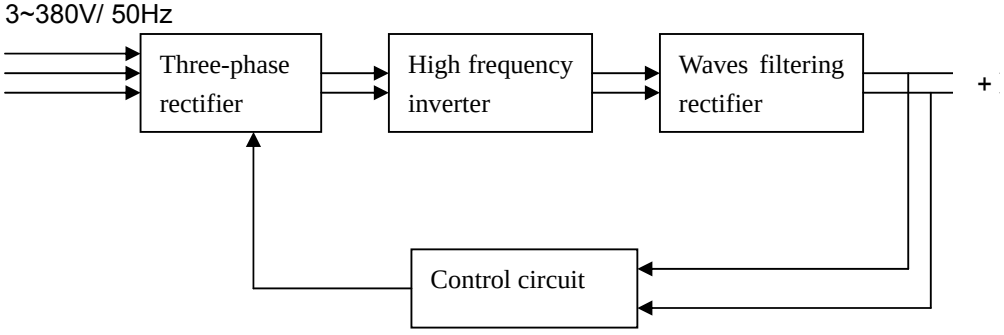
- Inverter technology can guarantee highly stable welding voltage under the condition of voltage fluctuation of power grid and the changing arc length. Electric arc has strong self-regulating abilities and stable welding process can be obtained.
- Welding spatter is lower and metallic deposition efficiency is higher.
- It has good weld formation and little weld deformation.
- Adapt the method of strong pulse arc ignition with high successful rate of striking arc.
- It can eliminate balls while arc extinguishing and improve the next striking performance.
- Auto-lock function can reduce labor intensity of welding machines while handing with large and long welding.
- High performance power system is used in wire feeding circuit and smooth wire delivery is realized.
- It is small and light and easy to be carried about.
- It takes advantages of energy-saving, lower cost and requirements of power grids capacity.
- Owing to digital processing and adjustments of practical welding parameters and setting parameters are done by monitoring-system, any welding machine of COMBO series is capable of welding the steel as thick as 0.8 ㎜ using welding wire with diameter of 0.8-1.6 ㎜.

SPECIFICATION:

NO.	Item	COMBO 400 I
01	Power voltage/ frequency	Three-phase 380±10%/ 50HZ
02	Rated power input	13.8KVA
03	Rated current input	21A
04	Rated load continuous rate	60%
05	Regulation range of output current	60~400A
06	Regulation range of output voltage	17~31.5V
07	Output on-load voltage	65±5V
08	Efficiency	≥90%
09	Power factor	≥0.89
10	Used welding wire diameter	Φ0.8~1.2mm
11	Weight of welding machine	40kg
12	Volume of welding machine	570×320×530(mm)
13	CO_2 gas flow	15-20L/ min

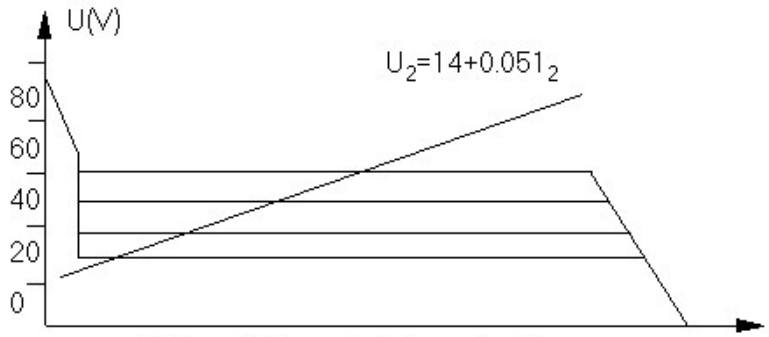
.Brief Introduction of the Principle

The principle of COMBO Series welding machine is shown as Picture1:



The welding machine adopts IGBT soft switching inverter technology. The working frequency three-phase 380V power is changed to the HF alternating current by IGBT after in put rectifying, deceased the voltage by HF transformer, rectified by HF rectifier, and output the direct current suitable for welding. By the duration, raise the dynamic response speed of welding machine and lessen the volume and weight of welding machine. The control circuit makes the closed loop control for the whole machine, which makes the welding power own good anti-electricity fluctuation ability and excellent welding ability.

The output characteristics of COMBO series inverter welding machine are shown as picture2.



(Picture 2)The output characteristics

VI. **Instruction on Operation and Use**

1. Application conditions

1.1 Environmental condition

(1) Temperature range of the surrounding air

Welding -10℃~40℃

During the transportation and storage -25℃~55℃

(2) Air relative humidity

40℃ ≤ 50%

20℃ ≤ 90%

(3) The dust, acid and corrosive gas or materials, and etc. in the surrounding air are not beyond normal level.

(4)The altitude is not beyond 100M

(5)Wind speed in the surrounding ≤1M/s

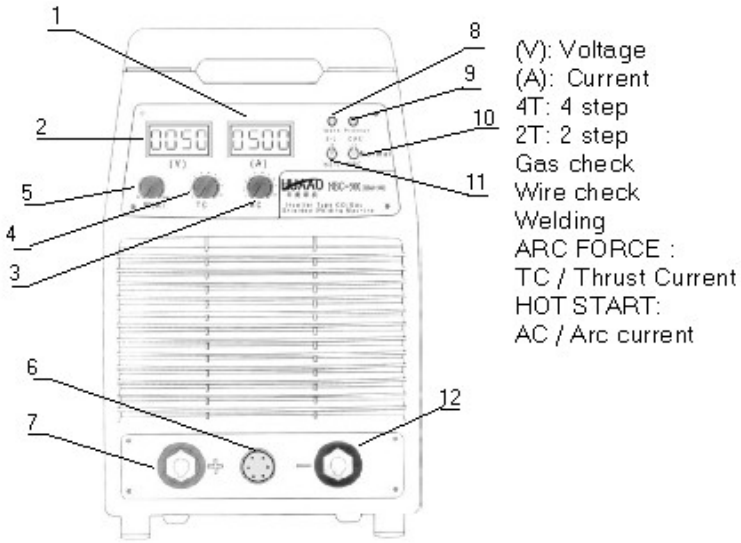
1.2 Supply voltage quality

(1) Waveform shall be the standard sine wave, the effective value is 415V±10%, and the frequency is 50Hz±1%

(2)The three-phase voltage asymmetry≤5%

2. Introduction to function

2.1 Front panel of welding machine



(Picture3) The front panel of welding machine picture

(1) Output current

The output current parameter displays the relative value of feeding speed at the time of no load, and displays the actual welding current value at the time of welding.

(2) Output voltage

Display the reference value of voltage at the time of no load, and Display the actual welding voltage value at the time of welding.

(3) Inductance adjustment button

It can change welding stability, penetration and amount of spatters.

(4) Arc suppression current control button

Adjust the arc suppression under the self-lock mode.

(5) Arc suppression voltage control button

Adjust the arc suppression voltage under the self-lock mode.

(6) Wire-feeder control socket

Connect to the control cable of the wire-feeder.

(7) Welding cable wiring terminal(+)

Connect the welding cable of wire-feeder.

(8) POWER: Operating indicator

Indicate whether the welding machine is connected to the power or not.

(9) OVER LOAD: Protection indicator

Indicate whether the temperature in the welding machine is too high or not. The welding machine stops working automatically when the lights on.

(10) Selection switch of control mode REM ON and OFF

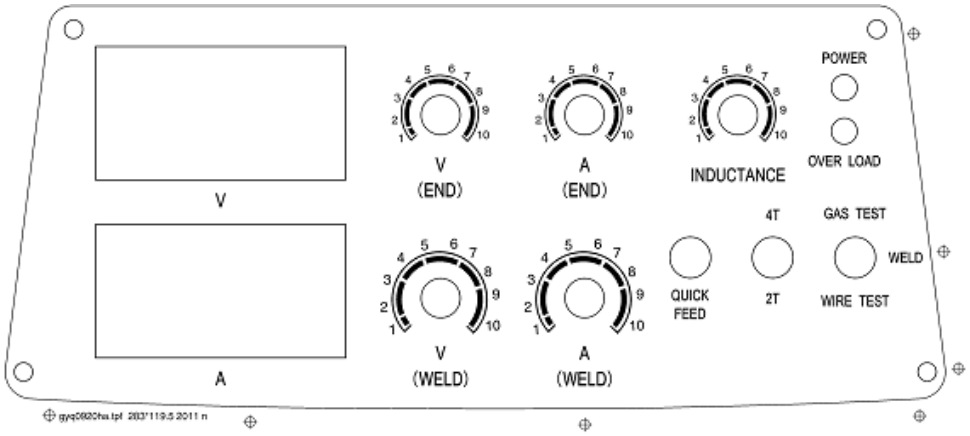
When the switch is on the position of 2T, press the switch of welding torch and the welding machine works normally, loosen the switch and the welding machine stops working, which is suitable for the short seams welding; when the switch is on the position of 4T, press the switch of welding torch and successful strike the arcing, the welding can be operated normally, loosening the switch. After press the switch of welding machine again, transfer into the minor arcing code set by the button of front panel, loosen the switch and the welding machine stops working, which is suitable for the long seams welding.

(11)Condition option switch

When the switch is the position of gas check, the electromagnetic field valve opens, check whether the gas flow of CO_2 is suitable or not; When the switch is the position of wire check, same as pressing the switch of torch, check the working status of welding machine; When the switch is normal position which is the welding position, the welding machine is in normal working status.

(12)Welding cable wiring terminal (-)

Connect the welded work pieces by the output cable.

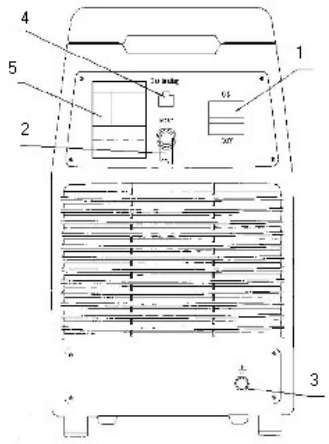


This controlling board is designed for the control request on machine, not on wire feeder.

V (END): arc collection voltage adjustment
A (END): arc collection current adjustment
V (WELD): voltage for welding
A (WELD): current for welding

2.2 Back panel of welding machine

The back panel of welding machine is shown as picture4.



(Picture4) Back panel of welding machine

(1) Automatic air switch

The switch works for protecting the welding machine by automatic power off in case of the welding machine overload or any faults. In general case, the switch is pushed up ward to the position of connection. Start and stop of welding machine shall use the power switch on the user distribution panel (cabinet) as possible, and do not use the switch as the power switch.

(2) Power input cable

Make sure the effect yarn is connected to ground reliably, and the left 3 wires are connected to the three-phase 380V/50HZ POWER.

(3) Grounded bolt

To ensure personal safety and normal use of arc welding power source, please make sure connect the bolt to ground reliably by the conductor, or connect the grounding line in the input cable to ground reliably.

(4) Heat the power output socket. (AC36V)

Connect the heater coil of CO2 gas regulator.

(5) Nameplate

2.3 Controller

The controller is equipped to the wire-feeder, and the pane is shown as picture 6.

(1) Automatic air switch

The switch works for protecting the welding machine by automatic power off in case of the welding machine overload or any faults. In general case, the switch is pushed upward to the position of connection. Start and stop of welding machine shall use the power switch on the user distribution panel (cabinet) as possible, and do not use the switch as the power switch.

(2) Power input cable

Make sure the effect yarn is connected to ground reliably, and the left 3 wires are connected to the three-phase 380V/50hz POWER.

(3) Grounded bolt

To ensure personal safety and normal use of arc welding power source, please make sure connect the bolt to ground reliably by the conductor, or connect the grounding line the input cable to ground reliably.

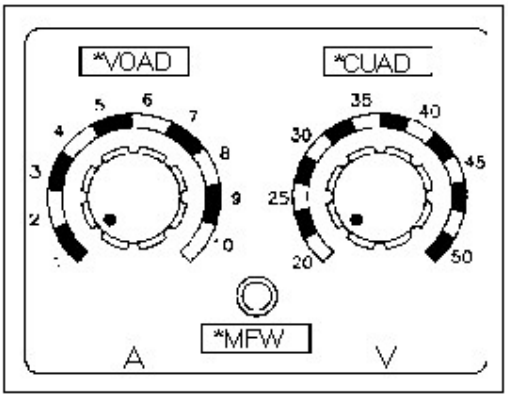
(4) Heat the power output socket. (AC36V)

Connect the heater coil of CO2 gas regulator.

(4) Nameplate

2.3 **Wire Feeder**

The wire-feeder Control is shown Below



*CUAD	: Current adjustment
*VOAD	: Voltage adjustment
*MFWI	: Manual feeding wire

(Picture 5) Controller panel diagram

(1) Current adjustment button

Used for controlling the welding current.

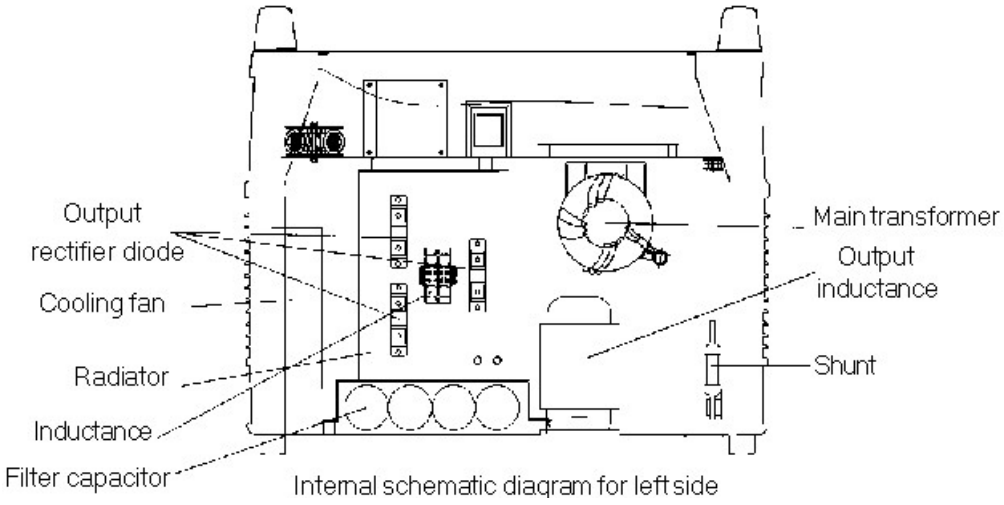
(2) Manual feeding wire button

Used for rapid feeding.

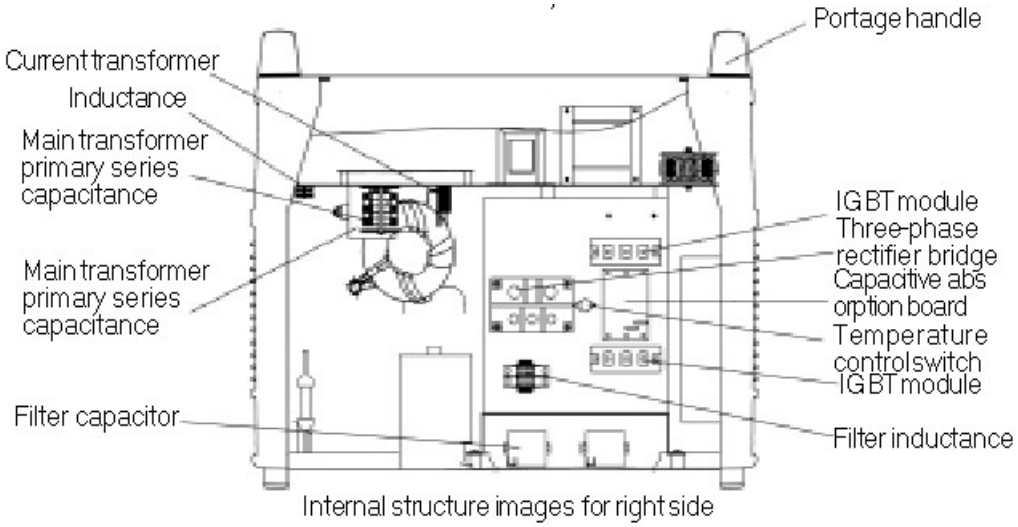
(3) Voltage adjustment button

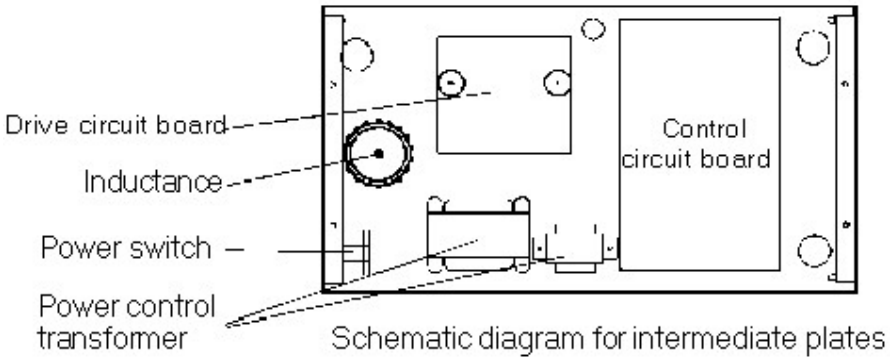
Used for controlling the welding voltage.

2.4 Internal structure images



Internal schematic diagram for left side



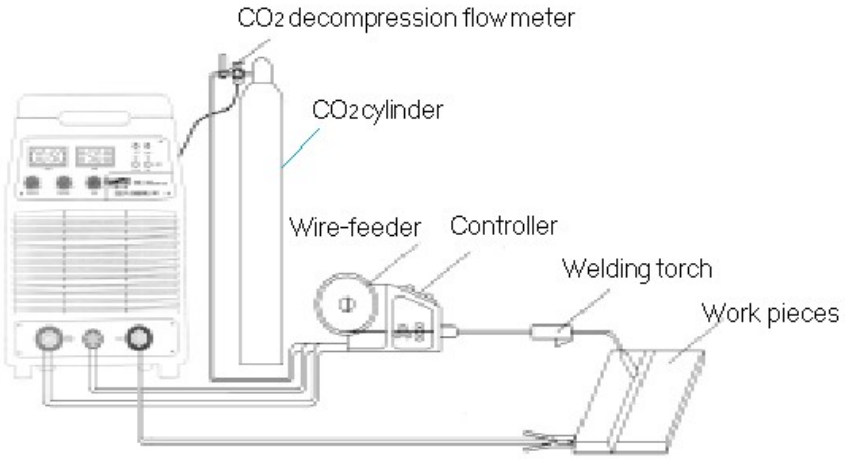


(Picture 6) Internal structure images

3. Equipment installation

The welding machine is small and light and easy to handle, and the welding operator can do mobile operation with it. If a trolley can be available, it will be more convenient for portage. The ground where the welding machine is placed must be level.

The external electrical connection of COMBO-series welding machine is shown



(Picture 7) Working switchboard diagram

Operation procedure:

(1) Connect the wiring terminal (-) with the weld work pieces by the welding cable.
(2) Connect the wire-feeder welding cable with the wiring terminal of welding machine (+).
(3) Connect the control cable of wire-feeder with the control socket of welding machine.
(4) Connect the gas pipe of wire-feeder with CO2 gas regulator.
(5) Connect the heating cable of gas regulator to heating power output socket on the back panel of welding machine.
(6) Connect the input three-phase cable to the distributor panel, and make sure the grounding line is connected to ground.
(7) Close the automatic air switch on the back panel of welding machine.

4. Check the welding before use

4.1 Examination under power off

Cut off the and check the welding machine mainly for the following items:

(1) Check whether circuit and gas path make a correct and reliable connection or not.
(2) Check whether the automatic air switch is put upward onto the position of connection or not.
(3) Check whether working control mode and option switches on the front panel are put onto the right position.
(4) Check whether the convenient plug on the welding cable is solidly inserted into the socket on the welding machine with a correct and reliable connection.

4.2 Examination under power-supply and no load:

The electrified and no load inspection should not be carried out, while the following steps make up the approach for such inspection.

(1) Shut on the switch on the distribution panel or cabinet and power on the welding machine.

(2) If power-on is successful, the indicating lamps of power lights up, the digital ampere meter on the front panel of the welding power shows the present value and the fan rotates in the specified direction.

(3) Put the gas check switch onto the position of gas check, CO2 gas will spray from the nozzle of the welding gun immediately.

(4) When pressing the welding torch switch the wire-feeder rotates slowly and works and CO2 gas will spray from the nozzle of the welding gun.

Only if all these steps are finished without any problems can the equipment, a normal one, be used in welding.

5. Equipment use

Close the automatic air switch on the distributor pane (cabinet), the operating light is on and the fan rotates according to the regulation radius. Press the manual wire-feeding button and the welding wire is delivered rapidly. Set up the position of button and switch on the controller and front panel in accordance with use instruction. Press the welding torch switch and the wire-feeder rotates and works, CO2 gas sprays from the nozzle of the welding gun, and welding can be operated normally. The users can operate according to the welding criterion showed in form.

2. After the welding is over, close CO2 gas and cut off the power.

Welding current (A)	Welding voltage (V)	Applicable welding wire(mm)
60~80	17~18	Φ1.0
80~130	18~21	Φ1.0 Φ1.2
130~200	20~24	Φ1.0 Φ1.2
200~250	24~27	Φ1.0 Φ1.2
250~350	26~32	Φ1.2 Φ1.6
350~500	31~39	Φ1.6

VII. Maintenance and Repair

The repairing principle of the welding machine should be made by our company and the user can solve the problems met in using it under the direction of our company.

1. Issues to pay attention

(1) It should rivet the tag of equipment number on the shut of the casing, or the inner elements might be damaged.

(2) The connection between the welding cable and the connecting terminal of the welding machine should be solid and reliable. Otherwise, the terminal can be burn out which will result in the unstableness of the welding process.

(3) To keep the bare copper parts of the welding cable and the connecting terminal of the welding machine from the metals on the ground to avoid the short-circuiting of the welding machine output.

(4) To avoid the damage or break of the welding cables and the control cables.

(5) To avoid the deformation of the welding machine caused by being stroken. Do not stack heavy load on the welding machine.
(6) To keep being ventilated.

2. Regular check and maintenance of the welding machine

(1) The professional repairing staff should clean the welding power with the condensed air for every3-6 months. Meanwhile, check the fastening piece in the welding machine and no loose phenomenon should happen.
(2) Check often that if the cable has been damaged and if the the control knob is loose and if the member on the panel has been damaged.
(3) Current contact nozzles and the wire feed rolls should be changed timely. The wire feed tube should be cleaned frequently.

3. Faults and solutions of welding machine

3.1 The following check shall be made before maintenance:

(1) Whether the position of switches on the front panel are right or not.
(2) Whether the line voltage of three-phase power is within 340V~420V; and open-phase or not.
(3) Whether the connection of welding machine power input cable is right or not.
(4) Whether the grounding line of welding machine right and reliable.
(5) Whether the connection of welding cable is right or not, and whether the connection is good or not.
(6) Whether the gas path is good or not, and whether CO2 gas regulator is normal or not.

Note: The highest voltage in the welding machine reaches 600V. To guarantee safety, it is prohibited to open the shell of welding machine at random.

When maintaining, pay attention to safety and prevent electric shock.

3.2 For common phenomena, causes and measures see appendix A.

VIII. Appendix A

NO.	Phenomena	Cause	Measures
01	After started, the indicator light is off.	①Phase-failure of power ② Automatic air switch on back panel is damaged ③ Fuse wire is broken	① Check power ② Change the automatic air switch ③ Change fuse wire(2A)
02	After connecting the welding machine power, the automatic air switch on back panel of welding machine is power off automatically immediately.	①Automatic air switch do not work ②IGBT module is damaged ③Three-phase rectifier is damaged ④ Varistor is damaged ⑤ Control board of welding machine is damaged	① Change the air switch ② Change IGBT module and change drive circuit board ③ Change three-phase rectifier ④ Change varistor ⑤ Change control board of welding machine
03	During welding the automatic air switch on back panel of welding power is power off automatically immediately.	① Long-term over load operation ② Air switch is damaged	① Use according to lacerate of welding machine ② Change the air switch
04	The volume of welding current is nonadjustable.	① Control cable of wire-feeder is broken or controller do not work ② Control circuit board of welding machine does not work	① Change control cable of wire-feeder of controller ② Change control board

		③Conductor in the two terminals of current divider is broken.	③Connect the broken wire
05	Electric arcing is instable with big spattering.	① Wrong welding standard ② Current contact nozzle wears severely	① Make fine adjustment for welding machine standard ② Change current contact nozzle
06	CO2 gas regulator does not theat.	① CO2 gas regulator is damaged ② Heating cable is broken of short circuit ③Thermistor of heating power does not work	① Change CO2 gas regulator ② Repair heating cable ③Change control circuit board
07	Pressing the welding machine torch, wire feeding is normal but gas path is not fluent.	①Control circuit board does not work ②Electro magnetic valve does not work	① Change control circuit board ②Change electro magnet valve
08	Pressing the welding machine torch, wire-feeder doesn't work and no-load voltage indication.	① Switch of welding torch is damaged ② Control cable of wire-feeder is broken ③Control circuit board doesn't work	① Change welding torch ② Repair control cable of wire-feeder ③Change control circuit board