EasyTig

Operation Manual

Model: Easytig 160S/ 200S/ 180A/ 200A/ 200ADS/ 200P/ WS300/ WS400/ WSM300/ WSM400

Hong Kong Easyweld Limited

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EC DECLARRATION OF CONFORMITY

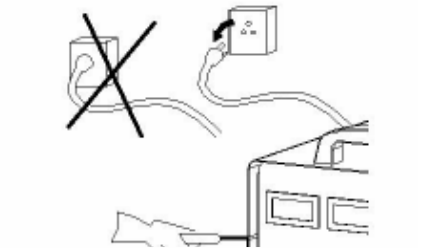
Hereby we declare that our machines for industrial and professional use as stated below
Type: EasyTig 160S, 200S, 180A, 200A, 200ADS,
Conform the EMC Directives: 73/23/EEC and 89/336/EEC
European Standard: EN/1EC60974

Please read and understand this instruction manual carefully before the installation and operation of this equipment.

The contents of this manual may be revised without prior notice and without obligation. This revised instruction manual is issued on 1st November 2008.

WARNING

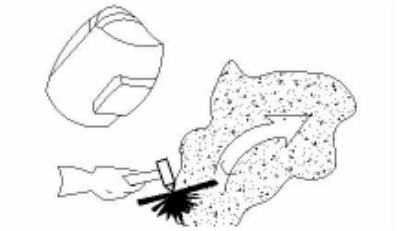
Welding and cutting is dangerous to the operator, people in or near the working area, and the surrounding, if the equipment is not correctly operated. Therefore, the performance of welding/cutting must only be under the strict and comprehensive observance of all relevant safety regulations. Please read and understand this instruction manual carefully before the installation and operation.



- The switching of function modes is possibly damaging to the equipment, while the welding operation is performed.
- Do disconnect the electrode-holder cable with the equipment, before the performance of welding.
- A safety switch is necessary to prevent the equipment from electric-leakage.
- Welding tools should be of high quality.
- Operators should be qualified.

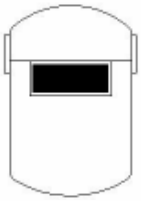
Electric Shock: It may be fatal

- connect the earth cable according to standard regulation.
- Avoid all contact with live components of the welding circuit, electrodes and wires with bare hands. It is necessary for the operator to wear dry welding gloves while he performs the welding task.
- The operator should keep the working piece insulating from himself/herself.



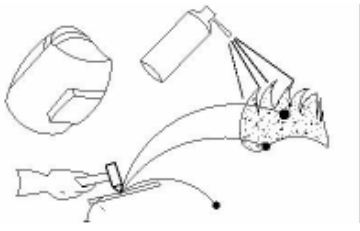
Smoke and Gas generated wile welding or cutting: harmful to people's health.

- Avoid of breathing the smoke and gas of welding or cutting.
- Keep the working area in good ventilation.



Arc light-emission: harmful to people's eyes and skin

- Wear the welding helmet, anti-radiation glass and work clothes while the welding operation is performed.
- Measures also should be taken to protect people in or near the working area.



Fire hazard

- The welding splash may cause fire, thus remove flammable material away from the working place.
- Have a fire extinguisher nearby, and have a train fire person ready to use it.

Noise: Possibly harmful to peoples' hearing.

- Surface noise is generated while welding/cutting, the hearing aids is necessary in some cases.

Machine Fault:

- Consult this instruction manual.
- Contact your local dealer or supplier for further advice.

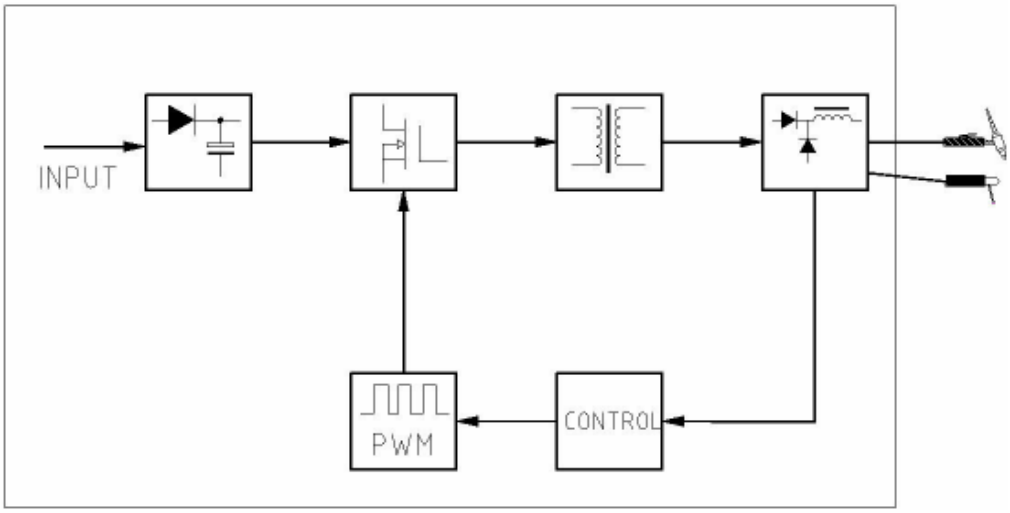
GENERAL DESCRIPTION

This welding machine is manufactured with advanced inverter technology. With high-power component MOSFETS and by adopting PWM technology, the inverter convert the DC voltage, which is rectified from input AC voltage, to high 100KHz frequency AC voltage; as a consequence, the voltage is transformed and rectified. Therefore, it result the much more small-sized of the main transformer and lighter in weight of the inverter welder, which rates the performance of welding by 30%. The high frequency oscillation, which enables the output of the high frequency DC, is employed in the arc-starting system. The features of this product are as following: stable output, reliable, completely portable, efficient and low noise generated while welding is performed.
-TIG welding is available for EasyTig 160S/200S.
Both MMA and TIG are welding are available for EasyTig 180A/200A/200ADS/200P and WS 300/WS 400/WSM 300/WSM 400.
TIG 160S, TIG 200S, TIG 180A, TIG 200A and TIG 200ADS are models of registered design plastic products, the cover of which are made of anti-combustible ABS material. It possesses more advantages compared to machines of iron case, such as beautiful design, excellent insulation, and waterproof.

During the performance of MMA welding, this welding machine is featured with the stability of output, and the availability of arc force modulation. In case of normal arc input voltage, the stability of welding current output is not frustrated with variation of arc length therefore it results in stable performance of welding operation, of which the arc is of elasticity. In case of unavailable length of arc and low input voltage, welding output current increases while arc voltage decreases, as a consequence, the length of arc, which is not sufficient, will automatically compensate and the modulation of arc force is accessible. In case that the input arc voltage is too low to maintain arc, the output of this welding equipment descends steeply which avoid the splash generated due to over current input. During the performance of TIG welding, this welding equipment is featured with the stability of output current and that the welding current output does not vary with variation of the length of arc. In case of short circuit of electrode, the voltage automatically decreases to OV, which limits the impairment of electrode and pollution to environment.

Guarantee of maintenance for main engine is one year, excluding other spare parts.
During the guarantee maintenance period, all maintenance is free of charge, excluding the deliberated damage to this welding equipment.
Only qualified technician are authorized to carry out the repairs task of this welding machine in case of machine fault.

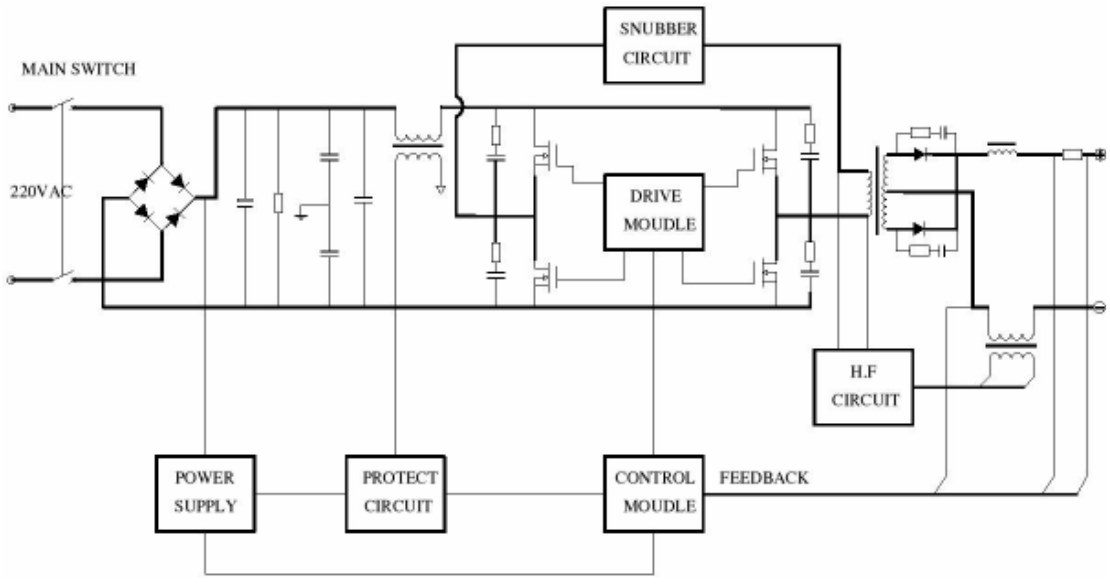
Block Diagram



MAIN PARAMETER

Type	EasyTig 160S	EasyTig 200S	EasyTig 180A	EasyTig 200A/200 ADS	TIG200P
Input volt (V)	Single Phase AC22OV±15%				
Frequency (Hz)	*50/60*	*50/60*	50/60	*50/60*	50/60
Input current (A)	15	21	18	21	18
No-load volt (V)	43	43	60	60	54
Output current (A)	10~160	10~200	10~180	10~200	10~200
Rated Input (KVA)	3.2	4.5	4.5	4.5	4.5
Post-flow Time (S)	3, 8	3, 8	3, 8	3, 8	1~5
Valley-down current	----	----	----	18-162A(200ADS)	----
Duty cycle	60%	60%	60%	60%	60%
No-load loss (W)	35	35	40	40	40
Arc-starting	HF	HF	HF	HF	HF
Efficiency	85%	85%	85%	85%	85%
Power factor	0.93	0.93	0.93	0.93	0.93
Insulation class	B	B	B	B	B
Protection class	IP23	IP23	IP23	IP23	IP21
Weight (kg)	7	7	7	7	15
Dimension (mm)	395x163x290	395x163x290	395x163x290	395x163x290	425x205x355

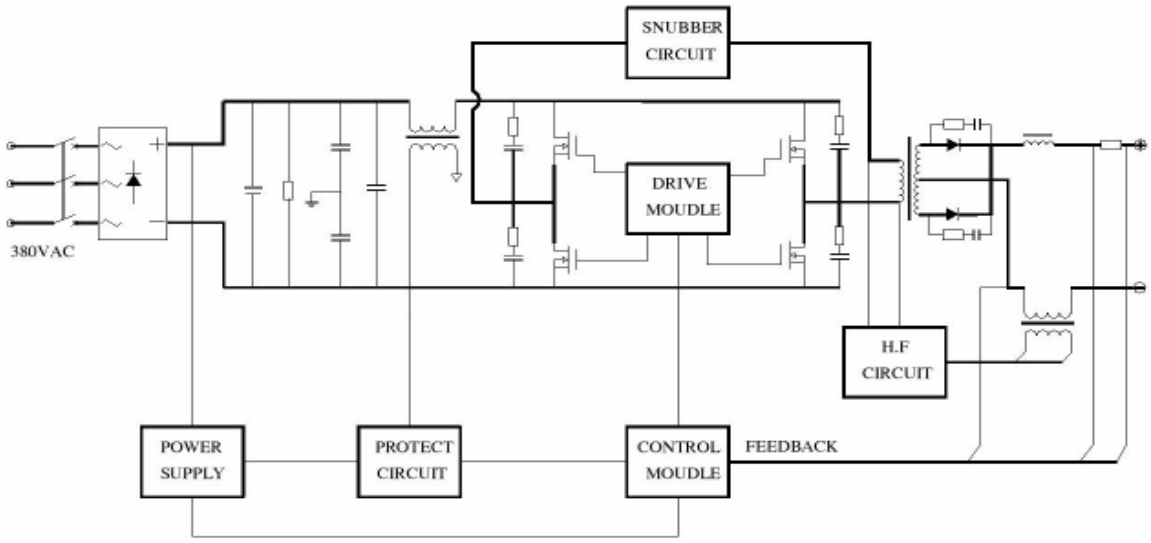
Circuit diagram (Single phase input)



MAIN PARAMETER

Type	WS 300	WS 400	WSM 300	WSM 400
Input voltage (V)	3 phase AC380V±15%			
Frequency (Hz)	50/60	50/60	50/60	50/60
Rated Input (KVA)	8.3	13	12	13
No-load voltage (V)	54	64	55	60
Peak current (A)	10~300	10~400	10~300	10~400
Valley current (A)	-	-	10~300	10~400
Up Slope (S)	-	-	0~10	0~10
Down Slope (S)	-	-	0~10	0~10
Pulse Frequency (Hz)	-	-	25~250	25~250
Post-flow time (S)	1~10	1~10	1~10	1~10
Rated voltage (V)	22	22.6	22	22.6
Duty cycle	60%	60%	60%	60%
No-load loss (W)	40	80	40	80
Arc-starting	HF	HF	HF	HF
Efficiency	85%	85%	85%	85%
Power factor	0.93	0.93	0.93	0.93
Insulation class	F	F	F	F
Protection class	IP21	IP21	IP21	IP21
Weight (kg)	23	32	23	32
Dimension (mm)	500x263x421	562x303x467	500x263x421	562x303x467

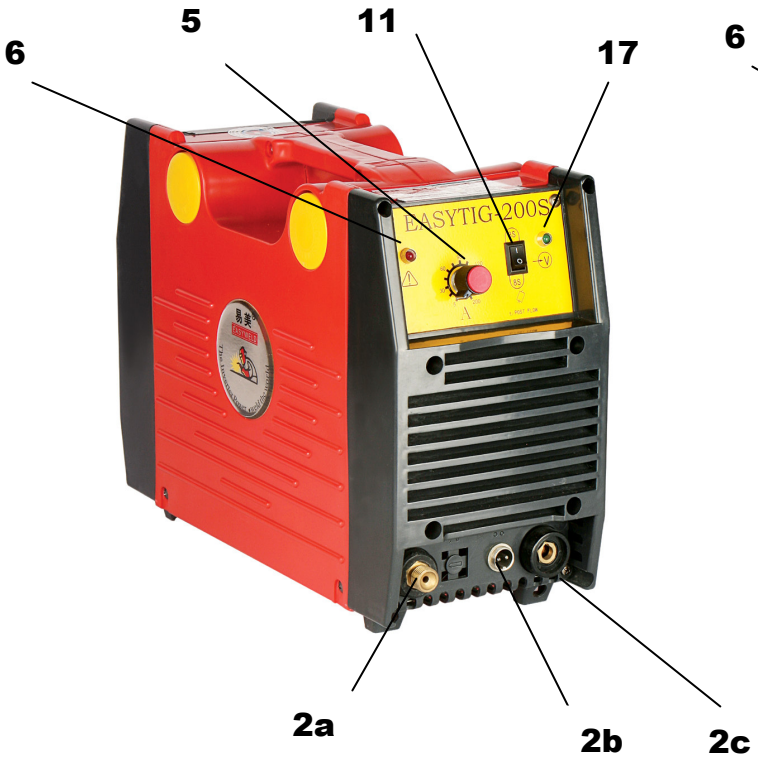
Circuit diagram (Three phase input)



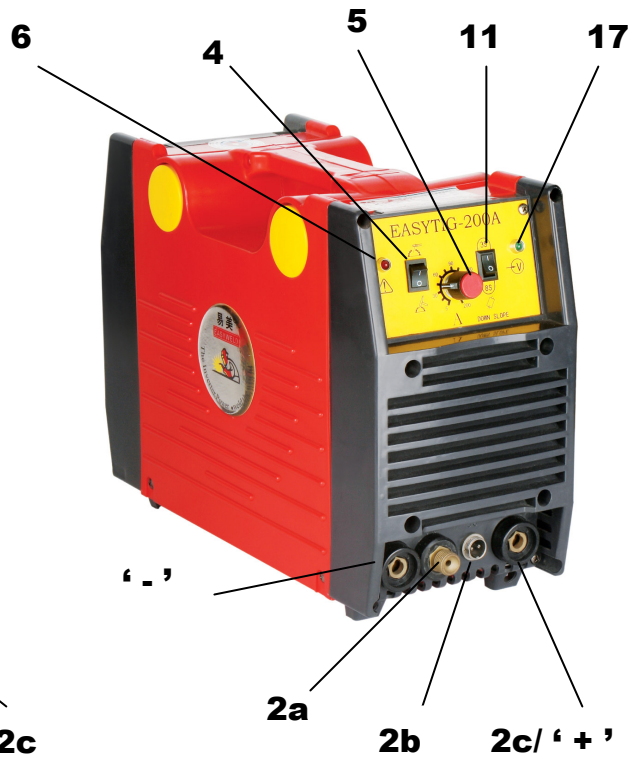
INSTALLTION & OPERATION

It is important to note that any extension of mains cables or torch cables will possibly affect the welding performance of this welding equipment, due to the fact that the resistance of the cable will reduce input voltage, which is decided by the length of the cable. The assembled length of main cables and torch cables is recommended.

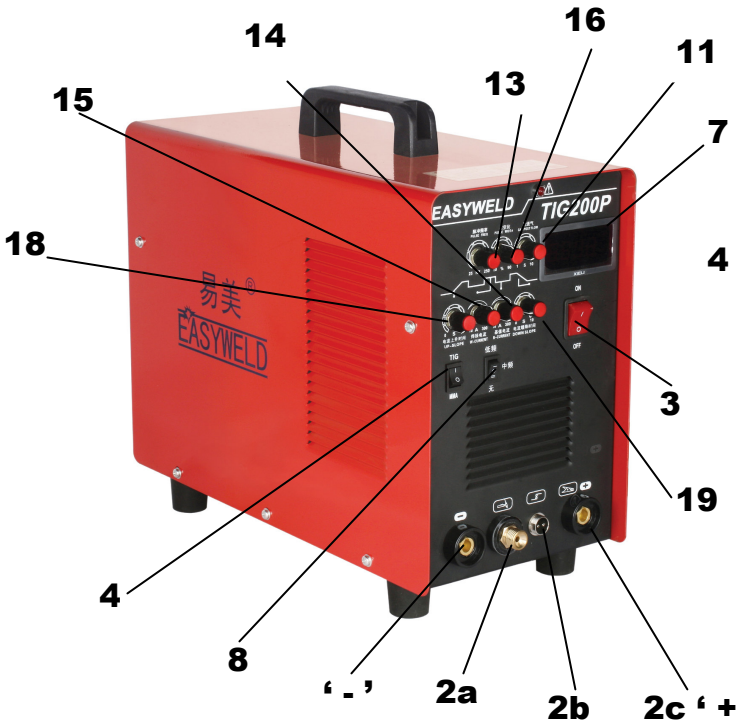
Easytig 160S/ 200S



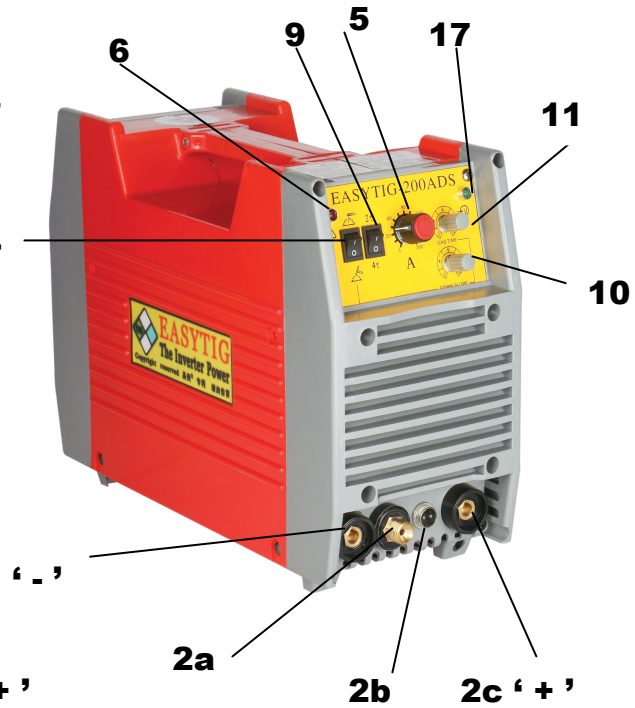
Easytig 180A/ 200A



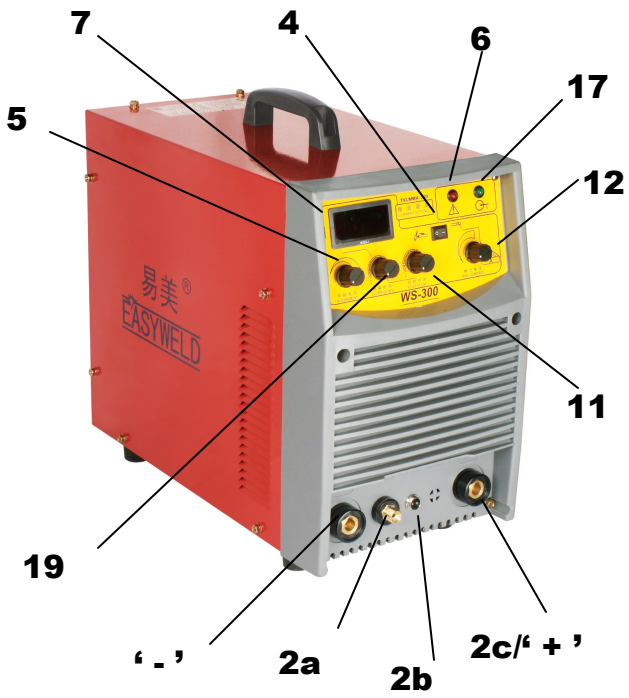
Easytig 200P



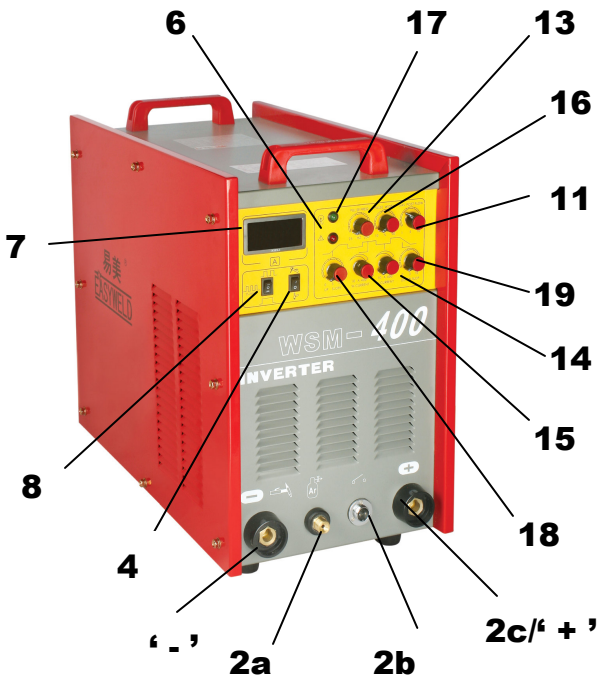
Easytig 200ADS with 2T/2T Function



WS300/ WS400



WSM300/ WSM400



GENERAL

1. Connection of Input cables

1.1 Primary cable is available for this welding equipment. Connect the primary cable with power supply of required input voltage.

Please note:

Input voltage for EasyTig 160S, 200S, 180A, 200A, 200ADS, 200P is of 220V and single phase.

Input voltage for WS 300/ WS 400/ WSM 300/ WSM 400 is of 380V and three phase.

1.2 The input cable should be well connected with the power supply switch or the cable oxidization. Check with multi-meter whether the input voltage varies in the given range, during the performance of welding. Please refer to “main parameter”

2. Connection of Output Cables

2.1 TIG Welding Equipment: (Available for EasyTig 160S, 200S)

a. Plug the torch into the one-knob connector, and fasten the screw in clockwise direction.

b. Connect pilot-plug of the torch into the pilot-socket on the panel board, and fasten the screw.

c. Plug the fast-plug of earth clamp to the socket on the panel board, and fasten it in the clockwise direction. Connect earth clamp with work piece.

Gas supply: At the back of the machine connect the gas tube to the copper nozzle. The gas supply system, which includes a gas bottle, an air regulator and a gas hose, should be well connected in order to keep gas output, which is of critical importance for TIG welding operation. Connect earth cable with earth terminal of this welding equipment to prevent possible occurrence of static electricity and electric leakage.

2.2 MMA & TIG welding equipment : (Available for EasyTig 180A, 200A, 200ADS, 200P, WS 300, WS 400, WSM 300, WSM 400*)*

'-'. Connect Torch welding cable into the fast-plug socket.

a. Connect Torch Gas hose fitting into the connection point on the panel board.

b. Connect pilot-plug of the torch into the pilot-socket on the panel board, and fasten the screw

c. Connect the fast-plug of earth clamp to the socket on the panel board, and fasten it in the clockwise direction. Connect earth clamp with work piece.

d. For the MMA welding connection:
Connect the terminal of electrode-holder to plug **'+'** and connect the terminal of earth clamp to plug **'-'**. Possible damage to plug and socket occurs due to the incorrect operation, over current output or excessively long period of welding operation.

Please pay attention to the connection of the poles. Two modes of connection for MMA welding are available: Positive connection and negative connection.

- Positive connection mode is generally available with acid welding rod. Connect work piece to **'+'** and electrode holder to **'-'**
- Negative connection mode is generally available with stainless steel, fiber materials rod. Connect work piece to **'-'**, and electrode to **'+'.**

OPERATION

3. Power Supply Switch

In case that power switch is on, the built-in fan is functioning or the current meter displays the current value.

4. Function Switch

Function switch enables the option between MMA and TIG welding according to practical welding task requirement.

4a. TIG Instruction:

- Opt with TIG mode.
- Release gas and set parameters of required volume of gas output.
- The built-in fan functions. Press the button of welding torch, electromagnetic valve functions and electricity is releasing, and there is gas output.
- According to the thickness of work piece, modulate welding current output.
- The distance between the tungsten and the work piece should be limited in the range of 2-4mm. Press the torch button, arc starts, and welding operation is accessible.

4b.MMA Instruction: (Available for EasyTig 180A/ 200A/ 200ADS/ 200P/ WS 300/ WS 400/ WSM 300/ WSM 400*)*

- Opt with MMA welding mode
- Modulate current output according to the thickness of work piece
- Modulate Arc force according to practical application (only available for WS 300 & WS 400); Arc force is available for the improvement of welding performance particularly in case of low input current.

5. Welding Current Adjust

-In case of option of MMA welding mode, "pulse exchange "and "down-slope " are unavailable.

-Modulating welding output current according to the thickness of the work piece.

6. Pilot lamp

Pilot lamp is on, in case that this welding equipment is of overheating protection status. Overheating arises if this welding equipment is overloaded. This welding equipment automatically restarts when the temperature inside of this welding equipment has fallen, and pilot lamp is off.

7. Current meter (Only available for EasyTig 200P, WS 300, WS 400, WSM 300, WSM 400*)*

The digital meter displays the welding current.

8. Pulse Switch (Only available for WSM 300 & WSM 400*)*

8.1 Opt TIG welding mode.

8.2 Modulate "pulse exchange", no pulse mode at "MIDDLE", medium pulse frequency mode at" UP" (for parameter of frequency please refer to Main Parameter), and low pulse frequency mode at "DOWN"

8.3 Press down control button of welding torch, the electric valve functions, there is electric release, and there is gas output from the nozzle.

9. (2T/4T) Switch (Optional)

In "2T" mode, for the first time press the button of welding torch, there is welding current output. Second time, no welding current output; in "4T" mode, for first and second time, there is welding current output, for the third time there is not welding output current.

10. Slope-down Time Adjust

The adjustable range of slope-down time is from 0 to 10 seconds.

11. Gas post-flow

The gas post-flow time is the period from extinction of arc to the interruption of the gas supply. The time can be adjusted from 1—10 seconds to avoid possible oxidation of tungsten electrode.

12. Arc Force Current

Arc Force improves the performance of arc starting.

13. Pulse Frequency Adjust (See the following curve of current)

14. Valley Current Adjust (Peak or valley current are not available in MMA welding mode)

Modulate volley value as practical application required.

15. Peak Current Adjust

Modulate peak current as practical application required.

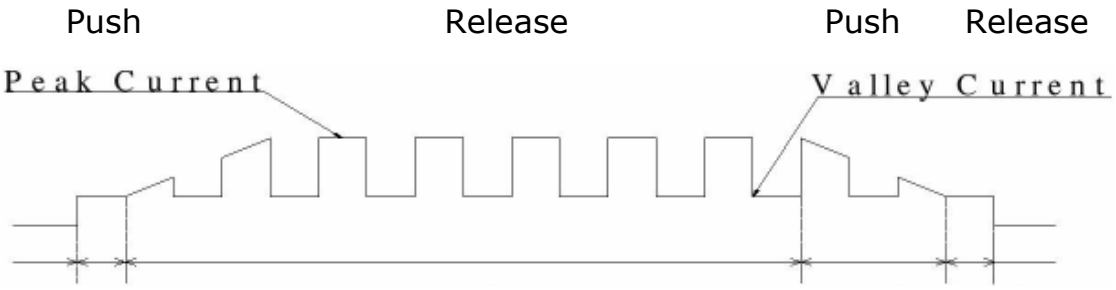
16. Pulse Width Adjust

17. Power Lamp

Green light lamp is on when power is on.

18. Arc Start Current

19. Arc End Current



CAUTIONS

Possible threaten to the safety, and even life of operator and people in or near working area, and damage to this welding equipment occurs, in case of any disconnection of cable and plug during the welding operation.

SPEED-READ TABLE

Parameter for Stainless Plate TIG Welding (for reference only)

Plate Thickness(mm)	Connector	Tungsten Diameter (mm)	Wire Diameter (mm)	Current Type	Welding Current	Gas Volume (L/min)	Welding speed (cm/min)
1.0	Butt Joint	2	1.6	DC positive	7~28	3~4	12~47
1.2	Butt Joint	2	1.6	DC positive	15	3~4	25
1.5	Butt Joint	2	1.6	DC positive	5~19	3~4	8~32

Parameter for Titanium and its Alloy TIG Welding (for reference only)

Plate thickness (mm)	Slope shape	Welding Layers	Tungsten Diameter (mm)	Wire Diameter (mm)	Welding Current	Gas Volume (L/min)			Nozzle Diameter
0.5	I-Shaped	1	1.5	1.0	30~50	8~10	6~8	14~16	10
1.0		1	2.0	1.0~2.0	40~60	8~10	6~8	14~16	10
1.5		1	2.0	1.0~2.0	60~80	10~12	8~10	14~16	10~12
2.0		1	2.0~3.0	1.0~2.0	80~110	12~14	10~12	16~20	12~14
2.5		1	2.0~3.0	2.0	110~120	12~14	10~12	16~20	12~14
3.0	Y-Shaped	1~2	3.0	2.0~3.0	120~140	12~14	10~12	16~20	14~18
4.0		2	3.0~4.0	2.0~3.0	130~150	14~16	12~14	20~25	18~20
5.0		2~3	4.0	3.0	130~150	14~16	12~14	20~25	18~20
6.0		2~3	4.0	3.0~4.0	140~180	14~16	12~14	25~28	18~20
7.0		2~3	4.0	3.0~4.0	140~180	14~16	12~14	25~28	20~22
8.0		3~4	4.0	3.0~4.0	140~180	14~16	12~14	25~28	20~22
10	Double Y-Shaped	4~6	4.0	3.0~4.0	160~200	14~16	12~14	25~28	20~22
20		12	4.0	4.0	200~240	12~14	10~12	20	18
22		12	4.0	4.0~5.0	230~250	15~18	18~20	18~20	20
25		15~16	4.0.	3.0~4.0	200~220	16~18	20~26	26~30	22
30		17`18	4.0	3.0~4.0	200~220	16~18	20~26	26~30	22

Parameter for Stainless Pulse TIG Welding (for reference only)

Plate thickness (mm)	Current (A)		Duration Time (S)		Pulse Frequency (Hz)	Welding Speed (cm/min)
	Pulse	Base Value	Pulse	Base Value		
0.3	20~22	5~8	0.06~0.08	0.06	8	50~60
0.5	55~60	10	0.08	0.06	7	55~60
0.8	85	10	0.12	0.06	5	80~100

Parameter for Aluminum and its Alloy TIG Welding (for reference only)

Plate thickness (mm)	Slope shape	Welding Layers	Tungsten Diameter (mm)	Wire Diameter (mm)	Pre-Temperature (C)	Welding Current	Gas Volume (L/min)	Nozzle Diameter
1.5	I-Shaped	1/0	2	1.6~2.0	-	50~80	7~9	8
2		1/0	2~3	2~2.5	-	50~80	8~12	8~12
3	Y-Shaped	1/0	3	2~3	-	150~180	8~12	8
4		1~2/1	4	3	-	180~200	10~15	8~12
5		1~2/1	4	3~4	-	180~240	10~15	8~12
8		2/1	5	4~5	100	260~320	16~20	10~12
10		3~4/1~2	5	4~5	100~150	280~340	16~20	14~16
12		3~4/1~2	5~6	4~5	150~200	300~360	18~22	14~16
16		4~5/1~2	6	5~6	200~220	340~380	20~24	16€20
20		4~5/1~2	6	5~6	200~260	360~400	25~30	20~22
16~20	Double Y-Shaped	2~3/2~3	6	5~6	200~260	300~380	25~30	16~20
22~25		2~3/2~3	6~7	5~6	200~260	360~400	30~35	20~22

PROBLEMS POSSIBLY OCCUR

The phenomena following listed possibly occur due to the factors, such as spare parts, input gas, environment, and power supply. Thus necessary measures should be taken to avoid the following listed occurrences

-Black Welding Point

The occurrence of black welding point should possibly occur due the failure of protective gas output. The failure of protective gas output may be due to the following factors: sufficiency of gas pressure, impurity of gas source, and ventilation condition.

Compensate the gas output failure.

-Difficult in Arc-starting and to halt frequently

In case of unqualified tungsten, the performance of electricity releasing is affected.

With the un-peaked tungsten terminal, it is difficult in arc starting and unstable of current output.

-Unstable Welding Current during the welding operation.

The possible causation may include the unstable input voltage and the disturbance of electromagnetic noise of other electric equipment

CAUTIONS

1. Working Environment

1.1 The location in which this welding equipment is installed should be of little dust, corrosive chemical gas, flammable gas or materials etc, and of maximum 80% humidity;

1.2 Avoid the operation of welding in the open air unless the working area sheltered from the sun shining, rain water and snow etc; the temperature of working environment should be maintained within -10°C to +40°C;

1.3 The minimum distance of this welding equipment and wall should be 30cm.

1.4 Keep the working environment in good ventilation.

2. Safety Tips

2.1 Ventilation

This welding equipment is small-sized, compact in structure and of excellent performance in current output. Fans are to abstract heat generated by this welding equipment while the operation of welding is carried out.

Cautions: Maintain good ventilation of the louvers of this welding equipment. The minimum distance between this welding equipment and any other objects in or near the working area should be 30 cm. Good ventilation is of critical importance for the normal performance and service life of this welding equipment.

2.2 Welding operation is forbid while this welding equipment is of over-load.

A sudden halt may occur while the welding operation is carried out while this welding machine is of over-load status. Under this circumstance, it is unnecessary to restart this welding equipment. Keeps the built-in fan working to bring down the temperature inside this welding equipment.

2.3 Over-voltage is forbid.

Regarding the power supply voltage range of the welding machine, please refer to "Main parameter" table. This welding equipment is of automatic voltage compensation, which enables the maintaining of the voltage range within the given range. In case that the input voltage exceeds the stipulated value, it is possibly damaging to the components of this welding equipment.

2.4 An earth terminal available for this welding equipment. Connect with the earth cable to avoid the static and electric shock.

2.5 It is strongly forbid to contact the output terminal when the welding operation is performed. An electric shock possibly occurs.

MAINTENANCE

Exposure to extremely dusty, damp, or corrosive air is damaging to the welding machine. In order to prevent any possible failure or fault of this welding equipment, clean the dust at regular intervals with clean and dry compressed air of required pressure.

Please note that: lack of maintenance can spell to the unavailability and cancellation of the guarantee; the guarantee of this welding equipment will be no longer available in case that it has been attempted to take the machine apart or open the factory-made sealing of the machine.

TROUBLESHOOTING

CAUTIONS: Only the qualified technicians are authorized to undertake the repair task of this welding equipment in case of machine fault

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EasyTig 160S, 200S, 180A, 200A, 200AD, 200P

Fault Symptoms	Rectification
1. While this welding equipment is operated; the pilot lamp is off, no output, the built-in fan unavailable.	1. Possible function failure of power switch. Compensate it if necessary. 2. Possible unavailability of input. Compensate it if necessary. 3. Possible short circuit of input cable, Compensate it if necessary.
2. While this welding equipment is operated, the pilot lamp is on, no output, the built-in fan unavailable.	1. Possible misconnection with input of 380V, and occurrence of over voltage protection status. Reconnect with input of 220V, and restart. 2. Possible unstable input due to the un-available input cable or possible connection unavailable spells it's being of over-voltage protection status. 3. Frequently switching on and off of this welding equipment in a short period leads this equipments being of over-voltage protection. Switch off this welding machine and wait for at least 3 minutes, then restart this welding equipment. 4. Possible unavailability of the connection of switch and bottom board. Reconnect it. 5. The 24 V relay of bottom PCB is possibly damaged. Replace it if necessary.
3. While this welding equipment is operated, the built-in fan functions, the fault indicator is off, no HF electricity releasing, arc starting unavailable.	1. The normal voltage of positive and negative pole of board VH-07 should be DC 308V. 1.1Possible short circuit occurs, and possible unavailability of connection of silicon bridge with the PCB. 1.2 Possible electricity leakage of capacitors, replace them if necessary. 2. A green light indicator of secondary power supply of top PCB should be on. Otherwise, it indicates that the secondary power supply is not functioning. Check the connection whether is available. If fault cannot be rectified, please contact the supplier for further advice. 3. Possible unavailability of connection inside this welding equipment occurs. Check and reconnect if necessary. 4. Possible malfunction of control circuit occurs. Check otherwise contact the supplier for further advice. 5. Possible damage of the welding torch. Replace it if necessary.

Fault Symptoms	Rectification
4. While this welding equipment is operated, fault indicator is off, HF electricity releasing is available, and welding current output is unavailable.	1. Possible disconnection of welding torch cable. 2. Possible disconnection of earth cable, or unavailability of connection of the earth cable and work piece. 3. The connection between positive output terminal or the gas or electricity output terminal and this welding equipment is possibly unavailable. Reconnect them if necessary.
5. While is this welding equipment is operated, the fault indicator is off, no electricity releasing, and the arc starting available.	1. The cable connection between the transformer of arc starting and power PCB is possibly unavailable. Check and reconnect it. 2. Possible oxidization of electricity releasing parts occurs. Or the distance is larger than the maximum distance available. Remove the oxidization of the electricity releasing parts and adjust the distance of the electricity releasing parts to range of 1mm. 3. Possible damage to MMA/TIG switch. Replace them if necessary. 4. Components of HF arc starting circuit are possibly damaged. Check and replace them if necessary.
6. While this welding equipment is operated, fault indicator is on, and there is no output.	1. It is possible of over-current protection status. Switch off the power supply, wait till the fault indicator is off, and restart this welding equipment. 2. It is possible of over-heating protection status. Wait till the fault indicator is off, and the welding operation will be available. 3. Possible fault with Inverter circuit. Disconnect the power supply plug (VH-07) of transformer of MOS PCB. And restart this welding equipment. 3.1 If the fault indicator is still on. Turn off the power supply of this welding equipment. Disconnect the power supply plug (VH-03) of HF arc starting. 3.1.1 If the fault indicator is on, MOFESTS of top PCB is possibly defective. Replace it, if necessary. 3.1.2 Possible damage of transformer of center PCB. Replace it if necessary. 3.2 If the fault indicator is off. 3.2.1 Possible damage of transformer of center PCB. Replace it if necessary. Measure the inductance value and Q value. L=0.9-1 .6mH Q>35. If both of the inductance value and Q value are comparatively low, replace them. 3.2.2 Possible damage of secondary rectifier of transformer. Replace it if necessary. 4. Possible damage of feed back circuit. Replace it if necessary.

Fault Symptoms	Rectification
7. Unstable current output during the welding operation and the potentiometer is unavailable.	1. Possible damage of 1K resistance. Replace it if necessary. 2. The connection of this welding equipment is not available.
8. Excessive plash generated during welding operation. It is difficult to weld with alkaline rod.	1. Misconnection of earth cable and welding torch cable. 2. Reconnect them.

WS 300/ WS 400/ WSM 300/ WSM 400

Fault Symptoms	Rectification
1. While this welding equipment is operated, the built-in fan is not functioning. No display of digital meter, no welding output.	1. Possible failure of connection of power supply, check and reconnect if necessary. 2. If power supply is available of input, possible damage of four thermal resistance. Check and replace them if necessary. 3. Possible malfunction of power PCB. 3.1 Possible damage of Rectifier Bridge. 3.2 Power PCB is damaged. 3.3 Check connection of input. 4. Possible failure of secondary power supply. Please contact dealer or supplier for further advice.
2. While this welding equipment is operated, the built-in fan functions, fault indicator is off, no HF electricity releasing, arc starting unavailable.	1. Check all the connections inside the machine. 2. Something wrong with the control circuit, find out the reason and contact the manufacture. 3. The control cable on the torch is broken.
3. While this welding equipment is operated, fault indicator is off, HF electricity releasing is available, and welding current output is unavailable.	1. Possible disconnection of welding torch cable. 2. Possible disconnection of earth cable, or unavailability of connection of the earth cable and work piece. 3. The connection between positive output terminal or the gas or electricity output terminal and this welding equipment is possibly unavailable. Reconnect them if necessary.
4. While this welding equipment is operated, the fault indicator is off, no electricity releasing, and the arc starting available.	1. The cable connection between the transformer of arc starting and power PCB is possibly unavailable. Check and reconnect it. 2. Possible oxidization of electricity releasing parts occurs. Or the distance is larger than the maximum distance available. Remove the oxidization of the electricity releasing parts and adjust the distance of the electricity releasing parts to range of 1mm. 3. Possible damage to MMA/TIG switch. Replace them if necessary. 4. Components of HF arc starting circuit are possibly damaged. Check and replace them if necessary.

Fault Symptoms	Rectification
5. While this welding equipment is operated, the fault indicator is on, and there is no output.	1. It is possible of over-current protection status. Switch off the power supply, wait till the fault indicator is off, and restart this welding equipment. 2. It is possible of over-heating protection status. Wait till the fault indicator is off, and the welding operation will be available. 3. Possible fault with Inverter or HF arc starting PCB. Disconnect the power supply plug (VH-07) of transformer of Inverter. And restart this welding equipment. The same measure should be taken in order to locate the fault for the welding equipment of one Inverter or two Inverters. a) If the fault indicator is still on. Switch off the power supply of this welding equipment. Disconnect the power supply plug (VH-03) of HF arc starting. i. If the fault indicator is on, MOFESTS of top PCB is possibly defective. Replace it, if necessary. ii. If the fault indicator is off, possible damage of transformer of arc starting PCB. Replace it if necessary. b) Reconnect the power supply of Inverter of fault. Disconnect the power supply of main transformer, and restart this welding equipment. i. In case that the fault indicator is off, it can be concluded that there is possible fault of transformer of middle PCB. Possible damage of transformer of middle PCB. Replace it if necessary. Measure the inductance value and Q value. ii. Possible damage of secondary rectifier of transformer. Replace it if necessary. 4. Possible damage of feed back circuit. Replace it if necessary.
6. Insufficient current output during the welding operation and the variable resistance is unavailable.	1. The length or thickness of secondary cables is not available. 2. This welding equipment is of remote control mode. 3. Possible damage of variable resistance. Replace it.