

DC INVERTER MMA WELDER

MMA- 120S/140S/160S

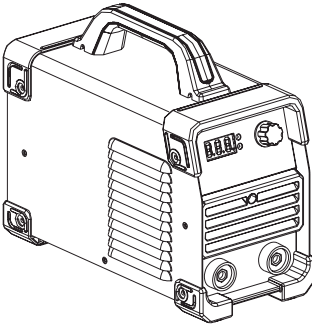
User Manual



For Your Safety

Read and understand this manual before use. Keep this manual for future reference.

HYUNDAI

MMA-120S/140S/160S

Read the entire text of the instruction manual prior to the assembly and operation of the device.

This instruction manual is intended to make it easier for you to get familiar with your device and utilize its intended possibilities of use.

The instruction manual contains important notes on how to work safely, properly and economically with your machine and how to avoid dangers, save repair costs, reduce downtime, and increase the reliability and working life of the machine.

In addition to the safety regulations contained herein, you must in any case comply with applicable regulations of your country with respect to the operation of the machine.

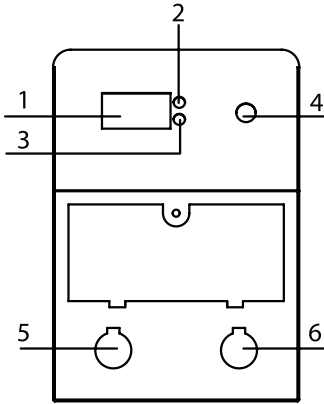
Put the instruction manual in a clear plastic folder to protect them from dirt and humidity, and store them near the machine. The instructions must be read and carefully observed by each operator prior to starting the work. Only persons who have been trained in the use of the machine and have been informed on the related dangers and risks are allowed to use the machine.

In addition to the safety notes contained in this instruction manual, any local regulations and general technical rules for the operation of welding machines must be followed.

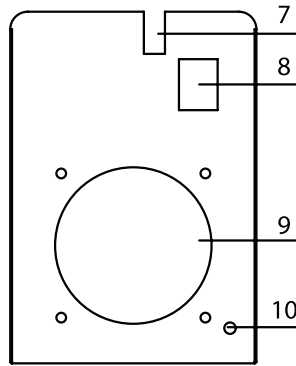
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1. Operation Control and Description



Front Panel



Back Panel

• Front panel

- 1) Digital display
- 2) Power indicator
- 3) Overheated indicator
- 4) Output current control
- 5) Positive socket
- 6) Negative socket

• Back panel

- 7) Power Cable
- 8) ON/OFF switch
- 9) Fan
- 10) Ground screw



Earth cable with earth clamp



Welding cable with electrode holder



Combination wire brush and chipping hammer

**IMPORTANT**

Read instruction manual before operating this equipment. Please pay particular attention to all sections of this manual that carry warning symbols and notices.

**WARNING!**

This is a Warning symbol. This symbol is used throughout the manual whenever there is a risk of personal injury. Ensure that these warnings are read and understood at all times.

**CAUTION!**

This is a Caution symbol. This symbol is used throughout the instruction manual whenever there is a risk of damaging your product. Ensure that these warnings are read and understood at all times.

2. Main Parameters

Model	MMA-120S	MMA-140S	MMA-160S
Type	Inverter Arc		
Rated Input Voltage(V)	1P AC 230V, 50Hz		
Rated Output Current(A)	20-120A	20-140A	20-160A
Net Weight(kg)	4.3	4.5	4.8
Rated Duty Cycle (%)	15		
No-load Voltage (V)	69		
Cooling Type	Fan cooling		
Protection Class	IP21S		
Dimension	325x150x285mm		
Static Characteristic	Dropping characteristic		

3. Contents

- 1 X Inverter welder
- 1 X Earth cable with earth clamp
- 1 X Welding cable with electrode holder
- 1 X Combination wire brush and chipping hammer
- 1 X Instruction manual

- Open the packaging and remove the device carefully.
- Remove the packaging material as well as the packaging and transport bracing (if available).
- Check that the delivery is complete.
- Check the device and accessory parts for transport damage.
- If possible, store the packaging until the warranty period has expired.

**WARNING!**

The device and packaging materials are not toys!

Children must not be allowed to play with machine and accessories!

Plastic bags are a choking risk for children!

4. Safety



WARNING!

The user of this welder is responsible for his own and the safety of others. It is most important to read, learn and respect the rules in this user guide. When using this welder, basic safety precautions, including the following, should be followed to reduce the risk of fire, electric shock and personal injury. Make sure that you have read all of these instructions before using this welder. Keep this booklet in a safe place for future reference.

Persons who are not familiar with this booklet should not use the welder.



Training

The operator should be properly trained to use the welding machine safely and should be informed about the risks relating to arc welding procedures. This manual does not attempt to cover welding technique. Training should be sought from qualified/experienced personnel on this aspect especially for any welds requiring high integrity for safety.



Serious fire risk

The welding process produces sparks, droplets of fused metal, metal projectiles and fumes. This constitutes a serious fire risk. Make sure that the area around the workpiece is clear of all inflammable materials. It is advisable to have a fire extinguisher on hand



Work area

Ensure a clear work area with unrestricted movement for the operator. Always maintain easy access to the On/Off switch and the mains supply.



Workpiece

The workpiece will remain at a high temperature for a relatively long period. Do not touch the weld or the workpiece unless you are wearing welding gloves. Always use pliers or tongs. Never touch the welded material with bare hands until it has been allowed to cool.



Welding surfaces

Do not weld on containers or pipes that hold, or have held, flammable liquids or combustible gases.

Do not weld coated, painted or varnished surfaces as the coatings may ignite or can give off dangerous fumes.



Ventilate the work area

Arc welding emits fumes which can be dangerous. Make sure that the work area is well ventilated.

**Avoid electrical contact**

Use adequate electrical insulation with regard to the electrode, the workpiece and any accessible earthed metal parts in the vicinity. Avoid direct contact with the welding circuit. The no load voltage between the earth clamp and the electrode can be dangerous under certain circumstances.

**For additional protection from electric shock**

It is recommended that this tool be used in conjunction with a residual current device (RCD) with a rated residual current of 30mA or less. Please contact our After Sales Support for further information.

**Extension leads**

In general these are best avoided. If used however make sure that the extension lead used with the welder is of a suitable current rating and has an earth connection. If using the welder outdoors make sure that the extension cable is suitable for outdoor use. Always keep cables and extension leads away from the welding zone and any hot materials.

**Consider work area environment**

Do not expose the welder to rain. Do not use it in damp, or wet locations.
Keep the work area well lit.

**Dress properly**

Use protective gloves and fire resistant protective clothing when using the welder.
Avoid exposing skin to the ultraviolet rays produced by the arc.

**Always use the welding mask**

Under no circumstances should the welder be operated unless the welding mask is protecting the eyes and face. There is a serious risk of eye damage if the mask is not used. The sparks and metal projectiles can cause serious damage to the eyes and face.

The light radiation produced by the arc can cause damage to eyesight and burns on the skin.
Never remove the welding mask whilst welding.

**Safety glasses**

After welding use safety glasses when brushing, chipping, grinding the slag from the weld.

**Other persons**

Ensure that other persons are screened from the welding arc and are at least 15 metres away from the workpiece. Always ensure that the welding arc is screened from onlookers, or people just passing by. Use screens if necessary, or non reflecting curtains.

**Keep children and animals away**

Do not let children or animals have access to the welding equipment or to the work area.

**Switching off**

When you have finished welding switch off the welder. Do not put the electrode holder down with the welder switch On. When leaving the welder unattended, move the On/Off switch to the Off position and disconnect the welder from the mains supply. Do not leave hot material unattended after welding.

**Welding cables**

Keep the welding cables, earth clamp and electrode holder in good condition. Failure can result in poor welding quality and could be dangerous in structural situations.

**Check damaged parts**

Before further use of the welder, any part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for breakage of parts and any other conditions that may affect its operation. ANY part that is damaged should be properly repaired, or replaced by an authorised service centre.

**Improper use**

Do not use this welder for pipe thawing.

**Handling**

Ensure the handle is correctly fitted and always use safe lifting practices when lifting.

5. Additional Precautions



Welding operations

In environments with increased risk of electric shock;

In confined spaces;

In the presence of flammable or explosive materials;

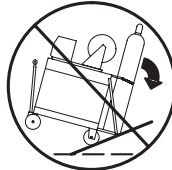
MUST BE evaluated in advance by an “expert supervisor” and must always be carried out in the presence of other people trained to intervene in emergencies.



Position and handling

Position the welding machine on a horizontal surface that is able to support the weight: otherwise (e.g. inclined or uneven floors etc.) there is danger of overturning.

The operator **MUST NOT BE ALLOWED** to weld in raised positions unless safety platforms are used.



Voltage between electrode holders or torches

Working with more than one welding machine on a single piece or on pieces that are connected may generate a dangerous accumulation of no-load voltage between two different electrode holders or torches, the value of which may reach double the allowed limit.



Improper use

It is hazardous to use the welding machine for any work other than that for which it was designed.

Example do not use this welder for pipe thawing.

6. Warning Symbols

The following warning symbols are displayed on the unit to remind you of the safety precautions you should take when using the welder.

**WARNING!**

Read instruction manual before operating this equipment.

**WARNING!**

When using this welder, avoid direct contact with the welding circuit. The no-load voltage supplied by the welding machine can be dangerous in certain circumstances.

**WARNING!**

When using this welder, provide adequate ventilation or facilities for the removal of welding fumes near the arc; a systematic approach is needed in evaluating the exposure limits for the welding fumes, which will depend on their composition, concentration and the length of the exposure itself. Do not operate on materials cleaned with chlorinated solvents or near such substances. Remove all flammable materials (e.g. wood, paper, rags etc.) from the working area.

**WARNING!**

Do not weld on containers or piping that contains or has contained flammable liquids or gaseous products.

Do not weld on containers under pressure.

**WARNING!**

When using this welder, always use a welding mask. Use special fire resistant protective clothing the skin to be exposed to the ultra violet and infrared rays produced by the arc; other people in the vicinity of the arc should be protected by shields of non-reflecting curtains.

**WARNING!**

Do not use in rain or store in locations affected by rain.

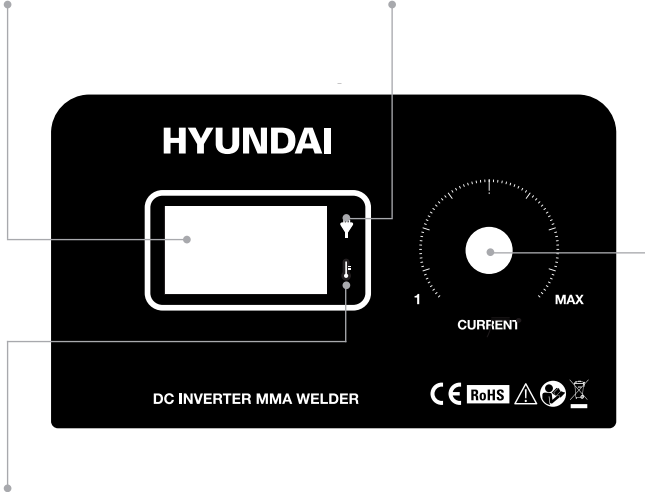
7. Indicators

Welding current display

The digital display shows the welding current.

Power indicator

This indicator lights green means power is on.



Over temperature indicator

When the indicator lights yellow. This indicates that the duty cycle of the machine has been exceeded.

Allow the unit to cool for 20 minutes to reset before resuming welding.

Current adjust

Adjust this knob to set output current.

8. Rating Information

The rating plate fitted to the front of the welder and display the following symbols and information.

Model: MMA-120S					
		EN 60974-1			
		20A/20.8V - 120A/24.8V			
IP21S	U₀ = 69V	X	15%	60%	100%
		I₂	120A	60A	46.5A
		U₂	24.8V	22.4V	21.9V
	U₁ = 230V	I_{1max} = 24A	I_{1eff} = 9.3A		
HYUNDAI					
25, Yulgok-ro 2-gil, Jongno-gu, Seoul 03143 Korea HYUNDAI Corporation / Made in P.R.C Year of manufacture : 2019					

Model: MMA-140S					
		EN 60974-1			
		20A/20.8V - 140A/25.6V			
IP21S	U₀ = 69V	X	15%	60%	100%
		I₂	140A	70A	54.2A
		U₂	25.6V	22.8V	22.2V
	U₁ = 230V	I_{1max} = 26A	I_{1eff} = 10A		
HYUNDAI					
25, Yulgok-ro 2-gil, Jongno-gu, Seoul 03143 Korea HYUNDAI Corporation / Made in P.R.C Year of manufacture : 2019					

Model: MMA-160S					
		EN 60974-1			
		20A/20.8V - 160A/26.4V			
IP21S	U₀ = 69V	X	15%	60%	100%
		I₂	160A	80A	62A
		U₂	26.4V	23.2V	22.4V
	U₁ = 230V	I_{1max} = 32A	I_{1eff} = 12.3A		
HYUNDAI					
25, Yulgok-ro 2-gil, Jongno-gu, Seoul 03143 Korea HYUNDAI Corporation / Made in P.R.C Year of manufacture : 2019					

	Single phase frequency conversion and rectifier	X	Duty cycle at rated current
	Mains supply, single phase A.C. 50Hz*	I₂	Conventional output current range
U₁	Rated input voltage	U₂	Welding voltage at rated current
50Hz	Rated input frequency	U₀	Output open circuit voltage
I_{1max}	Maximum input current		MMA Welding
I_{1eff}	Rated input current	IP21S	Degree of protection against intrusion of water and solid bodies

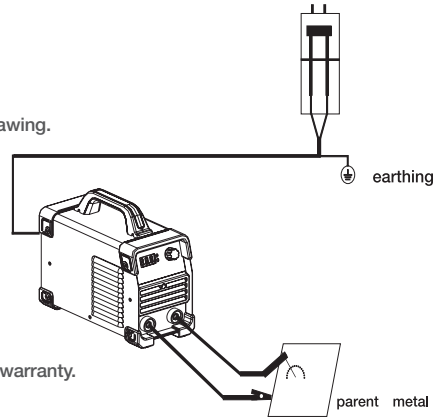
9. Installation Debugging and Operation

The Earth cable with clamp (earth clamp) and welding cable with clamp (electrode holder) are easily connected to the machine by inserting the quick connector and twisting it clockwise. Always ensure a correct fit. Please pay attention to the connection polarity

Use earth clamp to clamp the workpiece.

Use electrode holder to hold electrode.

You can refer to page 3 for the connection or below line drawing.



CAUTION!

When fitting the welding leads to the unit, twist the plugs clockwise and ensure that they are tight in the sockets.

Loose connectors will overheat, damage the unit and void warranty.

Selection of electrode

There is no hard and fast rule by which a particular gauge of electrode is selected. Usually this is determined by, the type of weld required and the thickness of the workpiece. E.g. a butt weld in 1.5mm sheet metal can be done by a 1.6mm or 2.5mm electrode, the different being that the 2.5mm electrode will do the job quicker. The table below gives guidance as to which electrode is most suitable according to the welding current. This table is only a guide, and values given are an indication only.

Amperage Selection Guide	
Rod Size	Welding Current
1.6mm	40 - 50 Amps
2.0mm	50 - 75 Amps
2.5mm	75 - 105 Amps
3.2mm	105 - 140 Amps
4.0mm	140 - 160 Amps

Operation

Before commencing, make sure that your hand held welding mask or welding helmet is in position to protect your eyes. Wear gloves and clothing, which cover the hands and arms to prevent flash burns.

Please note your inverter welder is only ideal for arc welding.

Turn on switch

Power switch is at the back of machine.

When the switch is in the "0" position means the power OFF.

When the switch in the "1" position means the power is ON, and the switch will light red.

Striking arc

This is done by bringing the electrode into contact with the workpiece using a light tapping action and withdrawing to create a gap of 1.5 mm – 3.00 mm.

Maintaining arc

Having created an arc, all that is necessary to maintain it is to proceed steadily in one direction keeping the gap between the electrode and the workpiece constant.

The electrode length will gradually decrease as the metal is gap, and in doing so will melt the electrode core wire and protective transferred to the workpiece under a protective slag formed by the with a pointed tool or a welders' chipping hammer.

Stop welding

All that is required is to withdraw the electrode from the workpiece thus breaking the circuit. Be careful with the end of the electrode, as it will be hot! Provided the current setting is correct, the surface of the workpiece will also melt by the intensity of the electric arc. A degree of "penetration" is thereby obtained, and a complete "fusion" of the workpiece and the deposited electrode is met.

Tip

Keep the welding current as low as possible for the job at hand to maintain the best duty cycle from your welding machine, prevent

Thermostatic protection

This welder is automatically protected from overheating by a thermal overload cut-out protector.

If the transformer overheats, the overload cut-out protector will activate and cut off. The yellow light will illuminate to show that the cut out has operated.

After cooling, the protector will reconnect the supply circuit and the welder will be ready for further use.

NOTE: If the duty cycle of the machine is exceeded, the thermostatic protection will activate.

10. maintenance



Warning

Before starting any cleaning, or maintenance procedures on the welding machine, make sure that it is switched off and disconnected from the mains supply.

There are no user serviceable parts inside the welder. Refer to a qualified service personnel if any internal maintenance is required.

After use, wipe the unit down with a clean soft dry cloth.

Storage/transport

Store the equipment and accessories out of children's reach in a dry place. If possible store the welder in the original packaging.

The appliance must unconditionally be secured against falling or rolling over during transport.

Disposal



Disposing of the packaging

Recycling packaging reduces the need for land fill and raw materials. Reuse of recycled material decreases pollution in the environment. Please recycle packaging where facilities exist. Check with your local council authority for recycling advice.



Disposing of the welder

Welders that are no longer usable should not be disposed of with household waste but in an environmentally friendly way. Please recycle where facilities exist. Check with your local council authority for recycling advice.

11. Troubleshooting

Faults	Remedy
<p>Power indicator is not lit, fan does not work and no output current</p>	<ol style="list-style-type: none"> 1. Check that the unit is plugged into the 230V mains outlet and is switched on. 2. Check that the mains fuse or breaker has not operated. 3. Check that the main switch on the rear of the unit is in the on position.
<p>Power indicator is lit, fan works, no output current</p>	<ol style="list-style-type: none"> 1. Check if welding cables are connected correctly. 2. Check output connectors not disconnected or damaged. 3. Check that the earth clamp is connected securely to the workpiece and that the contact point is clean of paint or rust.
<p>Over temperature indicator is on, no output current</p>	<ol style="list-style-type: none"> 1. Duty cycle of the unit has been exceeded. Allow the unit to cool for 20 minutes.
<p>Output current is not stable</p>	<ol style="list-style-type: none"> 1. Check mains voltage is constant. 2. Check welding cable connectors are tight in the sockets. 3. Check earth clamp connection to the workpiece. 4. Check welding leads are not reversed.

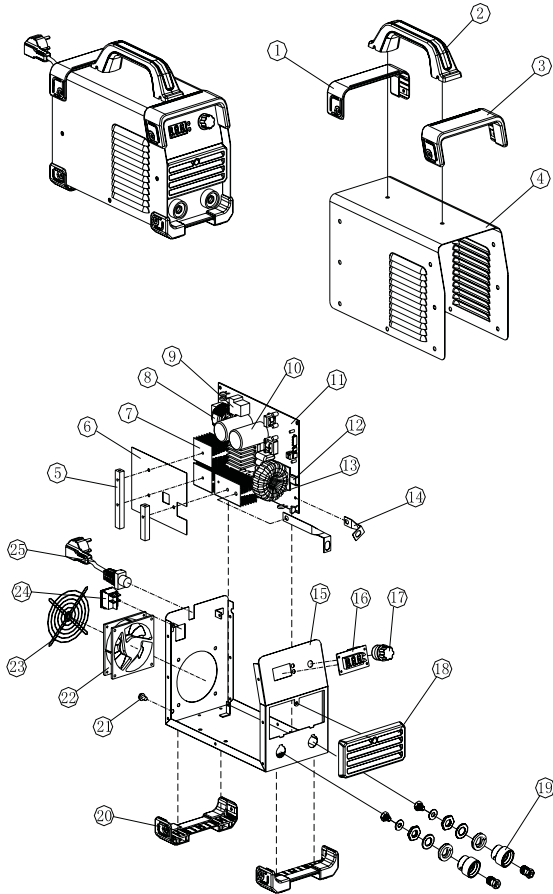
Imported for:

Builder SAS

ZI, 32 Rue Aristide Berges, 31270

Cugnaux, Toulouse France

12. Exploded Drawing



MMA-120S/140S/160S

1. Rear Plastic Panel
2. Handle
3. Top Plastic Panel
4. Cover
5. Pillar
6. Wind screen
7. Radiator
8. Inductance
9. Relay
10. Capacitance
11. Main PCB

12. diverter
13. Main transformer
14. Copper plastic connector
15. Base
16. Display meter
17. Knob
18. Plastics window
19. Fast connector
20. Base Plastic Panel
21. Grounding screw
22. Fan

23. Fan net
24. Power Switch
25. Power line

List of parts typically replaced due to wear

9. Relay
10. Capacitance
11. Main PCB
22. Fan
24. Power Switch
- IGBT(No show)
- DIODE(No show)

EC Declaration of Conformity



We :

HYUNDAI Corporation

25, Yulgok-ro 2-gil, Jongno-gu, Seoul 03143 Korea

Declare that the product detailed below :

Welding Machine

MODEL : MMA-120S/140S/160S

Satisfies the requirements of the Council Directives :

EC-Low voltage directive 2014/35/EU

EC Directive of Electromagnetic Compatibility 2014/30/EU

and conform with the norms :

EN IEC 60974-1:2018+A1:2019

EN 50445:2008, EN 60974-10:2014+A1:2015

EN 61000-3-11:2000, EN 61000-3-12:2011

General Manager

A handwritten signature in black ink, appearing to be 'Yoonsung Lee', written over a horizontal line.

Yoonsung Lee

Project Manager

A handwritten signature in black ink, appearing to be 'Donghoon Park', written over a horizontal line.

Donghoon Park

Date : 2019.10.15

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