

DECLARATION OF CONFORMITY

1. **Product model:** IM-MMA130-IWK

2. **Name and address of the manufacturer or his authorised representative:**



NAP BRANDS LTD. Office 20, Fleming Court Business Centre,
Leigh Road, Eastleigh, Hampshire SO50 9YN
Tel: +44 (0)23 8064 9650. Email: sales@napbrands.co.uk

3. **This declaration of conformity is issued under the sole responsibility of the manufacturer.**

4. **Object of the declaration:**

Equipment: 130A MMA Welder
Brand name: IMPAX
Model/type: IM-MMA130-IWK

5. **The object of the declaration described above is in conformity with the relevant statutory requirements:**

Supply of Machinery (Safety) Regulations 2008
Electrical Equipment (Safety) Regulations 2016
Electromagnetic Compatibility Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
Regulations 2012

6. **References to the relevant designated standards used or references to the other technical specifications in relation to which conformity is declared:**

EN IEC 60974-1
BS EN IEC 60974-1

7. **The person authorized to compile the technical file:**

Name: Robert Redfern

Address: Nap Brands Ltd. Office 20, Fleming Court Business Centre, Leigh Road, Eastleigh,
Hampshire SO50 9YN

Signed for and on behalf of:

Authorised Representative

Robert Redfern, Technical Manager
03/03/2022

A handwritten signature in black ink, appearing to read 'Robert Redfern', is written over a large, faint, light-grey watermark of the letters 'UKCA'.

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130A MMA WELDER

IM-MMA130-IWK



Always Read Instruction Manual
Retain for Future Reference

CERTIFICATE OF GUARANTEE

This product is guaranteed for a period of 1 Year, with effect from the date of purchase and applies only to the original purchaser. This guarantee only applies to defects arising from, defective materials and or faulty workmanship that become evident during the guarantee period only and does not include consumable items. The manufacturer will repair or replace the product at their discretion subject to the following. That the product has been used in accordance with the guidelines as detailed in the product manual and that it has not been subjected to misuse, abuse or used for a purpose for which it was not intended. That it has not been taken apart or tampered with in any way whatsoever or has been serviced by unauthorised persons or has been used for hire purposes. Transit damage is excluded from this guarantee, for such damage the transport company is responsible. Claims made under this guarantee must be made in the first instance, directly to the retailer within the guarantee period. Only under exceptional circumstances should the product be returned to the manufacturer. In this case it shall be the consumer's responsibility to return the product at their cost ensuring that the product is adequately packed to prevent transit damage and must be accompanied with a brief description of the fault and a copy of the receipt or other proof of purchase. The manufacturer shall not be liable for any special, exemplary, direct, indirect, incidental, or consequential loss or damage under this guarantee. This guarantee is in addition to and does not affect any rights, which the consumer may have by virtue of the Sale of Goods Act 1973 as amended 1975 and 1999.

INTRODUCTION

Thank you for purchasing this product which has passed through our extensive quality assurance process. Every care has been taken to ensure that it reaches you in perfect condition. However, in the unlikely event that you should experience a problem, or if we can offer any assistance or advice please do not hesitate to contact our customer care department. For details of your nearest customer care department please refer to the telephone numbers at the back of this manual.

Safety First

Before attempting to operate this product the following basic safety precautions should always be taken to reduce the risk of fire, electric shock and personal injury. It is important to read the instruction manual to understand the application, limitations and potential hazards associated with this product.

HELPLINE & SPARE PARTS

In the unlikely event of a defect occurring please contact our Helpline.

Office hours: Monday - Friday 9:00am – 5:00pm.

Telephone Number 0344 264 2485

SAFETY INFORMATION

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others. All safety messages will follow the safety alert symbol and either the word “DANGER” or “WARNING.”

These words mean:



DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

CAUTION

CAUTION, without the safety alert symbol, is used to address practices not related to personal injury.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

Before attempting to operate the machine, it is essential that you read this manual thoroughly and carefully follow all instructions given. In doing so you will ensure the safety of yourself and that of others around you, and you can also look forward to the welder giving you long and satisfactory service.

Important

Warning! If you have no welding experience, we recommend you seek training from an experienced person.

Caution: The pages of this manual are restricted to the basic safe use of a MMA welder and very basic welding technique. We recommend you purchase a good quality publication on welding or if you have internet access visit one of the

numerous welding related web sites to be able to use the welding power supply to its full potential.

The electrodes used in welding are many and varied. You are advised to seek advice from your local welding equipment supplier for the correct selection of wire electrode for the work being performed.

THE QUALITY OF ANY WELDED JOINT IS DEPENDANT ON THE PREPARATION OF THE JOINT THE SELECTION OF THE CORRECT WIRE ELECTRODE AND THE SKILL AND EXPERIENCE OF THE WELDER.

SAFETY INFORMATION

General Welding Safety

The Workshop Environment

Housekeeping is extremely important to avoid injury from slips, trips and falls, damage to equipment and fire. The work area should be kept clean and tidy at all times. Combustible materials must not be discarded or stored in the vicinity of the welding area.

Avoid using your welder in the vicinity of:

- a) other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the welding equipment;
- b) radio and television transmitters and receivers;
- c) computer and other control equipment;
- d) safety critical equipment, e.g. guarding of industrial equipment;
- e) pacemakers and hearing aids etc.;
- f) equipment used for calibration or measurement;
- g) other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;

It may be possible to avoid the above by changing the time of day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

Electrical Safety



Electric Shock Can Kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever

the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly

installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.

SAFETY INFORMATION

Shock Prevention

Exposed live conductors or other bare metal in the welding circuit, or in unearthed, electrically-LIVE equipment can fatally shock a person whose body becomes a conductor. DO NOT STAND, SIT, LIE, LEAN ON, OR TOUCH a wet surface when welding, without suitable protection.

Protection for Wearers of Pacemakers

Magnetic fields from high currents can affect pacemaker operation. Persons wearing electronic life support equipment (pacemaker) should consult with their doctor before going near arc welding, gouging, or spot welding operations.

To Prevent Against Shock

Keep body and clothing dry. Never work in damp area without adequate insulation against electrical shock. Stay on a dry duckboard, or rubber mat when dampness or sweat can not be avoided. Sweat, sea water, or moisture between body and an electrically LIVE part - or earthed metal - reduces the body surface electrical resistance, enabling dangerous and possibly lethal currents to flow through the body.

Earthing the Equipment

When arc welding equipment is earthed according to the National Electrical Code, and the workpiece is earthed, a voltage may exist between the electrode and any conducting object.

Examples of conducting objects include, but are not limited to, buildings, electrical tools, work benches, welding power source cases, workpieces, etc.

Never touch the electrode and any metal object unless the welding power source is off. When installing, connect the frames of each unit such as welding power source, control, work table, and water circulator to the building earth.

Conductors must be adequate to carry earth currents safely. Equipment made electrically LIVE by stray current may shock, possibly fatally. Do NOT EARTH to electrical conduit, or to a pipe carrying ANY gas or a flammable liquid such as oil or fuel.

Electrode Holders

Fully insulated electrode holders should be used. Do NOT use holders with protruding screws or with any form of damage.

Connectors

Fully insulated lock-type connectors should be used to join welding cable.

Cables

Frequently inspect cables for wear, cracks and damage. IMMEDIATELY REPLACE those with excessively worn or damaged insulation to avoid possibly lethal shock from bared cable. Cables with damaged areas may be taped to give resistance equivalent to original cable. Keep cable dry, free of oil and grease, and protected from hot metal and sparks.

Terminals And Other Exposed Parts

Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

Electrode

Equipment With Output On/Off Control (Contactor)

Welding power sources for use with the gas metal arc welding, gas tungsten arc welding and similar processes normally are equipped with devices that permit on/off control of the welding power output. When so equipped the electrode wire becomes electrically LIVE when the power source switch is ON and welding gun switch is closed. Never touch the electrode wire or any conducting object in contact with the electrode circuit unless the welding power source is off.

Equipment Without Output On/Off Control (No Contactor)

Welding power sources used with shielded metal arc welding and similar processes may not be equipped with welding power output on/off control devices. With such equipment the electrode is electrically LIVE when the power switch is turned ON. Never touch the electrode unless the welding power source is off.

SAFETY INFORMATION

Changing Electrodes

The electrode holder should be isolated when changing the electrode, where a work piece is earthed. If the electrode is changed without isolating the electrode holder, the welder is relying on the insulation properties of the glove to avert shock from the OCV (Open Circuit Voltage) which can be 80V between the electrode and earth. If the glove is wet, the electrode a bad insulator or the welder in contact with a conductive surface, one or more of these layers of insulation may be ineffective.

Safety Devices

Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out. Before installation, inspection, or service of equipment, shut OFF all power and remove line fuses (or lock or red-tag switches) to prevent accidental turning ON of power. Do not open power circuit or change polarity while welding. If, in an emergency, it must be disconnected, guard against shock burns, or flash from switch arcing.

Always shut OFF and disconnect all power to equipment. Power disconnect switch must be available near the welding power source.

Checking the Equipment

Check that the equipment is suitable for the operation and connected in accordance with the manufacturer's recommendations. The welder is responsible for checking the equipment (cable, electrode holder and coupling devices) daily for damage and defects. All external connections should be clean and tight and checked each time a reconnection is made. The welding return clamp should be connected directly to the work piece, as close as possible to the point of welding or to the metal work bench on which the work piece is placed. Any damaged or defective parts must be replaced before continuing the welding operation.

Fumes And Gases



The welding process vapourises metals, and anything that is resting on the surface. This gives rise to fumes, which is condensed fine particulate material. The fume is mostly oxides of the metals, including any alloying elements, but it also contains gases

produced in the arc, such as ozone or oxides of nitrogen, and decomposition products from any paint or coating which was on the metal surface. The nature and quantity of this fume depends critically upon the welding process, the materials and the welding parameters.

Severe discomfort, illness or death can result from fumes, vapours, heat, or oxygen enrichment or depletion that welding (or cutting) may produce. Prevent them with adequate ventilation. NEVER ventilate with oxygen. Lead, cadmium, zinc, mercury and beryllium, bearing materials, when welded (or cut) may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an airsupplied respirator. For beryllium, both must be used. Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator. Work in a confined space only while it is being ventilated and, if necessary, while wearing an air-supplied respirator. Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a highly toxic gas, and other lung and eye irritating products. The ultraviolet (radiant) energy of the arc can also decompose trichloroethylene and perchloroethylene vapours to form phosgene. DO NOT WELD or cut where solvent vapours can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.

SAFETY INFORMATION

5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator.

Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.

6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

Noise



Welding environments are frequently noisy as other operations such as grinding, etc. may also be taking place. Some operations, such as deslagging may take the noise up to such a level where it will damage hearing. In such cases hearing protection must be used.

Fire and Explosion Prevention



Causes of fire and explosion are:

- 1) combustibles reached by the arc, flame, flying sparks, hot slag or heated material;
- 2) misuse of compressed gases and cylinders;
- 3) short circuits.

BE AWARE THAT flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the goggled operator. Sparks and slag can fly 10M.

To prevent fires and explosion: keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are in area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles.

Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work cannot be moved, move combustibles at least 10M, away out of reach of sparks and heat; or protect against ignition with suitable and snug fitting, fire-resistant covers or shields.

Walls, ceilings, and floor near work should be protected by heat resistant covers or shields. Fire watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if:

- a) appreciable combustibles (including building construction) are within 10m.
- b) appreciable combustibles are further than 10m but can be ignited by sparks.
- c) openings (concealed or visible) in floors or walls within 10m can expose combustibles to sparks.
- d) combustibles adjacent to walls, ceilings, roofs or metal partitions can be ignited by radiant or conducted heat.

After work is done, check that area is free of sparks, glowing embers, and flames.

An empty container that held combustibles, or that can produce flammable or toxic vapours when heated, must never be welded on or cut, unless container has first been cleaned. This includes a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility) followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment.

Water filling just below working level may substitute for inerting.

A container with unknown contents should be cleaned (see paragraph above), do NOT depend on sense of smell or sight to determine if it is safe to weld or cut.

Hollow castings or containers must be vented before welding or cutting - they can explode.

In explosive atmospheres, never weld or cut where the air may contain flammable dust, gas, or liquid vapours.

SAFETY INFORMATION

Cylinders Can Explode If Damaged
Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.
4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.

Welding Can Cause Fire Or Injury



Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns.

Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
11. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

Moving Parts Can Cause Injury



Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

SAFETY INFORMATION

Sparks Can Cause Battery Gases To Explode



SPARKS can cause BATTERY GASES TO EXPLODE; BATTERY ACID can burn eyes and skin. Batteries contain acid and generate explosive gases.

1. Always wear a face shield when working on a battery.
2. Stop engine before disconnecting or connecting battery cables.
3. Do not allow tools to cause sparks when working on a battery.
4. Do not use welder to charge batteries or jump start vehicles.
5. Observe correct polarity (+ and -) on batteries.

Flying Sparks Can Cause Injury



FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal.

As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

Steam And Pressurised Hot Coolant Can Burn



STEAM AND PRESSURIZED HOT COOLANT can burn face, eyes, and skin.

The coolant in the radiator can be very hot and under pressure.

1. Do not remove radiator cap when engine is hot. Allow engine to cool.
2. Wear gloves and put a rag over cap area when removing cap.
3. Allow pressure to escape before completely removing cap.

Falling Unit Can Cause Injury



1. Lift unit with handle on top of case.
2. Use handcart or similar device of adequate capacity.
3. If using a fork lift vehicle, place and secure unit on a proper skid before transporting.

Optical Radiation



The welding process produces a large quantity of visible light, ultraviolet and infrared. Exposure to the radiation from an arc causes damage to the eyes (Arc Eye). For this reason, welders need to wear efficient eye protection, which is usually supplied in the form of a protective shield.

The precise choice of the shade of glass filter in these shields depends on the type of welding operation, since they vary in their light output.

ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (ANSI Z49.1) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended. Never wear contact lenses while welding.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high

SAFETY INFORMATION

Recommended Protective Filters for Electric Welding		
Description of Process	Approximate Range of Welding Current in Amps	Minimum Shade Number of Filter(s)
Manual Metal Arc Welding - covered electrodes (MMAW)	Less than or equal to 100	8
	100 to 200	10
	200 to 300	11
	300 to 400	12
	Greater than 400	13
Gas Metal Arc Welding (GMAW) (MIG) other than Aluminium and Stainless Steel	Less than or equal to 150	10
	150 to 250	11
	250 to 300	12
	300 to 400	13
Gas Metal Arc Welding (GMAW) (MIG) Aluminium and Stainless Steel	Greater than 400	14
	Less than or equal to 250	12
Gas Metal Arc Welding (GMAW) (MIG) Aluminium and Stainless Steel	250 to 350	13
	Less than or equal to 100	10
Gas Tungsten Arc Welding (GTAW) (TIG)	100 to 200	11
	200 to 250	12
	250 to 350	13
	Greater than 350	14
Flux-cored Arc Welding (FCAW) -with or without shielding gas.	Less than or equal to 300	11
	300 to 400	12
	400 to 500	13
	Greater than 500	14
Air - Arc Gouging	Less than or equal to 400	12
Plasma - Arc Cutting	50 to 100	10
	100 to 400	12
	400 to 800	14
Plasma - Arc Spraying	—	15
Plasma - Arc Welding	Less than or equal to 20	8
	20 to 100	10
	100 to 400	12
	400 to 800	14
Submerged - Arc Welding	—	2(5)
Resistance Welding	—	Safety Spectacles or eye shield

SAFETY INFORMATION

H.F. Radiation Can Cause Interference



1. High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
2. Have only qualified persons familiar with electronic equipment install, test, and service H.F. producing units.
3. The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
4. If notified by the FCC about interference, stop using the equipment at once.
5. Have the installation regularly checked and maintained.
6. Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

Electric And Magnetic Fields May Be Dangerous



1. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
2. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
3. Exposure to EMF fields in welding may have other health effects which are now not known.
4. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
5. Route the electrode and work cables together - Secure them with tape when possible.
6. Never coil the electrode lead around your body.

7. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
8. Connect the work cable to the workpiece as close as possible to the area being welded.
9. Do not work next to welding power source.

For Electrically Powered Equipment



1. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
2. Install equipment in accordance with the countries National Electrical Code, all local codes and the manufacturer's recommendations.
3. Ground the equipment in accordance with the countries National Electrical Code and the manufacturer's recommendations.

Hot Parts Can Cause Severe Burns



1. Do not touch hot parts bare handed.
2. Allow cooling period before working on welding gun or torch.

Fire Or Explosion Hazard



1. Do not place unit on, over, or near combustible surfaces.
2. Do not service unit near flammables.

Static Can Damage PC Boards



1. Put on grounded wrist strap BEFORE handling boards or parts.
2. Use proper static-proof bags and boxes to store, move, or ship PC boards.

Overuse Causes Overheating



1. Allow cooling period; follow rated duty cycle.
2. Reduce current or reduce duty cycle before starting to weld again.
3. Do not block or filter airflow to unit.

SAFETY INFORMATION

Specific Safety Instructions

Use the welding power supply as indicated in the instruction manual. Improper use of this welding power supply can be dangerous for persons, animals or objects.

The user of the welding power supply is responsible for his own safety and the safety of others. It is important to read and understand this instruction manual.

Repair and maintenance must be carried out by qualified persons.

Maintain the machine in good condition (keep clean and dry etc).

During welding do not locate the machine in a confined space or close to a wall, which will block air outlets.

Avoid stretching the supply cable, disconnect from the mains supply before moving the machine.

Keep welding cables, earth clamp and electrode holder in good condition.

Welders should not wear jewellery (especially rings) or metallic watch straps

Appropriate clothing should be worn. Gloves, boots and overalls will provide some protection from electric shock

The welder should check daily, and after each reconnection, that all external connections are clean and tight

When changing the electrode, the electrode holder should be isolated

When welding stops for a short time, the electrode holder should not be put on the face shield or flammable material as it may still be 'live' at 80V or hot enough to cause damage

Arc welding produces fumes, sparks and fused metal projectiles.

Remove all flammable substances and materials from the work area.

Ensure adequate ventilation in areas where welding is being performed.

Do not weld on containers or pipes that hold or have held flammable liquid or gases (danger of explosion) or on materials cleaned with chlorinated solvents or on varnished surfaces (danger of toxic fumes).

Remove all flammable materials from the work area.

Ensure there is adequate fire fighting equipment close by.

Avoid direct contact with welding circuit, the OCV (Open Circuit Voltage) between the electrode and the earth clamp can be dangerous.

Do not use the welding power supply in damp or wet places or weld in the rain.

Always protect your eyes with an approved face mask. Use gloves and proper protective clothing which are dry and not soiled by oil or grease.

Avoid exposing skin to the ultra violet rays produced by the arc.

Working in the Open Air

When welding outside, the equipment should have the appropriate level of waterproofing; see manufacturer's Rating Plate (IP) codes for enclosures:

IP 23 protection against limited spraying

IP 24 protection against spraying from all directions

If there is a risk of heavy rain, a cover for the welding power supply, equipment and workpiece should be in place.

Additional Safety Instructions

1. ALWAYS ensure that there is full free air circulating around the outer casing of the machine, and that the louvres are unobstructed.
2. ALWAYS use a proper welding face shield or helmet, with suitable filter lenses. Proper gloves and working clothes should be worn at all times.
3. ALWAYS check that the pressure regulator and gauges are working correctly. DO NOT lubricate the regulator.

SAFETY INFORMATION

4. ALWAYS use the correct regulator. Each regulator is designed to be used with a specific gas.
5. ALWAYS inspect the hose before use to ensure it is in good condition.
6. ALWAYS keep the free length of gas hose outside the work area.
7. ALWAYS remove all flammable materials from the welding area.
8. NEVER remove any of the panels unless the machine is disconnected from the supply, AND never use the machine with any of the panels removed.
9. NEVER attempt any electrical or mechanical repair unless you are a qualified technician. If you have a problem with the machine contact your local IMPAX dealer.
10. NEVER use or store in a wet/damp environment. DO NOT EXPOSE TO RAIN.
11. NEVER use gas from a cylinder, the content of which is unknown. It is important to ensure the appropriate gas is being used.
12. NEVER use a damaged cylinder.
13. NEVER lift the cylinder by the valve.
14. NEVER expose the cylinder to a heat source or sparks.
15. NEVER continue to weld, if, at any time, you feel even the smallest electric shock. Stop welding IMMEDIATELY, and DO NOT attempt to use the machine until the fault is diagnosed and corrected.
16. NEVER use the welder with input connections greater than 10M in length.
17. NEVER point the torch at any person or animal.
18. NEVER touch the torch nozzle until the welder is switched OFF and the nozzle has been allowed to cool off.
19. NEVER connect, disconnect, or attempt to service the torch, until the machine is switched OFF and disconnected from the mains supply.
20. NEVER allow the cables to become wrapped around the operator or any person in the vicinity.
21. Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out.
22. Before installation, inspection, or service of equipment, shut OFF all power and remove line fuses to prevent accidental turning ON of power.
23. Do not open power circuit or change polarity while welding.
24. If, in an emergency, it must be disconnected, guard against shock burns, or flash from switch arcing. Always shut OFF and disconnect all power to equipment. Power disconnect switch must be available near the welding power source.
25. Fully insulated electrode holders should be used. Do NOT use holders with protruding screws or with any form of damage.
26. Fully insulated lock-type connectors should be used to join welding cable.
27. Frequently inspect cables for wear, cracks and damage. IMMEDIATELY REPLACE those with excessively worn or damaged insulation to avoid possibly lethal shock from bared cable. Cables with damaged areas may be taped to give resistance equivalent to original cable. Keep cable dry, free of oil and grease, and protected from hot metal and sparks.

SAFETY INFORMATION

The following types of welding operation must be performed by a qualified coded welder and approved by a qualified welding inspector.

- The welding of pressure vessels for liquid and gaseous substances.
- The welding of pressurised pipe work for liquid and gaseous substances.
- The repair of containers for flammable liquids and corrosive chemicals.
- Structural support and load bearing steelwork in buildings.
- Load lifting and moving equipment.
- Load lifting slings, chains, hooks and shackles.
- Hydraulic systems.
- Any type of safety critical equipment.

In addition to the above it is strongly recommended that the following welding operations are checked by a competent person.

- The repair of vehicle chassis and suspension and steering components.
- Vehicle load bearing attachment points ie, engine mounts seat and seat belt anchor points.
- Motor Cycle frames and components.

General Safety Rules

Warning! Read all instructions Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term "power tool" in all of the warnings listed below refers to your mains operated welder.

Save These Instructions

1) Work Area

- a) **Keep work area clean and well lit.** Cluttered and dark areas invite accidents.
- b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.

- c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

2) Electrical Safety

- a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- b) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- c) **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.

3) Personal Safety

- a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- b) **Use safety equipment. Always wear eye protection.** Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

SAFETY INFORMATION

c) **Avoid accidental starting. Ensure the switch is in the off position before plugging in.** Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.

d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.

e) **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.

f) **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.

g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of these devices can reduce dust related hazards.

4) Power Tool Use And Care

a) **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.

b) **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.

c) **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.

d) **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.**

Power tools are dangerous in the hands of untrained users.

e) **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.

f) **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

g) **Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from intended could result in a hazardous situation.

5) Service

a) **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.

INSTALLATION

Environment

These units are designed for use in environments with increased hazard of electric shock.

- A. Examples of environments with increased hazard of electric shock are:
1. In locations in which freedom of movement is restricted, so that the operator is forced to perform the work in a cramped (kneeling, sitting or lying) position with physical contact with conductive parts.
 2. In locations which are fully or partially limited by conductive elements, and in which there is a high risk of unavoidable or accidental contact by the operator.
 3. In wet or damp hot locations where humidity or perspiration considerable reduces the skin resistance of the human body and the insulation properties of accessories.
- B. Environments with increased hazard of electric shock do not include places where electrically conductive parts in the near vicinity of the operator, which can cause increased hazard, have been insulated.

Location

This machine can operate in harsh environments. However, it is important that simple preventative measures are followed to assure long life and reliable operation:

- This machine must be located where there is free circulation of clean air without restrictions for air movement to and from the air vents. Do not cover the machine with paper, cloth or rags when switched on.
- Dirt and dust that can be drawn into the machine should be kept to a minimum.
- This machine has a protection rating of IP21S. Keep it dry and do not place it on wet ground or in puddles. Do not use in wet or damp locations. Store indoors.
- Locate the machine away from radio controlled machinery. Normal operation may adversely affect the operation of nearby radio controlled machinery, which may result in injury or equipment damage.

Read the section on electromagnetic compatibility in this manual.

- Do not operate in areas with an ambient temperature greater than 40°C.

Tilting

Place the machine directly on a secure, level surface.

Do not place or operate this machine on a surface with an incline greater than 15° from horizontal. The machine may topple over if this procedure is not followed.

Ventilation

Since the inhalation of welding fumes can be harmful, ensure that the welding area is effectively ventilated.

Machine Grounding And High Frequency Interference Protection

The Capacitor Discharge Circuit used in the high frequency generator, may cause many radio, TV and electronic equipment interference problems. These problems may be the result of radiated interference.

Proper grounding methods can reduce or eliminate radiated interference.

1. Direct interference radiated from the welder.
2. Direct interference radiated from the welding leads.
3. Direct interference radiated from feedback into the power lines.
4. Interference from re-radiation of "pickup" by ungrounded metallic objects.

Keeping these contributing factors in mind, installing equipment as per the following instructions should minimize problems.

1. Keep the welder power supply lines as short as possible and enclose as much of them as possible in rigid metallic conduit or equivalent shielding for a distance of 50 feet (15.2m). There should be good electrical contact between this conduit and the welder case ground. Both ends of the conduit should be connected to a driven ground and the entire length should be continuous.

INSTALLATION

2. Keep the work and electrode leads as short as possible and as close together as possible.

Lengths should not exceed 7.6m. Tape the electrode and work leads together into one bundle when practical.

3. Be sure the torch and work cable rubber coverings are free of cuts and cracks that allow high frequency leakage. Cables with high natural rubber content better resist high frequency leakage than neoprene and other synthetic rubber insulated cables.
4. Keep the torch in good repair and all connections tight to reduce high frequency leakage.
5. The work terminal must be connected to a ground within ten feet of the welder, using one of the following methods.
 - a) A metal underground water pipe in direct contact with the earth for ten feet or more.
 - b) A 3/4" (19mm) galvanized pipe or a 5/8" (16mm) solid galvanized iron, steel or copper rod driven at least eight feet into the ground.

The ground should be securely made and the grounding cable should be as short as possible using cable of the same size as the work cable, or larger. Grounding to the building frame electrical conduit or a long pipe system can result in re-radiation, effectively making these members radiating antennas.

6. Keep all panels securely in place.
7. All electrical conductors within 50 ft (15.2m) of the welder should be enclosed in grounded, rigid metallic conduit or equivalent shielding. Flexible metallic conduit is generally not suitable.
8. When the welder is enclosed in a metal building, several earth driven electrical grounds connected (as in 5b above) around the periphery of the building are recommended.

Failure to observe these recommended installation procedures can cause radio or TV interference problems.

Input Connections

Be sure the voltage, phase, and frequency of the input power is as specified on the rating plate, located on the machine.



ELECTRIC SHOCK can kill. SIGNIFICANT DC VOLTAGE is present after removal of input power.

DO NOT TOUCH live electrical parts.

Have a qualified electrician provide suitable input power as per national electrical codes. Make sure machine is earthed / grounded.

Make sure fuse or circuit breaker is correct rating for machine. Using fuses or circuit breakers smaller than recommended will result in 'nuisance' shut off from welder inrush currents even if welding at low amperages.

Failure to follow these instructions can cause immediate failure within the welder and void machines warranty.

Turn the input power OFF at the mains switch & fuse box before working on this equipment.

Have a qualified electrician install & service this equipment.

Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment. Do not touch electrically live parts

The IM-MMA130-IWK Welder requires a 230V 50Hz supply.

Connect wires according to national coding.

Brown wire – Live

Blue wire – Neutral

Green/Yellow Wire – Earth (Ground)

THIS MACHINE IS FITTED WITH A 13A PLUG

ELECTRICAL INFORMATION

WARNING! THIS APPLIANCE MUST BE EARTHED

Models Fitted With 13A Plug

Welders fitted with a standard 13 amp BS 1363 plug, should be connected to a to a 230 volt (50Hz) domestic electrical supply and we strongly recommend that this be done via a Residual Current Device (RCD).

IMPORTANT: If the welder is fitted with a plug which is moulded onto the electric cable (i.e. non- re-wirable) please note:

1. The plug must be thrown away if it is cut from the electric cable. There is a danger of electric shock if it is subsequently inserted into a socket outlet.
2. Never use the plug without the fuse cover fitted.
3. Should you wish to replace a detachable fuse carrier, ensure that the correct replacement is used (as indicated by marking or colour code). Replacement fuse covers can be obtained from your local dealer or most electrical stockists.

Fuse Rating

The fuse in the plug must be replaced with one of the same rating (13 amps) and this replacement must be ASTA approved to BS1362.

Models Fitted Without Plug

230V Supply

Connect the mains lead to a suitably fused 230 Volt (50Hz) electrical supply. The fuse rating should correspond to that shown on the technical specification on page 19.

The wires in the mains lead are coloured in accordance with the following code:

Green & Yellow: Earth

Blue: Neutral

Brown: Live

As the colours of the flexible cord of this appliance may not correspond with the coloured markings identifying terminals in your plug, proceed as follows:

- Connect GREEN & YELLOW cord to plug terminal marked with a letter "E" or Earth symbol "⊕", or coloured GREEN or GREEN & YELLOW.
- Connect BROWN cord to plug terminal marked letter "L" or coloured RED.
- Connect BLUE cord to plug terminal marked letter "N" or coloured BLACK.

COMPONENTS



Component List

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Digital display ("E-1" indicates Over current protection and "E-3" indicates over heating protection) 2. Carry handle 3. ON/OFF switch 4. Cooling fan 5. Face mask | <ol style="list-style-type: none"> 6. Electrode holder 7. Earth clamp 8. Wire brush/chipping hammer 9. Electrode holder attachment point (+) 10. Regulator knob (A) 11. VRD On/Off button 12. MMA/TIG selector button 13. Earth clamp attachment point (-) |
|---|--|

Technical specification

Input power:	230V~50Hz	Power factor	0.65 cosφ
Phase:	1	Output current range:	20-130A / 20.8~25.2V
Rated input current:	29.2A	Peak current:	130A
Electrode size:	1.6-3.2mm	Insulation grade:	H
Rated no load voltage:	71V DC	Cooling type:	Fan cooled
Rated input capacity:	5.9kVA	Case protection class:	IP21S
Duty cycle:	15% @ 130A	External dimensions:	360 x 136 x 252mm
Efficiency:	85%	Weight:	3.4kg

UNPACKING

Caution! This packaging contains sharp objects. Take care when unpacking. Remove the machine, together with the accessories supplied, from the packaging. Check carefully to ensure that the machine is in good condition and account for all the accessories listed in this manual. Also make sure that all the accessories are complete. If any parts are found to be missing, the machine and its accessories should

be returned together in their original packaging to the retailer.

Do not throw the packaging away, keep it safe throughout the guarantee period, then recycle if possible, otherwise dispose of it by the proper means. Do not let children play with empty plastic bags due to the risk of suffocation.

MMA ASSEMBLY

WARNING



ELECTRIC SHOCK can kill.

Keep the electrode holder and cable insulation in good condition.

Do not touch electrically live parts or electrode with skin or wet clothing.

Insulate yourself from work and ground.

Turn the input line switch on the welder "OFF" before connecting or disconnecting

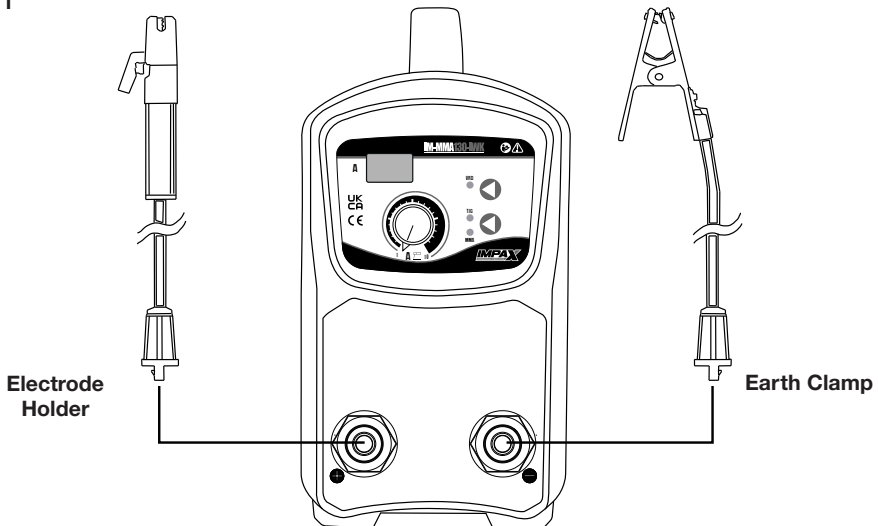
output cables or other equipment. IP21S enclosure protection grade, please do not operate it in rain.

Fitting The Earth Clamp & Electrode Holder

Insert the plug on the end of the earth clamp lead into the negative (-) socket (Fig.1) and twist in a clockwise direction to secure into position.

The plug on the end of the electrode holder can be fitted into the positive (+) socket (Fig.1) in the same way.

Fig 1



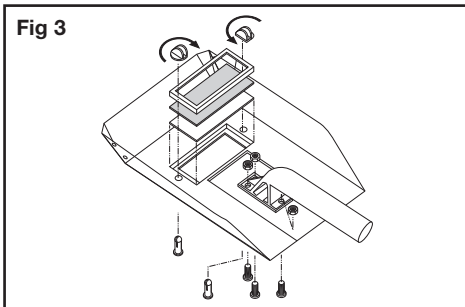
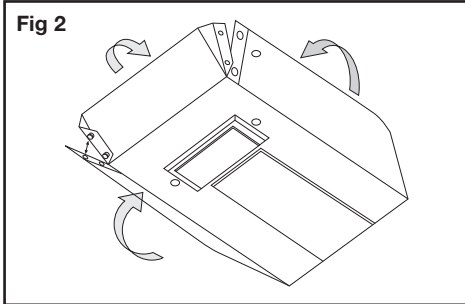
MMA ASSEMBLY & OPERATION

Assembly

Note: Before carrying out any assembly or disassembly of the unit please ensure that the unit is not connected to the electrical supply.

Assembling the Face Mask

To assemble the mask bend in the top and side flaps (Fig.2) and clip into place then attach the handle and mask glass shield as shown in Fig.3.



Description

Your Welding Power Supply features a single phase transformer suitable for welding with an alternating current using stick electrodes with diameters from 1.6mm to 4mm. The welding current is regulated by using the welding current control (regulator).

Electrode Selection

The pages of this manual are restricted to the basic safe use of an MMA welding power supply and very basic welding technique. The electrodes used in MMA welding are many and varied. You are advised to seek advice from your local welding equipment supplier for the correct selection of electrode for the work being performed.

Operation

WARNING! If you have no welding experience, we recommend you seek training from an experienced person.

CAUTION: This manual is a basic guide to welding. We recommend you purchase a good quality publication on welding or if you have internet access visit one of the numerous welding related web sites to be able to use the welding power supply to its full potential.

THE QUALITY OF ANY WELDED JOINT IS DEPENDANT ON THE PREPARATION OF THE JOINT THE SELECTION OF THE CORRECT ELECTRODE AND THE SKILL AND EXPERIENCE OF THE WELDER.

Ensure the Welding Power Supply is disconnected from the mains supply.

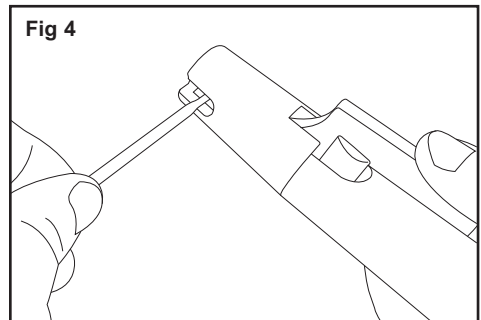
Ensure that the area of the work piece where the earth clamp is to be connected is clean using a file or a grinder, to ensure a good electrical contact.

Ensure the earth lead is connected to the workpiece, and the other lead to the electrode holder.

Important: Ensure also that the earth clamp is attached to clean, solid metal. If necessary thoroughly clean with a wire brush or similar to guarantee a good connection.

The earth clamp must only be connected to the work piece. The area to be welded must be clean and free from dirt, rust, paint, grease and oil.

Insert an electrode into the electrode holder (Fig.4) ensuring there is a good connection.

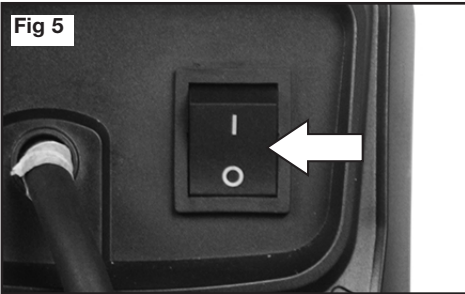


MMA OPERATION

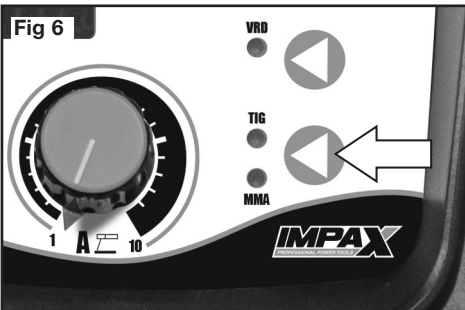
The chart below is an indicator of the electrode diameter and the corresponding welding current. This is intended as a guide only as results can vary depending on material, work piece thickness, welding position and joint form.

Electrode size (mm)	Welding voltage (V)	Welding current (A)
1.0	20.8 - 22.4	20 - 60
1.6	21.76 - 23.36	44 - 84
2.0	22.4 - 24.0	60 - 100
2.5	23.2 - 24.8	80 - 120
3.2	23.32 - 24.92	108 - 148
4.0	24.6 - 27.2	140 - 180
5.0	27.2 - 28.8	180 - 220

Connect to the mains supply and press the On/Off switch (Fig.5) to the ON position (I).

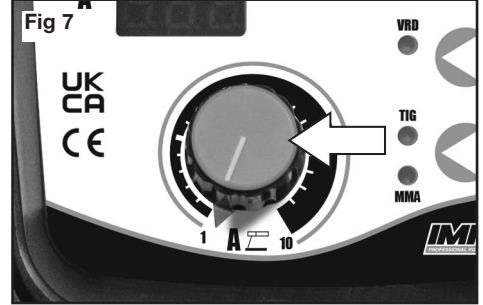


The digital display will illuminate and the cooling fan will operate. To stop the machine, press the On/Off switch to the OFF position (O).



Press the MMA/TIG switch to MMA mode, Fig.6.

Set the amperage (see Table 1) by adjusting the regulator knob (Fig.7) until the desired setting is reached.



Warning! Always wear a full face mask, welding gloves and protective clothing. Wear goggles while chipping slag.

Do not switch on the power supply until you are ready to start welding. Practice welding on a piece of scrap material.

Voltage Reduction Device

A voltage reduction device (VRD) is a hazard reduction device that lowers the welder's open-circuit voltage (OCV) to prevent electric shock from welding current. A VRD is often combined with stick welding machines used in damp environments. The OCV is the voltage between the electrode holder (or stinger) and the working (or grounding) clamp when the welder is on, but you are not welding. If you have a welding rod in the stinger and the working clamp is connected, the OCV is between the rod and the base metal.

Press the VRD button to turn ON, Fig.8. The VRD indicator light will illuminate.



MMA OPERATION

A Word To Beginners

For those who have not yet done any welding, the simplest way to commence is to run beads on a piece of scrap plate. Use mild steel plate about 6.0mm thick and a 3.2mm electrode. Clean any paint, loose scale or grease off the plate and set it firmly on the work bench so that welding can be carried out in the downhand position. Make sure that the work clamp is making good electrical contact with the work, either directly or through the work table. For light gauge material, always clamp the work lead directly to the job, otherwise a poor circuit will probably result.

The Welder

Place yourself in a comfortable position before beginning to weld. Get a seat of suitable height and do as much work as possible sitting down. Don't tense your body. Relax and you will find that the job becomes much easier. Wear a leather apron and gauntlets. This will protect you from being burnt or sparks setting alight to your clothes.

Place the work so that the direction of welding is across, rather than to or from, your body. The electrode holder lead should be clear of any obstruction so that you can move your arm freely along as the electrode burns down. If the lead is slung over your shoulder, it allows greater freedom of movement and takes a lot of weight off your hand. Be sure the insulation on your cable and electrode holder is not faulty, otherwise you are risking an electric shock.

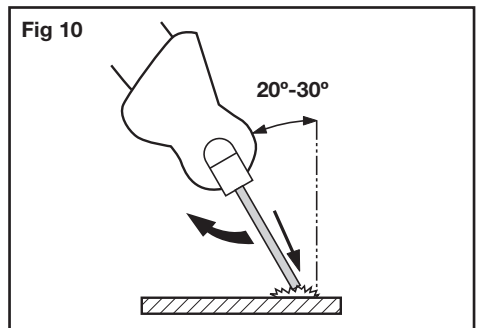
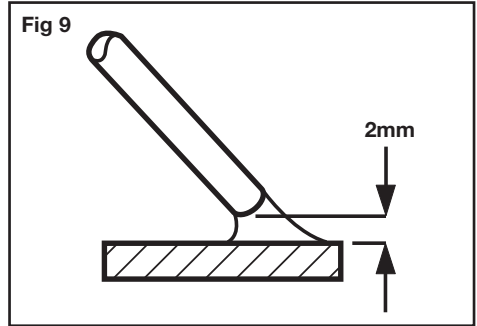
Striking The Arc

Holding a face mask in front of your face stroke the electrode point on the workpiece as if striking a match.

Maintain a steady gap between the end of the electrode and the workpiece of approximately 2mm (Fig.9).

Maintain this distance as constantly as possible during the weld remember that the angle of the electrode to the work piece must be 20-30° (Fig.10).

Do not hit the electrode on the workpiece as this may damage the electrode. Withdraw with a clean movement at the end of the welding run.



Note: This is the most difficult aspect for most beginners. It is recommended that you practice on some scrap material in order to get a feel of the operation.

If the electrode is not withdrawn quickly enough once the arc is primed, there is a possibility that the electrode will weld itself to the workpiece. Should this happen, give it a sharp tug to free it, and try again. If this fails to free it, turn off the machine immediately as it will quickly overheat.

If you withdraw the electrode too far once the arc is primed, you will lose the arc and have to try again.

Inspect the job carefully. With a correct combination of electrode size and current setting the area of weld should be complete fusion of the electrode and parent metal/s. Any slag which forms on the surface should be chipped away with the pick/brush supplied.

MMA OPERATION

If the resultant weld looks messy and irregular, this is an indication of porosity or slag contamination, and you have almost certainly failed to achieve the correct combination. This is a common problem, so do not worry as practice will quickly cure this.

Arc Length

The securing of an arc length necessary to produce a neat weld soon becomes almost automatic. You will find that a long arc produces more heat. A very long arc produces a crackling or spluttering noise and the weld metal comes across in large, irregular blobs. The weld bead is flattened and spatter increases. A short arc is essential if a high quality weld is to be obtained although if it is too short there is the danger of it being blanketed by slag and the electrode tip being solidified in. If this should happen, give the electrode a quick twist back over the weld to detach it. Contact or "touch-weld" electrodes do not stick in this way, and make welding much easier.

Rate of Travel

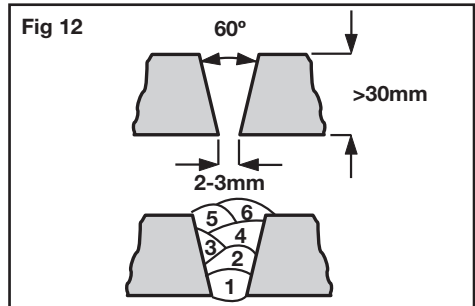
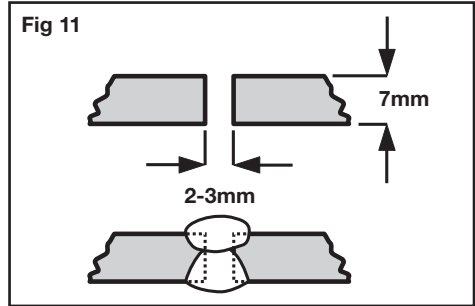
After the arc is struck, your next concern is to maintain it, and this requires moving the electrode tip towards the molten pool at the same rate as it is melting away. At the same time, the electrode has to move along the plate to form a bead. The electrode is directed at the weld pool at about 20° from the vertical. The rate of travel has to be adjusted so that a well-formed bead is produced. If the travel is too fast, the bead will be narrow and strung out and may even be broken up into individual globules. If the travel is too slow, the weld metal piles up and the bead will be too large.

Making Welded Joints

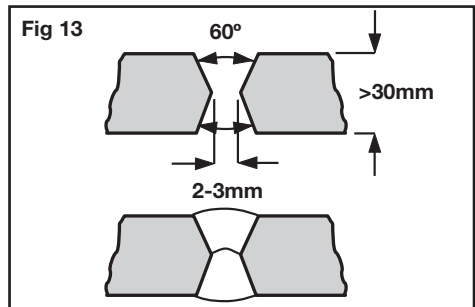
Having attained some skill in the handling of an electrode, you will be ready to go on to make up welded joints.

When welding material up to 7mm in thickness place the pieces 2-3mm apart, run the welding bead along the join. A second bead can go along the underside for extra strength (Fig.11).

When welding material from 7mm to 30mm thick prepare the material as shown in Fig.12 filling up the space with several layers of weld.



When welding together material over 30mm in thickness prepare the material as shown in Fig.13 filling up the space with several layers of weld, welding each side in turn with each welding pass.



Disconnect the Welding Power Supply from the mains supply before changing or removing electrodes. Use pliers to remove used electrodes from the electrode holder or to move the welded pieces.

MMA OPERATION

The Manual Metal Arc Process

When an arc is struck between the metal rod (electrode) and the workpiece, both the rod and workpiece surface melt to form a weld pool. Simultaneous melting of the flux coating on the rod will form gas and slag which protects the weld pool from the surrounding atmosphere. The slag will solidify and cool and must be chipped off the weld bead once the weld run is complete (or before the next weld pass is deposited).

The process allows only short lengths of weld to be produced before a new electrode needs to be inserted in the holder. Weld penetration is low and the quality of the weld deposit is highly dependent on the skill of the welder.

Types of Flux/Electrodes

Arc stability, depth of penetration, metal deposition rate and positional capability are greatly influenced by the chemical composition of the flux coating on the electrode. Electrodes can be divided into three main groups:

- Cellulosic
- Rutile
- Basic

Cellulosic electrodes contain a high proportion of cellulose in the coating and are characterised by a deeply penetrating arc and a rapid burn-off rate giving high welding speeds. Weld deposit can be coarse and with fluid slag, deslagging can be difficult. These electrodes are easy to use in any position and are noted for their use in the stovepipe (vertical down position) welding technique.

Features:

- Deep penetration in all positions
- Suitability for vertical down welding
- Reasonably good mechanical properties
- High level of hydrogen generated - risk of cracking in the heat affected zone

Rutile Electrodes contain a high proportion of titanium oxide (rutile) in the coating. Titanium oxide promotes easy arc ignition, smooth arc operation and low spatter. These electrodes are general purpose electrodes with good welding

properties. They can be used with AC and DC power sources and in all positions. The electrodes are especially suitable for welding fillet joints in the horizontal/vertical position.

Features:

- Moderate weld metal mechanical properties
- Good bead profile produced through the viscous slag
- Positional welding possible with a fluid slag (containing fluoride)
- Easily removable slag

Basic electrodes contain a high proportion of calcium carbonate (limestone) and calcium fluoride (fluorspar) in the coating. This makes their slag coating more fluid than rutile coatings - this is also fast-freezing which assists welding in the vertical and overhead position. These electrodes are used for welding medium and heavy section fabrications where higher weld quality, good mechanical properties and resistance to cracking (due to high restraint) are required.

Features:

- Low hydrogen weld metal
- Requires high welding currents/speeds
- Poor bead profile (convex and coarse surface profile)
- Slag removal difficult

Iron powder electrodes contain an addition of metal powder to the flux coating to increase the maximum permissible welding current level. Thus, for a given electrode size, the metal deposition rate and efficiency (percentage of the metal deposited) are increased compared with an electrode containing no iron powder in the coating. The slag is normally easily removed. Iron powder electrodes are mainly used in the flat and horizontal/vertical positions to take advantage of the higher deposition rates.

MMA OPERATION

Efficiencies as high as 130 to 140% can be achieved for rutile and basic electrodes without marked deterioration of the arcing characteristics but the arc tends to be less forceful which reduces bead penetration.

Care of Electrodes

The quality of weld relies upon consistent performance of the electrode. The flux coating should not be chipped, cracked or, more importantly, allowed to become damp.

Drying of Electrodes

Drying is usually carried out following the manufacturer's recommendations and requirements will be determined by the type of electrode.

Storage

Electrodes should always be kept in a dry and well-ventilated store. It is good practice to stack packets of electrodes on wooden pallets or racks well clear of the floor. Also, all unused electrodes which are to be returned should be stored so they are not exposed to damp conditions to regain moisture. Good storage conditions are 100°C above external air temperature. As the storage conditions are to prevent moisture from condensing on the electrodes, the electrode stores should be dry rather than warm. Under these conditions and in original packaging, electrode storage time is practically unlimited. It should be noted that electrodes are now available in hermetically sealed packs which obviate the need for drying. However, if necessary, any unused electrodes must be redried according to manufacturer's instructions.

IMPORTANT – Thermostatic Protection (Duty Cycle)

This product has a rated duty cycle of 15%. The percentage represents the welding time in a 10 minute period for example 15% means that the welding time is 1.5 minutes with a rest time of 8.5 minutes in a ten minute period although the actual duty cycle will depend on the amperage used. If the Welding Power Supply is used for longer than the duty cycle or if you are welding using large welding rods you may experience a temporary current shut off. This is to protect the transformer inside the Welding Power Supply from overheating.

The thicker the material being welded, the greater the current required, therefore, the hotter the machine will become and the quicker it will cut out. When the windings reach performance temperature the cut out switch will operate and the digital display will show "E-3". After a few minutes the cut out switch will reset and the welder will be ready for use.

MAINTENANCE

WARNING. ELECTRIC SHOCK can kill.
Have an electrician install and service this equipment.

Turn the input power off at the fuse box, disconnect supply lines and allow machine to sit for five minutes minimum to allow the power capacitors to discharge before working inside this equipment.

Do not touch electrically hot parts.

WARNING. Do not open this machine and do not introduce anything into its openings. Power supply must be disconnected from the machine before each maintenance and service. After each repair, perform proper tests to ensure safety.

CAUTION. The power supply must be disconnected from the machine before each maintenance and service. Always use gloves in compliance with the safety standards.

Routine Maintenance

The welder must be kept clean and dry at all times. Use a dry cloth to clean the welder.

Keep the electrodes clean and dry and ensure all cables are in good condition.

Keep the louvre passages clean to avoid a build up of dirt and oxides inside the machine, which can reduce machine output.

The nozzle will occasionally need to be cleaned of spatter from welding. Clean it with a metal brush. When the nozzle deteriorates or can no longer be cleaned, it will need to be replaced. Unscrew the nozzle and replace it with a new one.

Always try to avoid getting particles of metal inside the machine since they could cause short circuits.

Periodically clean the inside of the welder with compressed air, ensuring you wear a mask during the operation.

Caution: Water must never come into contact with the welder.

Regularly check the general condition of the tool. Check for loose screws, misalignment or binding of moving parts, cracked or broken

parts, damaged electrical wiring, and any other condition that may affect its safe operation.

If the supply cord requires replacing, the task must be carried out by the manufacturer, the manufacturer's agent, or an authorised service centre to avoid a safety hazard.

Welding Mask Maintenance

Always maintain the welding mask in good condition. If the clear glass protection lens becomes badly pitted, sufficient to interfere with vision, or cracked, have it replaced immediately.

NEVER use any dark filter lens other than that provided by Impax, or one with the same certified 'Optical class' (degree of protection).

The shield should always be cleaned with a clean soft cloth after use, ensuring the lenses are clean. Remove any dust that may have accumulated and store it in a safe place where it cannot be damaged.

NEVER use a shield that is not in perfect condition.

MMA WELDING TROUBLESHOOTING

Problem	Possible Cause	Remedy
Welding current varying.	Control knob is set at a value that causes the welding current to vary excessively with the arc length.	Reduce the control knob until welding current is reasonably constant while prohibiting the electrode from sticking to the workpiece when you "dig" the electrode into the workpiece.
A gap is left by failure of the weld metal to fill the root of the weld.	Welding current too low. Electrode too large for joint. Insufficient gap.	Increase welding current. Use smaller diameter electrode. Allow wider gap.
Non-metallic particles are trapped in the weld metal.	Non-metallic particles may be trapped in undercut from previous run. Joint preparation too restricted. Irregular deposits allow slag to be trapped. Lack of penetration with slag trapped beneath weld bead. Rust or mill scale is preventing full fusion. Wrong electrode for position in which welding is done.	If a bad undercut is present clean slag bout and cover with a run from a smaller gauge electrode. Allow for adequate penetration and room for cleaning out the slag. If very bad, chip or grind out irregularities. Use smaller electrode with sufficient current to give adequate penetration. Use suitable tools to remove all slag from corners. Clean joint before welding. Use electrodes designed for position in which welding is done, otherwise proper control of slag is difficult.
A groove has been formed in the base metal adjacent to the toe of a weld and has not been filled by the weld metal (undercut).	Welding current is too high. Welding arc is too long. Angle of the electrode is incorrect. Joint preparation does not allow correct electrode angle. Electrode too large for joint. Insufficient deposit time at edge of weave.	Reduce welding current. Reduce the length of the welding arc. Electrode should not be inclined less than 45° to the vertical face. Allow more room in joint for manipulation of the electrode. Use smaller gauge electrode. Pause for a moment at edge of weave to allow weld metal buildup.

MMA WELDING TROUBLESHOOTING

Problem	Possible Cause	Remedy
Portions of the weld run do not fuse to the surface of the metal or edge of the joint.	<p>Small electrodes used on heavy cold plate.</p> <p>Welding current is too low.</p> <p>Wrong electrode angle.</p> <p>Travel speed of electrode is too high.</p> <p>Scale or dirt on joint surface.</p>	<p>Use larger electrodes and preheat the plate.</p> <p>Increase welding current.</p> <p>Adjust angle so the welding arc is directed more into the base metal.</p> <p>Reduce travel speed of electrode.</p> <p>Clean surface before welding.</p>
Gas pockets or voids in weld metal (porosity).	<p>High levels of sulphur in steel.</p> <p>Electrodes are damp.</p> <p>Welding current is too high.</p> <p>Surface impurities such as oil, grease, paint, etc.</p> <p>Welding in a windy environment.</p> <p>Electrode damaged ie. flux coating incomplete.</p>	<p>Use an electrode that is designed for high sulphur steels.</p> <p>Dry electrodes before use.</p> <p>Reduce welding current.</p> <p>Clean joint before welding.</p> <p>Shield the weld area from the wind.</p> <p>Discard damaged electrodes and only use electrodes with a complete flux coating.</p>
Crack occurring in weld metal soon after solidification commences.	<p>Rigidity of joint.</p> <p>Insufficient throat thickness.</p> <p>Weld current is too high.</p>	<p>Redesign to relieve weld joint of severe stresses or use crack resistance electrodes.</p> <p>Travel slightly slower to allow greater build up in throat.</p> <p>Decrease welding current.</p>
Excessive spatter	<p>Improper welding polarity</p> <p>Long Arc Length.</p> <p>Weld current is too high.</p>	<p>Make sure the electrode holder is plugged into the positive "+" output terminal.</p> <p>Move the electrode closer into the weld joint.</p> <p>Decrease welding current.</p>

TROUBLESHOOTING

Problem	Possible Cause	Remedy
Turn on the machine, the fan doesn't work, and no welding output.	Check if the power switch is ON.	No input power.
Turn on the machine, the fan works, but the output current is unstable and can't be controlled by potentiometer (Regulator knob) when welding.	The current potentiometer fails. Loose contact.	Replace it. Check if any loose contact exists inside the machine. If any, reconnect.
Turn on the machine, the power is on, the fan works, but no welding output.	Loose contact. The overheating "E-3" message is displayed on the digital display.	Check if any loose contact exists inside the machine. If any, reconnect. Open circuit or loose contact occurs at the joint of output terminal. The machine is under over-heating protection status. It can recover automatically after the welding machine is cooled. Check if the thermal switch is ok. Replace it if damaged. Check if the thermal switch is loosely connected, and reconnect it if necessary.
The electrode holder becomes very hot.	The rated current of the electrode holder is smaller than its actual working current.	Replace it with a bigger rated current.

ENVIRONMENTAL PROTECTION & SYMBOLS

Information for (private householders) for the environmentally responsible disposal of Waste Electrical and Electronic Equipment (WEEE)



This symbol on products and or accompanying documents indicates that used and end of life electrical and electronic equipment should not be disposed of in household waste. For the proper disposal, treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your retailer upon the purchase of an equivalent new product. Disposing of this product correctly will help to save valuable

resources and prevent any potential adverse effects on human health and the environment which could otherwise arise from inappropriate waste disposal and handling. Please contact your local authority for further details of your nearest designated collection point. Penalties may be applicable for incorrect disposal of this waste in accordance with national legislation.

FOR BUSINESS USERS IN THE EUROPEAN UNION.





If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union.

This Symbol is only valid in the European Union.

If you wish to dispose of this product, please contact your local authorities or dealer and ask for the correct method of disposal.

SYMBOLS

Symbols and Technical Data	
EN 60974-6:2003	European standard relating to Welding Power Supply's for limited use
IM-MMA130-IWK	Type ID
	Single phase transformer
	Symbol for manual arc welding and covered electrodes
50Hz	Nominal mains frequency
Ø	Diameter of electrodes
U_0	No load voltage
...A/...V to ...A/...V	Range of output
X%	Duty cycle
I_2	Conventional welding current
U_2	Conventional load voltage
U_1	Mains voltage
$I_1 \text{ max}$	Maximum absorbed current
$I_1 \text{ eff}$	Effective supply current
IP21S	Grade of protection
	Standardised plug
	Suitable for welding in an environment with increased hazard of electric shock

SYMBOLS

The rating plate on this product may show symbols. These represent important information about the product or instructions on its use.



Conforms to European safety standards.



Conforms to UK safety standards.



Read the instruction manual.



Product conforms to RoHS requirements



Warning! Electrical welding process



Protect operator and passer by from the effect of uV radiation. This can cause permanent damage to the eye. Make sure the arc and resulting flash is shielded at all times.



Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice



Always wear approved face mask with correct filter, gloves and apron to protect against welding operation

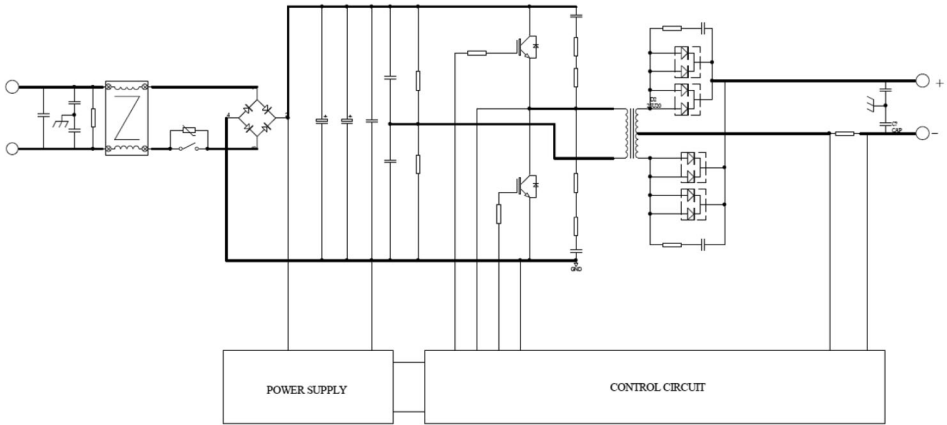


Do not use this welder in damp conditions



Keep bystanders and pets clear of the welding power supply when in use.

WIRING DIAGRAM



EC DECLARATION OF CONFORMITY

1. **Product model:** IM-MMA130-IWK

2. **Name and address of the manufacturer or his authorised representative:**



Nuair Ibérica, Lda. Rua da Zona Industrial, 560, 4520-114,
Santa Maria da Feira, Portugal
Tel: +351 256 580 930. Email: sat@nuair.pt

3. **This declaration of conformity is issued under the sole responsibility of the manufacturer.**

4. **Object of the declaration:**

Equipment: 130A MMA Welder
Brand name: IMPAX
Model/type: IM-MMA130-IWK

5. **The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:**

2006/42/EC. Machinery Directive.
2006/95/EC. Low Voltage Directive.
2004/108/EC. Electromagnetic Compatibility Directive.
93/68/EC. CE Marking Directive.
2011/65/EU. Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive.
2002/96/EC as amended by 2003/108/EC. Waste Electrical and Electronic Equipment (WEEE) Directive.

6. **References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:**

EN IEC 60974-1
BS EN IEC 60974-1

7. **The person authorized to compile the technical file:**

Name: Sérgio Fernandes

Address: Nuair Ibérica, Lda. Rua da Zona Industrial, 560, 4520-114, SMF, Portugal

Signed for and on behalf of:

Authorised Representative

Sérgio Fernandes, Technical Manager
03/03/2022