

INSTRUCTION MANUAL FOR TIG WELDER

IMPORTANT

Read these instructions before using the welding machine and related equipment. This manual has been prepared for proper use and maintenance of the machine.

Remember: **YOUR SAFETY DEPENDS ON YOU!!**

Follow all regulations and safety instructions.

You will use the machine satisfactorily and for many years if you follow all directions.

NOTHING CAN REPLACE COMMON SENSE.

DIRECTIONS FOR ARC WELD.

-It is your duty to protect yourselves and others against any risks related to weld.

-To that purpose you should know the safety rules related to arc weld, to high-pressure gas containers and the general safety rules.

-The following is a brief and partial list to be used as a reminder.

-It is important that you become aware of all safety rules prior to starting welding.

-We recommend warmly to read: SAFETY RULES CEI 26-9 HD 407

SAFETY RULES RELATED TO EQUIPMENTS.

-All electric installations, maintenance and repair should be carried out by skilled personnel.

-Keep the machine always clean, dry and in good conditions.

-Make sure that vents are always clean and leave free room (about 30 cm.) around the machine so as it can "breathe".

-Make sure that the feeding cable is properly connected. Disconnect the welding machine always before shifting it from the feeding source.

-Always keep available the proper type of extinguisher while welding.

ENVIRONMENTAL SAFETY RULES

-Arc weld generates warm material and sparks which can create local fire.

-Remove all inflammable material (rags, oils, petrol) from the weld area.

-Do not weld near inflammable material or explosive such as petrol tanks.

-Prior to welding, make sure that the area is properly vented.

IMPORTANT: NEVER USE OXYGEN FOR VENTILATION.

-Do not weld or cut when intense fumes are present.

-To avoid electric shocks, do not weld in wet areas.

-Always check the weld area half an hour after welding to make sure that any fire is not going to occur.

-Do not weld when oils, grease, paints, etc., are present.

These materials are inflammable and emit toxic fumes.

-Clean surfaces before welding.

PERSONAL SAFETY RULES.

-Operator is responsible for his own safety and for the one of those who are in the working area. He must then be aware of all safety rules and follow them.

-Electric shock may kill. All electric shocks are potentially fatal.

-Always wear dry gloves while welding.

-Make sure that you are well insulated from the floor.

-Wear shoes with thick soles and keep them dry so as to avoid any leak towards the ground.

-If you feel even the smallest electric shock immediately stop welding. Do not use it until the problem is identified and solved.

-Disconnect the welding machine from the current tap

always before working inside it.

-Arc weld creates fumes - which can be dangerous for health.

WELD IN PROPERLY VENTED ROOMS.

-Some elements emit toxic fumes (poisonous), for instance galvanized or zinc-plated materials. Prior to welding materials with this coating remove it from the welding area.

-Arc weld heats metals and generates sparks and drops of cast metal.

-Protect oneself against burns, fire and explosions.

-Always wear protection goggles under the weld mask.

-The weld mask should be provided with glass with protection level DIN 10 at least.

-Always wear dry, fireproof, grease and oil-free clothes.

-Never keep matches, lighters etc. in your pockets, because they may give rise to fire or explosions.

-Arc weld emits radiations that may burn skin and eyes.

-The skin exposed may burn with arc radiations.

-Protect yourselves and make other people close to the arc weld area protect themselves before operating.

Remember: The arc may dazzle or damage your eyes. It is considered dangerous up to a 15-mt distance.

PRECAUTIONS TO FOLLOW WHEN USING PROTECTION GASES OR HIGH-PRESSURE BOTTLES.

-If gas leaks occurs, close the bottle valve.

-The adjuster is faulty if one of the following phenomena occur:

1. gas leaks detected from the outside.

2. the delivery pressure still increases when the adjuster valve is closed.

3. if the gauge needle does not shift from the stop pin when the adjuster is under pressure or if it returns to the stop pin once pressure has been released.

-Do not try to repair adjusters. Send the faulty adjusters to the workshop recommended by the manufacturer where special techniques and equipment are used by skilled personnel.

-Handle bottles with care.

-Check the gas contained in bottles. Only use bottles on which the name of the gas is indicated. Do not trust the color to identify the gas contained. Warn the supplier if the name is not indicated. Never damage or alter the name, number or other indications on the bottle. It is illegal and dangerous.

-Always handle bottles as if they are full. Place bottles so as to avoid falling. Do not switch the arc on over a bottle. Do not expose bottles to high temperatures (above 45 degrees).

GENERAL INFORMATION

This machine is a single-phase direct current generator, electronically controlled, suitable for welding following T.I.G. procedures and for manual welding with coated electrodes.

FUNCTIONS DESCRIPTION

A Connector for remote controls:

To which all accessories adjusting the weld current are to be fixed. It always works both with T.I.G. and with electrode.

B Adjusting device of weld current:

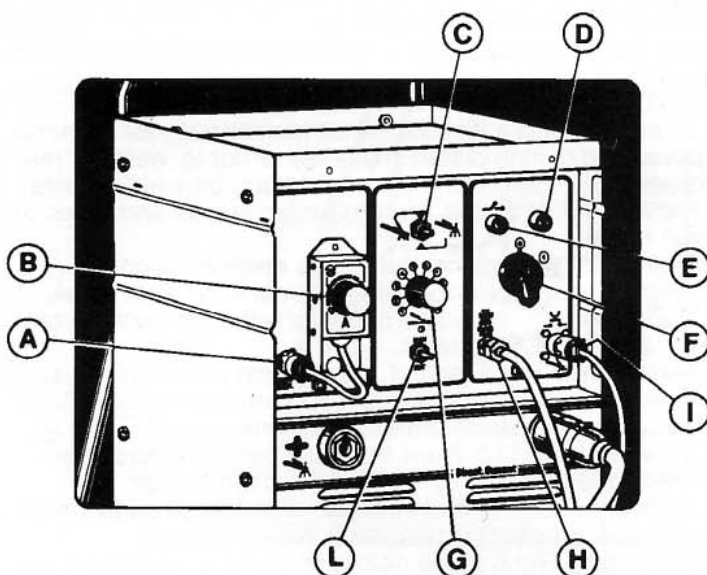
The current values indicated in the plate refer to weld following T.I.G. procedure. In case of welding with coated electrodes subtract 10 Amperes from the value indicated so as to obtain the value of the weld current. It should be always connected to connector A.

C Procedure selector switch:

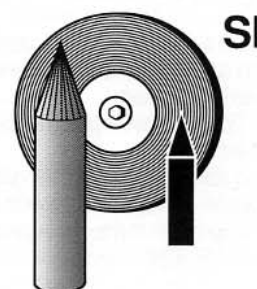
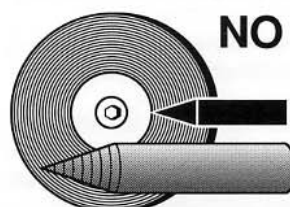
It selects the T.I.G. weld procedure or MMA (coated elec.).

D Pilot light:

Red, it is turned on when thermostat works.

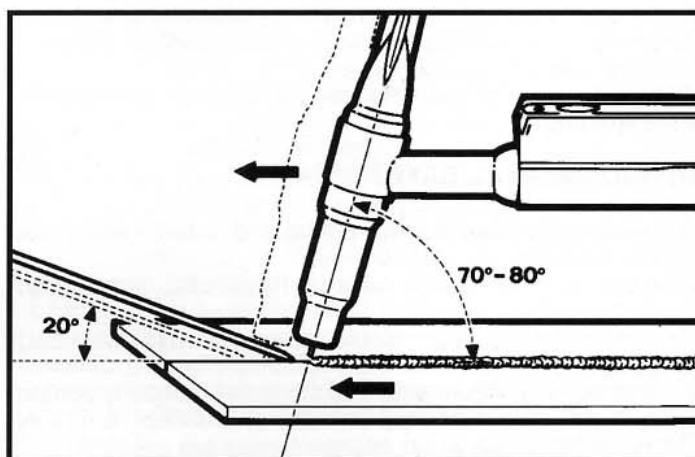


- Connect the gas hose and the control connector from the torch to clamps (H) and (I) respectively.
- Fix the female connector (A) to the male one of the current adjuster (B)
- Position selector switch (C) to TIG.
- Position the weld current noting that 30-40 amperes per mm/thickness are always necessary for carbon steel and stainless steel.
- Special care should be taken in preparing the electrode tip (on supply Ø1,6, 2% thorium tungsten). The tip should be lapped so as to give rise to a vertical line. This gives you more concentrated arcs and quicker arc ignition.

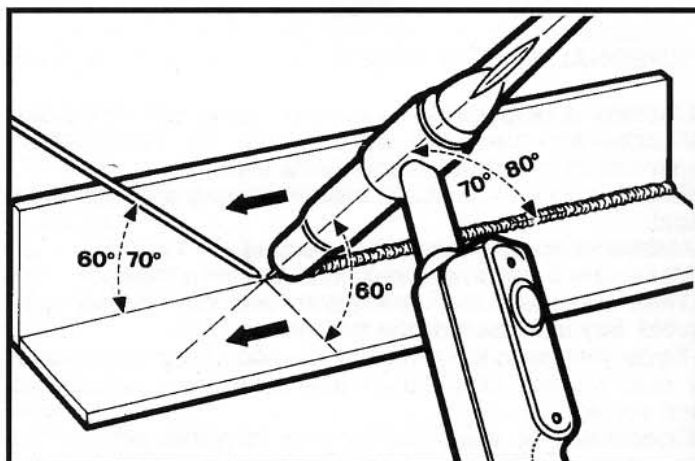


TURN THE MACHINE ON BY SWITCH (F)

RECOMMENDED POSITION FOR FLAT WELD.



RECOMMENDED POSITION FOR ANGULAR WELD



E Pilot light:

White, it is turned on when the machine is on.

F Main switch:

It turns the machine on and off.

G Slope down current adjuster:

It adjusts the time in which the weld current changes from the set value up to the arc turning-off. It starts working whenever welding is stopped. It enables the final crater to be filled at the end of welding. It works when T.I.G. procedure is selected.

H Fitting (1/4" gas):

It is to be connected to the gas hose of the weld T.I.G. torch.

I Connector:

To which the pin of torch control is to be fixed. It works when the T.I.G. procedure is selected.

L Automatic (AUT.) or manual (MAN.) selector switch:

It works by selecting the T.I.G. procedure.

- **AUTOMATIC:** once the torch button is pressed it can be released again without turning the arc off. To turn it off press the button again.

- **MANUAL:** when the operator presses the button the machine delivers current, when it is released the arc is turned off.

INSTALLATION

Make sure that the line voltage corresponds to that indicated on the plate close to the feeding cable. Before setting at work a suitable plug should be connected to the current tap, noting that the BROWN and BLUE wires should be connected to a phase, respectively and the YELLOW GREEN wire should be connected to an efficient earth.

SETTING AT WORK

T.I.G. Weld:

This machine can weld carbon steel - stainless steel, copper, bronze and cast iron with this procedure.

The gas necessary for this type of weld is pure ARGON. The flowmeter should be adjusted at 10 : 12 lt/min.

- Connect the gas hose coming out from the rear side of the machine, to flowmeter.

- Connect the plug you have previously assembled on the mains input cable, to the voltage tap.

- Connect the earth cable on supply to pole (+) of the welding machine.

- Connect the power cable of TIG torch to pole (-) of the welding machine

Weld with coated electrode:

With this procedure all kinds of coated electrodes can be welded, including cellulose ones.

- Position selector switch (C) on: coated electrode
- Connect the earth cable to - of the welding machine and the electrode carrying pliers to (+).

This polarization is the most used, but it is always good to read on the box which pole the electrode is to be connected to. Set the weld current noting that 10 Amperes should be subtracted from the current value indicated by the device pointer (B).

MAINTENANCE

This machine requires for simple maintenance. Periodically open the side panels and blow off dust with a slow jet of dry air. Make sure that the weld cables are not damaged, if necessary replace them.

INSTRUCTIONS FOR ERROR DETECTION

1-DEFECT: Fault weld current

- CAUSE :-Selector switch (C) on TIG(chosen procedure MMA)
- Disconnected current adjuster to connector (A)
 - Check the service transformer voltages.
 - The plug of torch switch is disconnected to connector (I)(chosen procedure TIG).
 - Thermostat on: pilot light (4)on.
 - Potentiometer of adjusting drawer of faulty device (B).

2-DEFECT: Weld current always at the highest level.

- CAUSE :-A wire of shunt is disconnected.
- Faulty control card.

3-DEFECT: The weld current is unstable or insufficient.

- CAUSE :-Check the position of the current adjusting potentiometer. N.B.: while welding with coated electrodes set the value of the secondary current noting that 10 Amperes should be subtracted from the indicated value.

4-DEFECT: Arc is hardly kept with low adjusting of weld current.

- CAUSE :-Breaking of the basic current resistance (43)
- A wire of the basic current resistance is detached
 - Faulty relay card (31)
 - Faulty condenser (19)

5-DEFECT: Fuse blow

- CAUSE :-Power transformer short-circuit
- SCR diodes short-circuit

6-DEFECT: Gas leak

- CAUSE :-Check selector switch (C) is on TIG
- Check output voltages (0-5V 0-27V 0-20V) on the service transformer
 - Check the continuous winding of solenoid valve

7-DEFECT: Arc is not switched on with TIG procedure.

- CAUSE :-Faulty electrode. Sharpen tip.
- Inadequate gas, use pure ARGON.
 - Selector switch (C) on: electrode.
- N.B.: If the unit is connected to an automatic welding system it is good to connect the ceramic body of the TIG torch to earth in contact with the piece to be welded. This is carried out by tightening to the ceramic body (through a metal clamp) a flexible copper wire connected to the framework of the piece to be welded. This simple device will always guarantee excellent ignition without leaks of the pilot sparkle.

ACCESSORIES

- mt.5 long extension.

It enables the current control drawer (B) to be kept away from the welding machine. It should be inserted into connector (C).

- Carriage kit.

For easy transportation of the machine and of bottle necessary for weld following T.I.G. procedure.

-Drawer for pulsed weld.

Necessary for weld of thin sheets following T.I.G. procedure. It should be inserted into connector (A)

- Foot

It permits to adjust current while welding.