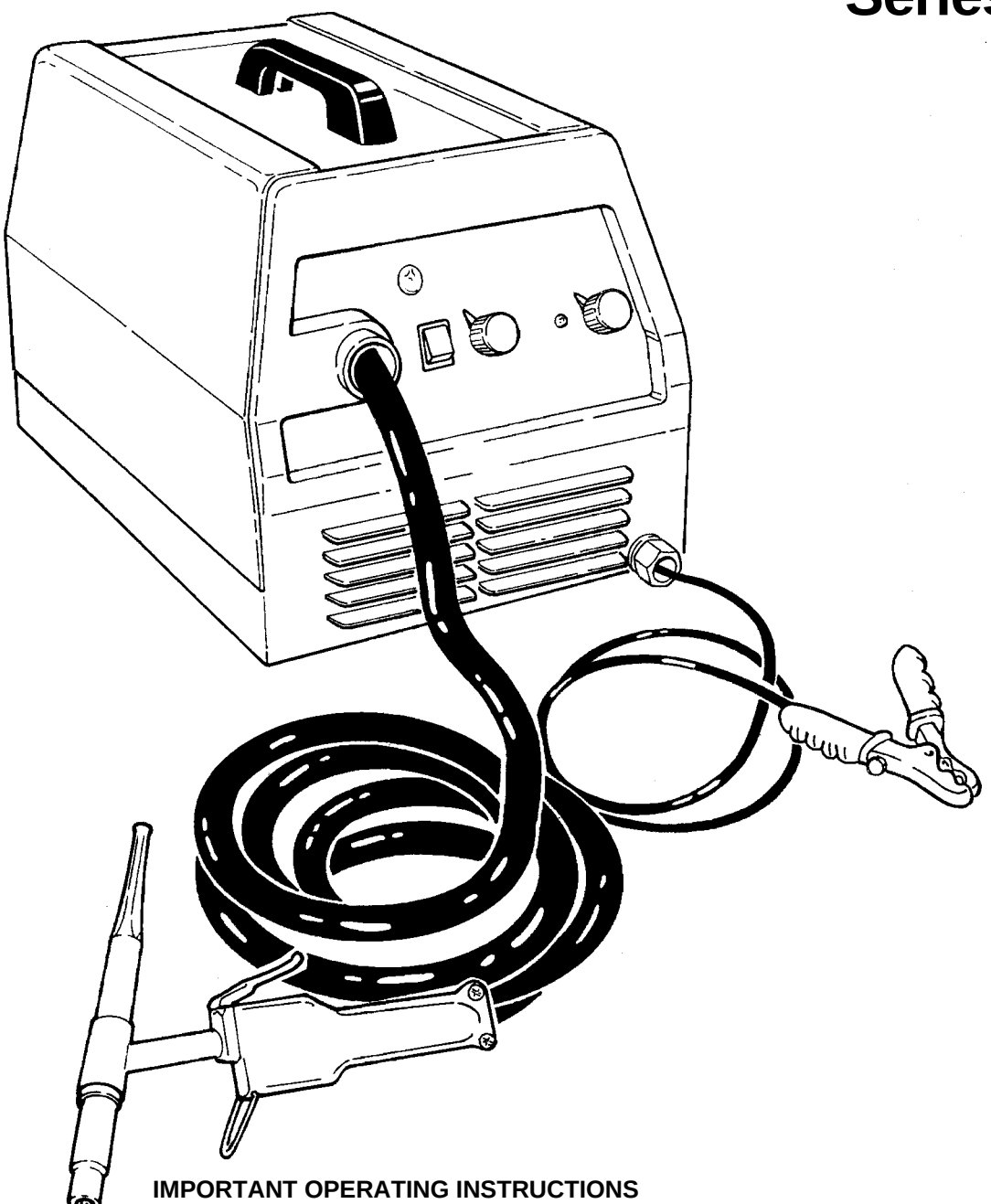
OPERATING INSTRUCTIONS
MANUEL D'INSTRUCTIONS
MANUAL DE INSTRUCCIONES

FOR MODELS:

M12140
83-388

Series B



IMPORTANT OPERATING INSTRUCTIONS
SAVE THESE INSTRUCTIONS

3.300.763

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St. Louis, Missouri 63120-1578
Customer Service (314) 679-4300

4/99

Form No.

430778

SAFETY PRECAUTIONS

Warning: Arc welding can be injurious to operator and person in the work area.

FIRE

● Avoid causing fire because of sparks, slag, hot metal or pieces.
● Make sure that suitable fire-fighting equipment is available close to welding area.
● Remove all flammable and combustible material from the welding area and its surrounding (32 ft minimum).
● Do not weld containers of combustible or flammable material, even when empty. These must be carefully cleaned before being welded.
● Allow the welded material to cool down before touching it or putting it in contact with combustible or flammable material.
● Do not weld parts with hollow spaces, containing flammables.
● Do not work under conditions with high concentrations of combustible vapours, gases, or flammable dust.
● Always check the work area half an hour after welding so as to make sure that no fire has started.
● Do not keep any combustible material such as lighters or matches in your pockets.

BURNS

● Wear fire-proof clothing all over your body in order to protect your skin against burns caused by ultraviolet radiation given off by the arc, and from weld metal sparks and slag.
● Wear protective clothing-gauntlet gloves designed for use in welding, hat and high safety-toe shoes. Button shirt collar and pocket flaps, and wear cuff-less trousers to avoid entry of sparks and slag.
● Wear helmet with safety goggles and glasses with side shields underneath, appropriate filter lenses or plates (protected by clear cover glass). This is a MUST for welding to protect the eyes from radiant energy and flying metal. Replace cover glass when broken, pitted, or spattered.
● Avoid oil or greasy clothing. A spark may ignite them.
Hot metal such as electrode stubs and workpieces should never be handled without gloves.
● First-aid facilities and a qualified first-aid person should be available for each shift unless medical facilities are close by for immediate treatment of flash burns of the eyes and skin burns.
● Ear plugs should be worn when working on overhead or in a confined space. A hard hat should be worn when others work overhead.
● Flammable hair preparations should not be used by persons intending to weld or cut.

FUMES

Welding operations give off harmful fumes and metal dusts which may be hazardous to your health, therefore:
● Work in a well-ventilated area.
● Keep your head out of fumes.
● In closed areas, use suitable exhaust fans.
● If ventilation is not enough, use breathing sets approved for this procedure.
● Clean the material to be welded of any solvents or halogen degreasers giving rise to toxic gases. Some clorine solvents may decompose with the radiation emitted by the arc, and create phosgene gas.
● Do not weld plated metals or those containing lead, graphite, cadmium, zink, chrome, mercury or beryllium, unless you have the proper breathing set.
● The electric arc creates ozone. A long exposure to high concentrations may cause headaches, nasal, throat and eye irritation as well as serious congestions and chest pains.
IMPORTANT: DO NOT USE OXYGEN FOR VENTILATION.
● Gas leaks in a confined space should be avoided. Leaked gas in large quantities can change oxygen concentration dangerously. Do not bring gas cylinders into a confined space.
● DO NOT WELD where solvent vapors can be drawn into the welding atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

EXPLOSIONS

●Do not weld above or near containers under pressure.
● Do not weld in environments containing explosive dusts, gases or vapours.
●This welding machine uses inert gases such as ARGON, or a mixture of ARGON + hydrogen or helium for the protection of the arc, thus you should take special precautions:

A) CYLINDERS
● Do not directly connect cylinder to the machine gas hose without a pressure regulator.
● Handle or use pressure cylinders in conformity with the existing rules.
● Do not use leaking or damaged cylinders.
● Do not use cylinders which are not well secured.
● Do not carry cylinders without the protection of the installed valve.
● Do not use cylinders whose content has not been clearly identified.
● Never lubricate cylinder valves with oil or grease.
● Do not put the cylinder in electrical contact with the arc.
● Do not expose cylinders to excessive heat, sparks, molten slags or flame.
● Do not tamper with the cylinder valves.
● Do not try to loosen tight valves by means of hammers, keys, or any other object.
● NEVER DEFACE or alter name, number, or other markings on a cylinder. It is illegal and hazardous.
● Do not lift cylinders off the ground by their valves or caps, or by chains, slings or magnets.
● Never try to mix any gases in a cylinder.
● Never refill any cylinder.
● Cylinder fittings should never be modified or exchanged.

B) PRESSURE REGULATORS
● Keep pressure regulators in good condition. Damaged regulators may cause damages or accidents, they should only be repaired by skilled personnel.
● Do not use regulators for gases other than those for which they are manufactured.
● Never use a leaking or damaged regulator.
● Never lubricate regulators with oil or grease.

C) HOSES
● Replace hoses which appear damaged.
● Keep hoses unwound in order to avoid bending.
● Keep the excess hose wound and out of the working area in order to avoid any damage.

M12140, 83-388

RADIATIONS

Ultra-violet radiation created by the arc may damage your eyes and burn your skin. Therefore:

● Wear proper clothing and helmet.

● Do not use contact lenses!! The intense heat coming from the arc may cause them to stick to the cornea.

● Use masks with grade DIN 10 or DIN 11 safety lenses at the least.

● Protect people in the surrounding welding area.

Remember: the arc may dazzle or damage the eyes. It is considered dangerous up to a distance of 15 meters (50 feet). Never look at the arc with the naked eye.

● Prepare the welding area so as to reduce reflection and transmission of ultra-violet radiation. Paint walls and exposed surfaces in black to reduce reflection, install sheathings or curtains to reduce ultra-violet transmissions.

● Replace mask lenses whenever damaged or broken.

ELECTRIC SHOCK

Electric shock can kill.

All electric shocks are potentially fatal.

● Do not touch live parts.

● Insulate yourself from the piece to be cut and from the ground by wearing insulated gloves and clothing.

● Keep garments (gloves, shoes, hats, clothing) and body dry.

● Do not work in humid or wet areas.

● Avoid touching the piece to be welded.

● Should you work close to or in a dangerous area, use all possible precautions.

● If you should feel even the slightest electric shock sensation, stop welding immediately. Do not use the machine until the problem is identified and solved.

● Always fit an automatic wall switch with adequate power, possibly close to the machine, allowing you to immediately switch the machine off in case of an emergency.

● Frequently inspect the power supply cable.

● Disconnect power supply cable from mains before replacing cables or before removing unit covers.

● Do not use the unit without protection covers.

● Always replace any damaged parts of the unit, with original material.

● Never disconnect unit safety devices.

● Make sure that the power supply line is equipped with an efficient earth plug.

● Any maintenance should only be carried out by qualified personnel aware of the risks due to dangerous voltages necessary for the operation of the unit.

PACE MAKER

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

CAUTION! WELDING WIRE CAN CAUSE PUNCTURE WOUNDS.

● Do not press gun trigger until instructed to do so.

● Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

MOVING PARTS CAN CAUSE INJURY.

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

● Keep all doors, panels, covers, and guards closed and securely in place.

● Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.

● Keep hands, hair, loose clothing, and tools away from moving parts.

● Reinstall panels or guards and close doors when servicing is finished and before starting the machine.

NOISE

These power source alone do not produce noise levels exceeding 80 dB. The welding procedure, however, may produce noise levels above this limit; in which case the machine operator must take the necessary safety precautions as prescribed by the national safety regulation.

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 schould 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.

GENERALITIES

This unit is an electronically-controlled single-phase direct current rectifier suitable for continuous TIG or pulsed TIG welding of carbon steels, stainless steels, copper and cast iron.

INSTALLATION

Ensure that mains voltage corresponds to that shown in the rating plate on the machine rear panel. Connect to a supply having an amperage sufficient to supply the machine before starting up, and ensure that the yellow-green wire corresponds to the earth wire.

OPERATION

For correct use carefully follow the instructions below:

- use pure Argon as welding gas
- screw the flowmeter on the cylinder
- connect the gas hose from the machine rear panel to the flowmeter
- adjust the gas flow to 2-3 ltr./min. if you are welding in a draft free position or 5-6 ltr./min. in a drafty area
- turn on the machine by positioning the "**A**" switch (fig. 1) to ON

Attention: the lamp E turns on when the thermostat trips.

M12140, 83-388

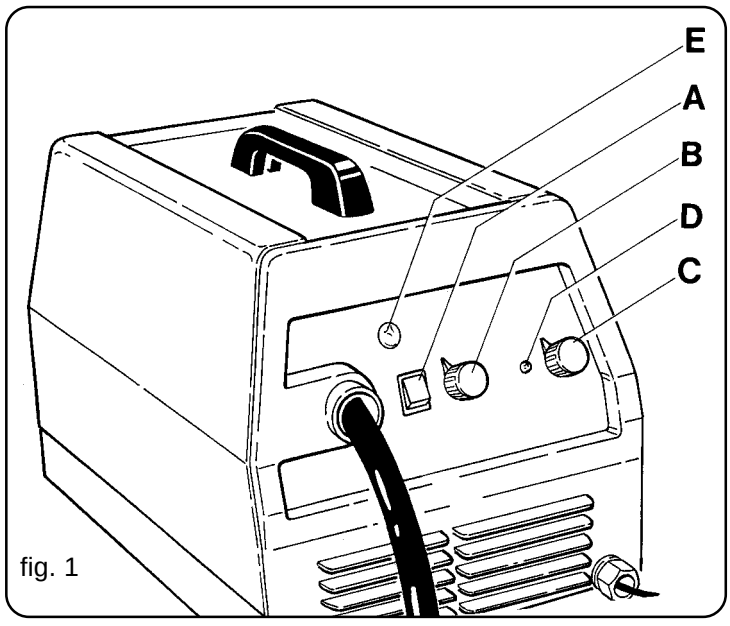


fig. 1

Continuous TIG Welding

This type of welding is used where there are no distortion problems due to heat input.

- Position the knob "**C**" (fig. 1) to continuous position and adjust the welding current by means of the knob "**B**" (fig. 1), bearing in mind that 20-30 A per mm. of thickness are required for carbon steels and stainless steels.

Pulsed TIG welding

This consists of two alternate current modes; one called Peak Current that melts the material, the other called Base Current which maintains the arc without diffusing any heat into the material.

This welding method is used for thin materials, where heat problems cause distortion.

- Adjust the peak current by means of the knob "**B**" (fig. 1) (peak time is fixed)
- set the time of base current from 0 to 2.5 sec (max) by means of the knob "**C**" (fig. 1) (the base current is fixed at 5 Amperes)
- a 2% thorium tungsten electrode (red colour) of 1.6 mm. diameter has to be used for this equipment. Special care should be taken in preparing the electrode point; it should be ground so as to show a vertical scoring as shown in fig. 2.

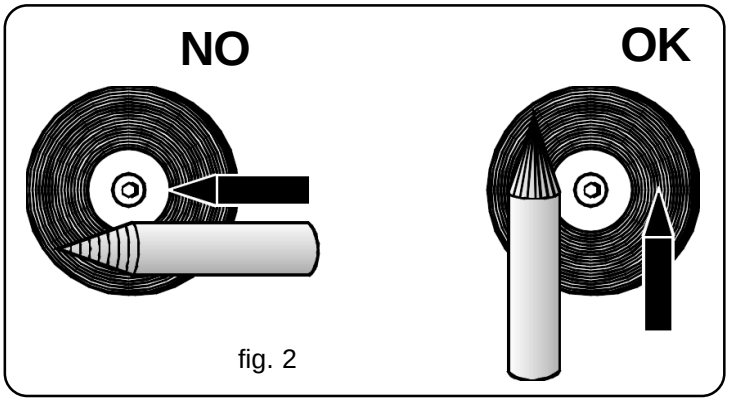


fig. 2

This arrangement will give more concentrated arcs and a quick starting of the arc.

The correct electrode installation on the torch is shown in fig. 3.

The tungsten electrode has to be tightened by means of the back cap (**E**), so that the tip protrudes 2 ÷ 3 mm (1/8") from the ceramic nozzle **F**.

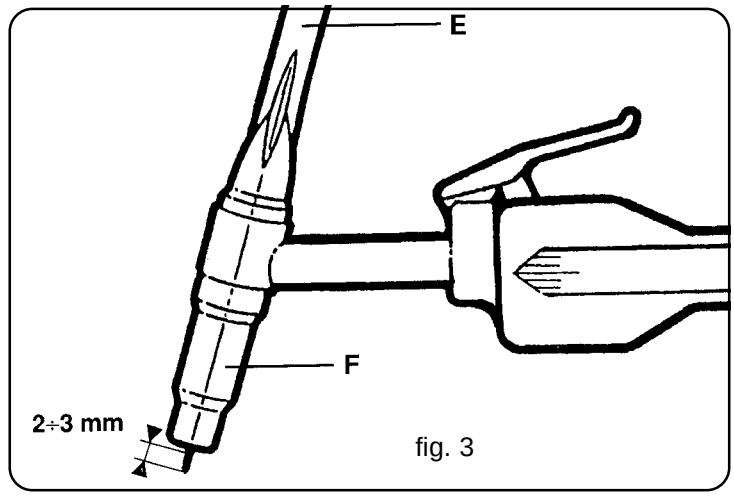


fig. 3

OPERATION

- Connect the earth clamp to the workpiece.

The arc starting in this equipment is achieved by contact.

To avoid destroying the electrode tip during starting with high currents, a special system has been conceived that allows the arc to start at the lowest current. This system consists of a time delay of 1.5 seconds between the moment the torch button is pressed and the moment when the welder delivers the current which was preset through the knob "**B**" (fig. 1).

During this time the device delivers the lowest possible current and the operator can start the arc without jeopardising the tip of the electrode. The starting techniques will therefore be as follows:

1) bring the ceramic nozzle onto the workpiece (fig. 4 A).

- protect your eyes with the welding headscreen;
- touch the workpiece (fig. 4 B) with the electrode. Then press the torch button and quickly move the electrode away, by 1-2 mm. (1/16" - 3/32") max, (fig. 4 C), the selected current will now be established.

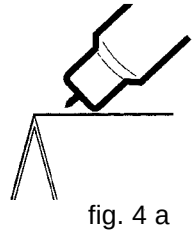


fig. 4 a

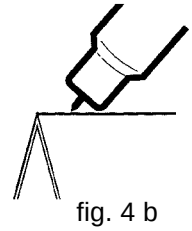


fig. 4 b

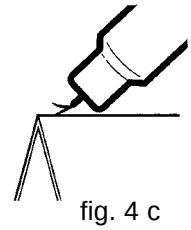


fig. 4 c

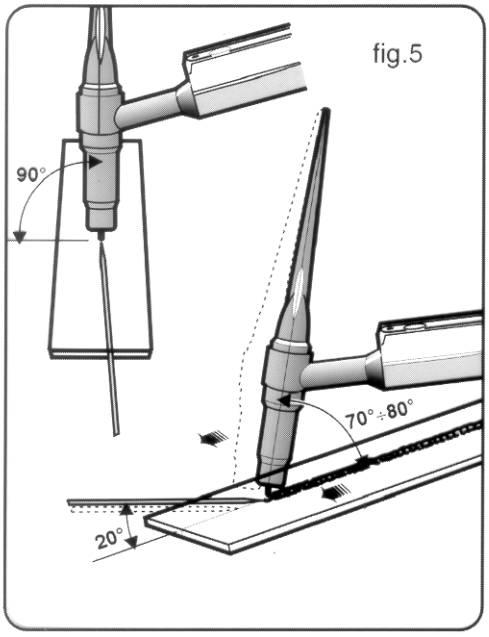
When welding is completed, release the push button sufficiently to extinguish the arc, but keep sufficient pressure on the button to allow gas to flow for electrode cooling for 2-3 seconds before releasing the push button completely.

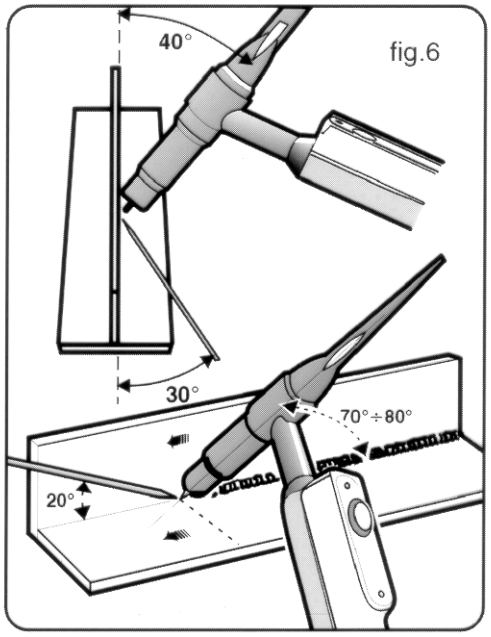
VERY IMPORTANT

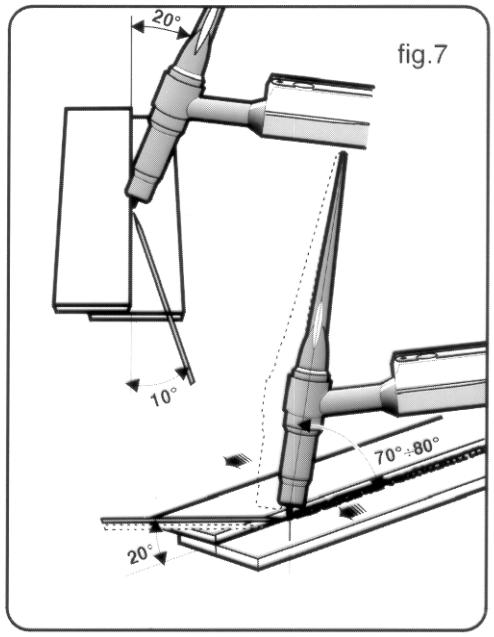
Should the above recommendations not be followed, the electrode tip will rapidly wear out.

Standard TIG welding positions operation as per positions shown in fig. 5 - 6 - 7.

M12140, 83-388







Note: the mode indicator (**D** in fig. 1) lights up whenever continuous TIG is selected and it follows the impulses in TIG pulsed mode.

MAINTENANCE

The machine needs very little maintenance.
- Periodically remove the cover and blow the dust away with a light jet of dry air.
- Ensure that welding cables and the supply cable are not damaged. Replace them if necessary.

TROUBLESHOOTING

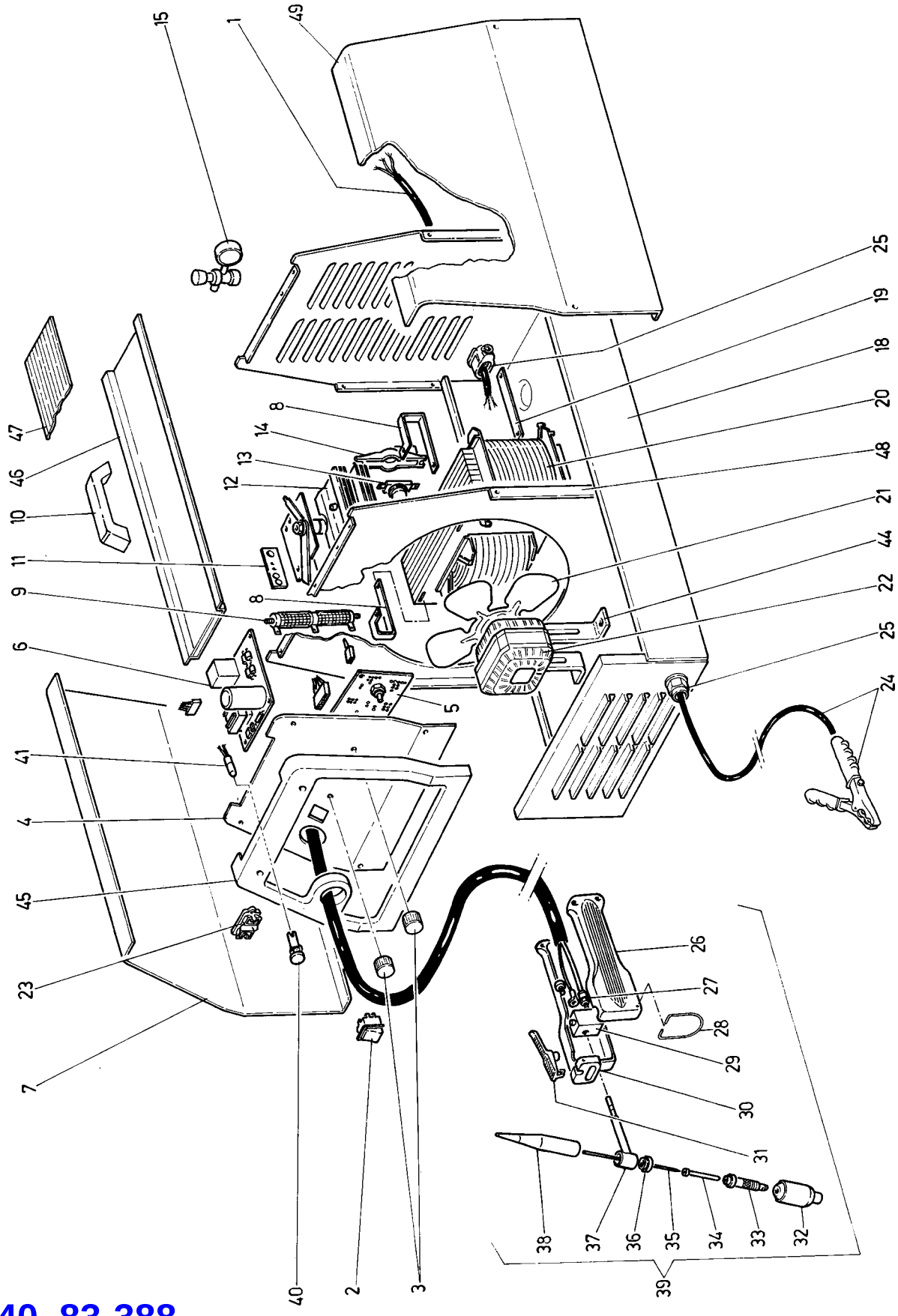
DEFECT: - *Failre of the welding current*
CAUSES: - the thermostat has tripped; pilot light **E** (fig. 1) turned on
- defecting regulation potentiometer **B** (fig. 1)
- cables of torch push button interrupted
- shunt black cable detached
- interrupted fuses on the circuit board

DEFECT: - *Welding current not controllable by the potentiometer "**B**" (fig. 1)*
CAUSES: - shunt red wire detached
- defective control card.

DEFECT: - *Arc difficult to be maintained at low welding-current regulation*
CAUSES: - failure of base current resistance
- one wire of the base current resistance detached
- defective relay card
- defective capacitor on card

DEFECT: - *The line fuses blow*
CAUSES: - power transformer in short circuit
- SCR diodes in short circuit.

DEFECT: - *The arc does not start*
CAUSES: - defective electrode; restore the tip
- non suitable gas; use pure Argon
- defective relay card
- defective capacitor on card



M12140, 83-388

When ordering spare parts, alwais state the following: machine part number, item position number, the quantity, and the machine serial number.

La demande de piéces de rechange doit toujours indiquer le numéro de l'article ,la position ,la quantitè et la date d'achat.

El pedido de las piezas de repuesto debe indicar siempre el número de articulo, la posición ,la cantidad y la fecha de la adquisición.

M12140, 83-388 140 Amp Pulse DC Tig

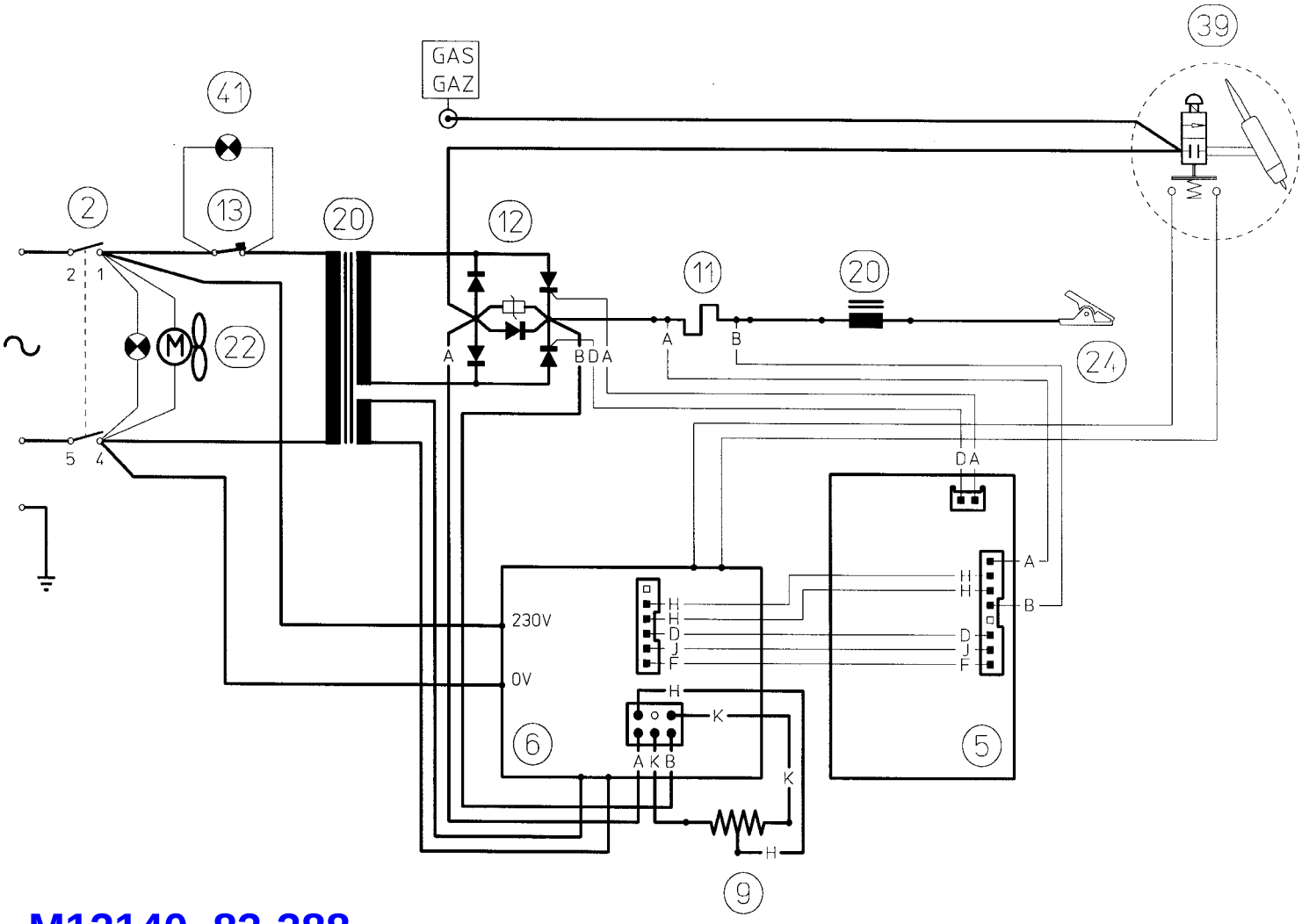
Item	Lincoln Stock #	Customer #	Description
1		260519	Input Cable
2		B7129370 **(3190002)**	Power Switch
3		250920 **(3055123)**	Knob
4		260520, 260521	Control Panel
5		250926 **(5600873)**	Control Circuit Board
6		250912 **(5600872)**	Relay Circuit Board
7		260460	Left Side Panel
8		250922 **(5803401)**	Support
10	312-515-666	250975	Handle
11		250927 **(5750480)**	Shunt
12		250911 **(3200087)**	Rectifier
13	S26399-21	B7065370	Thermostat
14	S26399-20	B7028370	Thermostat Support
15	334-460-001	B7017370	Air Regulator
18		260522, 260523	Base
19		B7050370	Locking Device
20		250928 **(5600414)**	Transformer
21	216-113-666	B7027380	Fan Blade
22	216-108-666	246224	Fan Motor
23		250913 **(3180009)**	Strain Relief
24		246269 **(5580078)**	Ground Cable
25		B7114370 **(3180002)**	Strain Relief
26	S26399-24	B7038370	Handgrip, Left
27	S26399-26	B7044370	Quick Coupling
28	S26399-27	B7046370	Torch Hook
29		250929 **(5750526)**	Gas Valve & Trigger
30	S26399-25	B7043370	Handgrip, Right
31	S26399-23	B7037370	Torch Lever

Item	Lincoln Stock #	Customer #	Description
32		M12312, 83-559	Gas Cup #4 (2 Pk.)
		M12313, 83-553	Gas Cup #5 (2 Pk.)
		M12314, 83-554	Gas Cup #6 (2 Pk.)
		M12315, 83-565	Gas Cup #8 (2 Pk.)
33		M12309, 83-549	Collet Body 0.040 (2 Pk.)
		M12310, 83-557	Collet Body 1/16" (2 Pk.)
		M12311, 83-558	Collet Body 3/32" (2 Pk.)
34		M12306, 83-546	Collet 0.040 (5 Pk.)
		M12307, 83-547	Collet 1/16" (5 Pk.)
		M12308, 83-548	Collet 3/32" (5 Pk.)
35		M12303, 83-543	Electrode 2% 0.040 X 7" (10 Pk.)
		M12304, 83-544	Electrode 2% 1/16" X 7" (10 Pk.)
		M12305, 83-545	Electrode 2% 3/32" X 7" (10 Pk.)
36		250924 **(3080216)**	Insulating Bushing
37		250918 **(5710052)**	Torch Head
38		250925 **(3160410)**	Electrode Clamp Cup
39		250919 **(1567)**	Complete Torch
40	245-169-666	246251 **(3175181)**	Lamp Holder
41		260524	Pilot Lamp
42		247507	Label
43		247509	Warning Label
44	412-752-666	246188	Fan Motor Support
45		246947 **(3070087)**	Frame
46		260466	Top Panel
47	512-265-666	260467	Rubber Mat
48		260525	Center Divider
49	411-110-026	260461	Right Side Panel

2/8/2007

Model	Primary Input	Input Plug	Duty Cycle at Rated Output
M12140	220 Vac	20A	25%

Rated Output	Amperage Settings	Agency Listing	Max Welding Thickness
25 amps	Infinite (5-100)		3/16"



M12140, 83-388

	WIRING DIAGRAM COLOR CODE	CODIFICATION COULEURS SCHEMA ELECTRIQUE	CODIFICACION COLORES CABLAJE ELECTRICO
A	BLACK	NOIR	NEGRO
B	RED	ROUGE	ROJO
C	GREY	GRIS	GRIS
D	WHITE	BLANC	BLANCO
E	GREEN	VERT	VERDE
F	VIOLET	VIOLET	VIOLA
G	YELLOW	JAUNE	AMARILLO
H	BLUE	BLEU	AZUL
K	BROWN	MARRON	BRUNO
J	ORANGE	ORANGE	NARANJO
I	PINK	ROSE	ROSA
L	PINK-BLACK	ROSE-NOIR	ROSA-NEGRO
M	GREY-VIOLET	GRIS-VIOLET	GRIS-VIOLA
N	WHITE-VIOLET	BLANC-VIOLET	BLANCO-VIOLA
O	WHITE-BLACK	BLANC-NOIR	BLANCO-NEGRO
P	GREY-BLUE	GRIS-BLEU	GRIS-AZUL
Q	WHITE-RED	BLANC-ROUGE	BLANCO-ROJO
R	GREY-RED	GRIS-ROUGE	GRIS-ROJO
S	WHITE-BLUE	BLANC-BLEU	BLANCO-AZUL
T	BLACK-BLUE	NOIR-BLEU	NEGRO-AZUL
U	YELLOW-GREEN	JAUNE-VERT	AMARILLO-VERDE