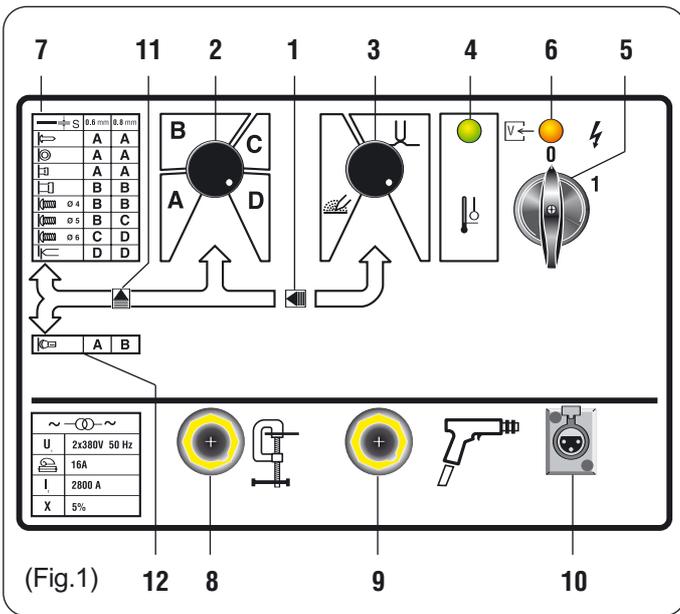


INSTRUCTIONS MANUAL

1 CONTROL PANEL DESCRIPTION (Pict. 1)



1. Mode switch: it selects the working area
2. Knob adjusting THE WELDING TIME in its area
3. Knob adjusting THE WELDING POWER in its area
4. Thermostat signalling light (wait until it turns off and then start working)
5. Main switch
6. Lamp signalling the machine working
7. Table of sectors to be chosen in order to achieve excellent results
8. Current tap of earth cable (connect and then turn to right)
9. Current tap of gun cable (connect and then turn to right)
10. Spot-welding control connector; connect by pushing (when releasing, push tab and pull at the same time)
11. Switch selecting working areas
12. Table of sectors to be chosen in order to achieve excellent results while patching.

2 GENERAL SPECIFICATIONS

This machine has been worked out to face all problems arising when body-making.

It permits:

- dings removal on the body, by operating from one side, only.
- spot-welding and intermittent welding of small sheets on the body (patching)
- welding of rivets, washers, screw diam. 4 mm. - 5 mm. 6 mm. and molding supports.

3 CONNECTIONS

3.1 Feed cable connection

Make sure that line voltage corresponds to that mentioned in the front panel of the machine.

- If voltage mentioned is 380 V. 50 HZ the unit is provided with a EEC-type plug to be connected to a 5-pole tap of same type. If plug is required to be replaced, connect the brown and blue conductor to one phase each, and the yellow-green conductor to an efficient ground clamp.

Line fuses are required of delayed 16A type (16A).

- If voltage mentioned is 220 V. 50 HZ the unit is suitable for connection to a three-phase 220 V line. Before setting at

work use a plug suitable for the current tap. The brown and blue wires should be connected to one phase each and the yellow-green one should be connected to an efficient ground clamp. Line fuses are required of delayed 32A type.

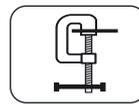
(32A)

- If voltage mentioned is respectively 440 V 50 HZ-415 V 50 HZ the unit is suitable for connection to a three-phase line with 440V. or 415 V.

Before setting at work use a plug suitable for the current tap. The brown and blue wires should be connected to one phase each and the yellow-green one should be connected to an efficient ground clamp. Line fuses are required of delayed 16A type (16A).

- If voltage is 240 V-50 HZ use a plug suitable for the current tap before setting at work and make sure that the yellow-green wire is connected to an efficient ground clamp, line fuses are required of delayed 32A type (32A).

- If voltage is 230 V-60 HZ use a plug suitable for the current tap before setting at work and make sure that the yellow-green wire is connected to the ground clamp. Line fuses are required of delayed 30A type. (30A=).



3.2 Electric bonding (Pict.2)

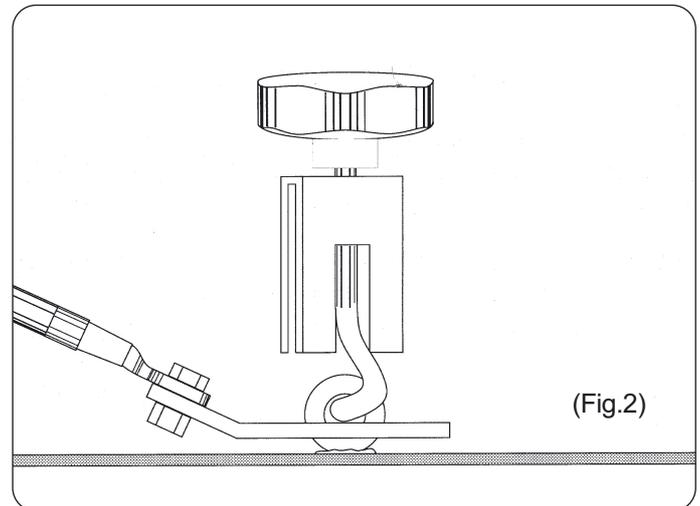
Insert connector and turn clock-wise until it is tight.

The earth cable should be connected as close as possible to the point where it will

operate.

ATTENTION: It is compulsory to connect the earth to doors tops when working on them, in order to prevent current passing through hinges.

Good connection is obtained by scouring sheet where the earth is to be connected to, by spot-welding a washer (see paragraph "spot-welding of screws, washers, nails and rivets"), put washer in the fissure of copper terminal and



operate as shown in picture (2) by means of clamp.

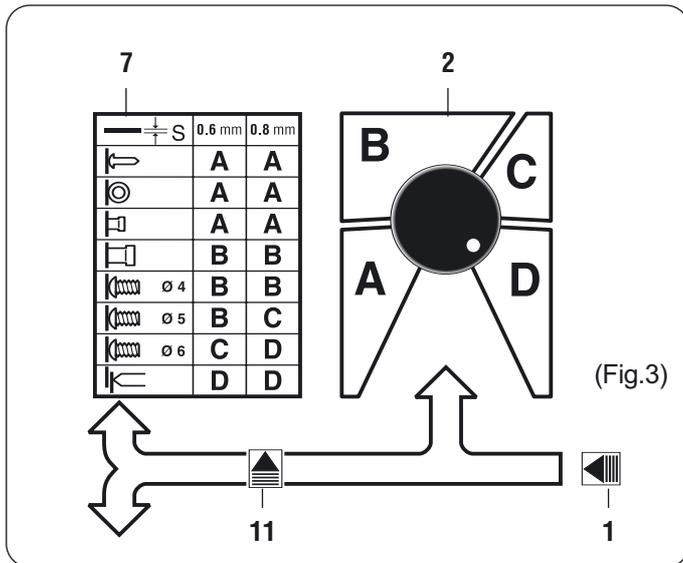


3.3 Gun connection

Put power connector in and turn it clock-wise until it is tight. Afterwards put the control jack in the tap (10). If connector is not correctly positioned lamp 4 will light. Put the electrode on the gun to spot-weld washers and tighten the ring nut properly. Position a washer and then turn the unit on.

4 WORKING AREAS

4.1 Automatic control area (Pict.3)



Spot-weld of screws, washers, nails, rivets. Turn the mode-switch (1) to left in the area shown in pict. 3 and turn the switch (11) facing the table (7).

Now, according to your needs, position the knob (2) on the sector you are interested in. The specifications of these sectors are detailed in the table (7).

Spot-weld of washers by securing ground clamp. Position the knob (2) in sector A, position washer, previously put in the electrode, where the earth cable should be secured, make the chosen area be in contact with the terminal of this cable, press the gun trigger.

Secure following (Pict.2)

ATTENTION: The screen-printed sectors are fixed under excellent feeding and securing conditions of the earth cable. According to the operation to be carried out, the best welding point may be also found in areas not shown in the picture. It is recommended to carry out some tests before, to find the best welding point. Please note that power is maximum here and the welding time may be adjusted (knob 2).



Spot-weld. Turn the mode switch (1) to left as shown in Pict.3, the switch (11) facing the table (7) and the knob (2) to sector D. Mount electrode on gun. Now sheets up to 0.8 mm-thickness can be spotwelded from one side only. Spot-weld on monocoques is not allowed.

Correct spot-weld is obtained by following suggestions below:

1. Carry out electrical bonding properly;
2. Remove paint, grease and oil from the parts to be spot-welded;
3. Make the parts to be spot-welded be in contact with one another, with no gap, if necessary pressed with a tool, not with gun. Too strong pressure may lead to bad results;
4. The thickness of the part should not exceed 0.8 mm;
5. The electrode face must have a 2.5 mm. diameter and metallic parts must be scoured.
6. Tighten the nut locking the electrode, make sure that current taps are well secured (insert and turn to right) 7. When spot-welding slightly press the electrode (3-5 kg). Press

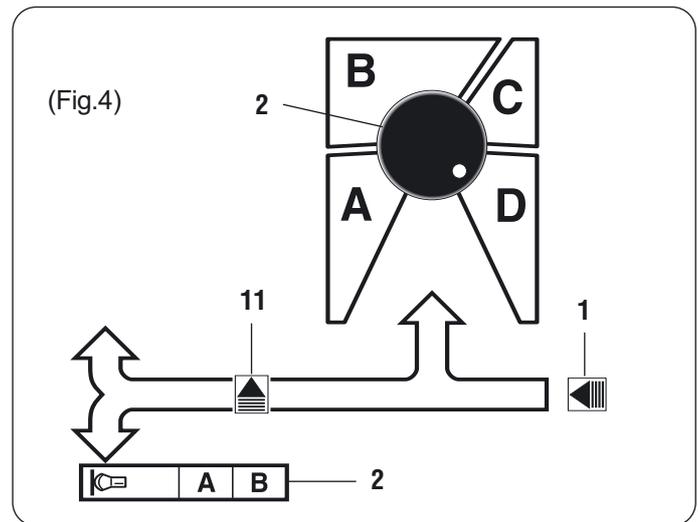
button and wait until spot-welding is over, then and only then move away with gun.

8. Do not move away farther than 30 cm. the earth securing-point.

ATTENTION: A thermostat is provided to protect the electrode-holding gun against overloads. This, by detaching the unit, protects the parts that may be damaged. Thermostat operates when the lamp (4) is lighting.



Patching (Pict.4). Turn the mode switch (1) to left as shown in pict.4 and the switch (11) facing the table (12).



Small rectangular sheets can be thus secured in such a way as to fill in holes resulting from rust or other reasons. Mount the electrode on mandrel, tight ring nut properly. Scour the area and make sure that the sheet to be spot-welded is clean and free from grease or paint.

Position the part and put on the electrode, then press the torch trigger. While button is depressed, inch following the working and dwell time of the machine.

N.B. In this operation the dwell time is fixed whereas the working time is adjustable by means of the knob 2. While working slightly press (3-5 kg). Operate following an ideal line 2-3 mm. far away from the edge of the new part to be welded.

Excellent results are obtained if you:

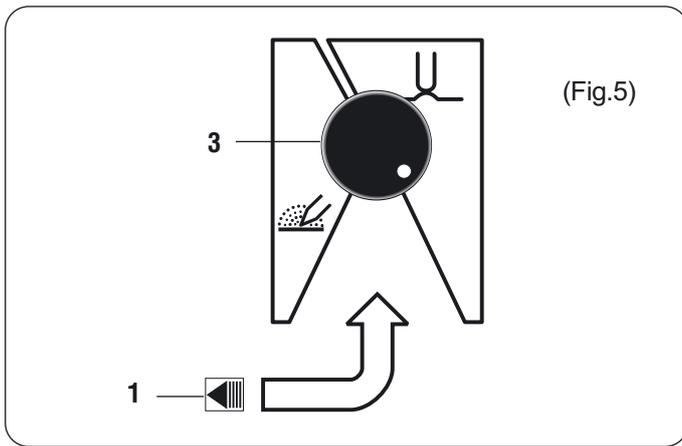
1. Do not move away farther than 30 cm. from the securing point of the earth;
2. Use covering sheets with 0.6 mm max. thickness, if possible of stainless steel;
3. Inch following the clock track of the machine. Move forward when the machine is still and stop when spot-welding is being carried out.

4.2 Manually adjusted area (Pict.5)

Turn the mode switch (1) to right. Here (pict.5) the working time is manually adjusted. By turning the knob (3) clockwise power is increased.



"Sheets warming" sector. Apply carbon on the electrode tightening gun and tighten the ring nut, then turn the knob (3) to minimum. Make the carbon face touch the area previous-



sly scoured and press the gun trigger. Operate from outside to inside with a circular movement in such a way as sheet comes back to its original position, when work-hardened. To prevent sheet being too much tempered, treat small areas and immediately afterwards wipe with a wet rug, thus cooling the treated part. By moving the knob (3) within the sector marked with symbol () heating is regulated.



Sheet upsetting sector.

By operating with the electrode, sheets with shear buckling may be flattened again

5 INSTRUCTIONS FOR ERROR DETECTING.

5.1 AUTOMATIC WORKING AREA (Pict.3):

5.1.1 - Spot-weld of screws washers nails and rivets

A.: The parts do not hold out traction (they are not welded);
REASON:

- too strong gun pressure. Slightly press gun while welding (its weight is enough).
- Do not use other kinds of screws or washers if not on supply.
- Do not spot-weld zinc plated screws or washers.

B.: The parts blaze up or fuse inside the electrode
REASON :

- too slight gun pressure

C.: Parts get oval and squashed
REASON :

- too long spot-weld time (decrease by using the knob)
- Too strong gun pressure.

5.1.2 - Spot-weld

A.: Welding spots do not hold out
REASONS:

- too strong pressure;
- too long extension cable;
- faulty electrical bonding;
- too low mains voltage;
- too wide diameter of the electrode face;
- too short spot-weld time;
- too thick upper sheet (max.0.8 mm);
- gap between sheets;
- earth cable too far

B.: Spots break sheets
REASONS:

- too much pressure on the gun;
- too thin upper sheet;
- long time;

C: The electrode blazes up and does not spot-weld
REASONS:

- too low gun pressure;
- gap between sheets.

5.1.3- Patching (Pict.4)

A: The upper sheet does not weld
REASONS:

- too high advance speed;
- too high gun pressure;
- gap (paint, rust, etc) between sheets;
- too thick upper sheet;
- too short spot-weld time;
- too low line voltage;

B.: The machine makes one spot only
REASONS:

- switch (11) not properly positioned;
- gun trigger has not been kept pressed.

C: The upper sheet is cut by the electrode
REASONS:

- too long spot-weld time;
- too short advance time;
- too low pressure of upper sheet;

5.2 MANUALLY ADJUSTED AREA (Pict.5)

5.2.1- Sheet warming unit

A: Carbon turns on and off
REASONS:

- mode switch (1) not properly positioned;
- faulty electronic circuit;
- the gun trigger has not been kept pressed;
- broken or faulty carbon;
- faulty contact of carbon with gun (tighten ring nut);
- faulty button;
- faulty jack of gun;

B: Carbon turns off and burns quickly
REASONS:

- carbon not suitable for this operation (use that on supply);
- faulty position of knob 3 (too much power).

N.B. Carbon usually remains incandescent for some minutes after working.

5.2.2 - Sheets upsetting

A: Sheets do not warm up and the electrode blazes up
REASONS:

- paint or rust on the part to be welded;
- insufficient gun pressure;
- faulty positioning of knob (3)

N.B. By turning the machine on and by keeping the gun trigger pressed, automatic valves may be operated. Should this happen, do as follows:

- turn the machine off (switch 5 on 0);
- arm the automatic valve again;
- turn the mode switch (1) to right (sectors: sheet warming and upsetting);
- turn the knob 3 to minimum (turn it counterclockwise);
- turn the machine on **without depressing** the button (Switch 5 on 1);
- press the torch button and at the same time turn the knob 3 clock-wise (position it to max.);

- release the gun trigger;
- turn the mode switch (1) to left;
- now you are ready to start.

weld of screws, nails, washers, rivets" in the terminal (33) and start drawing. Then push the terminal (33) towards hammer in order to take off plug.

6 USE OF HAMMER ON SUPPLY (Pict. 6)

This hammer may have three different uses:

1) Washer coupling and draw

By assembling and locking with nut the terminal (34) on the hammer body (32).

Couple washer (art.2330) as described in chapter "spot-weld of screws, nails, washers, rivets" and start drawing. Then rotate hammer by 90 degrees to detach washer.

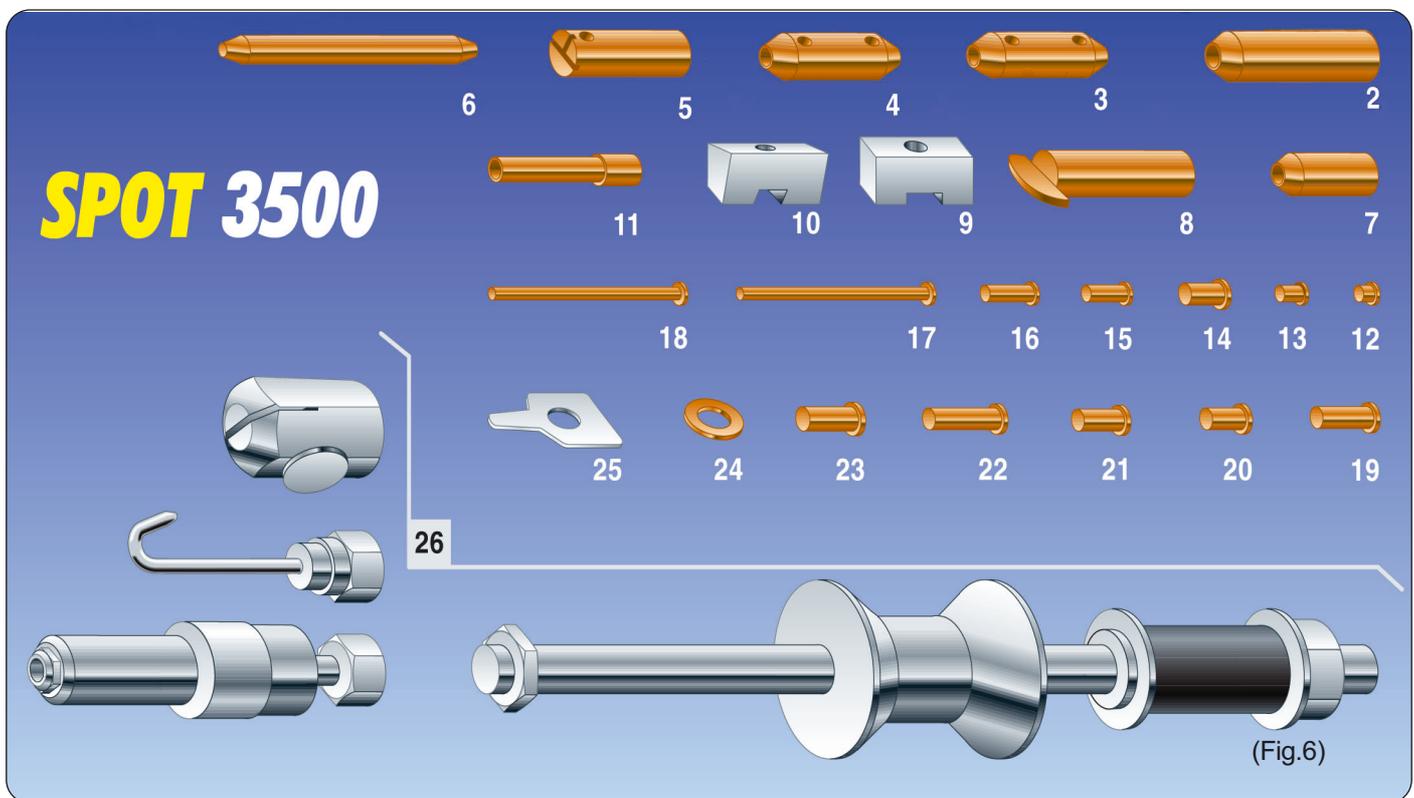
2) Plug coupling and draw

By assembling and locking with nut the terminal (33) on the hammer body (32).

Put plug (art.2330 or 2302), as described in chapter "spot-

3) Simultaneous spot-weld and draw of special washers.

By assembling and locking with nut the terminal (35) on the hammer body (32) and by coupling and locking hammer on the electrode-holding couple of gun. Put the special washer in the terminal (35) by locking it with its knob. Spot-weld it where necessary by adjusting the machine in the same way as for washers spot-welding (art.2330 DIN 125) and start drawing. Then rotate hammer by 90 degrees in order to detach washer. This may be spot-welded in a new position.



POS.	PACK. CODE	DESCRIPTION	USED FOR
2	2280	ELECTRODE SPOT-WELD	RIVETS Ø 3 / Ø 5
3	2282	ELECTRODE "	SCREW M4/plug Ø 2-2,5
4	2283	ELECTRODE "	SCREW M5 - M6
5	2284	ELECTRODE "	WASHERS
6	2285	ELECTRODE CU/CR	SHEET SPOT-WELD
7	2286	ELECTRODE CU	SQUASHING
8	2287	ELECTRODE CU/CR	PATCHING
*9	2276	ELECTRODE SUPP.(porsche)	ELECTRODE POS. 11
*10	2277	ELECTRODE SUPP. (golf 2)	ELECTRODE POS. 11
*11	2281	SPECIAL ELECTR.SPOT-WELD	RIVETS Ø 3
12	2305	RIVETS Ø 3x3,2	ELECTRODE POS.2 e 11
13	2306	RIVETS Ø 3x4,5	ELECTRODE POS.2 e 11

POS.	PACK. CODE	DESCRIPTION	TO BE USED WITH
14	2308	RIVETS Ø 5x10	ELECTRODE POS. 2
15	2320	THREAD-RIVETS M4x12	ELECTRODE POS. 3
16	2321	THREAD-RIVETS M4x15	ELECTRODE POS. 3
17	2300	PLUGS Ø 2,5x50	ELECTRODE POS. 3
18	2302	PLUGS Ø 2x50	ELECTRODE POS. 3
19	2322	THREAD-RIVETS M5x18	ELECTRODE POS. 4
20	2323	SELF-THREADING RIVETS 5,5x12	ELECTRODE POS. 4
21	2324	SELF-THREADING RIVETS 5,5x18	ELECTRODE POS. 4
22	2325	SELF-THREADING RIVETS 5,5x25	ELECTRODE POS. 4
23	2328	THREAD-RIVETS M6x12	ELECTRODE POS. 4
24	2330	WASHERS DIN 125 Ø8x16x1,5	ELECTRODE POS. 5
25	2331	WASHERS	POS. 32 + POS. 35
26		HAMMER WITH HEADS	

* OPTIONAL