

---

# **PROFESSIONAL INVERTERS**

## **TIG 150A AC/DC**

**CEMONT TX160 AC/DC**



Loc. Casalmenini - 37010 Rivoli Veronese - Verona -Italy  
Tel. (+39). 045.6208901 - Fax (+39). 045.6200041 - Txl 481294 CEM I

**SERIES: 1305****Professional Inverters (TX)TIG 150AC/DC****Fixed points 55**

---

Repair code		Repair scores
01	Control board	12
02	Rectifier	5
04	Filter	40
11	Switch	3
14	Electric fan	55
18	Diode	65
20	Auxiliary power supply board	10
21	Power board 1	30
22	Power board 2	75
24	Main transformer	40
28	Detached wire repair	10
32	High voltage board	4
33	High voltage coupler	45
36	Control board	8
41	Auxiliary transformer	20
46	Solenoid valve	5
61	Filter 2	65
69	Impedance 2	25
70	Fuse	2
76	Impedance 1	35

---

## 1.0 REPAIR INSTRUCTIONS

### 1.1 GENERAL CLEANING

Remove the generator body sides and clean carefully with compressed air.

### 1.2 MACHINE: VISUAL INSPECTION

Check the general conditions of the generator, particularly:

- on the electronic circuit ref. 21:
  - the state of the levelling condensers (fig. 1) and check if there are swellings or breaks on the container
  - check for the presence of burn tracks or electric discharge marks on the printed circuit
- Check on all the harnesses the insulation of the cables and the state at the connection points.

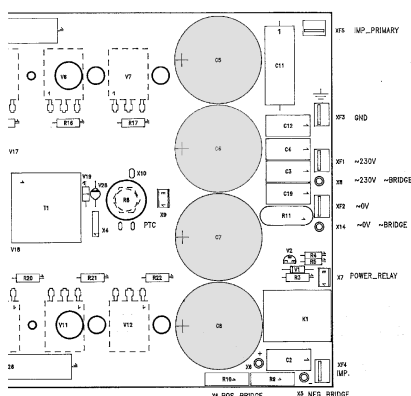


fig. 1 ref. 21

### 1.3 CHECK OF THE MAIN COMPONENTS WITH TESTER (OHMMETER) ON THE CIRCUIT REF. 1

- On the electronic circuit ref. 21 check:
  - For the presence of short circuits on the rectifier bridge and the correct value of the ptc precharge (fig. 2)
  - points 1-2, 1-3, 2-3 of mosfet A and B (fig. 3):

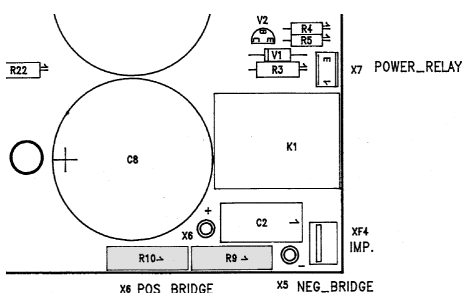


fig. 2 ref. 21

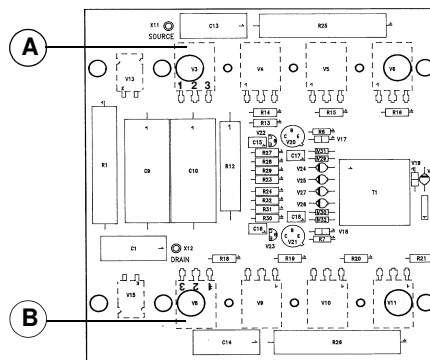


fig. 3 ref. 21

if there are short circuits in any of the tested components, replace board ref. 21

- On the electronic circuit ref. 22 test the IGBT of the secondary circuit between points 1 and dissipator, 2 and dissipator (fig. 4); if short circuits are present, replace the electronic circuit ref. 22, remove first the primary power circuit ref. 21 and the diode module of the secondary circuit.

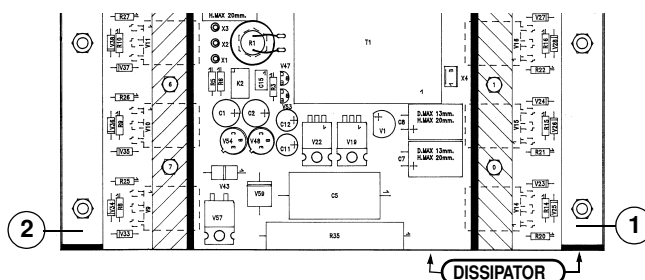


fig. 4 ref. 22

- Diodes of the secondary circuit: test between points 1,2,3,4 and the diode dissipator (fig. 5); if there is a short circuit: first disassemble the circuit ref. 21, then take out diode module from the generator, unsolder the electronic circuit F209 from the three power diodes: if there are short circuit replace them.

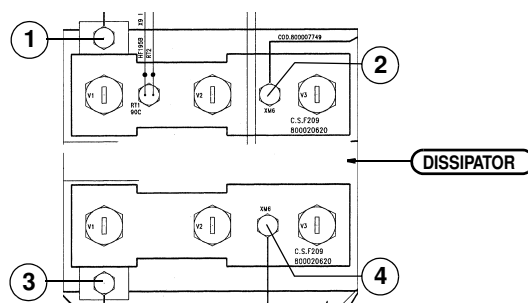


fig. 5 DIODES OF THE SECONDARY CIRCUIT

- On the circuit ref 32 check points G-D-S (fig. 6): in case of short circuit replace it and check if the fuse is good.

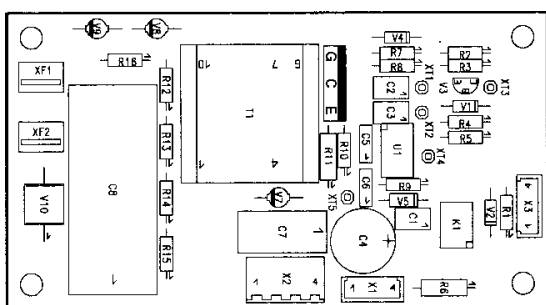


fig. 6 ref. 32

#### 1.4 CHECK OF GENERATOR WORKING WITH OSCILLOSCOPE AND VOLTMETER

Disconnect on circuit ref. 21 the faston of the positive of the rectifier bridge; set the oscilloscope on a time base of 5  $\mu$ S and a range of 0.5 V/Div with probe  $\times 10$ ; connect the generator to the power supply, set it in MMA and DC with the pulse commutator at zero. switch it on and check for:

1. The presence on the electronic circuit ref. 20 of a voltage between points: 1 and 2 (negative) of + 15 Vdc and between points 3 and 2 (negative) of - 15 Vdc (fig. 17); in case of lower readings disconnect the circuit ref. 20 from the circuit ref. 21 and check:
  - if the correct voltage is restored this means that the electronic circuit ref. 21 is broken
  - if the wrong voltage is still there, the fault is on the electronic circuits ref. 1 or ref. 36 or ref. 20

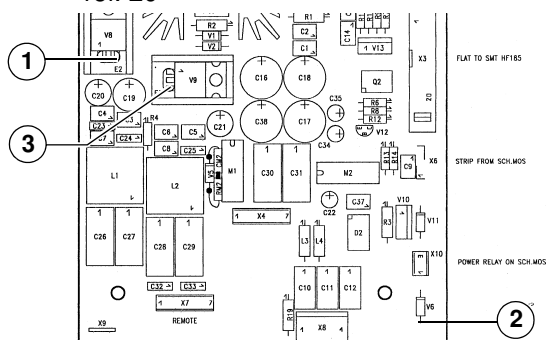


fig. 7 ref. 20

2. 2. Check for the presence on circuit ref. 21 between points E (GND) - A (Probe) and F (GND) - B (probe) (fig. 8) of the wave form as shown in fig. 9:

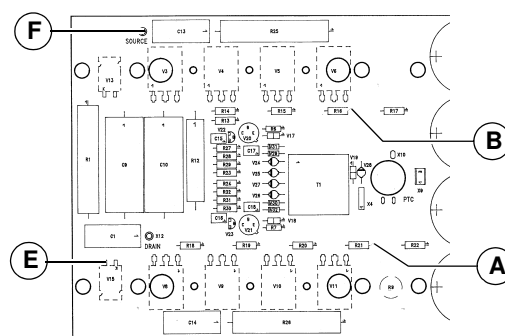
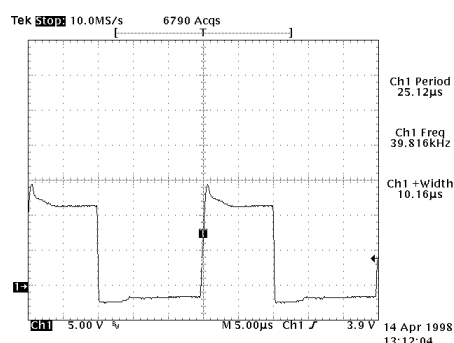


fig. 8 ref. 21



**fig. 9**

- if the wave form differs from the one in the figure, the electronic circuit ref. 21 is certainly broken (mosfet of the primary circuit or diodes of recycle): replace it
3. Set the oscilloscope in DUAL mode on a time base of 10uS and a range of 0.5 V/Div, pre-trigger at 4 div and GND of the two channels are coincident; on the circuit ref. 22 connect the probe of channel 1 between points A (probe ) and B (GND) and the probe of channel 2 between points C (probe) and D (GND) (fig. 10) and check for:

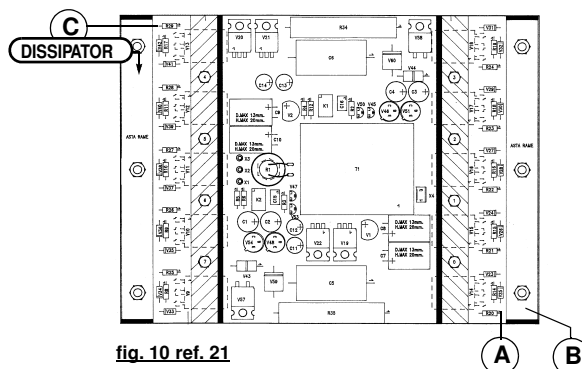


fig. 10 ref. 21

- a wave form as shown in fig. 11 with the A DC selector in DC

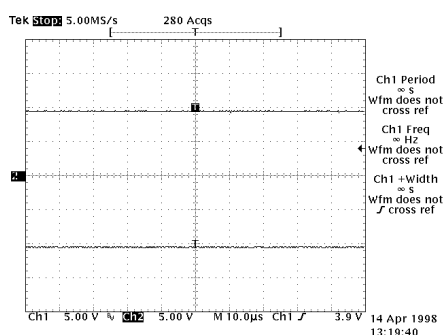


fig. 11

- a wave form as shown in fig. 11 with the A DC selector in DC

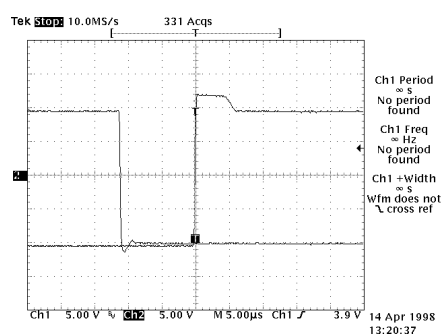


fig. 12

if the wave forms do not correspond (for example strong ripple in a wave), the fault is on circuit ref. 22: replace it

4. Switch off the generator, restore the positive connection on the bridge; set the oscilloscope only with channel 1 with a range of 1V/Div with a probe x100; on the circuit ref. 21 connect the probe between points M (GND) and P (probe 8fig. 13) and verify:

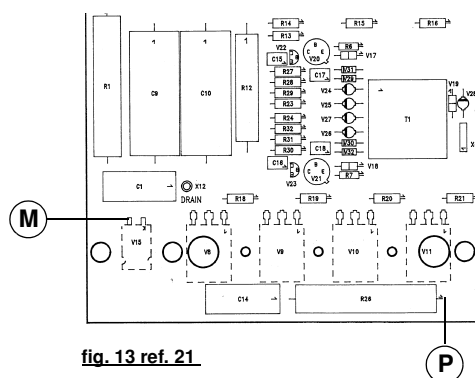


fig. 13 ref. 21

- that approx. 2 seconds after switching on, a wave appears as shown in fig. 14
- check with a voltmeter, that the output voltage is 62 Vdc

If the waveform does not appear or the correct output voltage is not present, replace circuit ref. 1

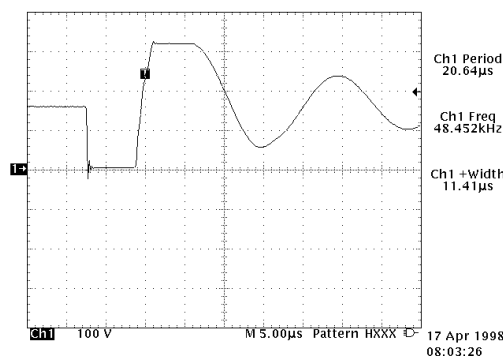


fig. 14 ref. 21

5. If the current regulation is not correct, replace the circuit ref. 1, if the fault appears again, replace the circuit ref. 36.
6. Set the function selector in TIG 2 strokes, short-circuit points E and G of the remote outlet (ref. 51) and check:
  - the release of the solenoid valve
  - the appearance on the oscilloscope of the wave form of fig. 14

• a high voltage hum for approx. 2 seconds  
if there is no hum or if in TIG welding there is no sufficient discharge, replace the electronic circuit ref. 32, if the fault appears again replace the coupler ref. 33

7. If the TIG functions do not work correctly on the generator after the check of the support feeders on circuit ref. 20 (point 1 of the present paragraph), replace the electronic circuit ref. 1, if the fault appears again, replace circuit ref. 20.

Carry out the final test after the repair.

## 2.0 FINAL TEST

1. Carry out the safety test according to our operative instruction N. SLL12, before proceeding, act as follows:
  - Disconnect the faston connector at 90° and the shunt harness on the board ref. 20 (fig. 15)
  - disconnect the feeders going from filter EMI to the "on" switch and short-circuit them

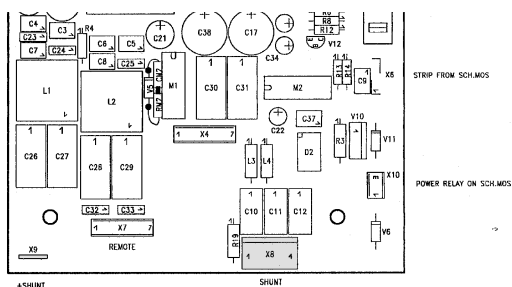


fig. 15 ref. 20

- disconnect the two cables connecting the rectifier bridge with the board ref. 21 (positive and negative)
- short-circuit the mosfet on the board ref. 21 (fig. 16)

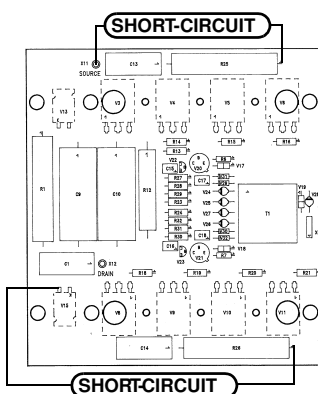


fig. 16 ref. 21

- short-circuit the dissipator of diodes of the secondary circuit with the dissipator of circuit ref. 22
- on circuit ref. 22 short-circuit the dissipator with the two copper staffs present on the board HF 208 A (fig. 17)

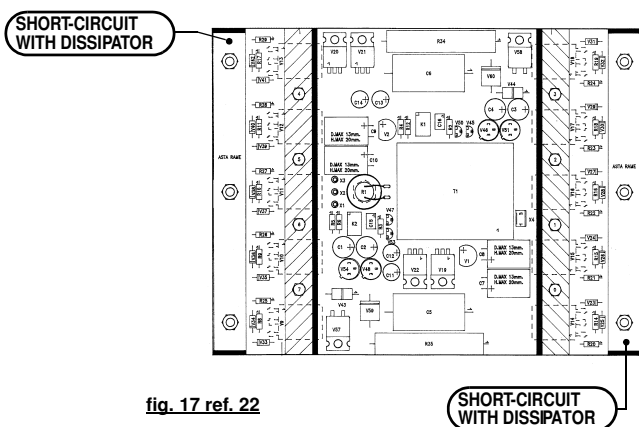


fig. 17 ref. 22

After the test remove all the short circuits and restore the connections.

## 2.1 FUNCTIONAL TEST

1. Connect the generator to the power supply (230 Vac), set it in DC and MMA, switch it on and check if the voltage of the outputs is 62Vdc (+/- 5%): switch off the generator.
2. Connect the generator to the resistive load: the load must be regulated so that the voltage on the load, with maximum current, is between 24 and 26Vdc. Apply oscilloscope probe as in fig. 13
3. Set the regulation knob to the centre of the dial, switch on the generator, turn the knob to the maximum welding current and check:
  - with the amperometer the maximum current indicated on the technical table with an output voltage of 25 Vdc (+/- 5% tolerance)
  - on the oscilloscope check for a waveform as in fig. 18.

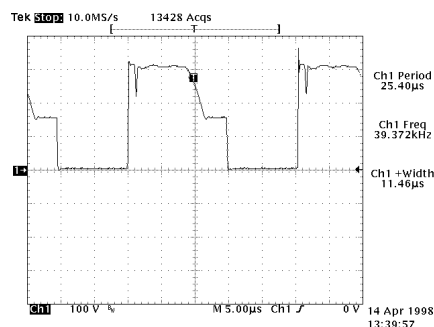


fig. 18

- if the voltage is not within the tolerance adjust the trimmer T1 on circuit 1.
4. Regulate the resistive load to measure the minimum current (5A - 20V), set the minimum current on the frontal panel and check:
    - with the amperometer a value included within 4 and 6A.
    - if the voltage differs from the value within the tolerance, adjust the trimmer T2 on circuit ref. 1

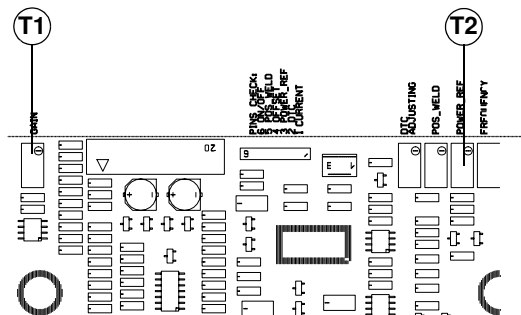


fig. 20 ref. 1

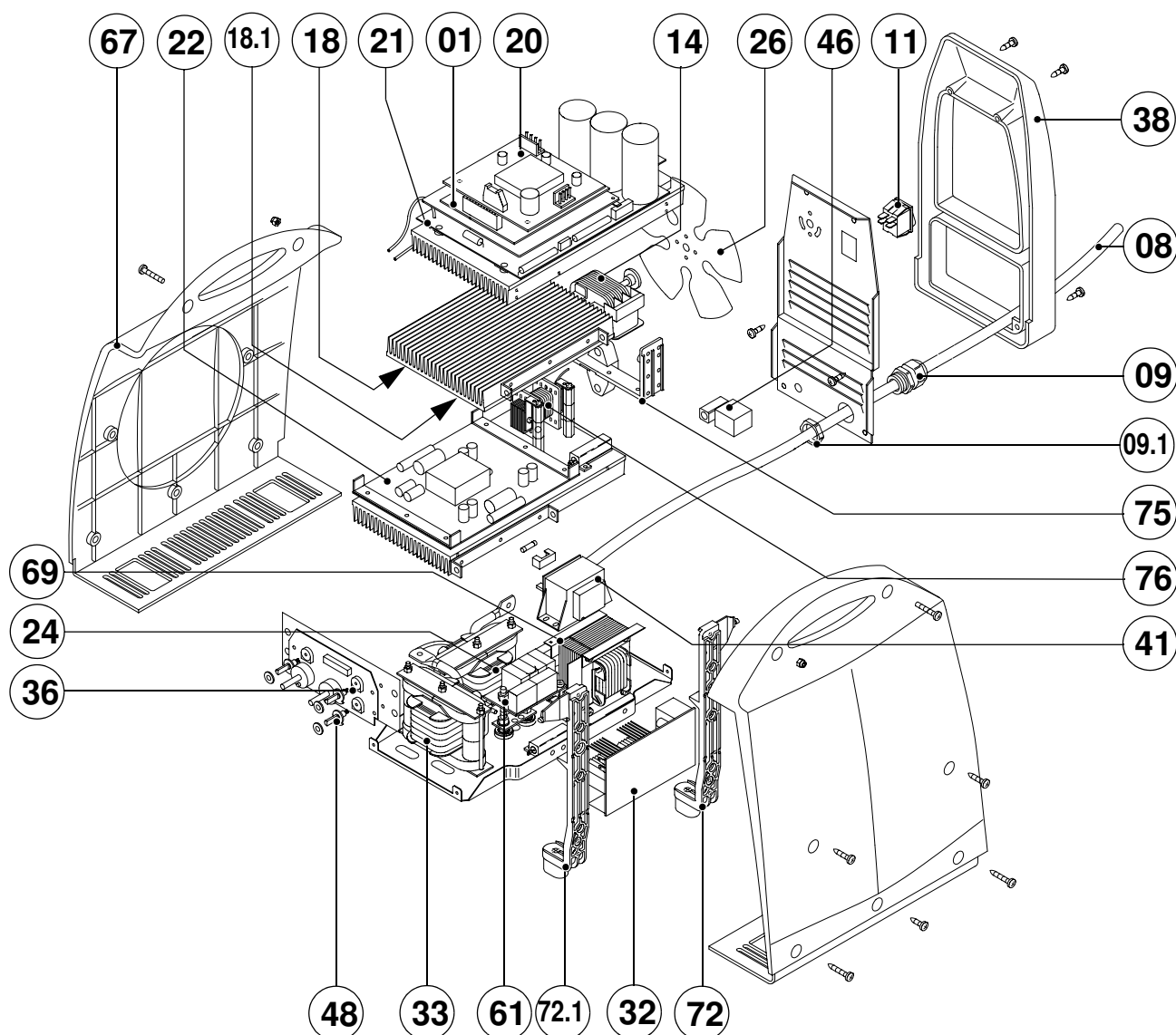
5. Now short-circuit the outputs and check that by adjusting the regulation potentiometer the voltage changes from approx. 5A to 150A; switch off the generator.
  6. Set the AC/DC selector to AC, set the resistive load so that the voltage on the load, with maximum current, is between 24 and 26Vdc.; switch on the generator and check that the output current is within 125 and 145 Aac; switch off the generator.
- wait till the thermal protection led turns off and in the meanwhile change the AC/DC selector to AC
  - run through a new work cycle in AC till the thermal protection intervenes.

## **2.2 WELDING TEST**

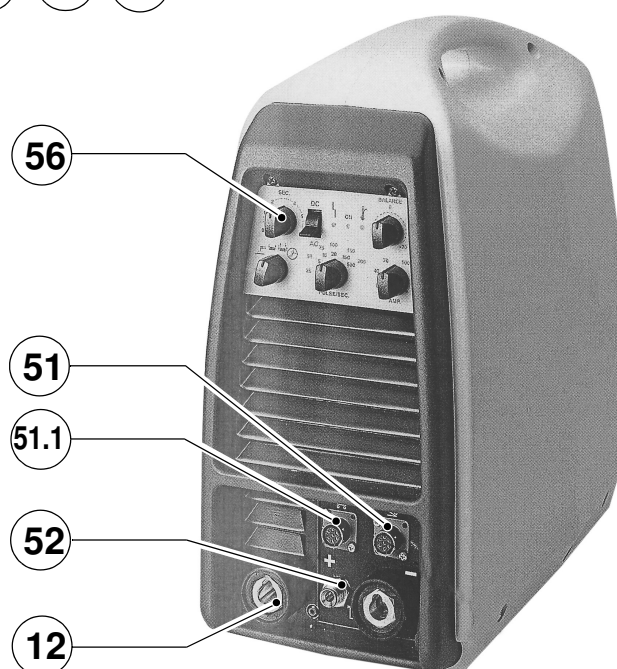
1. Connect the TIG torch for DC welding to the generator, set the AC/DC selector in DC; the function selector in TIG 2 strokes and the pulser selector at 0 Hz:
  - carry out welding tests at maximum current and check for the correct striking at high voltage
  - verify that the machine is working correctly either with the function selector in TIG 4 strokes or in Spot
  - check that the pulser selector is working correctly by testing the weld at various frequencies
2. Now set now the AC/DC selector in AC, the functions selector in TIG 2 strokes and the pulser selector at 25 Hz (attention: equip the torch with the electrode for AC weld):
  - carry out welding test at approx. 100 Aac on aluminium, check for the correct striking at high voltage
  - check that the pulser selector is working correctly by testing in weld the various working frequencies.
3. Switch off the generator and equip it for MMA weld; set the function selector in MMA, the AC/DC selector in DC and the pulser selector at 0 Hz; switch on the generator:
  - carry out welding test at maximum current (one electrode)

## **2.3 THERMAL TEST**

1. Switch off the generator and close it up again, connect it to the resistive load regulated for the maximum current; switch on the generator:
  - let it work till the thermal protection intervenes (yellow led turns on)



TX 160 AC/DC



## TX 160 AC/DC

R.	CODE	DESCRIZIONE	DESCRIPTION	DESCRIPTION	BESCHREIBUNG	DESCRIPCIÓN
01	800022604	CIRCUITO ELETTRONICO	CIRCUIT BOARD	CIRCUIT ÉLECTRONIQUE	ELEKTRONISCHE SCHALTUNG	CIRCUITO ELECTRÓNICO
08	800043462	CAVO DI ALIMENTAZIONE	POWER CABLE	CÂBLE ALIMENTATION	SPEISEKABEL	CABLE DE ALIMENTACIÓN
09	038088150	PRESSA CAVO	CABLE CLAMP	SERRE-FIL	KABLEKLEMME	PRENSACABLE
09.1	038088860	DADO NYLON	KNOB D.49	ECRU SERRE-CÂBLE	DREHKNOPF D.49	PERILLA D.49
11	035038041	INTERRUTTORE	SWITCH	INTERRUPTEUR	SCHALTER	INTERRUPT
12	038055010	RACCORDO USCITA	DINSE COUPLING	RACCORD SORTIE	VERSCHRAUBUN	EMPALME DINSE
14	073010131	MOTOVENTILATORE	FAN UNIT	MOTOVENTILATEUR	MOTORVENTILATOR	MOTOR DEL VENTILADOR
18	034040811	DIODO RAPIDO TIPO N	TYPE N DIODE	DIODE TYPEN	DIODE TYP N	DIODO TIPO N
18.1	034040810	DIODO RAPIDO TIPO R	TYPE R DIODE	DIODE TYPE R	DIODE TYP R	DIODO TIPO R
20	800022617	CIRCUITO ELETTRONICO CE 22617	CIRCUIT BOARD CE 22617	CIRCUIT ÉLECTRONIQUE CE 22617	ELEKTRONISCHE SCHALTUNG CE 22617	CIRCUITO ELECTRÓNICO CE 22617
21	800040888	CIRCUITO ELETTRONICO HF 195B	CIRCUIT BOARD HF 195B	CIRCUIT ÉLECTRONIQUE HF 195B	ELEKTRONISCHE SCHALTUNG HF 195B	CIRCUITO ELECTRÓNICO HF 195B
22	800040719	CIRCUITO ELETTRONICO HF 208A	CIRCUIT BOARD HF 208A	CIRCUIT ÉLECTRONIQUE HF 208A	ELEKTRONISCHE SCHALTUNG HF 208A	CIRCUITO ELECTRÓNICO HF 208A
24	800025080	BOBINA TRASFORMATORE	TRANSFORMER COIL	BOBINE TRANSFORMATEUR	TRANSFORMATOR-SPULE	BOBINA DEL TRANSFORMADOR
26	073080150	VENTOLA	FAN	VENTILATEUR	LÜFTERRAD	VENTILADOR
32	800022437	CIRCUITO ELETTRONICO HF 317	CIRCUIT BOARD HF 317	CIRCUIT ÉLECTRONIQUE HF 317	ELEKTRONISCHE SCHALTUNG HF 317	CIRCUITO ELECTRÓNICO HF 317
33	800025120	BOBINA ACCOPPIATORE	COIL COUPLER	BOBINE COUPLEUR	KOPPLERSPULE	BOBINA DEL ACOPLADOR
36	800004263	CIRCUITO ELETTRONICO TV 157	CIRCUIT BOARD TV 157	CIRCUIT ÉLECTRONIQUE TV 157	ELEKTRONISCHE SCHALTUNG TV 157	CIRCUITO ELECTRÓNICO TV 157
38	800010030	CORNICE FRONTALE	FRONT PANEL FRAME	ARÊTE FRONTALE	FRONTRAHMEN	MONTURA FRONTAL
39	800012700	PANNELLO VETRONITE	VETRONITE PANEL	PANNEAU VETRONITE	WAND VETRONITE	PANEL VETRONITE
41	800040737	TRASFORMATORE AUSILIARIO	AUXILIARY TRANSFORMER	TRANSFORMATEUR AUXILIAIRE	HILFS TRANSFORMATOR	TRANSFORMADOR AUXILIAR
46	070010078	ELETTROVALVOLA	SOLENOID VALV	ÉLECTROVANNE	MAGNETVENTIL	ELECTROVÁLVULA
48	800009000	ALBERINO LUNGO PER TRIMMER	LONG TRIMMER PIN	ARBRE LONG POUR TRIMMER	LANGE WELLE FÜR TRIMMER	EJE LARGO DEL TRIMMER
51	800044613	CABLAGGIO CONNETTORE	CONNECTOR CABLING	CÂBLAGE CONNECTEUR	VERKABELUNG STECKER	CABLEADO CONECTOR
51.1	038060525	CONNETTORE 7PIN	7 PIN CONNECTOR	CONNECTEUR 7 BROCHES	7PIN-STECKER	CONECTOR 7PIN
52	800005247	RACCORDO GAS	GAS CONNECTION	RACCORD GAZ	GASANSCHLUSS	RACOR GAS
56	800010090	MANOPOLA	KNOB	BOUTON	DREHKNOPF	PERILLA
61	800022614	CIRCUITO FILTRO CE 22614	CIRCUIT BOARD CE 22614	CIRCUIT ÉLECTRONIQUE CE 22614	ELEKTRONISCHE SCHALTUNG CE 22614	CIRCUITO ELECTRÓNICO CE 22614
67	800010610	FIANCATA	PANEL	FLANC	FLANKE	PANEL LATERAL
69	800050703	IMPEDENZA	IMPEDANCE COIL	IMPÉDANCE	IMPEDANZ	IMPEDANCIA
72	800010401	SUPPORTO DX	RH MOUNT	SUPPORT DROIT	HALTER RECHTS	SOPORTE DERECHO
72.1	800010391	SUPPORTO SX	LH MOUNT	SUPPORT GAUCHE	HALTERUNG LINKS	SOPORTE IZQUIERDO
75	800005925	SELLA VENTILATORE	FAN ATTACHMENT	ASSISE DE VENTILATEUR	VENTILATORSATTEL	ASIENTO DEL VENTILADOR
76	800050702	IMPEDENZA PRIMARIO	CHOKE ASSEMBLY	IMPEDANCE	DROSSEL	INDUCTANCIA

