Operation Manual

TIG-welding units
model MobiTIG 190 DC
model MobiTIG 250 DC

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Legal registration: Memmingen, Germany
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Security indications before introduction

The unit device is built after the recognized standards. Safe works are nevertheless only possible if you read the operating instructions and the safety regulations contained in it entirely and obey strictly. Install yourselves by trained staff of our establishments or appointed dealers.

Accident prevention regulations

The following accident prevention regulation is applied for welding unit, model TIG 160DC.

BGV D1 (earlier VBG 15) * Welding, cutting and allied processes.

A copy of this regulation should be readily accessible in every welding shop. The stipulations of this regulation are to be observed in the interests of safe and correct welding operation.

* Available from the trade association responsible or
Carl Heymanns-Verlag, Luxemburger Strasse 449, 50939 Cologne.

Safety instructions

This unit is manufactured according to the requirements and stipulations of EN 60974.1 / VDE 0544 part 1. BGV D1 (earlier VBG 15) of the trade association for precision engineering and electrical engineering are as well valid.

1) In case of an accident, the cutting unit must be disconnected from the mains immediately.

2) If electrical contact voltages arise, switch off the unit immediately, disconnect it from the mains and proceed to inspection by a qualified electrician or by our Service Department.

3) Before opening the unit, disconnect it from the mains supply.

4) Repair work may only be carried out by a skilled electrician or by our Service Department.

5) Before the unit is put to operation, check it visually, as well as the torch and all cables and connectors regarding possible external damages.

6) Personal protective equipment in accordance with DIN EN 175, DIN EN 379 and DIN EN 169.
During the work, the welder's body must be completely protected against radiation and burns by means of protective clothing and face protection. Long gloves, aprons and welding shields with welding filters conforming to DIN EN 470-1 and BGR 189 must be worn.
Synthetic clothing are excluded. Shoes must be closed, not opened (due to spatters). If necessary, protective headwear must be worn (e.g. for overhead welding). If cover glasses are used, these must be in accordance with the norms specified above.
As additional protection for the eyes against UV radiation, safety goggles with side shields and corresponding face protection in accordance with BGR 192 and BGI 553 must be worn.
Accident prevention regulation BGV D1 § 27 stipulates that it is the responsibility of the employer to provide suitable personal protective equipment, while § 28 stipulates that it is the responsibility of the insured to wear suitable clothing.

7) Protection when welding under increased electrical risks
Welding rectifiers and welding power sources which can optionally be used for either direct or alternating current must be marked **"S"** in accordance with EN 60974-1 and BGI 534.
Use insulating materials to protect you against contact with electrically conductive parts and damp floors. Wear dry, undamaged work clothing, long gloves and footwear with rubber soles. Ventilate rooms, install extraction systems if required, and wear respiratory protective equipment if necessary (see Procedural instructions BGV D1 § 27 and BGI 533, Section 5).

8) In order to prevent stray currents and the effects thereof (e.g. destruction of electrical protective ground conductors), the welding return cable (workpiece cable) must be connected directly to the workpiece to be welded or to the table (e.g. welding table, grid-type welding table, workbench) supporting the workpiece (see BGV D1 § 20). When installing the ground connection, assure that there is a good electrical contact (remove rust, paint, etc.).

9) During welding pauses, the welding torch is to be laid down on an insulated surface or hung up in such a way that it is not in contact with the workpiece and its support connected to the welding power source (see § 20 BGV D1).
In the case of longer work pauses, the welding unit must be switched off and the gas cylinder valve must be closed.

10) The shielding gas cylinder must always be protected against tumbling downing using a safety chain.

11) Under no circumstances the unit may be put into operation while it is opened (e.g. for repair work). Apart from the safety regulations, sufficient cooling of the electrical components provided by the fan cannot be guaranteed.

12) In accordance with BGV D1 § 5, people in the vicinity of the arc must also be informed of the hazards and protected against them. Safety partitions ("welding safety curtains") must be erected in accordance with DIN EN 1598.

13) No welding work may be carried out on containers in which gases, fuels, mineral oils or similar substances have been stored ⇨**even if they have been empty for a long time**⇦ (risk of explosion). See § 31 of accident prevention regulation BGV D1.

14) Welds which will be subjected to high loads and which need to meet specific safety requirements may only be carried out by specially trained and qualified welders.

15) Never bring the torch close to your face.

16) In areas at particularly high risk of fire, the welder must obtain a welding permit and have this on his person throughout the duration of the welding work. On completion of welding, a fire-guard must be delegated to ensure fire protection.

17) Ventilation measures must be applied in accordance with BGI 553, Section 9.

18) The hazard to eyesight must be indicated by means of a sign at the work site **"CAUTION! Do not look into the arc!"**.

Duty cycle

The duty cylce measurings have been carried out in accordance with
EN 60974-1 / VDE 0544 part 1 (10 min working period).
60% duty cycle means:
After a 6 min. welding period a 4 min welding pause must be respected. The electrical components are thermally protected against overheating.

Instructions to avoid interferences due to electromagnetic influences EMC

The welding unit has been manufactured in accordance with the requirements of guideline EN 60974-10 / VDE 0544 part 10 regarding electromagnetic compatibility. It is nonetheless the responsibility of the user to ensure that the welding equipment is installed and operated in accordance with the manufacturer's instructions. If electromagnetic interference is detected, it is the responsibility of the user of the welding equipment to find a solution with the technical assistance of the manufacturer. In some cases, it may be sufficient simply to ground the welding current circuit. In other cases, it may be necessary to build a complete shield for the welding power source and workpiece using the input filters. In all cases, electromagnetic interference must be reduced to avoid any possible malfunctions.
Note: For safety reasons, the welding current circuit may or may not be grounded. No modifications may be made to the grounding without the approval of an expert who is able to determine whether the changes might increase the risk of accidents, e.g. by allowing parallel welding current return paths which could destroy the ground conductors of other equipment. Further instructions are contained in TEC 974-XX "Arc welding equipment – installation and use".

a) **Evaluation of the installation site**

Before installing the welding equipment, the user must evaluate potential electromagnetic problems in the vicinity. The following must be taken into consideration:

- Other power cables, control cables, signal and telecommunication cables above, below and next to the welding equipment
- Radio and television transmitters and receivers
- Computers and other control devices
- The health of people in the vicinity, e.g. use of heart pacemaker and hearing aids
- Calibration and measuring equipment
- Interference immunity of other devices in the vicinity. The user must ensure the electromagnetic compatibility of other devices used in the vicinity. This may require additional safety measures.

b) **Procedures to reduce emitted interference**

1) **Mains supply**

Welding equipment is to be connected to the mains in compliance with the recommendations of the manufacturer. If interference occurs, it may be necessary to take additional precautions, e.g. filters for the mains connection. Make sure that the power cable of welding equipment is installed in a fixed position shielded by means of a metal conduit or similar. The entire length of the shield must be electrically connected. The shield must be connected to the welding power source in the way to obtain a good electrical contact between the metal conduit and the housing of the welding unit.

2) **Maintenance of the welding equipment**

Welding equipment must be maintained regularly in accordance with the recommendations of the manufacturer. All access and service doors and covers must be closed and fastened securely when the welding equipment is in operation. No modifications whatsoever may be made to welding equipment with the exception of modifications and adjustments specified in the manufacturer's operating instructions.

3) **Welding cables**

Welding cables should be kept as short as possible and routed close together on or near the floor.

4) **Equipotential bonding**

It is advisable to interconnect all metallic parts in and next to the welding equipment. Metallic parts connected to the workpiece can, however, increase the risk of the welder receiving an electric shock by touching these metallic parts and the electrode simultaneously. The welder must be electrically insulated against all these connected metallic parts.

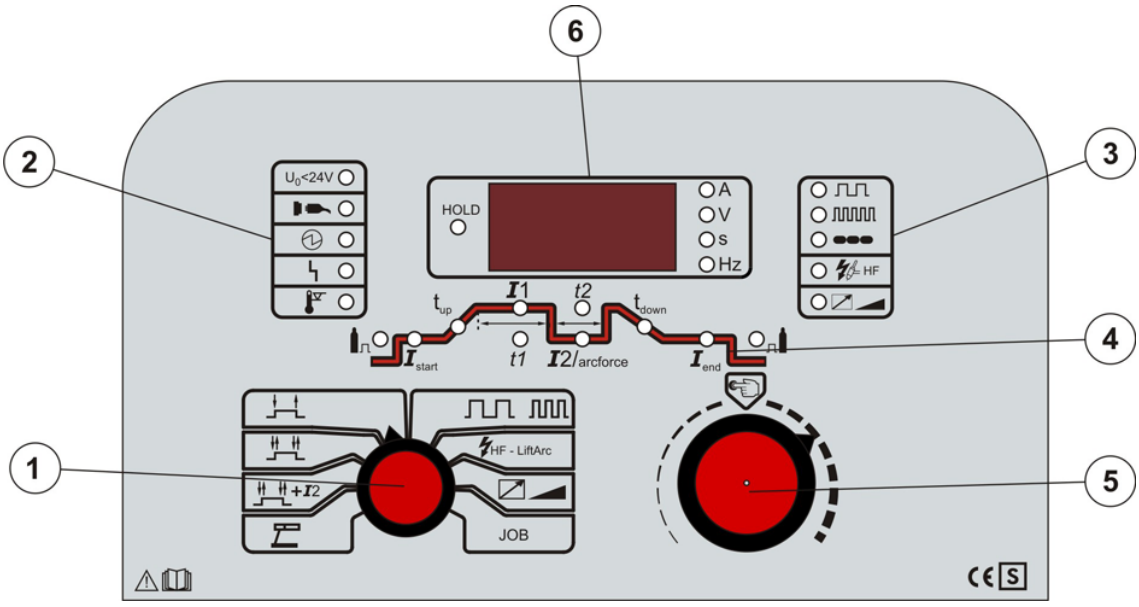
5) **Grounding the workpiece**

If the workpiece is not connected to the ground for electrical safety reasons, or due to the size and position of the workpiece, e.g. steel structure or outer wall of a ship, grounding the workpiece may in some cases, but not all, reduce emitted interference. It must be ensured that grounding the workpiece will not increase the risk of accidents for the user and cannot cause the destruction of other electrical equipment. If necessary, the grounding of the workpiece must be carried out by means of a direct connection to the workpiece. In countries where a direct connection is prohibited, the connection must be made by means of suitable reactors, selected in accordance with national regulations.

6) **Shielding**

Selective shielding of other cables and devices in the vicinity can reduce interference problems. For special applications, it may be worth considering shielding the entire welding system.

1.1 Control panel and display



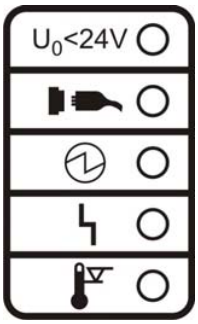
1. stepswitch for operation selection
2. status display
3. operation mode-display
4. programm-display
5. potentiometer with push-button
6. multifunctional-display

(1) *Stepswitch for operation selection*

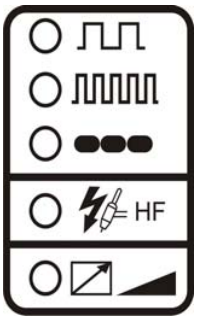
With the stepswitch you can select the operation mode as well as additional functions:

	TIG 2-stroke operation
	TIG 4-stroke operation
+I2	TIG 4-stroke operation with 2nd current
	Electrode hand welding
	Slow pulse / fast pulse / spot welding operation
HF - LiftArc	High frequency ignition / *LiftArc ignition*
	Energy adjustement with remote control / on the front panel
JOB	JOB-mode: Selection and editoring of welding jobs

(2) (3) *Statusdisplay / Operation mode*



„open voltage <24V" for electrode welding is in use (optional)
Supply voltage present
Welding in use
Fault indicator: machine is not ready for use
overtemperatur : inverter overheated



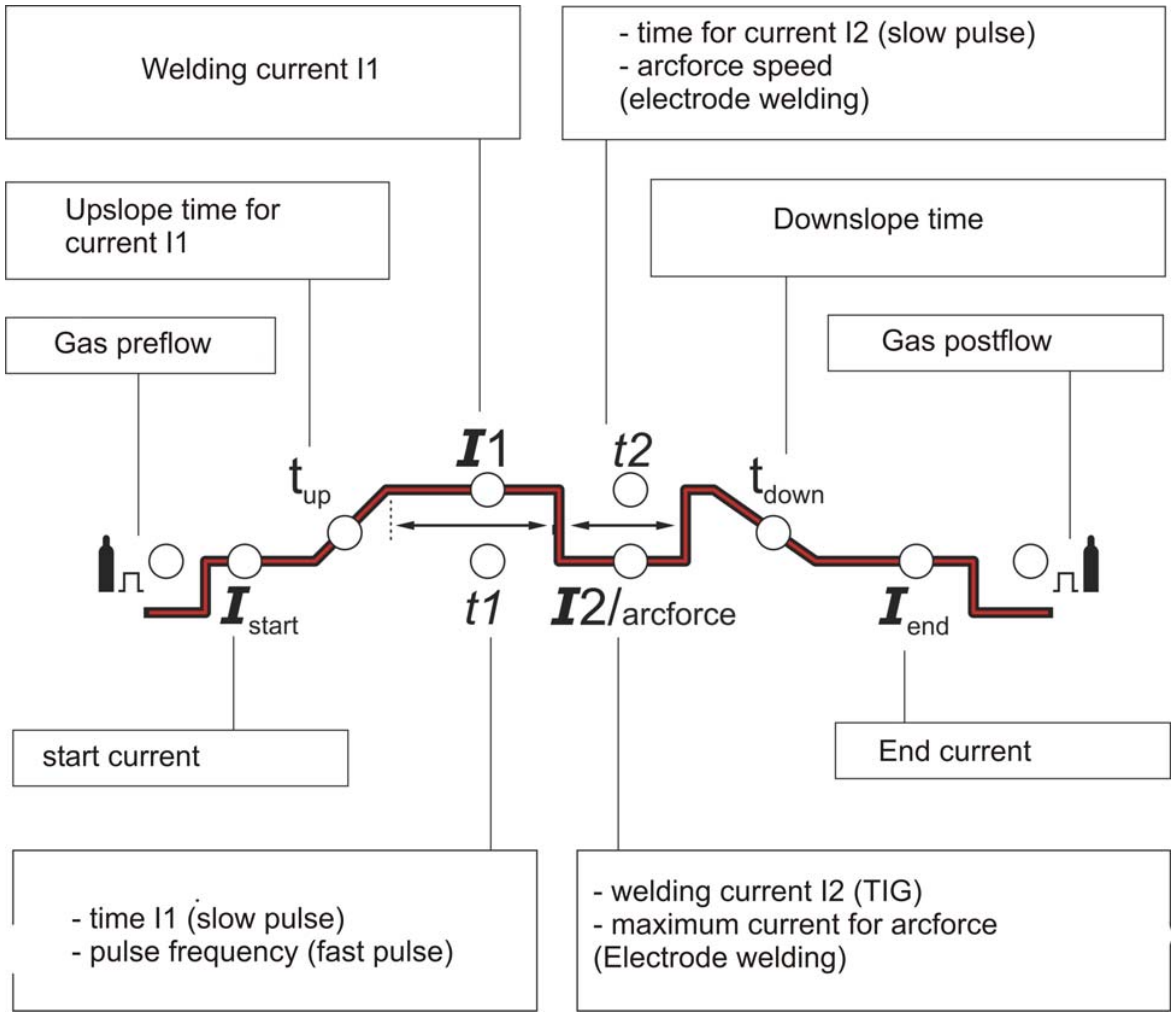
Slow pulse activ
Fast pulse activ
Spot welding activ
TIG ignition with high frequency
Energy adjustment with remote control

(4) *Program flow display*

During the welding process it shows every step in the program flow that is currently in use.

When not in operation it shows which parameter can be adjusted with turning of the potentiometer (5).

The following drawing explains the meaning of the symbols:



6 *Multifunctional-display*

The multifunctional-display shows the welding parameters and machine setup.

LED current in ampere
LED voltage
LED times in seconds
LED frequency in Hz or kHz

If the „HOLD"- display is lit, the last welded current is shown.

5 *Potentiometer push-button*

Parameter adjustement can be done by turning the potentiometer. Additionally by pressing the potentiometer the following selections can be made:

push-button function	
short pressing:	next step in the program flow will be shown on the display
steady pressing:	Program flow will be shown until release of the push-button.

Installation of the machine

Place the machine at least 0.80 m from a wall etc. to guarantee the cooling air can go through the unit. The room temperature should not exceed 40°C.

Main supply voltage

The main supply must be connected by a trained person. The main supply voltage is displayed on a sticker at the machine. The protection earth must be connected.

Earth lead (work cable) and stick electrode welding cable

The earth lead must have an excellent ground. The clamp should be attached to a clean, paint and rust free area on the workpiece or on the welding table.

Maintenance

The maintenance of the welding machine consists of a regular cleaning and inspection. It depends on the enviroment of the working area and the working hours.

Operation at generators

The genarator must supply at least 10 % more power than the maximum power requirement of the welding unit. For the operation of the MobiTIG 190 DC a minimum power of 6 kVA is required. Switch on the welding unit after the generator has been switched on.

Operation outside the workshop

The unit can be placed and operated outside the workshop according to the protection class IP 23. Make sure that all electrical parts are well protected against rain and water.

While in use for example after switching the operation mode, short messages will be shown in the Display. Please find there meaning in the below table:

display	
2 t	2-stroke operation
4 t	4-stroke operation
4 t S	4-stroke with 2nd current
E L	Electrode welding
P u	Stepswitch for operation mode inposition
H F	Stepswitch for operation mode in position HF - LiftArc
F r o	Energy control on the front panel
J o b	Job-mode in use
b t	Torch trigger is pressed

Current adjustment:

Please find here standard settings for the TIG manual welding in horizontal position of stainless steel:

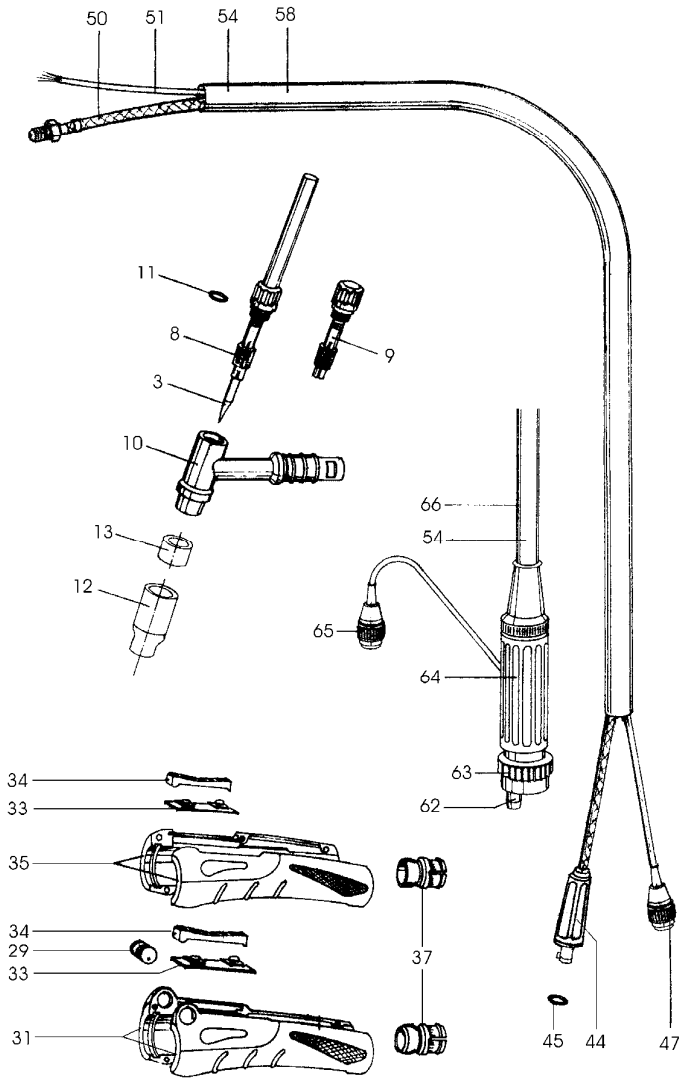
Material-thickness in mm	Weld-form	Seam-distance in mm	Aprox. welding-current in A	Number of layers	Welding-rod in mm	Tungsten electrode grey in mm	Gas nozzle	Argon welding gas l/min.
0,6	I	-	20-30	1	1,6	1,0	4	5
0,8	I	-	40	1	1,6	1,0	4	5
1,0	I	-	45	1	1,6	1,0	4	5
1,5	I	-	50	1	1,6	1,6	4-6	6
2,0	I	-	80-100	1	2,4	1,6	6-8	7
2,5	I	-	100-130	1	2,4	1,6	6-8	7
3,0	I	-	140	two sided	2,4	2,4	8	7
4,0	I	V-shaping.	180	1	2,4	3,2	8-10	10
6,0	I	V-shaping.	220	2	2,4	3,2	8-10	10
8,0	I	X-shaping.	280	2 (3)	3,2	3,2	8-10	10

Spares and accessories

1.1 TIG-hand welding torch TH 201 G

Technical data:

Cooling:	gascooled
DC range:	200 A, 40 % ED
AC range:	180 A, 40 % ED (at 30 % positive polarity)
Tungsten electrodes:	1.0 – 2.4 mm ∅
Weight:	230 g without hose assembly



TIG Hand Welding Torch, Model TH 201 G, gas cooled

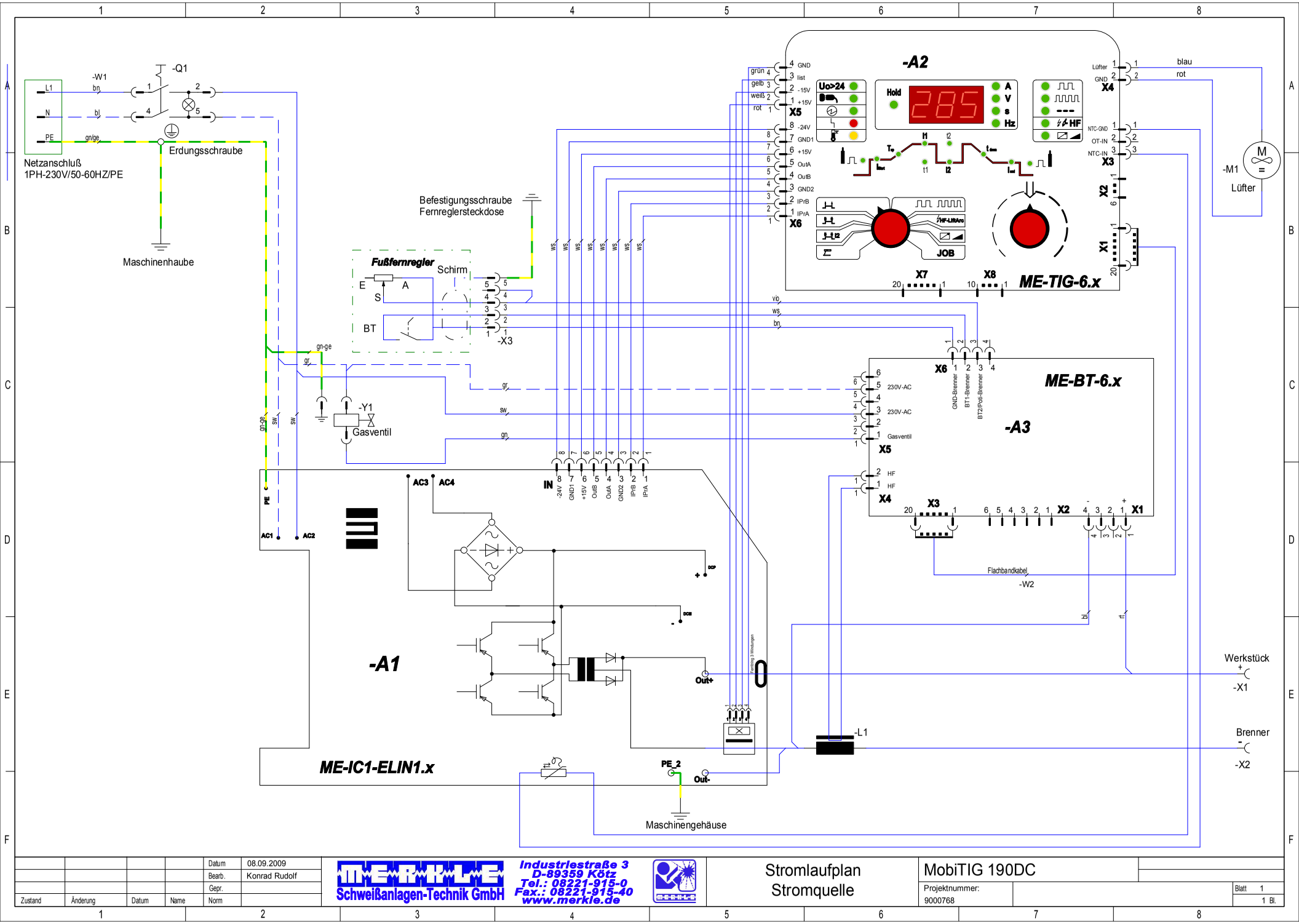
Pos.	Nr./no.	Bezeichnung	Description
		Mit Merkle TCG-Anschluss:	**With Merkle TCG connector:**
	114.144	**TIG-Handschweißbrenner TH 250 G, 4 m mit Merkle TCG-Anschluss, Leder/Textil mit Doppeldruckknopfschalter**	**TIG hand welding torch TH 201 G, 4m with Merkle TCG connector, leather/fabric hose assembly**
	114.146	**TIG-Handschweißbrenner TH 201 G, 8 m mit Merkle TCG-Anschluss, Leder/Textil mit Doppeldruckknopfschalter**	**TIG hand welding torch TH 201 G, 8m with Merkle TCG connector, leather/fabric hose assembly**
	114.148	**TIG-Handschweißbrenner TH 250 G, 8 m mit Merkle TCG-Anschluss, Leder/Textil mit Schalter und Potentiometer**	**TIG hand welding torch TH 201 G, 8m with Merkle TCG connector and potentiometer, leather/fabric hose assembly**
		Mit Euro-Zentralanschluss:	**With Euro Connector:**
	114.150	**TIG-Handschweißbrenner TH 250 G-EURO, 4 mit Euro-Zentralanschluss, Leder/Textil mit Doppeldruckknopfschalter**	**TIG hand welding torch model TH 201 G-EURO, 4 m with Euro connector, leather/fabric hose assembly**
	114.152	**TIG-Handschweißbrenner TH 201 G-EURO, 8m mit Euro-Zentralanschluss, Leder/Textil mit Doppeldruckknopfschalter**	**TIG hand welding torch model TH 201 G-EURO, 8 m with Euro connector, leather/fabric hose assembly**
	114.154	**TIG-Handschweißbrenner TH 201 G-EURO, 8m mit Euro-Zentralanschluss, Leder/Textil mit Schalter und Potentiometer**	**TIG hand welding torch model TH 201 G-EURO, 8 m with Euro connector & potentiometer leather/fabric hose assembly**
	114.156	**TIG-Handschweißbrenner TH 201 G-MAG, 8 m mit MIG/MAG Euro-Zentralanschluss HighPULSE 330/PU 300 K, Leder/Textil**	**TIG hand welding torch model TH 201 G-MAG, 8 m with MIG/MAG Euro connector for HighPULSE 330/PU 300 K**
		Erstausrüstung: 2,4 mm, Keramik LW 10	**Standard equip.: 2.4 mm, ceramic 10**
		Ersatz- und Verschleißteile:	**Spare parts and consumables:**
3.1	013.0.0111	Wolfram-Elektrode 1,0 x 175 mm grau Ceroxyd	Tungsten-electrode, grey 1.0 x 175 mm
3.2	013.0.0112	Wolfram-Elektrode 1,6 x 175 mm grau Ceroxyd	Tungsten-electrode, grey 1.6 x 175 mm
3.3	013.0.0113	Wolfram-Elektrode 2,4 x 175 mm grau Ceroxyd	Tungsten-electrode, grey 2.4 x 175 mm
8.1	114.184	Spannkappe "Quick TIG" 1,0 mm, lang TH 161/201 G	Back cap "quick TIG" 1.0 mm, long TH 161/201 G
8.2	114.186	Spannkappe "Quick TIG" 1,6 mm, lang TH 161/201 G	Back cap "quick TIG" 1.6 mm, long TH 161/201 G
8.3	114.188	Spannkappe "Quick TIG" 2,4 mm, lang TH 161/201 G	Back cap "quick TIG" 2.4 mm, long TH 161/201 G
9.1	114.190	Spannkappe "Quick TIG" 1,0 mm, kurz TH 161/201 G	Back cap "quick TIG" 1.0 mm, short TH 161/201 G
9.2	114.192	Spannkappe "Quick TIG" 1,6 mm, kurz TH 161/201 G	Back cap "quick TIG" 1.6 mm, short TH 161/201 G
9.3	114.194	Spannkappe "Quick TIG" 2,4 mm kurz TH 161/201 G	Back cap "quick TIG" 2.4 mm, short TH 161/201 G
10	114.196	Brennerkopf TH 161/201 G	Torch neck TH 161/201 G
11	022.1.0704	O-Ring 9 x 1,5 (P 583)	O ring 9 x 1.5
12.1	104.260	Keramik-Gasdüse 6,5 TH 161/201 G, TH 170/250 G und TH 450/451 W	Ceramic nozzle 6.5, TH 161/201 G, TH 170/250 G, TH 450/451 W
12.2	104.262	Keramik-Gasdüse 8,0 TH 161/201 G,	Ceramic nozzle 8.0, TH 161/201 G,

		TH 170/250 G und TH 450/451 W	TH 170/250 G, TH 450/451 W
12.3	104.264	Keramik-Gasdüse 10,0 TH 161/201 G, TH 170/250 G und TH 450/451 W	Ceramic nozzle 10.0, TH 161/201 G, TH 170/250 G, TH 450/451 W
Pos.	Nr./no.	Bezeichnung	Description
12.4	104.266	Keramik-Gasdüse 12,5 TH 161/201 G, TH 170/250 G und TH 450/451 W	Ceramic nozzle 12.5 TH 161/201 G, TH 170/250 G, TH 450/451 W
12.5	104.268	Keramik-Gasdüse 15,0 TH 250 G, TH 450 W TH 250 G und TH 450/451 W	Ceramic nozzle 15.0 TH 250 G, TH 450/451 W
13	114.214	Gaslinse komplett für TH 161/201 G, TH 451 W	Gas lense for TH 161/201 G, TH 451 W
29	108.354	Regelrad komplett mit Potentiometer für TIG TH Brenner	Adjustement wheel incl. potentiometer for TH torch
31	108.368	Griffschalenpaar TIG-Brenner mit Poti (geliefert ohne Kugelgelenk)	Handle TIG torch, right and left side for torch with potentiometer (delivered without ball joint)
33	107.992	Platine für TIG-Brenner mit und ohne Potentiometer (für Brenner mit Kugel-gelenk)	pc board for TIG double button switch (for torch with ball joint)
34	107.994	Wipptaster rot für TIG-Brenner mit Kugelgelenk	Switch button (red) for TIG torch with ball joint
35	107.988	Griffschalenpaar TIG-Brenner, schwarz (geliefert ohne Kugelgelenk)	Handle TIG torch, right and left side (delivered without ball joint)
37	107.998	Kugelgelenk für TIG-Griffschale wassergekühlt mit Überwurfmutter groß, schwarz	Kinking protection for TIG handle
44	109.554	Stecker für Merkle TCG-Anschluss (gasgekühlt) komplett mit Gummitülle und 2 O-Ringen	Merkle TCG connector plug (gas cooled) incl. rubber housing and 2 o-rings
45	103.544	O-Ring 8 x 1,6	O-ring 8 x 1.6
47	021.1.0380	Brennerstecker 5-polig für TIG-Brenner (standard)	Round plug 5-pole for TIG torch (standard)
50.1	106.868	Gasstromkabel 4 m TH 201/250 G für Einzel- u. TIG Euro-Zentralanschluss	Power cable 4 m TH 201/250 G
50.2	106.872	Gasstromkabel 8 m TH 201/250 G für Einzel- u. TIG Euro-Zentralanschluss	Power cable 8 m TH 201/250 G
50.3	107.048	Gasstromkabel 8 m TH 201/250 G-MAG für MAG Euro-Zentralanschluss	Power cable 8 m TH 201/250 G-MAG
51.1	107.646	Steuerleitung 3 x 0,5 LIYY nicht abgeschirmt, farbig	Control cable 3 x 0.5 LIYY no shield
51.1	107.646	Steuerleitung 3 x 0,5 LIYY nicht abgeschirmt, farbig	Control cable 3 x 0.5 LIYY no shield
51.2	107.242	Steuerleitung 5 x 0,5 LIYY nicht abgeschirmt, farbig	Control cable 5 x 0.5 LiYY no shield
51.2	107.242	Steuerleitung 5 x 0,5 LIYY nicht abgeschirmt, farbig	Control cable 5 x 0.5 LiYY no shield
54.1	114.332	Überzugschlauch 4 m - Textil/ Leder für TIG Brenner	Protection hose 4 m leather/fabric for TIG torch
54.2	114.334	Überzugschlauch 8 m - Textil/ Leder für TIG Brenner	Protection hose 8 m leather/fabric for TIG torch
58.1	106.866	Schlauchpaket TH 201/250 G, 4 m Merkle TCG-Anschluss (Steuerleitung 3 x 0,5)	Cable assembly 4 m, TH 201/250 G incl. Merkle TCG connector, control cable 3 x 0.5
58.2	106.870	Schlauchpaket TH 201/250 G, 8 m Merkle TCG-Anschluss (Steuerleitung 3 x 0,5)	Cable assembly 8 m, TH 201/250 G incl. Merkle TCG connector, control cable 3 x 0.5
58.3	106.871	Schlauchpaket TH 201/250 G, 8 m Merkle TCG-Anschluss (Steuerleitung 5 x 1,5)	Cable assembly 8 m, TH 201/250 G incl. Merkle TCG connector, control cable 5 x 1.5
		Schlauchpaket mit Euro-Zentralanschluss:	**Cable assembly with Euro connector:**
62.1	013.4.0048	Messingkörper Zentralanschluss TIG gasgekühlt mit 5/8"-UNF-Mutter	Brass body for TIG Euro connector incl. nut 5/8"
62.2	025.1.1401	Messingkörper Zentralanschluss MAG gasgekühlt	Brass body for MIG Euro connector incl. nut 5/8"
63	025.1.0300	Überwurfmutter schwarz	Euro adapter nut

64.1	013.4.0049	Knickschutz maschinenseitig 3-teilig für TIG-Euro-Zentralanschluss gasgekühlt (Gehäuse m. Bohrung, Mutter, TIG-Tülle)	Kinking protection at machine side TIG Euro connector (set 3 pieces)
64.2	025.1.1300	Knickschutz maschinenseitig 3-teil. für MAG Euro-Zentralanschluss gasgekühlt (Gehäuse, Mutter, MAG-Tülle)	Kinking protection at machine side MIG Euro connector (set 3 pieces)
65	021.1.0380	Brennerstecker 5-polig für TIG-Brenner (standard)	Round plug 5-pole for TIG torch (standard)
66.1	108.504	Schlauchpaket TH 201/250 G-EURO, 4 m Euro-Zentralan. (Steuerleitung 3 x 1,5) Lederschlauch	Cable assembly 4 m, TH 201/250 G incl. Euro connector, control cable 3 x 0.5
66.2	108.506	Schlauchpaket TH 201/250 G-EURO, 8 m Euro-Zentralan. (Steuerleitung 3 x 1,5) Lederschlauch	Cable assembly 8 m, TH 201/250 G incl. Euro connector, control cable 3 x 0.5
66.3	108.507	Schlauchpaket TH 201/250 G-EURO, 8 m Euro-Zentralan. (Steuerleitung 5 x 1,5) für Brenner mit Potentiometer (Leder)	Cable assembly 8 m, TH 201/250 G for torch with potentiometer incl. Euro connector, control cable 5 x 0.5
66.4	107.047	Schlauchpaket 8 m kpl TH 250 G-MAG MAG-Zentralan. (Steuerleitung 3 x 0,5)	Cable assembly 8 m, TH 201/250 G-MAG incl. Euro connector, control cable 3 x 0.5

Änderungen vorbehalten. **Changes reserved.**

2 Wire diagram



				Datum	08.09.2009
				Bearb.	Konrad Rudolf
				Gepr.	
Zustand	Änderung	Datum	Name	Norm	

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Stromlaufplan
Stromquelle

MobiTIG 190DC

Projektnummer: 9000768

Blatt 1
1 Bl.

3 Conformity Attestation

3.1 MobiTIG 190 DC

MERKLE Schweißanlagen-Technik GmbH
Industriestraße 3
D-89359 Kötz

CE

EU – Conformity Attestation

Description of the unit: TIG Welding Unit

Model: MobiTIG 190 DC

The above mentionned unit complies with the following European Regulations:

EU-Low Voltage Regulation 73/23/EWG
EU-Electromagnetic Compatibility 89/336/EWG

In case of any modifications, incorrect repairs not exclusively authorized by Merkle, this attestation looses its valdity.

Applied norms EN 60974 - 1 / IEC 974 - 1 / VDE 0544 part 1
EN 60204 - 1 / IEC 204 - 1 / VDE 0113 part 1
EN 60974-10 / VDE 0544 Teil 10

Kötz, September 21st, 2009

Wilhelm Merkle, Generalmanager
Merkle Schweissanlagen-Technik Gmb