

**UNI-MIG
WELDING**



TRADE 250

Compact MIG Manual





3 YEARS Warranty*

Machine Model

Description

UNIMIG Trade 250

Part Number

KTS250

CONTENTS

PAGE No:

Safety

3

General Description

6

Installation

6

Operation

7

Machine Parts

10

Welding Tips

11

Maintenance

13

Trouble Shooting

13

*** CAUTION ***

Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapours from substance inside. These can cause an explosion even though the vessel has been "cleaned". Vent hollow castings or containers before heating, cutting or welding. They may explode.

CE Declaration



The manufacturer: Weld-Impex Manufacturing and Trading Ltd. declares that the product conforms to

- o EN 60974-1 (*Arc welding equipment*)
- o EN 50199 (*Electromagn. compatibility*)
- o EN ISO 12100-2 (*Safety of machinery*)
- o 73/23 EGK (*Low-voltage directives*)
- o 89/336 EGK (*Electromagn. compatibility*)
- o 98/37 EK (*Machines*)

European directives, norms and is suitable for the *technical parameters* in the instruction manual.

The machine has been designed according to the European norm EN 60974-1, it fulfils the (*disturbance filtering*) directions of EN 55011:1994 group "A", and it also complies with the directions of the European directive 2002/95/CE (RoHS).

Karcag, Febr. 12, 2007.

.....
István KISS
Managing Director

Legal Declaration

The quality certification will be handed over to the customer when purchasing. *Technical* parameters and *proper* usefulness of the equipment are warranted by the producer.

Warranty begins at installation; its period and services' list are in the *warranty* (supplement).

The manufacturer doesn't take responsibility for damages resulting any of the followings:

- o using *not according* to intended designation
- o *not complying* with labour etc. safety instructions
- o *not knowing* instruction manual
- o *not proper qualification* for the specified work (installation, welding, maintenance, etc.)
- o *lending* the machine without instruction manual, and/or to *not well* trained person.

The manufacturer reserves the rights to change *properties*, *technical parameters*, *appearance* of the product.

Built-in parts *lose* their warranty if damaged!

This Manual is under *copyright* owned by Weld-Impex Ltd. Without preliminary written permission, it is prohibited to *distribute*, *copy*, or using by *other way* any data (text, figure).

All right reserved. © Weld-Impex Ltd. 2007.

Weld-Impex Ltd. has the Quality Management System certified by ISO-9001. Its number: HU97/10906.



Information:

- o Address:
Weld-Impex Ltd. 5300 Karcag, Kunhegyesi út 2.
(from Karcag towards *Kunmadaras*, out of the town.)
- o Internet: www.weldimpex.com
Hungarian: www.weldimpex.hu
- o E-mail:
weldiker@weldimpex.hu (*trade*)
muszak@weldimpex.hu (*technical support*)
- o Telephone:
 - o (+36) 59 **500-241**: *General office (director)*
 - o (+36) 59 **500-244**: *Trading office*
 - o (+36) 59 **503-515**: Telex

Our other services:

- o Galvanization, electrostatic powder-painting
- o Screen process
- o Body ironing works (also CNC)
- o Manufacture of dry transformers
- o Manufacture of *unique* electrical equipments
- o Repairs *over* the guarantee
- o Technical supervision
- o Installing, transport, commission
- o *Leasing* of equipment (MIG, TIG, Plas)
- o *National* service network

For details, please visit our website or ask for information by telephone!

SAFETY

SAFETY PRECAUTIONS

for electric machines of welding/cutting industry



Present Manual should be studied thoroughly before starting any operation!



Next paragraphs provide some **safety precautions** and **instructions** how to use electric machines of *welding* and *cutting* industry in order **all persons** to **prevent** accidents, injuries etc.

As all preventing rules cannot be written because of **many variations** of **task environment**, **follow** the rules concerning the actual job(s) and the employer's **safety practices**.

Read, understand and **keep industrial safety** and **fire protection** instructions concerning to **safety** of **all parts** and **equipments** used (cylinder, torch, extractor, etc.).

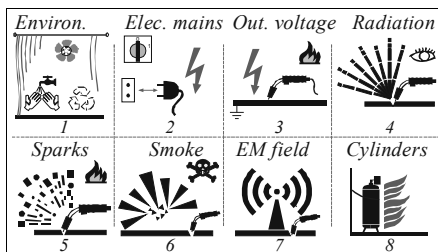
1. Dangerous features



1. Formed **conditions** of the machine and work are important: **transport, storage, installation, operation, maintenance**.
2. The machine is connected to the **mains network**.
3. The **electrode, work-piece** (or *ground*), and **cables** are **under voltage** (electrically live). Voltage of more electrodes can be **added up** on the work-piece. At **plasma cutting** there is 200–350 V at the torch!

At *welding/cutting*, the followings are **produced**:

4. Visible **light**, ultraviolet and infra-red **rays**, significant **heat**.
5. **Sparks, spatter** and high-energy **metal drops** with **great temperature** (800–1600 °C). These are thrown from the arc and can **fly** to **adjacent** areas (through small gaps).
6. Toxic **fumes, gases** and **smoke** generated from
 - the **worked** (e.g. galvanized, lead or cadmium plated) metal,
 - the gas used **for work**,
 - those reacting with **each other** (e.g. phosgene).
7. Considerable **electromagnetic field** (because of high-current *arc* and *mains cable*) that **radiates** to the environment. Its effect **highly** decreases with the distance. Radiation of machines with **HF-ignition unit** (TIG, Plas) is **more** bigger.
8. **Cylinders** using for work and **nearby** contain **high-pressure gas**.



2. Damaging effects

These **dangerous features** have **harmful** influence to the **workers** and also to **near living beings, machine**, and **other equipments**:

◆ General injuries

1: A not suitable made **environment**, a not well prepared and made **working area** can be **dangerous** (machine tipping over, its overheating, person falling down, etc.).



◆ Electric shock

2: The machine's **inside** is **under mains voltage**.

3: Machine's **cables** have **voltage** while working.



◆ Eye damaging

4: *Arc ray* causes **eye inflammation**.

5: *Flying sparks* can cause **physical** eye damaging.

6: *Smoke, gas, fume* can **irritate** the eye.

8: Cylinders' **overpressure** can come to the eye.



◆ Hand and skin injuries

4: **Heat effect** of the *arc ray* and the overheated **work-piece** can burn the skin.

5: *Flying sparks* can **reach** the skin.

6: *Smoke, gas, fume* can **irritate** the skin.



◆ Breathing damage

6: *Smoke* etc. can **displace** air and **breathing in** can cause injury or even death.



◆ Fire and explosion danger

2: *Electric fault* can happen in the machine in principle.

3: Cables can **overheat** or a **short-circuit** can happen.

4: *Arc ray* has a **great heat effect** to the work-piece.

5: *Sparks* are of **high** temperature and **fly far away**.

6: *Fumes* can be **hot** and can stimulate burning.

8: *Cylinders* can contain **high-pressure** and **fire-feeding** gas (e.g. oxygen).



◆ Electromagnetic disturbances

7: *EM radiation* has **too much** energy for **sensitive** electrical equipments.



◆ Environmental damage

1,4,5,6: *Welding/cutting* and its **waste** materials can **contaminate** the surrounding **soil, waters, and air**. **Damaging noise, light, and heat** are produced.

3. The machine's transport, storage



- » Must be in **upright** position, secured against tipping over.
- » **Lifted** (if **bigger** size) by means of lift device and with the help of **more** personnel.
- » **Protected** against vapour, moisture, **damaging** weather and mechanical effects (in **dry, covered** place, for good cause in its box or covered).



4. Creating working area





- » The **working area** should be ...
- clean and **orderly**
- well-**lighted** and -**aired** (e.g. extractor fan), and of good temperature; **protected** from falling water, rain, and storm
- of straight, smooth floor, **free from obstructions** (of non-combustible material)
- screened, fenced off with **safety grids** (if necessary).



SAFETY

» In the *working area* or near, there not be ...

- *inflammable* materials (or cover them)  
- person living with pacemaker
- electrically sensitive appliances in the area of health (e.g. pacemaker), control (e.g. computer), measurement, safety (e.g. guard), radio-waves (e.g. mobile phone), etc.

» The cylinder ...

- must be in upright position, securely chained to a fixed support, and away from areas where they may be subjected to damaging physical or heat effect
- valve protection cap should always be in its *place* if out of use.

» Pay attention to the followings:

- Keep a fire-extinguisher, water hose, blanket, etc. readily available for immediate use.
- Connect work clamp to the work piece close to the working area (not be complex current path). Connections must be tight.
- Ground the work to a good electrical point.
- Place the high-current cables side by side and at floor. Nobody stay close to them for a long time.
- Cables not be wound around metal or living body.

5. Operation



» The equipment:

- can be operated at a place which is suitable for safety work and well ventilated
- changes decreasing its safety shall not be carried out
- its electric shock prevention test must be carried out regularly as prescribed
- must be connected to a line provided with protective grounding, circuit breaker or fuse, and possibly protection switch
- its airing grids/slots be free
- can be used only for the purpose that it was designed for
- its all installation, repair and maintenance works (possibly on disconnected machine) can be performed only by qualified, trained, and competent (examined) persons, according to the labour safety provisions, electric shock protection, and local and manufacturer's regulations.

» Protect ...







- cables from any kind of damage, e.g. don't step on them and don't roll anything over them
- low-current cables of the machine(s) by laying them in a safe location, or, if necessary, with screening
- public utilities (gas hoses and fittings, electric wires and equipments, etc.)
- air (by filter usage), soil, worked metal etc. from contamination.

6. Working








» Don't weld/cut ...

- with covers removed or with damaged cables
- materials and parts under voltage (also don't touch these)

- near to inflammable or explosive materials, dust, vapours (e.g. chlorinated hydrocarbon vapours coming from cleaning or spraying operations)
- when not knowing what gases and fumes can be generated e.g. from coated metals   
- in damp and dirty environment   
- tanks, drums, barrels, cylinders, containers, etc. as these are filled up with vapours (being inside in spite of "cleaning" and produced by working).

» Pay attention to the followings:

- Safe and stable working position is needed.
- Rolls of wire feeder and the fed wire are dangerous (at MIG welding).
- Use enough ventilation and mask or respirator.
- Keep your head and face:
 - ♦ out of the fume (avoid breathing in these)  
 - ♦ away from the valve outlet when opening it.
- Wear protective clothing (isolate yourself from the work-piece):
 - ♦ oil-free, fire-resistant clothing covering all body 
 - ♦ dry, leather gloves with no holes
 - ♦ high shoes, hair cap, ear plugs  
 - ♦ safety filter glass with side shield (helmet).
- Switch off the machine when out of use (wait its cooling; also recommended pulling the mains plug out).
- Waste materials must be handled carefully, regularly.
- Keep all parts, fittings (e.g. gas hose) in well and safety condition, suitable for work, according to rules and specifications.

» Don't do the followings:

- Don't turn any switch, don't pull cables from the connector while working.
- Never turn the torch toward anybody (and yourself).
- Don't touch the electrode:
 - ♦ to the work-piece when this is not necessary
 - ♦ to parts or cylinder under voltage
 - ♦ if touching also the work-piece at the same time
 - ♦ to liquid (e.g. for cooling).

*** CAUTION ***

Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapours from substance inside. These can cause an explosion even though the vessel has been "cleaned". Vent hollow castings or containers before heating, cutting or welding. They may explode.

1. Introduction

In case of MIG/MAG welding the arc is generated between the automatic fed **welding wire** and the **work piece**, shielding in CO₂ gas or gas mixture. Its advantages:

- ◆ concentrated, small-region heat input (low warp)
- ◆ high current density and welding speed, quick melting
- ◆ wide range of welding parameters
- ◆ deep penetration, high melting rate
- ◆ easy automation
- ◆ ability to weld of thin plates, roots, etc.
- ◆ no slag on the welded seam.

The machine constitutes a **compact** unit with the gas cylinder *fixed to it* and can easily move by *rubber wheels*. Its main **parts**:

- ◆ **Mechanical parts**: Metal cabinet, wheels, wire feeding mechanism.
- ◆ **Mains-voltage parts**: Contactor, switches, fuse, fans, auxiliary transformer.
- ◆ **High-current parts**: Main transformer, rectifier, capacitors, choke, outlets.
- ◆ **Low-voltage parts**: Fuse, feeding motor, solenoid valve, control electronic.

2. Specification

Mains voltage	240 V, 50 Hz
Nominal mains power	5 kVA (d.c. 60%)
Max. mains current	38 A (d.c. 30%)
Mains fuse	T 20 A
Open-circuit voltage (DC)	20 – 45 V
Welding current range	30 – 250 A
Duty cycle (T _c =10 min)	30 % – 250 A, 60 % – 175 A, 100 % – 135 A
Number of welding steps	14 (2×7)
Dimensions (w×h×l) without wheels	445 × 710 × 805 mm 300 × 565 × 805 mm
Weight (approx.)	75 kg

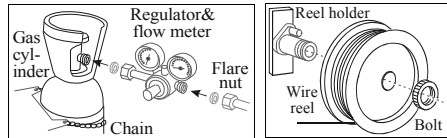
- Protection: IP 21
- EMC class: 2A
- cos φ: 0.8
- Insulation class: I
- Class of heat resistance: F.
- Cooling: AF

3. Installation

Safety precautions must be considered!

► Equip the **gas cylinder** with **pressure regulator** and **flow meter** according to their instruction manuals. Put the cylinder *on its place* on the machine, secure it carefully by the **chain** and mount the **flare nut** of the gas hose to the regulator output by a wrench. Air sealing should be **checked**, possible leakage must be stopped.

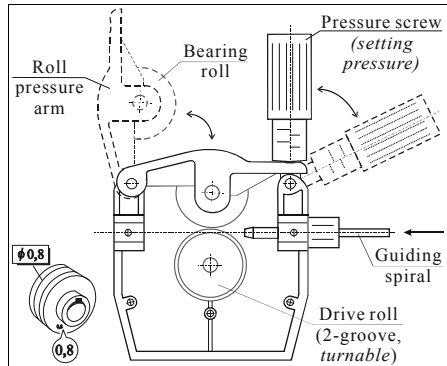
For **flux-cored** wire electrode, gas is **not** in use!



► In space separating from electric parts, the **reel holder** holds the **wire reel** for *hand gun*. Push the wire reel onto the **holder** and **secure** against falling. Make free the wire end and cut it smoothly.

The reel's **braking** can be adjusted by the **bolt** located on the middle of the holder.

► The **feeding mechanism** (for *hand gun*) serving for reliable wire feeding is mounted near to the **reel holder**. On the feeding motor's shaft there is a **drive roll**, in the **groove** of which the wire runs. This is provided by a **bearing roll** pressed against the **drive roll** by the **pressure arm**. The pressure can be adjusted by a **screw**. The wire is guided by a **guiding spiral**.



Unlock the pressure arm and, putting the wire into the wire feeder, align it into the drive roll's groove so that the wire goes 10-15 cm into the **guiding tube**.

Drive roll can be used for wire of **two** different diameter (size is marked on it); for changing, **turn over** the roll after unscrewing the shaft **nut** (but the **contact tip** of the torch must be changed, too).

► **Connect the**

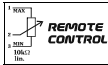
short polarity cable to the one output socket, according to the desired welding polarity (generally to the '+'). It depends also on the welding method: with or without gas;

- work cable to the other output socket (where spatter is the least in the welding current range);
- clamp of the work cable to the work piece;
- torch cable to the central adaptor.

For spool gun, connect also its motor wires (24V DC) to the socket marked with Spool Gun symbol.

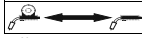


▪ three wires of the (wire speed adjusting) remote pot/meter, if using such a torch, to the socket marked with Remote Control.



► **Switch the**

- inside switch to spool or hand gun,
- control unit's remote switch to on or off state according to the gun's type used (hand/spool gun, and with/without remote pot/meter).

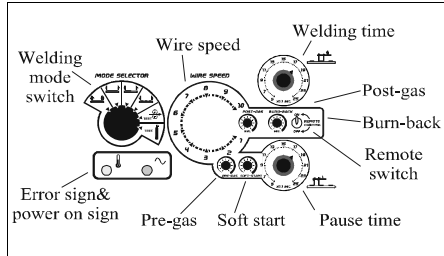


In case of

- ▣ hand gun, the built-in feeding mechanism is in use;
- ▣ spool gun, the external feeding mechanism built in the torch is in use.

The equipment is protected against overheating: in this case welding voltage and wire feed are automatically turned off (signed by the yellow LED). After the inside fans cool it down, welding can be continued.

The **control unit** provides the feeder motor's controlled DC voltage, switches the contactor and gas valves on/off and controls the welding process.



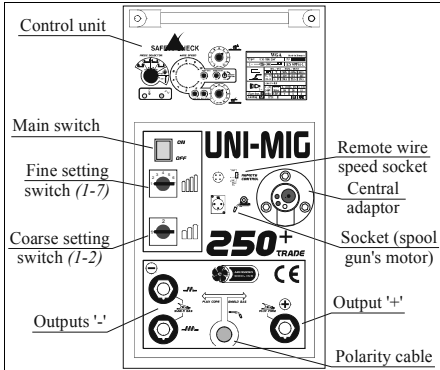
- Welding mode selector switch: selects one mode under the six possible operations (from left to right):

- ☼ 4-stroke welding
- ☼ 2-stroke welding
- ☼ Spot welding
- ☼ Interval welding
- ☼ Wire threading
- ☼ Gas test

- green LED: signals the 'power on' state
- yellow LED: signals overheat error
- Wire speed pot/meter (1–10, relative value)
- 'Welding on' time pot/meter (0.5–2.5 sec.)
- 'Welding off' (pause) time pot/meter (0.5–2.5 sec.)
- Wire burn back time (mini) pot/meter (0–0.5 sec.)
- Gas post-flow time (mini) pot/meter (0.1–2.5 sec.)
- Gas pre-flow time (mini) pot/meter (0–0.5 sec.)
- Soft start time (mini) pot/meter (0.1–0.2 sec.)
- Remote switch: on for wire speed adjusting on torch.

Typical wire speed according to the scale on the potentiometer P4 (m/min):

P4	sp.	P4	sp.	P4	sp.	P4	sp.	P4	sp.
1	1	3	3.5	5	7.5	7	10.5	9	15.5
2	2	4	5	6	9	8	13	10	18



The gas hose (to the cylinder), the mains cable and the cooling fans are located at the machine's rear plate.

The built-in fuses and the hand gun/spool gun selector switch are in the space of the wire reel.

4. Operation

Typical welding current and open-circuit voltage of the welding steps:

I ×	Current	Voltage	2 ×	Current	Voltage
1-3	40 – 60 A	20–22 V	1-3	100 – 150 A	27–33 V
4-5	60 – 80 A	22–24 V	4-5	150 – 200 A	33–38 V
6-7	80 – 100 A	24–27 V	6-7	200 – 250 A	38–45 V

Welding modes (selected by the switch K):

☼ Gas test: Pushing the torch button, the gas valve is open, so the gas flow can be checked and set.

☼ Wire threading: Pushing the torch button, the wire is threaded with a constant speed (approx. 10 m/min.). Take care of torch cable to be as straight as possible in order wire to pass in it without difficulty.

Starting welding (by pushing the torch button):

- ▣ First there is only gas preflow;
- ▣ Afterwards the wire feeding begins (with soft start), and also the welding current.

Continuing welding:

☼ **4-stroke welding:** Releasing the button, the welding continues and it stops only if the button is pushed again.

☼ **2-stroke welding:** Releasing the button, the wire feeding stops.

☼ **Spot welding:** Expiring the set time (or releasing the button), the wire feeding stops.

☼ **Interval welding:** Releasing the button in the pause time, the wire feeding stops.

Finishing welding (at stopping wire feeding):

■ Elapsing the *wire burn back time*, the welding current ceases;

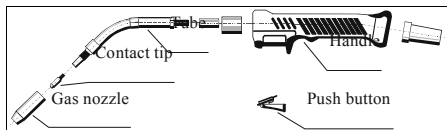
■ Elapsing the *gas postflow time*, the gas flow stops too.

5. Maintenance

Safety precautions must be considered!

■ **Torch:** During work apply welding spray to the gas nozzle to prevent *melted droplets* adhering to it. The contact tip is a consumable part to be changed regularly depending on its burning and erosion. The torch *liner* should be blown out with compressed air.

Factory's instructions should be authoritative.



■ **Cables and hoses:** Check condition of *gas hose* and *mains* and *work* cables, replace if damaged!

■ **Wire feeder:** This must be checked and maintained regularly at the *drive roll* and the guiding *spiral*.

■ **High-current unit:** It can be necessary to remove dust from *inside* the equipment by compressed air, to check connections, possible tighten them.

6. Trouble shooting

Safety precautions must be considered! If the fault remains or is caused by an *unknown* reason, contact the *service*!

■ **The green LED is off**

1. No *mains* voltage → check.

2. Faulty *switch(es)*, *mains cable* or *transformer* → replace it or contact the service.

3. Blown fuse → Find the *cause* of trouble (maybe e.g. short circuit), replace fuse and check its *rating*.

■ **The yellow LED is on**

The machine is *overheated* → wait until the fan cools it down and the LED *extinguishes*.

■ **No welding arc**

1. Faulty *torch* or its *cable* or *button* → repair or replace.

2. Loose *connection* at welding cables → tighten.

3. Worn contacts of *contactor* → replace.

4. Faulty *control* unit → contact the service.

■ **Bad gas flow**

1. Empty *cylinder*, faulty pressure *regulator* or flow *meter* → repair or replace.

2. Leakage at gas hose or gas *valve* → stop.

3. Cylinder or regulator is *frozen* → heat up it by hot water or gas heater.

■ Weld porosity

1. Contaminated gas → replace cylinder.

2. Bad *quantity* of gas or gas *post-flow* → set correctly.

■ Irregular wire feed

1. Worn or deformed input *guide*, *roll* or its *groove*, loose wire reel → locate fault and repair.

2. Bad *pressure* on the roll → set correct pressure.

3. Rusty wire surface → replace.

4. Faulty *control* unit → contact the service.

■ Bad quality of weld

1. Bad gas flow, contaminated *surface*, improper quality of *wire* or *gas*, worn *parts* → use good quality products, maintain the machine and its parts *regularly*.

2. *Size* of the *drive roll* and *contact tip* don't match to the *wire* → check and replace.

3. → check *welding parameters*:

▪ welding current

▪ arc voltage

▪ wire stick out

▪ polarity

▪ nozzle-to-work distance

▪ leading of the torch.

7. Parts list

Part	qty	Code No.
On the front plate		
Handle (half)	2	2142240230
Control electronic WI 3.0, 24V AI	1	
11-pin PCB-connector (<i>inside</i>)	1	2342240179
Turning knob FF-25 (<i>w. speed</i>)	1	2342240017
Turning knob FF-16	3	2342240015
Mains switch C6050 AL	Q1	2142330208
Switch GN 20-55 (1-2)	Q2	2142330189
Switch GN 20-8009 (1-7)	Q3	2142330191
Standard central adaptor	1	2142240339
3-pin socket (<i>spool gun motor wires</i>)	1	2144760001
4-pin socket (<i>gun w.speed pot/meter</i>)	1	2144760148
Welding cable's socket CX-31	3	2142240068
Polarity cable's plug CX-21	1	2142240154
Polarity cable's fixing clamp	1	2342240567

On the rear plate		
Gas hose Ø5, 1.5 m	1	2357320008
Solenoid valve 42V~	Y1	2142241101
Mains cable 3×2.5 mm ² , 3 m	1	2343630019

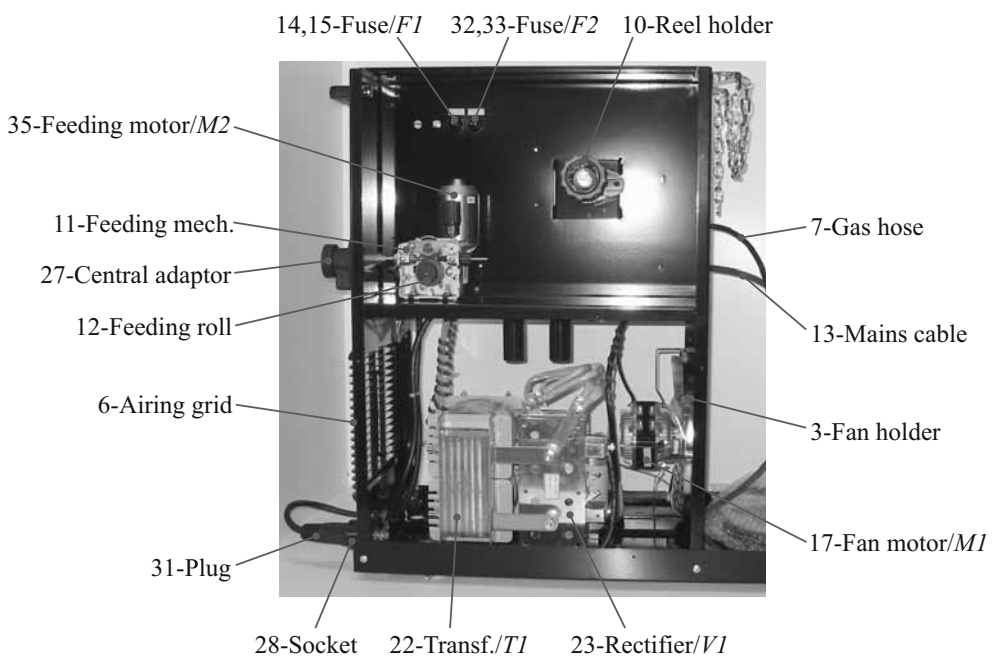
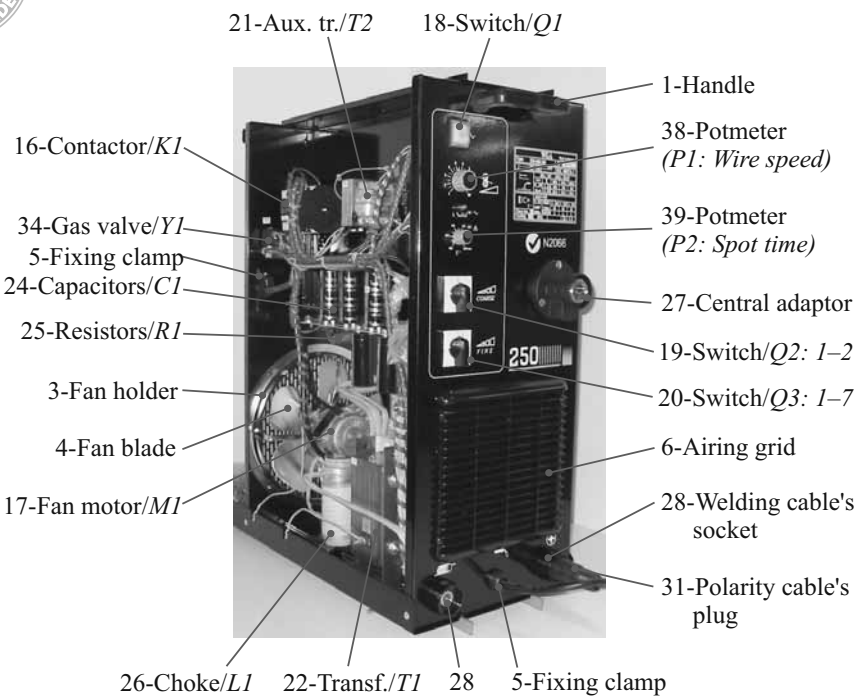
Mains cable's fixing clamp		1	2342240567
Fan motor	<i>M1</i>	2	2142240240
Safety grid for fan		2	2142240241

Inside			
Main transformer	<i>T1</i>	1	29081480
Rectifier bridge PMS 16/4/2	<i>V1</i>	1	2142241414
Capacitor 22 mF 50 V	<i>C1</i>	5	2344720412
Resistor 27Ω 16W	<i>R1</i>	2	2344720323
Choke	<i>L1</i>	1	29090330
Contacto LC1-D32, 42V~	<i>K1</i>	1	2142320096
Auxiliary transformer	<i>T2</i>	1	29081138

In the wire reel's space			
Reel holder		1	2142240076
Gun selector switch R13-28B	<i>Q4</i>	1	2142330107
Fuse holder PTF-35 (250V)		2	2343730015
Fuse 250V/1A	<i>F1</i>	1	2343730016
Fuse 250V/3.15A	<i>F2</i>	1	2343730049
Wire feeding mech. 2465L-502D		1	2142241561
Feeding roll Ø40/22, Ø0.9-1.2 "V"		1	2342240737
Feeding motor D76L, 24V 65W	<i>M2</i>	1	2142241561

Other			
Plastic hinge M-6		2	2327610002
Plastic lock		1	2357320082

Accessories			
Work cable 25 mm ² , 3 m		1	2343630051
Work cable's plug CX-21		1	2142240154
Work clamp 350A		1	2142240072
3-pin plug (<i>spool gun motor wires</i>)		1	2144760002
4-pin plug (<i>gun w. speed pot'meter</i>)		1	2144760147



Welding Tips

Welding tips

The built-in main transformer of **flat static** characteristic provides *stable* welding even with *hand*-moved torch.

This means that e.g. the arc length increases (*shifting* work point), the arc voltage hardly changes but welding current and melting rate decrease: work point is *restored*.

1. Using gas

Properties of **argon** and **CO₂** are in the next table. Properties of **mixed gas** are between the two so it is good *compromise* between quality and cost.

Property	Ar	CO ₂
Width of seam	wide	narrow
Height of seam	flat	big
Depth of penetration	small	deep
Dimensions of bath	big	small
Current of welding torch	low	big
Danger of contact tip burning	frequent	rare
Spatter	low	strong
Danger of porosity	-	middle
Weldability of structural steels	less	good
Pulse arc welding	excellent	not poss.
Dipping arc welding	adequate	excellent
Weldability of Cr-Ni steels	good (+O ₂)	condition-ally
Weldability of Al and alloys	possible	not poss.
Costs	very high	low

It can be seen that only un- or low alloyed steels are practical to weld with CO₂.

It is worth considering offers of gas manufacturers!
Flux-cored wire *doesn't* need any gas!

Typical values of *gas consumption* (litre/min):

wire Ø mm	gas cons.	wire Ø mm	gas cons.
0.8	8 – 12	1.2	10 – 15
1.0	10 – 12	1.4	12 – 16

2. Welding properties

Welding unalloyed **steel** (in case of butt joint, 82% Ar+18% CO₂ gas):

thickness	wire	current	voltage	w. speed
mm	Ømm	A	V	m/min
1.0	0.8	70	17	3.6
1.5	0.8	90	18	4.9
2.0	0.8	120	20	7.2
3.0	0.8	130	21	8.0
4.0	1.0	130	21	4.5
5.0	1.0	130	21	4.5
6 – 9	1.0	130 – 200	21 – 25	4.5 – 8.3
10 – 20	1.2	135 – 300	21 – 30	3.0 – 9.6

Aluminium and alloys (SG-AlSi5 wire and Ar gas):

thickness.	wire	current	voltage	w. speed
mm	Ømm	A	V	m/min
1.0	0.8	70	17	7.3
1.5	0.8	70	17	7.3
2 – 3	0.8	90	18	9.7
4.0	1.2	130	20	5.5
5.0	1.2	160	22	6.9
6.0	1.2	180	23	8.0

Copper and alloys (Ar gas):

thickness	wire	current	voltage	w. speed
mm	Ømm	A	V	m/min
3.0	0.8	175	23	10.9
5.0	1.2	210	25	6.0

3. Welding parameters

It is very important *welding parameters* properly to set to the welding process.

◆ Welding current

Wire feed speed determines the welding current which assures uniform melting. Welding current is set by the wire feed speed.

◆ Arc voltage

Too high: wider and longer weld, lower penetration depth, higher spatter and burning alloying elements - in turn good appearance of seam surface.

Too low: narrow and deep weld, poor appearance of seam surface, bulgy fillet weld.

◆ Wire stickout

Too long: reduction of welding current (melting rate), bad gas shielding, strong spatter.

Too short: contact tip can be melted, and the wire can burn back.

Recommended values (according to welding current)

A	50	100	150	200	250	300	350	400
mm	5	6	8	10	12	14	17	20

◆ Polarity

Unusual polarity can be used only for *piling* welding, but arc burns irregularly and spatter is stronger.

◆ Gas nozzle-to-work distance

Too big: bad gas shielding.

Too small: difficult visible welding bath, easier melting gas nozzle, to which melted metal droplets can adhere.

Recommended value approx. 10-12 mm (15 mm upper 350 A).

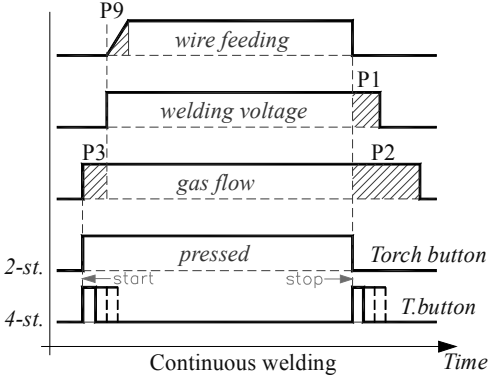
◆ Tipping torch

In the direction of travel (pulling): higher penetration depth, narrow and high seam; good gas shielding, well visible welding bath.

In the opposite (pushing): fusion defects, lower penetration depth, wide and flat seam (but good for thin plates and roots).

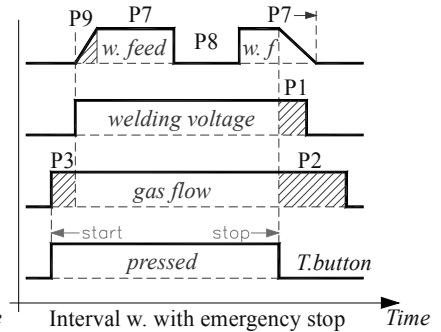
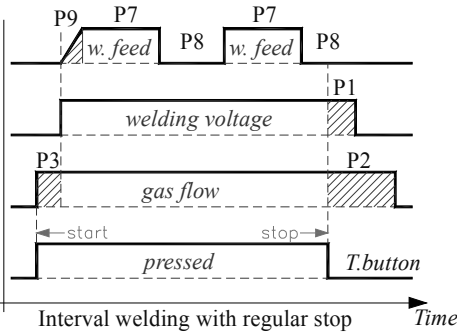
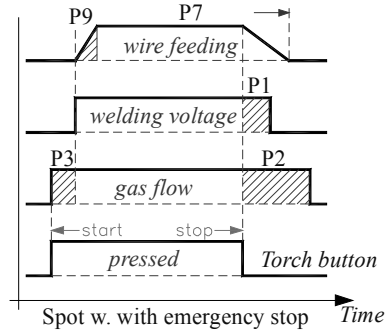
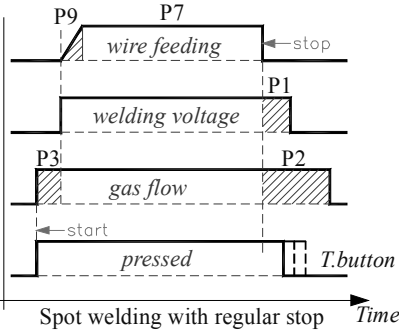
Welding Tips

Welding time diagrams



- ⊙ P3: Gas pre-flow time (0-0.5 s)
- ⊙ P9: Soft start time (0-0.2 s)
- ⊙ P1: Wire burn-back time (0-0.5 s)
- ⊙ P2: Gas post-flow time (0-2.5 s)

- ⊙ P7: Welding time (0.5-2.5 s)
- ⊙ P8: Pause time (0.5-2.5 s)





**UNI-MIG
WELDING**

MAINTENANCE

WARNING:

Exposure to extremely dusty, damp, or corrosive air is damaging to the welding machine. In order to prevent any possible failure or fault of this welding equipment, clean the dust at regular intervals with clean and dry compressed air of required pressure.

Please note that: lack of maintenance can result in the cancellation of the guarantee; the guarantee of this welding equipment will be void if the machine has been modified, attempt to take apart the machine or open the factory-made sealing of the machine without the consent of an authorized representative of the manufacturer.

TROUBLESHOOTING

Caution:

Only qualified technicians are authorized to undertake the repair of this welding equipment. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed in this manual.

WARRANTY

- 3 Years from date of purchase.

• Welding Guns of Australia Pty Ltd warranties all goods as specified by the manufacturer of those goods. This Warranty does not cover freight or goods that have been interfered with. All goods in question must be repaired by an authorised repair agent as appointed by this company. Warranty does not cover abuse, mis-use, accident, theft, general wear and tear. New product will not be supplied until

Welding Guns of Australia Pty Ltd has inspected product returned for warranty and agree's to replace product. Product will only be replaced if repair is impossible.
If in doubt please ring.



UNI-MIG
WELDING 
WELDING GUNS OF AUSTRALIA Pty Ltd

WWW.UNIMIG.COM.AU

Disclaimer:

While the information is provided in good faith, Welding Guns Of Australia does not warrant the accuracy of information provided nor assume any legal responsibility for it or for any damage which may result from reliance on or use of it or from any negligence of Welding Guns Of Australia or other person/s with respect to it.

For further information please call Welding Guns of Australia Pty Ltd.

112 Christina Rd, Villawood NSW 2163 - PO Box 3033 Lansvale NSW 2166

UNIMIG pursue a policy of continuous research and development, and therefore reserve the right to change the specifications, or design, without prior notice. • 3 year warranty power source.