

KEMPOMAT 220/MIGGER 220 is designed for the MIG welding of thin steel sheets and vehicle repairs. The wide choice of voltages - 16 different steps - and the stepless regulation of the wire feed speed enables the optimum welding values to be selected for widely different applications.

TECHNICAL DATA

Mains voltage 3~ Mains current (100 % duty)	V kVA	380/220 4,0
Welding current at duty cycle *) 35 % 60 % 100 %	A/V A/V A/V	220/24,5 180/23 140/21
Voltage steps Open circuit voltage	pc V	16 16 - 32
Wire feed speed Wire sizes Weight of wire reel Shielding gas	m/min mm kg	0 - 16 0,6 - 1,2 15 CO ₂ or CO ₂ /Ar
Dimensions length width height Weight	mm mm mm kg	815 390 1010 104
Temperature class		H (180°C)
Machine complies with the safety regulations set out in VDE 0542 and SEN 8301 standards.		

*) According to VDE 0542/7,65 standard:
The duty cycle is the percentage of arcing-time in a 5 min total time.
Example: 3 min welding in a 5 min period = 60 % duty cycle.

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INSTALLATION

Siting

- the machine should be used indoors, away from strong draughts.
- the location should be free from excessive mois-

ture or grinding dust.

- if the machine has to be covered, the natural cooling air circulation should be ensured.

Lifting of the machine

TAKE OFF THE GAS BOTTLE FROM THE BOTTLE CARRIER BEFORE LIFTING THE MACHINE.

For the lifting there are lifting ears in the reel case of the machine (picture 7).

Connection to the mains *)

The mains cable is led to the machine through the grommet in the back wall of the machine and connected to the mains terminal strip and locked with the clamp (B).

The phase wires to the cable are connected to the connectors L1, L2 and L3.

The yellow-green protective earth cable is connected to the earth screw \oplus beside the terminal strip. Picture 1.

Connection cable:

Connection voltage	Connection cable	Fuses delayed
220 V 3 ~	4 × 2,5 mm ²	16 A delayed
380 V 3 ~	4 × 2,5 mm ²	10 A delayed

Change of connection voltage *) (pictures 2 and 3)

When the 380/220 V machine is coupled on 220 V, on the change-over contactor and the terminal strip of the auxiliary transformer are made the changes in switching according to pictures 3a and 3b.

From the wiring diagram delivered with the mach-

ine you can see the connections more clearly. The 380/220 V machine is coupled on 380 V when it is delivered from factory unless it has otherwise been agreed in writing.

- *) **NOTE!** The connection of the primary cable from the mains supply and changes to any internal primary voltage connectors should only be carried out by a competent electrician.

Shielding gas

Construction steel: mixed gas 80 % Ar/20 % CO₂ or CO₂

Construction steel: mixed gas 98 % Ar/2 % O₂

Aluminium: Argon

Flow speed of shielding gas approx. 10 l/min.

Mounting of the welding gun (picture 5)

- inside the multi-function adapter of the welding gun is a **liner**, which is **always selected according to the filler wire and the wire diameter** in the table
- check that the liner inside the cable of the welding gun is suitable for the filler wire:
 - white symbol colour for wire \varnothing 0,6 - 0,8 mm
 - red symbol colour for wire \varnothing 1,0 - 1,2 mm
- **change to the gun suitable contact tip for the wire diameter** 0,6; 0,8; 1,0 or 1,2
- connect the welding gun on the central adapter of the machine, **tighten the lock nut with hand.**

Filler wire \varnothing mm/mater.	inner \varnothing mm	Liner	
		symbol	mater.
0,6-1,0 steel	1,2	1,2	steel
1,0-1,2 alum.	1,5	röd	Teflon

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Mounting of the filler wire

- open the press arm above the feed roll
- **choose the feed roll according to wire diameter** and set it onto the draw axle so that the marking of the wire diameter "0,6...1,2" is at the back side of the roll
- **set the wire reel onto the hub, lock the reel**
NOTE! Wire reels with metal circles may be warped. Control that the reel has enough place to rotate without touching body or other metal parts of the machine.
- release the wire end from the reel and cut off the bent wire end. **SEE THAT THE WIRE REEL DOES NOT GET RELEASED**
- straighten about 20 cm of the wire and make sure that the end is not sharp. A sharp end could damage the liner and the contact tip of the welding gun
- thread some wire into the liner of the welding gun
- see to that the wire is placed correctly onto the feed roll and close the press arm of the feed rolls (choose the contact tip according to the filler wire)
- turn the main switch to position **I** and set the wire feed speed at a low value
- keep the hose of the welding gun straight and press the switch, until the wire end comes out of the contact tip
- **the pressure adjustment of the feed rolls** (8 in picture 5) must be set so that the wire is fed evenly into the liner and small restriction of the wire can be made without the feed rolls slipping. **NOTE! Excessive pressure** will cause flattening of the wire and loosening of the wire coating and undue wear of the rolls
- **regulate the braking of the wire reel hub** (picture 6) so that the reel stops rotation at the same time as the feed rolls, in other words the wire may not be loosened on the reel.

OPERATION

SETTINGS (picture 4)

Earth cable

The welding characteristics of the machine are greatly influenced by the welding choke. The selection of the optimum choke value is combined with connection of the earth cable.

Connection I This connection is used when welding thin sheets (under 1 mm).

Connection II This connection is used when welding thicker sheets.

The earth connection from the weld plant should at all times be made directly onto the piece to be welded. The contact between the earth connection and the job should be as large and as flat as possible and all rust and paint on the workpiece should be removed.

The settings of the welding voltage

The welding voltage is set with a 4-step coarse and fine adjustment switch.

Open circuit voltages are according to the table.

DO NOT ADJUST THE VOLTAGE DURING WELDING.

Coarse	Fine	Open circuit voltage
1	1 - 4	16,7 - 18,6 V
2	1 - 4	19,2 - 21,8 V
3	1 - 4	22,5 - 26,2 V
4	1 - 4	27,1 - 32,5 V

The settings of the wire feed speed

The wire feed speed is stepless 0—16 m/min and equipped with memory scale (0—10).

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MAINTENANCE

The frequency of maintenance must take into account the amount of use and the environment. Proper use and rational preventive maintenance ensure the most troublefree use of the machine without any unforeseen interruptions. Basic maintenance should be carried out at least

twice a year for the following:

- welding gun
 - wire feed mechanism
 - power source unit
- In addition the welding gun requires daily cleaning and service.

Welding gun

Due to high temperature and wear the welding end of the gun requires most attention.

Gas nozzle

- clean the gas nozzle often during the day
- at the same time check the insulators of the gas nozzle

Weld spatter from the arc will build-up on the gas nozzle and prevent the free flow of shielding gas. Severe spatter build-up can lead to short-circuiting between the nozzle and the contact tip causing severe damage.

Contact tip

- the spatter on the contact tip should be cleaned
 - the condition of the tip should be checked weekly
- An enlarged or blocked contact tip should be changed for a new one.

Liner

- the liner should be cleaned and checked at least each time a new wire reel is fitted to the machine.
- Dry compressed air is blown through the liner; blowing should be preferably made from the neck end.

Wire feed mechanism

Check the following:

- groove of the roll. If the groove is worn this will cause disturbances in the wire feed
- that the wire runs straight. The liner of the multi-function adapter must be as near the feed rolls as possible, without touching them, and the wire must run straight from the hole of the liner to

the groove of the feed roll

- function of brake of wire reel hub; the brake band must be lubricated lightly

Clean the unit of dust and dirt.

Power source

Switch off the machine from the mains before all cleaning, service and reparations in the power source unit.

- clean the interior parts and components of the machine with dry compressed air
- check the condition of all electrical connections
 - * the oxidized parts must be cleaned
 - * the loose parts must be tightened
- possible faults must be repaired immediately

WHEN CLEANING WITH COMPRESSED AIR, ALWAYS PROTECT YOUR EYES WITH PROPER EYE PROTECTION!

IN CASE OF PROBLEMS CONTACT THE KEMPPI WORKS IN LAHTI, FINLAND OR YOUR KEMPPI-DEALER.

GUARANTEE

The machines produced and products represented by Kemppi Oy are guaranteed against defects in material or manufacture. Within the limits of the guarantee the defective part will be replaced by a new one, or when possible, repaired free of charge.

The guarantee is valid for one year provided that the machine is used in one-shift work.

The guarantee does not compensate for damage

due to improper use, neglect or normal wear. Possible travelling costs or freight or postage charges are not covered by the Kemppi guarantee.

Guarantee repairs shall be carried out only by Kemppi authorised representative. In case guarantee repair is demanded a certificate about validity of guarantee has to be presented.

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