

MIG/MAG WELDING EQUIPMENT



LASTIMIG 26-36

Manual and operating instructions

LM26-36/e1112/E/rc



**CE-VERKLARING VAN OVEREENSTEMMING
CE-DECLARATION DE CONFORMITE
CE-DECLARATION OF CONFORMITY**

LASTEK BELGIUM N.V./S.A.

Industriepark Wolfstee
Toekomstlaan 50
2200 Herentals

verklaart hiermede dat de volgende machines:
déclare par la présente que les appareils suivants:
declares herewith that the following machines:

LASTIMIG 26C 2WD Euro 24V art.nr./No. d'art. 2319215.....
LASTIMIG 26C 4WD Euro 24V art.nr./No. d'art. 2319205.....
LASTIMIG 26C 4WD Euro 42V art.nr./No. d'art. 2319208.....
LASTIMIG 26C 4WD Dinse 24V art.nr./No. d'art. 2319221.....
LASTIMIG 26C 4WD Dinse 42V art.nr./No. d'art. 2319220.....

LASTIMIG 26D art.nr./No. d'art. 2319275.....

waarop deze verklaring betrekking heeft, met volgende richtlijnen/normen overeenstemt:
auxquels rapporte cette déclaration, sont conformes aux directives/normes suivantes:
to which this declaration refers, are in compliance with following directives/standards

73/23/CEE	laagspanningsrichtlijn/directive basse tension/directive low tension
93/68/CEE	CE markering/marquage CE/CE labelling
89/392/CEE	machinerichtlijn/directive machines/directive machines
89/336/CEE	EMC richtlijn/directive CEM/directive EMC
EN 60974-1	Veiligheidsvoorschriften voor lasmachines Instructions de sécurité pour appareils de soudage Security instructions for welding machines

Herentals, 02.01.2000

Lastek Belgium n.v./s.a.



Ir. R. Creten

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0. INTRODUCTION

Dear customer,

You have just acquired a Lastek MIG/MAG welding machine, a welding equipment of excellent quality. We thank you for the trust in our products.

During development and manufacture of Lastek welding machines, only spare parts of highest quality have been used. In order to obtain a high life span, even for heavy duty applications, all parts have to fulfil severe Lastek standards.

All Lastek machines are manufactured in accordance with existing safety rules and CE legal directives. The CE-marking and CE declaration confirm this conformity.

Lastek reserve the rights to make changes without previous notification. Illustrations and characteristics are not contractually binding and do not engage the responsibility of the manufacturer.

Safety rules must be observed and particularly those concerning protective measures against electric currents.

Lastek welding machines are intended for purchase and use by commercial/industrial users and persons trained and experienced in the use and maintenance of welding equipment. Have all installation, operation, maintenance and repair work performed only by qualified people.

This manual contains important information for a safe and economical use of the welding machine. Read and understand this manual before installation, operation, maintenance and repair work with this machine.

This manual does not replace instructions of service personnel of Lastek. Read and understand the manuals of all accessories belonging to or used with the equipment.

Warranty shall not apply to equipment that has been modified by any party other than Lastek, or equipment that has improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment that has been used for operation outside of the specifications for the equipment.

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1. SAFETY INFORMATION AND PRECAUTIONS DURING WELDING

WARNING! Arc welding can be hazardous.

Protect yourself and others from possible serious injury or death. Keep children away. Pacemaker wearers away until consulting your doctor.

Have all installation, operation, maintenance and repair work performed only by qualified people.

In welding, as in most jobs exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is a summary of the most important safety information. Read and follow all safety standards.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live when ever the output is on. The input power cir and machine internal circuits are also live when power is on. In semi automatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

0. Do not touch live electrical parts.
1. Wear dry, hole-free insulating gloves and body protection.
2. Insulate yourself from work and ground using dry insulating mats or covers.
3. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
4. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
5. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
6. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
7. Do not use worn, damaged, undersized, or poorly spliced cables.
8. Do not wrap cables around your body.
9. Ground the work piece to a good electrical (earth) ground.
10. Do not touch electrode while in contact with the work (ground) circuit.
11. Use only well-maintained equipment. Repair or replace damaged parts at once.
12. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
13. Wear a safety harness to prevent falling if working above floor level.
14. Keep all panels and covers securely in place.

ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved earplugs or earmuffs if noise level is high.

FUMES AND GASES can be hazardous to your health.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

1. Keep your head out of the fumes. Do not breathe the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDS) and manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot work piece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from travelling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.

FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.
3. Do not touch hot (just welded) parts without protection gloves.
4. A cut wire end can cause stab wounds

GASCYLINDERS can explode if damaged

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Keep cylinders away from any welding or other electrical circuits.
3. Never allow a welding electrode to touch any cylinder.
4. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

MAGNETIC FIELDS FROM HIGH CURRENTS can affect pacemaker operation

1. Pacemaker wearers keep away.

2. TECHNICAL DATA



TECHNICAL DATA		LM 26	LM 36
Mains voltage	V	3x220 / 3x380	3x230 / 3x400
Frequency	Hz	50	50
Rating at 60% Duty Cycle	kVA	3.5	5.7
Maximum rating	kVA	7	12
Fuses	A	16/10	30/20
Welding voltage	V	16-27	17-32
Welding current range	A	40-260	60-360
Welding current	A		
at 35% duty cycle		260	360
at 60% duty cycle		200	280
at 100% duty cycle		160	200
Number of selections		10	12
Wire speed	m/min	0-15	0-15
Wire diameter	mm	0.6 ÷ 1.0	0.6 ÷ 1.2
Insulation class		H	H
Protection class		IP21	IP21
Dimensions	mm	730x450x825	730x450x825
Weight	kg	96	127

3. GENERAL DESCRIPTION

3.1. Construction

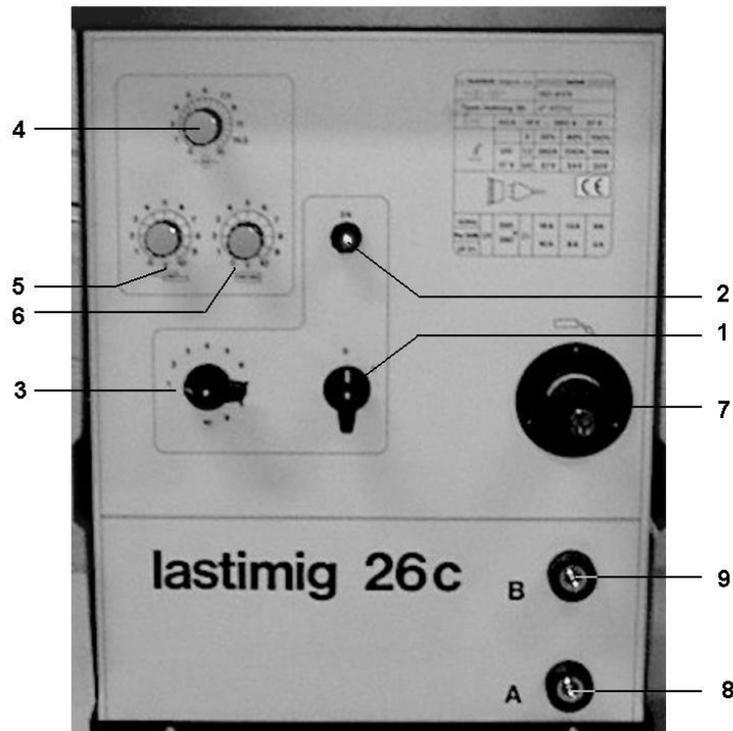
The Lastimig 26-36 are designed for welding solid wires, depending on the power of the machine, from diameter 0.6 up to 1.2 mm with protection gas.

They are suitable for MAG welding of unalloyed and low alloyed steel (with CO₂ or Argon/CO₂ – protection gas), welding of stainless steel (with Ar/2%CO₂ or Ar/2%O₂ – protection gas) up to 6 mm plate and for MIG welding of aluminium (with inert gas, Ar or Ar/He)

The Lastimig 26-36 have special welding characteristics thanks to:

- a three phase welding transformer with a constant voltage arc characteristic
- solid copper windings
- direct current self with two outputs to change the short circuit frequency
- excellent welding properties even at low welding current
- strong motor for the wire feeder
- easy regulation of the wire speed which assures a constant drive torque on the whole range
- functional and aesthetic housing
- solid construction in steel plate with a bottle support, four rubber wheels and a handle
- central and compact torch connection on the wire feeder

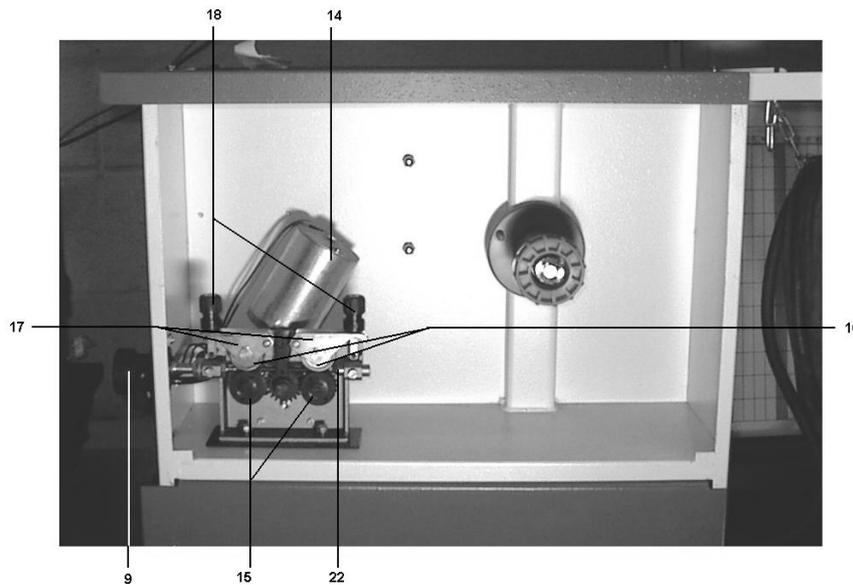
3.2. Front panel and controls



All control elements are situated together on the front panel.

1. **On/off switch:** this switch cuts off the control circuit of the Lastimig
2. Fuse with control lamp
3. **Voltage selector switch:** this multi-position switch (Lastimig 26 = 10 positions, Lastimig 36 = 12 positions) changes the welding voltage between min. and max. by changing the windings of the transformer. This switch **may not be operated** during welding.
4. **Wire feed speed** between 0 and 15 m/min
5. **Spotwelding:** this switch-potentiometer has double function: 0-position is normal welding, out of 0-position is for spot welding with welding time T_s which is set by potentiometer (5)
6. **Interval welding:** this switch-potentiometer has double function: 0-position is normal welding, out of 0-position is for interval welding. Welding time T_s is set by potentiometer (5) and no-weld time is set by potentiometer (6)
7. **Torch connector** this assures a fast and good connection of the torch to the welding machine. Welding current, gas, wire feed and control wires are all together in one connector.
8. **Earth cable connector**
A: with earth cable fitted in this terminal, half of the self is put into the welding circuit. Terminal **A** is used for thicker plate welding.
In practice: from position 4 of switch (3).
B: with earth cable in this terminal, the whole self is put into the welding circuit. This terminal is used for thinner plate welding.
In practice: till position 4 of switch (3).

3.3. Wire feed unit



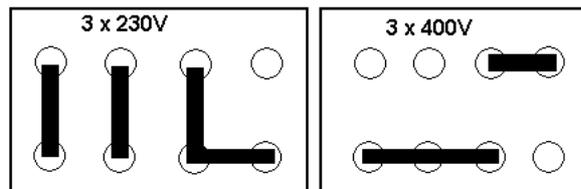
To execute a good welding job, it is essential that the wire speed is constant and regular. In the Lastimig Wire feed unit this constant speed is the result of the following elements:

- Powerful DC motor 24 V (14)
- Drive wheels (15) with adapted profile for the wire diameter and type
- Pressure wheels (17)
- The pressure is adjusted with the levers (17) and regulation screws (18)
- By lifting the levers (17) the pressure wheels are free and a new wire can be inserted in the wire feed unit.
- The wire guide (22) is nylon for soft wires and brass for harder wires
- The torch coupling (9)

4. INSTRUCTION FOR USE

4.1. Installation

- Adjust the Lastimig to the mains voltage. First remove the left-hand side panel. Adjustment is effected by switching over the connection bars on the terminal Block, according to the following diagram:



- Connect a 3-pole plug with the earth to the mains cable.
WARNING: the yellow/green wire is the earth connector and **MUST ALWAYS BE** connected
Connect the equipment to the mains.
- Put the gas cylinder on the support at the backside of the machine and fix it with the chain. Mount the regulator and the flow meter, turn the flow meter to 0 (no flow) and open the cylinder valve.
- Connect the earth clamp and the gas hose
- Connect the torch
- Put the wire spool on the wire feeder. Make sure that the wire is unwound at the bottom of the spool.
Adapt the wire guide (22) and drive roller (15) according to the wire diameter.
Before entering the free wire end into the wire feed mechanism, it should be straightened over about 10 cm (4 inches) from the end, to avoid every obstruction from the wire in the liner, the gun and the contact tips.
Now the pressure wheel is put on its place by means of the lever.
- Open the gas cylinder and regulate the gas flow of gas on the necessary value (generally 8 – 12 l/min).
- Turn the power switch (1) into the position "ON". The welding voltage is chosen by means of the voltage selector (3) and the wire speed with potentiometer (4).
Mount a contact tube on the torch, corresponding to the wire diameter.
Push and hold the torch switch pressed until the wire has passed through the torch.
The Lastimig 26-36 is now ready to weld.

5. WELDING

5.1. Welding mild steel

For welding mild steel Lastifil 20 is used with mixed gas Ar-CO₂ (flow: 8 - 20 l/min). The wire diameter has to be chosen according to the plate thickness and the available welding power. The values mentioned below in the table can help you as a rule of thumb for selection of wire diameter:

Plate thickness (mm)	Wire diameter (mm)
0 - 1.5	0.6
1 - 5	0.8
>2	1.0

The welding voltage will be selected according to plate thickness, the welding position and the type of joint to be welded.

According to this welding voltage, there is one wire feed speed giving the best welding result.

If wire speed is too low: the arc length is too long and wire will burn on the contact tube.

If wire speed is too high, the welding wire pushes into the weld bead.

5.2. Welding of Stainless steel

For MIG/MAG welding of most standard stainless steels the following Lastek wires are used:

Lastifil 804 (316L) or Lastifil 803 (308L) with shielding gas Ar + 2-3% CO₂ or Ar + 1-2% oxygen (flow: 8 - 20 l/min.). The wire diameter (0.8, 1.0, 1.2 mm) depends on the plate thickness to be welded (see 6.2.1). For special types of stainless steel, consult Lastek service.

6. TROUBLE SHOOTING

TROUBLE	CAUSE	CORRECTION
1. no current on the power source	a) line disconnect switch is open b) plug out of the receptacle c) fuses removed or blown d) wire disconnected in plug or receptacle	a) close the switch b) plug into the receptacle c) replace fuses d) fix the wire
2. wire feeding motor does not turn	a) fuse blown on the front panel b) printed circuit defect	a) replace fuse b) replace printed circuit
3. nothing happens when pushing the gun switch	a) cable not connected b) control wires in torch gun disconnected c) gun micro switch defect d) printed circuit defect e) fuse blown on the front panel f) line fuse blown	a) fix the cable b) check all contacts in the gun switch and fix loosen wires c) replace micro switch d) replace printed circuit e) replace fuse f) replace line fuse
4. no welding arc is formed	a) ground cable not connected	a) connect the ground cable
5. porosities in the weld bead	a) no gas or insufficient gas flow b) gas hose defective or obstructed c) dirty work piece (oil, grease, rust, paint) d) welding nozzle too far from the work piece e) gas nozzle is dirty or obstructed	a) open the gas cylinder completely, regulate flow (7-20 l/min) b) replace gas hose and check all connections for tightness c) clean work piece d) hold the welding gun closer to the work piece e) clean the nozzle
6. weld bead is convex	a) welding backwards	a) weld forwards
7. wire burns into the contact tube	a) wire speed too low b) resistance in the gun liner c) wire reel too tightened d) resistance in the contact tip e) welding voltage too high f) arc length too short g) pressure on the driving wheel too low	a) increase speed b) check the liner and replace if necessary c) release the brake d) replace contact tip e) reduce the welding voltage f) keep the gun torch farther from work piece g) increase pressure
8. binding defects	a) the molten pool flows ahead	a) increase the welding speed
9. too much spattering during welding	a) welding voltage too low b) nozzle obstructed c) gun too far from the work piece d) dirt on the work piece e) insufficient gas flow f) wire speed too high	a) increase welding voltage b) clean nozzle c) keep the gun closer to the work piece d) clean work piece e) increase gas flow f) reduce wire speed
10. no or insufficient penetration	a) wrong protection gas b) welding current too low c) wrong polarity	a) check gas cylinder and if necessary use another cylinder b) increase welding current by increasing welding voltage and wire speed c) check the cables: the ground cable has to be connected to the negative terminal and the welding gun to the positive terminal
11. irregular wire speed / wire speed not constant	a) wire reel is too tight or too loose b) problem with welding torch c) control defective	a) readjust the wire reel brake b) the welding torch has to be blown through regularly. The torch liner and the drive wheels must correspond with the type and diameter of wire c) contact Lastek service

7. MAINTENANCE

In spite of their robustness, the welding performance of Lastek power sources depends upon careful use and a regular maintenance.

Once every 6 months (more often in dusty surroundings).

1. always pull out the mains plug
2. remove side covers of the power source
3. blow out the machine with dry compressed air
4. check all electrical contacts
5. check electrical wires and plugs for damage. Replace if necessary.
6. close the covers