

# PRIMA

---

PRIMA SRL  
I – 35020 ALBIGNASEGO / PD  
Via Garibaldi, 28  
Tel +39 49 8625963  
Fax+39 49 8625968

## MANUAL INSTRUCTIONS

### MICROCAR 28



#### **ATTENTION**

Carefully read this manual before using the spot welder.

This manual refers to the following spot welders MICROCAR 28.

This manual is supplied by PRIMA srl without any guarantee. PRIMA srl reserves the right to apply to this manual, at any time and without notice, modifications due to typing errors, inaccuracy of contents or improvements of the programs and devices. In any case, possible modifications will be integrated in the subsequent editions of this manual. In no case PRIMA srl will be liable for direct, indirect, extraordinary, accidental or consequential damage caused by the use or the inability to use the spot welder or this documentation.

Copyright © 2000 Prima srl  
Via G. Garibaldi, 28  
35020 Albignasego/PD - Italy

All rights reserved. First edition 2000. Printed in Italy.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **CONTENTS**

Notes and precautions .....	p. 04
Definition of the terms .....	p. 05
Features of the machine and general information.....	p. 05
Technical specifications and performances .....	p. 06
Packing-Unpacking-Storage .....	p. 07
Installation .....	p. 08
Electrical connection .....	p. 09
MicroDigital 1 welding control.....	p. 10
Start-up .....	p. 11
Limit of use .....	p. 11
Environment .....	p. 12
Starting the machine .....	p. 12
Easy Start .....	p. 12
Handling .....	p. 13
Maintenance .....	p. 13
Scheduled maintenance .....	p. 14
Extraordinary maintenance .....	p. 14
Emergency .....	p. 15
Disassembly-Disposal .....	p. 15
Troubleshooting .....	p. 16
Microcar 28 (spotter) spare parts .....	p. 17
KSP spare parts .....	p. 18
MR6 spare parts .....	p. 19
Multipoint spare parts .....	p. 20
Microcar 28 electric diagram .....	p. 21

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

### **NOTES AND PRECAUTIONS**

Have the electrical connections made by qualified personnel in compliance with the relevant Laws and safety Codes. Make sure that the power box is properly connected to the grounding system and that it is complying with the CEI EN 60 204/1 Standard.

### **WARNING**

Do not use cables with damaged insulation, loose connecting terminals or inadequate section.

Do not operate the spot welder in a humid or wet environment or in the rain.

Always disconnect the machine from the supply systems during installation or checking and maintenance operations.

Bring flammable materials or substances to a sufficient distance (at least 10 meters) from the working area.

It is extremely dangerous to weld (spot weld) containers or tanks which have contained liquid or gaseous substances or combustibles, because explosions may occur.

During spot welding, and especially when welding galvanized, painted or oil contaminated metal, smoke will be produced. Make sure there is an adequate air change or a suitable extraction systems.

Always protect your eyes with special safety glasses, wear gloves, apron and protective clothing without metal accessories.

During welding operations the machine generates magnetic fields. Pay attention to the attraction of iron bearing working residues.

Watches as well as other mechanical, electric and/or electronic devices can be damaged.

**WARNING: Persons with pacemakers or other cardiac devices must absolutely not use the machine.**

The operator must have adequate knowledge and training in the use and the resistance welding procedure with this machine.

Do not allow unauthorized persons to access the working area; avoid that more than one person works simultaneously on the same machine.

The spot welder is equipped with balancing and movable mechanisms. Therefore all precautions must be taken to avoid hazardous situations.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **DEFINITION OF THE TERMS**

Refer to the UNI EN 292 Standard for the definition of the terms used in this manual.

## **FEATURES OF THE MACHINE AND GENERAL INFORMATION**

### **MOVABLE RESISTANCE WELDING STATION**

Main components and controls:

Mobile trolley of metal tubes and frame with wheels.

Welding gun with plait cables covered with a special bushing.

Electro-pneumatic operation of welding gun closure.

Manometer unit for welding pressure regulation at the electrodes.

MICRO DIGITAL 1, synchronous, with pulses, heating and welding current regulation.

SCR-diode power unit.

**This machine has been manufactured in compliance with the following regulations:**

Machine Safety Directive 89/392/CEE, 91/368CEE, 93/44/CEE, 93/68/CEE

89/336/CEE Directive, electromagnetic compatibility.

73/23/CEE Directive, low voltage electric material.

EN 50063 Standard, building and installation of resistance welders.

UNI EN 292/1 and 292/2 Standard, machinery safety.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **TECHNICAL SPECIFICATIONS AND PERFORMANCES**

Table of general technical data:

<b>DIMENSIONS</b>		<b>MICROCAR 28</b>	
Head WxLxH	mm	145x320x250	
Welding cable with easy start gun	mm	3000	
Earth cable	mm	2000	
Cable section	mm <sup>2</sup>	50	
Weight	Kg	13	

<b>ELECTRICAL specifications</b>		<b>MICROCAR 28</b>	
Nominal power at 50%	KVA	2	
Input voltage (*)	1ph V/Hz	230/50	
Secondary no-load voltage	V	7	
Secondary short-circuit current	KA	2.8	
Secondary welding current	KA	2,5	
Duty cycles	%	5	
Rated power	KVA	16	
Fuses	A	16	

<b>MECHANICAL FEATURES</b>		<b>MICROCAR 28</b>	
Noise level (ISO 7779)	dBA	<65	
Ambient temperature	°C	55÷35	
Air humidity	%	<90	

Fig. 1

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **PACKING**

The spot welder is packed in a sturdy cardboard box.

When shipped in a container by sea, the spot welder is sealed with salt resistant plastic material.

On request, the spot welder is delivered on a pallet with wooden case and fastened with steel strips.

## **UNPACKING**

Remove the panels of the wooden case (if provided).

Remove the steel strips.

Remove the protective plastic material.

Remove the cardboard box.

**CAUTION:** The packing materials – wood, nails, plastics, cardboard etc. – must not be left within the reach of children, as they could be a source of danger.

The packing materials must be subdivided and disposed of in compliance with the applicable Codes.

## **STORAGE**

The spot welder must be stored at a temperature between 0 and 40 °C in a dry place, protected from weather and far from heat sources.

The spot welder must be moved with care, avoiding shocks and dropping which could damage the machine.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **INSTALLATION**

### **PRECAUTIONS AND CHECKS**

**CAUTION:** During all installation and connection operations, the machine must be absolutely isolated from the power supply line.

**CAUTION:** Installation must be made by qualified personnel in compliance with the applicable regulations and in accordance with the instructions of the manufacturer.

**CAUTION:** Before connecting the machine to the mains supply, make sure that the data on the nameplate of the spot welder correspond to the voltage and frequency of the mains supply available on site.

Electrical safety of the spot welder is obtained only when connected to an efficient grounding system made in compliance with the applicable Regulations.

Have qualified personnel check the system for functional efficiency.

The Manufacturer cannot be held liable for possible damage caused by absence or inefficiency of the grounding system.

Check that the installed power on the electric supply meter as well as the cables of the electrical plant are adequate for the rated power of the spot welder.

**CAUTION:** In case the user makes modifications, alterations or changes of the spot welder or integrates it in a plant, any liability of the Manufacturer decays and the user is obliged to remove the CE label.

The non-observance of the above instructions will render the safety system provided by the Manufacturer ineffective, causing serious risks of personal injuries and material damage.



This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **ELECTRICAL CONNECTION**

The electrical connection of the spot welder to the mains must be made by qualified personnel.

The electrical connection must be made in compliance with the prescriptions of the EN 50063 CEI 26-6 and CEI 64/8 Standard - installation of resistance welders (spot welders) - to a grounded power box provided with a differential circuit breaker having an adequate capacity for the power of the spot welder (tab.1, p.6, Electrical Features) and complying with the CEI EN 60204/1 Standards.

Make sure that the size of the electrical line (conductor section) and the capacity of the fuses are adequate.

**Caution: The spot welders are SINGLE PHASE and provided with a power cord with two leads, plus a third lead intended only for connection to the grounding system; therefore they can be connected to a single phase power supply, or to a three phase power supply of which only two of the three available phases will be used.**

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

**WELDING CONTROL.**

Micro Digital 1 microprocessor-controlled welding control.

Machine starting is made switching the light button. The default operative mode is manual.

To change in automatic mode it is necessary to switch on the machine and pressing at the same time the button on the gun.

**1) "MR" WELDING SELECTOR**

Activates the "MR" welding function. Welding time of 1 at 10 cycles, current at 100%.

**2) TIP WELDING SELECTOR**

Activates the tip welding function. Welding time of 1 at 10 cycles, cold welding, current at 85%.

**3) PULSE HEATING SELECTOR**

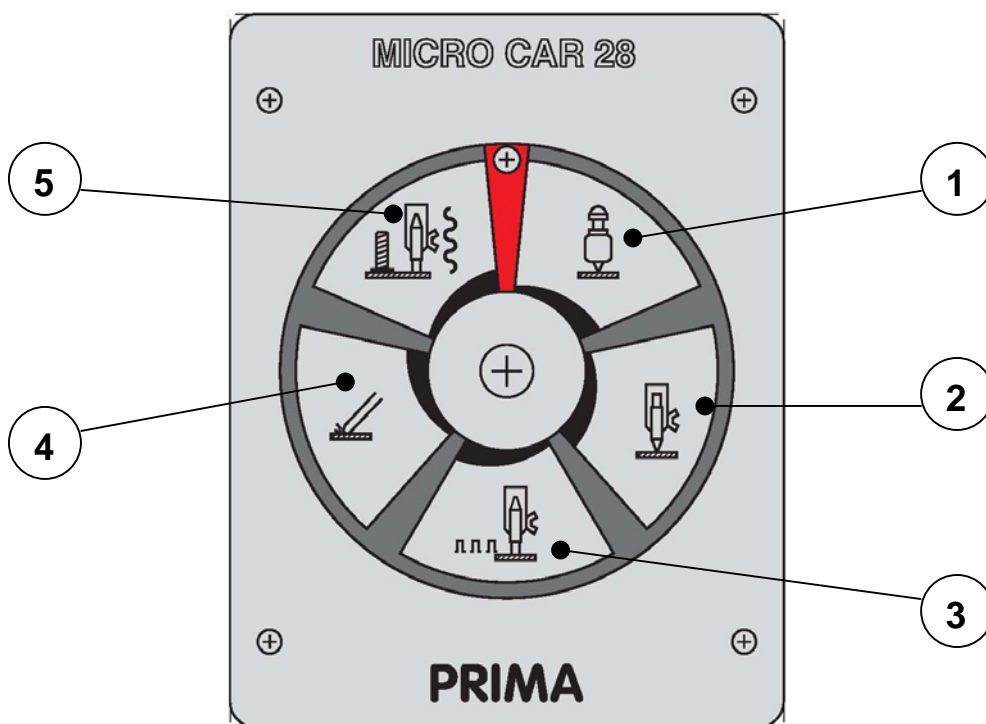
Activates the metal heating function with a copper electrode and pulse process. Heating current of 30% at 100%.

**4) CARBON ELECTROD HEATING SELECTOR**

Activates the heating function for metal heating operations using the carbon electrode. Heating current of 15% at 60%.

**5) WELDING OR HEATING SELECTOR**

Activates the welding function with single spot process for screws, rivets and so on, and heating of the metal with a copper electrode. Welding or metal heating time of 5 at 30 cycles, current at 100%.



This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

### **START-UP**

**WARNING:** Remember some safety precautions to be taken in order to avoid hazardous situations.

The operator must have adequate knowledge and training in resistance welding procedures (spot welding) with this type of spot welder.

Do not allow unauthorized persons to access the working area.

Avoid that more than one person works simultaneously on the same spot welder.

The spot welder is equipped with mobile elements, welding arms and electrodes.

### **CAUTION:**

Do not wear magnetic metal objects as rings, bracelets, watches etc. during welding operations, because these objects can be violently attracted by the magnetic field generated by the spot welder or considerably overheated due to the Joule effect and cause burns.

The operator must wear safety glasses, gloves and an apron to protect himself against burns, cuts in the hands and sparkling incandescent particles.

Note: The individual protective systems must be in compliance with the applicable Regulations.

### **LIMIT OF USE**

This spot welder has been designed, dimensioned and manufactured for resistance welding on thin steel sheet (fig.1, p.6, Electrical Features). Any use with different welding procedures, non-iron metals, different sheet thickness or with more duty cycles as indicated may affect proper operation and cause damage to the spot welder.

Therefore the machine must be destined only for the use foreseen and described in this manual, any other use is to be considered improper and may cause hazards to the operator's safety and material damage.

The manufacturer cannot be held liable for possible personal injuries or material damage arising from improper or unreasonable use.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

### **ENVIRONMENT**

Working ambient temperature: 5°C to 35°C.

Working air humidity: lower than 90%..

### **STARTING THE MACHINE**

**WARNING:** The first start-up of the spot welder must be made by qualified personnel. Before performing any welding operation, checks and adjustments must be made.

Make sure the electrical connection has been made properly and in compliance with the applicable regulations.

Check the diameter and the good state of the welding electrode tips.

Turning on: operate (close) the main switch, the display and the red LEDs indicate that the spot welder is properly energized.

Turning off: Operate (open) the main switch. The spot welder and the display turn off.

**WARNING:** The spot welder must be used by trained personnel.

### **WELDING WITH MANUAL GUN**

**Welding gun with manual start switch. All the welding operations are controlled pushing the switch on the gun.**

### **WELDING WITH GUN EASY START**

**The use of TOP CAR 28 is to make easy by a special electronic circuit of automatic start, that consent the use of a gun with out start switch, this makes welding easier and all heating operations. Easy start, begin the welding cycle after 3/10 sec from the contact electrode-metal sheet.**

### **ATTENTION !!**

**At the starting the machine is in manual mode.**

**To change manual mode in automatic, it is necessary to swicht on the machine pushing the button on the gun.**

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **HANDLING**

**CAUTION:** Use particular care in handling and positioning the spot welder in the shop during the welding operations.

The spot welder is equipped with moving elements, therefore all precautions must be taken to avoid dangerous situations to arise.

The spot welder must be moved and positioned using the appropriate handle.

Do not allow unauthorized persons to access the working area; avoid that more than one person works simultaneously on the same machine.

Before operation check the machine for level and stable positioning.

## **MAINTENANCE**

**WARNING:** Never remove the panels of the spot welding machine and access the interior without having previously removed the power cord from the power supply box.

**WARNING:** Possible checks inside the spot welding machine, performed when energized, can cause heavy electrical shocks generated by direct contact with current carrying parts.

**WARNING:** Maintenance must be performed by qualified personnel.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

### **SCHEDULED MAINTENANCE**

Maintenance of components and wear materials must be performed on a regular basis once a week or more often according to the use and the environmental conditions as listed below.

Check the welding electrodes every 100 spot welds; restore the original diameter of the tip (circa 4÷5 mm). Using a fine-grained file, remove iron residues that come off the sheet metal as well as the craters that have formed.

Check and carefully clean the locking seats of the arms in the gun as well as the extremities of the welding arms.

Check the state of the power cord and the tightness of the compressed air hoses.

Inspect the spot welder and remove dust and particles that may have deposited on the various components.

In regular intervals and with a frequency based on the use, at least every 4 months, check all electrical contacts of the secondary circuit of the spot welding machine. Make sure the screws are tightened and that there are no traces of oxidation. Inspect all pneumatic hoses and check the hose clips for perfect seal.

The proper maintenance assures high welding performance of the machine and limits consumption and current absorption.

In the machine interior, inspect all electric, pneumatic and mechanical components. Remove dust and particles that may have deposited on the various components.

### **EXTRAORDINARY MAINTENANCE**

Repair and replacement of components of the welding machine, if required, must be performed by qualified personnel using only original spare parts.

**WARNING:** Replacement of components with non original spare parts and/or alterations of the machine causes the decay of any liability of the manufacturer for personal injuries or material damage that may arise.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **EMERGENCY**

### **FIRE**

In case of fire, use only powder extinguishers complying with the applicable Regulations.

**WARNING: NEVER USE LIQUID FIRE EXTINGUISHERS, BECAUSE THE MACHINE COULD BE ENERGIZED.**

**WARNING: WHEN BURNING, SOME PARTS OF THE MACHINE MAY PRODUCE TOXIC COMBUSTION GASES OR SMOKE.**

## **DISASSEMBLY - DISPOSAL**

**CAUTION:** If the machine is to be put out of service, provide for disassembly and disposal according to the applicable Regulations.

Subdivide the different materials:

Metal

Electric material

Electronic material

Plastic and rubber material

**ATTENTION:** Waste materials must be subdivided and disposed of in compliance with the applicable Laws.

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

## **TROUBLESHOOTING**

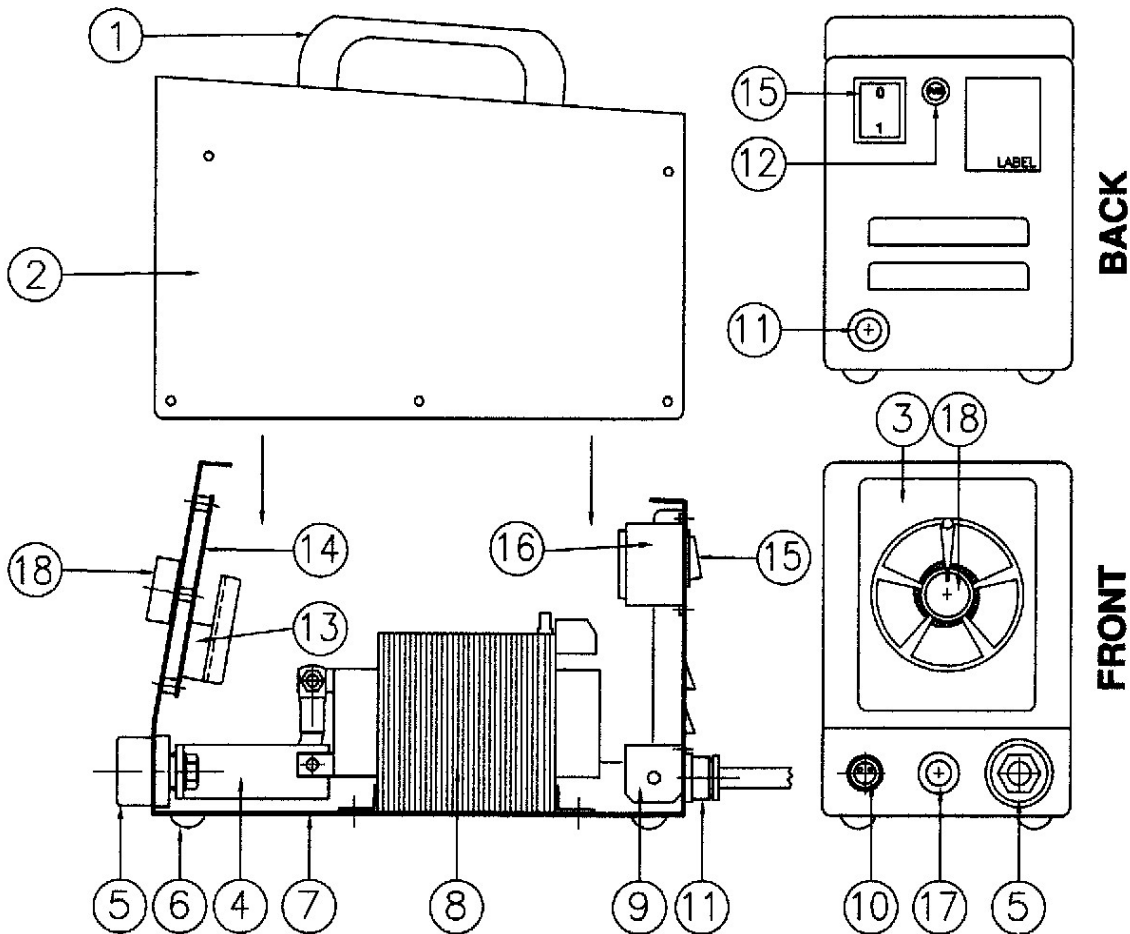
Below is a list of possible problems and malfunctions that may occur and the remedies to eliminate them.

<b>PROBLEM</b>	<b>CAUSE</b>	<b>REMEDY</b>
The spot welder does not turn on.	Connection error. Control panel switch open.	Check connection and control panel.
Execution of spot welds with sparkling of melted material. Holes and craters at the welds on the sheets.	Excessive welding current or welding time. Insufficient electrode pressure. Electrode tips with metal residue deposits.	Decrease welding current or welding time. Clean the electrodes. Make a correct contact electrode-metal sheet.



This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

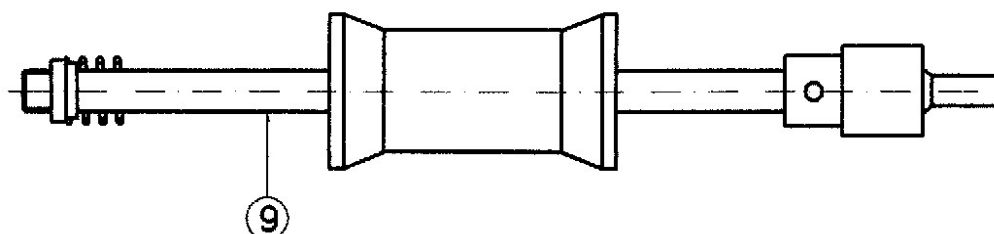
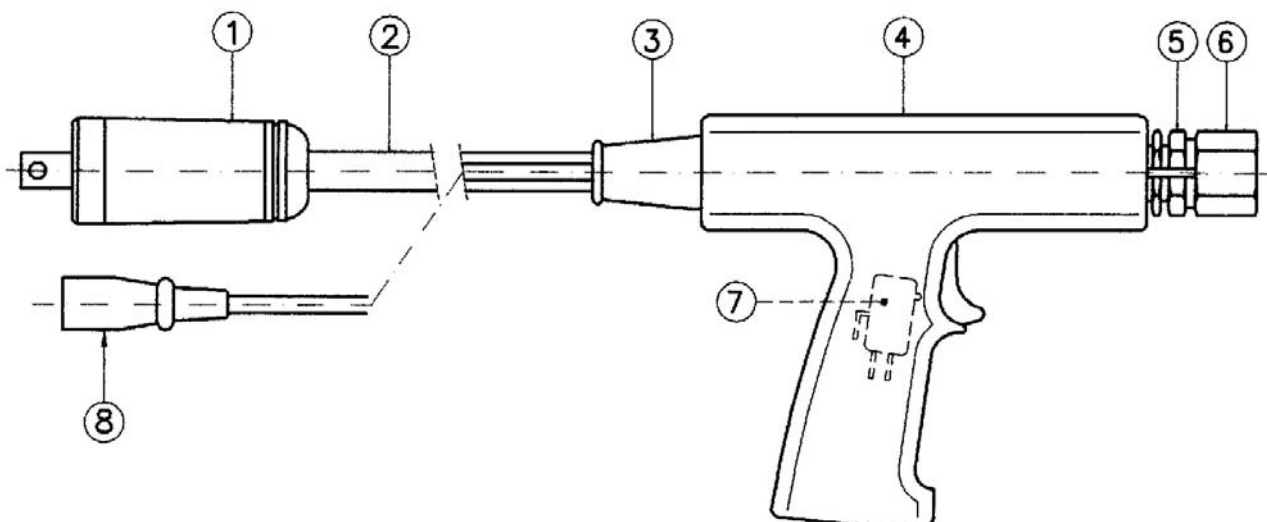
**MICROCAR-28 (SPOTTER): SPARE PARTS.**



1	90019533	HANDLE
2	20010104	SPOTTER COVER
3	20010106	WELDING CONTROL PANEL
4	20010110	CUPPER CONNECTION
5	90019359	CONNECTING PLUG
6	90019310	FEET
7	20010103	SPOTTER BASIS
8	20010105	WELDING TRANSFORMER
9	90014029	ELECTRIC COIL
10	90019532	TAP FOR TOOLS CONTROL
11	90019037	CABLE HOLDER
12	90010146	FUSE HOLDER (315 mA.)
13	90018002	DIODE SCR
14	90014020	ELECTRONIC BOARD
15	90019368	ON-OFF SWITCH
16	90010080	BOARD TRANSFORMER
17	90018003	CABLE BUSHING
18	90018004	CONTROL SELECTION REGULATOR

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

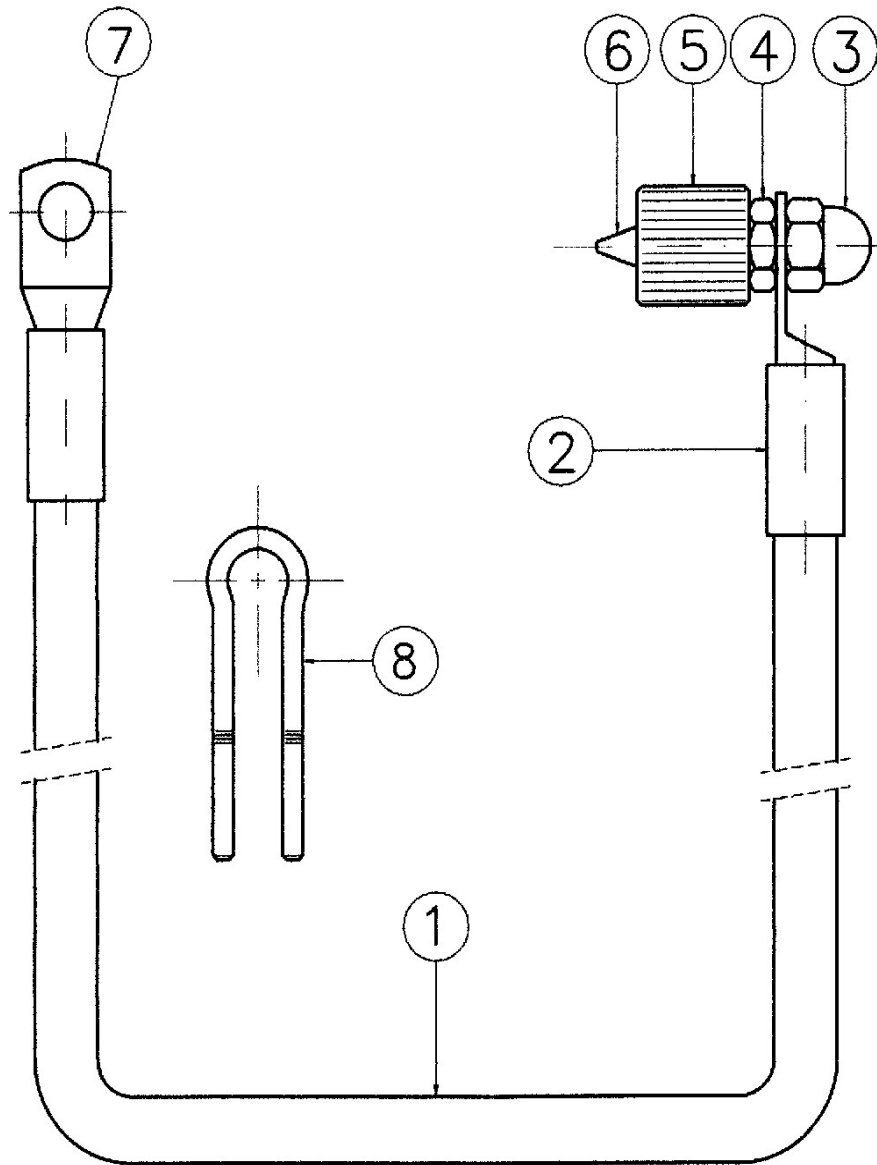
**“KSP” SINGLE POINT: SPARE PARTS.**



1	90019364	CONNECTOR
2	90019240	EXTRAFLESSIBLE CABLE (1 X 50mmq x 3000mm)
3	90014312	CABLES HOLDER
4	90016022	SPOTTER HANDLE
5	90016021	ELECTRODES MANDRIN
6	90016020	MANDRIN NUT
7	90019288	MICROSWITCH
8	90019408	GUN CONNECTOR
9	90016024	SLIDE HAMMER

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

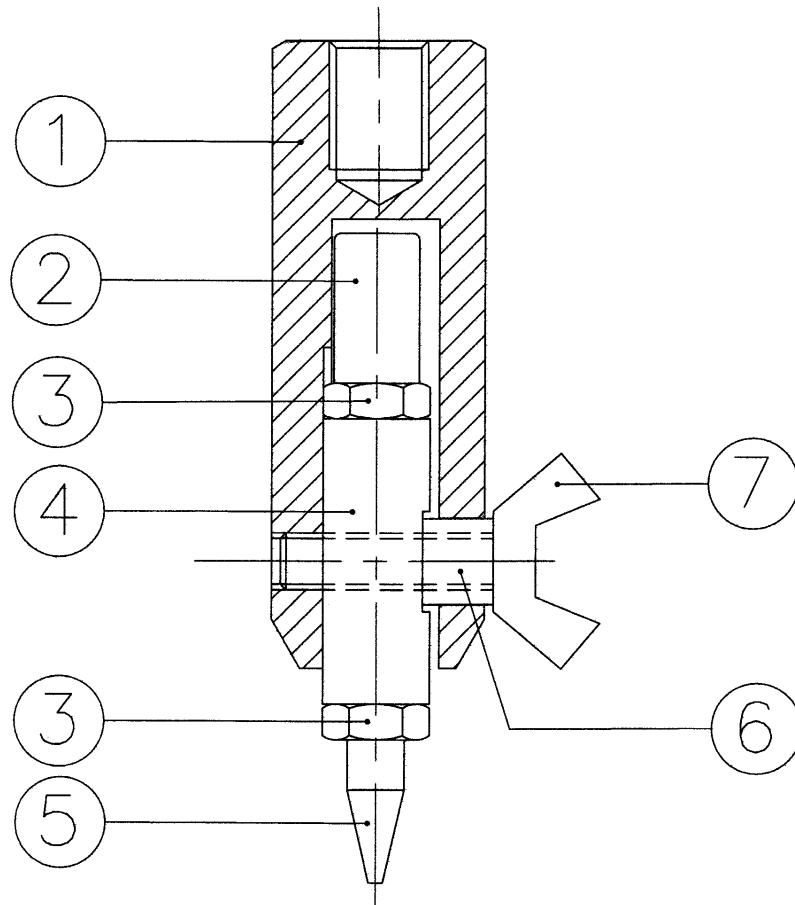
**“MR6” GROUND CABLE: SPARE PARTS.**



1	90019240	EXTRAFLEXIBLE CABLE (1x50)
2	90019369	ELECTRIC TERMINAL
3	90019354	M10 NUT
4	90019400	M10 CAP NUT
5	50010302	SLEEVE
6	50010301	"P 10" ELECTRODE
7	90019364	CONNECTOR
8	50010303	SPRING

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

**MULTIPOINT: SPARE PARTS.**



1	60010303	HEAD FOR ELECTRODES HOLDER
2	60010306	"E 30" ELECTRODE
3	90019350	M8 LEFT NUT
4	60010304	ELECTRODES HOLDER
5	60010305	"P 8" ELECTRODE
6	90019349	GUSSET
7	90013011	M8x30 SPECIAL SCREW

**PRIMA  
MOVABLE SPOT WELDER**

This machine complies with the 89/392/CEE directives and subsequent modifications and supplements.

**MICROCAR-28: ELECTRIC DIAGRAM**

