



**Transmig 403/503
Transmig 403W/503W**

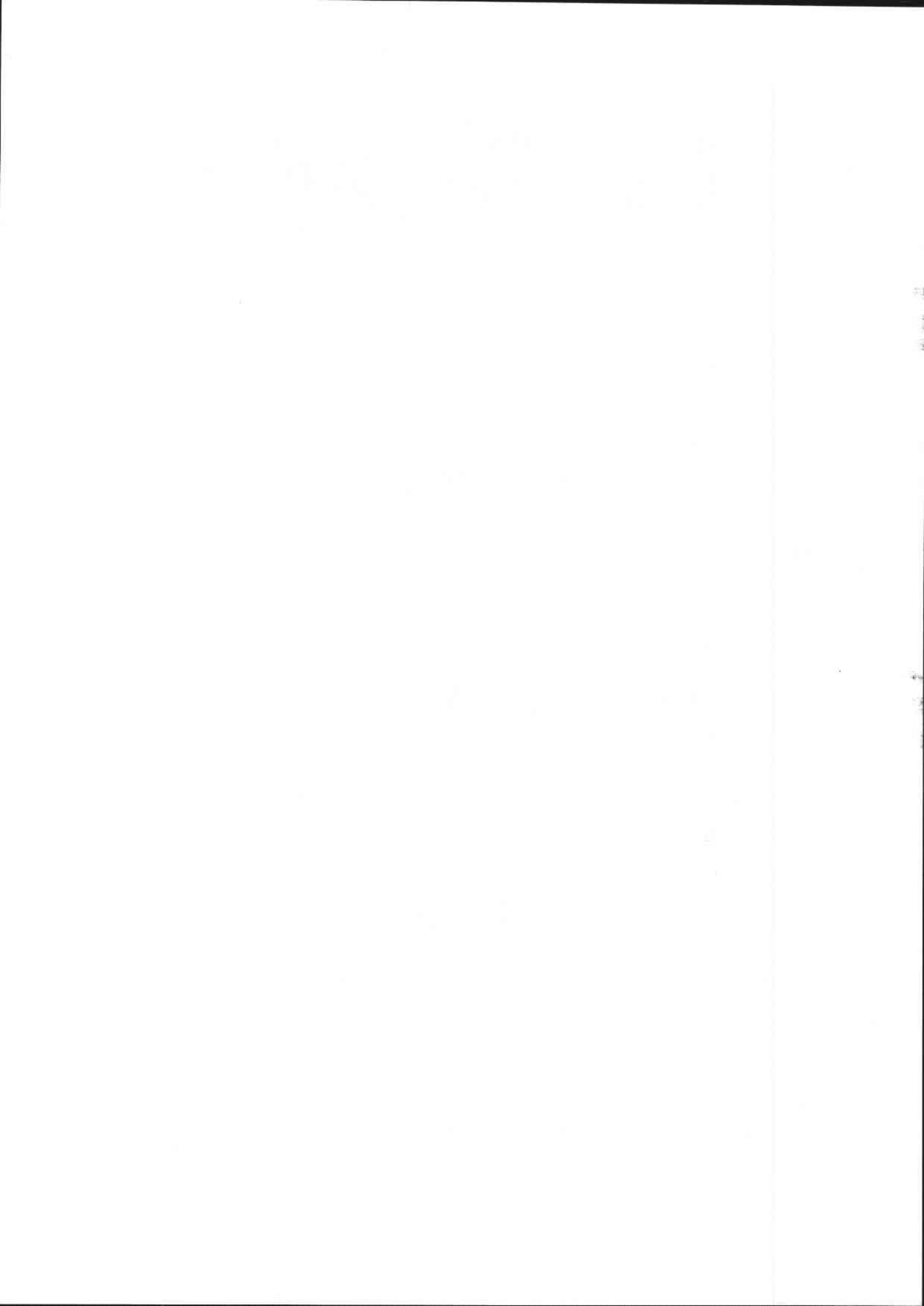
Welding Power Source

SERVICE MANUAL

Note:

For Transmig 403/503 refer to LAW 400/500 - 400/415V Only. Serial Number 512....

For Transmig 403W/503W refer to LAW 400W/500W - 400/415V only. Serial Number 512....



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READ THIS FIRST

This service manual is intended for use by technicians with electrical/electronic training, for help in connection with fault-tracing and/or repair.

Use the connection diagram as a form of index for the description of operation and the component description. The circuit board is divided into numbered blocks, which are described individually in more detail in the description of operation. All component names in the connection diagram are listed in the component description.

This manual contains details of all design changes that have been made up to and including February 1997.

The LAW 400/500 and 410/510 are designed and tested in accordance with international standard

EN 60 974-1 (IEC 974-1).

On completion of any service or repair, it is the responsibility of the person or organisation performing the service to ensure that the product still complies with the above standard.



WARNING



ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK – Can kill

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

FUMES AND GASES – Can be dangerous to health

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

ARC RAYS – Can injure eyes and burn skin.

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

FIRE HAZARD

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

NOISE – Excessive noise can damage hearing

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risk.

MALFUNCTION – Call for expert assistance in the event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

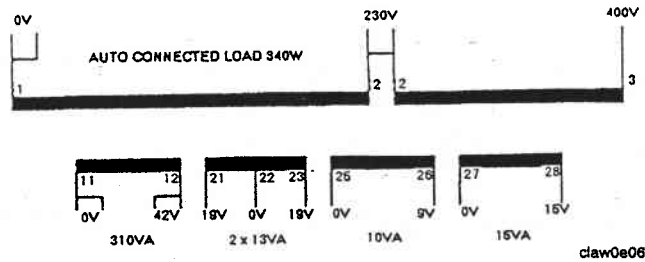
PROTECT YOURSELF AND OTHERS!

COMPONENT DESCRIPTION LAW 400/500

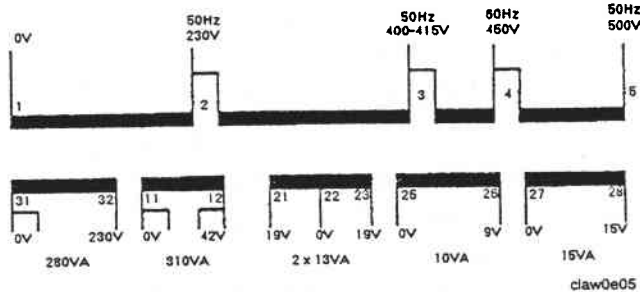
The LAW welding rectifiers 500 are 6-pulse thyristor rectifier units intended for semi-automatic welding. They are available for different mains voltages and with or without integral cooling units: see the table in the spare parts list on page 55. The component description below refers to the electrical circuit diagrams on page 6 to 12.

AP1	Circuit board with control electronics: see the function description on page 18.
AP2	Suppression circuit board, see circuit diagram on page 30. AP2 has been fitted with effect from machine no. 550
C1	Capacitor, 3 μ F 400 V. Start and run capacitor for fan motor EV1.
C2-C4	Suppression capacitors 0.1 μ F 250 V.
C5	Capacitor, 5 μ F 400 V. Start and run capacitor for pump motor M1. Only in machines with water cooler.
C6	Capacitor, 6 μ F 400 V. For speed reduction of the cooling fan. This capacitor has been fitted with effect from machine no. 512
EV1	Fan
FU1	Circuit breaker, 10 A. Protects the 42 V supply to the wire feed unit.
HL1	Indicating lamp, 42 V, white. Lights when switch QF1 is in the ON position.
KM2	Contactor 42 V 50 Hz. For speed control of the fan: see ST2 below. This capacitor has been fitted with effect from machine no. 512
L1	Interphase transformer. When connecting the interphase transformer to the inductor, it is important that all parts are fitted exactly as shown in Figure A on page 49.
L2	Inductor. When connecting the inductor, it is important that all parts are fitted exactly as shown in Figures A, C and D on page 49.
M1	Pump motor, 230 V 50 Hz 0.2 kW. Only in machines with water cooler.
P1	Digital display. Accessory, see the list on page 40. The instrument is described in the service manual for the MEK 4.
QF1	Main ON/OFF switch.
QF2	Cooling water pump switch. Only on machines with water cooler.
R1	Resistor, 0.43 Ω
RS1	Shunt, 60 mV / 600 A
ST1	Thermal overload cutout. Protects the machine against excessive temperature. See the function description, item 6, on page 21.
ST2	Thermal switch. Controls the speed of fan motor EV1. The switch closes when the temperature exceeds 80 °C, energising contactor KM2. This short-circuits capacitor C6, allowing the fan to run at full speed. The switch opens when the machine temperature has fallen to 60 °C. LAW 400/410: ST2 is fitted in the interphase transformer winding, L1. LAW 500/510: ST2 is fitted in the inductor winding, L2. Thermal switch ST2 is fitted from machine no. 512

TC1 Control power supply transformer for LAW with 400–415V mains voltage.



TC1 Control power supply transformer for LAW with 230–500V mains voltage.



- TM1** Main transformer. Connection instructions for the LAW 400/500 and LAW 410/510 with 230 – 500 V mains connection are on page 38.
- V1–V6** Thyristor module. See the fault-tracing instructions on page 26 and the fitting instructions on page 33.
- V7** LED, yellow. Lights to indicate operation of the thermal cutouts.
- XS1** Connector, 23–pole. For connection to/from the wire feed unit.
- XS2–XS4** Main welding current contact, single–pole.
- XS5–XS8** Sleeve contacts
- XS9** 4–pole contact. Only on the LAW 500/510.
- XS10–XS15** Sleeve contacts
- XT1** 9–pole terminal block. Only on machines with 230 – 500 V mains connection. See the connection instructions on page 38.
- XT2** 3–pole terminal block.
- Z1–Z6** RC filter.