

MASTER

9904

Operation instructions
Gebrauchsanweisung
Gebruiksaanwijzing
Manuel d'utilisation

1913120E

MASTER 2800 MASTER 3500



Francés Nederlands Deutsch English

Read carefully these instructions before you use the welding machine !

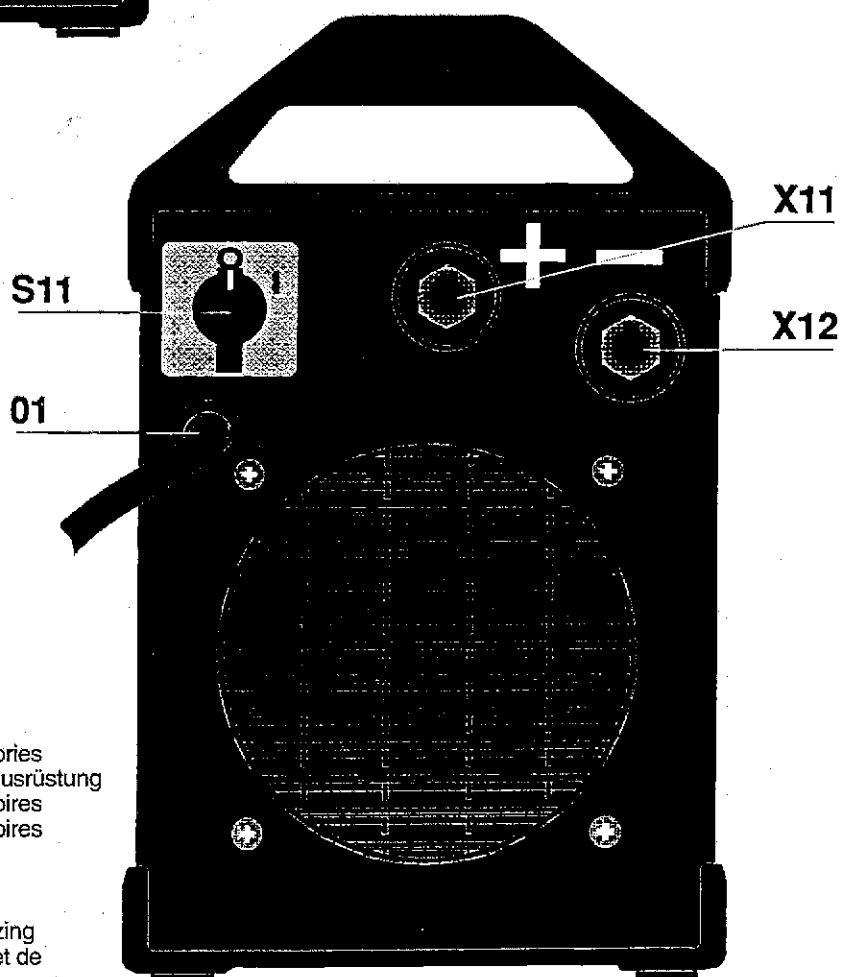
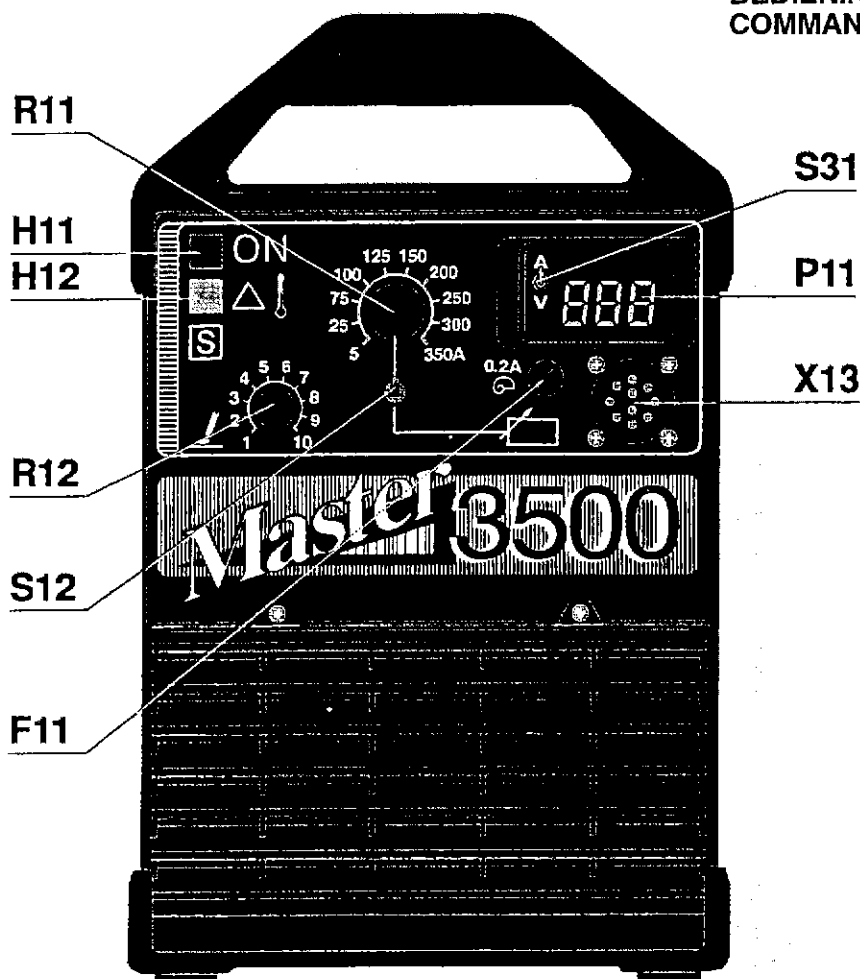
Bitte, lesen Sie diese Gebrauchsanweisungen vor Gebrauch der Schweißmaschine !

Lees deze gebruiksaanwijzing aandachtig door voor u de lasmachine in gebruik neemt !

Veuillez lire et appliquer ces instructions avant utilisation de la machine !

 **KEMPEI**

OPERATION CONTROL AND CONNECTORS
 BEDIENUNGSELEMENTE UND ANSCHLÜSSE
 BEDIENING EN AANSLUITINGEN
 COMMANDES ET CONNECTEURS



P11 Current/Voltage meter
 Strom-/Spannungsmesser
 Volt-/ampere meter
 Ammètre/Voltmètre

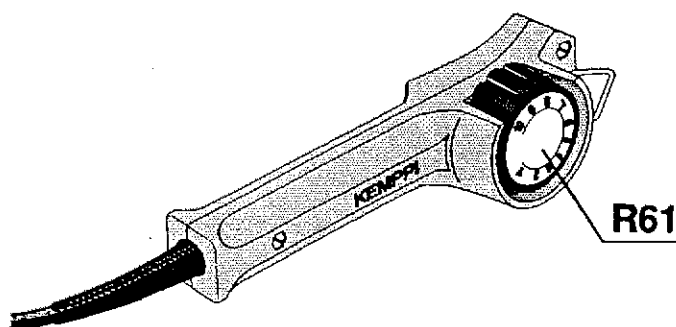
MSD1 Accessoires
MSD1 Zusatzausrüstung
MSD1 Accessoires
MSD1 Accessoires

S31 Selection for current/voltage measuring
 Wahl für Strom-/Spannungsmessung
 Keuzeschakelaar voor de stroom/spanning aflezing
 Sélection commande de mesure de courant et de tension

- F11** Fuse for remote control connection 0,2 A slow-blow
 Sicherung für Fernregelanschluß 0,2 A träge
 Zekering voor aansluiting voor afstandbediening 0,2 A traag
 Fusible pour connecteur commande à distance 0,2 A temporisé
- H11** Signal lamp I/O
 Signallampe I/O
 Signaallamp I/O
 Voyant lumineux I/O
- H12** Warning lamp for thermal shield
 Warnungslampe für Wärmeschutz
 Waarschuwinglicht voor thermische overbelasting
 Feu indicateur pour écran thermique
- R11** Adjustment of welding current
 Einstellung für Schweißstrom
 Regeling voor lasstroom
 Réglage du courant de soudage
- R12** Adjustment of MMA welding dynamics
 Einstellung für Stabelektrodenschweiß-Dynamik
 Regeling voor elektrodenlassen-dynamiek
 Réglage pour dynamique du soudage electrode
- S11** Main switch I/O
 Hauptschalter I/O
 Hoofdschakelaar I/O
 Interrupteur principal I/O
- S12** Selection for local/remote control
 Wahl für Nah-/Fernregelung
 Keuze voor paneel-/afstandbediening
 Sélection commande locale/à distance
- X11** Welding and return current connections
X12 Schweiß- und Rückleitungsanschlüsse
 Aansluiting voor las- en werkstuk kabel
 Connecteur courant de soudage et de masse
- X13** Connection for remote control
 Anschluß für Fernregelung
 Aansluiting voor afstandbediening
 Connecteur commande à distance
- 01** Inlet of mains cable
 Durchführung des Netzkabels
 Doorvoer voor aansluitkabel
 Passe-câbles

REMOTE CONTROL DEVICES FERNREGLER AFSTANDBEDIENINGEN COMMANDES A DISTANCE

C 100C



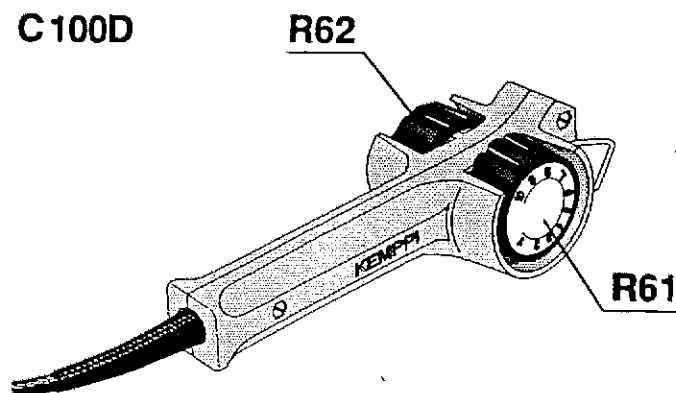
Control of MMA/TIG welding current (R61), reference scale 1-10.

Einstellung für Stabelektroden-/WIG-Schweißstrom (R61), Referenzskala 1-10.

Lasstroomregeling elektroden-/TIG-lassen (R61), schaal 1-10.

Réglage du courant de soudage Electrode/TIG (R61), échelle de mémoire 1-10.

C 100D



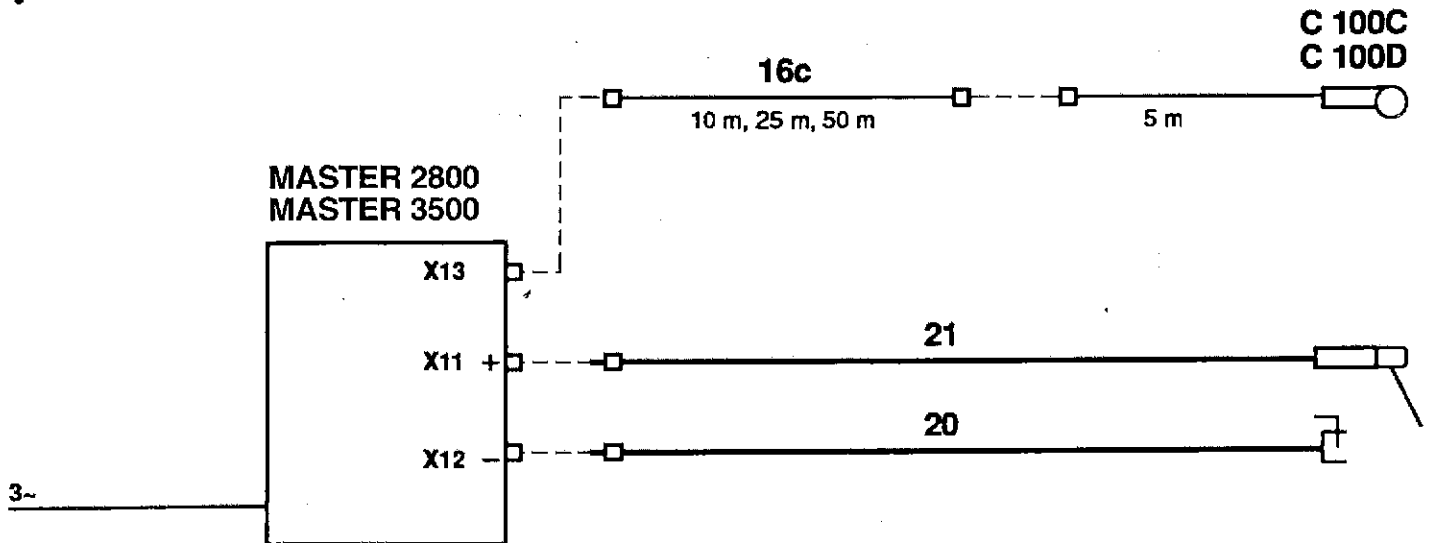
Rough control (R61), reference scale 1-10, and fine control +/- (R62) for MMA/TIG welding current.

Grobeinstellung (R61), Referenzskala 1-10, und Feineinstellung +/- (R62) für Stabelektroden-/WIG-Schweißstrom.

Grofregeling (R61), schaal 1-10, en fijnregeling +/- (R62) voor lasstroom elektroden-/TIG-lassen.

Réglage d'approche (R61), échelle de mémoire 1-10, et réglage fin +/- (R62) du courant de soudage Electrode/TIG.

**CABLES
KABEL
KABELS
CABLES**



T 120 6185252
 Transport unit
 Fahrwagen
 Onderwagen
 Chariot

16c Extension cable for remote control
 Verlängerungskabel für Fernregelung
 Verlengkabel voor afstandbediening
 Câble prolongateur pour commande à distance

20 Return current cable
 Stromrückleitungskabel
 Werkstukkabel
 Câble de masse

21 Cable for MMA welding
 Kabel für Stabelektrodenschweißen
 Kabel voor elektrodenlassen
 Câble soudage Electrode

C 100C Remote control devices, see also pages 3 and 6
C 100D Fernregler, auch Seiten 3 und 10 sehen
 Afstandbedieningen, zie ook pag. 3 en 13
 Commandes à distance voir également pages 3
 et 17

MSD1	6185666
C 100C	6185410
C 100D	6185413
16c /10 m	6185451
/25 m	6185452
/50 m	6185453
MASTER 2800	6130281
20 /5 m – 35 mm ²	6184311
/10 m – 35 mm ²	6184312
21 /5 m – 35 mm ²	6184301
/10 m – 35 mm ²	6184302
MASTER 3500	6130351
20 /5 m – 50 mm ²	6184511
/10 m – 50 mm ²	6184512
21 /5 m – 50 mm ²	6184501
/10 m – 50 mm ²	6184502

ENGLISH

MASTER 2800		
Mains voltage	3~, 50/60 Hz	380 V -10 % ... 415 V +6 %
Rated power	35 % ED 60 % ED 100 % ED	280 A / 11,5 kVA 213 A / 8,5 kVA 165 A / 6,0 kVA
Connection cable / fuses		4 x 1,5S / 10 A slow-blow
Welding current range	MMA	15 A / 20,0 V...280 A / 31,2 V
Max. welding voltage		46 V / 280 A, 51 V / 165 A
Electrode sizes to be welded		ø 1,5 ... ca. 5,0 mm
Welding current control		stepless
Open circuit voltage		75 V
Efficiency		83 % (280 A / 31,2 V)
Power factor		0,93 (280 A / 31,2 V)
Open circuit power		ca. 25 W
Storage temperature range		- 40 ... + 60 °C
Operation temperature range		- 20 ... + 40 °C
Temperature class		H (180 °C) / B (130 °C)
Degree of protection		IP 23
External dimensions:	length width height	540 mm 215 mm 350 mm
Weight		22 kg
Remote control connection		24 V AC, fuse 0,2 A slow-blow

The product meets conformity requirements for CE marking.

MASTER 3500		
Mains voltage	3~, 50/60 Hz	380 V -10 % ... 415 V +6 %
Rated power	35 % ED 60 % ED 100 % ED	350 A / 15,0 kVA 267 A / 11,0 kVA 207 A / 8,0 kVA
Connection cable / fuses		4 x 2,5S / 16 A slow-blow
Welding current range	MMA	15 A / 20,0 V...350 A / 34,0 V
Max. welding voltage		45 V / 350 A, 47 V / 207 A
Electrode sizes to be welded		ø 1,5 ... ca. 6,0 mm
Welding current control		stepless
Open circuit voltage		75 V
Efficiency		83 % (350 A / 34,0 V)
Power factor		0,95 (350 A / 34,0 V)
Open circuit power		ca. 25 W
Storage temperature range		- 40 ... + 60 °C
Operation temperature range		- 20 ... + 40 °C
Temperature class		H (180 °C) / B (130 °C)
Degree of protection		IP 23
External dimensions:	length width height	590 mm 215 mm 350 mm
Weight		25 kg
Remote control connection		24 V AC, fuse 0,2 A slow-blow

The product meets conformity requirements for CE marking.

MASTER 2800 and 3500 are MMA welding DC power sources which are designed for demanding professional use.

Size classes for 3-phase MASTER 2800 and 3500 inverter power sources are accordingly 280 A and 350 A. MASTER power sources are protected against overload with overcurrent protections and thermal releases. Operation of a thermal release is indicated with a signal lamp on the front wall of the machine.

INSTALLATION

Siting the machine

By siting of the machine you should consider the following:

- Site the machine on a fixed dry base, from which there doesn't come any dust etc. into suction air.

SEE TO THAT THE MACHINE IS POSITIONED AWAY FROM THE LINE OF PARTICLE SPRAY, CREATED BY GRINDING TOOLS ETC.

Preferably site the machine somewhat higher above the floor level.

- See to that in front of the machine as well as at the rear of the machine there is at least 20 cm free distance to allow good circulation of the cooling air through the machine.

- PROTECT THE MACHINE AGAINST HEAVY RAIN AND IN HOT CIRCUMSTANCES AGAINST DIRECT SUNSHINE. Ensure the free circulation of the cooling air.

Connection to the mains supply

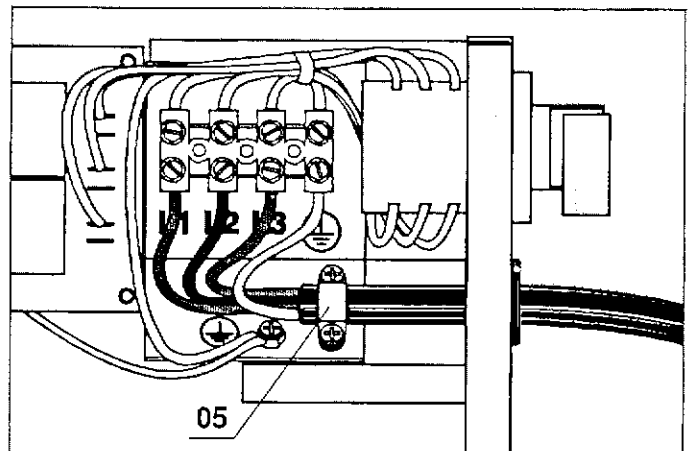
MASTER 2800 and 3500 are delivered without mains cable.

CONNECTION OF THE MAINS CABLE AND MOUNTING AND CHANGE OF THE PLUG SHOULD ONLY BE CARRIED OUT BY A COMPETENT ELECTRICIAN.

BEFORE CONNECTING THE MAINS CABLE REMOVE HANDLE AND CASING PLATE OF THE MACHINE

By change of the mains cable take into attention the following:

The cable is entered into the machine through the inlet ring on the rear panel of the machine and fastened with a cable clamp (05). The phase leads of the cable are coupled to connections L1, L2 and L3. The earth protection coloured green-yellow is coupled to connection ⊕.



Sizes of the mains cables and fuse ratings for the machine at 100 % duty cycle are specified in the table below:

MASTER 2800	
Rated voltage	400 V 3~
Mains voltage range	380 V -10 % ... 415 V +6 %
Fuses	10 A slow-blow
Connection cable	4 x 1,5 mm ² S *)
Extension cables	5 x 2,5 mm ² S *) (recommendation)

MASTER 3500	
Rated voltage	400 V 3~
Mains voltage range	380 V -10 % ... 415 V +6 %
Fuses	16 A slow-blow
Connection cable	4 x 2,5 mm ² S *) (recommendation)
Extension cables	5 x 2,5 mm ² S *) (recommendation)

*) In cables of S type there is a protective grounding conductor coloured green-yellow.

Welding and feed-back current cables

Use only copper cable with cross-sectional area of at least:

MASTER 2800	35 mm ²
MASTER 3500	50 mm ²

DON'T USE THINNER CABLES due to voltage losses and heating.

Fasten the earthing press of the feed-back current cable carefully, preferably direct onto the piece to be welded. The contact surface of the press should always be as large as possible.

CLEAN THE FASTENING SURFACE FROM PAINT AND RUST!

OPERATION CONTROL SWITCHES AND POTENTIOMETERS AND THEIR USE

Main switch I/O


When you turn the switch into I-position, pilot lamp H11 for readiness for use on the front panel is lit, open circuit voltage comes to welding cable connectors and the machine is ready for use.

ALWAYS START AND SWITCH OFF THE MACHINE WITH THE MAIN SWITCH, NEVER USE THE MAINS PLUG AS A SWITCH.

Pilot lamps

The pilot lamps of the machine report about the electric operation:

ON The green pilot lamp H11 for readiness for use is always on, when the machine is connected to mains supply and the main switch is in I-position.

 Yellow pilot lamp H12 of thermal protection is on when thermostat has released due to overheating of machine. The cooling fan is cooling down the machine and when the pilot lamp goes off, the machine is again ready for welding.

Local/remote control of welding current

You can control the welding current either from local control R11 of the machine or from a control which is connected to the remote control connector X13. When you use the remote control unit, the switch S12 should be in the remote control position. Suitable remote control units: C 100C, and C 100D, see page 3

Control for electrode dynamics

Master 2800 and 3500 are inverter power sources, which due to their high control speed enable the DC+ and the DC- MMA welding even under difficult conditions.

With control potentiometer R12 for MMA dynamics you can change behaviour of arc in drop short circuits. Changing of dynamics can be seen as "coarseness" or "softness" of arc.

When control for dynamics is in the middle (control 5...6), the machine is suitable for universal use.

With coarse arc (control 7...8) you can weld with minimum currents of electrode, and then e.g. at position welding the sticking of electrode is prevented.

For cellulose covered electrodes is recommended a very coarse arc (control 9...10).

Soft arc (control 1...4) is used to produce a weld without spatter among others with stainless and base type filler materials.

Meter equipment

Panel meter mounted into machine shows current or voltage values depending on position of meter selector S31 according to following:

On no-load: current set value or machine's no-load voltage

In welding: real welding current or machine's terminal voltage



Meter doesn't show arc voltage but machine's terminal voltage. Note that due to cable losses, arc voltage might be several volts lower than machine's terminal voltage with long welding cables.

Operation of the cooling fan

The cooling fan of MASTER starts during welding and operates for some time after welding has been stopped.

Electrodes to be welded

By the MASTER power sources you can use all electrodes designed for DC or AC welding within the current limits of the machine in question.

MASTER 2800 and 3500 power sources are suitable for carbon arc gouging and cutting according to their max. effect.

REFERENCE MAX. ELECTRODE DIAMETERS / YIELD		
Electrode type	Master 2800	Master 3500
Fe - rutile	ø 5 mm / 95 %	ø 6 mm / 95 %
Fe - base	ø 6 mm / 100 %	ø 7 mm / 100 %
Fe - high-yield	ø 5 mm / 180 % ø 4 mm / 250...270 %	ø 6 mm / 180 % ø 5 mm / 250...270 %
Ss - rutile	ø 6 mm	ø 6 mm
Ss - base	ø 6 mm	ø 6 mm
Ss - high-yield	ø 6 mm / 150 %	ø 7 mm / 150 %
Hard facing by welding	ø 5 mm / 100 %	ø 6 mm / 100 %

OPERATION SAFETY

NEVER WATCH THE ARC WITHOUT A FACE SHIELD DESIGNED FOR ARC WELDING!

THE ARC DAMAGES UNPROTECTED EYES!
THE ARC BURNS UNPROTECTED SKIN!

PROTECT YOURSELF AND THE SURROUNDINGS AGAINST THE ARC AND HOT SPRAY!

REMEMBER GENERAL FIRE SAFETY!

PAY ATTENTION TO THE FIRE SAFETY REGULATIONS. WELDING IS ALWAYS CLASSIFIED AS A FIRE RISK OPERATION.

WELDING WHERE THERE IS FLAMMABLE OR EXPLOSIVE MATERIAL IS STRICTLY FORBIDDEN.

IF IT IS ESSENTIAL TO WELD IN SUCH AN AREA REMOVE INFLAMMABLE MATERIAL FROM THE IMMEDIATE VICINITY OF THE WELDING SITE.

FIRE EXTINGUISHERS MUST ALWAYS BE ON SITE WHERE WELDING IS TAKING PLACE.

NOTE! SPARKS MAY CAUSE IGNITION MANY HOURS AFTER COMPLETION OF WELDING.

WATCH OUT FOR THE MAINS VOLTAGE!

TAKE CARE OF THE CABLES - THE CONNECTION CABLE MUST NOT BE COMPRESSED, TOUCH SHARP EDGES OR HOT WORK PIECES.

FAULTY CABLES ARE ALWAYS A FIRE RISK AND HIGHLY DANGEROUS.

DO NOT LOCATE THE WELDING MACHINE ON WET SURFACES.

DO NOT TAKE THE WELDING MACHINE INSIDE THE WORK PIECE (I.E. IN CONTAINERS, CARS ETC.)

ENSURE THAT NEITHER YOU NOR GAS BOTTLES OR ELECTRICAL EQUIPMENT ARE IN CONTACT WITH LIVE WIRES OR CONNECTIONS!

DO NOT USE FAULTY WELDING CABLES.
ISOLATE YOURSELF BY USING DRY AND NOT WORN OUT PROTECTIVE CLOTHES.
DO NOT WELD ON WET GROUND.
DO NOT PLACE THE WELDING CABLES ON THE POWER SOURCE OR OTHER ELECTRICAL EQUIPMENT.

WATCH OUT FOR THE WELDING FUMES!

ENSURE THAT THERE IS SUFFICIENT VENTILATION. FOLLOW SPECIAL SAFETY MEASURES WHEN YOU WELD METALS WHICH CONTAIN LEAD, CADMIUM, ZINC, MERCURY OR BERYLLIUM.

NOTE THE DANGER CAUSED BY SPECIAL WELDING JOBS!

WATCH OUT FOR THE FIRE AND EXPLOSION DANGER WHEN WELDING CONTAINER TYPE WORK PIECES.

MAINTENANCE

The amount of use and the working environment should be taken into consideration when planning the frequency of maintenance of the machine. Careful use and preventive maintenance will help to ensure trouble-free operation.

Cables

Check the condition of welding and connection cables daily. **DO NOT USE FAULTY CABLES!**

Make sure that the mains connection cables in use are safe and according to laid down regulations.

THE REPAIR OF MAINS CONNECTION CABLES SHOULD BE CARRIED OUT ONLY BY AN AUTHORISED ELECTRICIAN.

Power source

NOTE! DISCONNECT THE PLUG OF THE MACHINE FROM THE MAINS SOCKET AND WAIT APPROX. 2 MINUTES (CAPACITOR CHARGE) BEFORE REMOVING THE CASING PLATE

Check at least every half year:

– Electric connections of the machine - clean the oxidized parts and tighten the loosened ones

NOTE! YOU MUST KNOW CORRECT TENSION TORQUES BEFORE STARTING THE REPARATION OF THE JOINTS.

– Clean the inner parts of the machine from dust and dirt e.g. with a soft brush and vacuum cleaner.

DO NOT USE COMPRESSED AIR, THERE IS A RISK THAT DIRT IS PACKED EVEN MORE TIGHTLY INTO GAPS OF COOLING PROFILES!

DO NOT USE PRESSURE WASHING DEVICE!

ONLY AUTHORISED ELECTRICIAN SHALL CARRY OUT REPAIRS TO THE MACHINES.

Regular maintenance

KEMPPI-SERVICE REPAIR SHOPS MAKE REGULAR MAINTENANCE ACCORDING TO AGREEMENT.

The major points in the maintenance procedure are listed as follows:

– Cleaning of the machine

– Checking and maintenance of the welding tools

– Checking of switches and potentiometers

– Checking of electric connections

– Checking of mains cable and plug

– Damaged parts or parts in bad connection are replaced by new ones

– Maintenance testing. Operation and performance values of the machine are checked, and adjusted when necessary by means of test equipment

OPERATION DISTURBANCES

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

Check the maintenance objects before the machine is sent to the service repair shop.

Operation of the overload protection



Yellow pilot lamp H12 of thermal protection is lit when thermostat has operated due to overheating of machine.

The thermostat of machine will operate, if machine is continuously loaded over rated values or cooling air circulation is blocked.

COOLING FAN COOLS DOWN THE MACHINE AND WHEN THE PILOT LAMP GOES OFF THE MACHINE IS AUTOMATICALLY READY FOR WELDING.

Control fuses

The fuse F11 on the front panel of the machine is as protection of remote control connection X13.

As protection of machine there is on control card 2 pc 2,0 A slow-blow cartridge fuses in the safety voltage circuit.

– Reason for burning of a fuse might be a damaged control card.

Use same type and rating of fuse which is marked beside the fuse adapter.

DAMAGE CAUSED BY A WRONG TYPE FUSE, IS NOT COVERED BY THE GUARANTEE.

TERMS OF GUARANTEE

KEMPPI OY provides a guarantee for products manufactured and sold by them if defects in manufacture and materials occur. Guarantee repairs must be carried out only by an Authorized KEMPPI Service Agent. Packing, freight and insurance costs to be paid by third party. The guarantee is effected on the day of purchase. Verbal promises which do not comply with the terms of guarantee are not binding on guarantor.

Limitations on guarantee

The following conditions are not covered under terms of guarantee: defects due to natural wear and tear, non-compliance with operating and maintenance instructions, connection to incorrect or faulty supply voltage (including voltage surges outside equipment spec.), incorrect gas pressure, overloading, transport or storage damage, fire or damage due to natural causes i.e. lightning or flooding.

This guarantee does not cover direct or indirect travelling costs, daily allowances or accomodation.

Note: Under the terms of the guarantee, welding torches and their consumables, feed, drive rollers and feeder guide tubes are not covered. Direct or indirect damage due to a defective product is not covered under the guarantee. The guarantee is void if changes are made to the product without approval of the manufacturer, or if repairs are carried out using non-approved spare parts.

The guarantee is also void if repairs are carried out by non-authorized agents.

Guarantee period

The guarantee is valid for one year from date of purchase, provided that the machine is used for single-shift operation.

The guarantee period for double and treble shift operation is six months and four months respectively.

Undertaking guarantee repairs

Guarantee defects must be informed to KEMPPI or authorised KEMPPI Service Agents within the guarantee period. Before any guarantee work is undertaken, the customer must provide proof of purchase and serial number of the equipment in order to validate the guarantee.

The parts replaced under the terms of guarantee remain the property of KEMPPI.

Following the guarantee repair, the guarantee of the machine or equipment, repaired or replaced, will be continued to the end of the original guarantee period.

MASTER 2800

Anschlußspannung 3~, 50/60 Hz	380 V -10 % ... 415 V +6 %	
Anschlußleistung	35 % ED 60 % ED 100 % ED	280 A / 11,5 kVA 213 A / 8,5 kVA 165 A / 6,0 kVA
Anschlußkabel / Sicherungen	4 x 1,5S / 10 A träge	
Schweißstrombereich Stabelekt.	15 A / 20,0 V...280 A / 31,2 V	
Max. Schweißspannung	46 V / 280 A, 51 V / 165 A	
Die zu schweißenden Stabelektrodengrößen	ø 1,5 ... ca. 5,0 mm	
Einstellung für Schweißstrom	stufenlos	
Leerlaufspannung	75 V	
Wirkungsgrad	83 % (280 A / 31,2 V)	
Leistungsfaktor	0,93 (280 A / 31,2 V)	
Leerlaufleistung	ca. 25 W	
Lagertemperaturbereich	- 40 ...+ 60 °C	
Betriebstemperaturbereich	- 20 ...+ 40 °C	
Isolierstoffklasse	H (180 °C) / B (130 °C)	
Schutzart	IP 23	
Maße:	Länge Breite Höhe	540 mm 215 mm 350 mm
Gewicht	22 kg	
Anschluß für Fernregelung	24 V AC, Sicherung 0,2 A träge	

Die Anlage erfüllt die Konformitätsansprüche des CE-Zeichens.

MASTER 3500

Anschlußspannung 3~, 50/60 Hz	380 V -10 % ... 415 V +6 %	
Anschlußleistung	35 % ED 60 % ED 100 % ED	350 A / 15,0 kVA 267 A / 11,0 kVA 207 A / 8,0 kVA
Anschlußkabel / Sicherungen	4 x 2,5S / 16 A träge	
Schweißstrombereich Stabelekt.	15 A / 20,0 V...350 A / 34,0 V	
Max. Schweißspannung	45 V / 350 A, 47 V / 207 A	
Die zu schweißenden Stabelektrodengrößen	ø 1,5 ... ca. 6,0 mm	
Einstellung für Schweißstrom	stufenlos	
Leerlaufspannung	75 V	
Wirkungsgrad	83 % (350 A / 34,0 V)	
Leistungsfaktor	0,95 (350 A / 34,0 V)	
Leerlaufleistung	ca. 25 W	
Lagertemperaturbereich	- 40 ...+ 60 °C	
Betriebstemperaturbereich	- 20 ...+ 40 °C	
Isolierstoffklasse	H (180 °C) / B (130 °C)	
Schutzart	IP 23	
Maße:	Länge Breite Höhe	590 mm 215 mm 350 mm
Gewicht	25 kg	
Anschluß für Fernregelung	24 V AC, Sicherung 0,2 A träge	

Die Anlage erfüllt die Konformitätsansprüche des CE-Zeichens.