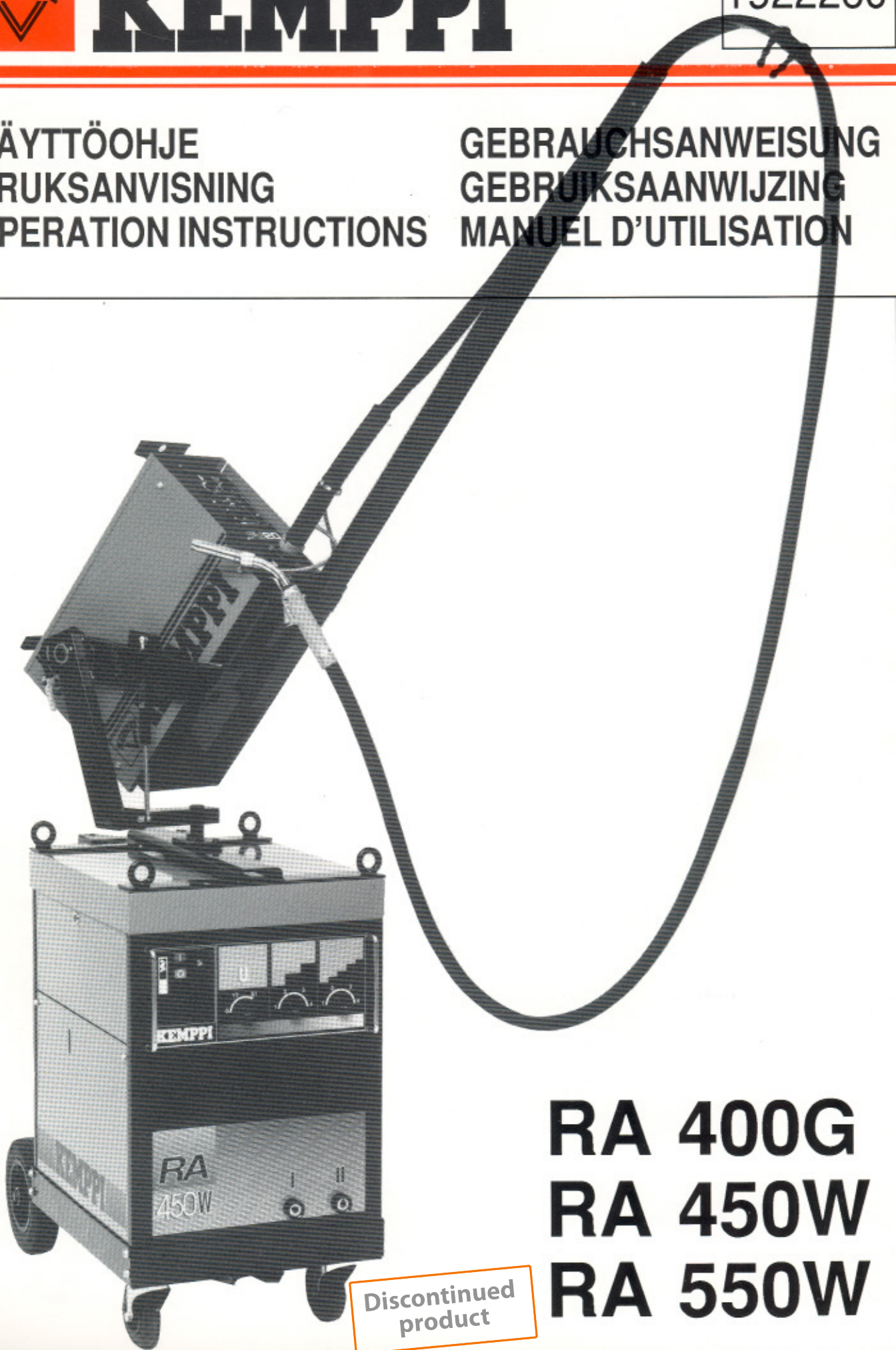
KEMPPI

1922260

KÄYTTÖOHJE
BRUKSANVISNING
OPERATION INSTRUCTIONS
GEBRAUCHSANWEISUNG
GEBRUIKSAANWIJZING
MANUEL D'UTILISATION



RA 400G
RA 450W
RA 550W

Discontinued product

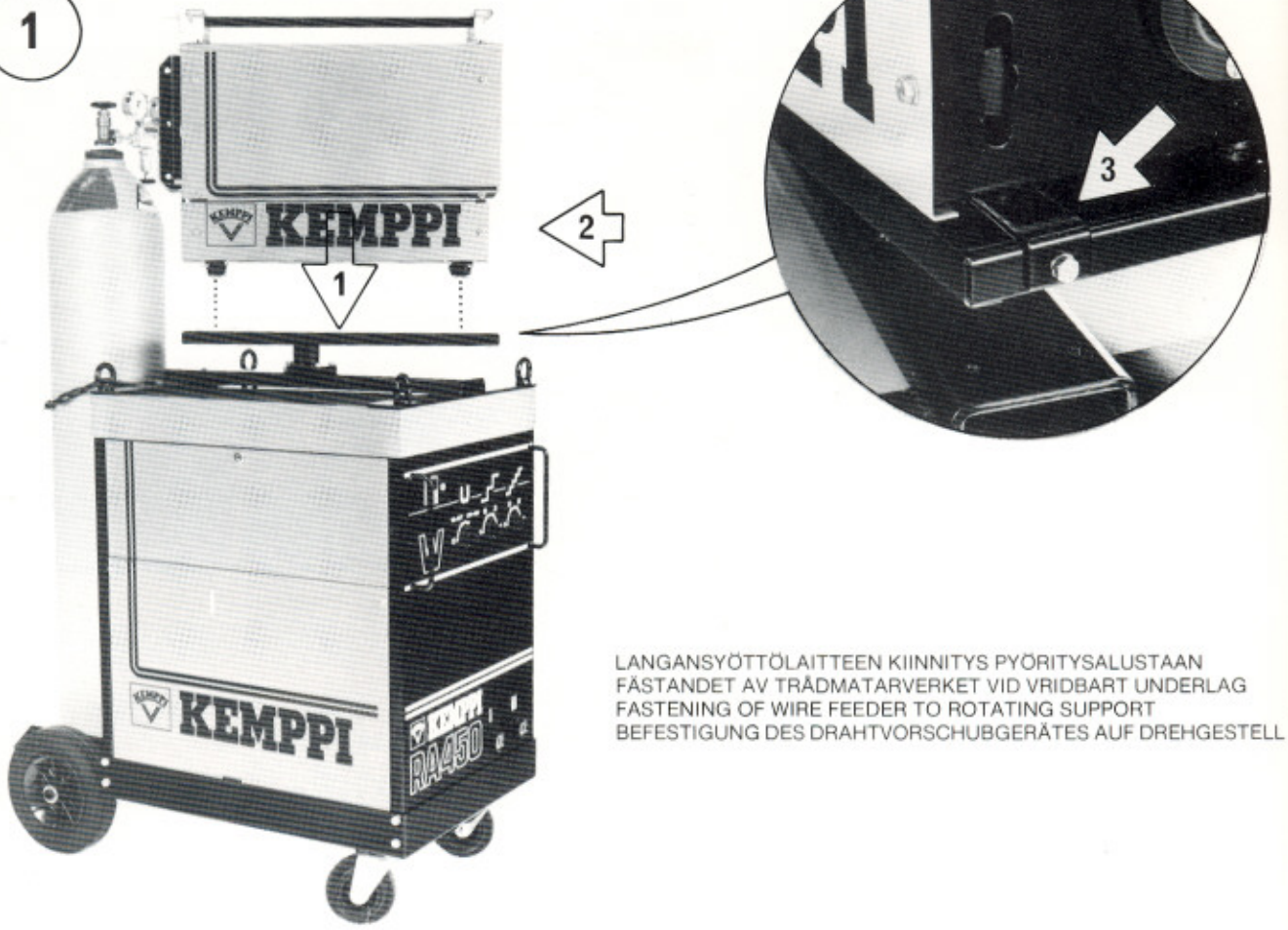
SUOMI

SVENSKA

ENGLISH

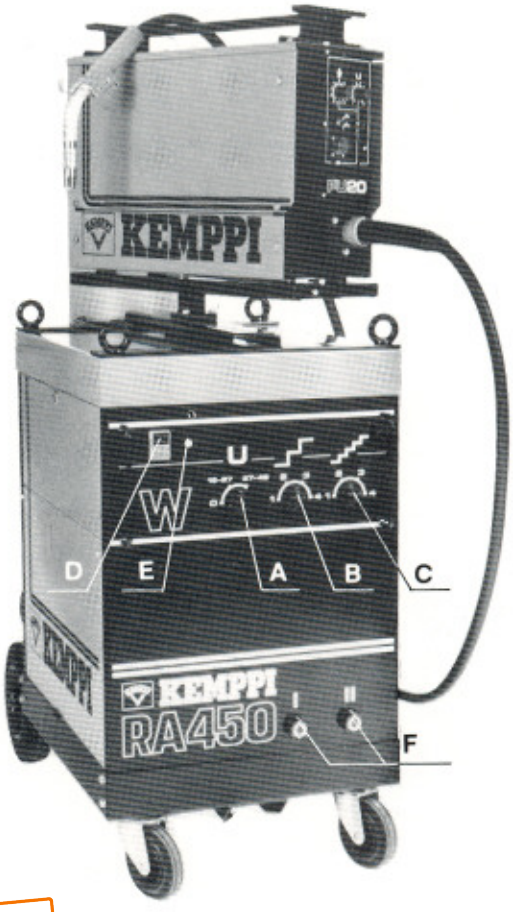
DEUTSCH

1



LANGANSYÖTTÖLAITTEEN KIINNITYS PYÖRITYSALUSTAAN
FÄSTANDET AV TRÅDMATARVERKET VID VRIDBART UNDERLAG
FASTENING OF WIRE FEEDER TO ROTATING SUPPORT
BEFESTIGUNG DES DRAHTVORSCHUBGERÄTES AUF DREHGESTELL

2



A Pääkytkin/Jännitealueen valintakytkin
Huvudbrytare/Brytare för val av spänningsområde
Main switch/Selecting switch of voltage range
Hauptschalter/Wahlschalter für Spannungsbereich

B Jännitteensäätökytkin, karkeasäätö
Spänningsreglagebrytare, grovreglage
Voltage regulation switch, coarse regulation
Spannungsregelschlater, Grobeinstellung

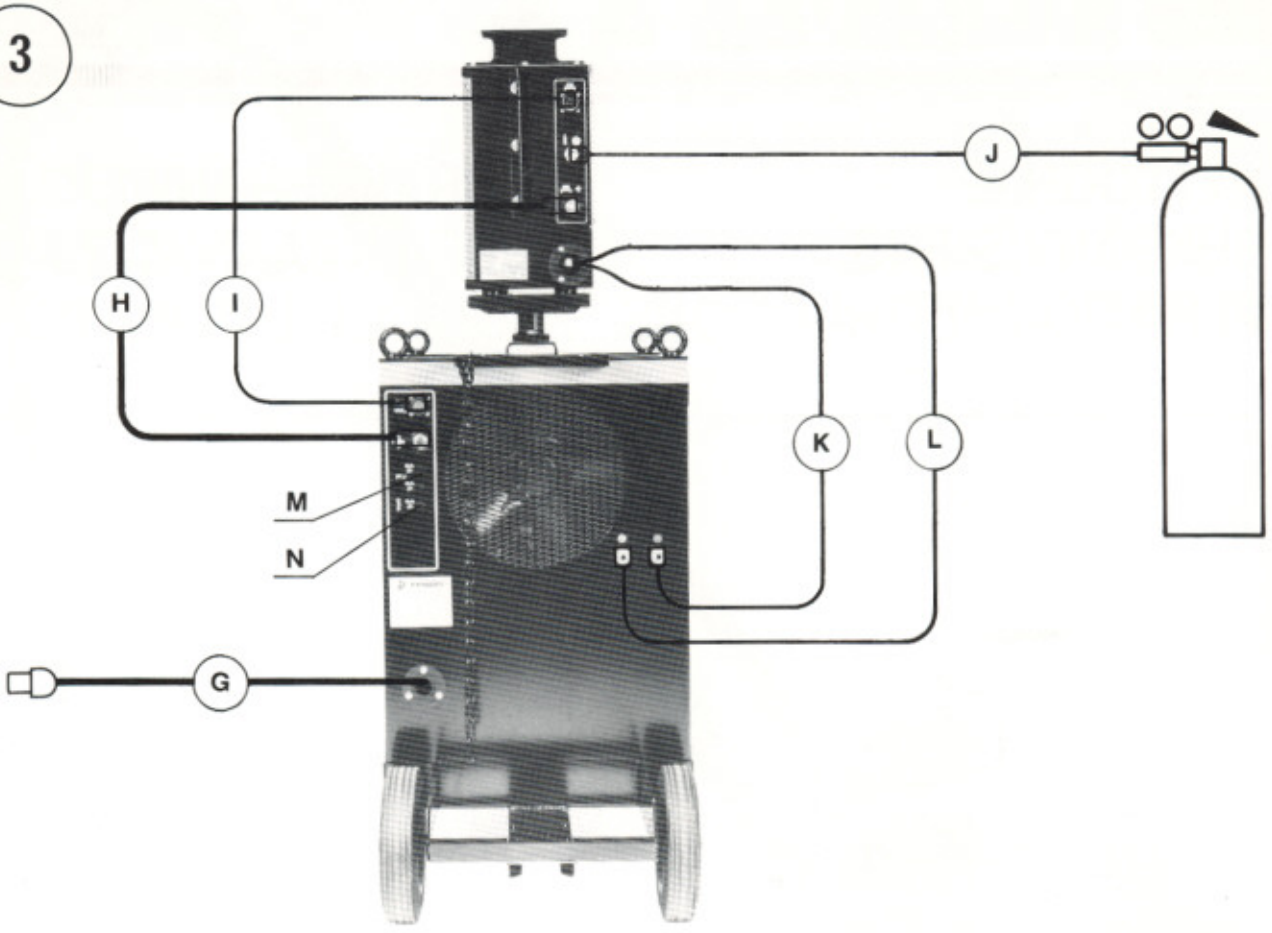
C Jännitteensäätökytkin hienosäätö
Spänningsreglagebrytare, finreglage
Voltage regulation switch, fine regulation
Spannungsregelschalter, Feineinstellung

D Vesilaitteen käynnistyskytkin
Startbrytare för vattenanläggning
Start switch for water equipment
Startschalter für Wassergerät

E Vesilaitteen merkkivalo
Signallampa för vattenanläggning
Pilot lamp for water equipment
Signallampe für Wassergerät

F Paluuvirtakaapeliliittimet
Återledarkopplingar
Earth cable connectors
Massekabelanschlüsse

3



G Liitäntäkaapeli
Anslutningskabel
Mains cable
Anschlusskabel

H Hitsausvirtakaapeli
Svetsströmkabel
Welding current cable
Schweissstromkabel

I Ohjausvirtakaapeli
Manöverkabel
Control cable
Steuerkabel

J Suojakaasuletku
Gasslang
Gas hose
Gasschlauch

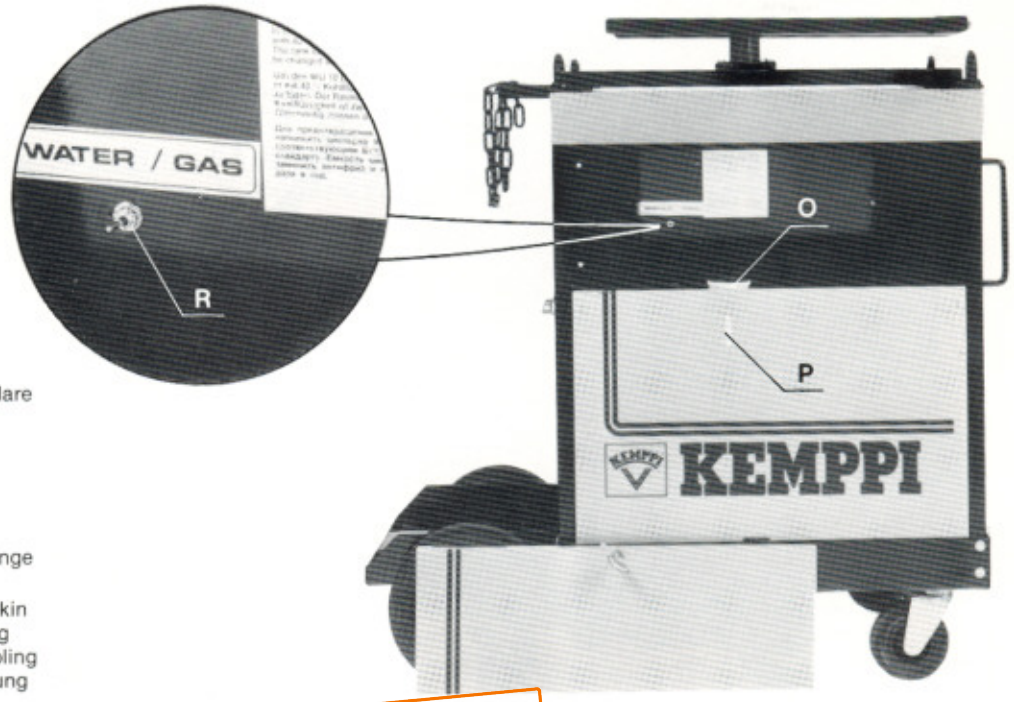
K Vesiletku, kuuma
Vattenslang, het
Water hose, hot
Wasserschlauch, heiss

L Vesiletku, kylmä
Vattenslang, kalt
Water hose, cold
Wasserschlauch, kalt

M Sulakkeet langansyöttölaitteen käyttöjännitteelle, 2x8A
Säkringar för styrspänning av trådmatarverket, 2x8A
Fuses for manoeuvring voltage of wire feeder, 2x8A
Sicherungen für Steuerspannung des Drahtvorschubgerätes, 2x8A

N Tuulettimen sulake, 2 A
Säkring för fläkt, 2 A
Fuse for fan, 2 A
Sicherung für Ventilator, 2 A

4



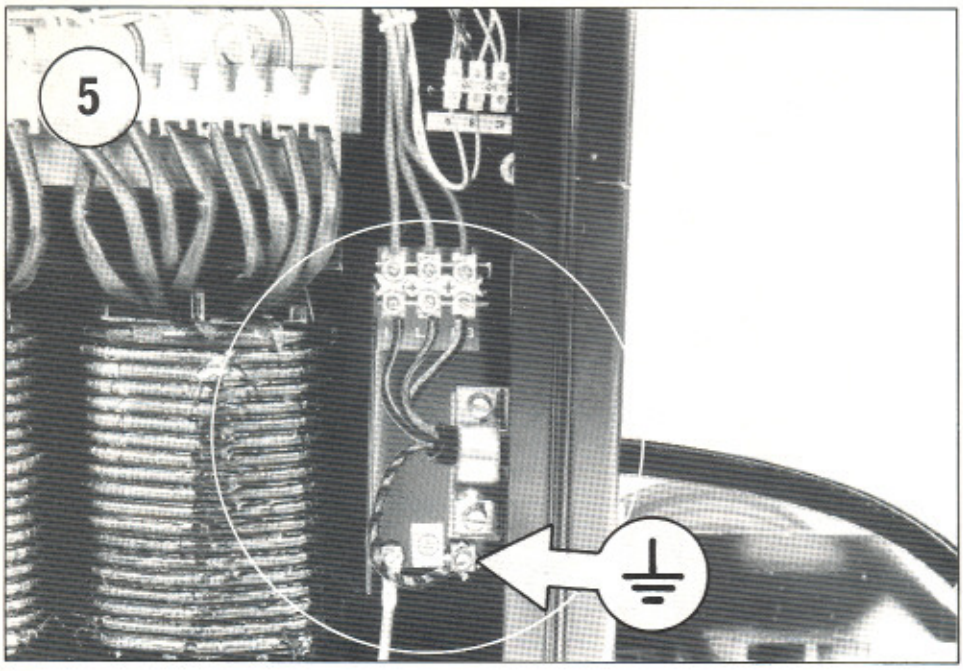
RA 450W

O Vesisäiliön täyttöaukko
Påfyllningsöppning för vattenbehållare
Filling gate for water tank
Füllöffnung für Wasserbehälter

P Nestepinnan tarkkailuaukko
Kontrollöppning för vätskemängd
Control gate for liquid level
Kontrolläffnung für Flüssigkeitsmenge

R Vesi-/kaasujäähdytyksen valintakytkin
Brytare för val av vatten-/gaskylning
Selecting switch for water-/gas cooling
Wahlschalter für Wasser-/Gaskühlung

Discontinued product



VERKKOKAAPELIN KYTKENTÄ
KOPPLING AV ANSLUTNINGSKABEL
CONNECTION OF MAINS CABLE
ANSCHLUSS DES NETZKABELS

Katso myös sivu 5
Se också sida 8
See also page 11
Auch Seite 14 sehen

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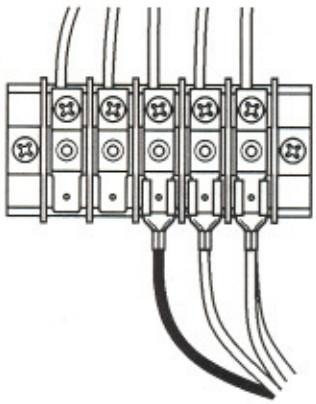
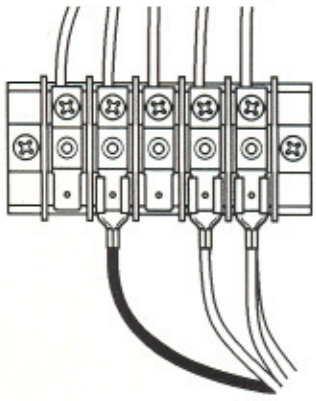
LIITÄTÄJÄNNITTEEN VAIHTO APUMUUNTAJAN LIITIN-RIMALLA
OMKOPPLING AV ANSLUTNINGSSPÄNNING PÅ HJÄLP-TRANSFORMATORNS KOPPLINGSPLINT
CHANGE OF MAINS VOLTAGE ON TERMINAL BOARD OF AUXLIARY TRANSFORMER
UMSCHALTUNG DER ANSCHLUSSSPANNUNG AN DER ANSCHLUSSLEISTE DES HILFETRANSFORMATORS

Katso myös sivu 5
Se också sida 8
See also page 11
Auch Seite 14 sehen



U_1 = 380...400 V

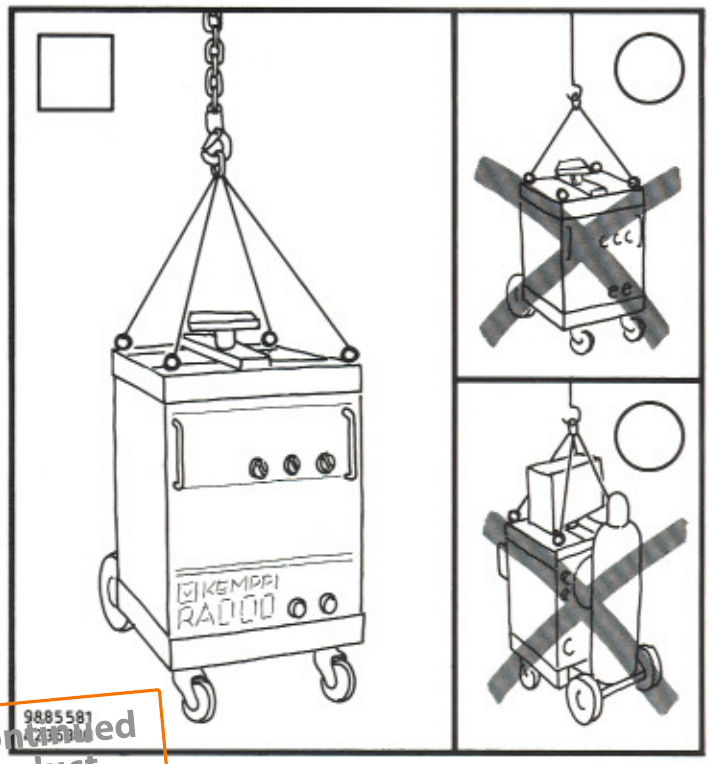


U_1 = 405...415 V

7

KONEEN NOSTAMINEN
LYFTNING AV MASKINEN
LIFTING OF MACHINE
HEBEN DER MASCHINE

Katso myös sivu 5
Se också sida 8
See also page 11
Auch Seite 15 sehen



RA 400G, 450W and 550W machines are power sources designed for gas metal arc welding. Machines of W type have a built-in cooling water circulation unit for a liquid-cooled welding gun. RA machines have as standard equipment a rotation platform and a rotating support T1 for mounting the wire feeder (picture 1). In place of the rotating support you can also mount the swing arm KV 100 (6185237) on the platform, picture on cover

TECHNICAL DATA

	RA 400G	RA 450W	RA 550W
Mains voltage 3~, 50/60 Hz			
nominal voltage range	400 V	400 V	400 V
mains voltage range	380 ... 415 V	380 ... 415 V	380 ... 415 V
Rated power U_1 = 400 V			
45 % ED	22,3 kVA	22,3 kVA	---
60 % ED	18,4 kVA	18,4 kVA	36,5 kVA
100 % ED	12,2 kVA	12,2 kVA	19,9 kVA
cos φ	0,95	0,95	0,95
Welding current range	40 A /17,0 V ... 450 A / 36,5 V	40 A /17,0 V ... 450 A / 36,5 V	70 A /19,0 V ... 550 A / 41,5 V
Rated current			
45 % ED	450 A / 36,5 V	450 A / 36,5 V	---
60 % ED	400 A / 34,0 V	400 A / 34,0 V	550 A / 41,5 V
100 % ED	310 A / 29,5 V	310 A / 29,5 V	425 A / 35,5 V
Open circuit voltage U_1 = 400 V	17,0 ... 51,0 V	17,0 ... 51,0 V	19,0 ...57,0 V
voltage steps	32 pc	32 pc	32 pc
induct. controls	2 pc	2 pc	2 pc
Efficiency	78 % (450 A / 36,5 V)	78 % (450 A / 36,5 V)	78 % (550 A / 41,5 V)
Open circuit power	4 kW / 380 V 7 kW / 415 V	4 kW / 380 V 7 kW / 415 V	5,5 kW
Storage temperature range	– 40 ... +60 °C	– 40 ... +60 °C	– 40 ... +60 °C
Operation teperature range	– 20 ... +40 °C	– 20 ... +40 °C	– 20 ... +40 °C
Heat class	H (180 °C)	H (180 °C)	H (180 °C)
Degree of protection	IP23	IP23	IP23
External dimensions			
length	970 mm	970 mm	1100 mm
width	520 mm	520 mm	830 mm
height	910 mm	910 mm	1100 mm
Weight	190 kg	190 kg	270 kg
Supply voltage for accessories (VDE 0100 § 8)	30 VAC (50 VA / 100 % ED)	30 VAC (50 VA / 100 % ED)	30 VAC (50 VA / 100 % ED)
Suitable accessories:			
wire feeder units	FU 10, FU 20, FU 30	FU 10, FU 20, FU 30	FU 10, FU 20, FU 30
cooling liquid circulation unit	WU 10	as standard equipment	as standard equipment

The machines meet with construction and safety requirements according to norms VDE 0542 and SEN 8301. The rated current of the machine has been given for an environmental temperature + 40 °C.

INSTALLATION AND OPERATION

Siting the machine

By siting of the machine you should consider the following:
- Site the machine onto dry floor 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.
- A distance of at least 20 cm must be ensured at the back of the machine to allow good circulation of the cooling air through the machine.
- PROTECT THE MACHINE AGAINST HARD RAIN AND UNDER HOT CIRCUMSTANCES AGAINST DIRECT SUNSHINE. Ensure the free circulation of the cooling air.

Connection to mains supply

CONNECTION OF THE MAINS CONNECTION CABLE TO THE MAINS SUPPLY AND CHANGES TO ANY INTERNAL PRIMARY VOLTAGE CONNECTORS SHOULD ONLY BE CARRIED OUT BY A COMPETENT ELECTRICIAN.

For the time taken by connection remove the right side plate of the machine.
The connection cable is taken to the terminal block through the inlet insulation and the clamp on the back panel of the machine.
The phase leads of the connection cable are coupled to connections L1, L2 and L3.
The yellow-green earth protection is coupled to the earthing screw marked thus ⏚ beside the terminal block (picture 5).

Machine	Mains voltage	Fuses slow-blow	Connection cable
RA 400G	380 ... 415 V	3 x 35 A	4 X 6S mm^2
RA 450W	380 ... 415 V	3 x 35 A	4 x 6S mm^2
RA 550W	380 ... 415 V	3 x 50 A	4 x 10S mm^2

In cables of S type there is an earth protection coloured green-yellow.

Changing the connection voltage

BEFORE YOU CONNECT THE MACHINE TO THE MAINS, PLEASE MAKE SURE THAT COUPLINGS OF TERMINAL BLOCK OF AUXILIARY TRANSFORMER (380...400/ 405...415 V) CORRESPOND TO MAINS VOLTAGE BEING IN USE (picture 6).

Connection of wire feeder

On rear panel of machine there are +cable and control cable connectors for FU wire feeder and in W models cooling liquid connectors (picture 3).
If you want to use cooling liquid you must equip the FU with control cable / hose set 6260183.

Built-in cooling liquid circulation unit

(picture 4)

In machines of type W there is a built-in cooling liquid circulation unit for a liquid-cooled welding gun.
With the switch located inside the RA 450W, beside water tank, you can choose if you weld with liquid-cooled (WATER) or gas-cooled (GAS) welding method. The cooling liquid circulation unit is started only in "WATER" position. This switch doesn't exist in RA 550W.
The cooling liquid circulation unit is started when the power source is switched on and the black push-button on the front wall of the machine is pressed down. **When taking the machine into use you must press on the switch for approx. 5 seconds** because the equipment is protected from dry operation with pressure control on pressure side. **YOU MUST NOT PRESS ON THE SWITCH WHEN THE TANK IS EMPTY.**
The pilot lamp above the push-button tells when the liquid cooling circulation unit is switched on.
In order to stop the liquid cooling circulation unit, press on the red push-button below the start button or turn the main switch of the machine to position 'zero'.
The pump motor is protected against overload with a thermostat which controls welding current and voltage of pump.
The water tank must be filled with 40 % antifreeze according to British Standard B 3151 (e.g. Esso Perma-Guart, Shell Antifreeze or Aspo Zero).
YOU MUST NOT USE THE EQUIPMENT WITHOUT ANY COOLING LIQUID!
On side plate of machine there is an inspection hole for control of liquid level.

External cooling liquid circulation unit WU 10

When liquid cooling circulation unit WU 10 is used, connect the control cable between the FU wire feeder and the power source through the WU 10. For connections you need the control cable / hose set 6260183.
Taking into use and operation of the WU 10 are described in operating instructions delivered with the WU 10.
The WU 10 can be placed above the power source beside the wire feeder using the wide rotating plate **T3** (6185236).

Connection of return current cable

Welding characteristics are greatly determined by welding choke. Return current cable is connected on right choke value according to following general instructions:

I General use for ø 0,6 - 0,8 mm filler wires and for aluminium welding. Welding result "cold".

II General use for ø 1,0 - 1,6 mm filler wires and for flux-cored wire welding.

Recommended size of return current cable and the +cable is 70 mm^2 in RA 400G and RA 450W machines and 95 mm^2 in RA 550W machine.

Welding voltage adjustment (picture 2)

Voltage adjustment is divided into two ranges which are marked onto main switch. Within these ranges voltage is adjusted with a 4-step coarse and fine adjustment switch.

OPEN CIRCUIT VOLTAGES			
Voltage adjustment		Voltage range selection	
Coarse	Fine	Small range	Wide range
RA 400G and RA 450W U_1 = 400 V			
1	1 ... 4	16,7 ... 18,3 V	29,7 ... 32,3 V
2	1 ... 4	18,9 ... 20,7 V	33,2 ... 36,7 V
3	1 ... 4	21,5 ... 24,0 V	38,0 ... 42,4 V
4	1 ... 4	25,0 ... 28,9 V	44,1 ... 51,0 V
RA 550W U_1 = 400 V			
1	1 ... 4	18,9 ... 20,7 V	33,4 ... 36,5 V
2	1 ... 4	21,4 ... 23,5 V	37,6 ... 41,6 V
3	1 ... 4	24,2 ... 27,0 V	42,9 ... 47,9 V
4	1 ... 4	26,0 ... 32,3 V	49,5 ... 56,5 V

NOTE! YOU MAY NOT ADJUST VOLTAGES DURING WELDING.

Transport and lifting of machine

RA machines are equippped with wheel chassis and bottle rack for transports in the house which are made by pushing by hand.

GAS BOTTLE MUST ALWAYS BE BOUND WITH CHAIN ONTO RACK.

For lifting there are lifting eyes on top corners of the machine. LIFTING MUST ALWAYS BE DONE AS SO CALLED 4-POINT-LIFTING = FROM ALL LIFTING EYES AT THE SAME TIME.
ALWAYS REMOVE THE GAS BOTTLE FROM RACK BEFORE LIFTING OR VEHICLE TRANSPORT OF MACHINE!

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 MIG GUN OR THE WELDING CABLES ON THE POWER SOURCE OR OTHER ELECTRICAL EQUIPMENT.
DON'T PRESS ON MIG GUN SWITCH, IF THE GUN IS NOT DIRECTED TOWARDS WORK PIECE.

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

Power source unit

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

Basic maintenance should be carried out at least twice a year:
- clean the equipment carefully, interior parts and components with compressed air.
- inspect the condition of electrical connections and components especially contact tips of contactor and relay. Clean dirty tips.
- repair possible damage immediately.

REPARATIONS TO MACHINE SHOULD ONLY BE CARRIED OUT BY A COMPETENT ELECTRICIAN.

WHEN CLEANING WITH COMPRESSED AIR ALWAYS PROTECT YOUR EYES WITH PROPER EYE PROTECTORS.

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

Cooling liquid circulation unit (RA 450W, 550W)

Check daily quantity of liquid. Change liquid if it has been boiling because it will then lose its metal protecting characteristics.
Cooling liquid must be changed twice a year and pipes and tank must be rinsed with clean water. Check condition of pump, motor and couplings between them. Repair possible faults and clean the equipment.
NOTE! By replacement of hoses make sure that they are suitable to be used with cooling liquid.

Cables

Check condition of welding and connection cables daily.
DON'T USE DEFECTIVE CABLES!
Make sure that extension cables for mains connection being in use are safe and according to given regulations.

REPARATIONS OF MAINS CONNECTION CABLES SHOULD ONLY BE CARRIED OUT BY A COMPETENT ELECTRICIAN.

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 parts 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.