



Tradestig AC/DC 200S

Welding Power Source

SERVICE MANUAL

Service Manual - AC/DC 200S

Introduction

This service manual is intended to be used together with the instruction manual where the spare parts list is included.

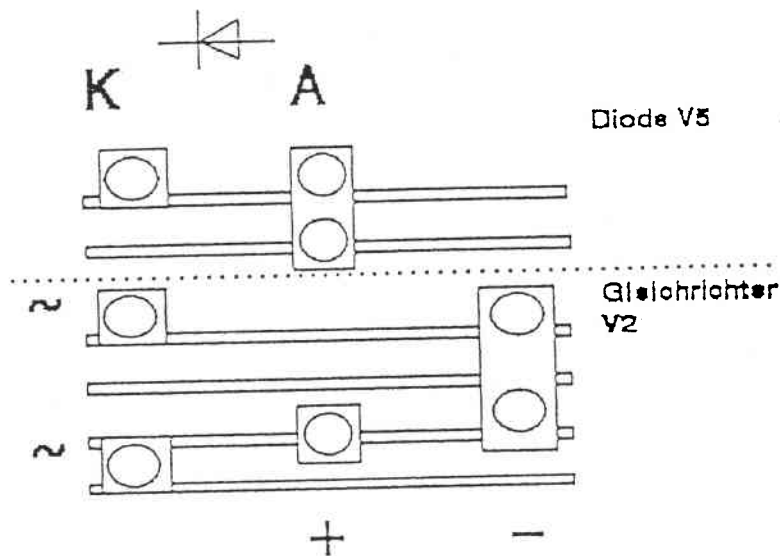
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GENERAL DESCRIPTION

The AC/DC 200S is a primary triac controlled power source. Changes from ambient temperature or input voltage (+/-10%) are compensated. The two supply wires are connected to the yellow/red main switch Q1. The external fuse must not exceed 25 Amps! Control is released if the main contactor K1 is energised and a base current is established.

The design of main transformer T1 and control transformer T2 is according to VDE 0544 for welding under increased hazard of electric shock. The machine is marked with "S".

Main rectifier V2 and diode V5:



Operation with DC mode:

The base current is supplied from the control transformer T2 (70V coil). No load voltage is 100V DC.

The base current is limited by the resistor R1 to a value of approx. 4A. For logic control purpose the current transformer T3 is sensing the current in that loop. (10 windings at T3)

The components of the main DC loop are:

rectifier V2	
shunt R2	(sensing the current for control)
arc	
HF-coil L2	(in use at TIG welding)
inductor L1	

Operation with AC mode:

For stabilizing the arc the resistor R1 is connected as base load to the rectifier V2.

The base current through the arc is supplied from the main transformer and adjusted at R20 on the control PCB A1.

For logic control also current transformer T3 is sensing this current. A small part of L1 (N=15) is used at AC mode for both halfwaves.

The ignition unit HFG is operating with the inducting principle. It is important that the igniting pulse is in the same direction as the sinus halfwave at that time.

COMPONENT DESCRIPTIONS

COMPONENT DESCRIPTIONS

A 1	Main control PCB (Earth connection to C49 via fastening bolt and green/yellow wire is important!) Check that S1 is closed to "Int"! —
A 2	Triac ignition PCB; !!! 400V AC !!!
A 3	RC - PCB
C 1	at A3 0,1uF 1000V
C 2	at A3 2,2uF 400V
C 3	Electrolytic capacitor for DC base current 2200uF 100V
F 1	Fuse 6,3A 5X30mm
F 2	Thermal switch 115°C at main transformer T1
F 3	Thermal switch 130°C at main choke L1
HFG	Arc ignition unit. Stand alone test with scope: 42V AC at supply and synchr.42V input. -check 500 to 600V bipolar pulses at output.
H 1	"Contactor on" lamp 24V 1W (series resistor 680R 1W)
H 3	"Thermal overload on" LED 24V (yellow)
K 1	Contactor for main and base loop (42V; 50/60Hz)
L 1	Main choke N=89 with tapping at N=15 L=5,2...5,6mH (measured with L/C Instrument)
L 2	HF transformer N= 13 ; L=0,6...0,8mH
M 1	Fan motor 230V; 50/60Hz;
M 2	Fan motor 230V; 50/60Hz;
Q 1	Mains switch; 2 pole
R 1	Base current limiting resistor 6R2; 80W
R 2	Shunt 180A;60mV
R 3	at A3; 22R/1W
R 4	Discharge resistor 10K
S 1	AC/DC selector switch;at main side two contacts for current capability in parallel.(see truth table at diagram)
T 1	Main transformer; 400V prim. => 44V secondary at no load
T 2	Control transformer; prim. 400V; 230V tapping max.1,25A; Sec.:42V 100VA; 70V 390VA
T 3	Current transformer for AC and DC current detection (L > 100mH)
T 4	Control transformer for main PCB (A1) supply
V 1	Triac 1200V 45A; !!! 400V AC !!!
V 2/V5	Main rectifier/diode combination
V 3	Base current rectifier
V 4	Protecting diode for H3 (1N4004)
Y 1	Gas valve 42V 50/60Hz; max. pressure: 10 bar

CIRCUIT BOARDS

SIGNAL DESCRIPTION of X6 at PCB A1. (parallel to X8)

X6/1	Q3	Low signal at third stroke
X6/2	Q2	Low signal at second stroke
X6/3	Q1	Low signal at first stroke
X6/4	and X7/3	Low signal if ext. setvalue is selected
X6/5	n.c.	
X6/6	n.c.	
X6/7	EL	Low signal if MMA welding is selected
X6/8	EZ	Spare signal for logic
X6/9	Ga	GND at this point starts gasflow from external
X6/10	StrE	Low signal if current flows
X6/11	ZAB	Low signal at intermediate downslope (not used)
X6/12	Iset	Signal behind controller
X6/13	BT	Low signal if torch trigger is active
X6/14	STOP	Low signal if stop from ext. is active
X6/15	and X7/5	Setvalue for current (0...10V)
X6/16	10V	Reference after upslope and before downslope
X6/17	-15V	Supply
X6/18	+15V	Supply
X6/19	+ 5V	Supply
X6/20	GND	Ground (also measurement reference)

All active Low signals (0V) have inactive a +5V level!

from machine to PCB A1

X1/1	Start signal also X7/1 (Signals are galvanic separated from PCB Ground)
X1/2	Start signal also X7/2
X1/3	n.c.
X1/4	n.c.
X3/1 to 5	AC supply to PCB according to diagram
X4/1	Synchronisation voltage to HFG
X4/2	Synchronisation voltage to HFG
X4/3	42V AC to PCB A1
X4/4	42V AC to gas valve Y1
X4/5	42V AC to main contactor K1 and lamp H1
X4/6	Open +15V; If AC 2 is selected, GND signal
X4/7	n.c.
X5/1	Open +5V; If AC 1 or AC 2 is selected, GND signal
X5/2	output current (180A => 60mV)
X5/3	output current (180A => 60mV)
X5/4	current flows sensor (app.10V bipolar pulses with mains frequency)
X5/5	frequency)
X5/6	Pulses to ignition unit (+15V)
X5/7	Pulses to ignition unit (to GND)
X7/1	Start signal
X7/2	Start signal
X7/3	GND if ext. setvalue is selected, otherwise +15V
X7/4	10V signal rises and falls with slope
X7/5	External setvalue (0...10V)

CIRCUIT BOARDS

SIGNAL DESCRIPTION of X2 at PCB A1.

X2/1	Low signal if MMA is selected
X2/2	Low signal if TIG 2-stroke is selected
X2/3	Low signal if TIG 4-stroke is selected
X2/4	GND signal
X2/5	Set value current (0...10V)
X2/6	10V reference after upslope and before downslope
X2/7	Poti for upslope time
X2/8	10K lin
X2/9	Poti for downslope time
X2/10	10K lin
X2/11	Poti for postflow time
X2/12	220K lin
X2/13	n.c.

All active Low signals (0V) have inactive a +5V level!

Adjustments

R 1	Gas preflow (max 7 sec)
R 2	Hot start (sensitive !!! mains fuse may blow if too high)
R 20	AC Base current
R 85	10V Ref. at X6/16
R103	DC current max
R104	AC 1 current max