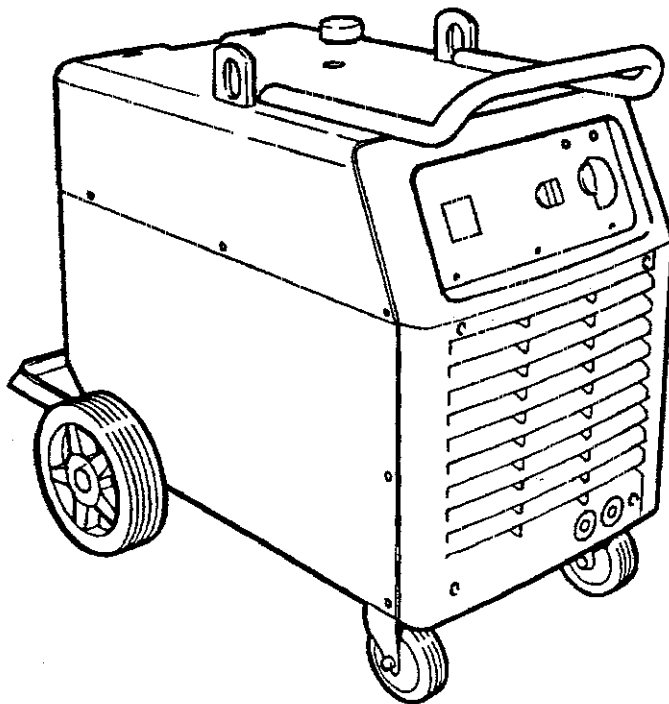




# Operating Manual

## Transmig 413S/413SW-513S/513SW



**Please ensure that this  
Operating Manual  
is made available  
to the user  
of the equipment.**



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## DECLARATION OF CONFORMITY

### Murex Welding Products Ltd.

Declare hereby that:

**Murex Transmig 413S/413SW/513S/513SW Power Source**

Part No.1415333/1415334/1415338/1415339

Manufactured after 1 st June 1999

- conform with the requirements of Council Directive 73/23/EEC, amended by Council Directive 93/68/EEC, relating to electrical equipment designed for use within certain voltage limits.
- conform with the requirements of Council Directive 89/336/EEC, amended by Council Directive 93/68/EEC, relating to electromagnetic compatibility.
- are manufactured in accordance with EN 60974-1 Safety Requirements for Arc Welding Equipment.
- are manufactured in accordance with EN 50199 Electromagnetic Compatibility for Arc Welding Equipment.

On behalf of Murex Welding Products Ltd.  
Hertford Rd  
Waltham Cross  
Herts. EN8 7RP  
England

  
.....  
P.G. Dodd  
Managing Director.  
Esab Group (UK) Ltd  
June 1999

Manufactured by Esab Welding Equipment AB.  
S-695 81 Laxå Sweden



## 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!**

### **MAINTENANCE**

This welding equipment has been designed, manufactured and tested to the highest standards to ensure long and trouble free life. However, regular maintenance is an essential part of keeping the machine operating in a reliable and safe manner and your attention is drawn to any maintenance instructions that are contained in this manual.

In general all welding equipment should be thoroughly inspected, tested and serviced at least annually.

More frequent checking will be required when the equipment is heavily used

Wear and tear, particularly in electro-mechanical and moving components, are gradual processes.

Caught in time, repair costs are small and the benefits in performance reliability and safety are significant.

Left alone they can put the equipment, and you, at risk

Have this equipment regularly inspected and maintained by an approved service centre.

### **ELECTROMAGNETIC COMPATIBILITY**

This product is intended for industrial use. In a domestic environment this product may cause radio interference. It is the users responsibility to take adequate precautions.

### **RISK OF TILTING**

**When** moving the equipment on its wheels, the momentum should the wheels hit an obstruction (cable or scrap etc), could cause the machine to tilt.

**When** moving the equipment, do not pull on the torch.

**Secure** the equipment, especially if used on a sloping or uneven surface.

**Ensure** the feeder is prevented from suddenly swivelling to one side whilst moving or wheeling the machine.

## SAFETY

In any arc welding or gouging operation, it is the responsibility of the user to observe certain safety rules to ensure his personal safety and to protect those working near him. Read all safety articles relevant to arc welding published by the WMA. Pay particular attention to any CAUTION or WARNING Notes included in this manual. CAUTION indicates possible equipment damage. WARNING indicates possible hazard to life.



### WARNING



The ON/OFF switch on this equipment does not isolate the unit from the mains electrical supply. **AC POWER IS PRESENT ON THE ON/OFF SWITCH TERMINALS.**

The ON/OFF lamp is an indication that the supply is switched on and does not imply that the unit is isolated from the supply **BEFORE REMOVING THE COVERS FOR MAINTENANCE, ISOLATE THE UNIT FROM THE MAINS ELECTRICAL SUPPLY.**

#### 1. Electrical

- Treat electricity with respect. Even the open circuit voltage of this equipment can be dangerous. Adjustments to the torch or replacement of torch parts should be undertaken with the mains supply isolated from the unit. If damaged torch cables or torch components are found, the unit must be disconnected from the mains and defective parts must be replaced using only Murex spare parts.
- Do not work on live circuits or cables. Disconnect the main power supply before checking the machine or performing any maintenance operation.
- Be sure the case of the welding machine is properly connected to a good electrical earth.
- Have the wiring for the welding machine installed by a qualified electrician. All connections must be made according to specifications in force and to general safety standards.
- Do not stand in water or on damp floors while using an arc welder or cutter. Do not use in the rain.
- Do not operate with worn or poorly connected cables. Inspect all cables frequently for insulation failure, exposed wires and loose connections.
- Do not overload cables or continue to operate with overheating cables. Cables which are too small for the current carried will overheat, causing rapid deterioration of the insulation.
- Pay attention that live parts of the torch do not touch any metal which is connected to the earth cable. Fix an insulated hook to hang the torch on when it is not in use.

#### 2. Ventilation

- Do not weld or cut on containers which have held combustible or flammable materials, or materials which give off flammable or toxic vapours when heated, without proper cleaning.
- Locate the welding/cutting operation far enough from any vapour-type degreaser using trichlorethylene or other chlorinated hydrocarbons as solvents. The ultraviolet light from the arc can decompose these vapours into toxic gases at a considerable distance from the arc, even though the concentration of the gases is low enough to be undetectable by smell.
- Be sure to provide adequate ventilation for removal and dilution of fume and gases. Fume exhaust facilities near the arc, or a ventilated helmet should be used when cutting in confined spaces or on toxic material.

#### 3. Glare

- Never look at the arc without wearing eye protection.  
Always use the proper protective clothing, filter glasses, and gloves. Be careful to avoid exposed skin areas. Do not use cracked or defective helmets or shields
- Never strike an arc when there is someone near who is not protected from the strong light of the arc.
- Warn bystanders who are not aware of the dangers of ultraviolet light.

#### 4. General

- Take care when lifting the unit.
- Ensure that cylinders are secured by chains
- Locate the unit so that there is adequate air flow to the ventilation louvres
- Always dress correctly to protect against glare, radiation and spatter.

#### 5. Fire

- Ensure that the correct type of fire extinguisher is available in the welding area
- Do not weld near flammable materials or liquids, in or near explosive atmospheres, or on pipes carrying explosive gases.

#### 6. Vehicle electrics

- When working on motor vehicles, remove the battery and any circuitry which may be damaged by the arc.
- Whilst welding be aware of the possibility of 'hidden wires' behind panels or bulkheads.



## INTRODUCTION

**Murex Transmig 413S/413SW/513S/513SW** are industrial 3 phase electronic thyristor controlled flat characteristic power sources for MIG/MAG welding with solid or cored wires. They are normally used together with a Murex Transmatic 4x4 EHD or Suitcase wire feed unit for dip through spray transfer processes. Transmig 413SW/513SW incorporates a MIG torch water cooling unit.

## Specification Transmig 413S/413SW

**Standard delivery:** Power source. (TM 413SW includes inbuilt torch water cooler). Mains cable 3 m (fitted). Includes: Gas cylinder shelf (fitted with 2 screws). Mounting post for wire feed unit.

Part No.	1415333/1415334	1415391/1415392
<b>Voltage</b>	400-415V, 3~50 Hz	230/400-415/500V, 3~ 50Hz 230/440-460V, 3~ 60 Hz
<b>Permissible load at 100 % duty cycle</b>	280 A/28 V	280 A/28 V
60 % duty cycle	350 A/32 V	350 A/32 V
45 % duty cycle	400 A/34 V	400 A/34 V
<b>Setting range (DC)</b>	60A/17(12)V-400A/34V	60A/17(12)V-400A/34V
<b>Open circuit voltage</b>	53-58 V	53-58 V
<b>Open circuit power</b>	590/790 W	640/840 W
<b>Efficiency</b>	0,74	0,76
<b>Power factor</b>	0,86	0,84
<b>Control voltage</b>	42 V, 50/60 Hz	42 V, 50/60 Hz
<b>Enclosure class</b>	IP 23	IP 23
<b>Weight</b>	200/214 kg	201/215 kg
<b>Dimensions lxbxh</b>	800x640x835	800x640x835
<b>Application classification</b>	<b>S</b>	<b>S</b>



## Specification Transmig 513S/513SW

### Standard delivery:

Power source (TM 513SW includes inbuilt torch water cooler).

Mains cable 3 m (fitted).

Includes: Gas cylinder shelf (fitted with 2 screws).

Mounting post for wire feed unit.

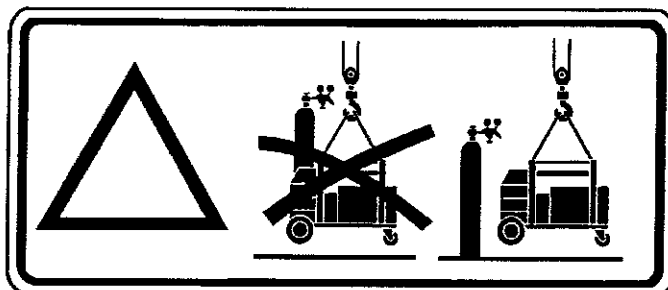
Part No.	1415338/1415339	1415393/1415394
<b>Voltage</b>	400-415V, 3-50 Hz	230/400-415/500V, 3~ 50Hz 230/440-460V,3~ 60 Hz
<b>Permissible load at 100 % duty cycle</b>	400 A/34 V	390 A/33,5 V
80 % duty cycle	450 A/37 V	435 A/36 V
60 % duty cycle	500 A/39 V	500 A/39 V
<b>Setting range (DC)</b>	60A/17(12)V-500A/39V	60A/17(12)V-500A/39V
<b>Open circuit voltage</b>	53-60 V	53-60 V
<b>Open circuit power</b>	670/870 W	720/920 W
<b>Efficiency</b>	0,78	0,78
<b>Power factor</b>	0,90	0,90
<b>Control voltage</b>	42 V, 50/60 Hz	42 V, 50/60 Hz
<b>Enclosure class</b>	IP 23	IP 23
<b>Weight</b>	225/239 kg	227/241 kg
<b>Dimensions lxbxh</b>	800x640x835	800x640x835
<b>Application classification</b>	<b>S</b>	<b>S</b>

These welding power sources conform to the requirements of IEC 974-1 and EN 50199.

The symbol **S** indicates that the power source is designed for use in areas where there is an increased electrical hazard.

Equipment marked **IP 23** is designed for use indoors and outdoors. Installation

## INSTALLATION



### Important

- Electrical installation must be carried out by a qualified electrician.
- Site the unit so that ventilation grilles are clear of obstructions.
- Ensure all flammable materials are removed from the area.
- Ensure the gas cylinder retaining strap is installed when mounting the gas cylinder.
- Check that the internal tapplings are correctly set for the mains supply.
- Check that the primary cable is of the correct cross-section for the mains supply.
- The front panel on/off switch does not isolate the mains electrical supply.

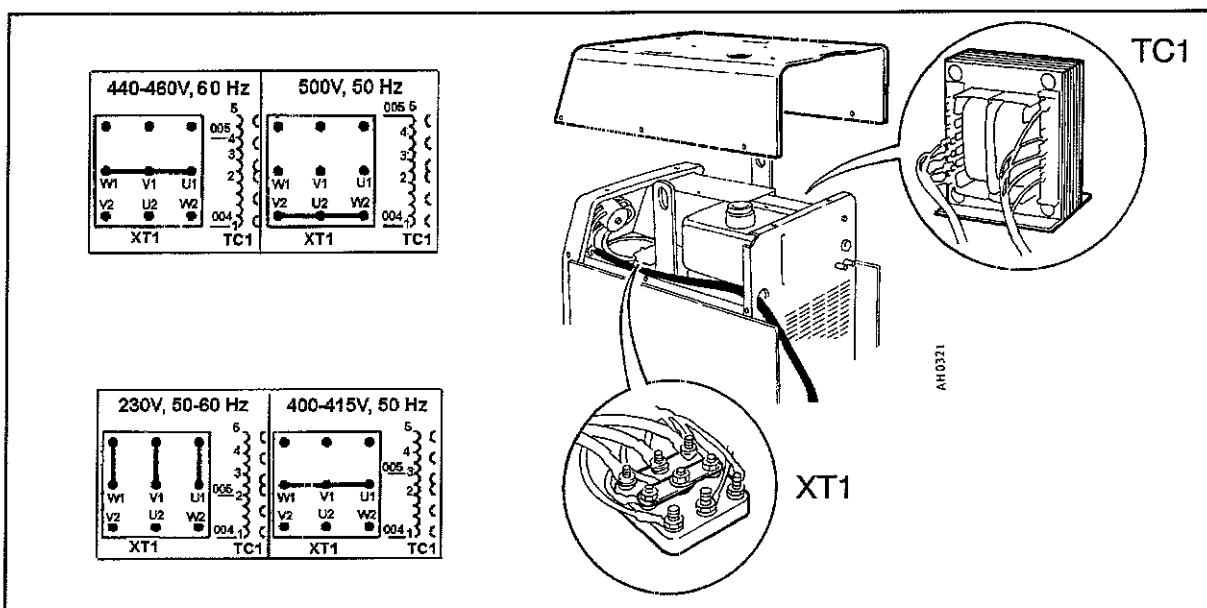
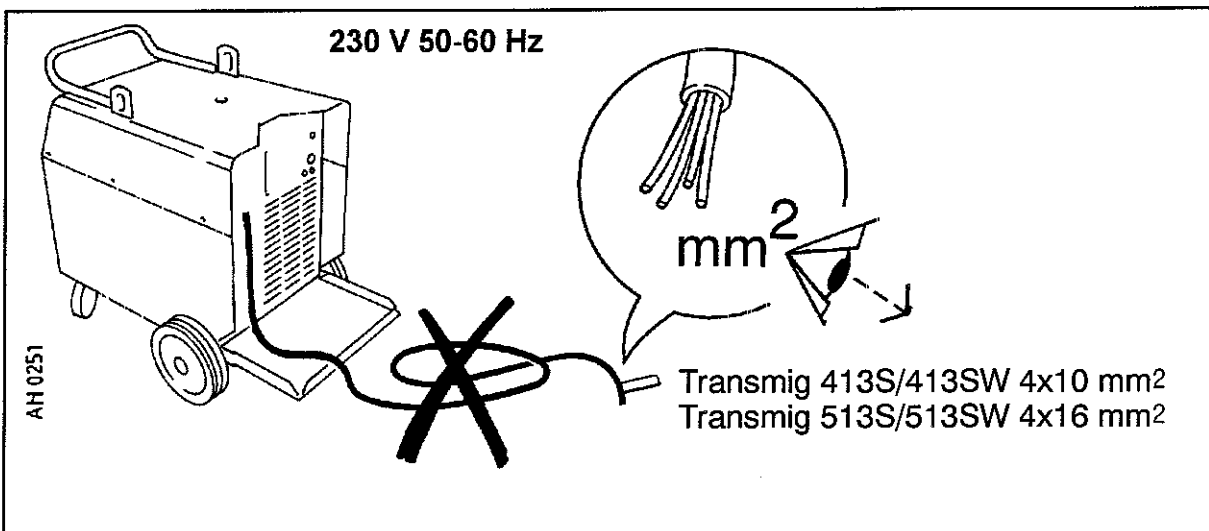
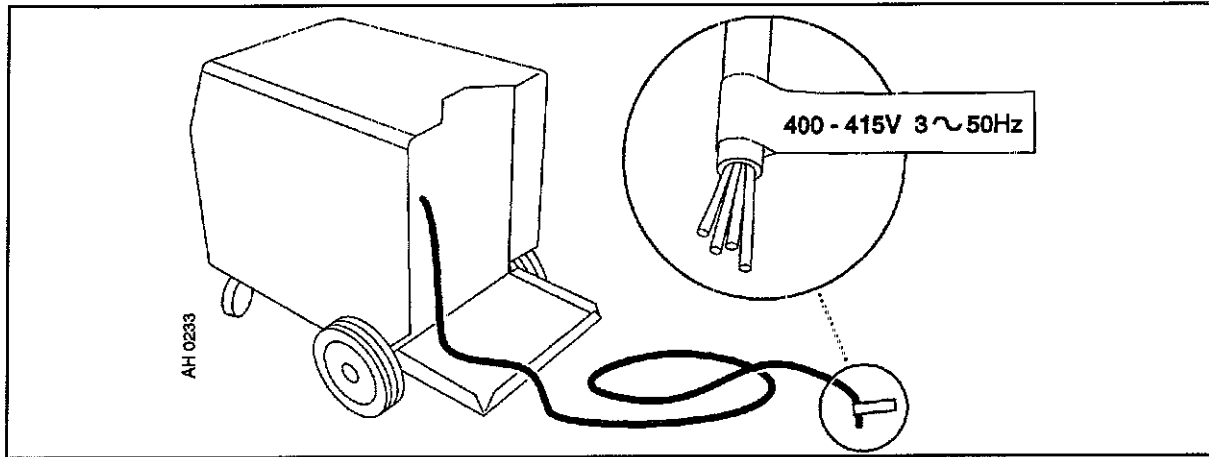
### Mains supply Transmig 413S/413SW

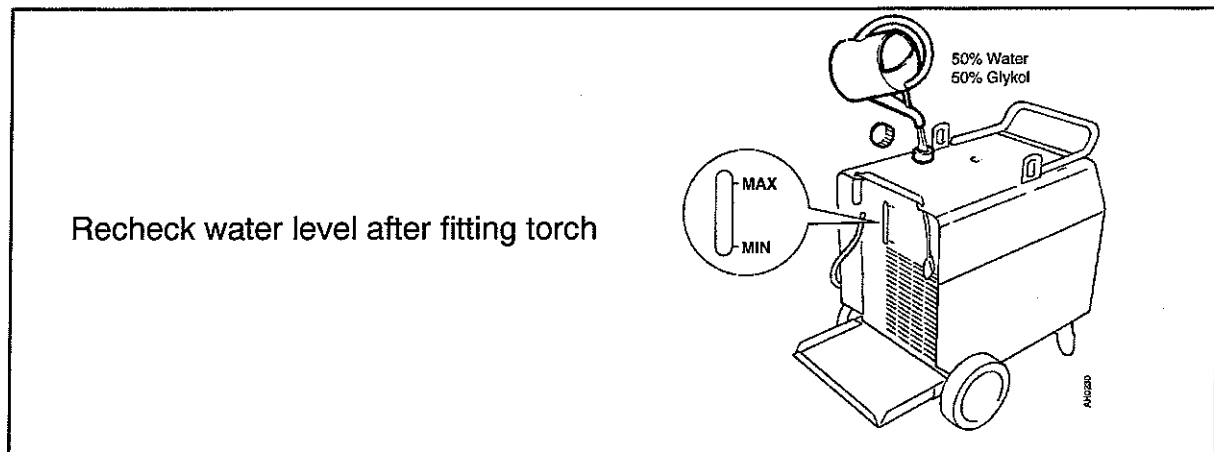
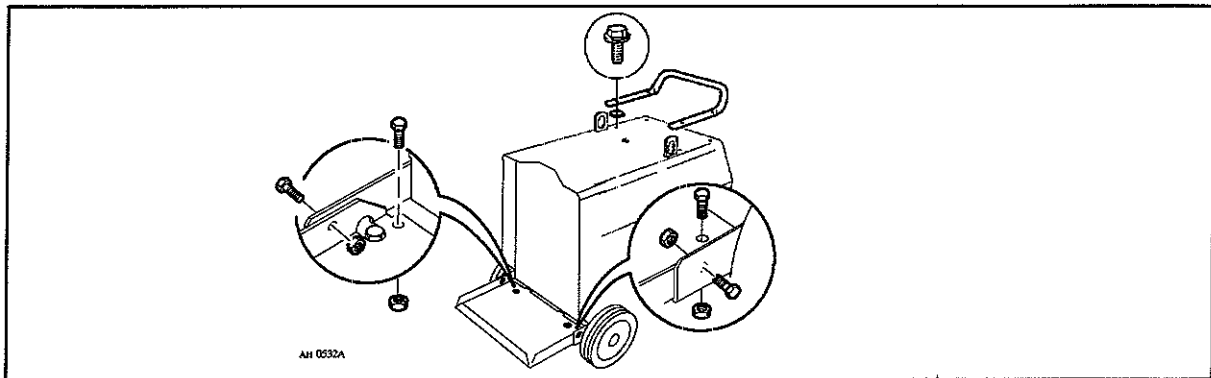
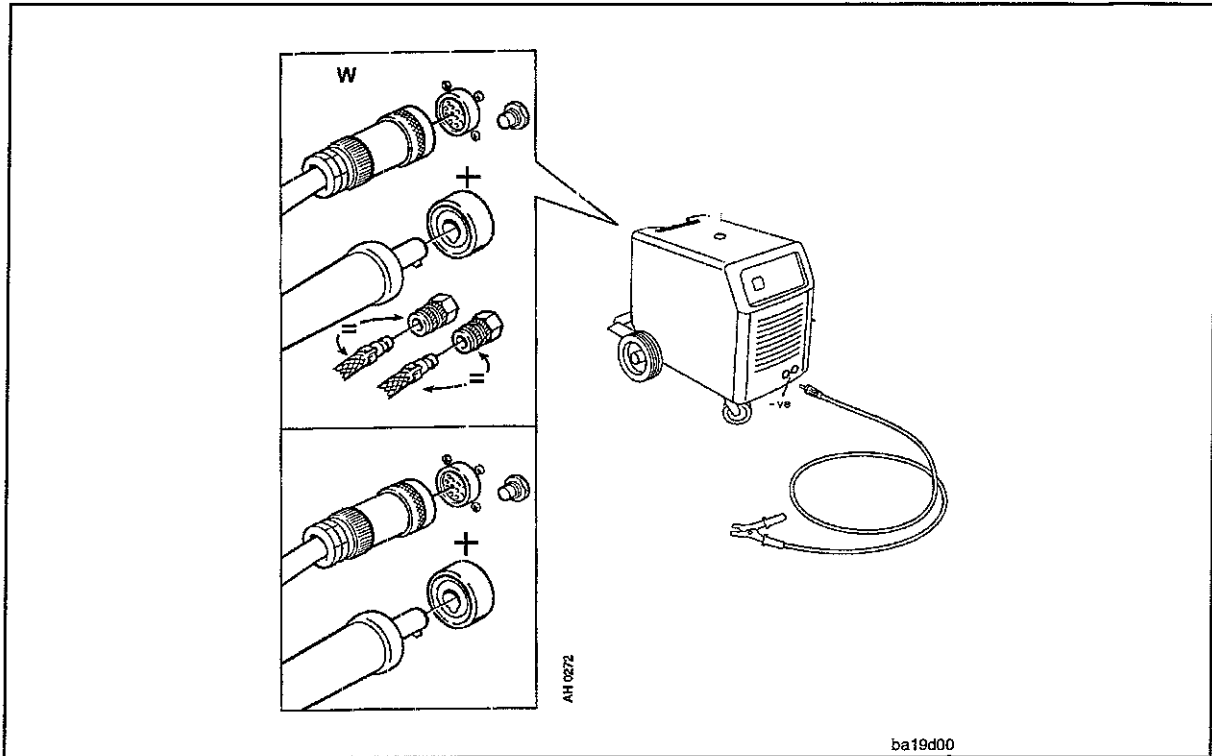
	3~50 Hz	3~50 Hz	3~50 Hz	3~60 Hz	3~60 Hz
Voltage V	230	400/415	500	230	450
Current A 100%	39	23	19	37	22
60%	47	28	22	45	27
45%	51	31	25	51	30
Mains lead rating	4x10	4x4	4x4	4x10	4x4
Fuse, slow A	35	25	20	35	20

### Mains supply Transmig 513S/513SW

	3~50 Hz	3~50 Hz	3~50 Hz	3~60 Hz	3~60 Hz
Voltage V	230	400/415	500	230	450
Current A 100%	59	35	27	56	33
60%	63	39	29	61	37
45%	69	41	33	69	42
Mains lead rating	4x16	4x6	4x6	4x16	4x6
Fuse, slow A	63	35	35	50	25

## Assembly of components





## OPERATION

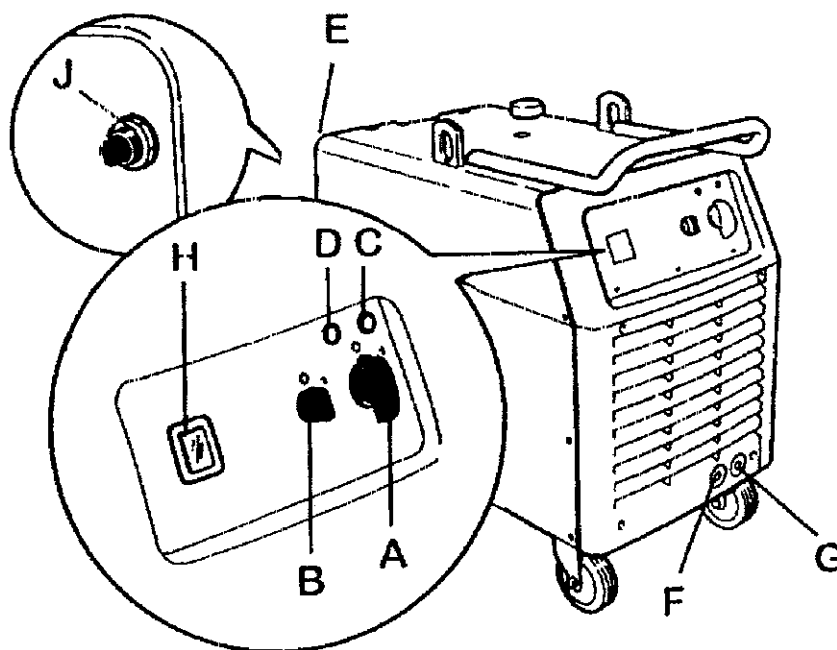
Transmig 413S/413SW/513S/513SW utilise Thyristor control providing electronic controlled continuous/adjustment of welding voltage.  
In addition 2 different inductance levels can be selected at the - ve welding outlets (normally the work connection) on the lower front panel.

The machines are fan cooled ( 2 speed thermostatic) and incorporate thermal over-load protection.

If the machine is overheated the orange warning light will illuminate and welding output will stop.

In this event have the machine switched on with the fan running, resetting is automatic when the unit has cooled.

- A - On/Off mains supply
- B - On/Off cooling unit (Transmig 413SW/513SW)
- C - Mains indicator lamp
- D - Thermal overload warning lamp, lights up in case of overheating
- E - Welding socket, + terminal
- F - Inductance socket, - terminal
- G - Inductance socket, - terminal
- H - Digital meters
- J - Automatic fuse 42 V AC-circuit



ba11d003



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## MAINTENANCE

- Regular maintenance is important for reliable and safe operation.
- **Daily**
  - Check all welding and electrical connections and cables for signs of deterioration
  - Check the gas supply, hoses and connectors
  - Check the water cooling unit (353W only) and top up if necessary
  - Check the fan is operating normally
- **At least annually**
  - Disconnect the machine from the mains electrical supply
  - Remove the top and side covers
  - Blow out the inside of the unit with clean dry compressed air at low pressure
  - Check the security of all wiring, connections and components
  - Refit the covers
- **Annually**
  - Have an insulation and earth continuity test carried out by an approved service agent

## ACCESSORIES

1415335	5m Interconnection to Transmatic 4x4 EHD feeder
1415336	12m Interconnection to Transmatic 4x4 EHD feeder
1415337	20m Interconnection to Transmatic 4x4 EHD feeder
1403219	5m Work return lead & clamp (Transmig 413S/413SW)
1414234	8m Work return lead & clamp (Transmig 513S/513SW)
1414015	Water hose 6,6 m (2 required)
368541-005	Burndy plug 23 way (excl.pins)
323945-004	Burndy pin (3 required)



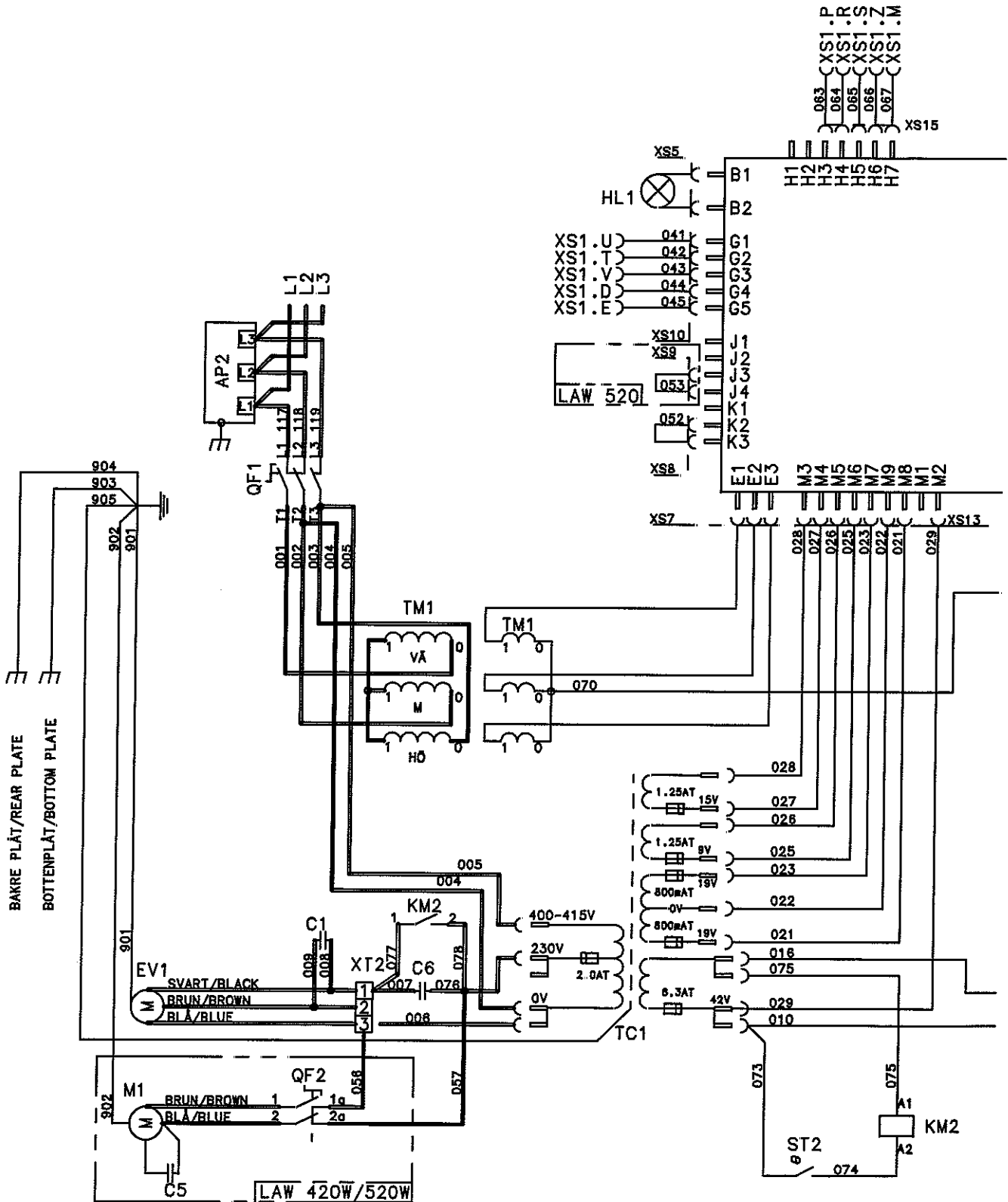
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## NOTES

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## CIRCUIT DIAGRAM

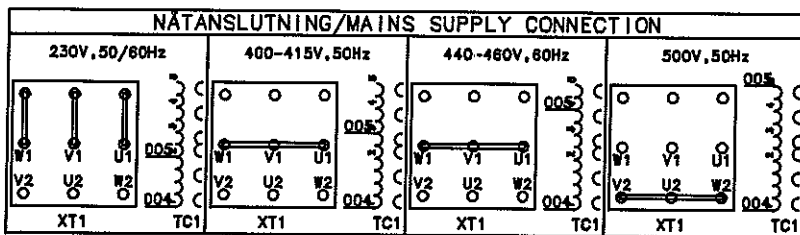
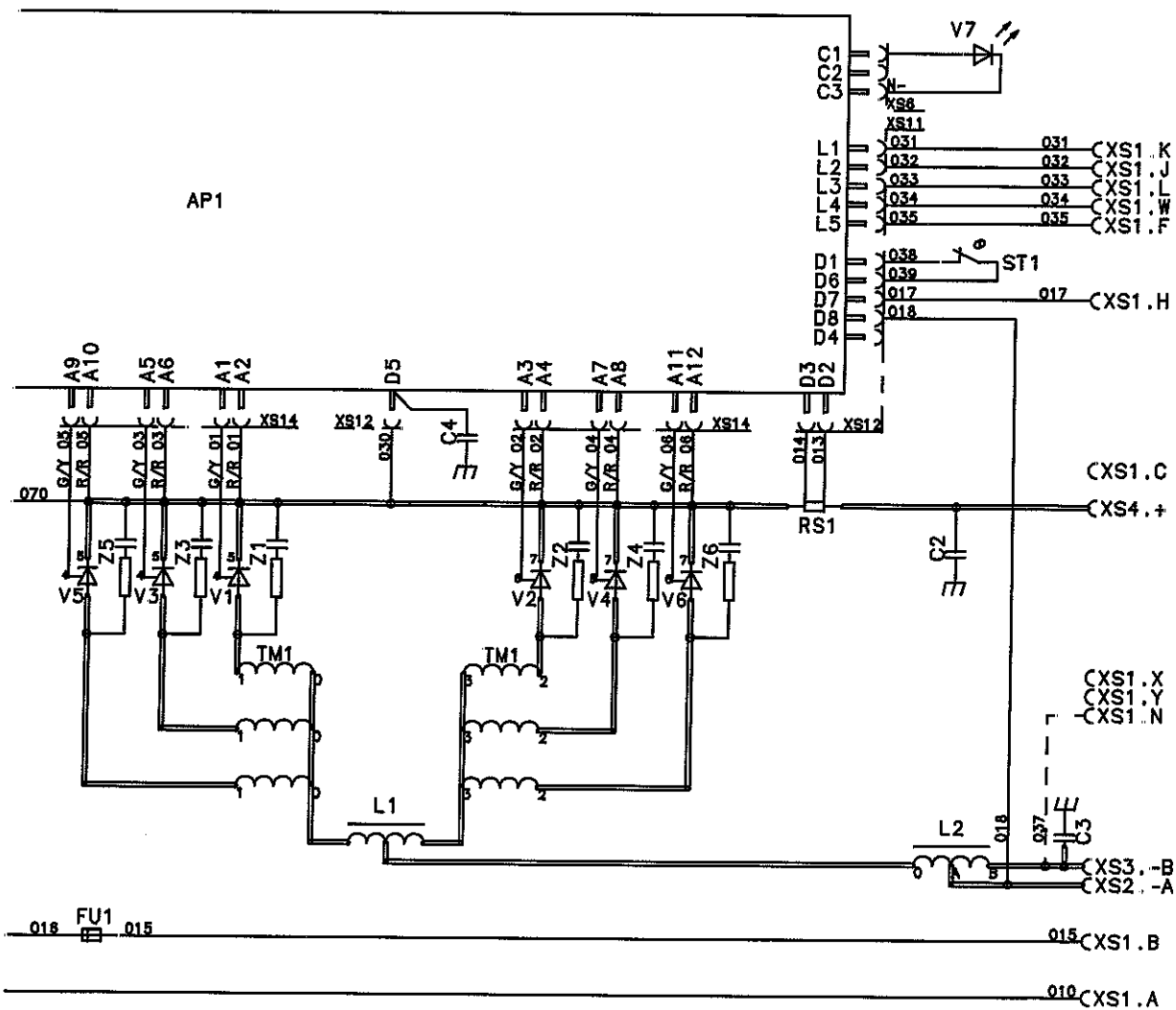
Transmig 413S/413SW/513S/513SW (400-415 V 50 Hz)







Transmig 413S/413SW/513S/513SW (230-500V 50 Hz, 230-460V 60 Hz)



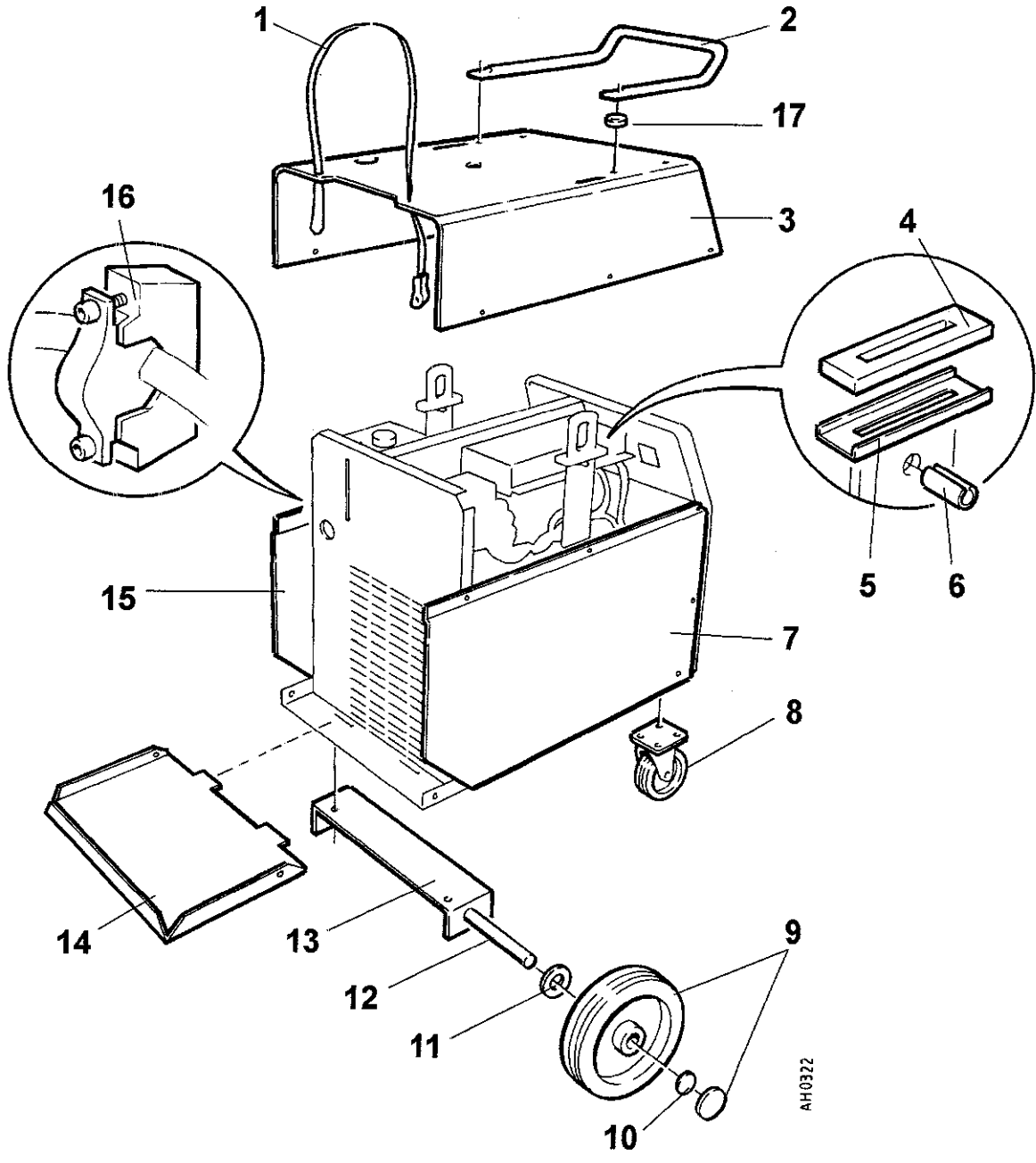
LEDNINGSMÄRKNING/  
CABLE MARKING  
G/Y=GUL/YELLOW  
R/R=ROD/RED



## SPARE PARTS

### Transmig 413S/413SW/513S/513SW

Item no.	Qty	Ordering no.	Denomination	Notes
1	1	368 265-002	Securing strap	
2	1	469 868-002	Handle	
3	1	469 681-002	Cover	
4	2	468 797-001	Seal	
5	2	468 796-001	Support plate	
6	2	211 103-005	Roll pin	∅ 8x28
7	1	455 811-001	Side panel with text	Left
8	2	469 873-001	Castor wheel	∅ 125mm h=150mm
9	2	469 872-001	Wheel	∅ 250mm
10	2	192 859-126	Locking washer	
12	1	469 516-002	Shaft	
13	1	469 685-001	Clamp	
14	1	469 684-001	Shelf	
15	1	456 023-001	Side panel with text	Right
16	1	469 950-880	Cable inlet	
17	4	366 481-002	Seal	



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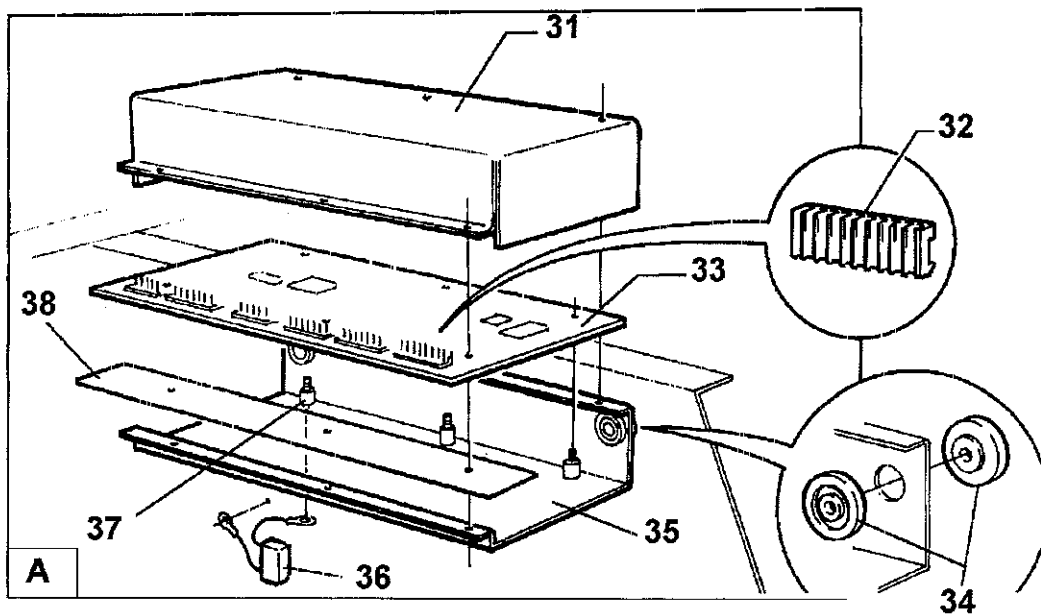
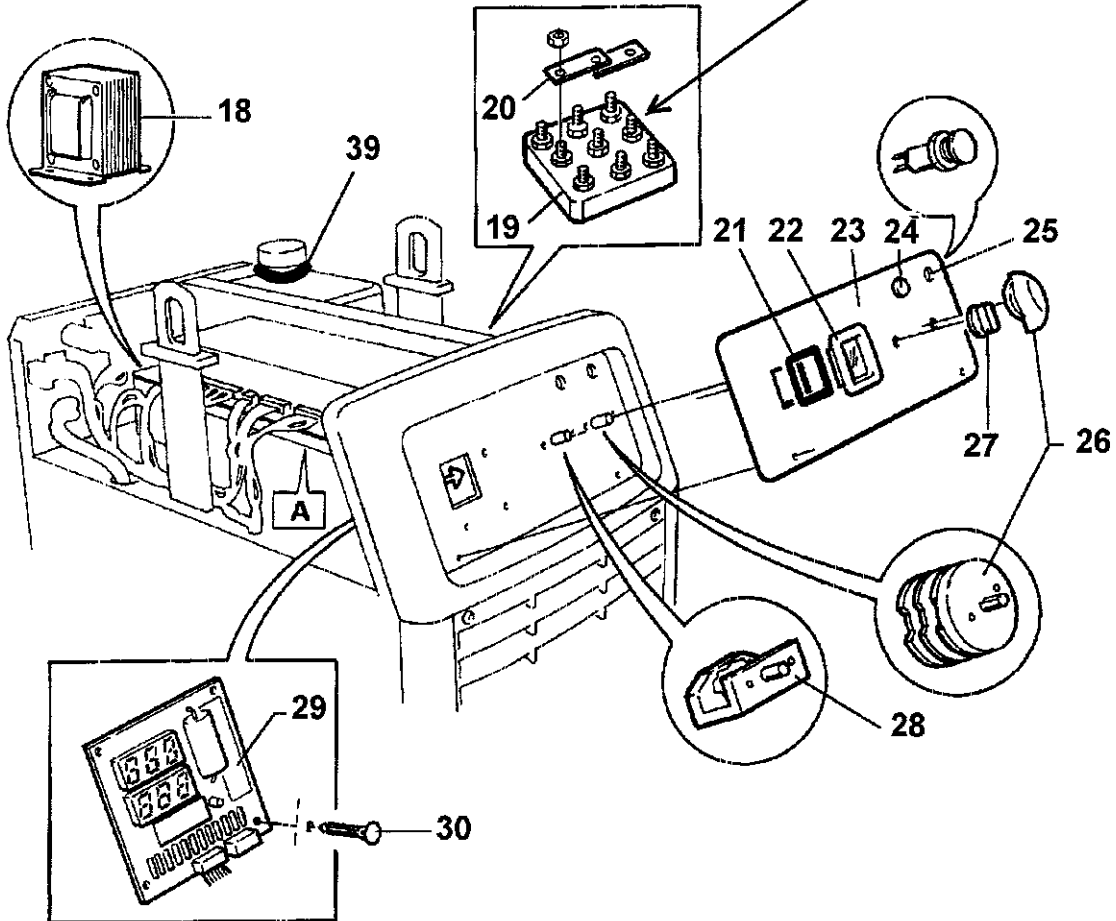


Item no.	Qty 413S	Qty 513S	Ordering no.	Denomination	Notes	C
18	1	1	469 882-001	Control transformer	400-415 V mains voltage	TC1
	1	1	455 306-001	Control transformer	230-500 V mains voltage	TC1
19	1	1	469 899-001	Terminal	230-500 V mains voltage	XT1
20	2	2	469 899-002	Jumper		
21	1	1	455 174-001	Seal		
22	1	1	455 172-001	Protection glass		
23	1	-	457 156-001	Panel with text	Transmig 413	
	1	-	457 157-001	Panel with text	Transmig 413W	
	-	1	457 167-001	Panel with text	Transmig 513	
	-	1	457 168-001	Panel with text	Transmig 513W	
24	1	1	455 201-002	Light-emitting diode	Yellow	V7
25	1	1	455 201-001	Indicating lamp	42 VAC, white	HL1
26	1	-	455 158-001	Switch	400-415 V mains voltage	QF1
	1	-	455 159-001	Switch	230-500 V mains voltage	QF1
	-	1	455 159-001	Switch	400-415 V mains voltage	QF1
	-	1	455 160-001	Switch	230-500 V mains voltage	QF1
27	1	1	366 296-003	Knob	Only 413W/513W	
28	1	1	366 295-002	Switch	Only 413W/513W	QF2
29	1	1	455 173-881	Digital instrument	Option, complete	PI
	1	1	486 212-880	Circuit board	For digital instrument	
30	3	3	455 226-010	Spacer	For circuit board	
31	1	1	455 211-001	Cover		
32	1	1	193 260-061	Connector	2-pole XS5	
	1	1	193 260-062	Connector	3-pole XS6	
	2	2	193 260-151	Connector	3-pole XS7,XS8	
	-	1	193 260-152	Connector	4-pole XS9	
	2	2	193 260-153	Connector	5-pole XS10,XS11	
	1	1	193 260-156	Connector	8-pole XS12	
	1	1	193 260-157	Connector	9-pole XS13	
	1	1	193 260-071	Connector	12-pole XS14	
33	1	1	486 480-884	Circuit board		AP1
34	4	4	153 043-002	Insulating washer		
35	1	1	455 210-001	Box		
36	1	1	467 911-882	Capacitor	0.1 $\mu$ F 250 V, with cable lugs	C4
37	3	3	394 516-031	Spacer screw	M5	
38	1	1	191 193-118	Tape	To be ordered per meter	
39	1	1	366 481-003	Seal	Only for machines with water cooler	

SURPRESSOR PCB APZ  
486 216 880

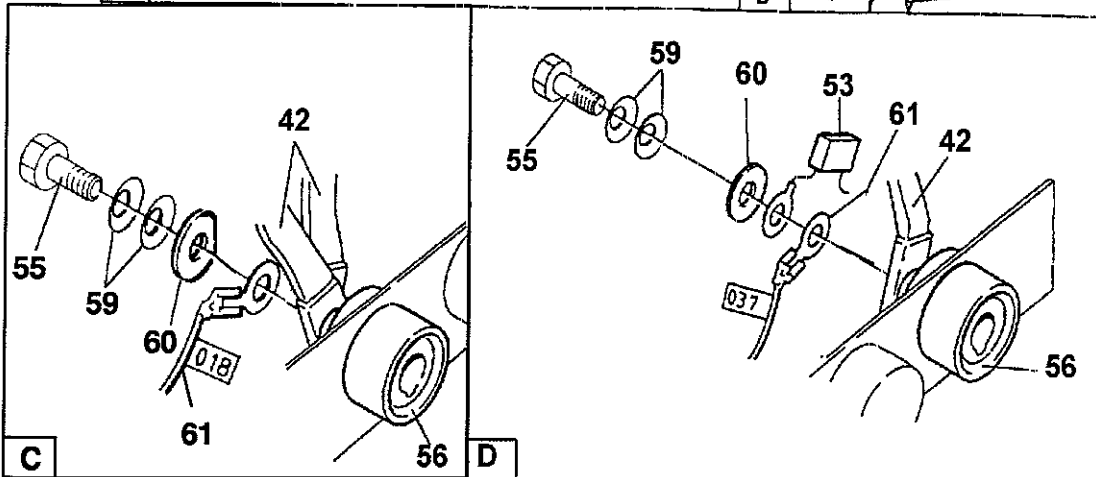
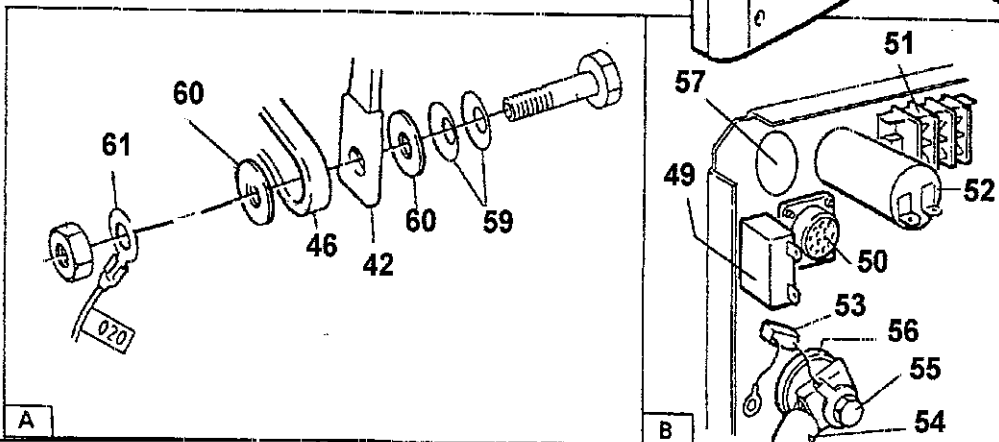
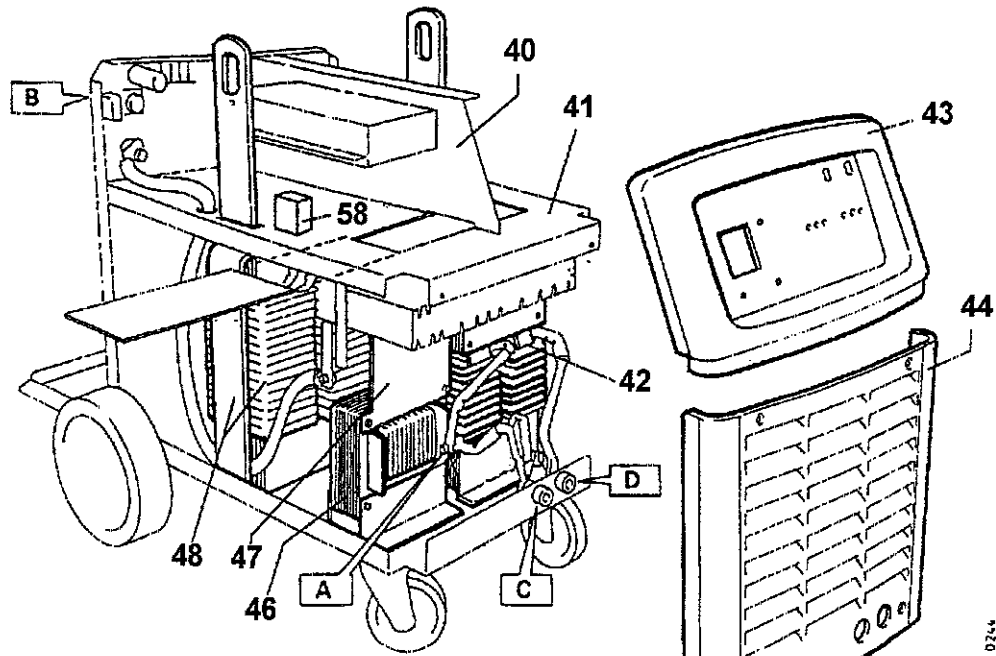
Single Voltage (400V)

162 772 001





Item no.	Qty 413S	Qty 513S	Ordering no.	Denomination	Notes	C
40	1	1	469 678-001	Centre plate		
41	1	1	469 675-001	Intermediate plate		
42	1	-	469 876-880	Inductor		L2
	-	1	469 876-881	Inductor		L2, ST1, ST2
43	1	1	469 704-002	Front panel		
44	1	1	469 703-002	Front grill		
45						
46	1	-	469 696-880	Inductor		L1, ST1, ST2
	-	1	469 697-880	Inductor		L1
47	1	1	455 217-001	Attachment		
48	1	-	457 100-881	Transformer	400-415 V	TM1
	1	-	457 102-881	Transformer	230-500 V	TM1
	-	1	457 104-881	Transformer	400-415 V	TM1
	-	1	457 106-881	Transformer	230-500 V	TM1
49	1	1	193 586-102	Circuit breaker	10 A	FU1
50	1	1	368 544-005	Sleeve socket	23-pole	XS1
			323 945-003	Sleeve		
51	1	1	466 884-003	Connection block	3-pole	XT2
52	1	1	191 085-203	Capacitor	3 $\mu$ F 400 V	C1
53	2	2	467 911-881	Capacitor	0.1 $\mu$ F 250 V, with cable lugs	C2,C3
54	1	-	469 879-880	Cable set	A=50mm <sup>2</sup>	
	-	1	469 879-881	Cable set	A=95mm <sup>2</sup>	
55	3	3		Screw	M10x30	
56	3	3	160 362-881	Current terminal	1-pole	XS2-XS4
57	1	1	191 085-206	Capacitor	400 V 6 $\mu$ F	C6
58	1	1	193 296-101	Contacteur		KM2
	1	1	193 298-101	Bar		
59	6	6	219 504-307	Spring washer	Ø 20/10.2x1.1	
60	6	6		Washer	Ø 22/10.5x2	
61	3	3		Washer	With flat pin connection 6,3x0,8,M10	

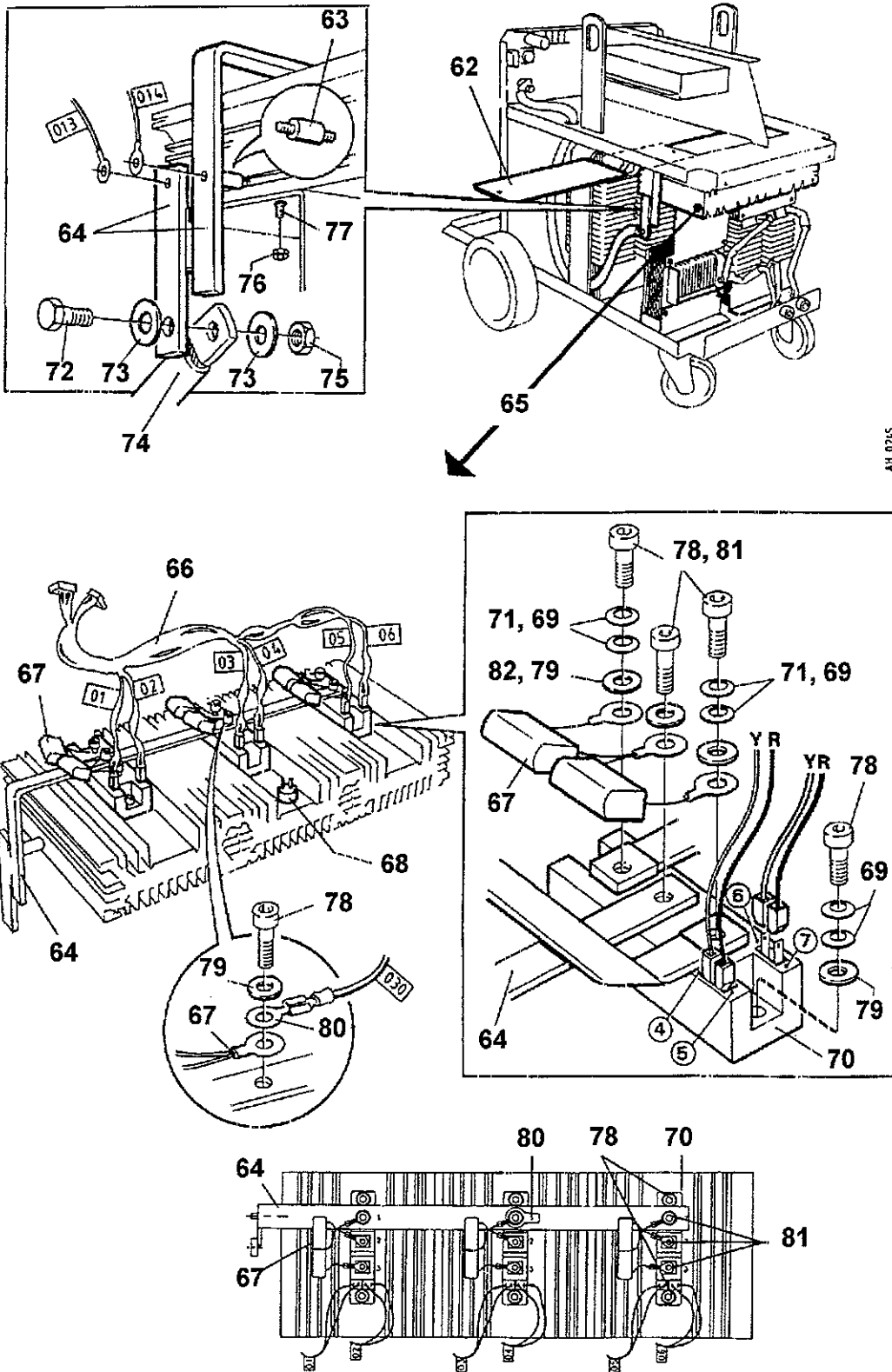




Item no.	Qty 413S	Qty 513S	Ordering no.	Denomination	Notes	C
62	1	1	469 691-001	Cover		
63	1	1	193 609-105	Insulator	M5	
64	1	1	469 878-881	Shunt	60mV/600A	RS1
65	1	1		Thyristor bridge		
66	1	1	469 861-884	Cable set		
67	3	3	469 693-880	Suppressor	RC filter	Z1 - Z6
68	1	-	467 864-003	Thermal cutout	60°C	ST1
	-	1	467 864-005	Thermal cutout	70°C	ST1
69	12	24		Spring washer	∅ 12,5/6,2x0,7 See item 150	
70	-	3		Thyristor module	See item 150	V1 - V6
	3	-		Thyristor module	See item 150	V1 - V6
-				Thermal compound	For fitting of thyristor modules	
71	12	-	2195 043-02	Spring washer	∅ 10/5,2x0,5	
72	1	1		Screw	M8x25	
73	2	2		Washer	∅ 16/8,4x1,5	
74				Cable set	See item 54	
75	1	1		Nut	M8	
76	2	2		Nut	M5	
77	2	2		Screw	M5x12	
78	6	15		Screw	M6x16 see item 150	
79	6	15		Washer	∅ 12/6,4x1,5 see item 150	
80	1	1		Washer	With flat pin connection 6,3x0,8, M6	
81	9	-		Screw	M5x16	
82	9	-		Washer	∅ 10/5,6x1	

#### SPARE PART SET

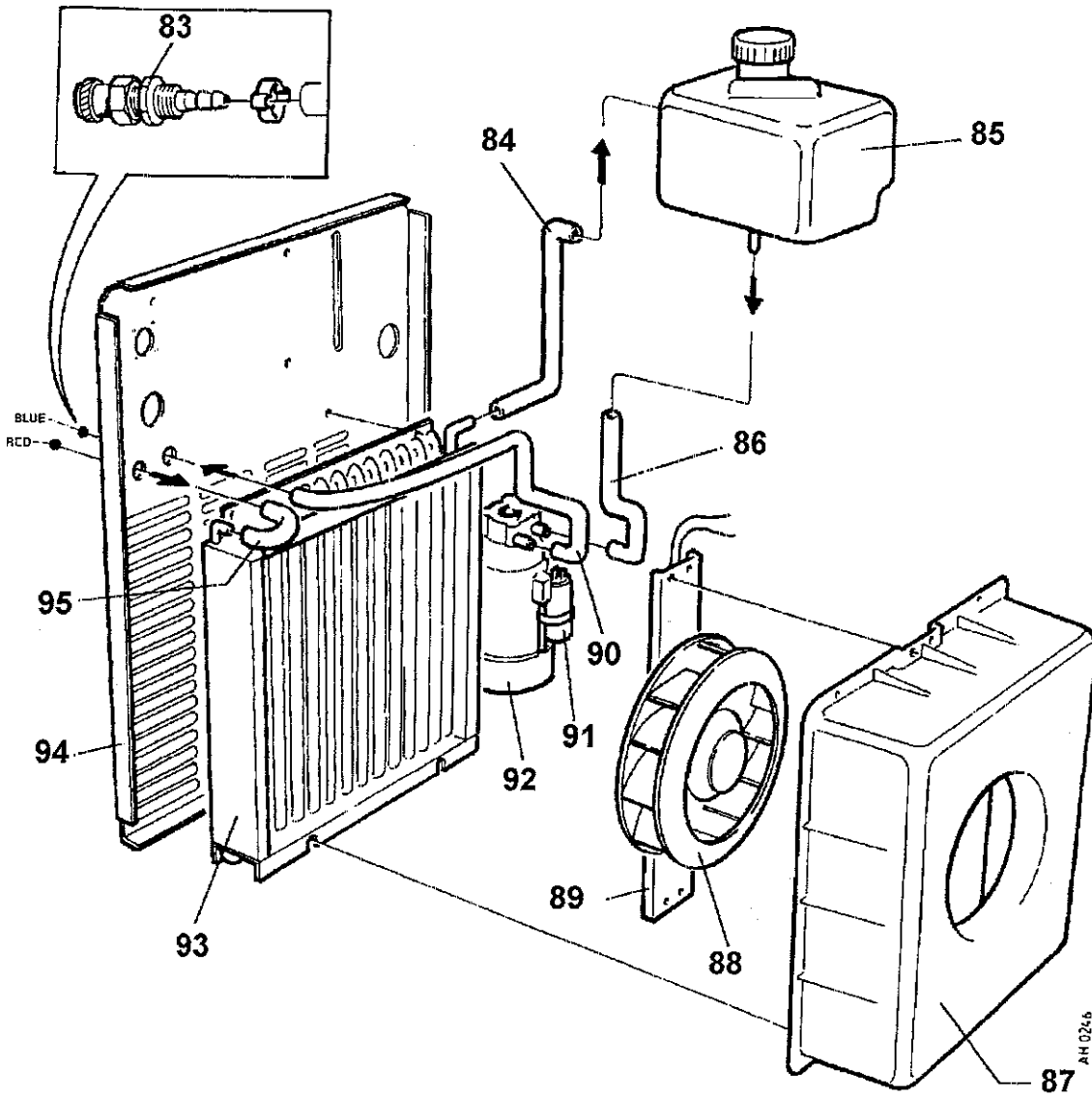
Item	Ordering no.	Denomination	Notes
150	0455 157 880	Thyristor modulezs	Includes items 69, 70, 78, 79, roller and mounting instruction.



AH 0245



Item no.	Qty 413S/ 513S	Qty 413SW/ 513SW	Ordering no.	Denomination	Notes	C
83	-	1	365 803-008	Quick connector	Female, red	
	-	1	365 803-009	Quick connector	Female, blue	
84	-	1	455 162-001	Hose		
85	-	1	469 689-001	Water tank		
86	-	1	455 164-001	Hose		
87	1	1	469 893-001	Fan housing		
88	1	1	369 827-001	Fan		EV1
89	1	1	455 165-001	Attachment		
90	-	1	455 163-001	Hose		
91	-	1	191 085-105	Capacitor	5 $\mu$ F 400 V	C5
92	-	1	469 692-001	Pump	1A0.2kW230V50Hz	M1
93	-	1	469 688-001	Cooler		
94	1	1	455 166-001	Rear panel with text		
95	-	1	455 161-001	Hose		



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**Murex Welding Products Limited**  
Hertford Road, Waltham Cross  
Herts. EN8 7RP England  
Telephone: Lea Valley (0992) 710000  
Telex: 25743

