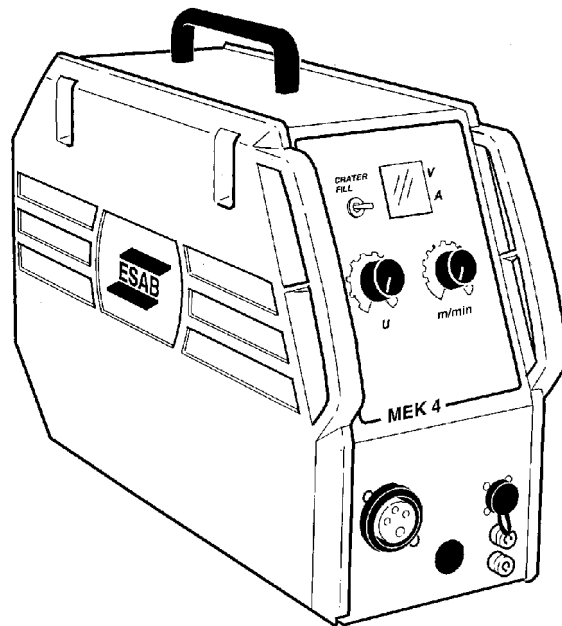




# MEK 4



## Service manual

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## **READ THIS FIRST**

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Maintenance and repair work should be performed by an experienced person, and electrical work only by a trained electrician. Use only recommended replacement parts.

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

Use the wiring diagram as a form of index for the description of operation. 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 wiring diagram are listed in the component description.

This manual contains details of all design changes that have been made up to and including February 2003.

Rights reserved to alter specifications without notice.

The MEK 4 wire feed unit is designed and tested in accordance with European standard EN 60974-1 and EN 50199.  
On completion of service or repair work, it is the responsibility of the person(s) etc. performing the work to ensure that the product does not depart from the requirements of the above standard.



## WARNING !

**STATIC ELECTRICITY** can damage circuit boards and electronic components.

- Observe precautions for handling electrostatic sensitive devices.
- Use proper static-proof bags and boxes.



## 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.**

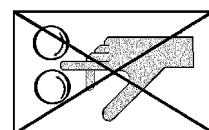
**READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.**

**PROTECT YOURSELF AND OTHERS!**



## WARNING!

**Rotating parts can cause injury, take great care**



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## COMPONENT DESCRIPTION

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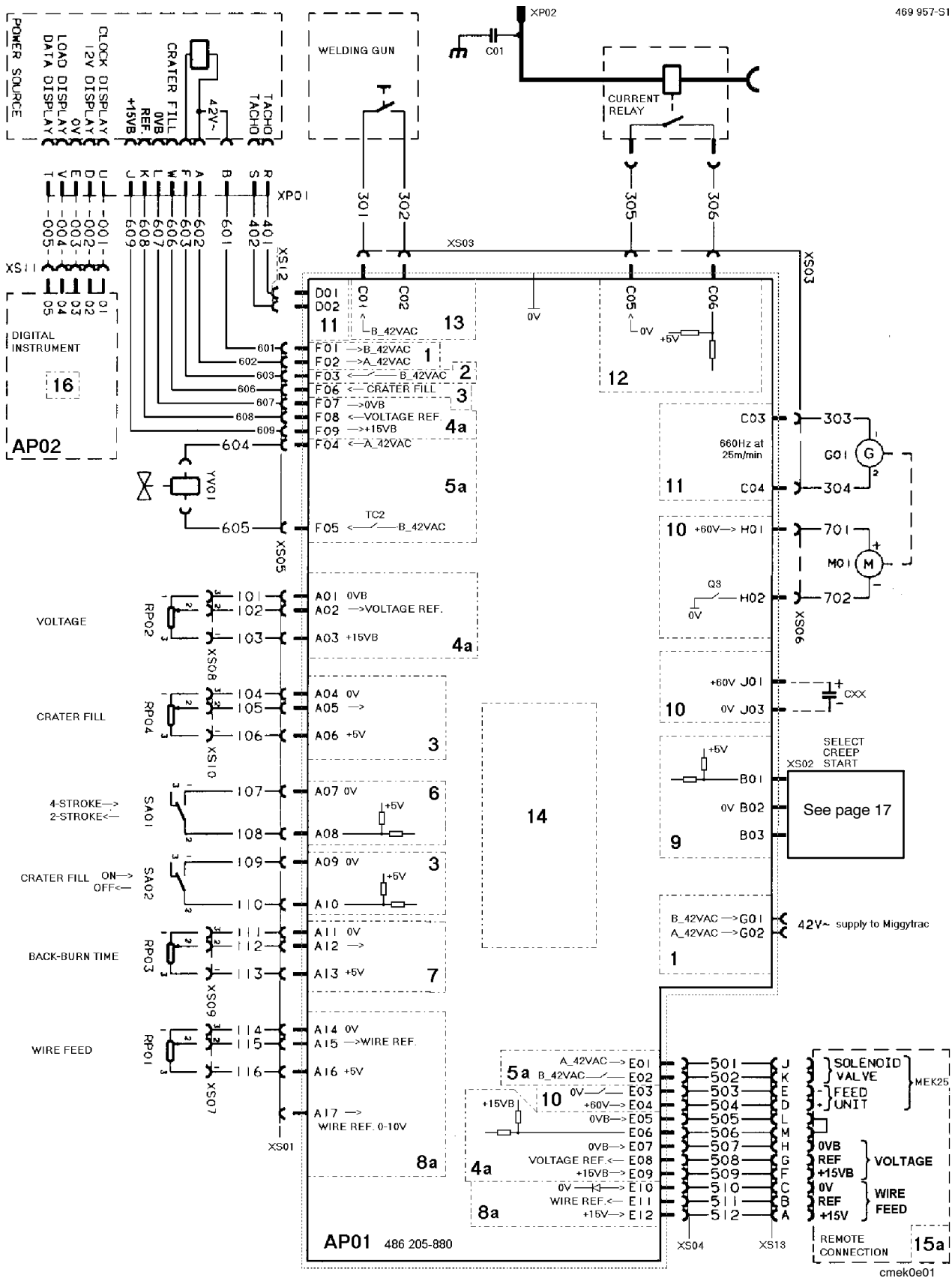
This component description refers to the wiring diagram.

<b>AP01</b>	Main circuit board with control electronics: see the description on page 7.
<b>AP02</b>	Circuit board with display: see the description on page 22.
<b>C01</b>	Capacitor 0.1 $\mu$ F, decoupling.
<b>CXX</b>	Capacitor 4700 $\mu$ F. Must be fitted when an intermediate wire feed unit is in use in extreme applications (low mains voltage and long cables).
<b>G01</b>	Tachogenerator: 660 Hz output at a wire speed of 25 m/min. The tachogenerator is incorporated in motor M01.
<b>M01</b>	Motor, rated voltage 42 V.
<b>RP01</b>	Potentiometer, 10 k $\Omega$ , for setting the wire feed speed.
<b>RP02</b>	Potentiometer, 10 k $\Omega$ , for setting the welding voltage.
<b>RP03</b>	Potentiometer, 10 k $\Omega$ , for setting the burn-back time.
<b>RP04</b>	Potentiometer, 10 k $\Omega$ , for setting the crater fill time.
<b>SA01</b>	Switch, 2/4-stroke changeover. When the switch is closed, 4-stroke control mode is selected.
<b>SA02</b>	Switch, Crater fill function On/Off. When the switch is closed, crater fill function is operative.
<b>XP01</b>	23-pole connector, for connection to the welding power unit.
<b>XP02</b>	Terminal for welding current connection from the power unit.
<b>XS . .</b>	Connectors marked XS are socket connectors.
<b>XS02</b>	If circuit board AP01 has part no. 0486 205 880 or 0486 205 882: the Creep Start function is operative when the connector links B01-B02.  If circuit board AP01 has part no. 0486 205 886 or 0487 166 880: the Creep Start function is operative when the connector links B02-B03.
<b>XS12</b>	Not mounted, from machine number 514-615-xxxx
<b>XS13</b>	12-pole connector: MEK 4 with serial number 431-xxx-xxxx  23-pole connector: MEK 4 from serial number 514-xxx-xxxx and above.
<b>YV01</b>	Solenoid valve

# WIRING DIAGRAM Valid for serial no. 431-xxx-xxxx

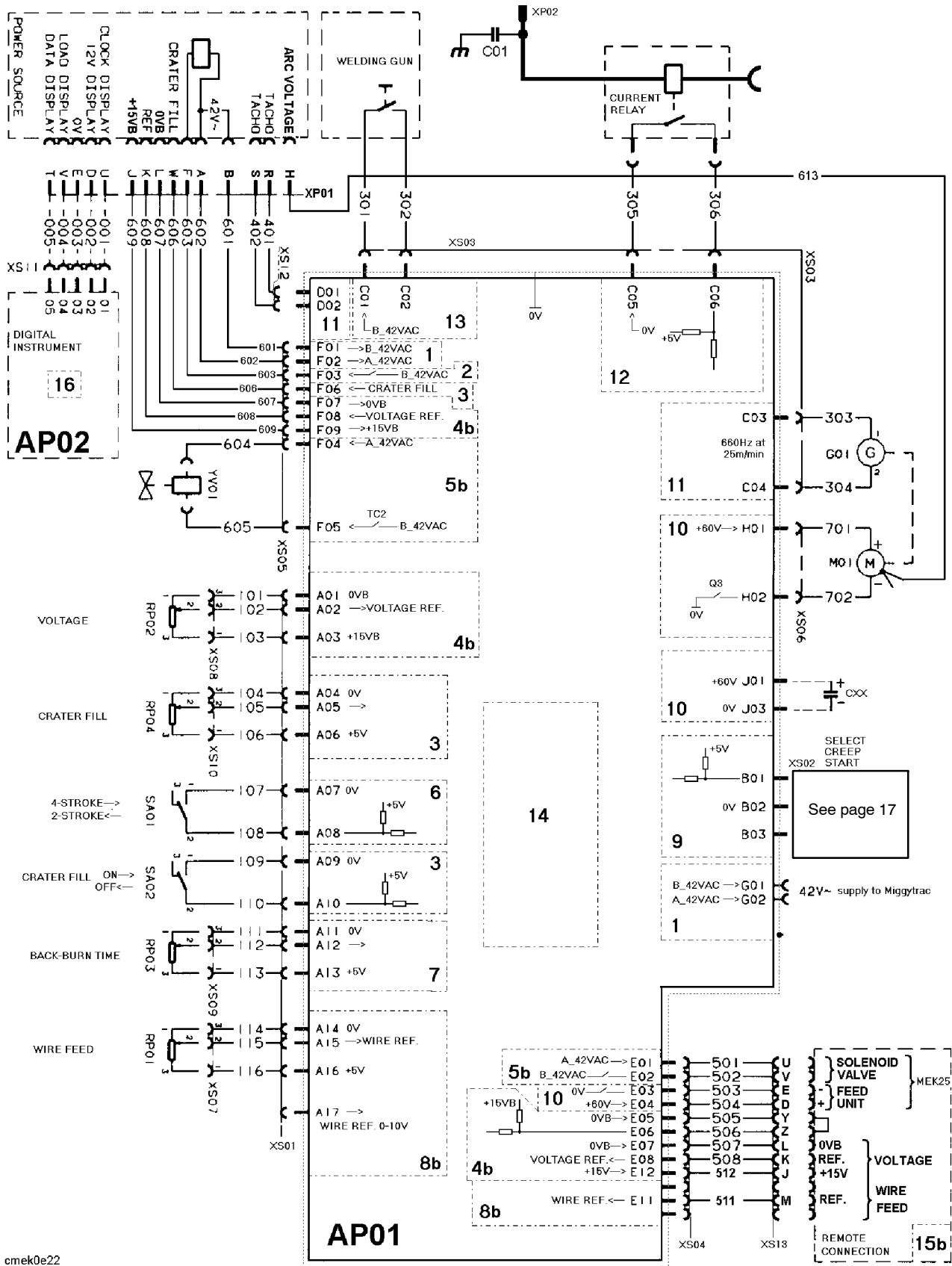
## MEK 4

469 957-S1



# WIRING DIAGRAM Valid for serial no. 514-xxx-xxxx to 826-xxx-xxxx

## MEK 4



cmek0e22

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## DESCRIPTION OF OPERATION

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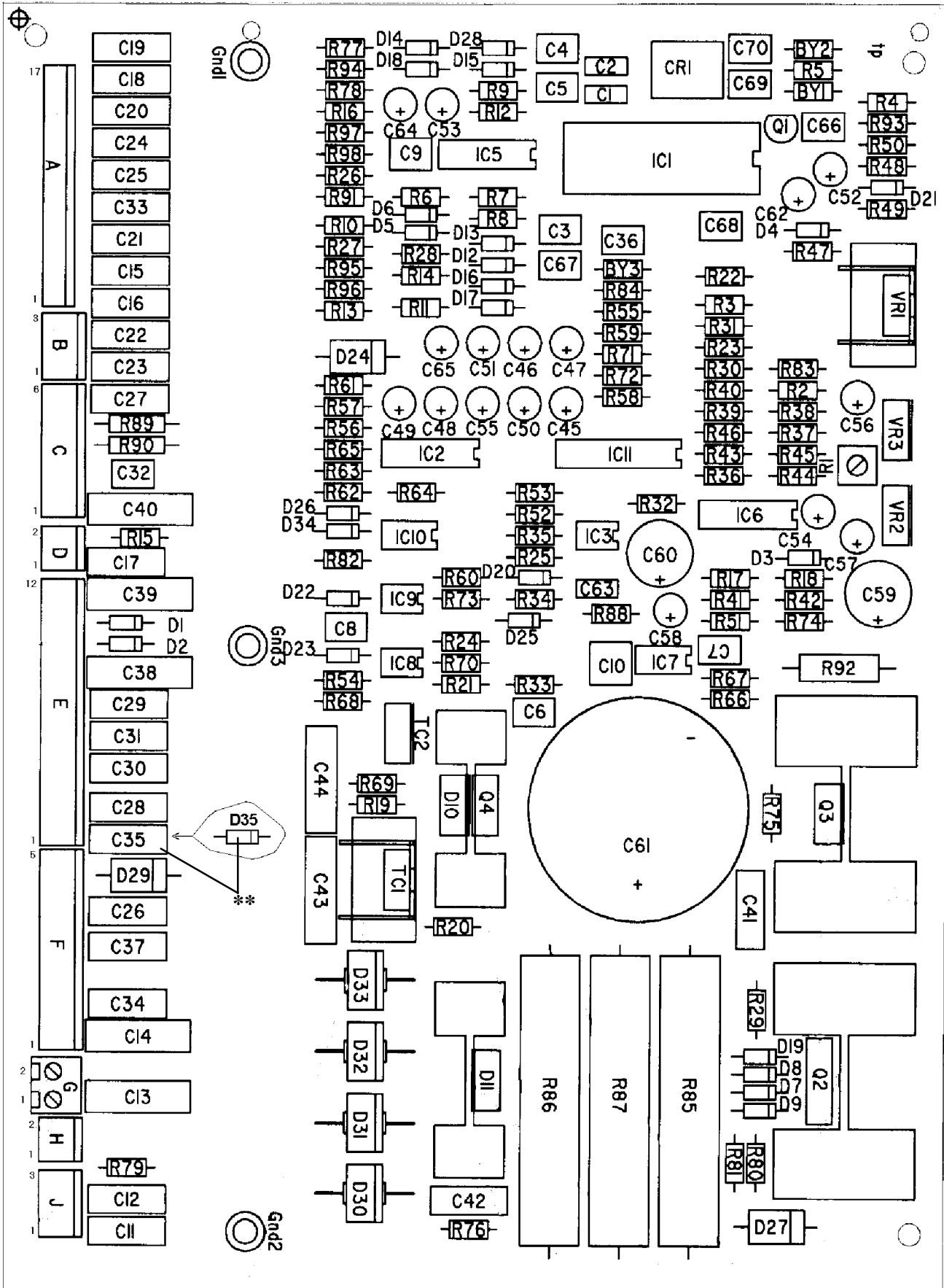
### Design changes

*The following changes have been introduced, with effect from serial no. 514 . . . . .*

1. Remote control socket outlet XS13 has been changed from a 12-pole socket to a 23-pole socket.
2. Power supply arrangements to the remote control unit have been changed. See items 4a, 4b and 8a, 8b in the Function Description. See also item 15b.
3. The power supply connections for the solenoid valve in the intermediate wire feed unit have been changed from J and K to U and V. See items 5b and 15b in the Function Description.
4. A new circuit board (486 205-882) replaces circuit board 486 205-880. It can be used as a replacement part in all MEK 4 units. The following changes have been introduced on the new board:
  - a. New program version, with modified creep start characteristics. See items 9 and 14 in the Function Description.
  - b. Higher current limit for the motor, which improves acceleration and starting. See item 10 in the Function Description.
  - c. The 0 VB voltage from the power unit is no longer galvanically isolated from 0 V in the wire feed unit, in order to allow other remote control devices to be used. The two neutrals are connected via diode D35. See items 4a, 4b and 8a, 8b in the Function Description. See also the component positions diagram.
5. The circuit board is now contained in a larger screened enclosure, item 227 in the Spare Parts List. The guard for the screened enclosure and the wiring harness, item 228 in the Spare Parts List, is also larger. However, when fitting the new circuit board in older MEK 4 machines, it is not necessary to replace the screened enclosure or guard.
6. Actual voltage is now measured. This involves a new conductor, no. 613 in the wiring diagram. It runs from the motor body (the welding wire) to connector XP01;H. This connection works only with LAW power units with serial numbers 512 . . . . . and above, or with modified LAW power units. Note that modifying LAW power units involves fitting the new circuit board (486 291-880) and modifying the wiring in the power unit.
7. A cooling water connection has been introduced as an accessory: see item 7 in the Accessories List.  
An adapter for a 5 kg bobbin is now available as an accessory: see item 8 in the Accessories List.
8. The above changes have resulted in corresponding changes to the following points of the Spare Parts List: 214, 215, 225, 226, 227 and 228.

*The following change has been introduced, with effect from serial no. 514 615 . . . . .*

1. The cables 401, 402 and connector XS12 are not mounted in the machine. See item 11 in the Description of operation.



cmek0e04

\*\* Circuit board 0486 205 880 is supplied with capacitor C35, on circuit board 0486 205 882 capacitor C35 is replaced by diode D35. See the description of operation, items 4a and 4b.

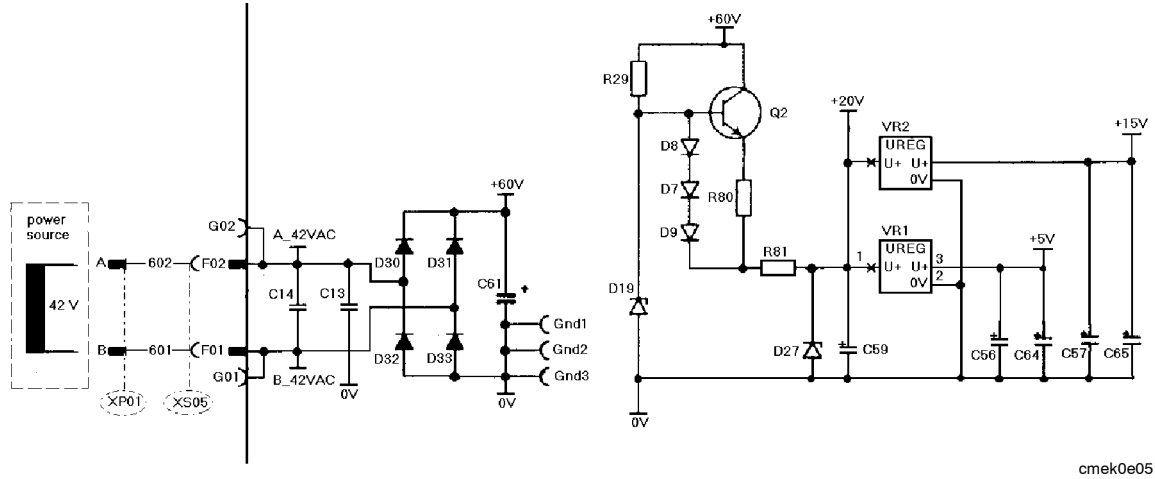
*Component positions, circuit board AP01*



Sections 1-16 below refer to the /wiring diagrams on pages 5 and 6.

The circuit board is screened by a metal casing, connected to 0 V in the wire feed unit.

## 1 Power supply



cmek0e05

The wire feed unit receives 42 V from the control power supply transformer in the welding power unit via connector XP01. LAW 400 and 500 welding power units can supply a maximum of 6 A to the MEK 4. The wire feed unit's own power requirement at maximum load is 5 A.

42 V AC is supplied to the welding gun trigger switch, the gas valve and the contactor. In addition, terminals G01 and G02 supply 42 V to a Miggytrac unit if this is used together with the MEK 4.

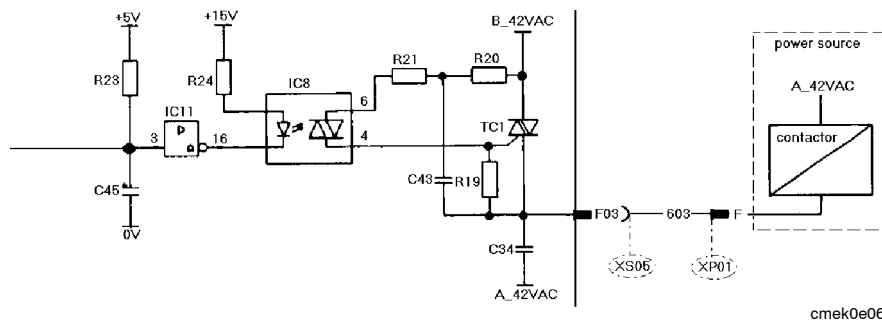
### DC power supplies

Diodes D30 - D33 rectify the 42 V supply to 60 V. Capacitor C61 smooths the supply, which is then used to power the wire feeder motor.

Transistor Q2 is a pre-regulator that drops the voltage from 60 V to 20 V. Q2 is current-limited to about 200 mA.

VR1 and VR2 are voltage regulators, producing 5 V and 15 V respectively. The circuit board's microprocessor monitors the voltages. If the 15 V supply falls below 13 V, the wire feed unit is stopped.

## 2 Activation, contactor



cmek0e06

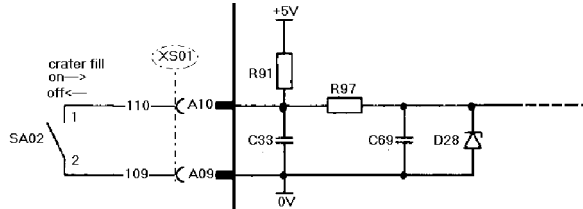
The welding power unit contactor is connected to the wire feed unit via pin F in connector XP01. In the LAW 400/500 power units triac TC1 is loaded by a 1 kΩ resistor.

### 3 Crater filling

The crater fill function can be used when the MEK 4 is working with a LAW power unit.

The crater fill function comprises the following modules :

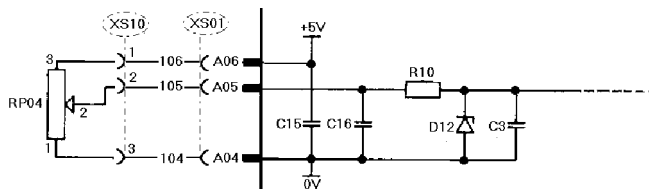
- An input for selecting crater fill function On/Off.



cmek0e07

Closing switch SA02 activates the function.

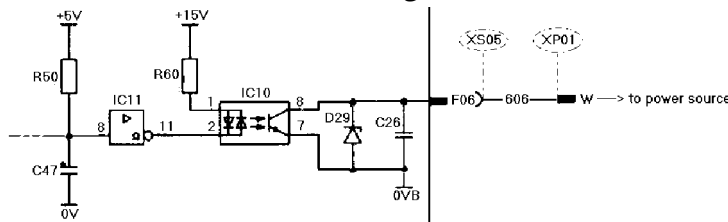
- Potentiometer RP04 sets the crater fill time.



cmek0e08

Times between 0 and 5.1 seconds can be set.

- An output, XP01;W, which supplies a signal to the power unit when the voltage is to be reduced for crater filling.



cmek0e09

The emitter of the transistor in optocoupler IC10 is connected to 0 VB, i.e. to the neutral of the power unit voltage reference.

The crater fill function operates as follows :

#### Phase 1

When in 2-stroke control mode, releasing the welding gun trigger switch reduces the wire feed speed to 84% of its original value. In 4-stroke control mode, crater filling starts when the trigger switch is pressed for the second time. Optocoupler IC10 is activated, supplying a signal to the power unit that crater filling has started, causing the power unit to reduce its output voltage.

Phase 1 continues for a time as determined by the setting of potentiometer RP04, up to a maximum of 1.27 seconds.

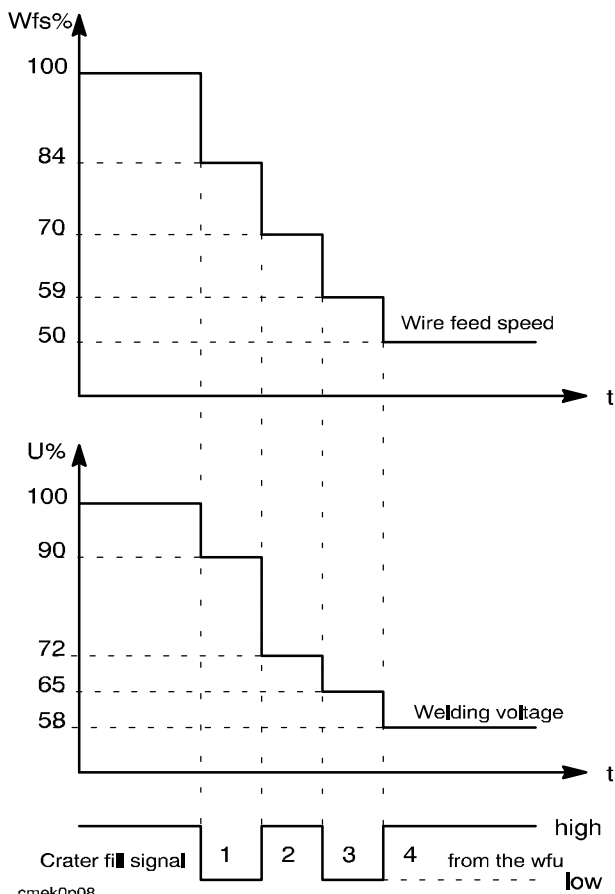
## Phase 2

Phase 2 starts when phase 1 finishes. The wire feed unit further reduces the wire speed to 84% of the value during phase 1. Optocoupler IC10 turns off, giving the power unit a signal further to reduce the voltage. Phase 2 continues also for a maximum of 1.27 seconds.

## Phases 3 and 4

Phases 3 and 4 are repeats of phases 1 and 2. After phase 4, during which wire feed speed is 50 % of the original value, welding concludes with the preset burn-back time.

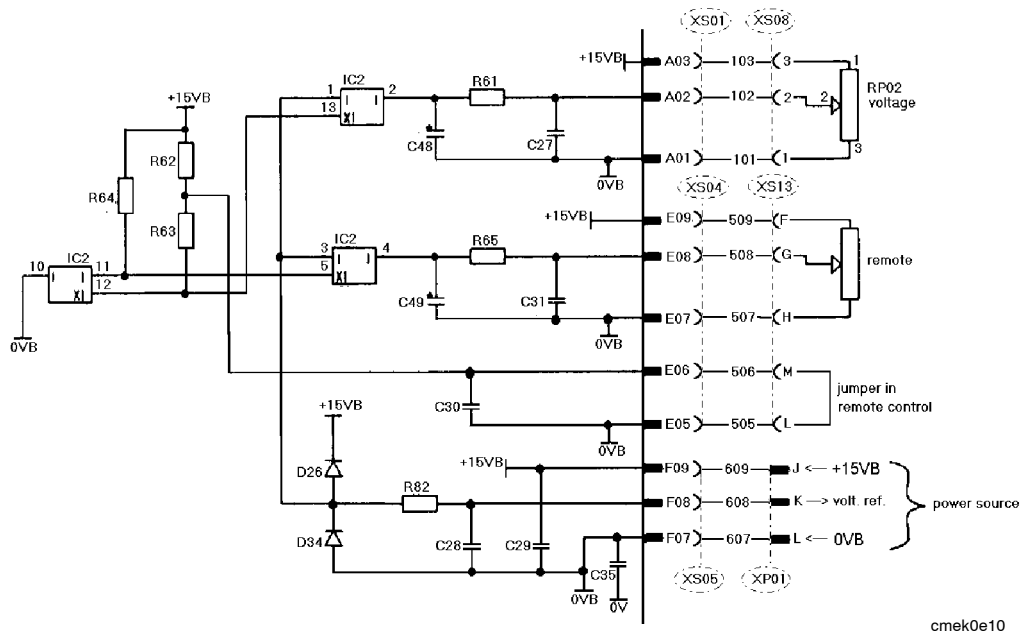
If, when in 4-stroke control mode, the welding gun trigger switch is released while crater filling is in progress, crater filling will be interrupted.



cmek0p08  
*Wire feed speed and welding voltage during crater filling*

#### 4a Voltage adjustment

Applies to MEK 4 with serial number 431 . . . . .

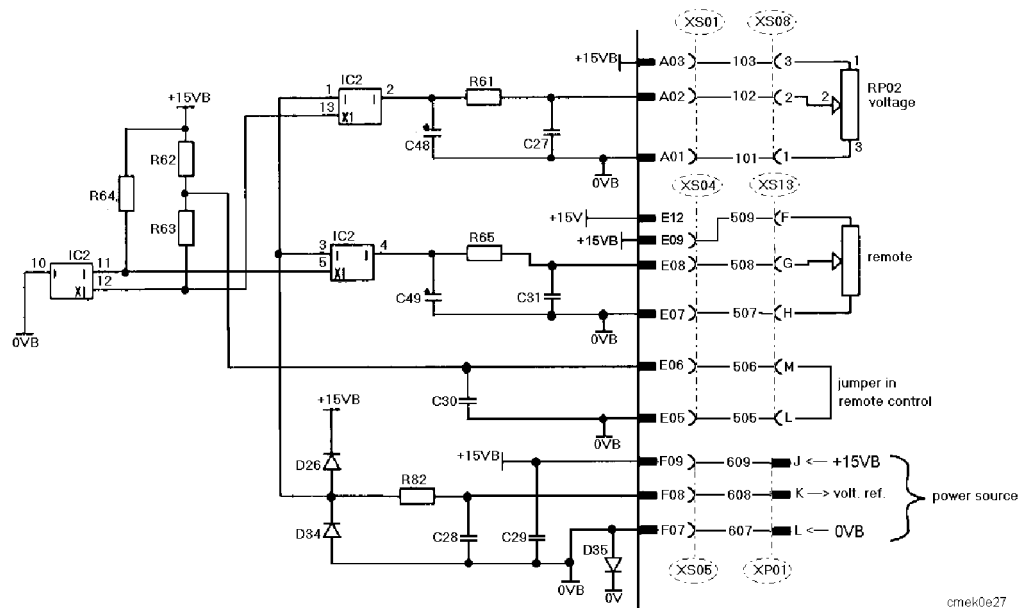


*Voltage adjustment, circuit board AP01 with article number 0486 205 880*

When the MEK 4 is connected to a power unit with steplessly variable output voltage, potentiometer RP02 on the front of the unit can be used to control the power unit output voltage.

The +15 VB and 0 VB voltages are supplied by the power unit via connector XP01. The voltage adjustment circuits are galvanically isolated from the other circuits at circuit board AP01.

The remote control unit for voltage control is connected to pins F, G, H, L and M in connector XS13. A link must be fitted between pins L and M in order to activate the unit.

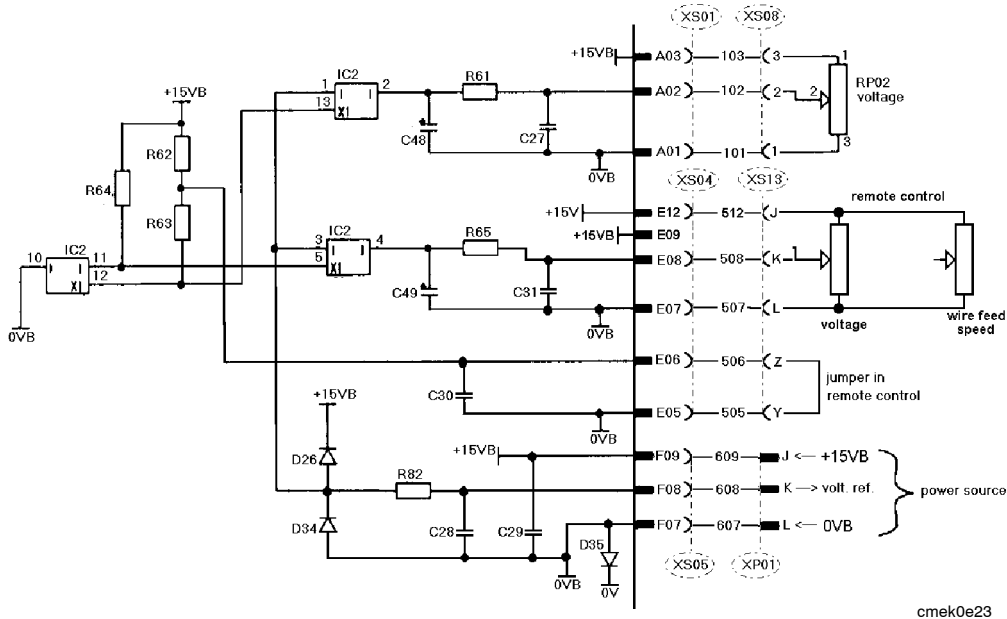


*Voltage adjustment, circuit board AP01 with article number 0486 205 882*

The voltage adjustment circuits are **not** galvanically isolated from the other circuits on the board when circuit board -882 is used.

## 4b Voltage adjustment

Applies to MEK 4 with serial number 514 . . . . . and above.



cmek0e23

*Voltage adjustment, circuit board AP01 with article number 0486 205 882*

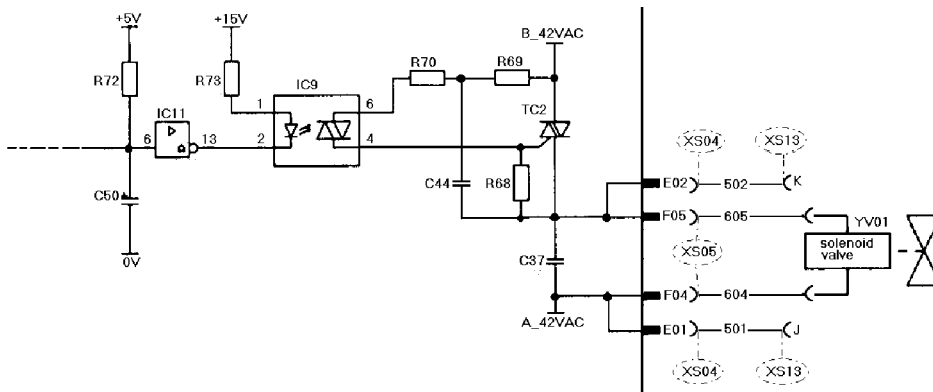
When the MEK 4 is connected to a power unit with steplessly variable output voltage, potentiometer RP02 on the front of the unit can be used to control the power unit output voltage.

The +15 VB and 0 VB voltages are supplied by the power unit via connector XP01. The voltage adjustment circuits are **not** galvanically isolated from the other circuits at circuit board AP01.

The remote control unit for voltage control is connected to pins J, K, L, Z and Y in connector XS13. A link must be fitted between pins Z and Y in order to activate the unit.

### 5a Gas valve

Applies to MEK 4 with serial number 431 . . . . .

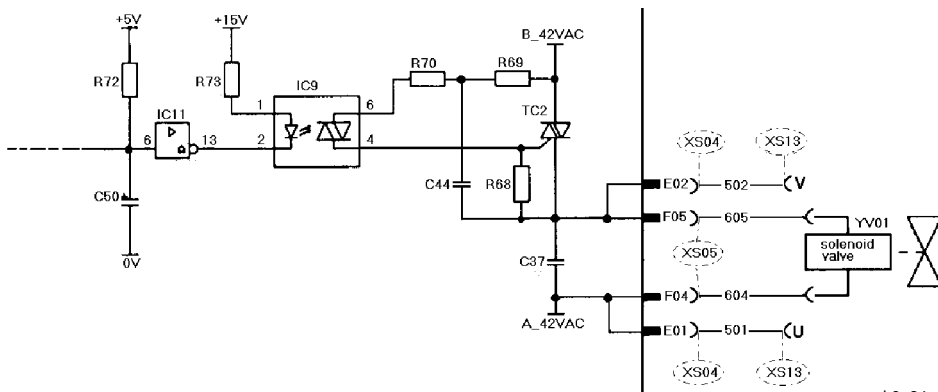


cmek0e11

The gas valve is connected to connectors F04 and F05. If an intermediate wire feed unit is being used, its gas valve is connected via pins K and J in the remote control connector (XS13).

### 5b Gas valve

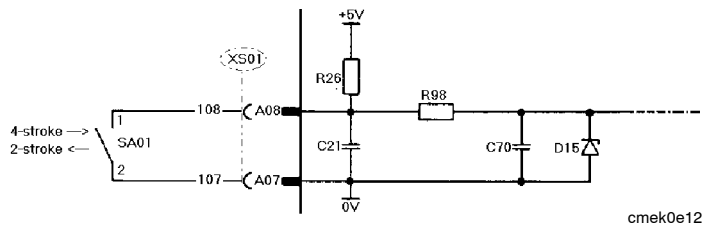
Applies to MEK 4 with serial number 514 . . . . . and above.



cmek0e24

The gas valve is connected to connectors F04 and F05. If an intermediate wire feed unit is being used, its gas valve is connected via pins V and U in the remote control connector (XS13).

## 6 2-stroke / 4-stroke



### 2-stroke

When switch SA01 is open, 2-stroke control mode is selected. This means that closing the welding gun trigger switch starts the wire feed motor, opens the gas valve and closes the power unit contactor.

Releasing the switch stops the motor, releases the contactor and closes the gas valve. If crater filling and/or burn-back time are operative, they will be activated before welding ceases.

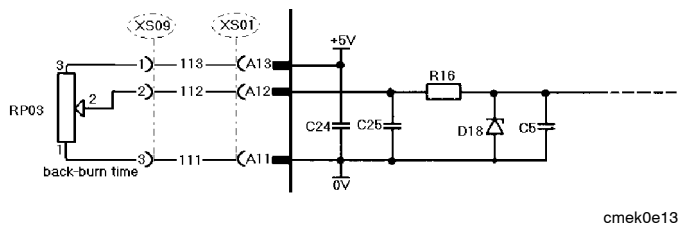
### 4-stroke

When switch SA01 is closed, 4-stroke control mode is selected. This means that first closure of the trigger switch operates the gas valve, with the wire feed motor starting, and the power unit contactor operating, when the trigger switch is released.

Closing the trigger switch for the second time stops the motor and de-energises the contactor in the power unit. Releasing the switch closes the gas valve.

If crater filling and/or burn-back time are operative, they will be activated before welding ceases.

## 7 Burn-back time

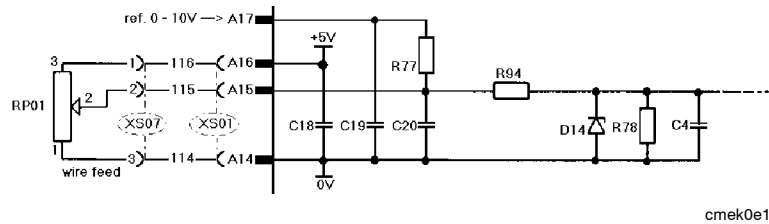


The burn-back time is the time from when motor braking starts until the machine contactor opens. It can be adjusted by potentiometer RP03 between 0 and 0.5 seconds.

## 8a Wire feed speed

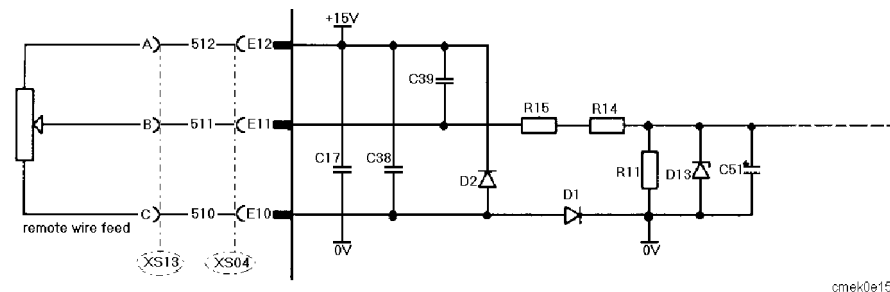
Applies to MEK 4 with serial number 431 . . . . .

### ADJUSTMENT ON THE FRONT PANEL OF THE FEEDER UNIT



Potentiometer RP01 controls the wire feed speed over a range from 1.9 to 25 metres/minute. For use with automated welding processes, a 0 - 10 V reference signal can be connected to terminal A17.

### ADJUSTMENT USING THE REMOTE CONTROL UNIT



#### *Wire feed speed reference from the remote control unit*

Potentiometer RP01 is disengaged when a remote control unit is connected to input XS13. The circuit board microprocessor senses that the remote control unit is connected by means of the voltage drop across diode D1. When the remote control unit is connected, the voltage on connector E11 cannot drop below about 0.6 V.

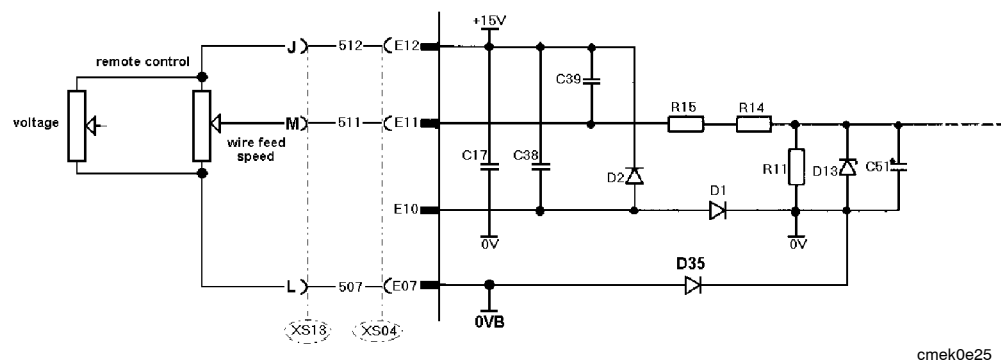
## 8b Wire feed speed

Applies to MEK 4 with serial number 514 . . . . . and above.

### ADJUSTMENT ON THE FRONT PANEL OF THE FEEDER UNIT

The function is the same as described in item 8a above.

### ADJUSTMENT USING THE REMOTE CONTROL UNIT



#### *Wire feed speed reference from the remote control unit*

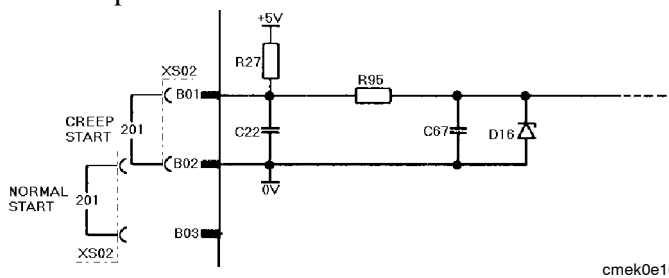


Potentiometer RP01 is disengaged when a remote control unit is connected to input XS13. The circuit board microprocessor senses that the remote control unit is connected by means of the voltage drop across diode D35. When the remote control unit is connected, the voltage on connector E11 cannot drop below about 0.6 V.

## 9 Creep start / Normal start

Creep start means that the motor runs at a speed of 1.9 m/minute until the current relay is activated. When the relay operates, the speed increases to the set speed. If the current relay has not operated within one second after starting, the motor increases to the set speed.

MEK 4 with circuit board 0486 205 880 will start at a speed of 3 m/minute when the creep start is activated. If the set speed is less than 3 m/minute, wire feed starts at the set speed.



cmek0e16

*Activation of creep start, circuit boards with part no. 0486 205 880 and 0486 205 882*

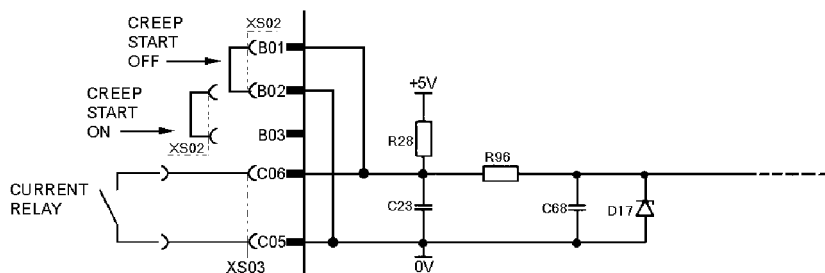
The wire feed unit is delivered with creep start activated. If it is to be disengaged, so that the unit starts immediately at the set speed, connector XS02 must be changed over.

**Note:** creep start is activated when terminals B01 and B02 are short-circuited by connector XS02.

### Spare part boards

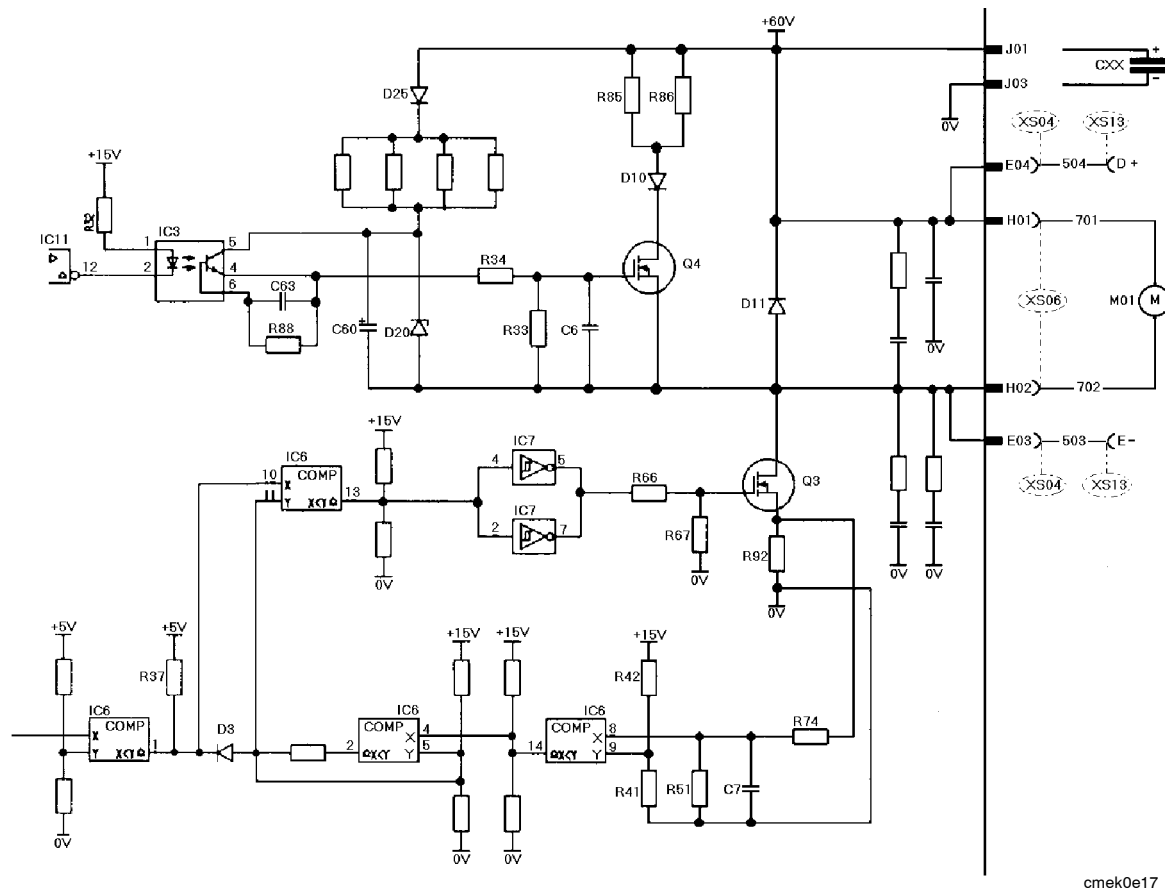
Circuit boards with part no. 0486 205 886 and 0487 166 880 can be used as spare parts to the MEK 4.

**Note:** if these boards are used, creep start is activated when terminals B02 and B03 are short-circuited by connector XS02.



*Activation of creep start, circuit boards with part no. 0486 205 886 and 0487 166 880*

## 10 Motor driving / braking



cmek0e17

The motor is powered by the smoothed +60 V supply. Pulse width modulation, controlled by transistor Q3, is used to vary the motor voltage. The pulse frequency is 12 kHz, and the maximum conducting time of the pulses is 97% of the pulse cycle time. Freewheel diode D11 maintains motor current during the pulse breaks.

At a supply voltage of 42 V, the wire feed drive roller has a speed of 258 r/min. At a drive roller speed of 266 r/min, the wire feed speed is 25 m/min.

Pins D and E in the remote control unit connector XS13 provide power for the motor in an intermediate wire feed unit or for a PKE (push/pull) welding gun. If an intermediate wire feed unit is being used in extreme applications (low mains voltage and long cables), an additional 4700µF smoothing capacitor CXX must be connected (ordering number 0193 141 048).

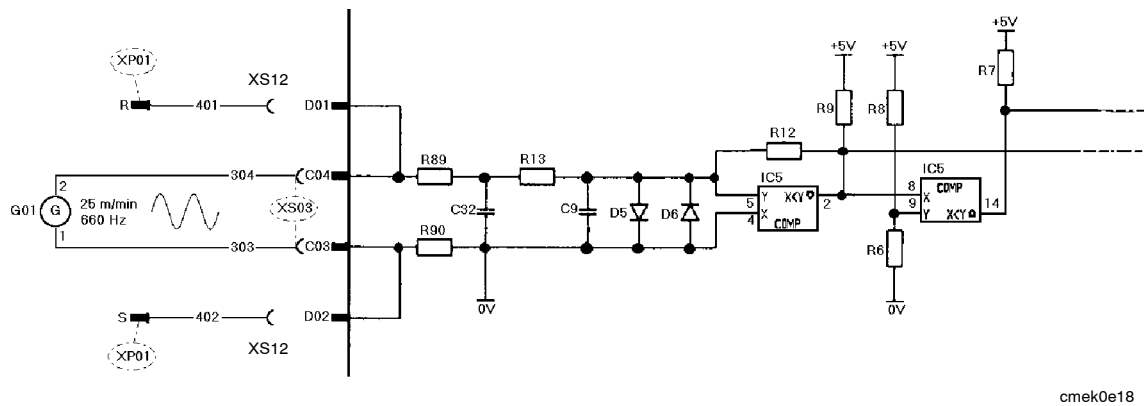
The voltage drop across resistor R92 provides a signal that is proportional to the motor current. When the current exceeds 15.4 A, IC6:2 turns off the gate pulse to Q3. When the current drops, Q3 conducts again at the next gate pulse.

Circuit board AP01 with article number 0486 205 880 was delivered with a current limit of 7A. The current limit of this circuit boards can be changed by replacing R41.  $R41 = 220 \Omega \Rightarrow 7 \text{ A current limit}$ .  $R41 = 470 \Omega \Rightarrow 15.4 \text{ A current limit}$ . Circuit board AP01 with article number 0486 205 882 is delivered with a current limit of 15.4A.

## BRAKING

When the motor starts, capacitor C60 charges up to 15 V, with zener diode D20 limiting the voltage across it. Braking is activated by the optocoupler IC3. When the transistor in IC3 is turned on by the LED, 15 V from capacitor C60 is connected to the gate of transistor Q4. Transistor Q4 turns on and short circuits the motor through the resistors R85 and R86. The resistors limit the braking current to about 20 A.

## 11 Tachometer input

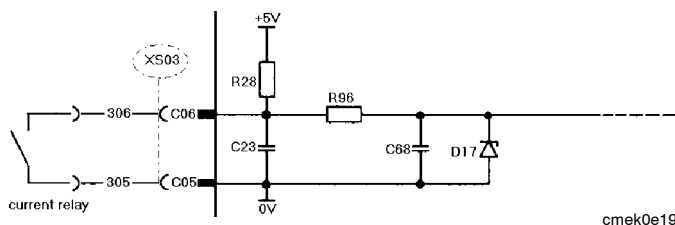


The tachometer G01 is fitted inside the motor casing. At a wire feed speed of 25 m/min, it produces a signal frequency of 660 Hz. Comparator IC5;2 converts the sine wave signal from the tachogenerator to a square wave at the same frequency.

Pins XP01;R and XP01;S are used if there is a separate display unit for showing wire feed speed. The digital displays in the MEK 4 and the LAW power units cannot show the wire feed speed. Connections D01 - D02 are used only if there is an external instrument for displaying the wire feed speed.

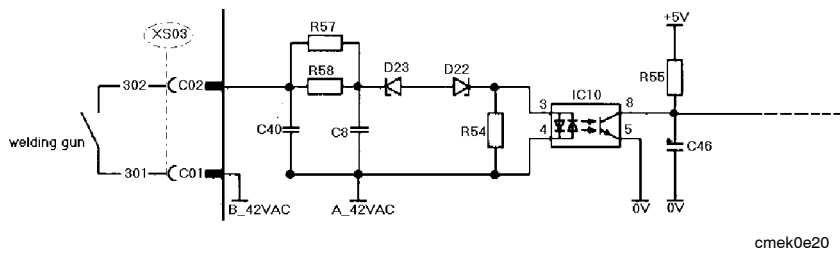
Wires 401, 402 and connector XS12 are not fitted from serial number 514 615 . . . . and above.

## 12 Current relay



The current relay operates if the welding current exceeds 20 A. If the creep start function has been selected, this is disengaged when the current relay operates. If the crater filling function has been selected, it will work only when the current relay has operated.

### 13 Start / Stop



The trigger switch in the welding gun is supplied at 42 V AC. Closing the switch energises optocoupler IC10, pulling down the voltage across C46.

### 14 Processor

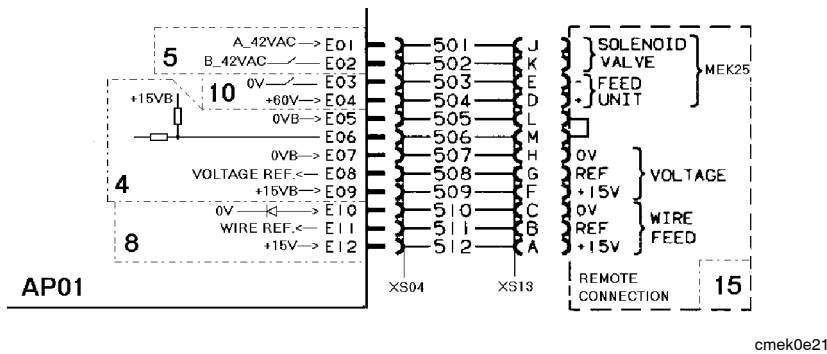
The processor stores the machine program. It monitors the power supply voltages: if the voltages drop to too low a level, wire feed is stopped, as described in section 1 above.

The processor also monitors speed. If the wire speed deviates from the set value by more than 1.5 m/min for more than five seconds, wire feed will be stopped.

From machine serial number 514 . . . . . the program version of the processor is changed to P1.02 (the previous version was P1.00, circuit board AP01 with part number 0486 205 880). The change in the program affects the creep start: see Creep start / Normal start on page 17.

### 15a Remote control input, 12-pole

Applies to MEK 4 with serial number 431 . . . . .



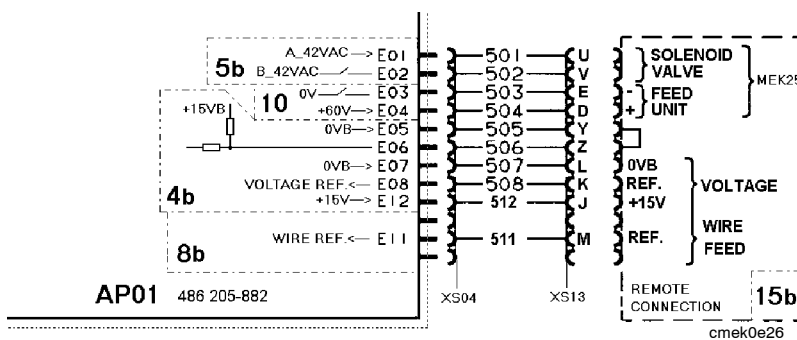
*Remote control input, MEK 4 with serial number 431 . . . . .*

The following items can be connected to the remote control input :

- Wire feed speed remote control unit: pins A, B and C in XS13.
- Welding voltage remote control unit, if the power unit is of thyristor-controlled or transistor-controlled type: pins F, G, H, L and M in XS13.
- MEK 25 intermediate wire feeder unit.

### 15b Remote control input, 23-pole

Applies to MEK 4 with serial number 514 . . . . . and above.



*Remote control input*

The following items can be connected to the remote control input :

- Wire feed speed remote control unit: pins M, J and L in XS13.
- Welding voltage remote control unit, if the power unit is of thyristor-controlled or transistor-controlled type: pins J, K, L, Z and Y in XS13.
- Suitable remote controls are:  
 "Aristo Control Synergic Torch" ordering number 0466 515 880.  
 "Aristo Control Synergic Box" ordering number 0466 801 880.
- MEK 25 intermediate wire feeder unit.

## 16 Digital display

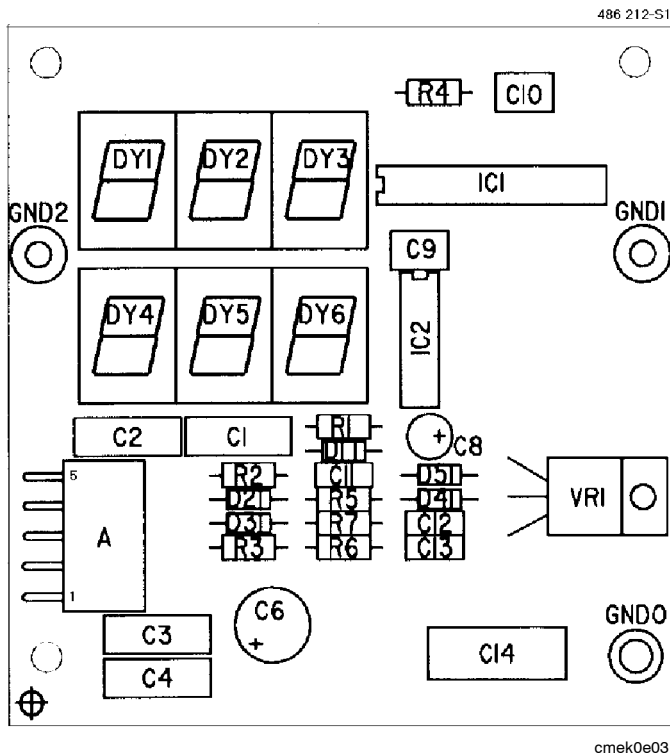
The digital display unit is standard in the -881 and -883 variants of MEK 4. It is available as an accessory for other wire feeder units: see the list on page 27.

The instrument can be connected either to the wire feeder unit or to the LAW power unit. Connection requires a connection kit, which is supplied with the instrument when it is ordered as an accessory. The kits differ for the MEK and the LAW units. The instrument can be used only when the wire feeder unit is connected to an LAW power unit.

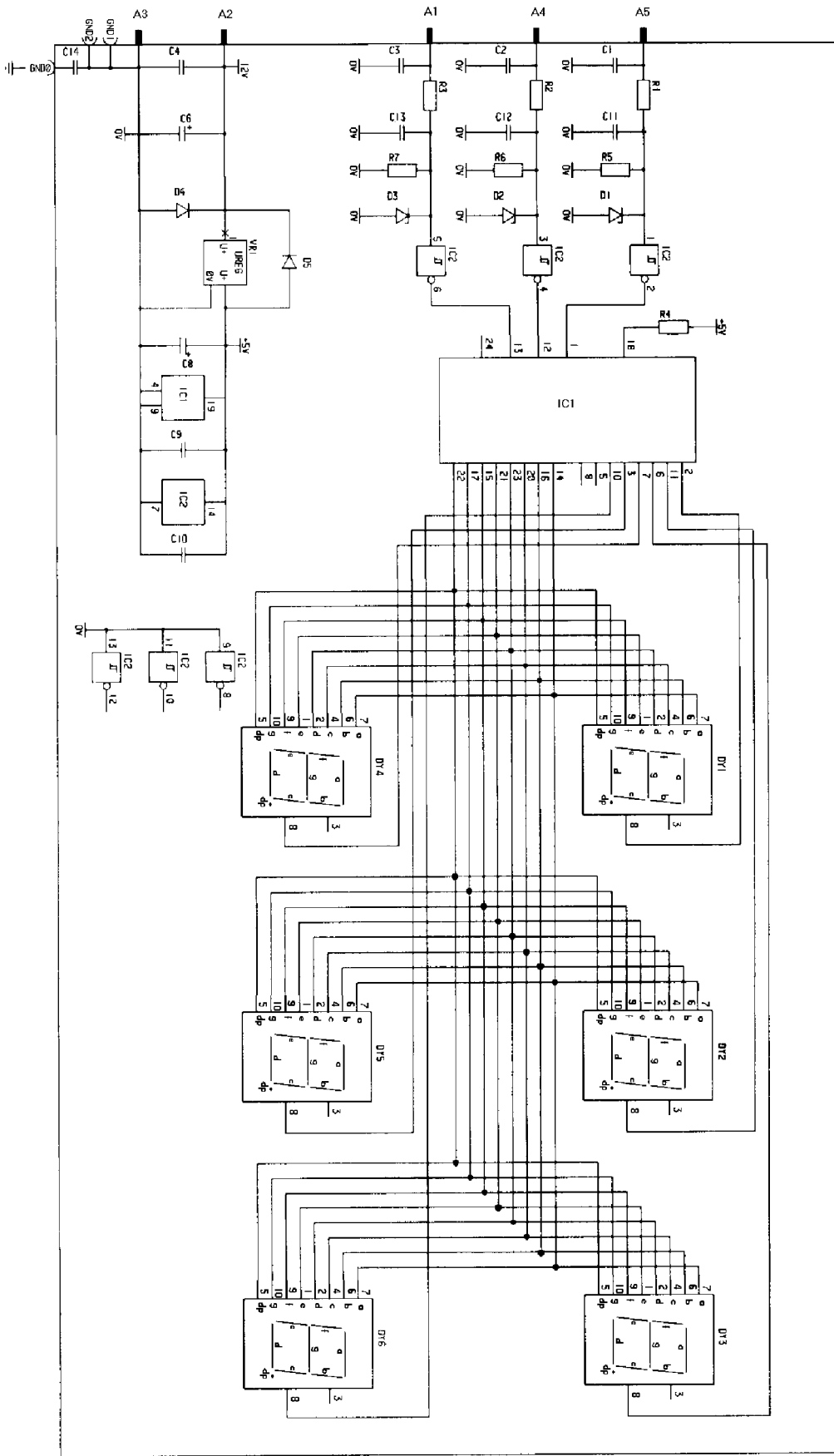
The display board has two rows of 7-segment displays, with three displays in each row. The upper row displays arc voltage and the lower displays the welding current.

Data is transmitted serially to the display board from the LAW power unit, via inputs A1, A4 and A5.

A smoothed 12 V DC power supply is supplied to the board via inputs A2 and A3 from the welding power unit. Voltage regulator VR1 produces a 5 V output.



*Component positions, display board AP02*



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Circuit diagram, display board AP02

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## TECHNICAL DATA

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The MEK 4 wire feed units is of enclosed construction with four-wheel drive to the wire.

Power supply	42 V 50 - 60 Hz
Power requirement	300 VA
Feed speed	1.9 - 25 m/min
Welding gun connection	EURO
Max. diameter of wire bobbin	300 mm
Weight	16 kg
Dimensions (l x w x h)	645 x 240 x 480 mm



### WARNING

There is a risk of tipping if the MEK 4 is fitted with a counterbalance arm. Secure the equipment, especially if used on an uneven or sloping surface.

Limit the angle of rotation of the wire feed cabinet using the straps supplied.

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

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## MAINTENANCE

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Regular maintenance is important in ensuring safe and reliable operation.

- **The feed unit**

Clean and replace the wearing parts in the feed mechanism at regular intervals.

Do not set too high a pressure on the pressure rollers, as this can cause abnormal wear of the pressure rollers, the feed rollers and wire guide. Instructions for setting of the wire feed pressure are on page 25.

- **The welding gun**

Blow the wire guide clean with compressed air at regular intervals and clean the gas nozzle.

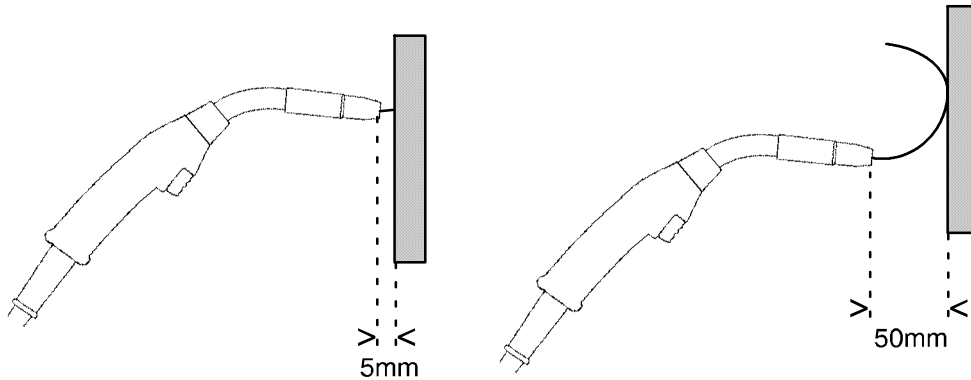


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## SETTING THE WIRE FEED PRESSURE

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Start by checking that the wire can run freely through the wire liner, and then adjust the pressure of the wire feed rollers. It is important that the pressure is not too high.



*Figure 1*

*Figure 2*

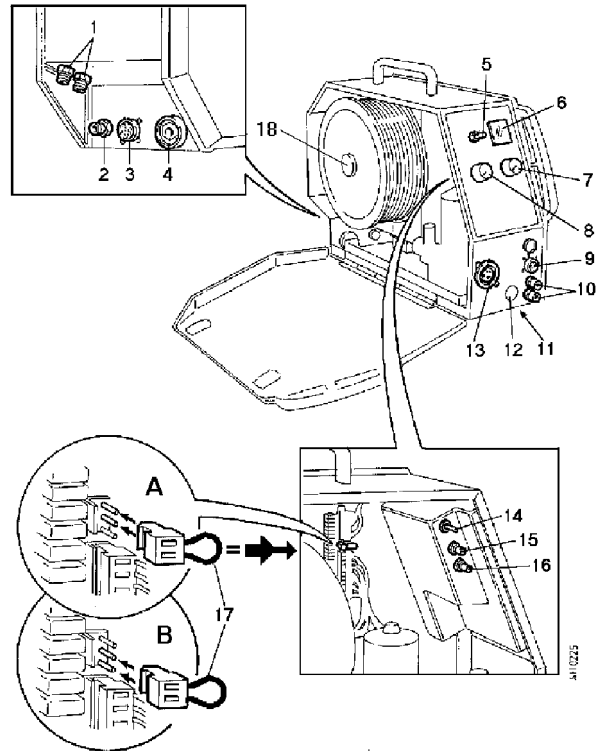
To check for correct feed pressure, feed the wire out against a piece of insulating material, such as a piece of wood.

With the pistol held about 5 mm from the wood (Figure 1), the drive rollers should slip.

With the pistol held further away from the wood (about 50 mm, as shown in Figure 2), the wire should continue to feed out, bending as it does so.

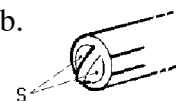
## CONTROL PANEL AND CONNECTIONS

1. Cooling water connections (only -882 and -883 models).
2. Gas connection.
3. Connector for control cable from the power unit.
4. Connector for welding current cable from the power unit.
5. Switch, crater filling On/Off. Crater filling operates only with the LAW power units.
6. Digital instrument (only -881 and -883 models). Operates only with the LAW power units.
7. Potentiometer, wire feed speed 1.9 - 25 meter per minute.
8. Potentiometer, welding voltage control. Operates only with thyristor-controlled or transistor-controlled power units.
9. Connector, remote control unit. Control is passed to the remote control unit automatically when it is connected.
10. Cooling water connections to/from the welding gun (only -882 and -883 models).
11. Strap securing points. The strap must be used to secure the wire feed unit to the power unit during transport.
12. Hole for fitting connector for PKE (welding gun with integral wire feed drive motor).
13. Welding gun connector.
14. Selector switch, 2/4-stroke mode.
15. Potentiometer, burn-back time, 0 - 0.5 seconds.
16. Potentiometer, crater fill time, 0 - 5.1 seconds.
17. Link, creep start On/Off.
  - A:** Creep start active. Wire feed starts at 1.9 m/min and then increases to the set speed.
  - B:** Normal start. Wire feed starts at the set speed.
 See also Creep / Normal start on page 17.
18. Brake hub. The hub is adjusted when delivered, if readjustment is required, follow the instructions below.



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Adjust the braking power by means of the two screws (springs) inside the hub. Turn the adjustment screws clockwise to reduce the braking power. Adjust the brake hub so that wire is slightly slack when wire feed stops.

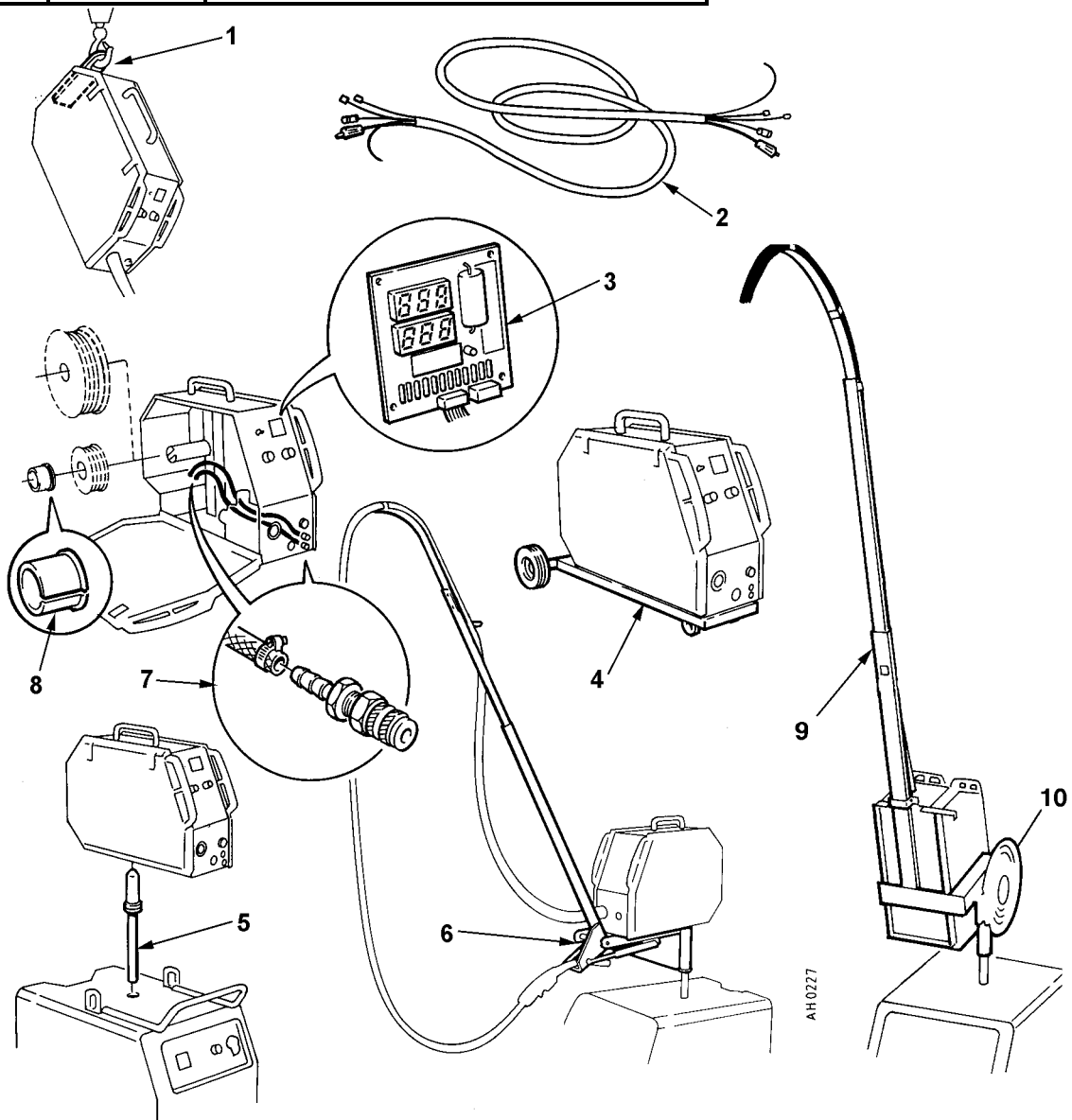
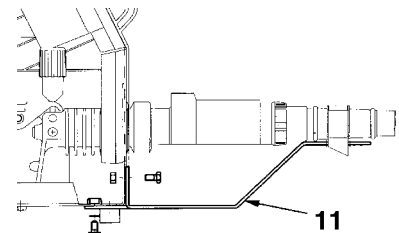


S = Adjustment screws

# ACCESSORIES

Item no.	Ordering no. when used with LAW 400	Ordering no. when used with LAW 410W	Ordering no. when used with LAW 510	Ordering no. when used with LAW 510W	Denomination
1	0469 789 880	0469 789 880	0469 789 880	0469 789 880	Lifting eye
2	0469 836 880	0469 836 885	0469 836 890	0469 836 895	Connection set, 1,7 metre
	0469 836 881	0469 836 886	0469 836 891	0469 836 896	Connection set, 8 metre
	0469 836 882	0469 836 887	0469 836 892	0469 836 897	Connection set, 16 metre
	0469 836 883	0469 836 888	0469 836 893	0469 836 898	Connection set, 25 metre
	0469 836 884	0469 836 889	0469 836 894	0469 836 899	Connection set, 35 metre

Item	Ordering no.	Denomination
3	0455 173 881	Digital instrument
4	0469 786 880	Trolley
5	0156 654 883	Guide pin (included in LAW)
6	0469 792 881	Counter balance device and mast
7	0469 967 880	Water connection set
8	0455 510 880	Adapter for 5 kg bobbin
9	0156 746 880	Mast
10	0456 693 880	Counter balance device, sprung coil
11	0457 341 880	Hose reinforcement bracket
-	0349 090 888	Connection kit for foot pedal
-	0466 515 880	Remote control unit: Aristo Control Synergic Torch
-	0466 801 880	Remote control unit: Aristo Control Synergic Box



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