

INTRODUCTION

MIGATRONIC welding equipment has a good reputation - and we know how important it is to live up to the standards we have set ourselves.

The welding machine you have purchased is the result of **MIGATRONIC'S** experience in the field of welding machine manufacture. This experience, combined with correct operation and maintenance of your machine, provides a guarantee of excellent performance in the years ahead.

Thank you for buying a **MIGATRONIC** machine.

MANUAL

DynaMig S 320/550



Edition F

50173007

EC DECLARATION OF CONFORMITY

MIGATRONIC A/S
Aggersundvej 33
9690 Fjerritslev
Denmark

hereby declare that our machine as stated below

Type: DynaMig S
as of: week 51 1995, step 3

conform to directives 73/23/EEC and 89/336/EEC.

European Standards: EN60974-1
EN50199

Issued in Fjerritslev on 21st December 1995.


Peter Roed
Managing director

Valid from 9603

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IMPORTANT SAFETY INSTRUCTIONS

The safety instructions contained in the **PERSONAL SAFETY** sections of this manual should be read and observed when installing and operating the machine.

This manual and the accompanying instructions for use must be accessible at all times to the staff engaged in the installation, operation and maintenance of the machine.

Full understanding of this manual requires a skilled welder's knowledge of welding and of the risks involved.

DESCRIPTIONS OF FUNCTIONS

The DynaMig S series consists of 2 models:

DynaMig S 320 STB:

welding machine with separate wire feed unit, suitable for synergic and manual MIG/MAG and MMA electrode welding.

DynaMig S 550 STB:

welding machine with separate wire feed unit, suitable for synergic and manual MIG/MAG and MMA electrode welding, also suitable for carbon arc gouging process.

DynaMig S is an inverter-based welding machine providing the following advantages: Programmable welding properties and improved welding characteristics, reduction of power loss resulting in increased arcing time, and reduced weight. Like all other components in the machine, the inverter is controlled by a micro-processor which makes it possible to achieve sophisticated welding control combined with straightforward operation and easy use.

To a large extent the DynaMig S machines are of a modular design, which provides the advantages of high flexibility as the machines can be equipped according to the user's needs and easy service as repair can be carried out by replacing defective modules.

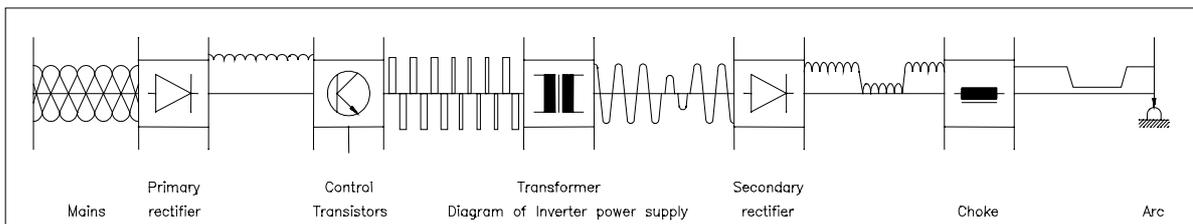
The most important modules are briefly described below.

Inverter

As previously mentioned, Dynamig S is an inverter-based machine. This means that the power source (the power module) is designed according to the switch mode principle.

The power module of Dynamig S switches at 100 kHz making it one of the fastest switching modules on the market today. The principle is illustrated in the block diagram below.

Block diagram of inverter



Electronic box

The micro-processor is placed in the electronic box and is part of a regulating loop where measurements of welding current and voltage are carried out. Based on these measurements the inverter generates current and voltage. This takes place by a frequency of 10 kHz.

In addition to the regulation of welding current and welding voltage the micro-processor takes care of all control and data collection from modules in the welding machine, and of the communication with the user via the front of the electronic box, and of operation by use of either the torch or the remote control.

Wire feed

Wire feed is used when MIG/MAG welding and is placed in a separate wire feed unit. The wire feed unit can be fitted with either 2-roll or 4-roll wire drive system. The 4-roll wire drive system is recommended for many welding jobs, and not least when welding with aluminium or fluxcored wire. Furthermore, it is important that the dimensions of the feed rolls match the dimension of the wire and that a liner of correct diameter and material is used for the welding wire (see the paragraph "Fitting of Welding Wire").

Water module

The water module consists of a water tank, a water cooling unit, a water pump, a filter and a flow control system.

The flow control system indicates a water cooling error if the flow of cooling water is either insufficient or absent.

TECHNICAL DATA

Power source	DynaMig 320 S	DynaMig 550 S
Mains voltage: - Standard version - Version with selector switch	3x400 V ±10% 3x230 V ±10% 3x400/440/500 V ±10%	3x400 V ±10% 3x400/440/500 V ±10%
Fuse	According to type plate on machine	According to type plate on machine
Max. consumption	12.1 kVA	30 kVA
Efficiency	0.85	0.85
Open circuit power	100 W	100 W
Permitted load: - 40% duty cycle - 60% duty cycle - 100% duty cycle	320 A 260 A/30.8 V	550 A/42.0 V 500 A/40.0 V 400 A/36.0 V
Open circuit voltage	80 V	80 V
Current range	5 - 320 A	5 - 550 A
Water module: - cooling power - cooling capacity	850 W 7 litres	1600 W 4 litres
Application class	S	S
Protection class	IP21	IP21
Standards	EN60974-1 EN50199	EN60974-1 EN50199
Dimensions excl. wire feed unit	67x46x80 cm	67x46x80 cm
Weight incl. water module	110 kg	135 kg
Wire feed unit, type	KT120/KT140	KT22/KT24
Operating voltage	24 V AC	24 V AC
Motorpower 1 - 2 units	105 W	105 W
Wire dimension	0.8 - 2 mm	0.8-2 mm
Wire reel dimension	5 - 15 kg	5-15 kg
Wire speed	1 - 24 m/min	1 - 24 m/min
Dimension	70x40x24 cm	61x22.5x28 cm
Weight	22 kg	14.6 kg
Control		
Arc PowerMMA	35% - not adjustable	
Hot-startMMA	0 - 100%	
AntifreezeMMA	always active	
Gas pre-flowMIG/MAG	0 sec. - not adjustable	
Gas post-flowMIG/MAG	0 - 30 sec.	
Spot welding timeMIG/MAG	0.1 - 10 sec.	
InductanceMIG/MAG	0 - 100%	
Burn-backMIG/MAG	0.01 - 0.1 sec.	
Slope-downMIG/MAG	0 - 10 sec.	

INITIAL OPERATION

Mains connection

The machine must be connected to a 3-phase alternating current (50 or 60 Hz) of a mains voltage between 380 and 415 V (see technical data). The order of the phases is not important. The earth cable is yellow/green. Type of fuse: see the type plate. Use the main switch to switch on the machine (pos.1).

Gas connection

The gas hose which is connected to the back of the machine, must be connected to a supply of gas with a flow setting of 8-20l/min. depending of the welding job.

A gas cylinder or double gas cylinder can be fitted on the back of the machine.



-marking

This machine meets the demands made for machines which are to operate in environments with an increased hazard of electric shock.

In certain types of welding jobs there is an increased hazard of getting an electric shock, e.g. in environments where the welder has to work in a crouched position and is therefore in contact with the work-piece, in places which are partially or totally surrounded by conductive parts, and in wet, damp or hot places.

When welding under such conditions there must be a person nearby who can render help in case of an emergency and he must be able to quickly cut off the current.

Protection class

The machine is designed for indoor operation as it meets the demands of protection class IP21.

It must be ensured that the air intake and outlet are not blocked.

Electromagnetic emissions and the radiation of electromagnetic disturbances

In conformity with the Electromagnetic Compatibility (EMC) Directive within the European Union this high-quality welding machine for industrial and professional use is designed, built and tested in accordance with the European Standard EN50199 on radiation and incident radiation of electromagnetic disturbances, the purpose of this standard being to prevent the occurrence of situations, where the machine is disturbed or is itself the source of disturbance in other electrical equipment or appliances.

The responsibility of the user

A trouble-free performance without disturbances or disruption caused by electromagnetic emissions, does, however, require that certain measures are taken when installing and using the welding equipment.

Thus it is the responsibility of the user to ensure that the operation of this machine does not occasion disturbances of the above mentioned nature.

Before installing and operating the welding machine, an assessment of the surrounding area is therefore required and this assessment is best performed by the specialist installing the welding machine.

Assessment of area

The following shall be taken into account:

1. Supply cables for other equipment, control cables, signalling and telephone cables in the vicinity of the welding machine.
2. Radio or television transmitters and receivers.
3. Computers and any control equipment.

4. Critical safety equipment, e.g. electrically or electronically controlled guards or protective systems around process equipment.
5. The medical health circumstances of people in the area, e.g. the use of pacemakers, hearing aids etc.
6. Equipment used for calibration and measurement.
7. The immunity to disturbance or disruption of other equipment in the environment which may be disturbed and which therefore may require special protection measures.
8. The time of day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and those other activities that are to take place in the environment. Special circumstances may require an extension of this area.

Use in domestic establishments

This welding machine is normally expected to be used in industrial situations and areas, and if used in a domestic establishment the hazard of disturbing other electric appliances is increased and it may be necessary to take special and additional precautions in order to prevent problems of emission.

Methods of reducing electromagnetic emissions

- The welding cables should be kept as short as possible.
- The welding cables should be positioned with the negative and the positive cables close together.
- The welding cables should be running at or close to floor level.

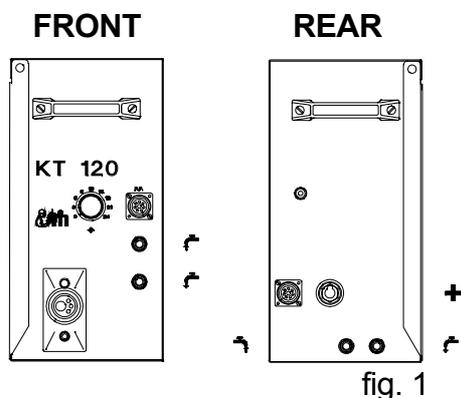
- Mains cables and other cables, e.g. telephone, computer, and signalling cables, should not be carried or placed parallel and close to each other, e.g. not in the same cable tray or box.
- Separately-insulated mains supply cables for sensitive electronic equipment, e.g. computers.
- Selective screening of cables may be considered under special circumstances.
- Screening of the entire welding installation may be considered under special circumstances and for special applications.

How to connect the gas

The gas hose, which is connected to the rear of the machine, should be connected to a gas supply with a flow setting of 8-20 l/min, depending on the welding operation in use. TRIPLE and COMBI types are fitted with two gas hoses.

The left-hand gas hose is for use inside the machine, and the right-hand gas hose should be connected to the separate wire feed unit. A gas cylinder or fittings for twin bottles can be fitted to the rear of the machine.

FRONT DynaMig S

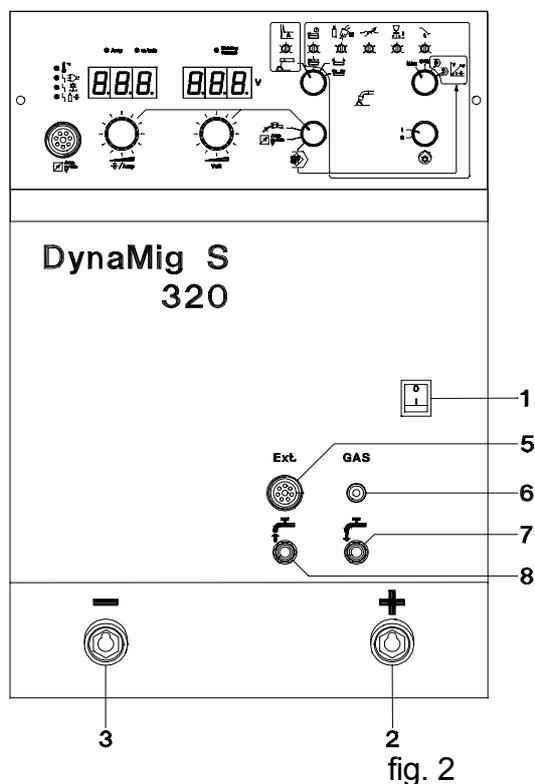


Connection of separate wire feed unit

The separate wire feed unit is connected to the machine by means of an intermediary cable containing cables and hoses to welding positive (pos.2), control signals (pos.5), gas (pos.6) and cooling water (pos. 7 and 8) if a water module is incorporated in the machine.

The push-pull torch is connected at position 4. Furthermore, remote control of the wire speed can take place from the wire feed unit.

Please note that the unit is not fitted with these options at delivery.



1. Mains switch
2. Outlet, positive
3. Outlet, negative
5. Multiplug for connection of separate wire feed unit
6. Quick release for gas hose to separate wire feed unit
7. Quick release for cooling water to separate wire feed unit
8. Quick release for return cooling water from separate wire feed unit

CONNECTION FOR MIG/MAG

Connection of welding torch

The welding torch is fitted to the central connection (ZA) (fig. 1) and the nut is tightened manually. The earth cable is connected to the negative outlet (fig. 2). If the machine has a water module the two water hoses are also connected: RED for water quick release (fig. 1) and BLUE for water quick release (fig. 1). For push-pull torches the pilot wire plug is connected to the 8-poled multiplug (fig. 1) next to the central connection.

Fitting of welding wire

Turn the lever arm aside and tip up the wire drive unit arm (see fig. 3) Check that the wire feed roll, the capillary tube and the wire liner match the dimension of the wire. The recommended capillary tubes and wire liners are shown in the table (fig. 5).

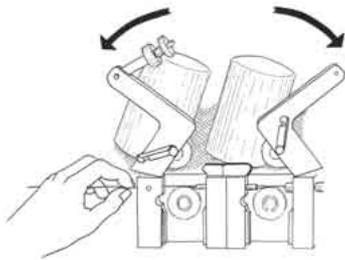


fig. 3

Unscrew the contact tip if it is fitted to the torch. Insert the wire reel and feed the

wire through the teflon inlet nozzle, the wire liner and further into the capillary tube. Tip down the wire drive unit arm and turn the lever arm into place. Press the key on the motor control box and the wire will then be fed through the hose. Fit the contact tip when the wire is through the hose. The pressure of the thumb screw is to be adjusted so that the wire rolls will just slide on the wire when it is stopped at the contact tip.

For the push-pull torch it is important to leave open the wire feed device of the torch when fitting the wire (see fig. 4).

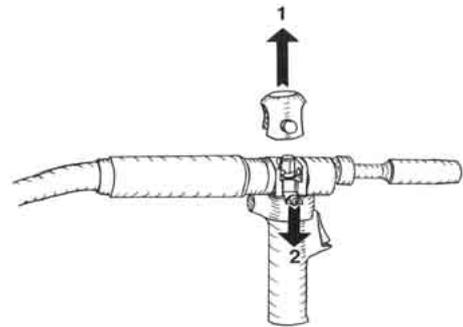


fig. 4

MMA connection

Electrode and earth cable are connected to the positive outlet (fig. 2) and to the negative outlet (fig. 2). The polarity is selected according to your electrode supplier's recommendations.

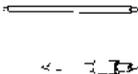
				
0,8	0,8	white	1,2	0,8
1,0	1,0	blue	1,5	1,0
1,2	1,2	red	2,0	1,2
1,6	1,6	red	2,0	1,6
2,0	2,0	yellow	2,7	2,0
2,4	2,4	yellow	2,7	2,4

fig. 5

INSTRUCTIONS FOR USE

The operation of the control box is described in this section

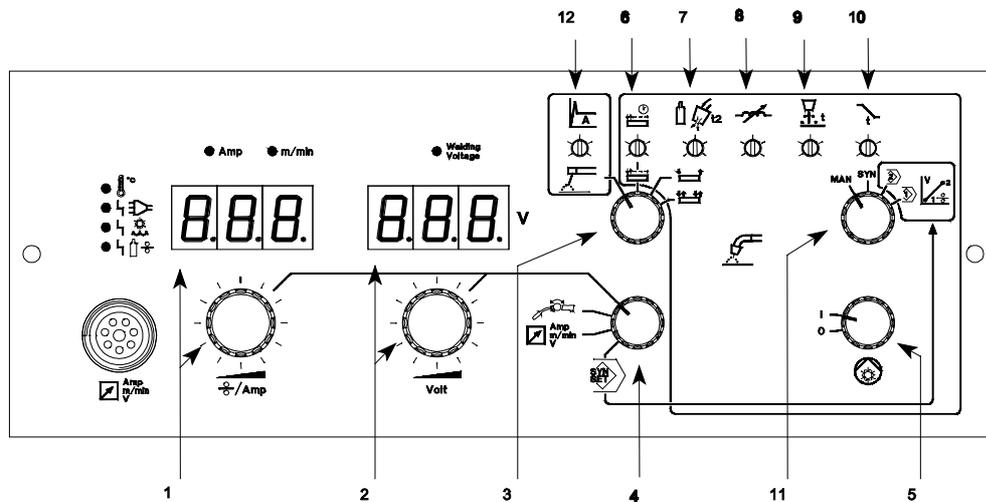


fig. 6

1. Welding current/wire speed

The welding current/wire speed can be read on a 7-segment display with three digits.

The display functions as follows:

At stand-by:

MIG/MAG: The display shows the selected wire speed. When a welding operation is finished (when the arc goes out) the machine will go to stand-by after about 2.5 s. The LED marked "m/min." will light when the welding speed is shown.

During welding the LED marked "Amp" will light.

MMA: The display shows the selected welding current. When welding is finished the machine will go to stand-by immediately. The LED marked "Amp" will always light.

When welding:

The display shows the welding current in the arc.

The welding current/wire speed is selected by the adjusting buttons below the display. The wire speed is adjustable from 1.0 to 24.0 m/min.

When welding in MMA the welding current is adjustable from 5 A to the maximum current of the machine.

2. Welding voltage

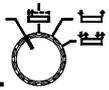
The welding voltage is indicated on displays with three digits in the following way:

At stand-by:

MIG/MAG: The display shows the selected welding voltage. When a welding process is finished (when the arc goes out) the machine will go to stand-by after 2.5 sec. The LED marked "welding voltage" will light when the arc is on.

The voltage is adjustable from 10.0 to 50.0 V in steps of 0.5 V.

MMA: The display shows the open circuit voltage of the machine. The machine will go to stand-by immediately when a welding process is finished. The LED marked "welding voltage" will always light when the arc is on.



3. **Welding mode**

By use of the welding mode button it is possible to select between the trigger functions as well as selecting electrode welding. There are four functions: 2-times, 4-times, spot and MMA.



4. **Control mode**

By use of this button it is possible to select where to control the wire speed and the voltage (current in MMA); either internal, external, torch or SYN SET. When welding MMA it is not possible to select torch and SYN SET. The SYN SET position is used for setting of synergy points.



5. **Torch cooling**

It is possible to choose between water-cooling or aircooling. When watercooling is selected there is the following automatic function: the water-cooling will always start when the torch is triggered. If the arc is out for 5 minutes the watercooling will stop.



6. **Spot time**

MIG/MAG function
Spot time is defined as the time from the arc is established till the post-flow begins. The spot time function is only active when spot is selected on "welding mode".

Adjustable between 0.1 and 10 sec.

When the spot time potentiometer is turned, the two displays will change to show the setting of this parameter; the right display indicates the unit (sec.) and the left display indicates the time between 0.1 and 10 sec. The value is shown in approximately 3 sec.



7. **Post-flow**

MIG/MAG function
Gas post-flow
Adjustable between 0 and 30 sec.
When the post-flow potentiometer is turned, the two displays will change to show the setting of this parameter; the right display indicates the unit (sec.) and the left display indicates the time between 0 and 30 sec. The value is shown in approximately 3 sec.

It is possible to trigger during the post-flow period.

8. **Inductance**

MIG/MAG function
The electronic inductance, arc adjust, changes the integration time of the regulator. The arc adjust is set in an interval where the welding process can be kept stable.

Adjustable between 0 and 100%, which means that 100% will make a soft arc and 0% will make a hard arc.

When the inductance potentiometer is turned, the two displays will change to show the setting of this parameter; the right display indicates the unit (%) and the left display indicates the value between 0 and 100%. The value is shown in approximately 3 sec.



9. **Burn-back**

MIG/MAG function

Adjustable delay from the wire feed is stopped till the voltage is cut off. The function is used to avoid sticking of the wire. Adjustable between 0.01 and 0.1 sec.

When the burn-back potentiometer is turned, the two displays will change to show the setting of this parameter; the right display indicates the unit (sec.) and the left display indicates the time between 0.01 and 0.1 sec. The value is shown in approximately 3 sec.

- 10. See point 4.0 Slope-down in the passage about SYNERGIC MIG/MAG WELDING.
- 11. See point 1.0 Embedding of the synergic curve in the passage about SYNERGIC MIG/MAG WELDING.



12. **Hot-start**

MMA function

This function increases the rated welding current from 0% to 100% for 0.5 sec. after starting. Within 1 sec. the current will drop till the set value.

When the hot-start potentiometer is turned the two displays will change to show the setting of this parameter; the right display indicates the unit (%), the left display indicates the value between 0 and 100 %. The value is shown in approximately 3 sec.

Not adjustable

Arc power

MMA function

The arc power function is an increase of the welding current when the welding voltage is below a set value. The value is indicated in %.

0% does not provide any increase of the welding current, which means that the arc power function is inactive.

100% is maximum value and the welding current is increased by 100% in relation to the set current, which means the current will double, while the welding voltage is below the set limit value.

The fold back line is the same one used with the antifreeze function.

The arc power value is constantly set on 35%.

Pre-flow

MIG/MAG function

The gas pre-flow is always 0 sec.

Antifreeze

MMA function

This function secures that the electrode does not stick to the material. The machine switches to a welding current of 5 A when the welding voltage drops below a limit value below for more than 1 sec. One second after the electrode is removed from the workpiece the machine will switch to the rated current.

Antifreeze is always activated.

Torch trigger

The torch trigger has primarily three functions: 2-times, 4-times and spot.

When 2-times is selected the welding starts by pressing the trigger.

The welding process proceeds through (slope-down), burn-back and post-flow and finishes when the torch trigger is released. If the trigger is activated during post-flow the welding process will start again.

When 4-times is selected the welding starts by pressing the trigger. Next time the trigger is pressed (the trigger is kept pressed down) (slope-down), burn-back and post-flow will start and the welding process is finished.

When the spot function is selected the welding process starts by pressing the trigger. From the time the arc is ignited the welding process will continue in the number of seconds selected on spot time, and afterwards slope-down, burn-back and post-flow will start and the welding process is finished.

Torch regulation

When a torch with regulation in the handle is used, it is possible to adjust the wire speed when this function is selected on the torch. (See the paragraph "Synergic MIG/MAG welding").

SYNERGIC MIG/MAG WELDING

MIG/MAG welding with synergy means that the welding conditions are controlled by one key parameter - that of wire speed. The voltage is then automatically controlled from the machine on the basis of the set wire speed.

When synergic welding with the DynaMig S, the machine is set for correct welding conditions at low wire feed speed, then again at high wire feed speed. After this, the machine automatically calculates the correct welding voltage on the basis of the set wire speed.

Following sketch (ill. 7) shows the correlation between wire speed and voltage.

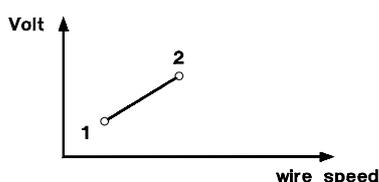


fig. 7

The voltage setting is replaced by a trim setting in synergic welding. The trim setting determines how many volts the synergic curve will be displaced either upwards or downwards. See ill. 8.

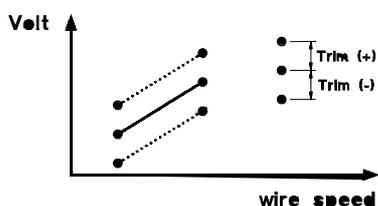


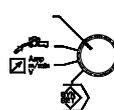
fig. 8

The trim value can be set between -9.9 V and +9.9 V.

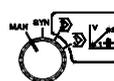
Trim adjustment is used to regulate the length of the arc in the same way as the voltage in manual MIG/MAG welding. In this way adjustment is made for different welding positions, material thickness etc.

1.0 Embedding of the synergic curve

Following procedure is used:



- 1) It must be ensured that the machine is set (control mode) for SYN SET. (The display will show SYN SET).



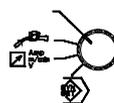
- 2) The MAN/SYN button is then turned to 1.

Low wire speed and suitable voltage are set on the large control knobs. Welding is then carried out on these settings and any fine adjustments made until the optimum welding conditions are obtained.

Please note that it is only possible to set wire speed and voltage with the large control knobs.

- 3) The MAN/SYN button is then turned up to 2.

The procedure described in item 2 is then repeated on a high wire speed setting.



- 4) When the two synergic points 1 and 2 have been set, the control mode switch is turned away from the SYN SET setting. Either intern, torch or remote control is then selected.

The MAN/SYN button is set at SYN. Welding can now be done synergically.

Please note that the settings in 1 and 2 will be stored in the machine until alterations are made.

2.0 Welding in synergy

- 1) Ensure that the machine is set (control mode) for SYN. (The display shows wire speed and trim).
- 2) Welding with setting via intern
Wire speed and trim are set on the large control knobs and welding can then take place. The wire speed can be set from 1 m/min. till 24 m/min. regardless of the setting of the synergy points.
- 3) Welding with torch setting
Trim value is set on the trim control knob. The torch handle control will determine the wire speed and thus welding voltage. The control field in the torch is equivalent to the field between the two embedded synergic points.
If for example synergic point 1 is set to a wire speed of 3.2 m/min. and synergic point 2 is set to 6.4 m/min., the control in the torch handle will be between 3.2 and 6.4 m/min.
- 4) Welding with remote setting
If a remote control is connected, the wire speed and trim will be set from this in the same way as setting via intern setting.

3.0 Display of synergic points

- 1) It must be ensured that the machine is set for intern; remote or torch control. (control mode must NOT be set at SYN SET).

- 2) The MAN/SYN button is turned to 1 or 2, depending on which point is to be read. The two displays will show the entered wire speed and welding voltage respectively.
It is not possible to alter the settings of the two points whilst the values are displayed.

4.0 Slope-down

Slope-down makes it possible to implement a slope-down procedure at the end of a weld. During the slope-down period the wire speed is reduced from the set speed to the minimum level of wire speed, that is, the bottom point in the synergic curve.

The slope-down time can be set from 0.0 to 10 sec. III. 9 is a schematic display of the slope-down procedure.

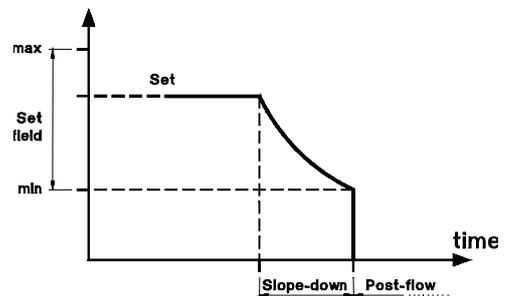


fig. 9

When the slope-down potentiometer is turned, the two displays will show the setting of this parameter: the right hand display shows unit (sec.) and left hand display shows time between 0.0 and 10 sec. The values are displayed for approx. 3 secs.

It is to be noted that ONLY slope-down is synergically connected with wire speed; no other function is synergic.

5.0 Dynamic characteristics for MIG/-MAG welding

Following applies to synergic and manual MIG/MAG welding.

The dynamic characteristics of the DynaMig S machine are chosen to provide the best results with regard to arc stability and spatter-free welding.

The dynamic performance is characterized by the welding voltage having been made dependant on the welding current. This means that the welding voltage will drop by approx. 0.5 V/100 A. See ill. 10.

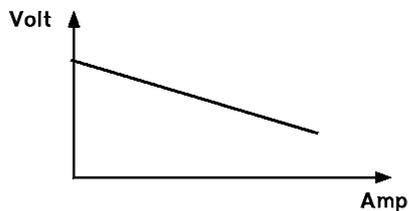


fig. 10

Example: The machine's setting of wire speed and voltage gives a welding current of 200 A. The actual welding voltage read out will be 1 V lower than the voltage set before welding started.

Detection of errors in MIG/MAG welding

Errors	Origin
Uneven wire feed	<ol style="list-style-type: none"> 1. The inlet nozzle and the groove in the wire roll are not in line. 2. The wire reel runs too tight on the spindle. Sometimes the wire is wrongly reeled so it "crosses". 3. The inlet nozzle or the contact tip is worn, dirty or maybe blocked. 4. The welding wire is dirty, corroded or of poor quality. 5. There is too little pressure on the counter-roll.
Too much spatter	<ol style="list-style-type: none"> 1. Too high a wire speed in relation to the welding job in hand. 2. The contact tip is worn.
The welding is coked and "brittled". When spot welding a characteristic top appear.	<ol style="list-style-type: none"> 1. The gas nozzle is blocked. 2. The system contains leaks so that atmospheric air is sucked in and mixed with the shielding gas due to the injector effect.
The wire sticks in the contact tip several times and runs slowly.	<ol style="list-style-type: none"> 1. Can be caused by a deformation of the wire in the liner. Cut off the wire at the wire roll and pull the deformed wire out of the liner. Fit a new wire and check the pressure of the counter roll. 2. The contact tip is worn.

INDICATION OF ERRORS AND SELF-TEST

A total of 5 errors can be registered: Power Error 1, Power Error 2, Overheating Error, Gas Error and Torch Cooling Error. The errors are divided into two levels: one level where the user can try to correct the

error, and another level where Migatronic's Service Department has to be called in. All error codes are shown for as long as the error exists.

Power Error 1	
Origin	Appears in case of errors in the mains supply, viz. overvoltage or undervoltage.
 Consequence	The welding process is interrupted and post-flow starts. The LED by the symbol will light.
Remedy	The user repairs the mains supply to the welding machine.
Power Error 2	
Origin	Appears if the inverter module is defective.
 Consequence	The welding process is interrupted and post-flow starts. The LED by the symbol will light.
Remedy	Call in Migatronic's Service Department if it is not possible to repair the error as under Power Error 1.
Overheating Error	
Origin	Appears if the inverter module is overheated due to wrong use.
 °C Consequence	The welding process is interrupted and post-flow starts. The LED by the symbol will light.
Remedy	If the error is not due to wrong use, call in Migatronic's Service Department.
Gas Error	
Origin	The pressure of the gas supply is insufficient.
 Consequence	The welding process is interrupted and post-flow starts. The LED by the symbol will light.
Remedy	The user tries to repair the gas supply. This error does not register when welding MMA.

Torch Cooling Error	
Origin	There is no flow of cooling water in the torch.
  Consequence	The welding process is interrupted and post-flow starts. The LED by the symbol will light.
Remedy	The user refills the water tank and checks the hoses. If the error persists, contact Migatronnic's Service Department. This error does not register when welding MMA, or MIG/MAG with air-cooling.
Motor Error	
Origin	The wire feed unit is overloaded.
  Consequence	The welding process is interrupted by starting burn back and then post-flow. The LED by the symbol will light.
Remedy	If the wire feed unit is used as prescribed, contact Migatronnic's Service Department. This error does not register when welding MMA.
External Wire Feed Unit Error	
Origin	One of the following errors exist in the wire feed unit. a. Motor error : The wire feed unit is overloaded. b. Wire error : There is no wire in the wire feed unit. c. Gas error : The pressure of the gas flow is insufficient.
  Consequence	The welding process is interrupted and post-flow starts. The LED by the symbol will light.
Remedy	a.If the wire feed unit is used as prescribed, contact Migatronnic's Service Department. b.The user fits wire into the wire feed unit. c.The user tries to repair the gas supply.
Incorrect installation of box	
Origin	The machine is not correctly prepared.
Consequence	The display will show "TUP ERR" (type error). Welding cannot take place
Remedy	Check that the correct box has been placed in the DynaMig S machine. If this is the case, contact Migatronnic's Service Department.

All errors are shown for as long as the error exists and always for at least 5 seconds.

MAINTENANCE

However good the materials that have been used and no matter how carefully the assembly has been done, an advanced and sophisticated product such as a Migatronic welding machine demands your effort to operate perfectly for years. The following items demand special attention:

Wire feed unit

The wire feed unit must be cleaned with compressed air and the wire feed rolls and wire tips must be checked regularly. The wire tips must be replaced if the wire is deformed or if the copper coating of the wire is damaged when the wire passes through the tips. Sometimes it occurs that scraped copper dust totally hinders a free passage through the liner. Check the adjustment of the tips and clean them at least once a week. Furthermore, the grooves in the wire roll must be checked and cleaned.

MIG/MAG hose

The hose must be protected against overload and must not be stepped on or run over. The hose should be disconnected and the liner should be cleaned with compressed air regularly.

MIG/MAG welding torch

The welding torch contains important components which must often be checked and cleaned; the contact tip and the gas shroud. Spatter must be removed regularly and at the same time spatter loosener must be applied (MIG-spray). During the cleaning process the gas nozzle must be removed. Do not clean by hitting the torch.

Power source

The power source should be checked and cleaned by a qualified service technician at least once a year.

Water module

If the liquid in the tank is so low that the machine is interrupted (error code displayed on the control box) extra coolant has to be filled through the filler neck. The water level should be checked regularly and the filter cleaned. In order to ensure reliable operation, Migatronic's coolant should be used (part no. 99290400).

PERSONAL SAFETY



Light and heat emission

A welding arc emits radiation which is damaging to the human eye. Even short-term exposure to this radiation can cause lasting damage. Protect your eyes from powerful radiation by infra-red, visible and also ultra-violet light by installing suitable radiation protection glass in your welding helmet.

Your skin can also be damaged by welding radiation. Radiation can cause serious burns. Protect your skin by wearing a welding helmet, working clothing covering all exposed parts, and gloves.

During welding, warn other people in the vicinity of the danger of radiation and sparks. If possible, place a screen between the place of work and the surroundings.

The heat emitted from the arc and pool crater - as well as the sparks emitted during welding - represent a fire hazard. Consequently, welding should never be carried out near combustible materials. Working clothing must not be made of substances which are easily combustible, and should have no folds or open pockets into which sparks can fall. Wear a fire resistant apron if necessary.



Welding fumes

The smoke and gases emitted during welding are damaging to the health. Consequently, the inhalation of welding smoke and gases should be avoided by taking suitable preventive measures (e.g. local air extraction, ventilation, or supply of fresh air to welding helmet).



Electricity

Avoid contact with all live components.

The voltages used in welding are not sufficient to represent a danger in themselves. However, if damp clothing is worn, or if working in damp conditions, electric shocks can be caused, representing an indirect source of danger.

Considerable electric shocks can be caused by HF high voltage ignition during TIG welding in particular, and may lead to minor burns beneath the skin.

Consequently, all contact with live components should be avoided as far as possible.

Always use dry, leather welding gloves and wear dry working clothing and shoes. Keep cables, torches, and the welding machine itself dry at all times.

Make sure that the welding machine's earth connection is properly and safely earthed.

Do not open the machine to expose live components. Maintenance and service which require access to live components inside the machine must be carried out by an authorized electrician.