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OPERATING MANUAL

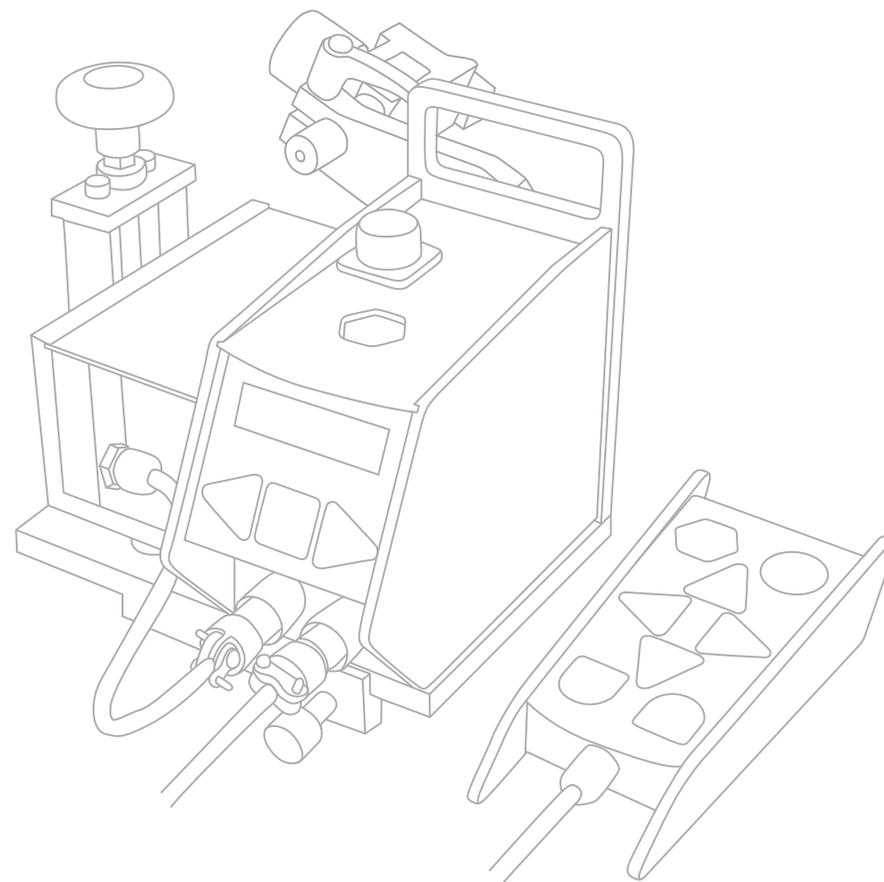
A5 MIG Rail System

2500

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1. INTRODUCTION

1.1 General

Congratulations on choosing A5 MIG Rail System 2500 welding equipment. Used correctly, Kemppi products can significantly increase the productivity of your welding and provide years of economical service.

This operating manual contains important information on the use, maintenance and safety of your Kemppi product. The technical specifications of the equipment can be found at the end of the manual.

Please read the operating manual and the safety instructions booklet carefully before using the equipment for the first time. For your own safety and that of your working environment, pay particular attention to the safety instructions in the manual.

For more information on Kemppi products, contact Kemppi Oy, consult an authorized Kemppi dealer, or visit the Kemppi website at www.kemppi.com.

The specifications presented in this manual are subject to change without prior notice.

Important notes

Items in the manual that require particular attention in order to minimise damage and harm are indicated with below symbols. Read these sections carefully and follow their instructions.



Note:

Gives the user a useful piece of information.



Caution:

Describes a situation that may result in damage to the equipment or system.



Warning:

Describes a potentially dangerous situation. If not avoided, it will result in personal damage or fatal injury.

Disclaimer

While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions. Kemppi reserves the right to change the specification of the product described at any time without prior notice. Do not copy, record, reproduce or transmit the contents of this guide without prior permission from Kemppi.

1.2 About the product

A5 MIG Rail System 2500 is a complete set of welding mechanization equipment designed especially for horizontal and vertical joints and for all position welding. It can be used in medium-heavy industries for MIG/MAG welding of long plates and for plasma or oxy-fuel cutters.

The rail is made of extruded aluminum and can be easily extended, shortened or stiffened. As the rail does not contain any racks, the risk of service interruption due to spatter from the weld is minimized. It is flexible and can be bent down to a diameter of three meters.

i Bending the rail to diameters smaller than that will deform it permanently. Specially rolled rails are used for smaller diameters.

The rail is attached to the workpiece with magnetic brackets or vacuum brackets. For secure attachment each vacuum holder consists of one ejector and two vacuum suction cups

1.3 Compatibility

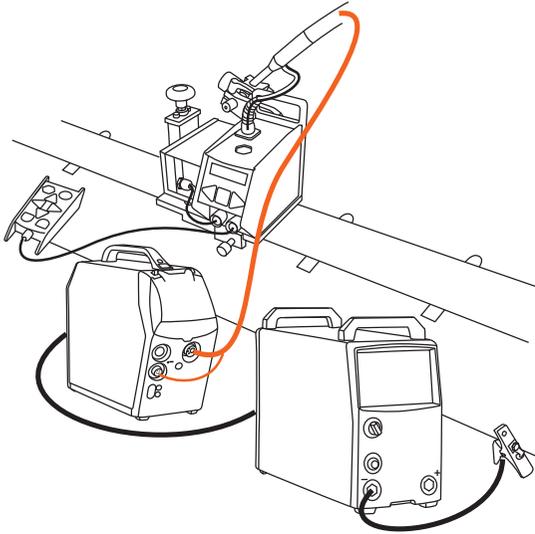
A5 MIG Rail System 2500 is compatible with the following welding equipment:

- FastMig M and FastMig X: all wire feeders and control panels
- FastMig Pulse 350/450 power sources
- Control panel PF 65
- FastMig KMS 300/400/500 power sources
- Control panels SF 52W and SF 54
- SuperSnake mechanization models
- Other power source brands with limitations

i Some of the functions are available only if the wire feeder has the right control panel. For example, changing memory channels at the welding carriage is available only if the wire feeder has a control panel with the channel remote control feature.

2. INSTALLATION

2.1 Connecting to a FastMig welding machine



To connect the carriage system to the FastMig welding equipment:

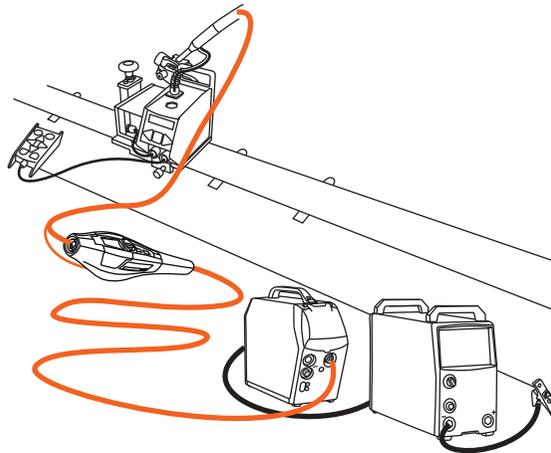
1. Connect welding cable to welding gun connector.
2. Connect control cable to remote control connection at the wire feeder.
3. Connect control cable to 7-pin connection at the carriage unit.
4. Connect remote control unit to 7-pin connector on the carriage front panel.

i With Kemppi mechanization welding gun, the control cable is integrated into the gun cable. The trigger mode must be set to 2T. With other welding guns, you need to use a separate control cable. See the ordering codes at the end of this document.

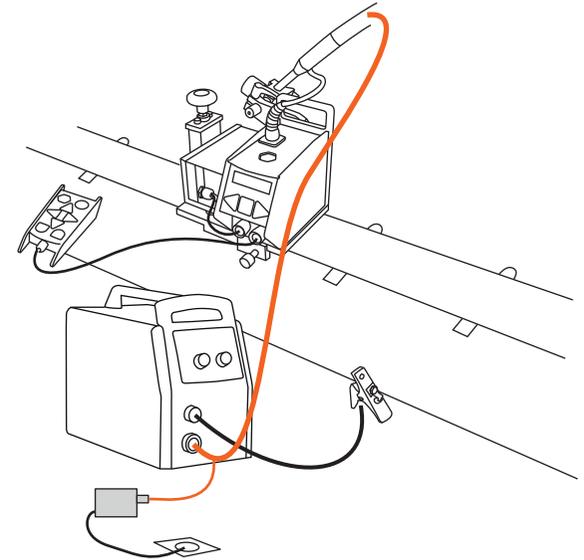
i When using a manual welding gun, start and stop the arc with the gun trigger and start the carriage motion with the remote control as usual. The trigger mode must be set to 4T. See FastMig operation manual for further instructions.

When using a Supersnake:

1. Use the mechanization model of Supersnake.
2. Connect as usual to the wire feeder, and connect the carriage with the welding gun to the Supersnake. This model includes a bus coupler with which to connect.



2.2 Connecting to a non-FastMig welding machine

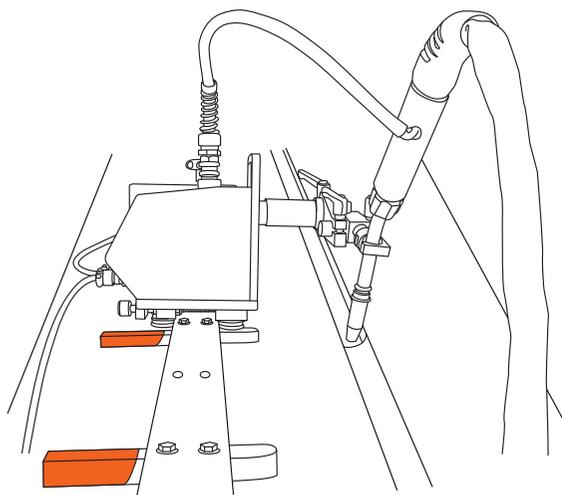


You need a transformer (1-phase, 230 VAC) to power the carriage. In this setup, the start button and the adjustment of welding voltage and wire feed speed are not accessible through the remote control device.

Do the following to connect:

1. Connect welding gun to the wire feeder.
2. Attach welding gun to the carriage gun holder.
3. Connect transformer to the carriage.
4. Start welding by pressing the gun trigger.

2.3 Installing the rail



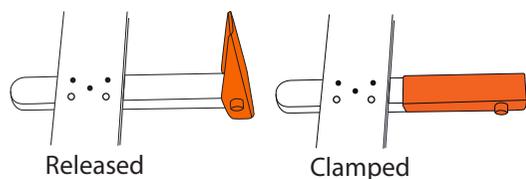
! The rail contains powerful neodymium magnets that may cause injuries. Always use a stopper at the last end of the rail or sequence of rails to avoid dropping the carriage. Dropping the carriage may break it or cause an injury.

Fasten the fixing brackets to the aluminum rail:

- Use two M8 bolts.
- Use either magnetic brackets or suction brackets.
- Quick clamping mechanism.

i For safety reasons, use 8 magnets per 2.5 m of aluminum rail.

i One magnetic attachment kit contains 8 magnets that serve a rail of 2.5 meters.



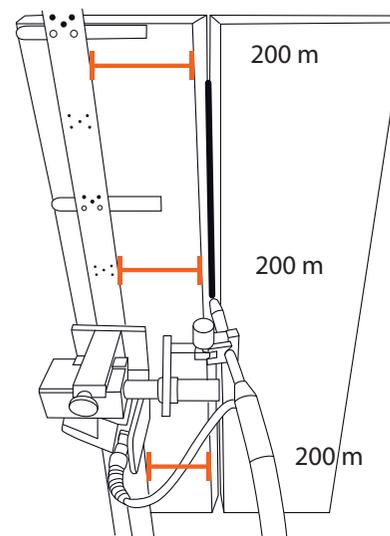
2.4 Adjusting the rail

1. Place the rail parallel to the joint at about 200 mm distance from it.
2. Fine adjust with a plastic hammer.

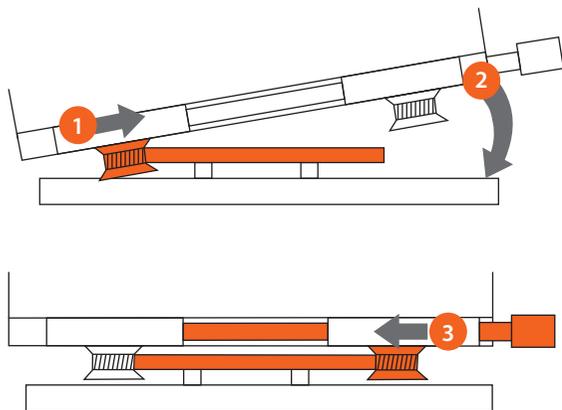
i You can adjust distance by aligning the displacement of the carriage. Use standard distance between the rail and the weld in order to minimize the need for adjustment during welding.

The more accurate the alignment, the less adjustment is needed during welding. When welding, PC position rail should be mounted above the groove. The rail bends around items with minimum outer diameter of about 1.5 m.

i If the diameter is smaller than 2500 mm, the rail must be rolled to shape. If the diameter is more than 2500 mm, a straight rail can be used and magnets can make the bending.



2.5 Mounting the carriage on the rail



1. Mount the carriage on the rail with drive wheels facing the rail.
2. Check that the drive wheels are levelled with the rail.
3. Tighten the pressure screw so that the drive wheels grip tightly to the rail.

2.6 Selecting a welding gun

Kemppi mechanization guns offer various benefits compared with manual welding guns. Carriage control and powering signals are integrated in the gun cable, so there is only one cable needed between the wire feeder and the welding carriage. This also enables the adjustment of carriage functions and welding parameters at the remote control device.

Kemppi offers three welding gun models designed especially for mechanized welding:

PMT MN32C (Multi Neck model)

Multiple neck designs. Slightly bent neck available for mechanized welding. Extra-long gas nozzle and contact tip are available, suitable especially for root welding in narrow grooves.

MMT42C

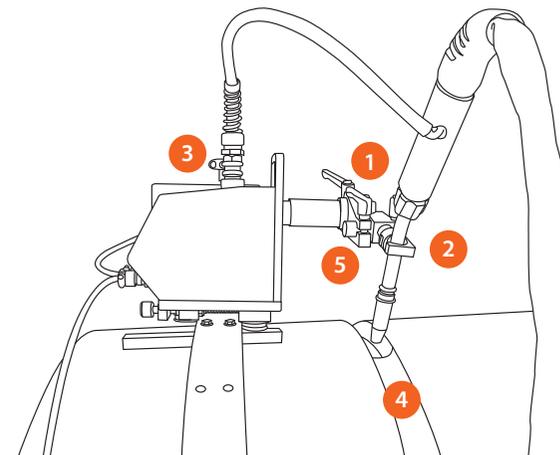
Gas-cooled straight neck model

MT 51MWC

Water-cooled straight neck model for heavy applications

i Please see the technical details of the welding guns in their documentation.

2.7 Installing the welding gun



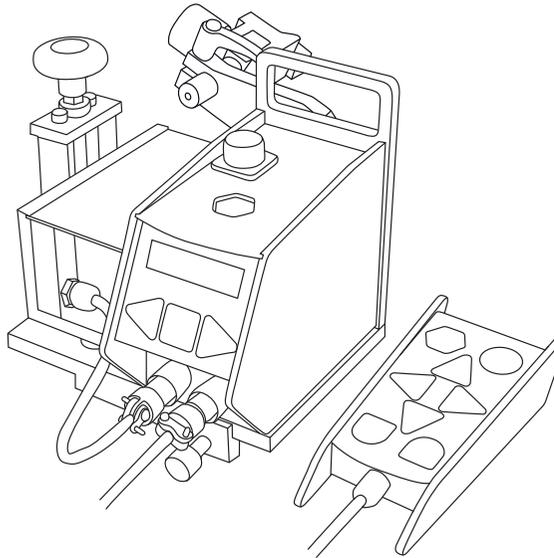
1. Fasten the gun holder on the weaving unit.
2. Fasten the gun on the holder.
3. Connect the control cable.
4. Use adjustment screws and weaving displacement adjustment to fine-adjust the position of the gun.

i Check that the gun trigger mode is set to 2T.

i Create memory channels at the welding machine and carriage using the desired welding parameters for your welding jobs.

3. OPERATION

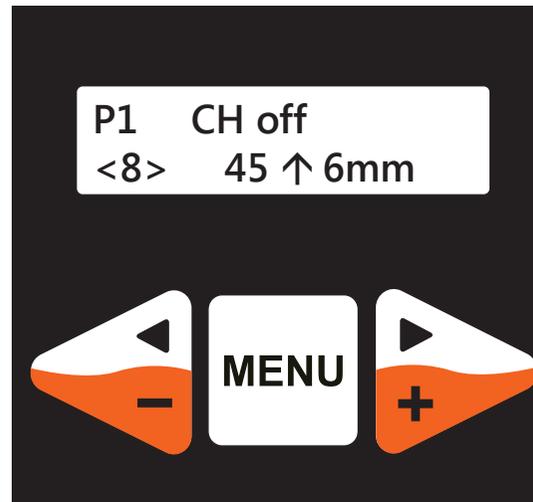
3.1 Carriage functions



1. **STOP** button on top of the carriage is the same as in the remote control device
2. **Display** to show menu settings and their values
3. **Menu** button move from one menu to another
4. **Scroll left/right** buttons to change values of menu settings

3.2 Carriage control panel

3.2.1 Start menu



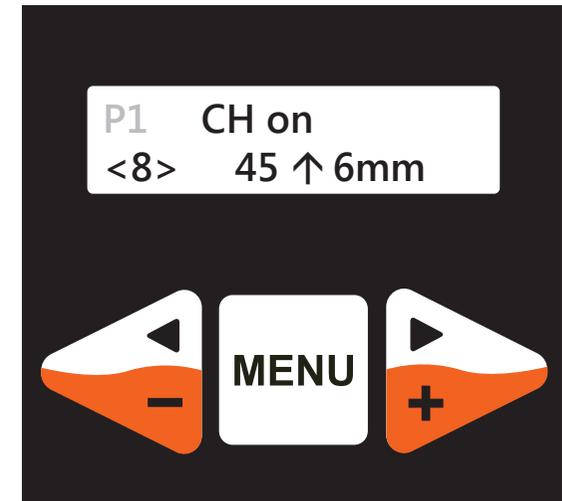
This is the initial view on the carriage display.

1. Program number (P1)
2. Remote memory channels on/off (CH Off)
3. Carriage speed (8 cm/min)
4. Weaving speed (45 mm/s)
5. Weaving width (6 mm)

Press MENU to continue.

3.2.2 Menu options

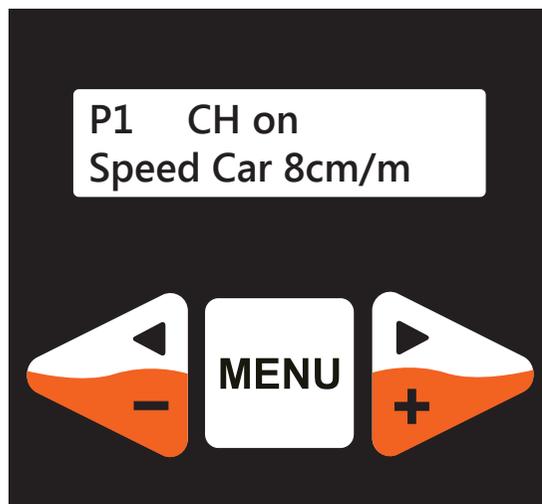
Program selection



The item to be adjusted (P1) is blinking in the display. Select the program to store the settings:

1. Use + and – buttons to browse programs.
2. Select the program to use: P1...P5.
3. Press MENU to continue.

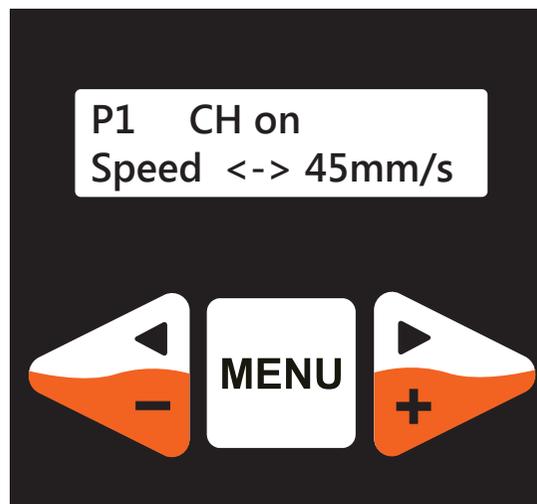
Speed Car



Set the carriage travel speed:

1. Use + and - buttons to change the speed.
2. Set the carriage speed within the range 5–150 cm/min.
3. Press MENU button to continue.

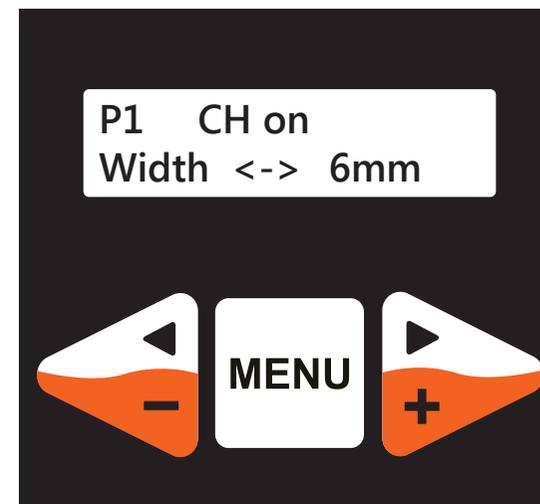
Speed



Set the weaving speed i.e. the speed at which the torch moves from one side of the groove to the other during the weaving motion:

1. Use + and - buttons to change the speed.
2. Set the weaving speed within the range 10–50 mm/s.
3. Press MENU to continue.

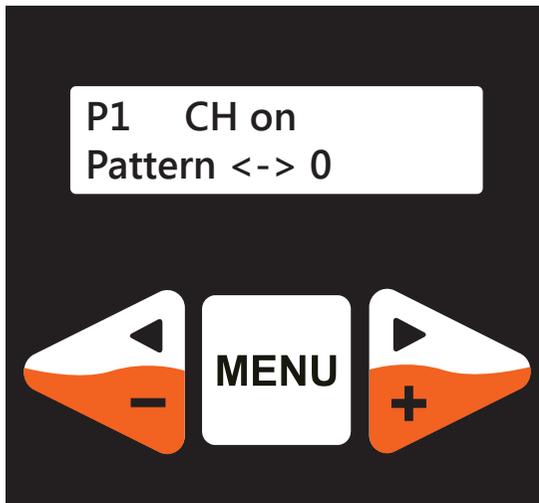
Width



Set the width of the weaving motion:

1. Use + and - buttons to change the width from center (1 mm = 0.5 mm on each side).
2. Set the weaving width within the range 0–30 mm
3. Press MENU to continue.

Pattern

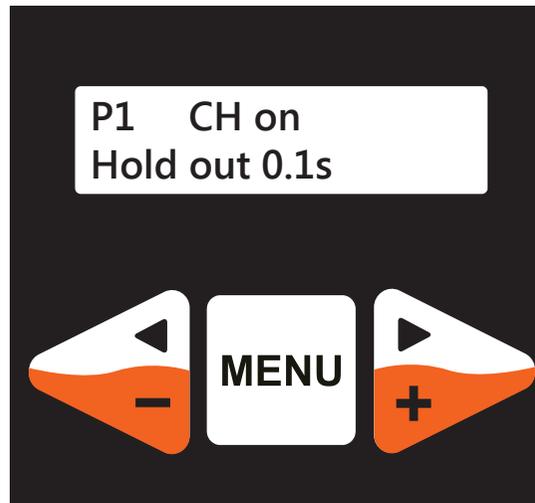


Determine the pattern used in weaving. Use + and - buttons to select any of the three patterns:

0. Travels constantly while weaving (triangular).
1. Travels when weaving, stands during delay.
2. Travels during delay, stands when weaving (square).

Press MENU to continue.

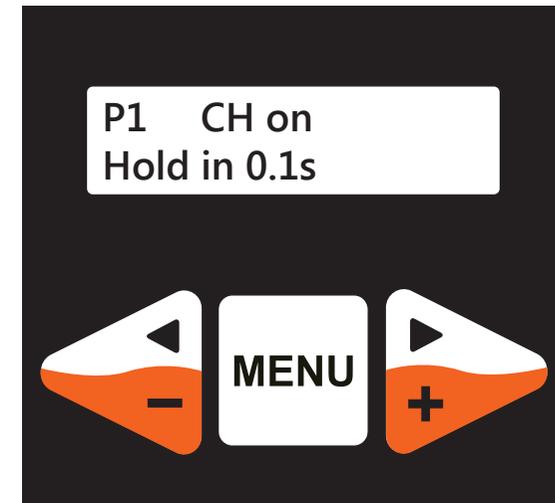
Hold out



Set outer dwell time (the time that the torch holds at the outer side of the weaving motion):

1. Use + and - buttons to change the time.
2. Press MENU to continue.

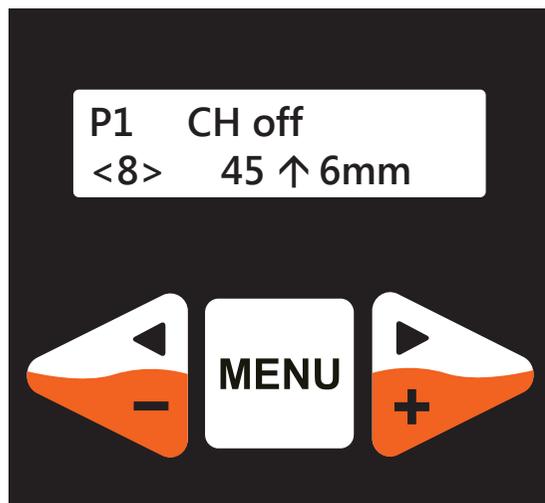
Hold in



Set inner dwell time (the time that the torch holds at the inner side of the weaving motion):

1. Use + and - buttons to change the time in seconds.
2. Press MENU to continue.

3.2.3 Setup menu A



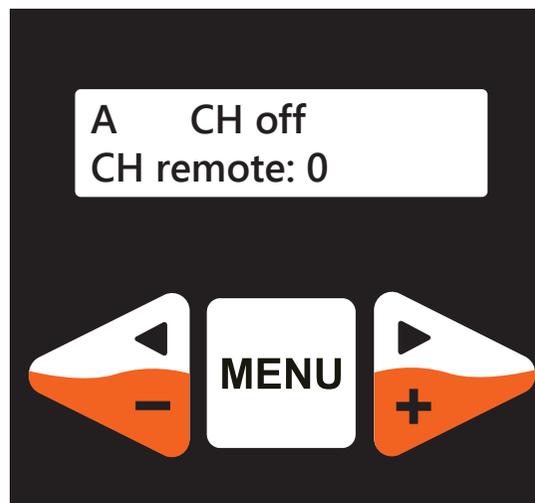
Long press of the MENU button activates Setup menu A, which contains 3 options:

- CH remote
- WF+V fac
- Delay car

Brief press of the MENU button toggles the menu items.

No buttons pressed in 3 seconds or a new long press on MENU button exits the Setup Menu A.

CH remote

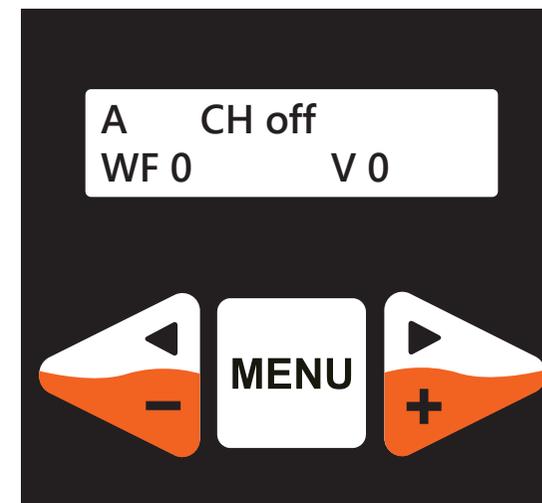


Use + and – buttons to set the remote memory channels function on or off:

- If CH setting is OFF, the selected P setting only enables the corresponding carriage program (P1, P2 etc.).
- If CH setting is ON, the selected P setting also activates the corresponding memory channel at the wire feeder (CH1, CH2 etc.).

i To use the wire feeder's memory channels, the CH REMOTE setting must be ON at the wire feeder. In this case, the fine tuning is disabled at the carriage remote control unit.

WF+V fac

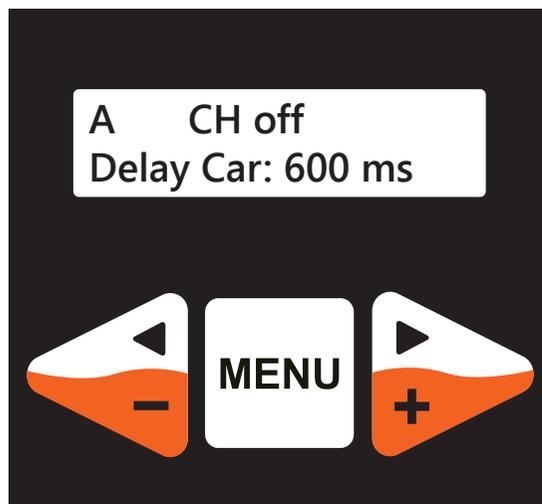


Set the factor that is used for determining the roughness of fine tuning and affects the adjustment of WFS and arc voltage:

1. Use + button to select value 0, 1, 2, 3 or 4 (default = 2).
 - Higher setting = wider steps
 - Lower setting = narrower steps
2. Press MENU to continue.

i The wire feeder scale varies according to the min/max limits set in the power source. If the power source holds narrow limits, the carriage may require a rough scale. If limits have not been set in the power source, the carriage requires a finer scale. Different applications may benefit from different scaling.

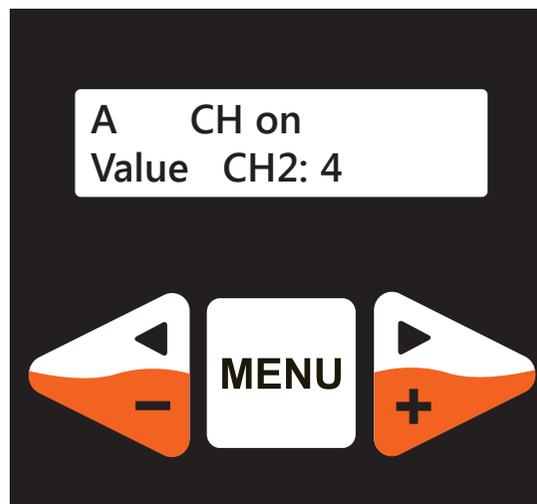
Delay Car



Set the start delay (the time that the carriage stands still after welding has started):

1. Use + and – buttons to change the time.
2. Range: 100–3000 milliseconds
3. Press MENU to continue

Value CH2-CH5

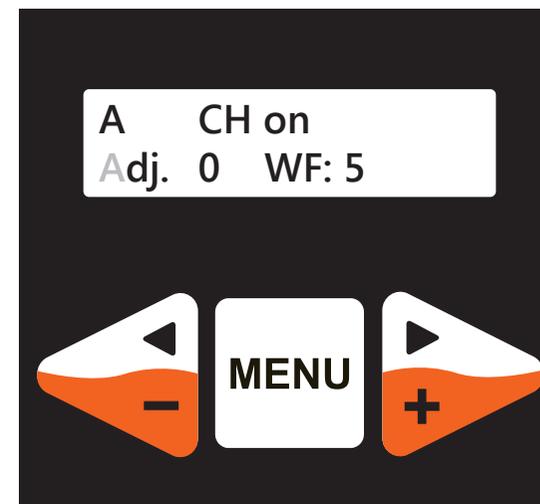


Fine adjust the signal level of the memory channels at the welding carriage for channels 2 to 5.

- Use + and – buttons to change the value.

i You need to change these settings only if there is a conflict between the memory channels set by the wire feeder and the welding carriage.

Adj0 WF



With this parameter you can fine-tune the signal zero level for setting the wire feed speed value.

- Use + and – buttons to change the value.

i In normal use, you never need to change the value of this parameter.

Adj0 V

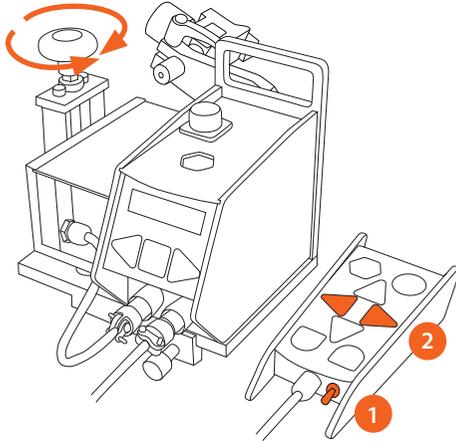
With this parameter you can fine-tune the signal zero level for setting the voltage value.

- Use + and – buttons to change the value.

i In normal use, you never need to change the value of this parameter.

3.4 Fine-adjustment of gun position

When the welding gun is fixed in position and connected, adjust its position vertically by turning the wheel on the vertical slide clockwise (up) or counterclockwise (down).



3.5 Kemppi Wise application software

When using Kemppi FastMig welding equipment, you can further optimize the quality and productivity of your mechanized welding by using Wise application software. There are several Wise processes and functions available for different welding applications. For more information about Wise, please refer to FastMig documentation or Kemppi website at www.kemppi.com.

3.6 Ordering information

<i>Product name</i>	<i>Product code</i>
A5 MIG RAIL CARRIAGE 2500	6190700
RAIL QUICK EXTENSION BRACKET	6190702
RAIL MAGNETIC BRACKET	6190703
RAIL VACUUM BRACKET	6190704
WEAVING TILT BRACKET	6190708
WEAVING TURN BRACKET	6190709
RAIL 2500	6190710
TORCH FLOATING HEAD	6190711
MACHINE CUTTING TORCH	SP800679
CARRIAGE TRANSFORMER	6190714
CARRIAGE CONTROL CABLE	6190716
STORAGE BOX	6190717
MMT MN 32C welding gun (gas-cooled, multi-neck, 5 m, 320 A)	6250405
Neck 30°, 198 mm, RP (30° bent neck for mechanized welding)	W010975
MMT 42C welding gun (gas-cooled, 4.5 m)	6254207
MT51MWC welding gun (water-cooled, 4.5 m)	6255162
NARROW GAP GAS NOZZLE PMT27	W008123
NARROW GAP CONTACT TIP 1.2 M6	W008124
NARROW GAP CONTACT TIP 1.0 M6	W008333
SUPERSNAKE GT 02SWC 15M	61541501
SUPERSNAKE GT 02SWC 25M	61542501C1
SUPERSNAKE GT 02SWC-70 20M	61542001
SUPERSNAKE GT 02SC 15 M	61531501

3.7 Technical data

Input Power	30 – 55 V DC or 24 – 50 V AC
Carriage Speed	5 – 150 cm/min
Transport Speed	200 cm/min
Weaving speed	10 – 50 mm/s
Weaving width	0 – 30 mm
Weaving displacement	± 40 mm
Dwell time (Adjustable on both sides separately)	0 – 2.0 s
Weaving patterns	3
Torch horizontal adjustment (manual)	± 40 mm
External dimensions (L x W x H)	365 x 217 x 255 mm
Weight	7.3 kg

4. TROUBLESHOOTING

4.1 Operation problems

Should you experience a malfunction from your machine, please consult the troubleshooting sections below first, and complete some basic checks.

If the machine malfunction cannot be corrected with these measures, contact your Kemppi maintenance service workshop.

i The problems listed and the possible causes are not definitive but serve to suggest some standard and typical situations that may present during normal environmental use when using the A5 MIG Rail System 2500.

Below instructions only apply to possible problems with the carriage. Always ensure that the related welding system is functional and ready for welding.

<i>Problem:</i>	<i>Check the following:</i>
Carriage won't work	<ul style="list-style-type: none">• Check that power reaches carriage (display is ON).• Check that the welding power source is switched ON.• Check the gun control connection and possible Supersnake and separate control cable connections• Check that control panels are switched on.
Dirty, poor quality weld	<ul style="list-style-type: none">• Check shielding gas supply.• Check and set gas flow rate.• Check gas type for application.• Check that correct welding program is selected.• Check correct selection on the control panel.• Check power supply – phase down?
Arc is not ignited or welding starts or stops strangely	<ul style="list-style-type: none">• Check gun logic. 2T should be selected.• Check torch connection.
Carriage moves but arc does not start	Check that remote control buttons have been pressed correctly: <ul style="list-style-type: none">• Stop+Up/Down ignites the arc and starts the carriage.• If carriage is moving fast but arc is off, you may have pressed Start button for too long.
The magnets do no longer hold	<ul style="list-style-type: none">• Magnets may be weakened. Replace the magnets.• Material to fasten is not magnetic. Use vacuum or other additional fastening method.
The vacuum cups do no longer hold	<ul style="list-style-type: none">• If they use compressed air, check compressed air supply.• Clean surfaces and vacuum cups. Even small leakage can greatly decrease suction.

5. MAINTENANCE

When considering and planning routine maintenance, please consider the frequency of machine use and the working environment.

Correct operation of the machine and regular maintenance will help you avoid unnecessary downtime and equipment failure.

 Make sure that the carriage does not start accidentally when your fingers are in the wheel area.

5.1 Daily maintenance

- Check that all cables and plugs are intact.
- Keep the carriage and the torch holder clean.
- Check that all parts slide smoothly. Add grease or clean spatters if necessary.
- Check the gun's condition.

5.2 Periodic maintenance

 Periodic maintenance should only be carried out by a suitably qualified person.

Check at least every half year:

- Electric connectors of the machine – clean any oxidized parts and tighten loose connections.
- Condition of the drive and support wheels. If worn, change.

 Do not use compressed air for cleaning as there is a risk that the dirt will compact even more tightly into gaps of cooling profiles.

 Do not use pressure washing devices.

 Only an authorized trained electrician should carry out repairs to Kemppi machines.

6. DISPOSAL



Do not dispose of electrical equipment with normal waste!

In observance of European Directive 2002/96/EC on waste electrical and electronic equipment, and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and taken to an appropriate environmentally responsible recycling facility.

The owner of the equipment is obliged to deliver a decommissioned unit to a regional collection centre, as per the instructions of local authorities or a Kemppi representative. By applying this European Directive you will improve the environment and human health. In observance of European Directive 2002/96/EC on waste electrical and electronic equipment, and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and taken to an appropriate environmentally responsible recycling facility.

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