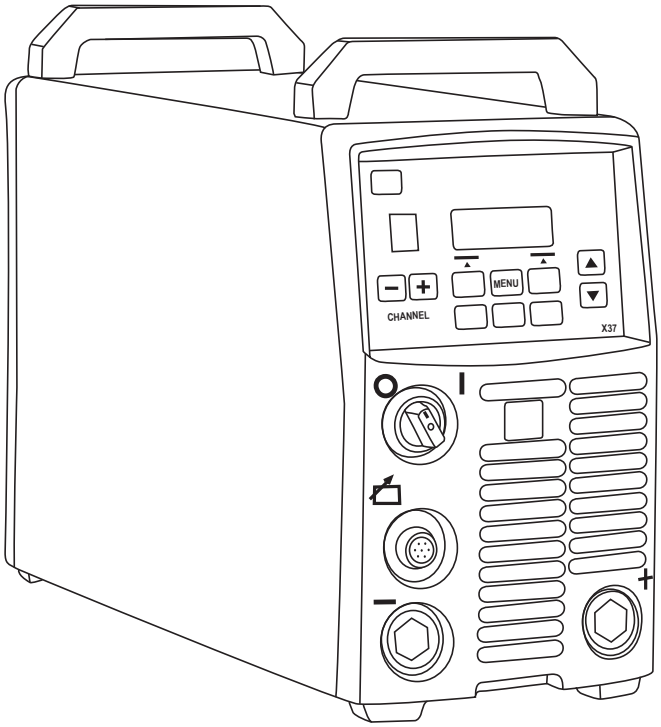
FastMig

X 350, X 450



Operating manual EN

Brugsanvisning DA

Gebrauchsanweisung DE

Manual de instrucciones ES

Käyttöohje FI

Manuel d'utilisation FR

Manuale d'uso IT

Gebruiksaanwijzing NL

Bruksanvisning NO

Instrukcja obsługi PL

Manual de utilização PT

Инструкции по эксплуатации RU

Bruksanvisning SV

操作手册 ZH

KEMPPI

OPERATING MANUAL

English

CONTENTS

1. Introduction 3
1.1 General 3
1.2 About FastMig X 350 and X 450 3
2. Installation 4
2.1 Before use 4
2.2 Distribution network 4
2.3 Machine introduction 5
2.4 Positioning of the machine 5
2.5 Connecting cables 6
2.5.1 Liquid-cooled system: FastMig X 350 or X 450 + WFX + Cool X 6
2.5.2 Air-cooled system: FastMig X 350 or X 450 + WFX 7
2.5.3 Cable positions for multiple machine configurations 8
2.5.4 Connecting to mains power 8
2.5.5 Cables 9
2.5.6 Interconnection with wire feeder 9
3. Operation control 10
3.1 Main switch I/O 10
3.2 Pilot lamps 10
3.3 Operation of cooling fan 10
3.4 Manual Metal Arc Welding 10
3.5 Using external devices with CC and CV modes 10
4. Control panel X 37 11
4.1 Layout and button functions 11
4.2 Using the menus 13
4.2.1 Selecting the interface language 13
4.2.2 About memory channels 13
4.2.3 Creating the first memory channel 13
4.2.4 Creating the first MMA/CC/CV memory channel 14
4.2.5 Creating and modifying memory channels 14
4.3 Welding parameters 14
4.4 Welding functions 17
4.5 Arc voltage display 21
4.6 Welding software delivery profile 22
5. Troubleshooting 22
6. Operation disturbances 24
7. Maintenance 25
7.1 Daily maintenance 25
7.2 Periodic maintenance 25
7.3 Service Workshop maintenance 26
8. Disposal of the machine 26
9. Ordering codes 27
10. Technical data 29

1. INTRODUCTION

1.1 General

Congratulations on choosing the FastMig X 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 authorised Kemppi dealer, or visit the Kemppi web site 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 personal harm are indicated with the *'NOTE!'* notation. Read these sections carefully and follow their instructions.

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 written permission from Kemppi.

1.2 About FastMig X 350 and X 450

FastMig X 350 and X 450 are multi-purpose welding power sources designed for demanding professional use. They are suitable for synergic pulsed MIG/MAG, synergic 1-MIG and basic MIG/MAG welding, as well as the modified WiseRoot+™ and WiseThin+™ processes. They can also be used as a welding power source for MMA welding. TIG welding is also available when connected to MasterTig LT 250.

Control panel X 37 is included in the delivery for selecting, setting and managing the welding system prior to and during system use.

FastMig X 350 and X 450 offer a multi-process solution for a wide range of welding applications. Various cable options, welding software options, remote control units including tablet computer based ARC Mobile Control (adapter included with WFX 200 AMC and 300 AMC wire feeders) and other accessories are available for this product. Please see the list at the end of this manual.

© Kemppi Oy / 1520

2. INSTALLATION

2.1 Before use

The product is packed in specially designed transport cartons. However, before use always make sure the products have not been damaged during transportation.

Check also that you have received the components you ordered and the corresponding instruction manuals. Product packaging material is recyclable.

NOTE! *When moving the welding machine, always lift it from the handle, never pull it from the welding gun or other cables.*

Operating environment

This machine is suitable for both indoor and outdoor use. Always make sure that the air flow to the machine is unrestricted. The recommended operating temperature range is –20…+40 °C.

Please ensure you read the safety instructions concerning operating environments supplied in this manual.

EN

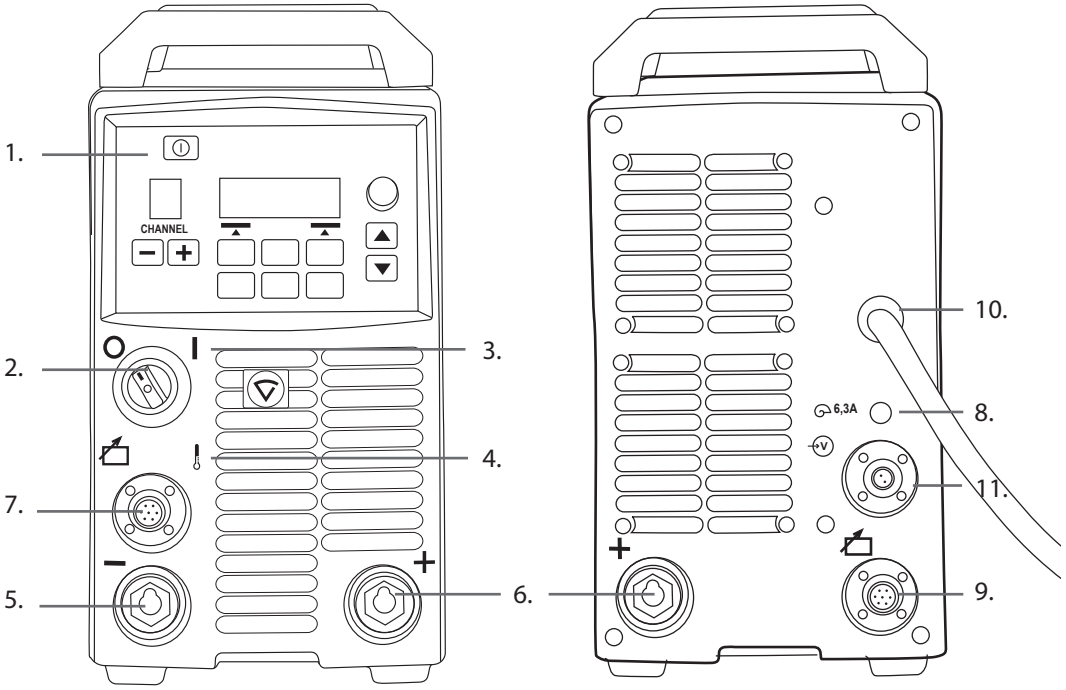
2.2 Distribution network

All regular electrical devices without special circuits generate harmonic currents into distribution network. High rates of harmonic current may cause losses and disturbance to some equipment.

FastMig X 350 and X 450

This equipment complies with IEC 61000-3-12 provided that the short-circuit power S_{sc} is greater than or equal to 5.5 MVA at the interface point between the user's supply and the public suply network. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power S_{sc} greater than or equal to 5.5 MVA.

2.3 Machine introduction



1. Control panel X 37
2. Main switch (ON/OFF)
3. Power on pilot lamp
4. Overheating pilot lamp
5. Welding cable connection, negative pole (–)
6. Welding cable connection, positive pole (+)
7. Control cable connection
8. Fuse (delayed 6.3 A)
9. Control cable connection
10. Mains power cable
11. Measurement cable connection

2.4 Positioning of the machine

Place the machine on a sturdy, level surface that is dry and does not allow dust or other impurities to enter the machines cooling air flow. Preferably site the machine to a suitable carriage unit so it is above floor level.

Notes for positioning the machine

- The surface inclination may not exceed 15 degrees.
- Ensure the free circulation of the cooling air. There must be at least 20 cm of free space in front of and behind the machine for cooling air circulation.
- Protect the machine against heavy rain and direct sunshine.

NOTE! *The machine is not allowed to be operated in the rain as the protection class of the machine, IP23S, allows preserving and storing outside only.*

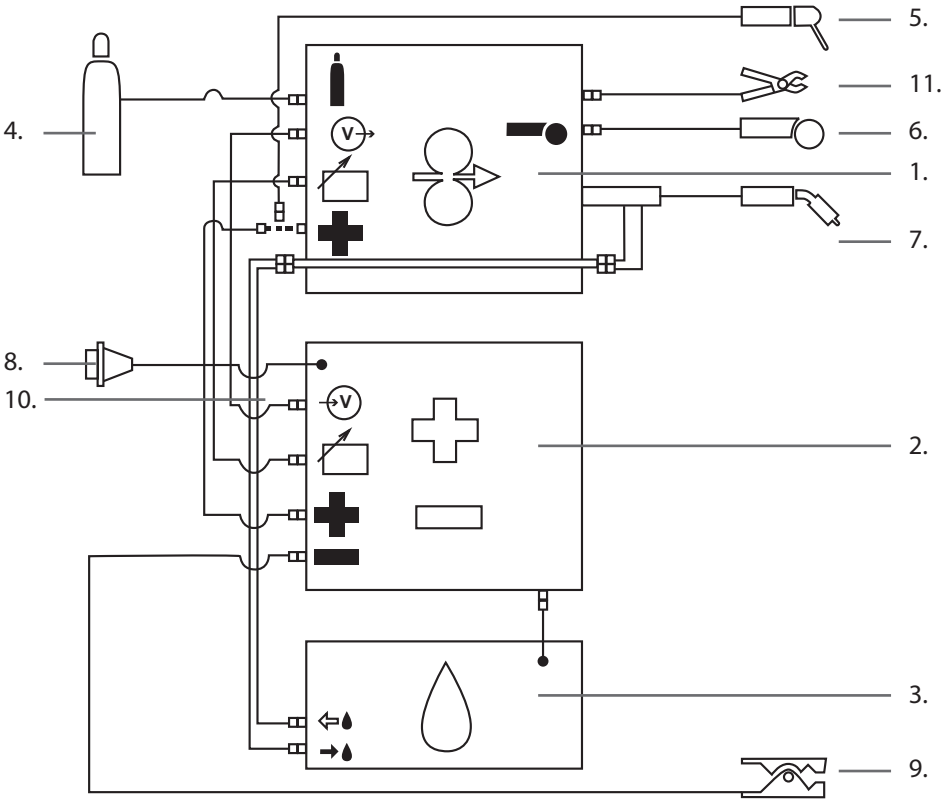
NOTE! *Never aim the spray of sparks from a grinding machine toward the equipment.*

© Kemppi Oy / 1520

2.5 Connecting cables

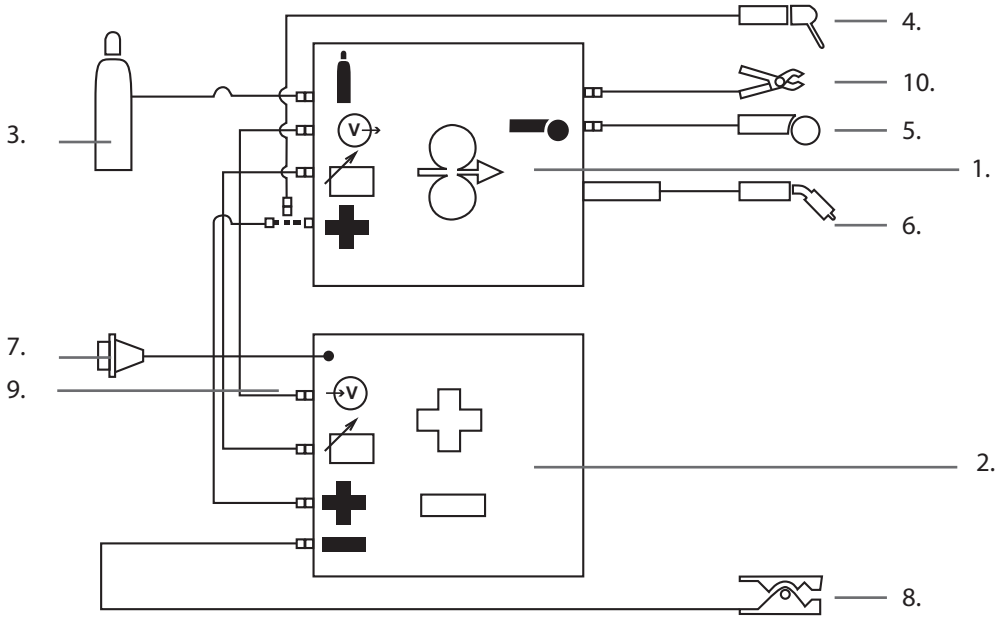
NOTE! *Always check before use that the mains cable, earth return cable and its clamp, interconnection cable and shielding gas hose are in a serviceable condition. Ensure that connectors are correctly fastened. Lose connectors can impair welding performance and damage connectors.*

2.5.1 Liquid-cooled system: FastMig X 350 or X 450 + WFX + Cool X



1. WFX wire feed unit
2. FastMig X 350 or X 450 power source
3. Cool X cooling unit and power connection
4. Gas supply
5. MMA electrode holder
6. Remote control device
7. Liquid-cooled welding gun
8. Power cable
9. Earth return cable and clamp
10. Measurement cable (from power source to wire feeder)
11. Voltage sensing cable (from wire feeder to work piece)

2.5.2 Air-cooled system: FastMig X 350 or X 450 + WFX



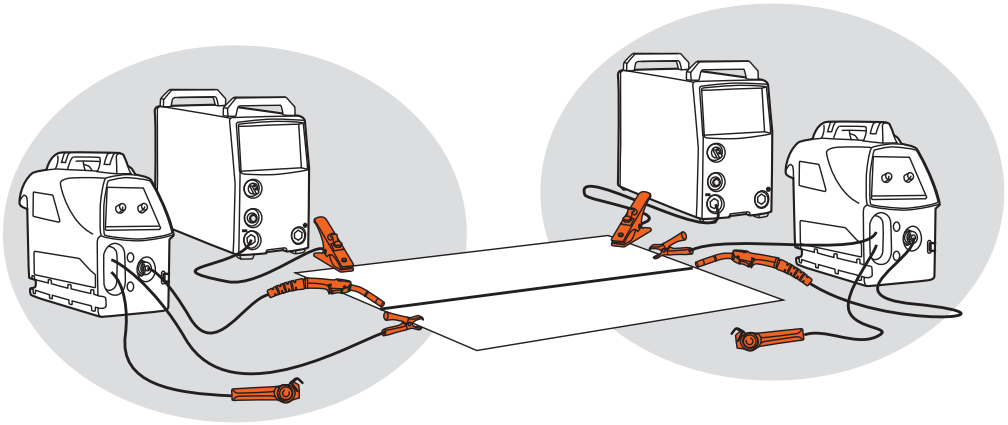
1. WFX wire feed unit
2. FastMig X 350 or X 450 power source
3. Gas supply
4. MMA electrode holder
5. Remote control device
6. Air-cooled welding gun
7. Power cable
8. Earth return cable and clamp
9. Measurement cable (from power source to wire feeder)
10. Voltage sensing cable (from wire feeder to work piece)

© Kemppi Oy / 1520

2.5.3 Cable positions for multiple machine configurations

When using two or more FastMig X units working on the same work piece, the right positioning of voltage sensing cable and the earth return cable is important.

In order for the voltage sensing function to work properly, the earth return cable and the voltage sensing cable for each FastMig X power source should be connected close to each other and away from other units' cables (see the pictures below).



EN

2.5.4 Connecting to mains power

FastMig power sources are delivered as standard with 5 meters of mains power cable. No mains plug is fitted at the Kemppi factory.

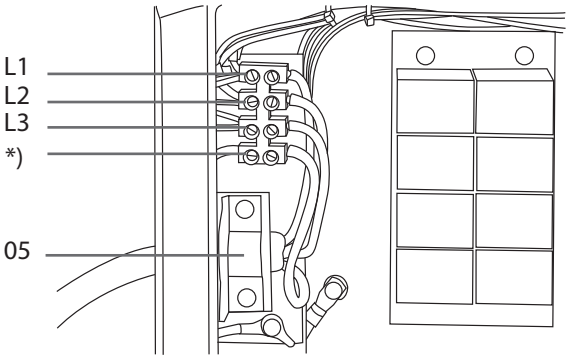
NOTE! *If local country-based regulations state an alternative power cable is required, the mains cable must be replaced in conformity with the regulations. Connection and installation of the mains cable and plug should only be carried out by a suitably qualified person.*

Remove the machine cover plate to enable mounting of a mains cable. FastMig X 350 and X 450 power sources can be connected to the mains supply of 400 V 3~ .

If changing the mains cable take into consideration the following:

The cable is entered into the machine through the inlet ring on the rear panel of the machine and fastened with a cable clamp (05). The phase conductors of the cable are coupled to connectors L1, L2 and L3. The earth protection coloured green-yellow is coupled to the marked connector.

If you are using 5-lead cable, do not connect the neutral conductor.



*) In S type cables there is a protective grounding conductor coloured green-yellow.

Generator use

If no mains connection is available, you can use FastMig X 350 and X 450 on a generator. The minimum recommended generator output is 35 kVA. The greater the output, the more stable is the FastMig X power source operation.

2.5.5 Cables

Kemppi always recommend the use of high quality copper cables with a suitable cross-sectional area. Cable size should be selected depending on the intended welding application.

50 mm^2 copper cables may be used for low duty work in basic or synergic 1-MIG. However, using pulsed MIG/MAG process, longer cables, or higher welding power increase the voltage loss, and therefore smaller cross sectional interconnection cables and earth return cables will restrict the welding performance of your machine.

Recommended cross-sectional area of FastMig X power source cables: 70 – 90 mm^2.

The enclosed table shows typical load capacities and voltage loss values of rubber insulated copper cables for duty cycles 100%, 60% and 30%, when ambient temperature is 25 °C and the cable temperature is 85 °C.

Cable size	100 %	60 %	30 %	Voltage loss / 10 m
50 mm^2	285 A	370 A	520 A	0.35 V / 100 A
70 mm^2	355 A	460 A	650 A	0.25 V / 100 A
95 mm^2	430 A	560 A	790 A	0.18 V / 100 A

Do not overload the cables due to voltage losses and heating.

NOTE! *Always check the serviceability of the earth return cable and clamp. Ensure the metal surface to which the cable is connected is clean from metal oxide or paint. Check the connector to the power source is fastened correctly.*

2.5.6 Interconnection with wire feeder

Kemppi provide a choice of interconnection cable sets for different environments. Only materials that meet the demands of Kemppi's international markets are used in their construction.

Used correctly, Kemppi cable sets ensure high welding performance and serviceability.

Before use, always ensure the cable set is in good condition and that connectors are correctly fastened. Loose connections reduce welding performance and may result in damage to connectors due to heating effects.

For correct connection and configuration of cable sets, please refer to schematic drawings in section 2.5 of this manual.

NOTE! *FastMig X 350 and X 450 power sources are designed to be used with WFX wire feed units.*

© Kemppi Oy / 1520

3. OPERATION CONTROL

3.1 Main switch I/O

When you turn the on/off switch into position **I**, the pilot warning lamp is illuminated and the machine is ready for use. Always turn the machine on and off with the power source mains switch. Never use the mains plugs as a switch.

3.2 Pilot lamps

The pilot lamps of the machine report its operational state:

When the green pilot lamp is on, it indicates that the machine is switched on and ready for use.

When the orange pilot lamp is on, it indicates that the machine is overheated due to higher than normal working loads that exceed the rated duty cycle. The cooling fan will continue to run and cool the machine down. When the lamp is off the machine is again ready to weld.

3.3 Operation of cooling fan

FastMig X power sources incorporate two simultaneously operating fans.

- The fan is started momentarily when the main switch is turned into position **I**.
- The fan will start during welding as the machine reaches operational temperature, and it will run for 1 to 10 minutes after the welding has stopped, depending on the welding cycle completed.

3.4 Manual Metal Arc Welding

MMA electrode welding is a standard feature of the FastMig X power sources. To use it you need to connect the electrode holder to the power source positive pole (+) and select the MMA welding mode either from the power source or from the wire feeder:

- In power source control panel, select **MMA/CC/CV Mode** from the main menu list.
  – OR –
- in wire feeder control panel, select **MMA/CC/CV** option with a long press of the corresponding up-down-arrow.

NOTE! *There must be an MMA memory channel defined before you can use these modes. To create a memory channel, see the Control panel section of this manual.*

3.5 Using external devices with CC and CV modes

FastMig X 350 and X 450 are CC (constant current) and CV (constant voltage) power sources. With this function you can use them as power sources for the voltage sensing wire feeder **ArcFeed** and TIG welding device **MasterTig LT 250**.

To use the CC/CV function you select **MMA/CC/CV Mode** option from the main menu of the power source control panel.

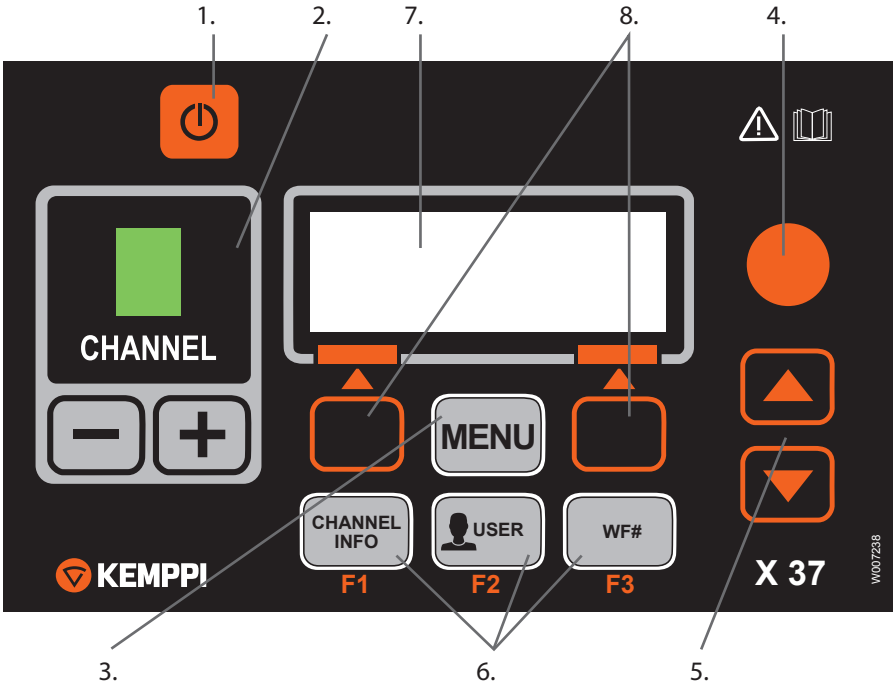
NOTE! *There must be a CC or CV memory channel defined before you can use these modes. To create a memory channel, see the Control panel section of this manual.*

4. CONTROL PANEL X 37

FastMig X power sources feature X 37 control panel with a clear and logical LCD menu display. The menu allows the operator to refine, adapt and manage the arc process and system function before, during and after welding.

The following information details control panel layout, button functions, operation and set-up. The menu options and their descriptions are listed for each menu command.

4.1 Layout and button functions



1. ON/OFF button

- **Short press** returns the panel to default initial view (channel information).
- **Long press** (>5 sec) turns X 37 panel and wire feeder panel XF 37 (or XF 38) ON or OFF.
- **Keeping this button pressed** while turning the machine ON restores to factory settings. The panel asks for a confirmation before restoring to defaults.
- **If X 37 panel is OFF** and a wire feeder panel XF 37 (or XF 38) is turned ON, the X 37 panel will also be turned ON and linked automatically to this wire feeder panel.

NOTE! This button connects power to the control panel. Use the main switch on the front of the power source to switch the power source on or off.

2. Welding channel selection buttons

FastMig X power sources offer 100 memory channels (10 for each user) for storing frequently used welding jobs.

- To browse memory channels, press + and – buttons.
- To store a new welding job to an empty channel, press the soft key under the display text NEW.

© Kemppi Oy / 1520

3. MENU button

This button takes you to the main menu list. Proceed following the instructions on screen.

X 37 main menu list	
Edit Channel	Make changes to existing welding channel
User Identification	Selecti one user out of ten
Weld Data	Check out the values of the last weld
System Config Menu	Show device configuration and information
Language	Select your menu language
Select Feeder (WF#)	Select another parallel wire feeder as a setup target
MMA/CC/CV Mode	Activate MMA welding, or use CC or CV mode for ArcFeed or MasterTig LT 250

4. Control knob

Turn the knob to change the value of the selected parameter. In MMA/CV/CC mode when panel is in default initial view (channel information), knob can be used to adjust current (MMA and CC) or voltage (CV).

EN

5. Menu browsing buttons

Use up and down arrows to move the selection up and down in the menu structure. In MMA/CV/CC mode when panel is in default initial view (channel information), Up/Down buttons can be used to adjust Arcforce (MMA) and Dynamics (CV/CC).

6. Menu shortcut buttons

- **F1 (CHANNEL INFO)** displays the basic data recorded to the displayed channel. Pressing F1 multiple times gives more information of the selected memory channel. Keeping F1 pressed while turning the machine ON restores the menu language to English.
- **F2 (USER)** Browses and selects users: 1…10, Administrator. When MMA/CC/CV is selected, only Administrator is allowed.
- **F3 (WF#)** Selects another wire feeder as a setup target. Panel allows selecting only those WF numbers that are found connected on the system. When MMA/CC/CV is selected, the display shows text "MMA/CC/CV Mode".

NOTE! *FastMig X power sources allow up to 3 wire feeders to be connected to one power source. Only one wire feeder can be active at a time and must be selected before it will operate.*

7. LCD menu display

8. Soft key buttons for menu selection

Use these buttons to select menu items. Their functions depend on selected menu items. The function is shown on the display.

4.2 Using the menus

4.2.1 Selecting the interface language

The default menu language is English. If you want to select another menu language, do the following:

1. Connect the mains power and switch on the power source at the main switch.
   - If this is the initial system activation (if SYSTEM OFF text is in the display), you may need to press and hold the **POWER ON** button in the to left corner of the X 37 control panel. Hold the button down for 5 seconds.
2. Press the **MENU** button to display the main menu, which includes 7 menu items.
   - You can move around in the menu list by pressing the up and down arrow buttons.
   - As you browse the menu item list, the currently selected item is shown at the bottom of the display, marked as 1/7, 2/7, 3/7 etc.
   - The selected menu item is marked with a black arrow-shaped cursor.
3. Browse to the menu item **LANGUAGE** (5/7) and press the **SELECT** soft key button.
4. Browse to your language and press the **SELECT/SAVE** soft key button. Your language choice is now confirmed and will remain selected unless you change it later.

4.2.2 About memory channels

You can have several setups of welding parameter values for use in various welding applications. These setups (or welding jobs) are stored as memory channels in X 37 control panel.

Up to 10 user profiles can be defined in one FastMig X unit, and each of them are assigned up to 10 memory channels. So, you have maximum of 100 memory channels to store your frequently used welding jobs. In addition to them, there are 10 memory channels available for MMA/CC/CV use.

To define a new welding job, you need to make the necessary welding parameter selections and then save them to a memory channel of your choice.

When you want to use these settings, you simply select the corresponding memory channel number on the power source or wire feeder control panel and start welding. Only the most often used controls are available in the wire feeder control panel, making welding easy and convenient.

You can use and update any memory channel, unless it is locked via the four-digit administrator pin code lock.

4.2.3 Creating the first memory channel

If you are starting with a new FastMig X power source that contains no memory channels, follow these steps to create the first memory channel.

1. Power on the machine from the main switch. You may need to press the control panel's **Power On** button for 5 seconds to activate the X 37 control panel.
2. An empty memory channel appears. Press the **NEW** soft key.
3. With **Create New** selected, press **SELECT** soft key.
4. Select the desired welding process and other welding parameters.
   - Use **up and down arrow** buttons to move around in the menus
   - Approve selections by pressing the **SELECT** soft key.
5. When you have made all settings , press **SAVE** soft key to store the settings in the active memory channel.

© Kemppi Oy / 1520

4.2.4 Creating the first MMA/CC/CV memory channel

If you are starting with a new FastMig X power source that contains no MMA/CC/CV memory channels, follow these steps to create the first MMA/CC/CV memory channel.

1. Press **MENU** button to display the main menu.
2. With up and down arrows, browse to **MMA/CC/CV Mode (7/7)** and press **SELECT**.
   - MMA/CC/CV Mode view appears
3. With the control knob, select ON and press **SELECT**.
   - An empty MMA/CC/CV memory channel appears.
4. When an empty MMA/CC/CV memory channel appears, press **NEW** soft key.
5. With **Create New** selected, press **SELECT** soft key.
6. Select MMA, CC or CV and other parameters.
7. When you have made all settings, press **SAVE** soft key to store the settings in the active memory channel.

4.2.5 Creating and modifying memory channels

1. Press **MENU** button to display the main menu.
2. With **Edit Channel** selected, press **SELECT**.
3. Select the channel number to be changed and press **SELECT**.
   - Use **up and down arrow** buttons to browse the displayed channel numbers.
   - Use **Channel Info** (**F1**) button to see the show the settings of the displayed channel.
   - To create a new channel, select a channel that is marked (**Empty**).
4. Browse the menu to select the desired options and parameters.
   - Use **up and down arrow** buttons to move around in the menus.
   - Approve selections by pressing the **SELECT** soft key.
   - See the welding parameters and functions section of this manual.
5. When you have made all settings, press **SAVE** soft key to store the settings in the selected memory channel number.

When you have created a memory channel, the system is ready to weld. You select the desired memory channel number on wire feeder's control panel, set the welding power and arc length and start welding.

4.3 Welding parameters

MIG

WFSpeed	0.7…25 m/min		Sets the wire feed speed. Changes by steps of 0.05, when WFSpeed < 5 m/min, and by 0.1, when WFSpeed > 5 m/min
WFS-Max			Sets the limit for maximum WFSpeed
WFS-Min			Sets the limit for minimum WFSpeed
Voltage	8…50 V	Step: 0.1	Controls the length of the arc
VoltageMax			Sets the limit for maximum voltage value
VoltageMin			Sets the limit for minimum voltage value
Dynamics	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.

1-MIG

WFSpeed	0.7…25 m/min *		Sets the wire feed speed. Changes by steps of 0.05, when WFSpeed < 5 m/min, and by 0.1, when WFSpeed > 5 m/min
WFS-Max			Sets the limit for maximum WFSpeed
WFS-Min			Sets the limit for minimum WFSpeed
FineTuning	-9.0 … +9.0	Factory setting is 0.0 (= curve point)	Adjusts the arc voltage of the curve (arc length) within certain limits
FineTuningMax	-9.0 … +9.0	Step: 0.5	Sets the limit for maximum arc length
FineTuningMin	-9.0 … +9.0	Step: 0.5	Sets the limit for minimum arc length
Dynamics	-9 … +9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.

PULSE MIG

WFSpeed	0.7…25 m/min *		Sets the wire feed speed. Changes by steps of 0.05, when WFSpeed < 5 m/min, and by 0.1, when WFSpeed > 5 m/min
WFS-Max			Sets the limit for maximum WFSpeed
WFS-Min			Sets the limit for minimum WFSpeed
FineTuning	-9.0 … +9.0	Factory setting is 0.0 (= curve point)	Adjusts the base current of the curve (arc length) in certain limits
FineTuningMax	-9.0 … +9.0	Step: 0.5	Sets the limit for maximum arc length
FineTuningMin	-9.0 … +9.0	Step: 0.5	Sets the limit for minimum arc length
Dynamics	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.
Pulse Current	-10…+15%	Factory setting is 0 %	Reduces (–) or raises (+) the pulse current of the curve

DOUBLE PULSE MIG

WFSpeed	0.7…25 m/min *		Sets the wire feed speed. Changes by steps of 0.05, when WFSpeed < 5 m/min, and by 0.1, when WFSpeed > 5 m/min
WFS-Max			Sets the limit for maximum WFSpeed
WFS-Min			Sets the limit for minimum WFSpeed
FineTuning	-9.0 … +9.0	Factory setting is 0.0 (= curve point)	Adjusts the base current of the curve (arc length) in certain limits
FineTuningMax	-9.0 … +9.0	Step: 0.5	Sets the limit for maximum arc length
FineTuningMin	-9.0 … +9.0	Step: 0.5	Sets the limit for minimum arc length
Dynamics	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.
Pulse Current	-10…+15%	Factory setting is 0%	Reduces (-) or raises (+) the pulse current of the curve
DPulseAmp	0.1…3.0 m/min	Factory setting is CURVE	Adjusts the amplitude of the WFSpeed by steps of 0.1. Value comes from welding program.
DPulseFreq	0.4…8.0 Hz	Factory setting is CURVE	Adjusts the frequency of the double pulse by steps of 0.1. Value comes from welding program.

© Kemppi Oy / 1520

WISEROOT+

WFSpeed	1.5…8.0 m/min *		Sets the wire feed speed. Changes by steps of 0.05, when WFSpeed < 5 m/min, and by 0.1, when WFSpeed > 5 m/min
WFS-Max			Sets the limit for maximum WFSpeed
WFS-Min			Sets the limit for minimum WFSpeed
FineTuning	-9.0 … +9.0	Factory setting is 0.0 (= curve point)	Adjusts the base current of the curve (heat of the arc) within certain limits.
FineTuningMax	-9.0 … +9.0	Step: 0.5	Sets the limit for maximum heat of the arc
FineTuningMin	-9.0 … +9.0	Step: 0.5	Sets the limit for minimum heat of the arc

* Different welding programs may further restrict the value range.

WISETHIN+

WFSpeed	0.7…25 m/min *		Sets the wire feed speed. Changes by steps of 0.05, when WFSpeed < 5 m/min, and by 0.1, when WFSpeed > 5 m/min
WFS-Max			Sets the limit for maximum WFSpeed
WFS-Min			Sets the limit for minimum WFSpeed
FineTuning	-9.0 … +9.0	Factory setting is 0.0 (= curve point)	Adjusts the arc voltage of the curve (arc length) within certain limits
FineTuningMax	-9.0 … +9.0	Step: 0.5	Sets the limit for maximum arc length
FineTuningMin	-9.0 … +9.0	Step: 0.5	Sets the limit for minimum arc length
Dynamics	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.

MMA PROCESSES

Current	14…350/450 A		Welding current
CurrentMax	14…350/450 A		Set the limit for maximum current value
CurrentMin	14…350/450 A		Set the limit for minimum current value
ArcForce	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.
StartPower	-9…+9	Factory setting is 0	Adjusts arc ignition

CC PROCESS

Current	10…350/450 A		Welding current
CurrentMax	10…350/450 A		Set the limit for maximum current value
CurrentMin	10…350/450 A		Set the limit for minimum current value
Dynamics	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.
StartPower	-9…+9	Factory setting is 0	Adjusts arc ignition

CV PROCESS

Voltage	10…50 V		Welding voltage
VoltageMax	10…50 V		Set the limit for maximum voltage value
VoltageMin	10…50 V		Set the limit for minimum voltage value
Dynamics	-9…+9	Factory setting is 0	Controls the short circuit behaviour of the arc. The lower the value the softer the arc is. The higher the value the rougher the arc is.
StartPower	-9…+9	Factory setting is 0	Adjusts arc ignition

4.4 Welding functions

WISEROOT+ AND OTHER PROCESSES

2T/4T	2T, 4T, MATCHLOG, USER	Factory setting is USER (user chooses the switching logic)	Sets switching logic
HotStart	ON, OFF, USER	Factory setting is USER (user chooses ON or OFF)	
HotStartLevel	-50…+100 %	Step: 1 Factory setting 40%	
Hot 2T Time	0…9.9 s	Step: 0.1 Factory setting is 1.2 s	
CraterFill	ON, OFF, USER	Factory setting is USER (user chooses ON or OFF)	
CraterStart	10…250 %	Factory setting is 100%	Sets the level of the curve where the crater filling will start
CraterFillEnd	10…250 %, not higher than start	Step: 1 Factory setting is 30%	Sets the level of the curve where the crater filling will end.
CraterTime	0.0…10.0 s	Step: 0.1. Factory setting is 1.0 s	Sets slope time for crate filling
Crater 4T Timer	On, OFF	Factory setting is OFF	ON: if 4T is selected, crater filling will last at least time that has been adjusted by CraterTime or as long as trigger is pressed. OFF: if 4T is selected, crater filling will last as long as trigger is pressed.
Creep Start	10…99 %	Step: 1 OFF, CURVE (OFF=100%) Factory setting is CURVE	CURVE means that the creep start value comes from welding program.
StartPower	-9…+9	Factory setting is 0	Adjusts arc ignition.

© Kemppi Oy / 1520

ADVANCED FUNCTIONS

WisePenet	ON, OFF		Penetration control selection
Penet%(123A)	-30…+30 %	Factory setting: 0 %	WisePenetration percent setting. Set penetration current.
WiseFusion	ON, OFF		WiseFusion selection
WiseFusion%	10…60 % or CURVE	Factory setting is CURVE	When WiseFusion is ON, it controls the amount of short circuits in the arc. The lower the value, the less short circuits in the arc, and the higher the value, the more short circuits in the arc.
MatchFunc *	Minilog, MatchCh OFF	Default is OFF	Selects the type of function for toggling between two sets of welding parameters during welding: Minilog=percentage of base current MatchCh=alternative memory channel
MinilogLevel	-99…+125 %	Factory setting is 20	Sets the alternative current level to a percentage of the base current
MatchMemChannel	0…9	Factory setting is 0	Sets the pre-defined memory channel, where the alternative set of parameters is stored

* MatchFunc is a function that allows you to use two pre-defined sets of welding parameters during welding. You can toggle between these parameter sets by pressing the welding gun trigger briefly without having to stop welding.

SYSTEM CONFIG MENU

Water Cooling	ON, OFF, AUTO	Factory setting is AUTO	Water cooler control. ON: Water cooler is always ON OFF: Water cooler is always OFF AUTO: Water cooler starts when welding starts and turns off after a delay when welding stops.
Cable Length	10…100 m	Step: 5 Factory setting is 10m	Welding cable loop length setting for optimising arc control.
FineCalib	0V/100A…10V/100A	Step: 0.1 V Factory setting is 1.0V/100A	Fine Tuning Calibration Point. Compensation for varying cable resistance.
System Clock		System Clock Settings	
Device List	Shows a list of connected devices.		
Info	Shows following information about the selected device. Device name: DevSW: Unit software version. SysSW: System software version (base software version). BootSW: Boot software version. SW Item: Software item number (IFS code). Serial: Device serial number. Prog: Programmer name Date: Programming time and date.		
Restore Settings	User 1 (one of ten users) Channel: Selected user can restore to his backup memory channels one by one. Other users' memory channels remain untouched. Setup settings remain untouched.		
	User 1 (one of ten users) All Channels: Selected user can restore all of his backup memory channels (0-9) at one time. Other users' memory channels remain untouched. Setup settings remain untouched.		
	Restore To Factory: All channels (of all users) are removed. All users' backup channels are removed. All setup settings are set to defaults.		
	When MMA/CC/CV Mode is selected, the Restore Settings options are: MMA/CC/CV Channel MMA All channels Restore To Factory		
Licence Menu	**Licence Code** allows you to enter the licence code: - Up and down arrows are used to select the code number position. - Pulse encoder is used to select the code number (0–255) to be entered. - Soft key button on the right is used to activate the licence number (after all numbers have been entered). In case the code was wrong the earlier view will be displayed. **Licence Timers** allows you to check the remaining time of the time-based Wise features.		
WeldData Delay	1…60 s	Step: 1 Factory setting is 20 s.	Defines how long time the Weld Data is displayed after welding ends. Weld Data display is also turned off when pulse encoder is turned or any button is pressed.
Display Delay	1…20 s	Step: 1 Factory setting is 10	Defines how long time the information is displayed (e.g. "Setting Saved" text). This is not always the exact time.

© Kemppi Oy / 1520

Pre Gas Time	0.0…9.9 s, CURVE.	Step: 0.1 Factory setting is CURVE	CURVE: Pre Gas time is read from the Welding program. 0.0 – 9.9s: User Pre Gas time setting.
Post Gas Time	0.0…9.9 s, CURVE.	Step: 0.1 Factory setting is CURVE	CURVE: Post Gas time is read from the Welding program. 0.0 – 9.9s: User Post Gas time setting.
Control *	USER, PANEL, REMOTE, GUN.	Factory settings is USER	This setting affects the XF 37 (or XF 38) control panel remote control unit selection. USER: User can select the remote control device at XF 37 panel PANEL: Selection is locked to PANEL, and user can not select the remote device at XF 37 panel. REMOTE: Selection is locked to HAND REMOTE device. GUN: Selection is locked to GUN REMOTE device.
RemoteAutoRecog	ON, OFF.	Factory setting is ON	Automatic remote control unit recognition. ON: Remote control units are recognized. Wire feeder panel XF 37 (or XF 38) jumps to PANEL selection, if the selected remote control unit disappears. OFF: Remote control units are not recognized. Remote control unit selection remains unchanged if the selected remote control unit disappears.
MIG CurrentDisp	ON, OFF	Factory setting is OFF	ON: Displays amperage (A) preset values OFF: Displays wire feed speed (m/min).
WFMotorWarnLev	1.5…5.0 A	Factory setting is 3.5A	The alarm level of wire feed motor current. Check/service wire feed mechanism, adjustment and gun components.
WF End Step	ON, OFF	Factory setting is OFF	ON: The filler wire steps forward at the end of the welding cycle. OFF: Filler wire remains static at the end of the welding cycle.
AutoWireInch	ON, OFF	Factory setting is ON	Automatic SuperSnake Wire Inch feature. When ON, the Wire Inch button drives the filler wire automatically up to SuperSnake.
Gas Guard	ON, OFF	Factory setting is OFF	Turns the gas guard on and off, provided that one is installed.
ArcVoltage	ON, OFF	Factory setting is OFF	Measured and calculated arc voltage. This must be calibrated using voltage measurement cable. If ON, welding panel and subfeeder/R30 shows arc voltage value in voltage display.
SubFeederLength	10...25 m	Factory setting is 10 m	Sub feeder length selection for arc voltage calculation.

* When connecting a remote control device to the power source in MMA/CC/CV welding, you don't need to make adjustments to this setting. Remote control device is automatically recognised, when USER option is selected (default) and RemoteAutoRecog=ON.

ADMINISTRATOR MENU

Change PIN Code		Factory PIN code is 0000	Administrator pin code change.
Ask PIN	OFF, StartUp, Menu	Factory setting is OFF	PIN code inquiry selection OFF: No PIN code inquiry. StartUp: Control panel X 37 always asks for the PIN code when the machine is turned on. Wire feeder panel XF 37 (or XF 38) is not affected and always works without PIN. Menu: Control panel X 37 asks for the PIN code every time when MENU button is pressed and when the display is in channel info mode (in start-up view). PIN code inquiry is made only once when entering the menu. After that the menu button can be pressed any time without PIN inquiry.

4.5 Arc voltage display

FastMig X is capable of measuring and showing the voltage close to the welding arc. By taking this feature into use you don't need to be concerned about the voltage losses in welding cables anymore. With this feature you are only required to set the voltage for the arc before welding and after welding you can see the voltage close to the arc.

In order to use the arc voltage feature, follow these steps:

1. After setting up the welding equipment for the first time, connect the voltage sensing cable to the welding piece and the measurement cable between the wire feeder and the power source.
2. If you are using a sub-feeder, enter the length of the sub-feeder to the SubFeederLength parameter.
3. Set the welding parameters according to your application. Note that the set voltage when using 1-MIG, MIG and WiseThin+ welding processes means always the voltage in the arc despite of ArcVoltage setting.
4. Weld with 1-MIG, MIG or with Pulse MIG for at least 5 seconds. During that time the welding machine calibrates itself for the welding cable length in question. Calibration values are stored into the welding machine, therefore this calibration is required only once after installing the welding machine package.
5. If you want to see arc voltage in panels during and after welding, turn the ArcVoltage setting to ON. Dot after voltage value in XF 37 or XF 38 panel means that showed value is arc voltage. In the weld data after welding in X 37 panel 'AVol' means also the arc voltage.
6. Voltage sensing cable can be removed after the calibration procedure, but it is recommended to use it always.

NOTE! *Steps 1-3 should be repeated every time, when the length of the welding or grounding cable is changed.*

© Kemppi Oy / 1520

4.6 Welding software delivery profile

Connected to Kemppi's WFX wire feed units, FastMig X power sources make a very efficient, multi-process welding system.

After delivery and installation, your system will include welding software specified at the point of order.

If your welding needs change and you wish to update your FastMig X system in the future, you can order additional welding programs or Wise™ and Match™ welding software and load them to your system with Kemppi DataGun field programming device.

See further information about the available welding programs, modified processes, Match™ functions and special enhanced arc performance solutions in the wire feeder's operating manual or on Kemppi's web site at www.kemppi.com.

More welding programs are available by purchasing MatchCurve and MatchCustom products.

5. TROUBLESHOOTING

NOTE! *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 MIG/MAG process with FastMig X 350 or X 450.*

Problem	Check the following
Machine won't work	• Check mains plug is connected correctly • Check mains power distribution is switched on • Check the mains fuse and or circuit breaker • Check power source 0/I switch is ON • Check interconnection cable set and connectors between the power source and wire feed unit are correctly fastened. See the manual schematic • Check earth return lead is connected • Check control panels are switched on.
Dirty, poor quality weld	• Check shielding gas supply • Check and set gas flow rate • Check gas type for application • Check gun/electrode polarity • Check correct welding program selected • Check correct channel number selected on wire feeder control panel • Check power supply – Phase down?
Variable welding performance	• Check wire feed mechanism is correctly adjusted • Check correct drive rolls are fitted • Check wire spool overrun tension is correctly adjusted • Check gun liner is not blocked, replace if necessary • Check correct gun liner is fitted for the filler wire size and type • Check contact tip for size, type and wear • Check gun is not over heating in application • Check cable connections and earth return clamp • Check welding parameter settings.
Filler wire won't feed	• Check that pressure arms are closed and adjusted in wire feed mechanism • Check welding gun switch function • Check Euro gun collar is correctly fastened • Check gun liner is not blocked • Check contact tip, size, type, wear • Check and try alternative gun

High spatter volume	• Check welding parameter values • Check inductance/Dynamics values • Check cable compensation value if long cables are fitted • Check gas type and flow • Check welding polarity – cable connections • Check filler material selection • Check correct welding program selected • Check correct channel number selection • Check filler wire delivery system • Check power supply – 3-phase present?
Err1	Power source is not calibrated or calibration data cannot be read • Restart power source • if the problem continues after multiple startups contact Kemppi service representative
Err 3	Overvoltage in the mains supply • Check the mains voltage
Err 4	Power source is overheated • Do not shut down, let the fans cool the machine. • Check ventilation. • If cooling fans are not running, contact Kemppi service representative.
Err 5	Mains power supply voltage is too low or one of the phases is missing or auxiliary supply is faulty • Check the mains supply and auxiliary supply and contact Kemppi service representative if necessary.
Err 8	FPGA is not configured • Restart the power source. • If the error persists, contact Kemppi service representative
Err 9	Loose cable connections • Check the voltage sensing cable, measurement cable and earth return cable.
Err 10	Illegal process • The welding process is not available in this machine.
Err 12	Plus and minus DIX cable connectors are in contact Check welding cables
Err 27	Error in the liquid cooling unit • Check the connections in the cooling unit.
Err 42 or Err 43	Over current in wire feeder motor • Check that the welding gun and consumable parts are properly mounted
Err 45	Gas guard alert • Check the shielding gas, gas guard and all connections.
Err 50	The function is not activated in this machine • If you need this function, order a licence for it from a Kemppi representative. • WiseDemo period might be over.
Err 51	Rear feed roll may be loose • Check that the feed rolls are properly tightened.
Err 52	Front feed roll may be loose • Check that the feed rolls are properly tightened
Err 62	Power source is not connected or not identified by the wire feeder • Check the intermediate cable and its connections.
Err 81	Welding program is not found • If you need the welding program, order a licence for it from Kemppi representative.

© Kemppi Oy / 1520

MEMORY ERROR	Machine cannot complete read or write functions on the wire feeder memory card • Check the cables and connections. • Contact Kemppi service representative.
SYSTEM BUS ERROR	Control panel cannot establish a connection to the CAN bus • Check the flat cables and the control panels. • Contact Kemppi service representative.
LICENSE FILE ERROR	Machine cannot read wire feeder memory lisence file • Check the cables and connection. • Contact Kemppi service representative.

NOTE! *Many of these checks may be carried out by the operator. However certain checks relating to mains power must be completed by an authorised trained electrician.*

NOTE! *In the case of an error code other than the listed above, contact Kemppi service representative.*

6. OPERATION DISTURBANCES

EN

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

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

Operation of the overload protection

Yellow thermal protection lamp is lit when the thermostat is operating due to loading beyond the stated duty cycle.

The thermostat will operate, if machine is continuously loaded over rated values or cooling air circulation is blocked.

Internal fans will cool the machine, and when the pilot lamp is not lit the machine is automatically ready for welding.

Control fuses

Fuse, 6.3 A delayed, on the rear wall of machine provides protection for auxiliary devices.

Use the same type and rating of fuse as marked beside the fuse adapter. Damage caused by incorrect fuse selection is not covered by the guarantee.

Under and over voltages in the mains supply

Primary circuits of the machine are protected against sudden, transient overvoltages. The machine is designed to withstand 3 x 440 V voltage continuously. Ensure that voltage is kept within this permissible limit, especially when the mains supply is provided by a combustion engine generator. If the mains has under voltage (under approx. 300 V) or overvoltage (over approx. 480 V) machine control stops operation automatically.

Loss of a phase in the mains supply

Loss of a mains power phase causes noticeably poor welding properties. In some cases the machine won't start at all. Loss of a phase can be due to following:

- Blowing of mains supply fuse
- Defective mains cable
- Bad connection of mains power cable on machine terminal block or plug of machine.

7. 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.

NOTE! *Disconnect the machine from the mains before handling the electrical cables.*

7.1 Daily maintenance

- Check the overall condition of the welding gun. Remove welding spatter from the contact tip and clean the gas nozzle. Replace worn or damaged parts. Only use original Kemppi spare parts.
- Check the condition and connection of the welding circuit components: welding gun, earth return cable and clamp, sockets and connectors.
- Check the condition of the feed rolls, needle bearings and shafts. Clean and lubricate bearings and shafts with a small quantity of light machine oil if necessary. Assemble, adjust and test function.
- Check that the feed rolls are suitable for the filler wire you are using, and that their pressure adjustment is correct.

7.2 Periodic maintenance

NOTE! *Periodic maintenance should only be carried out by a suitably qualified person. Disconnect the plug of the machine from the mains socket and wait about 2 minutes (capacitor charge) before removing the cover plate.*

Check at least every half year:

- Electric connectors of the machine – clean any oxidized parts and tighten loose connections.

NOTE! *You must know the correct tension torques values before starting the reparation of the loose joints.*

Clean the inner parts of the machine from dust and dirt e.g. with a soft brush and vacuum cleaner. Also clean the ventilation net behind the front grill.

Do not use compressed air, 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.

© Kemppi Oy / 1520

7.3 Service Workshop maintenance

Kemppi Service Workshops complete maintenance according to their Kemppi service agreement.

The major points in the maintenance procedure are listed as follows:

- Cleaning of the machine
- Checking and maintenance of the welding tools
- Checking of connectors, switches and potentiometers
- Checking of electric connections
- Checking of mains cable and plug
- Damaged parts or parts in bad condition are replaced by new ones
- Maintenance testing.
- Operation and performance values of the machine are checked, and when necessary adjusted by means of software and test equipment.

Software loading

Kemppi Service Workshops can also test and load firmware and welding software.

EN

8. DISPOSAL OF THE MACHINE

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.

9. ORDERING CODES

FastMig X 350 power source	X 37 control panel included	6103350
FastMig X 350 power source	No control panel	610335001
FastMig X 450 power source	X 37 control panel included	6103450
FastMig X 450 power source	No control panel	610345001
WFX 200 wire feeder	200 mm, regular pulse welding	6103520
WFX 300 wire feeder	300 mm, regular pulse welding	6103530
WFX 200 P Fe wire feeder	200 mm, pipe welding, steel	6103521
WFX 300 P Fe wire feeder	300 mm, pipe welding, steel	6103531
WFX 200 P Ss wire feeder	200 mm, pipe welding, stainless steel	6103522
WFX 300 P Ss wire feeder	300 mm, pipe welding, stainless steel	6103532
WFX 200 AMC wire feeder	200 mm, intelligent pulse welding	6103523
WFX 300 AMC wire feeder	300 mm, intelligent pulse welding	6103533
WFX 200-T wire feeder	200 mm, tailored	6103524
WFX 300 P-T wire feeder	300 mm, tailored	6103535
WFX 300-T wire feeder	300 mm, tailored	6103534
Control devices		
Remote X 37 control panel		6103800
ARC Mobile Control adapter *	Included with WFX 200 AMC and WFX 300 AMC	6103100
* To use the ARC Mobile Control you need a mobile device with Android 4.0 operating system or newer, Bluetooth feature, and Kemppi's ARC Mobile Control mobile application. With certain mobile device models, Near Field Communication (NFC) can also be used for smart connection between the welding machine and the mobile device. For more information, please visit www.kemppi.com.		
Cables		
Earth return cable	5 m, 50 mm^2	6184511
Earth return cable	5 m, 70 mm^2	6184711
MMA welding cable	5 m, 50 mm^2	6184501
MMA welding cable	5 m, 70 mm^2	6184701
Interconnection cables, air-cooled		
FASTMIG X 70-1.8-GH	1.8 m	6260468
FASTMIG X 70-5-GH	5 m	6260469
FASTMIG X 70-10-GH	10 m	6260470
FASTMIG X 70-20-GH	20 m	6260471
FASTMIG X 70-30-GH	30 m	6260472
– For other lengths, please contact Kemppi.		

© Kemppi Oy / 1520

Interconnection cables, liquid-cooled		
FASTMIG X 70-1.8-WH	1.8 m	6260473
FASTMIG X 70-5-WH	5 m	6260474
FASTMIG X 70-10-WH	10 m	6260475
FASTMIG X 70-20-WH	20 m	6260476
FASTMIG X 70-30-WH	30 m	6260477
– For other lengths, please contact Kemppi.		
Software products		
MatchLog™	Included with WFX 200 AMC and 300 AMC	9991017
MatchChannel™	Included with MatchLog™ licence	
WiseRoot+™	Included with WFX 200 P Fe/Ss and 300 P Fe/Ss	9990418
WiseThin+™	Included with WFX 200 AMC and 300 AMC	9990419
WiseFusion™	Included with all WFX wire feeders	9991014
WisePenetration™ function	Included with WFX 200 AMC and 300 AMC	9991000
Pipe Steel welding program package	Inlcuded with WFX 200 P Fe and 300 P Fe	99904274
Pipe Stainless welding program package	Inlcuded with WFX 200 P Ss and 300 P Ss	99904275
Steel Pack for WiseThin+ welding program package	Included with WFX 200 AMC and 300 AMC	99904301
Steel Pack	Included with WFX 200 AMC and 300 AMC	99904232
Stainless Steel Pack	Included with WFX 200 AMC and 300 AMC	99904233
Aluminium Pack	Included with WFX 200 AMC and 300 AMC	99904231
Work Pack	Included with WFX 200 and 300	99904230
– Other welding software available.		
Accessories		
Cool X cooling unit		6068200
SuperSnake GT02S sub feeder	10 m	6153100
SuperSnake GT02S sub feeder	15 m	6153150
SuperSnake GT02S sub feeder	20 m	6153200
SuperSnake GT02S sub feeder	25 m	6153250
SuperSnake GT02S W sub feeder	10 m	6154100
SuperSnake GT02S W sub feeder	15 m	6154150
SuperSnake GT02S W sub feeder	20 m	6154200
SuperSnake GT02S W sub feeder	25 m	6154250
SuperSnake GT02S sub feeder synchronization unit for WFX 300 series wire feeders		W004030
KV 200 mounting plate for two wire feeders and TIG unit		6185249
Gun holder GH 30		6256030
Transport unit PM 500		6185291
Remote control unit R10	5 m	6185409
Remote control unit R10	10 m	618540901
Remote control unit R20	5 m	6185419
Remote control unit R30 DataRemote	5 m	6185420

Remote control unit R30 DataRemote	10 m	618542001
Remote control extension cable	10 m	6185481
Software installation device DataGun		6265023

NOTE! *WiseRoot+™ and WiseThin+™ welding processes are not available with SuperSnake sub feeder.*

10. TECHNICAL DATA

FastMig		**X 350**	**X 450**
Connection voltage	3~50/60 Hz	400 V, -15…+20 %	400 V, -15…+20 %
Rated power	60 % ED		22.1 kVA
	80 % ED	16.0 kVA	
	100 % ED	15.3 kVA	16.0 kVA
Connection cable	H07RN-F	4G6 (5 m)	4G6 (5 m)
Fuse	Delayed	35 A	35 A
Output 40 °C	60 % ED		450 A
	80 % ED	350 A	
	100 % ED	330 A	350 A
Welding current and voltage range	MMA	15 A/20 V – 350 A/46 V	15 A/20 V – 450 A/46 V
	MIG	20 A/12 V – 350 A/46 V	20 A/12 V – 450 A/46 V
Max. welding voltage MMA		46 V	46 V
Open circuit voltage	MMA	U_0 = 70 – 98 V U_{av} = 50 V	U_0 = 70 – 98 V U_{av} = 50 V
	MIG/MAG/Pulse	U_0 = 80 – 98 V	U_0 = 80 – 98 V
Open circuit power		100 W	100 W
Power factor at max. current		0.85	0.88
Efficiency at 100 % ED		87 %	87 %
Operating temperature range		-20…+40 °C	-20…+40 °C
Storage temperature range		-40…+60 °C	-40…+60 °C
EMC class		A	A
Minimun short circuit power S_{sc} of supply network*		5.5 MVA	5.5 MVA
Degree of protection		IP23S	IP23S
External dimensions	L x W x H	590 x 230 x 430 mm	590 x 230 x 430 mm
Weight		38 kg	38 kg
Voltage supply for auxiliary devices		50 V DC / 100 W	50 V DC / 100 W
Fuse (auxiliary device)	Delayed	6.3 A	6.3 A
Voltage supply for cooling unit		24V DC / 50 VA	24V DC / 50 VA
The minimum recommended generator output is 35 kVA.			

* See section 2.2: Distribution network.

© Kemppi Oy / 1520

KEMPPI OY
Kempinkatu 1
PL 13
FIN-15801 LAHTI
FINLAND
Tel +358 3 899 11
Telefax +358 3 899 428
export@kemppi.com
www.kemppi.com

Kotimaan myynti:
Tel +358 3 899 11
Telefax +358 3 734 8398
myynti.fi@kemppi.com

KEMPPI SVERIGE AB
Box 717
S-194 27 UPPLANDS VÄSBY
SVERIGE
Tel +46 8 590 783 00
Telefax +46 8 590 823 94
sales.se@kemppi.com

KEMPPI NORGE A/S
Postboks 2151, Postterminalen
N-3103 TØNSBERG
NORGE
Tel +47 33 346000
Telefax +47 33 346010
sales.no@kemppi.com

KEMPPI DANMARK A/S
Literbuen 11
DK-2740 SKOVLUNDE
DANMARK
Tel +45 4494 1677
Telefax +45 4494 1536
sales.dk@kemppi.com

KEMPPI BENELUX B.V.
NL-4801 EA BREDA
NEDERLAND
Tel +31 765717750
Telefax +31 765716345
sales.nl@kemppi.com

KEMPPI (UK) LTD
Martti Kemppi Building
Fraser Road
Priory Business Park
BEDFORD, MK44 3WH
UNITED KINGDOM
Tel +44 (0)845 6444201
Telefax +44 (0)845 6444202
sales.uk@kemppi.com

KEMPPI FRANCE S.A.S.
65 Avenue de la Couronne des Prés
78681 EPONE CEDEX
FRANCE
Tel +33 1 30 90 04 40
Telefax +33 1 30 90 04 45
sales.fr@kemppi.com

KEMPPI GMBH
Perchstetten 10
D-35428 LANGGÖNS
DEUTSCHLAND
Tel +49 6 403 7792 0
Telefax +49 6 403 779 79 74
sales.de@kemppi.com

KEMPPI SPÓŁKA Z O.O.
Ul. Borzymowska 32
03-565 WARSZAWA
POLAND
Tel +48 22 7816162
Telefax +48 22 7816505
info.pl@kemppi.com

KEMPPI AUSTRALIA PTY LTD
13 Cullen Place
P.O. Box 5256, Greystanes NSW 2145
SMITHFIELD NSW 2164
AUSTRALIA
Tel. +61 2 9605 9500
Telefax +61 2 9605 5999
info.au@kemppi.com

ООО KEMPPI
Polkovaya str. 1, Building 6
127018 MOSCOW
RUSSIA
Tel +7 495 240 84 03
Telefax +7 495 240 84 07
info.ru@kemppi.com

ООО КЕМППИ
ул. Полковая 1, строение 6
127018 Москва
Tel +7 495 240 84 03
Telefax +7 495 240 84 07
info.ru@kemppi.com

KEMPPI WELDING TECHNOLOGY (BEIJING) CO., LTD.
Unit 105, 1/F, Building #1,
No. 26 Xihuan South Rd.,
Beijing Economic-Technological Development Area (BDA),
100176 BEIJING
CHINA
Tel +86-10-6787 6064
+86-10-6787 1282
Telefax +86-10-6787 5259
sales.cn@kemppi.com

肯倍焊接技术（北京）有限公司
中国北京经济技术开发区
西环南路26号
1号楼1层105室(100176)
电话：+86-10-6787 6064/1282
传真：+86-10-6787 5259
sales.cn@kemppi.com

KEMPPI INDIA PVT LTD
LAKSHMI TOWERS
New No. 2/770,
First Main Road,
Kazura Garden,
Neelankarai,
CHENNAI - 600 041
TAMIL NADU
Tel +91-44-4567 1200
Telefax +91-44-4567 1234
sales.india@kemppi.com

KEMPPI WELDING SOLUTIONS SDN BHD
No 12A, Jalan TP5A,
Taman Perindustrian UEP,
47600 Subang Jaya,
SELANGOR, MALAYSIA
Tel +60 3 80207035
Telefax +60 3 80207835
sales.malaysia@kemppi.com

1903450
1520