KEMPPI

FastMig
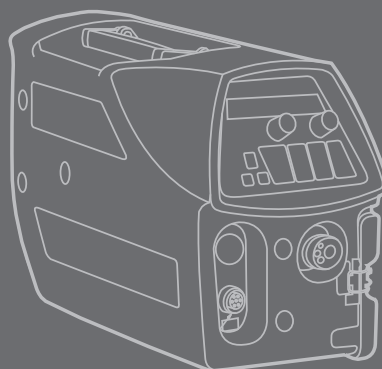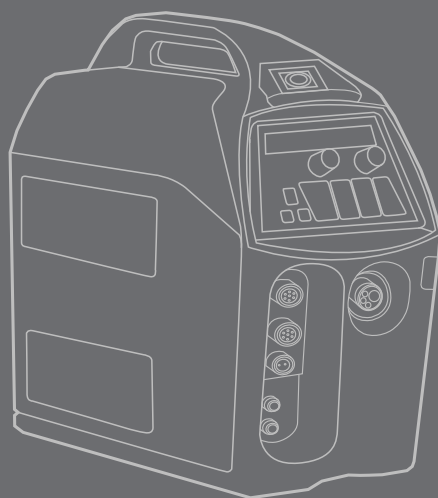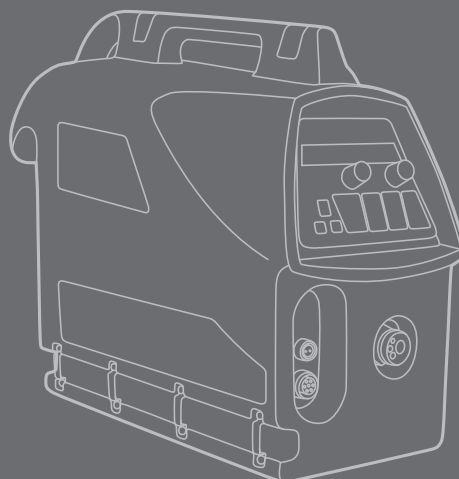
200, 300
200 P Fe, 300 P Fe
200 P Ss, 300 P Ss
200 AMC, 300 AMC
200-T, 300 P-T, 300-T

KEMPPI

OPERATING MANUAL

English

CONTENTS

WFX 200, 300, 200 P Fe/Ss, 300 P Fe/Ss, 200-T, 300 P-T, 300-T, 200 AMC, 300 AMC

1. INTRODUCTION

1.1 General

Congratulations on choosing the Kemppi WFX 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 permission from Kemppi.

1.2 About WFX wire feeders

Kemppi WFX 200 and 300 are basic wire feeders for regular pulse welding. They are equipped with the WiseFusion™ welding process and are best suitable for basic MIG/MAG welding purposes with robust thick metal plates.

Kemppi WFX 200 P Fe, WFX 300 P Fe, WFX 200 P Ss and WFX 300 P Ss are wire feeders for more demanding professional use for example in pipe welding. They are equipped with the WiseRoot+™ welding process developed especially for efficient root welding on pipes and plates. Based on the model chosen, the wire feeder comes with either steel (Fe) or stainless steel (Ss) pack preinstalled.

Kemppi WFX 200 AMC and 300 AMC are wire feeders designed for demanding professional use featuring most of the Kemppi software options available. They are equipped for example with the WiseThin+™ welding process, developed especially for efficient welding for thin sheets and position welding, also with CO_2 shielding gas.

WFX 200 AMC and 300 AMC wire feeders can also be controlled in conjunction with FastMig X power sources through Kemppi's ARC Mobile Control, which is a tablet computer based wireless control interface. The required ARC Mobile Control adapter is included with the AMC wire feeder models and provided as an option for the rest of the WFX wire feeders.

If a customer needs a specific set of software for their production, there is a tailored wire feeder option available. With a special configuration tool customers can select the desired software products to be factory-installed on the wire feeder, or they can just order an empty wire feeder with no software pre-installed and only MIG welding enabled.

WFX wire feeders can be used with FastMig X power sources.

Operation of the wire feeder is controlled and adjusted by microprocessor. By adding an optional synchronization unit MXF Sync 65, the SuperSnake sub-feeder device may be connected to the WFX 300 series wire feeders (not available for WFX 200 series).

2. INSTALLATION

2.1 Machine introduction

WFX 300 P Fe, WFX 300 P Ss, WFX 300 P-T

WFX 300, WFX 300 AMC, WFX 300-T
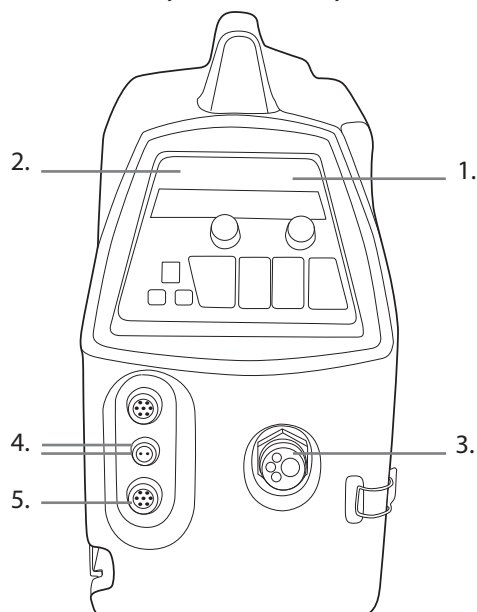
1. Control panel
2. ON/OFF button
3. Euro gun connection
4. Voltage sensing cable connection
5. Remote control connection
6. Sub-feeder sync connector (kit optional)
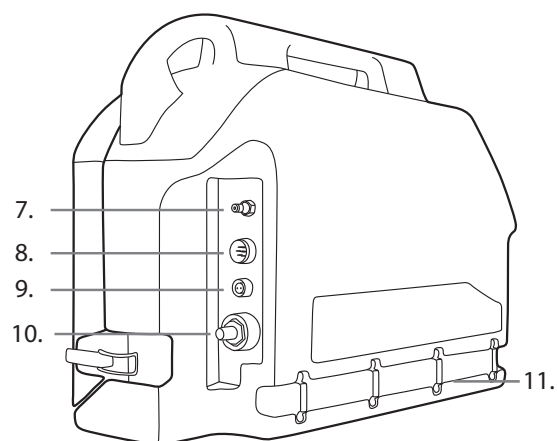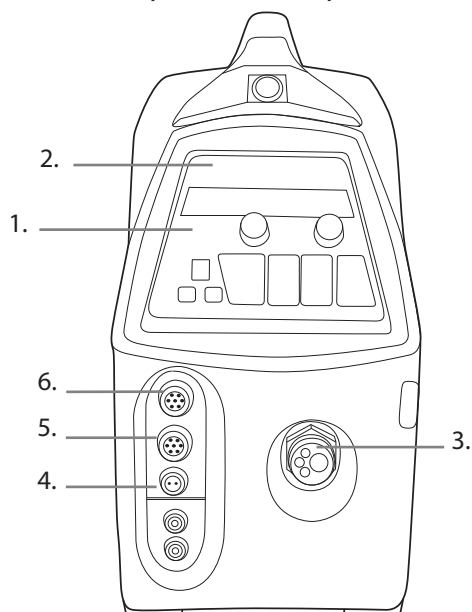
7. Shielding gas connection
8. Control cable connection
9. Measurement cable connection
10. Welding current cable connection
11. Lead-in and clamping of cooling liquid hoses
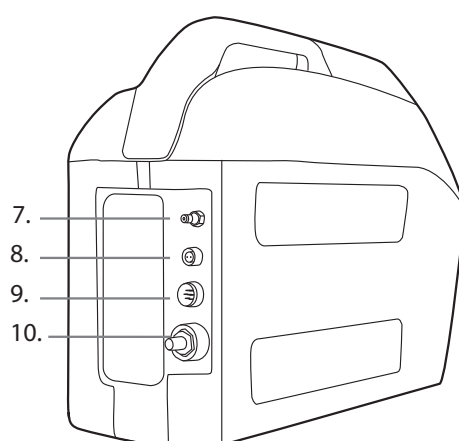
7. Shielding gas connection
8. Measurement cable connection
9. Control cable connection
10. Welding current cable connection

WFX 200, WFX 200 P Fe, WFX 200 P Ss, WFX 200 AMC and WFX 200-T
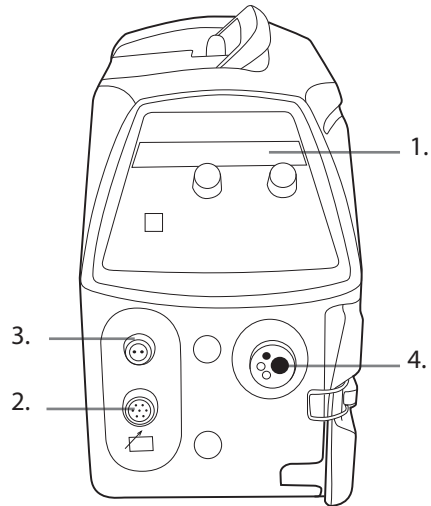
1. Control panel
2. Remote control connector
3. Voltage sensing cable connection
4. Euro gun connector
5. Shielding gas connection
6. Connection for control cable
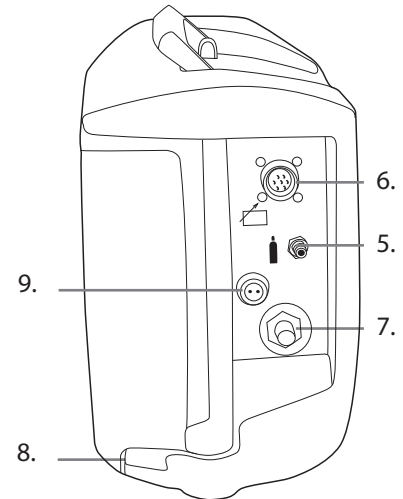
7. Welding current cable connector
8. Lead-in and clamping of cooling liquid hoses
9. Measurement cable connection

2.2 Connecting cables

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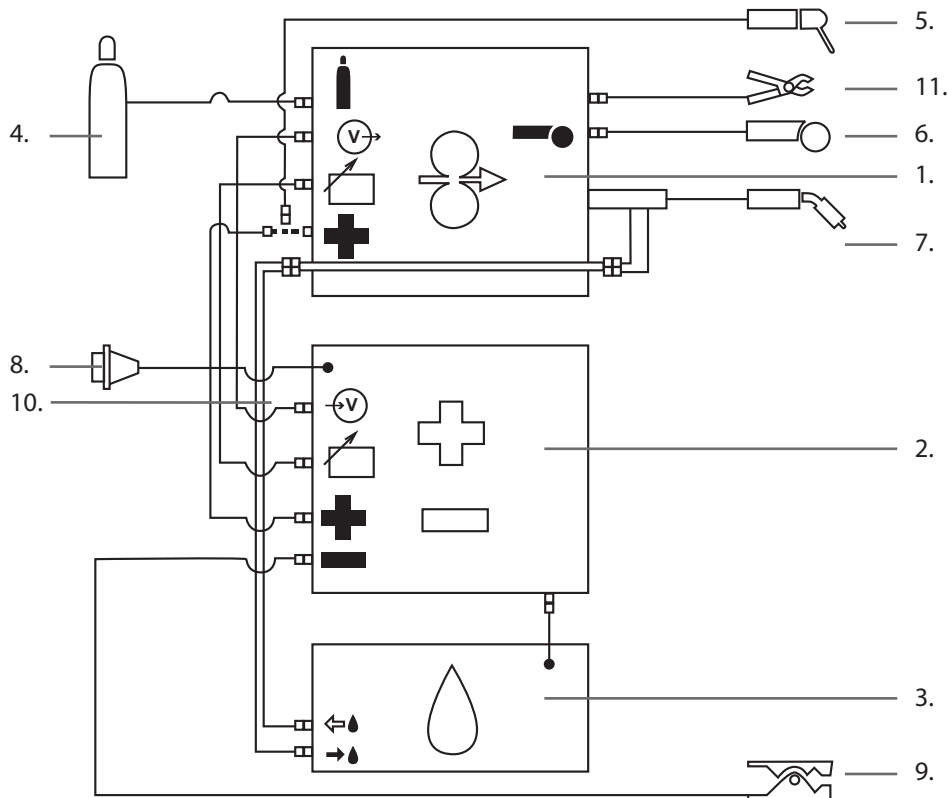
1.   WFX wire feed unit
2.   FastMig X power source
3.   Cool X cooling unit and power connection
4.   Gas supply
5.   MMA electrode holder
6.   Remote control device
7.   Liquid-cooled welding gun
8.   Power cable
9.   Earth return cable and clamp
10. Measurement cable (from power source to wire feeder)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

NOTE! *WFX wire feeders can also be used with FastMig Pulse power source, but in that case measurement cable and voltage sensing cable will not be used.*

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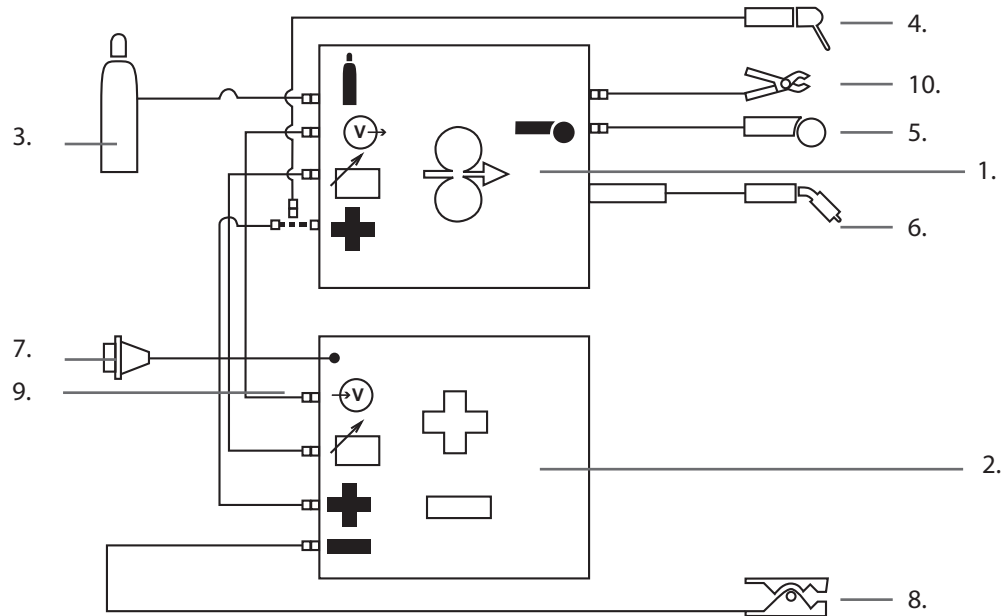
1. WFX wire feed unit
2. FastMig X power source
3. Gas supply
4. MMA electrode holder
5. Remote control device
6. Air-cooled welding gun
7. Power cable
8. Earth return cable and clamp
9. Measurement cable (from power source to wire feeder)
10. Voltage sensing cable (from wire feeder to work piece)

NOTE! *WFX wire feeders can also be used with FastMig Pulse power source, but in that case measurement cable and voltage sensing cable will not be used.*

2.3　Assembly of MIG/MAG system

Assemble the units in the order mentioned below. Follow the additional mounting and operation instructions delivered with each package.

1. Installation of power source

Read and follow the installation instructions given in the FastMig power source operating manual.

2. Mounting of power sources to transport cart

Read and follow the instructions given in the transport cart assembly instructions.

3. Mounting the FastMig WFX wire feed unit to the power source

Remove the cover sticker on top of the power source. Screw the fastening pivot into the power source – hand tighten only. Place the supplied plastic spacers over the pivot. Lift the WFX wire feeder into place, locating over the pivot.

4. Connecting cables

Connect the cables in accordance with the equipment notes provided in this manual.

The polarity of the welding wire (+ or –) can be selected by connecting the wire feed unit to either the positive or negative power source terminals.

Most MIG/MAG applications run the wire feed unit connected to the positive terminal of the power source.

5. Mounting FastMig wire feed units to boom and swing arms

When mounting wire feed units to boom and swing arms, the unit must be electrically isolated from both.

Suspension angle of wire feed unit can be changed by moving the fixing point in handle.

2.4　Accessories corresponding to wire diameter

Colour coded wire feed rolls and guide tubes are available to suit a variety of filler wire types and sizes. Feed roll groove geometry and design vary depending on the application. Further details are available in the spare parts tables.

Please ensure you select the correct drive rolls and guide tubes from the table to suit your particular welding application.

2.5　Welding gun selection

Please ensure that the welding gun selected is suitable for the target application. Kemppi welding gun products are designed to meet many different applications. Special wire liners and contact tips are available for different wire types and sizes.

For FastMig X pipe welding package Kemppi offers the PMT MN welding gun model, which is specially designed for welding root and fill passes on pipe. The neck is replaceable, so you can select just the right bending angle for different work stages.

Distance wire feeding is accommodated with WeldSnake and SuperSnake products in either air or liquid cooled models.

2.6   Mounting and locking of wire spool
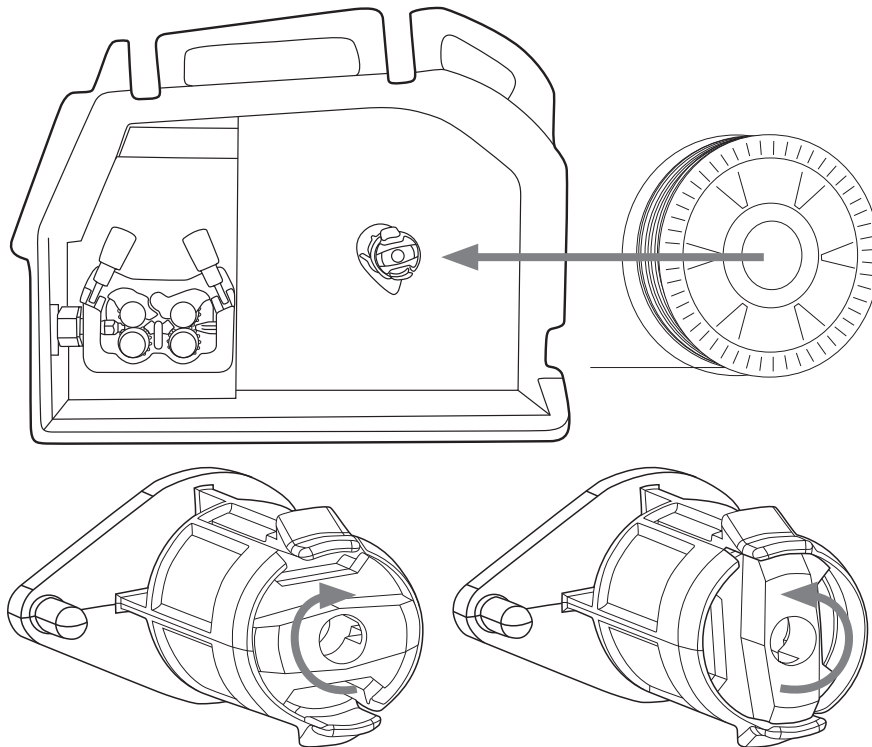
NOTE! *Check that in filler wire spool is correctly mounted and locked into position. Ensure the spool is not damaged or deformed in such a way that it can rub or chaff against the internal surface of the wire feed unit chassis or door. This may result in increased drag, impacting on weld quality. This may also result in long term wire feed unit damage, rendering the unit unserviceable or unsafe to use.*

2.7   Loading the filler wire and automatic feed

Automatic wire feed makes wire spool changes faster. When changing the wire spool, the pressure of feed rolls need not be released.

Simply ensure that the groove of the feed roll matches the diameter of filler wire used. Release the wire end from the spool and cut off any deformed section. Be careful that the wire does not spill from the spool sides.

Straighten about 20 cm of filler wire and ensure the tip has no sharp edges. File if necessary, as a sharp wire edge may damage the wire gun liner - particularly softer plastic liners.

Present the filler wire tip to the back of the wire feed rolls and press the wire inch switch on the wire feeder panel. Feed the wire to the gun contact tip and prepare to weld.

NOTE! *Smaller diameter filler wires may need to be loaded manually and with the feed roll pressure arms released. This is because it is easy to over estimate the pressure required to feed these smaller filler wires. Too high feed roll pressures can easily deform filler wires and contribute to later feeding problems.*

2.8 GT04 wire feed mechanism

This is used in WFX 300 P Fe, WFX 300 P Ss and WFX 300 P-T wire feeders.

Wire guide tubes					
	ø mm		outlet tube	middle tube	inlet tube
Al, Ss (Fe, Mc, Fc) plastic	0.6		SP007285	SP007273	SP007293
	0.8 – 0.9		SP007286	SP007274	SP007294
	1.0		SP007287	SP007275	SP007295
	1.2		SP007288	SP007276	SP007296
	1.4		SP007289	SP007277	SP007297
	1.6		SP007290	SP007278	SP007298
	2.0		SP007291	SP007279	SP007299
	2.4		SP007292	SP007280	SP007300
Fe, Mc, Fc metal	0.8 – 0.9		SP007454	SP007465	SP007536
	1.0		SP007455	SP007466	SP007537
	1.2		SP007456	SP007467	SP007538
	1.4 – 1.6		SP007458	SP007469	SP007539
	2.0		SP007459	SP007470	SP007540
	2.4		SP007460	SP007471	SP007541

Wire feed rolls, plastic

	ø mm		lower	upper
Fe, Ss, (Al, Mc, Fc) V-groove ∨	0.6		W001045	W001046
	0.8 – 0.9		W001047	W001048
	1.0		W000675	W000676
	1.2		W000960	W000961
	1.4		W001049	W001050
	1.6		W001051	W001052
	2.0		W001053	W001054
	2.4		W001055	W001056
Fc, Mc, (Fe) V-groove, knurled ∨≡	1.0		W001057	W001058
	1.2		W001059	W001060
	1.4 – 1.6		W001061	W001062
	2.0		W001063	W001064
	2.4		W001065	W001066
Al, (Fc, Mc, Ss, Fe) U-groove ∪	1.0		W001067	W001068
	1.2		W001069	W001070
	1.6		W001071	W001072

Wire feed rolls, metal

	ø mm	lower	upper
Fe, Ss, (Al, Mc, Fc) V-groove ∨	0.8 – 0.9	W006074	W006075
	1.0	W006076	W006077
	1.2	W004754	W004753
	1.4	W006078	W006079
Fc, Mc, (Fe) V-groove, knurled ∨≡	1.0	W006080	W006081
	1.2	W006082	W006083
	1.4 – 1.6	W006084	W006085
	2.0	W006086	W006087
Fc, Mc, Ss, Fe U-groove ∪	1.0	W006088	W006089
	1.2	W006090	W006091
	1.6	W006092	W006093

NOTE! *Mount the lower feed roll, ensuring that the pin on the shaft fits in the cut on the feed roll.*

2.9 DuraTorque™ 400, 4-wheel wire feed mechanism

This is used in WFX 200, WFX 200 P Fe, WFX 200 P Ss, WFX 200 AMC, WFX 300, WFX 300 AMC, WFX 200-T and WFX 300-T wire feeders.

Wire guide tubes						
	ø mm			outlet tube	middle tube	inlet tube
Ss, Al, **(Fe, Mc, Fc)** **plastic**	0.6			SP007437	SP007429	SP007293
	0.8 – 0.9			SP007438	SP007430	SP007294
	1.0			SP007439	SP007431	SP007295
	1.2			SP007440	SP007432	SP007296
	1.4			SP007441	SP007433	SP007297
	1.6			SP007442	SP007434	SP007298
	2.0			SP007443	SP007435	SP007299
	2.4			SP007444	SP007436	SP007300
Fe, Mc, Fc **metal**	0.8 – 0.9			SP007454	SP007465	SP007536
	1.0			SP007455	SP007466	SP007537
	1.2			SP007456	SP007467	SP007538
	1.4 – 1.6			SP007458	SP007469	SP007539
	2.0			SP007459	SP007470	SP007540
	2.4			SP007460	SP007471	SP007541

Wire feed rolls, plastic				
	ø mm		lower	upper
Fe, Ss, (Al, Mc, Fc) V-groove ∨	0.6		W001045	W001046
	0.8 – 0.9		W001047	W001048
	1.0		W000675	W000676
	1.2		W000960	W000961
	1.4		W001049	W001050
	1.6		W001051	W001052
	2.0		W001053	W001054
	2.4		W001055	W001056
Fc, Mc, (Fe) V-groove, knurled ∨≡	1.0		W001057	W001058
	1.2		W001059	W001060
	1.4 – 1.6		W001061	W001062
	2.0		W001063	W001064
	2.4		W001065	W001066
Al, (Fc, Mc, Ss, Fe) U-groove U	1.0		W001067	W001068
	1.2		W001069	W001070
	1.6		W001071	W001072

Wire feed rolls, metal			
	ø mm	lower	upper
Fe, Ss, (Al, Mc, Fc) V-groove ∨	0.8 – 0.9	W006074	W006075
	1.0	W006076	W006077
	1.2	W004754	W004753
	1.4	W006078	W006079
Fc, Mc, (Fe) V-groove, knurled ∨≡	1.0	W006080	W006081
	1.2	W006082	W006083
	1.4 – 1.6	W006084	W006085
	2.0	W006086	W006087
Al, (Fc, Mc, Ss, Fe) U-groove U	1.0	W006088	W006089
	1.2	W006090	W006091
	1.6	W006092	W006093

NOTE! *Mount the lower feed roll, ensuring that the pin on the shaft fits in the cut on the feed roll.*
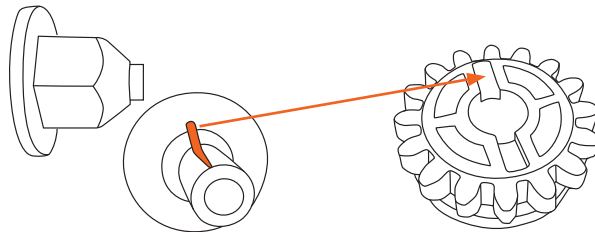
2.10 Adjustment of pressure arms

Adjust the drive pressure to the filler wire with the thumb screws mounted over the pressure arms. Notice the graduated scales indicating load. The load applied should be sufficient to overcome a light braking force applied by hand to the filler wire, as it exits the welding gun contact tip.

For smaller diameter and soft filler wires, less feed pressure is required. It should be possible to apply a light breaking force to the filler wire by hand, as it exits the gun contact tip. But slightly more wire flow restriction should render the drives rolls to slip slightly over the filler wire without deforming the wire.

NOTE! Excessive pressure causes flattening of the filler wire and damage to coated or cored filler wires. It also causes undue wear of the feed rolls and increases gearbox load, so reducing service life.

2.11 Adjustment of spool brake

Brake force is adjusted through the hole behind the locking clip. Remove the locking clip by hand, and adjust the tension and pressure to the friction pads mounted inside with a screw driver. See diagram and location A.
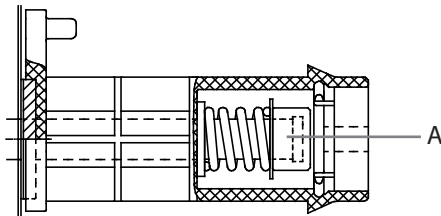
The load applied varies depending on the size and weight of the filler wire and spool, but also the filler wire feed speed set. The heavier the wire spool and the faster the feed speed, the greater the need to increase the braking load. Adjust the pressure, secure the locking clip, set the wire feed speed and check that the braking force is enough to ensure the filler wire does not spill from the spool on overrun.

NOTE! Too much or unnecessary loads can impact welding quality, load and wear to the wire feed system.

2.12 Burn back time

FastMig electronics controls the burn back time. When welding stops an automatic sequence ensures that the filler wire does not stick to the work piece and that no ball is formed at the wire tip, ensuring reliable re-ignition. This system works regardless of the wire feed speed.

2.13 Earth return cable

Preferably the earth return cable and clamp should be connected directly to the welding material.

Always use a good quality, 70 mm² heavy copper cable, and if possible a screw type 600 A clamp. Ensure that the surface contact to the work piece is clean of metal oxide and or paint. Make sure the clamp is firmly secured.

2.14 Shielding gas

NOTE! *Handle shielding gas bottle with care. Assess the risks associated with handling and using compressed gas. Always use a cylinder transport carriage and secure the cylinder safely.*

There are many different suppliers of quality shielding gases for welding. Please ensure that you are selecting the correct gas for your application. FastMig products use welding programs for synergic and pulsed welding. These programs are created and recommend against a particular shielding gas.

Shielding gas effects welding performance and is a fundamental component to overall weld quality.
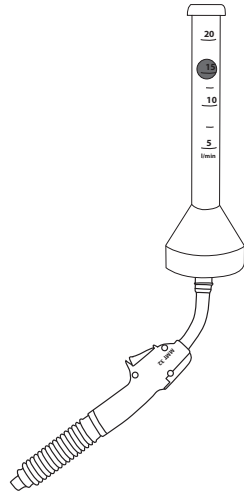
NOTE! *Shielding gas flow rate from the welding gun is set according to the application, weld joint, gas type and gas nozzle shape and size. The flow rate should be measured at the welding gun nozzle before welding via a rotameter, and normally measure's between 10 – 20 litres per minute for many welding applications.*

2.14.1 Installing gas bottle

Always fasten the gas bottle properly in the vertical position, in a special holder against the wall or on a cylinder carriage. Remember to close gas bottle valve after welding.

Parts of gas flow regulator
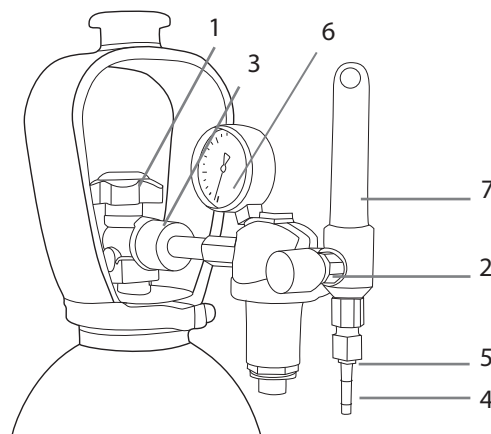
1. Gas bottle valve
2. Flow regulation screw
3. Connecting nut
4. Hose tail
5. Hose tail nut
6. Gas bottle pressure gauge
7. Shielding gas flow meter

2.15 Main switch I/O

When you turn the main switch of the FastMig power source into I-position, the pilot lamp closest to this switch will illuminate, indicating the power source is ready for welding. The equipment will return to the same operation state where it was before the last shutdown.

Always start and switch off the machine with the main switch, never use the mains plug as a switch.

2.16 Operation of cooling unit, Cool X

When liquid-cooling unit Cool X is connected to the FastMig power source for the first time, the cooler function is normally active. To deselect the cooler function, follow the instructions stated in the Cool X operating manual.

2.17 Hanging kit

The WFX wire feeders can be mounted on a welding boom using the KFH 1000 hanging device available as an accessory. This allows the wire feed unit to be suspended above the work area.

3. XF 37 AND XF 38 CONTROL PANEL

3.1 Connecting and mounting
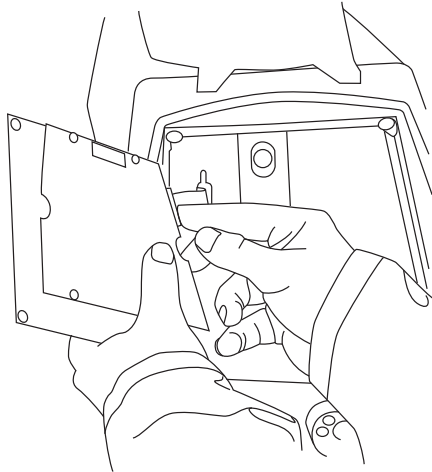
Fasten the ribbon cable connector from the WFX wire feed unit to the control panel. Attach the yellow-green earth lead into the fork connector on the XF control panel.

XF 37   XF 38
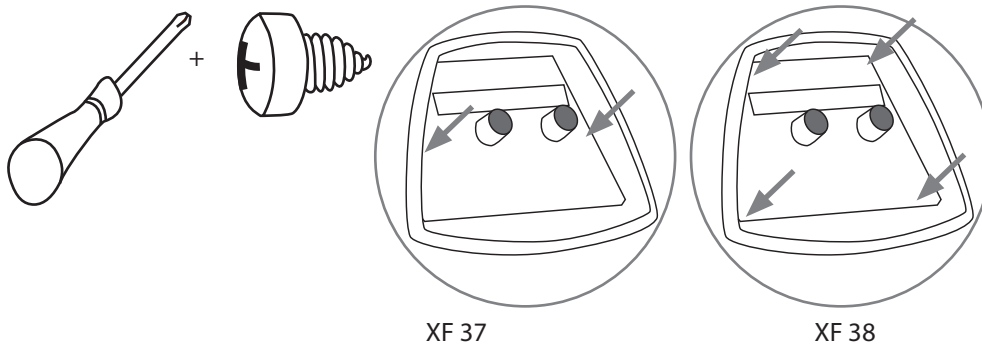
3.2 Layout

NOTE! The button layout is the same in both, XF 37 and XF 38 panels.
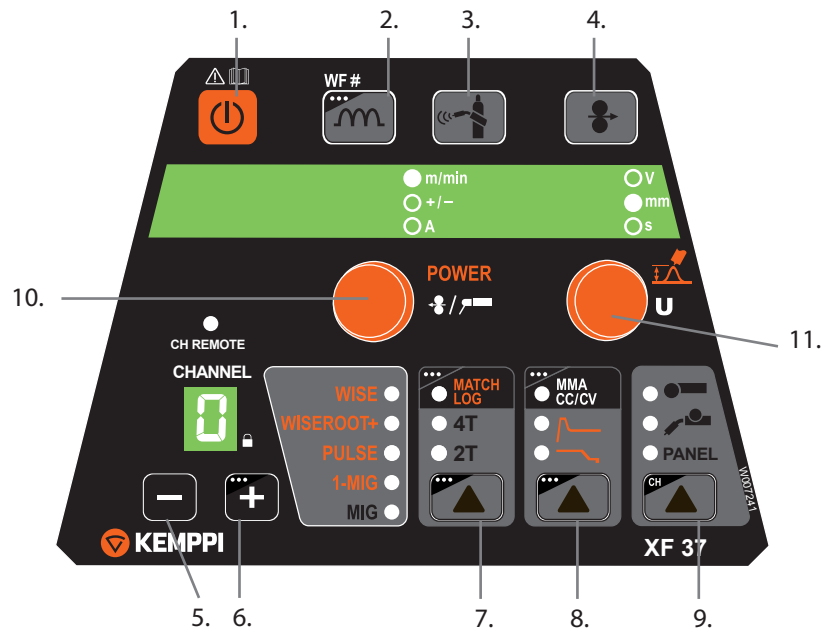
1. ON/OFF button
2. Activates MIG welding dynamics (short press)
   Selects the active wire feeder, if several wire feeders exist (long press)
3. Gas test
4. Wire inch
5. Selects the previous memory channel
6. Selects the next memory channel (short press)
   Locks selected memory channel (long press)
7. Selects welding gun trigger mode (short press) or turns MatchLog function ON/OFF
8. Selects crater fill, hot start (short press) or MMA/CC/CV (long press)
9. Selects panel control, gun control unit or hand-held control unit (short press).
   Turns memory channel remote selection ON/OFF (long press).
10. Power control knob
11. Arc length and voltage control knob.

Automatic weld data display

Last recorded welding values are displayed post welding.

Voltage display

Voltage display will show arc voltage if selected from the setup panel. Voltage display's last dot indicates that arc voltage display is selected (for example 23.5. V). If arc voltage feature is not used, pole voltage of the power source is shown.

3.3 Button functions

3.3.1 ON/OFF button (1)

Short press: control panel returns to initial display.

Long press: control panel is turned ON or OFF.

NOTE! When wire feeder XF 37 / XF 38 control panel is turned ON, also the power source control panel X 37 turns on and links automatically to this wire feeder.

3.3.2 Dynamics button (2)

Short press: Dynamics setting for 1-MIG, synergic MIG and CC/CV. ArcForce setting for MMA.

Long press: Wire feeder number selection. If there is more than one wire feeder connected to the system, you can select which of them is active. Each wire feeder has its own number (1–3).

NOTE! *Wire feeder number is not available in MMA, CC and CV processes.*

3.3.3 Gas test button (3)

This button displays the gas test time. You can change it with the control knob.

Gas test starts when the time adjustment is made, after a short delay.

You can stop gas test by pressing any button.

3.3.4 Wire inch button (3)

This button starts feeding the wire with the default speed of 5.0 m/min. The wire feed stops when you release the button.

You can change the wire feed speed with the control knob. The changed speed is used if you press the button again.

3.3.5 Channel down button (5)

This button selects the previous memory channel that can be found.

3.3.6 Channel up button (6)

Short press: Selects the next memory channel that can be found.

Long press: Locks or unlocs the selected memory channel. No parameter changes are allowed to a locked memory channel.

3.3.7 2T/4T button (7)

Short press: Toggles between 2T or 4T gun trigger mode.

Long press: Turns MatchLog ON/OFF. This can be either MatchChannel or Minilog functionality, depending on which one is defined in the selected memory channel. If neither one is defined, this selection is unavailable.

3.3.8 Extra functions button (8)

Short press: Selects Crater fill or Hot start function.

Long press: Turns MMA/CC/CV mode ON/OFF.

3.3.9 Remote Selection Button (9)
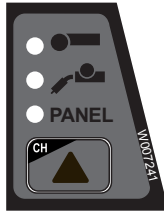
Short press: Toggles the control between the control panel, gun remote control unit and hand-held remote control unit.

NOTE! If RemoteAutoRecog setting is ON in X 37 control panel, you can select only those remote controls, which can be found in the system.

Long press: Turns the memory channel remote selection ON/OFF. This is available only if you have selected either gun remote control unit or hand-held remote control unit. Not available in MMA/CC/CV mode.

3.3.10 Power control knob (10)

This control knob adjusts
- wire feed speed or power in MIG/MAG processes (before or during welding)
- MMA/CC current level (before or during welding)
- selected parameter values.

3.3.11 Arc length and voltage control knob (11)

This control knob adjusts the arc length, voltage or selected parameter values before or during welding.

3.4 Welding software

The FastMig WFX wire feeders are compatible with the following modified welding processes and functions

- **WiseRoot+™** is a modified welding process for open gap root welding without backing.
- **WiseThin+™** is a modified welding process developed especially for efficient welding for thin sheets and position welding, also with the CO_2 shielding gas.
- **WiseFusion™** is a welding function for ensuring consistent weld quality in all positions.
- **WisePenetration™** is a welding function for delivering constant welding power regardless of changes in the stick out length.
- **MatchLog™** contains MiniLog™ function and the MatchChannel™ function for quickly changing welding parameters on the run.

Wire feeder	Factory-installed
WFX 200, 300	WiseFusion WorkPack
WFX 200 P Fe, 300 P Fe	WiseFusion, WiseRoot+, MatchLog Pipe Steel pack FE
WFX 200 P Ss, 300 P Ss	WiseFusion, WiseRoot+, MatchLog, Pipe Stainless pack Ss
WFX 200 AMC, 300 AMC	WiseFusion, WisePenetration, WiseThin+, MatchLog, Steel Pack, Steel Pack for WiseThin+, Stainless Steel Pack, Aluminium Pack
WFX 200-T, 300 P-T, 300-T	MIG as standard. Other welding software factory-installed according to order.

If your welding needs change and you wish to update your system in the future, you can order additional welding programs or other welding software and load them to your system with Kemppi DataGun field programming device. Optional features can be purchased through Kemppi DataStore.

For further information about the available welding programs, modified processes and special enhanced arc performance solutions, visit Kemppi web site at www.kemppi.com or contact the local Kemppi dealer.

PIPE STAINLESS PACK

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Ss	CrNiMo 19 12	0.8	Ar+2%CO_2	WiseRoot+	S01
Ss	CrNiMo 19 12	0.9	Ar+2%CO_2	WiseRoot+	S02
Ss	CrNiMo 19 12	1.0	Ar+2%CO_2	WiseRoot+	S03
Ss	CrNiMo 19 12	1.2	Ar+2%CO_2	WiseRoot+	S04
Ss	CrNiMo 19 12	0.8	Ar+2%CO_2	1-MIG	S01
Ss	CrNiMo 19 12	0.9	Ar+2%CO_2	1-MIG	S02
Ss	CrNiMo 19 12	1.0	Ar+2%CO_2	1-MIG	S03
Ss	CrNiMo 19 12	1.2	Ar+2%CO_2	1-MIG	S04
Ss	FC-CrNiMo 19 12	1.2	Ar+15–25%CO_2	1-MIG	S84
Ss	FC-CrNiMo 19 12	1.2	CO_2	1-MIG	S85
Ss	MC-CrNiMo 19 12	1.2	Ar+2%CO_2	1-MIG	S87
Ss	CrNiMo 19 12	0.8	Ar+2%CO_2	Pulse/Double Pulse	S01
Ss	CrNiMo 19 12	0.9	Ar+2%CO_2	Pulse/Double Pulse	S02
Ss	CrNiMo 19 12	1.0	Ar+2%CO_2	Pulse/Double Pulse	S06
Ss	CrNiMo 19 12	1.2	Ar+2%CO_2	Pulse/Double Pulse	S04
Ss	CrNiMo 19 12	1.0	Ar+He+CO_2	Pulse/Double Pulse	S26
Ss	CrNiMo 19 12	1.2	Ar+He+CO_2	Pulse/Double Pulse	S24

PIPE STEEL PACK

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Fe	Fe	0.8	Ar+15–25%CO_2	WiseRoot+	F01
Fe	Fe	0.9	Ar+15–25%CO_2	WiseRoot+	F02
Fe	Fe	1.0	Ar+15–25%CO_2	WiseRoot+	F03
Fe	Fe	1.2	Ar+15–25%CO_2	WiseRoot+	F04
Fe	Fe	0.8	CO_2	WiseRoot+	F21
Fe	Fe	0.9	CO_2	WiseRoot+	F22
Fe	Fe	1.0	CO_2	WiseRoot+	F23
Fe	Fe	1.2	CO_2	WiseRoot+	F24
Fe	Fe Metal	1.2	Ar+15–25%CO_2	WiseRoot+	M04
Fe	Fe Metal	1.2	CO_2	WiseRoot+	M24
Fe	Fe	0.8	Ar+15–25%CO_2	1-MIG	F01
Fe	Fe	0.9	Ar+15–25%CO_2	1-MIG	F02
Fe	Fe	1.0	Ar+15–25%CO_2	1-MIG	F03
Fe	Fe	1.2	Ar+15–25%CO_2	1-MIG	F04
Fe	Fe	0.8	CO_2	1-MIG	F21
Fe	Fe	0.9	CO_2	1-MIG	F22
Fe	Fe	1.0	CO_2	1-MIG	F23
Fe	Fe	1.2	CO_2	1-MIG	F24
Fe	Fe Metal	1.2	Ar+15–25%CO_2	1-MIG	M04
Fe	Fe Metal	1.2	CO_2	1-MIG	M24
Fe	Fe Rutil	1.2	Ar+15–25%CO_2	1-MIG	R04
Fe	Fe Rutil	1.2	CO_2	1-MIG	R14
Fe	Fe	1.6	InnerShield	1-MIG	R56
Fe	Fe	2.0	InnerShield	1-MIG	R57
Fe	Fe	2.4	InnerShield	1-MIG	R58

STEEL PACK FOR WISETHIN+

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Fe	Fe	0.8	Ar+15–25%CO_2	WiseThin+	F01
Fe	Fe	0.9	Ar+15–25%CO_2	WiseThin+	F02
Fe	Fe	1.0	Ar+15–25%CO_2	WiseThin+	F03
Fe	Fe	1.2	Ar+15–25%CO_2	WiseThin+	F04
Fe	Fe	0.8	CO_2	WiseThin+	F21
Fe	Fe	0.9	CO_2	WiseThin+	F22
Fe	Fe	1.0	CO_2	WiseThin+	F23
Fe	Fe	1.2	CO_2	WiseThin+	F24

WORK PACK

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Al	AlMg5	1.2	Ar	Pulse/Double Pulse	A02
Al	AlSi5	1.2	Ar	Pulse/Double Pulse	A12
Fe	Fe	1.0	Ar+15–25%CO_2	Pulse/Double Pulse	F03
Fe	Fe	1.2	Ar+15–25%CO_2	Pulse/Double Pulse	F04
Fe	Fe	0.8	Ar+8%CO_2	Pulse/Double Pulse	F11
Fe	Fe	1.0	Ar+8%CO_2	Pulse/Double Pulse	F13
Fe	Fe	1.2	Ar+8%CO_2	Pulse/Double Pulse	F14
Ss	CrNiMo 19 12	1.0	Ar+2%CO_2	Pulse/Double Pulse	S03
Ss	CrNiMo 19 12	1.2	Ar+2%CO_2	Pulse/Double Pulse	S04
Ss	CrNiMo 19 12	1.0	Ar+2%CO_2	Pulse/Double Pulse	S06
Ss	CrNiMo 19 12	1.2	Ar+2%CO_2	Pulse/Double Pulse	S07
Fe	Fe	0.8	Ar+8%CO_2	1-MIG	F11
Fe	Fe	1.0	Ar+8%CO_2	1-MIG	F13
Fe	Fe	1.2	Ar+8%CO_2	1-MIG	F14
Fe	Fe	0.8	Ar+15–25%CO_2	1-MIG	F01
Fe	Fe	1.0	Ar+15–25%CO_2	1-MIG	F03
Fe	Fe	1.2	Ar+15–25%CO_2	1-MIG	F04
Fe	Fe	0.8	CO_2	1-MIG	F21
Fe	Fe	1.2	CO_2	1-MIG	F24
Fe	Fe Metal	1.2	Ar+15–25%CO_2	1-MIG	M04
Fe	Fe Rutil	1.2	Ar+15–25%CO_2	1-MIG	R04
Ss	CrNiMo 19 12	1.0	Ar+2%CO_2	1-MIG	S03
Ss	CrNiMo 19 12	1.2	Ar+2%CO_2	1-MIG	S04
Ss	FC-CrNiMo 19 12	1.2	Ar+15–25%CO_2	1-MIG	S84

ALUMINIUM PACK

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Al	AlMg5	1.0	Ar	Pulse/Double Pulse	A01
Al	AlMg5	1.2	Ar	Pulse/Double Pulse	A02
Al	AlMg5	1.6	Ar	Pulse/Double Pulse	A03
Al	AlSi5	1.0	Ar	Pulse/Double Pulse	A11
Al	AlSi5	1.2	Ar	Pulse/Double Pulse	A12
Al	AlSi5	1.6	Ar	Pulse/Double Pulse	A13
Al	AlMg5	1.0	Ar	1-MIG	A01
Al	AlMg5	1.2	Ar	1-MIG	A02
Al	AlMg5	1.6	Ar	1-MIG	A03
Al	AlSi5	1.0	Ar	1-MIG	A11
Al	AlSi5	1.2	Ar	1-MIG	A12
Al	AlSi5	1.6	Ar	1-MIG	A13

STAINLESS STEEL PACK

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Ss	CrNiMo 19 12	0.8	$Ar+2\%CO_2$	Pulse/Double Pulse	S01
Ss	CrNiMo 19 12	0.9	$Ar+2\%CO_2$	Pulse/Double Pulse	S02
Ss	CrNiMo 19 12	1.0	$Ar+2\%CO_2$	Pulse/Double Pulse	S06 Soft
Ss	CrNiMo 19 12	1.2	$Ar+2\%CO_2$	Pulse/Double Pulse	S04
Ss	CrNiMo 19 12	1.0	$Ar+He+CO_2$	Pulse/Double Pulse	S26 Soft
Ss	CrNiMo 19 12	1.2	$Ar+He+CO_2$	Pulse/Double Pulse	S24
Ss	CrNiMo 19 12	0.8	$Ar+2\%CO_2$	1-MIG	S01
Ss	CrNiMo 19 12	0.9	$Ar+2\%CO_2$	1-MIG	S02
Ss	CrNiMo 19 12	1.0	$Ar+2\%CO_2$	1-MIG	S03
Ss	CrNiMo 19 12	1.2	$Ar+2\%CO_2$	1-MIG	S04
Ss	FC-CrNiMo 19 12	1.2	$Ar+15-25\%CO_2$	1-MIG	S84
Ss	MC-CrNiMo 19 12	1.2	$Ar+2\%CO_2$	1-MIG	S87

STEEL PACK

Group	Material	Wire ø (mm)	Shielding gas	Process	Number
Fe	Fe	0.8	$Ar+15-25\%CO_2$	1-MIG	F01
Fe	Fe	0.9	$Ar+15-25\%CO_2$	1-MIG	F02
Fe	Fe	1.0	$Ar+15-25\%CO_2$	1-MIG	F03
Fe	Fe	1.2	$Ar+15-25\%CO_2$	1-MIG	F04
Fe	Fe	0.8	CO_2	1-MIG	F21
Fe	Fe	0.9	CO_2	1-MIG	F22
Fe	Fe	1.0	CO_2	1-MIG	F23
Fe	Fe	1.2	CO_2	1-MIG	F24
Fe	Fe Metal	1.2	$Ar+15-25\%CO_2$	1-MIG	M04
Fe	Fe Metal	1.2	CO_2	1-MIG	M24
Fe	Fe Rutil	1.2	$Ar+15-25\%CO_2$	1-MIG	R04
Fe	Fe Rutil	1.2	CO_2	1-MIG	R14
Fe	Fe	1.0	$Ar+15-25\%CO_2$	Pulse/Double Pulse	F03
Fe	Fe	1.2	$Ar+15-25\%CO_2$	Pulse/Double Pulse	F04

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

3.5   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 in X 37 setup panel. 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.

4. BASIC 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 and WFX wire feeders.

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.
MEM ERR & NO DAT	Machine cannot complete read or write functions on the wire feeder memory card • Check the cables and connections. • Contact Kemppi service representative.
NO BUS	Control panel cannot establish a connection to the CAN bus • Check the flat cables and the control panels. • Contact Kemppi service representative.
SUB ERR	WF-number change error • Connect only one wire feeder to system and try again.

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.

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.

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

5.1 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.

5.2 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.

5.3 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.

6. 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.

7. ORDERING CODES

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
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
Magnetic clamp (voltage sensing cable)	200 A	9871580
Magnetic clamp (earth return cable)	600 A	9871570
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.		

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 WFX wire feeders (not in T models)	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. Note that WiseRoot+ and WiseThin+ welding processes are not available with SuperSnake sub feeder.		

Accessories		
Cooling unit Cool X		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
DataGun software installation tool		6265023
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 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.

8.   TECHNICAL DATA

WFX		200, 200 P Fe, 200 P Ss, 200-T, 200 AMC	300 P Fe, 300 P Ss, 300 P-T	300, 300-T, 300 AMC
Operating voltage (safety voltage)		50 V DC	50 V DC	50 V DC
Rated power		100 W	250 W	100 W
Output 40 °C	60 % ED	520 A	520 A	520 A
	100 % ED	440 A	440 A	440 A
Wire feed speed		1 – 25 m/min	0.5 – 25 m/min	1 – 25 m/min
Wire feed mechanism		4-roll	4-roll, two motors	4-roll
Diameter of feed rolls		32 mm	32 mm	32 mm
Filler wires	ø Fe, Ss	0.6 – 1.6 mm	0.6 – 2.0 mm	0.6 – 1.6 mm
	ø Cored wire	0.8 – 2.0 mm	0.8 – 2.4 mm	0.8 – 2.0 mm
	ø Al	0.8 – 2.4 mm	0.8 – 2.4 mm	0.8 – 2.4 mm
Wire spool	max. weight	5 kg	20 kg	20 kg
	max. ø	200 mm	300 mm	300 mm
Maximum gas pressure		0.5 MPa	0.5 MPa	0.5 MPa
Gun connection		Euro	Euro	Euro
Operation temperature range		-20 ... +40 °C	-20 ... +40 °C	-20 ... +40 °C
Storage temperature range		-40 ... +60 °C	-40 ... +60 °C	-40 ... +60 °C
EMC class		A	A	A
Degree of protection		IP23S	IP23S	IP23S
External dimensions	L x W x H	510 x 200 x 310 mm	590 x 240 x 445 mm	625 x 243 x 476 mm
Weight		9.4 kg	13.1 kg	12.5 kg

For connection options of all gun and torch models and corresponding remote controls, refer to Kemppi Userdoc at https://kemp.cc/connectivity.