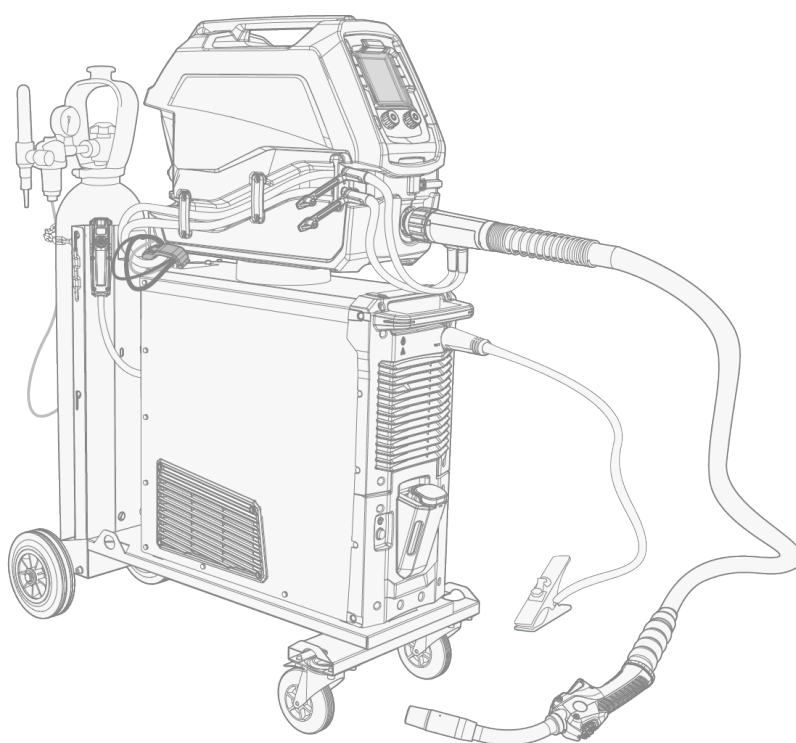


# X3 FastMig



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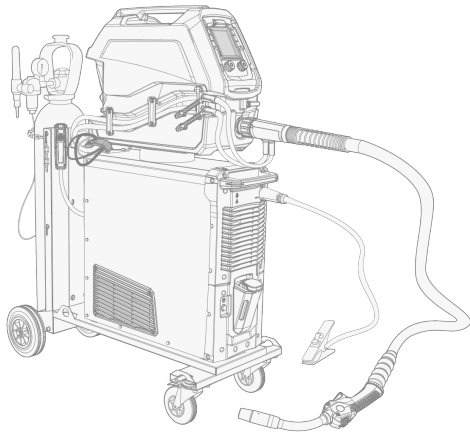
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## 1. GENERAL

These instructions describe the use of Kemppi's X3 FastMig equipment. X3 FastMig system consists of multi-purpose welding power sources and wire feeder designed for demanding professional use in both, normal and pulsed MIG/MAG welding.

The X3 FastMig equipment range includes automatic 1-MIG control capabilities by default. Pulsed MIG welding requires the X3 pulse power source.



*Fully equipped water-cooled X3 FastMig system illustrated.*

X3 FastMig is designed to be used together with Kemppi's Flexlite GXe MIG welding torches.

With additional adapters, X3 FastMig can be used also for MMA welding and carbon arc gouging.


For more information on the individual X3 FastMig devices, refer to the "Equipment description" on page 6 chapter.

### Important notes

Read the instructions through carefully.

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

 *Note: Gives the user a useful piece of information.*

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

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

### DISCLAIMER

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

The source language for this document is English. All other language versions available are either professional human translations or advanced machine translations. Any feedback regarding translation terminology can be sent to [userdoc@kemppi.com](mailto:userdoc@kemppi.com).



## 1.1 Welding safety

Welding is always classified as hot work, and welding equipment typically contains high-voltage circuits. If you are not familiar with welding and welding principles, it is recommended that you acquire welding training or professional guidance before commencing welding. The welding equipment mentioned in this manual is intended for professional use in an industrial environment.



*For your own safety, and that of your working environment, pay particular attention to the safety instructions delivered with the equipment.*

You can also access and download the safety instructions by using these links:

- [Safety](https://kemp.cc/safety/general)  
(<https://kemp.cc/safety/general>)
- [Personal protection](https://kemp.cc/safety/ppe)  
(<https://kemp.cc/safety/ppe>)
- [Welding guns and torches](https://kemp.cc/safety/torches)  
(<https://kemp.cc/safety/torches>)

## 1.2 Equipment description

X3 FastMig has four power source options and one wire feeder. The control panel is always fixed to the wire feeder.

X3 FastMig supports welding cable calibration without an additional voltage sensing cable.

The equipment technical data can be found here: "Technical data" on page 83.

### **X3 power sources (420 A):**

- X3S Power Source Syn 420 G (gas-cooled)
  - >> Standard power source with support for automatic 1-MIG process
- X3S Power Source Syn 420 W (water-cooled)
  - >> Standard power source with support for automatic 1-MIG process
  - >> Cooling unit integrated with the power source

For the power source and cooling unit part descriptions, refer to "X3 power source" on page 8 or "X3 power source with cooling unit" on page 9.

### **X3 power sources (450 A):**

- X3P Power Source Pulse 450 G (gas-cooled)
  - >> Pulse power source with support for automatic 1-MIG and Pulse MIG processes
- X3P Power Source Pulse 450 W (water-cooled)
  - >> Pulse power source with support for automatic 1-MIG and Pulse MIG processes
  - >> Cooling unit integrated with the power source

For the power source and cooling unit part descriptions, refer to "X3 power source" on page 8 or "X3 power source with cooling unit" on page 9.

### **X3 wire feeder:**

- X3 Wire Feeder HD300
  - >> Includes 2-knob LCD control panel with 6 function buttons
  - >> Stackable with X3 power source
  - >> Built-in automatic 1-MIG and Pulse welding programs (Pulse process requires a pulse power source)
  - >> Maximum wire spool diameter 300 mm

For the X3 wire feeder part descriptions, refer to "X3 wire feeder" on page 11, "Wire spools" on page 12 and "Wire feed mechanism" on page 13.

For the wire feeder control panel description, refer to "X3 control panel" on page 54.

### **MIG welding torches:**

- Flexlite GXe
  - >> For more information on the Flexlite GXe welding guns, refer to [Kempfi Userdoc](#).

### **Welding programs:**

X3 FastMig is delivered with welding programs preinstalled. The welding programs included in the X3 FastMig are shown here: "X3 welding program work pack" on page 97.

With additional adapters, X3 FastMig can be used also for MMA welding and carbon arc gouging.

For more information on optional accessories, refer to "Optional accessories" on page 17 or contact your local Kempfi dealer.

## EQUIPMENT IDENTIFICATION

### **Serial number**

Serial number of the device is marked on the rating plate or in another distinctive location on the device. It is important to make correct reference to the serial number of the product when ordering spare parts or making repairs for example.

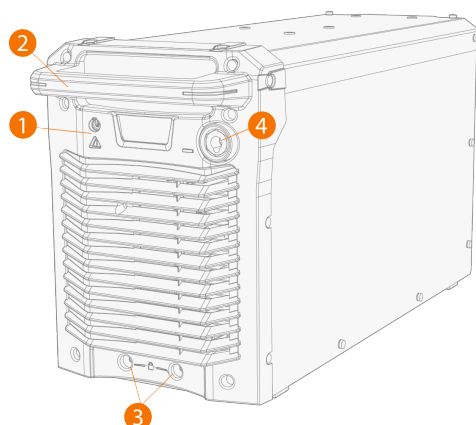
### **Quick Response (QR) code**

The serial number and other device-related identification information may also be saved in the form of a QR code (or a barcode) on the device. Such code can be read by a smartphone camera or with a dedicated code reader device providing fast access to the device-specific information.

## 1.3 X3 power source

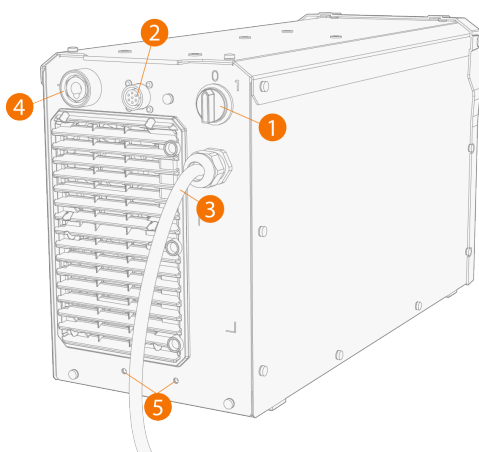
This section describes the structure of X3 power sources without cooling unit.

### Front:



1. Indicator panel
  - Power on/off indicator: The LED is green when the unit is on.
  - Warning indicator: The LED is yellow if overheating occurs.
2. Handle (not intended for mechanical lifting)
3. Front locking interface
  - >> For locking on top of the optional cart.
4. Earth return cable connector, minus (-) connector

### Rear:

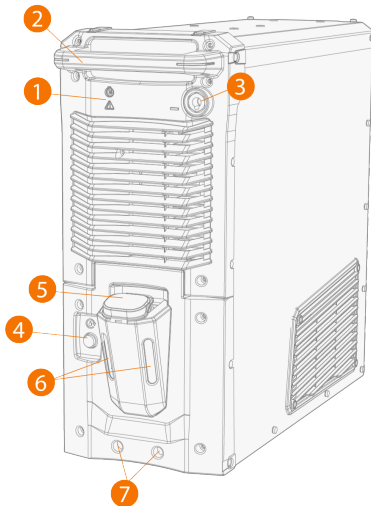


1. Power switch
2. Control cable connector
3. Mains cable
4. Welding current cable connector, plus (+) connector
5. Rear locking interface
  - >> For locking on top of the optional cart.

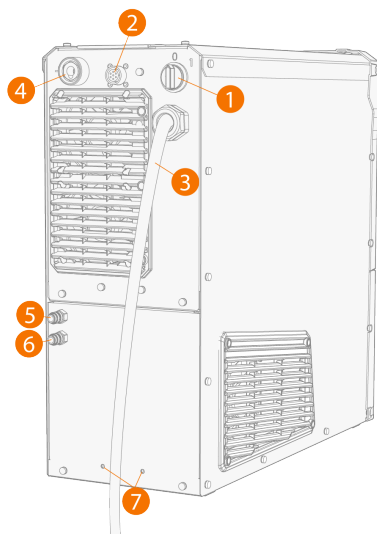
## 1.4 X3 power source with cooling unit

This section describes the structure of X3 power sources with cooling unit. The cooling unit is integrated with the power source in the water-cooled system option.

### Front:



1. Indicator panel
  - Power on/off indicator: The LED is green when the unit is on.
  - Warning indicator: The LED is yellow if overheating occurs.
2. Handle (not intended for mechanical lifting)
3. Earth return cable connector, minus (-) connector
4. Cooling liquid circulation button
  - >> Keeping the button pressed activates the pump and circulates the cooling liquid throughout the system. Once released, the pump stops.
5. Cooler container cap
6. Cooling liquid level indicator
7. Front locking interface (locking on the optional cart)

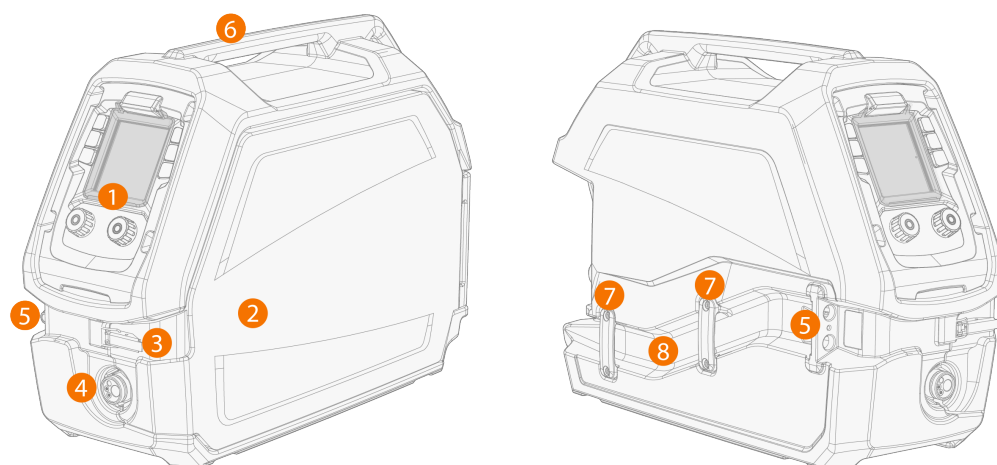
**Rear:**

1. Power switch
2. Control cable connector
3. Mains cable
4. Welding current cable connector, plus (+) connector
5. Coolant inlet/outlet connector (color-coded)
6. Coolant inlet/outlet connector (color-coded)
7. Rear locking interface

>> For locking on top of the optional cart.

## 1.5 X3 wire feeder

This section describes the structure of the X3 wire feeder.



### 1. Control panel (and hinged control panel display cover)

>> For more information on the X3 wire feeder control panel, refer to "X3 control panel" on page 54.

### 2. Wire feeder cabinet door



*Keep the wire feeder cabinet door closed during welding to reduce the risk of injury or an electric shock. Keep the cabinet door closed also at other times to keep the inside of the wire feeder clean.*

### 3. Wire feeder cabinet door latch

### 4. Euro connector for welding cable connection

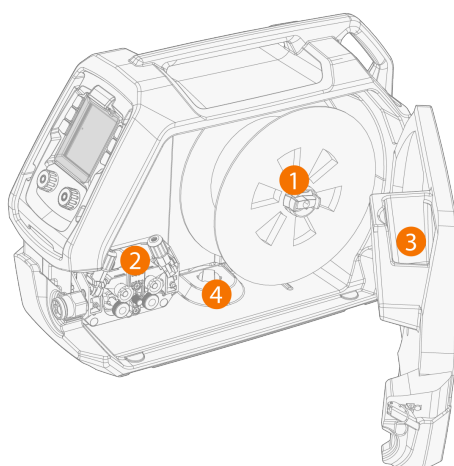
### 5. Coolant inlet and outlet connector holder

### 6. Handle

### 7. Coolant hose duct brackets

### 8. Coolant hose duct.

## Inside wire feeder (wire feeder cabinet)

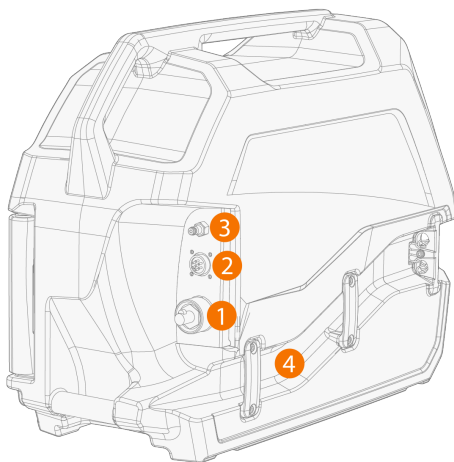


### 1. Wire spool and spool hub

>> For more information on the wire spool, refer to "Installing and replacing filler wire and wire spool" on page 39.

2. Wire feed roll mechanism
3. Parts storage
  - >> For temporarily storage of smaller items.
4. Aperture for mounting plate connection

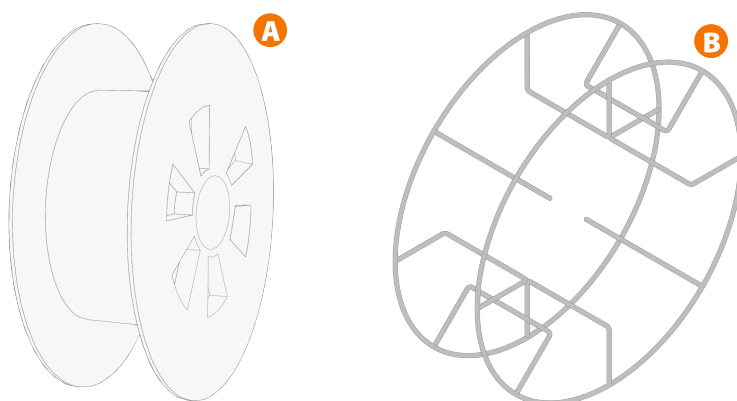
#### Wire feeder rear



1. Welding current cable connector
2. Control cable connector
3. Shielding gas hose connector
4. Coolant hose duct.

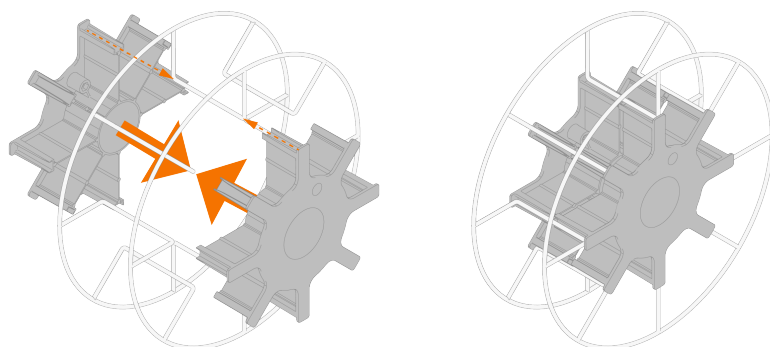
For installing and connecting the cables, refer to "X3 interconnection cables" on page 15 and "Installing cables" on page 28.

#### 1.5.1 Wire spools

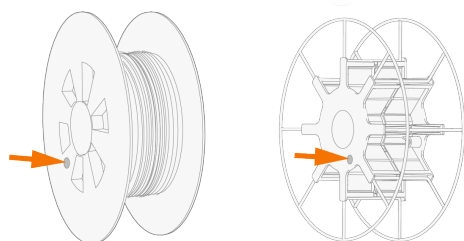


X3 wire feeder uses the standard wire spools (A) without additional adapters. Wire spools with a large center hole, e.g. a wire basket rim (B), require an additional spool adapter (available as Kemppi accessory):





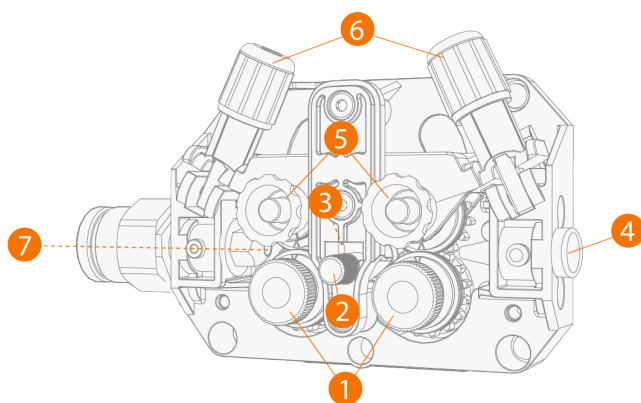
When installed, the pin next to the wire spool hub in the wire feeder must align and go into the hole in the spool or spool adapter.



"Installing and replacing filler wire and wire spool" on page 39

## 1.5.2 Wire feed mechanism

### X3 wire feeder wire feed mechanism:



1. Drive rolls and drive roll securing caps
2. Middle guide tube tightening knob
3. Middle guide tube
4. Inlet guide tube
5. Pressure rolls and pressure roll mounting pins
6. Pressure roll locking arms
7. Outlet guide tube.

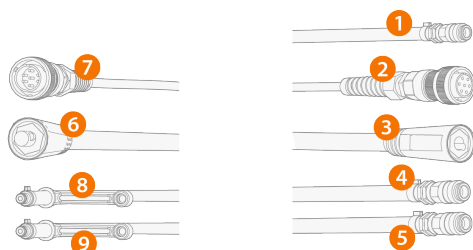
For replacing the wire feed rolls, refer to "Installing and replacing feed rolls" on page 43.

For replacing the wire guide tubes, refer to "Installing and replacing wire guide tubes" on page 46

## 1.6 X3 interconnection cables

The X3 FastMig interconnection cables come in multiple different lengths and configurations to suit your equipment setup.

For installing the interconnection cables, refer to "Installing cables" on page 28.



1. Shielding gas hose (WF)
2. Control cable (WF)
3. Welding current cable (WF)
4. Coolant hose (outlet/inlet, color-coded) (WF)
5. Coolant hose (outlet/inlet, color-coded) (WF)
6. Welding current cable (PS)
7. Control cable (PS)
8. Water-cooled models only: Coolant hose (outlet/inlet, color-coded) (PS)
9. Water-cooled models only: Coolant hose (outlet/inlet, color-coded) (PS)

(PS = Power source end of the interconnection cable, WF = Wire feeder end of the interconnection cable.)

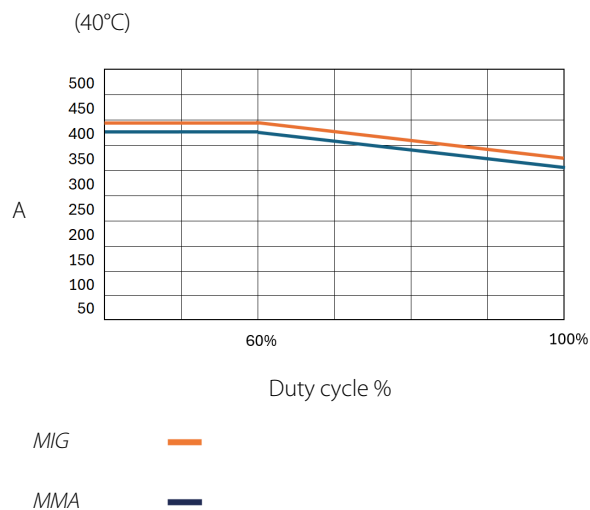
### Interconnection cable specifications

Cable	Welding current cable size	Cable length	Cooling	Connector types
X37001MG	70 mm <sup>2</sup>	1.5 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X39501MG	95 mm <sup>2</sup>	1.5 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37005MG	70 mm <sup>2</sup>	5 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37010MG	70 mm <sup>2</sup>	10 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37015MG	70 mm <sup>2</sup>	15 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37020MG	70 mm <sup>2</sup>	20 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37025MG	70 mm <sup>2</sup>	25 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37030MG	70 mm <sup>2</sup>	30 m	Gas-cooled	7-pin (control), snap (water/gas), DIX (current)
X37001MW	70 mm <sup>2</sup>	1.5 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X39501MW	95 mm <sup>2</sup>	1.5 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X37005MW	70 mm <sup>2</sup>	5 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X37010MW	70 mm <sup>2</sup>	10 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X37015MW	70 mm <sup>2</sup>	15 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X37020MW	70 mm <sup>2</sup>	20 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X37025MW	70 mm <sup>2</sup>	25 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)
X37030MW	70 mm <sup>2</sup>	30 m	Water-cooled	7-pin (control), snap (water/gas), DIX (current)

## 1.7 X3 welding performance

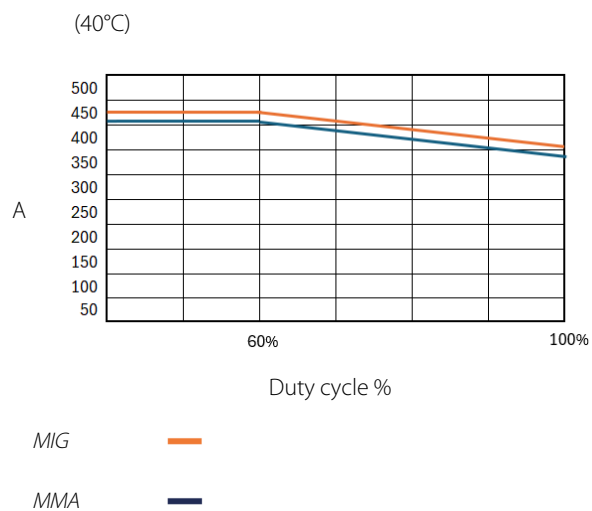
The following graph describes the welding performance of X3S Power Source Syn 420. For technical data, refer to "X3 power sources" on page 84.

*X3S Power Source Syn 420:*



The following graph describes the welding performance of X3P Power Source Pulse 450. For technical data, refer to "X3 power sources" on page 84.

*X3P Power Source Pulse 450:*

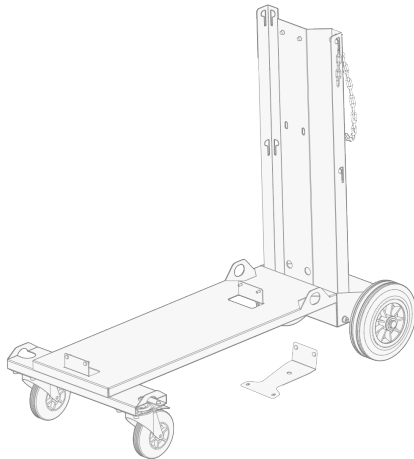


## 1.8 Optional accessories

For installing the optional accessories, refer also to the installation instructions delivered with the equipment. Read also the installation chapters here: "Installation" on page 19.

### **4-wheel cart X3T4**

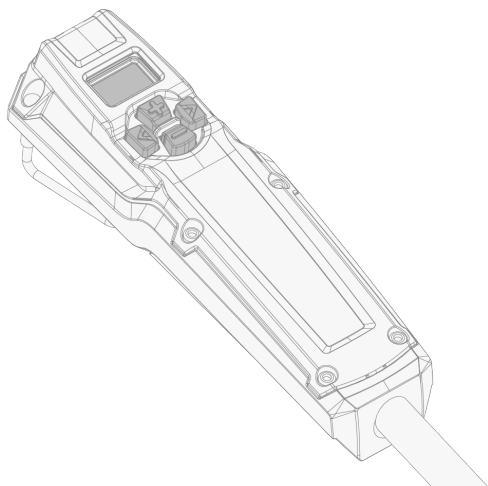
This is a 4-wheel cart with gas bottle rack.



>> For more information, refer to "Installing equipment on X3T4 cart (optional)" on page 23.

### **External remote control HR53**

This is an external handheld remote control unit.



### **Torch remote controls**

X3 FastMig supports also the following torch remote controls (with the Flexlite GX and GXe welding torch models):

- GXR10
- GRe50.

For more information on the torch remote controls, refer to Flexlite GX and GXe operating manuals in [Userdoc](#).





**Other accessories**

These optional X5 FastMig accessories can be used with the X3 FastMig equipment:

- 2-wheel wire feeder cart
- 4-wheel wire feeder cart
- 4-wheel cart
- Wire feeder hanger for boom (X5 WF HD300 version)
- Wire feeder protection sliders (X5 WF HD300 version).

For more information on optional accessories, contact your local KempPi dealer.



## 2. INSTALLATION

-  *Do not connect the equipment to the mains before the installation is complete.*
-  *Do not modify the welding equipment in any way, except for the changes and adjustments covered in the manufacturer's instructions.*
-  *Do not attempt to move or hang the equipment mechanically (e.g. with a hoist) from the handle on the power source unit or on the wire feeder unit. The handles are for manual moving only.*
-  *Place the machine on a horizontal, stable and clean ground. Protect the machine from rain and direct sunshine. Check that there is enough space for cooling air circulation in the machine vicinity.*

### Before installation


- Make sure to acknowledge and follow the local and national requirements regarding installation and use of high voltage units.
- Check the contents of the packages and make sure the parts are not damaged.
- Before you install the power source on site, see the requirements for the mains cable type and fuse rating.

### Distribution network

-  *This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated radio-frequency disturbances.*
-  *Provided that the short circuit power of public low voltage system at the point of common coupling is higher than mentioned in the table below (\*), the equipment is compliant with IEC 61000-3-11:2017 and IEC 61000-3-12:2011 and can be connected to public low voltage systems. 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 system impedance complies with the impedance restrictions.*

Equipment	*
X3 power source 420A:	6.0 MVA
X3 pulse power source 450A:	6.0 MVA

## 2.1 Installing power source mains plug

 *Only an authorized electrician is allowed to install the mains cable and plug.*

 *Only connect the welding machine to an earthed electric network.*

 *Do not connect the machine to the mains before the installation is complete.*

Install the 3-phase plug according to the X3 FastMig power source and site requirements. Refer also to "Technical data" on page 83 for power source specific technical information.

The mains cable includes the following wires:

1. Brown: L1
2. Black: L2
3. Grey: L3
4. Yellow-green: Protective earth

*Table. Cable type and fuse rating requirements:*

Unit amperage	Cable type	Fuse rating
420 A	4 mm <sup>2</sup>	25 A
450 A	4 mm <sup>2</sup>	25 A



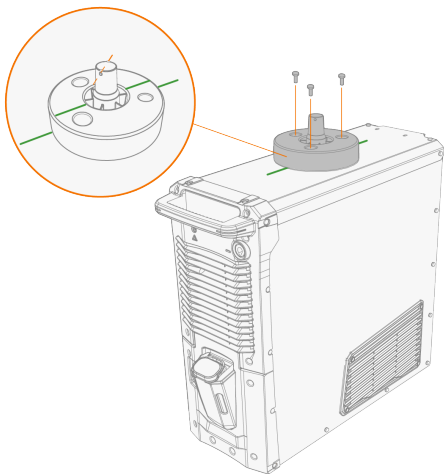
## 2.2 Installing wire feeder with mounting plate

This section describes the installation of X3 wire feeder on top of the power source with the mounting plate. The mounting plate allows the wire feeder to turn.

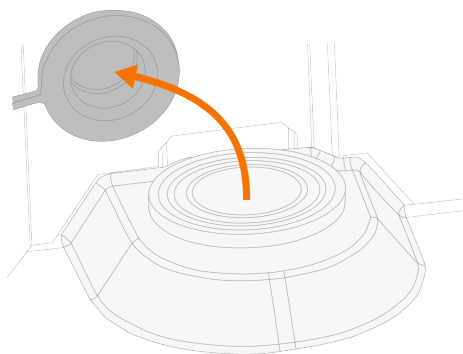
Tools needed:



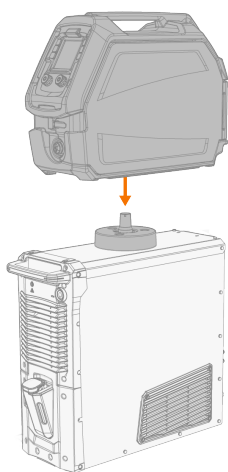
1. Install the wire feeder mounting plate on the power source. Ensure that the positioning lines in the mounting plate and on the power source align.



2. Inside the wire feeder, remove the aperture cover plug and place it into the holder on the side.

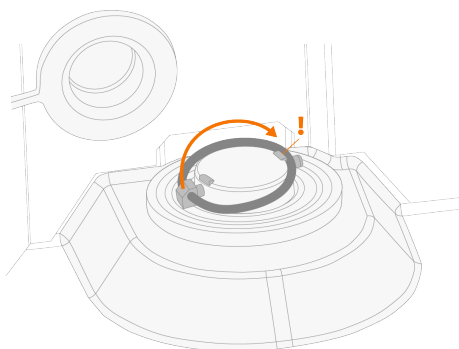


3. Lift the wire feeder on top of the power source, on the mounting plate. Ensure that the mounting interface aligns properly and that the shaft goes fully through the aperture in the wire feeder.

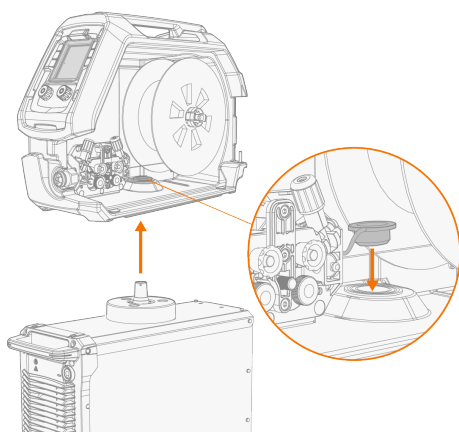


*The wire feeder must be secured to the mounting plate shaft to ensure safe operation.*

4. Open the wire feed cabinet and install the linchpin through the holes in the mounting plate shaft.



When the wire feeder is removed from the mounting plate and taken into use elsewhere, the aperture cover plug must be put back in place.



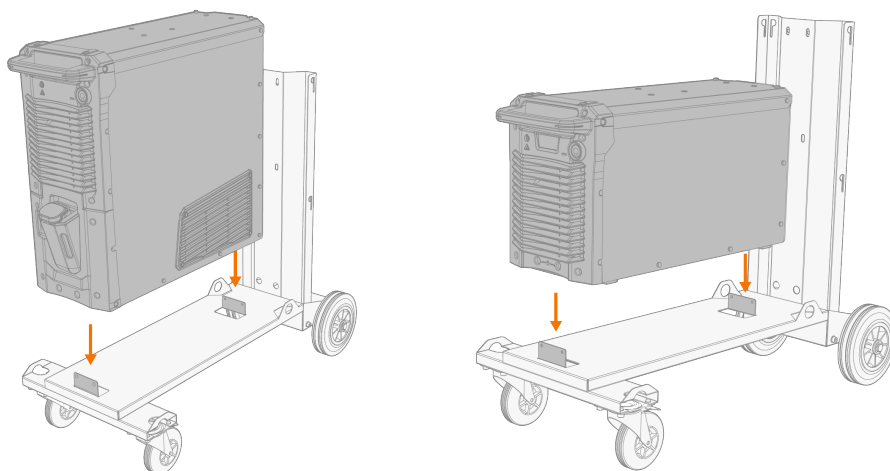
## 2.3 Installing equipment on X3T4 cart (optional)

X3T4 cart is an optional 4-wheel cart with gas bottle rack for X3 FastMig.

Tools needed:

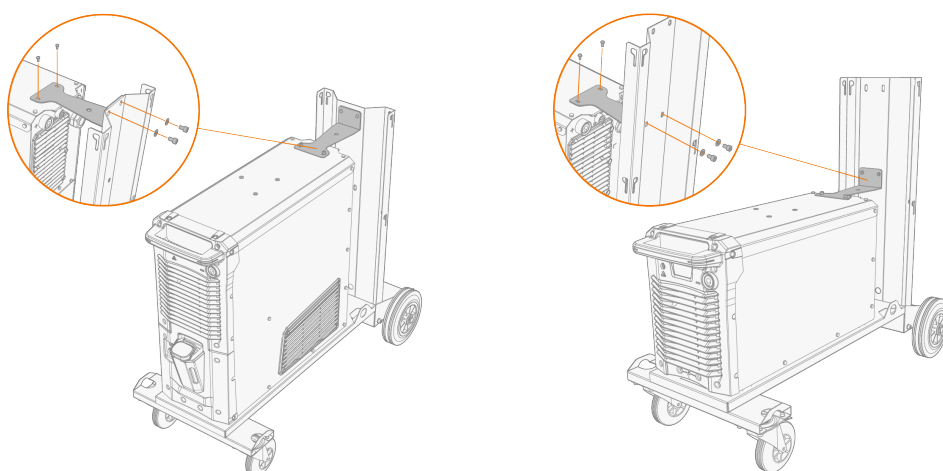


### 1. Install the power source on the cart.

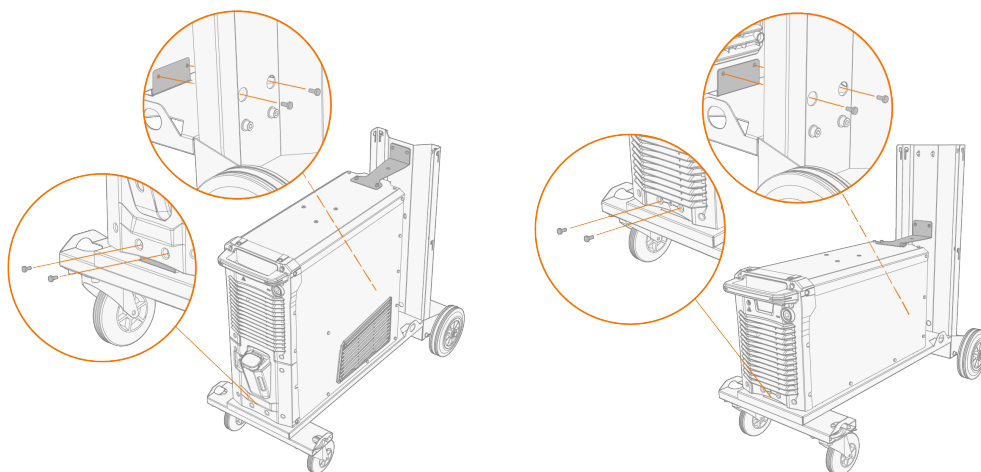


### 2. Secure the power source to the cart.

>> With the securing bracket delivered with the cart:



>> And with two screws in the front and two screws in the rear (use the screws delivered with the securing bracket):

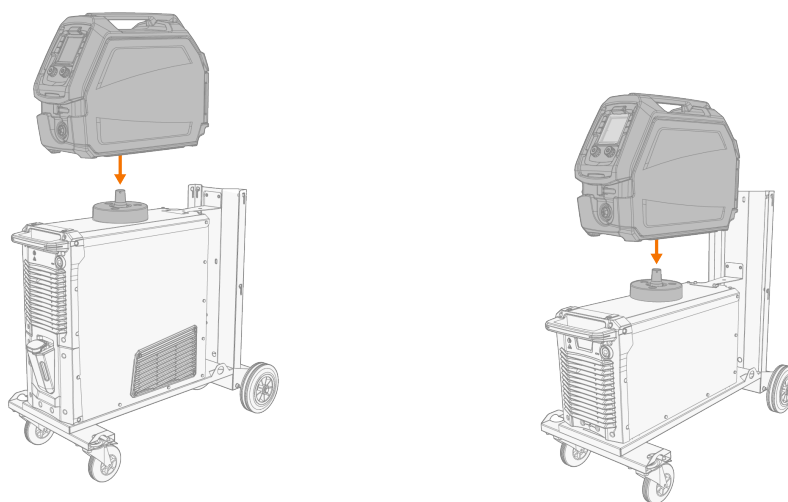


**3. Install the wire feeder mounting plate on the power source.**

>> Refer to "Installing wire feeder with mounting plate" on page 21 for more information.

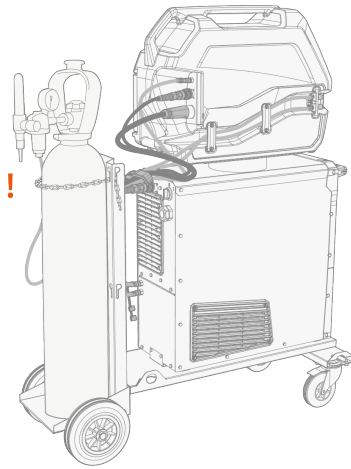
**4. Lift the wire feeder on top of the power source, on the mounting plate.**

>> Refer to "Installing wire feeder with mounting plate" on page 21 for more information.



*The wire feeder must be secured to the mounting plate shaft to ensure safe operation.*

5. Place the gas bottle on the rear rack and secure it with the chain delivered with the cart.



For lifting the equipment, refer to "Lifting equipment" on page 72.

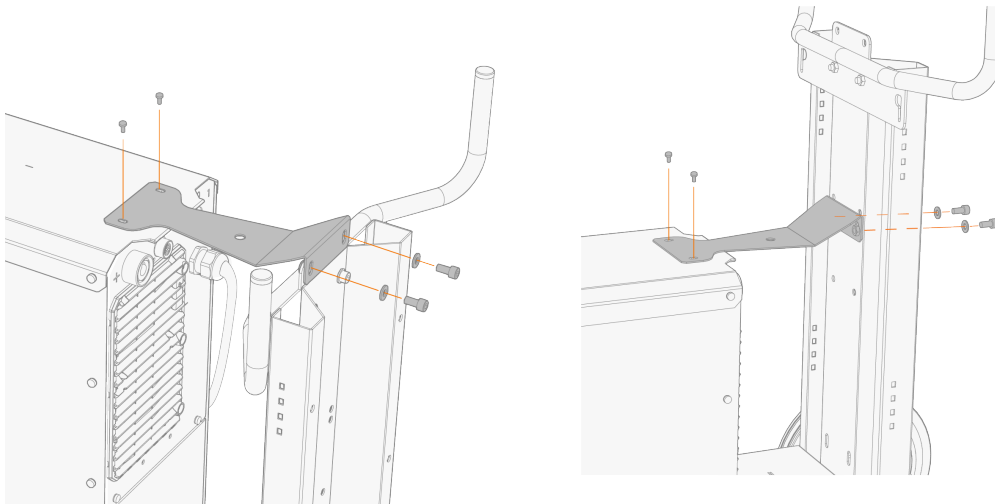
## 2.4 Installing equipment on X5 4-wheel cart (optional)

This 4-wheel cart with gas bottle rack is an optional transport unit for X5 FastMig that can also be used with X3 FastMig. The equipment must be secured in place using an equipment-specific securing bracket accessory for X3 FastMig (SP027771).

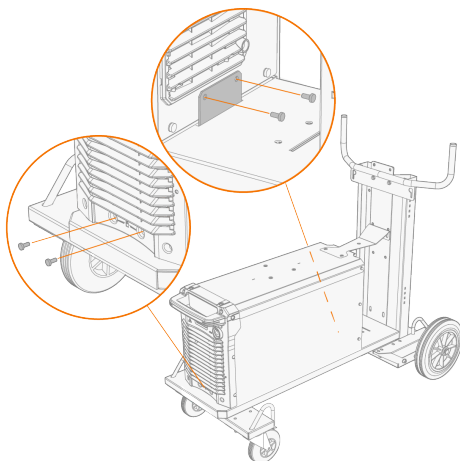
Tools needed:



1. Install the power source on the cart by following the installation instructions delivered with the cart and the basic installation principles described here: "Installing equipment on X3T4 cart (optional)" on page 23.
2. Secure the power source to the cart.  
 >> With the X3 FastMig securing bracket:



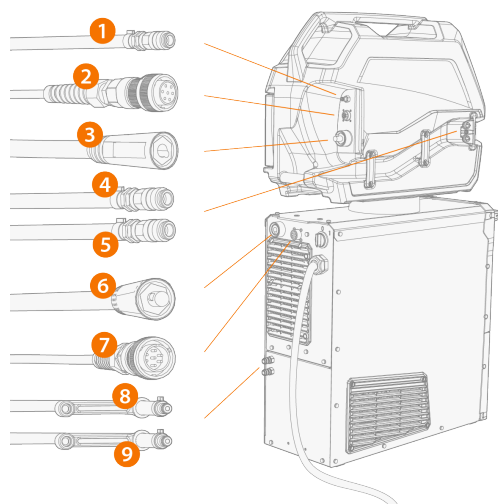
>> And with two screws in the front and two screws in the rear (use the screws delivered with the securing bracket):



3. Install the wire feeder and gas bottle by following the installation instructions delivered with the cart and the basic installation principles described here: "Installing equipment on X3T4 cart (optional)" on page 23.

## 2.5 Installing cables

Connect the interconnection cables first to the wire feeder and then to the power source. For the connector descriptions, refer to "X3 wire feeder" on page 11.



Tools needed:



 *Route the cables as neatly as possible.*

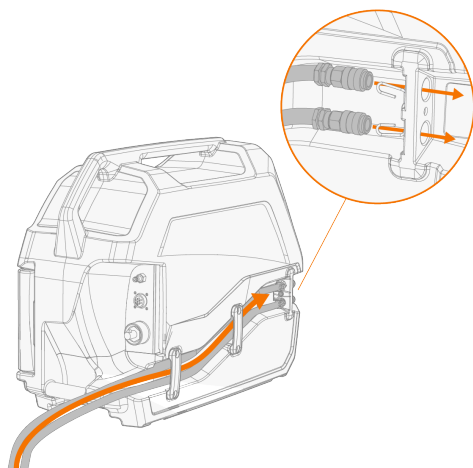
1. Connect the welding current cable (3) to the wire feeder. Push the cable as far as it goes and turn the connector clockwise to tighten the cable to its place.



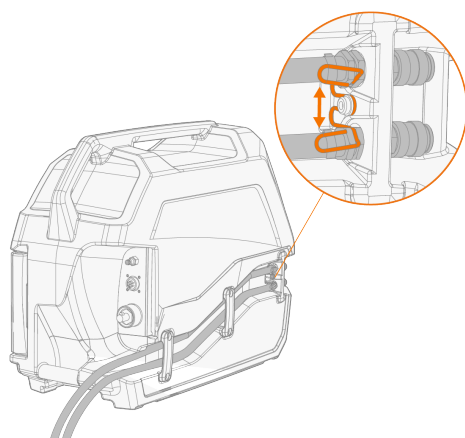
*Tighten the welding current cable as much as you can by hand. If the welding current cable connection is loose, it may overheat.*



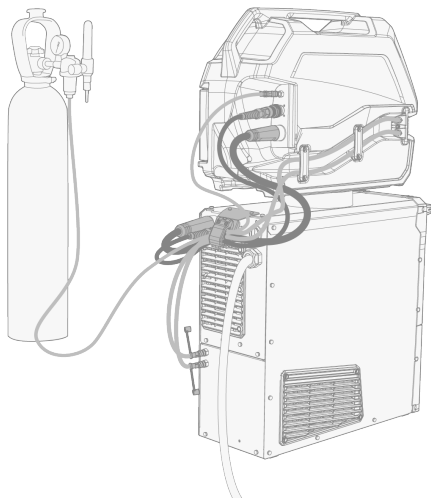
2. Push the shielding gas hose (1) to the shielding gas hose connector so that it locks down.
3. Connect the control cable (2) to the connector. Rotate the collar clockwise to lock it in place.
4. If you have the optional cooling unit, place the cooling liquid hoses (4, 5) into the recess on the wire feeder side and the connectors through the apertures.



5. Compress the spring fastener to secure the hose connectors in place. Once released, ensure that the spring fastener locks in place into the hose connector grooves.

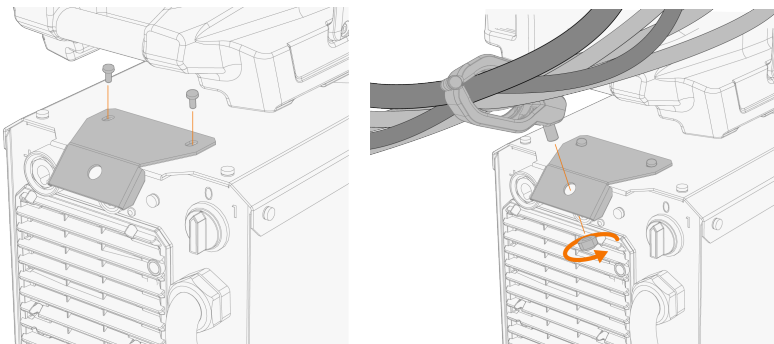


6. Secure the cable fasteners.
7. Connect the welding current cable (6) to the plus (+) connector on the power source.
8. Connect the control cable (7) to the power source.
9. Connect the shielding gas hose to the gas bottle.
10. If you have the optional cooling unit, connect the cooling liquid hoses (8, 9) to the cooling unit. The hoses are color-coded.
11. As applicable, secure the cables with the included cable clamp(s) depending on your equipment installation. The cable clamps help to guide the cables and act as a strain relief.

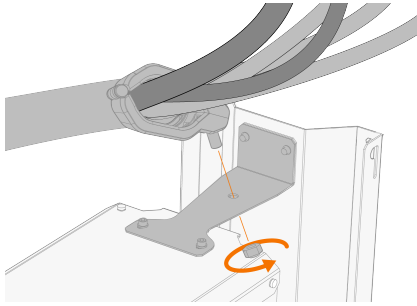


*The 1.5 meter interconnection cables come with one cable clamp attached in the power source end of the cable.  
The 5 meter and longer interconnection cables have two cable clamps attached, one in the power source end of the cable and one in the wire feeder end of the cable.*

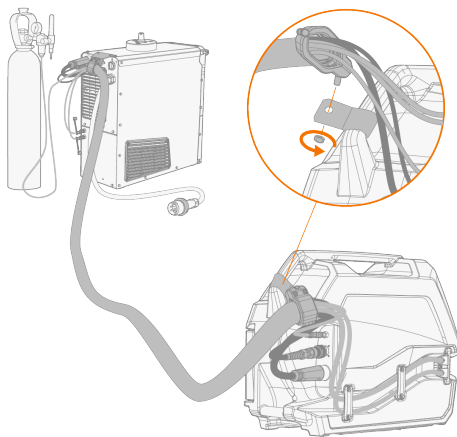
>> If the wire feeder is installed on top of the power source, the attached cable clamp can be secured to the optional support bracket on the power source (with the nut provided):



>> With the optional cart, secure the attached cable clamp to the cart support bracket (with the nut provided):



>> 5 meter and longer cables: To secure the wire feeder end of the interconnection cable, place the additional support bracket around the wire feeder's rear handle and secure the cable clamp to it (with the nut provided).



For connecting the earth return cable and MIG welding torch to the system, refer to "Connecting welding torch and earth return cable" on the next page.



*Most MIG/MAG applications and filler wires run the wire feed unit's welding current cable connected to the positive terminal of the power source. The polarity can be selected by connecting the welding current cable and earth return cable accordingly to either the positive or negative connector on the power source. For this purpose, an additional cable extension for the interconnection cable's welding current cable is available as an optional extra.*



*Ensure that you have connected and tightened all the cables properly.*



*The interconnection cable heats up during welding. The cables must be handled with caution right after welding.*

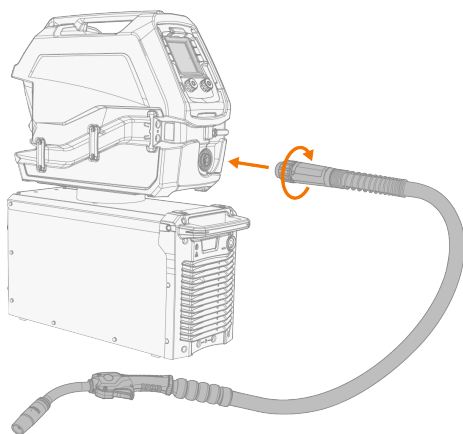
## 2.6 Connecting welding torch and earth return cable

X3 FastMig is designed to be used with the Kemppi Flexlite GXe MIG welding torches. For the Flexlite GXe operating instructions, refer to [userdoc.kemppi.com](http://userdoc.kemppi.com).

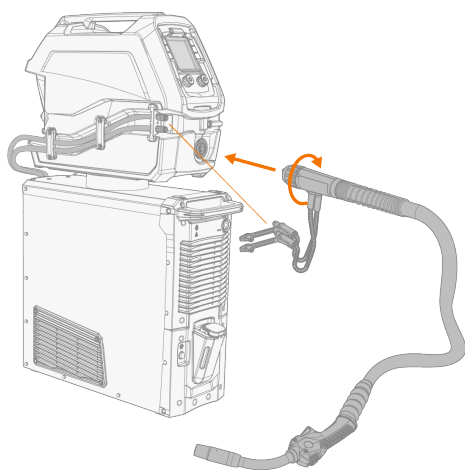
 *Always check that the wire liner, contact tip and gas nozzle are suitable for the job.*

To connect the MIG welding torch to the X3 wire feeder, proceed as follows:

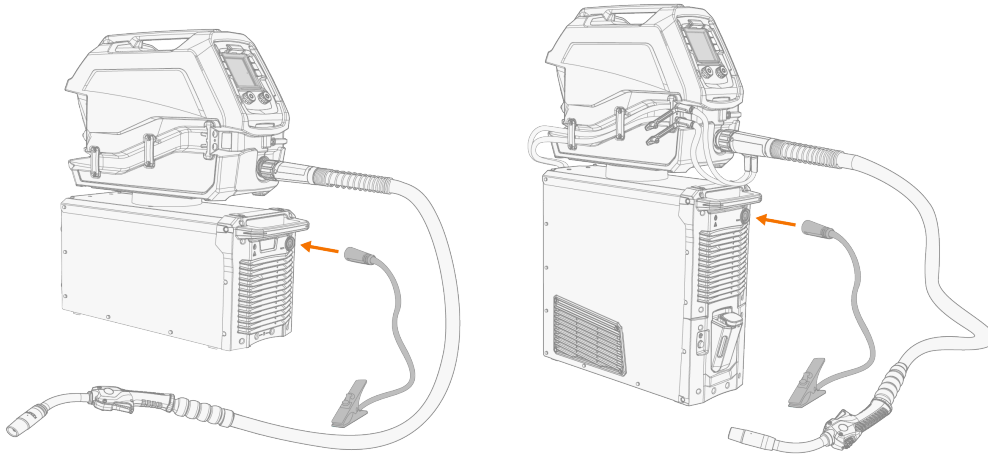
1. Push the welding torch connector (Euro) into the wire feeder's torch connector (Euro) and hand-tighten the collar.



2. If your setup includes a power source with cooling unit and a water-cooled torch, connect also the cooling liquid hoses. The hoses are color-coded.





3. Install and load the filler wire as described in "Installing and replacing filler wire and wire spool" on page 39.
4. Check the gas flow. Refer to "Installing gas bottle and testing gas flow" on page 48 for more information.
5. Connect the earth return cable to the power source's connector (-) in the front.



*(The above illustration shows different equipment setup options.)*

## 2.6.1 Connections for MMA welding and gouging

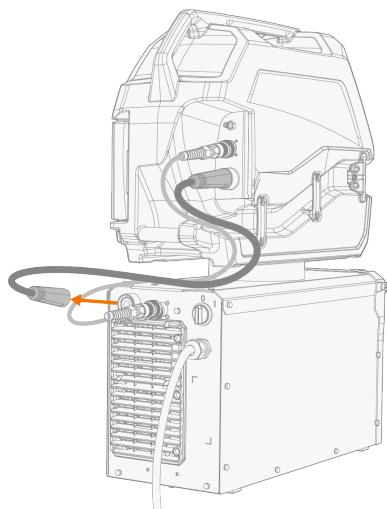
-  This chapter describes the connections with the wire feeder connected to the system. In this case, the wire feeder control panel is used to control the MMA welding parameters. For standalone MMA welding use of the power source, refer to "Connections for standalone MMA welding and gouging" on page 36.
-  The following steps describe connecting the electrode holder, but the same connection method and cautionary notes apply with the gouging cable for carbon arc gouging.

MMA welding requires disconnecting the welding cable (to the wire feeder) from the welding connector (+) in the rear of the power source.

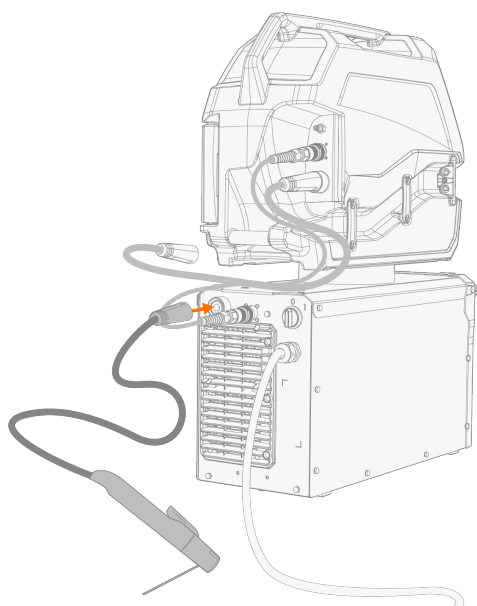
Optionally, an additional DIX splitter cable adapter connected to the rear welding connector (+) can be used, if MMA welding is more frequent.

**To connect the electrode holder (or gouging cable) to the X3 power source, proceed as follows:**

1. If already connected, temporarily disconnect the welding current cable (going to the wire feeder) from the rear of the power source.



2. Connect the electrode holder directly to the welding connector (+) in the rear of the power source.

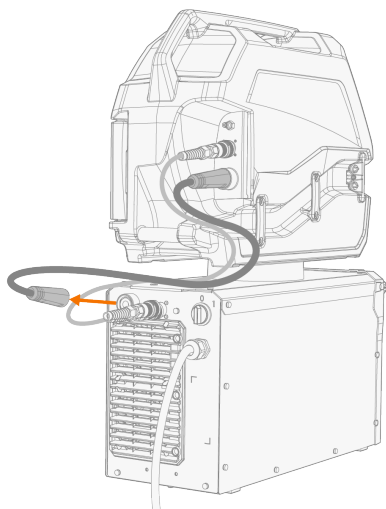


**To connect to the X3 power source using the optional splitter cable adapter, proceed as follows:**

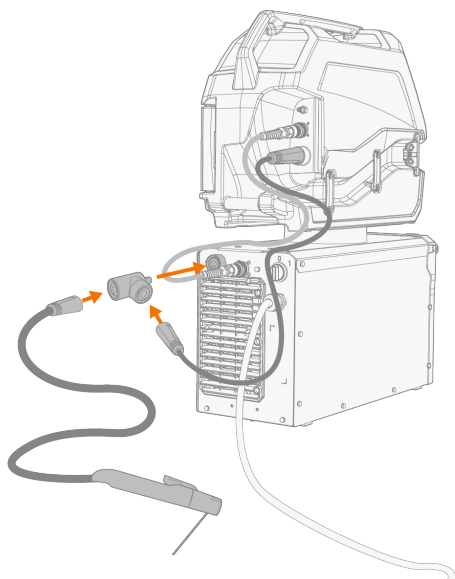


*Disconnect the electrode holder or the electrode from the electrode holder when not welding in MMA mode. Connected like this, the MMA cable is part of the circuitry even when welding in other operation modes (e.g. MIG).*

1. If already connected, disconnect the welding current cable (going to the wire feeder) from the rear of the power source.

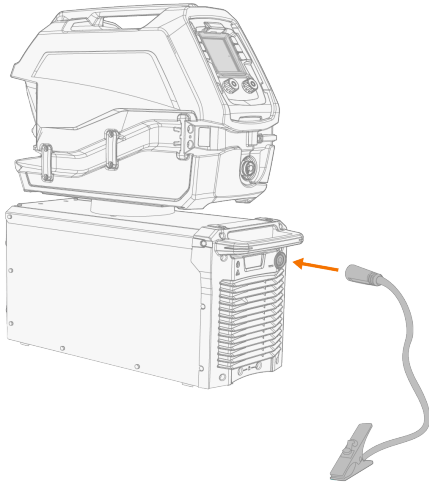


2. Attach a DIX splitter cable adapter to the welding current cable connector (+) in the rear of the power source.
3. Connect both, the welding current cable (going to the wire feeder) and the electrode holder cable to the DIX splitter cable adapter.



**To connect the earth return cable and to change into MMA mode, proceed as follows:**

1. Connect the earth return cable to the power source's connector (-) in the front.



2. Change the welding system's operation mode to MMA using the control panel on the wire feeder. For more information, refer to "X3 control panel" on page 54.



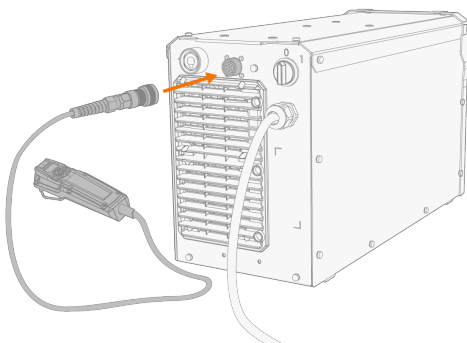
*Most MMA applications require the welding current cable (or gouging cable) to be connected to the positive terminal of the power source. The polarity can be selected by connecting the welding current cable (or gouging cable) and earth return cable accordingly to either the positive or negative connector on the power source. For this purpose, an additional cable extension for the interconnection cable's welding current cable is available as an optional extra.*

## 2.6.2 Connections for standalone MMA welding and gouging

X3 power sources can be used for MMA welding and carbon arc gouging also without a wire feeder. The HR53 remote control is required for this standalone use.

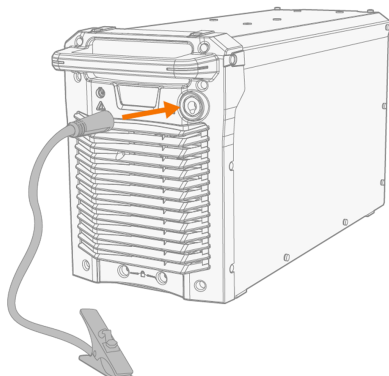
To connect the electrode holder, earth return cable and HR53 remote control to the X3 power source, proceed as follows:

1. Connect the HR53 remote control to the control cable connector on the rear of the power source.

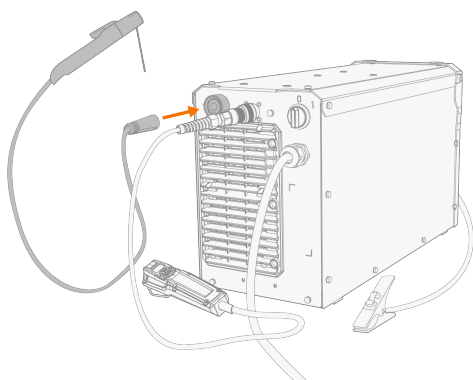




2. Connect the earth return cable to the earth return cable connector (-) on the front of the power source.



3. Connect the electrode holder to the welding current cable connector (+) on the rear of the power source.



 *Once the power source is turned on, it will start in the MMA welding / gouging mode.*

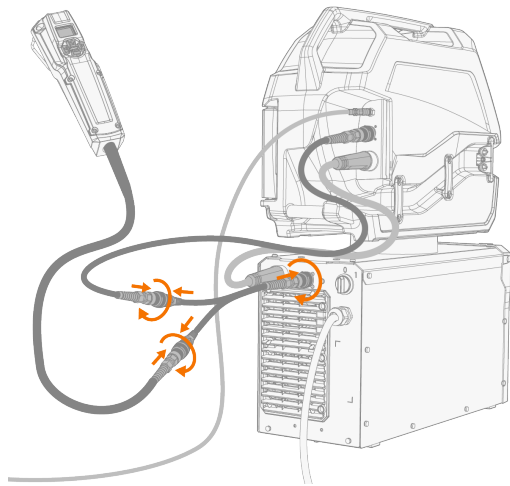
For more information on the HR53 remote control, refer to "Using HR53 remote control" on page 70.

## 2.7 Installing remote control HR53 (optional)

Remote controls are optional. To enable remote operation, connect the remote control device to the X3 FastMig welding equipment.

 *An additional splitter adapter is required to connect the HR53 remote control when also the wire feeder is connected.*


1. Connect the splitter adapter to the power source's control cable connector.
2. Connect the control cable (going to the wire feeder) to the splitter adapter's first available female connector.
3. Connect the remote control cable to the splitter adapter's last available female connector.



X3 FastMig supports also the following torch remote controls with the remote-compatible Flexlite GX and GXe welding torch models:




- GXR10
- GRe50.

For more information on the torch remote controls, refer to Flexlite GX and GXe operating manuals in [Userdoc](#).



 *X3 power sources can be used for MMA welding and carbon arc gouging also without a wire feeder. The HR53 remote control is required for this standalone use.*

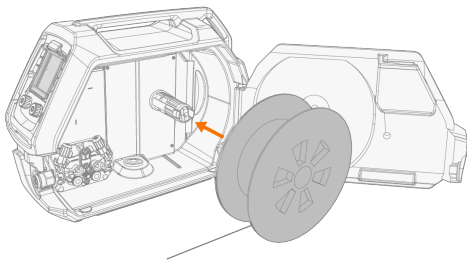
## 2.8 Installing and replacing filler wire and wire spool

This section describes how to install the filler wire and spool on X3 wire feeder.

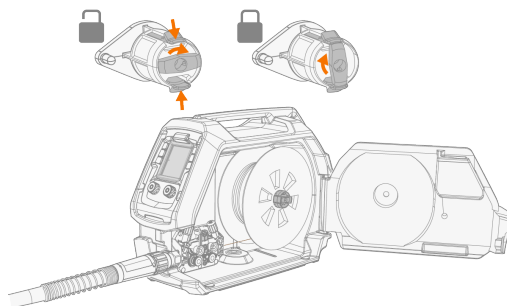
-  *Install the MIG welding torch to the wire feeder before installing the wire spool.*
-  *When changing the wire spool, remove the remaining filler wire from the MIG welding torch and wire feed mechanism before removing the wire spool.*
-  *Always ensure that the feed rolls are suitable for the filler wire (diameter and material) in question. Refer also to "Installing and replacing feed rolls" on page 43.*

### To install the wire spool:


1. Open the wire feed cabinet door.
  2. Insert the wire spool onto the spool hub and push the spool into the wire feeder until the securing mechanism locking clips lock it in place.
-  *Ensure that the wire spool is facing the right direction, the filler wire running from the bottom of the spool to the feed rolls.*
  -  *When installed, the pin next to the wire spool hub in the wire feeder must align and go into the hole in the spool or spool adapter.*



3. Secure the locking clips by turning the lever in the spool hub center.



4. If needed, adjust the spool's brake force by turning the spool brake tightening screw in the center of the spool hub.
  - >> Brake force can be adjusted by turning the adjustment screw with a flat screwdriver through the hole in the locking lever.

-  *The load applied varies depending on the size and weight of the filler wire and spool, but also the filler wire feed speed. The heavier the wire spool and the faster the wire 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.*

### To remove the wire spool:

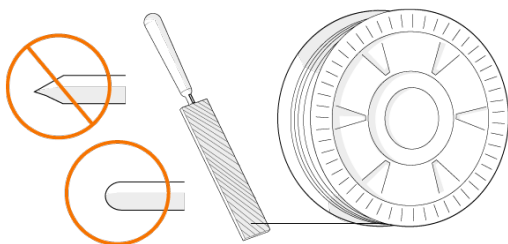
1. Release the locking clips by turning the lever in the spool hub center.
2. Press the locking clips slightly towards the center.
3. Remove the wire spool.

### To install the filler wire:

1. Release the filler wire end from the spool and cut off any deformed section so that the end is straight.

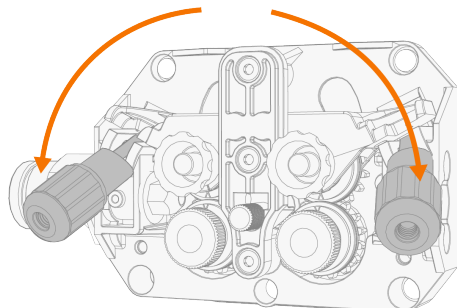
 *Ensure that the filler wire does not spill from the spool when it is released.*

2. File the tip of the filler wire smooth.

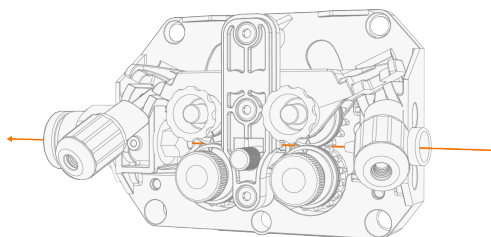


 *Sharp edges on the filler wire tip may damage the wire liner.*

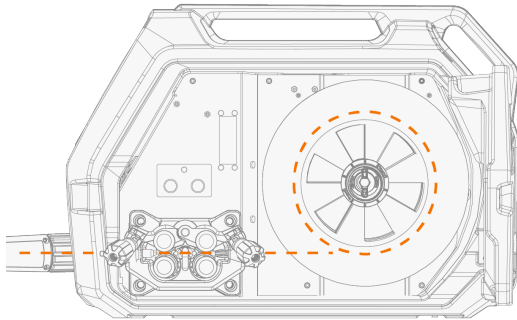
3. Release the pressure roll locking arms to move the feed rolls apart.



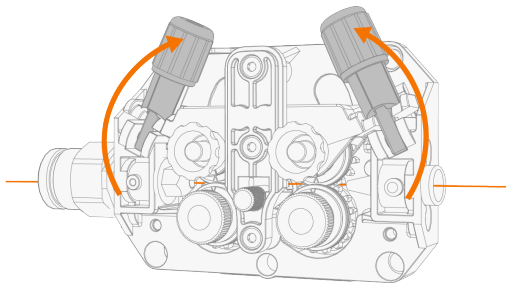
4. Guide the filler wire through the inlet tube and middle wire guide tube and into the outlet tube, which feeds the filler wire to the MIG welding torch.



5. Push the filler wire by hand towards the MIG welding torch so that the wire reaches the wire liner (approx. 20 cm).

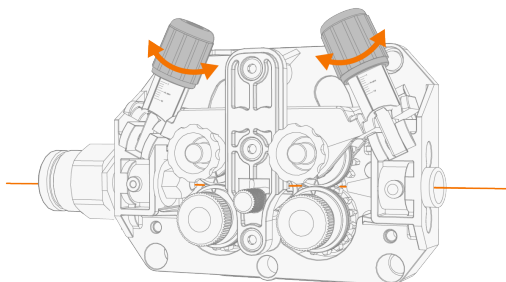


6. Close the pressure roll locking arms so that the filler wire is locked between the feed rolls. Ensure that the filler wire sits in the feed roll grooves.



7. Adjust the pressure of the feed rolls with the pressure roll locking arm knobs.

>> The graduated scales on the pressure roll locking arms indicate the pressure applied on a relative scale from 1 to 10.



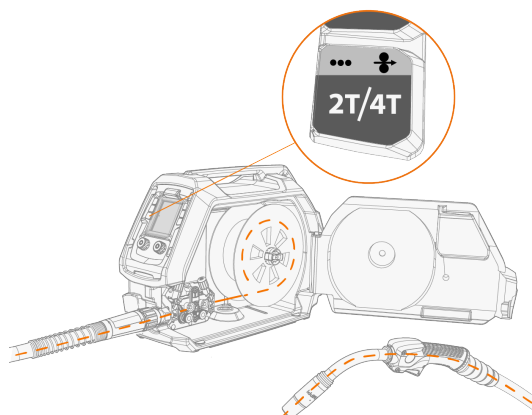
*Apply even pressure on both pressure handles*



*Excessive pressure may cause damage to the filler wire (especially aluminum and cored/coated filler wires) and impede the feeding of the filler wire. Excessive pressure also increases the wire feed mechanism load.*

8. Close the wire feeder cabinet.
9. Press the wire inch button to drive the filler wire into the MIG welding torch. Stop when the wire reaches the MIG welding torch's contact tip.

>> In X3 wire feeder the wire inch function is activated by long-pressing the trigger logic button in the control panel.



 *Watch out for the wire when it reaches the contact tip and exits the welding torch.*

- 10.** Before welding, ensure that the welding parameters and settings on the control panel conform to your welding setup.

>> Refer to "X3 control panel" on page 54 for more information.

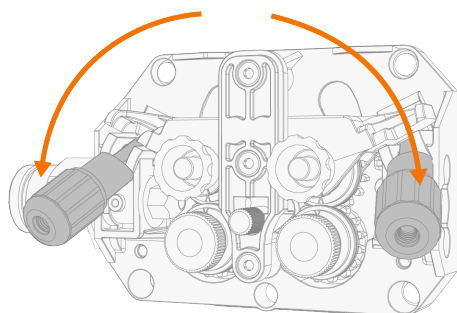
## 2.9 Installing and replacing feed rolls

Replace the wire feed rolls when the material and diameter of the filler wire changes.

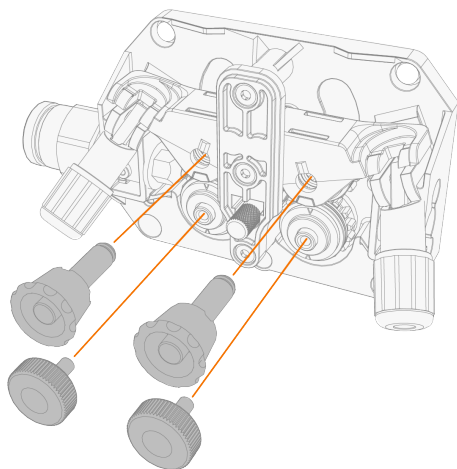
Select the new wire feed rolls according to the tables here: "X3 wire feeder consumables" on page 90.

To replace the wire feed rolls:

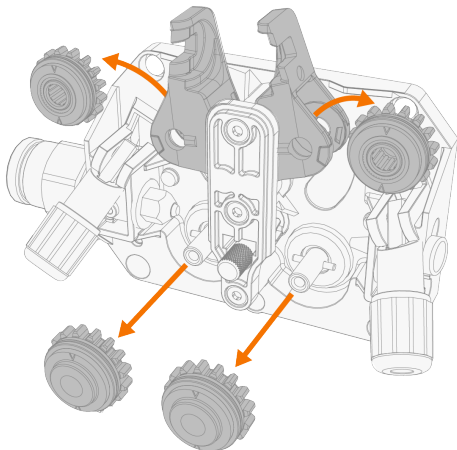
1. Open the wire feeder cabinet.
2. Release the pressure roll locking arms on the wire feed mechanism.



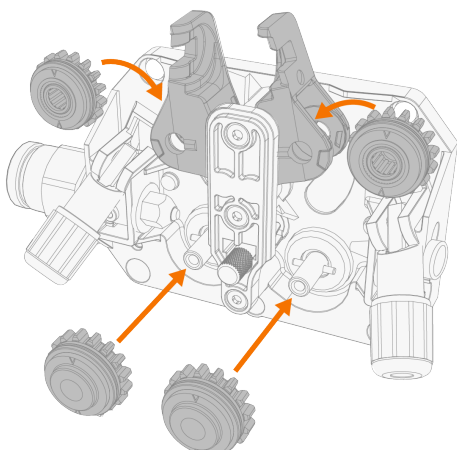
3. Pull out the pressure roll mounting pins and unscrew the drive roll securing caps.



4. Turn the pressure roll holders open and remove the pressure rolls.
5. Remove the drive rolls.

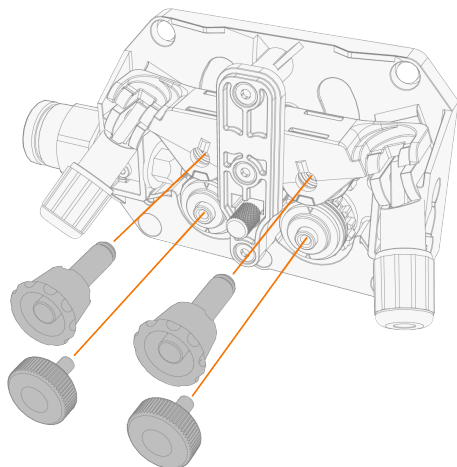


6. Follow the previous steps in reverse to install the wire feed rolls. Align the cut on the drive rolls' bottom with the pin on the drive shaft.

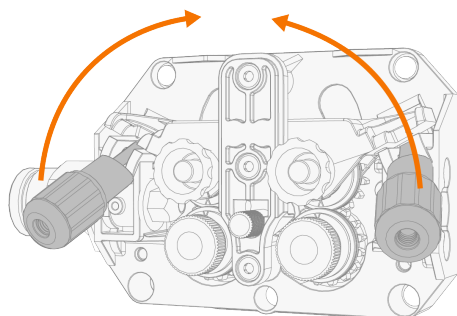




7. Reattach the mounting caps and mounting pins to lock the drive and pressure rolls into their places.



8. Lower the pressure roll locking arms to secure the pressure rolls.



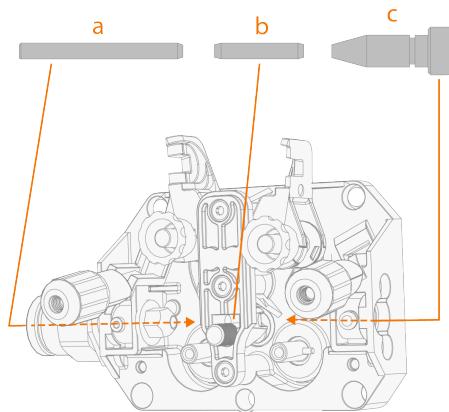
9. Close the wire feeder cabinet.

Refer to "Installing and replacing filler wire and wire spool" on page 39 for more information on the wire installation.

## 2.10 Installing and replacing wire guide tubes

The wire feed mechanism includes three wire guide tubes. Replace them when the filler wire diameter grows or the material changes.

 When replacing the outlet guide tube, the MIG welding torch must be detached.

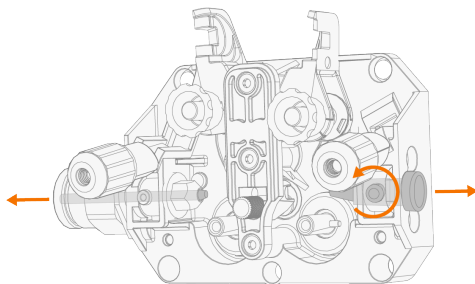


- a.** Outlet guide tube
- b.** Middle guide tube
- c.** Inlet guide tube

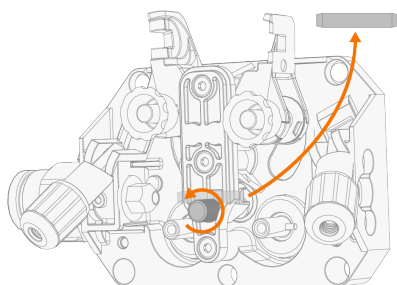
Select the new wire guide tubes according to the tables here: "X3 wire feeder consumables" on page 90.

To replace the wire guide tubes:

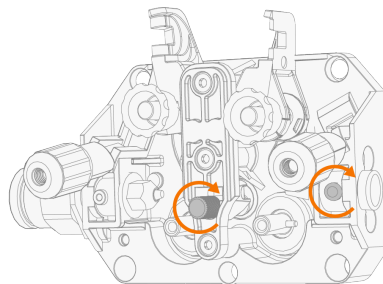
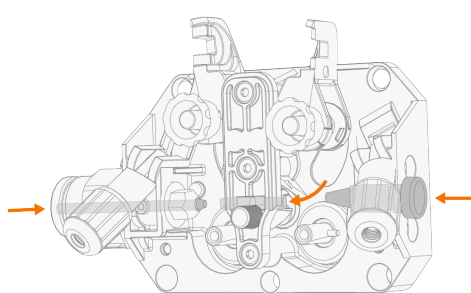
- 1.** Release the pressure arms and remove the filler wire and wire feed rolls from the system.  
>> Refer to "Installing and replacing feed rolls" on page 43 for more information on the wire feed roll removal.
- 2.** Release the tightening screw on the mechanism frame and pull out the old inlet guide tube.
- 3.** Remove also the old outlet guide tube by pushing it out through the welding torch connector.



4. Release the tightening knob in the middle and pull out the old middle guide tube.



5. Insert the new inlet guide tube in place and secure it by tightening the screw on the mechanism frame.
6. Install a new outlet guide tube by pushing it in through the welding torch connector.
7. Insert a new middle guide tube in place and secure it with the tightening knob.



8. Replace the wire feed rolls, as applicable.

>> Refer to "Installing and replacing feed rolls" on page 43 for more information on the wire feed roll installation.

## 2.11 Installing gas bottle and testing gas flow



*Handle gas bottles with care. There is a risk of injury if the gas bottle or the bottle valve is damaged!*



*Always secure the gas bottle properly in an upright position to a special holder on the wall or on the welding equipment cart. Always keep the gas bottle valve closed when not welding.*



*- If a transport unit with a gas bottle rack is used, install the gas bottle on the transport unit first, then make the connections.*

*- Install the welding gun to the wire feeder before installing and testing the gas bottle.*

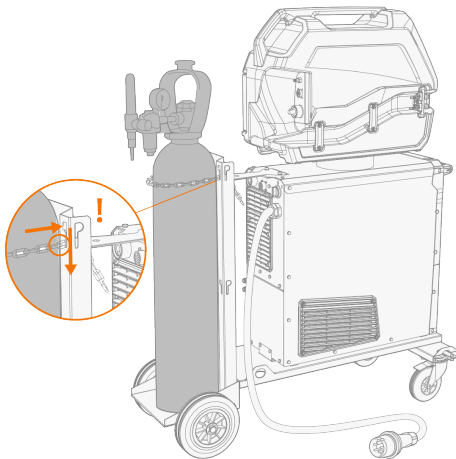
*- Do not use the whole contents of the bottle.*

*- Always use an approved and tested regulator and flow meter.*

Contact your local Kemppi dealer for choosing the gas and the equipment.

1. Without gas bottle cart: Place the gas bottle in a suitable, secure location.
2. With gas bottle cart: Move the gas bottle on the transport unit's gas bottle rack and secure it in place with the chain provided.

>> Take the chain through the top part of the keyhole slot and drop it down into the keyhole slot's narrow section to lock the chain in place.



3. If not already, connect the welding torch to the wire feeder.
4. Connect the gas hose to the wire feeder.
5. Open the gas bottle valve.
6. Press the gas test button in the wire feeder control panel to flush the previous shielding gas and to run the new gas into the system.

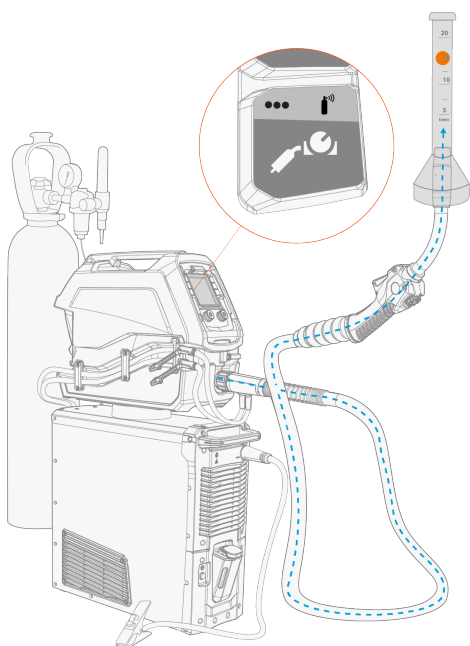
>> In X3 wire feeder the gas test function is activated by long-pressing the remote control selection button in the control panel.



*Use the gas test function also to test that the shielding gas flows through the system properly.*

7. Press the gas test button again to adjust the gas flow. Use an external flow meter and regulator for measuring and adjustment.

>> In X3 wire feeder the gas test function is activated by long-pressing the remote selection button in the control panel.







Recommended gas flow rates (for general guidance only):

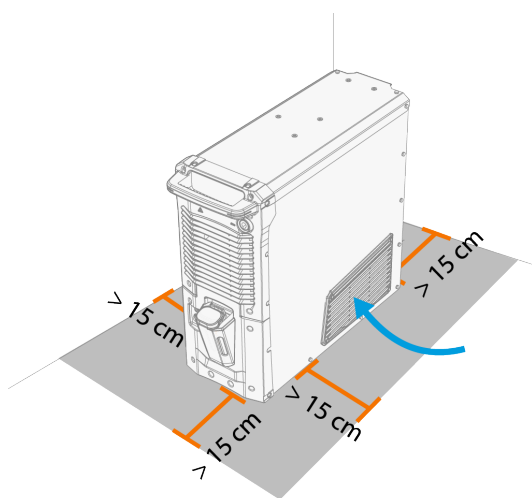
	MIG*
Argon	10...25 l/min
Helium	-
Argon + 18-25% CO <sub>2</sub>	10...25 l/min
CO <sub>2</sub>	10...25 l/min



\* Depending on the gas nozzle size and welding current.

### 3. OPERATION

Before using the equipment, ensure that all the necessary installation actions have been completed according to your equipment setup and instructions.

-  *Only connect the welding machine to an earthed electric network.*
-  *Welding is forbidden in places where there is an immediate fire or explosion hazard!*
-  *The interconnection cable heats up during welding. The cables must be handled with caution right after welding.*
-  *Check that there is enough space for cooling air circulation in the machine vicinity. There should be a minimum of 15 centimeters of free space around the equipment for unobstructed air circulation.*



-  *If the welding equipment is left unused for a longer period, disconnect the mains plug from the mains.*
-  *Always check before use that interconnection cable, shielding gas hose, earth return cable and clamp and mains cable are in serviceable condition. Ensure that the connectors are correctly fastened. Loose connectors can impair welding performance and damage connectors.*

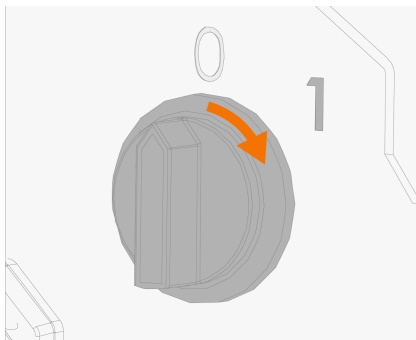
## 3.1 Preparing welding system for use

### Before starting the use of the welding equipment

- Ensure the installation has been completed according to your welding equipment setup and process  
>> Refer to the "Installation" on page 19 chapters.
- Turn the welding equipment on
- Prepare the cooler
- Connect the earth return cable to the work piece
- Calibrate the welding cable (in MIG operation mode only)  
>> Refer to "Calibrating welding cable" on page 53 for instructions.

### Turning on welding system

To turn on the welding equipment, turn the power source main switch to ON (I).



Turn the main switch to start and shut down the welding equipment. Do not use the mains plug as a switch.



*If the welding equipment is left unused for a longer period, detach the mains plug to disconnect the equipment from the mains.*

### Preparing cooler (with water-cooled model only)

Fill the coolant container inside the cooler with Kemppi cooling liquid. For instructions on filling the cooler, refer to "Filling cooler and circulating coolant" on the next page. To weld, you must pump the coolant through the system by pressing the coolant circulation button in the front panel of the cooling unit.

### Connecting earth return cable



*Keep the welding piece connected to earth to reduce the risk of injury to users or damage to electrical equipment.*

Attach the earth return cable clamp on the welding piece.

Ensure that the surface contact to the table is clean of metal oxide and paint and that the clamp is firmly secured.

### Selecting operation mode and process

To select the operation mode (MIG/MMA/Gouging), refer to "X3 control panel" on page 54.



*Replace also the welding cable accordingly, and remove or replace the filler wire in the wire feeder.*

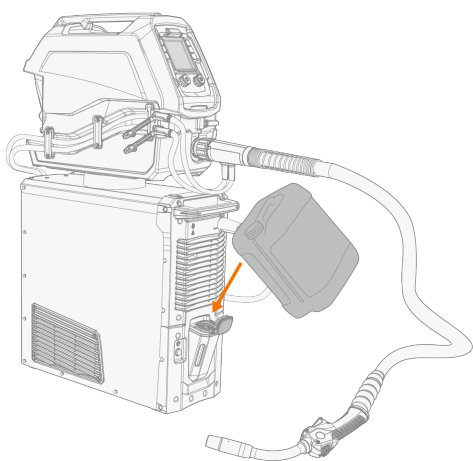
### 3.1.1 Filling cooler and circulating coolant

Fill the cooler with pre-mixed coolant solution. The mixing ratio should be 20...50% as standard. Use only ethylene or propylene glycol mixture intended for welding cooling systems, for example Kemppi cooling liquid.



*Do not add water to the pre-mixed coolant solution. Do not use automotive cooling solutions or ethanol-based mixtures.*

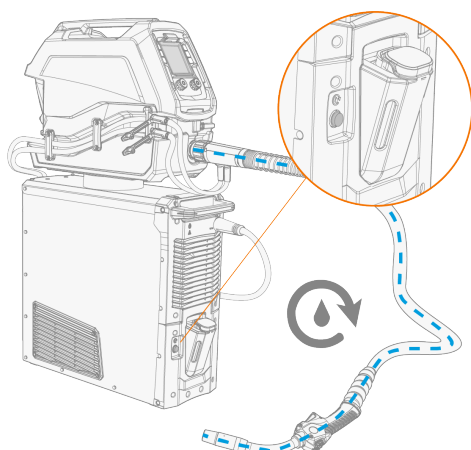
1. Open the cooler cap.
2. Fill the cooler with coolant. Do not fill over the max. marking.



3. Close the cooler cap.

#### To circulate the coolant:

Press the coolant circulation button in the cooler front panel. It activates the motor, which pumps the coolant to the hoses and to the welding torch.



Complete the coolant circulation operation after each time you change the welding torch. Check and add coolant as necessary (e.g. if the welding torch is changed to a model with longer cable).



### 3.1.2 Calibrating welding cable

With X3 FastMig, the welding cable resistance can be measured using the built-in cable calibration function without additional measurement cable. This calibration function is available only in MIG operation mode.

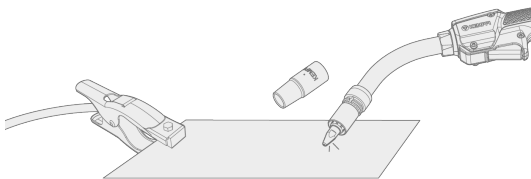
**i** Calibration needs to be done when the machine has never been welded before, or the total length of the welding torch, interconnection cable and earth return cable has changed by at least 5 meters.

1. Connect the earth return cable between the power source and work piece.
2. Remove the MIG welding torch gas nozzle.
3. Connect the MIG welding torch to the wire feeder.
4. Turn the welding equipment on.
5. On the control panel, press the cable calibration button (long press of the filler wire and shielding gas setup button).



>> For more information on the X3 wire feeder control panel, refer to "X3 control panel" on the next page.

6. Press the control knob button in the control panel to start and touch the cleaned work piece with the MIG welding torch contact tip.



>> Follow the progress bar on the control panel display.



**i** There is no need to pull the trigger. Trigger function is disabled at this stage.

Once finished, the calibration values (resistance and inductance) are shown on the screen.



## 3.2 X3 control panel

This section introduces the controls and features of the X3 wire feeder's control panel.



**1. Left control knob (more information below)**

>> Turn and press the control knob to make selections

**2. Right control knob (more information below)**

>> Turn and press the control knob to make selections


**3. Trigger logic and wire inch button**

>> Short press: Trigger logic selection (2T/4T)

>> Long press: Wire inch, drive the filler wire forward (with arc off)

 During wire inch, the wire feed speed can be adjusted with the right control knob.

**4. Process and mode button**

>> Short press: MIG welding process selection (Manual MIG (M) / 1-MIG (A) / Pulse MIG ()). Use the right control knob to make the selection. When in Manual MIG mode, the short press of the button opens the material selection menu first.

>> Long press: Operation mode selection (MIG/MMA/Gouging)

 The Pulse MIG process is available only with a pulse power source.

 When in MMA or Gouging mode, short press of the welding process selection always returns the device to the MIG mode.

**5. Memory channel button**

>> Short press: Change memory channel

>> Long press: Save to memory channel >> For more information, refer to: "Memory channels" on page 63

**6. Material selection and cable calibration button**

>> Short press: Filler wire material, thickness and shielding gas selection >> For more information, refer to: "Base settings for 1-MIG and Pulse MIG" on page 57

>> Long press: Cable calibration >> For more information, refer to: "Calibrating welding cable" on the previous page

**7. Welding parameters button**

>> Short press: Additional welding parameter adjustments: Hot start / Crater fill / Post current (PC) >> For more information, refer to: "Additional welding parameters" on page 60

>> Long press: Water cooling AUT/ON/OFF (AUT = Automatic). Use the right control knob to make the selection.

### 8. Remote control and gas test button

>> Short press: Remote control mode selection (applies to torch remote control only): Wire feed speed / Channel / OFF

>> Long press: Gas test, test the shielding gas flow and flush the gas line

 During gas test, the gas flow can be adjusted with control knob.

### 9. Control panel display.

>> For more information, refer to: "X3 control panel" on the previous page.


## Control knob functions in main welding view


Left control knob:

- Manual MIG: Wire feed speed adjustment
- 1-MIG: Wire feed speed adjustment
- Pulse MIG: Wire feed speed adjustment
- MMA: Welding current adjustment
- Gouging: Current adjustment.

Right control knob:

- Manual MIG: Welding voltage adjustment
- 1-MIG: Fine tuning of welding voltage / Dynamics (press to switch between adjusted parameters)
- Pulse MIG: Fine tuning / Pulse current (press to switch between adjusted parameters)
- MMA: Dynamics adjustment.

 The right control knob is the default control knob for adjustments and selections when saving welding parameters to a memory channel or when adjusting additional parameters.

 In most of the adjustment and setup views, pressing the left control knob or one of the side buttons returns back to the main view.

>> For more information, refer to: "Main welding parameters" on page 58

**Safety lock:** By long-pressing the control knobs 1 and 2 simultaneously for 2 seconds, the device can be locked for safety. This prevents welding and operating the device by accident without having to turn the equipment off. Unlock the device by pressing the control knobs 1 and 2 simultaneously for 2 seconds.

## 3.2.1 Control panel display items



### 1. Memory channels (1...5) and remote control indicator (shown when torch remote control is used for changing memory channels)

>> Refer to "Memory channels" on page 63 for more information.



### 2. Warning and caution indicators and VRD (Voltage Reduction Device) indicator

>> Refer to "Warning and error indicators" on page 64 for more information.

>> The voltage reduction device (VRD) function is used with MMA and Gouging modes only, and only if the function is enabled on the welding equipment. For more information, refer to "Voltage reduction device (VRD)" on page 69.






### 3. Filler wire material, diameter and shielding gas settings

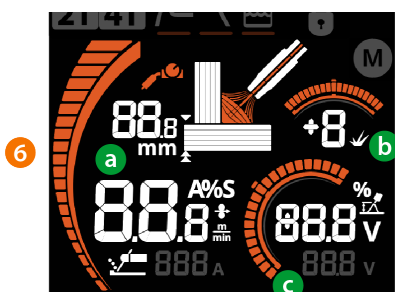


### 4. Trigger logic, Hot start, Crater fill and water cooling indicators



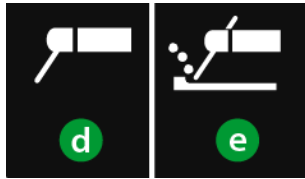
### 5. MIG welding process indicators

	Automatic MIG (1-MIG)
	Pulse MIG
	Manual MIG



### 6. Main welding parameters:

- a) Wire feed speed adjustment and indicators for material thickness and remote control (when torch remote control is used for welding parameter adjustment)
- b) Dynamics or pulse adjustment
- c) Voltage or voltage fine tuning.



**d)** MMA icon (when MMA mode is selected)

**e)** Gouging icon (when Gouging mode is selected)

Refer to "Main welding parameters" on the next page for more information on the welding parameters with each welding process.

You can also find the X3 control panel symbols explained here: "X3 control panel symbols and icons summary" on page 99.

### 3.2.2 Base settings for 1-MIG and Pulse MIG

For automatic 1-MIG (A) and Pulse MIG (⌚) welding, you are required to enter the filler wire and shielding gas information to determine the base welding program.

 The Pulse MIG process is available only with a pulse power source.

Manual MIG welding doesn't require the filler wire and shielding gas information to be specified.

The filler wire and shielding gas setup can be entered at any time by pressing the material selection button in the control panel.

1. Select filler wire material by turning and pressing the right control knob.



>> When the control knob is pressed to confirm the set value, the next settings value is automatically selected for adjustment. The value under adjustment is underlined.

2. Set filler wire diameter by turning and pressing the right control knob.




3. Select shielding gas by turning and pressing the right control knob.



4. Once the filler wire and shielding gas information has been entered, select the welding process by turning and pressing the right control knob. 1-MIG or Pulse MIG:



 While most of the available filler wire and shielding gas combinations are supported by both, 1-MIG and Pulse MIG process, some restrictions apply. For more information, refer to "X3 welding program work pack" on page 97.

5. Select a suitable memory channel to save the settings by turning and pressing the right control knob.

On the following start-ups, X3 FastMig starts into the last used MIG welding process and memory channel.

### 3.2.3 Main welding parameters

The X3 control panel's main view displays the main welding parameters, including wire feed speed, material thickness as well as dynamics, pulse and fine tuning adjustments. The parameters shown and available for adjustment depend on the selected process and/or welding mode.

The parameters' adjustments are accessed using the two control knobs below the display.

 The Pulse MIG process is available only with a pulse power source.

#### Wire feed speed

MIG (M) 1-MIG (A) Pulse MIG

To adjust wire feed speed, turn the left control knob. The set wire feed speed (m/min) is shown on the screen. With 1-MIG and Pulse MIG processes, the welding current (A) corresponding to the wire feed speed is displayed below the speed.



- Adjustment range: 0.5...25.0 m/min (or according to the welding program)
- Default setting: 5.0 m/min
- Adjustment steps: 0.1 m/min

#### Material thickness indicator

1-MIG (A) Pulse MIG

The material thickness value and indicator are shown based on the set wire feed speed with 1-MIG and Pulse MIG processes.



#### Fine tuning

1-MIG (A) Pulse MIG

With 1-MIG and Pulse MIG processes, the welding voltage can be fine-tuned by turning the right control knob. Especially with Pulse MIG, the adjustment essentially affects the arc length. The actual welding voltage is shown below the fine tuning value.



- Adjustment range: According to the welding program
- Default setting: 0.0 V
- Adjustment steps: 0.1 V

### Voltage

MIG (M)

With the manual MIG process, the welding voltage can be adjusted by turning the right control knob.



- Default setting: 14.0 V
- Adjustment steps: 0.1 V

### Pulse current

Pulse MIG

With the Pulse MIG process, the pulse current (peak) can be adjusted by first pressing (to switch to the pulse adjustment mode) and then turning the right control knob.



 The pulse current is adjusted as +/- percentage in relation to the initial pulse current defined in the welding program.

### Dynamics

MIG (M) 1-MIG (A)

With the manual MIG and 1-MIG processes, the dynamics can be adjusted by first pressing (to switch to the dynamics adjustment mode) and then turning the right control knob.

MMA

With the MMA process, the dynamics can be adjusted by turning the right control knob.

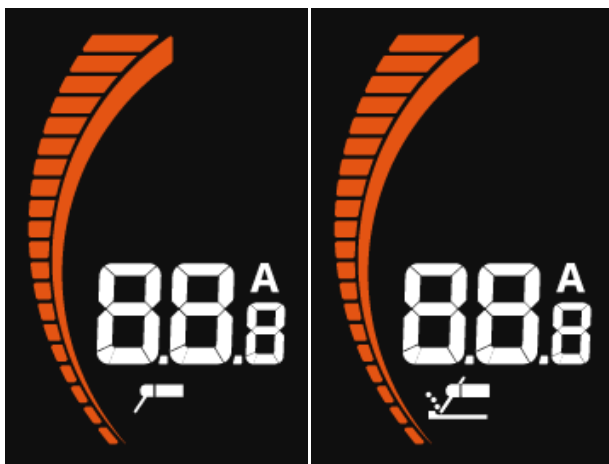


- Adjustment range: -9...+9
- Default setting: 0
- Adjustment steps: 1

### Current

MMA Gouging

With the MMA process and in gouging, the current can be adjusted by turning the left control knob.



- Adjustment range: According to the welding system setup
- Default setting: 50 A
- Adjustment steps: 1 A

For more information on the available welding features and processes, refer to "Additional welding parameters" below and "Additional guidance to functions and features" on page 66.

## 3.2.4 Additional welding parameters

To access the additional welding parameters, including Hot start, Crater fill and Post current adjustments (start and stop parameters) and water cooling setting (optional), press the welding parameters button on the right of the X3 control panel display.

The parameters available for adjustment depend on the selected process and/or welding mode.

 The Pulse MIG process is available only with a pulse power source.

### Hot start

1-MIG (A) Pulse MIG MMA Gouging



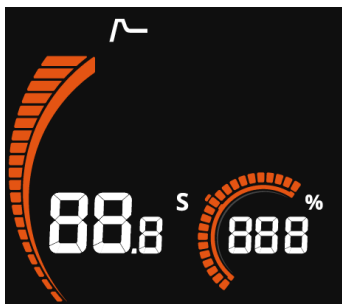
Hot start is a welding function that uses higher or lower wire feed speed and welding current at the start of the weld. After the Hot start period the current changes to normal welding current level. This facilitates the start of the weld especially with aluminum materials.

To adjust Hot start:

1. Press the welding parameters button to enter the welding parameters menu.
2. Turn the right control knob until the Hot start icon is underlined.



3. Select Hot start for adjustment by pressing the right control knob.
4. Turn the right control knob to turn Hot start ON or OFF and press the control knob button to select.
5. If Hot start is on: Adjust the Hot start time (s) by turning the right control knob. Confirm the set value by pressing the right control knob.
6. If Hot start is on: Once the Hot start time is set, adjust the Hot start level (%) by turning the right control knob. Confirm the set value by pressing the right control knob.



Hot start time (1-MIG):

- Adjustment range: 0.1...10.0 s
- Default setting: 1.2 s
- Adjustment steps: 0.1 s

 Hot start time setting is not available with 4T trigger logic. Refer to "Trigger logic functions" on page 66 for more information.

Hot start level (1-MIG):

- Adjustment range: 50...200 %
- Default setting: 140%
- Adjustment steps: 1%

Hot start adjustment (MMA, Gouging):

- Adjustment range: -30...+30
- Default setting: 0
- Adjustment steps: 1

 In MMA and Gouging, the Hot start adjustment is a combined fine tuning value relative to the default setting.

## Crater fill

1-MIG (A) Pulse MIG

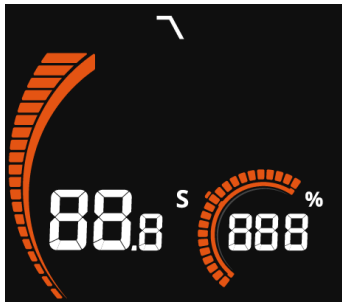
When welding with high power, a crater is usually formed at the end of the weld. The Crater fill function decreases the welding power / wire feed speed at the end of the welding job so that the crater can be filled using a lower power level.

To adjust Crater fill:

1. Press the welding parameters button to enter the welding parameters menu.
2. Turn the right control knob until the Crater fill icon is underlined.



3. Select Crater fill for adjustment by pressing the right control knob.
4. Turn the right control knob to turn Crater fill ON or OFF and press the control knob button to select.
5. If Crater fill is on: Adjust the Crater fill time (s) by turning the right control knob. Confirm the set value by pressing the right control knob.
6. If Crater fill is on: Once the Crater fill time is set, adjust the Crater fill end level (%) by turning the right control knob. Confirm the set value by pressing the right control knob.



Crater fill time:

- Adjustment range: 0.1...10.0 s
- Default setting: 1.0 s
- Adjustment steps: 0.1 s

Crater fill end level:

- Adjustment range: 10...150 %
- Default setting: 30%
- Adjustment steps: 1%

## Post current

MIG (M) 1-MIG (A) Pulse MIG

Post current setting affects the wire length at the weld end, for example to prevent the wire from stopping too close to the weld pool. This also enables the optimum wire length for the start of the next weld.

To adjust Post current (PC):

1. Press the welding parameters button to enter the welding parameters menu.  
>> In manual MIG process, Post current is selected directly for adjustment.

2. 1-MIG and Pulse MIG only: Turn the right control knob until the rightmost (empty) welding parameter menu item is underlined.



3. 1-MIG and Pulse MIG only: Select Post current for adjustment by pressing the right control knob.
4. Adjust Post current by turning the right control knob. Confirm the set value by pressing the right control knob.



- Adjustment range: -30...+30
- Default setting: 0
- Adjustment steps: 1

### Water cooling setting (optional)

MIG (M) 1-MIG (A) Pulse MIG

To enable or disable water cooling, long-press the welding parameters/water cooling button and turn the right control knob to change the setting. Confirm the setting by pressing the right control knob.



- Adjustment range: OFF/Aut/ON (Aut = Automatic)
- Default setting: Aut

When ON is selected, the coolant is circulated continuously, and when "Aut" is selected, the coolant is circulated automatically only during welding.

## 3.2.5 Memory channels

To change the memory channel, press the memory channel button on the control panel. This selects the next available memory channel.

The top of the X3 FastMig control panel display indicates which of the five available memory channels is currently selected:



If the welding parameters have been changed from the ones saved on the memory channel (i.e. a work channel has been created), this is indicated with a dotted line in the channel selection:



To save the adjusted welding parameters to a memory channel, follow these steps:

1. Long-press the memory channel button in the control panel to enter the memory channel saving mode.



2. Turn the right control knob to change the memory channel (where to save).



3. Press the right control knob to select the memory channel (where to save).

>> Once saved, the newly saved memory channel is automatically selected.

On start-up, X3 FastMig starts into the last used MIG memory channel.

Each operation mode (MIG, MMA, Gouging) has its own set of memory channels.












*A new 1-MIG or Pulse MIG memory channel can be created using the material selection wizard. For more information, refer to "Base settings for 1-MIG and Pulse MIG" on page 57.*

### 3.2.6 Warning and error indicators

These warning and error indicators are located in the top-right corner of the X3 control panel display.

Indicator symbol definitions:

	Warning: This symbol indicates an error or fault that requires attention, but doesn't prevent welding
	Error: This symbol indicates an error or fault that prevents welding and require immediate action
	Error or fault with power source
	Error or fault with wire feeder
	Error or fault with cooling unit
	Overheating error
	Error (error code is shown together with this text)
	Voltage reduction device (VRD) error (blinking)*
	Voltage reduction device (VRD) is on*

\* The voltage reduction device (VRD) function is used with MMA and Gouging modes only, and only if the function is enabled on the welding equipment. For more information, refer to "Voltage reduction device (VRD)" on page 69.



*If the power source overheats, a thermal cutoff switches the unit off and does not allow it to be used until it has cooled down.*



*If the coolant liquid overheats, a thermal cutoff switches the welding system off and does not allow it to be used until the coolant liquid has cooled down.*

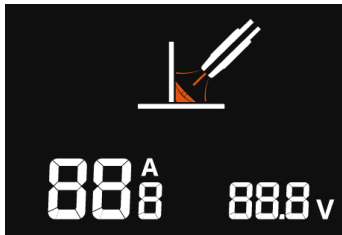


*If the circulation of the coolant liquid is obstructed, a thermal cutoff switches the welding system off. Check and fix the error before using the welding system again.*

For error codes, refer to "Error codes" on page 80.

### 3.2.7 Welding view

During welding, the control panel display shows the welding current and voltage.



Adjusting the main welding parameters is also possible during welding by turning the control knobs. Depending on the welding process used, and if applicable, pressing the right control knob switches between the secondary welding parameters (e.g. fine tuning and dynamics).

>> When starting to adjust the welding parameters during welding, the view is temporarily changed from the welding view to the main view to show the adjusted welding parameters for the current welding process (e.g. wire feed speed and fine tuning).

### 3.2.8 Weld data

After each weld, a weld summary (weld data) is displayed briefly.



The current and voltage values shown in the weld data view are average values of the weld.

### 3.2.9 Wire inch

With X3 FastMig, the wire inch function is operated with the control panel button. Refer to "X3 control panel" on page 54 for more information on the control panel operation.

This function is available in MIG operation mode.

The wire feed speed is displayed during wire inch. It can be adjusted during wire inch by turning the left control knob.

### 3.2.10 Gas test

With X3 FastMig, the gas test function is operated with the control panel button. Refer to "X3 control panel" on page 54 for more information on the control panel operation.

This function is available in MIG operation mode.

The gas test time is displayed during gas test. It can be adjusted during gas test by turning the left control knob.

### 3.3 Additional guidance to functions and features

This section further describes some of the X3 FastMig functions and features and how to use them.

#### 3.3.1 Trigger logic functions

You can select the trigger logic by pressing the trigger logic selection button in the control panel ("X3 control panel" on page 54).

##### 2T

In 2T, pressing the trigger ignites the arc. Releasing the trigger switches the arc off.



##### 4T

In 4T, pressing the trigger starts the pre gas, and releasing the trigger ignites the arc. Pressing the trigger again switches the arc off. Releasing the trigger ends the post gas.



If Hot start is used with 4T, pressing the trigger starts the pre gas for a predefined duration, after which the arc ignites automatically and the current raises to the Hot start level. The current is lowered to the normal welding current level once the trigger is released. If the trigger is released before the start sequence reaches the Hot start phase, the arc is ignited without Hot start.

#### 3.3.2 1-MIG



The automatic 1-MIG (A) is a synergic MIG/MAG welding process where the welding voltage is defined automatically when you adjust the wire feed speed. The voltage is calculated based on the welding program in use. The process is suitable for all materials, shielding gases and welding positions.

>> To take 1-MIG (A) into use, select an existing memory channel with 1-MIG process.

If there aren't any 1-MIG (A) memory channels available, create a new one for 1-MIG process by defining the filler wire and shielding gas information and selecting 1-MIG (A) as the welding process. Refer to "Base settings for 1-MIG and Pulse MIG" on page 57 for more information on defining the base settings and process.

>> Once selected, the corresponding 1-MIG (A) welding process parameters become available for adjustment in the main view.

### 3.3.3 Pulse



 *The Pulse process is available only with a pulse power source.*

Pulse is a synergic MIG/MAG welding process where the current is pulsed between the base current and the pulse current.

The advantages of pulse welding are a higher welding speed and deposition rate compared to short-arc welding, lower heat input compared to spray-arc welding, a spatter-free globular arc and smooth appearance of the weld. Pulse is suitable for all position welding. It is excellent for welding aluminum and stainless steel, especially when the material thickness is small.


>> To take Pulse welding process into use, select an available Pulse channel.

If there aren't any Pulse memory channels available, create a new one for Pulse process by defining the filler wire and shielding gas information and selecting Pulse as the welding process. Refer to "Base settings for 1-MIG and Pulse MIG" on page 57 for more information on defining the base settings and process.

>> Once selected, the corresponding Pulse welding process parameters become available for adjustment in the main view.


### 3.3.4 USB update

The X3 FastMig firmware can be updated to a newer version (when available) using a USB memory stick.

 *There can be only one ZIP file on the USB memory stick inserted into the welding system at once. This ZIP file must be a dedicated firmware update pack for this welding system.*

 *For more information on firmware updates and their availability, contact your local Kemppi representative.*

 *Where applicable, the voltage reduction device (VRD) function is enabled following the same USB update procedure.*

 *To ensure safe update operation, turn the welding equipment on once the USB memory stick is connected, and only for the update process to complete. Removing the filler wire and disconnecting the welding torch before the update is also advised.*

Tools needed:



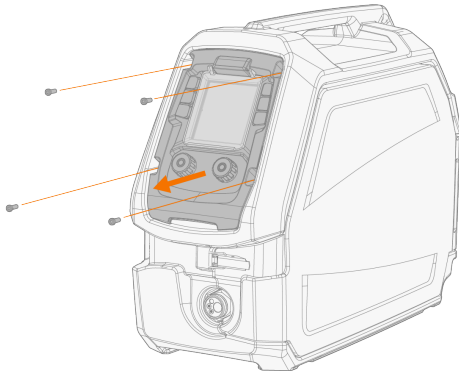
T20

To update the firmware, follow these steps:

1. Ensure you have the correct firmware ZIP package saved on your computer for the welding equipment in question.
2. Connect the USB memory stick to the computer.

 *The USB memory stick must be formatted to use FAT/FAT32 file system.*

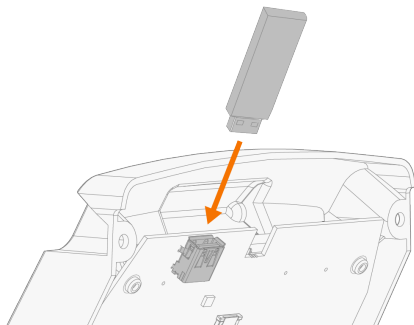
3. Copy the new firmware ZIP file into the memory stick's root folder.
4. Turn the welding equipment off.
5. At the wire feeder, release the four control panel screws.



6. Remove the control panel slightly from its place, so that the rear of the control panel is accessible from the top.

 *Do not strain, pull or disconnect the electrical wiring and connections.*

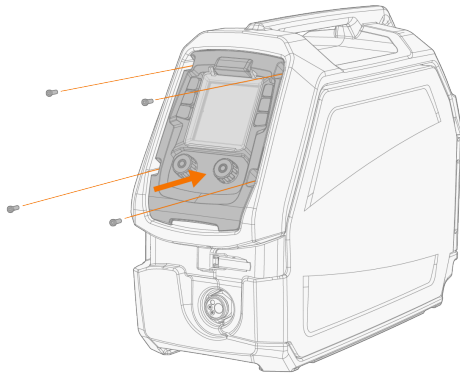
7. Connect the USB memory stick to the control panel's USB connector.



8. Turn the welding equipment on. The update process starts automatically.
  - >> The control panel shows the update progress percentage as well as the firmware/software being updated (PS = Power source, UI = User interface, db = Database).
  - >> Once the update is completed, the welding equipment restarts automatically.



9. Once the welding system has rebooted and the update is ready ("UPd rdy" text is shown on the display), turn the welding equipment off.
10. Remove the USB memory stick from the control panel.
11. Replace the control panel and secure it in place with the four screws.




### 3.3.5 Voltage reduction device (VRD)

The voltage reduction device (VRD) is a safety device used in welding equipment to reduce the open-circuit voltage below a certain voltage value. This reduces the risk of electric shock particularly in dangerous environments, such as closed or damp spaces. VRD may also be required by regulation in certain countries or regions.

The VRD function is used with MMA and Gouging modes only.

X3 FastMig is equipped with the voltage reduction device. By default, VRD is disabled. To enable the VRD function, it must be activated by installing an activation file on the X3 FastMig equipment following the USB update procedure ("USB update" on page 67). For more information, contact your local Kemppi representative.

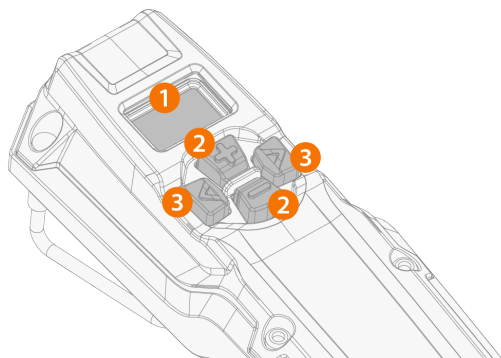
 *For standalone MMA welding and gouging using only the X3 power source, if VRD is required, the VRD function must first be enabled following the activation process with the wire feeder connected.*

When activated, the VRD voltage is 24 V with X3 FastMig. The VRD function cannot be disabled once it has been activated.

### 3.4 Using HR53 remote control

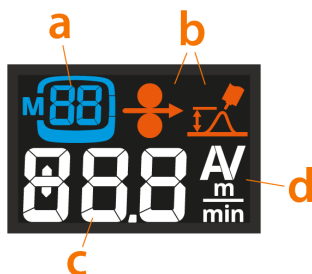
When connected, the HR53 remote control is automatically in use.

With the optional HR53 remote control, you can select memory channels and adjust wire feed speed, welding current, welding voltage or voltage fine tuning depending on the welding process used.



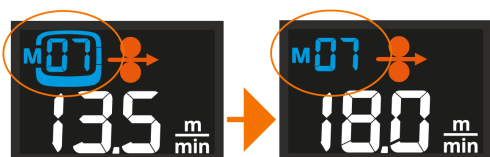
1. LCD display  
>> Displays the adjusted parameter and notifies if there is an error ("Err") in the welding system.
2. Plus/minus (+/-) buttons  
>> Changes the parameter value.
3. Left/right arrow buttons  
>> Changes between adjustable parameters/views.

#### Remote control display items



- a. Process and/or selected memory channel information (process is indicated with a single letter: M = MIG/MAG, S = MMA, G = Gouging)
- b. MIG/MAG: Wire feed speed and fine tuning symbols
- c. Adjusted parameter value (or error indicator)
- d. Adjusted parameter unit

When the parameter is adjusted with the remote and the parameter value doesn't reflect the one saved on the selected memory channel anymore, this is indicated on the display by showing only the memory channel number without the channel box around it (MIG/MAG only):





## Remote control views and operation

Change between the views by pressing the left/right arrow buttons.

- **Memory channel view (MIG/MAG only):** The memory channel is changed by pressing the +/- buttons. Long press of a +/- button scrolls the parameter values faster.
- **Process selection view:** This allows selecting between MIG/MAG welding, MMA welding and gouging.
- **Welding power view:** Depending on the used welding process, wire feed speed or current is adjusted by pressing the +/- buttons. Long press of a +/- button scrolls the parameter values faster.
- **Voltage/Fine tuning view:** Depending on the welding process used, voltage or welding process specific parameter is adjusted by pressing the +/- buttons. Long press of the +/- button scrolls the parameter values faster. Long press of the right arrow button switches between different parameter sets, as applicable.
- **Safety lock:** By pressing the left/right arrow buttons simultaneously for 2 seconds, the equipment safety lock can be enabled and disabled.

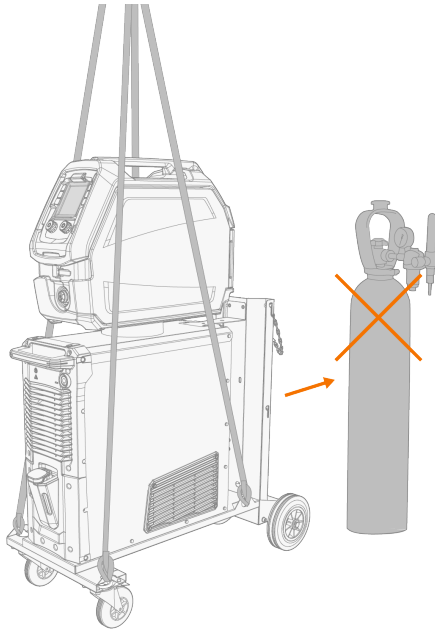
Long press of the left arrow button saves the adjusted parameters on the currently selected channel.

-  *X3 power sources can be used for MMA welding and carbon arc gouging also without a wire feeder. The HR53 remote control is required for this standalone use.*
-  *When a MIG welding torch remote control is used to select a memory channel or adjust the wire feed speed, the corresponding function is disabled in the HR53 remote control.*

### 3.5 Lifting equipment


If you need to lift X3 FastMig equipment, pay special attention to the safety measures. Also follow the local regulations. The X3 FastMig equipment can be lifted with a mechanical hoist as a whole only when the equipment is installed securely on the dedicated transport unit (X3T4 cart).

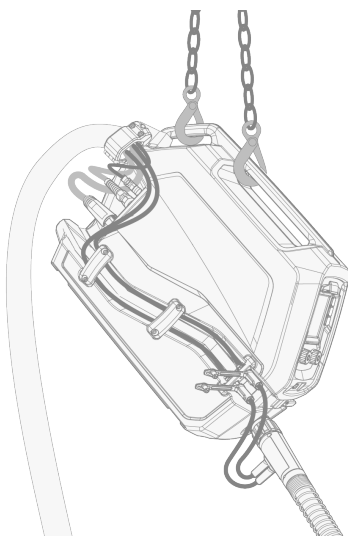
 *If a gas bottle is installed on cart, DO NOT attempt to lift the cart with the gas bottle in place.*



 *DO NOT attempt to lift the full set of equipment with a hoist from the handle.*

1. Ensure that the welding equipment is properly secured to the cart.  
>> Refer to "Installing wire feeder with mounting plate" on page 21 and "Installing equipment on X3T4 cart (optional)" on page 23 for more information.
2. Connect the 4-legged chain or straps from the hoist hook to the four lifting points on the cart on both sides of the welding equipment.

 *Suspending the wire feeder alone (i.e. for lifting or moving) with dedicated suspension accessories is possible. For more information on optional accessories, contact your local Kemppi dealer.*



## 4. MAINTENANCE

When considering and planning routine maintenance, consider the operating frequency of the welding system and the working environment.

Correct operating of the welding machine and regular maintenance helps you avoid unnecessary downtime and equipment failure.

## 4.1 Daily maintenance



*Disconnect the power source from the mains before handling electrical cables.*

### **Maintenance of power source and wire feeder**

Follow these maintenance procedures to maintain the proper functioning of the welding system:

- Check that all covers and components are intact.
- Check all the cables and connectors. Do not use them if they are damaged and contact service for replacements.
- Check the wire feeder's feed rolls and the pressure handle. Clean and lubricate with a small quantity of light machine oil if needed.

For repairs, contact KempPi at [www.kemppi.com](http://www.kemppi.com) or your dealer.

### **Welding torch maintenance**

For KempPi MIG welding torch instructions, refer to [userdoc.kemppi.com](http://userdoc.kemppi.com).

## 4.2 Periodic maintenance



*Only qualified service personnel is allowed to carry out periodic maintenance.*



*Only an authorized electrician is allowed to carry out electrical work.*



*Before removing the cover plate, disconnect the power source from the mains and wait for about 2 minutes before discharging the capacitor.*

Check the electric connectors of the unit at least every six months. Clean oxidized parts and tighten loose connectors.



*Where applicable, use the correct tension torque when fastening loose parts.*

Clean the outside parts of the unit from dust and dirt, for example, with a soft brush and vacuum cleaner. Also clean the ventilation grill at the back of the unit. 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.*

Update the wire feeder and power source to the latest firmware version.



## 4.3 Service workshops

Kemppi Service Workshops complete the welding system maintenance according to the Kemppi service agreement.

The main aspects in the service workshop maintenance procedure are:

- Cleanup of the machine
- Maintenance of the welding tools
- Checkup of the connectors and switches
- Checkup of all electric connections
- Checkup of the power source mains cable and plug
- Repair of defective parts and replacement of defective components
- Maintenance test
- Test and calibration of operation and performance values when needed

Find your closest service workshop at [Kemppi website](#).

## 4.4 Troubleshooting



*The problems listed and the possible causes are not definitive, but suggest some typical situations that may turn up during normal use of the welding system.*

Welding system:

Problem	Recommended actions
The welding system does not power up	Check that the mains cable is plugged in properly.
	Check that the mains switch of the power source is at the ON position.
	Check that the mains power distribution is on.
	Check the mains fuse and/or the circuit breaker.
	Check that the interconnection cable between the power source and the wire feeder is intact and properly attached.
	Check that the earth return cable is connected.
The welding system stops working	Gas-cooled gun may have overheated. Wait for it to cool down.
	Check that none of the cables is loose.
	The wire feeder may have overheated. Wait for it to cool down and see that the welding current cable is properly attached.
	The power source may have overheated. Wait for it to cool down and see that the cooling fans work properly and the air flow is unobstructed.

Wire feeder:

Problem	Recommended actions
The filler wire on the spool unravels	Check that the spool locking cover is closed.
The wire feeder does not feed the filler wire	Check that the filler wire has not run out.
	Check that the filler wire is properly routed through the feed rolls to the wire liner.
	Check that the pressure handle is properly closed.
	Check that the feed roll pressure is adjusted correctly for the filler wire.
	Check that the welding cable is properly connected to the wire feeder.
	Blow compressed air through the wire liner to check that it is not blocked.

Weld quality:

Problem	Recommended actions
---------	---------------------

Dirty and/or poor quality weld	Check that the shielding gas has not run out.
	Check that the shielding gas flow is unobstructed.
	Check that the gas type is correct for the application.
	Check the polarity of the gun/electrode.
	Check that the welding procedure is correct for the application.
Varying welding performance	Check that the wire feed mechanism is adjusted properly.
	Blow compressed air through the wire liner to check that it is not blocked.
	Check that the wire liner is correct for the selected wire size and type.
	Check the welding gun contact tip's size, type and wear.
	Check that the welding gun is not overheating.
	Check that the earth return clamp is properly attached to a clean surface of the workpiece.
High spatter volume	Check the welding parameter values and welding procedure.
	Check the gas type and flow.
	Check the polarity of the gun/electrode.
	Check that the filler wire is correct for the current application.

"Error codes" on the next page

## 4.5 Error codes

In error situations, the control panel displays the number of the error. Refer to the table below for more information on the error situation.

Error			
Code	Title	Possible cause	Proposed action
1	Power source not calibrated	Power source calibration has been lost.	Restart the power source. If problem persists, contact Kemppi service.
2	Too low mains voltage	Voltage in mains network is too low.	Restart the power source. If problem persists, contact Kemppi service.
3	Too high mains voltage	Voltage in mains network is too high.	Restart the power source. If problem persists, contact Kemppi service.
4	Power source is overheated	Too long welding session with high power.	Do not shut down, let the fans cool the machine. If fans are not running, contact Kemppi service
5	Internal 24V voltage is too low	Power source contains an inoperative 24V power supply unit .	Restart the power source. If problem persists, contact Kemppi service.
7	Wire feeder not found	Wire feeder is not connected to power source or connection is faulty.	Check the control cable and its connectors.
12	Welding cable failure	Plus and minus cables are connected together.	Check the connections of welding cable and earth return cable.
13	IGBT overcurrent	Inoperative mains transformer in power source.	Restart the power source. If problem persists, contact Kemppi service.
14	IGBT overheated	Too long welding session with high power or high ambient temperature.	Do not shut down, let the fans cool the machine. If fans are not running, contact Kemppi service.
17	Phase is missing from mains supply	One or more phases are missing from the mains supply.	Check the mains cable and its connectors. Check the voltage of mains supply.
20	Power source cooling failure	Cooling capacity is reduced in the power source.	Clean the filters and clear any dirt from the cooling channel. Check that the cooling fans are running. If not, contact Kemppi service.
24	Cooling liquid overheated	Too long welding session with high power or high ambient temperature.	Do not turn off the cooler. Let the liquid circulate until the fans cool it down. If fans are not running, contact Kemppi service.
26	Cooling liquid not circulating	No cooling liquid or circulation is blocked.	Check the liquid level in the cooler. Check hoses and connectors for blockage.
27	Cooler not found	Cooling is turned on in the settings menu, but cooler is not connected to power source or cabling is faulty.	Check the cooler connections. Ensure that the cooling is turned off in the settings menu, if the cooler is not in use.
33	Welding cable calibration failure	Welding cable calibration failed.	Check the welding system cables and their connections.
40	VRD error	Open circuit voltage exceeds the VRD limit.	Restart the power source. If problem persists, contact Kemppi service.
43	Overcurrent in wire feeder motor	There may be too much pressure in the wire feed rolls or dirt in the wire line.	Adjust the feed roll pressure. Clean the wire line. Change worn parts in the welding gun.

44	Wire speed measurement is missing	Faulty sensor or wiring in wire feeder.	Restart the welding system. If problem persists, contact Kemppi service.
62	Power source not found	No power source is connected to the wire feeder, or connection is faulty.	Check the control cable and its connectors.
81	Welding program data missing	Welding program data has been lost.	Restart the power source. If problem persists, contact Kemppi service.
244	Internal memory failure	Initialization failed (%sub:%device).	Restart welding system. If problem persists, contact Kemppi service.
250	Internal memory failure	Memory communication failed (%sub:%device).	Restart welding system. If problem persists, contact Kemppi service.

For warning and error indicator descriptions, refer to "Warning and error indicators" on page 64.

## 4.6 Disposal



Do not dispose of any electrical equipment with normal waste!

In observance of WEEE Directive 2012/19/EU on waste of electrical and electronic equipment and European Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, and their 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 center, as per the instructions of local authorities or a Kempfi representative. By applying these European Directives you improve the environment and human health.

For more information:



## 5. TECHNICAL DATA

### **Technical data:**

- "X3 power sources" on the next page
- "X3 wire feeders" on page 88

### **Additional information:**

- "X3 welding program work pack" on page 97
- "X3 ordering info" on page 89
- "X3 wire feeder consumables" on page 90
- "X3 control panel symbols and icons summary" on page 99

## 5.1 X3 power sources

X3S Power Source Syn 420 G		
Feature		Value
Mains connection voltage		380...415 V $\pm 10\%$
Mains connection phases		3~50/60 Hz
Mains connection cable type		H07RN-F
Mains connection cable size		4 mm <sup>2</sup>
Rated maximum input power [ $S_{1max}$ ]		20 kVA
Mains fuse		25 A
Idle state power consumption [ $P_{idle}$ ]		15 W
No-load voltage [ $U_0$ ]		54...59 V
Open circuit voltage [ $U_{av}$ ]		54...59 V
Effective supply current [ $I_{eff}$ ]		23...21 A
Maximum supply current [ $I_{1max}$ ]		29...27 A
Output at +40 °C, 60% MIG		420 A
Output at +40 °C, 100% MIG		350 A
Output at +40 °C, 60% MMA		400 A
Output at +40 °C, 100% MMA		330 A
Output range, MIG welding current/voltage		15 A / 12 V ... 420 A / 40 V
Output range, MMA welding current/voltage		15 A / 10 V ... 400 A / 41 V
Voltage adjustment range (MIG)		8...45 V
Power factor at rated maximum current	$\lambda$	0.85
Efficiency at rated maximum current	$\eta$	89 %
Minimum short-circuit power of supply network [ $S_{SC}$ ]		6 MVA
Voltage supply for auxiliary devices		48 V
Wired communication type		CAN bus
Operating temperature range		-20...40 °C
Storage temperature range		-40...60 °C
Recommended minimum generator power [ $S_{gen}$ ]		25 kVA
EMC class		A
Degree of protection		IP23
External dimensions	$L \times W \times H$	698 x 251 x 361 mm
Weight without accessories		35 kg
Standards		IEC 60974-1, -10



X3S Power Source Syn 420 W		
Feature		Value
Mains connection voltage		380...415 V $\pm$ 10 %
Mains connection phases		3~50/60 Hz
Mains connection cable type		H07RN-F
Mains connection cable size		4 mm <sup>2</sup>
Rated maximum input power [ $S_{1max}$ ]		20 kVA
Mains fuse		25 A
Idle state power consumption [ $P_{idle}$ ]		15 W
No-load voltage [ $U_0$ ]		54...59 V
Open circuit voltage [ $U_{av}$ ]		54...59 V
Effective supply current [ $I_{1eff}$ ]		23...21 A
Maximum supply current [ $I_{1max}$ ]		29...27 A
Output at +40 °C, 60% MIG		420 A
Output at +40 °C, 100% MIG		350 A
Output at +40 °C, 60% MMA		400 A
Output at +40 °C, 100% MMA		330 A
Output range, MIG welding current/voltage		15 A / 12 V ... 420 A / 40 V
Output range, MMA welding current/voltage		15 A / 10 V ... 400 A / 41 V
Voltage adjustment range (MIG)		8...45 V
Power factor at rated maximum current	$\lambda$	0.85
Efficiency at rated maximum current	$\eta$	89 %
Minimum short-circuit power of supply network [ $S_{SC}$ ]		6 MVA
Voltage supply for auxiliary devices		48 V
Wired communication type		CAN bus
Operating temperature range		-20...40 °C
Storage temperature range		-40...60 °C
Recommended minimum generator power [ $S_{gen}$ ]		25 kVA
Cooling power at 1 l/min		1.2 kW
Recommended coolant		MGP 4456 (Kemppi mixture)
Maximum coolant pressure		0.4 MPa
Tank volume		3 l
EMC class		A
Degree of protection		IP23
External dimensions	$L \times W \times H$	698 x 251 x 613 mm
Weight without accessories		47 kg
Standards		IEC 60974-1, -2, -10

X3P Power Source Pulse 450 G		
Feature		Value
Mains connection voltage		380...415 V $\pm 10\%$
Mains connection phases		3~50/60 Hz
Mains connection cable type		H07RN-F
Mains connection cable size		4 mm <sup>2</sup>
Rated maximum input power [ $S_{1max}$ ]		21 kVA
Mains fuse		25 A
Idle state power consumption [ $P_{idle}$ ]		15 W
No-load voltage [ $U_0$ ]		61...67 V
Open circuit voltage [ $U_{av}$ ]		60...65 V
Effective supply current [ $I_{eff}$ ]		25...23 A
Maximum supply current [ $I_{1max}$ ]		33...30 A
Output at +40 °C, 60% MIG		450 A
Output at +40 °C, 100% MIG		380 A
Output at +40 °C, 60% MMA		430 A
Output at +40 °C, 100% MMA		360 A
Output range, MIG welding current/voltage		15 A / 12 V ... 450 A / 45 V
Output range, MMA welding current/voltage		15 A / 15 V ... 430 A / 46 V
Voltage adjustment range (MIG)		8...50 V
VRD voltage		24 V
Power factor at rated maximum current	$\lambda$	0.88
Efficiency at rated maximum current	$\eta$	87 %
Minimum short-circuit power of supply network [ $S_{SC}$ ]		6 MVA
Voltage supply for auxiliary devices		48 V
Wired communication type		CAN bus
Operating temperature range		-20...40 °C
Storage temperature range		-40...60 °C
Recommended minimum generator power [ $S_{gen}$ ]		25 kVA
EMC class		A
Degree of protection		IP23
External dimensions	$L \times W \times H$	698 x 251 x 361 mm
Weight without accessories		35 kg
Standards		IEC 60974-1, -10

X3P Power Source Pulse 450 W		
Feature		Value
Mains connection voltage		380...415 V $\pm 10\%$
Mains connection phases		3~50/60 Hz
Mains connection cable type		H07RN-F
Mains connection cable size		4 mm <sup>2</sup>
Rated maximum input power [ $S_{1max}$ ]		21 kVA
Mains fuse		25 A
Idle state power consumption [ $P_{idle}$ ]		15 W
No-load voltage [ $U_0$ ]		61...67 V
Open circuit voltage [ $U_{av}$ ]		60...65 V
Effective supply current [ $I_{eff}$ ]		25...23 A
Maximum supply current [ $I_{1max}$ ]		33...30 A
Output at +40 °C, 60% MIG		450 A
Output at +40 °C, 100% MIG		380 A
Output at +40 °C, 60% MMA		430 A
Output at +40 °C, 100% MMA		360 A
Output range, MIG welding current/voltage		15 A / 12 V ... 450 A / 45 V
Output range, MMA welding current/voltage		15 A / 15 V ... 430 A / 46 V
Voltage adjustment range (MIG)		8...50 V
VRD voltage		24 V
Power factor at rated maximum current	$\lambda$	0.88
Efficiency at rated maximum current	$\eta$	87 %
Minimum short-circuit power of supply network [ $S_{SC}$ ]		6 MVA
Voltage supply for auxiliary devices		48 V
Wired communication type		CAN bus
Operating temperature range		-20...40 °C
Storage temperature range		-40...60 °C
Recommended minimum generator power [ $S_{gen}$ ]		25 kVA
Cooling power at 1 l/min		1.2 kW
Recommended coolant		MGP 4456 (Kemppi mixture)
Maximum coolant pressure		0.4 MPa
Tank volume		3 l
EMC class		A
Degree of protection		IP23
External dimensions	$L \times W \times H$	698 x 251 x 613 mm
Weight without accessories		47 kg
Standards		IEC 60974-1, -2, -10

## 5.2 X3 wire feeders

X3 Wire Feeder HD300		
Feature		Value
Supply voltage		48 V
Supply current at maximum load		6.3 A
Idle power		6 W
Welding current 60%		450 A
Welding current 100%		380 A
Welding connection type		Euro
Wire feed mechanism		4-roll, Single-motor
Diameter of feed rolls		32 mm
Filler wire diameter, Fe		0.8...2 mm
Filler wire diameter, Ss		0.8...2 mm
Filler wire diameter, MC/FC		0.8...2.4 mm
Filler wire diameter, Al		0.8...2.4 mm
Wire feed speed		0.5...25 m/min
Maximum wire spool weight		20 kg
Maximum wire spool diameter		300 mm
Maximum shielding gas pressure		0.5 MPa
Wired communication type		CAN bus
Operating temperature range		-20...40 °C
Storage temperature range		-40...60 °C
EMC class		A
Degree of protection		IP23
External dimensions	<i>L x W x H</i>	670 x 240 x 465 mm
Weight without accessories		14.4 kg
Standards		IEC 60974-5, 10

## 5.3 X3 ordering info

For X3 FastMig ordering information and optional accessories, refer to [Kempfi.com](https://kempfi.com).

## 5.4 X3 wire feeder consumables

This section lists the feed rolls and wire guide tubes available both separately and in consumable kits. The consumable kits contain recommended feed roll and wire guide tube combinations for selected filler wire materials and diameters. The wire feeder consumables can be ordered in [Configurator.kemppi.com](https://configurator.kemppi.com).

Note: In the tables, *standard* refers to plastic feed rolls and *heavy-duty* refers to metal feed rolls. The materials mentioned first refer to primary suitability and the materials mentioned inside brackets refer to secondary suitability. The measurements are in millimeters.

### X3 Wire Feeder HD300

FE (MC/FC), standard, V-groove, plain		
<b>F000322</b>	<b>FE (MC/FC) V0.8-0.9 FEEDER KIT #11</b>	
Drive feed roll	W001047	0.8-0.9 WH PLASTIC
Pressure feed roll	W001048	0.8-0.9 WH PLASTIC
Inlet tube	W007536	0.8-0.9 WH METAL
Middle tube	W007465	0.8-0.9/33 WH METAL
Outlet tube	W007454	0.8-0.9/64 WH METAL
<b>F000323</b>	<b>FE (MC/FC) V1.0 FEEDER KIT #11</b>	
Drive feed roll	W000675	1.0 RD PLASTIC
Pressure feed roll	W000676	1.0 RD PLASTIC
Inlet tube	W007537	1.0 RD METAL
Middle tube	W007466	1.0/33 RD METAL
Outlet tube	W007455	1.0/64 RD METAL
<b>F000324</b>	<b>FE (MC/FC) V1.2 FEEDER KIT #11</b>	
Drive feed roll	W000960	1.2 OG PLASTIC
Pressure feed roll	W000961	1.2 OG PLASTIC
Inlet tube	W007538	1.2 OG METAL
Middle tube	W007467	1.2/33 OG METAL
Outlet tube	W007456	1.2/64 OG METAL
<b>F000325</b>	<b>FE (MC/FC) V1.4 FEEDER KIT #11</b>	
Drive feed roll	W001049	1.4 BN PLASTIC
Pressure feed roll	W001050	1.4 BN PLASTIC
Inlet tube	W007539	1.4-1.6 YE METAL
Middle tube	W007469	1.4-1.6/33 YE METAL
Outlet tube	W007458	1.4-1.6/64 YE METAL
<b>F000326</b>	<b>FE (MC/FC) V1.6 FEEDER KIT #11</b>	
Drive feed roll	W001051	1.6 YE PLASTIC
Pressure feed roll	W001052	1.6 YE PLASTIC
Inlet tube	W007539	1.4-1.6 YE METAL
Middle tube	W007469	1.4-1.6/33 YE METAL

Outlet tube	W007458	1.4-1.6/64 YE METAL
<b>F000327</b>	<b>FE (MC/FC) V2.0 FEEDER KIT #11</b>	
Drive feed roll	W001053	2.0 GY PLASTIC
Pressure feed roll	W001054	2.0 GY PLASTIC
Inlet tube	W007540	2.0 GY METAL
Middle tube	W007470	2.0/33 GY METAL
Outlet tube	W007459	2.0/64 GY METAL
<b>F000328</b>	<b>FE (MC/FC) V2.4 FEEDER KIT #11</b>	
Drive feed roll	W001055	2.4 BK PLASTIC
Pressure feed roll	W001056	2.4 BK PLASTIC
Inlet tube	W007541	2.4 BK METAL
Middle tube	W007471	2.4/33 BK METAL
Outlet tube	W007460	2.4/64 BK METAL
FE (MC/FC), heavy-duty, V-groove, plain		
<b>F000210</b>	<b>FE (MC/FC) V0.8-0.9 HD FEEDER KIT #11</b>	
Drive feed roll	W006074	0.8-0.9 METAL
Pressure feed roll	W006075	0.8-0.9 METAL
Inlet tube	W007536	0.8-0.9 WH METAL
Middle tube	W007465	0.8-0.9/33 WH METAL
Outlet tube	W007454	0.8-0.9/64 WH METAL
<b>F000211</b>	<b>FE (MC/FC) V1.0 HD FEEDER KIT #11</b>	
Drive feed roll	W006076	1.0 METAL
Pressure feed roll	W006077	1.0 METAL
Inlet tube	W007537	1.0 RD METAL
Middle tube	W007466	1.0/33 RD METAL
Outlet tube	W007455	1.0/64 RD METAL
<b>F000212</b>	<b>FE (MC/FC) V1.2 HD FEEDER KIT #11</b>	
Drive feed roll	W004754	1.2 METAL
Pressure feed roll	W004753	1.2 METAL
Inlet tube	W007538	1.2 OG METAL
Middle tube	W007467	1.2/33 OG METAL
Outlet tube	W007456	1.2/64 OG METAL
<b>F000213</b>	<b>FE (MC/FC) V1.6 HD FEEDER KIT #11</b>	
Drive feed roll	W006078	1.6 METAL
Pressure feed roll	W006079	1.6 METAL
Inlet tube	W007539	1.4-1.6 YE METAL
Middle tube	W007469	1.4-1.6/33 YE METAL
Outlet tube	W007458	1.4-1.6/64 YE METAL

SS, CU (FE), standard, V-groove, plain

<b>F000202 SS, CU (FE) V0.6 FEEDER KIT #11</b>		
Drive feed roll	W001045	0.6 LTGY PLASTIC
Pressure feed roll	W001046	0.6 LTGY PLASTIC
Inlet tube	W007293	0.6 LTGY PLASTIC
Middle tube	W007429	0.6/33 LTGY PLASTIC
Outlet tube	W007437	0.6/64 LTGY PLASTIC
<b>F000203 SS, CU (FE) V0.8-0.9 FEEDER KIT #11</b>		
Drive feed roll	W001047	0.8-0.9 WH PLASTIC
Pressure feed roll	W001048	0.8-0.9 WH PLASTIC
Inlet tube	W007294	0.8-0.9 WH PLASTIC
Middle tube	W007430	0.8-0.9/33 WH PLASTIC
Outlet tube	W007438	0.8-0.9/64 WH PLASTIC
<b>F000204 SS, CU (FE) V1.0 FEEDER KIT #11</b>		
Drive feed roll	W000675	1.0 RD PLASTIC
Pressure feed roll	W000676	1.0 RD PLASTIC
Inlet tube	W007295	1.0 RD PLASTIC
Middle tube	W007431	1.0/33 RD PLASTIC
Outlet tube	W007439	1.0/64 RD PLASTIC
<b>F000205 SS, CU (FE) V1.2 FEEDER KIT #11</b>		
Drive feed roll	W000960	1.2 OG PLASTIC
Pressure feed roll	W000961	1.2 OG PLASTIC
Inlet tube	W007296	1.2 OG PLASTIC
Middle tube	W007432	1.2/33 OG PLASTIC
Outlet tube	W007440	1.2/64 OG PLASTIC
<b>F000206 SS, CU (FE) V1.4 FEEDER KIT #11</b>		
Drive feed roll	W001049	1.4 BN PLASTIC
Pressure feed roll	W001050	1.4 BN PLASTIC
Inlet tube	W007297	1.4 BN PLASTIC
Middle tube	W007433	1.4/33 BN PLASTIC
Outlet tube	W007441	1.4/64 BN PLASTIC
<b>F000207 SS, CU (FE) V1.6 FEEDER KIT #11</b>		
Drive feed roll	W001051	1.6 YE PLASTIC
Pressure feed roll	W001052	1.6 YE PLASTIC
Inlet tube	W007298	1.6 YE PLASTIC
Middle tube	W007434	1.6/33 YE PLASTIC
Outlet tube	W007442	1.6/64 YE PLASTIC



**F000208**
**SS, CU (FE) V2.0 FEEDER KIT #11**

Drive feed roll	W001053	2.0 GY PLASTIC
Pressure feed roll	W001054	2.0 GY PLASTIC
Inlet tube	W007299	2.0 GY PLASTIC
Middle tube	W007435	2.0/33 GY PLASTIC
Outlet tube	W007443	2.0/64 GY PLASTIC

**F000209**
**SS, CU (FE) V2.4 FEEDER KIT #11**

Drive feed roll	W001055	2.4 BK PLASTIC
Pressure feed roll	W001056	2.4 BK PLASTIC
Inlet tube	W007300	2.4 BK PLASTIC
Middle tube	W007436	2.4/33 BK PLASTIC
Outlet tube	W007444	2.4/64 BK PLASTIC

SS (FE), heavy-duty, V-groove, plain

**F000318**
**SS (FE) V0.8-0.9 HD FEEDER KIT #11**

Drive feed roll	W006074	0.8-0.9 METAL
Pressure feed roll	W006075	0.8-0.9 METAL
Inlet tube	W007294	0.8-0.9 WH PLASTIC
Middle tube	W007430	0.8-0.9/33 WH PLASTIC
Outlet tube	W007438	0.8-0.9/64 WH PLASTIC

**F000319**
**SS (FE) V1.0 HD FEEDER KIT #11**

Drive feed roll	W006076	1.0 METAL
Pressure feed roll	W006077	1.0 METAL
Inlet tube	W007295	1.0 RD PLASTIC
Middle tube	W007431	1.0/33 RD PLASTIC
Outlet tube	W007439	1.0/64 RD PLASTIC

**F000320**
**SS (FE) V1.2 HD FEEDER KIT #11**

Drive feed roll	W004754	1.2 METAL
Pressure feed roll	W004753	1.2 METAL
Inlet tube	W007296	1.2 OG PLASTIC
Middle tube	W007432	1.2/33 OG PLASTIC
Outlet tube	W007440	1.2/64 OG PLASTIC

**F000321**
**SS (FE) V1.6 HD FEEDER KIT #11**

Drive feed roll	W006078	1.6 METAL
Pressure feed roll	W006079	1.6 METAL
Inlet tube	W007298	1.6 YE PLASTIC
Middle tube	W007434	1.6/33 YE PLASTIC
Outlet tube	W007442	1.6/64 YE PLASTIC

## MC/FC, standard, V-groove, knurled

**F000214**
**MC/FC VK1.0 FEEDER KIT #11**

Drive feed roll	W001057	1.0 RD PLASTIC
Pressure feed roll	W001058	1.0 RD PLASTIC
Inlet tube	W007537	1.0 RD METAL
Middle tube	W007466	1.0/33 RD METAL
Outlet tube	W007455	1.0/64 RD METAL

**F000215**
**MC/FC VK1.2 FEEDER KIT #11**

Drive feed roll	W001059	1.2 OG PLASTIC
Pressure feed roll	W001060	1.2 OG PLASTIC
Inlet tube	W007538	1.2 OG METAL
Middle tube	W007467	1.2/33 OG METAL
Outlet tube	W007456	1.2/64 OG METAL

**F000216**
**MC/FC VK1.4-1.6 FEEDER KIT #11**

Drive feed roll	W001061	1.4-1.6 YE PLASTIC
Pressure feed roll	W001062	1.4-1.6 YE PLASTIC
Inlet tube	W007539	1.4-1.6 YE METAL
Middle tube	W007469	1.4-1.6/33 YE METAL
Outlet tube	W007458	1.4-1.6/64 YE METAL

**F000217**
**MC/FC VK2.0 FEEDER KIT #11**

Drive feed roll	W001063	2.0 GY PLASTIC
Pressure feed roll	W001064	2.0 GY PLASTIC
Inlet tube	W007540	2.0 GY METAL
Middle tube	W007470	2.0/33 GY METAL
Outlet tube	W007459	2.0/64 GY METAL

**F000218**
**MC/FC VK2.4 FEEDER KIT #11**

Drive feed roll	W001065	2.4 BK PLASTIC
Pressure feed roll	W001066	2.4 BK PLASTIC
Inlet tube	W007541	2.4 BK METAL
Middle tube	W007471	2.4/33 BK METAL
Outlet tube	W007460	2.4/64 BK METAL

## MC/FC, heavy-duty, V-groove, knurled

**F000219**
**MC/FC VK1.0 HD FEEDER KIT #11**

Drive feed roll	W006080	1.0 METAL
Pressure feed roll	W006081	1.0 METAL
Inlet tube	W007537	1.0 RD METAL
Middle tube	W007466	1.0/33 RD METAL

Outlet tube	W007455	1.0/64 RD METAL
<b>F000220</b>	<b>MC/FC VK1.2 HD FEEDER KIT #11</b>	
Drive feed roll	W006082	1.2 METAL
Pressure feed roll	W006083	1.2 METAL
Inlet tube	W007538	1.2 OG METAL
Middle tube	W007467	1.2/33 OG METAL
Outlet tube	W007456	1.2/64 OG METAL
<b>F000221</b>	<b>MC/FC VK1.4-1.6 HD FEEDER KIT #11</b>	
Drive feed roll	W006084	1.4-1.6 METAL
Pressure feed roll	W006085	1.4-1.6 METAL
Inlet tube	W007539	1.4-1.6 YE METAL
Middle tube	W007469	1.4-1.6/33 YE METAL
Outlet tube	W007458	1.4-1.6/64 YE METAL
<b>F000222</b>	<b>MC/FC VK2.0 HD FEEDER KIT #11</b>	
Drive feed roll	W006086	2.0 METAL
Pressure feed roll	W006087	2.0 METAL
Inlet tube	W007540	2.0 GY METAL
Middle tube	W007470	2.0/33 GY METAL
Outlet tube	W007459	2.0/64 GY METAL
AL, standard, U-groove		
<b>F000223</b>	<b>AL U1.0 FEEDER KIT #11</b>	
Drive feed roll	W001067	1.0 RD PLASTIC
Pressure feed roll	W001068	1.0 RD PLASTIC
Inlet tube	W007295	1.0 RD PLASTIC
Middle tube	W007431	1.0/33 RD PLASTIC
Outlet tube	W007439	1.0/64 RD PLASTIC
<b>F000224</b>	<b>AL U1.2 FEEDER KIT #11</b>	
Drive feed roll	W001069	1.2 OG PLASTIC
Pressure feed roll	W001070	1.2 OG PLASTIC
Inlet tube	W007296	1.2 OG PLASTIC
Middle tube	W007432	1.2/33 OG PLASTIC
Outlet tube	W007440	1.2/64 OG PLASTIC
<b>F000365</b>	<b>AL U1.4 FEEDER KIT #11</b>	
Drive feed roll	W008974	1.4 BN PLASTIC
Pressure feed roll	W008975	1.4 BN PLASTIC
Inlet tube	W007297	1.4 BN PLASTIC
Middle tube	W007433	1.4/33 BN PLASTIC

Outlet tube	W007441	1.4/64 BN PLASTIC
<b>F000225</b>	<b>AL U1.6 FEEDER KIT #11</b>	
Drive feed roll	W001071	1.6 YE PLASTIC
Pressure feed roll	W001072	1.6 YE PLASTIC
Inlet tube	W007298	1.6 YE PLASTIC
Middle tube	W007434	1.6/33 YE PLASTIC
Outlet tube	W007442	1.6/64 YE PLASTIC

AL, heavy-duty, U-groove

<b>F000226</b>	<b>AL U1.0 HD FEEDER KIT #11</b>	
Drive feed roll	W006088	1.0 METAL
Pressure feed roll	W006089	1.0 METAL
Inlet tube	W007295	1.0 RD PLASTIC
Middle tube	W007431	1.0/33 RD PLASTIC
Outlet tube	W007439	1.0/64 RD PLASTIC

<b>F000227</b>	<b>AL U1.2 HD FEEDER KIT #11</b>	
Drive feed roll	W006090	1.2 METAL
Pressure feed roll	W006091	1.2 METAL
Inlet tube	W007296	1.2 OG PLASTIC
Middle tube	W007432	1.2/33 OG PLASTIC
Outlet tube	W007440	1.2/64 OG PLASTIC

<b>F000228</b>	<b>AL U1.6 HD FEEDER KIT #11</b>	
Drive feed roll	W006092	1.6 METAL
Pressure feed roll	W006093	1.6 METAL
Inlet tube	W007298	1.6 YE PLASTIC
Middle tube	W007434	1.6/33 YE PLASTIC
Outlet tube	W007442	1.6/64 YE PLASTIC

#### Color coding:

WH = White, RD = Red, OG = Orange, BN = Brown, YE = Yellow, BK = Black, GY = Gray, LTGY = Light gray.

#### Feed roll profile symbols:

<b>V</b>	V-groove, plain
<b>V≡</b>	V-groove, knurled
<b>U</b>	U-groove

## 5.5 X3 welding program work pack

These X3 FastMig welding program work packs include welding programs that allow welding with automatic 1-MIG and/or Pulse MIG processes. With X3 FastMig the required welding programs come factory-installed.

### 1-MIG:

Welding program	Process	Filler wire material	Filler wire diameter	Shielding gas	Description
A01	1-MIG	AlMg5	1	Ar	Standard
A02	1-MIG	AlMg5	1.2	Ar	Standard
A03	1-MIG	AlMg5	1.6	Ar	Standard
A11	1-MIG	AlSi5	1	Ar	Standard
A12	1-MIG	AlSi5	1.2	Ar	Standard
A13	1-MIG	AlSi5	1.6	Ar	Standard
C01	1-MIG	CuSi3*	0.8	Ar	Standard: Brazing
C03	1-MIG	CuSi3*	1.0	Ar	Standard: Brazing
F01	1-MIG	Fe	0.8	Ar+18%CO <sub>2</sub>	Standard
F02	1-MIG	Fe	0.9	Ar+18%CO <sub>2</sub>	Standard
F03	1-MIG	Fe	1	Ar+18%CO <sub>2</sub>	Standard
F04	1-MIG	Fe	1.2	Ar+18%CO <sub>2</sub>	Standard
F05	1-MIG	Fe	1.4	Ar+18%CO <sub>2</sub>	Standard
F06	1-MIG	Fe	1.6	Ar+18%CO <sub>2</sub>	Standard
F11	1-MIG	Fe	0.8	Ar+8%CO <sub>2</sub>	Standard
F12	1-MIG	Fe	0.9	Ar+8%CO <sub>2</sub>	Standard
F13	1-MIG	Fe	1	Ar+8%CO <sub>2</sub>	Standard
F14	1-MIG	Fe	1.2	Ar+8%CO <sub>2</sub>	Standard
F21	1-MIG	Fe	0.8	CO <sub>2</sub>	Standard
F22	1-MIG	Fe	0.9	CO <sub>2</sub>	Standard
F23	1-MIG	Fe	1	CO <sub>2</sub>	Standard
F24	1-MIG	Fe	1.2	CO <sub>2</sub>	Standard
F25	1-MIG	Fe	1.4	CO <sub>2</sub>	Standard
F26	1-MIG	Fe	1.6	CO <sub>2</sub>	Standard
M04	1-MIG	Fe Metal (FeMC)	1.2	Ar+18%CO <sub>2</sub>	Standard
M05	1-MIG	Fe Metal (FeMC)	1.4	Ar+18%CO <sub>2</sub>	Standard
M06	1-MIG	Fe Metal (FeMC)	1.6	Ar+18%CO <sub>2</sub>	Standard
M24	1-MIG	Fe Metal (FeMC)	1.2	CO <sub>2</sub>	Standard
M26	1-MIG	Fe Metal (FeMC)	1.6	CO <sub>2</sub>	Standard
R04	1-MIG	Fe Rutile (FeRC)	1.2	Ar+18%CO <sub>2</sub>	Standard
R06	1-MIG	Fe Rutile (FeRC)	1.6	Ar+18%CO <sub>2</sub>	Standard
R14	1-MIG	Fe Rutile (FeRC)	1.2	CO <sub>2</sub>	Standard

R16	1-MIG	Fe Rutile (FeRC)	1.6	CO2	Standard
R56	1-MIG	Fe (IS)	1.6	-	InnerShield
R57	1-MIG	Fe (IS)	2.0	-	InnerShield
S01	1-MIG	Ss	0.8	Ar+2%CO2	Standard
S02	1-MIG	Ss	0.9	Ar+2%CO2	Standard
S03	1-MIG	Ss	1	Ar+2%CO2	Standard
S04	1-MIG	Ss	1.2	Ar+2%CO2	Standard
S05	1-MIG	Ss	1.6	Ar+2%CO2	Standard
S82	1-MIG	FC-CrNiMo (SsRC)	0.9	Ar+18%CO2	Standard
S84	1-MIG	FC-CrNiMo (SsRC)	1.2	Ar+18%CO2	Standard

\* C01 and C03 welding program settings can be used also with CuAl8 filler wire material.

### Pulse MIG:






Welding program	Process	Filler wire material	Filler wire diameter	Shielding gas	Description
A01	P-MIG	AlMg5	1	Ar	Standard
A02	P-MIG	AlMg5	1.2	Ar	Standard
A03	P-MIG	AlMg5	1.6	Ar	Standard
A11	P-MIG	AlSi5	1	Ar	Standard
A12	P-MIG	AlSi5	1.2	Ar	Standard
A13	P-MIG	AlSi5	1.6	Ar	Standard
C01	P-MIG	CuSi3	0.8	Ar	Standard: Brazing
C03	P-MIG	CuSi3	1.0	Ar	Standard: Brazing
F01	P-MIG	Fe	0.8	Ar+18%CO2	Standard
F02	P-MIG	Fe	0.9	Ar+18%CO2	Standard
F03	P-MIG	Fe	1	Ar+18%CO2	Standard
F04	P-MIG	Fe	1.2	Ar+18%CO2	Standard
F05	P-MIG	Fe	1.4	Ar+18%CO2	Standard
F06	P-MIG	Fe	1.6	Ar+18%CO2	Standard
F11	P-MIG	Fe	0.8	Ar+8%CO2	Standard
F12	P-MIG	Fe	0.9	Ar+8%CO2	Standard
F13	P-MIG	Fe	1	Ar+8%CO2	Standard
F14	P-MIG	Fe	1.2	Ar+8%CO2	Standard
M04	P-MIG	Fe Metal	1.2	Ar+18%CO2	Standard
M06	P-MIG	Fe Metal	1.6	Ar+18%CO2	Standard
S01	P-MIG	Ss	0.8	Ar+2%CO2	Standard
S02	P-MIG	Ss	0.9	Ar+2%CO2	Standard
S03	P-MIG	Ss	1	Ar+2%CO2	Standard
S04	P-MIG	Ss	1.2	Ar+2%CO2	Standard
S05	P-MIG	Ss	1.6	Ar+2%CO2	Standard

## 5.6 X3 control panel symbols and icons summary




*Control panel button functions:*

	Save memory channel (long press)
	Change memory channel
	Operation mode selection (long press)
	MIG welding process selection
	Wire inch (long press)
	Trigger logic selection
	Cable calibration (long press)
	Material selection
	Water cooling (long press)
	Welding parameters
	Gas test (long press)
	Remote operation (torch remote control)











*Welding processes and modes:*

	Manual MIG process
	Automatic MIG process (1-MIG)
	Pulse MIG process
	MMA mode
	Gouging mode







*Material selection (1-MIG and Pulse MIG):*

	Filler wire material
	Filler wire diameter
	Shielding gas




*Device settings:*

	Trigger logic 2T
	Trigger logic 4T
	Remote mode: Memory channels
	Remote mode: Welding parameter
	Safety lock
	Water cooling (if in use)
	Cable calibration
	Cable resistance
	Cable inductance
	Voltage reduction device (VRD) is on




*Welding parameters and memory channels:*

	Wire feed (speed)
	Pulse current
	Dynamics
	Fine tuning
	Hot start
	Crater fill











	Post current
	Memory channel (selected and saved)
	Work channel (selected and not saved)

*Firmware update:*

	USB memory stick connected
	Update (in progress)
	Update ready

*Warning and caution indicators:*

	Warning: This symbol indicates an error or fault that requires attention, but doesn't prevent welding
	Error: This symbol indicates an error or fault that prevents welding and require immediate action
	Error or fault with power source
	Error or fault with wire feeder
	Error or fault with cooling unit
	Overheating error
	Error (error code is shown together with this text)
	Voltage reduction device (VRD) error (blinking)