

## FDV 50

Operating Instructions  
Carriage





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# General

## Principle

The FDV 50 carriage is a straight-line carriage with a 2-wheel drive for welding mechanised butt and fillet welds in a horizontal welding position.

## Device concept



*FDV 50 carriage*

The FDV 50 carriage has been designed for flexibility and to improve productivity in the execution of longitudinal weld seams.

Robust yet lightweight design allows quick and easy positioning on the workpiece.

The carriage is powered by a mains cable. It is controlled and operated by a remote control.

## Scope of supply

FDV 50 carriage	8,045,099
FCU9 / M1 control unit	8,040,026
FRC9 remote control	8,046,016

## Field of application

The FDV 50 carriage can be used in all situations where a high degree of flexibility is required when executing longitudinal weld seams:

- Welding of longitudinal members
- Shipyards
- Bridge construction
- Workshops
- Production halls
- Building sites

## Proper use

The FDV 50 carriage must only be used for welding mechanised butt and fillet welds in a horizontal welding position.

Any other use shall be deemed improper and the manufacturer will assume no responsibility for any damages arising.

Can be used in the following welding processes:

- MIG / MAG process

Proper use also includes:

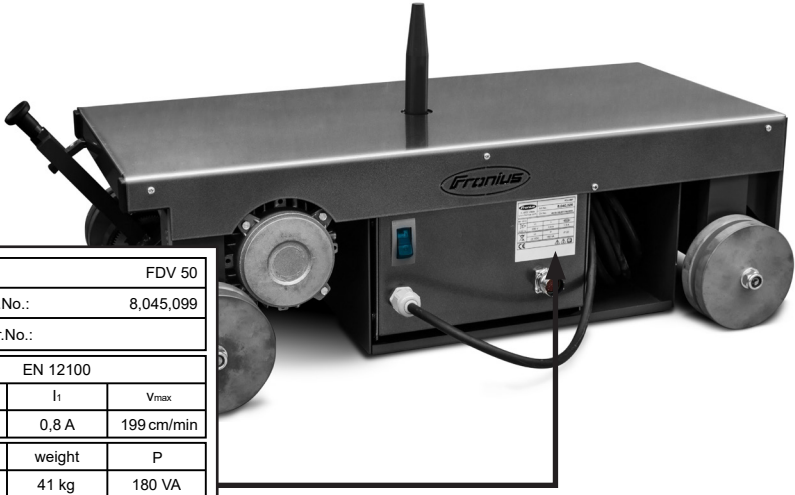
- Carrying out all maintenance work at the appropriate intervals
- Keeping a service book with the most important information (date, operator, activities carried out)
- Using the spare parts stipulated by Fronius
- Following all the information in the operating instructions
- Using this document in combination with the operating instructions for the integrated system components (power source, wire-feed unit, etc.)





**NOTE!** Any use of the machine other than for its intended purpose or any unauthorised conversion or modifications, shall be deemed improper use. Any liability or warranty from the manufacturer is hereby invalidated.


## Warning notices on the carriage

A number of safety symbols can be seen on the rating plate affixed to the carriage. The safety symbols must not be removed or painted over.



		FDV 50	
A-4600 Wels www.fronius.com		Art.No.:	8,045,099
		Ser.No.:	
YM:2010	EN 12100		
	U <sub>1</sub>	I <sub>1</sub>	V <sub>max</sub>
50/60 Hz	230 V	0,8 A	199 cm/min
	max. load	weight	P
	50 kg	41 kg	180 VA
L x W x H			
1070 x 815 x 680 mm			
CE			

  Do not use the functions until you have fully read all the operating instructions.

 Do not dispose of used devices with domestic waste. Dispose of them according to safety rules.

FDV 50 rating plate

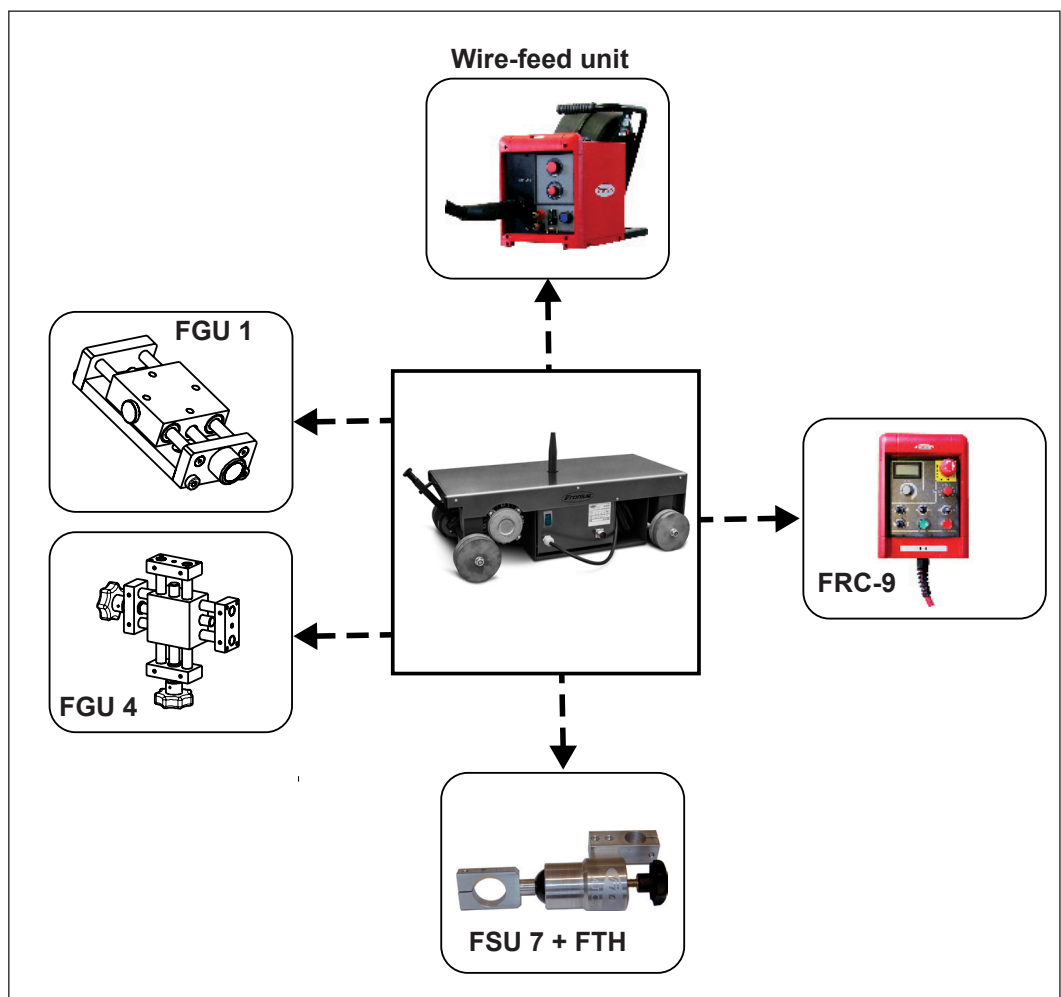
# Carriage components

## Standard equipment

- 2-wheel drive via AC motor (drive can be uncoupled)
- Wheels with steel tread and groove
- Reinforcement with mounting pin for wire-feed unit
- Power supply and motor controller box integrated in the carriage
- Mains cable and plug (5 metres)
- Control line to power source (6.5 metres)

## Options and accessories

- FRC-9 remote control and cable (3 metres)
- Holder for remote control
- Mechanical weld tracking system
- Torch holder and adjustment units
- Steel guide rollers with / without groove (laterally adjustable)
- Rail system
- Limit position function I-kit
- VR holder for two wire-feed units



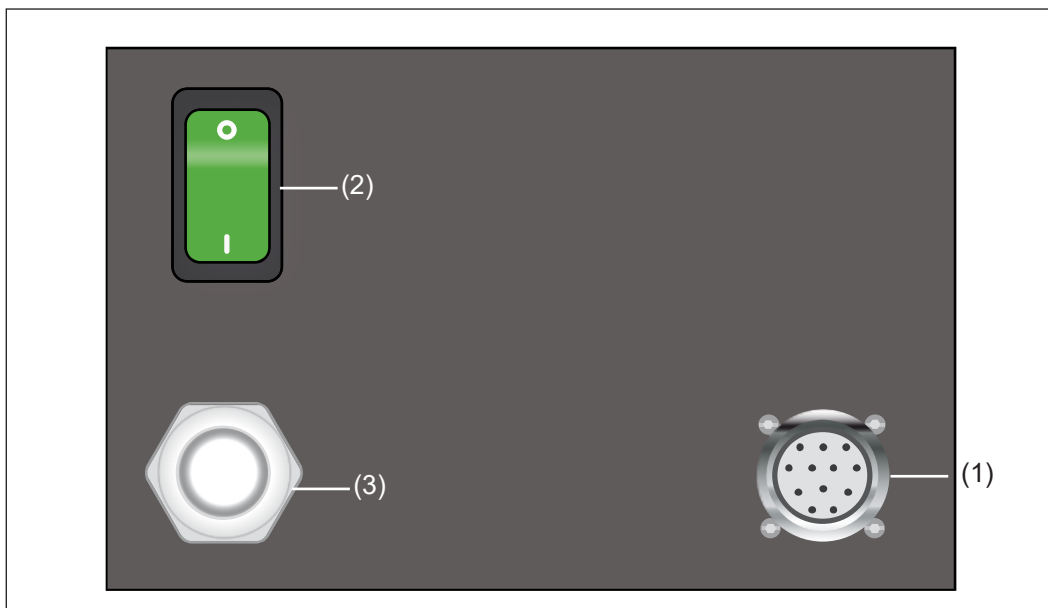
# Controls and connections

## FCU-9 control unit



**WARNING!** Operating the equipment incorrectly can cause serious injury and damage. Do not use the functions described here until you have thoroughly read and understood the following documents:

- These operating instructions
- All the operating instructions for the system components, especially the safety rules



FDV 50 connections

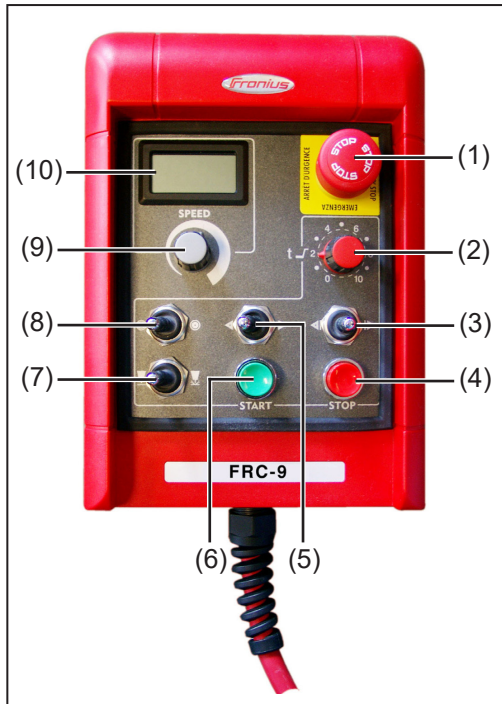
No.	Function
(1)	<b>Remote control connection</b> to connect manual remote control
(2)	<b>On/Off mains switch</b> to switch the carriage and connected remote control on and off
(3)	<b>Power source control</b> to connect the power source



**NOTE!** Detailed information about using the FCU-9 control unit, plus information about maintenance and troubleshooting, can be found in the FCU-9 operating instructions that are enclosed with the technical documents for the carriage.




**FRC-9 remote control**



FRC-9 remote control

No.	Function
(1)	<b>Emergency Stop button</b> Stops all movements. The arc is broken immediately.
(2)	<b>Start-up delay potentiometer</b> To set the time between igniting the arc and starting the carriage.
(3)	<b>"Move manually" button</b> For manual fine positioning of the carriage.
(4)	<b>"STOP" button</b> To stop the program sequence. Combined with the "START" button, used to determine the direction of rotation.

No.	Function
(5)	<b>Preselect welding direction</b> To select the welding direction (direction of travel).
(6)	<b>START button</b> To start the welding process.
(7)	<b>Welding ON/OFF</b> Select program sequence with or without welding.
(8)	<b>Pneumatic ON/OFF</b> To control a pneumatic unit (e.g. lowering of torch).
(9)	<b>Welding speed potentiometer</b> To set the welding speed. This can also be changed during the welding process.
(10)	<b>Digital display of welding speed</b> Displays the carriage speed in [cm/min].

 **NOTE!** Detailed information about using the remote control and setting the desired welding parameters, plus information about maintenance and troubleshooting, can be found in the FRC-9 operating instructions.

# Welding positions

## Possible welding positions

Exceptional track consistency is assured by the wheels with grooves and the 2-wheel drive, which can be uncoupled.

The following welding positions are possible:

- PA position

# Preparing the carriage

## Checking the surface of the workpiece and the carriage to ensure they are clean

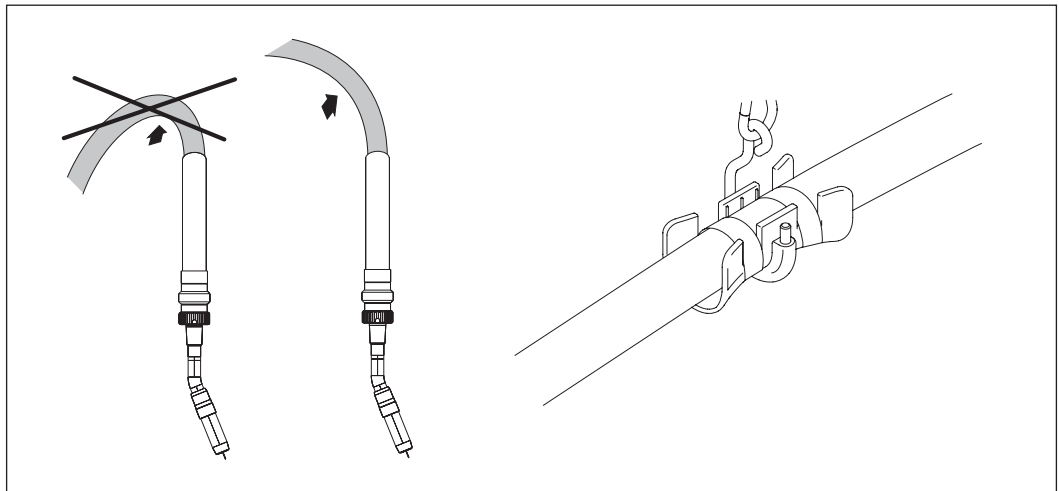
Before positioning the carriage, check the following:

- The surface of the workpiece must be clean (no sand, shavings, etc.)
- The tread and grooves of the drive wheels must not be damaged and must be free of shavings, dirt and welding spatter

## Carriage strain relief

To attain optimum wirefeed, observe the following when connecting and routing the hosepack:

- Do not allow the hosepack to become kinked
- Always lay the hosepack as straight as possible
- Suspend hosepack if necessary. Use balancer and hosepack holder.



*Hosepack handling*

# Commissioning

## Checking the connections



**WARNING!** Operating the equipment incorrectly can cause serious injury and damage. Do not use the functions described here until you have thoroughly read and understood the following documents:

- These operating instructions
- all the operating instructions for the system components, especially the safety rules

The following activities and work steps apply to the installed system. All connections must be established. Before start-up, check the connections of the following system components:

- Power source
- Cooling circuit
- Gas cylinder
- Wire-feed unit
- Welding torch with hosepack
- Workpiece

Precise information on the assembly and connection of the system components can be found in the relevant system component operating instructions.

## Switching on system components

**IMPORTANT!** There are no fixed rules for the sequence in which the system components are switched on. They can be switched on in any order.

On the following system components turn the main switch to the "ON - 1" position:

- Carriage control unit
- Power source
- Wire-feed unit (if power is not supplied from the power source)

## Defining parameters for the carriage

Determine the following settings for the welding process:

- Start-up delay
- Welding direction
- Traversing speed

### **Carrying out test run**

Perform a test run to check that all system components work together correctly. This is done without an arc and thus allows you to check all movements during the process.

1. Switch the "Welding ON / OFF" toggle switch to the OFF position.
2. Press the START button. The welding test sequence starts.

**IMPORTANT!** Never leave the machine unattended, particularly when it is moving automatically.

3. Carry out a visual check during the process.
4. If necessary, make the relevant corrections (welding torch position, direction of travel of carriage, traversing speed, etc.).
5. After the test, move the carriage back to its original position.

### **Starting the welding process**

Start the welding process:

1. Switch the "Welding ON / OFF" toggle switch to the ON position.
2. Press the START button. The welding process starts.

**IMPORTANT!** Never leave the machine unattended, particularly when it is moving automatically.

# Troubleshooting

## General

In the event of faults, note that the functioning of the entire system depends on many additional components (power source, wire-feed unit, etc.) that are also potential sources of problems.

## Basic requirements for the system to work

- Connections established between separate system components
- System components are supplied with electricity and the mains voltage is as specified (see rating plate)

## Carriage

<b>Carriage is switched on but does not move</b>	
Cause:	Carriage overloaded (e.g. the torch cables pull the carriage up)
Remedy:	Relieve cable strain (suspend)
Cause:	Wheels dirty (with oil)
Remedy:	Clean the wheels
<b>Play on the torch</b>	
Cause:	Play on the handles
Remedy:	Tighten handles
Cause:	Play on the guide rails
Remedy:	Tighten the pressure screws

## Control, remote control

<b>Nothing happens, main switch does not light up</b>	
Cause:	Main switch is switched off
Remedy:	Switch the device on
Cause:	No connection to the mains
Remedy:	Check the mains lead, mains plug and mains cable
Cause:	Mains fuse is faulty
Remedy:	Replace the mains fuse: glass-tube fuse
<b>No function, main switch lights up</b>	
Cause:	Emergency Stop has been actuated
Remedy:	Release the Emergency Stop button
Cause:	No connection to the carriage
Remedy:	Check the control line
Cause:	Frequency converter error
Remedy:	- Switch the device off - Wait 15 seconds - Switch the device on again

**Control,  
remote control**  
(continued)

<b>Carriage does not move after start-up or when in inching mode</b>	
Cause:	Emergency Stop has been actuated
Remedy:	Release the Emergency Stop button
Cause:	Frequency converter error
Remedy:	- Switch the device off - Wait 15 seconds - Switch the device on again

<b>Arc ignites, carriage does not move</b>	
Cause:	Value too high for start-up delay
Remedy:	Change the "Start-up delay time" parameter (start-up delay potentiometer)

<b>Carriage moves but arc does not ignite</b>	
Cause:	Power source switched off
Remedy:	Switch on the power source
Cause:	Welding ON / OFF selector switch set to the OFF position
Remedy:	Set the selector switch to ON

# Maintenance and care

## Personnel



### **WARNING! Risk of injury and damage from incorrectly performed maintenance.**

All maintenance work on the FDV 50 carriage must only be carried out by trained technicians. It is essential to adhere to the maintenance intervals and maintenance procedures. The manufacturer accepts no liability for any damage caused by inadequate or poorly performed maintenance.

## Maintenance record

The operator must put the following organisational measures in place with regard to maintenance:

- keeping a service book with the most important data (date, operator, maintenance activities carried out)

## Maintenance operations and intervals



**NOTE!** Before beginning maintenance work, switch off device and disconnect from mains supply.

Item	Part	Action	Interval
<b>A</b>	Linear guides	Clean, check oil film, eliminate play: tighten pressure screws with Allen key	M
<b>B</b>	Thread play	Clean, regrease	M
<b>C</b>	Rack and pinion	Clean, regrease	M
<b>D</b>	Rollers and rails	Clean, check position	M
<b>E</b>	Ventilation openings	Clean	W
<b>F</b>	Terminal contacts	Clean	W
<b>G</b>	Wheels, underbody, guide wheels, guide rails	Clean	D

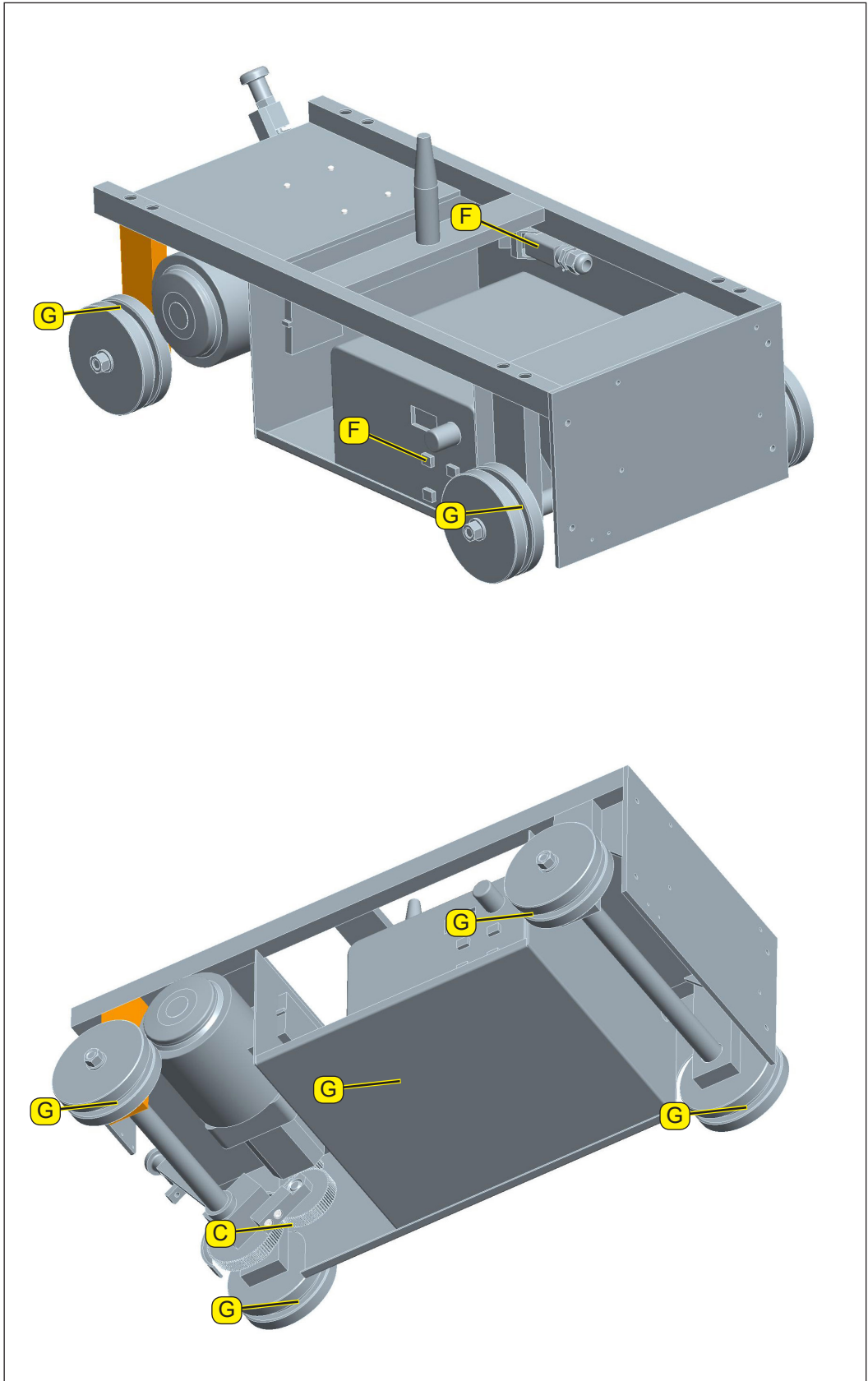
D Daily  
 W Weekly  
 M Monthly  
 1/2 y Half-yearly  
 Y Yearly

## Recommended lubricants

**IMPORTANT!** Lubricants with solid lubricant additives (e.g.: MoS<sub>2</sub>, graphite and PTFE) are not suitable for guiding systems.

Lubricant	DIN	DIN number	Comment
Lubricating grease	KP 2-K	51502 / 51825	Lithium soap-based grease
Lubricating oil	CLP32-100	51517 Part 3	ISO VG 32-100
Conductive paste	--	--	Item no. 48,0009,0157

Carriage  
components



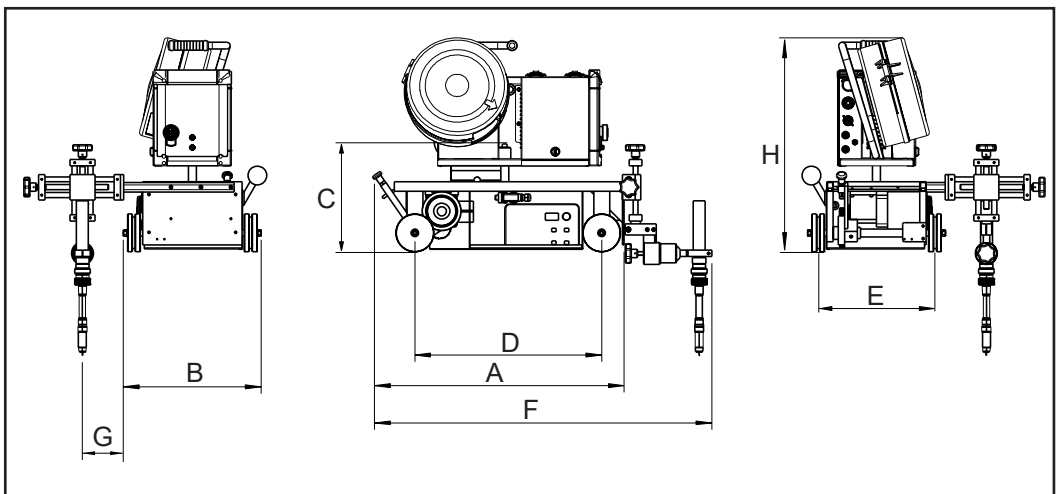


# Technical data

## FDV 50 carriage

Mains voltage/frequency	230 V / 50-60 HZ
Control voltage	24 V DC
Power consumption	180 VA
Max. load	50 kg
Track width	370 mm
Welding position	PA
Horizontal speed (load = 50 N)	0-199 cm/min
Net weight (without remote control and weld tracking)	41 kg

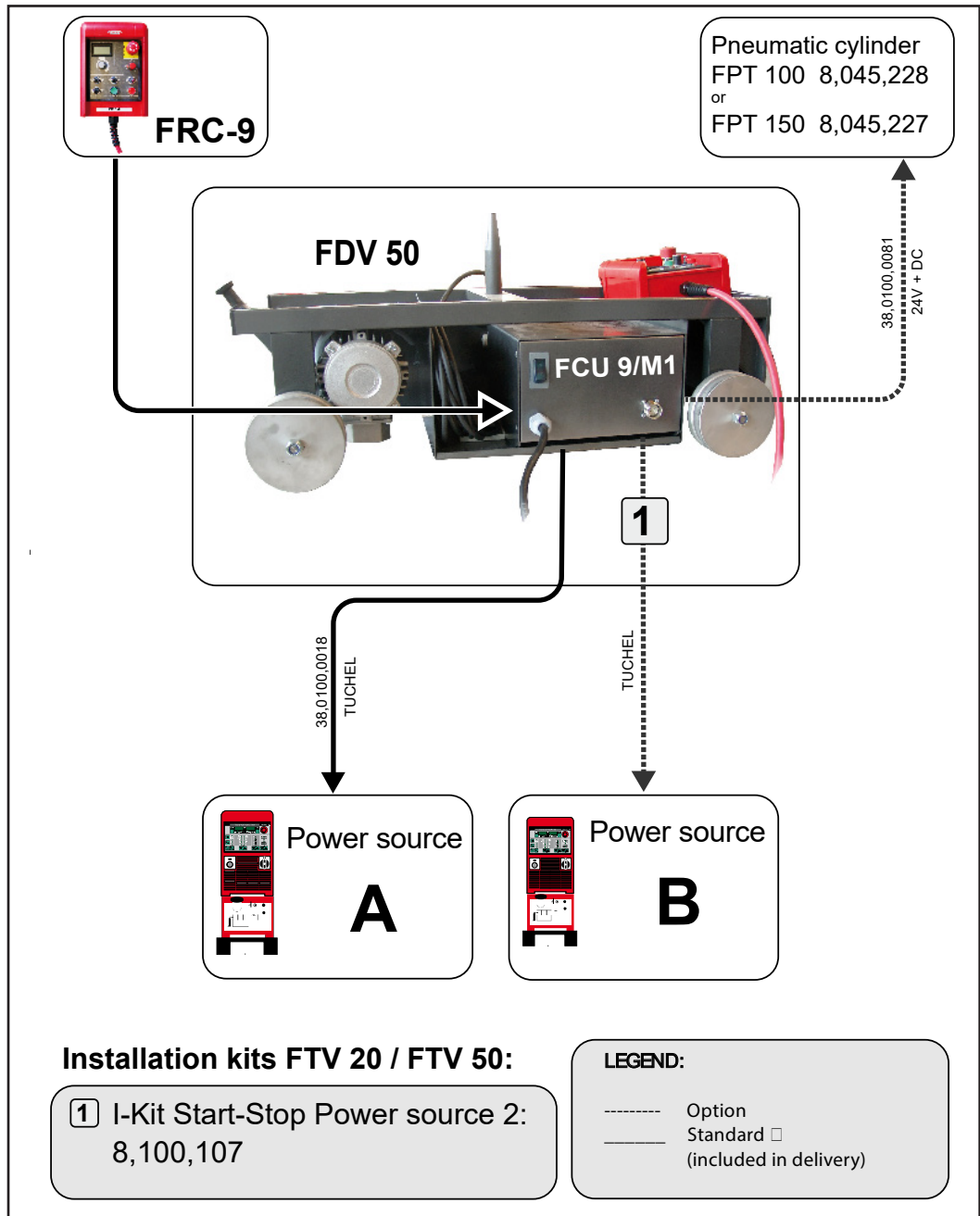
## FDV 50 dimensions



A	792 mm	E	370 mm
B	437 mm	F	1069 mm
C	345 mm	G	max. 379.5 mm
D	592 mm	H	678 mm

# Options and accessories

## System overview



### Installation kit

Start/Stop second power source I-kit  
 Item number: 8,100,107  
 Including 3 m Tuchel connecting cable

### Connecting cable

5 m connecting cable to FTP (pneum. torch positioning)  
 Item number: 38,0100,0081

## FDV-50

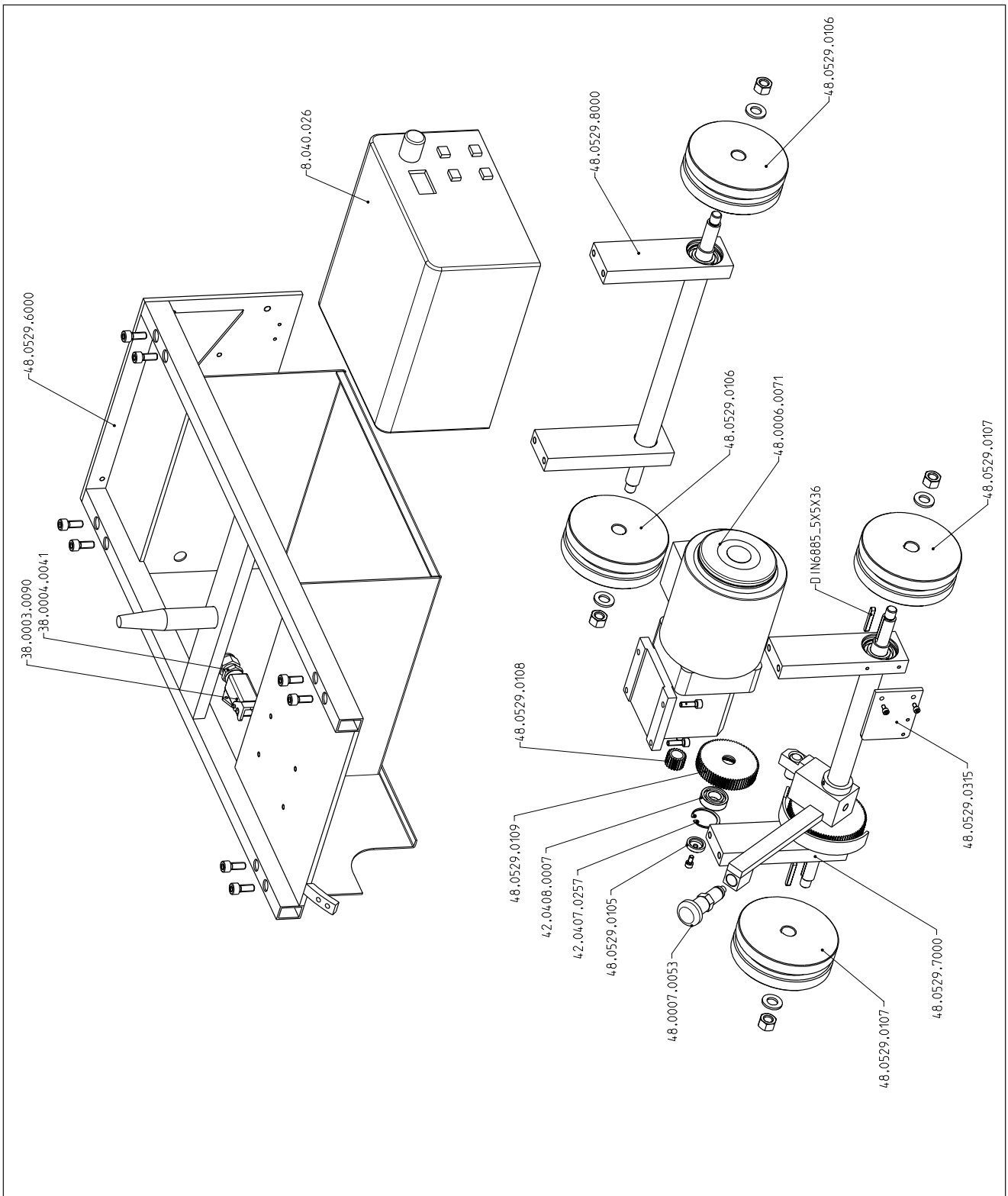
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Spare parts list,  
circuit diagram  
Carriage





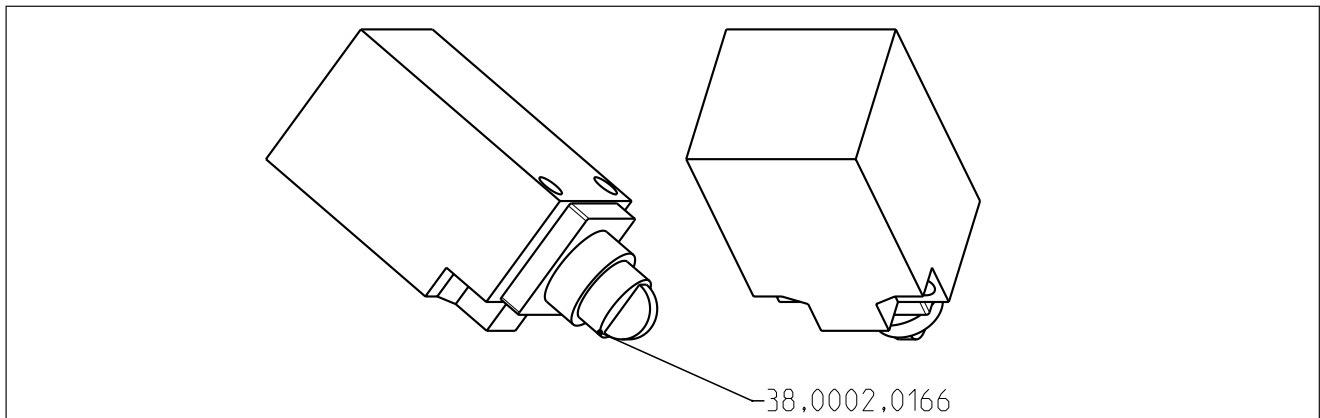
48,0529,0000 FDV 50 carriage



**48,0529,0000 FDV 50 carriage**

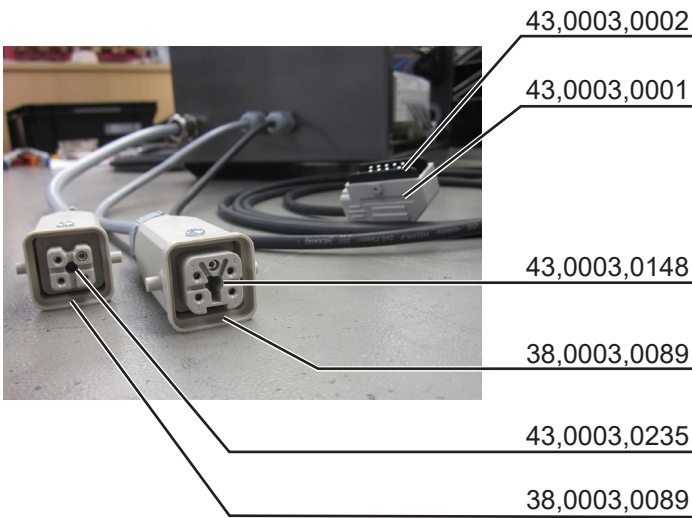
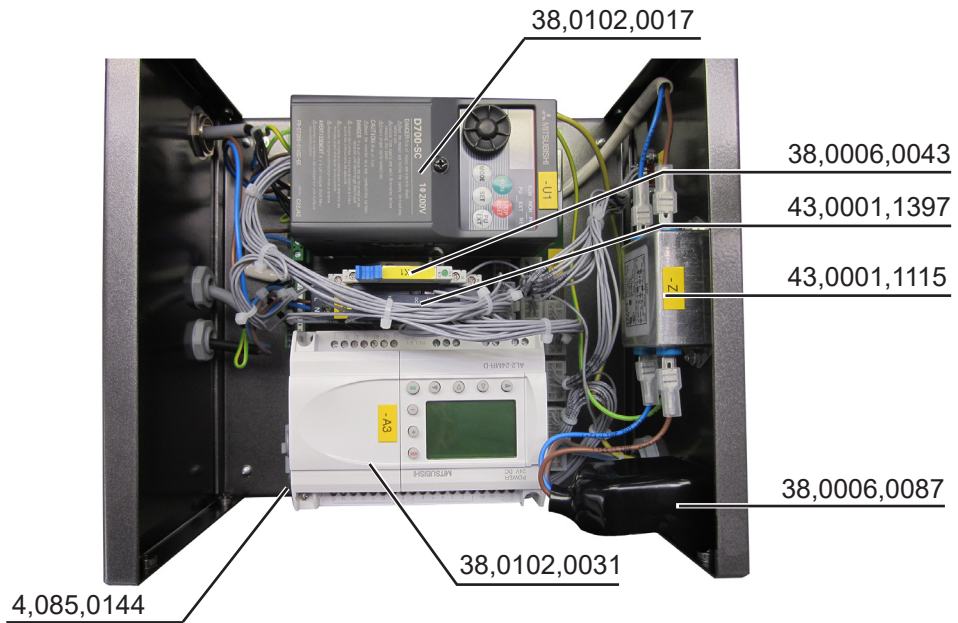
<b>Designation:</b>	<b>Item number:</b>
Thrust washer	48,0529,0105
Impeller	48,0529,0106
Impeller drive	48,0529,0107
Drive pinion	48,0529,0108
Intermediate cog	48,0529,0109
Limit switch plate	48,0529,0315
Base frame, complete	48,0529,6000
Drive axis, complete	48,0529,7000
Front axis, complete	48,0529,8000
Base housing	38,0003,0090
Cable gland	38,0004,0041
Spur gear motor	48,0006,0071
Stop bolt without locking nut, with button	48,0007,0053
FCU-9M1	8,040,026
Locking ring	42,0407,0257
Bearing	42,0408,0007
Spring	DIN6885_5x5x36
FRC-9 remote control	8,046,016

**48-0385-C000 I-kit Limit switch**



<b>Designation:</b>	<b>Item number:</b>
Limit switch 90°	38,0002,0166
Cable connection	38,0004,0090

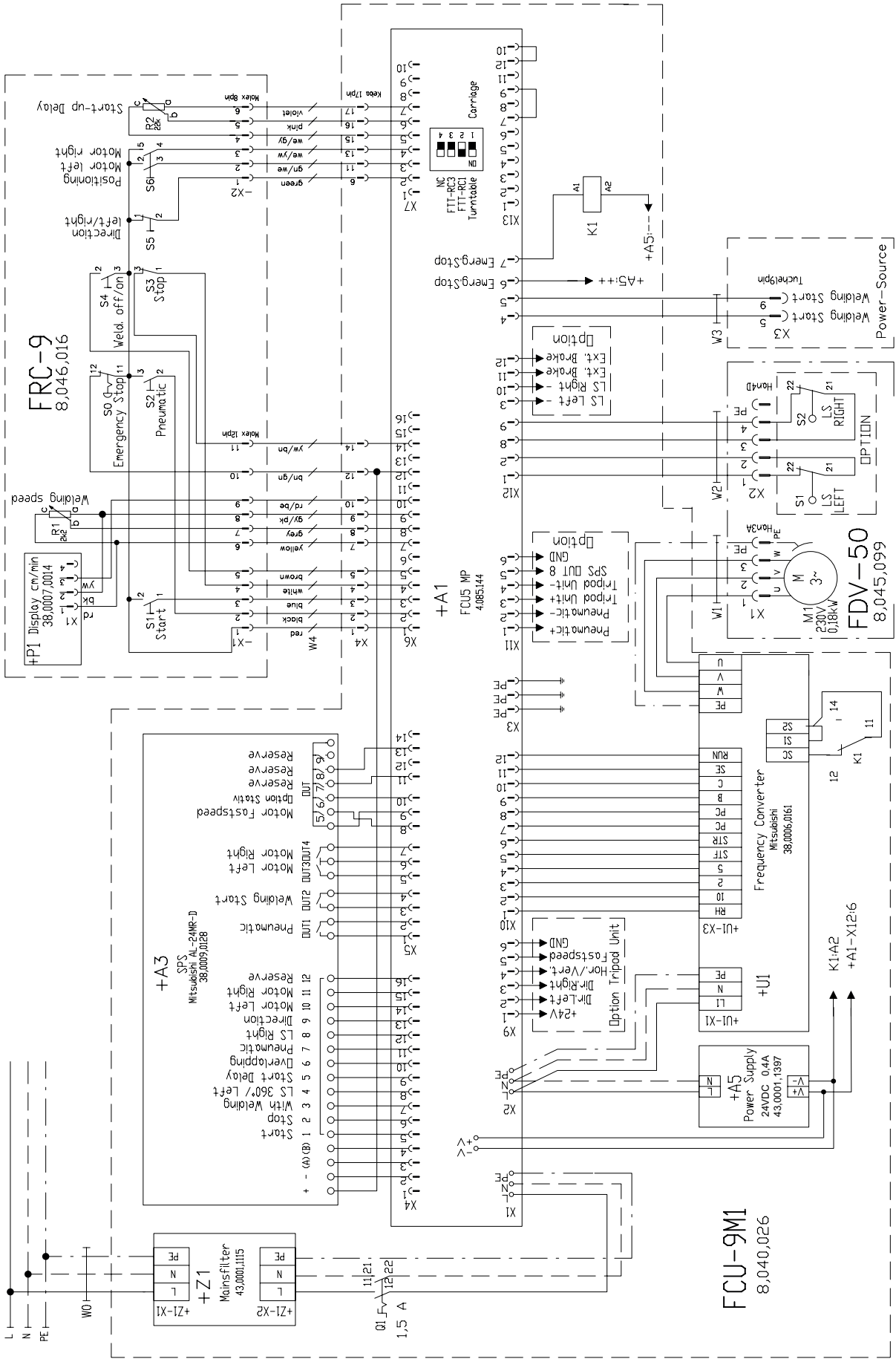
8,040,026 FCU-9M1



Item no.	Name
4,085,144	MP-Print
38,0006,0087	Mains switch
38,0102,0017	Frequency converter
38,0102,0031	PLC
38,0006,0043	Relay 24VDC 1WI
43,0001,1115	Line filter
43,0001,1397	24 VDC mains adapter
43,0004,3206	5 m mains cable
43,0003,0001	Handle cap
43,0003,0002	Plug connector
43,0003,0148	Plug insert
38,0003,0089	Connector housing
43,0003,0235	Plug insert

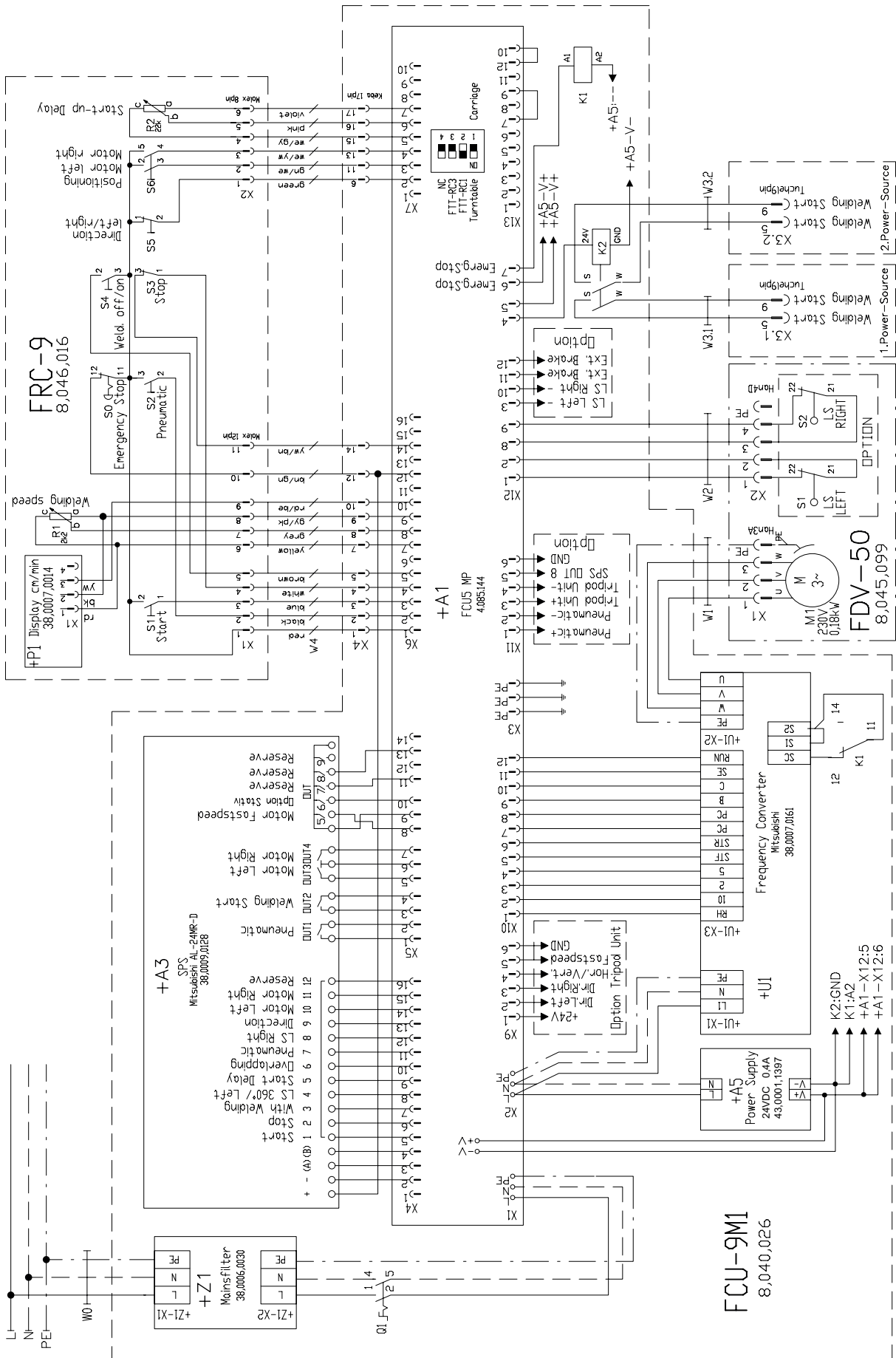
# Wiring diagram

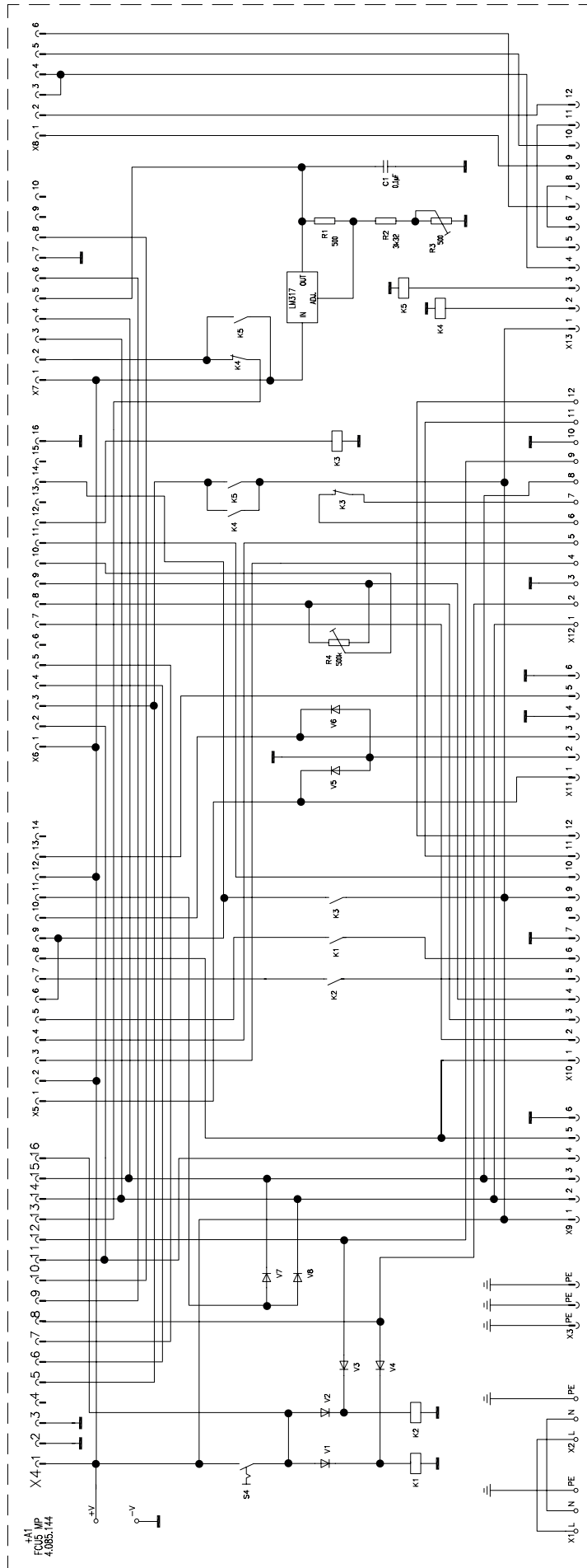
with one Powersource





with two Powersources





# EU-Declaration of conformity



## EU-KONFORMITÄTSERKLÄRUNG 2016 EU-DECLARATION OF CONFORMITY 2016 DÉCLARATION UE DE CONFORMITÉ, 2016

Wels-Thalheim, 2016-04-20

Die Firma

Manufacturer

La compagnie

### FRONIUS INTERNATIONAL GMBH

Froniusplatz 1, 4600 Wels

erklärt in alleiniger Verantwortung,  
dass folgendes Produkt:

Hereby certifies on its sole  
responsibility that the following  
product:

se déclare seule responsable du fait  
que le produit suivant:

FDV 50  
Fahrwerk

FDV 50  
Carriage

FDV 50  
Chariot de soudage

auf das sich diese Erklärung  
bezieht, mit folgenden Richtlinien  
bzw. Normen übereinstimmt:

which is explicitly referred to by this  
Declaration meet the following  
directives and standard(s):

qui est l'objet de la présente  
déclaration correspondent aux  
suivantes directives et normes:

Richtlinie 2006/42/EG  
Maschinenrichtlinie

Directive 2006/42/EC  
Machinery Directive

Directive 2006/42/CE  
Directive aux machines

Richtlinie 2014/35/EU  
Elektrische Betriebsmittel  
Niederspannungsrichtlinie

Directive 2014/35/EU  
Electrical Apparatus  
Low Voltage Directive

Directive 2014/35/UE  
Outillages électriques  
Directive de basse tension

Richtlinie 2011/65/EU  
RoHS

Directive 2011/65/EU  
RoHS

Directive 2011/65/UE  
RoHS

Europäische Normen inklusive  
zutreffende Änderungen  
EN ISO 12100:2010  
EN 60204-1:2006 (18.3 -18.7)

European Standards including  
relevant amendments  
EN ISO 12100:2010  
EN 60204-1:2006 (18.3 -18.7)

Normes européennes avec  
amendements correspondants  
EN ISO 12100:2010  
EN 60204-1:2006 (18.3 -18.7)

Die oben genannte Firma hält  
Dokumentationen als Nachweis der  
Erfüllung der Sicherheitsziele und  
die wesentlichen Schutzanforder-  
ungen zur Einsicht bereit.

Documentation evidencing  
conformity with the requirements of  
the Directives is kept available for  
inspection at the above  
Manufacturer.

En tant que preuve de la satisfaction  
des demandes de sécurité la  
documentation peut être consultée  
chez la compagnie susmentionnée.

Dokumentationsverantwortlicher:  
(technische Dokumentation)


person responsible for documents:  
(technical documents)

responsable documentation:  
(technique documentation)

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