KEMPPI
The Joy of Welding

Kempact Pulse™ | 3000 MVU

Operating manual • English **EN**

Bruksanvisning • Norsk **NO**

OPERATING MANUAL

English

EN

CONTENTS

1. PREFACE

1.1 GENERAL

Congratulations on your choice of the Kempact Pulse™ series power source. Reliable and durable, Kemppi products are affordable to maintain, and they increase your work productivity.

This user manual contains important information on the use, maintenance, and safety of your Kemppi product. The technical specifications of the device can be found at the end of the manual. Please read the manual carefully before using the equipment for the first time. For your safety and that of your working environment, pay particular attention to the safety instructions in the manual.

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

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

Important notes

Items in the manual that require particular attention in order to minimise damage and personal harm are indicated with the *'NOTE!'* notation. Read these sections carefully and follow their instructions.

1.2 PRODUCT INTRODUCTION

The Kempact Pulse 3000 MVU is a compact MIG inverter suitable for repair and installation use, and for light and medium industrial use.

1.3 GENERAL SAFETY INSTRUCTIONS

Kemppi welding equipments conform to international safety standards. Safety is an important issue in equipment design and manufacturing. Therefore, Kemppi welding solutions are unparalleled in safety. There are, however, always certain hazards involved in using welding equipment. Therefore, to ensure your personal safety and the safety of your working environment, carefully read the safety instructions below and respect them.

Use of personal protective equipment

- The arc and its reflecting radiation damage unprotected eyes. Shield your eyes and face appropriately before you start welding or observe welding. As the welding current increases, the welding face screen lens darkness should also increase.
- Arc radiation and spatters burn unprotected skin. Always wear protective gloves, clothing and footwear when welding.
- Always wear hearing protection if the ambient noise level exceeds the allowable limit (e.g., 85 dB).

General operating safety

- Exercise caution when handling parts heated during welding. For example, the tip of the welding torch or gun, and the end of the welding rod and the work piece. The temperature of items burn unprotected skin.
- Never wear any welding device on the shoulder during welding and never suspend it by the carrying strap during welding.
- Do not expose the machine to high temperatures, as this may cause damage.
- Keep intermediate and earth return cables as close to each other as possible throughout their length. Straighten any loops in the cables as this limits inductive effects on welding performance. This also minimizes your exposure to harmful magnetic fields, which may, for example, interfere with a pacemaker.
- Do not wrap the welding cables around your body.
- In environments classified as dangerous, only use S-marked welding equipments with a safe idle voltage level. These work environments include, for example, humid, hot or small spaces, where the user may be directly exposed to the surrounding conductive materials.
- Do not use arc welding equipment for pipe thawing.

Spatter and fire safety

- Welding is always classified as hot work, so pay particular attention to the fire safety regulations during welding and after it.
- Remember that fire can break out from sparks, even several hours after the welding work is completed.
- Protect the environment from welding spatter. Remove combustible materials, such as flammable liquid from the welding vicinity, and supply the welding site with adequate fire fighting equipment.
- In special welding jobs, be prepared for hazards such as fire or explosion when welding inside enclosed work spaces, such as tanks and vessels. Ensure you have authority to work.
- Never direct the sparks or cutting spray of a grinder toward the welding machine or flammable materials.
- Beware of hot objects or spatter falling on the machine when working above. Welding in flammable or explosive sites is absolutely forbidden.

General electric safety

- Only connect the welding machine to an earthed electric network. Note the recommended mains fuse size.
- Do not take the welding machine inside a container, vehicle or similar work piece unless authorized to do so.
- Do not place the welding machine on a wet surface and do not work on a wet surface.
- Do not allow the mains cable to be directly exposed to water.
- Ensure cables or welding torches are not squashed by heavy objects and that they are not exposed to sharp edges or a hot work piece.
- Make sure that faulty and damaged welding torches are changed immediately as they may cause electrocution or fire.
- Remember that the cable, plugs and other electric devices may be installed or replaced only by an electrical contractor or engineer authorized to perform such operations.
- Turn off the welding machine when it is not in use.

Welding power circuit

- Insulate yourself from the welding circuit by using dry and undamaged protective clothing.
- Never touch the work piece and welding rod, welding wire, welding electrode or contact tip at the same time.
- Do not put the welding torch or ground cable on the welding machine or other electric equipment.

Welding fumes

- Ensure proper ventilation and avoid inhaling the fumes.
- Ensure a sufficient supply of fresh air, particularly in closed spaces. You can also ensure an adequate supply of clean breathing air by using a filtered fresh-air mask.
- Take extra precautions when working on metals or surface-treated materials containing, for example, lead, cadmium, zinc, mercury or beryllium.

Transportation, lifting and suspension

- Pay attention to correct working position when lifting a heavy device – risk of injury to the back.
- Never pull or lift the machine by the welding torch or other cables. Always use the lifting points or handles designed for that purpose.
- Only use a transport unit designed for the equipment. Try to transport the machine in an upright position, if possible.
- Never lift a gas cylinder and the welding machine at the same time. There are separate provisions for gas cylinder transportation.
- Never use a welding machine when suspended unless the suspension device has been designed and approved for that particular purpose.
- Do not exceed the maximum allowable load of suspension beams or the transportation trolley of welding equipment. It is recommended that the wire coil be removed during lifting or transportation.

Environment

- Welding equipment is not recommended for use in rain or snow – see manual. Protect the equipment against rain and strong sunlight. Always store the machine in a dry and clean space.
- Protect the machine from sand and dust during use and in storage. The recommended operating temperature range is -20 to +40 °C. The machine's operation efficiency decreases and it becomes more prone to damage if used in temperatures in excess of 40 °C.
- Place the machine so that it is not exposed to hot surfaces, sparks or spatter.
- Make sure the airflow to and from the machine is unrestricted.
- EMC classification of this product is class A in accordance with electromagnetic compatibility standards CISPR 11 and IEC 60974-10, and therefore the product is designed to be used in an industrial environment only.
  WARNING: This class A equipment is not intended for use in residential locations where the electrical power is provided by a public low-voltage supply system. In those locations it may be difficult to ensure the electromagnetic compatibility due to conducted and radiated disturbances.
- Arc welding equipments cause electromagnetic disturbance. To minimize the harmful effects, strictly use the equipment according to the operating manual and other recommendations.

Gas bottles and pneumatic devices

- Adhere to the instructions for handling pneumatic devices and gas bottles.
- Make sure that gas bottles are used and stored in properly ventilated spaces.
- A leaking gas bottle may replace the breathable air, causing suffocation.
- Before use, make sure that the gas bottle contains gas suitable for the intended welding purpose.
- Always fix the gas bottle securely in an upright position, against a bottle wall rack or purpose-made bottle cart.
- Never move a gas bottle when the regulator or flow adjuster is in place. Replace the valve cover during transportation. Close the bottle valve after use.

Circuit diagram and spare part lists

If the circuit diagram and the spare parts list are not included in delivery package, please inquire for them at your local Kemppi service representative. For more information, please visit www.kemppi.com.

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.

2. BEFORE YOU START USING THE UNIT

2.1 UNPACKING

The equipment is packed in durable packages, designed specially for it. Nevertheless, before using the equipment, always make sure it was not damaged during transport. Also check that you have received what you ordered and it is accompanied by the appropriate instructions.

NOTE! The packaging material is suitable for recycling.

2.2 PLACEMENT OF THE UNIT

Place the unit on a horizontal, solid, and clean surface. Shield it from heavy rain and scorching sun. Make sure that cooling air circulates freely.

2.3 SERIAL NUMBER

The serial number of the unit is marked on its rating plate. The serial number makes it possible to trace product manufacturing series. You might need the serial number when placing spare parts orders or when planning maintenance.

2.4 CONNECTION TO THE MAINS SUPPLY

The Kempact Pulse 3000 MVU is delivered with a five metre mains cable without a plug. Installation of the plug should be carried out only by a competent electrician. Kempact Pulse MVU can be connected to mains supply of 230 V 3~ or 400 V 3~ power source. Power source recognizes the mains voltage automaticly. For fuse and cable sizes, see the technical data in the end of this document.

2.5 DISTRIBUTION NETWORK

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

Connection to 400 V supply:

WARNING: This equipment does not comply with IEC 61000-3-12. If it is connected to a public low voltage system, it is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment may be connected.

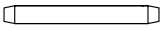
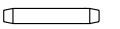
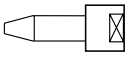
2.6 GROUND CABLE

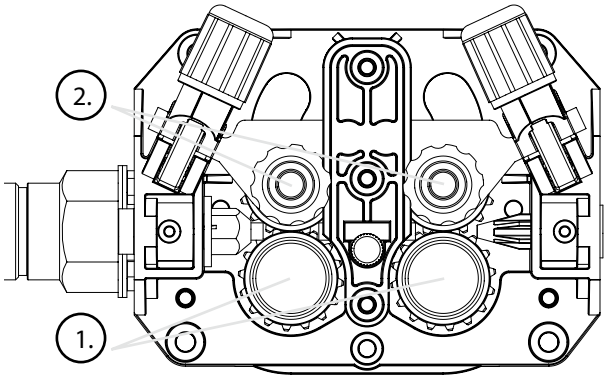
Fasten the earth clamp of the return current cable carefully, preferably direct onto the piece to be welded. The contact surface of the earth clamp should always be as large as possible.

Clean the fastening surface of paint and rust. Use at least two 35 mm^2 cables. Thinner cross sectional areas may cause the connectors to overheat.

2.7 DURATORQUE™ 400, 4 WHEEL WIRE FEED MECHANISM

Wire guide tubes

Ss, Al, Fe, Mc, Fc	ø 0.6 ... 1.6 mm	→	ø 2.5/64 mm, W000762, silver, plastic	→	ø 2.5/33 mm, W000956, silver, plastic	→	ø 2.0 mm, W000624, plastic
	ø 1.6 ... 2.4 mm	→	ø 3.5/64 mm, W001430, silver, plastic	→	ø 3.5/33 mm, W001431, silver, plastic	→	ø 3.5 mm, W001389, plastic
Fe, Mc, Fc	ø 0.6 ... 0.8 mm	→	ø 1.0/67 mm, W001432, white, steel	→	ø 2.0/33 mm, W001435, orange, steel	→	ø 2.0 mm, W000624, plastic
	ø 0.9 ... 1.6 mm	→	ø 2.0/64 mm, W001433, orange, steel			→	ø 3.5 mm, W001389, plastic
	ø 1.6 ... 2.4 mm	→	ø 4.0/63 mm, W001434, blue, steel	→	ø 4.0/33 mm, W001436, blue, steel	→	ø 3.5 mm, W001391, brass
							



Wire feed rolls

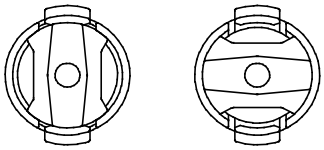
	ø mm	colour	drawing	pressing
Fe, Ss, Al, V-groove	0.6	pale grey	W001045	W001046
	0.8/0.9	white	W001047	W001048
	1.0	red	W000675	W000676
	1.2	orange	W000960	W000961
	1.4	brown	W001049	W001050
	1.6	yellow	W001051	W001052
	2.0	grey	W001053	W001054
	2.4	black	W001055	W001056
Fe, Fc, Mc, knurled	1.0	red	W001057	W001058
	1.2	orange	W001059	W001060
	1.4/1.6	yellow	W001061	W001062
	2.0	grey	W001063	W001064
	2.4	black	W001065	W001066
Fe, Fc, Mc, Ss, Al, U-groove	1.0	red	W001067	W001068
	1.2	orange	W001069	W001070
	1.6	yellow	W001071	W001072

2.8 INSTALLATION OF WELDING GUN

Make sure the gun wire conduit and the contact tip match the manufacturer's recommendations for the type and diameter of wire you use. Too small a conduit may overload the wire feed device and impede the wire feeding. Tighten the gun's quick connector to eliminate voltage loss. A loose joint will heat up the gun and wire heater.

NOTE! Never use defected gun.

2.9 MOUNTING AND LOCKING OF WIRE REEL



LOCKED OPEN

- Release locking nails of wire reel hub by turning locking knob a quarter round.
- Mount the reel at its place. Note rotating direction of reel!
- Lock the reel with locking knob, locking nails of hub remain to outside position and will lock the reel.

2.10 AUTOMATIC WIRE FEED TO GUN

Automatic wire feed makes change of wire reel more rapid. In reel change the pressure of feed rolls need not to be released and filler wire goes automatically to correct wire line.

- Make sure that groove of feed roll matches the diameter of welding wire used.
- Release the wire end from reel and cut off the bent length. Be careful that the wire does not spill from the reel to sides!
- Straighten about 20 cm of the wire and see that the end of it has no sharp edges (file off if necessary). A sharp edge may damage the wire guide tube and contact tip of the welding gun.
- Draw a bit of loose wire from wire reel. Feed wire through back liner to feed rolls. Do not release pressure of feed rolls!
- Press the gun switch and feed a bit wire until wire goes through feed rolls to gun. See that wire is in grooves of both feed roll pairs!
- Press still the gun switch until wire has come through contact tip.

Automatic feed may sometimes fail with thin wires (Fe, Fc, Ss: 0,6...0,8 mm, Al: 0,8...1,0 mm). In that case you might have to open feed rolls and feed wire manually through feed rolls.

NOTE! Check that the wire or wire reel does not touch the equipment body, there is a danger of short circuit

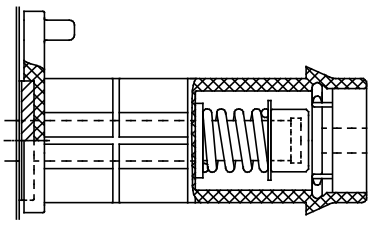
2.11 ADJUSTMENT OF PRESSURE

Adjust the pressure of the feed rolls with the control screw so that the wire is fed into the wire guide tube evenly and allows a little braking when emerging from the contact tip, without slipping on the feed rolls.

NOTE! Excessive pressure will cause the filler wire to flatten and damage its coating, as well as undue wear and tear of the feed rolls and friction damage.

2.12 ADJUSTMENT OF TIGHTNESS OF SPOOL BRAKE

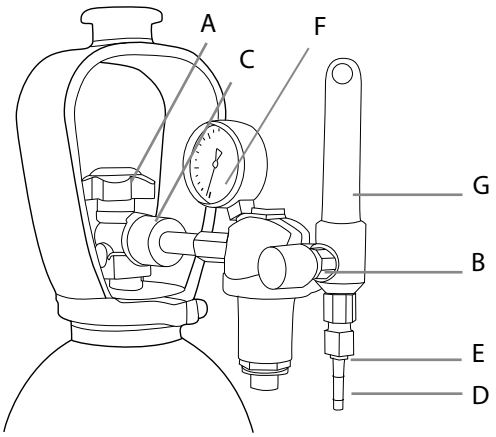
Brake force can be adjusted through the hole in the spool hub's locking device of spool hub by screwing the control screw with a screwdriver. Adjust the braking force so that it is sufficient to prevent the wire from becoming too loose on the spool and spilling when the spool stops rotating. The greater the wire feed speed, the greater the braking force required. Do not keep the brake unnecessarily tight, since this will impose a strain on the motor.



2.13 SHIELDING GAS

The MIG shielding gas consists of carbon dioxide, mixed gases and argon. Shielding gas flow rate is determined by the amount of welding current. The typical flow rate of gas in the welding steel is 8-15 l /min.

Parts of gas flow regulator



A. Gas bottle valve
B. Press regulation screw
C. Connecting nut
D. Hose spindle
E. Jacket nut
F. Gas bottle pressure meter
G. Gas hose pressure meter

The following installation instructions are valid for most gas flow regulator types:

1. Step aside and open the bottle valve (A) for a while to blow out possible impurities.
2. Turn the press regulation screw (B) of the regulator until no spring pressure can be felt.
3. Close the needle valve if there is one in the regulator.
4. Install the regulator onto bottle valve and tighten the connecting nut (C) with a wrench.
5. Install the hose spindle (D) and jacket nut (E) into the gas hose and tighten with a hose clamp.
6. Connect the hose with the regulator and the other end with the wire feed unit. Tighten jacket nut.
7. Open the bottle valve slowly. The gas bottle pressure meter (F) shows bottle pressure. Note! Do not use the whole contents of the bottle. The bottle pressure should be filled when bottle pressure is 2 bar.

8. Open the needle valve if there is one in the regulator.
9. Turn the regulation screw (B) until the hose pressure meter (G) displays the required flow (or pressure). When regulating the flow amount, the power source should be switched on and the "GAS PURGE" -switch pressed simultanously.

Close the bottle valve after welding is finished. If the machine will not be in use for a long time, unscrew the pressure regulation screw.

NOTE! Always fasten the gas cylinder securely in an upright position on a wall rack intended for the purpose or on a cylinder cart. Always close the cylinder valve after you have finished welding.

3. OPERATION

3.1 MAIN SWITCH AND SIGNAL LIGHTS

With the switch in the 'I' position, the primary and control circuits of the machine become live and the 'ON' signal light on the panel lights up. The welding circuit receives voltage when the gun switch is operated or when the wire feed test switch is pressed. Always use the main switch to turn the machine on and off with the main switch; do not use the power plug for this purpose.

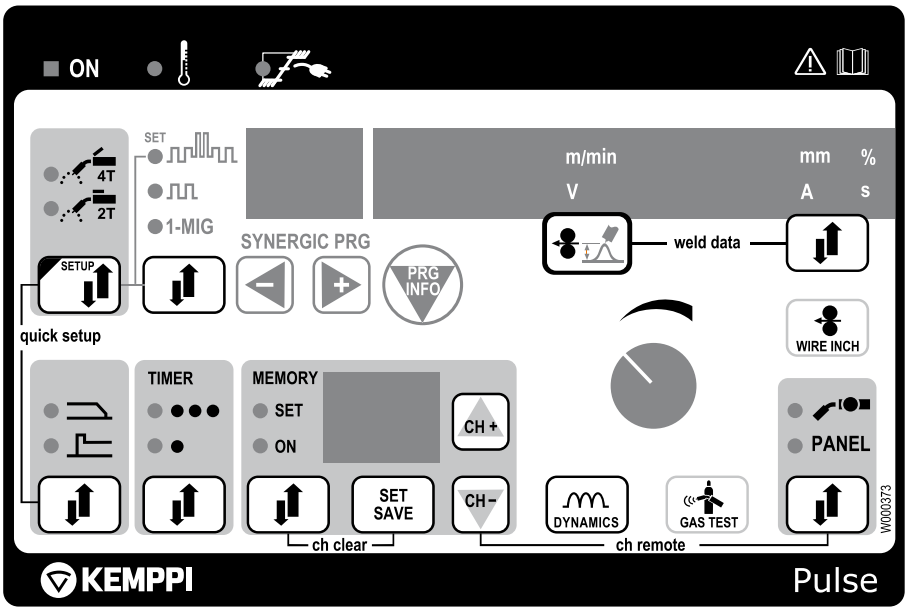
3.2 TO SELECT POLARITY FOR WELDING

Solid wire is usually welded in the +pole and gasfree filler wires in the - pole gun. When welding with other filler wires, check for the recommended polarity on the package or consult the supplier of the product. The welding of very thin steelplates (0.5 to 0.7 mm) a - polarity might also work best for solid wire.

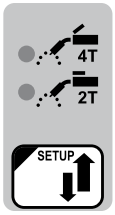
3.2.1 Changing the polarity

NOTE! Only a service shop authorised by Kemppi may change the polarity.

3.3 PANEL



3.3.1 Choosing start switch function



MIG welding by 4-function start switch, MIG 4T
MIG welding by 2 function start switch, MIG 2T

3.3.2 Choosing the welding method

Normal MIG/MAG welding:

With a separate wire feed and voltage regulation can be chosen in the 1-MIG position. Curve number "00" provides a free wire feed range between 1-18 m/min. The voltage can be set between special pre-programmed limits depending on the wire feed. Curve number "01" wire feed speed and voltage are not depended on each other. When curve "01" is selected, the wire feed speed and voltage will be independent of one another.

Synergic MIG/MAG welding (1-MIG)

Synergic MIG/MAG welding (1-MIG): MIG welding in which the wire feed speed determines all the other welding parameter values, allowing the adjustment of welding power with a single knob. Choose the appropriate synergy curve for the filler wire and shielding gas to determine how the wire feed speed affects the pulse parametres.

Synergic Pulse MIG welding:

Through this welding method, based on pulsing the welding current, the filler metal on the workpiece is kept spatter-free. The power source pulse parameters change automatically (synergy) enabling welding power regulation using a single knob. Choose the appropriate synergy curve for the filler wire and shielding gas to determine how the wire feed speed affects the pulse parametres.

Double pulse:

The wire feed will become higher or lower according to the wire feed range. While the synergic welding parameters change to correspond to the momentary wire speed. The purpose is to get a goodlooking weld and a proper penetration while improving the controllability of the weld pool during position welding.

3.3.3 Selecting 1-mig/pulse mig synergy curves

The program number of the synergy curve is selected using the plus-minus buttons and is displayed on "SYNERGIC PRG".

The middle display is actual material group display (eg. SS, AL, CUS, FE, GEN). Wire diameter (mm) can be seen on the right side. This information will only be displayed for a while.

The "PRG INFO" button gives more curve information:

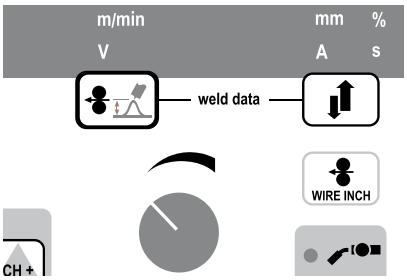
One press will revert to the material group and diameter display, a second will display the type number of the material and a third run through the gas consistency components one by one.

Kempact Pulse 3000 Synergic programs

1-MIG	Pulse	Double Pulse	Wire, ø	Material	Gas	Wire Feed Range
00			All	All	All	1,0 - 18,0
01			All	All	All	0,5 - 18,0
SS-group						
S1	S1	S1	0,8 mm	SS 308 / 316	Ar + 2 % CO_2	
S2	S2	S2	0,9 mm	SS 308 / 316	Ar + 2 % CO_2	
S3	S3	S3	1,0 mm	SS 308 / 316	Ar + 2 % CO_2	
S4	S4	S4	1,2 mm	SS 308 / 316	Ar + 2 % CO_2	
S5			0,9 mm	SS 316 FC	Ar + 18 % CO_2	
S7			1,2 mm	SS 316 FC	Ar + 18 % CO_2	
Al-group						
A1	A1	A1	1,0 mm	AlMg5 / AlMg4,5Mn	Ar	
A2	A2	A2	1,2 mm	AlMg5 / AlMg4,5Mn	Ar	
A6	A6	A6	1,0 mm	AlSi5 / AlSi12	Ar	
A7	A7	A7	1,2 mm	AlSi5 / AlSi12	Ar	
Cu-group						
C1	C1	C1	0,8 mm	CuSi3	Ar	
C2	C2	C2	0,9 mm	CuSi3	Ar	
C3	C3	C3	1,0 mm	CuSi3	Ar	
C4	C4	C4	1,2 mm	CuSi3	Ar	
C5	C5	C5	0,8 mm	CuAl8	Ar	
C6	C6	C6	0,9 mm	CuAl8	Ar	
C7	C7	C7	1,0 mm	CuAl8	Ar	
C8	C8	C8	1,2 mm	CuAl8	Ar	

Fe-group						
F1	F1	F1	0,8 mm	Fe	Ar + 18 % CO_2	
F2	F2	F2	0,9 mm	Fe	Ar + 18 % CO_2	
F3	F3	F3	1,0 mm	Fe	Ar + 18 % CO_2	
F4	F4	F4	1,2 mm	Fe	Ar + 18 % CO_2	
F5			0,8 mm	Fe	CO_2	
F6			0,9 mm	Fe	CO_2	
F7			1,0 mm	Fe	CO_2	
F8			1,2 mm	Fe	CO_2	
FA	FA	FA	1,0 mm	FeMC	Ar + 18 % CO_2	
FB	FB	FB	1,2 mm	FeMC	Ar + 18 % CO_2	
FD			1,2 mm	FeFC	Ar + 18 % CO_2	
Auto						
	20	20	1,0 mm	CuSi3-A	Ar	1,1 – 2,0
1	21	21	1,0 mm	CuSi3-A	Ar	2,0 – 2,6
2	22	22	1,0 mm	CuSi3-A	Ar	2,4 – 3,1
3	23	23	1,0 mm	CuSi3-A	Ar	3,0 – 3,6
4	24	24	1,0 mm	CuSi3-A	Ar	3,5 – 4,1
5	25	25	1,0 mm	CuSi3-A	Ar	4,0 – 4,6
6	26	26	1,0 mm	CuSi3-A	Ar	4,5 – 5,1
7	27	27	1,0 mm	CuSi3-A	Ar	5,0 – 5,5
8	28	28	1,0 mm	CuSi3-A	Ar	5,5 – 6,0
9	29	29	1,0 mm	CuSi3-A	Ar	6,0 – 6,5
10	30	30	1,0 mm	CuSi3-A	Ar	6,4 – 7,0
11	31	31	1,0 mm	CuSi3-A	Ar	6,9 – 7,6
12	32	32	1,0 mm	CuSi3-A	Ar	7,4 – 8,1

3.3.4 Adjustments, display and weld data



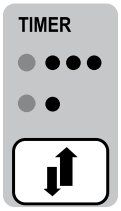
Display for welding current and welding material thickness. Changing can be made using the button behind the display. There is a percentage display (eg. gas consistency) and seconds display (see timer). The relative length of arc will be displayed when adjusted. Otherwise the predicted current value is displayed (not in 2-MIG).

Process Manager™ for setting all welding parameters.

The display for wire feed speed, welding voltage or material group. This can be switched using the button under the display (wire feed speed/length of arc). The voltage can be adjusted in the normal and 1-MIG position (wire feed range/the length of arc). During pulse welding the voltage is determined by the wire feed speed while the length of arc affects some other parameters.

When pressed simultaneously, the weld data buttons recall the wire feed speed on the display, the welding voltage and welding current values which have been used when welding was stopped.

3.3.5 Timer



Intermittent welding

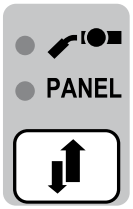
Spot welding

The spot time is set immediately after pressing the switch button, on the display SPt. The pause time is set accordingly, on the PSE display. The time is set using the Process Manager.

3.3.6 Adjustment of welding dynamics

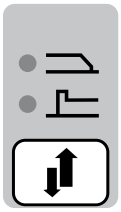
For adjusting of MIG/MAG welding dynamics, the adjustment value dyn -9...0...9 is displayed. The welding stability and quantity of spatter are affected by the welding dynamics control, the 0-position is the recommended reference range. Values -9...-1 give a smoother arc and less spatter, while values 1...9 give a rougher arc and increased stability, when using a 100% CO^2 shielding gas when welding steel.

3.3.7 Remote control



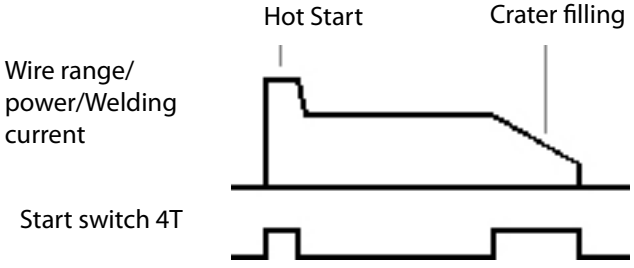
Gun control, wire feed speed or welding power control is changed using RMT 10. Control of the welding voltage or the length of the welding arc can be adjusted using the potentiometer on the panel. Panel control, adjustments using the potentiometer on the panel.

3.3.8 MIG extra functions



Crater filling, 1-MIG and pulse MIG:

Crater filling reduces welding mistakes caused by end craters. By pressing the 4T-trigger continuously at the end of weld, a descending welding power is achieved which fills end craters in a controlled manner. The descending time is kept constant using the 2T function, and the welding power and end level can be changed using the SETUP-function.



The Hot Start:

The Hot Start function is used with 1-MIG and pulse MIG welding. The Hot Start time by 4T Hot Start time is determined by trigger function (see picture) and while by 2T function it is determined by the SETUP parameters. The level of Hot Start can be changed by SETUP function.

The Hot Start level, Hot Start time by 2T, crater fill level and downslope time can be easily adjusted using the 'QUICK SETUP' function:

1. Select the gun trigger function: 4T or 2T.
2. First, press the SETUP button and then , while still pressing the SETUP button, press the extra function button.
3. Adjust the Hot Start level.
4. Repeat step 2, upon which the display will show the next adjustable parameter, depending on the switch mode.

Exit by pressing any button (except SETUP)

3.3.9 Use of gas test

If you press the gas test button, gas will begin to flow without any starting power source or wire feed. Gas flow can be measured by using an external measuring device.

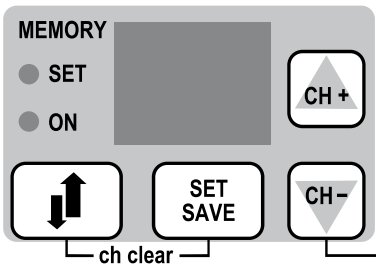
Cut off the gas flow by pressing the same button again, or the gun trigger. If the trigger is not pressed again, the gas flow will end within 20 seconds.

The display will show "GAS" and the time.

3.3.10 Testing wire feed

The wire feed switch will start the wire feed motor without opening the gas valve. The power source will start up, but without providing welding power. The wire feed range will be 5m/min but can be adjusted as desired.

3.3.11 Memory channels, MEMORY



The pulse panel has 100 channels for different welding options. Memory channels can be chosen on the lower part of the panel using the memory block. Both welding values and functions can be saved. Do the following:

1. Press  twice if needed and and the SET light will start blinking if the channel is not in use, while the light will stay on if the channel is in use.
2. Select the memory channel you want by pressing CH button
3. Make settings and save by pressing SAVE button.
4. Press  twice. ON light turns on.
5. Start welding and set the values.

To change the values, the light must be switched from the ON to SET and then you can choose the parameters, pressing the SAVE button afterwards. It is also possible to save the used parameters by pressing SET when memory function is OFF (no lights). The channel can be emptied by pressing  and SET button in SET simultaneously.

Using saved settings

1. Press  button.
2. Select the memory channel by pressing the CH button.
3. Start welding.

Memory channels in control device

Select memory channels by pressing the CH REMOTE button simultaneously and the gun control light will start to blink. Use the saved values through the gun's remote control.

You can use five channels.

3.3.12 SETUP

Using the SETUP function, the user can change welding parameters which do not have their own panel functions. These parameters can be set separately for 1-MIG and Pulse MIG. SETUP settings are separate for each memory channel.

Setup functions on pulse panel

Parameter Name	Nr	Display	1-MIG	Pulsed MIG	Factory value	Unit	Explanation
PostGasTime	1	PoG	X	X	Curve	s	PostGas time 0.0…9.9 s
PreGasTime	2	PrG	X	X	Curve	s	PreGas time, functions by 2T 0.0…9.9 s
HotStartLevel	11	Hot	X	X	30	%	Hot start ratio to welding power -50…+75%
HotStartTime 2T	12	H2t	X	X	2	s	2T Hot start timer 0.1-9.9 s
CraterFillLevel	14	CFL	X	X	30	%	Welding end level 10-90 %
CraterFillSlope	15	CFS	X	X	1	s/10m	Wire slowing-down 1…20 s/10m
CreepStartLevel	17	CSL	X	X	Syn		Wire speed start value 10…90
CreepStartSlope	18	CSS	X	X	0	s/10m	Wire speed up time 0.1…5 s/10m
DoubleFrequency	21	dFr		X	Curve	Hz	Double pulse frequency control 0.4…8.0 Hz
DoubleAmpiltude	22	dA		X	Curve	m/min	Double pulse power variation control 0.1…3.0 m/min
StartPower	31	StP	X	X	0		Start power control -9…0…+9
PulseCurrent	33	PuC		X	0	%	Pulse top current control -10…+15%
ArcLength AdjRange	41	ALr	X	X	0	%	Arc length adjustment range -50…+75%

Calibration	42	CAL	X	X	1	V/100A	Setting mid value of arc length fine adjustment 0.0…10.0 V/100A
WFS	51	FS			18	m/min	Wire feed maximum 18 or 25 m/min
Gun	53	Gun			On		Liquidcooled thermal protection on/off
GunRemote	54	GrE			On		Disabling of gun remote control automatic identification
Water Cooler On/Off Selection	55	Coo			On		Set OFF after each power up if cooler is connected with gas cooled gun.
Display reset time	81	dLY	X	X	5	s	1...20 s
PRG INFO - feeld selection	82	diS	X	X	1		1, 2, 3
Restore	99	FAC	X		OFF		Restoring factory settings (OFF=no reset, Pan=panel and setup ALL= also memory channels)

Changing parameters

By pressing the 2T/4T (SETUP) selection switch a little longer the machine will enter the SETUP state. The display will show the set parameter's runnning number (blinking), its abbreviation and value. Select the parameter number using the "SYNERGIC PRG" + and - buttons or the "SETUP" button (which will jump by tens). Change the value using the control button (in some cases, the value can be found from the synergy curve). "Syn" and the curve value will blink by turns on the right of the display. Set the value by turning the button anticlockwise.

Exit for SETUP using a long press.

Frequency and amplitude of double pulse can be set in the separate 'SET' mode, obtained by first pressing the 2T/4T (SETUP) and, without releasing it, the method button. "dFr" and the frequency in Hz will be displayed. "Syn" will appear if the frequency is based on synergy curves. Change this value by turning the control button anticlockwise. Press it twice to display "dA" i.e. the amplitude (m/min). Adjust this accordingly and exit SETUP by pressing any button other than SETUP.

3.3.13 Error codes

Error codes are among others the following:

Err 3: Overvoltages in the mains supply. Also the pilot light of overvoltage is lighting.

Err 4: The thermal protection of power suorce has stopped welding. Also the pilot light of thermal protection is lighting.

Err 5: The cooling device has stopped welding.

Err 6: The terminal voltage has rised. Take the device to service.

Err 153: Liquid cooled PMT- or WS-gun is overheated. Or torch-PTC or RMT10 has beeb installed, but the jumber inside the torch is in FU-position, look also instruction of torch.

Err 154: Overloading of the wire feed motor

Error code is eliminated when the reason is aborted, except Err 6, which demands to turn down the machine.

4. MAINTENANCE

4.1 DAILY MAINTENANCE

NOTE! Be careful of mains voltage when handling electric cables!

Clean the wire channel of the gun and check the contact tip regularly. Always check the condition of the mains and welding cable before operation and replace defective cables.

NOTE! Only a qualified electrician should remove or install the mains cable!

4.2 REGULAR MAINTENANCE

KEMPPI -service workshops sign special service contracts with customers for regular maintenance. All parts are cleaned, checked and if necessary, repaired. The operation of the welding machine is also tested.

4.3 DISPOSAL OF THE MACHINE

Do not dispose of electrical equipment with normal waste!

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

The owner of the equipment is obliged to deliver a decommissioned unit to a regional collection centre, per the instructions of local authorities or a Kemppi representative. By applying this European Directive you will improve the environment and human health.

5. ORDERING NUMBERS

Item	Ordering number	
Kempact Pulse 3000 MVU		62183000302
GH 30 Gun holder		6256030
PMT 25	3 m	6252513
PMT 25	4,5 m	6252514
PMT 27	3 m	6252713
PMT 27	4,5 m	6252714
PMT 32	3 m	6253213
PMT 32	4,5 m	6253214
PMT 35	3 m	6253513
PMT 35	4,5 m	6253514
WS 35	6 m Al1,2	6253516A12
WS 35	6 m Ss1,0	6253516S10
MMT 25	3 m	6252513MMT
MMT 25	4,5 m	6252514MMT
MMT 27	3 m	6252713MMT
MMT 27	4,5 m	6252714MMT
Remote Control Unit	RMT 10	6185475
Earth cable 35 mm²	5 m	6184311
Transport unit P20	power source and gas bottle	6185261
Transport unit P250	power source	6185268
Lift hook		4298180
Gas hose	6 m	W000566
Wire spool pole		4289880
5 kg spool adapter		4251270

Parts of the DuraTorque™ 400 metal feed rolls					
W000731	gear ring 1	driving			2 pcs per unit
W000732	gear ring 2	pressing			2 pcs per unit
W000711	drive ring	V groove	1,2/1,2	optional	4 pcs per unit
W000718	drive ring	V groove	1,0/1,0	optional	4 pcs per unit
W000891	drive ring	V groove	1,0/1,2		4 pcs per unit
9420507	washer		10.5x30x2.5		2 pcs per unit

Recommended for aluminium welding with Pulse MIG.

6. TECHNICAL DATA

Kempact Pulse 3000 MVU		
Mains connection	3~, 50/60 Hz	230 V +/-10%
	3~, 50/60 Hz	400 V +/-15%
Connected load		
	40% ED	10 kVA 250 A
	60% ED	8 kVA 207 A
	100% ED	6,5 kVA 160 A
Connection cable	H07RN-F	4G1.5 (5 m)
Fuse (delayed)		16A
Load capacity		
	40% ED	250 A /26,5 V
	60% ED	207 A /24 V
	100% ED	160 A /22 V
Adjustment range		8 - 30 V
Wire feed speed		1 - 18 m/min
Open circuit voltage		68 V
Power factor		0,78 (250 A / 26,5 V)
Efficiency		0,83 (250 A / 26,5 V)
Filler wires		
	Fe, Ss	0,6 ... 1,2 mm
	Cored wire	0,9 ... 1,2 mm
	Al	0,9 ... 1,2 mm
	CuSi	0.8 ... 1.2 mm
Shielding gas		CO_2, Ar, Ar & CO_2 mixed gases
Wire spool diameter		300 mm (15 kg)
Feed roll Ø		32 mm
Thermal class		H (180 °C) / B (130 °C)
External dimensions	LxWxH	580x280x600 mm
Weight		33 kg
Gun connector		EURO
Principle of operation		4-wheel feed
Range of temperature for use		- 20 °C ...+ 40 °C
Storage temperature for use		- 40 °C ...+ 60 °C
EMC class		A
Degree of protection		IP23S

7. WARRANTY POLICY

Kemppi Oy provides a warranty for products manufactured and sold by the company if defects in materials or workmanship occur. Warranty repairs are to be carried out only by an authorised Kemppi Service Agent. Packing, shipping, and insurance are at the orderer's expense.

The warranty starts on the date of purchase. Spoken promises not included in the terms of warranty are not binding on the warrantor.

Limitations of the warranty

The following conditions are not covered under the terms of warranty: defects arising from normal wear and tear, non-compliance with operation and maintenance instructions, overloading, negligence, connection to incorrect or faulty supply voltage (including voltage surges outside equipment specifications), incorrect gas pressure, anomalies or failures in the electric network, transport or storage damage, and fire or damage due to forces of nature. This warranty does not cover direct or indirect travel costs, daily allowances, or accommodation related to warranty service.

The warranty does not cover welding torches and their consumables, feeder drive rolls, and feeder guide tubes. Direct or indirect damage caused by a defective product is not covered under the warranty.

The warranty becomes void if modifications are made to the machine that are not approved by the manufacturer or if non-original spare parts are used in repairs. The warranty is also voided if repairs are carried out by a repair agent not authorised by Kemppi.

Undertaking warranty repairs

Warranty defects must be reported to Kemppi or an authorised Kemppi Service Agent without delay.

Before a warranty repair is undertaken, the customer must present proof of warranty or otherwise prove the validity of the warranty in writing. The proof must indicate the date of purchase and the manufacturing number of the unit to be repaired. The parts replaced under the terms of this warranty remain the property of Kemppi and must be returned to Kemppi if requested.

After a warranty repair, the warranty of the machine or equipment, repaired or replaced, shall be continued to the end of the original warranty period.

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