Operation instructions • english

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WELDFORCE

KWF 200S

KEMPPI
The Joy of Welding

CONTENTS

1. PREFACE

1.1. INTRODUCTION

Congratulations on having purchased this product. Properly installed Kemppi products should prove to be productive machines requiring maintenance at only regular intervals. This manual is arranged to give you a good understanding of the equipment and its safe operation. It also contains maintenance information and technical specifications. Read this manual from front to back before installing, operating or maintaining the equipment for the first time. For further information on Kemppi products please contact us or your nearest Kemppi distributor.

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

In this document, for danger to life or injury the following symbol is used: ⚠

Read the warning texts carefully and follow the instructions. Please also study the Operation safety instructions and respect them when installing, operating and servicing the machine.

1.2. PRODUCT INTRODUCTION

Kemppi WeldForce KWF is wire feeder designed for demanding professional use.

Operations of wire feed unit are controlled and adjusted with microprocessor.

This manual provides instructions on the start-up of the KWF200S MIG unit and the functions of the wire feed unit.

1.2.1. Operation control and connectors

KWF200S

Operation panel

Connection of remote control unit

Connection of welding gun EURO

Shield gas flow control

Lead-in and clamping of cooling liquid hoses

Connection for control cable

Shielding gas connection

Welding current cable connector

Functions of KWF200S function panel

Main switch

Display of wire feed speed / welding current

a) Adjustment of wire feed speed
b) Selection of SETUP parameter

a) Selection of MIG process: 2T / 4 T
b) Changing of basic parameters of the unit, SETUP (long pressing)

Selection of MIG dynamics for adjustments

MMA

Selection of gas / water cooled MIG gun

Weld data: Last used welding parameters shown in displays

Gas purge

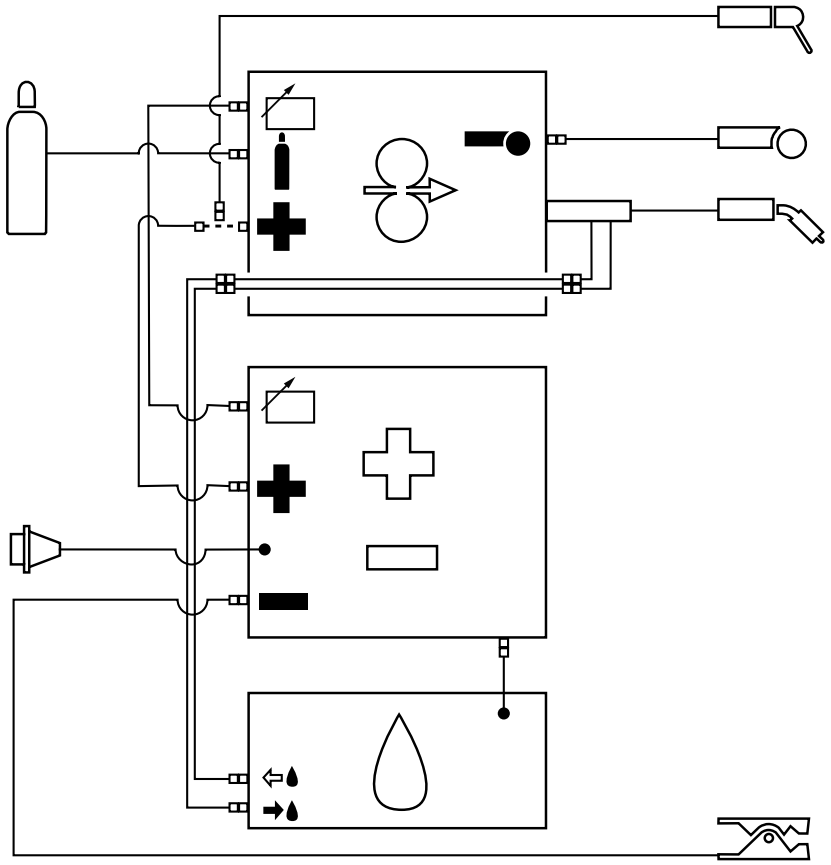
Wire inch

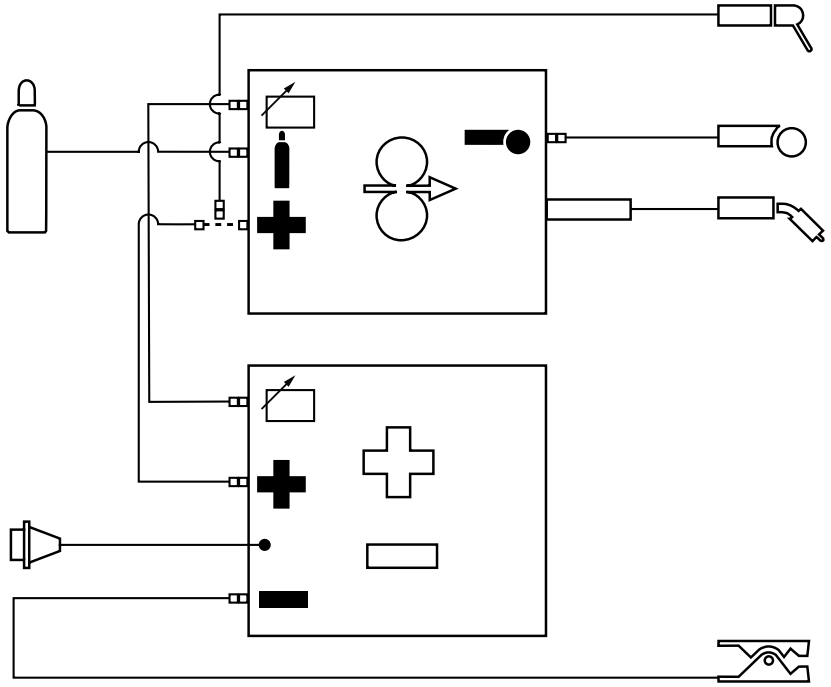
Indication lamp of connected remote control device

Display of set value of welding voltage / voltage during welding

a) Adjustment of welding voltage
b) Adjustment of MIG dynamics
c) Adjustment of SETUP parameter

1.2.2. Connection of system





1.2.3. Parts of wire feed mechanism WeldForce KWF200S

4 - roll wire feed mechanism

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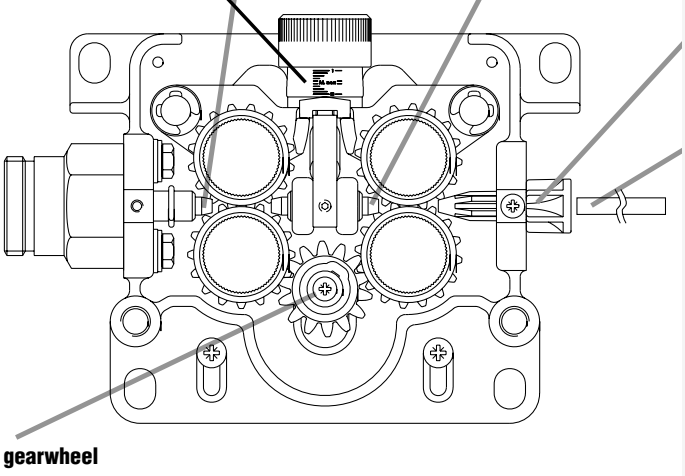
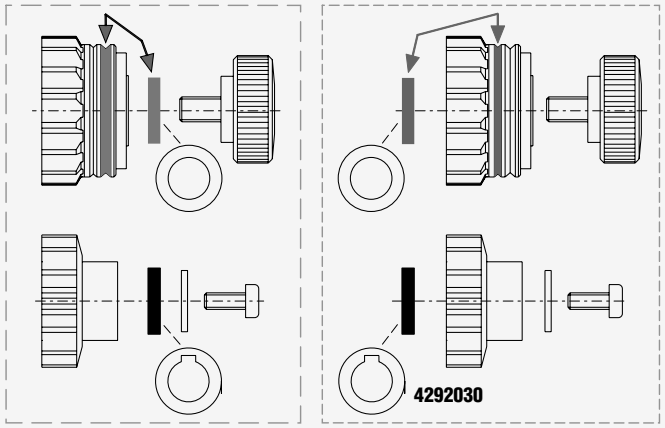
Wire guide tubes

Fe Mc	ø .023…030"	ø .040" white	3134140	ø 5/64" orange	3134120	ø 5/64" plastic	4267220	ø 3/32" yellow	4268210
						ø 5/64" plastic	4266970		
Fc	ø .035…1/16"	ø 5/64" orange	3133700			ø .16" plastic	4270180		
	ø 1/16…3/32"	ø .16" blue	3134130	ø .16" blue	3134110	ø .16" brass	4267030		
Ss	ø .030…1/16"	ø .1" silver	3134290	ø .1" silver	3134300	ø 5/64" plastic	4267220	ø .118" yellow	4268560
Al	ø 1/16…3/32"	ø .118" yellow	3134710	ø .118" yellow	3134720	ø .16" plastic	4270180		



Selection of feed wheel groove.



Relocation of selection plate.

ø 1.102" (0 - 709 ipm) **4265240, ø 1.575"**(0 - 984 ipm) **4265250**
Plastic

ø 1.102" (0 - 709 ipm) **4287860, ø 1.575"**(0 - 984 ipm) **4297270**
Steel

Feed rolls

Fe Ss Al	Plain	ø .023/.030"	3133810	ø .040/.045"	3133210	ø .055-1/16 / 5/64"	3133820	ø 3/32" black	3133880
		ø .030/.030" (L)	3143180	ø .040/.040" (L)	3138650	ø 1/16 / 1/16" (L)	3141120	ø 3.2" blue	3133910
		white		red		yellow			
				ø .045/.045" (L) orange	3137390				
Fe Fc Mc	Knurled			ø .040/.045" red	3133940	ø .055-1/16 / 5/64"	3133990	ø 3/32" black	3134030
						ø 1/16 / 1/16" (L)	3141130	ø 1/8" blue	3134060
				ø .045/.045" (L) orange	3137380	yellow			
Fe Fc Mc Ss Al	Trapezoid			ø .045/.045" (L) orange	3142210	ø .055/.055" (L) brown	3142220	ø 5/64 / 5/64" (L) grey	3142230
						ø 1/16 / 1/16" (L) yellow	3142200	ø 3/32" (L) black	3142240

(L) = Ball race

W000574

1.3. OPERATION SAFETY

Please study these Operation safety instructions and respect them when installing, operating and servicing the machine.

Welding arc and spatters

Welding arc hurts unprotected eyes. Use a proper face shield fitted with a correct filter and cover plates to protect your eyes, face, neck and ears from the sparks and rays of the welding arc when welding or observing welding. Warn bystanders not to watch the arc and not to expose themselves to the welding arc rays or to hot metal. Be careful also with reflecting arc flash.

Welding arc and spatter burn unprotected skin. Use safety gloves and protective clothing. Wear flameproof gauntiet-type gloves, a heavy long-sleeve shirt, cuffles trousers, high-topped shoes, and welding helmet or cap (for hair protection) to protect the skin from arc rays and hot sparks or hot metal.

Wear ear plugs or other ear protection devices when welding equipment.

Protect other nearby personnel from arc rays and hot sparks with a suitable non-flammable partition.

Danger for fire or explosion

Pay attention to fire safety regulations. Remove flammable or explosive materials from welding place at least 35 feet (11 meters) or protect them with flame-proof covers.

Always ensure that you have sufficient fire fighting equipment available where you are welding and you have a trained fire watcher ready to use it. Be prepared for hazards in special welding jobs, eg. for the danger of fire or explosion when welding container type work pieces. Note! Fire can break out from sparks even several hours after the welding work has been finished!

Combustible materials include but are not limited to wood, clothing, sawdust, gasoline, kerosene, paints, solvents, natural gases, acetylene, propane, and similar articles.

Compressed gas cylinders are potentially dangerous, refer to the suppliers for proper handling procedures.

Mains voltage

Do not touch live electrical parts.

Never take welding machine inside a work piece (eg. container or truck). Do not place welding machine on a wet surface. When welding in a damp area or when standing on metal, make sure you are well insulated by wearing dry cloves, rubber or soled shoes, and by standing on dry board or platform. Keep everything dry you might touch, including clothing, wor area, welding gun, torch and welding machines. Fix water leaks immediately.

Always check cables before operating the machine. Change damaged cables without delay. Damaged cables may cause an injury or set out a fire. Do not overlay the gables. Connection cable must not be crushed, it must not touch sharp edges or hot work pieces.

The ground cable should be connected to building as close to the work area as possible. Grounds connected to building framework or other locations remote to the work area reduce efficiency and increase the potential hazard of electric shock.

When not welding, turn equipment OFF. Accidental grounding can cause overheating and create a fire hazard. Do not coil or loop the around parts of the body.

Welding power circuit

Isolate yourself by using proper protective clothing, do not wear wet clothing. Never work on a wet surface or use defect cables. Do not put the MIG-gun or welding cables on welding machine or on other electric equipment. Avoid the possibility of the cutting current passing through lifting chains, crane cables or other electrical paths. Do not press the MIG-gun switch, if the gun is not directed towards a work piece.

Welding fumes

Take care that there is sufficient ventilation during welding. Keep your head out of the fumes. Do not breath the fumes. Breathing welding fumes can be hazardous to your health. Take special safety precautions when welding metal, which contain lead, cadmium, zinc, mercury or beryllium.

Do not weld on closed or used barrels, drums, tanks or other containers unless a qualified person has tested it and declared it or prepared it to be safe. There must be no substance in container which might produce flammable or toxic vapors.

⚠ **This equipment's electromagnetic compatibility (EMC) is designed for use in an industrial environment. Class A equipment is not intended for use in residential location where the electrical power is provided by the public low-voltage supply system.**

2. INSTALLATION

2.1. ASSEMBLY OF MIG SYSTEM

Assemble the units in order mentioned below and follow mounting and operation instructions which are delivered in packages.

1. Installation of power source

Read paragraph: ”Installation” in operation instructions for Kemppi WeldForce power sources and carry out the installation according to that.

2. Mounting of KPS power sources to transport wagon

Read and follow the instructions given in the transport cart installation / assembly manual

3. Connecting cables

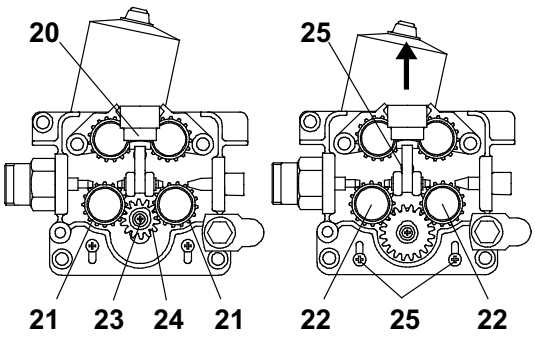
Connect the cables in accordance with the equipment notes provided.
The polarity of the welding wire (+ or -) can be changed by replacing the KWF welding current cable and return current cable with the Kemppi WeldForce power source welding cable connector.

4. Max. wire feed speed

When the unit is delivered the max. wire feed speed is 18 m/min (709 ipm), which is enough for most welding works. If you need a higher speed, you can increase the max. wire feed speed to 25 m/min (984 ipm) by replacing the gear wheel on motor shaft to a bigger one. The big gear wheel D40 is delivered with the feed unit.

When necessary speed is changed according to following:

– Change the SETUP function to the 25 m/min (984 ipm) maximum wire feed speed. See ‘changing SETUP settings’ for instructions.



– Open tightening lever (20). Remove lower feed rolls (21). Release screw (23) and its washer. Remove gear wheel D28 (24) from motor shaft.
– Loosen screws (25) (3 pc) 1 twist. Mount the D40 gear wheel onto motor shaft. Screw the screw (23) with its washer back.
– Put feed rolls (21) back to their axles, however, do not fasten the fastening screws of feed rolls yet (22).
– Lift the motor so that the tooth gap between gear wheel and both lower feed rolls is approx. 0.2 mm (.008”).
– Tighten screws (25). Check gear teeth gaps, when necessary put the motor into a better position. Screw on the mounting screws of feed rolls (22).

⚠ **If the gap is too small between gear wheel and feed rolls it will overload the motor. If gap is too big for its part might cause too rapid wearing for teeth of feed rolls and gear wheel.**

5. Mounting of WeldForce wire feed units to boom

⚠ **Wire feed unit must be mounted to boom in such a way that its chassis is galvanic separated both from swing arm and boom.**

KWF 200 needs hanging frame (accessorie) for mounting to boom. Do not hang it from handle.

2.2. ACCESSORIES CORRESPONDING TO WIRE DIAMETER

Wire feed rolls are available with plain groove, knurled groove and with U groove for different purposes.

Feed rolls with plain groove: Universal feed roll for welding of all kinds of wires.

Feed rolls with knurled groove: Special feed roll for cored wires and steel wires.

Feed rolls with U groove: Special feed roll for aluminium wires.

Trapezoid slotted, ball bearing feed wheels: For heavy welding

Wire feed rolls has two grooves for different filler wire diameters. Correct wire groove is selected by moving selecting washer (28) from one side to another in feed roll.

Feed rolls and wire guide tubes of wire feed unit have colour codes in order to make identification easier.

Feed rolls		
colour filler wire	ø mm	inch
white	0.6 and 0.8	.030
red	0.9/1.0 and 1.2	.035, .045 and .052
yellow	1.4, 1.6 and 2.0	1/16 and 5/64
black	2.4	3/32
Guide tube		
colour filler wire	ø mm	inch
orange	0.6-1.6	.024-1/16
blue	over 1.6	over 1/16

In delivery WeldForce wire feed units are equipped with red feed rolls with plain groove and with orange wire guide tubes for welding filler wires of 0.9 - 1.2 mm (.035”, .045” and .052”).

2.3. MOUNTING OF MIG WELDING GUN

In order to ensure trouble-free welding check in operation instructions of gun used by you that wire guide tube and contact tip of gun are according to manufacturer’s recommendation suitable to be used for wire feed diameter and type in question. To tight a wire guide tube might cause for wire feed unit a bigger stress than normally as well as disturbances in wire feed.

Screw snap connector of gun tight that there won’t come any voltage losses on connecting surface.

A loose connection will heat gun and wire feed unit and feeder.

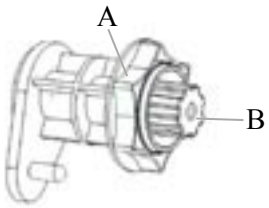
KWF wire feed units are equipped with backup functions in case of overheating of the liquid-cooled PMT and WS gun or overloading of the wire feed motor. The backup function is as follows (see also the error code information, page 23):

1. The Kemppi PMT and WS gun thermal protection goes into action. When this occurs, the unit interrupts welding and the message ‘Err 8’ appears on the panel (ls) display.
2. The wire feed motor can overload - due to, e.g., gun clogging. In this event, the unit interrupts welding and the text ‘Err 9’ appears on the panel (ls) display.

Error codes Err 8 and Err 9 disappear on the next start-up if the cause of the error has been eliminated (i.e., the gun has cooled down or the motor is no longer overloaded).

2.4. MOUNTING AND LOCKING OF WIRE REEL

KWF 200S



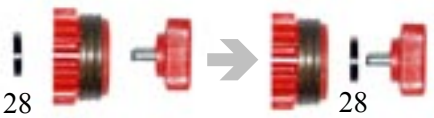
– Release the locking nub (A)!
– Mount the reel at its place. Note rotating direction of reel
– Lock the reel with locking nut.

⚠ **Check that in filler wire reel there are no parts sticking out, which could e.g. chafe against chassis or door of wire feed unit. Dragging parts might expose chassis of wire feed unit under voltage.**

2.5. 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. Feed roll groove is selected by moving the groove selecting washer (28). N.B.! Also the selector plate for changing the feed roll groove has to be moved similarly.



Moving the groove selecting washer

Moving the selectore plate

– 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 (8 in) 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.

WeldForce KWF wire feed units:

– 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 (.025....030”), Al: 0.8...1.0 mm (.030....040”). In that case you might have to open feed rolls and feed wire manually through feed rolls.

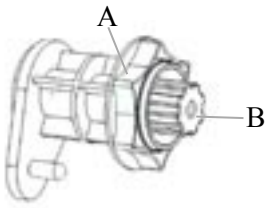
2.6. ADJUSTMENT OF PRESSURE

Adjust the pressure of feed rolls with the control screw (20) so that the wire is fed into the wire guide tube evenly and allows a little braking when coming out from the contact tip without slipping at the feed rolls.

⚠ **Excessive pressure causes flattening of the filler wire and damage to the coating. It also causes undue wear of the feed rolls as well as friction.**

2.7. ADJUSTMENT OF TIGHTNESS OF REEL BRAKE

KWF 200S



Brake force is adjusted by screwing the brake force adjusting screw (B), tightening clockwise direction.

Adjust brake force as so big that the wire is not allowed to become too loose on the reel so that it would spill from the reel when the rotation of the reel stops. Need for brake force is increased with increase of wire feed speed.

Since the brake loads for its part the motor, you shouldn't keep it unnecessarily tight.

2.8. BURN BACK TIME

Electronics of feed unit controls stopping of welding automatically so that the wire end doesn't melt fastened to the contact tip or the work piece. Automatics work regardless of the wire feed speed.

2.9. GROUND CABLE

Connecting of earth cable should be preferably connected directly to the welding material. Contact surface of press always should be as large as possible.

Clean the fastening surface from paint and rust!

Use in your MIG equipment at least 70 mm² (2/0 AWG). Thinner cross-sectional areas might cause overheating of connectors and insulations.

Make sure that the welding gun in your use is designed for max. welding current needed by you!

Never use a damaged welding gun!

2.10. SHIELD GAS

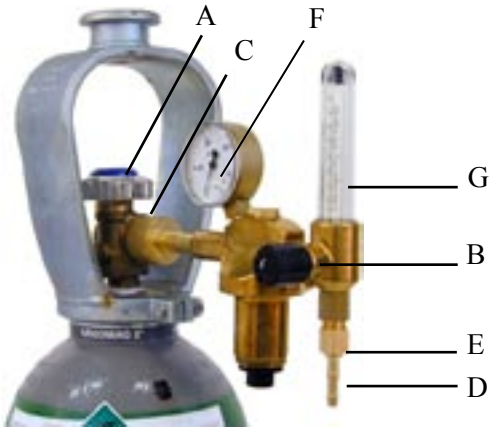
Handle gas bottle with care. There is a risk for injury if gas bottle or bottle valve is damaged!

For welding stainless steels, mixed gases are normally used. Check that the gas bottle valve is suitable for the gas. The flow rate is set according to the welding power used in the job. A suitable flow rate is normally 8 - 10 l/min (0.282 - 0.353 cu ft/min). If the gas flow is not suitable, the welded joint will be sporous. Contact your local Kemppi-dealer for choosing gas and equipment.

2.10.1. Installing gas bottle

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

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 installing instructions are valid for most of the gas flow regulator types:

1. Step aside and open the bottle valve (A) for a while to blow out possible impurities from the bottle valve.
2. Turn the press regulation screw (B) of the regulator until no spring pressure can be felt.
3. Close needle valve, if there is one in the regulator.
4. Install the regulator on bottle valve and tighten connecting nut (C) with a wrench.
5. Install hose spindle (D) and jacket nut (E) into gas hose and tighten with hose clamp.
6. Connect the hose with the regulator and the other end with the wire feed unit. Tighten the jacket nut.
7. Open bottle valve slowly. Gas bottle pressure meter (F) shows the bottle pressure. Note! Do not use the whole contents of the bottle. The bottle should be filled when the bottle pressure is 2 bar (29 psi).
8. Open needle valve if there is one in the regulator.
9. Turn regulation screw (B) until hose pressure meter (G) shows the required flow (or pressure). When regulating flow amount, the power source should be in switched on and the gun switch pressed simultaneously.

Close bottle valve after having finished welding. If the machine will be out of use for a long time, unscrew the pressure regulation screw.

2.11. MAIN SWITCH I/O

When you turn the main switch of the Kemppi WeldForce power source into I-position, the pilot lamp closest to this switch will light up, indicating the power source is ready for welding. The equipment is returned to the position which it last carried out before the main switch was turned to zero position.

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

2.12. OPERATION OF COOLING UNIT, KWU10

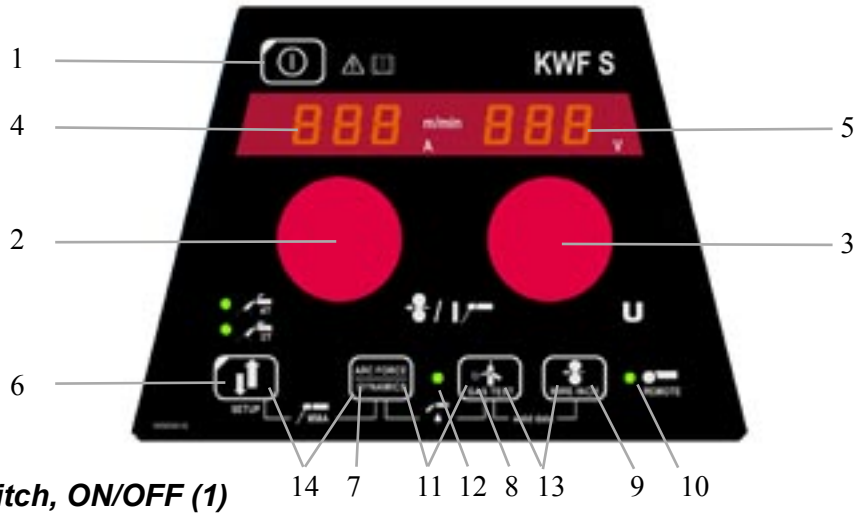
Operation of cooling unit is controlled in such a way that pump is started when welding is started. After welding stop pump is rotating for approx. 5 min cooling the liquid to ambient temperature. Read in operation instructions for the KWU10 unit the trouble situations of the liquid circulation system and protection against torch etc. damage.

2.13. HANGING

KWF200 needs hanging frame (accessorie) for mounting, do not hang from the handle.

3. CONTROL PANELS OPERATIONS

3.1. KWF200S OPERATIONS



Main switch, ON/OFF (1)

The wire feed unit remains in the OFF position when the power source is switched on, thus preventing start-up.

'OFF' is shown on the display.

When the ON/OFF button is pressed for more than 1 second, the unit starts up and all LED lights light-up for a moment. The unit is now ready for welding and will automatically return back to it previous position, before the power was cut off.

Basic settings and displays (2, 3, 4, 5)

The wire feed speed is set via potentiometer No. 2, the value of which is shown on display No. 4. The welding voltage is set via potentiometer No. 3, the value of which is shown on display No. 5. During welding, display No. 4 shows the actual welding current value and display No. 5 shows the welding voltage.

When MIG dynamics adjustment is activated via button No. 7, the MIG dynamics value is adjusted through potentiometer No. 3 (see 'Adjustment of MIG dynamics').

When the adjustment of SETUP parameters has been confirmed with one long press on button No. 6, the adjustable parameter is selected via potentiometer No. 2, the name of which is shown on display No. 4 (see the information on SETUP functions).

Selection of MIG operating procedure (6)

MIG 2T: MIG welding with two-sequence procedure of welding gun start switch

1. switch pressed: welding starts
2. switch released: welding stops

MIG 4T: MIG welding with four-sequence procedure of welding gun start switch

1. switch pressed: shielding gas flow starts
2. switch released: welding starts
3. switch pressed: welding stops
4. switch released: shielding gas flow stops

Adjustment of MIG dynamics/Arc Force (7)

With MIG welding dynamics adjustment is influenced on welding stability and spatter amount. Zero setting is recommended basic setting. Values –> min (-1...-9), softer arc for reduced spatter amount. Values –> max (1...9), harder arc for increased stability and when 100 % CO2 shielding gas is used when welding steel.

With electrode welding Arc Force adjustment is influenced on welding stability. Adjustment is needed for using different types of electrodes. Control range (-9...0) is commonly used for welding electrodes for stainless steel. Control range (0...+9) is used for harder arc characteristic to increase stability, e.g. for welding with thicker basic electrodes and using lower current value than recommendated. Factory set value (0) is a good general use for adjusting the roughness of the arc.

Gas test (8)

The gas test button opens the gas valve without activating the wire feed or power source.

By default, gas flows for 20 seconds. The display shows the remaining gas flow time.

The default time for gas flow can be adjusted via the right-hand potentiometer within a 10- to 60-second range. The new time setting is recorded in the memory.

The gas flow can be discontinued by pressing the ON/OFF button or the start switch of the gun.

Wire feed test (9)

The wire feed switch starts the wire feed motor without opening the gas valve and without engaging the power source.

The default wire feed speed is 5 m/min (197 ipm). The speed can be adjusted via the right-hand potentiometer.

When the button is released, the wire feed stops. Unit operation returns to normal approx. 3 seconds after release of the button or if the ON/OFF button is pressed briefly.

Selection of liquid- /gas-cooled MIG gun (11)

Selection of liquid-cooled/gas-cooled MIG gun is activated by pressing buttons 7 and 8 simultaneously (for more than 1 second). When ‘Gas’ is shown on the display, the welding equipment will assume that a gas-cooled MIG gun has been connected. If the above buttons are pressed again, the text ‘COO Ler’ appears on the display and the LED (12) indicating liquid cooling selection lights up. In this case, the welding equipment will assume that a liquid-cooled MIG gun has been connected to the equipment. When liquid cooling is selected, the liquid cooling unit will start up in connection with the next equipment start-up.

Weld data (13)

The weld data function is activated by pressing buttons 8 and 9 simultaneously. The weld data function returns the welding current and voltage values that were in use when welding was discontinued to the displays.

MMA (14)

Selection of MMA welding is activated by pressing buttons 6 and 7 simultaneously. To get back to MIG welding repress buttons 6 and 7.

Use of remote control units (10)

When a remote control unit is connected to the device, LED (10) lights up and the wire feed speed and welding voltage setting operations are performed via remote control. In this case, potentiometers 2 and 3 of the panel are disconnected.

SETUP functions (6)

The unit is equipped with a number of additional functions, the selection and parameter value settings for which are performed via the SETUP function.

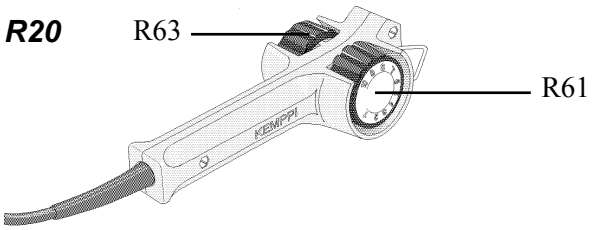
The SETUP function is activated by pressing the SETUP button (6) for >1 second. The adjustable parameter is selected via the left-hand potentiometer (2), the name of which is shown on display No. 4. The value of the parameter in question is adjusted via the right-hand potentiometer (3), and the value is shown on the display (5). The parameters and their possible values are:

Name of parameter	Name on display	Parameter values	Factory setting	Description
Creep Start	CrE	10 … 170 %	50 %	Percentage of wire feed speed: 10 % = slowed start 170 % = accelerated start
Post Current	PoC	-9 … +9	0	Post current
Selection of Wire Feeder Address	Add	85 or 90	85	Bus address of wire feeder
Maximum Wire Feed Speed	FS	18 or 25 m/min (709 or 984 ipm)	18 m/min (709 ipm)	The max. wire feed speed selected; dependent on feed wheels
Disable PMT MIG guns	Gun	OFF or ON	ON	OFF = other gun ON = PMT gun
Restore Factory Settings	FAC	OFF or ON	OFF	Restores factory settings when ‘ON’ is selected.

The parameter’s value is immediately recorded in the memory. Exit SETUP mode by holding down the new SETUP button or by briefly pressing the ON/OFF button.

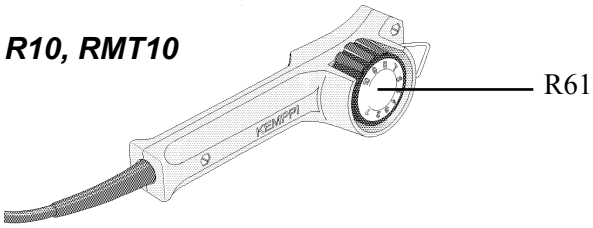
4. OPERATIONS OF REMOTE CONTROL UNITS IN KWF WIRE FEED UNIT

R20



	R63	R61
MIG	Setting for wire feed: I 1...18 m/min (39.3...709 ipm) II 1...25m/min (39.3....984 ipm)	Setting for voltage: 10 V...max. voltage of power source (35...46 V)
Memory	Channel selection: 1...5 corresponding to settings 1, 4, 6, 8, 10 of knob	Fine adjustment for arc length:1...10
SYNERGIC MIG	Setting for power (wire feed speed): according to wire min. ... max.	Fine adjustment for arc length: 1...10
MMA	Setting for power: 10 A ... max. power of power source	NO OPERATION

R10, RMT10



	R61	RMT 10 remote control unit for PMT/WS gun
MIG	Setting for wire feed: I 1...18 m/min (39.3...709 ipm) II 1...25m/min (39.3....984 ipm)	Setting for wire feed: I 1...18 m/min (39.3...709 ipm) II 1...25m/min (39.3....984 ipm)
Memory	Channel selection: 1...5 corresponds in the R10 settings 1, 4, 6, 8, 10 of knob	Channel selection 1 ...5
SYNERGIC MIG	Setting for power (wire feed speed): according to wire min. ... max.	Setting for power (wire feed speed) according to wire min. ... max. (see page 18, part 10)
MMA	Setting for power: 10 A...max.power of power source	NOTE! RMT10 NO OPERATION

5. WELDFORCE ERROR CODES

The existence of possible faults in the equipment is investigated in connection with each wire feed unit start-up. If a fault is detected, the fault in question will be indicated as an 'Err' message on the (ls) panel display (see enclosed illustration).

Error code examples:

Err 1: Not in use.

Err 2:

Press the start switch of the gun when data transfer between KWF and KPS has been disrupted (control cable fault or connector fault).

Err 4:

Press the start switch of the gun when liquid cooling has been selected via the KWF user interface as the gun-cooling method and the KWU cooling unit has failed to be connected.

Err 5:

The KWU cooling unit has interrupted welding. Possible causes: loss of supply voltage from KWU, failure of fluid circulation pressure to rise, or an excessive increase in coolant temperature.

Err 6: Not in use.

Err 7: Not in use.

Err 8:

Overheating of liquid-cooled PMT or WS™ gun.

Err 9:

Overloading of the wire feed motor, caused by, e.g., clogging of the gun wire conduit or excessive bending of the gun cable.

Err 10:

Welding disrupted by activation of thermal protection of KPS power source.

Err 11:

An attempt has been made to use a PMT or WS™ gun when its use is prevented by the SETUP function.

Err 12:

Welding disrupted due to activation of the gas guard (functions require additional attachments to the standard unit).

Err 13: Not in use.

Err 14: Not in use.

Resetting error codes:

Error codes Err 2-4 automatically disappears within 5 seconds if the trigger is not pressed.

The cause of the error must be eliminated before the next start-up.

Error codes Err 5-14 disappears on the next start-up if the source of the error has been removed.

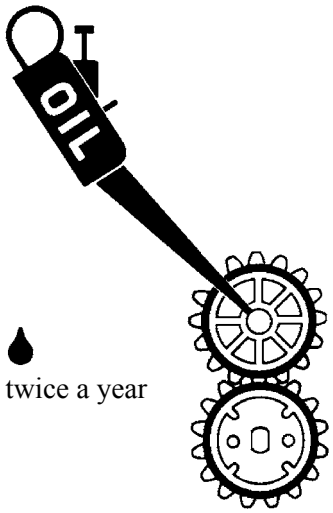
6. SERVICE, OPERATION DISTURBANCES

The amount of use and the working environment should be taken into consideration when planning the frequency of maintenance of KWF. Careful use and preventive maintenance will help to ensure trouble-free operation.

The following maintenance operations should be carried out at least every six months:

Check:

- The wear of the grooves of the feed rolls. Excessive wear of grooves causes problems in wire feed.
- The wear of the wire guide tubes of wire feed. Badly worn feed rolls and wire guide tubes should be discarded.
- The wire guide tube in the gun should be set as near the feed rolls as possible, but not touching them and the wire must follow a straight line from the end of the tube to the groove of the feed roll.
- Reel brake adjustment.
- Electric connections
  * Oxidised couplings must be cleaned
  * Loose couplings must be tightened



twice a year

Clean dust and dirt from the equipment.

⚠ **When using compressed air, always protect your eyes with proper eye protection.**

In case of problems contact your KEMPPI dealer.

7. DISPOSAL OF THE MACHINE

Do not dispose of electrical equipment together 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 returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative.

By applying this European Directive you will improve the environment and human health!

8. ORDERING NUMBERS

KWF 200S		6232200US
KPS 3500	3 ph 480V	6131351
Transport unit T 400		6185267
Transport unit P40		6185264
KWF300/300SP500		6185265
KV 400		6185247

Accessories

KWF 200 hanging frame (incl. KPS mounting set)		6185285
KWF 200 protection slides (incl. KPS mounting set)		6185286
KWF 300 protection slides		6185287
KWF 200/300 spool space heater		6185288
KWF Sync 300		6263300
GG 200/300 Gas Guard		6237406

Remote control units

R10	5 m (16.4 ft)	6185409
R10	10 m (32.8 ft)	618540901
R 20	5 m (16.4 ft)	6185419
RMT 10 (for PMT MIG-gun)		6185475

MIG–guns

PMT 27	3 m (9.8 ft)	6252713
PMT 27	4.5 m (14.8 ft)	6252714
PMT 32	3 m (9.8 ft)	6253213
PMT 32	4.5 m (14.8 ft)	6253214
PMT 35	3 m (9.8 ft)	6253513
PMT 35	4.5 m (14.8 ft)	6263514
PMT 42	3 m (9.8 ft)	6254213
PMT 42	4.5 m (14.8 ft)	6254214
PMT 50	3 m (9.8 ft)	6255013
PMT 50	4.5 m (14.8 ft)	6255014
MMT 32	3 m (9.8 ft)	6253213MMT
MMT 32	4.5 m (14.8 ft)	6253214MMT
MMT 35	3 m (9.8 ft)	6253513MMT
MMT 35	4.5 m (14.8 ft)	6253514MMT
MMT 42	3 m (9.8 ft)	6254213MMT
MMT 42	4.5 m (14.8 ft)	6254214MMT
PMT 30W	3 m (9.8 ft)	6253043
PMT 30W	4.5 m (14.8 ft)	6253044
PMT 42W	3 m (9.8 ft)	6254203
PMT 42W	4.5 m (14.8 ft)	6254204
PMT 52W	3 m (9.8 ft)	6255203
PMT 52W	4.5 m (14.8 ft)	6255204
MMT 30W	3 m (9.8 ft)	6253043MMT
MMT 30W	4.5 m (14.8 ft)	6253044MMT

MMT 42W	3 m (9.8 ft)	6254203MMT
MMT 42W	4.5 m (14.8 ft)	6254204MMT
MMT 52W	3 m (9.8 ft)	6255203MMT
MMT 52W	4.5 m (14.8 ft)	6255204MMT

Interconnecting cables

KWF 70-1,8-GH	6260401
KWF 70-1,8-WH	6260403
KWF 70-5-GH	6260405
KWF 70-5-WH	6260407
PROMIG 2/3 70-10-GH	6260326
PROMIG 2/3 70-10-WH	6260334

9. TECHNICAL DATA

KWF 200S		
Working voltage (safety voltage)		50 VDC
Rated power		100 W
Max. load (nominal values)		
	60 % ED	520 A
	100 % ED	440 A
Operation principle		4 roll feed
Diameter of feed roll		32 mm (1.26”)
Wire feed speed I		0...18 m/min (0...709 ipm)
Wire feed speed II [1])		0...25 m/min (0...984 ipm)
Filler wires		
	ø Fe, Ss	0.6...1.6 mm (.023...1/16”)
	ø Cored wire	0.8...1.6 mm (.030...1/16”)
	max. size	1.0...1.6 mm (.040...1/16”)
Wire reel		
	max. weight	5 kg (11 lb)
	max. size	ø 200 mm (7.9”)
Gun connector		Euro
Operation temperature range		-20...+40˚C (-4...+104 °F)
Storage temperature range		-40...+60˚C (-40...+140 °F)
Degree of protection		IP 23 C
Dimensions		
	length	510 mm (20”)
	width	200 mm (7.9”)
	height	310 mm (12.2”)
Weight		9.4 kg (20.7 lb)

The products meet conformity requirements for CE marking.

[1]) Changes of speed are carried out by changing gear wheel