KEMPPI

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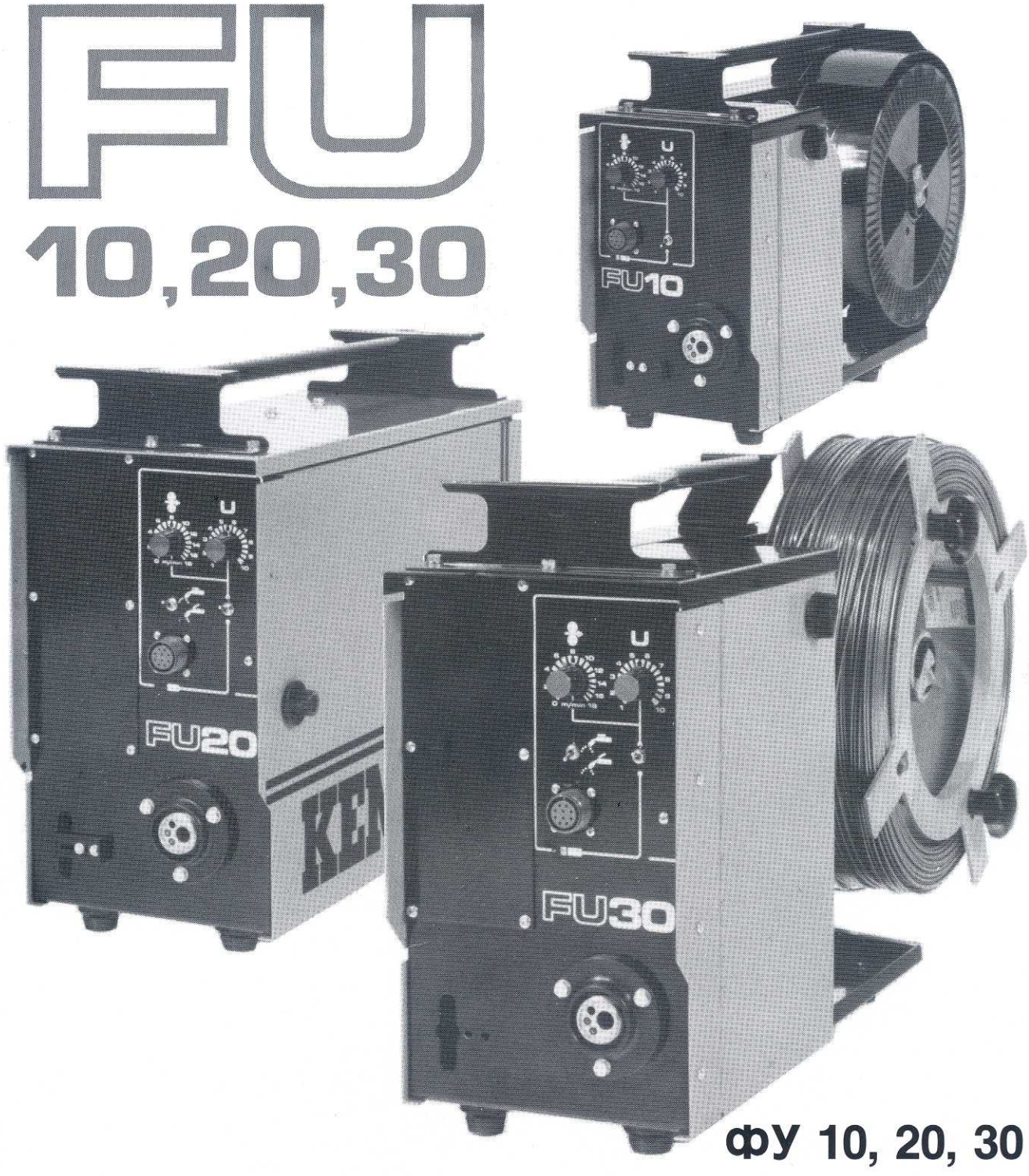
KÄYTTÖ- JA HUOLTO-OHJE
OPERATION AND MAINTENANCE INSTRUCTIONS
ИНСТРУКЦИЯ ПО ЭКСПЛУАТАЦИИ И ОБСЛУЖИВАНИЮ

FU 10,20,30



ФУ 10, 20, 30

SUOMI

ENGLISH

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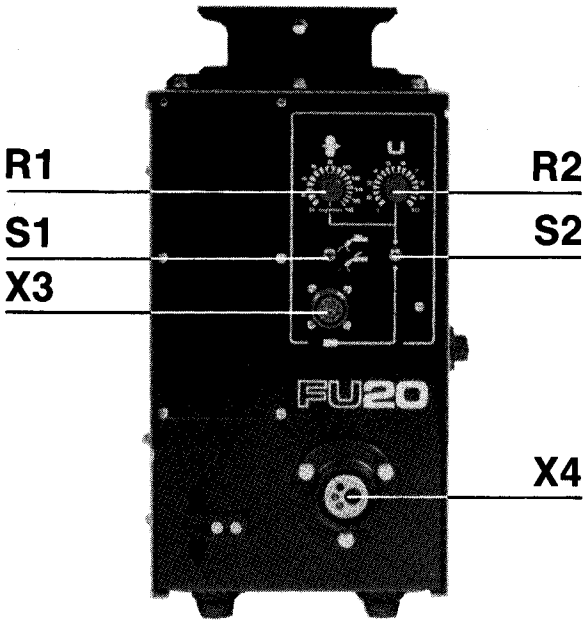
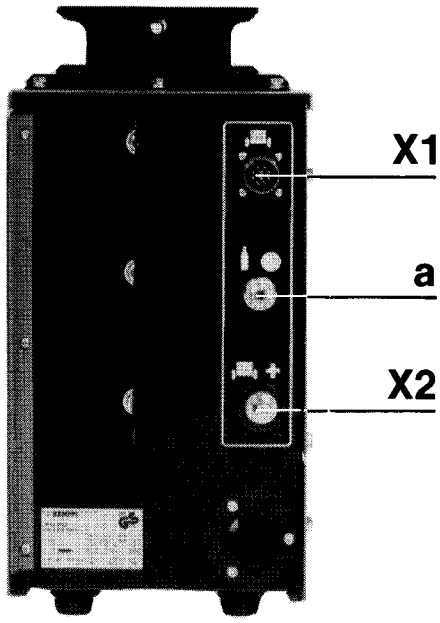
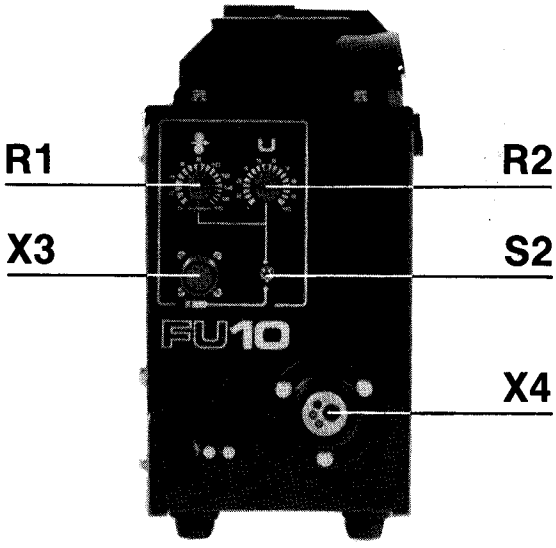
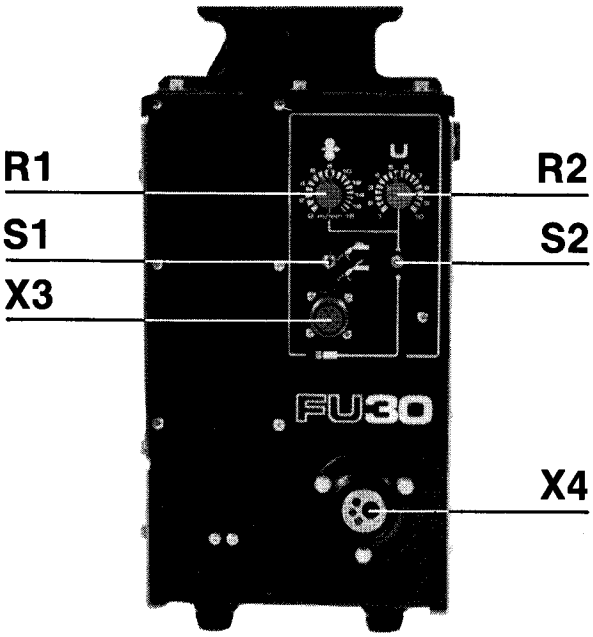








1 KÄYTTÖSÄÄTIMET, KYTKIMET JA LIITTIMET
OPERATION CONTROL, SWITCHES AND CONNECTORS
РЕГУЛЯТОРЫ И ВКЛЮЧАТЕЛИ УПРАВЛЕНИЯ; СОЕДИНИТЕЛИ

R1 Langansyöttönopeuden säätö
Wire feed speed regulation
Регулировка скорости подачи проволоки

R2 Hitsausjännitteen säätö (PS-koneet)
Regulation of welding voltage (PS machines)
Регулировка сварочного напряжения (машины ПС)

S1 Käynnistystavan valintakytkin
Selector switch for start method
Селекторный переключатель метода начала сварки

S2 Lähi-/kaukosäädön valintakytkin
Selector switch for local/remote control
Переключатель режима управления: местное/дистанционное

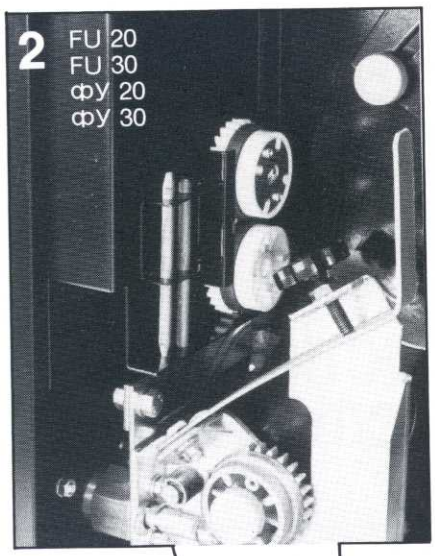
X1 Ohjausjänniteliitäntä
Control voltage connection
Разъем управляющего напряжения

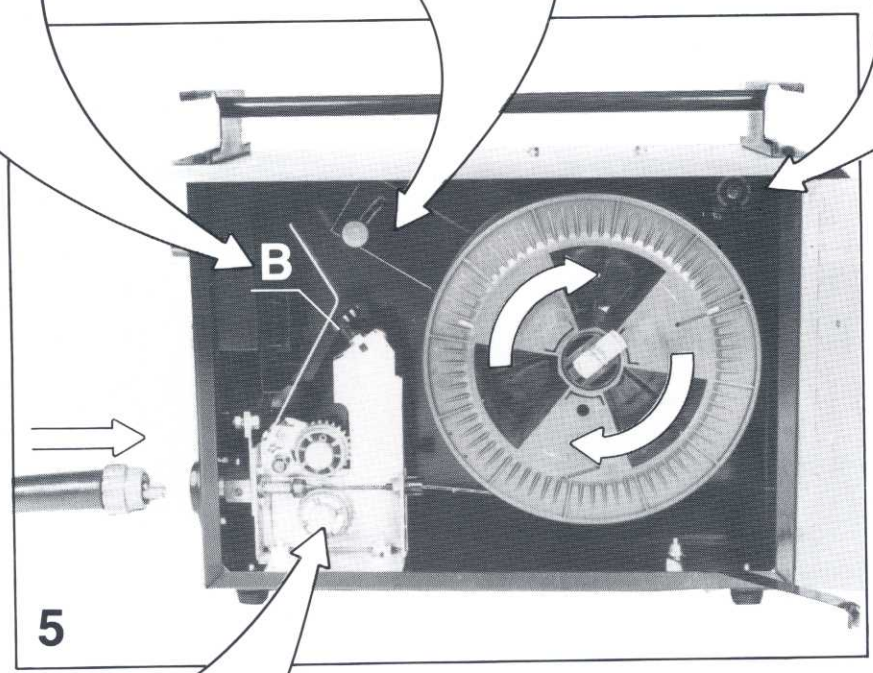
X2 Hitsausjänniteliitäntä, +napa
Welding voltage connection, positive
Разъем сварочного напряжения, положит. полюс

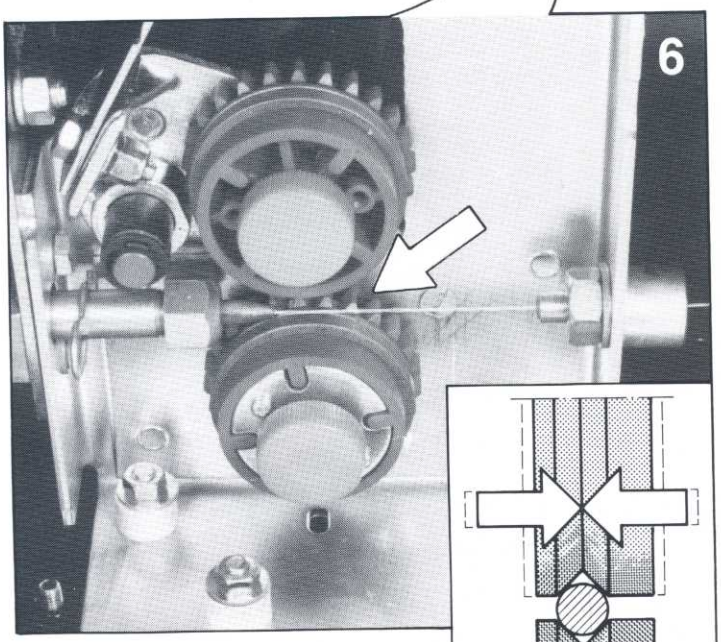
X3 Kaukosäätimen liitäntä
Connector of remote control device
Соединительный разъем пульта дистанц. управления

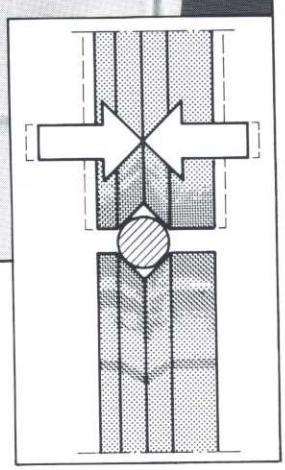
X4 Monitoimiliitin hitsauspistoolille
Central connector for gun
Центральный разъем для сварочной горелки

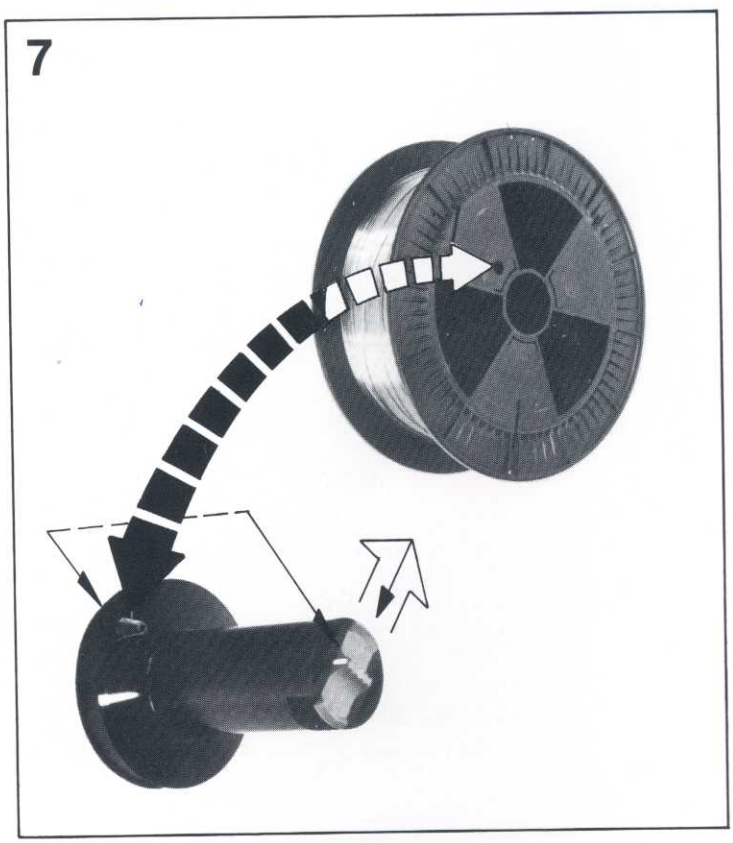
a Suojakaasuliitäntä
Connection for shielding gas
Гнездо для защитного газа







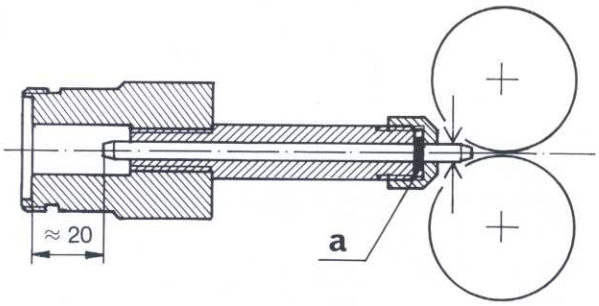


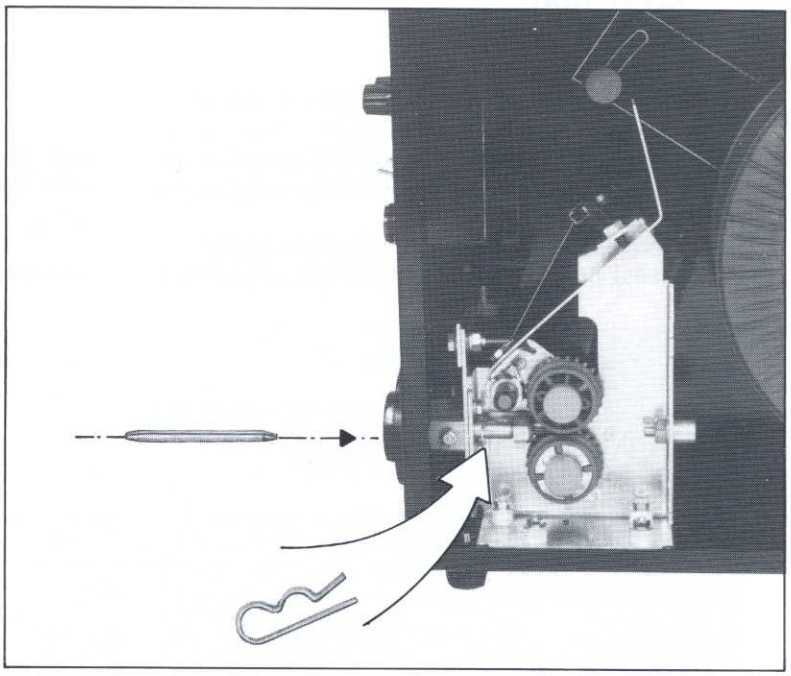


LISÄAINELANGAN ASENNUS
FITTING OF FILLER WIRE
ЗАПРАВКА ПРИСАДОЧНОЙ ПРОВОЛОКИ

9 LANGANOHJAUSPUTKEN VAIHTO
CHANGE OF OUTLET GUIDE TUBE
ЗАМЕНА НАПРАВЛЯЮЩЕЙ ТРУБКИ ДЛЯ ПОДАЧИ ПРОВОЛОКИ

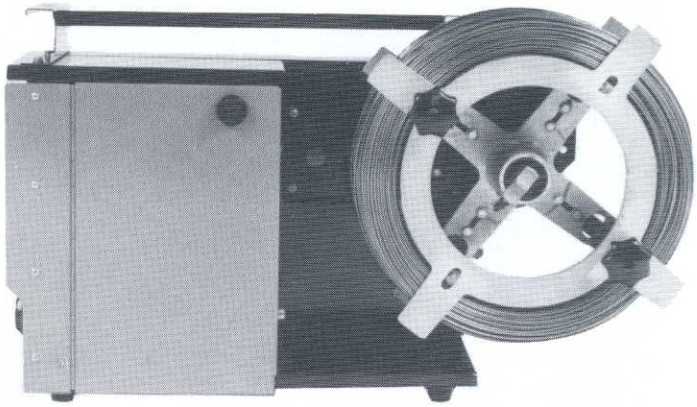
Lankalinjan keskitys suoritetaan tarvittaessa liukuvan aluslevyn (a) avulla.
When necessary the centering of wire line is carried out by means of a gliding washer (a).
При необходимости центрирование линии проволоки осуществляется при помощи скользящей шайбы (a).

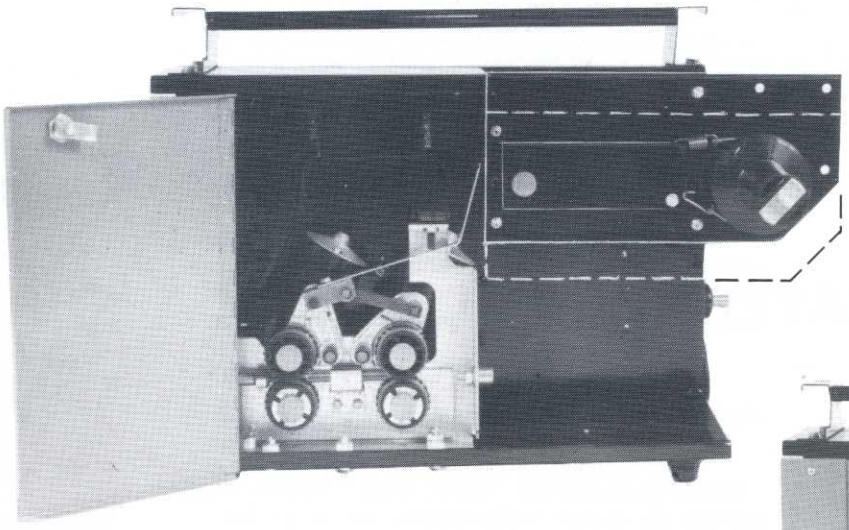




10 FU 30 KELANAVAN SIIRTO
FU 30 MOVING OF REEL HUB
ПЕРЕМЕЩЕНИЕ ВТУЛКИ КАТУШКИ С ПРОВОЛОКОЙ ФУ 30

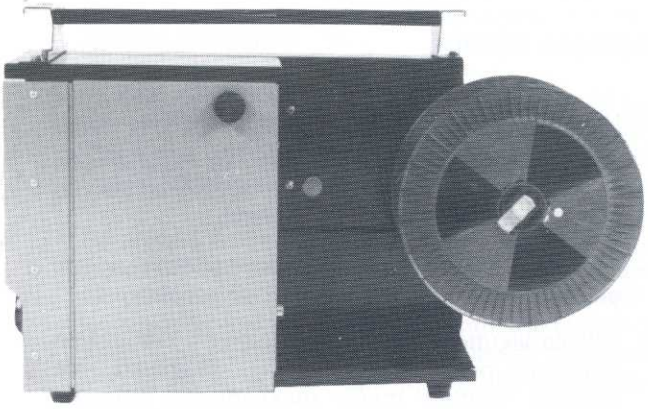
A





A

B



B

FU 10, 20 and **30** units are wire feeders designed for the MULTISYSTEM- and RA gas metal-arc welding system.
The uses and reach of wire feeding unit can be extended with various accessories: auxiliary functional units (FU 20 and 30), remote control equipment, sub-feeder unit (FU 20), motorised welding gun (FU 20 and 30), safety frame, rotation stand and swing arm.
FU 10 is suitable for use also in TIG-welding for feeding of cold wire.

TECHNICAL DATA

		FU 10	FU 20	FU 30
Working voltage 50/60 Hz *	V	30	30	30
Rated power	VA	120	120	220
Load capacity ED 60 %	A	500	500	600
Wire feeding speed	m/min	0—18	0—18	0—18
Filler wires:				
- solid wire Fe	ø mm	0,6—1,6	0,6—1,6	0,8—1,6
- solid wire Al	ø mm	1,0—1,6	1,0—1,6	1,0—2,4
- flux-cored wire Fe	ø mm	1,1—1,6	1,1—1,6	1,1—3,2
Wire reel:				
- weight max.	kg	20	20	25
- diameter max.	mm	300	300	435
Dimensions:				
- length	mm	480	650	700
- width	mm	220	240	245
- height	mm	390	470	470
Weight without wire reel	kg	14	21	27
Degree of protection		IP 23	IP 23	IP 23

* **NOTE!** Supply through safety isolating transformer

PUTTING INTO SERVICE AND USING

Placing the unit

The following aspects should be considered when the place for the unit is chosen:

- the unit is designed to be installed on a rotating platform on top of the power source, moved on the floor or when installed hanging from a bar.
- the unit must be hung on the bar with an insulated hanger fastened onto the unit
- to make moving on the floor easier there is available for the unit a safety frame with wheels, which can be used also as mechanical protection when hanging unit on the bar. Use always the safety frame if there is risk for mechanical damage
- the operator must be able to reach the necessary controls and to change the wire reel without trouble
- the welding cable and the intermediate cable may not under any circumstances get under pressure or touch the hot workpiece
- care must be taken to ensure that a strong draught or wind does not reduce the gas shielding of the weld.

Coupling with the power source

The connections to FU 20 are shown in picture 1. More detailed cabling between FU and the various power sources are shown in the operating instructions of the power sources.
When coupling FU with the RA-System a special fitting set has to be used. With the fitting set is delivered a scheme which shows the cabling.
The cross-section of the welding cable must be sufficient for the welding current to be used.

Connecting the welding gun

There is an outlet guide tube inside the central adapter for the welding gun (picture 9). Always choose the correct size of tube from the table according to the size of the filler wire used.

At the delivery FU 10, 20 and 30 are equipped with a red outlet guide tube for the welding of ø 0,9—1,3 mm filler wires.

Before connecting the welding gun make sure that the contact tip of the gun and the liner inside the cable are suitable for the filler wire size to be used.

	Outlet guide tube			
Filler wire ø mm	ø mm inner/outer	length mm	sign colour	order no.
0,6—0,8	1,2/6,0	91	white	4220881
0,9—1,3	1,6/6,0	91	red	4220882
1,4—1,6	3,0/6,0	84,5	yellow	4220883
2,0—3,2	4,0/6,0	80	blue	4220884
1,0—1.6 Al	2,0/6,0	84,5	—	4245070

Feed rolls

Feed rolls must always be chosen to match the size of the filler wire used.

At the delivery FU 10 is equipped with red feed rolls for the welding of ø 0,9—1,0 mm filler wires and FU 20 and 30 are equipped with orange feed rolls for the welding of ø 1,1—1,3 mm filler wires.

	Feed rolls		
Filler wire ø mm	sign colour	order no. draw wheel	order no. press wheel
0,6—0,8	white	3106841	9592401
0,9—1,0	red	3106842	9592402
1,1—1,3	orange	3106846	9592406
1,4—1,6	yellow	3106843	9592403
2,0—2,4	black	3106844	9592404
2,8—3,2	blue	3106845	9592405

Fitting the filler wire

- open the press lever of the wire feed rolls
- make sure that the feed rolls and the guide tube match the filler wire used.
  Make sure that the liner and the contact tip of the welding gun are suitable for the filler wire in use.
- remove the bolt that locks the wire reel on the hub
- place the wire reel on the hub so that the locking pin on the hub fits into a corresponding hole in the reel (see picture 7).
  Note the direction of the wire, from under the reel towards the feed rolls.
- replace the bolt that locks the wire reel on the hub
- release the end of the wire from the reel and cut off the bent length.

  BE CAREFUL THAT THE WIRE DOES NOT SPILL FROM THE REEL.
- straighten about 20 cm of the wire and see that the end of it has no sharp edges (file when necessary). A sharp end may damage the liner of the gun and the contact tip of the welding gun.
- thread the wire for a few centimetres into the guide tube
- close the press lever and make sure that the wire settles in the groove of the feed rolls (picture 6)
- set the wire feed speed control to a low value and switch on the power source
- keep the leads of the welding gun straight and press the gun switch until the wire comes out of the tip
- adjust the pressure of the feed rolls with the control screw (B in picture 5) so that the wire is fed into the wire conduit evenly and allows a little braking when coming out from the tip without slipping at the feed rolls

  NOTE! Excessive pressure causes flattening of the filler wire and damage to the coating. It also causes undue wear of the feed rolls
- adjust the brake of the reel hub (picture 3) so that the rotation of the reel stops simultaneously with the feed rolls. The wire must not be allowed to become too loose on the reel.
- when using Fe-solid wires check that the wire has suitable pre-tension. When the wire is fed through the gun, the gun cable should be kept as straight as possible. If the wire comes out even a little spiralled, it may cause contact problems in the contact tip.

Operating switches (see picture 1)

R1 The control of the wire feed speed is steppless from 0 m/min to 18 m/min, which enables the user to find the optimum setting for any welding applications.

R2 The control of the voltage with the PS-power sources.
With the RA- and HILARC-power sources the control of the voltage is adjusted by the voltage control switches or potentiometer of the power sources in question.

S1 Selector switch for start method, FU 20 and 30

The starting procedure from the gun switch can be selected for either two- or four-sequence operation.

Two-sequence procedure:

1 switch 'on' - welding starts
2 switch 'off' - welding stops

Four-sequence procedure:

1 switch 'on' - shielding gas flow starts
2 switch 'off' - welding starts
3 switch 'on' - welding stops
4 switch 'off' - shielding gas flow stops

The four-sequence procedure is used, for example, on long welds and for welding easily-oxidizing parent metals where post-flow of the shielding gas is very important.

S2 Selector switch for local/remote control

The local position on the control switch is selected if the controls of the wire feeding and the voltage are made from the control switches on the front panel of FU or in the remote control position from the remote controller, which will be coupled to the machine connector on the front panel.
With the RA- and HILARC-power sources both with the local- and remote control of the voltage is operated from the power source.

R3 Control of the burn back time

The burn back time is controlled from the potentiometer inside the reel housing (picture 4), which is regulated with a screw gouge. The time can be controlled from 0,05 s to 0,5 s.

It may be necessary to control the burn back time when going over to weld different qualities of filler wire, e.g. when going over from welding of steel to welding of aluminium.

The burn back time is correctly controlled when the filler wire is not fastened on the work piece or burnt on the contact tip at the end of welding.

ACCESSORIES

AUXILIARY FUNCTIONAL UNITS FOR FU 20 AND 30

The operation functions of FU 20 and 30 can be widened through use of auxiliary functional units. The unit is fitted to FU 20 and 30 by taking off from the front wall the cover plate which is fastened with screws. The control connectors behind the plate are connected to corresponding connectors of the auxiliary functional unit and the unit is fastened on the front wall (picture 11 on the last page).

Time control unit FP 5
(order no: 6263110)

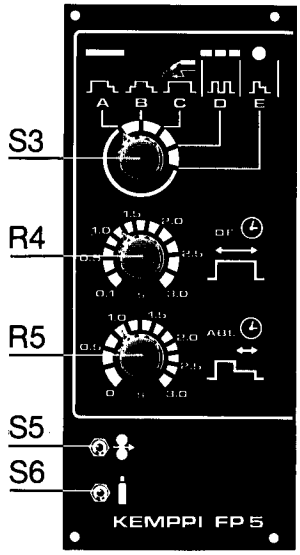
The unit has the following operating switches:

S3	Welding method selector switch
S5	Testing of wire feed
S6	Testing of gas flow
R4	Regulation of cycle arc-/spot welding time 0,1 - 3,0 s
R5	Time for crater filling *) 0,1 - 3,0 s

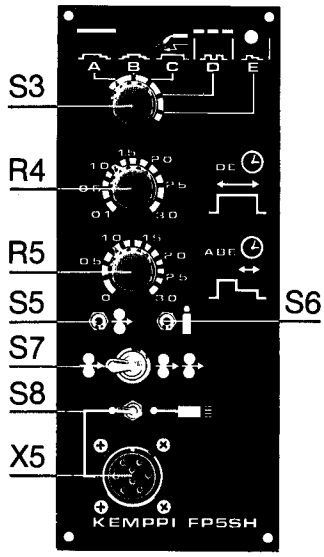
With the welding method selector switch can be chosen five different methods of welding:

A	Continuous welding with crater filling
B	Continuous welding with creep feed and crater filling
C	Continuous welding with contact ignition
D	Cycle arc welding
E	Spot welding with crater filling

*) Crater filling operation with PS power sources only.



FP 5

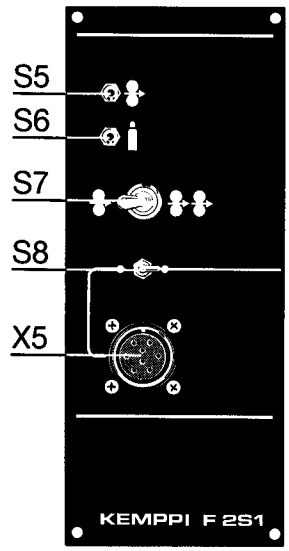


FP 5SH

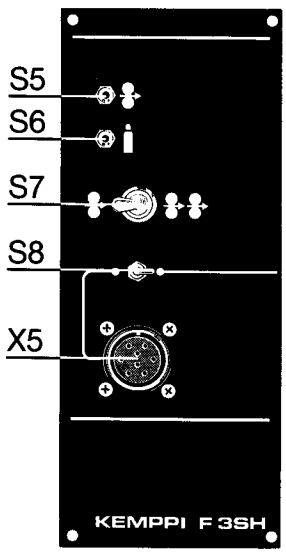
Synchronizing unit FP 5SH
(order no: 6263111)

The unit has the operations of the time control unit FP 5 and in addition the synchronizing for motorised gun. The unit has the same operation switches as FP 5 and in addition to them:

S7	Synchronizing switch
S8	Selector switch for control of wire feed (motorised gun or local/remote control of FU)
X5	Control voltage connection for motorised gun.



F 2S1



F 3SH

Synchronizing unit F 2S1
(order no: 6263115)

F 2S1 is synchronizing unit for sub-feeder and motorised gun which is fitted to FU 20. Selection between sub-feeders and motorised gun is done through coding connectors.

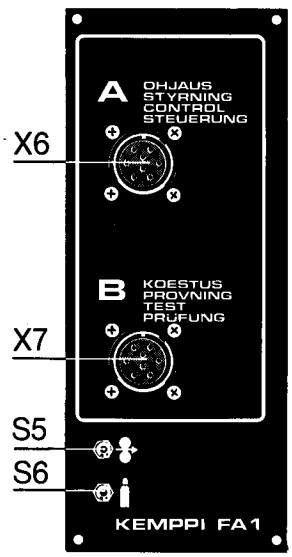
NOTE! F 2S1 can be fitted to FU 20 wire feeder only.

The unit has the following operating switches:

S5	Testing of wire feed
S6	Testing of gas flow
S7	Synchronizing switch
S8	Selector switch for control of wire feed (motorised gun or local/remote control of FU)
X5	Control voltage connection for motorised gun.

Synchronizing unit F 3SH
(order no: 6263114)

F 3SH is synchronizing unit for motorised gun. Operating switches of the unit as in F 2S1.



FA 1

Automatic unit FA 1

(order no: 6263113)

FA 1 is a unit with which the wire feeder is coupled with the other equipment in mechanized welding. FA 1 receives the following data:

- start
- set values of wire feed and power source (0–10 V)
- testing of wire feed
- testing of gas flow
- testing of power source

FA1 gives the other equipment data about how the welding current is flowing.

REMOTE CONTROL DEVICES (picture 15 on the last picture page)

The remote control devices with a stepless regulation of wire feed and voltage for MIG welding can be connected to the machine connector on the front wall of FU 20. When using remote control the local/remote control switch must be turned into position 'remote control'.

With RA-power source the remote control is possible for wire feed only.
With HILARC-power sources the remote control of voltage can be performed with remote control units RCR 11 and RCR 30 only.

C 110D (order no: 6185421)

MIG-MAG remote controller with controls for wire feed and voltage. (Memory scale 1—10)

TC 110D

Additional module for MIG-MAG gun with equivalent operations as in C 110D.
3 m order no: 6185433
4,5 m order no: 6185434

C 120S (order no: 6185427)

A remote controller into which it is possible to program three different welding parametres for MIG-MAG or MMA welding. The parametres are selected on the selector of C 120S or on the switch module TC 120S which is connected to the MIG gun.

NOTE: In MMA welding the MIG gun and filler wire always are live.

C 130S (order no: 6185428)

C 130S enables one knob control of welding power in MIG-MAG welding with all wire diameters, wire types and gases. Control of welding power is carried out from MIG-MAG control device. Adjustable crater filling (0.5—6 s) enables faultless welding finish. In operation instructions for C 130S there is a more detailed description of operations.

C 120P (order no: 6185426)

Use possible only with PS 5000 or PSS 5000 power sources.

C 120P is a remote control device for pulsed MIG welding, with which PS/PSS 5000 MIG equipment is changed into pulsed MIG equipment. Use and operation of C 120P are described in the C 120P operating instructions.

SAFETY FRAME (picture 13 on the last picture page)

A with wheels equipped safety frame which works as mechanical protection and transport trolley is available for FU 10 and 20.

Safety frame for FU 20 order no: 6264510.
Safety frame for FU 10 order no: 6264509.

HOLDER FOR HASP REEL (picture 10 A on page 2)

As accessory to FU 30 for max ø 435 mm hasp reels with a centre hole 300 — 315 mm.

Order no: 6264515.

MAINTENANCE

The amount of use and the working conditions should be taken into consideration in the maintenance of the FU equipment. Careful use and preventive maintenance will ensure troublefree operation without unforeseeable service interruptions. The following maintenance operations should be performed at least every six months:

Check:

- the wear of the grooves of the feed rolls. Excessive wear causes problems in wire feed.

- the wear of the outlet guide tubes of the central connector

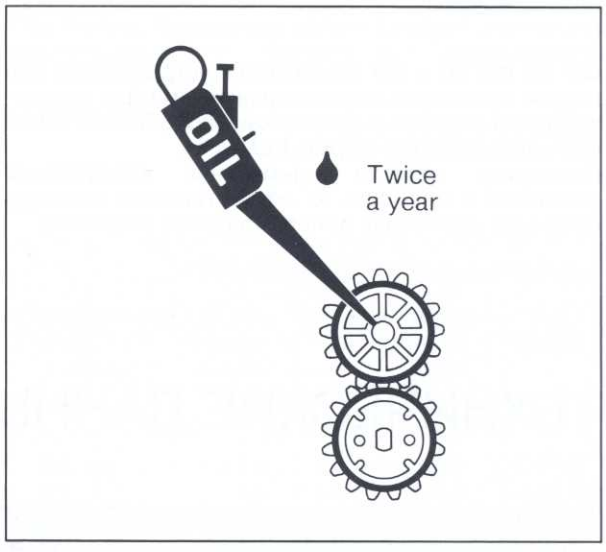
Badly worn feed rolls and guide tubes should be discarded.

- the outlet guide tube in the gun connector 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

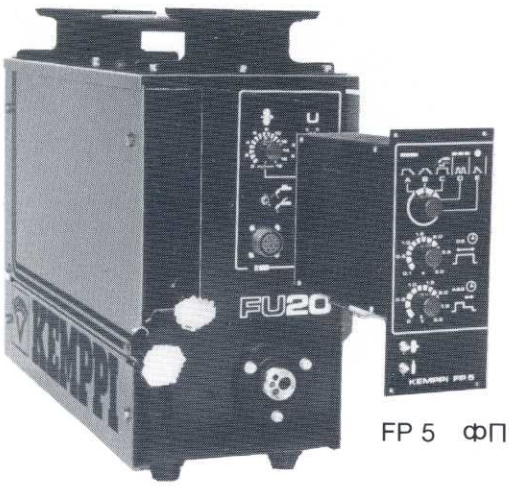
- electrical connections
  * oxidized couplings must be cleaned
  * loose couplings must be tightened

Clean dust and dirt from the equipment.

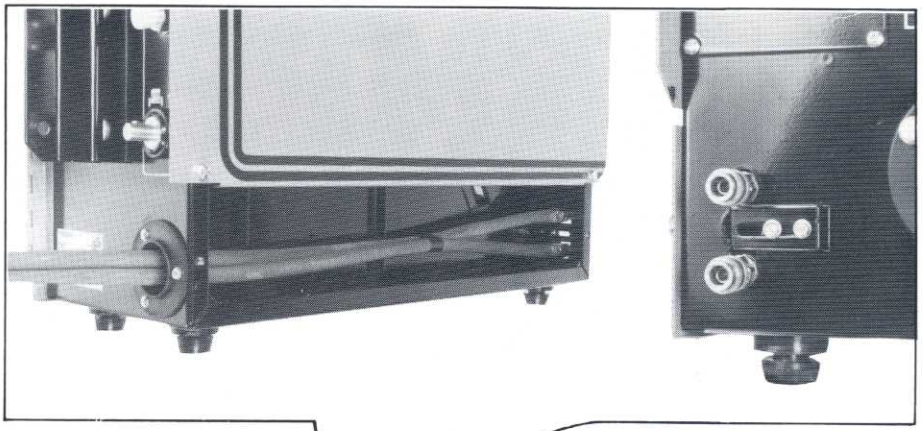


WHEN CLEANING WITH COMPRESSED AIR ALWAYS PROTECT YOUR EYES WITH PROPER EYE PROTECTION!

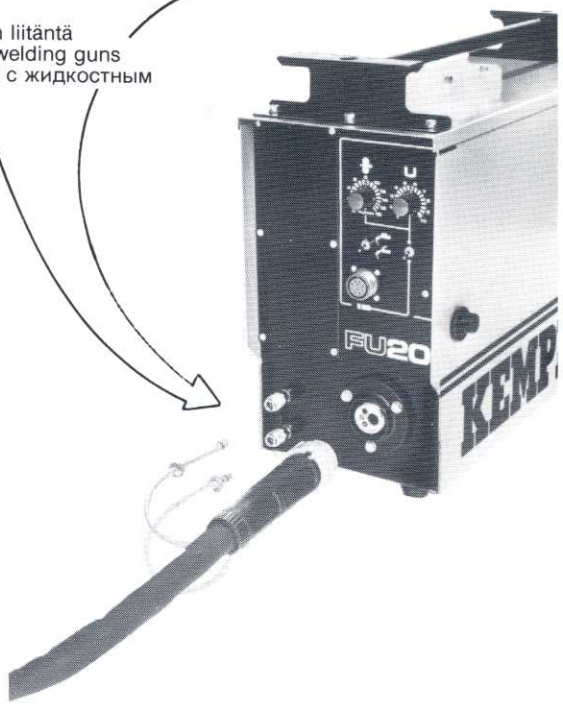
LISÄLAITTEET
ACCESSORIES
ДОПОЛНИТЕЛЬНЫЕ
ПРИНАДЛЕЖНОСТИ



FP 5 ФП 5



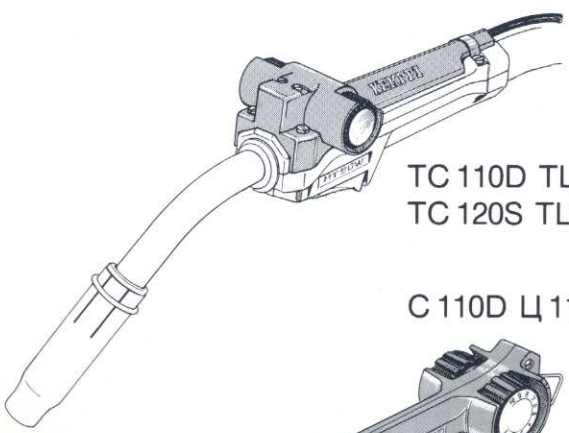
12 Nestejäähdytteisten pistoolien liitäntä
Connection of liquid-cooled welding guns
Присоединение пистолетов с жидкостным охлаждением



11 Lisätoimintayksiköt FU 20 ja 30
Auxliary functional units for FU 20 and 30
Блоки дополнительных функций

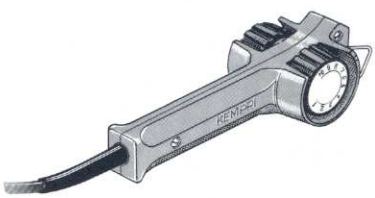
13 Suojakehikot FU 10 ja 20
Safety frames for FU 10 and 20
Защитные каркасы

15 KAUKOSÄÄTIMET
REMOTE CONTROL DEVICES
ДИСТАНЦИОННЫЕ РЕГУЛЯТОРЫ



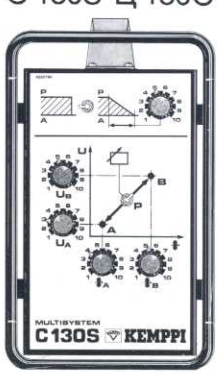
TC 110D ТЦ 110Д
TC 120S ТЦ 120C

C 110D Ц 110Д

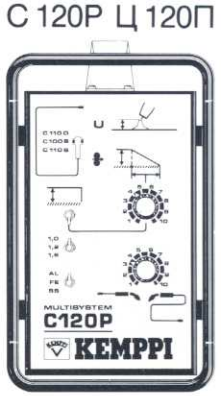


C 120S Ц 120C

C 130S Ц 130C



C 120P Ц 120П



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