MINISTRY OF NATIONAL DEFENCE

Approved by
Chief of the communication troops
Maj. Gen. Ladislav Stach
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Exclusively for official use

RADIO STATION RF-10

Technical description
Part 2

PRAGUE 1977

This regulation contains the following:

INTRODUCTION

This document includes a description of the battery pack charger, the KZ-10 control device, and the data transfer box. These devices are supplied as an add-on and are not part of the RF-10 radio set. The KZ-10 battery pack charger and control device are required to operate the RF-10 radio station, but will always be used with a large number of RF-10 radio sets. The specification also includes a description of the RF-10 raidio station battery pack, which was not listed in the Radio Station RF-10 , technical description part 1.
This document is intended for officers, service personnel and radio mechanics of units in which the RF-10 radio station is in service.
The Regulation shall become effective on 1 January.

CHAPTER 1
BATTERY PACK CHARGER

1. Basic technical data

1. The battery pack charger is used to charge the RF-10 radio batteries. It consists of two enclosures E and D (Figures 1, 2) which enable power supply from the 220 V power line or from 24 V DC vehicle wiring.

2. Cabinet E:
- supply voltage from AC 220 V +20% / -15%;
- load on the mains 0.42A at nominal voltage and load;
- output Voltage 12V / 3A DC;
- output voltage (unfiltered) 24V / 3A;
- operating temperatures -20°C to +50°C;
- dimensions 191 x 77 x 213 mm
- weight about 4 kg.

3. Cabinet D:
- Supply voltage 24V
- current 2.7A at rated voltage and load;
- Load: 6 battery packs for RF-10 radio station;
- Output current at the supply voltage of the D 24V cabinet or the E 220V / 0.45A ± 10% box from each charging output;
- Operating temperatures -20 °C to + 50 °C;
- Dimensions 191 x 77 x 213 mm
- weight: about 2.7 kg.

4. Dimensions of the battery pack charger are 195 x 165 x 220 mm.

5. The weight of the charger with the spare parts in the box is 8.5 kg.

2. Composition of kit

6. The charger kit consists of:
- power supply (cabinet E);
- charger (cabinet D);
- Accessories (Figure 3), which consist of:
- 220 V circuit cable;
- 24 V on-board cable;
- 5 replacement fuses 1 A;
- 5 replacement fuses 4 A;
- 7 replacement lamps 12 V / l, 2 W;
- 100 labels to indicate battery packs;
- screwdriver;
- Operating Instructions;
- record book, technical sheet and quality certificate.

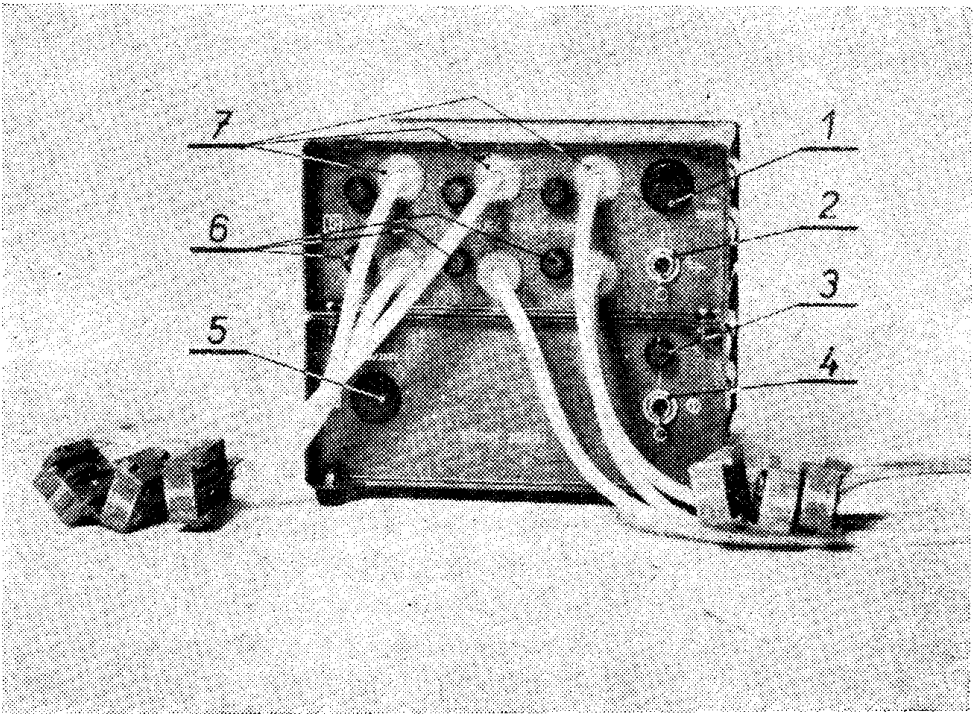

Fig.1. Front cabinet panels D and E

1 - charger fuse; 2 - charger switch; 3 - power supply light bulb; 4 - power supply switch; 5 - power supply fuse; 6 - Charging light bulbs in circuits; 7 - cables with terminals for connecting battery packs

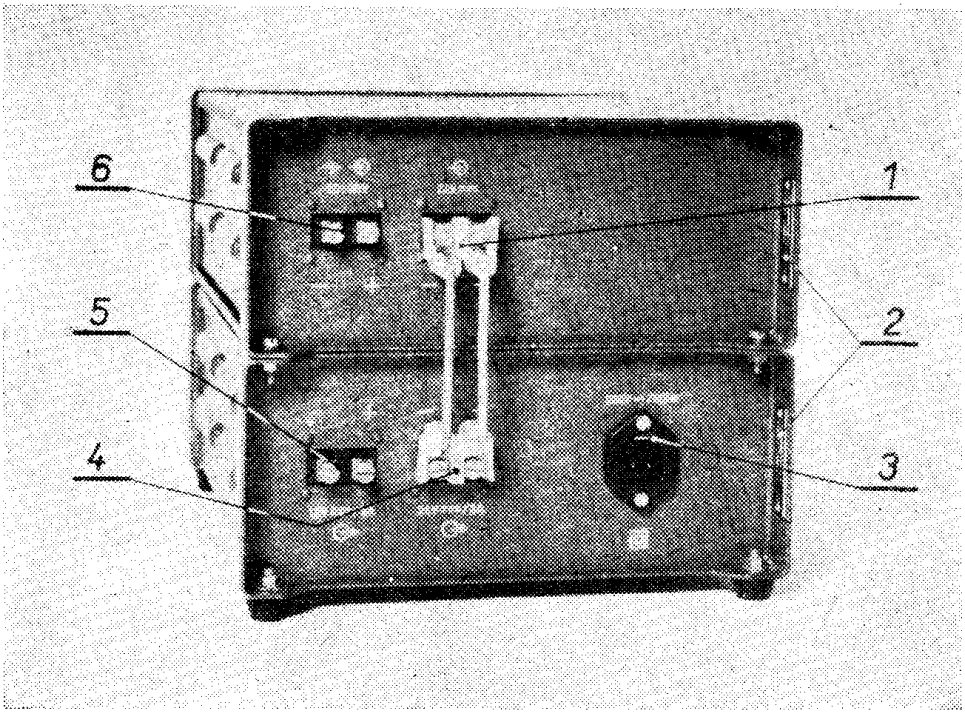

Fig. 2. Rear panel panels D and E
1 - Terminals for connecting both boxes; 2 - type plate; 3 - mains lead; 4 - Terminals for connection of both cabinets; 5 - output terminals 12 V; 6 - Terminals for power supply from the on-board circuit

3. Construction

7. The charger consists of two separate cabinets, i.e. the power supply (cabinet E) and the battery charger (cabinet D). Both cabinets are designed so that they can be joined together in one unit. For stationary use, the lower cabinet (Figure 1), i.e. cabinet E, is fitted with rubber feet. When used in a vehicle, instead of these feet, the fastening screws are used to attach the charger to the vehicle chassis or furniture.

8. The electrical connection between the two boxes is secured by a two-core cable between the terminal boxes on the rear panels of the cabinets (Figure 2).

9. When operating on vehicles, the D cabinet is powered directly by the cable connected to the terminal board on the rear panel of the cabin from the on-board 24V DC circuit. The polarity must be observed when connecting. If the polarity is incorrect, the device is not damaged, but it does not work.

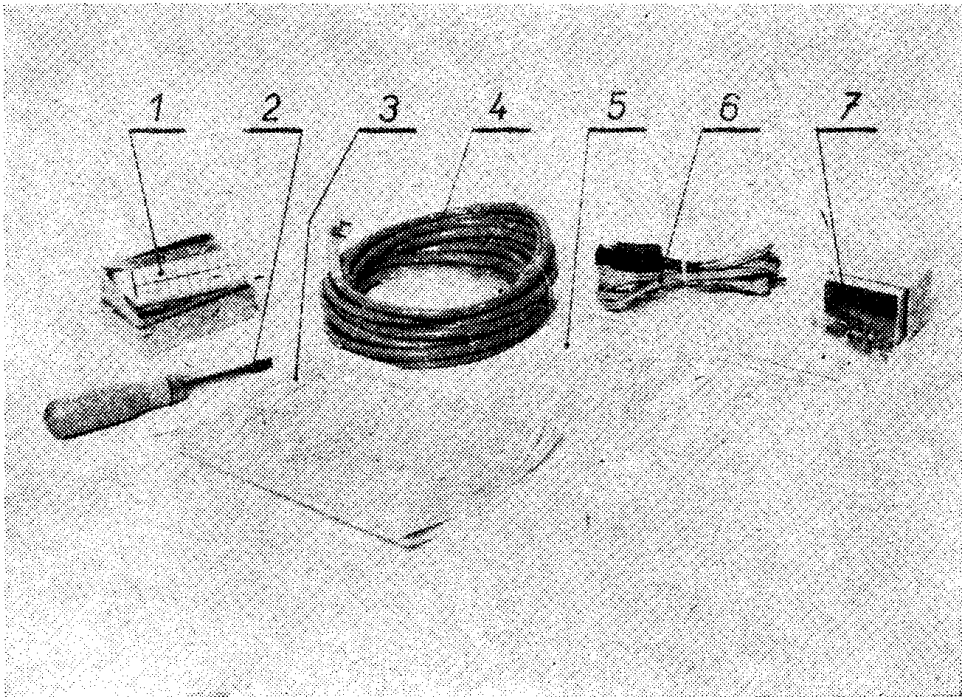

Fig. 3. Charger kit accessories
1 - labels to indicate battery packs; 2 - Screwdriver; 3 - operating instructions; 4 - cable for the on-board circuit; 5 - the quality certificate; 6 - power cord; 7 - replacement bulbs

10. When feeding from a 220 V supply, alternating voltage is applied to the rear panel of the E-cabinet with the mains plug.

11. Cabinet panels as well as their chassis and auxiliary beams are moulded from steel sheet.
The side panels, panels and chassis form a welded assembly. The lower and upper lids are replaceable steel mouldings with ventilation openings. The cabinets are sprayed with khaki firing ink. The cabinets are not

waterproof and must be protected from rain during operation.

12. Differences in the design of the cabinets E and D are based on the mounting of panels by control, signalling and interconnecting elements.

a) Cabinet E

13. The fuse holder, switch and indicator lamp are covered on the front panel of the mains supply, covered with a green coloured lens (Figure 1).

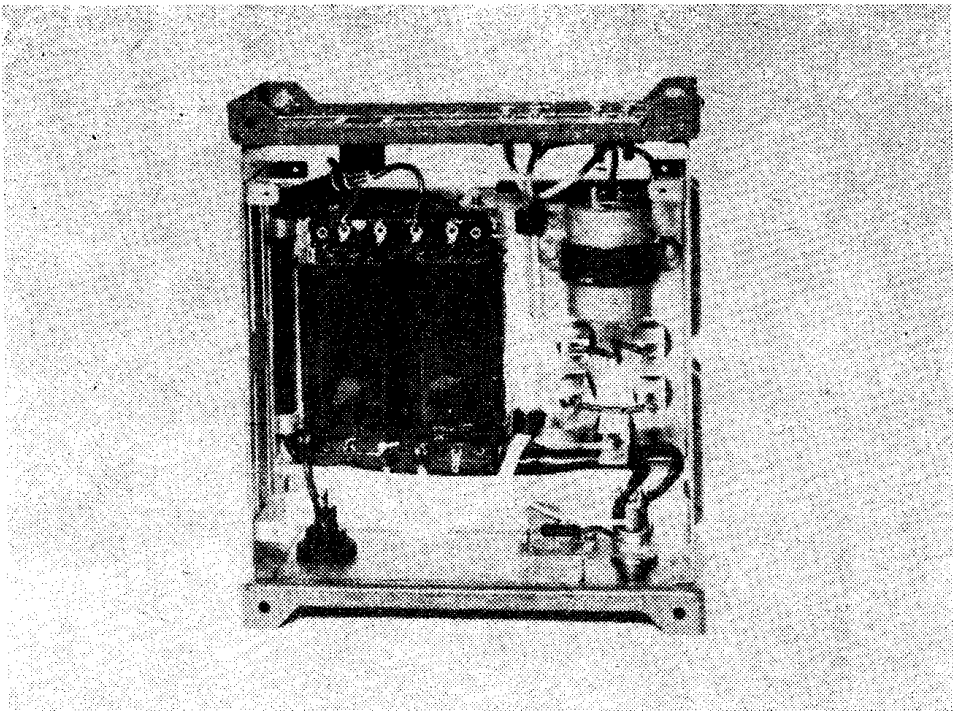

Fig. 4. Partitioning of the E-cabinet components

A standardized fork and two terminal blocks are located on the rear panel. Terminal blocks are marked with inscriptions (Figure 2).

14. The "24V ⎓ / 3A" terminal box is used to connect the E box to the D cabinet. The "12V ⎓ / 3A" terminal block is intended for further use.

15. A mains transformer, rectifying diodes with cooling fins, and an electrolytic capacitor (Figure 4) are attached to the chassis.

b) Cabinet D

16. Six two-core cables terminated by two-pole terminals for connection to the RF-10 radio station battery packs (Figure 1) are attached to the front panel of the cabinet.

17. To the left of each cable outlet there is a green signalling lamp illuminated by a light bulb. The bulbs are replaceable after removing the lens.

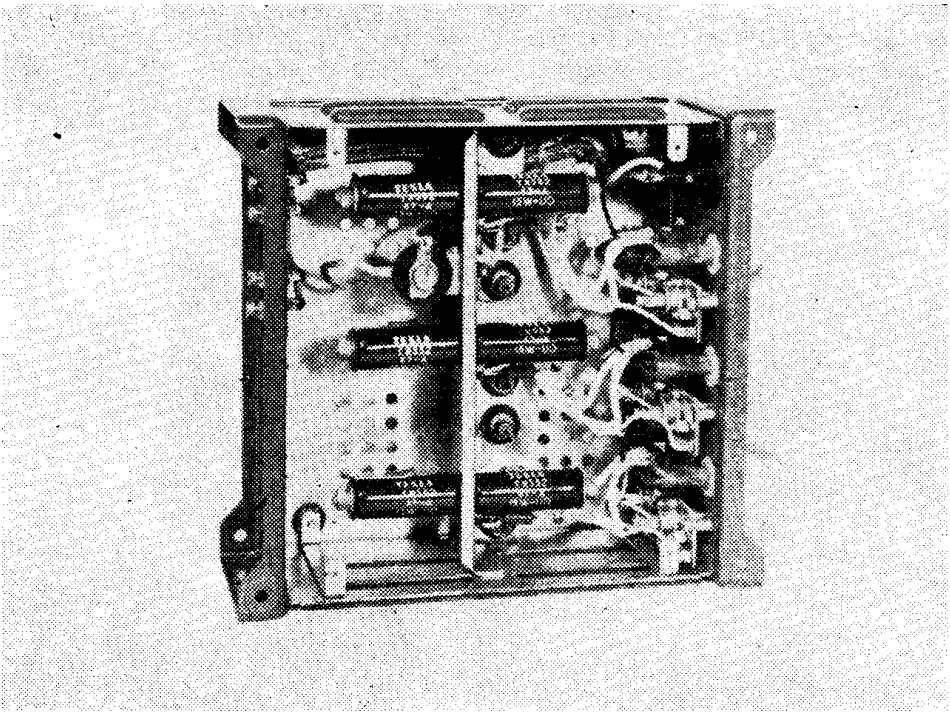

Fig. 5. Locating the D cabinet components

18. On the right side of the front panel is a toggle switch and a fuse holder.

19. On the rear panel there are two screw terminals marked "20 to 30 V" and "24V ⎓ / 3A" (fig. 2).

20. The "20 to 30V" terminal block is used to interconnect with the on-board circuit.

21. When using a 220 V mains voltage, the terminal box is marked "24V ⎓ / 3A" in D-box connected to the corresponding terminal box on the E-box.

22. The front panel bulb holders are identical to the bulb holder E. The holders are replaceable.
Replacing the bulb by pulling the light bulb off. Push the bulb to release the bulb. Insert the new bulb into the sleeve, push it and turn so that the key fits into the hinge in the sleeve. Then insert the lens into the hole in the panel and push it to the stop.

23. The chassis is placed in the D cabinet parallel to the cabinet panels. Resistors (6 pieces) and diodes (7 pieces) are mounted on it. The layout of these components is shown in Figure 5.

4. Circuit description and function of cabinets

a) Cabinet E

24. The cabinet E connection is simple. It is a 24V DC and 12V DC power supply. The wiring diagram is shown in Figure 6.

25. The mains voltage is fed from the socket on the rear panel via the two pole switch S1 and the fuse P1 on the primary winding of the transformer.

26. The core transformer winding "C" is produced in a conventional manner. To ensure climate resistance, the transformer is varnish impregnated.

27. The secondary voltage of the transformer (26 to 27V) is fed to a bridge rectifier fitted with 4 diodes, D1 to D4 of type KY708.

28. The rectifier output voltage is not filtered due to a sufficient "hardness" of the source and corresponds to 24 V DC. It is applied to the terminal board on the rear panel of the E box. The maximum draw is 3A. The output voltage depends on the current being drawn.

29. The secondary winding of the transformer has a tap. The signalling bulb Z1 is connected to this tap. The brightness of this bulb is adjusted by the serial resistance R1 (33 Ω). At the same time, a half-wave rectifying voltage is applied to the diode D5 separating the 24 and 12V DC sources.

30. Diode D5 (KY708) is connected to a filtering capacitor C1 (500µF). The voltage +12V with the suppressed bulb is discharged to the terminal box E on the terminal board. The maximum power consumption is 3A. The output voltage is dependent on the current being consumed.

b) Cabinet D

31. The wiring diagram of the cabinet D is shown in Figure 6. The charger's own circuit consists of 6 completely identical circuits with charging resistors and isolating diodes.
The voltage from the power supply E or the voltage from the vehicle's on-board circuits is either fed through the respective terminal block in the first case directly, in the other via the switch S1 to the charger's own circuits. Switch S1 thus enables the charger to switch off when operating independently from the vehicle's on-board circuit.
Diode D1 (KY715) prevents damage to the cabinet E rectifier if the operator connects the on-board circuit to the D-box with the incorrect polarity.
The P1 fuse protects the D cabinet and its circuits from overloading or improper handling.

32. In the first branch, the parallel connection of the resistors R2, R13 and the resistance R1 in the series with the bulb Z1 (12V / 1.2W) ensures a constant current of 450 mA ± 10% flowing during charging via a two-core cable with a K1 connector to the batteries cabinets. The brightness of the bulb indicates the charging of the power supply.

33. The D2 to D7 diodes protect the battery packs from reversing the original wires on the terminal panels of the E and D cabinets. At the same time, these diodes prevent the flow of current between the cabinets when the power supply is interrupted from the power supply or from the vehicle's on-board circuit.

5. Using the charger

34. The E and D cabinet assembly is used to charge the battery packs of the RF-10 radio station from a 220 V +20% / -15% mains voltage. When charging the battery packs from the vehicle's on-board circuit, only the D cabinet is used.

a) Charging from the mains

35. Connect the boxes E and D with four screws. The terminal box D marked "24V ⎓" is connected by a two-wire cable with the terminal box E marked "24V ⎓ / 3A". A current of 220 V is supplied to the mains lead of the E box labelled "220V / 50Hz" with a cord.

36. Attach the cables to the cabinet terminals by plugging them into the battery packs for charging (Figure 7). With the S1 switch on the front panel of the E-box, turn on the charger. The warning light bulb on the front panel of the cabinet E and the signalling bulbs on the front panel of the D cabinet belonging to the individual charging circuits are illuminated. The bulbs light up only on the circuits where battery packs are connected.

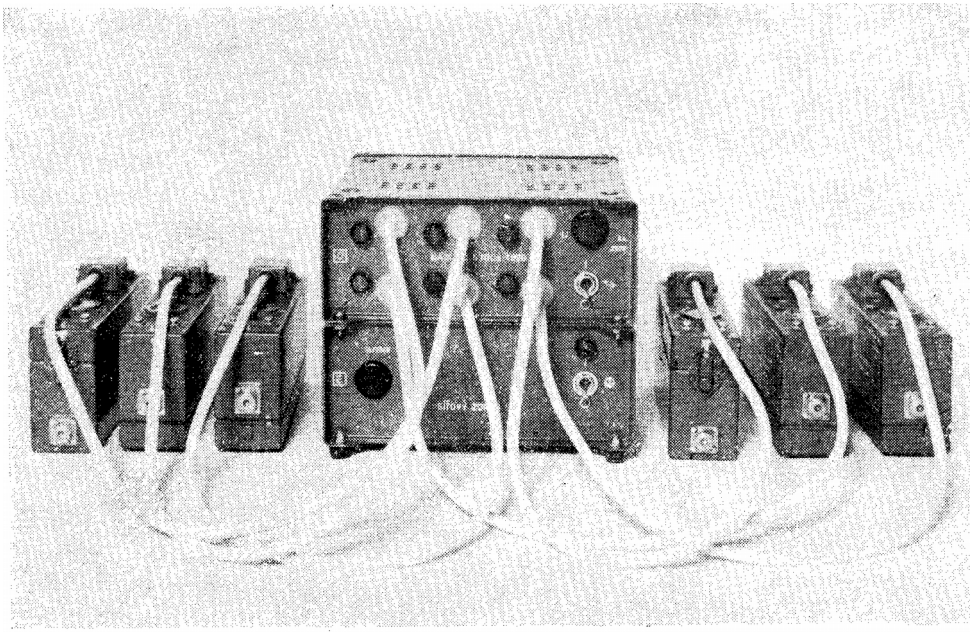

Fig. 7. Connect the battery packs while charging

37. The size of the charging current, depending on the number of connected battery packs when charging the charger from the 220 V mains, is shown in Table 1.

Table 1

Number of connected battery packs	1	2	3	4	5	6
Charging current (A)	0.470	0.458	0.450	0.440	0.435	0.400

b) Charging from the vehicle's on-board circuit

38. We use only D cabinet for this charging method.

39. Connect the terminal box on the rear panel of the box marked "20 to 30V" using a two-wire cable with the vehicle's on-board circuit so that the polarity is maintained. Connect the cables to the battery pack terminals D by inserting them into the battery packs to be charged.
Turn on the using the switch on the front panel to charge. The D lamp signalling bulb lights up on the circuits where the battery packs are connected.

40. The magnitude of the charging current, depending on the number of connected battery packs, when supplied with the +24V on-board system is shown in Table 2.

Table 2

Number of connected battery packs	1	2	3	4	5	6
Charging current (A)	0.450	0.449	0.448	0.446	0.444	0.440

6. Maintenance and storage

a) General provisions

41. The charger should be kept dry and clean, not subject to weathering, humidity and excessive vibration.
When charging is complete, make sure that the switches of both boxes are in the "○" position.
The terminals must not be disconnected by pulling the cables.

b) Maintenance

42. After each use and in park days, the basic treatment of the kit should be done as follows:
1. Clean the D and E cabinets from dust and dirt.
2. Check for completeness, external condition, damage to the surface of controls and cables.
3. Check the function of both cabinets.

43. Charger serviceability can be verified:
1. Connect a known good battery pack.
2. Connect the 6V / 5W light bulb gradually to all charging circuits.
If the charging current flows through, the appropriate indicator bulb of the D cabinet will always illuminate, otherwise the connected 6V lamp will light up.

c) Technical Treatment No. 1 (TO 1)

44. Technical treatment No. 1 of the charger is performed once every quarter of a year in the normal mode of operation. If the charger has been in service for more than 7 days or if it has been stored for more than half a year, TO 1 is also carried out.

45. For technical treatment No 1, it is necessary to:
- perform basic treatment (Article 42);
- remove the top cover of the cabinet and remove dust;
- Check with an ohmmeter for wire integrity in all connecting lines and cables, especially when bending them near the panel outlet and the terminal;
- Examining and supplementing spare parts;
- plug in the cabinets and after 1 hour check the charging current in all circuits;
- Inspect individual components, all joints and cable forms inside. Remove wires with damaged insulation and damaged parts;
- Check the completeness of the charger accessories, repair and replenish them.

d) Storage and transport

46. The charger kit must be stored in dust-free environments without chemical influences and mechanical vibrations at a relative humidity of

75% and at a minimum temperature of -20 ° C and maximum +50 ° C. During storage, routine maintenance is required. Technical treatment No. 1 is done once a year.

47. The charger kit can be transported by all means of transport. The kit is transported and stored in a cardboard package.

7. Troubleshooting

No.	Fault	Cause	Removal method
1	**2**	**3**	**4**
1	Box E turned on, bulb is off, cabinet bulbs D are not lit, battery packs are connected	a) Faulty fuse b) Faulty power cord c) Faulty switch d) Defective transformer	a) Replacement of the fuse b) Changing the cord c) Replace switch (BO) d) Replacement of the transformer in the workshop (BO)
2	Enclosure E on, bulb not illuminated, cabinet bulbs D lit, battery packs connected	a) Defective bulb b) Faulty resistance R1 33Ω	a) Bulb replacement b) Replacement of resistance in the workshop (BO)
3	Enclosure E on, warning light on, no bulb on cabinet D lit.	a) Wrong connection of "24 V === / 3A" terminals of both boxes b) D1 to D4 faulty diodes	a) Tightening, replacement of connecting conductors b) Workshop Repair (SO)
4	Enclosure E on, battery packs connected, some of the bulbs on cabinet D are not illuminated	a) The source connector of the appropriate charging branch, the cable or the source of the cabinet has no contact	a) Clean or loosen the connector contacts

No.	Fault	Cause	Removal method
1	**2**	**3**	**4**
		b) Interrupted battery pack fuse c) Faulty bulb of the branch d) Faulty diode in the appropriate branch	b) Verification by replacing the battery packs is not a fault in the charger c) Light bulb change Diode Replacement (SO)
5	When operating from the vehicle's on-board circuit, none of the bulbs D of the cabinet are lit. Other deficiencies when operating from the on-board circuit of vehicles are the same as those listed under No. 4	a) Faulty power cord, poor cable connection to the terminal board b) Blown fuse box D c) Faulty switch d) Faulty diode D1	a) Check the supply cable and terminal box, replace the cable b) Fuse replacement c) Replacement of the switch (SO) d)Diodes Replacement (SO)

Note. Data in parentheses column 4 (BO, SO) indicates the degree of repair into which the fix falls.

CHAPTER 2
CONTROL EQUIPMENT KZ-10

1. Basic technical data

48. The control device serves to check the parameters of the RF-10 radio station. It allows the measurement the receiver's HF sensitivity, the output power of the transmitter, the radio station's power consumption, and the power supply voltage. In addition, other DC voltages can be measured up to 10 and up to 30 V.
The control device KZ-10 is used in the Technical Treatment No. 1 and 2. The control device can be operated in conjunction with the radio station directly and during operation if it is necessary to verify the parameters of the radio station (Figure 8).

49. Frequency band:
- the sensitivity measurement is performed at a frequency of 45.100 MHz;
- Power output measurement can be performed on any channel in the band 44.000 to 53.975 MHz.

50. The RF-10 radio station current consumption is measured in a range up to 1A.

51. DC voltage measurement is carried out in the range of up to 10 V and up to 30 V.

52. The control device KZ-10 is supplied from the battery pack of the radio station, the nominal value is 6V, with a minimum of 5.0V and a maximum of 7.8V.

53. Weight and dimensions:
- the weight of the KZ-10 control device is about 0.65 kg;
- Dimensions of the KZ-10 own cabinet is 178 x 64 x 96 mm;
- the weight of the control device in it’s package is 1.5 kg;
- the dimensions of the inspection device in the package are 104 x 224 x 215 mm.

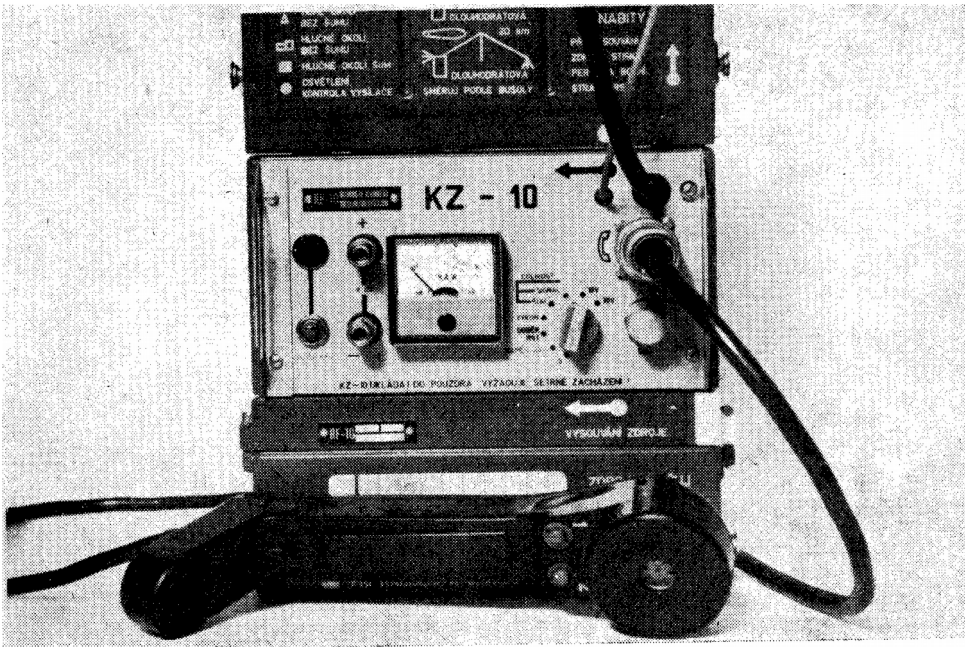

Fig. 8. The KZ-10 control device connected to the RF-10 radio station

54. The kit of the KZ-10 control device consists of:
- control device cabinet;
- 2 measuring cords;
- transport packaging;
- a bag;
- tightening strip;
- record book;
- technical sheet;
- identity Sheet;
- a list of items in the set.

2. Construction

55. The KZ-10 control device is designed with minimal dimensions, clear layout of controls and easy connection to the RF-10 radio station and battery pack.
It is placed in a cabinet welded from a sheet of aluminium alloy. The footprint of the cabinet is identical to the footprint of the RF-10 radio station.

The front panel is attached to the box by four screws. The front panel controls are protected by two handles located on the shorter sides of the front panel. The connection of the front panel with the cabinet is not waterproof.
A brief instruction manual for the control device is located on the back of the cabinet.
The top and bottom of the cabinet are provided with connectors and pins to connect the control device between the RF-10 radio station and the battery pack.

a) Front panel

56. The front panel of the control device is made of aluminium alloy sheet. All components of the device are mechanically connected to the front panel and can be removed with the panel from the cabinet.

57. The front panel contains control and connection elements, a meter, the AF and an RF cable are passed through the panel. For clarity, the colours indicating the controls match the colours of the tolerance fields on the scale of the meter.
The layout of all the control and connection elements of the panel is shown in Figure 9.

58. The electrical circuits of the control device are located on two printed circuit boards (Figure 10).

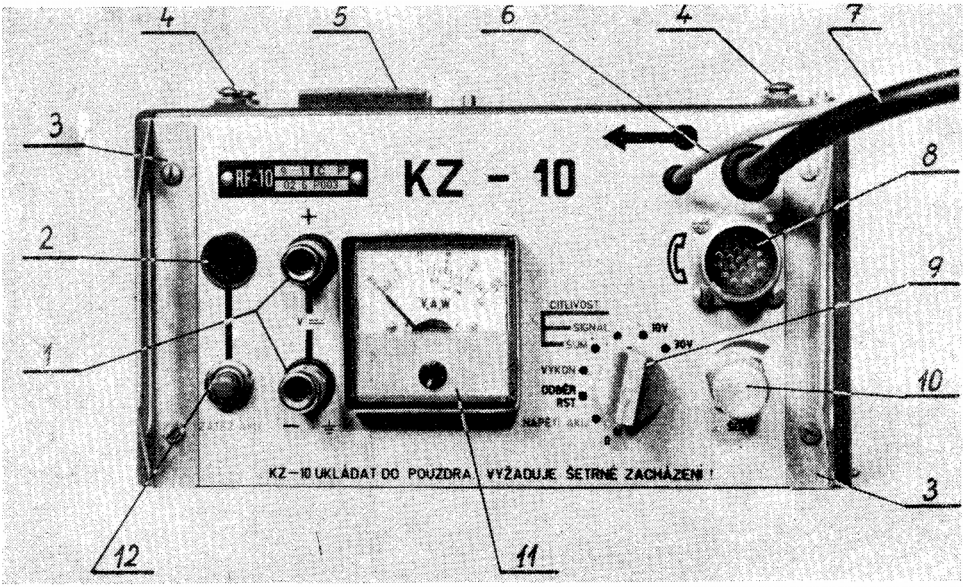

Fig. 9. Front panel of the control unit KZ-10

1 - terminals; 2 - bulb "BATTERY LOAD"; 3 - protective handles; 4 – locating pins; 5 - power connector; 6 - coaxial cable; 7 - 19-pin connector cable; 8 - 19-pin connector for connecting the handset to a radio station; 9 - function switch S1; 10 - potentiometer for setting AF level; 11 - meter; 12 - button S2 "BATTERY LOAD"

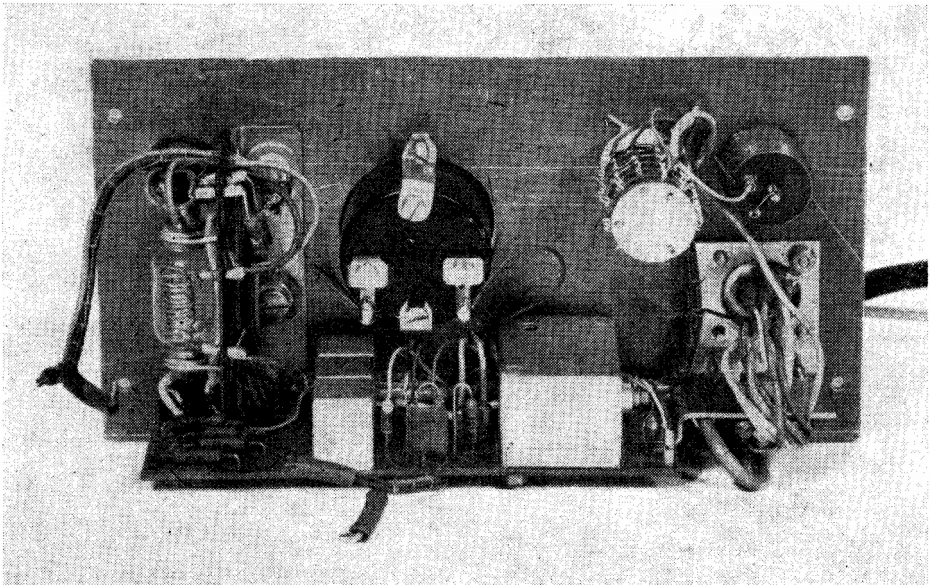

Fig.10. Component placement inspection equipment

b) Cables

59. Connecting a 19-pin RF-10 radio control device provides the same cable as the radio handset cord.
60. A 3 mm coaxial cable with a characteristic impedance of 50Ω, with a BNC connector, connects the control device with the antenna connector of the radio station.

61. Two measuring cords ending with banana plugs are supplied with the control device for voltage measurement.

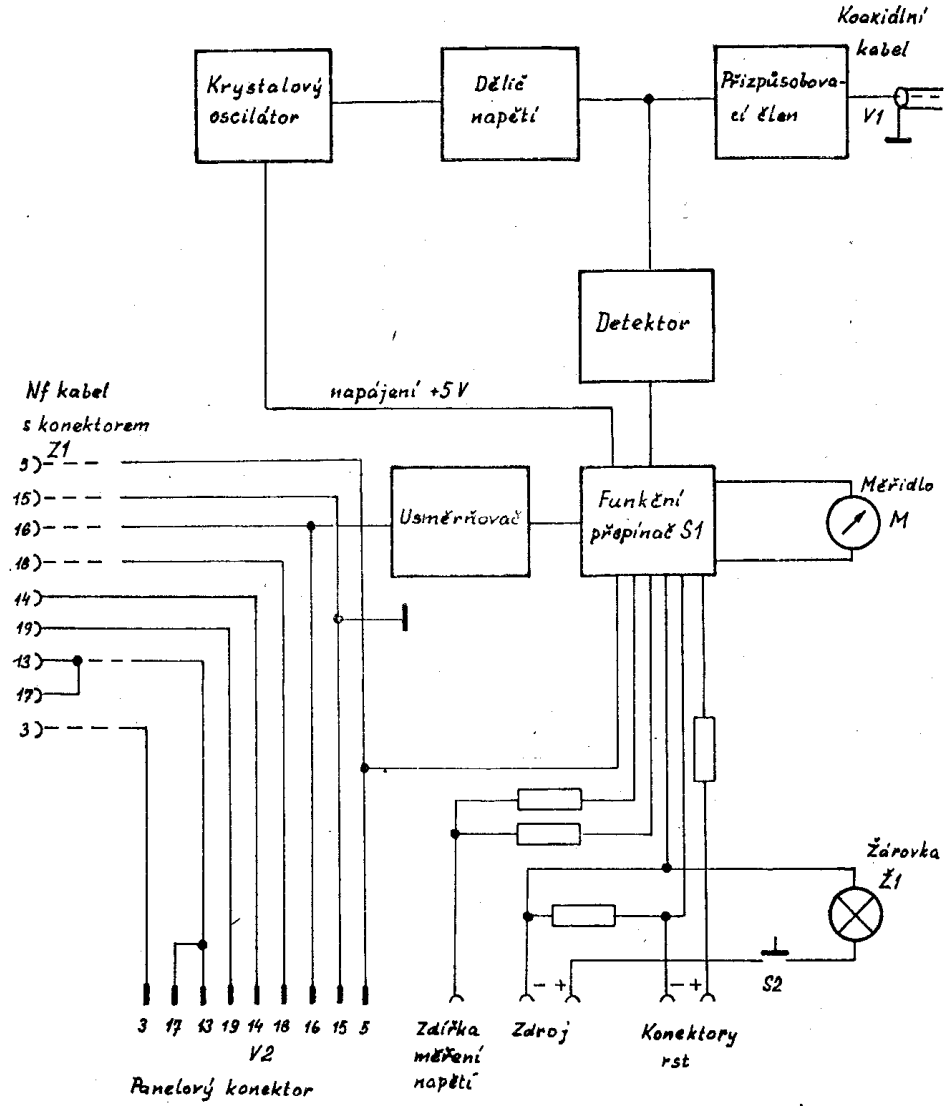

Fig.11. Block diagram of the control device

3. Principle of Operation

62. The principle of the operation of the control device is shown on the block diagram (Figure 11)

63. The main part is a crystal oscillator, which delivers voltage across the voltage divider and the matching member of a corresponding voltage level of about 0.5μV, at a frequency of 45.100MHz by coaxial cable to the antenna connector of the radio station under test. The noise from the radio station output is fed via the cable from the Z1 connector (contact 1b) to the rectifier. The output voltage of the rectifier is connected via a function switch S1 to a meter that evaluates its power level.

64. The RF output power of the radio station transmitter is fed from the antenna connector on the front panel of the radio station by a coaxial cable through the adapter member and the detector load in the KZ-10. The output voltage of the detector with function switch S1 is fed to the meter for measuring the power output of the radio station.

65. When measuring the voltage of the battery, the positive pole, i.e. the positive pole for the connection of the radio station, is fed to the meter by means of the functional switch S1 of the control device via the dropper resistor, where the power supply voltage is read off on the scale when the radio station is switched off or on.

66. In order to assess the state of the power supply itself even when the load is applied, the light bulb Z1 (6V, 15W) is connected to the power supply by the S2 button and lights up. The current flowing through the bulb loads the battery pack, and the drop in the meter readings can be used to judge the state of the battery by the discharge rate.

67. For measuring radio station current, there is a resistance between the source pole and the radio station. The voltage drop on this resistor is fed via the function switch S1 to the meter, the scale of which is calibrated in the flowing current.

68. The Z4 "+" terminal for voltage measurement up to 10 volts or 30 volts is connected to the meter with scales up to 10 and up to 30 volts via the appropriate dropper resistors.

4. Circuit description

69. The control device circuits are designed so that the operation is simple and the device functions reliably. The wiring diagram of the control device

is shown in Figure 12. The measurement accuracy of the control device complies with the requirements of Technical Treatment No. 1 (TO 1).

a) Oscillator & damping member

70. The oscillator of the control device works in connection with a common collector (the so-called Clapp connection) and is controlled by a crystal with a frequency of 45.100MHz. The exact frequency can be achieved by changing the capacitor C2 value. In order for oscillator frequency stability to be better, the oscillator is powered from the +5 V stabilized circuit via a filter member from the radio station. In addition, the voltage is supplied through choke T11, capacitor C1 and C5, contact 5 of section C1 of selector switch S1, cable and 19-pin connector (contact 5).

71. The oscillator is fitted with a KF525 silicon transistor. Capacitors are ceramic, TR 191 resistors.

72. The output voltage level is provided by an attenuator of approximately 93 dB, consisting of resistors R3 to R10 (type TR 191), corresponds to the typical sensitivity of the radio station, i.e. 0.3 µV.
The load rejectors for measuring the performance of radio stations R13 and R14 represent an increase in total attenuation from the output of the oscillator to the 96 to 97 dB. The output voltage of the control device is precisely set by potentiometer R18.

73. To achieve high attenuation and prevent undesired radiation (oscillator-to-connector voltage transfer), the oscillator is placed on a special plate in the shielding cover. On the other plate, the attenuator member is also shielded by the cover.

74. The output voltage (signal or noise) rectifier is connected from the radio frequency amplifier via the potentiometer R22, the S1 switch (section a1, 4 and 5) to the meter.

75. The output voltage (signal or noise) is fed to the rectifier from the RF station amplifier via the 19-pin connector 16 of the control board plate. Resistance R15 is the load resistance for the AF output of the radio station. The temperature dependence of the rectifier (diode D1) is compensated by the D2 diode. The C8 capacitor is a filter. The resonant noise level is set at position 4 of the S1 ("SUM") potentiometer R22 to the full deviation of the meter.

b) Detector and load

76. The RF transmitter's RF power is fed through the coaxial cable to the R11 to R14 resistors, which impose a load on the impedance 50Ω and act as a divider of the RF output voltage of the radio station. The voltage reduced by about 6 dB against the input of the control device, proportional to the power of the radio station, is detected and via the resistor R17, the switch S1 (section a1 contact 3) is fed to the meter. The resistance value R17 determines the meter displacement so that the mark corresponds to the power of the transmitter 1 W.

77. Adaptation and load are resistors R11 to R14 (TR 181, 51 Q / 1 W). Detector D3 is fitted with silicon diode KA206, capacitor C7 is ceramic. The detector is located in the shielding cover.

c) Radio station power measurement circuits

78. The radio station’s current consumption is measured by means of a voltage drop on the resistor R23 / 0.2Ω connected between the "-" poles of the source and the radio station so that the "-" pole of the meter is switched by the S1 section b1 by the contact 2 with the "-" pole of the source, the "+" pole of the meter is connected to the "-" pole of the radio station. In the "1" position of the S1 switch, the "+" pole of the meter is connected to the "+" pole of the power supply.

79. In order to check the voltage of the battery pack itself at load without the connection of the radio station, the load is represented by the bulb Ž1 6 V / 15 W, which is connected to the source by the push button S2.

d) Voltmeter

80. The control device can measure the external voltage in two ranges. Socket "-" Z5 for voltage measurement is connected to the negative pole of the power supply and via contacts 6 and 7 of the switch S1 of section b with the negative pole of the meter.

81. The "+" Z4 voltage measuring socket is connected via the R19 / 39.2kΩ resistor and the contact 6 and the S1 switch with the positive pole of the meter when the switch is in the position up to 10V.

82. For measuring up to 30 V, the meter is connected via the contacts 7 of the switch S1 of sections a, b to the sockets Z4, Z5 via R20 / 4.22 kΩ and R21 / 115 kΩ. The internal resistance is 4 kΩ / 1 V.

e) Switch and connectors

83. Switch S1 switches the individual circuits of the control device according to the selected function. In the "○" position, the meter is short-circuited through the contacts of the o switch section of the switch, so that its needle is protected during transport.

84. Switch S1 is 12-pole with three sections and one switching contact.

85. The NF 19-pin connector on the cable connects to the radio station panel instead of the handset. In order to be able to work exceptionally with the radio station, the contacts of the connector are connected to the corresponding contacts of the corresponding connector on the front panel of the control device, where the handset can be connected, and if the antenna is connected to the radio.

5. Use

a) Connection

86. The control device is provided with pins and connectors on the top and bottom of the cabinet similar to the radio station and the battery pack.

87. Using the 4 pins in the hinges on the bottom of the radio station, slide the control box into the bottom of the radio station so that the connector at the bottom of the radio station cabinet is on the same side as the connector on the top of the control cabinet wall. Pressing both boxes and moving the control device in the opposite direction of the arrow indicating the direction of ejection will lock the pin of the control device into the lock spring hole on the bottom of the radio station. Control cabinets and radio stations are mechanically connected, the source connectors are connected.
In the same way, we connect the battery pack to the bottom of the control device.

88. Connect the 19-pin cable to the radio station connector instead of the handset. We connect the handset to the "" connector on the control panel.

89. Connect the coaxial cable with the connector to the radio antenna panel wire antenna connector. The complete RF-10 radio station assembly, the KZ-10 control device and the battery pack are shown in Figure 8.

b) Checking the radio station (Figure 9)

aa) Checking the battery

90. Switch the S1 switch (9) of the control device to the "BATTERY VOLTAGE" position. The radio station is off. The meter (11) shows the voltage of the battery pack. Pressing the "LOAD" button (12) loads the battery packs with a current corresponding to about twice the maximum specification of the radio station, the light bulb "LOAD" (2) illuminates. The voltage of the battery pack is 6 V. The freshly charged source has a higher voltage.
The meter data must always be within the red tolerance field boundaries. If the meter falls below the lower limit of this field, the battery pack must be recharged.

bb) Check radio station consumption

91. Switch the control switch S1 (9) to "RST OFF". We switch the mode switch to the "▄" position. The meter must show 230 to 300 mA. When switching the handset on the transmitter, the meter must be between 750 and 950 mA. If the radio mode switch switches to "Δ" or "□", consumption is 80 to 150 mA. Deviation of the hand of the meter is unstable (oscillating) The radio station is operating in an intermittent reception but it is necessary to check on the handset whether the radio station receives any signal.

cc) Check the sensitivity of the receiver

92. The radio station mode selector switches to the "▄" position that the radio station receives and is tuned to the frequency listed on the control panel (45.100MHz). Switch S1 of the control device to the "SHUT" position. The needle of the meter is set by the "US M" knob to full

deflection. Switching the S1 switch to the "SIGNAL" position will cause the meter to drop to a blue tolerance field. Before testing, make sure that a strong transmitter is not transmitting at this frequency.

dd) Checking the performance of the transmitter

93. Switch the radio station mode switch to one of the positions, except for the off position, switch the S1 control switch to the "POWER" position. Press the handset PTT button, to switch the radio station to transmit. The meter indicator should point to the green field. This check can be performed without connecting the control device between the radio station and the battery pack, without changing the handset from the radio station panel connector to the KZ-10 control panel connector. Just plug the connector into the coaxial connector on the radio station panel. The KZ-10 can therefore be used to measure RF power of the RF-10 radio independently.

94. If any of the checks fail, pass the RF-10 radio station to more accurately verify the parameters with the ZZ-10 test device.

c) Voltage measurement

95. The KZ-10 can be used as a voltmeter for DC voltage in the range of 0 to 10V or in the range 0 to 30V. Measured voltages are connected to the terminals (1), according to the polarity indicated, and are read on the respective scale of the meter.
The measuring ranges are selected by the S1 switch. The KZ-10 control devices are supplied with terminating banana cords.

96. Disconnecting the control device is performed in a reverse manner to the connection. However, it is first necessary to switch off the mode switch of the radio station and switch the control device switch S1 to "○".

6. Maintenance and storage

97. Keep the control equipment dry and clean. The device is not waterproof! The control device must not be exposed to intense heat and solar radiation, dust, rain, shocks and corrosive environments.

98. The contacts and connectors must be kept clean. The device should be cleaned with a dry cloth or brush. When cleaning, both the radio station and the battery pack must be connected.

99. Connectors out of service must be protected by protective caps. When not working with the control device, switch S1 to switch to "○" (off).
100. The cables must not bend to a sharp angle, and the two connectors must not be disconnected by pulling on the cable.

101. To facilitate the connection of the 19-pin connector, it is necessary to lubricate threads, preferably with frost-resistant grease every 3 months. To improve the function of the hinges for the connection of the source and the radio station, it is necessary to lubricate the edges of the holes and the hinge pins with frost-resistant grease every 3 months.

7. Faults during operation

a) General provisions

102. All faults of the KZ-10 Inspection Device must be judged with the verified RF-10 radio station in accordance with the fault table. Check the radio station with another KZ-10 control device or ZZ-10 test device. More serious defects should be removed in the workshop for medium or overhaul of RF-10 radio stations.

b) Defects and how to remove them

No.	Fault	Cause	Remedy
1	**2**	**3**	**4**
1	With the proven source in the S1 "BATTERY VOLTS" position, the meter does not show and the bulb does not light after pushing the S2 button	Improper or dirty connector at the bottom of the control device	Re-installing the battery pack, cleaning the connector, In case of damage, replacing the connector in the workshop
2	As with fault 1, the meter does not indicate but the bulb is on	a) Faulty switch S1 b) Faulty meter c) Other defect within the control device	a), b), c) Replacement of faulty components in the workshop

No.	Fault	Cause	Remedy
1	**2**	**3**	**4**
3	As with fault 1, the meter indicates but the bulb is off	a) Defective bulb b) Faulty S2 button	a) Replace bulb b) Replace the button in the workshop
4	With the verified radio station switched to the specified frequency and in the "SIGNAL" position of the S1 KZ-10 switch, the meter deflection does not decrease	a) Faulty coaxial connector b) Faulty coaxial cable c) Fault in the attenuator or oscillator	a) Changing the coaxial connector in the workshop b) Replace the coaxial cable in the workshop c) Repair of the KZ-10 control device in the workshop
5	With the verified radio station switched to transmit by the S1 switch in the "POWER" position, the meter does not show that the control device does not show faults 4a) and 4b)	Fault in load resistors, detector or switch S1	Replace defective parts in the workshop

CHAPTER 3
BATTERY CABINET

1. General provisions

103. The battery cabinet with NiCd 4000 battery cells is designed to power the RF-10 radio station.
The battery pack is made of aluminium alloy sheets. The interior of the cabinet is provided with a varnish that prevents corrosion in the event of electrolyte vapour leakage from the battery cells.
The battery pack consists of its own cabinet and lid. The lid is screwed to the bottom with 2 M4 screws (Figure 13).
Dimensions: 191 x 84 x 42 mm.
Weight with battery cells 1.18 kg.

2. Construction

a) Own cabinet

104. The base of the cabinet (Figure 14) forms the carrier portion for the battery cells. A rubber fitting is placed on the lower inner surface, which defines the tolerances of the battery cells in height. On the side walls inside the cabinet there are two mouldings made of polyethylene. These mouldings form chambers for the individual cells.

105. The battery cells are connected in series using wires soldered to the cell solder points. The terminals of the cells are connected with the "+" and "-" conductors. These sleeves are inserted and secured against ejecting in one of the polyethylene mouldings.
The second moulded polyethylene moulding does not have holes for the hollows, but full pins are provided to prevent misalignment of the source lid.

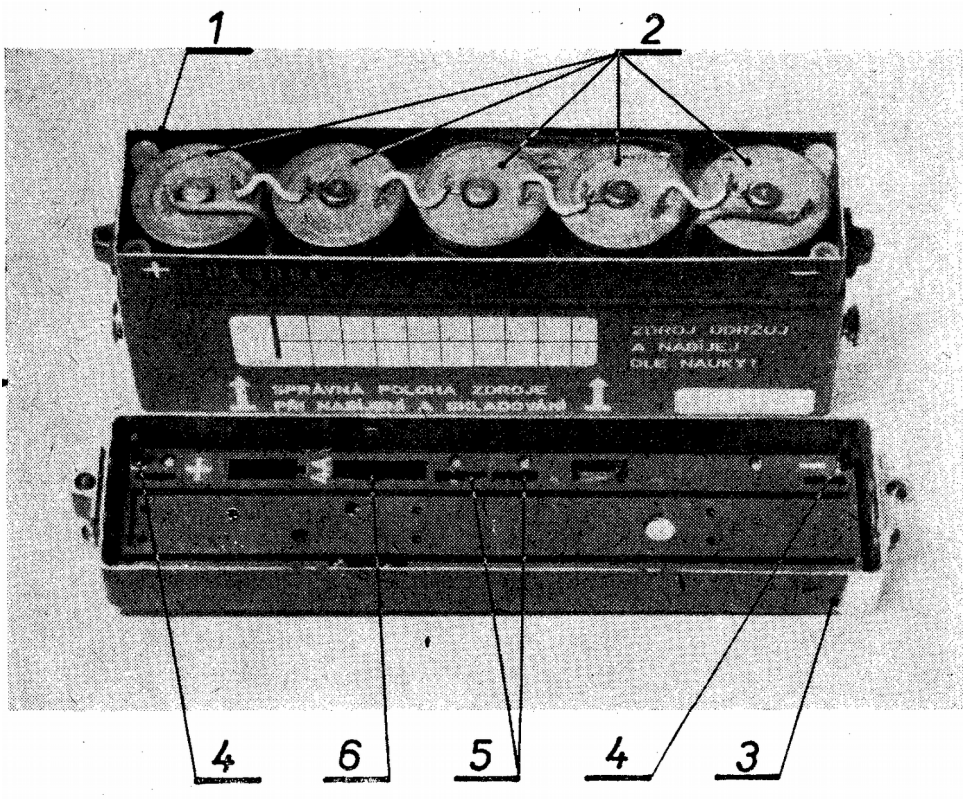

Fig.13. Open battery pack with battery cells
1 - The box of resources; 2 - battery cells; 3 - battery pack cover; 4 - connecting pins; 5 – connector; 6 - Fuse wire area

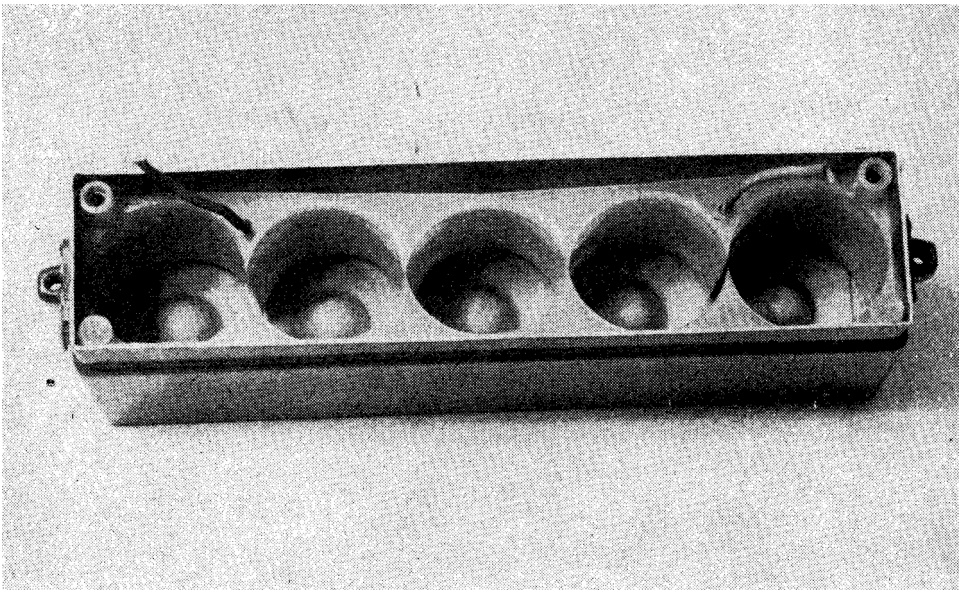

Fig. 14. Empty battery pack

106. On the narrower sides outside the box, two aluminium alloy mouldings with M4 threads are attached to the lid. Under these mouldings, steel pins are fitted to attach the strap hinges to when wearing a radio station.
The front panel provides instructions for maintaining and charging the power supply. There is also a self-adhesive label attached for the purpose of charging cycle records.

b) Cabinet lid

107. A moulding that carries the connection pins, a fusible fuse and the push button contacts of the button is fitted into the inner part. There is a circumferential rubber seal between the mild and the lid of the power supply.
The outer surface of the lid is equipped with 4 locating pins to connect the battery pack to the radio station housing. Furthermore, a locking clip is secured on this surface, which secures against the ejection with the pin on the radio. A 2-pole source connector is tapped on this surface and a rubber push button adjacent to it. Next to the button is a bulb viewfinder. Furthermore, there is a M22 x 0.75 thread hole on this surface, which serves to fit the vent.

On the narrower sides, two aluminium alloy mouldings are threaded in which the M4 threaded screws are mounted to secure the lid to the housing.
On the front is a mark for the ejection of the source.

3. Nickel-cadmium cells (Figure 15)

108. The power box is equipped with a 5 cell NiCd 4000 rechargeable battery consisting of five selected NiCd 4000 nickel-cadmium encapsulated cells. The electrode system of the cells is a positive and negative electrode. The electrodes are separated by a separator and rolled together in a tight coil.

109. The base of the electrodes is a perforated sheet on which a porous layer made of powder nickel is applied on both sides.
The pores of the positive electrode are filled with nickel, pores of the negative electrode by cadmium compounds. The electrolyte is a solution of potassium hydroxide contained in the pores of the electrodes and the separator.

110. The cell is constructed in a steel cylindrical housing that forms negative electrode. The cell is closed with a steel cap that is connected to positive electrode. A safety valve is built into the cap of the lid to allow gas leakage if the internal pressure in the cell exceeds the critical value. For ease of connection, the article is provided with spot-welded nickel-plated leads. The surface of the cell case is protected by a PVC jacket.

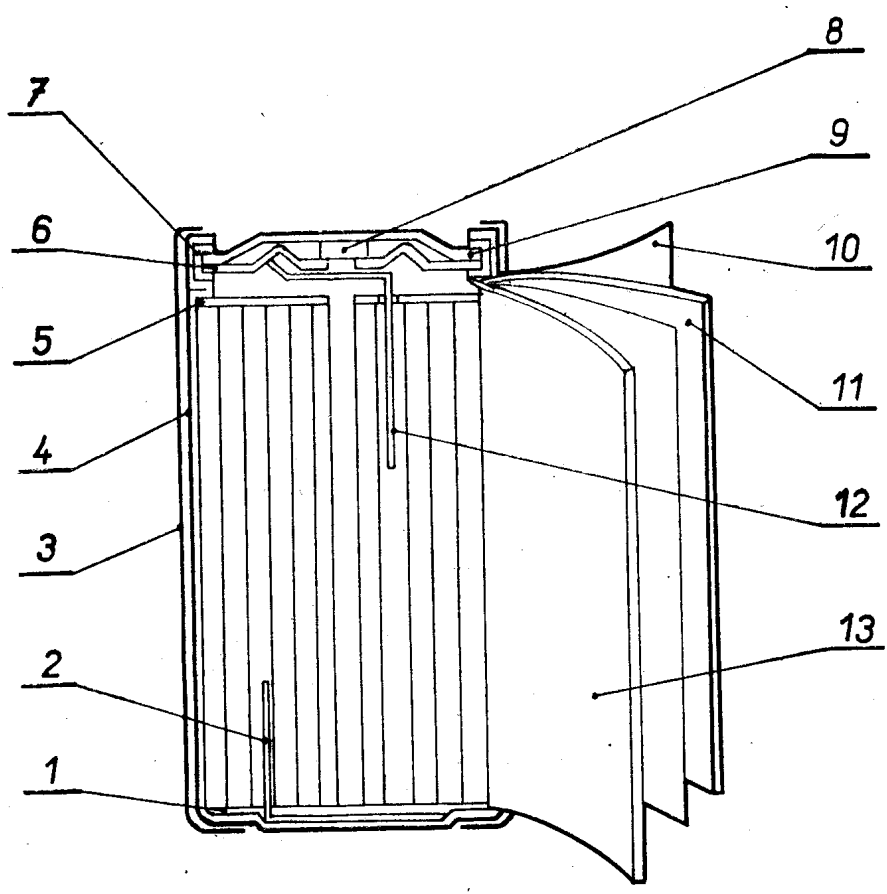

Fig.15. Section of NiCd 4000 accumulator cell
1 - PVC insulation; 2 - negative electrode outlet 3 - PVC jacket; 4 - plasp article; 5 - PVC insulation; 6 - lower case; 7 - seals; 8 - rubber seals 9 - valleys; 10 - separator pair; 11 - stop electrode; 12 - positive electrode outlet; 13 - positive electrode

111. When charging, the electrical energy supplied to the battery is transformed into chemical energy and accumulates in the active mass of the electrodes.

112. When discharging the counter electrode, the metal cadmium atom is converted to a divalent cation. In this case, 2 electrons are released, which pass through the outer current circuit to the positive electrode,

where the trivalent nickel ions absorb these electrons and become divalent cations. Movement of electrons through an external current circuit is actually an electric current that can perform a useful job, energy is drawn from the cell.
During charging, the energy is supplied by an external source, the direction of the current and the electro-chemical processes in the electrodes are the opposite. To achieve full charge of the cell at 4 Ah, you need to supply more power around 5 Ah. Excessive energy in the next charging process is converted into heat and the article is heated. This shortens its service life.
When overcharging, the electrolyte decomposes, oxygen is released on the positive electrode, negative hydrogen. These processes are only possible with open batteries. With closed batteries, releasing gases could cause an excessive increase in internal pressure and tearing of the cell shell. To prevent premature release of hydrogen during charging, the capacitive excess of the negative electrode must be secured against the positive electrode when the batteries are closed. Oxygen, generated on the positive electrode, is bound by a negative electrode, which simultaneously discharges it. That's why it can not be overcharged and hydrogen released.

4. Use

113. The accumulators are charged at a constant current in the range of 400 to 800 mA so that the total passing charge is 5.5 Ah. This corresponds to a charging time of 14 to 7 hours (at 800 mA). Charging can be done regardless of the charging status of the power supply. However, it is recommended to charge the batteries after they are fully discharged. This prevents unnecessary overcharging, which adversely affects their lifetime. The optimum ambient cell temperature when charging is + 20 ° C. In the battery pack, the charging temperature is higher due to heating. When charging "sources at higher temperatures, it is advisable to increase heat dissipation with sufficient ventilation. If more than one source is being charged at the same time, precautions should be taken to avoid heat build-up (separate sources at sufficient distances).

114. Articles with sintered electrodes have a greater self-discharge due to lower internal resistance. At elevated temperatures (above 20 °C), self-discharge significantly increases, at temperatures below 0 °C, it is very

small. Therefore, the charging source should not be exposed to elevated temperatures as far as possible (Figure 16).
When charging, the cells must not be in the cap position down. They can be discharged in any position at temperatures ranging from -50 °C to + 70 °C. Depending on the temperature, however, the capacity of the batteries varies (Figure 17).

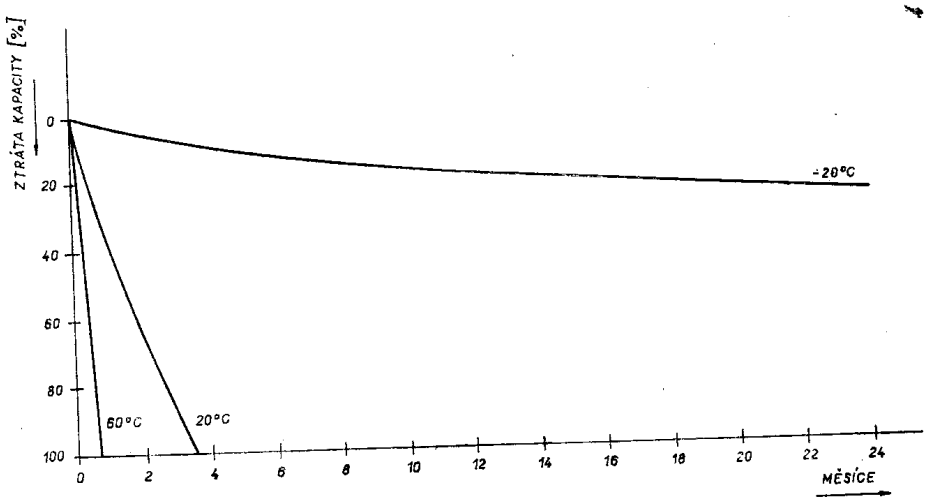

Fig.16. Self-discharge of accumulator cells

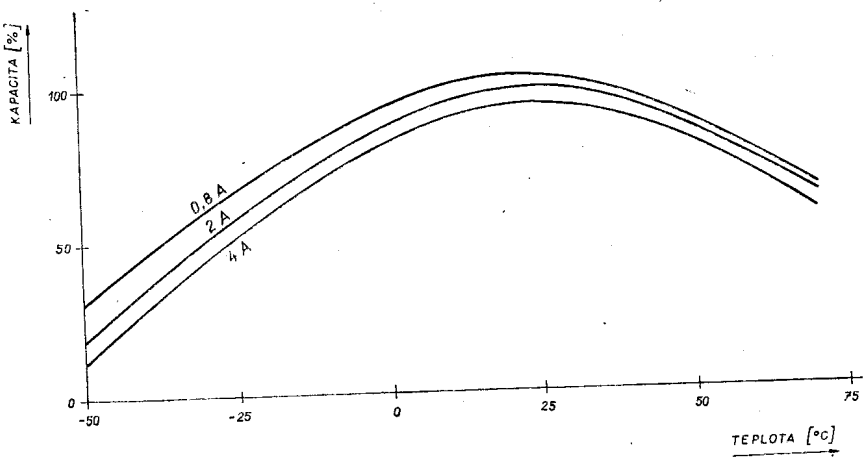

Fig.17. Typical capacities of the NiCd 4000 accumulator battery capacities at the discharging temperature and on various battery loads

115. The allowable lower cut-off voltage at discharge is 1,0V per cell per battery. Another discharge is inadmissible because then there is a rapid drop in voltage to zero. This last part of discharge does not bring any capacity gain and is different for individual cells (Figure 18). Thus, when several cells are connected in series, one will reach zero faster than the others, and from that moment on, its polarity will change.

116. Voltage measurement due to its tolerances and flat charging and discharge cycles can not be used to determine the cell and battery charge and charge status. The only option is direct test of capacity.

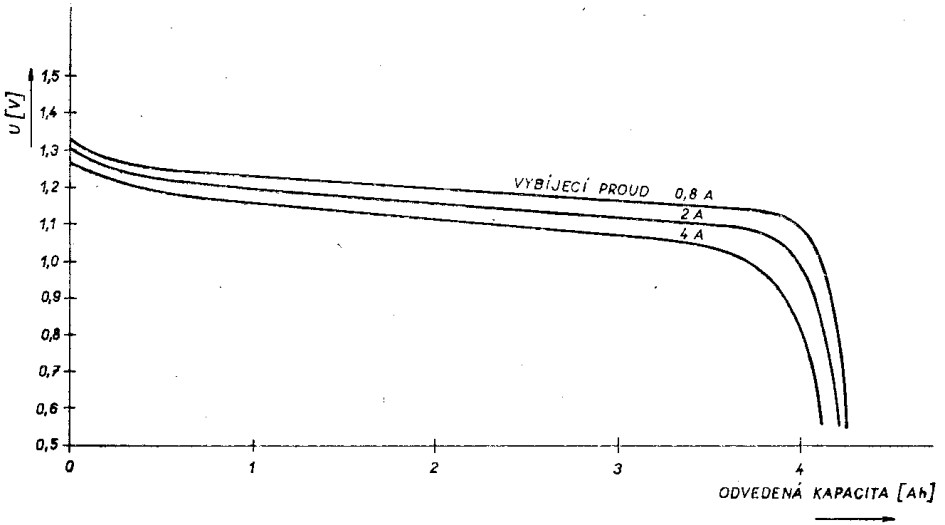

Fig.18. Typical discharge curves of NiCd 4000 battery cells at + 20°C and different discharge currents

5. Maintenance and storage

117. The battery pack connector must be protected by a plastic cover when it is not in use. Occasionally, it must be cleaned of dust and dirt.

118. If the battery pack fails, it is only possible to replace the fuse if the warranty period has elapsed.
Using the screwdrivers or the universal key supplied in the radio station kit, unscrew the two screws securing the lid of the battery pack and

carefully remove the lid. On the inside of the moulding cover between the "+" and "4 A" marks is the fuse box (Figure 13). Inside the lid, we disconnect the old fuse trap and connect a new fuse wire Ø 0.15 (ON 428 484 - ON 42 3831-31), which is supplied in the radio station kit in a box with spare parts marked "0.15".
The fuse wire must not be tensioned after switching on. Wire must be solder with the minimum amount of solder.

119. Store batteries if possible in dry and dust-free warehouses with a temperature of -5 to +20 °C, without sudden temperature changes at 50% relative humidity.
Stored accumulators are recharged after 2 and 3 months of storage.

6. Faults and how to remove them

No.	Fault	Cause	Remedy
1	**2**	**3**	**4**
1	The bulb marked "⏚" on the battery pack lid is pressed when the rubber button is pressed, the radio station is without power supply, with other battery packs the radio station is working	Dirty or damaged battery pack contacts	Clean or straighten contacts
2	The line marked "⏚" on the source lid is off, the radio station is working	Defective bulb or the test button in cabinet	Repair the battery pack in the workshop
3	The error has the same symptoms as fault No.1, the battery pack contacts are OK	a) battery pack fuse interrupted b) broken links of cells, faulty cell c) Cavity failure for lid connection	a) Repair the item under Article 118 b), c) Source box pass into the repair workshop

No.	Fault	Cause	Remedy
1	2	3	4
4	The bulb marked "⧺" on the cover of the cabinet is illuminated, the radio station indicates a low voltage of the power source even though the power was charged	One of the items is defective	Send the battery pack to the repair workshop. Replace the set.

CHAPTER 4
DATA TRANSMITTER CABLE

1. Basic technical data

120. The data transfer box is an optional accessory to the RF-10 radio station. Parameters of the data transmission cabinet correspond to telephone channels or information transmissions up to 600 Bd.

121. The PK2 telephone line or telephone set can be connected to the data transmission box. The radio station connects the cabinet with a 19-pole connector and a cable that supplies the cabinet from the radio station.

122. Dimensions and weight:
- dimensions in the shipping package 185 x 195 x 95 mm;
- the weight in the shipping container of 1.2 kg;
- box weight 0.95 kg.

123. Electrical properties:
- the output voltage of the radio station's amplifier at input voltage at "a-b" 0.35 V terminals is 0.25 to 0.35 V at distortion <= 10%;
- output voltage of the line amplifier - radio station at 0.775 V input voltage is 0.5 V;
- disconnect the amplifier voltage radio station - the 50mV input line at "a-b" terminals is 0.5 to 1.0 V at distortion <= 10%;
- Frequency transmission frequency - radio station or radio station - Driving: Drop at the edges of the 300 to 3400 Hz band must not be more than 3 dB with respect to the 1000 Hz frequency level;
- The maximum length of the telephone line with the PK2 cable is 500 m.

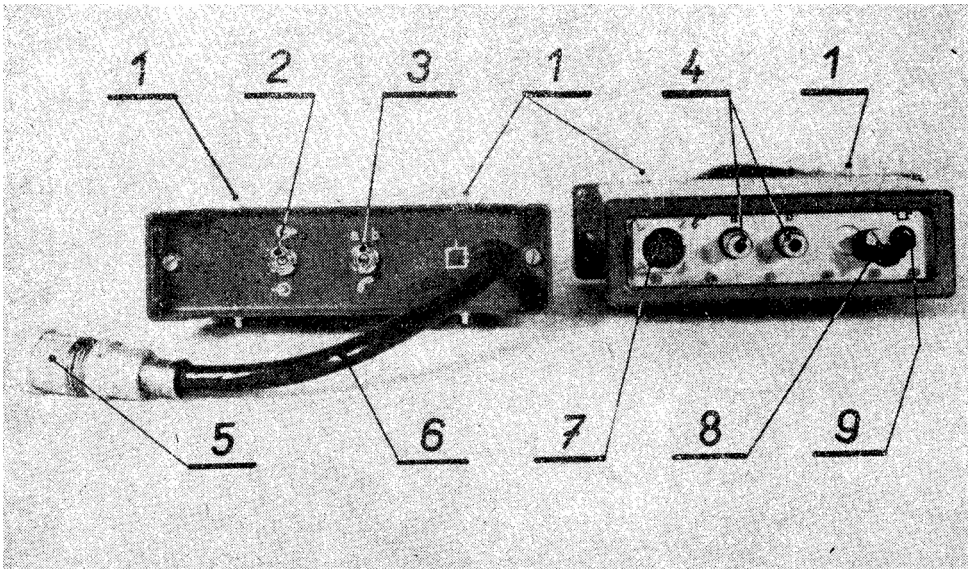

Fig.19. Data transfer box - front and rear panel
1 - pins; 2 - switch P501; 3 - Switch P502; 4 - line connectors; 5 - cable connector; 6 - connecting cable; 7 - panel connector; 8 - rubber stopper; 9 - jack for connecting a telephone device

2. Construction

124. The design solution is derived from the construction of the RF-10 radio station, one of the dimensions being the same. The chassis, the front panel and the rear panel form a welded structural unit made of steel sheet metal. This assembly is inserted into a box welded from steel sheet. Rubber seals ensure the water-tightness of the cabinet.
On the short sides of the cabinet are two threaded clips for the two screws on the cabinet panel, which attach the panel to the chassis.
125. The front panel is moulded from a steel sheet, two holes are used to connect it to the cabinet. Using the pins on the periphery of the panel, a data transfer box is attached to the RF-10 radio station.
There are two toggle switches on the front panel to switch between modes. The switches are marked with symbols embossed into the panel and filled with white paint (Figure 19).
On the front panel, the cable is approximately 20 cm long with a 19-pin connector for connecting to the RF-10 radio. The cable is marked with a radio station symbol.

126. On the rear panel, the 19-pin connector is marked with the "" symbol to connect the radio station's handset. The two "a-b" terminals on the rear panel are designed to connect the telephone line, a special telephone socket marked "☎" is intended for the connection of the telephone. This drawer is fitted with a non-removable rubber stopper.

127. In the lower part of the chassis, the four-screws secure the printed circuit board fitted to the data transfer box. The connection of the terminals and controls connectors is made by wiring with telium insulated cables.

3. Principle of operation and description of circuits

a) Principle of Operation

128. The principle of the data transmission box operation is shown in Fig. 20.
The main parts are an amplifier providing sufficient amplification of the signal from a radio station to a line, a limiter providing the signal transmission from a line to a radio station, a line transformer, and the switches P501, P502 that control the functions of the data transmission box.

129. With the switch shown in fig. 20, the line is connected via the transformer, switch P501, transducer, limiter, and P502 to the terminal No. 8 of the cable connector connected to the radio station (data input of the radio station). Thus, the signal transmitted by the radio station can be modulated from the line.
Additionally, switch P501 connects the radio station terminal 14 through the cable connector hollow to the panel connector of the box pin 14 and at the same time via the switch P502 to the handset housing panel connector pin 19 which, when the "RECEIVE-TRANSMIT" button is pressed, connects the radio outlets 14 and 19 of the radio set. The radio station is permanently switched to transmit.
In this case, the operator of the data transfer box does not use the handset. Attachment is possible by connecting the telephone device to a special connector on the rear panel of the cabinet.

130. If the switch P501 is in receive position "⊖" and switch P502 in position "a-b", then the signal from the output of the radio station amplifier mf passes through the radio station connector panel 10 and the data bus box connector via the amplifier, switch P501 and transformer into line. The switches P501 and P502 continuously connect the terminal of the radio station 19 to the housing panel terminal 14 and 19. The radio station can not switch to the transmission by an acoustic transducer connected to the case. Reception is possible either in the way specified in clause 129, or via an electro acoustic converter.

131. If switch P501 is in position "⊖" and switch P502 in electro acoustic "" position, the signal from the radio station, as in Art. 125, goes back to the line. The radio station can not be switched to broadcast by an acoustic transducer connected to the cabinet.

132. If the switch P501 is in the transmitting position "⊖" and switch P502 in electro acoustic "" position, the signal from the line passes through the transformer, switch P501 to the limiter input and from here to the switch 502. The signal is not connected and does not pass to the radio station. The switch 501 connects the terminal boxes 14 of the cable box and panel connector to the switch 502 of the cable and panel connector of the data transfer box 19. The electro-acoustic converter is thus fully connected to the radio station via the cabinet and can be operated and used by the radio station as it would be if connected directly to the radio station's panel connector.

b) Circuit description

133. The connection of the amplifiers and the limiter, the transformer, the protective diodes and the data precision box is shown in Fig. 21.

134. Transformer Tr 301 transforms the impedance of the line (600R) to a value suitable for the input of transistor T302 of the signal amplifier. Resistors R308, R309 and Zener diodes D301, D302 provide protection against over voltage from cabling. The C304 capacitor modulates the frequency characteristic.

135. The signal amplifier is two-stage, the T301 circuit is fitted with the KC508 transistor, the T302 circuit with the KC507 transistor which allows me to load the collector more.

136. The first stage of the amplifier is stabilized by the negative feedback loop (R301) and inhibits the current feedback of the emitter bonds T301 (resistor R304). The collector resistor is a variable resistor R303 (4.7 kO) to adjust the gain of the amplifier. Capacitor C302 limits the frequency transfer of amplifiers higher than 5 kHz.

137. The second stage is stabilized by negative current feedback (emitter resistance R307). When transmitter P501 is switched to receive, a transformer is connected to the transducer collector T302. The maximum output voltage at the input voltage of the amplifier 50 mV determines the gain of the whole amplifier ie about 30 dB. However, the variable resistance is set to the output voltage of the conductor so that the input voltage of the amplifier 50 mV corresponds to the output voltage in the 0.7V line.

138. When transmitting a radio station, the signal from the line is attributed to the resistors R312, R313, which adjust the input voltage level to the limiter. The resistor R312, along with the C307 capacitor, participates in the semiconductor processing of the signal. Both resistors together with diodes D303, D304 form the protection of integrated circuit OI301 (type MA 3005) against over-voltage from a line not captured by diodes D301, D302.

139. The limiter connection is taken from the modulation amplifier part (QN 35 044) of the RF-10 radio station. The limiter ensures that even very fast input voltage changes (overshoots) do not pass to the radio station and the modulation pattern will be within the specified limits. The variable resistor R320 sets the size of the output voltage of the limiter, the variable resistor R315 sets the limit symmetry.

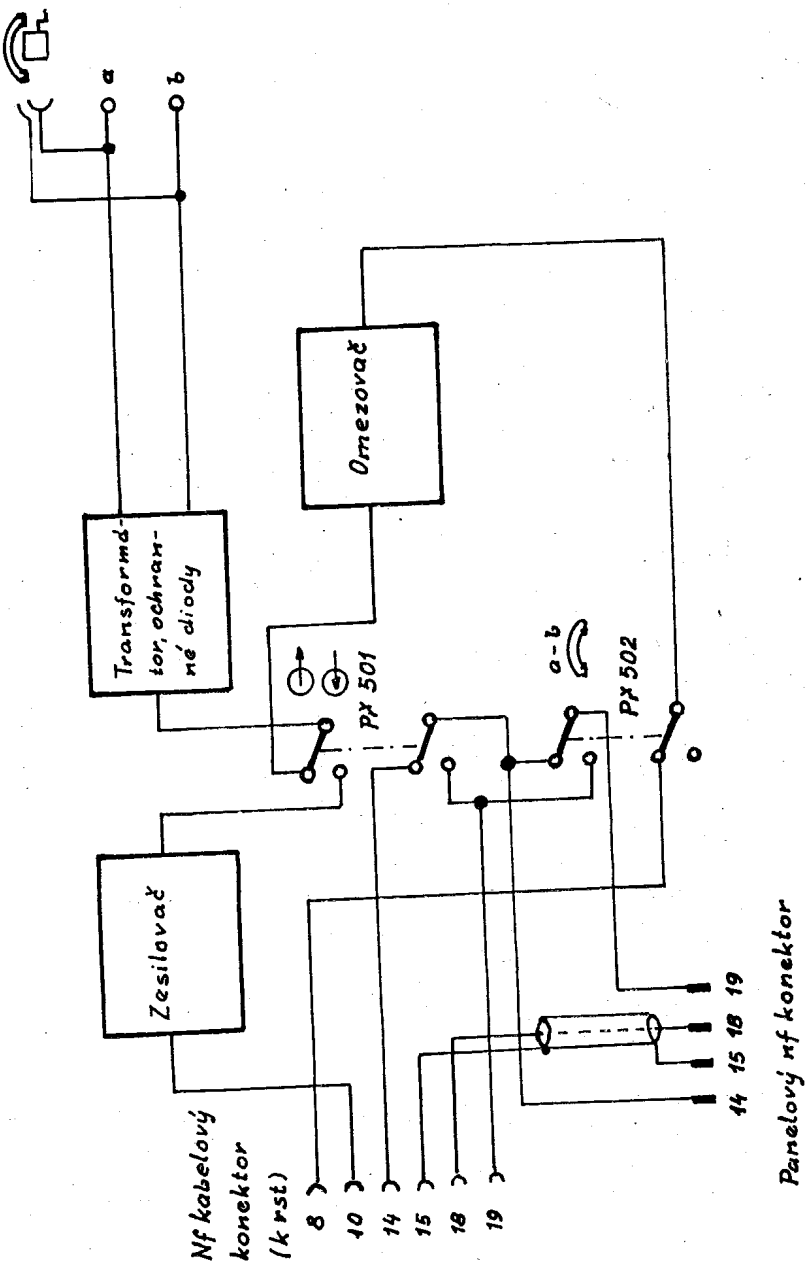

Fig.20. Block diagram of the data transmission box

140. The limiter in the data transfer box should be set so that at a voltage of 350 mV at the "a-b" line terminals it moves with respect to the tolerances and modulation strokes of the various radio stations within the range of 2.5 to 7 kHz. The maximum stroke of radio stations should be in the range of 5 to 10 kHz. These values apply to 1 kHz line voltage.

141. In terms of bandwidth, the amplifier and limiter are designed to transmit frequencies of 300 to 3400 Hz with a decrease of no more than 3 dB relative to the 1 kHz frequency.

4. Using the cabinet

a) Preparation for operation

142. The data transmission box allows for the use of a radio station in conjunction with a telephone line, for telephone calls, requiring the attendance of a radio station or for transmitting information.

143. Remove the data transfer box from the shipping container. Insert the pins of the cabinet panel into the openings of the radio station panel so that the cabinet's description of the cabinet is readable from one side (the cabinet can be mounted in either a "below" or "above" radio mode in two ways). We secure the connection with the strap supplied with the data transfer box (Figure 22).

144. Disconnect the acoustic transducer from the radio station and place the cable box connector in its place. Connect the electro-acoustic converter to the panel connector on the back panel of the data transfer box. We will connect the telephone lines to the "a-b" terminals. You can connect a telephone to the socket marked "☎" on the back panel of the cabinet.

b) Operation

145. Turn on the radio station, switch the data transfer box to "G-" and the acoustic converter to the "a" position. The radio station can normally be operated as if the cabinet has not been connected. If the opposite station or a party participant requests a telephone call or transmission of data from the radio circuit to a line, switch the data transfer box switches to the

receive position "⊖" and the line "a-b". We monitor the transmission via an acoustic transducer or telephone set, but the radio station can not be controlled by an acoustic transducer.

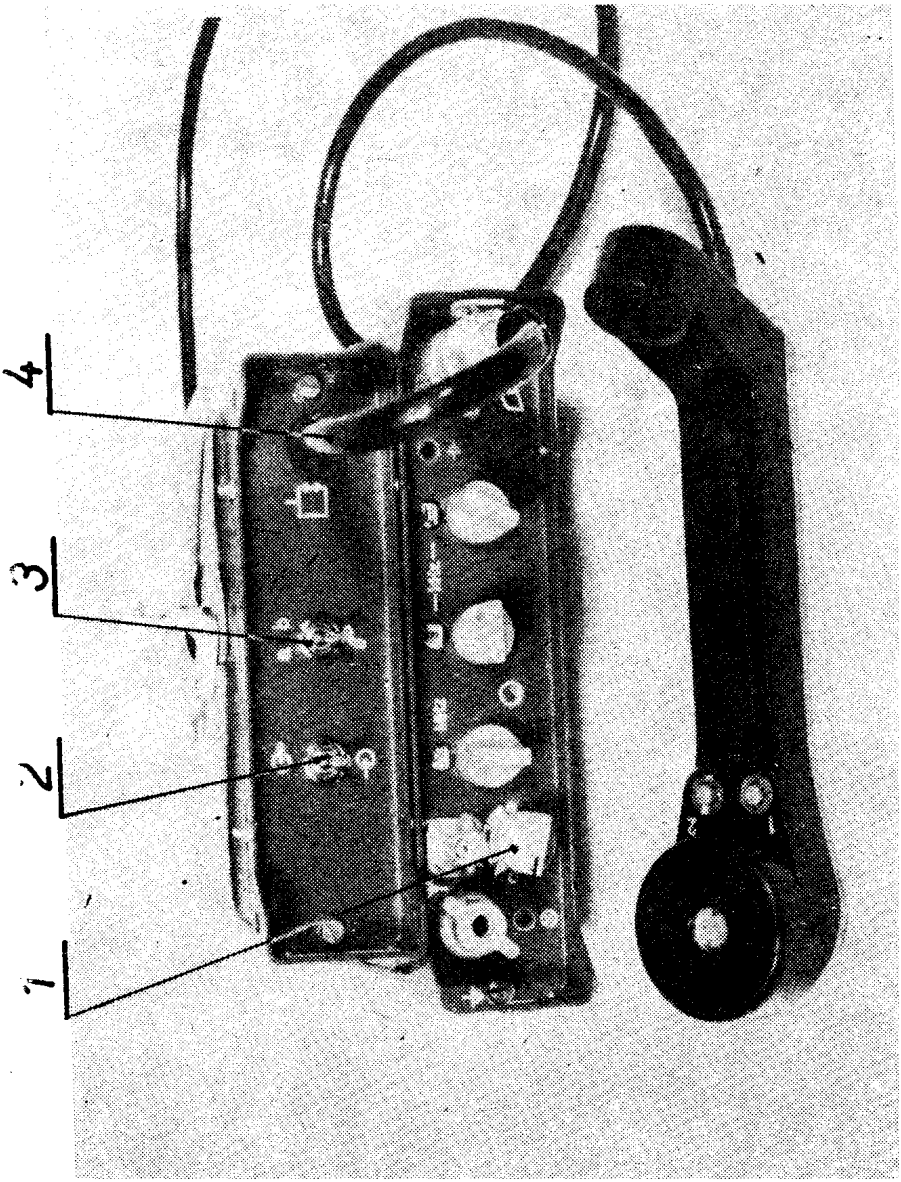

Fig.22. Data transfer box with radio station RF-10

146. If information is to be transmitted or a telephone call from the line to the radio circuit, switch the cabinet switches to the broadcasting positions: "a-" and "a-b" guidance. Connection is possible only by means of a telephone, an acoustic converter can not control the radio station.

147. In the position of the data transfer box switches "€" and "A", the permanent output of the radio station is connected to the line. The electric-acoustic drive can be monitored, the radio can be switched to broadcast, the radio can modulate the radio station, but the transmission from the line to the radio station is not possible.

148. If two subscribers, one radio station and the other telephone device want to talk together, this is possible via a radio station with a data transfer box.
In order to view the conversation of both subscribers and to switch the cabinet and the radio station from reception to broadcast as needed, it is necessary to connect the telephone to the rear panel of the data box. The data transfer box will be permanently switched to the "a-b" line and the box operator will switch the box switch to receive or broadcast position ("©" "o-") as needed by the telephone. Electro-acoustic drive does not need to be used.

5. Maintenance and storage

149. After the operation of the data transfer box, disconnect the box from the radio station, clean it from possible dirt, cover the connectors with plastic caps, close the special plug on the back panel marked "☎".

150. The cabinet must be kept dry and clean, avoiding unnecessary weathering, sun and heat, corrosion and excessive vibration.

151. Disconnecting the connectors must be done not by cable pulling or by tapping, but by uniform pulling in the direction of the connector axis. Before disconnecting, release the locking nut. Before disconnecting the cable, loosen the wire by pressing the terminal sheath towards the panel. The line wires must not be pulled from the terminals.

152. The data transfer box switch requires almost no force, switching must be done with sensitivity.

153. The out-of-operation data transfer box should be stored in the shipping container. Storage of the cabinet is only possible in the shipping container.

154. Technical treatment No.1 (TO 1) is performed once every quarter of a year in the normal mode of operation. If the data transfer cabinet has been in service for more than 7 days or if it has been stored for more than half a year, it also carries out technical treatment No. 1.

155. In the case of technical treatment No 1, the following steps must be taken:
- Clean the cabinet with a soft cloth or brush;
- Check the surface wear or damage of the cabinet, panels, controls, cables and connectors;
- check the completeness of the parts supplied with the data transfer box;
- connect the data transmission cabinet to the radio station and test its operability;
- Preserve the studs, connectors and terminals with Resistin ML.

6. Faults and how to remove them

No.			
1	**2**	**3**	**4**
1	The radio station can not be controlled by the data transfer box	a) Cabinet cable connector defective b) Cabinet defective cable c) Faulty switch P501	a) b) c) Replacement of faulty parts in workshop (SO)
2	The acoustic transducer connected to the cabinet can not be controlled by the radio station	a) Panel connector on the back panel of the cabinet faulty b) Faulty switch P501 or P502	a), b) Replacement of faulty parts in the workshop (SO)
3	The radio station can be controlled by a	a) Faulty limiter (OI301)	a) Workshop Repair (GO)

No.			
1	**2**	**3**	**4**
	cabinet and an electro-acoustic converter, but the radio station can not be modulated by an electro-acoustic converter. The signal from the radio station passes through the line	b) Cabling failure	b) Workshop Repair (SO)
4	The radio station can be controlled by a cabinet and an electro-acoustic converter, it can be modulated from the line, but the signal from the radio station to the line does not pass	a) Faulty amplifier T301, T302 b) Cabling failure	a) Repair in the workshop (GO) b) Repair in the workshop (SO)
5	The radio station can be controlled by a cassette with an electro-acoustic converter. The signal does not pass from the radio to the radio station or the radio station. The radio station can be modulated by an electroacoustic meter	a) The +5 V power supply is not connected to the radio station via a 19-pin connector b) Fault in wiring cabinet c) Faulty amplifier and cabinet limiter	a) Checking, cleaning, if necessary, replacing the cabinet cabinet connector in the workshop (SO) b), c) Workshop Repair (SO)

Note. The data in parentheses of column 4 (SO GO) indicate the degree of correction to which the correction belongs.

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