

MADE IN RUSSIA

X-RAY TUBE 0,2BDM7-50

OPERATING INSTRUCTIONS

1. SAFETY PRECAUTIONS

- 1.1. The X-ray tube is used in monoblock of the portable X-ray unit ensuring electrical safety when dealing with voltage and protection from unused X-radiation.
- 1.2. Protect the tube from impacts when unpacking, wiping, mounting the tube in monoblock.

2. OPERATING CONDITIONS

- 2.1. The tube shall be used in monoblock of X-ray unit type 5D2 supplied by AC voltage.

Filament supplied by AC voltage with frequency 50 or 60 Hz.

Voltage on the primary coil of HV transformer should be 220 V +/- 10%.

Amplitude of reverse voltage should be no more than 60 kV.

- 2.2. X-ray unit monoblock where X-ray tube is used should be filled by transformer oil which effective breakdown voltage is to be no less than 35 kV.

3. PREPARATION OF TUBE TO OPERATION.

- 3.1. Perform external inspection of the tube for absence of mechanical damages.

DON'T USE A TUBE WITH DAMAGES !

- 3.2. Before mounting the tube in the monoblock wipe it with a dry napless cloth and in case of dirt and dust, wipe it with a cloth wetted with alcohol and with dry napless cloth.

- 3.3. Check the tube for inleakage with a spark leak detector or by short-time supply of the tube with voltage within 15-20 kV without switching on the cathode filament.

Don't use the tube in case of abrupt deflection of milliammeter through the whole dial or in case of switching on the tube's current protection system of the unit.

NOTE: If there is no test equipment, it can be not perform the checking for inleakage.

Description of parameter, unit of measurement	Norm			Data of measurement	Remark
	not below	nomi- nal	not over		
Filament current, A	2,5	-	3,2	2,8	1
Filament voltage, V	6,93	-	7,07	-	
Tube nominal voltage, kV	-	50	-	-	
Tube nominal power, kW	-	0,2	-	-	
Width of effective focal spot, mm	-	0,8	1,12	1,1	
X-radiation exposure dose rate, $\mu\text{A}/\text{kg}(\text{R}/\text{h})$	0,43 (6,0)	-	-	-	

Remarks: 1 At tube voltage 50 kV, tube current 2 mA at a distance 485 mm from the tube bulb with additional filter: transformer oil - 10 mm, plastic plate - 10 mm, Al-plate - 5 mm.

3.2 Roentgenoptical parameter changing in the process of operation.

X-radiation exposure dose rate measured in mode specified in para. 3.1 Rem. 1, $\mu\text{A}/\text{kg}(\text{R}/\text{h})$, not less than0,29 (4,2)

3.3 Limit permissible operating conditions:

Description of parameter, unit of measurement	Norm	
	not below	not over
Filament current, A	2,5	3,2
Filament voltage, V	6,93	7,07
Tube current, mA	5,6	8,4
Tube voltage, kV	-	50

Tube mode of operation: intermittent.

Standard durations of load - 5 s and of intervals - 175 s, correspondingly

4 STORAGE

Storage rules shall correspond to the operation instructions.

5 ACCEPTANCE CERTIFICATE

X-ray tube 0,2BDM7-50, individual № 3889 has been checked by the Quality Control Department and found fit for regular service.

Date of acceptance 05.06.03

QCD stamp

OTK 1

Rechecked on 19.08.03

QCD stamp

OTK 62

01.03

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X-RAY TUBE 0,2BDM7-50

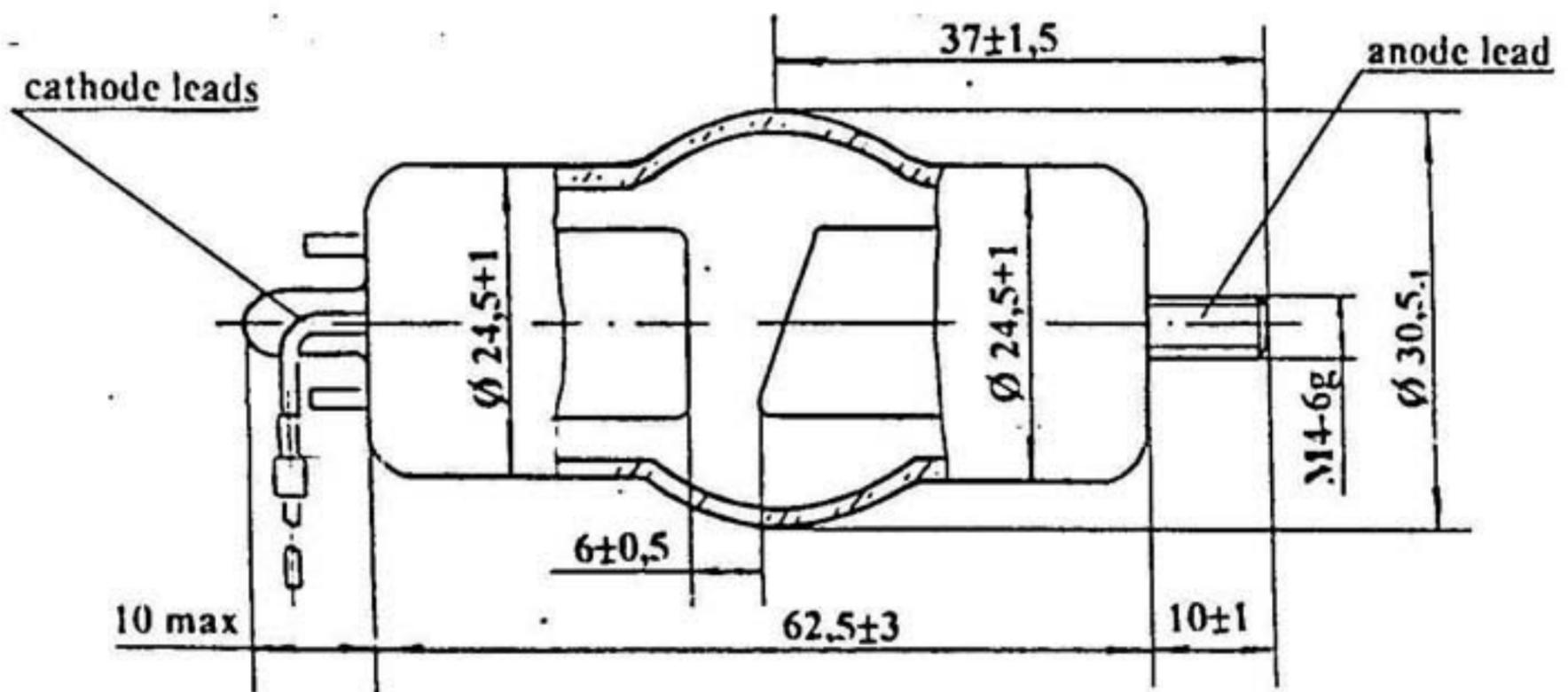
SERTIFICATE

1 GENERAL DATA

Portable X-ray tube 0,2BDM7-50 has side exit of X-rays and is intended as for medical diagnostic as for industrial X-ray examination of materials.

Individual No 3889

Date of manufacturing 05.06.03



Mass: not more than 0,08 kg

2 OPERATING CONDITIONS

Sinusoidal vibration:

- frequency range, Hz 1 to 55
- acceleration amplitude, $m.s^{-2}$ 10

Multiple mechanical impact:

- peak impact acceleration, $m.s^{-2}$ 150
- action duration, ms $2 \pm 0,5$

Raised working temperature of medium, K 343

Lowered working temperature of medium, K 274

Raised air relative humidity at 298 K, % 80

3 MAIN TECHNICAL DATA

3.1 Electrical and roentgenoptical parameters for supply and storage.

4. MOUNTING AND SWITCHING ON THE TUBE

4.1. Mount the radiator on the tube anode according to the X-ray unit operating instruction.

Fitting place for both leads is located at the distance 5 mm from the end of filament wires.

4.2. Make the pre-burning of the tube to keep at load in accordance to certificate datas at the primary coil voltage 220 V +/- 10%.

NOTE: Small discharges and insignificant fluctuations of the tube current are considered normal during the tube pre-burning.

4.3. In case of appearance of discharges inside tube accompanied by sharp increase of the tube current or operation of the current protection system of the unit, decrease voltage to the value at which discharges stop and then continue pre-burning.

NOTES:

1. Total time of pre-burning excluding interval time should be no more 20 min.

2. Duration of interval and loading should be in accordance to operating instruction of unit manufacturer.

3. If primary voltage will decrease upto 198 V decreasing of tube current to 25 % (no more) is permissible.

5. OPERATING PROCEDURE.

Follow the following instruction in the process of tube operation:

1) electrical parameters and modes of operation of the tube shall be correspond to certificated data;

2) after interruptions of operating from 5 hours to 5 days bring the tube to the nominal mode according to para. 4 of present instructions.

6. STORAGE

The tube shall be stored in heated (or cooled) ventilated warehouses at temperature of 274 to 313 K and relative air humidity of up to 80% at a temperature of 298 K.