

3.21. Effect of measuring device on compass (para 1.3.15) is checked at maximum supply voltage (30V). During this measuring device is rotated around axis of compass as well as around its own axis. During this magnetic effect of other foreign objects on the compass should be eliminated.

3.22. While checking for cold resistance (para 1.3.16) the measuring device is held in the cold chamber at temperature of minus $60^{\circ} \pm 3^{\circ}\text{C}$ for 4 hours.

During this temperature error is determined after 4 hours holding at the temperature of minus $60^{\circ} \pm 3^{\circ}\text{C}$ as per method of item 3.15.

On expiry of the test measuring devices are kept in normal conditions for four hours, after which checking of their main error is carried out (para 1.3.1) and they are visually checked.

3.23. For checking the effects of frost and dews (fog) (para 1.3.17) the measuring devices are kept in cold chamber and held in it at temperature of minus $20 \pm 5^{\circ}\text{C}$ for 2 hours in switched off condition. Then measuring devices are removed from the chamber, are kept in normal climatic conditions and switched on.

The devices are kept in switched on condition for 3 hours. During this serviceability in the conditions of dews and frost is determined immediately after switching on and after every 60 minutes.

Measuring devices are considered to have withstood the test if they maintain the serviceability in normal climatic conditions after their removal from cold chamber and also after 3 hours being in normal condition the main error of device corresponds to para 1.3.1.

3.24. Measuring devices are kept in heat chamber at temperature of $60 \pm 3^{\circ}\text{C}$ in switch on condition for 2 hours for checking its thermal stability (P 1.3.18) after which their serviceability is checked.

After checking the measuring devices are disconnected and temperature in the chamber is raised upto $80^{\circ}\text{C} \pm 3^{\circ}\text{C}$. At this temperature measuring devices are kept for 2 hours.

Then the chamber is opened, temperature is brought down to the normal temperature and after holding in normal conditions for two hours checking as per para 1.3.1 and 1.3.6 is carried out.

3.25. Insulation heat resistance is checked while testing for conformity of the measuring device to para 3.24.

Insulation resistance after holding the device for 2 hours at temperature ($^{\circ}\text{C}$) is checked as per procedure of point 3.17.

3.26. Stability of the device against linear acceleration (Para 1.3.20) is checked on centrifuge.

The measuring device is fastened in working position and connected to working diagram and tested at current when pointer deflection is within limits of scale.

Testing time under the action of centrifugal loads should not be less than 3 min.

After testing it is checked for conformity to para 3.9 and 3.11.

3.26a. Testing for vibration and impact loading effect (para 1.3.21 - 1.3.24) is carried out on vibration and impact stands.

Measuring devices are fastened to the table of the stand in normal position.

At the time of vibration (impact) to the device the voltage ($27 \pm 2.7\text{V}$) should be supplied, instead of sending unit a rheostatic resistance is connected which ensures shifting of pointer within the scale limits.

The test modes should be maintained at the places of fastening of the device to the table, fastened on the platform of stand with deviation not exceeding:

- $\pm 15\%$ - in amplitude of shifting of vibration.
- $\pm 5\text{Hz}$ - in frequency.
- $\pm 20\%$ - in acceleration (vibration impact).

3.27. Testing for vibration strength (P 1.3.21) is carried out while observing the condition of para 3.2.6a.

for frequency 20Hz with amplitude 0.9mm -30% (45.9 hours)
for frequency 59Hz with amplitude 0.15mm -40% (24.4 h).
for frequency 80Hz with amplitude 0.06mm -30% (11.4 h)
After each frequency of vibration checking for conformity to para 1.3.1 1.3.6 and 1.3.22 is carried out.

Remark: Main error is allowed during this:

$\pm 6^{\circ}\text{C}$ within the range from minus 70 to minus -20°C .

$\pm 3^{\circ}\text{C}$ within the range from minus 10 to $+110^{\circ}\text{C}$.

$\pm 6^{\circ}\text{C}$ within the range from minus from 120° to 150°C and variation of the reading of measuring device, caused by variation of position (inclination) after testing on for vibration strength should not exceed $\pm 6^{\circ}\text{C}$ in zero method ~~xx~~ of taking reading. Given note pertains to para 3.28, 3.30, 3.31 3.32.

3.2.8. Impact strength testing (para 1.3.23) is conducted with the observation of conditions of para 3.26a.

After the test it is checked for conformity to para 1.3.1 and 1.3.6.

3.29. Impact strength (para 1.3.24) is checked with observation of conditions of para 3.26a in two mutually perpendicular positions.

Tests are carried out for a period necessary for determining the magnitude of oscillation of pointer, for this the number of impacts should be not less than 20 in each position. Impact sequence frequency should be enough for determining the magnitude of oscillations of pointer but not more than 100 impacts per minute.

3.30. Testing of measuring device for its stability during transportation (para 1.3.25) is carried out on impact stands in shipping and market container. characteristics of test mode:
* acceleration 15g, number of impacts 5000
acceleration 10g number of impacts 15000.

Duration of pulse ——— 5-10 Micro sec.

approximate number of impacts per min - 40 - ~~4050~~.

It is allowed to carry out testing directly by transporting in vehicles with a speed of 20-40 KM/Hr along the pebble and dirt road for a minimum distance of 300KM.

After the testing the measuring device is checked for absence of any mechanical damage and also it is checked for conformity to para 3.9 and 3.11.

3.31. For checking the stability against cyclic temperature variation (para 1.3.26) the measuring device is subjected to three temperature cycles followed in succession of one after another. Each cycle is carried out in the following sequence.

The measuring device is put into cold chamber in which the temperature is brought down to minus $60 \pm 3^{\circ}\text{C}$ and it is kept in it for 2 hours after which the measuring device is put into heat chamber where the temperature is raised to $80 \pm 3^{\circ}\text{C}$ and it is kept at this temperature for 2 hours.

On expiry of holding time in heat chamber the test cycle is repeated. The time for shifting measuring device from cold chamber to heat chamber should exceed 5 min.

On completion of next cycle the measuring device is removed from the heat chamber and kept in normal climatic conditions for 3 hours. Then main error and effect of inclination is checked as per method of para 3.9 and 3.11.

3.32. Overload strength (para 1.3.27) is checked ~~xx~~ by short circuiting and rupturing the sending unit circuit on special device with resistance corresponding to the position of pointer of measuring device on 50°C marking.

Intervals between the impacts should be minimum 5 seconds.

Duration of each impact should not exceed 1 sec.

After the test main error and effects of inclination are checked as per method of para 3.9 and 3.11.

3.33. Moisture proof property of insulation (P 1.3.11⁸) is checked by 500V meggar after keeping the measuring device in dryer for 48 hours at relative humidity of $95 \pm 3\%$.

The test should be carried out not later than within 3 minutes after removal of measuring device from dryer.

3.34. Electrical insulation strength at relative humidity of $95 \pm 3\%$ (para 1.3.12⁸) is checked between current carrying portion and body of the measuring device when testing the measuring device as per para 3.33.

The test is carried out not later than within 3 minutes after withdrawal of measuring device from dryer.

3.35. Splashproof property (para 1.3.2⁸) is checked on special device, which provides artificial rains with intensity ~~provides~~ ~~artificial rains with intensity~~ of (5 ± 2) MM per minute at an angle of 45° in plane of measuring device glass.

The measuring device is mounted in a working position with facial side towards the jet, the remaining portion of the measuring device should be protected against splash.

The water temperature should be lesser than the temperature of measuring device by 5 to 10°C .

After testing for five minutes the measuring device is wiped dry opened and absence or presence of water inside the device is confirmed.

3.36. Stability and quality of coating (para 1.3.29) is checked by visual inspection of parts and units of measuring device, subjected to periodic testing.

Parts and units, subjected to checking are defined in each individual case by the customer's representative.

3.37. Conformity of the design (para ~~xx~~ 1.1) is checked by means of disassembly of measuring device and measurement of dimensions of parts and units in corresponding plant laboratories. Results of measurements are compared with drawings.

Parts and units, subjected to checking are defined in each individual cases by customer's representative.

4. Transportation and Storage

4.1. Transportation of thermometers should be carried out in any type of transport for any distance in shipping and marketing container at temperature from minus 60 to plus 30°C and should confirm to the requirements of GOST 9181-74.

4.2. Storage of measuring devices should be carried out in centrally heated places at temperature from 5 to 40°C and relative humidity upto 80°C.

6. Time to first overhaul

6.1. The measuring device is guaranteed for 1500 flight Hrs before first overhaul repair during 8 years period which includes 2 years of shelf life.

When the device is used on passenger liner or transport aircraft the service life is 10.000 flight Hrs, on helicopters - 3000 flight hours during same period.

6.2. The designed time to first overhaul of measuring device is 6000 flight hrs at 3 repairs in the course of 20 years. When the device is used on passenger liners and transport air ~~xxx~~ craft the service life is 30000 flight hours ~~service~~ at 2 repairs in course of 25 years and on helicopters - 15000 flight hrs at 4 repairs in course of 20 years.

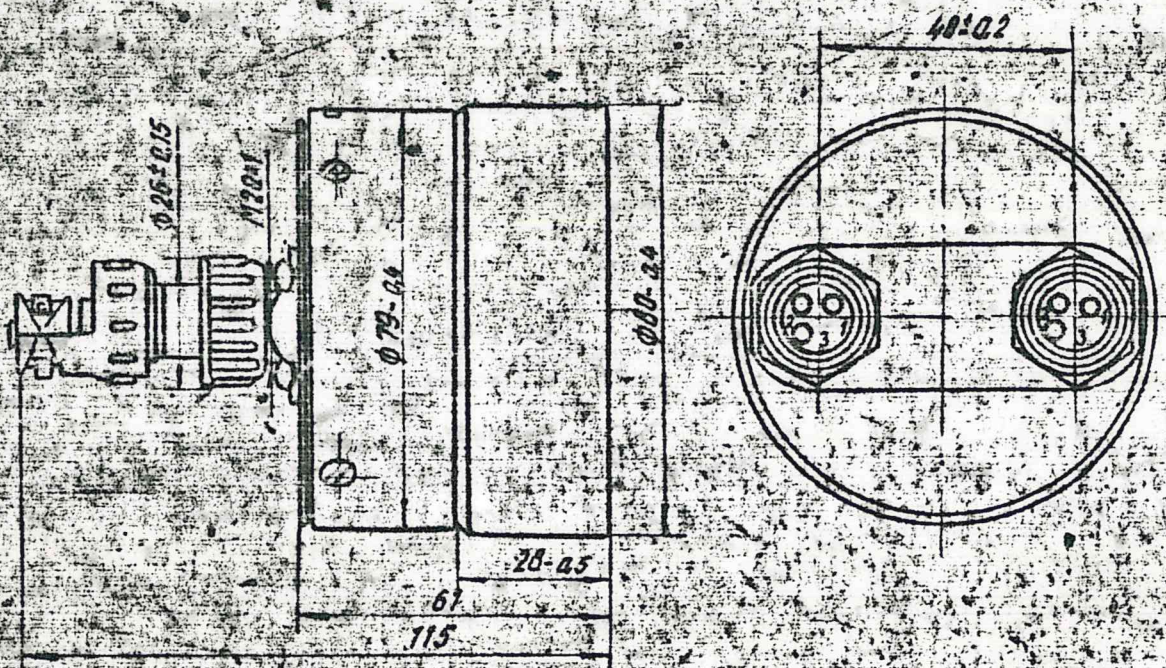
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Приложение 1

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Габаритные размеры измерителя 2ТУЗ-1



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Overall dimensions of measuring
device 2742-1.

Appendix 1.

Appendix 2

List of documents covering reference
data on technical specification

TY 25-04-1254-76

Sending units of resistance
thermometer 1 -1 and 1 -2

Technical specifications

Appendix 3

List of the measuring devices and
Equipment, used for checking and
testing of thermometers

1. D.C. supply sources which provided stabilized voltage from 0 to 30V to the output terminals when the load current is from 0 to 5 Amp.
2. Voltmeter with class of accuracy not less than 0.5 for measuring voltage in D.C circuits.
3. Bridge for measuring resistance for D.C. class 0.1.
4. Resistance bosc, for example MCP-60M.
5. Meggar, for example M/ 101.
6. Jolting stand for example CY-1M.
7. Vibration stand for example - CT-80.
8. Low pressure, high and low temperature chamber for example KHT-2M.
9. Heating and humidity chamber for example KTB-0,16-155.
10. Device for checking the electrical insulation strength for example SY-025.
11. Stopwatch, for example, COCOP-2B-2.
12. Vernier callipers accuracy upto 0.05MM.
13. Compass type A-4.
14. Technical balance with accuracy upto 0.005 kg.
15. Ampere-voltmeter, for example 4311.
16. Rain chamber, for example YB-1.