1 1988	NUMBER BTO.360.002TY	
	SHEET 1 OF 27	
	SUPERSEDES	

ALBUM No.45

TECHNICAL PAPERS

CONVENTIONAL INDEX

84/0848711-01-40001

BTO.360-002TY

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1. DEFINITION AND PURPOSE

1.1 Present technical specifications refer to double pole switches, type П2Т.

1.2. Operating conditions:

Switches are designed for operation with in th. temperature range from - 60 to +85°C to switch over circuits with DC and AC resistive loads and feed through power of up to 660 W for each contact pair (220V 3 A or 127V 5A for A.C, 300V 0.2 A or 27V 6 A DC). in equipment to be used in the following conditions:

-relative air humidity of up to 98% at a temperature of +20°C;

-atmospheric pressure, reduced to 33 mm, Hg.

-Vibration in frequency range from 5 to 200 Hz with acceleration of up to 4g:

1.3. Switches are designated as П2 Т, where:

П -switches;

2- Double -pole;

T-Toggle switch type

2.TYPES, MAIN PARAMETERS AND DIMENSIONS

2.1. Switches are made of four modifications as per the switching circuit in accordance with drawing 1 and table 1 as per nature of fixing switches of each modification are divided in to 3 types:

-Switches whose lever cab be fixed in the middle and two extreme positions (1,2,3);

-Switches whose lever cab be fixed in the middle and one extreme position (1,3);

-Switches whose lever can be fixed in the middle position (1) only:

switches of each type are made with usual lever or luminous one.

NOTE:- By agreement with consumer round nut may be changed for hexagon one and nuts and washers may be delivered in bulk.

2.2. In order and design papers conventional designation of double-pole switch should consists of word "switch" abbreviated designation, type of modification (according to table1) and number of Technical Specifications given below is an example of designation of double-pole switch with normally open contacts and luminous lever which is fixed in the middle and two extreme positions, switch 2T-2 BTO.360.002TY.

3.TECHNICAL REQUIREMENTS

3.1. Switches should be made in accordance with the requirements of this present Technical specification and technical papers, approved in present order.

3.2. Requirements FOR designe

~~For requirement design~~ As per design as well as over all and mounting dimensions switches should correspond to the working drawings, drawing 1 and table 1 given in present Technical Specifications.

3.2.2. Plastic parts should meet the requirements of standard HO.005.603. Metal surfaces of the switches should be free from burrs, dents, corrosion and coating separation.

3.2.3. Levers of the switches should be freely shifted from one position to the other one without jamming. When switching over, switch levers should be fixed properly. In normal climatic conditions force required for switching over should be within the limits of 0.03 to 3.0Kgf.

3.2.4. Lugs should withstand a force of 2 kgf applied along the axis of contact without displacement and slackening of attachment and a force of 0.5 kgf. applied perpendicularly to the axis of contact, without turn.

3.2.5. Weight of switch should not exceed 38g.

3.3. Requirements for Electrical Parameters.

3.3.1. Contact resistance of switches between two closed contacts in normal climatic conditions should be not more than 0.01 ohm.

3.3.2. Insulation of switches between two open adjacent contacts, between closed and open contacts, as well as between switches cap and each contact should withstand

effective ac voltage of 1100V 50Hg without break-down and flash over in normal climatic conditions.

3.3.3. Insulation resistance of switches between two open adjacent contacts, between closed and open contacts as well as between switch cap and each contact should be not less than 1000 megohms in normal climatic conditions.

3.4. Requirements for resistance to mechanical effects.

3.4.1. Switches should withstand the effects of vibration loadings in frequency range from 5 to 200 Hz with acceleration of 4g. In this case mechanical damage and poor electrical contact should not occur. Force required for switching over should correspond to that specified in item 3.2.3.

3.5. Requirements for resistance to climatic effects.

3.5.1. Switches should withstand the effects of elevated temperature of + 85°C. In this case insulation resistance should be not less than 100 megohms.

3.5.2 Switches should withstand the effects of increased air humidity of 98% at temperature +20°C. In this case, Contact resistance should not be more than 0,04 ohm, insulation should withstand effecti.e ac voltage of 700V 50Hz without break down and surface flashover. Insulation resistance should not be less

than 100 mehohms. Metal parts should be free from traces of corrosion and coating separation.

3.5.3 Switches should withstand the effects of temperature of -60°C. In this case insulation should withstand effective ac voltage of 1100v 50 Hz without breakdown and surface flashover; insulation resistance should not be less than 1000 megohms.

3.5.4. Switches should withstand multiple cyclic effects of temperature of -60°C and +85°C. In this case contact resistance should not be more than 0.03 ohm; insulation resistance should be not less than 100 megohms. Metal parts should be free from traces of corrosion and coating separation.

3.5.5. Switches should withstand the effects of reduced atmospheric pressure of 83 mm Hg. In this case insulation should withstand effective ac voltage of 350V 50Hz without breakdown and and surface flashover.

3.6. Requirements for reliability, durability and wear resistance.

3.6.1. Minimum value of probability of survival of switches (P_2) for 1000hrs. and confidence level $P^X=0.7$ should be not less than 0.99 with number of possible failures C=0.

1. Discontinuity of electrical circuit under nominal load, electrical insulation breakdown. Originating in the operation of switch; Mechnical damage, causing loss of serviceability of switch are considered to be failures.

2. On the basis of reliability test results parameters determining the fitness of switch under test and their permissible variations exceeding of which is equating to failure are refined.

. Durability of switches should not be less than 5000 hours under rated electrical load; during this period switches should withstand 10,000 switchings with frequency of not more than 12 switchings per minute.

3 Wear resistance of switches is 10,000 switchings with a frequency not exceeding 12 switchings per minute, after which contact resistance should not exceed 0.04 ohm; force required for switching over should correspond to that specified in item 3.2.3; mechanical damage should not occur.

: 1. One switching over is considered to be shift of switch lever from one extreme position to other one.

Requirements for storage.

1. Storage life of switches in manufacturer's packing in SPTA set as well as of those mounted in equipment

should be 12 years when switches are stored in store-houses. During this period of time it is allowed to store the switches in field conditions:-

For 3 years in equipment and SPTA set when they are protected from the direct effect of sun rays & moisture.

For 6 years in air - tight equipment and SPTA set as well as in airtight packing.

Warehouse conditions are as follows:

Ambient air temperature from + 5to + 35°C, relative air humidity not exceeding 80% and absence of acidic and other corrosive agents in the air.

Field conditions are as follows:

Ambient air temperature may very within limits from -50 to + 50°C relative air humidity may raise up to 98% at temperature up to +30°C.

4.RULES FOR ACCEPTANCE

4.2 Acceptance tests.

4.2.1. The batch, to be presented to the representative of general customer for acceptance should contain not less than 100 items.

XXXXXNote:In case of small corders, by agreement with the representative of general customer, it is allowed to present batches containing smaller number of items, but not less than 10 items for acceptance.

4.2.2. Acceptance tests are carried out in scope and procedure specified in Table 2.

Table-2

Tests procedire	Description of tests	Technical requirements	Methods of tests
		Items of technical specifications	
1.	Design, Dimensions, External view, marking.	3.2.1 3.2.2 6.1	5.2.1 5.2.2
2.	Relability and force of switching over.	3.2.3	5.2.3
3.	Proper fastening of lugs	3.2.4	5.2.4
4.	Contact resistance.	3.3.1	5.3.1
5.	Electrical strength of Insulation.	3.3.2	5.3.2
6.	Insulation Resistance	3.3.3	5.3.3

4.2.3. 10% of the presented quantity of switches, but not less than 10 pcs are subjected to acceptance tests as per items 3.2.1 (dimensions), 3.2.3, 3.2.4, 3.3.2, 3.3.3.

4.3 Periodical tests.

4.3.1. Periodical tests are carried out once in 6 months.

4.3.2. For conducting periodical tests switches are divided into 12 groups as per switching circuit and type of fixing of switch lever 24 pcs of switches (sampling "Π ") are selected from each group.

4.3.3. Switches are subjected to tests in scope and procedure as per table 3.

Table 3

Tests procedure	Description of tests	Technical Requirements	Methods of tests
		Items of Technical specifications	
1.	Weight	3.2.5	5.2.5
2.	Vibration resistance	3.4.1	5.4.1
3.	Vibration strength in case of short time effect	3.4.1	5.4.2
4.	Heat resistance in case short time effect	3.5.1	5.5.1
5.	Moisture resistance in case of short-time effect	3.5.2	5.5.2
6.	Cold resistance	3.5.3	5.5.3
7.	Cyclic effect of temperature	3.5.4	5.5.4
8.	Altitude capability	3.5.5	5.5.5
9.	Wear resistance	3.6.3	5.6.3

Note:-Switching subjected to periodical tests, are not subject to shipment to customer.

4.4. Design tests.

4.4.1. Switches are subject to tests in scope and procedure as per table 4.

Table 4

Test procedure	Description of tests	Technical Requirements Items of Technical Specifications	Methods of tests Items of Technical Specifications
1.	Weight	3.2.5	5.2.5
2.	Vibration resistance	3.4.1	5.4.1
3.	Vibration strength in case of short-time effect	3.4.1	5.4.2
4.	Heat resistance in case of short-time effect	3.5.1	5.5.1
5.	Moisture resistance in case of short-time effect	3.5.2	5.5.2
6.	Cold resistance.	3.5.3	5.5.3
7.	Cyclic effect of temperature	3.5.4	5.5.4
8.	Altitude capability	3.5.5	5.5.5
9.	Wear resistance	3.6.3	5.6.3

Note:**Tests period is 40 days.

†** Tests period is 30 days. When tests are over, items should be kept under normal climatic conditions for 24 hours.

4.5. Reliability test.

4.5.1. Reliability test of switches, is carried out once in a year.

4.5.2 For reliability test, switches 2T-3 of current output are selected from those accepted by technical inspection department and the representative of general customer, in a quantity of 120 pieces.

4.5.3. Results of tests are considered to be satisfactory, if during 1000 hours no failure occurs (C=0, while testing 120 specimens)

4.6. Durability test.

4.6.1. For durability test, switches T2T-3 of current out put are selected from those accepted by technical inspection department and the representative of general customer, in a quantity of 25 peices.

Durability test of switches is carried out once at a stage of pilot-scale production and once at a stage of full-scale production, in case of change in design on materials to be used, which may cause reduction of durability.

4.6.2. In accordance with the results of durability tests, durability and operating conditions are defined and the norms for permissible changes of parameters are determined.

5. METHODS OF TESTS

5.1. If special instructions are not given, all the tests are carried out in normal climatic conditions:

ambient air temperature of $+20 \pm 10^{\circ}C$;

Relative air humidity of $65 \pm 15\%$;

atmospheric pressure of 720 to 780 mm Hg.

5.2. Checking for compliance with requirements to design.

5.2.1. Checking of design and dimensions of switches (item 3.2.1) is carried out by comparing them with drawings and measuring dimensions by any measuring tool, providing accuracy required by the drawings.

5.2.2. Checking of the external conditions of switches (item 3.2.2) is carried out by visual inspection.

5.2.3. Checking of reliability and force of switching-over (item 3.2.3) is carried out by shifting the switch lever from one fixed position to the other one.

Checking of switching over force is carried out ~~with~~ with the help of ~~dynamometer~~ dynamometer or any other meter providing meaasurements accuracy of ± 20%.

5.2.4. Checking of fastening of lugs of switches (item 3.2.5) is carried out by means of load or dynamometer. Measurement error should not exceed ± 20%.

5.25. Checking of weight of switches (item 3.2.5) is carried out by weighting in the scales with an accuracy of ±5%.

5.3. Checking for compliance with requirements to electric parameters.

5.3.1 Measurement of contact resistance (Item 3.3.1) is taken up by supplyig direct current of 0.5 to 1.0 to 1.0 A and voltage of upto 30 V by means of voltammeter, or by any other device, measurement error should not exceed ± 10%.

5.3.2. Checking of electric insulation strength (item 3.3.2) is carried out in high-voltage installation with power of not less than 0.5 KVA. Voltage is smoothly raised from 0 to the test value for a time of not less than 10 seconds. Switches are kept under the test voltage for 1 minute, this done voltage is smoothly lowered down to zero and the installation is deenergized. Measurement error should not exceed ± 5%.

5.3.3 Insulation resistance (item3.3.3) is measured by means of any meter with measuring voltage from 250 to 500 V. Take the readings after keeping insulation under voltage for 1 min. If meter readings are taken for the time of less than 1 min, the time required for keeping insulation under voltage may be reduced. Measurement error should not exceed ±20%.

5.4. Check for compliance with requirements to resistance to mechanical effects.

5.4.1 Checking of the vibration resistance of witches (item 3.4.1) is carried out on vibration testing machine under electrical load. Before and agter test of the switches measure the switching-over force. Switches are rigidly fixed on the platform of the vibration-testing machine by method provided for operation, simultaneously in 3 positions, i.e. vertical, horizontal and vertical revolved with respect to their axis, ~~horizontal and vertical, revolved with respect to their axis~~ all closed contacts of switches are connected inseries. Electrical contact is checked by any inertia-free indicator. Testing of switches is carried out in frequency range from 0 to 200 Hz. Division of frequency range into sub-ranges and magnitude of acceleration (amplitudeZ) in sub-ranges are given in table 5.

Table 5

Table 5

Frequency sub-range, Hz	Acceleration g	Amplitude mm
5-10		1.5± 0.1
10-20		1.5± 0.1
20-30	Not checked	1.5± 0.1
30-40		1.0± 0.1
40-50		0.6 ± 0.1
50-80	6 ± 1	To be corresponded
80-100	6 ± 1	To acceleration
100-150	6 ± 1	
150-200	6 ± 1	

Tests are carried out by smoothly changing frequency in each sub-range. Passage time for each sub-range should not be less than 1 minute. While detecting resonat frequency at which instability of electrical contact is observed. Additional holding is carried out at this frequency for 5 minutes.

Note: Until the factory is fitted out with the respective test equipment, it is allowed to carry out the tests, starting from 10 Hz.

5.4.2. Checking for the vibration strength of switches (item 5.4.1) is carried out on vibration testing machine without electrical load by the method of fixed frequency. Switches are fixed on platform of vibration-testing machine as indicated in (item 5.4.1)

Testing is carried out by smoothly changing frequency in each sub-range with acceleration (amplitude), indicated in Table-5. Passage time for each sub-range should not be less than 1 minute. At highest frequency of each sub-range switches are kept for 20 minutes.

After completion of test for vibration strength carry out the repeated test for vibration resistance. During test nut should not be unscrewed spontaneously. After test external inspection of switches is carried out and switching-over force is checked.

5.5. Checking for compliance with requirements to resistance to climatic effects.

5.5.1. Checking of heat resistance of switches (item 3.5.1) is carried out in a heat chamber at temperature $+85^{\circ}C \pm 2^{\circ}C$. Before testing insulation resistance is measured. Switches are kept in heat chamber for two hours in deenergized condition. After completion of test insulation ressistance is measured, with switches not removed from chamber. After removing switches from chamber and keeping them in normal climatic conditions for 1 hour external inspection is carried out.

5.5.2. Checking of the switches for moisture resistance (item 3.5.2) is carried out in humidity chamber. Before testing insulation resistance is measured. Switches are placed in the chamber and kept at temperature

+20± 5°C relative air humidity 95 to 98% in deenergized condition for 48 hours.

After test before removing switches from chamber or not later than 5 minutes after the moment of removal, measurement of insulation resistance and check of electrical strength of insulation are carried out.

After removing switches from chamber and keeping them in normal climatic conditions for 2 hours contact resistance is measured and external inspection is carried out.

5.5.3. Checking of the switches for cold-resistance (item 3.5.3) is carried out in the cold chamber without electrical load. Temperature -60±2°C is set in cold chamber. In these conditions switches are kept for 2 hours. After this checking of electrical strength of insulation of switches is carried out in cold chambers. When the switches are removed from cold chamber, they are checked for proper switching-over and insulation resistant is measured.

5.5.4. Checking of the switches for cyclinc effects of temperature (item 3.5.4) is carried out without the electrical load by means of 3 temperature cycle's. Each cycle should include keeping of switches for 2 hours, consequently in cold chamber and heat chamber whose temperature is brought before hand to

-60 ±2°C and + 85± 2°C, respectively. Time required for transfering the switches from chamber to chamber should not exceed 5 minutes. In chambers switches should be arranged at a distance of not less than 50 mm from each other and from the walls of the chamber.

Before and after the tests external inspection is carried out, insulation resistance and contact resistance are measured.

5.5.5. Checking of the switch for altitude capability at normal temperature (item 3.5.5) is carried out in pressure chamber, air pressure of which is brought down to 27 mm Hg. In these conditions switches are kept in ~~demagnetized~~ de-energized condition for 0.5 hours, this done, electrical strength of insulation is checked before switches are removed from the chamber.

5.6. Checking for compliance with requirements to reliability, durability and wear-resistance.

5.6.1 Checking of the switches for the reliability (item 3.6.11) is carried mout for 1000 hours in operating conditions and procedure specified, in table 6.

Table 6

Sl. No.	Effective factor's and their sequence	Test duration
1.	Normal conditions	250 hours
2.	Elevated temperature +85°C	250 hours
3.	Normal conditions	250 hours
4.	Elevated temperature +85°C	250 hours

In this case all the samples may be set for testing simaltaneously or by seperate batches as making a complete set of samples. During the complete time of testing switches are kept under normal electrical load. (60 switches are tested at 27V, 6A D.C. and 60 switches are tested at 220 V, 3A A.C). Under every effective factor 2500 switchings are carried out with a frequency of not more than 12 switchings per minute. Before test and every 250 hours of operation contact resistance, insulation resistance and switching over force are measured under normal climatic conditions.

5.6.2. Checking of the switches for durability (item 3.6.2) is carried out for 5000 hours. Test time in divided into 5 stages each of 1000 hours during which 2000 switchings should be made.

In each stage switches are subjected to tests in

operating conditions and sequence, given in table 7.

Table 7.

Sl. No.	Test duration	Electrical operating conditions
1. Normal conditions	1000 hours minus time of test at elevated temperature and time of test increased humidity	Rated current load and voltage as per present technical specifications, with 1000 switchings made at stage
2. Elevated temperature +85°C	20% of total time	
3. Increased humidity (item 3.5.2)	48 hours	Deenergized condition
4. Vibration resistance (item 3.4.1)	As per item 5.4.1	Presence of electrical contact is checked at rated current.

Before test and after 500,1000,2500, 5000 hours check in normal climatic conditions:-

Proper switching-over

Contact resistance

Switching-over force

Insulation resistance

Outside appearance

After 5000 hours check electrical strength of insulation by supplying voltage equal to 50% of voltage

valve specified in item 3.5.2.

As per the results of tests, failure rate, with complete failures taken ~~in~~ to account and minimum probability of survival for 5000 hours are determined as reference data and integral curves are plotted for all the measurements of parameters.

Carryout the analysis for the ~~failure~~ cause of failure of switches and work out a procedure for their removal.

Note: In reasonable cases, it is allowed to make breaks in tests, but the total time of tests should not be reduced.

5.6.3. Checking for wear-resistance item 3.6.3 is carried out in normal climatic conditions on installation providing the frequency of switchings of not more than 12 V per minute. 50% of switches are tested at 27^{V}, 6 A D.C. ~~and~~ and 50% at 220V, 3A AC. In the process of tests check the proper electrical contact. After test check the contact resistance, switching-over force and carry out visual inspection.

5.7. Checking for compliance with requirements ~~for~~ to storage.

5.7.1. By test results norms for permissible variations of parameters of switches in storage are defined more accurately as required data are accumulated (and when above

mentioned data are not awailable, norms are preset.

Each case of reject of switches to be tested for storage as well as each case when switches are rejected by consumers (when parameters are beyond the limits of norms preset in these technical specifications, as criteria of serviceability in storage) is analized by manufacturer and by analysis results manufacturer performs operations on elimination of detected defects of switches ~~surfaces~~ of current out put by agreement with representative of general customer.

6.MARKING PACKING AND TRANSPORTATION

6.1. The following should be distinctly applied on to each switch:

-Trade mark of manufacturer
-designation of switch
-Main parameters(working voltage and current)
-Month and year of manufacture.

The accepted switches should contain stamps made by Technical inspection department of manufacturer and ~~by representativexx~~ of general customer representative.

6.2. Switches should be packed in board boxes or any other boxes. Switches of one type of design should be placed in one box. Switches each wrapped in paraffin paper are packed in boxes in amounts of up to 100 pieces. Packing of switches ~~otherw~~ in boxes should provide preservation of switches during transp-

tation.

6.3. Lable containing the following data should be pasted on each box:

-trade mark of manufacturer

-designation of switch

-designation (number) of Technical Specifications

-Month and year of manufacture

-stamp of TID of manufacturer and general customers representative.

-quantity of packed switches.

-~~xxxxxxxxx~~ name or number of packer.

6.4. Boxes with switches packed in them should be tightly packed in wooden cases which should be covered inside with moisture-proof paper or similar material. Gaps between the boxes and the walls of case are filled by corrugated board, dry wood chips or any other similar packing material.

Wooden cases should be tightened with packing steel strips along the edges. Weight of case with switches packed in it should not exceed 35 Kg.

When dispatching switching by parcles, and transporting them in town, it is allowed to use card board boxes.

6.5. Cases with switches packed in them are checked by TID of manufacturer before they are closed. ~~Periodic~~ Representative of general customer checks the

cases for proper packing periodically.

In case of violation of requirements for packing switches, are subjected to repacking.

6.6. Packing list should be placed in each case from the side of cover.

Packing list should contain;

-trade mark of manufacturer;

-designation of switches;

-quantity of boxes and total quantity of switches in the case;

-month and year of packing;

-designation (Number) of technical specifications.

Packing list should be signed by packer, representative of technical inspection department and representative of general customer.

6.7. ~~Customer~~ Cases with switches packed in them are sealed by a person accepting the switches, and delivered to manufacturer who is responsible for their storage till they are dispatched.

6.8. Applied on to cases and other containers with indelible paint are stencilled instructions, with care " Handle with care", "kept dry" "top" as well as number and weight of the case address of consigner and consignee.

6.9. Cases are numbered by fractional numbers;

Numerator contains serial number and denominator contains total quantity of cases in batch to be shipped. Summary packing list for the shipped batch of switches, should be placed in case No.1.

6.10. Package of switches should provide their transportation by any transport to any distance provided that they are protected from direct fall of moisture and mechanical damage.

For transporting switches by sea or in tropical climatic conditions packing should be carried out as per special requirements. These requirements and cost of packing are mentioned in the contract.

6.11 Confirmity of package to the requirements of the given section is checked by visual examination and by dropping the packed cases with bottom cover and two side walls bottom down ward, from a height of 90cm to a hard surface (cement floor).

Packages are considered to withstand tests, if after this they are not destroyed, switches are free from damage, and electrical parameters of switches are within the limits of norms of technical specifications. Switches are checked as per parameters and in amounts specified in table 8.

Table 8

Tests procedure	Description of tests	Technical requirements Item of Technical specifications	Methods of tests	
1.	Outside appearance	3.22	5.2.2	100
2.	Electrical strength of insulation	3.3.2	5.3.2	10
3.	Contact resistance	3.3.1	5.3.1	10
4.	Insulation resistance	3.3.3	5.3.3	10
5.	Switching over force	5.2.3	5.2.4	10

The quality of packing is checked one time in the begining of production (pilot-scale and full scale) and also when package container design and packing methods are changed.

7. GUARANTY OF MANUFACTURER.

7.1. Manufacturer guaranties confirmity of all switches to be supplied to the requirements of present technical specifications and must deliver new switches free of charge or reimburse the cost of switches (according to current price lists) if during preset shelf life or durability it is revealed that switches do not meet the corresponding requirements of present technical specifications provided that consumer observes the operating conditions and storage regulations, and also instructions and recommendations on use and service of switches.

More over, manufacturer bears liability by paying the fine in amounts of 15% of cost of the switches and

reimbursing with the transport charges for their delivery.

8. INSTRUCTIONS AND RECOMMENDATIONS FOR OPERATION

8.1. Consumer has right to conduct the additional tests if it is required to use switches in operating conditions which differ from those given in these technical specifications.

Test reports, in this case, should be presented to manufacturer and development engineer, who give conclusions about possibility of use of switches in given operating conditions.

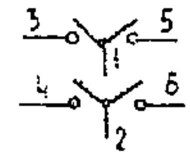
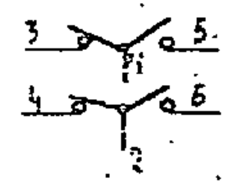
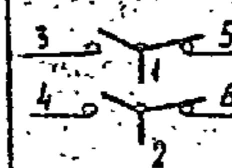
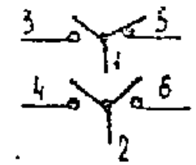
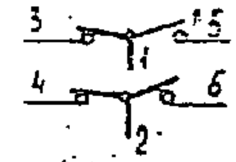
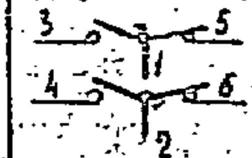
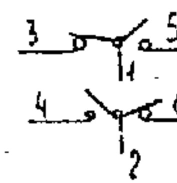
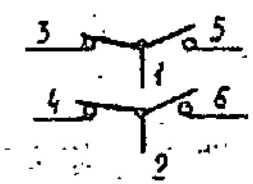
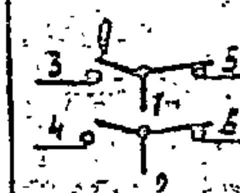
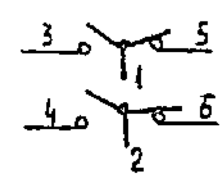
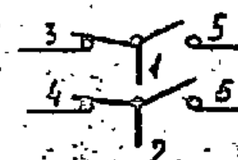
8.2. While mounting make sure that dust, moisture and other foreign particles do not enter the switches.

8.3. Switches should not be damaged during soldering. Distance form body to the soldering point should not be less than 2mm and soldering should last 5 to 10 seconds.

8.4. Opening of switches for elimination of defects is strictly prohibited.

3.5. Gradual transfer of switch levers from one fixed position to the other is not allowed. Switch lever should be transfered to the extreme position fully.

Таблица 1
Table 1.

Обозначение переключателя Switch designation	Вид Type				
	Исполнение Modification	Фиксация ручки в положениях Fixing of lever in positions	1 	2 	3 
П2Т-1	обычная Usual	1,2,3			
П2Т-2	светящаяся Luminous				
П2Т-3	обычная Usual	1,3			
П2Т-4	светящаяся Luminous				
П2Т-5	обычная Usual	1			
П2Т-6	светящаяся Luminous				
П2Т-7	обычная Usual	1,2,3			
П2Т-8	светящаяся Luminous				
П2Т-9	обычная Usual	1,3			
П2Т-10	светящаяся Luminous				
П2Т-11	обычная Usual	1			
П2Т-12	светящаяся Luminous				
П2Т-13	обычная Usual	1,2,3			
П2Т-14	светящаяся Luminous				
П2Т-15	обычная Usual	1,3			
П2Т-16	светящаяся Luminous				
П2Т-17	обычная Usual	1			
П2Т-18	светящаяся Luminous				
П2Т-19	обычная Usual	1,2,3			
П2Т-20	светящаяся Luminous				
П2Т-21	обычная Usual	1,3			
П2Т-22	светящаяся Luminous				
П2Т-23	обычная Usual	1			
П2Т-24	светящаяся Luminous				