I 769

0100.360.011 TY

I - 769

A L B U M NO: 227

TECHNICAL PAPERS

FOR ARTICLE 84/0848711-03- Гb-40007

TECHNICAL SPECIFICATIONS

0 100.360,011 TY

20 Sheets

TRANSLATED	Shivaprakash			Ordnance Factory Project Hyderabad.
AUTHENTICATED	Lebedev A			
TYPED	L.Devû		6/2/85	
EDITED	SEBASTIAN	Lobe-	4.2.85	APPROVED
	NAME	SIGN	DATE	

I769

LIST

OF CONTENTS OF ALBUM NO: 227

INDEX 84/0848711-03- Fb-40007"

Serial No:	Drawing, Assembly articles No:	Description of technical paper	Drawing No (process sheet)	Number of sheets in On copy	Remarks
1.	Particular technical specifications	Minature push button KM	0420.360 011 technical specification	18	
				1	
2.	Appendix-1			1	
3	Ammendment sheets				
			toral sheets	20	

Contd..3/-

工769

TY 11-76

MINIATURE PUSH BUTTOMS
OF KM TYPE
PARTICULAR TECHNICAL
SPECIFICATIONS
Ø 100.360.011TY
20 Sheets
(SUPERSEDED O 100.360.011TY
EDITION 2-66)

Contd...4/-

The present particular technical specifications relates to minature push buttons of type KM, intended for operations in D.C. and AC electric circuits.

Given particular technical specifications are supplementary and amendatory to GOST B 21248-75 " Push bottons and push botton switchs. General technical specifications; Numbration of items and subitems of thes particular technical Specifications corresponds to that of a valagous items and subitems of general Technical Specifications.

1. Classification, Conventional designation

1.1 Push bottons are manufactured in 3 designs / a unipole locking button, a unipolar a /bipolar button of two types/ standard, decorative/ in compliance with drawings 1.2.3 and table 1

1.2 Push bottons are supplied in two climatic designs: an all climates design moderate and cold climates designs moderate and cold climates designs.

1.3 Conventional designations of push buttons when ordering as well as in design technical papers should consist of words "minature push button", brief designation of push button, designation of a climatic design letter 'B'/ for all climates design/ and designation of present particular technical specifications.

Example of conventional designations: minature size push button KMA, I -IY B OK0.360.011 TY where KM-minature push button:

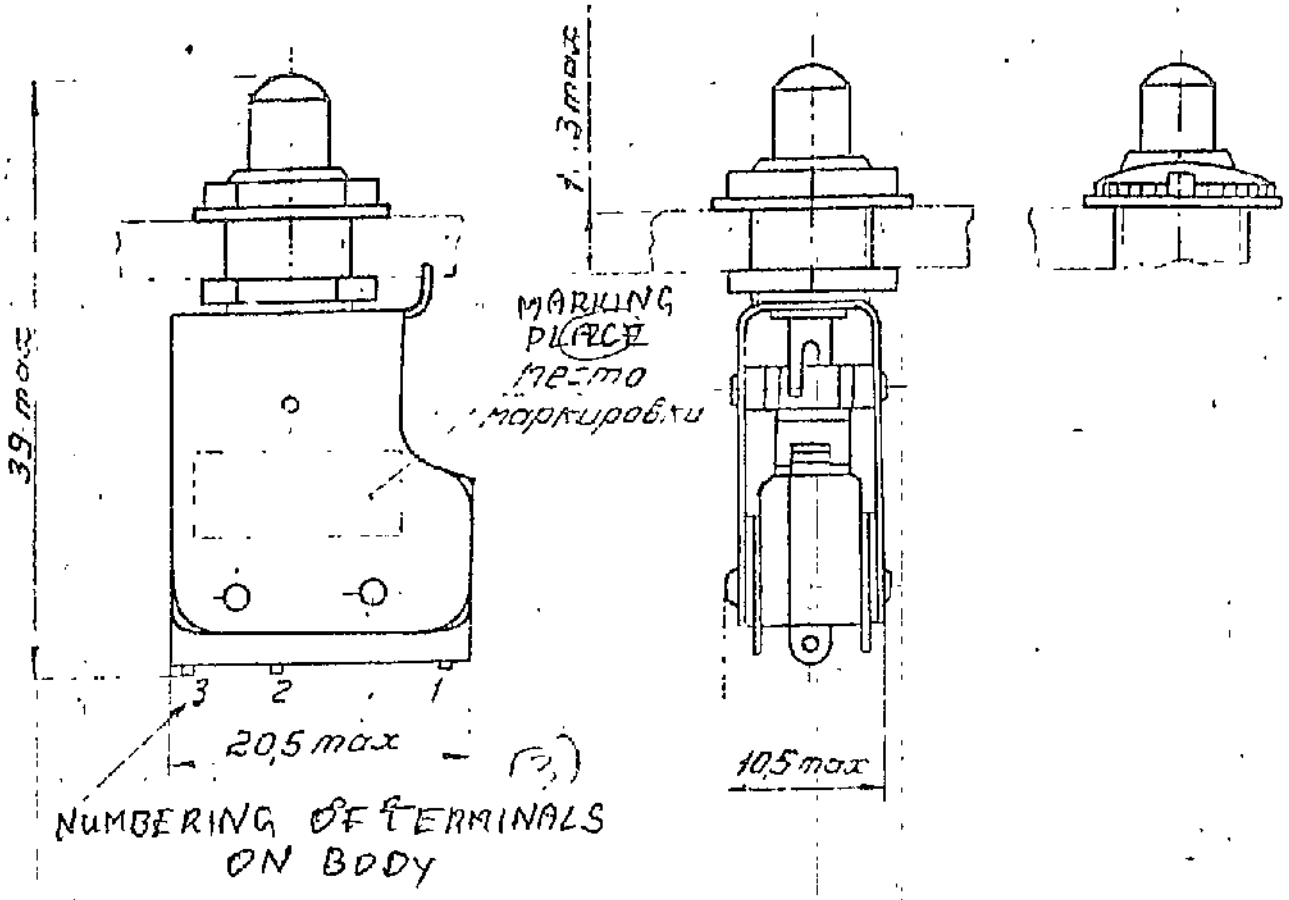
Contd....5/-

5621, I769

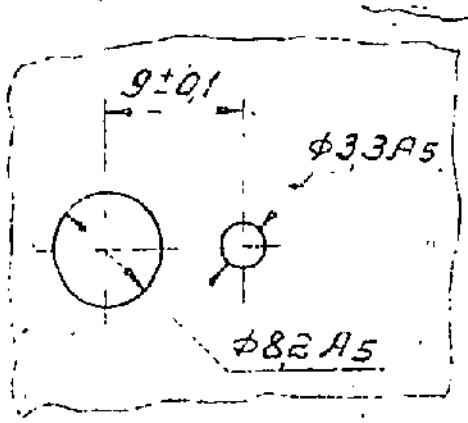
I769 5621

MINIATURE PUSH BUTTONS KMA

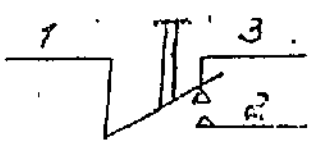
KMA1-IV6 KMAD1-IV



MARKING OUT FOR INSTALLATION



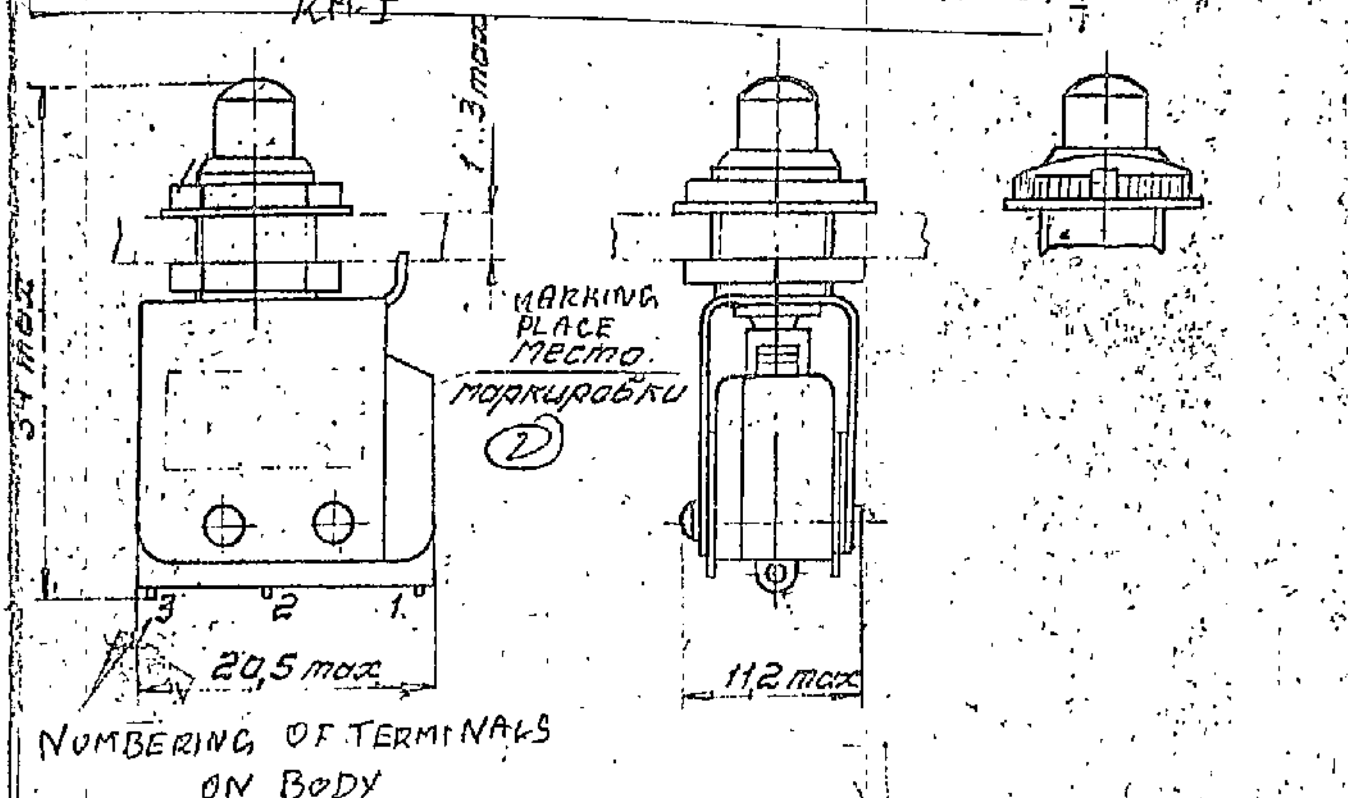
CIRCUIT DIAGRAM



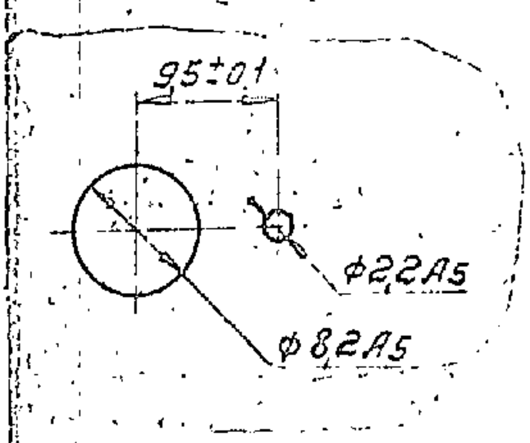
(6)

FIG.1

MINIATURE PUSH BOTTONS KMI



MARKING-OUT FOR INSTALLATION



CIRCUIT DIAGRAM

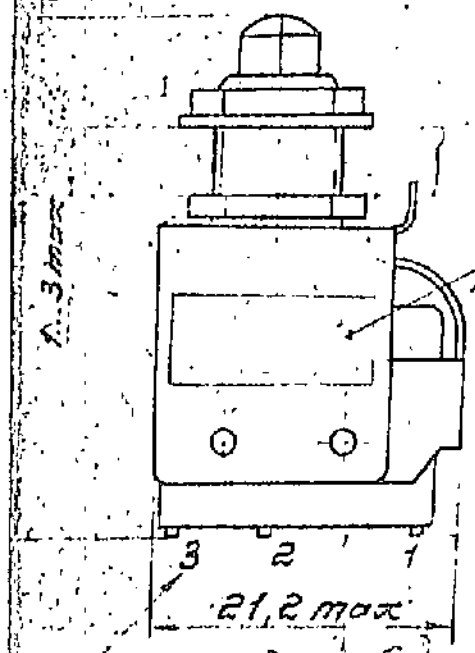
FIG-2

I 769
7921

7 of 21, I 769

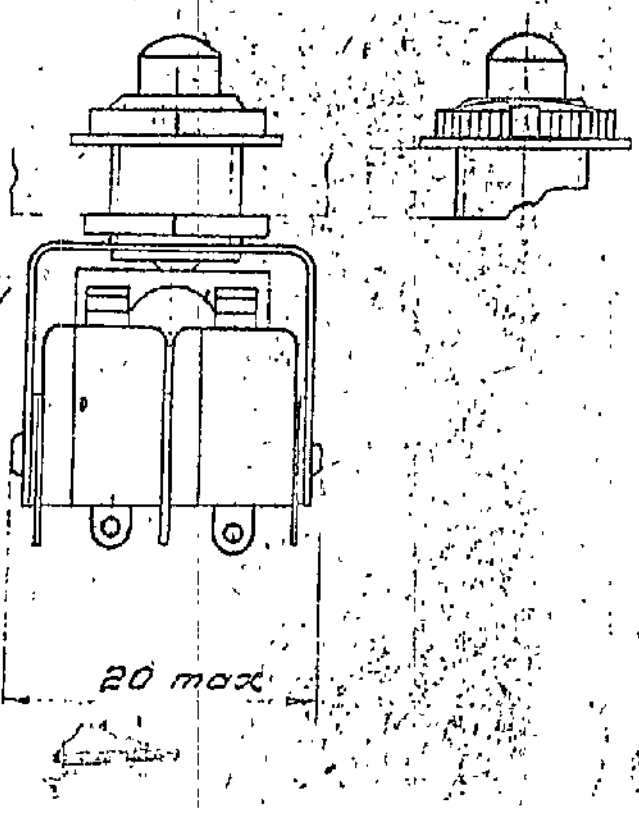
MINIATURE · PUSH BUTTONS - KM2

KM2-I

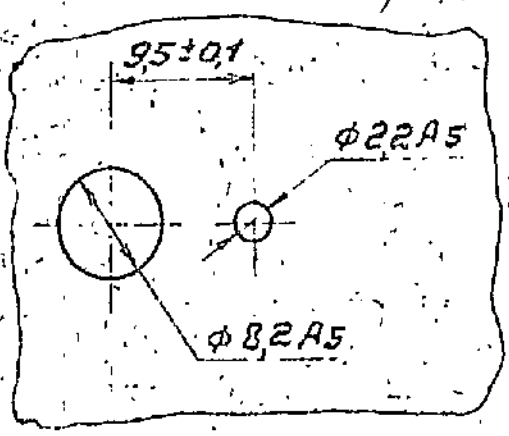


NUMBERING OF TERMINALS
ON BODY

KM2-I



MARKING-OUT FOR INSTALLATION



CIRCUIT DIAGRAM

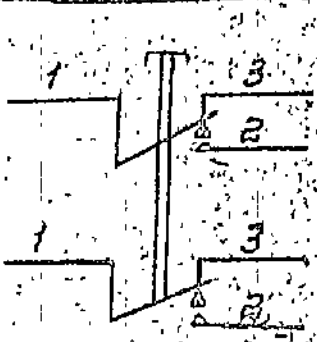


FIG-3

I 769

A - Locking push button

A - Decorative type

~~Б - Decorative type~~

I - Design type (unipolar)

The figure after a hyphen desigates a base microswich (for KM -1, KM2-M П3-1).

Table-1

Designs	Type designation	Designation of main design document.	Switching force N(kgf)	Mass, g
Unipolar Locking push button.	KMAI-IY	0Ю3.604.000 000	from 12,8/ 1,3/	15
KMA	KMAAI-IY	YC3.604.012	To 27,5/ 2,8/	14
Unipolar	KMI-I	0Ю3,604. 001	from 2,4/ 0,25/	11,5
KMI	KMAI-I	YC3.605.008	to 6,9/ 0,7/	12,5
Bipolar	KM2-1	0Ю3.604.002	from 5,9/ 0,6/	16,5
KM2	KMA2-I	YC3.604.011	to 12,8/ 1,3/	17,5

2. TECHNICAL REQUIREMENTS

Technical requirements as per GOST B 21248-75/ General technical specifications/ with supplements and amendments given in present item.

Provisions, stated in sub items 2.1.8, 2.1.9, 2.1.10, 2.1.4/ b.c/ 2.1.11, 2.1.12, 2.4.6, 2.4.7, 2.4.9, of General technical specifications do not refer to push buttons manufactured as per present particular technical specifications and item 2,14 /a/ of GTS is amended by present particular t technical specifications.

Contd-/10

2.1 DESIGN

2.1.1 To item 2.1.1 of general technical specifications, sets of design technical papers are given in table 1.

General view, overall, mounting and connecting dimensions are given in drawings 1,2,3.

2.1.2 To item 2,1,4 of general technical specifications Mass should not exceed the values, specified in table 1.

2.1.3 To item 2.1.4 general technical specifications. Tensile force, directed along a terminal should be of at least 19.6H/2.0 kgf/ tensile force directed perpendicularly to axis of at least 4,9 H/0,5 kgf/.

2.1.4 To item 2.1.7 of genral technical specifications. Switching force should comply with the values, specified in table 1

2.15 To item 2.1.13 of genral technical specifications. Electric modes test conditions and number of cycles of switchings are given in table 2 item 2,2,5.

2.1.6 To tiems 2.1.14 of general technical specifications. switching force should comply with the values, specified in table 1.

2.1.7 To item 2.1.15 of genral technical specifications, switching force should comply with the values, specified in table 1

Contd...11p-

2.2 ELECTRIC PARAMETERS AND MODES

2.2.1 To item 2.2.1 of general technical specifications.

2.2.1.1 To item 2.2.1.1 of genral technical specifications. Electric contact resistance /R/ not exceeding 0,05 ohm

2.2.1.2 To item 2.2.1.2 of genral technical specifications. Test voltage / U-test/ - ~~[illegible]~~. 1100 V

2.2.2 To item 2.2.2. of genral technical specifications . Electric contact resistance not exceeding 0,5 ohm

Insulation resistance at least 50 M ohm
Test voltage - 550 V.

2.2.3 To item 2.2.3 of genral technical specifications. Electric contact resistance-not exceeding 0,2 ohm.

Insulation resistance of at least 100 M ohm
Testing voltage should comply with item 2,2,1,2.

2.2.5 To item 2.2.5 of genral technical specifications electric modes Limiting values of permissibel electric modes of operation are given in table 2.
Value of Cos φ - of at least 0.5 time constant values of /τ/ - not exceeding 0.015 Sec

Contd...12/-

I 769

Table - 2

Type of current	Type of load	Electric switching mode				Maximum switching power.	Number of cycles of switchings	
		Voltage V		Current, A			Conditions of switching	
		Minimum	Maximum	Minimum	Maximum		Normal climatic conditions	Upper value of temperature
DC	Active inductive		30		4	70	10,000	5,000
		0,5		0,0005	2		5000	2500
AC	Active inductive		250		3	300	10,000	5,000
					2		5000	2500

2.2.6 To item 2.2.6 of general technical specifications, current-10A, flow time not exceeding 180 s.

2.3.4 Resistance to mechanical effects

2.3.1 To item 2.3.1 of general technic l specifications. Operating conditions as per group 4 of general technical specications

2.4 Resistanceto climatic effects.

2.4.1 To item 2.4.1 of genral technical specifications.operating conditions as per groups 2 of genral technical specifications

Upper value of ambient temperature - + 100°C /373 °k/

Atmospheric pressure - upto 666 Pa/5 mm Hg/

2.4.2 To item 2.4.2 2.4.2 of genral technical specifications. Upper value of temperature + 100°C/ 373 °k/.

2.5 Resistance to special effects.

2.5.1 To item 2.5.2 of general technical specifications. Special effects as per groups of application of standard HO.005.058; for factors, specified in item 1b of table 1- as per HO.058.058 III groups. ~~2.6 Reliability.~~

Contd...13/-

2.6.1 To item 2.6.1 of general technical specifications. Minimum operating time 5000 h. During this minimum operating time a push button should with stand the number of switching cycles, specified in table 2.

2.6.2 To 2.6.2 of general technical specifications storage life of push buttons is 15 years.

2.7 Marking.

2.7.1 To item 2.7.1 of general technical specifications Designation of all on climatic design (letter B") is to be put on the same line along with the designation of a push button and after this designation.

Push buttons should have marking only as per subitem, a,b,e,fh of general technical specificationd.

It is allowed to mark the date of manufacture by applying on an article only two figures, marking the year of manufacture.

2.8 <u>Packing</u>

2.8.1 To item 2.8.5 of general technical specifications. It is allowed to specify contents of precious metals in one push button.

3. <u>QUALIT INSPECTION</u>

Quality inspection should be conducted as per GOST B 21248-75/ General technical specifications/ with supplements and amendments, stated in this item.

Provisions, stated in sub items 3.3.1.8, 3.3.1.9, 3.3.1.10, 3.3.1.11, 3.3.4.1.10, 3.3.4.11, 3.3.4.1.13 of General technical specifications do not refer to push buttons, manufactured ~~do not refer specification~~ as per preset particular technical specifications.

Contd....14/-

3.2 ACCEPTANCE RULES

3.2.2 Qualifying tests

3.2.2.1 To item 3.2.2.1 of general technical specifications. Tests as per groups K-2 / item 4/ k-4/ item 2.16/ k-6/ item .1/k-12. k-13 are not to be conducted, since requirements as per these items do not refer to push buttons.

Tests as per groups k-7/ item 2/, to k--11, k-14 are not to be conducted,

On the basis of data, obtained during development, stage a manufacturer guarantees the compliance of push buttons with the requirements for resistance to increased pressure of air, to mould to ~~mistm~~ salty mist, to acoustic noises, to special effects, to effect of sun radiation.

If necessary tests for compliance with the specified above requirements should be included in new tests, carried out according to GOST B 18347-73 item 2.

3.2.2.2. To item 3.2.2.3 of general technical specifications. Making up sampling is to be carried out as follows:
- for group K-7 / item 1 / - as per each group of articles, consisting of push buttons of one design, / any type/ of one climatic design.
- for groups- k-8. k-9 sampling is to be done from push buttons of any design/any type/ of all climatic design.

3.2.4 Periodical tests

3.2.4.1 To item 3.2.4.3 of general technical specifications, Making up sampling is to carried out as follows:
- for group П-1 as per each group of articles, consisting of push buttons of one design / any type/ of any climatic design according to table 1.

- for group П- 2 - as per each group of articles, consisting of push buttons of one design, / of one type,

Contd...15/-

of one climatic design.

-for group II-3 sampling is to be done from push buttons of any design, of any type and climatic design,

--for-g

3.2.4.2 To item 3.2.4.4. of general technical specifications. Volume of sampling n =30 pieces, acceptance number C=0.

3.2.4.3 To item 3.2.5.5 of general technical specifications. Volume of sampling n_1=15 pieces, n_2=15 pieces. acceptance number $C_1=C_2=0$

3.2.5 <u>Durability tests</u>

3.2.5.1 To item 3.2.5.3 of general technical specifications, Volume of sampling n = 30 pieces, acceptance number C=0

3.3 <u>Inspection procedure</u>

List of testing equipments and measuring devices are given in appendix.1

3.3.1 Design checking

3.3.1.1 To item 3.3.1.4 of general technical specifications. Method 109-1 as per GOST 18962-71.

3.3.1.2 To item 3.3.1.5 of General technical specifcations Characteristics of a soldering iron should be as follows:

- power-30 to 40 W
- temperature of a soldering iron tip 300 to 350° C (573 to 623 °K)

Solder of ПОС-61 grades as per GOST 1499-70 and flux ФКТС as per OST 11 029.001-74 and to be used for testing. Distance between a push butten body and solder should be of not less than 1 mm

3.3.1.3 To item 3.3.1.12 of general technical specifications. Electrical modes, number of switching cycles in normal climatic conditions are to be in compliance with table 2, item 2.2.5.

Contd...16/-

~~Freqencing~~ Frequency of switching -12 cycles per minute.
Parameters of push buttons after testing for wear resistance should be in compliance with table 3.

Parameters	Ratings
Electric contact resistance ohm, maximum	0,1
Insulation resistance, Mohm, mìnimum	50
Testing voltage, V	550
Switching force, N(kgf)	as per table 1

3.3.2 Checking of electrical parameters.

3.3.2.1 To item 3.3.2.1.1 of general technical speciifcations
Mode of measuring:
current- 1A, e.m.f. -3M

3.3.3.2 To item 3.3.2.1.2 of general technical specifications. Accetatarated tests are to be conducted with voltages of 1250 V. Voltage is to be gradually increased from zero upto testing value for 0,2 to 0,5S.
Push buttons should be exposed to testing voltage for 5 ± 0,25, after this the voltage is to be gradually decreased to zero for 0,2 to 0,5Sec .

3.3.2.3 To item 3.3.2.1 of general technical specifications .
Mode of measuring: Voltage- 250 -500 V

3.3.2.4 To item 7.3.3.2.5 of general technical specifcations, current-10A, Voltage-40V, time of current flow-180S
After testing is over:
Resistance of an electric contact should not exceed 0.1 ohm.

Contd....17/

I 769

Insulation resistance should be of atleast 100 megohsm.

Switching force should comply with table 1

3.3.3 Checking of resistance to mechanical effects

3.3.3.1 To 3.3.3.1 of general technical specifications. Push buttons are to be secured to a fixture with a supplier's certificate.

Resistance of an electric contact should not exceed 0,5 ohm

Switching force should comply with table 1.

3.3.3.2 To item 3.3.3.1.1 of general technical specifications. Rigidity degree -x as per GOST 16962-71.

3.3.3.3 To item 3.3.3.12 of teneral technical specifications. Method 103-1.1 regidity degree - xy as per GOST 16962-71

3.3.3.4 To item 3.3.3.1.3 of general technical specifications. Regidity -IY, impact pulse duration -1-3 MS as per GOST 16962-71

3.3.3.5 To item 3.3.3.1.4 of G.T.S. Degree of rigidity IY as per GOST 16962-71

3.3.3.6 To item 3.3.3.1.5 of general technical specifications Degree of regidity VI as per GOST 16962-71

3.3.3.7 To 3.3.3.1.6 of general technical specifications. Degree of regidity- VI as per GOST 16962-71.

3.3.3.8 To item 3.3.3.1 .7 to general technical specifications. Method 108-2, degree of regidity- III as per GOST 16962-71

3.3.4 Checking of resistance to climatic effects.

3.3.4.1 To item 3.3.4.1.1 of general technical specifications, upper value of temperature should be of + 100 $\pm$ 3^{0}C/ 373 $\pm$ 3k/.

Resistance of an electric contact should

Test method - 201 -1

Resistance of an electric contact should not exceed 0.07 ohm.

Contd....18/-

Insulation resistance is to be of at least 100 M ohm switching force is to be in compliance with table 1.

3.3.4.2 To item 3.3.4.1.2 of general technical specifications, Electric load; current- 0,2A, Voltage - 3,0 V. Measuring device - HC 274000 Resistance of an electric contacts should not exceed 0,05 ohm.

Testing voltage 600V. Switching force- in compliance with table 1.

3.3.4.3 To item 3.3.4.1.3 of general technical - specifications Temperature- minus 60 $\pm$ 3°C/ 213 $\pm$ 3K/ and + 100 $\pm$3°C/ 373 $\pm$3k/.

Resistance of an electric contact should not exceed 0,05 ohm. Insulation resistance - at least 100 ohm switching force-in compliance with table 1

3.3.4.4 To item 3.3.4.1.4 of general technical specifications. Voltage- 250 V.

3.3.4.5 To item 3.3.4.1.5 of general technical specifications. Resistance of an electric contact should not exceed 0,05 ohm, insulation resistance during short time test- of at least 30 M ohm during long time test- at least 3.0 M ohm. Switching force- in compliance with item 2.1.4

3.3.4.6 To item 3.3.4.1.6 of general technical specifications. Air pressure in a appr pressure chamber 533 Pa / 4 mm Hg/- Test voltage- 300 V.

3,3,4.7 To item 3.3.4.1.8 of general technical specifications. Duration of test-7 days. Push buttons in the pressure chamber are to be arranged as follows: 50% of push buttons-button upwards, 50% of push buttons - buttons downwards.

Contd...19/-

3.3.4.8 To item 3.3.4.1.9 of general technical specifications, Method 214-1 as per GOST 16962-71

3.3.4.9 To item 3.3.4.1.12 of general technical specifications. Outside appearance of push buttons after testing should meet the following requirements:
There should be no mechanical damages and corrosion of meta parts, buckling, cracks, bulging of plastic.

3.3.5 Checking of resistance to special effects.

3.3.5.1 To item 3.3.5.1 of general technical specifications. Resistance of an electric contact, insulation resistance and testing voltage should be in compliance with item 2.2.4

3.3.6 Reliability checking.

3.3.6.1 To item 3.3.6.1.1 of general technical specifications. Testing time for wear resistance in normal climatic conditions - T = 10 h.

Upper value of temperature- + 100 ± $3^{o}C$/ 373 ± 3K/, relative humidity-95 ± 3% at a temperature of + 40 ± $2^{o}C$ 313 ± 2K/, value of electrocal loads and a number of switching cycles- according to table 2, item 2.2.5.

Resistance of an electric contact insulation resistance and testing voltage- in compliance with item 2.2.2 switching force-in compliance with item 2.1.4

3.3.6.2 To item 3.3.6 .12 of general technical specifications Testing time-500 h. upper value of temperature- + 100 ± $3^{o}C$/373±3K/, relative humidity-95 ± 3% at a temperature of + 40±$2^{o}C$./313 ± 2K/ electrical loads value and number of switching cycles according to table 2, item 2.2.5

Contd...20/

3.3.6.3 To item 3.3.6.1.3 of general technical specifications. Resistance of an electric contact, insulation resistance and testing voltage-in compliance with item 2 2.2.3, switching force- in compliance with item 2.1.4

3.3.7 <u>Checking of marking</u>

3.3.7.1 To item 3.3.7.1 of general technical spcifications. Methods a/b/ item 3.3.7.1 of general technical specifications.

3.3.8 Checking of packing.

3.3.8.1 To item 3.3.8.1 of general technical specifications.

4. <u>TRANSPORTATION AND STORAGE</u>

Requirements for transportation and storage conditions-as per GOST B 21248-75/ General technical specifications

5. <u>APPLICATION AND OPERATION INSTRUCTIONS</u>

Application and operation instructions-as per GOST B 21248-75 GOST B 21248-75 / general technical specifications with supplements and amendments, stated in present item.

5.1 To item 5.2.2 of general technical specifications solder should be of grade ПОС-61 GOST 21931-76

Distance between push button body and soldered is to be at least 1.0 mm

5.2 To item 5.2.3 of general technical specifications. Drawing for installation of push buttons on equipment in compliance with drawing 1.2.3.

5.3 It is allowed to operate push buttons in conditions of relative humidity of air of upto 98% and at a temperature of + 40°C/313K/ without moisture condensation.

6. REFERENCE DATA:

Contd...21/-

6. REFERENCE DATA

6.2 To item 6,2 of general technical specifications. 95 percent service life in modes and conditions, specified in general technical specifications and in particular technica specifications ~~and in particular technical specifications~~ should be at least 7500 h.

During this time push buttons should withstand 1,5 value o switching cycles, specified in table 2, item 2,2,5.

7. SUPPLIERS GUARANTEES

Suppliers guarantees - as per GOST B 21248-75 of general technical specif.cations

Cintd....22/

I-769

Appendix No:1
Recommended

LIST OF TESTING EQUIPMENTS AND MEASURING DEVICES

1. Vibration stand BY5/5000 CT-600, BC-68
2. Impact test installation CY-1, Y5/1000
3. Centrifugal equipment Ц1-150
4. Hot and moist chamber KTB 04-155
5. Cooling chamber TB -1000
6. Heating chamber - KT 04-350
7. Installation for measuring electric contact of type ПС-15
8. Megohmmeter of type Pm-175.
9. Installation for measuring switching force
10. Installation for conducting a test for wear resistance of
11. Loads stand HC
12. Brak-down test installation У/ГУ-IM

Note:
If the above listed equipments and inspection-measuring devices are not available it is allowed to use devices of similar or of higher accuracy class or any other equipment of parameters, which satisfy the requirements of technical specifications.

2. If an impact test installation with impacts duration of 0,2 to 6 ms is not available it is allowed to conduct tests using an impact test installation with impacts duration of 1 to 80 ms

. . . .

NUMBER I-2019

SHEET 28 OF 45

SUPERSEDES

EXTRACT from OP00.360.011 TY

Small size button.

It is intended to work in electric circuits of direct and alternate current.

Table.

Switching voltage (V).		Switching current, A		Wear-resistance of button (in switchings)
direct	alternate.	DIRECT alternate.	ALTERNATE direct	
30	220"	4	3	10000

Contact resistance is equal to 0.01 Ohm.

TRANSLATED	G.Nirmala		
AUTHENTICATED	P.M.Reddy		
TYPED			
EDITED			
	NAME	SIGN.	DATE

Ordnance Factory Project
Hyderabad.

APPROVED