

For Comments Only

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Draft Indian Standard
AUTOMOTIVE VEHICLES - ELECTRIC RELAYS
- SPECIFICATION
(Third Revision of IS 2077)

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of comments is 15.03.2010**

FOREWORD**Formal clause shall be included later**

This standard was first published in 1962. In the first revision, took place in 1988, besides other changes, environmental tests for horn relays were included. In this second revision, besides other changes, following new tests have been included:

- Limiting continuous current test
- Maximum switching current test
- Continuous ON test
- Reverse Polarity test
- Environment and humidity test
- Mechanical shock test
- Mixed environment test
(temp. profile with random vibration)

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

1.1 This standard specifies the general requirements and methods of test for electromagnetic relays for use in automotive circuits such as for horns, headlamps and other similar accessories using same rated voltage 6, 12 or 24 volts dc electrical system.

1.2 This does not cover relays for starter motor and solid state type relays.

2 REFERENCES

The following standards contain provisions, which, through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

<i>IS No.</i>	<i>Title</i>
4905 : 1968	Methods for random sampling
6236 : 1971	Direct recording electrical measuring instruments
10250 : 1982	Specification for environmental tests for automotive electrical equipment

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Relay

An electromagnetic switch generally used for remote control.

3.2 Drop Off Voltage

The maximum voltage at which the contacts of the relay shall be opened when the applied voltage is gradually decreased from the rated voltage (*see 3.6*), the relay contacts being closed initially.

3.3 Mounting

The means of fixing the relay.

3.4 Pull on Voltage

The minimum voltage at which the contacts of the relay shall be closed when the applied voltage is gradually increased from zero, the relay contacts being open initially.

3.5 Rated Current

The maximum current specified by the manufacturer which the relay contacts are designed to carry continuously at the normal operating conditions.

3.6 Rated Voltage

The normal operating voltage specified by the manufacturer.

3.7 Acceptance Tests

Tests carried out on samples taken from a lot for the purpose of acceptance of the lot.

3.8 Routine Tests

Tests carried out on each relay to check the requirements which are likely to vary during production.

3.9 Type Tests

Tests carried out to prove conformity with the specification. These are intended to prove the general qualities and design of a given type of relay.

4 MANUFACTURE

4.1 The relays shall be so designed and constructed as to be mechanically robust and free from any operational difficulties. They shall function safely and reliably under conditions of vibrations and shocks met with during normal installation and use. The relays shall have adequate resistance to weather conditions such as excessive humidity, rain, corrosion and dust ingress.

4.2 Components

The components shall be made of materials of approved quality agreed between the manufacturer and the purchaser. Typical materials for the components include mild sheets for armature, low magnetic retentive type ferrous core, water/weather proof cover.

4.3 Contacts

The contacts shall be made of suitable alloy or any other material as agreed between the manufacturer and the purchaser, and shall be capable of carrying the current specified in **7.15** without any damage.

4.4 Contact Retract Springs

The contact/retract springs, shall be robust in design and of any material agreed between the manufacturer and the purchaser.

4.5 Fuses

Fuses for electrical connections shall be non-corrosive and shall carry the ratings they are intended for.

4.6 Insulating Impregnating Compounds

All insulating and impregnating compounds including varnishes, waxes, oil and the like shall be suitable for the particular application for which they are intended. Under all normal uses and under specified test requirements, a compound shall adequately preserve electrical characteristics of the insulation to which it is applied, by the exclusion of moisture there from.

5 WORKMANSHIP AND FINISH

5.1 Workmanship shall be in accordance with the best prevalent engineering practice.

5.2 All the current carrying parts shall be suitably electroplated. Other metallic parts shall be given suitable protective coating.

6 MOUNTING AND POSITIONING

6.1 Mounting and positioning arrangement of a relay shall be such that it may be possible for easy replacement. For the above purpose the dimensions shall be as given in Fig. I. The positioning zone and terminal positions are shown in Fig.2 and Fig. 3.

6.1.1 Relays of a particular model and type shall be easily interchangeable.

6.1.2 *Positioning Zones of the Male Tabs (see Fig. 2).*

All positioning zones shall have a length of 7.0 mm maximum and a width of 1.15 mm maximum.

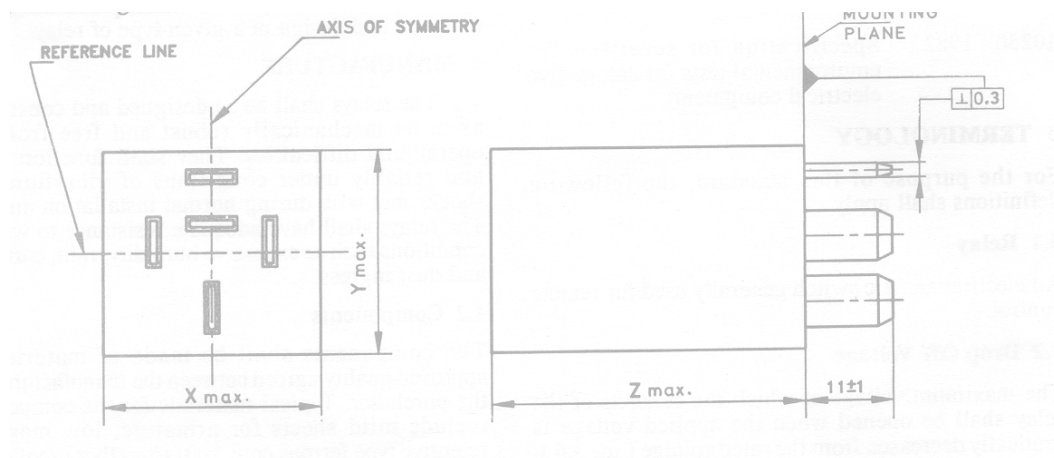
6.1.3 The central intersection of the reference line and axis of symmetry shall lie in the centre of the area defined by maximum dimensions of X and Y (see Fig. 1). Z is the maximum distance from the mounting plane.

6.1.4 Configurations other than rectangular are permitted, provided they lie within the specified area. However, in all cases the outside contour shall lie within the maximum dimensions X and Y.

6.1.5 The type of mounting, that is, either 'panel mounting' type or 'plug in' type and the arrangement of terminals, shall be as agreed between the manufacturer and the purchaser.

6.2 Sockets

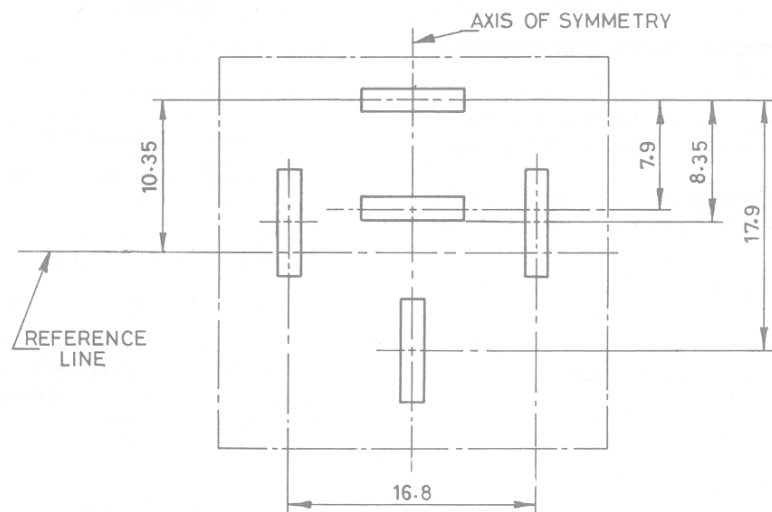
It is recommended that the female connectors in the socket shall not contain locating pins in order to avoid excessive withdrawal force.



<i>Apparatus</i>	<i>Type</i>	<i>X</i> <i>Max</i>	<i>Y</i> <i>Max</i>	<i>Z</i> <i>Max</i>
<i>Relays</i>	A	28	28	30
	B	30.7	30.7	40
<i>Flashers</i>	C	30.7	30.7	55
	D	34	40	
	E	40	40	

All dimensions in millimetres.

FIG. 1 OVERALL DIMENSIONS FOR RELAYS AND FLASHERS



NOTES

- 1 The dimensions in Fig. 2 refer to the positioning zones at the root of the male tabs and to the apertures at the entering plane.
 - 2 All corresponding dimensions are also applicable if less than five male tabs are fitted.
- All dimensions in millimetres.

FIG. 2 LOCATION OF POSITIONING ZONES AND APERTURES

Type	Arrangement of Terminals	Wiring Diagram (Basic Types)	Attribution of Terminal Functions
Normally Close (NC)			1) Coil 2) Coil 3) Switching contact input 4) Switching contact output (NC)
Normally Open (NO)			1) Coil 2) Coil 3) Switching contact input 5) Switching contact output (NO)
Change Over Contact (COC)			1) Coil 2) Coil 3) Switching contact input 4) and 5) Switching contact output 4 = Normally Close (NC) 5 = Normally Open (NO)

NOTE ~ Other terminal designations may be used if the arrangement and attribution of functions of the terminals comply with the specifications.

FIG. 3 ARRANGEMENT OF THE TERMINALS AND WIRING DIAGRAM

7 TESTS

7.1 Test Conditions

7.1.1 General

Unless otherwise specified, the ambient temperature shall be 15°C to 45°C.

7.1.2 If dc power supply other than battery is used, it shall be suitably stabilized within ± 0.1 V for output.

7.1.3 All measuring instruments used during the tests shall have accuracy of at least ± 0.1 percent (*see* IS 6236).

7.2 Classification of Tests

7.2.1 Type Tests

The following shall constitute type tests:

- i) Visual examination (*see* 7.3),
- ii) Dimensional check (*see* 7.4),
- iii) Performance test (*see* 7.5),

- iv) Insulation resistance (*see 7.6*),
- v) High voltage (flash) test (*see 7.7*),
- vi) Pull on and drop off voltage test (*see 7.8*),
- vii) Load test (*see 7.9*),
- viii) Voltage drop test (*see 7.10*),
- ix) Operating voltage range test (*see 7.11*),
- x) Fuse blowing test (*see 7.12*),
- xi) Robustness of terminations, fasteners (*see 7.13*),
- xii) Contamination test (*see 7.14*),
- xiii) Endurance test (*see 7.15*),
- xiv) Vibration test (*see 7.16*),
- xv) Dry heat test (*see 7.17*),
- xvi) Damp heat (cycling) test (*see 7.18*),
- xvii) Cold test (*see 7.19*),
- xviii) Rapid change of temperature test (*see 7.20*),
- xix) Dust test (*see 7.21*),
- xx) Corrosion resistance test (*see 7.22*),
- xxi) Drop test (*see 7.23*), and
- xxii) Water spray test (*see 7.24*). **7.25**
- xxiii) Limiting continuous current Test (*see 7.25*).
- xxiv) Maximum switching current Test (*see 7.26*).
- xxv) Continuous 'ON' test (*see 7.27*).
- xxvi) Reverse Polarity test (*see 7.28*)
- xxvii) Environment and humidity test (*see 7.29*).
- xxviii) Mechanical shock (*see 7.30*).
- xxix) Mixed environmental test (Temperature profile with random vibration) (*see 7.31*).

7.2.1.1 *Criteria for approval*

Twelve samples shall be submitted for testing together with the relevant data. These shall be tested according to the test sequence given in Annex A.

7.2.1.2 In case of failure in one or more type tests the testing authority may call for fresh samples not exceeding twice the number of the original samples and subject them to the test(s) in which the failure occurred. If in the repeat tests no failure occurs, the tests may be considered to have been satisfied.

7.2.2 *Acceptance Tests*

The following shall constitute the acceptance tests:

- i) Visual examination (*see 7.3*),
- ii) Dimensional check (*see 7.4*),
- iii) Performance test (*see 7.5*),
- iv) Insulation resistance test (*see 7.6*),
- v) Pull on and drop off voltage test (*see 7.8*),
- vi) Load test (*see 7.9*),
- vii) Voltage drop test (*see 7.10*), and
- viii) Operating voltage range test (*see 7.11*).

7.2.2.1 The number of samples for the acceptance tests shall be as agreed to between the manufacturer and the purchaser. However, a recommended plan of sampling is given in Annex B.

7.2.3 Routine Tests

The following shall constitute the routine tests:

- i) Visual examination (*see 7.3*),
- ii) Performance test (*see 7.5*),
- iii) Pull on and drop off voltage test (*see 7.8*), and
- iv) Voltage drop test (*see 7.10*).

7.2.4 Optional Tests

These tests shall be carried out only if agreed between manufacturer and buyer. Test conditions and other details shall be as agreed between the manufacturer and buyer. The following shall constitute the optional tests:

- i) Reverse Polarity test (*see 7.28*),
- ii) Environment and humidity test (*see 7.29*),
- iii) Mechanical shock (*see 7.30*), and
- iv) Mixed environmental test (Temperature profile with random vibration) (*see 7.31*).

7.3 Visual Examination

The relay shall be checked for general workmanship and finish. It shall be free from any defect that may affect the normal functioning of the relay. It shall also be free from injurious flaws and burns.

7.4 Dimensional Check

The relay shall be checked for dimensions as agreed to between the manufacturer and the purchaser.

7.5 Performance Test

The relay shall be connected to an appropriate electric load. Under no load to full load condition, the relay shall switch on and off in limits provided by working range of voltage, pull on and drop off voltage. The coil resistance and contact voltage drop shall be checked for normal functioning at the rated voltage and shall meet the requirements.

7.6 Insulation Resistance Test

The insulation resistance between the insulated terminal and the main body shall be not less than one mega ohm (1 M Ω) when measured with a dc potential of 500 volts applied for one minute at prevailing atmospheric temperature and humidity conditions.

7.7 High Voltage (Flash) Test

The relay shall be subjected to a test voltage of 500 V rms at any convenient frequency between 40 and 60 Hz applied for 5 seconds between each of the insulated terminals and the body at prevailing atmospheric temperature and humidity conditions.

7.7.1 The relay shall withstand the test without arcing or puncture and shall satisfy the performance test (*see 7.5*).

7.8 Pull on and Drop Off Voltage Test

7.8.1 Pull on Voltage Test

After connecting it in a suitable circuit, the voltage applied shall be gradually increased from zero till the contacts of the relay are closed. The observed voltage shall not be more than 67percent of the rated voltage for 6, 12 and 24 volt system.

7.8.2 Drop off Voltage Test

After connecting it in a similar way as in 7.8.1 the applied voltage shall be gradually decreased from the rated voltage till the contacts of the relay open. This voltage shall not be less than 20 percent of the rated voltage for 6, 12 and 24 volt systems respectively.

7.9 Load Test

The power consumed by magnetizing winding of the relay at the rated voltage shall not exceed 3 watts.

7.10 Voltage Drop Test

The voltage drop across the terminals of the relay with a load as per rated amperage when the rated voltage is applied to the coil, shall not exceed 3mv/A:

7.11 Operating Voltage Range Test

The relay shall operate satisfactorily between - 40 to 105 degree centigrade over the following voltage range:

Rated Voltage (dc)	Operating Voltage Range (dcV)
6	4.5 to 6
12	8 to 16
24	18 to 32

Note: This temp range -40 & 105 degree Centigrade can be across vehicle application within India. For exports the temperature range shall be as agreed between the manufacturer and the purchaser.

7.12 Fuse Blowing Test

The contacts of relay of Normally Open (NO) and Normally Closed (NC) shall be checked before the test. Rated voltage and current as specified in **7.15** shall then be passed through contacts in series with the vehicle fuse feeding this circuit. The battery shall be the source of supply for voltage. The load carrying rated current should be shorted across its terminals. After blowing of the fuse, the relay shall pass the tests specified in **7.5, 7.9** and **7.10**.

7.13 Robustness of Terminations and Mounting Fasteners

All terminations, fasteners shall be able to withstand" 200 N force applied on appropriate tool or by hand along the axis of terminals. After the test, the relay shall pass the tests specified in **7.5, 7.9** and **7.10**.

In addition relays terminals should withstand a torsion force of 0.3Nm.

7.14 Contamination Test

The test shall be conducted according to **4.9** of IS 10250. At the end of the test, the relay shall pass the tests specified in **7.5, 7.9** and **7.10**.

7.15 Endurance Test

Electrical life:

i) To be tested at 13.5V for 12V supply and 27V for 24V supply for 1 00 000 cycle each at rated current. Each cycle consists of 2 sec ON & 2 sec OFF. Operating temperature to be: Cold: - 30°C, Hot: + 85°C

Division of 1 00 000 test cycles are to be allocated as follows:

- 25 percent hot followed by performance check
- 12.5 percent cold
- 12.5 percent ambient followed by performance check
- 25 percent hot followed by performance check
- 12.5 percent cold
- 12.5 percent ambient followed by performance check

Test to be conducted on 3 samples minimum.

ii) To be tested at 13.5V for 12V relay coil voltage and 27V for 24V relay coil voltage at 85°C.

Motor load (Stall current to be minimum 1.5 times rated continuous current of relay): 3 00 000 cycles with motor switched on and off. Each cycle will consist of 5 sec 'ON' and 5 sec 'OFF'

Lamp load (Hot filament current to be minimum 75 percent of rated continuous current of relay): 1 50 000 cycles. Each consists of 1 sec 'ON' and 9 sec 'OFF'

The above three tests are to be conducted on different samples.

7.16 Vibration Test

The test shall be conducted according to 4.1 of IS 10250: 1982 under the following conditions:

Frequency range 10-55- 10 Hz
 Displacement amplitude 0.35 mm
 Total duration 6 h (2 h in each axis)

At the end of the test, the relay shall be examined for any evidence of damage and shall pass the tests specified in **7.5**, **7.6** and **7.10**.

7.17 Dry Heat Test

The test shall be conducted according to **4.2** of IS 10250 under the following conditions:

Temperature $105 \pm 2^{\circ}\text{C}$
 Duration of exposure 2 h

After the completion of the test, the relay shall pass the tests specified in **7.5** and **7.10**. The non-metallic parts shall not show any breakage or deformation.

7.18 Damp Heat (Cycling) Test

The test shall be conducted according to **4.3** of IS 10250. The number of the conditioning cycles shall be seven. After conditioning, the relay shall pass the tests specified in **7.5**, **7.6** and **7.10**.

7.19 Cold Test

The test shall be conducted according to **4.4** of IS 10250 under the following conditions:

Temperature $-30 \pm 3^{\circ}\text{C}$
 Duration 2 h.

After the completion of the test, the relay shall pass the tests specified in **7.5**, **7.6** and **7.10**. The non-metallic parts shall not show any breakage/deformation.

7.20 Rapid Change of Temperature Test

The test shall be conducted according to 4.5 of S 10250: 1982 under the following conditions:

Cold temperature, Min -30°C
 Hot temperature, Max 85°C
 No. of cycles 5
 Duration (t_1) 1 h

After the completion of the test, the relay shall pass the tests specified in **7.5** and **7.10**. The parts of nonmetallic material shall not show any breakage/ deformation.

7.21 Dust 'Test

The test shall be conducted according to **4.6** of IS 10250. At the end of the test, the relay shall pass the tests specified in **7.5, 7.6** and **7.10**.

7.22 Corrosion Resistance Test

This test shall be conducted according to **4.8** of IS 10250 for 150 h consisting of 6 cycles of 24 h duration each With one hour between cycles for draining. After removal from the salt spray chamber, the sample shall not show any sign of corrosion and shall pass the tests specified in **7.5, 7.6** and **7.10**.

7.23 Drop Test

This test shall be conducted according to **4.10** of IS 10250. The drop height shall be 1 000 mm and the number of falls shall be 10. At the end of the test, the relay shall pass the tests specified in **7.5, 7.6** and **7.10**. The non-metallic part of the material shall not show any breakage/deformation.

7.24 Water Spray Test

The test shall be conducted according to **4.13.1** of IS 10250 for a duration of 4 h. During the test the relay shall be mounted as per the vehicle mounting and after the test, the relay shall pass the tests specified in **7.5, 7.6** and **7.10**.

7.25 Limiting Continuous Current Test

The highest current to relay contact can carry under specified conditions without exceeding specified upper limit temperature of the relay.

Test condition: NO/NC contact at 23° C – 1.5 times Rated current/ Rated current.

NO/NC contact at 85° C – Rated current/0.75 times Rated current. Duration: 8h

No obvious damage should occur to the contact points and relay should satisfy performance requirements.

7.26 Maximum Switching Current Test

Switching current capacity of the relay contacts.

Test condition: NO/NC – ON - 3 times rated current/ Rated current.

NO/NC - OFF – 1.5 times rated current/ Rated current.

Duration : 8h

No obvious damage should occur to the contact points and relay should satisfy performance requirements.

7.27 Continuous on Test

The condition: To be tested with rated load at maximum operating temperature for 24h duration.

No obvious damage should occur to be contact points and relay should satisfy performance requirements.

7.28 Reverse Polarity Test

Relay shall withstand following voltage applied to its terminal without any degradation of performance.

- 14 V for 1 minute (for 12v Relay)
- 30 V for 30 sec. (for 12v Relay)
- 28V for 1 minute (for 24v Relay)

Acceptance criteria:

- To meet the requirements of performance after the test.
- No visual deterioration or degradation should occur

7.29 Adverse Voltage Test

The component should survive to the following adverse voltage applied across its coil terminals without any degradation in performance.

+30V for 1min, +18V for 15min. (For 12v Relays) and 36V for 60 min @ T max 20 deg C (for 24v relay)

No obvious damage should occur to the contact points and relay should satisfy performance requirements.

7.29 Environment and Humidity Test

The sample shall be subjected to the following conditions in operating mode and should satisfy before and after the test. Each cycle consists of:

From 25 ± 5 to -10 ± 2 °C in 30 min, At -10 ± 2 °C for 3 h,
From -10 ± 2 to 25 ± 5 °C in 90 min,
Then above cycle followed for 5 cycles, then followed by
From 25 ± 5 to 65 ± 2 °C in 30 min,
At Plus 65 ± 2 °C for 7.5 ± 0.5 h with 95 ± 3 percent RH,
From 65 ± 2 °C, 95 ± 3 percent RH to 25 ± 5 °C in 30 min,
At 25 ± 5 °C and 95 ± 3 percent RH for 15.5 h.
No. of cycles: 10 Test Voltage: 13.5 V dc

Acceptance criteria:

1. To meet the requirements of performance after the test.
2. No visual deterioration or degradation should occur
3. There should be no change in contact path
4. Full functionality of electrical and mechanical junctions
5. No anomalies in visual tear down analysis

7.30 Mechanical Shock Test

Mechanical shock profile and acceptance criteria shall be as under:

Mechanical Shock profile:

Acceleration 50 g

Nominal Duration 11 min

Number of shocks per axis 20 (10 positive & 10 negative)

Total number of shocks 60

Acceptance criteria:

1. To meet the requirements of performance after the test.
2. Non occurrence of any visual deterioration or degradation during the test.

7.31 Mixed Environmental Test (Temperature profile with random vibration)

This test should be conducted as per the details agreed between manufacturer and purchaser. Vibration profile shall be according to installation location.

Operating mode - operated with alternator voltage with electrical operation.

8 DESIGNATION

Relays, if agreed to between the manufacturer and the purchaser may be designated by their type of mounting, arrangement of terminals, rated voltage and current, the type of application in code, for example, 'H' for horn, 'L' for headlight, 'T' for turn signal followed by number of the Indian Standard.

A typical designation may be illustrated as follows:

PHS 1230 IS 2077 indicates a 12 V, 30 A, panel mounted with screw type terminals relay meant for horn application.

9 MARKING

9.1 Each relay shall be distinctly and indelibly marked with the following:

- a) Name and/or trade-mark of the manufacture,
- b) Rated voltage and current,
- c) Terminal markings, and
- d) Month and year of manufacture. .

9.1.1 The terminal markings for identification shall be 'as seen from the relay terminal connection' sides.

9.2 BIS Certification Marking

9.2.1 The product may also marked with the Standard Mark.

9.2.2 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A
(Clause 7.2.1.1)

TEST SEQUENCE FOR TYPE APPROVAL

Clause No.	Test	Sample No.														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7.3	Visual examination	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.4	Dimensions	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.5	Performance test	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.6	Insulation resistance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.7	High voltage (flash) test	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.8	Pull on and drop off voltage test	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.25	Load test	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.26	Voltage drop test	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7.27	Operating voltage range test	x	x	x	x											
7.28	Fuse blowing test					x	x	x								
7.29	Robustness of terminations, mounting fasteners							x	x	x						
7.30	Contamination test										x	x	x			
7.31	Endurance test	x	x	x												
7.32	Vibration test				x											
7.33	Dry heat test				x											
7.34	Damp heat (cycling)						x									
7.35	Cold test							x								
7.36	Rapid change of Temperature test								x							
7.37	Dust test									x						
7.38	Corrosion resistance test										x					
7.39	Drop test											x				
7.40	Water spray test												x			
7.41	Limiting continuous current test															
7.42	Maximum switching current test															
7.43	Continuous ON test															
7.44	Reverse Polarity test															
7.29	Environment and humidity test							x	x	x						
7.30	Mechanical shock test													x	x	x
7.31	Mixed environment test (temp. profile with random vibration)													x	x	x

ANNEX B
(Clause 7.2.2.1)
RECOMMENDED PLAN OF SAMPLING

B-1 LOT

B-1.1 In a consignment, all the relays of same design, manufactured from the same material under similar conditions of production shall be grouped to constitute a lot.

B-1.2 The number of relays to be selected from each lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

B-1.2.1 The relays shall be selected from the lot at random. In order to ensure the randomness of selection, procedure given in IS 4905 may be followed.

B-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-2.1 All the relays selected at random in accordance with coil and 2 of Table 1 shall be subjected to all the acceptance tests. A relay failing to satisfy any of the acceptance tests shall be termed as defective. The lot shall be considered as conforming to the requirements of these acceptance tests if the number of defective found in the sample is less than or equal to the corresponding acceptance number given in col 3 of Table 1 otherwise the lot shall be rejected without further testing.

Table 1 Sample Size and Acceptance Number
(Clause B-1.2)

Lot size (1)	Sample Size (2)	Acceptance No. (3)
Up to 500	20	1
501 to 1000	32	2
1001 to 3000	52	3
3001 to 10000	80	5
10001 and above	125	7