

Q-SERIES PLUG IN TYPE D.C. RELAYS (NON PROVED TYPE)

नाम

Name : _____

अनुक्रमांक

Roll No : _____

पाठ्यक्रम

Course : _____

दिनांक

Date : _____

प्राप्त अंक

Marks Awarded : _____

अनुदेशक का अधाक्षर

Instructor Initial : _____

Q- SERIES PLUG IN TYPE D.C. RELAYS (NON PROVED Type)

Plug in type relays are preferred in place of shelf type relays now a days to for the following reasons:-

1. They are compact and they occupy less space.
2. They carry more contacts due to their light structure.
3. They are quick to operate.
4. They have longer life i.e., 10^6 operations as against 10^5 of shelf type relays; and
5. These can be replaced without disturbing the wiring.

‘Q’ series relays made to BRS specifications and similar makes of vital relays are to be studies here. Vital relays are those whose malfunctioning affects safety in train working.

These relays are plugged into pre wired terminal boards and they can be replaced very quickly. A coding pin arrangement is provided to match the relay contact combination with that of plug board wiring. This is to ensure that a front contact of the relay shall not get connected to a back contact wiring on the board and vice versa. If allowed, this can cause unsafe conditions. Various contact combinations for each type of relay are so grouped, as to satisfy this conditions and allotted separate codes.

As the relay armature is fixed in front and not below the core, a pusher spring is provided to restore it to its full release position when the coil feed is cut off or reduced. The pusher spring also gives sufficient pressure to the relay back contacts.

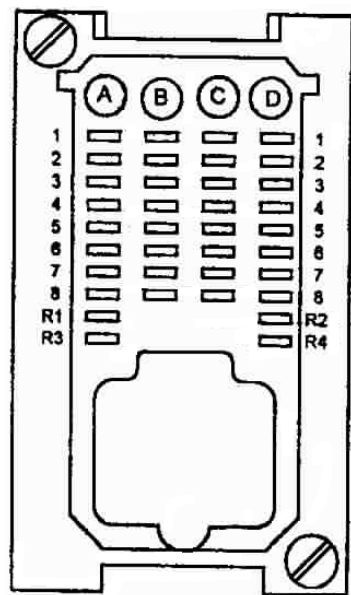
Clip type wire connectors when pushed in get locked in their respective slots of the terminal board. For their removal, they shall be lifted up and unlocked in their slots by a sharp tool from the relay side of the board so as to be drawn out.

24V D.C. ‘Q’ series line relays are generally used on railways. They have 8 to 16 independent ‘Metal’ to ‘Carbon’ contacts. QJ1 type thermal time element relays, however, have a ‘metal’ to ‘metal’ dependent heat actuated contact in addition to two front and one back ‘Metal’ to ‘Carbon’ contacts.

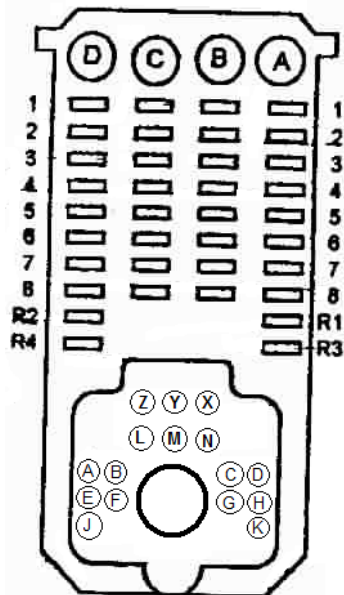
In addition to Non A.C. immunised and immunised D.C. neutral line relays (QN1 & QNA1) of common type, various special types of relays such as: (1) Latch relays (QL1) (ii) Biased Line Relays (QB3, QBA1) (iii) Biased Point Contactors (QBCA1) (iv) Sensitive Neutral Line Relays (QS3) (v) Twin Neutral Line Relays (QNN1) (vi) Slow to Pick up Line Relays (QSPA1) (vii) Slow to Release Line Relays (QSRQ1) (viii) Time

Element Relays (QJ1) (iv) Lamp Proving Relays (QECX1, QUCX1) and some such other types are available among these. These relays have their own designated coding pin positions so that they cannot be accommodated in each other's places.

GENERAL FEATURES: PLUG BOARD

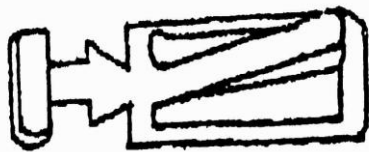


BACK VIEW OF PLUG BOARD



FRONT VIEW OF PLUG BOARD

Choosing from 16 positions shown above, 5 holes are provided on the plug board to accommodate coding pins available at the back side of the relay. This coding prevents plugging of wrong relays in the base. For each type of relay, a common code is allotted for a group of relays with common contact positions.	A1. B1. C1. D1 A2. B2. C2. D2 A3. B3. C3. D3 A4. B4. C4. D4	FIXED POSITIONS FOR FRONT CONTACTS
	A5. A6. A7. A8 D5. D6. D7. D8	FIXED POSITIONS FOR BACK CONTACTS
	B5. B6 . B7. B8 C5. C6. C7. C8	POSITIONS FOR EITHER FRONT OR BACK CONTACTS.



WIRE CONNECTOR

Only two wires can be connected to each Contact. They can either be crimped or soldered.

Recommended Wire:-

1. For all sigg. Circuits Carrying 16/0.2 mm dia. Multi-strand flexible copper wire. Normal currents.
2. For point motor feed through 9/0.012" Multi-strand copper wire.

Maximum permitted contact Resistance : M to C Contacts = **0.20 Ω**

(To be measured when relay is energised by 125% of its P.U. current)

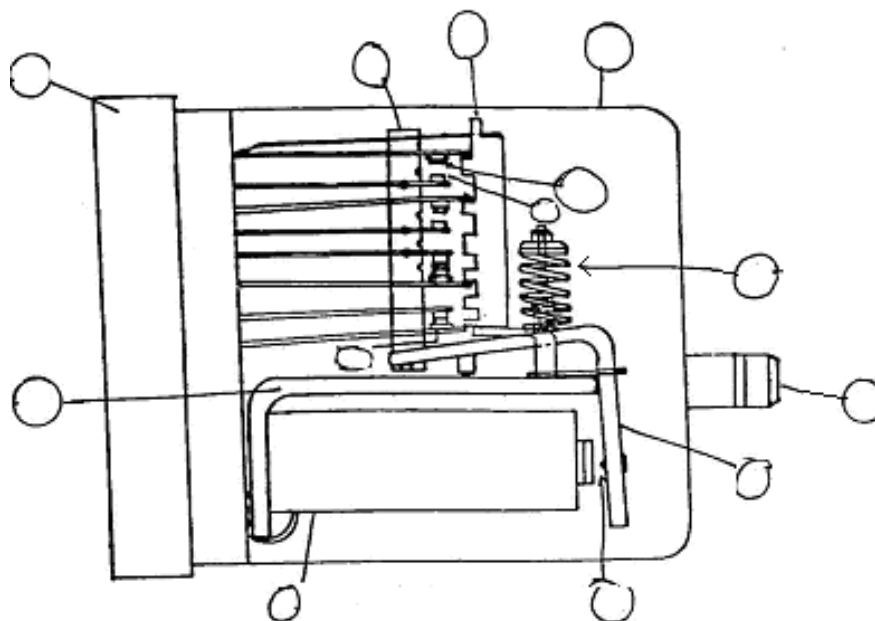
Current Carrying capacity of Relay contacts:

The continuous current rating of each contact is 3A. The switching current rating depends on the nature of load through the contact, viz., inductive or non-inductive load. (coil offering inductance is called inductive load)

1. D.C. NEUTRAL LINE RELAYS (Non - A.C. Immunised) QN1 RELAY

Specification: BRS 930/930 A.

Contact combinations available are 12F.4B: 8F.4B: 8F.8B. 6F.6B & 4F.4B.



Identify the following parts in the sketch:

- | | | |
|-----------------------|-------------------------|------------------------|
| 1) Relay base | 2) Electro-magnet | 3) Armature |
| 4) Pusher spring | 5) Fixed front contacts | 6) movable arm contact |
| 7) Fixed back contact | 8) Operating arm | 9) Adjustment card |
| 10) Residual pin | 11) Transparent cover | 12) handle |
| 13) Heel piece | | |

2. Study of QNA1 Relay: Specification: BRS 931/932 A

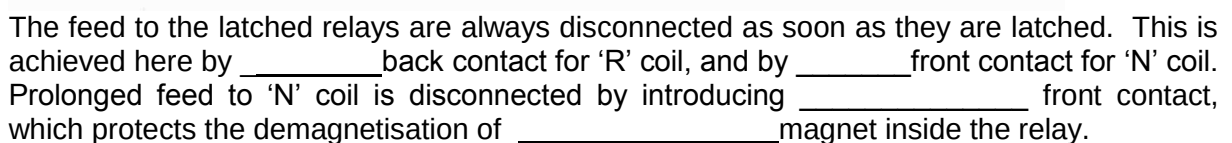
A copper slug is provided around the core near the armature end as shown in figure below. But for this, the design of the relay is similar to that of QN1 relay: QNA1 relays are used for external circuits in the AC RE sections. In the faulty condition the induced AC voltage will appear across the relay coil. This produces an alternative flux which in turn induces an eddy current in the copper slug. This induced current in the copper slug will produce a flux which will oppose the alternating flux produced by the induced voltage thereby preventing it from passing through the air gap. Thus, the relay is immunised up to 300 V AC R.M.S. at 50 Hz.

A diagram consisting of six dots arranged in two rows and three columns.

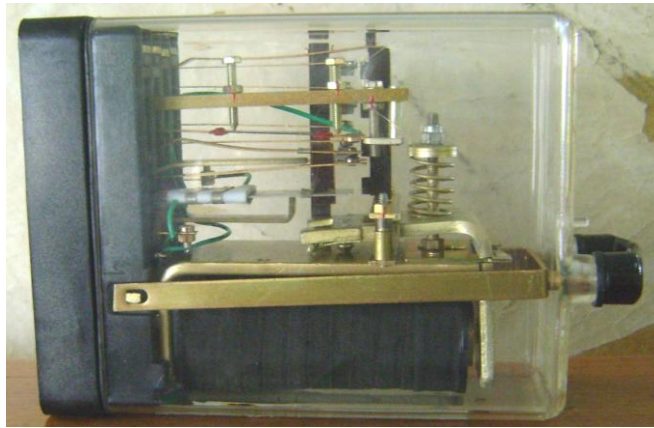
(a) Study the construction of the relay. There are four different 'arrows' shown in the figure below. Match the arrows with the statement given below:

-
- The diagram on the left illustrates the internal components of a relay assembly. It shows a central vertical core with two main sections: 'PM-N' (Permanent Magnet North) on the left and 'PM-E' (Permanent Magnet East) on the right. A 'COIL' is wound around the central core. Arrows indicate the flow of magnetic flux and the direction of current through the coil. The photograph on the right shows the physical assembly, which is housed in a transparent plastic enclosure. The internal components, including the coil, magnets, and mechanical contacts, are visible. A label on the bottom of the assembly reads 'STADIN 1100-AT 100-62'.

(b) Study the working of the relay from the circuit diagram given below:



4. Study of QJ1 Relay. THERMAL TIMER RELAY: made to BR Spec. No.937



This is a thermal time element relay. It has a heating element (H) and a neutral relay (R) which together energizes an external line relay after a pre-set time delay. The thermal element consists of a bimetallic strip having 'invar' (iron) at the top and brass at the bottom. A heating coil (TH) is wound over it. For a given heat, 'invar' expands less and 'brass' more. Since their ends are sealed together, the free end of the strip moves up gradually as being heated. This pushes up an arm contact to close with a 'hot contact' spring after a pre-determined time. Closing of hot contact energizes the 'JSR' relay coil, which sticks through its own front contact across the hot contact. When the 'JSR' is energized, its back contact in the thermal coil circuits opens. After some time, the heating element cools off and its arm closes with the cold contact. This cold contact in series with a 'JSR' front contact extends feed to an external relay. The complete cycle of making a hot contact and then a cold contact ensures that the thermal contacts are normalized before each operation. This in turn results in the time delay being equal for all operations. In this relay, the time lapse during the 'cool off' of the heat element is thrice the time lapse during its heating.

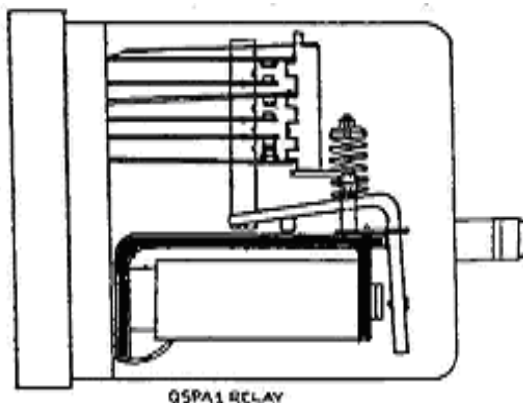
5. Study of QBCA1 Relay: Specification: BRS 943

QBCA1 is an AC immunised Biased contactor relay. The copper slug provided at the core face provides the AC immunity to the relay. The Horse shoe magnets mounted at the core face do provide the biasing on the relay. Biasing also can be achieved by providing diodes externally. The diagram explains how the biasing is achieved. The advantage of biasing is such that two conflicting relays can be made to operate on a pair of conductors. Giving the advantage of saving no. of conductors in point control circuits. This relay is biased to 20 times of its operating DC voltage.

The Heavy Duty (HD) contacts are rugged to switch and carry a current up to 30 Amps. Spark quenching of HD contacts are achieved by providing two ceramic magnets in an arc chamber. The ionised air deviate the flame and arcing intensity is reduced while switching ON/OFF the load.

A magnetic shunt is provided on the core face to protect the permanent magnet from decaying the magnetism, which provide as a cover to the permanent magnet.

6. QSPA1: Q series Slow to pick up AC immunized DC neutral relay. Spec. BRS 933A



Pick up time:	: 540-600 m seconds.
Release time	: 140-200 m seconds.
Working voltage	: 24 VDC
Coil resistance	: 208 ohms
Contact configuration	: 8F / 4B
A/C Immunity level	: 300 VAC

Magnetic shunt is provided at the armature end to make the relay slow to pick up. Magnetic shunt is of a magnetic material, when the current flows through the coil it set up a flux which passes through the magnetic shunt after a time delay the magnetic shunt saturates, further fluxes will not flow through the magnetic shunt. The magnetic circuit completes through core, air gap, armature and heel piece their by armature get attracted.

To make the relay AC Immunized Copper slug is provided at the heel piece end.

Used as TPR where Q-series AC immunized track relays are provided. OHE Circuit Breaker tripping may take around 300 m seconds after catenary's snapping/short circuiting of OHE supply. This causes high voltage drop across the track, which may operate the Track relay. But it is essential that the repeater should not pick up. Hence slow to pickup repeater relay is used. Pick up time for relays used as repeating relays with plug in type AC immunized track relays shall have a pick up time of at least 400 m seconds.

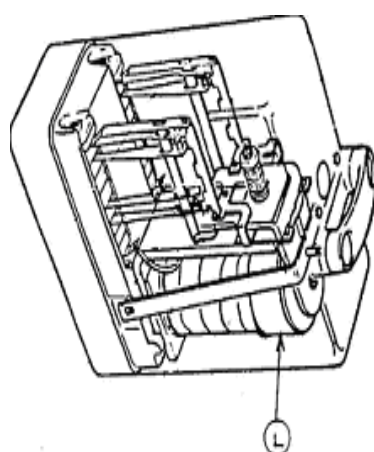
This increase the Pickup time: 540-600 m seconds.

7. D.C. Track Relays with carbon to metal contacts: QT2 Specification: BRS 938A

[QT2 Style Track Relay made to Relay Spec. 26/6:-This accord with. B.S. Spec. 938 A only to an extent].

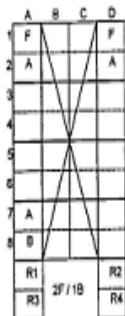
The construction of this relay is similar to that of a Q-Series line relay except that its contact load is reduced drastically. Also, the relay is made more sensitive and workable on a low voltage. It has one or two back contacts, in a deviation from B.R. Spec for QT2 relay, facilitating cross protection in remotely located TPR circuits. This has a single coil of 4 ohm or 9 ohm resistance unlike the shelf type relay which has two coils with open ends. 4 ohms relay is used for longer length track circuits and 9 ohm relay for shorter length track circuits. 2F/1B to reduce load on armature. Hence sensitive and can operate at low voltages. Back contact is used for cross protection to prevent the repeater relay from picking up in case of false feed.

8. QTA2: AC immunized DC neutral track relay. Spec: BRS 939A.



L - COPPER SLEEVE A/C Immunity level 50V AC rms.

Contacts 2F/1B.



9 ohm relay is standard and 20 ohm relays are also available.

Being sensitive relay its DC PU value should not change by a larger extent hence the limitation on the AC immunity. Same as in shelftype.

Max length of Track circuit is 450mtrs. (Rail voltage drop is 10V /90mtrs of track circuit).

QSPA1 only to be used as repeater relay with QTA2.

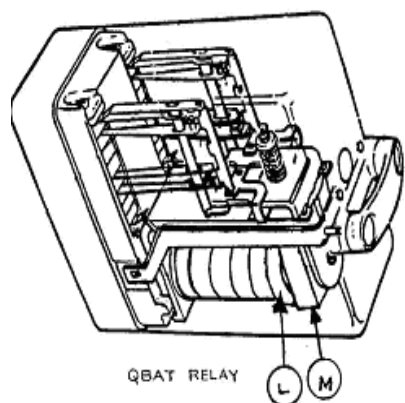
20 ohm relay: PU volts: 1.4 to 2.0V, PU current: 80mA to 90mA.

9 ohm relay: PU volts: 1.0 to 1.4V, PU current: 120mA to 140 mA.

QTA2 RELAY

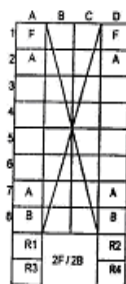
9. QBAT: Biased AC immunized Track Relay (Made to RDSO Spec. 84/88):

This also accords with B.R. Spec. 939 A and 966F to an extent. This is a track relay with an improved immunity level of 80V A.C. by the provision of a biasing permanent magnet on its core along with its copper slug. This biasing by initially polarizing the core strengthens its electro-magnetic flux created in the correct direction by coil current. This takes more AC voltage to disturb the DC working flux. This relay also requires QSPA1 relay as its 1st TPR for the same reasons specified in the case of QTA2 relay.



QBAT RELAY

L - COPPER SLEEVE
M - BIASING MAGNET



Contact configuration : 2F/2B.

PU volts : 1.1 to 1.75V, PU current: 140mA to 175 mA.

ACI : 80V,

Coil resistance : 9 ohms.

Max length of track circuit : 720mtrs and
can be extended to 750mtrs by using a choke at relay end.

Maximum excitation : 235% only because of the flux of P.M.

Non-RE area:

Type of TC	Type of Track Relay	Track Relay Resistance (L= Length of the Track Circuit)	Cells at Feed end	PU Voltage Approx	PU Current Approx
DC TC for Non-RE	Non ACI Plug in Type (QT2)	For L < 100 m → 9 Ω	1 cells (2 V)	1.5 V	150 mA
		For L > 100 m → 4 Ω	2 cells (4 V)	0.5 V	125 mA

Sl. No	Sleeper	Section Yard/ Block	Min. R_B in Ω / Km	TSR in Ω	Max. Length of Track Circuit in meters	Type of Track Relay to be used
1	Wooden /PSC	Block	4	0.5 Ω	1000 m	QT2
2	Wooden /PSC	Yard	2	0.5 Ω	670 m	QT2

RE area:

Type of TC	Type of Track Relay	Track Relay Resistance	Cells at Feed end	PU Voltage Approx	PU Current Approx
DC Single Rail Track circuit – AC RE Area	ACI Plug in Type QTA2	9 Ω	2 cells up to < 100m 3 cells > 100 m	1.4 V	140 mA
	ACI Plug in Type QBAT	9 Ω	2 cells up to < 100m 3 cells > 100 m to 450m 4 cells up to 750m	1.75 V	175 mA

Note: For operation of track circuits up to 750 m length with this type of relay, four secondary cells delivering 8.8V is required. (Ref. R.B. Lr No.87/W3/SG/T/1 dated 26.11.92.)

Sl. No	Sleeper	Section Yard/ Block	Min. R_B in Ω / Km	TSR in Ω	Max. Length of Track Circuit in meters	Type of Track Relay to be used (L= Length of the Track circuit)
1	Wooden/ PSC	Block	4	0.5 Ω	450 m	QTA2 (ACI level = 50V AC)
2	Wooden	Yard	2	0.5 Ω	450 m	QTA2 (ACI level = 50V AC)
3	PSC	Yard	2	0.5 Ω	350 m	QTA2 (ACI level = 50V AC)
4	PSC	Yard	2	0.5 Ω	750 m	QBAT (ACI level = 80V AC) in conjunction with QSPA1 With B-type Choke at relay end.

DATA SHEET FOR "D" SERIES NEUTRAL LINE RELAYS													
Relay No.	Relay Description	Spec. No.	Relay Contact Arrangement	Code No.	Coil Pin Bas. (Ohms)	Min. VOLT. (Volts)	Max. VOLT. (Volts)	Min. PIV (Volts)	A.C. Imm. nity (volts)	P.U. Time (sec)	D.A. Contact Rating (amps)	Usage & Other	Remarks
1	D.C. Neutral Line Relay	910A	01/16 12P.4B 01/18 4P.4B	001	ABC 340 to 470 DS	10.0	19.2	11.0	13.0	15.0	20	All ccts. of Non-NE & Internal ccts. of NE. In emergency external ccts. of NE area.	
2	"	"	01/17 8P.8B 01/19 4P.6B 01/20 4P.4B	002	ABC DS	"	"	"	"	"	"	Used as Track Relays with APTC	
3	"	"	01/21 12P.4B 01/23 8P.4B	003	ADC EF 1000/1500	50	40.0	"	7.5	"	"		
4	"	"	01/22 8P.8B 01/24 4P.6B 01/25 4P.4B	004	ABD EF 1000	50	9.35	7.5	3.75	"	"	In place of shelf type relays: 18A1 & 18A2 of APTC's	
5	083 (Sensitive)	"	4P.4B	"	"	"	"	"	"	"	"	All ccts. of non-NE & Internal ccts. of NE Area.	
6	081 (3-relay unit)	960	19/1 8P.2B	092	ACD EX 470	24	19.2	"	3.6	"	"		
7	"	"	19/2 4P.4B 19/3 2P.2B	057	ACE HJ	24	19.2	"	3.6	"	"		
8	D.C. Biased Line Relay (M/T)	"	PTJ/ 4P.2B 083	"	ABF GX 200	12	9.6 8.0 (45 mA)	"	"	380	20	CMS of PTJ make 2/less black Instt.	
9	A.C. Immune DC/ML 931A Relay.	"	05/11 12P.4B 05/13 8P.4B	021	ABD FH 208	24	19.2	"	3.6	300	70	External circuits of R.S. Area.	
10	"	"	05/12 8P.8B 05/14 4P.6B 05/15 4P.4B	022	ABD GH 208	24	"	"	"	"	"		
11	D.C. Biased ACI M/L Relay	932A	12P.4B 8P.4B	"	"	"	"	"	"	"	"		
12	"	"	8P.8B	"	"	"	"	"	"	"	"		

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DATA SHEET FOR Q - SERIES LAMP PROVING RELAYS

S.No.	Relay Style	IBS Spec. No.	Relay Type Number	Contact Arrangement	Pin Code No.	Code Positions	Coll. Res. (Ohms)	Rated Curr. (Amps)	Voltage drop @ 250 mA Current	Max. Full Operate Current	Max. Release current	Min. Release Current	Typical Interruption Time	Usage With
1	QECX1 (off/on)	941 A	13/1 (WSF)	4 F	071	ABCDK	35	400 mA	9 ± 0.6 V A.C.	180 mA	-	110 mA	100 ms @ 180 mA 200 ms @ 250 mA	SL 35 Lamp
2	QECX12 (off)	"	13/11 (WSF)	4 F	-	-	4.7	"	"	120 mA	-	60 mA	100 ms @ 110 mA	SL 17/SL 21 (DECR)
3	QECX13 (on)	"	13/12 (WSF)	4 F	-	CFKNX	"	"	"	225 mA	-	120 mA	100 ms @ 220 mA	SL 17/SL 21 (RECR)
4	QECX14 (off)	"	13/13 (WSF)	4 F, 4 B	-	CFJKM	"	650 mA	-	220 mA	-	70 mA	"	SL 17/SL 21 (DECR)
5	QUCX1	942 A	13/9 (WSF & Crompton)	2 F, 2 B	-	CFKLX	0.76	1400 mA	3.3 V A.C.	780 mA	590 mA	520 mA	-	SL 33 Direction Type R7 (4F, 4B)
6	QECX-51	941A	Crompton make	4 F, 4 B	-	-	-	400 mA	9 V A.C.	180 m	-	110 mA	-	SL 17/SL 21 (RECR)
7	QECX-52	"	"	4 F, 4 B	-	-	-	"	"	78 mA	-	35 mA	-	SL 17/SL 21 (DECR)

LINE RELAYS

Sl. No	Type of Relay	Relay Sl. No	Code no.	Contact Arrangement	Code pin Positions	Coil Resist. Ω	Nominal PU Voltage	Pick up voltage	Pick up Current	Drop Away Voltage volts	Drop Away Current mA	% of Release = $\frac{\text{DA value}}{\text{PU value}} \times 100$
1.	QN1											
2.	QNA1											
3.	QSPA1											
4.	QBCA1											

Note: Minimum percentage release shall be 50% for class 'B' Line relays & 60% for class 'A' Line relays and 68% for Track Relays.

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TRACK RELAYS

Sl. No	Type of Relay	Code No.	Contact Arrangement	Code pin positions	Coil Resistance	Nominal PU Value	Pick up Voltage	Pick up Current	Drop away Voltage	Drop away Current	% of Release = $\frac{\text{DA value}}{\text{PU value}} \times 100$
1	QT2										
2	QTA2										
3	QBAT										



एस.टी.टी.सी./गोरखपुर

प्रयोगात्मक अध्ययन

(केबल मेगरिंग) एस/पी.आई-1

प्रशिक्षणार्थी का नाम : कोर्स :
पद : अनुदेशक :
मंडल : दिनांक :

सिगनल केबल के इन्सुलेशन प्रतिरोध की जाँच अनुदेश

1. एस.ई.एम.-II के पैरा 15.23.1 के अनुसार ये अनुदेश केवल रेल सिगनलों के लिए प्रयुक्त केबलों पर लागू होंगे तथा ओपन लाइन तारों पर लागू नहीं होते हैं।
2. इन्सुलेशन प्रतिरोध की जाँच इस प्रकार की जानी चाहिए कि ट्रेनों का सेफ(संरक्षित) आपरेशन प्रभावित न हो,
3. यह सुनिश्चित किया जाना चाहिए कि टेस्ट इक्विपमेंट के अनुप्रयोग से कोई अनसेफ स्थिति उत्पन्न न हो।
4. सिगनल केबलों के सभी चालकों का उनके इन्सुलेशन के लिए अनिवार्यतः उनको चालू करने के समय परीक्षण और तत्पश्चात प्रत्येक वर्ष शुष्क मौसम में तरजीही तौर पर वर्ष के उसी भाग में किया जाए।
5. इन्सुलेशन प्रतिरोध की जाँच तब की जाए जब चालक, केबल और इन्सुलेटेड पुर्जे साफ और शुष्क हो।
6. शुष्क मौसम के दौरान केबलों के नियमित परीक्षण के अलावा जहाँ आवश्यक समक्षा जाए, वहां नम मौसम के दौरान रेन्डम(बेतरतीब) परीक्षण भी किया जाए।
7. केबलों के चालकों में पर्याप्त स्थिर विद्युत क्षमता होती है और ये स्थिर विद्युत आवेश संचित कर सकते हैं।
(i) परीक्षण आरम्भ करते समय इन्सुलेशन टेस्टर को जोड़ने से पहले (ii) परीक्षण पूरा हो जाने पर इन्सुलेशन टेस्टर को डिस्कनेक्टेड करने से पहले किसी भी संचित आवेश को पूर्णतः डिस्चार्ज करने के लिए केबल चालक को शार्ट अथवा भूयोजित (earthed) किया जाना चाहिए, यह कार्मिकों की सेफटी और इक्विपमेंट की सुरक्षा के हित में है।
8. इन्सुलेटेड परीक्षण के लिए **500 वोल्ट** का इन्सुलेशन टेस्टर उपयोग किया जाए। इस तथ्य कि केबल में स्थिर विद्युत धारिता है, का अर्थ है कि इन्सुलेशन प्रतिरोध को नापे जाने से पहले इसको डिस्चार्ज किया जाना है। अतः परीक्षण वोल्टेज 1 मिनट अथवा ऐसी अवधि तक प्रयोग किए जाने के पश्चात जब इन्सुलेशन टेस्टर का संचूक एकसमान रीडिंग शो करता है तो इन्सुलेशन प्रतिरोध को रिकार्ड किया जाए।
9. रैक अथवा उपकरण की धात्विक चादर अथवा अन्य धात्विक हिस्सों को परीक्षण के दौरान भूमि से जोड़ दिया जाए।

कार्यविधि:-

1. केबल के दोनो छोरों (ends) पर सभी अभ्यंतरों (Cores) को डिस्कनेक्ट कर दें यह डिस्कनेक्सन ए.आर.ए. टर्मिनल, यदि उपलब्ध कराये गए हो, तो उनके संपर्कों (Links) के माध्यम से वियोजन किया जा सकता है।
2. इन्सुलेशन टेस्टर के एक टर्मिनल को परीक्षणाधीन चालक के साथ और एक दूसरे टर्मिनल को एक साथ इकट्ठा तथा भूमि से जुड़े सभी अन्य चालकों के साथ जोड़ें।
3. इसी प्रकार 2 में उल्लेख किए गए के अनुसार केबल के शेष चालकों की एक-एक करके जांच करें।
4. इस प्रकार नापी गई इन्सुलेशन प्रतिरोध क्षमता तापमान पर प्रति किलोमीटर जमीन में गड़ी हुई केबल के तापमान पर **5 मैगा ओह्म** से कम नहीं होनी चाहिए। यदि इन्सुलेशन प्रतिरोध **5 मैगा ओह्म** से निम्नतर पाई जाती है तो कारण की छानबीन की जाए और इक्विपमेंट एवं सर्किटों की किसी खराबी की रोकथाम के लिए केबल की मरम्मत अथवा बदलाव के लिए तत्काल उपाय किए जाए।
5. इन्सुलेशन प्रतिरोध परीक्षणों को अनुमोदित प्रोफॉर्मों में रिकार्ड किया जाए। सदृश (Similar) परिस्थितियों में किसी केबल पर सम्पन्न क्रमिक परीक्षणों के बीच परीक्षण-परिणामों की तुलना समय के दौरान इन्सुलेशन प्रतिरोध के विकृत होने की प्रवृत्ति को परिलक्षित करेगी। यदि इन्सुलेशन प्रतिरोध में अचानक गिरावट पाई जाती है तो कारण की छानबीन की जाएगी और केबल की मरम्मत करने अथवा बदलाव के लिए तत्काल उपाय किए जाएंगे।

----- Railway

Station -----

Cable Insulation Resistance test sheet
Main/Tail* Cables

1. Location From ----- To -----
2. Cores -----
3. Size -----
4. Length -----
5. Type Unscreened/Screened/Power*
6. Insulation PVC
7. Date of installation/commissioning -----
8. Name of the manufacturer -----

***Strike out whichever is not applicable**

Core No. or Designation														Date of Test and Weather@
	1	2	3	4	5	6	7	8	9	10	11	12	E	
1														
2	X													
3	X	X												
4	X	X	X											
5	X	X	X	X										
6	X	X	X	X	X									
7	X	X	X	X	X	X								
8	X	X	X	X	X	X	X							
9	X	X	X	X	X	X	X	X						
10	X	X	X	X	X	X	X	X	X					
11	X	X	X	X	X	X	X	X	X	X				
12	X	X	X	X	X	X	X	X	X	X	X			
E	X	X	X	X	X	X	X	X	X	X	X	X		

Temperature:

Remarks:

Signature:

@Write wet, damp or dry

----- Railway
Station -----

Cable Insulation Resistance test sheet
Main/Tail* Cables

1. Location From ----- To -----
2. Cores -----
3. Size -----
4. Length -----
5. Type Unscreened/Screened/Power*
6. Insulation PVC
7. Date of installation/commissioning -----
8. Name of the manufacturer -----

***Strike out whichever is not applicable**

Core No. or Designation														Date of Test and Weather@	
	1	2	3	4	5	6	7	8	9	10	11	12	E		
1															
2															
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6															
7															
8															
9															
10															
11															
12															
E															

Temperature:

Remarks:

Signature:

@Write wet,damp or dry

का0अनुदेशक का हस्ताक्षर

प्रशिक्षणार्थी का हस्ताक्षर