MODIFICATION SHEET NO ELRS/MS/0264

No. EL/3.2.19 Dated : 9.8.99

1.0 **Title :**

Modification in the `Passenger Emergency Alarm Indication' circuit to prevent its operation during normal brake application through 'A9' by the driver.

2.0 **Object of Modification :**

The present system operates on the principle of sensing air flow into the BP pipe in case of ACP. Since release of automatic air brakes of the train through A9 after application also causes inrush of air into the BP pipe, this also results into actuation of audio visual alarm in the driver's cabs. Application and release of automatic brakes by the driver is a very common event, false alarm situations are too frequent and too many. It has because a habit of driver to cancel such alarm as false. This is every likelihood that a genuine ACP may also be thus ignored. Apart from it, these undesirable false alarms are a cause of nuisance for drivers. This is, therefore, a need to modify the circuit of audio-visual alarm making it inoperative in case of brake release by the driver during automatic brake application.

3.0 **Work to be Carried out :**

(i) Passenger emergency alarm indication circuit is to be modified as per details given in Annexure-I & II.

(ii) All drivers are to be instructed as follows.

"When ACP occurs, first acknowledge ACP by pressing push button switches BIS 1 or BIS 2, then apply brakes through A9 to stop the train".

In case driver fails to acknowledge ACP as above and applies brakes through A9, audio-visual signal of ACP will cut off momentarily and will reappear after 45 seconds and will continue till driver acknowledges ACP as above or ACP resets.

4.0 **Application to Class of Locomotives :**

All pure air brake and dual brake Electric Locomotives.

5.0 **Material Required :**

i) One no. time delay relay of Comat make CT32-1 of M/s. Concord or similar with of time delay of 45 secs.
ii) One no, Danfoss make of pressure switch model RT 116 X or similar having minimum one N/O & one N/C interlocks.
iii) Control cable of required length.

6.0 **Material Rendered Surplus :**

One time delay relay Q 120.

7.0 **Reference :**

i) Complains received from Railways regarding mal-functioning of passenger emergency alarm indication system during automatic brakes release.

ii) Study done by Lallaguda Shed of South Central Railway regarding minimum time delay required to mask the operation of audio-visual device during automatic brakes release.

8.0 **Modification Drawing : Enclosed as Annexure-I & II**

9.0 **Agency of Implmentation :**
i) CLW in all newly manufactured locomotives.
ii) All Electric Loco Sheds/POH Workshops in existing locomotives

9.0 **Distribution :**

As per enclosed list.

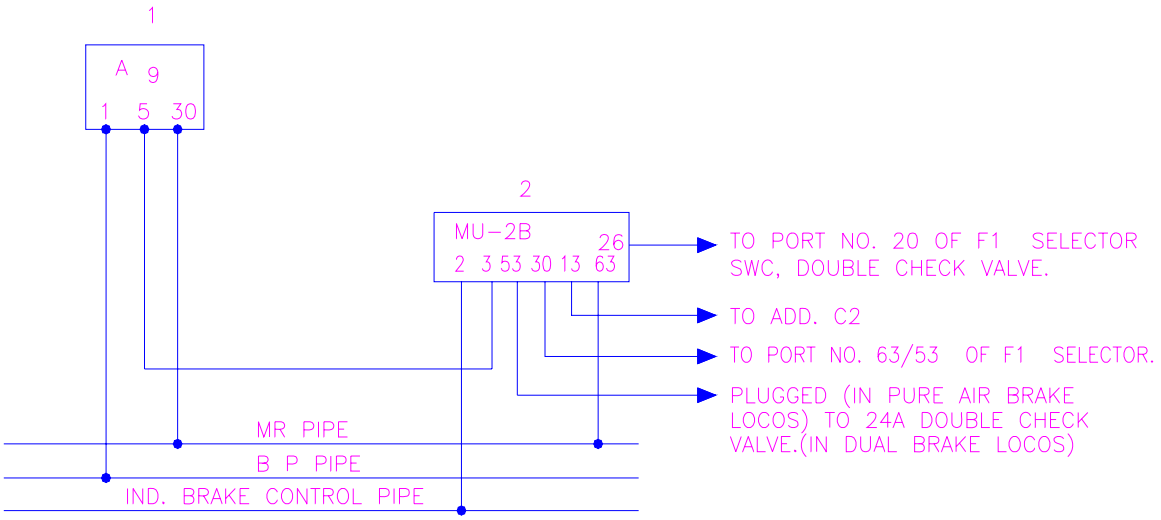
(O.H.Pande)
for Director General/Elect.

Encl : As above

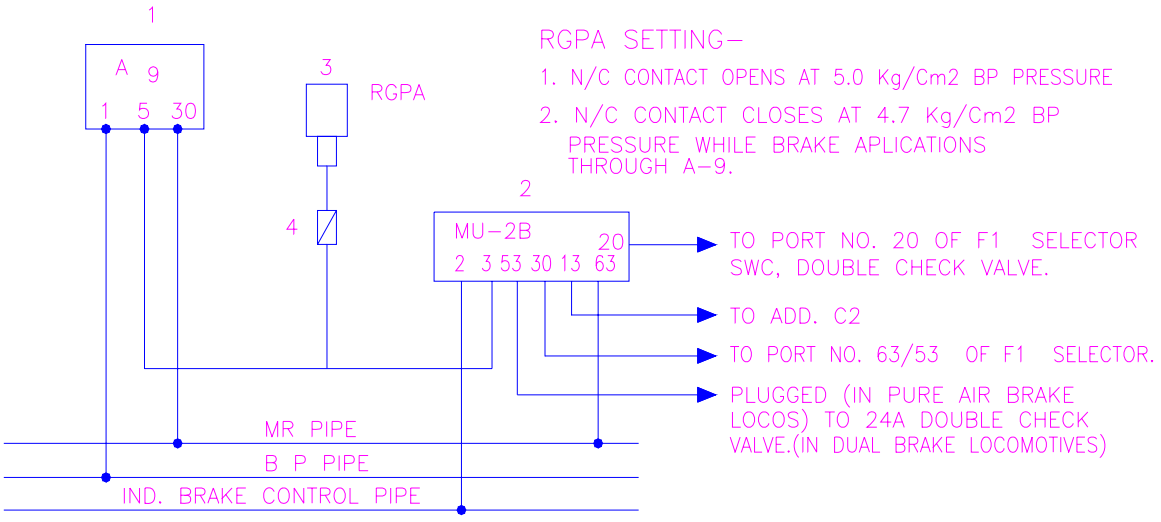
TO,

_____
_____

ANNEXURE–I



EXISTING ARRANGEMENT WITHOUT RGPA PRESSURE SWITH



MODIFIED ARRANGEMENT SHOWING ARRANGEMENT OF RGPA PRESSURE SWITH

1. AUTOMATIC BRAKE VALVE (A .9)
2. MU–28 VALVE.
3. PRESSURE SWITCH.
4. STRAINER (3/8")

ANNEXURE–II

RGAF SETTING:–

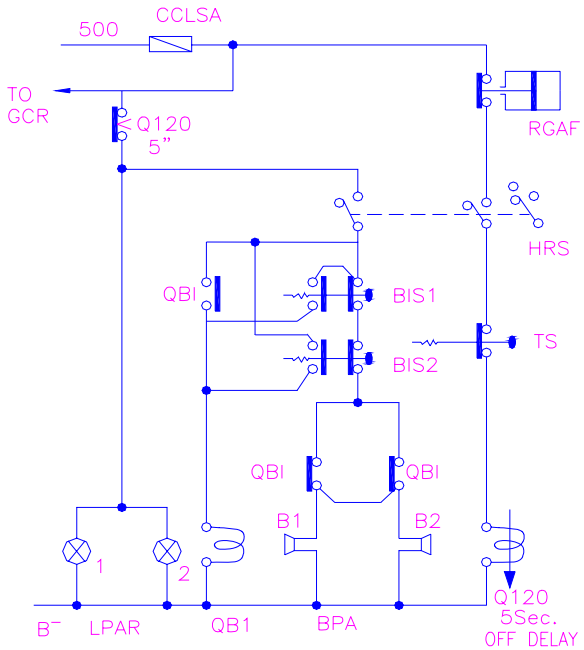
(i) CUT–IN 4 Kg/cm2

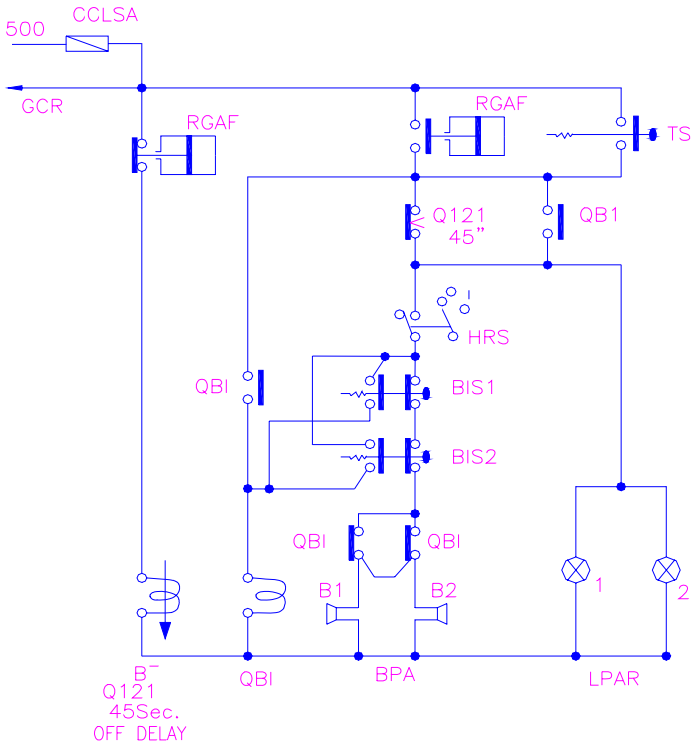
(ii) CUT–OUT 3.5 Kg/cm2

RGPA SETTING:–

(i) N/C CONTACT CLOSES AT – 4.7 Kg/cm2

(ii) N/C CONTACT OPENS AT – 5.0 Kg/cm2





EXISTING

MODIFIED

PASSENGER EMERGENCY ALARM INDICATION CIRCUIT

(CIRCUIT DESCRIPTION ENCLOSED)

ELRS/MS/0264

Description of the Circuit Working :

1. When driver applies brakes through A9 & releases the same :

1.1 Initially while train is running A9 will be in `release' position and pressure in the BP pipe will be in stablised condition at 5.0 kg/cm2. Therefore N/C contact of RGPA pressure switch connected in the pipe line coming from control pressure port of A9 as well as N/O contact of RGAF pressure switch connected in MR pipe line will be in open condition. As a result, the circuit will be in idle state.

1.2 When driver will apply brakes through A9, pressure in the pipe line coming from control pressure port of A9 will reduce depending upon the position of A9 handle. As a result, N/C contact of RGPA will close resulting into energisation of Q121 relay. This will cause instant opening of N/C time delay contact of Q121 relay in the circuit of buzzers `BPA' and indication lamps `LPAR', thus ACP circuit will be deactivated while A9 is still in applied condition.

1.3 When driver will bring back `A9' handle to release position after brake application in (1.2) above, main reservoir air will rush into the BP pipe forcing N/O contact of RGAF to close. At the same time, pressure in the pipe line coming from control pressure port of A9 will also rise to 5.0 kg/cm2 resulting into opening of N/C contact of RGPA in the circuit of Q121 relay causing its de-energisation but the N/C time delay contact of Q121 in the circuit of buzzers and indication lamps will close only after 45 secs. of de-energisation of Q 121 relay. Therefore, even though N/O contact of RGAF is close, buzzers as well as indication lamps will not get energised for 45 secs. After brake release.

1.4 Studies conducted by Lallaguda Shed have shown that pressure at RGAF will fall below 3.5 kg/cm2 after 45 secs. Of brake release even after full application of brakes thus forcing N/O contact of RGAF to open. Thus no ACP indication will come during brake release after application through A9 by the driver.

2.0 When ACP takes Place :

2.1 When ACP takes place, air from main reservoir will rush into; the BP pipe line forcing N/O contact of RGAF in the circuit of buzzers and indication lamps to close. As relay Q121 is in de-energised condition, its N/C time delay contact will be in closed condition resulting into energisation of buzzers and indication lamps.

2.2 As soon as driver gets the indication of ACP though buzzers and indication lamps, he will acknowledge the same by pressing push button BIS 1/BIS 2. On pressing of push button switch BIS 1/BIS 2 QBI relay will get energised and will maintain its feed through N/C self contact.

Energisation of QBI relay will cut off electrical feed to buzzers forcing them to become silent but feed to indication.

lamps will be maintained through N/O contact of QBI till ACP is reset N/O contact of RGAF opens forcing QBI relay to de-energise.

After acknowledging ACP, driver will control the train through A9. At this stage, RGPA activation will not have any effect on ACP indication lamp.

2.3 In case driver forgets to acknowledge the ACP and attempts to control the train through A9 immediately after receiving ACP indication the electrical feed to buzzers and indication lamps will be cut off the time being due to energisation of Q121 relay but it will resume after 45 secs. of brake release by the driver till ACP is reset. On resumption of ACP indication after 45 secs, of brake release, driver will have the option to put off buzzers by acknowledging the ACP through push button switch BIS 1/BIS 2.

3.0 <u>Testing Facility for the Circuit :</u>

3.1 Whenever circuit working is required to be confirmed, testing push button `TS' may be pressed which will energise buzzers and indication lamps' circuit and will thus confirm their operation.

3.2 For checking the buzzer cancellation operation, testing push button `TS' may be kept pressed which will energise ACP circuit, now BIS 1/BIS 2 push button may also be pressed simultaneously. This will cancel buzzer sounding but indication lamps `LPAR' will continue to glow.