Government of India
Ministry of Railways
Research, Designs & Standards Organisation
Manak Nagar, Lucknow - 226 011

No. EL/3.2.10/5/CG Dated:13th Dec. 1983.

MODIFICATION SHEET NO. RDSO/WAM4/134

MODIFICATION TO ENGLISH ELECTRIC MAKE QOA RELAY

1. OBJECT

1.1 English electric QOA relay was found to chatter under GC fault. Some relays were even tried with a single diode in series with VAG coil. The performance was not satisfactory, Further investigation high lighted the following aspects:

a) Under A. C. faults, the QOA relays has to sense A. C. voltage super imposed on D. C. 110 V.

b) Origional Orleken relay was found to function satisfactorily due to shaded pole design at different voltage levels in D. C. and A. C. mode.

c) E. E. relay coil was designed for pick up in D. C. system only. Hence this was found to chatter when ever it sensed voltage in AC or half wave rectified mode.

Experiments were conducted jointly by RDSO and M/s. E.E. at vijaywada Electric Loco Shed during Sept. 1982. The relay was modified by introductions full wave bridge rectifier between the VAG coil and incoming terminals. The relay was set to pick up approximately at 50 D.C. or AC. The relay was found to function satisfactorily under earth faults of 110 DC or 440V AC auxiliary supply when fault currents are superimposed over DC control supply.

So for M/s. E.E. has a common relay for QOA and QOP applications. Bridge rectifier is not necessary for QOP application.

2. WORK TO BE DONE

2.1 Procure and modified sample relay from M/s. E.E. Co. Madras giving reference of their latter No. DEV/R87/RSP dated 20.7.83.

2.2 Procure complete modification kit from M/s.E.E. co. as listed in para 4.

2.3 See wiring diagram No.SK. EL. 3632

2.4 Dismentle the relay and clear the components as required.

2.5 Mount the bridge rectifier board with resistors and capacitor at the proper locations according to the mounting arrangement adopted by the firm in the modified sample relay. Connect the components internally as shown in the wiring, diagram SK. EL. 3682. Care should be taken to avoid dry soldering. There will be no change in the external circuit.

2.6 Assembly the relay, check for proper function and PK and D.O. value at 50 V DC/AC (App).

2.7 This modified relay is applicable for QOA only. stencil letters "QOA ONLY" over neme plate and front glass from rear side in red colour.

1. APPLICATION

WAM4 loco in service whenever M/s. E.E. Co. Make QOA relays have been provided in place of imported version.

4. Material required:

Following are the materials required for the modification:

S.No.	Description	Qty/loco	E.E.Type ref.
1.	Bridge Rectifier Board	1 No.	260358-601
2.	110 ohms 37 resistor	1 No.	ZB9012-300
3.	0.22 Microfared capacitor	1 No.	ZB9058-6002
4.	5 K. ohms, 97 recistor	1 No.	ZB9012-890
5.	1 K ohms, 97 resistor	1 No.	ZB9012-448
6.	VAA coil	1 No.	FB0033-632
7.	Name plate mounting plate	2 nos.	FM 6048-901
8.	Turret Tag	7 nos.	ZB9115-002
9.	63 A Piller, 3/8`` height	2 nos.	ZA3034-021
10	63 A Screw	4 nos.	ZB4323-033
11.	63 A Plain washer	4 nos.	ZB4040-035

5. MATERIAL RENDERED SURPLUS:

- 1 No. VAA coil type No. FB0033.612 or FB0033.045.
- 1 No. CY-127 diode (All the relays will not be having this diode).
- 1 No. resistor 3.6 K. Ohms.
- 1 No. resistor 1.3 K. ohms.
- 1 No. resistor 1.2 K. ohms if VAA coil is of type FB 0033.045.

6. **MODIFICATION DRAWINGS:**

Wiring diagram No. SK. EL. 3682.

7. **AGENCY FOR IMPLEMENTATION:**

- CHITTARANJAN LOCOMOTIVE WORKS /CHITTARANJAN. to carry out the modification on the relays available in the stock. The model for QOA relay supplied earlied was SPECM 2YF 328 M but now it is revised and will be SPECM 2YF376M implementating the modification suggested in this modification sheet. The cut in is form 1.5.83. CLW to ensure the procurement for all the future requirements to model 376M.
- Electric loco sheds and POH shops for locos in service.
- M/s. E.E. Co. for current and future supplies.

8. **DISTRIBUTION:**

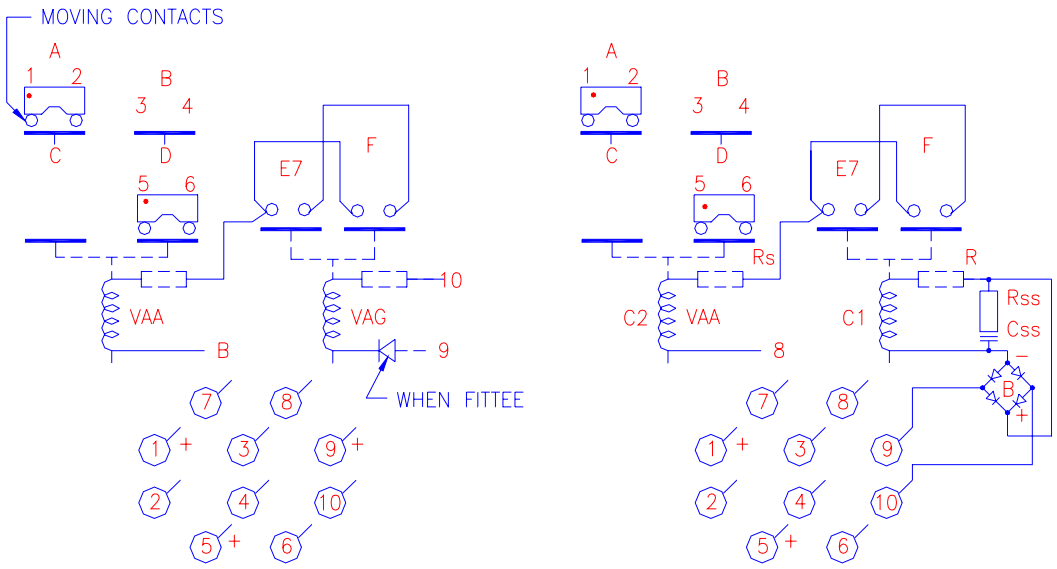
As per mailing list.

Encl: SK. EL. 3682
Mailing list

T.V.S.Sastri

(T.V.S. SASTRI)
for Director General/Elec.

SK.EL-3682



C1 –VAG COIL FB0033.612, 4±10% K
C2 –VAA COIL FB0033.632, 1.1±10% K
B –BRIDGE RECTIFIER BY 127
Css 0.22μF
Rss 110Ω,6W — SURGE SUPPRESSION
R –5KΩ 9W
Rs –1KΩ 9W

EL/3.2.10/5

REF:– ENGLISH ELECTRIC CO DRG NO.MYDZ 843.016	SCALE:– NTS	APPROVED BY:– FOR D.G.

WIRING DIAGRAM OF QOA RELAY

RDSO.ELEC.DTE.	SKEL–3682

Dt.	16.2.79
D	
T	
C	