

फैक्स/Fax : 91-0522-458500
तार : 'रेलमानक' लखनऊ
Telegram : 'RAILMANAK', Lucknow
टेलीफोन/Tele : 451200 (PBX)
450567 (DID)



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226011
Government of India-Ministry of Railways
Research Design & Standards Organisation
Lucknow - 226011



No.EL/3.1.3

Dated 14.11.2000

Chief Electrical Engineer,
-Central Railway, Mumbai CST- 400 001.
-Eastern Railway, Fairlie Place, Calcutta- 700 001
-East Central Railway, Chandrashekharapur, Bhubaneswar- 751 001.
-Northern Railway, Baroda House, New Delhi-110 001
-North Central Railway, Hasting Road, Allahabad-211 001.
-Southern Railway, Park Town, Chennai-600 003
-South Central Railway, Rail Nilayam, Secunderabad -500 371
-South Eastern Railway, Garden Reach, Calcutta-700 043
-South Western Railway, Bangalore - 560 046
-Western Railway, Churchgate, Mumbai -400 020
-West Central Railway, Jabalpur.
-New Zone Railway, Bilaspur.
-Chittaranjan Locomotive Works, Chittaranjan- 713 331

MODIFICATION SHEET No. ELRS/MS/0298 -2000 , Rev. '0'

1.0 Title :

Introduction of delay in the starting of compressor motors in order to improve the reliability of Arno as well as Compressor Motors.

2.0 Object :

2.1 The present control circuit provides for simultaneous starting and switching-off of all the three compressors in the Electric Locomotives. It is based upon the design of initially imported Electric Locomotives which were basically vacuum braked locomotives. Subsequently, with development of air brake stock, electric locomotive, were also converted to dual brake/pure air brake system. Accordingly, compressors were added in Electric Locomotives and thus total number of compressors increased from 1 to 3 nos.

- 2.2 At the time of pure vacuum brake system, the duty on the compressor was lesser as it was supposed to meet the control circuit and braking requirement of Electric Locomotive only. Subsequently, with the development of air brake stock, the duty on compressor increased significantly in spite of increase in number of compressors because of increased length of trains as well as deterioration of maintenance of goods stock which resulted in more leakages. Accordingly, to improve the reliability of compressor motors, the rating of MCP was increased from 12.6 HP to 14.4/15 HP and later on with the same capacity, high starting torque MCPs were developed which required higher starting current.
- 2.3 In the present arrangement, the starting and stopping of compressors is controlled through compressor governor (RGCP) which is set at 8 kgs. (cut in) and 9.5 kg (cut out). The starting and stopping of all the three compressors altogether mean, impulse on /off load of around 45 HP on the arno which was originally not even designed to cater for the load of two extra compressors.
- 2.4 Apart from on /off impulse load of 45 HP on arno, whenever there is a condition of low OHE voltage (18-19KV), extra strain is put on the compressor motors while starting and there have been a number of cases of burning of MCP motors during starting under such conditions.
- 2.5 In the original control circuit of Electric Locomotives, number of compressor was only one and subsequent addition of compressors was based upon requirement. Until a few years ago not more than two compressors were ever required to work together, therefore, the time delay in the starting of compressor motors was never thought off. It is, therefore, proposed to incorporate an on time delay of approximately 5 secs. in the starting of 3rd compressor motor in case of provision of 3 x 1000 LPM compressors and in the starting of 2nd compressor in case of provision of 2 x 2000 LPM compressors similar to the arrangement of on time delay while starting of MVMT 1 & 2 using electronic timers which will ease out the impulse load on the arno and hence will improve its reliability. It is also expected to improve the reliability of MCPs.
- 3.0 Work to be carried out :
- 3.1 For pure air brake WAG5/WAG7 class of Electric Locomotives provided with 2 x 2000 LPM compressor, 5 seconds on delay is to be introduced while starting of MCP2 using spare N/c interlock of Q119 relay and spare interlock of HCP which closes at position 1,2 & 3 as per modified control circuit given in SKEL-4568/1, Alt. '0'.

- 3.2 For WAG5/WAG7 class of Electric Locomotives provided with 3 x 1000 LPM compressors, 5 seconds on delay is to be provided while starting of MCP3 using spare N/C interlock of Q119 relay and spare N/O interlock of HCP as per modified control circuit given in SKEL-4568/2, Alt. '0'
- 3.3 For those pure air brake WAG5/WAG7 class of Electric Locomotives which have not been provided with magnetic unloaders, RDSO's modification sheet no. WAM4/195 dated 15.11.96 for incorporating arrangement of magnetic unloaders and present modification sheet is to be implemented simultaneously.
- 3.4 Dual brake WAG5 locos are also to be modified in line with modified control circuit given in SKEL-4568/1, Alt. '0' as well as SKEL-4568/2, Alt. '0'..
- 3.5 For WAP/WAM4 class of Electric Locomotives provided with 2 x 2000 LPM compressors, no delays is to be incorporated in the starting of compressor motors.

Note : As per modified control circuit given in SKEL-4568/2, Alt. '0', compressor '3' will have a time delay of 5 secs. while starting even on HCP position of '23' and '13'.

- 3.6 All electric loco drivers are to be counseled again on the existing instructions as follows:
 - (i) While approaching neutral section, MR pressure should be built up to 10 kg/cm² using BLCPD.
 - (ii) While energizing the locomotive, care should be taken not to put 'ON' BLCP and BLVMT simultaneously after closing the DJ/VCB.

Above is required basically to avoid any possibility of arno overloading due to simultaneous starting of compressor and blower motors.

4.0 Application to the class of Locomotives:

All WAG5 & WAG7 class of Electric Locomotives provided with Arno.

5.0 Material Required :

2.5 mm² control cable of required length.

6.0 Material Rendered Surplus : None.

7.0 Reference :

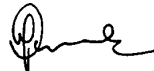
- (i) Item No. (6) under heading 'New Items' of 27th MSG (Elec.Loco) meeting held at Fairlie Place, Eastern Railway, Calcutta on 27th & 28th July 2000.
- (ii) Suggestion received from ELS/Erode of Southern Railway.
- (iii) RDSO's modification sheet no. WAM4/195 dated 15.11.96.

8.0 Modification Drawing: SKEL-4568/1, Alt. '0' and SKEL-4568/2, Alt. '0'.

9.0 Agency for Implementation :

CLW, All Electric Loco Sheds & Workshops.

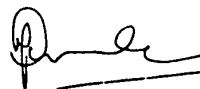
Encl: As above


(O.H.Pande)
for Director General/Elect.
FAX No : 0522-450374
e-mail : edse@lw1.vsnl.net.in
dse2@rdso.railnet.gov.in

Copy to : As per Standard Mailing List
No.EL/M/0028, Ver. '0'.

PIN

Encl: As above


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

ELRS/MS/0298-2000 (REV. '0')

RDSO ELECT DTE.

SKEL-4568/2

(SHEET 2 OF 2)

FIRST ISSUED

NOV. 2000

SUPERSEDES

SUPERSEDED BY

REF. No.	DRG. No.	DESCRIPTION	DETAIL DRG. No.	No./LOCO	MATL.	SPEC
REF.						
					APPROVED BY	(For Pgt)
					SCALE: NTS	

MODIFIED CIRCUIT WITH 3x1000 LPM COMPRESSORS

CAMS POSITION IN HCP SWITCH

MODIFIED

EXISTING

