

TENDER SPECIFICATION

NO. CLW/ES/3/0088

ALT:	:	:	:	:	:	:	:	:	:
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ENCLOSURES:

- DRG. NOS: 1) CLW/ES/3/SK-1/0088
 2) CLW/ES/3/SK-2/0088
 3) CLW/ES/3/SK-3/0088

TOTAL NO. OF SHEETS:-

ALT	-	A	:	:	:	:	:	:	:
SHEETS	10	11	:	:	:	:	:	:	:

SPECIFICATION

FOR CONTACTOR FOR DISCHARGING RESISTOR
 FOR WAG-9 (CO-CO) / WAP-5 (BO-BO)
 ELECTRIC LOCOMOTIVES

ISSUED BY:
 DY. CHIEF ELECTRICAL ENGINEER/CON/TU
 CHITTARANJAN LOCOMOTIVE WORKS
 P.O.: CHITTARANJAN-713331
 DIST: BURDWAN, WEST BENGAL (INDIA)

DATE: 14-4-97

WAG-9 (co-co)	DRN.	CHKD/REV.	CHITTARANJAN LOCOMOTIVE WORKS
SPECIFICATION FOR	CDA	AEE/D&D	WEST BENGAL, INDIA
CONTACTOR FOR	APPROVED BY		NO. CLW/ES/3/0088
DISCHARGING	DY. CEE/CON/TU		ALT. : A : : : : :
RESISTOR			

ALTERATION RECORD SHEET

Sheet

SL. NO.	DATE OF AMENDMENT	PAGE NO.	ALTERATION No.	REASON	AUTHORITY
1.	5-3-03	7	A	All the non metallic Parts of this item should be fire retardent/selfextinguishing properties as per IS:11731 (Part I & II) or any other equivalent DIN, IEC standards. This clause has been added in sheet No. 7.	

PREP BY <i>Chand</i>	CHKD BY	REVIEWED BY <i>Wk b</i>	APPROVED BY <i>[Signature]</i>
			DY. CEE/ CON./TU.

WAG-9 (CO-CO)

**CONTACTOR
FOR
DISCHARGING
RESISTOR**

CENTRE FOR D & D
CHITTARANJAN LOCOMOTIVE WORKS
CHITTARANJAN-713331
NO. :- CLW/ES/310088
DATE :-
ALT. **A**

SPECIFICATION FOR CONTACTOR FOR DISCHARGING RESISTOR
FOR WAG-9 (CO-CO) ELECTRIC LOCOMOTIVES

I N D E X

01. Scope
02. Climatic & Environmental condition
03. Standards
04. Technical Data
05. Design and Constructional details
06. Tests
07. Documents to be supplied by tenderer
08. Documents to be supplied by supplier
09. Quality Assurance
10. Reference

DATE : 14/4/97

WAG-9 (co-co)
 SPECIFICATION FOR
 CONTACTOR FOR
 DISCHARGING
 RESISTOR

DRN. : CHKD/REV.
PKS
 CDA 14/4/97 : *AK*
 AEE/D&D : 14/4/97

APPROVED BY
Handwritten Signature
 14/4/97

DY.CEE/CON/TU

CHITTARANJAN LOCOMOTIVE WORKS
 WEST BENGAL, INDIA

NO. CLW/ES/3/0088

ALT. : A : : : : :

SPECIFICATION FOR CONTACTOR FOR DISCHARGING RESISTOR

1. SCOPE:-

This specification applies to Contactor for discharging resistor for 3-Phase, 5000 HP WAG-9 class locomotive for 25 kV AC 50 Hz system.

2. Climate and Environment conditions:

- * Maximum Atmospheric temperature : Under Sun : 70°C
in shade : 50°C
- * Humidity : 100% saturation during rainy season
- * Reference site conditions :
 - (i) Ambient Temp. : max. 47°C min. 0°C
 - (ii) Humidity : 60%
 - (iii) Altitude : 160 m above mean sea level
 - (iv) Rain fall : Very heavy in certain areas. The locomotive will be designed to permit its running at 10 Km/hr in flood water level of 102mm above rail level.
- * Atmosphere during hot weather : Extremely dusty and desert terrain in certain areas.
- * Coastal areas : Locomotive and equipment will be designed to work in coastal areas in humid and salt laden atmosphere
- * Vibration : The equipment, sub-system and their mounting arrangement will be designed to withstand vibrations and shocks encountered in service as specified in corresponding IEC publications unless otherwise prescribed.

DATE: 15/4/93

WAG-9 (100001)	DRN. (CHKD/REV.)	CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA
SPECIFICATION FOR	DDA (14/4/93) AEE/D&D (14/4/93)	
CONTACTOR FOR	APPROVED BY	
DISCHARGING	(Signature) (14/4/93)	NO. CLW/ES/3/0088
RESISTOR	BY. CEE/CON/10	ALT : A : : : : :

3. **STANDARDS:-** IEC 77, IEC 158.1, IS:11731 (Part 1 & II) (A)

4. **TECHNICAL DATA:**

4.1. Mounting : Vertically on a wall
Weight : 5.8 Kg (approx)

4.2 **Main Circuit**

Number of poles & nature of contact	:	1 normally open circuit
Rated voltage	:	3000 V,
Permissible max. service voltage	:	4500 V,
Suitable supply	:	DC or AC 50Hz.
Q - Classification	:	3
Rated current	:	50 A
1 hour rated current	:	55 A
2 minute rated current	:	75 A
Opening current limit	:	250 A
Interrupting current (obtain)		
at 1500 V DC	:	30 A
at 3000 V DC	:	100 A
at 1800 V DC	:	150 A
at upto 3600 V DC	:	200 A
Closing time		90 - 100 ms
Interrupting time :		
without protective device	:	8 - 12 ms
with parallel connected resistor to the coil	:	14 - 20 ms
with parallel connected diode to the coil	:	100 - 200 ms

DATE :- 14.4.97

WAB-97/10-001	DRN. / CHKD/REV.	CHIYARANJAN LOCOMOTIVE WORKS
SPECIFICATION FOR	CUA / AEE/D&D	WBSI BENGAL, INDIA
CONTACTOR FOR	APPROVED BY	
DISCHARGING		NO. CLW/ES/3/0088
RESISTOR	BY CEE/CON/TD	A.T. : A : : : : :

4.3 Pilot Circuit

DR14	
Function	Electromagnetic with return spring
Rated voltage U_N	110 V AC
Service voltage	$0.7 \pm 1.25 \times U_N$
Input power circuit at U_N	30 W approx.
Quantity Contacts	
Nature of contacts	(Normally 2 NO + 2 NC)
Rated voltage	250 V
Rated current	4 A
Max. closing current	35 A
Reset Current (CR)	
at 24 V DC	4 A
at 48 V DC	1 A
at 110 V AC	0.3 A
4. Existing Current (AL) at 220 V	3 A

5 Design and construction detail

The principle construction is shown on the attached drawing DW/ES/3/SK-17/0088. The actuating magnet with the auxiliary contacts (1) and main contact with air choke (2), together with the base plate (3) form a stable unit.

The cylindrical type magnet, if energized, makes a continuously closed main contact, which needs no bypass resistor. An additional return spring is built into the magnet.

The moving contact is actuated by the drive through an insulated lever. To prevent corrosion the contact pieces are elastically fastened to the housing. The sliding movement of the contacts ensures the scrubbing off of dirt or oxide-layer from the contact surface. If they should be present, the hard silver plated contacts can easily be interchanged.

A strong slow-blow magnet fed by the main current is provided for the safety and extinguishing in the arc chutes. Thus, the polarity re of the lamp starts during a current interruption the arc is pushed into the parallel chambers, there by a double arc length is obtained without voltage increase, resulting in considerable space saving. The resistor and diode consisted in parallel to the contactor is within the scope of supply.

DATE: 14.9.97

WAB: M. G. G. G.	DRN: G. H. G. G. G.	DATE: 14.9.97
SPECIFICATION FOR	DRN: G. H. G. G. G.	DATE: 14.9.97
CONTRACTOR FOR	DRN: G. H. G. G. G.	DATE: 14.9.97
DISCHARGING	DRN: G. H. G. G. G.	DATE: 14.9.97
RESISTOR	DRN: G. H. G. G. G.	DATE: 14.9.97

6. TEST

The equipment shall be tested according to IS: 77 (1968) & IEC: 198.1 (1970) unless otherwise mentioned.

a) Insulation test

The equipment should withstand the following test voltages without occurrence of flashover :-

Pole to ground 9500 50Hz 1 min.
 Between open 5750 50Hz 1 min.
 contacts

i.) Temperature rise test

ii.) Mechanical no-load operation

(a) Switching rate : 2 switching per second

(b) Even after 5×10^6 switching operations no disturbance or inadmissible wear of the moving parts should take place.

(c) Breaking tests.

7. DOCUMENTS TO BE SUPPLIED BY THE TENDERER:

The tenderer shall interalia furnish the following in 3 copies alongwith the quotation.

i) Drawings comments on the specification and test programme.

ii) Detailed drawings.

iii) Past experience with supporting papers (if any).

iv) Past test reports (if any).

8. TECHNICAL DOCUMENTS TO SUPPLIED BY THE SUPPLIER:

The following documents shall be supplied by the supplier as a part of the contract.

i) Type test reports - 10 copies.

ii) Routine test reports alongwith each set - 4 copies.

iii) Maintenance manual - 20 copies.

iv) Detailed drawings - 6 copies.

9. QUALITY ASSURANCE:

Quality assurance should be as per ISO 9001.

DATE: 14.4.97

WAO-9 (co-co)	DHN. 1/DNK5/REV. 1	CHITTARANIAN LOCOMOTIVE WORKS WEST BENGAL, INDIA
SPECIFICATION FOR	CD A : AEE/D&D	
CONTACTOR FOR	APPROVED BY	
DTSCHARJINS		NO. CH/WB/3/0088
REGISTER	BY: DEE/CON/TH	ALT. I A

10. REFERENCE:

The equipment used by M/s. ABB for WAG-9 class (Co-Co) electric locomotives is supplied by:

Supplier: M/Sheraton Ltd., DH-1211
Geneve, Case Postale-116,
Fax: 041 22 7394361

Schematic Position : B.41 Type: SBA-HCM

Q/L:- 1 NO.

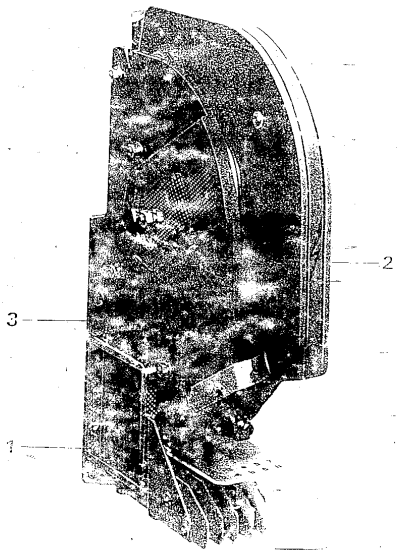
NOTE: The tenderer should confirm that the item is similar to the item which has been used for WAG-9 class of electric locomotives manufactured by M/s. ABB for Indian Railways.

- i) The tenderer shall fix name plate on the equipment indicating
- Manufacturer's name and also monogram/brand
 - Range of electrical ratings in watts.
 - Max. Rated Voltage
 - Month and year of manufacture
 - Sl.No. of equipment.
- ii) Hardware are to be used should be any of following make:-
- Um-brako (Precision fasteners)
 - Laxmi - Precision (LPS)
 - Sundaram Fasteners (TVS)
 - All Spring Washers of Forbes Gokak Ltd. Moka. Mumbai only.
- iv) All the non metallic parts of this item should be fire retardant/self extinguishing properties as Per IS: 1173 (Part I & II) or any other equivalent DIN, IEC standards.

DATE: 14.4.91

WAG-9	DEN	CHKI	SR
SPECIFIC IDENTIFIER	02	14/79	04/04/91
CONTACTOR FOR	02	14/79	04/04/91
DISCHARGING			
REGULATOR			
	APPROVED BY		
	BY: <i>[Signature]</i>		
		NO. : W/ES/13/0088	
		AL : A	

ELECTROMAGNETIC CONTACTOR



- 1 Actuating magnet with auxiliary contacts
- 2 Main contact with arc-chute
- 3 Base plate

DATE : 14-4-97

वर्तमान
CHKD./REVIEWED
DRIN
PND
CDA/DAD
AEE/DAD

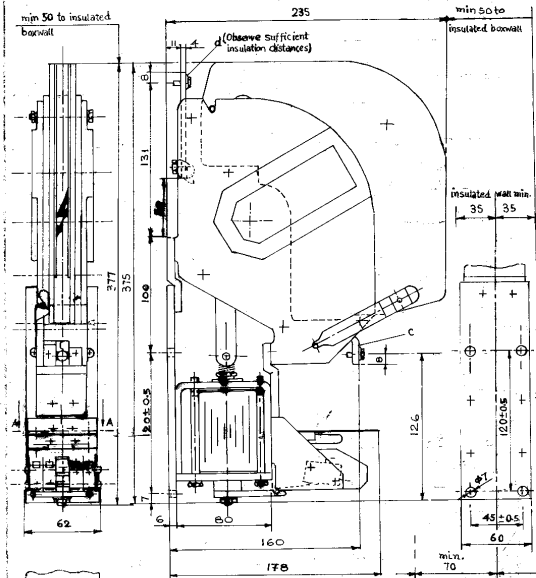
WAG-3 (COCO)
SPECIFICATION FOR
CONTACTOR FOR
DISCHARGING RESISTOR

APPROVED BY
hms 14/4/97
DY.CEE/CON/TVA

चितरंजन रेल इंजन कारखाना
पश्चिम बंगाल, भारत
CHITTARANJAN LOCOMOTIVE WORKS
WEST BENGAL, INDIA
क्र.क/NO. CLW/ES/SK-1/3/0086

ALT | A

CONTACTOR TYPE :- HSm



Main current terminals c.d M5
 Auxiliary terminals 1:8 faston plugs 6.35x08 **Mass (weight) 5.8kg**

DATE: 14-4-97

CHECKED BY: CHYD / REVIEWED BY: [Signature] / DATE: 14-4-97 / DESIGNED BY: A.P.E. / D.D.D. / DRAWN BY: CDA / DAD

APPROVED BY: [Signature] / DATE: 14-4-97
 SPECIFICATION FOR CONTACTOR FOR DISCHARGING RESISTOR
 DESIGNED BY: C.W.S. / SK-2/3/0088
 DRAWN BY: C.W.S. / SK-2/3/0088

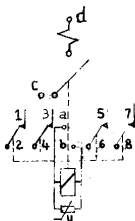


Fig. 1



Fig. 2

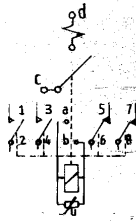


Fig. 3

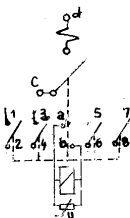


Fig. 4

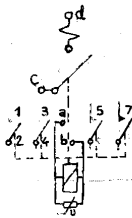


Fig. 5

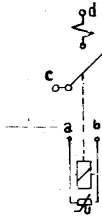


Fig. 6



Make contact (N/O)



Break contact (N/C.)



Varistor

DATE: 14-4-87

CHECKED / REVIEWED
 DATE: 14/4/87
 BY: [Signature]
 APPROVED BY: [Signature]

COA / DAI
 [Signature]

WAG-9 / (UGG)
 SPECIFICATION FOR
 CONTACTOR FOR
 DISCHARGING RESISTOR

APPROVED BY
 [Signature]
 DYCEE / LGN / TU

CHITARANJAN LOCOMOTIVE WORKS
 WEST BENGAL, INDIA
 CLW/ES/SK-3/3/8888
 ALT: A