



TENDER SPECIFICATION

NO. CLW/ES/3/0050

ALT. | A | B | | |

ANNEXURE: DRG.Nos:

TOTAL NO. OF SHEETS.12

ALT. | A | B | | |
Sheet | 5 | | | |

SPECIFICATION FOR

CIRCUIT BREAKER W/O AUX. CONTACTS (TYPE-8) WAG-9 (CO'CO), ELECTRIC LOCOMOTIVES

ISSUED BY
DY. CHIEF ELECTRICAL ENGINEER/CON/TU
CENTER FOR DESIGN AND DEVELOPMENT
CHITTARANJAN LOCOMOTIVE WORKS

SPECIFICATION FOR CIRCUIT BREAKER OUTPUE BATTERY CHARGER	DRN. <i>[Signature]</i> SDA	CHKD/REV <i>[Signature]</i> 22/3 SEE/CON/TU-I	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050					
APPROVED BY <i>[Signature]</i> DY CEE/CON/TU			ALT	A	B			

ALTERATION RECORD SHEET




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SL NO.	DATE OF AMENDMENT	PAGE NO.	ALTERATION No.	REASON	AUTHORITY
1	06-03-2003		A	Flammability test included.	(H. S. S.)
2	05/03/2005	11	B	1) Qty/ Loco increased as per category book. 2) The name of specification have been changed.	(H. S. S.) 5/3/05

PREP BY	CHKD BY	REVIEWED BY	APPROVED BY	WAG-9 (CO-CO)	<p>CENTRE FOR D & D</p> <p>CHITTARANJAN LOCOMOTIVE WORKS</p> <p>CHITTARANJAN-713331</p> <p>NO. :- CLW/ES/3/0050</p> <p>DATE :- 06-03-2003</p> <p>ALT. A B </p>
<p>H. S. S.</p> <p>JE-II (1)</p>		<p>6/3/03</p>	<p>CHITTARANJAN</p> <p>21/3</p> <p>DY. CEE/</p> <p>CON./TU-I</p>	<p>SPECIFICATION FOR</p> <p>CIRCUIT BRAKER W/O</p> <p>AUX. CONTACTS</p> <p>(TYPE-8)</p>	

SPECIFICATION FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER

1. SCOPE
2. SERVICE CONDITION
3. STANDARD
4. TECHNICAL DESCRIPTION
 - A) INTERNAL MOUNTED ACCESSORIES WITH THE CB
 - B) MAIN FEATURES OF CB
5. TENDER QUOTATION
6. TESTS

SPECIFICATION FOR CIRCUIT BREAKER W/O AUX. CON- TACTS (TYPE-B)	DRN.  27/3 SDA	CHKD/REV  27/3 SEE/CON/TU-1	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050						
	APPROVED BY  28/3 DY CEE/CON/TU		ALT	A	B				

SPECIFICATION FOR CIRCUIT BREAKER BATTERY

1.

1. SCOPE

This specification covers the manufacture and supply of
CIRCUIT BREAKER BATTERY for WAG - 9, (CO'CO), 6000 HP. 3 Phase,
25 kV. 50 Hz. AC Locomotive.

2 SERVICE CONDITION: -

2.1 Climatic and environmental condition: -

Maximum atmospheric temperature	: +70°C (in sun) & : +50°C (in shade)
Ambient temperature (operating)	: -20.. + 70°C
Ambient temperature (storage)	: -30 .. + 80°C
Normal humidity	: 60%
Maximum humidity	: 100% saturation during rainy season.
Altitude	: 160 m.a.s.l.
Rain fall	: very heavy in certain areas. The equipment should be designed in such a way as to withstand its running at 10Km /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 design to work even in coastal areas in humid and salty laden atmosphere.
Vibration	: The equipment sub-system and their mounting arrangement will be designed to withstand vibration and shocks encoun- tered in service as specified in correspondence unless otherwise prescribed.

SPECIFICATION FOR CIRCUIT BREAKER W/O AUX. CONTACTS (TYPE-B)	DRN <i>[Signature]</i> 27/3 SDA	CHKD/REV <i>[Signature]</i> 27/3 SEE/CON/TU-I	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050						
APPROVED BY <i>[Signature]</i> BY CEE/CON/TU 28/3			ALT	A	B				

3. STANDARD IEC 947-2

The relevant Indian standard specification shall also apply with respect to all materials used in the manufacture of CIRCUIT BREAKER BATTERY.

Flammability test as per IS: 11731 (Part 1 & 2): 1986 or relevant standard for plastic components

4. TECHNICAL DESCRIPTION :

Type : TRE - NF 100 - SS

Rated current (A) at ambient temperature : 75 A
40°C (marine use 45°C)

Number of Poles : 2 P

Rated Insulation Voltage (ui) : 250 V DC

Breaking Capacity (KA) Icu/Ics : 15/8

Dimensions (in mm) :-

a = 60 mm
b = 155 mm
c = 68 mm
ca = 86 mm



Connection :- FP (Flush Plate type)

A) Internal mounted accessories required with the CB :

- Shunt Trip (SHT) - To provide for tripping from a remote location. The control voltage range should be 70 - 110% of the rated voltage. The shunt trip should enable an MCCB to be used in combination with an ELR.
- Alarm Switch (AL) - Should have indication that the MCCB has tripped.
- Auxiliary Switch (AX) - Should have indication of whether the breaker is ON or OFF.
- Under voltage Trip (VVT) - The tripping voltage should be 70 - 35 % of the rated voltage. When the voltage recovers to at least 85% the MCCB should be manually reset. There should be electrical interlock and is used where electrical machines need to be protected against voltage drop.
- Earth Leakage Alarm (EAL) - Should have indication of tripping due to earth leakage fault.
- Test Button Lead Wire (TBL) - Instead of pushing the test button, this test lead wire should be used for remote testing. In this case should not apply voltage to the lead wire since the test circuit works on micro current and also to be used a reliable switch.

SPECIFICATION	DRN	CHKD/REV	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO. CLW/ES/3/0050				
FOR CIRCUIT BREAKER W/O AUX. CONTACTS TYPE-8	<i>[Signature]</i> 27/3 SDA	<i>[Signature]</i> 27/3 SEE/CON/TU-I					
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- g) Insulation Switch (MG) - It should be equipped with an insulation switch, the insulation resistance between poles on the load side can be measured by simply turning off the earth leakage circuit breaker.

B) Different Features of MCCB :

- i) Arc Extinguishing Device :- The MCCB should have arc extinguishing performance by virtue of the proper combination of grid gap, shape and material.
- ii) Arc Runner - The arc should be instantaneously transferred to the arc extinguishing chamber by the arc runner to reduce damage to contacts and the improving interrupting performance.
- iii) Trip Button (Push to Trip) - Should be enable to trip mechanically from outside, for confirming the operation of the accessory switches and the manual resetting function.
- iv) Switching Mechanism - The contacts should open and close rapidly, regardless of the moving speed of the handle, minimizing contact wear and ensuring safety.
- v) Handle :-
 - 1) **Trip indication** - The automatically tripped condition should be indicated by the handle in the Centre position between ON and OFF.
 - 2) **Resetting** - Resetting offer tripping should be performed by first moving the handle to the OFF position to engage the mechanism then returning the handle to ON to reclose the circuit.
 - 3) **Trip free** - Even if the handle is held at ON the breaker will trip if an overcurrent flows.
 - 4) **Contact on Mechanism** - Even in the worst case in which welding occurs owing to an overcurrent, the breaker should trip and the handle should maintain to ON, indicating the energizing state.

SHT (voltage tripping device)

Coil Rating:

MCCB Type	Cutoff Switch	Voltage	Input VA	Operating Time (ms)
NF-100-SS	Equipped	100 vDC	50	5-12

UVT (Under Voltage Tripping Device)

MCCB Type	Voltage	Input VA	Operating Time (ms)
NF-100 SS	110 V dc	5	5-12

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	APPROVED BY <i>[Signature]</i> DY.CEE/CON/TU 28/3		ALT	A	B				




SUBMISSION OF TENDER QUOTATION:

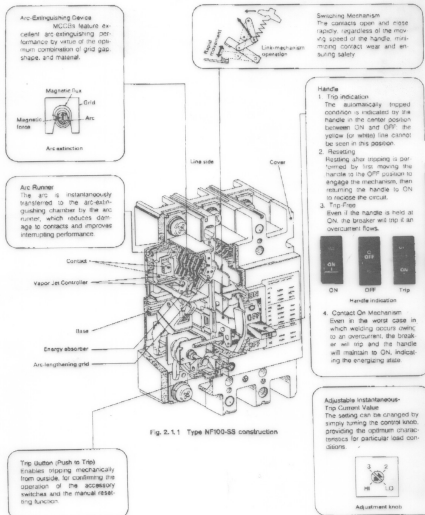
5.1 All tender documents including the quotation shall be submitted in duplicate including any correspondence till a contract is finalised.

5.2 The Tenderer shall give sufficient information to prove that his factory has adequate facilities and capacity to manufacture the CIRCUIT BREAKER BATTERY to meet the technical requirements of the specification and quality of materials and workmanship.

5.3 Quotation shall not be considered complete unless all information is furnished and are therefore liable to be rejected.

5.4 Detailed drawings of the CIRCUIT BREAKER BATTERY should be submitted for approval of purchaser.

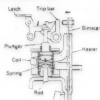
SPECIFICATION FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER	DRN  28/3 SDA	CHKD/REV  28/3 SEE/CON/TU-I	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050						
		APPROVED BY  BY CEE/CON/TU	ALT	A	B				






SPECIFICATION	DRN	CHKD/REV	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050				
FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER	<i>[Signature]</i> 27/3 SDA	<i>[Signature]</i> 27/3 SEE/CON/TU-I					
	APPROVED BY <i>[Signature]</i> BY CEE/CON/TU-1	ALT	A	B			

■ Automatic Tripping Devices

● Thermal Magnetic Type NF100-SS



- 1 Time Delay Operation
An overcurrent heats and warps the bimetal to actuate the trip bar.
- 2 Instantaneous Operation
If the overcurrent is excessive, the plunger is attracted and actuates the trip bar.

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FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER	 27/3 SDA	 27/3 SEE/CON/TU-1							
	APPROVED BY  DY CEE/CON/TU-1		ALT	A	B				

13. REFERENCE:

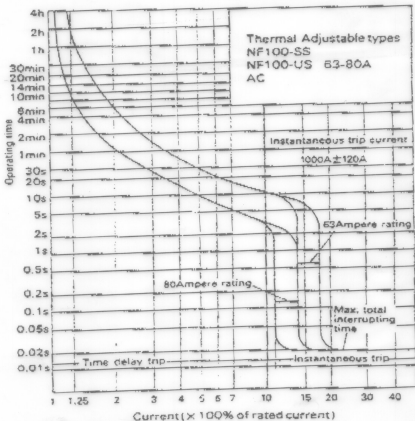
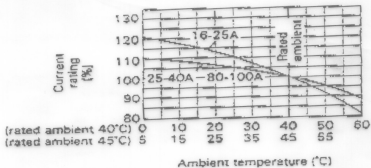
This specification has the reference to the original manufacturer as follows :-

M/S. MITSUBISHI ELECTRIC
D - 40835 RATTINGEN 1
GERMANY
PHONE: 0049 35208830
FAX. 0049 3520883500

SCHEMATIC POSITION : 110 & 112^{1, 112}

The tenderer shall confirm that the equipments are as either used in 3 phase ac locomotive manufactured by ABB for Indian railways or similar.

SPECIFICATION FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER	DRN <i>SDA</i> SDA	CHKD/REV <i>SDA</i> 27/3 SEE/CON/TU-I	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050							
APPROVED BY <i>hml</i> DY CEE/CON/TU-I			ALT	A	B					



SPECIFICATION FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER	DRN <i>[Signature]</i> SDA	CHKD/REV <i>[Signature]</i> 23/3 SEE/CONTU-1	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050				
	APPROVED BY <i>[Signature]</i> DY CEE/CONTU-3		ALT	A	B		

6. Technical documents and drawings to be furnished by the supplier as part of the contract.

7. APPROVAL OF SAMPLE:

7.1 The supplier shall make available at least two prototypes of the equipment proposed to be supplied by him for inspection and tests at his works and advice the DY. Chief Electrical Engineer, (D & D), Chittaranjan and Controller of Stores, Calcutta as and when he is ready with the prototype and necessary testing and measuring apparatus and facilities for carrying out the tests.

7.2 After the above tests if it is considered necessary by the DY. CEE/CON-/TU. or his authorized representative to carry out any further tests or trials of the prototype at Chittaranjan, the Supplier will arrange for the same by the quickest means.

7.3 The supplier shall not offer equipments of series production to the inspector authorized under the contract until the prototype has been finally approved. The supplier shall provide all facilities to the inspecting officer at his works, to inspect and test the equipment.

8. TESTS :

Type test and routine test shall be carried out according to the standard of IEC 947 -- 2.

9. TECHNICAL DOCUMENTS TO BE SUPPLIED BY THE SUPPLIER :

- i) Type test reports : 10 copies.
- ii) Routine test reports along with each set: 4 copies.
- iii) Maintenance manual: 20 copies.
- iv) Detailed drawings: 6 copies.

10. NAME PLATE

The tenderer shall fix name plate on the equipment including (i) manufacturer's name and monogram /brand (ii) range of electrical ratings in watts. (iii) max. rated voltage (iv) month and year of manufacture (v) sl. no. of equipment.

11. QUANTITY/LOCO AND ASSEMBLY SECTION

Quantity/loco

: 2 NOS. 3 NOS. (B)

Assembly section

: SB2

12. QUALITY ASSURANCE AS PER ISO 9000

SPECIFICATION	DRN	CHKD/REV	D & D CENTRE CHITTARANJAN LOCOMOTIVE WORKS WEST BENGAL, INDIA NO: CLW/ES/3/0050						
FOR CIRCUIT BREAKER OUTPUT BATTERY CHARGER	<i>SDA</i> SDA	<i>27/3</i> SEE/CONTU-1							
APPROVED BY <i>hlt</i> DY. CEE/CON/TU 28/3			ALT	A	B				