



Bharat Heavy Electricals Limited, Bhopal
CONTROL EQUIPMENT ENGINEERING DIVISION

Purchase Specification

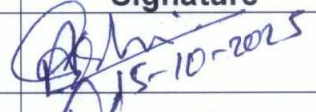
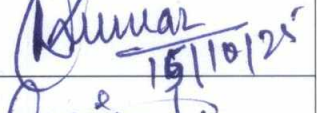
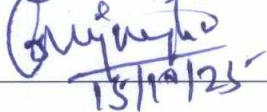
For

Supply of Electrically Operated Wiper System

For

ACSPIC for ICF Chennai

Document No	PS407589
Revision	00
Date	15.10.2025
Classification	Controlled Copy
Project	AC-SPIC ICF Chennai

	Name	Designation	Signature
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Approved By	Sanjay Kumar Rai	AGM	 15/10/25

1. Introduction:

This specification has been prepared for supply of Electrically Operated Wiper System for 8-Wheeler Air-Conditioned Self-Propelled Inspection Car (8W AC-SPIC) for operation on broad gauge (1676 mm) electrified routes of Indian Railways. The 8-Wheeler Self Propelled Inspection Car (SPIC) is a self-propelled 2-axel vehicle and is used for periodic inspection & patrolling.

2. Scope:

Supply of Electrically Operated Wiper System shall comply RDSO Spec. No. ICF/MD/SPEC-349 for use in AC SPIC. Electrically Operated Wiper System shall include following items/sub-assemblies:

- a. Electric motor assembly with suitable integrated drive mechanism suitable for mounting on panel inside the driving cab with spindle protruding out of the panel for mounting the detachable wiper arm along with blade — suitable for Left hand wind screen —1 no., suitable for Right hand wind screen —1 no.

Motor rating/parameters are given below,

Rated voltage	:	110 Volt DC
Nominal current	:	0.4 / 0.7 Amps (wet screen)
Nominal power output	:	28 / 48 Watts
Degree of protection	:	IP-54 or higher
Enclosure	:	Totally enclosed
Continuous torque	:	9 / 6.5 Nm (min)
Finish	:	Polyester power coated (Black colour)

- b. The Control Electrical Rotary Switch (3 position; slow wipe, fast wipe, parking) suitable for mounting on the Driver's desk — 2 nos.
- c. Windscreen wiper assembly consisting of wiper arm and blade, Wiper Blade shall be suitable for curved and flat windscreens and Wiper Arm (Main Arm & Support or



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Auxiliary Arm) shall be of pantograph type - 2 sets.

- d. Necessary power pack arrangement including DC-DC converter (If any).
- e. Necessary pre-wired interconnection cables to RDSO Spec. ELRS/SPEC/ELC/0019 (Latest) or equivalent PTFE cables of suitable length with suitable multi pin connectors required for interconnection between wiper system and it's controls located inside the driver's cab.
- f. Electrically Operated Wiper System shall confirm to ICF Specification ICF/ELEC/122.

3. Document submission:

Supplier to furnish following documents along with offer:

- (i) ICF/RDSO Approval.
- (ii) GA drawing/schematic drawing.
- (iii) Test Schedule/QAP

4. Delivery:

Within 12 weeks from the date of placement of PO.

5. Installation & Commissioning:

Supplier has to carry out installation and commissioning of Electrically Operated Wiper System for SPIC at ICF Chennai on call from BHEL Bhopal.

6. Payment Terms:

95% payment shall be released on supply of item at BHEL Bhopal. Payment schedule shall be as per BHEL payment terms. Balance 5% payment shall be released after successful completion of installation and commissioning of Electrically Operated Wiper System at ICF Chennai.



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7. Warranty:

Electrically Operated Wind Screen Wiper System shall be under warranty of 30 months against design and manufacturing defects form the date of supply at BHEL, Bhopal.

Specification No. : ICF/ELEC/122
No. of Pages : 6

Specification for
Electrically Operated Wind Screen Wiper System
for EMU / DEMU Driver cabin.

Issued By
Integral Coach Factory, Chennai - 38

CORRECTION SLIP NO.	-					
REVISION No:	00					
PREPARED BY :	PT					
APPROVED BY :	DPD DYCEE / I					
DATE :	07-01-11					

INTEGRAL COACH FACTORY, CHENNAI - 38	ICF/ELEC/122 REV.NO: 00 DATE : 07-01-2011
Subject : Specification for Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin.	Page 1 of 6

1 SCOPE

- 1.1 This specification covers the Design, Manufacture, Tests, Supply and after sales service of *Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin* operating on 110 Volt dc power supply.
- 1.2 The *Wind Screen Wiper System* is provided in the Driver's cabin of Electrical Multiple unit (EMU) or in Diesel Electric Multiple Unit (DMU).
- 1.3 The 110 Volt, dc power supply of sufficient rating shall be provided by the coach manufacturer for this purpose in both Electrical Multiple Unit operating on Traction supply of 25 kV, ac 50Hz, single phase supply and Diesel Electric Multiple Unit, operating on Traction supply derived from the Diesel Alternator set.

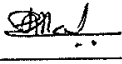
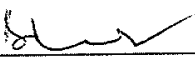
2. SERVICE CONDITIONS

- 2.1 The Wiper System shall be sturdy to withstand the following service conditions:

- 2.1.1. Maximum ambient temperature : 55°C.
- 2.1.2. Minimum ambient temperature : -4°C
- 2.1.3. Humidity : Upto 100%
- 2.1.4. Atmosphere : Very dusty atmosphere with dust of composite brake block shoe and fog.
- 2.1.5. Rainfall : Very heavy and continuous (heaviest in 24 hrs is 370mm), Max. Wind velocity 145kmph.
- 2.1.6. Altitude : sea level to 1000 Metres.
- 2.1.7. Maximum Train speed : 130Kmph
- 2.1.8. Vibration : The equipment, system and their mounting arrangement shall be designed to withstand satisfactorily the vibration and shocks encountered in service as specified below:-

- (a) Maximum vertical acceleration : 3.0 g
- (b) Maximum lateral acceleration : 3.0 g
- (c) Maximum longitudinal acceleration : 5.0 g
(‘g’ being the value of acceleration due to gravity)

In each of the three directions viz. Vertical, longitudinal and transverse sustained sinusoidal vibration in the frequency range. from 1 to 50 Hz having amplitude given by the following equations

		
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Subject : Specification for Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin.	Page 2 of 6

$a = 25/f$ - for value of 'f' from 1- 10 Hz and

$a = 250/f^2$ for value of from 10 - 50Hz.

3. STANDARDS

The Wiper System shall meet the requirements of RDSO Specification. C-K 306 (latest)

The Wiper Motor shall meet the requirement of the specification IS:7827 (Part-2).

RDSO/ELRS/SPEC/SI /0015-Reliability of Electronics used in Rolling Stock application.

4. POWER SUPPLY

- 4.1 The Wiper System and other related equipment shall be operable from 110V dc source only and the necessary power pack arrangement including DC-DC converter (If any) shall be built in the equipment. The input 110V dc variation is between 90 to 140 dc with ripples up to 15%. The unit shall be provided with the protection so as to withstand 200V dc and also reverse polarity.

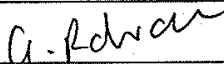
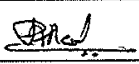
5. SCOPE OF SUPPLY

- 5.1 The scope supply is as follows:

- Electric motor assembly with suitable integrated drive mechanism suitable for mounting on panel inside the driving cab with spindle protruding out of the panel for mounting the detachable wiper arm along with blade – suitable for Left hand wind screen -1 no., suitable for Right hand wind screen – 1 no.
- The Control Electrical Rotary Switch (3 position: slow wipe, fast wipe, parking) suitable for mounting on the Driver's desk – 2 nos.
- Windscreen wiper assembly consisting of wiper arm and blade, Wiper Blade shall be suitable for curved and flat windscreens and Wiper Arm (Main Arm & Support or Auxiliary Arm) shall be of pantograph type - 2 sets.
- Necessary power pack arrangement including DC-DC converter (If any).
- Necessary pre-wired interconnection cables to RDSO specn. ELRS/SPEC/ELC/0019 (Latest) or equivalent PTFE cables of suitable length with suitable multi pin connectors required for interconnection between wiper system and it's controls located inside the driver's cab. (Length of cable can be confirmed from ICF).

5. TECHNICAL REQUIREMENTS :-

Electrical Wiper motor

		
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Subject : Specification for Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin.	Page 3 of 6

The Electrical Wiper Motor shall meet the requirement of the specification **IS:7827** (Part-2) Latest.

Motor Rating:-

(a) Option 1 :-

- Rated voltage : 110 volt DC
- Nominal current : 0.4 / 0.7 Amps (wet screen)
- Nominal power output : 28 / 48 Watts
- Degree of protection : IP-54 or higher
- Enclosure : Totally enclosed
- Continuous torque : 9 / 6.5 Nm (min)
- Finish : Polyester power coated (Black colour)

(b) Option 2 :-

- Rated voltage : 24 / 27 volt DC
- DC-DC converter : 110 V to 24/27 V DC
- Nominal current : 2.5 A / 3.5 A (wet screen)
- Degree of protection : IP – 54 or higher
- Enclosure : Totally enclosed
- Continuous torque : 28 Nm, at output gear.
- Finish : Polyester power coated (Black colour)

The overall dimension of the DC-DC Converter shall not exceed 210(L) x125(W) x110(H) for option 2 above.

Wiper motor shall have two speeds operation viz. low speed and high speed.

The motor assembly shall have integrated Radio interference suppression circuit using LC filters class of immunization according to CISPR 25.

The motor assembly shall have in built thermal protector to avoid over heating under adverse conditions.

Wind Screen wiper Assly. & Blade

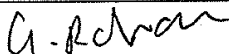
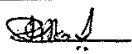
5.2.1 The wind screen wiper assembly and blade assembly shall confirm to RDSO Specification no: **C-K 306** (latest)

The nominal operating speed at low speed operation shall be 40 wipes per minute

The nominal operating speed at high speed operation shall be 55 wipes per minute

The system shall be designed to meet high level of durability. The motor and linkage shall be suitable for minimum 1.5 million cycles and the wiper blade shall have minimum 0.5 million or 6 months operational life as per SAE J 903 C standards.

The system shall have integrated wiper motor and links.

		
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Subject : Specification for Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin.	Page 4 of 6

The system shall be capable of producing Pantograph wipe pattern as per Indian Railway requirement to drawing no. ICF / STD 3-5-042 (latest)

The system shall have automatic parking facility and always stop the wiper in the agreed park position.

The wiper blade arm assembly shall be suitable for operating at minimum 60 cycles per minute.

6 CONSTRUCTIONAL REQUIREMENT

6.1.1 The Wiper system shall be constructed with strength and shall be robust design to meet the service conditions encountered in the Rolling Stock application.

6.2 The construction shall also cater for safe handling, transportation and rough usage without any damage.

6.3 All the parts that may cause injury or accident to the person operating shall be guarded with safe arrangement.

6.4 All parts that require periodic attention or maintenance shall be easily accessible when the unit is installed as per the requirement.

6.5 All hardware used shall be nickel plated and cadmium passivated and shall be with metric threads.

6.6 There shall be earthing terminals for connection of earth to coach body both on motor and DC-DC converter units

6.7 The units shall be supplied with fixing arrangement with fixing holes provided on the units and not in the enclosures or on steel sheets.

6.8 The supplier shall furnish the following details of all the items :-

(i) Mounting dimension in mm with hardware size.

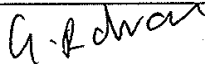
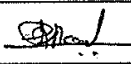
(ii) Overall dimension in mm

(iii) Weight in kgs

6.9 The dimensions and mounting arrangement of the each equipment mentioned in this specification are tentative and shall be finalized mutually between purchaser and supplier. The dimensional drawings with all details including the weight of the equipment shall be submitted for ICF approval before effecting supply. Bulk manufacture shall commence only on approval of the prototype by ICF.

7. INSPECTION

7.1 All materials and work covered in this specification shall be inspected by CEE/ QC & C / ICF Chennai or his authorized representative.

		
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Subject : Specification for Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin.	Page 5 of 6

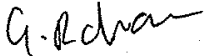
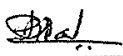
- 7.2 The equipment offered shall be tested as per this specification, in conjunction with latest IS: 7827 (Part-II) and RDSO Spec. C - K306 and ICF approved drawings of the firm.
- 7.3 The cost of the Inspection of the ordered equipment and the works shall be borne by the manufacturer.
- 7.4 The manufacturer shall inform CEE / QC & C / ICF, Chennai-38 well in advance for carrying out the Inspection of the ordered equipment.

8. TESTS :

- 8.1 Test shall constitute **Type test** and **Acceptance test**. The testing cost / charges applicable shall be borne by the manufacturer.
- 8.2 All the facilities for conducting the tests indicated shall be provided by the manufacturer at their works and on their own cost.
- 8.3 One complete unit from the ordered quantity, with all accessories, shall be type tested for Prototype Tests (clearance).
- 8.4 The following shall constitute the type tests and shall be done on the first unit for each purchase order unless otherwise stated and in every 50th Unit, if the ordered quantity is more than 50 numbers. The tests shall be conducted in the manufacturer's premises. All the facility for the conduction of the Tests shall be provided by the manufacturer at the manufacturing premises free of cost.
- 8.4.1 Tests for Wiper motor shall be conducted as per **clause 4 of IS: 7827 (Part-II)**.
- 8.4.2 Tests for Wind screen wiper arm and Blade assembly shall be conducted as per **clause 6.2 of RDSO spec. C – K 306**
- 8.4.3 The type tests shall be carried out at the works of the manufacturer by CEE QC & C / ICF or his authorized representative for conformity of the product with specification.

9 APPROVAL of DRAWINGS

- 9.1 The tenderer shall submit three sets of drawings showing technical details of the Wiper assembly, fixing arrangement dimensions, material specifications, list of parts for ICF approval.

		
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Subject : Specification for Electrically Operated Wind Screen Wiper System for EMU / DEMU Driver cabin.	Page 6 of 6

- 9.2 On approval of the drawing, the prototype unit, complete in all respects, shall be manufactured and offered for prototype test by ICF. Bulk manufacture shall commence only on approval of the prototype by ICF.

10. MARKINGS

- 10.1 Each Wiper unit shall be provided with a name plate carrying the following data, marked in a durable manner and located in a place such that it is visible and legible when the unit is installed. The Anodised aluminum name plate indicating:
 Manufacturer's name,
 Name of item, rating
 Specification No.
 Serial No. (first two digits year and next two digits month and three digits running serial number)

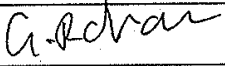
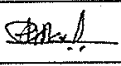
11 GUARANTEE:

- 11.1 The Wiper unit complete (including wiper motor & power pack) shall be guaranteed against design and manufacturing defects for a period of 60 months from the date of supply or 48 months from the date of fitment whichever is earlier. The successful tenderer shall offer prompt free after sales service during the guarantee period at ICF as well as at any car sheds of Indian Railway where motor coaches fitted with Electrical wiping system are in service.

12 ELIGIBILITY CRITERIA

- 12.1 The bidder should have manufactured and supplied at least 1000 sets for passenger car applications with comparable features to any renowned automobile manufacturer or railway system and these equipment should have been in active and troubles free service for at least 5 years.
- 12.2 If a bidder has already made supply in India with collaboration of any reputed firm and their equipments are working satisfactorily for at least 5 years, they should produce documentary evidences of supply details made in India.

* * * * *

		
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Pre-Qualification requirements

ELECTRICALLY OPERATED WIPER SYSTEM FOR SPIC/ KMMC

S. No.	Description of requirement	Document to be attached
1	Quoted Items SL NO.	Mention SI No.
2	Bidder should submit a self-declaration stating that, "Offered item is same as per enquiry and there is no deviation".	Self-declaration on letterhead of firm.
3	In case Bidder is not be OEM but its Reseller then bidder to submit valid authorisation certificate from OEM with the bid.	Valid authorisation letter from OEM.
4	Bidder should have valid approval from Indian Railway/ ICF/RDSO for Electrical Wiper system with washer tank confirming to ICF/Elec/122 for ACSPIC (Air-Conditioned Self-Propelled Inspection Car) /KMMC (Kavach Mobile Maintenance Car).	Valid copy of approval before date bid opening.

Terms Other than PQR to be compiled during Bidding:

Terms	Complied/Not Complied
Quoted SL NO.	
OEM Declaration/Authorization Certificate to be submitted by vendor	
Delivery accepted as per Tender	
Mobile no of concerned Person	
Email ID	

Note: Bidders providing above documents and not meeting above criteria essential for Offer Consideration.

NO DEVIATION CERTIFICATE

Reference: Bid No. _____ Dated: _____

Subject: Self-Declaration for No Deviation

This is to certify that the items/services offered by us against the above-referred enquiry are **fully compliant** with the specifications, terms, and conditions mentioned in the bid document.

We hereby confirm that **there are no deviations** from the stipulated specifications, commercial terms, conditions, and other requirements of the enquiry.

For _____
(Authorized Signatory)

Date: _____

Seal:

OEM SELF-DECLARATION (FOR OEM)

Date: _____

Subject: **OEM Self-Declaration**

Ref: Bid No. _____

We certify that:

1. The bidder **M/s** _____ is the OEM** itself.
2. The product(s) offered are **new, genuine, and comply** with all specifications mentioned in the tender.
3. We shall provide full **warranty support, technical assistance, and spare parts** availability as required.

For **(Name of OEM)**

Authorized Signatory

Name: _____

Designation: _____

Seal:

OEM address:

**** OEM refers to (Original Equipment Manufacturer)**

B. OEM AUTHORIZATION CERTIFICATE (FOR BIDDER AS DEALER)

Date: _____

Subject: **OEM Authorization Certificate**

Ref: Bid No. _____

We, **(Name of Original Equipment Manufacturer – OEM)**, hereby authorize:

M/s _____
(Address: _____)

We confirm that:

1. Bidder is **authorized partner / dealer / distributor / bidder** for participating in the above-mentioned tender
2. The bidder is authorized to **quote, supply, install (if any), and support** our products.
3. The products offered will be **genuine, brand-new, and manufactured by us (OEM)**.
4. We will provide full **warranty support, technical support, and spare parts (wherever applicable)** for the supplied equipment throughout the warranty/AMC period.

For **(Name of OEM)**

Authorized Signatory

Name: _____

Designation: _____

Seal:

**** OEM refers to (Original Equipment Manufacturer)**