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No. EL/DSE-4/Borescope

Dated: 27.03.2018

<b>Principal Chief Electrical Engineer,</b> 1. Central Railway, Mumbai, CST-400 001. 2. East Central Railway, Hazipur-844 101. 3. East Coast Railway, Chandrashekharpur, Bhubaneswar-751 016. 4. Eastern Railway, Fairlie Place, Calcutta-700 001. 5. North Central Railway, Block-A, Subedarganj, Allahabad-211 033. 6. Northern Railway, Baroda House, New Delhi-110 001. 7. North Western Railway, Jaipur- 302 006 8. North Eastern Railway, Gorakhpur-273001 9. North East Frontier Railway, Maligaon, Guwahati-781011 10. South Central Railway, Secunderabad-500 071. 11. South East Central Railway, Bilaspur-495 004. 12. South Eastern Railway, Garden Reach, Kolkata-700 043. 13. Southern Railway, Park Town, Chennai-600 003. 14. South Western Railway, Hubli- 580020 15. West Central Railway, Jabalpur-482 001. 16. Western Railway, Churchgate, Mumbai-400 020 17. Chittaranjan Locomotive Works, Chittaranjan-713 331 18. Diesel Locomotive Works, Varanasi-221 004	<b>प्रमुख विद्युत अभियंता,</b> 1. मध्य रेलवे, मुंबई सीएसटी -400 001 2. पूर्व मध्य रेलवे, हाजीपुर-844 101 3. पूर्व तटीय रेलवे, चन्द्रशेखरपुर, भुवनेश्वर-751 023 4. पूर्व रेलवे, फेयर्ली प्लेस, कोलकाता-700 001 5. उत्तर मध्य रेलवे, ब्लाक ए-2, सुबेदारगंज इलाहाबाद - 211 033 6. उत्तर रेलवे, बड़ौदा हाऊस, नई दिल्ली-110 001 7. उत्तर पश्चिम रेलवे जयपुर- 302006 8. उत्तर पूर्व रेलवे गोरखपुर- 273001 9. उत्तर पूर्व फ्रन्टीयर रेलवे मालीगाँव गुवाहाटी-781011 10. दक्षिण मध्य रेलवे, रेल निलायम, सिकंदराबाद-500 371 11. दक्षिण पूर्व मध्य रेलवे, बिलासपुर - 495 004 12. दक्षिण पूर्व रेलवे, गार्डेनरीच, कोलकाता-700 043 13. दक्षिण रेलवे, पार्क टाउन, चेन्नई-600 003 14. दक्षिण पश्चिम रेलवे हुबली-580020 15. पश्चिम मध्य रेलवे, जबलपुर-482 001 16. पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020 17. चित्तरंजन रेल इंजन कारखाना, चित्तरंजन - 713331 18. डीजल रेल इंजन कारखाना, वाराणसी-221004
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## Technical Circular No. RDSO/2018/EL/TC/0144 (Rev. 0) Dated 27.03.2018

**Sub.:** General Guidelines for uses of Video Bore scope for checking the inaccessible location of electric locomotives to avoid failure.

**Ref.:** (i) 38<sup>th</sup> MSG meeting held at Secunderabad / South Central Railway on 28<sup>th</sup> & 29<sup>th</sup> July'2017-SN-8 Other Important points discussed during MSG.

(ii) Minutes of meeting held at RDSO on 08.03.2018 vide letter no. EL/DSE-4/borescope dated 13.03.2018

### 1.0 Introduction

During locomotive maintenance, it is frequently observed that certain inaccessible locations need to be checked visually for discrepancies, as detection of cracks at visually unreachable locations in under frame, cable faults/cuts at the backside/inside of panels or below footplates, flashings, ingress of foreign particles /broken parts inside ducts. During 38<sup>th</sup> MSG meeting, the usefulness of video bore scope camera was appreciated for visual inspection of those areas of locomotive which are not accessible. In view of the recommendations of the meeting, reputed manufacturers of video bore scope were called at RDSO to discuss the features available with different models of equipment and their usefulness in viewing various locations of loco like Backside of BA Panel, inside electronic converters for flash marks, inside SL( smoothening reactors), below



footplates, TM rocker assembly, Ducts/impellers of all auxiliary motors, backside of driver desks for wires/cables, under frame and TM lugs, inside stator jali etc.

## **2.0 Minimum Features to be available in Video Bore Scope:-**

Hand held device with flexible/partially stiff probe with attached video camera and LED lights at its tip. The flexible probe can be put inside narrow inaccessible locations and video can be seen on a display screen.

- **Probe/ lens diameter:** 6mm, 12mm
- **Field of view of camera:** 60 degrees or more
- **Remote control:** For rotation of camera
- **Length of Probe:** 1meter or more
- **Storage:** 8 GB or more
- **Display unit:** At least 300000 pixels. Device can be connected on separate screen to view video
- **Ingress Protection:** IP-55 or above
- **Battery:** backup for more than 3 Hrs
- **Data Transfer:** data can be transferred to computer using USB lead/driver

Above characteristics of video borescope camera has been given for guidelines only. However sheds can procure any Video borescope with at least above mentioned properties. Any higher version may also be preferred by sheds if found suitable for the use for detection of fault/defects in electric locomotives.

## **3.0 Locations which can be viewed using video Boro scope:**

- Backside of BA Panel, SB panel
- Inside electronic converters
- Inside Smoothing reactors
- Below footplates
- TM rocker assembly Inside stator jali
- Ducts, impellers of all auxiliary motors
- Backside of driver desks for wires/cables
- Inaccessible locations in under frame for any crack
- TM lugs
- Any other inaccessible locations of locomotive which sheds found prone to failures


## **4.0 Details of the models available with the firm attended the meeting:**

1. **El-Mech Engineers**  
Model no. : BO26, VSC206
2. **GROZ**  
Model no.: DCS 200, DCS 300, DCS 400
3. **IT-Concept**  
Model no.: XLED



Sheds can purchase suitable video borescope as per their requirement from any of the above or any other reputed manufacturers.

Encl.: Nil

  
(Pratibha Gupta)  
for Director General/Electrical

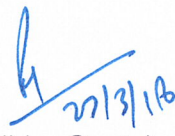
Copy to:

1. Secretary (Electric Traction), Railway Board, Rail Bhawan, New Delhi-110 001 (Kind Attn.: DEE (RS)/Railway Board)

सचिव (विद्युत), रेलवे बोर्ड, रेल भवन, नई दिल्ली-110 001 (निदेशक विद्युत (चल स्टॉक) के ध्यानाकर्षण हेतु)

2. As per Standard mailing list No. EL-M-4.2.3-19 Latest Revision.

Encl: Nil

  
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