

**REASONED DOCUMENTS ON**

**RDSO's REMARKS ON PROPOSED SUGGESTION/COMMENTS GIVEN BY FIRMS/RLYS ON EXISTING SPEC. NO. RDSO/2015/CG-05, REV. NIL FOR SCHEDULE OF TECHNICAL REQUIREMENTS FOR MANUFACTURE AND SUPPLY OF FAILURE INDICATION CUM BRAKE APPLICATION DEVICE (FIBA) DEVICE**

Clause No.	Description of clause of existing Spec. No. RDSO/2015/CG-05, Rev. Nil	Comments of M/s Top grip Instruments company Kolkata	Comments of M/s Faiveley Transport Tamilnadu	Comments of M/s Escorts Faridabad	Comments of M/s Knorr-Bremse Haryana	Comments of M/s River Engineering Noida	Comments of ICF/Chennai	Remarks/Decision of RDSO
Clause no. 2.3	Compressed air supply to the air spring assemblies shall be maintained through a compressor provided in the Locomotive through Feed Pipe. The Locomotive compressor charges the Feed pipe at 6 Kg/cm <sup>2</sup> and Brake Pipe at 5 Kg/cm <sup>2</sup> . Provision of air-drying drier does may not exist/function in some of the compressed air supply system of some Locomotives. Pneumatic circuit of Air Spring Failure Indication Cum Brake Application (FIBA) Device system is connected to air springs through pipelines. Internal air pressure of air springs may vary from tare to full load.	---	----	-----	<p>Justification:-In case of non-existence/ non-working of air dryer in locomotive, excessive moisture in compressed air may cause the accumulation of water in certain valves which may degrade the functioning and service life of rubber components, grease, metallic parts.</p> <p>Non-functioning/ non-existence of air dryer is the problem of the locomotive and should not be linked with specification of equipments on coaches.</p> <p>We recommended the clause should be modify accordingly.</p>	-----	-----	Firm's request is not acceptable as this clause elaborate the operating & maintenance conditions of IR and firm has to develop product accordingly.
Clause no. 2.5	To meet the requirement of a fool proof arrangement in the suspension design, FIBA device connected with each air spring has been fitted in air spring fitted coaches. FIBA device will send a message to the crew of the train in the event of air spring failure (which will ultimately demand a reduction in the operating speed) by way of brake application and physical indication (Hissing Sound and	-	Hissing Sound and color change of indicator from green to red in affected coach.	-	-	-	-	<p>Comments of firms may be accepted. The clause is modified as under:</p> <p>To meet the requirement of a fool proof arrangement in the suspension design, FIBA device connected with each air spring has been fitted in air spring fitted coaches. FIBA device</p>

	projection of indicator in affected coach). Failure of Air Spring is possible due to the likely hood of spring damage, possibility of air supply failure or due to sudden rupture or bursting of bellows of air springs due to any reason.							will send a message to the crew of the train in the event of air spring failure (which will ultimately demand a reduction in the operating speed) by way of brake application and physical indication (Hissing Sound and <b>Projection</b> color change of indicator from green to red in affected coach). Failure of Air Spring is possible due to the likely hood of spring damage, possibility of air supply failure or due to sudden rupture or bursting of bellows of air springs due to any reason.
Clause no.4.1	<p><b>4)</b> Isolating cock (OLP type) 20mm bore for BP/ Isolating cock without vent with end fitting (For LHB &amp; Double Decker Coaches fitted with FIAT bogies)</p> <p><b>5)</b> Isolating cock 20mm bore with vent hole**</p>	-	-	-	<p>Isolating cock 20mm bore with vent hole with end fitting (For LHB &amp; Double Decker Coaches fitted with FIAT bogies) **</p> <p>Description copied from Sr. no. 4, as type of connection should be same for both type of isolating cocks.</p>	-	<p>ICF is using Isolating Cock OLP type 20 NB to RDSO/SK-97002 and Isolating Cock OLP type with vent hole 20 NB to RDSO/SK-98013 for item Nos. 4 &amp; 5 of para 4.1. (Page 6 of 28).</p>	<p>a. Comments of firms may be accepted. The clause is modified as under:</p> <p>Isolating cock 20mm bore with vent hole/ <b>Isolating cock with vent hole with end fitting (For LHB &amp; Double Decker Coaches fitted with FIAT bogies) **</b></p>

<p>Clause no. 5.5.7</p>	<p>After type tests of a particular design are approved by RDSO, vendors shall ensure that Air Spring Failure Indication Cum Brake Application (FIBA) Device to the particular specification are supplied with components manufactured from the sources as indicated at the time of design approval and used for type testing. However, in case of change of sub vendor or source of supply for manufacturing of FIBA device components, the firm shall get approval of their modified QAP form RDSO before manufacturing and supply of FIBA device.</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>After type tests of a particular design are approved by RDSO, vendors shall ensure that Air Spring Failure Indication Cum Brake Application (FIBA) Device to the particular specification are supplied with components manufactured from the sources as indicated at the time of design approval and used for type testing.  <u>However, in case any change in FIBA device components which is critical for functionality of FIBA device</u>, the firm shall need to get approval of their modified OAP form RDSO before manufacturing and supply of FIBA device.</p> <p><b>Justification: -</b>  Sourcing of components is prerogative of manufacturer. Ensuring the quality of components from existing or new vendors and compliance to guarantee/warranty obligation is the responsibility of manufacturer. To meet this requirement for small items is not conducive as it will break the continuity of production and affect the supplies to IR. However, this requirement can be met with regard the major changes in design or change in supplier of major items. Also, periodicity for updation and approval of OAP can be specified.</p>			<p>Comments of firm is not acceptable as FIBA device is critical safety device and change of sub vendor at intermediate stage may affect the reliability and performance of approved design. In case any change in FIBA device components which is critical for functionality of FIBA device, para 5.5.3.1 will apply.</p>
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<p>Clause no. 5.5.10</p>	<p>In case, source of any component of Air Spring Failure Indication Cum Brake Application (FIBA) Device is changed or any additional new source is introduced, the firm shall get approval of modified QAP form RDSO before manufacturing and supply of FIBA device. The vendor should provide the detailed information of the source changed/ additional source introduced along with the documentary evidences for the record of this office. Firm shall validate the source in all respects i.e. material, manufacturing process, quality control and inspection &amp; testing etc. to conform to originally approved design and process. Compliance to all obligations including guarantee/warranty (as per para. 8 of Section - A) shall remain the responsibility of vendor</p>				<p>In case, source of any component of Air Spring Failure Indication Cum Brake Application (FIBA) Device is changed or any additional new source is introduced, <del>the firm shall get approval of modified QAP form RDSO before manufacturing and supply of FIBA device. The vendor should provide the detailed information of the source changed/ additional source introduced along with the documentary evidences for the record of this office.</del> Firm shall validate the source in all respects i.e. material, manufacturing process, quality control and inspection &amp; testing etc. to conform to originally approved design and process. Compliance to all obligations including guarantee/warranty (as per para. 8 of Section - A) shall remain the responsibility of vendor.</p> <p><b>Justification: -</b> Sourcing of components is prerogative of manufacturer. Ensuring the quality of components from existing or new vendors and compliance to guarantee/warranty obligation is the responsibility of manufacturer. To meet this requirement for small items is not conducive as it will break the continuity of production and affect the supplies to IR. However, this requirement can be met with regard the major changes in design or change</p>			<p>Comments of firm is not acceptable as FIBA device is critical safety device and change of sub vendor at intermediate stage may affect the reliability and performance of approved design. In case any change in FIBA device components which is critical for functionality of FIBA device, para 5.5.3.1 will apply.</p>
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					in supplier of major items. Also, periodicity for updation and approval of OAP can be specified.			
Clause no. 6.1.3	Indication devices/ Indicators, to be fixed one on each side of each bogie i.e 4 indicators per coach near turn under and mounted on underframe of the coach to change colour from green to red till either the ruptured bellow is rectified properly or FIBA device is reset manually <del>by closing the Isolating Cock provided in BP line</del> or by resetting key mechanism provided on FIBA device. Port diameter indicator will be 1/4". The resetting mechanism of FIBA device shall be maximum two knob button type i.e. one for each air spring.	Indication devices/ Indicators, to be fixed one on each side of each bogie i.e 4 indicators per coach near turn under and mounted on underframe of the coach to change colour from green to red till either the ruptured bellow is rectified properly or FIBA device is reset manually <u>by closing the isolating cock provided in BP line and then resetting the reset mechanism provided on FIBA device.</u> Port diameter indicator will be 1/4". The resetting mechanism of FIBA device shall be maximum two <u>knob/push button type</u> i.e. one for each air spring.	Indication devices/ Indicators, to be fixed one on each side of each bogie i.e 4 indicators per coach near turn under and mounted on underframe of the coach to change colour from green to red till either the ruptured bellow is rectified properly or FIBA device is reset manually after closing the Isolating Cock provided in BP line or by resetting mechanism provided on FIBA device. Port diameter indicator will be 1/4". The resetting mechanism of FIBA device shall be maximum two knob/Push button type i.e. one for each air spring. <u>Clarification:-</u> In case of train parting after bellow burst (which is the rarest phenomena), the loco pilot or guard who has earlier isolated FIBA device would have noted the coach details where the bellow burst took place. So, keeping the indicator in RED even after isolating the FIBA device, just to identify	To be rewritten as "Indication devices/ Indicators, to be fixed... The resetting mechanism of FIBA device shall be of knob button type."	Indication devices/ Indicators, to be fixed one on each side of each bogie i.e 4 indicators per coach near turn under and mounted on underframe of the coach to change colour from green to red till either the ruptured bellow is rectified properly or FIBA device is reset manually or by resetting mechanism provided on FIBA device. Port diameter indicator will be 1/4". The resetting mechanism of FIBA device shall be maximum two <u>knob button type</u> i.e. one for each air spring.	Indication devices/ Indicators, to be fixed one on each side of each bogie i.e 4 indicators per coach near turn under and mounted on underframe of the coach to change colour from green to red till either the ruptured bellow is rectified properly or FIBA device is reset manually <u>by closing the Isolating Cock provided in BP line and by resetting key mechanism provided on FIBA device.</u> Port diameter indicator will be 1/4". The resetting mechanism of FIBA device shall be maximum two knob <u>OR button type</u> i.e. one for each air spring.		Comments of firms may be accepted. The clause is modified as under:  Indication devices/ Indicators, to be fixed one on each side of each bogie i.e 4 indicators per coach near turn under and mounted on underframe of the coach to change colour from green to red till either the ruptured bellow is rectified properly or FIBA device is reset manually by <u>closing the isolating cock provided in BP line and by reset mechanism provided on FIBA device.</u> Port diameter indicator will be 1/4". The resetting mechanism of FIBA device shall be maximum <u>two knob/push button type mechanism</u> i.e. one for each air spring.

			<p>the coach during an incident of bellow burst followed by train parting (which is the rarest phenomena) is not advisable for the following reasons: a) RED indication might create confusion for the Gang men b) Addition of more components to achieve an un useful feature might reduce the reliability of the product itself c) To enable the indicator, remain as RED for a certain period of time even after the device is isolated will need an in-depth design review which might take quite some time and effort</p>				
<p>Clause no. 6.1.7</p>	<p>The equipment shall sense the air springs pressure of <del>respective air springs</del> from any of the adjacent air springs of same bogie and move to apply brake in complete train if the <del>discharge</del> of compressed air pressure of respective air springs <del>becomes</del> is less than <math>1\pm 0.1</math> Kg/Cm2 .</p>	-	-	-	-	<p>The equipment shall sense the air springs pressure of <del>respective air springs</del> from <b>both</b> the adjacent air springs of same bogie and move to apply brake in complete train if <del>the discharge</del> of compressed air pressure of respective air springs becomes is less than <math>1\pm 0.1</math> Kg/Cm2 .</p>	<p>Comments of firms may be accepted. The clause is modified as under:</p> <p>The equipment shall sense the air springs pressure <b>from both of</b> the adjacent air springs of same bogie and move to apply brake in complete train if compressed air pressure of respective air springs is less than <math>1\pm 0.1</math> Kg/Cm2 .</p>

<p>Clause no. 6.1.8</p>	<p>In addition to initiating brake in the complete train, it also shall actuate a hissing sound of 90±5 decibel intensity (measured approximately at 3m distance from actuated FIBA device) with steady pitch to attract the attention of the crew who walks along the train investigating the defect. It shall also not be such as to cause panic to the passengers traveling in the coach. In parallel, the equipment actuates a color change in the side mounted colour indicators from Green to red to quickly catch the eye of the driver. It shall be covered properly by a suitable transparent sheet to protect the same from dust, dirt and water etc.</p>	<p>-</p>	<p><b><u>measured approximately at 4.6 m distance from actuated FIBA device</u></b></p> <p><b><u>Clarification:</u></b> As per our understanding hissing sound should be audible to Crew member/Loco Pilot, no need to specify the sound intensity levels, however, As per standard the recommended distance to measure sound intensity is 4.6 mtr from the FIBA device.</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>Comments of firm is not acceptable.</p>
<p>Clause no. 6.1.16</p>	<p>However, the visual indication shall not be possible to be suppressed automatically either without proper rectification of the deflated air spring or by resetting the FIBA device by resetting key provided on FIBA device</p>	<p>-</p>	<p><b>FIBA device by resetting key Knob/push button by closing Isolating Cock provided in BP line on FIBA device.</b></p> <p><b><u>Clarification: -</u></b> However, Indicator will turn from Red to Green when Brake Pipe is isolated by Closing Isolating cock. After Isolation and resetting of FIBA device, Indicator turning back to Green is advisable as it gives the system fit to run with cautious speed as defined by IR. Instead of Key &amp; mention it has knob/Push button.</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>Comments of firm may not be accepted.</p> <p>(Resetting mechanism has been already modified as Knob/push)</p>

<p>Clause no. 6.1.19</p>	<p>The equipment shall be designed to withstand maximum vibrations as in existing Railway system without losing its efficiencies. Complete unit shall be protected from all possible damages and theft etc. It shall be as compact and light weight as possible for ease in mounting at the appropriate location. <b>In case, FIBA design of any vendor require mesh type front cover for protection against miscreant/damage, the front cover design shall be approved by RDSO so as to ensure that different design do not create confusion in field.</b></p>	<p>-</p>	<p><del>In case, FIBA design of any vendor require mesh type front cover for protection against miscreant/damage, the front cover design shall be approved by RDSO so as to ensure that different design do not create confusion in field.</del> <b>Clarification:</b> The design of our FIBA device is done taking into consideration of the environment that it has to work under, and we confirm a specific cover for our device is not required as it is already made for rugged conditions.</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>Comments of firm is not acceptable as requirement of front cover varies from design to design of FIBA device. Firm have option to supply the FIBA with or without front cover based on their design.</p>
<p>Clause no. 6.5</p>	<p><b>Other Details:-</b> All metal parts of the Air Spring Failure Indication Cum Brake Application (FIBA) Device and Indicators shall be of AISI 304 stainless steel.....</p>	<p>-</p>	<p><b>Clarification:</b> M16x40 long, is sufficient for FIBA supplied by FT and is being fitted currently in many coaches without any issue.</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>For standardization, specification is to be complied.</p>
<p>Clause no. 8.1</p>	<p>Complete Air Spring Failure Indication Cum Brake Application (FIBA) Device shall be guaranteed for satisfactory performance for a minimum period of 60 months from the date of actual commission in bogies or 72 months from the date of supply whichever is earlier (subject to the conditions that proper over hauling and proper instructions are followed during POH as instructed by the OEM). Satisfactory performance for this purpose means that</p>	<p>-</p>	<p><b>Clarification:</b> Proper overhauling, Rubber Kit and spring kit replacement to be carried out as per recommendation as per Maintenance Manuals.</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>-</p>	<p>Details of maintenance may be included in maintenance manual by OEM &amp; submitted to RDSO for approval.</p>



	complete Air Spring Failure Indication Cum Brake Application (FIBA) Device or any of its part shall neither show any kind of deterioration which is likely to render it unserviceable nor lose its characteristics as stipulated in this STR, during the guarantee period for reasons attributable to manufacturing/design defects.						
Clause no. 10.2	With every order for supply of the Air Spring Failure Indication Cum Brake Application (FIBA) Device, the supplier shall have to supply maintenance instructions in the form of two booklets (hard copy) and one copy on <del>Compact Disc (MS-Office compatible)</del> pen drive.	-	<b>one soft copy on email</b> <del>Compact Disc (MS-Office compatible)</del> pen drive.		With every order for supply of the Air Spring Failure Indication Cum Brake Application (FIBA) Device, the supplier shall have to supply maintenance instructions in the form of two booklets (hard copy) and copy on e-mail.  <b>Justification: -</b>  Most of the companies has policy, external storage device is not allowed due to security reason. Also, it will create eJunk which is national loss.		Comments of firms may be accepted. The clause is modified as under:  With every order for supply of the Air Spring Failure Indication Cum Brake Application (FIBA) Device, the supplier shall have to supply maintenance instructions in the form of two booklets (hard copy) and <b>one soft copy on email.</b>
Clause no. 11.2.1	<ul style="list-style-type: none"> <li>➤ Tightening torque for fasteners must be mentioned in drawing.</li> <li>➤ Dimension tolerance for other than specified dimension should be as per IS 2102 (Part-I) (medium).</li> </ul>	-	<p>Noted: - recommended tightening torque for fasteners may be mentioned in drawing.</p> <p>Noted. However, the tolerances are defined based on functional &amp; performance need and shall be defined by OEM.</p>		<ul style="list-style-type: none"> <li>➤ Tightening torque for fasteners must be mentioned in drawing.</li> <li>➤ Dimension tolerance for other than specified <b>machining</b> dimension should be as per IS 2102 (Part-I) (medium).</li> </ul> <p><b>Justification: -</b></p>		<p>Comments of M/S Knorr are not accepted.</p> <p>As per IS:2102 (part-1) Notes 3 (c) Linear and angular dimensions produced by machining assembled parts.</p>

					IS:2102 (part-1) is for general linear and angular dimensions. The same cannot be refer for assembly tolerance.			
Clause no. 11.2.2	<p><b>Knorr:</b> -There should be no leakage from any joint, port or FIBA device. Repeat the same procedure for leakage testing of Indicator.</p> <p><b>Escorts:</b> - Functional test of FIBA device shall be carried out as per ANNEXURE- B of this STR. Functional testing of Indicators of FIBA device shall also be carried out as per clause 4 of ANNEXURE-B. Indicative pneumatic circuit diagram for FIBA Test Bench is given at ANNEXURE – III.</p> <p><b>Faiveley:</b> <u>Functional test of the FIBA device:</u></p> <p>Functional test of FIBA device shall be carried out as per ANNEXURE- B of this STR. Functional testing of Indicators of FIBA device shall also be carried out as per clause 4 of ANNEXURE-B. <b>Indicative pneumatic circuit diagram for FIBA Test Bench is given at ANNEXURE – III.</b></p> <p>Leak test of Air Spring Failure Indication Cum Brake Application (FIBA) Device shall be carried out as follows-</p>	-	However, FT will only consider ANNEXURE III as a guideline document for testing FIBA. In-principle FT test bench will respect the system level requirement for testing of FIBA device & rest other parameters are owned by OEM.	LHB Bellow volume is close to 40 L. Request RDSO provide more information for requisition of 60 L reservoir shown in the Test Bench in Annexure III.	<p>There should <b><u>not be leakage more than 0.1kg/cm2 in 60 sec</u></b> from any joint, port or FIBA device. Repeat the same procedure for leakage testing of Indicator.</p> <p><u>Justification:</u> - There are no. of ports joints and devices. Hence a suitable tolerance limit for leakage should be defined.</p>	----	-----	<p><b>Knorr:</b> Comments of M/S Knorr may not be accepted. <b>FIBA device is critical safety item, hence no leakage allowed from any port/joint of FIBA device &amp; its indicators.</b></p> <p><b>Escorts:</b> Comments of M/S Escorts may not be accepted.</p> <p><b>Reservoir volume (40 L) + air spring volume (20 L approx.) =60 L</b></p> <p><b>This is indicative arrangement drawing.</b></p>

	<p>Install the Air Spring Failure Indication Cum Brake Application (FIBA) Device at test bench.</p> <p>Gradually raise the air pressure to 2 kg/cm<sup>2</sup> and thoroughly check the air leakage from FIBA device with the help of liquid soap solution.</p> <p>Gradually raise the air pressure to 10 kg/cm<sup>2</sup></p> <p>There should be no leakage from any joint, port or FIBA device. Repeat the same procedure for leakage testing of Indicator.</p>							
Clause no. 14 Annexure-B	<p>CHECK LIST SHEET FOR INSPECTION OF AIR SPRING FAILURE INDICATION CUM BRAKE APPLICATION DEVICE ANNEXURE-B.</p> <p>Suppression of Indicator:  <del>Pull the resetting keys provided on FIBA device.</del> Reset the FIBA device by knob mechanism.</p>	Suppression of Indicator: <del>Pull the resetting keys provided on FIBA device.</del> Reset the FIBA device by knob/ <b>Push</b> mechanism.	-	-	-	-	-	<p>Comments of firms may be accepted. The clause is modified as under:</p> <p>Suppression of Indicator:  Reset the FIBA device by <b>knob/</b><b>Push</b> mechanism.</p> <p>(Same as above, Reset mechanism knob/ Push modified in all para of STR)</p>
Clause no. 14.1	<p>RDSO may draw samples for quality check to test any property mentioned in this specification at its discretion at the time of time of purchase inspection. The vendor shall arrange testing of these samples at a reputed outside laboratory as decided between RDSO and the vendor. The testing charges should be borne by the vendor.</p>	-	<p>Noted. Material properties are to be checked in the specimen as specified by standards &amp; hence part cannot be subjected to material test etc. However, Material test report for the part can be shown to RDSO. Similarly, Rubber</p>	-	-	-	-	<p>Firm has not suggested any change in this clause.</p>

			properties can be checked in specimen only.					
Page 20/28	<p>3. Functional test of FIBA device: Clause Point No 3 (Standard)</p> <p>i. No leakage in FIBA device Valve</p> <p>4. A. Functional Test at 2.0 kg/cm2 (Tare pressure):</p> <p>ii) BP pressure starts venting gradually and settles at 3.4 ± 0.1 Kg/Cm2 approx. BP Isolation: (Standard)</p> <p>i) BP pressure exhaust, through FIBA device exhaust port stops and BP pressure rises to 5 ± 0.1 Kg/Cm2.</p> <p>ii) Hissing sound stops. iii) Both indicators show red/ green*. *If Indicators are still red go for next step i.e. suppression of Indicators). Suppression of Indicator: Pull the resetting keys provided on FIBA device. Reset the FIBA device by knob mechanism.</p>	-	<p>3. Functional test of FIBA device: Clause Point No 3 (Standard) i. No leakage in FIBA device Valve for <b>60 Sec.</b></p> <p>Kindly amend the point (iii) as below: iii. Both indicators show red/green*. *If Indicators are still red go for next step i.e. suppression of Indicators). Suppression of Indicator: (Test and Testing procedure) Reset the FIBA device by knob/Push button mechanism</p> <p><b>Clarification: -</b> Since in FT design, once the BP is isolated in FIBA device it turns green, showing that brake is released.</p>	-	-	-	-	<p>(i) Comments of firm may not be accepted.</p> <p><b>FIBA device is safety related item so no leakage allowed from any port/joint of FIBA device &amp; its indicators.</b></p> <p>(ii) Comments of firm may not be accepted for suppression of indicators as it was decided in the meeting held on 10.02.2020 at RDSO and firms were advised to modify their design accordingly.</p> <p>(iii) Comments of firms may be accepted for reset mechanism. The clause is modified as under:</p> <p>Suppression of Indicator: Reset the FIBA device by <b>knob/Push</b> mechanism.</p>
Page 21/28	<p>4. B. Functional Test at 5.0 kg/cm2:</p> <p>ii) BP pressure starts venting gradually and settles at 3.4 ± 0.1</p>	-	<p>Kindly amend the point (iii) as below: iii. Both indicators show red/green*. *If Indicators</p>	-	-	-	-	<p>iii) Comments of firm may not be accepted for suppression of</p>

	<p>Kg/Cm2 approx. BP Isolation (Brake release and suppression of hissing sound/hissing sound along indicators) :</p> <p>i) BP pressure exhaust, through FIBA device exhaust port stops and BP pressure rises to <math>5 \pm 0.1</math> Kg/Cm2. ii) Hissing sound stops. iii) Both indicators show red/green*. *If Indicators are still red go for next step i.e. suppression of Indicators). Suppression of Indicator: <del>Pull the resetting keys provided on FIBA device.</del> Reset the FIBA device by knob mechanism.</p>		<p>are still red go for next step i.e. suppression of Indicators). Suppression of Indicator: (Test and Testing procedure) Reset the FIBA device by knob/Push button mechanism.</p> <p><b>Clarification: -</b> Since in FT design, once the BP is isolated in FIBA device it turns green, showing that brake is released.</p>				<p>indicators.</p> <p>Comments of firm may not be accepted for suppression of indicators as it was decided in the meeting held on 10.02.2020 at RDSO and firms were advised to modify their design accordingly.</p> <p>(iii) Comments of firms may be accepted for reset mechanism. The clause is modified as under:</p> <p>Suppression of Indicator: Reset the FIBA device by <b>knob/Push</b> mechanism.</p>
<p>Page 21/28</p>	<p>4. C. Functional Test at 6.0 kg/cm2: ii) BP pressure starts venting gradually and settles at <math>3.4 \pm 0.1</math> Kg/Cm2 approx. BP Isolation:-approx. BP Isolation (Brake release and suppression of hissing sound/hissing sound along indicators) :</p> <p>i) BP pressure exhaust, through FIBA device exhaust port stops and BP pressure rises to <math>5 \pm 0.1</math> Kg/Cm2. ii) Hissing sound stops. iii) Both indicators show red/green*. *If Indicators are still red go for next step i.e. suppression of Indicators). Suppression of Indicator</p>	<p>-</p>	<p>Kindly amend the point (iii) as below: iii. Both indicators show red/green*. *If Indicators are still red go for next step i.e. suppression of Indicators). Suppression of Indicator: (Test and Testing procedure) Reset the FIBA device by knob/Push button mechanism.</p> <p><b>Clarification: -</b> Since in FT design, once the BP is isolated in FIBA device it turns green, showing that</p>				<p>iii)) Comments of firm may not be accepted for suppression of indicators.</p> <p>Comments of firm may not be accepted for suppression of indicators as it was decided in the meeting held on 10.02.2020 at RDSO and firms were advised to modify their design accordingly.</p> <p>(iii) Comments of firms may be accepted for reset mechanism. The</p>

	<del>Pull the resetting keys provided on FIBA device.</del> Reset the FIBA device by knob mechanism.		brake is released.					clause is modified as under:  Suppression of Indicator: Reset the FIBA device by <b>knob/Push</b> mechanism.
Page 22/28	Resetting Behaviour Test: i) Charge the system at 6.0±0.1 Kg/Cm2 pressure.	-	i) Charge the system (FP) at 6.0±0.1 Kg/Cm2 pressure.	-	-	-	-	Comments of M/s Faiveley may be accepted. the clause is modified as under: -  Resetting Behaviour Test: i) Charge the system <b>(FP)</b> at 6.0±0.1 Kg/Cm2 pressure.
Page 22/28	4. Testing of Indicator: i) Leakage test: Apply a pressure of 10 Kg/Cm2. There should not be any leakage if checked with soap water.	-	Apply a pressure of 10 Kg/Cm2. There should not be any leakage for 60sec if checked with soap water.	-	-	-	-	Comments of M/s Faiveley may not be accepted.  <b>FIBA device is safety related item so no leakage allowed from any port/joint of FIBA device &amp; its indicators.</b>
Page 28/28	FIBA TEST BENCH PNEUMATIC CIRCUIT. (ANNEXURE-III)	-	Noted. However, FT will only consider ANNEXURE III as a guideline document for testing FIBA. In-principle FT test bench will respect the system level requirement for testing of FIBA device & rest other parameters are owned by OEM.					This is indicative arrangement drawing.
Annexure-A (Requirement of type	Tolerance in different dimensions of Air Spring Failure Indication Cum Brake Application (FIBA) Device for machined parts should be as per	-	Noted. However, the tolerances are defined based on functional & performance need and shall be defined by	-	-	-	-	-----

test report) clause No.6	IS 2102 (Part -I) (m). However, for other components manufactured by different process, respective IS to be followed duly mentioned in Type Test Report and drawing.		OEM.					
Serial no 5 of functional test mentioned in Annexure-B of section-A	-	-	-	-	-	<b>(Formatting Error)</b> Serial No. 5 should be given to brake pipe variation test.	-	Formatting error has been corrected.
Serial no 7 of functional test mentioned in Annexure-B of section-A	Resetting Behaviour Test: i) Charge the system at 6.0±0.1 Kg/Cm2 pressure. ii) Drop FP line pressure and actuate the respective FIBA Device. iii) Close the drain cock and raise FP line pressure of FIBA Device to again 5.0 Kg/Cm <sup>2</sup>	-	-	-	-	Resetting Behaviour Test: i) Charge the system at 6.0±0.1 Kg/Cm2 pressure. ii) Drop FP line pressure and actuate the respective FIBA Device. iii) Close the drain cock and raise FP line pressure of FIBA Device to again <b>6.0±0.1 Kg/Cm<sup>2</sup></b>	-	Comments of firm may be accepted. the clause is modified as under: -  Resetting Behaviour Test: i) Charge the system at 6.0±0.1 Kg/Cm2 pressure. ii) Drop FP line pressure and actuate the respective FIBA Device. iii) Close the drain cock and raise FP line pressure of FIBA Device to again <b>6.0±0.1 Kg/Cm<sup>2</sup></b>

Annexur e-I (page 26/28)	Drawing No. CG-15078					1. RDSO drawing No CG-15078 shall be corrected to remove dotted lines so that port position of BP and IND will match with the piping layout for FIBA device. 2. Dimension lines are not clearly visible in the drawing.	Comments of firm may be accepted.  Drawing has been modified.
Annexur e-III	FIBA test bench pneumatic circuit	-	-	-	-	1. Position of BP & IND port in reference image of FIBA device is interchanged. BP port should be on left side. 2. Description of Part No. C4 should be corrected as "Isolating Cock"	Comments of firm may be accepted.  FIBA test bench pneumatic circuit has been modified.
Section B, Clause no. 3.2	3.2 The Manufacturer shall have at least following machines/facility of suitable capacity: a) CNC Center (Turning): Min. 01 Nos. b) VMC Milling Machine: Min. 01 Nos. c) Drilling Machine: Min. 01 Nos. d) Cutting Machine: Min. 01 Nos. e) Lathe Machine: Min. 01 Nos. f) Grinding Machine: Min. 01 Nos. g) Welding Machine: Min. 1 Nos. h) Air compressor: Min. 01 Nos. i) If any of M&P mentioned above is not required, the vendor shall establish no requirement of the specified M&P and also establish that process followed by the vendor is better.	--	--	--	<b>Justification: -</b>  We do in-house machining for critical components on machining centers only. The operations such as welding and grinding are outsourced at our approved suppliers. Hence the requirements against the s.no. (c) to (g) should be updated.	-	Comments of firms may be accepted. the clause is modified as under: -  3.2 The Manufacturer/sub vendor of firm/sister concern of firm shall have at least following machines/facility of suitable capacity: a) CNC Center (Turning): Min. 01 Nos. b) VMC Milling Machine: Min. 01 Nos. c) Drilling Machine: Min. 01 Nos. d) Cutting Machine: Min. 01 Nos. e) Lathe Machine: Min. 01 Nos. f) Grinding Machine: Min. 01 Nos.



								g) Welding Machine: Min. 1 Nos. h) Air compressor: Min. 01 Nos. i) If any of M&P mentioned above is not required, the vendor shall establish no requirement of the specified M&P and also establish that process followed by the vendor is better.
Section B, Clause no. 4.0	TESTING FACILITIES: - b) Endurance test setup: Min. 01 Nos	-	-	-	1000 cycles of endurance testing can be performed on functional test bench. Also, pressure reading to be recorded after each 10 cycles. We recommend requirement of separate endurance test stand should not be mandatory.	-	-	Firm shall have in-house endurance test facilities. No change in specification is considered.

**ADDITIONAL CHANGES/CORRECTIONS PROPOSED IN OTHER CLAUSES OF THE EXISTING SPEC. NO. RDSO/2015/CG-05, REV. NIL FOR SCHEDULE OF TECHNICAL REQUIREMENTS FOR MANUFACTURE AND SUPPLY OF FAILURE INDICATION CUM BRAKE APPLICATION DEVICE (FIBA DEVICE)**

Clause No.	Description of Clause of existing Spec. No. RDSO/2015/CG-05, Rev. Nil uploaded on RDSO Website for comments	Changes/corrections proposed in the clause	Reason
14.3	New para added.	Manufactures and purchaser should follow the Make in India policy.	-----

6.5	<p>All metal parts of the Air Spring Failure Indication Cum Brake Application (FIBA) Device and Indicators shall be of AISI 304 stainless steel or Aluminum Alloy for corrosion resistant. FIBA device shall be anodized with natural or yellow colour however Indicators shall be painted grey. Other items of clause 4.1 excluding FIBA device, Indicators and fasteners shall also be corrosion resistant and shall be painted in red colour. The fasteners shall be of high tensile steel to IS: 2269 (ISO 898). Fasteners/ Nut bolt shall be strictly of TVS, Unbrako or LPS make only. Details of requirement of fasteners is as follows: -.....</p>	<p>All metal parts of the Air Spring Failure Indication Cum Brake Application (FIBA) Device and Indicators shall be of AISI 304 stainless steel or Aluminum Alloy for corrosion resistant. FIBA device shall be anodized with natural or yellow colour however Indicators shall be painted grey. Other items of clause 4.1 excluding FIBA device, Indicators and fasteners shall also be corrosion resistant and shall be painted in red colour. The fasteners shall be of high tensile steel to IS: 2269 (ISO 898). Fasteners/ Nut bolt shall be strictly of TVS, Unbrako, LPS make or <b>of make of RDSO Approved Vendor for “axle end steel high tensile cap screws to be used in end holes of BG freight axles” (Vendors for developmental orders in the vendor directory should not be considered).</b> Details of requirement of fasteners is as follows: -.....</p>	<p>This para is elaborated to add more vendor for fasteners.</p>
11.1.7	<p>Item no.3, 4 &amp; 5 of Para 4.1 to be purchased from RDSO/ICF/RCF/MCF registered sources for similar items (isolating cock/ferrule fittings for item 4 or 5, hose pipe/connection for item 3) and these item to be inspected as per their (RDSO/ICF/RCF/MCF) check sheets and respective STR for similar items (isolating cock, hose pipe). Inspection Certificate of the same should be available at the time of inspection of FIBA device and Indicator. These item may be manufactured by the vendor with prior approval of Carriage Directorate, if it is found that sufficient registered sources for similar items (isolating cock, hose pipe/connection) are not available in vendor directory of ICF/MCF/RCF/RDSO. Item at S. No. 6 may be purchased on WTC for specified make.</p>	<p>Item no.3, 4 &amp; 5 of Para 4.1 to be purchased from RDSO/ICF/RCF/MCF <b>registered sources for similar items (isolating cock or hose pipe/connection) and these item to be inspected as per their (RDSO/ICF/RCF/MCF) check sheets and respective STR for similar items (isolating cock/hose pipe). Inspection Certificate of the same should be available at the time of inspection of FIBA device and Indicator. Purchaser can purchase suitable fittings and hardwares in deviation of item no. 4 &amp; 5 under clause 4.1 from the sources developed by RDSO/RCF/ICF/MCF as per their requirement based on the type of joint (single ferrule/double ferrule/Flange joint) used in pneumatic suspension. In case of such deviation, inspection requirement/procedure along with check sheet if required shall be provided by the purchaser for such item covered by deviation.</b> These item may be manufactured by the vendor with prior approval of Carriage Directorate, if it is found that sufficient registered sources for similar items (isolating cock, hose pipe/connection) are not available in vendor directory of ICF/MCF/RCF/RDSO. Item at S. No. 6 may be purchased on WTC/RITES Inspection as per applicability.</p>	<p>This para is elaborated for better understanding and ease of doing business of firm.</p>