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2024-02-27

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PRASA PROJECT

# SELF INSPECTION SHEET

## CONFIDENTIAL INFORMATION

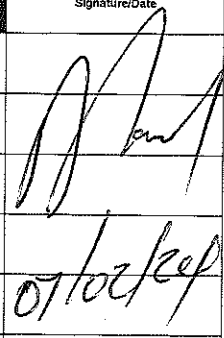
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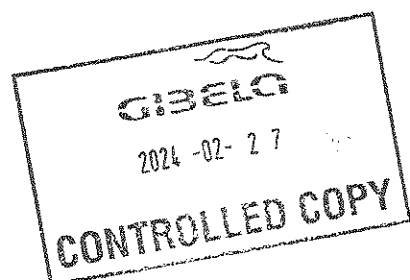
### APPLICATION REFERENCE

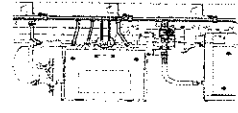
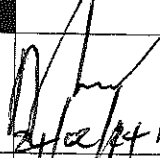
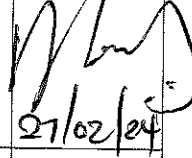
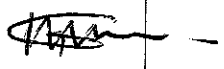
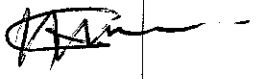
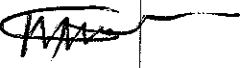
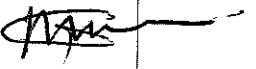
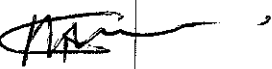
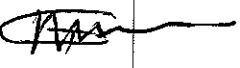
| MOUNTING                 | DESCRIPTION   | STATION                                   | CAR TYPE |    |    |    |    |     | WORK INSTRUCTION | SAFETY ?  |
|--------------------------|---------------|-------------------------------------------|----------|----|----|----|----|-----|------------------|-----------------------------------------------------------------------------------------------|
|                          |               |                                           | TC1      | M4 | M1 | M2 | M3 | TC2 |                  |                                                                                               |
| <input type="checkbox"/> | DTR3-PROCE-14 | LEVELLING, WEIGHTING AND BALANCING M CAR  | FT1140   | 1  | 1  | ✓  | 1  |     | PRA.FT1140.04    | YES                                                                                           |
| <input type="checkbox"/> | DTR3-PROCE-14 | LEVELLING, WEIGHTING AND BALANCING TC CAR | FT1140   | 1  |    |    |    | 1   | PRA.FT1140.05    | YES                                                                                           |
| <input type="checkbox"/> | DTR3-PROCE-17 | LEVELLING, WEIGHTING AND BALANCING TC CAR | FT1140   | 1  | 1  | 1  | 1  | 1   | PRA.FT1140.05    | YES                                                                                           |
| <input type="checkbox"/> | DTR3-PROCE-17 | LEVELLING, WEIGHTING AND BALANCING TC CAR | FT1140   | 1  | 1  | 1  | 1  | 1   | PRA.FT1140.05    | YES                                                                                           |
| <input type="checkbox"/> |               |                                           |          |    |    |    |    |     |                  |                                                                                               |
| <input type="checkbox"/> |               |                                           |          |    |    |    |    |     |                  |                                                                                               |
| <input type="checkbox"/> |               |                                           |          |    |    |    |    |     |                  |                                                                                               |

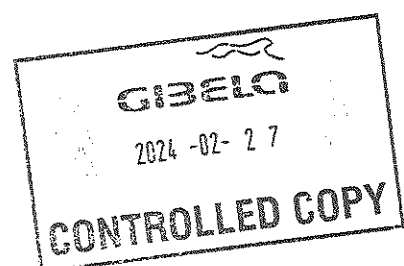
| REV | DATE       | MODIFICATION CONTENT                                                                    | RESPONSIBLE | NAME                 | DATE       |
|-----|------------|-----------------------------------------------------------------------------------------|-------------|----------------------|------------|
| 7   | 2020/02/11 | UPDATE OF AIR TIGHTNESS TEST TIME FROM 4 MIN TO 5 MIN.<br>ADD PANTOGRAPH AIR TIGHTNESS. | APPROVER    | GIVEN SILOWA         | 2020/02/11 |
|     |            |                                                                                         | CHECKER     | SIMON MOKOENA        | 2020/02/11 |
|     |            |                                                                                         | COMPILER    | COMFORT MALATJI      | 2020/02/11 |
| 8   | 2021/09/13 | ADDING GAUGE MEASUREMENT CHECK ON THE SI.                                               | APPROVER    | MAKOFANE LUCY        | 2021/09/13 |
|     |            |                                                                                         | CHECKER     | RATAU EDISON         | 2021/09/13 |
|     |            |                                                                                         | COMPILER    | TSAKANI KHOSA        | 2021/09/13 |
| 9   | 2022/05/31 | pressure valve (APV) Isolation                                                          | APPROVER    | MAKHURUPETJI THABANG | 2022/05/31 |
|     |            |                                                                                         | CHECKER     | HAZEL MGIBA          | 2022/05/31 |
|     |            |                                                                                         | COMPILER    | RATAU EDISON         | 2021/05/31 |

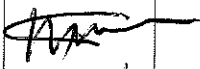
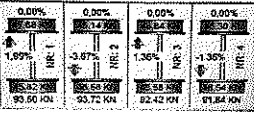
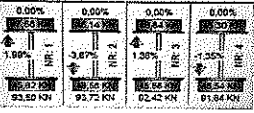
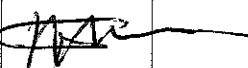
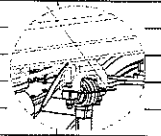
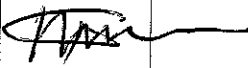
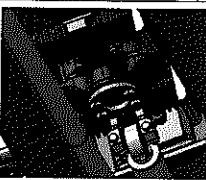
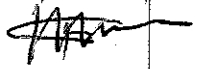
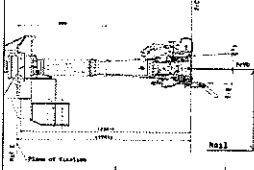
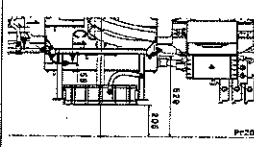
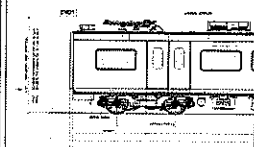
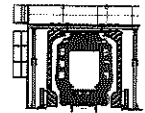
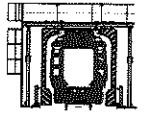
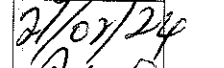
| TUE    | CAR | OPERATOR NAME | DATE     | SELF INSPECTION NUMBER | PAGES |
|--------|-----|---------------|----------|------------------------|-------|
| TS 210 | M2  | GOODNESS      | 27/02/24 | SI.FT1140.52           | 01/08 |

|                                                                                                                          |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----|------------------------------------------------|------------------|--------------|-----|--------------------------------------------------------------------------------------------------|--------|----|-----|----------------|
|                                         | SELF INSPECTION<br>INDUSTRIAL QUALITY |    | Rev:09<br>Date:<br>2022/05/31                  | Projet:<br>PRASA | SI.FT1140.52 |     |                                                                                                  |        |    |     |                |
|                                                                                                                          | Car: _____ NCR: _____                 |    | Work Station: FT1140                           |                  |              |     |                                                                                                  |        |    |     |                |
|  Safety Related                         |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
| I - Document and Instrument Control                                                                                      |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
| L1 - Documents control                                                                                                   |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
| Document                                                                                                                 | TC1                                   | M1 | M2                                             | M3               | M4           | TC2 | Revision                                                                                         | Remark | OK | NOK | Signature/Date |
| PRA.FT1140.04                                                                                                            |                                       |    | X                                              |                  |              |     |                                                                                                  |        | ✓  |     | Must 07/02/24  |
| PRA.FT1140.05                                                                                                            |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
| PRA.FT1140.05                                                                                                            |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
| L2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all Instrument with calibration needed) |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
| Instruments description                                                                                                  | Serial number                         |    | Calibration or Verification<br>Validation Date |                  | OK           | NOK | Signature/Date                                                                                   |        |    |     |                |
| Measuring TAPE                                                                                                           | GibIA 0276                            |    | 24/10/23-26/10/24                              |                  | ✓            |     | <br>07/02/24 |        |    |     |                |
| Vernier Caliper                                                                                                          | GibUR 0056                            |    | 06/06/23-06/06/24                              |                  | ✓            |     |                                                                                                  |        |    |     |                |
| Torque wrench 35mm                                                                                                       | D2511023                              |    | 19/12/23-19/12/24                              |                  | ✓            |     |                                                                                                  |        |    |     |                |
| Torque wrench 150mm                                                                                                      | D28622609                             |    | 19/12/23-19/12/24                              |                  | ✓            |     |                                                                                                  |        |    |     |                |
| Torque wrench 320mm                                                                                                      | A9650027                              |    | 24/12/23-24/12/24                              |                  | ✓            |     |                                                                                                  |        |    |     |                |
|                                                                                                                          |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |
|                                                                                                                          |                                       |    |                                                |                  |              |     |                                                                                                  |        |    |     |                |



|  | <h1>SELF INSPECTION<br/>INDUSTRIAL QUALITY</h1>                                     |                                                                                                                                                                                    | Rev:09                                                                                                                                                                                                                               | Project:<br>PRASA     | SI.FT1140.52                                                                                      |          |     |  |  |  |  |   |                                                                                                   |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------|----------|-----|--|--|--|--|---|---------------------------------------------------------------------------------------------------|
|                                                                                   |                                                                                     |                                                                                                                                                                                    | Date:                                                                                                                                                                                                                                |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
|                                                                                   |                                                                                     |                                                                                                                                                                                    | 2022/05/31                                                                                                                                                                                                                           |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
| <b>II - Self Inspection - Items to Check</b>                                      |                                                                                     |                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
| <b>II.1 - Items to Check</b>                                                      |                                                                                     |                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
| Item                                                                              | Picture/Sketch                                                                      | Description                                                                                                                                                                        | Criteria/Record                                                                                                                                                                                                                      | OK                    | Signature/Date                                                                                    |          |     |  |  |  |  |   |                                                                                                   |
| 01                                                                                |    | Ensure that the average pressure valve (APV) is isolated by capping the two input pipes at the fittings installing the blanking fitting on the pipes highlighted                   |                                                                                                                                                                                                                                      | ✓                     | <br>24/02/24   |          |     |  |  |  |  |   |                                                                                                   |
| 02                                                                                |                                                                                     | Check underframe pipe system Air tightness.<br>Test performance according to WI PRA.FT1130.15.                                                                                     | The test was performed and no leak was observed.<br>Initial pressure (IP): 9.95 bar<br>Final pressure (FP): 9.42 bar<br>FP - IP = 0.02 bar<br>APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar         | ✓                     | <br>27/02/24   |          |     |  |  |  |  |   |                                                                                                   |
| 03                                                                                |    | Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.                                                              |                                                                                                                                                                                                                                      | ✓                     | <br>27/02/24   |          |     |  |  |  |  |   |                                                                                                   |
| 04                                                                                |    | Measurement inspection was done with car on condition AWD and the rail levelled.<br>(The load cells system must be levelled and calibrated)                                        | Calibration Validation Date<br>19/12/24                                                                                                                                                                                              | ✓                     | <br>27/02/24  |          |     |  |  |  |  |   |                                                                                                   |
| 05                                                                                |  | In case of the equipments not installed, equivalent weight of the item should be added in the same place to simulate the equipment.<br>(Any simulated weight, add on pending list) | <table border="1"> <thead> <tr> <th>EQUIPMENT DESCRIPTION</th> <th>WEIGHT (kg)</th> </tr> </thead> <tbody> <tr> <td>Gang Way</td> <td>360</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table> | EQUIPMENT DESCRIPTION | WEIGHT (kg)                                                                                       | Gang Way | 360 |  |  |  |  | ✓ | <br>27/02/24 |
| EQUIPMENT DESCRIPTION                                                             | WEIGHT (kg)                                                                         |                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
| Gang Way                                                                          | 360                                                                                 |                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
|                                                                                   |                                                                                     |                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
|                                                                                   |                                                                                     |                                                                                                                                                                                    |                                                                                                                                                                                                                                      |                       |                                                                                                   |          |     |  |  |  |  |   |                                                                                                   |
| 06                                                                                |  | The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.                                                                         |                                                                                                                                                                                                                                      | ✓                     | <br>27/02/24 |          |     |  |  |  |  |   |                                                                                                   |
| 07                                                                                |  | Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.                                                                             |                                                                                                                                                                                                                                      | ✓                     | <br>27/02/24 |          |     |  |  |  |  |   |                                                                                                   |
| 08                                                                                |  | All levelling measurements are according to the reference.<br>(Values out of reference must be recorded on "Description of defects")                                               |                                                                                                                                                                                                                                      | ✓                     | <br>27/02/24 |          |     |  |  |  |  |   |                                                                                                   |



|  |                                                                                     | <h1>SELF INSPECTION<br/>INDUSTRIAL QUALITY</h1>                                                                                                            |                                                                                                                                                        | Rev:09     |    |                                                                                                   | Projet:<br>PRASA | SI.FT1140.52 |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----|---------------------------------------------------------------------------------------------------|------------------|--------------|
|                                                                                   |                                                                                     |                                                                                                                                                            |                                                                                                                                                        | Date:      |    |                                                                                                   |                  |              |
|                                                                                   |                                                                                     |                                                                                                                                                            |                                                                                                                                                        | 2022/05/31 |    |                                                                                                   |                  |              |
| Item                                                                              | Picture/Sketch                                                                      | Description                                                                                                                                                | Criteria/Record                                                                                                                                        | OK         | NO | Signature/Date                                                                                    |                  |              |
| 09                                                                                |    | Check that the levelling rods are torqued and have torque marker.                                                                                          |                                                                                                                                                        | ✓          |    | <br>27/02/24   |                  |              |
| 10                                                                                |    | The difference of weight between the left and right wheels of each axis, must be $\leq 4\%$ .<br>(Verify on the T&C equipment if all arrows are in green). |                                                                                                                                                        | ✓          |    | <br>27/02/24   |                  |              |
| 11                                                                                |    | Remove the car, move back onto the load cells and repeat the step 09.<br>Confirm if both are in the tolerance of $\leq 4\%$ .                              |                                                                                                                                                        | ✓          |    | <br>27/02/24   |                  |              |
| 12                                                                                |    | 1 - Record shims thickness used on rod.<br>2 - All screws were torqued and have torque marker.                                                             | THICKNESS (mm)<br>I 0<br>II 0<br>III 0<br>IV 0                                                                                                         | ✓          |    | <br>27/02/24   |                  |              |
| 13                                                                                |   | Pivot fixation                                                                                                                                             | 1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05                                                                          | ✓          |    | <br>27/02/24   |                  |              |
| 14                                                                                |  | FOR TC CARS<br>F= Height of the center of Automatic coupler<br>F = 895mm (+5 / -10mm)<br>(Using levelled rail)                                             | TC CAB #1= _____ mm                                                                                                                                    |            |    | M/A                                                                                               |                  |              |
| 15                                                                                |  | FOR TC CARS<br>Height of Eurobalise Antenna = 205mm(+/-10mm)<br>(Using levelled rail)                                                                      | TC CAB #1= _____ mm                                                                                                                                    |            |    | M/A                                                                                               |                  |              |
| 16                                                                                |  | Check pantograph piping air tightness.<br>Test performance according to WI PRA.FT1140.17.                                                                  | The test was performed and no leak was observed.<br>-Roof piping connection fittings.<br>-Room piping connection fittings(Roof arch and door trimming) | ✓          |    | <br>29/03/24 |                  |              |
| 17                                                                                |  | Pantograph does not come in contact with the higher height gauge when passing through.                                                                     | No Contact with Pantograph and Gauge -GO<br>Contact with Pantograph and Gauge - NO GO                                                                  | ✓          |    | <br>29/02/24 |                  |              |
| 18                                                                                |  | Car does not come into contact with the gauge.                                                                                                             | No Contact with Car and Gauge -GO<br>Contact with Car and Gauge - NO GO                                                                                | ✓          |    | <br>27/02/24 |                  |              |

  
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# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

2022/05/31

Projet:  
PRASA

SI.FT1140.52

## DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

|                                    |                                               | END#1            |   |   |   |   |   |            |     |     |   |   |   | END#2           |   |   |   |   |   |            |       |     |     |     |     |                 |                 |   |   |   |   |  |
|------------------------------------|-----------------------------------------------|------------------|---|---|---|---|---|------------|-----|-----|---|---|---|-----------------|---|---|---|---|---|------------|-------|-----|-----|-----|-----|-----------------|-----------------|---|---|---|---|--|
|                                    |                                               | LEFT SIDE        |   |   |   |   |   | RIGHT SIDE |     |     |   |   |   | LEFT SIDE       |   |   |   |   |   | RIGHT SIDE |       |     |     |     |     |                 |                 |   |   |   |   |  |
| DESCRIPTION                        | TOLERANCE                                     | 6                | 5 | 4 | 3 | 2 | 1 | 1          | 2   | 3   | 4 | 5 | 6 | 6               | 5 | 4 | 3 | 2 | 1 | 1          | 2     | 3   | 4   | 5   | 6   | 6               | 5               | 4 | 3 | 2 | 1 |  |
| AIR SPRING HEIGHT (EMPTY)          | N/A                                           | A <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | A <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     |                 | A <sup>IV</sup> |   |   |   |   |  |
| AIR SPRING HEIGHT (FULL)           | min 254<br>max 261                            | A <sup>II</sup>  |   |   |   |   |   | 256        | 261 | 258 |   |   |   | A <sup>IV</sup> |   |   |   |   |   | 255        | 256   | 257 |     |     |     |                 | A <sup>IV</sup> |   |   |   |   |  |
| FLOOR COVERING HEIGHT              | min 1096<br>max 1116                          | E <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | E <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     |                 | E <sup>IV</sup> |   |   |   |   |  |
| AIR SPRING PRESSURE                | ≤ 0.3<br>(C <sup>I</sup> - C <sup>I</sup> )   | C <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | C <sup>IV</sup> |   |   |   |   |   | 3.04       | 2.76  |     |     |     |     | C <sup>IV</sup> |                 |   |   |   |   |  |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF)                          | D <sub>3</sub>   |   |   |   |   |   |            |     |     |   |   |   | D <sub>7</sub>  |   |   |   |   |   |            |       |     |     |     |     | D <sub>7</sub>  |                 |   |   |   |   |  |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF)                          | D <sub>4</sub>   |   |   |   |   |   |            |     |     |   |   |   | D <sub>8</sub>  |   |   |   |   |   |            |       |     |     |     |     | D <sub>8</sub>  |                 |   |   |   |   |  |
| PIVOT VERTICAL GAP                 | min 25<br>max 32                              | K <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | K <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | K <sup>IV</sup> |                 |   |   |   |   |  |
| PIVOT LATERAL STOP GAPS DIFFERENCE | ≤ 4<br>(J <sup>I</sup> - J <sup>I</sup> )     | J <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | J <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | J <sup>IV</sup> |                 |   |   |   |   |  |
| QTY OF TURNS OF LEVELLING ROD      | N/A                                           | X <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | X <sup>IV</sup> |   |   |   |   |   | 0          | 1 1/2 |     |     |     |     | X <sup>IV</sup> |                 |   |   |   |   |  |
| SHIMS OF ANTI-ROLL BAR             | N/A                                           | Y <sup>II</sup>  |   |   |   |   |   |            |     |     |   |   |   | Y <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | Y <sup>IV</sup> |                 |   |   |   |   |  |
| DESCRIPTION                        | TOLERANCE                                     | 6                | 5 | 4 | 3 | 2 | 1 | 1          | 2   | 3   | 4 | 5 | 6 | 6               | 5 | 4 | 3 | 2 | 1 | 1          | 2     | 3   | 4   | 5   | 6   | 6               | 5               | 4 | 3 | 2 | 1 |  |
| AIR SPRING HEIGHT (EMPTY)          | N/A                                           | A <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | A <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | A <sup>IV</sup> |                 |   |   |   |   |  |
| AIR SPRING HEIGHT (FULL)           | min 254<br>max 261                            | A <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | A <sup>IV</sup> |   |   |   |   |   | 256        | 258   | 255 | 256 | 258 | 258 | A <sup>IV</sup> |                 |   |   |   |   |  |
| FLOOR COVERING HEIGHT              | min 1096<br>max 1116                          | E <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | E <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | E <sup>IV</sup> |                 |   |   |   |   |  |
| AIR SPRING PRESSURE                | ≤ 0.3<br>(C <sup>IV</sup> - C <sup>IV</sup> ) | C <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | C <sup>IV</sup> |   |   |   |   |   | 2.76       | 2.76  |     |     |     |     | C <sup>IV</sup> |                 |   |   |   |   |  |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF)                          | D <sub>5</sub>   |   |   |   |   |   |            |     |     |   |   |   | D <sub>7</sub>  |   |   |   |   |   |            |       |     |     |     |     | D <sub>7</sub>  |                 |   |   |   |   |  |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF)                          | D <sub>6</sub>   |   |   |   |   |   |            |     |     |   |   |   | D <sub>8</sub>  |   |   |   |   |   |            |       |     |     |     |     | D <sub>8</sub>  |                 |   |   |   |   |  |
| PIVOT VERTICAL GAP                 | min 25<br>max 32                              | K <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | K <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | K <sup>IV</sup> |                 |   |   |   |   |  |
| PIVOT LATERAL STOP GAPS DIFFERENCE | ≤ 4<br>(J <sup>IV</sup> - J <sup>III</sup> )  | J <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | J <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | J <sup>IV</sup> |                 |   |   |   |   |  |
| QTY OF TURNS OF LEVELLING ROD      | N/A                                           | X <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | X <sup>IV</sup> |   |   |   |   |   | 1 1/2      | 1 1/4 |     |     |     |     | X <sup>IV</sup> |                 |   |   |   |   |  |
| SHIMS OF ANTI-ROLL BAR             | N/A                                           | Y <sup>III</sup> |   |   |   |   |   |            |     |     |   |   |   | Y <sup>IV</sup> |   |   |   |   |   |            |       |     |     |     |     | Y <sup>IV</sup> |                 |   |   |   |   |  |

COMPARE EACH TENTATIVE WITH  
THE TOLERANCE AND IDENTIFY  
EACH MEASURE AS BELOW

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT  
COMPENSATION

EQUIPMENT

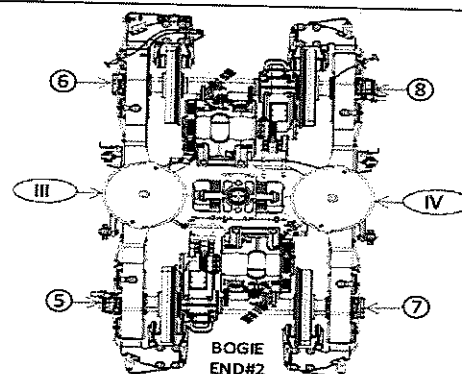
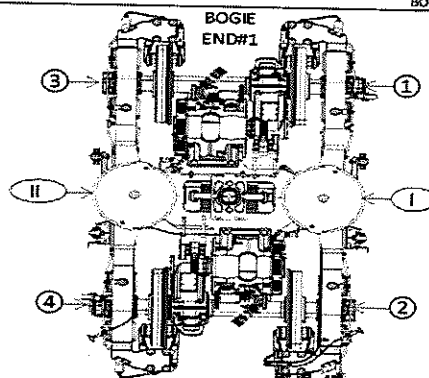
WEIGHT

EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS  
(ONLY TO CARS)AUTOMATIC COUPLER  
HEIGHT

ANTENNA HEIGHT



GIBELQ

2024-02-27

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# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

2022/05/31

Proj:  
PRASA

SI.FT1140.52

## DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

|                                    |                      | END#1     |   |   |   |   |   |            |  |   |   |   |   |   |   |      |
|------------------------------------|----------------------|-----------|---|---|---|---|---|------------|--|---|---|---|---|---|---|------|
|                                    |                      | LEFT SIDE |   |   |   |   |   | RIGHT SIDE |  |   |   |   |   |   |   |      |
| DESCRIPTION                        | TOLERANCE            |           | 6 | 5 | 4 | 3 | 2 | 1          |  | 1 | 2 | 3 | 4 | 5 | 6 |      |
| AIR SPRING HEIGHT (EMPTY)          | N/A                  | A`II      | / | / | / | / | / | /          |  | / | / | / | / | / | / | A`I  |
| AIR SPRING HEIGHT (FULL)           | min 254<br>max 261   | AII       |   |   |   |   |   |            |  |   |   |   |   |   |   | AI   |
| FLOOR COVERING HEIGHT              | min 1096<br>max 1116 | EII       |   |   |   |   |   |            |  |   |   |   |   |   |   | EI   |
| AIR SPRING PRESSURE                | ≤ 0.3<br>(QI - Q)    | CII       |   |   |   |   |   |            |  |   |   |   |   |   |   | CI   |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF) | D3        |   | / | / | / | / | /          |  | / | / | / | / | / | / | D1   |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF) | D4        |   | / | / | / | / | /          |  | / | / | / | / | / | / | D2   |
| PIVOT VERTICAL GAP                 | min 25<br>max 32     | KII       |   |   |   |   |   |            |  |   |   |   |   |   |   | KI   |
| PIVOT LATERAL STOP GAPS DIFFERENCE | ≤ 4<br>(JI - J)      | JII       |   |   |   |   |   |            |  |   |   |   |   |   |   | Ji   |
| QTY OF TURNS OF LEVELLING ROD      | N/A                  | XII       |   |   |   |   |   |            |  | / | / | / | / | / | / | Xi   |
| SHIMS OF ANTI-ROLL BAR             | N/A                  | YII       |   | / | / | / | / | /          |  | / | / | / | / | / | / | Yi   |
| DESCRIPTION                        | TOLERANCE            |           | 6 | 5 | 4 | 3 | 2 | 1          |  | 1 | 2 | 3 | 4 | 5 | 6 |      |
| AIR SPRING HEIGHT (EMPTY)          | N/A                  | A`III     | / | / | / | / | / | /          |  | / | / | / | / | / | / | A`IV |
| AIR SPRING HEIGHT (FULL)           | min 254<br>max 261   | AIII      |   |   |   |   |   |            |  |   |   |   |   |   |   | AIV  |
| FLOOR COVERING HEIGHT              | min 1096<br>max 1116 | EIII      |   |   |   |   |   |            |  |   |   |   |   |   |   | EIV  |
| AIR SPRING PRESSURE                | ≤ 0.3<br>(QV - QH)   | CIII      |   |   |   |   |   |            |  |   |   |   |   |   |   | CIv  |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF) | D5        |   | / | / | / | / | /          |  | / | / | / | / | / | / | D7   |
| PRIMARY SUSPENSION                 | SEE TABLE (ONLY REF) | D6        |   | / | / | / | / | /          |  | / | / | / | / | / | / | D8   |
| PIVOT VERTICAL GAP                 | min 25<br>max 32     | KIII      |   |   |   |   |   |            |  |   |   |   |   |   |   | Kiv  |
| PIVOT LATERAL STOP GAPS DIFFERENCE | ≤ 4<br>(JIV - JH)    | JIII      |   |   |   |   |   |            |  |   |   |   |   |   |   | Jiv  |
| QTY OF TURNS OF LEVELLING ROD      | N/A                  | XIII      |   |   |   |   |   |            |  | / | / | / | / | / | / | Xiv  |
| SHIMS OF ANTI-ROLL BAR             | N/A                  | YIII      |   | / | / | / | / | /          |  | / | / | / | / | / | / | Yiv  |

| COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW |       |        |
|------------------------------------------------------------------------------|-------|--------|
| GOOD                                                                         | LOWER | HIGHER |
| ✓                                                                            | ↓     | ↑      |
| WEIGHT COMPENSATION                                                          |       |        |
| EQUIPMENT                                                                    |       |        |
| WEIGHT                                                                       |       |        |
| EQUIPMENT                                                                    |       |        |
| WEIGHT                                                                       |       |        |
| SECONDARY MEASUREMENTS (ONLY TC CARS)                                        |       |        |
| AUTOMATIC COUPLER HEIGHT                                                     |       |        |
| ANTENNA HEIGHT                                                               |       |        |

BOGIE END#1

BOGIE END#2

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2024 -02- 2 7

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Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

| ITEM                                    |                                  | THEORETICAL VALUES                 |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |  |  |
|-----------------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--|--|
|                                         |                                  | T1 CAR                             |                                    | M4 CAR                             |                                    | M1 CAR                             |                                    | M2 CAR                             |                                    | M3 CAR                             |                                    | T2 CAR                             |                                    |  |  |
|                                         |                                  | Tbext                              | Tbint                              | MB1                                | MB2                                | MB1                                | MB2                                | MB1                                | MB2                                | MB1                                | MB2                                | Tbint                              | Tbext                              |  |  |
| Pivot lateral stop gaps difference [mm] | Fig. 4                           | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 | ≤4                                 |  |  |
| Air Spring height [mm]                  | Fig. 5                           | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    | 255 <sup>+6</sup> <sub>-1</sub>    |  |  |
| Air spring pressure at AWO [Bar]        | Fig. 5                           | 3,76<br>(Ref.)                     | 2,82<br>(Ref.)                     | 2,87<br>(Ref.)                     | 2,83<br>(Ref.)                     | 3,02<br>(Ref.)                     | 2,91<br>(Ref.)                     | 3,07<br>(Ref.)                     | 2,85<br>(Ref.)                     | 2,83<br>(Ref.)                     | 2,87<br>(Ref.)                     | 2,83<br>(Ref.)                     | 3,76<br>(Ref.)                     |  |  |
| Primary Suspension gaps [mm]            | C <sub>1</sub> -C <sub>10</sub>  | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           | 0,3 Māx.                           |  |  |
|                                         | C <sub>10</sub> -C <sub>19</sub> |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |  |  |
|                                         | D <sub>1</sub> D <sub>2</sub>    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |  |  |
|                                         | D <sub>2</sub> D <sub>4</sub>    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |  |  |
|                                         | D <sub>3</sub> D <sub>7</sub>    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |  |  |
| Carbody Floor height [mm]               | Fig. 7                           | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> | 1106 <sup>+10</sup> <sub>-10</sub> |  |  |
| Booster height [mm]                     | Fig. 7                           | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    | 850 <sup>+3</sup> <sub>-7</sub>    |  |  |
| Coupling End height [mm]                | Fig. 8                           | 895 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 895 (Ref.)                         | 895 (Ref.)                         |  |  |
| Pivot Vertical gap [mm]                 | F <sub>1</sub>                   | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         | 760 (Ref.)                         |  |  |
|                                         | F <sub>2</sub>                   |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |  |  |
|                                         | Fig. 10                          | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    | 30 <sup>+15</sup> <sub>-5</sub>    |  |  |



# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Project:  
PRASA

SI.FT1140.52

Leveling report from Production (Final measurements after Levelling and Weighting fine)

References for secondary suspension empty

A'n Air spring height empty

References for secondary suspension full

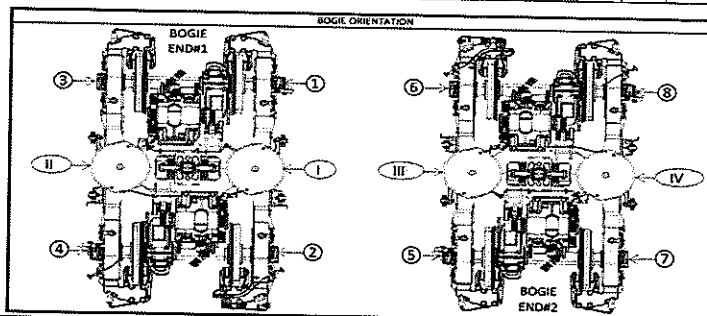
A'n Air spring height  
B'n Difference between measurement A'n and A'n  
E'n Floor covering height  
C'n Air spring pressure  
D'n Primary suspension  
K'n Pivot Vertical gap  
J'n Pivot Lateral stop gaps difference

| Item                | Reference [mm]   | END#1      |           | END#2           |            |
|---------------------|------------------|------------|-----------|-----------------|------------|
|                     |                  | Right Side | Left Side | Left Side       | Right Side |
| A'n                 | N/A              | A'i 238    | A'ii 240  | A'iii 240       | A'iv 242   |
| An                  | 254 to 261       | Ai 256     | Aii 258   | Aiii 259        | Aiv 258    |
| Bn = An - A'n       | N/A              | Bi 18      | Bii 18    | Biii 19         | Biv 16     |
| En                  | 1106 ±10 mm      | Ei 1107    | Eii 1116  | Eiii 1115       | Eiv 1112   |
| Item                | Reference [bar]  | END#1      |           | END#2           |            |
|                     |                  | Right Side | Left Side | Left Side       | Right Side |
| Cn                  | Table 02 (*)     | Ci 2,96    | Cii 2,96  | Ciii 2,90       | Civ 2,71   |
| Cn - Cn+1           | Difference ≤ 0,3 | Ci - Cii 0 |           | Ciii - Civ 0,19 |            |
| Gauge serial number | N/A              | GAB05875   |           | GAB05875        |            |
| Item                | Reference [mm]   | END#1      |           | END#2           |            |
|                     |                  | Right Side | Left Side | Left Side       | Right Side |
| Dn                  | Table 01 (*)     | Di 44,38   | Dis 44,25 | De 44,69        | Des 45,34  |
|                     |                  | Dz 44,07   | Ds 44,30  | Ds 44,57        | Dz 45,74   |
| Kn                  | 25 to 45         | Ki 30,16   |           | Kii 31,63       |            |
| Jn                  | Difference ≤ 4   | Ji 24,64   | Jii 25,72 | Jiii 24,27      | Jiv 25,51  |

(\*) Reference, only include values, isn't approval criteria.

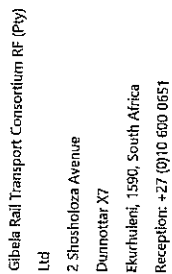
| Table 01<br>D Theoretical Values | TC1             |                 | M4              |                 | M1              |                 | M2              |                 | M3              |                 | TC2             |  |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--|
|                                  | Tbex            | Tbin            | Mb1             | Mb1             | Mb1             | Mb2             | Mb1             | Mb1             | Mb1             | Tbin            | Tbex            |  |
| D=                               | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ | $35^{+12}_{-5}$ |  |

| Table 02<br>C Theoretical Values | TC1  |      | M4   |      | M1   |      | M2   |      | M3   |      | TC2  |      |
|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                  | Tbex | Tbin | Mb1  | Mb1  | Mb1  | Mb2  | Mb1  | Mb1  | Mb1  | Tbin | Tbex |      |
| C=                               | 3,76 | 2,82 | 2,87 | 2,83 | 3,02 | 2,91 | 3,07 | 2,85 | 2,83 | 2,87 | 2,83 | 3,76 |



Weighting report from Test and Commissioning (Final measurements after Levelling and Weighting fine)





|               |                                              |
|---------------|----------------------------------------------|
| TRAIN SET 210 | REF: GIB000001672_10 PRASA WEIGHT BALANCE EN |
|               | PC09 WEIGHING REPORT                         |

|    | Balance across front and rear bogies | Front Bogie [Tons] | Rear Bogie [Tons] | Longitudinal Imbalance [%]     | Criteria Longitudinal Imbalance < 3% |
|----|--------------------------------------|--------------------|-------------------|--------------------------------|--------------------------------------|
| M2 |                                      | 18.73              | 18.01             | 1.96%                          | PASS                                 |
|    | Weight Measured vs Predicted         | 36.74              | 37.06             | Weight Difference [%]<br>0.87% | Tolerance [%]<br>1.37%               |
|    |                                      |                    |                   |                                | Criteria MinDiffMax<br>PASS          |

| Name  | Company | Department | Signature   | Date     |
|-------|---------|------------|-------------|----------|
| Smyth | GIBELA  | EDC        | [Signature] | 06/01/08 |