



**INTERNATIONAL TRACTORS LIMITED,  
SONALIKA INTERNATIONAL DI - 20 GARDENTRAC TRACTOR**



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय  
कृषि, सहकारिता एवं किसान कल्याण विभाग  
मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION & FARMERS WELFARE, MECHANIZATION & TECHNOLOGY DIVISION)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

(An ISO : 9001 - 2015 Certified Institute)

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**1. SCOPE OF TEST**

The "International Tractors Limited, Sonalika International DI - 20 Gardentrac" tractor had undergone "Commercial 1<sup>st</sup> Batch Test" at this Institute vide test report No. T-1152/1678/2018 was released in May, 2018. The performance results in Chapter-14 of said test report were evaluated on the basis of IS: 12207-2014.

Subsequently, the fourth revision of IS: 12207-2019 was established on dated 25<sup>th</sup> July, 2019. Therefore, the performance results of the said tractor has to be evaluated as per IS: 12207-2019. It was observed that, some of the parameters are not meeting the evaluative requirements applicable for "Qualifying Minimum Performance Criteria" as per clause-4 Table-1 of the said Indian Standard for acceptance of tractor for the purpose of subsidies / NABARD financing. The parameters which were not meeting the evaluative requirements has been modified & permanently incorporated in the production of said tractor model by the manufacturer.

Subsequently, the applicant has submitted the said model for inspection / test and same has been tested / evaluated and are summarized under Chapter-4 of this test report.

The applicant has informed that modified parameters have been implemented from tractor chassis number and engine serial number of tractor model "International Tractors Limited, Sonalika International DI - 20 Gardentrac" generated on production line as under tabulated:-

| S. No. | Parameters Modified  | Chassis Number | Engine Number |
|--------|--|----------------|---------------|
| 1.     | Specification of linkage drawbar   | FMGSH925351G   | A63122B9      |
| 2.     | Front tow hook   |                |               |
| 3.     | Labelling date   |                |               |
| 4.     | Re-declaration of backup torque, (%)   |                |               |
| 5.     | Re-declaration of maximum drawbar pull with standard ballast corresponding to 15% wheel slip, (kN) |                |               |
| 6.     | Re-declaration of hydraulic lift capacity at hitch points, (kN)                                    |                |               |

**Manufacturer** : M/s. International Tractors Limited,  
Vill.- Chak Gurjan, P.O.- Piplanwala,  
Jalandhar Road, Distt.- Hoshiarpur-146 022  
(Punjab) India

Test requested by (Applicant) : The manufacturer

**2. ESSENTIAL TESTS****2.1. SPECIFICATIONS**

The following are the brief specifications of the tractor. However, for detail specifications of the tractor, the test report No. T-1152/1678/2018, released in May, 2018 should be referred.

**2.1.1 Tractor:**

Make : M/s. International Tractors Limited  
Model : Sonalika International DI-20 Gardentrac  
Brand name : Sonalika  
Type : Four wheeled, Four wheel driven, (4WD), Unit construction, orchard tractor  
Month & Year of manufacture : 05 / 2019  
Chassis Serial number : FMGSH925351G  
Country of Origin : India



**4. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS**

4.1 The performance results have been reproduced from 1<sup>st</sup> batch test report No. **T- 1152/1678/2018 (May, 2018)** / On the basis of test conducted the performance results have been summarized as evaluative (mandatory) and non – evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 Table-1 of Indian Standard **12207: 2019** for acceptance of tractor for the purpose of subsidies/NABARD financing are summarized as under.

| Sl. No.      | Characteristic  | Category (Evaluative / Non Evaluative) | Requirements as per IS: 12207-2019  | Values declared by the applicant (D)/ Requirement (R) | As observed | Whether meets the requirements (Yes/No) |
|--------------|---|--|---|---|-------------|---|
| 1            | 2   | 3                                      | 4   | 5   | 6           | 7                                       |
| <b>4.1.1</b> | <b>PTO Performance:</b>   |  |   |   |             |   |
| a)           | Maximum power under 2 h test, (kW) (Natural ambient condition)    | Evaluative                             | Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power and or Engine power $>26$ kW, $+10\%$ for PTO power and or engine $\leq 26$ kW   | 10.3 (D)  | 10.4        | Yes                                     |
| b)           | Power at rated engine speed, (kW)                                 | Non Evaluative                         | -do-  | 10.3 (D)  | 10.4        | Yes                                     |
| c)           | Specific fuel consumption corresponding to maximum power, (g/kWh) | Evaluative                             | + 10%   | 323 (D)   | 331         | Yes                                     |
| d)           | Maximum equivalent crankshaft torque, (Nm)                        | Non Evaluative                         | + 8%  | 45 (D)  | 42.5        | Yes                                     |
| e)           | Back-up torque, percent. (%)                                      | Evaluative                             | 12 percent, minimum   | 12 (D)<br>12 (R)                                      | 15.2        | Yes                                     |
| f)           | Maximum operating temperature, (°C): (°)                          |  |   |   |             |   |
|              | 1) Engine oil   | Evaluative                             | The declared value should not exceed the max. value specified by the oil company and the observed value under high ambient condition should not exceed the declaration.                           | 132 (D)   | 114         | Yes                                     |
|              | 2) Coolant  | Evaluative                             | The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration. | 118 (D)   | 94          | Yes                                     |



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|----|---------------------------------|------------|--|---------------------|------|-----|
| g) | Engine oil consumption, (g/kWh) | Evaluative | Not exceeding 1% of SFC at max. power under High ambient conditions                                      | 3.29<br>Maximum (R) | 0.77 | Yes |
| h) | Smoke level, m <sup>-1</sup>    | Evaluative | Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hartidge value. | 3.25<br>Maximum (R) | 0.51 | Yes |

**4.1.2 Drawbar performance: (\*)**

|    |  |                |   |                                |      |     |
|----|--|----------------|---|--------------------------------|------|-----|
| a) | Max. drawbar pull with ballast corresponding to 15 percent wheel slip or 7 percent track slip, (kN)          | Non Evaluative | Minimum 70% of static mass with ballast   | Not applicable                 |      | --  |
| b) | Max. drawbar pull with standard ballast corresponding to 15 percent wheel slip or 7 percent track slip, (kN) | Evaluative     | Minimum 70% of static mass of tractor without ballast or with standard ballast, as the case may be  | 5.42(D)<br>5.42(R)<br>Minimum  | 6.63 | yes |
| c) | Maximum drawbar power with standard ballast as in case may be, (kW)  | Evaluative     | Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg<br>Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor<br>Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft. | 8.24 (D)<br>7.3 (R)<br>Minimum | 8.0  | Yes |
| d) | Maximum transmission oil temperature (°C)  | Evaluative     | To be declared by the manufacturer.   | 130 (D)                        | 59   | Yes |

**4.1.3 Power lift and hydraulic pump performance :**

|    |  |                |  |                            |      |     |
|----|--|----------------|--|----------------------------|------|-----|
| a) | Maximum lifting capacity throughout the range of lift, (kN):   |                |  |                            |      |     |
|    | 1) At hitch points   | Evaluative     | Tolerance of ± 30%   | 5.0 (D)                    | 5.09 | Yes |
|    | 2) With the standard frame   | Evaluative     | The lift capacity should at least be 24 kg/PTO kW, and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft | 3.0 (D)<br>2.45 (R)        | 3.15 | yes |
| b) | Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 Minutes, (mm) | Non Evaluative | The observed value should not exceed 50 mm   | 50 (D)<br>50(R)<br>Maximum | 00   | Yes |



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| 1            | 2  | 3              | 4   | 5  | 6   | 7   |
|--------------|--|----------------|---|--|---|-----|
| <b>4.1.4</b> | <b>Brake performance at 14.90 kmph (*)</b>   |                |   |  |   |     |
| a)           | Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with standard ballast, (m): |                |   |  |   |     |
|              | 1) Cold brake  | Evaluative     | 10 m  | 10 (R)   | 1.60  | Yes |
|              | 2) Hot brake   | Evaluative     | 10 m  | 10 (R)   | 1.90  | Yes |
| b)           | Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)               | Evaluative     | 600 N   | 600 (R) Maximum                                      | 315 to 365  | Yes |
| c)           | Whether parking brake is effective at a force of 600 N at foot pedal (s) or 400 N at hand lever, N           | Evaluative     | Yes / No  | Yes  | Yes   | Yes |
| <b>4.1.5</b> | <b>Noise measurement :(*)</b>  |                |   |  |   |     |
| a)           | Maximum ambient noise emitted by the tractor dB(A)   | Evaluative     | 88 dB (A) for >1.5 tonne GVW and 85 dB (A) for <1.5 tonne GVW (as per CMVR)   |  | 79  | Yes |
| b)           | Maximum noise at operator's ear level dB(A)  | Evaluative     | 96 (as per CMVR)  |  | 92  | Yes |
| <b>4.1.6</b> | <b>Amplitude of mechanical vibrations at: (*)</b>  |                |   |  |   |     |
|              | 1) Left foot rest  | Non Evaluative | 100 microns (max)   |  | 110   | No  |
|              | 2) Right foot rest   |                |   |  | 130   | No  |
|              | 3) Seat (with driver seated)   |                |   |  | 150   | No  |
|              | 4) Steering wheel  |                |   |  | 150   | No  |
| <b>4.1.7</b> | <b>Air cleaner oil pull over test : (*)</b>  |                |   |  |   |     |
|              | Maximum air cleaner pull over, (%)   | Evaluative     | 0.25% (Max)   |  | 0.15  | Yes |
| <b>4.1.8</b> | <b>Haulage requirements : (*)</b>  |                |   |  |   |     |
| a)           | Gross mass of the tractors, (tonnes):  |                | To be specified by manufacturer   | 3.0 (D)  | 3.0   | Yes |
|              | Two wheel  | Non Evaluative |   |  |   |     |
| b)           | Distance travelled / liter of fuel consumption, (km/l):  |                | -do-  | 5 to 8 (D)   | 5.66 to 5.74  | Yes |
|              | Two wheel  | Non Evaluative |   |  |   |     |
| c)           | Fuel consumption (ml/km/tonne):  |                | -do-  | 55 to 58 (D)   | 58.02 to 58.83  | No  |
|              | Two wheel  | Non Evaluative |   |  |   |     |
| <b>4.1.9</b> | <b>Wetland cultivation (Puddling Operation):</b>   |                |   |  |   |     |
|              | Sealing for the following assemblies:  | Evaluative     | The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2. If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only. | There should be no ingress of water and / or mud (R) | No ingress of water and / or mud was observed during Supplement dry test of tractor model having test report no. I-1012/1536/2016 | Yes |
|              | 1) Clutch assembly   | -do-           |   |  |   |     |
|              | 2) Brake housings  | -do-           |   |  |   |     |
|              | 3) Front axle hubs   | -do-           |   |  |   |     |
|              | 4) Engine oil  | -do-           |   |  |   |     |
|              | 5) Transmission oil  | -do-           |   |  |   |     |



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| 1             | 2   | 3              | 4  | 5 | 6                                       | 7              |
|---------------|---|----------------|--|---|---|----------------|
| <b>4.1.10</b> | <b>Safety features :</b>  |                |  |   |   |                |
| a)            | Guards against moving and hot parts                                       | Evaluative     | Bolt drives, pulleys, silencer, hydraulic pipes (As per IS: 12239 (Part-2))  |   | Meets the requirement                   | Yes            |
| b)            | Lighting arrangement  | Evaluative     | As per CMVR  |   | Meets the requirement                   | Yes            |
| c)            | Sealing requirements (tractors having more than 1150 mm rear track width) | Non Evaluative | Should meet the requirements of IS: 12343 (As amended from time to time)   |   | <b>Does not meets the requirement</b>   | <b>No</b>      |
| d)            | Technical requirements for PTO shaft                                      | Evaluative     | Should meet the requirements of IS: 4931 (As amended from time to time)  |   | Meets the requirement                   | Yes            |
| e)            | Dimensions of three point linkage   | Non Evaluative | Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)   |   | <b>Does not meets the requirement</b>   | <b>No</b>      |
| f)            | Specifications of linkage drawbar   | Evaluative     | Should meet the requirements of IS 12953 (As amended from time to time)  |   | Meets the requirement                   | Yes            |
| g)            | Swinging drawbar (wherever fitted)  | Evaluative     | Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)   |   | Not fitted                              | Not applicable |
| h)            | 1) Maximum traveling speed at rated engine speed in reverse gear, kmph    | Evaluative     | Should not exceed 20 kmph  |   | 6.77 (Meets the requirement)            | Yes            |
|               | 2) Audible warning signal on tractor                                      | Evaluative     | As soon as the travelling speed in reverse gear reaches to 20 kmph an audible warning signal on tractor be activated. The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer /dealer shall ensure the training on this aspect to operator before the delivery of tractor. |   | Not Provided                            | Not applicable |
| <b>4.1.11</b> | <b>Labelling of tractors (Provision of labelling plate):</b>              |                |  |   |   |                |
| 1)            | Make  | Evaluative     | Should conform to the requirements of CMVR along with maximum PTO power in kW and year of manufacture in numerical form  |   | <b>International Tractors Limited</b>   | Yes            |
| 2)            | Model   | Evaluative     |  |   | Sonalika International DI-20 Gardentrac | Yes            |
| 3)            | Month & Year of manufacture   | Evaluative     |  |   | 05 / 20                                 | Yes            |
| 4)            | Engine number   | Evaluative     |  |   | A63122B9                                | Yes            |
| 5)            | Chassis number  | Evaluative     |  |   | FMGSH925351G                            | Yes            |
| 6)            | Declaration of PTO power, (kW)  | Evaluative     |  |   | 10.3                                    | Yes            |



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|---------------|--|----------------|---|-----------------|------------------|----------------|
| <b>4.1.12</b> | <b>Discard limit for, (mm) : (*)</b>   |                |   |                 |                  |                |
| (a)           | Cylinder bore diameter, (mm)   | Evaluative     | To be specified by the manufacturer and supported by the printed literature   | 76.700          | 76.002 to 76.012 | Yes            |
| (b)           | Clearance between piston & cylinder liner at skirt, (mm)   | Non Evaluative |   | 0.200           | 0.106 to 0.107   | Yes            |
| (c)           | Piston diameter at skirt, (mm)   | Non Evaluative | -do-  | Not specified   | 75.904 to 75.905 | --             |
| (d)           | <b>Ring end gap (mm):</b>  |                |   |                 |                  |                |
|               | - Top comp. ring.  | Evaluative     | -do-  | 1.50            | 0.20 to 0.25     | Yes            |
|               | - 2 <sup>nd</sup> comp. ring.  |                |   | 1.50            | 0.25 to 0.35     | Yes            |
|               | - Oil ring.  |                |   | 1.50            | 0.20             | Yes            |
| (e)           | <b>Ring groove clearance (mm):</b>   |                |   |                 |                  |                |
|               | - Top comp. ring.  | Evaluative     | -do-  | -- lapped--     |                  | --             |
|               | - 2 <sup>nd</sup> comp. ring.  |                | -do-  | 0.200           | 0.095 to 0.097   | Yes            |
|               | - Oil ring.  |                | -do-  | 0.200           | 0.057 to 0.060   | Yes            |
| (f)           | <b>Clearance of main bearings (mm):</b>  |                |   |                 |                  |                |
|               | - Diametrical clearance  | Evaluative     | -do-  | 0.150           | 0.049 to 0.071   | Yes            |
|               | - Crankshaft end float   | Evaluative     |   | 0.50            | 0.20             | Yes            |
| (g)           | <b>Clearance of big or small end bearings, (mm):</b>   |                |   |                 |                  |                |
|               | - Diametrical  | Evaluative     | -do-  | 0.150           | 0.061 to 0.100   | Yes            |
|               | - Axial  | Evaluative     | -do-  | 0.50            | 0.20             | Yes            |
| (h)           | Clearance between king pin and bush, (mm)  | Non Evaluative | -do-  | --              | Not Applicable   | --             |
| (i)           | Clearance between centre pin and bush, (mm)  | Non Evaluative | -do-  | 0.10            | 0.058 to 0.072   | Yes            |
| <b>4.1.13</b> | <b>Literature (Submission to test agency)</b>  |                |   |                 |                  |                |
| (a)           | Operator manual  | Evaluative     | The printed literature in booklet form should be provided as per IS 8132 & should submit along with the test sample | Provided        | Provided         | Yes            |
| (b)           | Parts Catalogue  | Evaluative     |   | Provided        | Provided         | Yes            |
| (c)           | Workshop / Service manual  | Evaluative     |   | Provided        | Provided         | Yes            |
| <b>4.1.14</b> | Fitment of Roll Over Protective Structures (ROPS): for tractor having more than 1150 mm rear track width | Evaluative     | ROPS should meet the requirement of IS 11821 or OLCI code or equivalent International standard                      | ROPS not fitted |                  | Not applicable |
| <b>4.1.15</b> | Standard Accessories   | Evaluative     | Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.                                 | Provided        |                  | Yes            |
| <b>4.1.16</b> | Accessories (optional)   | Non Evaluative | Ballast weights, if fitted, should meet the requirement of CMVR   | Provided        |                  | Yes            |



| 4.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per Clause 5.0 of IS:12207-2019) :(*) |                        |  |  |                   |  |
|--|------------------------|--|--|-------------------|--|
| S. No.   | Category of breakdowns | Category (Evaluative / Non Evaluative) | Requirements as per IS: 12207-2019   | As observed       | Whether meets the Requirements (Yes/No.) |
| 1.   | Critical               | Evaluative                             | No critical breakdown  | None              | Yes                                      |
| 2.   | Major                  | Evaluative                             | Not more than two and neither of them should be repetitive in nature   | One (Mj-08)       | Yes                                      |
| 3.   | Minor                  | Evaluative                             | Not more than five and frequency of each should not be more than two.  | One (Mn-14)       | Yes                                      |
| 4.   | Total breakdowns       | Evaluative                             | In no case, the total number of breakdowns should exceed five, that is, (2 major + 3 minor) or 5 minor breakdowns. | Two (Mj08 & Mn14) | Yes                                      |

(\*) Test results were taken from base model Test report No T- 1152/1678/2018 (released in May, 2018)

**4.3 Salient Observations:**

**4.3.1 Hydraulic Performance:**

- i) The maximum lifting capacity at hitch point and at standard frame was observed as 5.09 and 3.15 kN respectively against the declaration of 5.0 and 3.0 respectively, which meets the requirements of IS: 12207-2019.

4.3.2 This tractor model meets the evaluative requirements of IS: 12207-2019

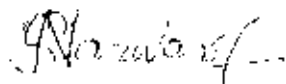
**5. CITIZEN CHARTER**

| Time frame for Testing & Evaluation as per Citizen Charter | Duration of Test                      | Whether the Test Report is released within the time frame given in Citizen Charter | Remarks  |
|--|---------------------------------------|--|----------|
| 10 Months  | 03 Month (June, 2020 to August, 2020) | Yes  | --None-- |

**TESTING AUTHORITY:**

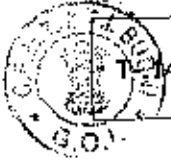
  
NITESH KUMAR VERMA  
AGRICULTURAL ENGINEER

  
C.V. CHIMOTE  
TEST ENGINEER

  
J.J.R. NARWARE  
DIRECTOR

The report compiled by Shri Pratyush Satya, Senior Technical Assistant





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**6. Applicant's comments**

-----None-----

**ANNEXURE - I**

**TRACTOR RUN HOURS DURING TEST**

| <b>A. LABORATORY AND TRACK TESTS:</b> |  | <b>HOURS</b> |
|---------------------------------------|--|--------------|
| 1.                                    | Running-in   | ---          |
| 2.                                    | Nominal speed test   | 1.09         |
| 3.                                    | PTO performance test   | 4.27         |
| 4.                                    | Power Lift and Hydraulic Pump Performance Test   | 2.75         |
| <b>B.</b>                             | Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test. | 0.93         |
| <b>Total</b>                          |  | <b>9.04</b>  |