



**SONALIKA INTERNATIONAL, WORLDTRAC 75 RX 4WD CABIN TRACTOR**



सत्यमेव जयते

भारत सरकार

**GOVERNMENT OF INDIA**

कृषि मंत्रालय (कृषि एवं सहकारिता विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)

Ministry of Agriculture (Deptt. of Agri. & Co-op, Mechanization & Technology Division)

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

**(An ISO : 9001 - 2008 Certified Institute)**

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५ **Tractor Nagar, Budni (M.P.) 466 445**

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Manufacturer : M/s. International Tractors Limited.  
Vill. Chak Gujran, P.O. Piplanwalan,  
Jalandhar Road,  
HOSHIARPUR (Punjab) – 146 022

Test requested by (applicant) : The Manufacturer  
Selected for test by : The Applicant  
Place of running-in : At manufacturer's works

Duration of said running-in (h):  
- Engine : 35  
- Transmission : Nil

Method of Selection : The tractor was submitted directly by the  
applicant for test. Hence, method of  
selection is not known.

### 1. SPECIFICATIONS

- 1.1 Tractor:**
- Make : Sonalika International  
Model : Worldtrac 75 RX 4WD Cabin  
Variant, if any :  
1. : Sonalika International Worldtrac 75 RX  
Cabin
- Type : Four wheeled, Four wheels driven, standard  
Agricultural Tractor.  
Year of manufacture : 2012  
Chassis number : KZKDD314487W  
Country of Origin : India
- 1.2 Engine:**
- Make : International Tractors Limited  
Model : 4100 FLT  
Type : Four stroke, Turbo Charged, water cooled,  
direct injection, diesel engine.  
Serial number : 4100 FLT 33B331732
- Engine speed (Manufacturer's recommended production setting)(rpm):  
- Maximum speed at no load : 2350 to 2450  
- Low idle speed : 650 to 750  
- Speed at maximum torque : 1100 to 1300
- Rated speed, (rpm):  
- For PTO use : 2200  
- For drawbar use : 2200
- 1.3 Cylinder & Cylinder Head:**
- Number : Four  
Disposition : Vertical, in-line  
Bore/stroke, (mm) : 100 / 118  
Capacity as specified by the applicant, : 3707 (apa)  
(cc)  
Compression ratio, (apa) : 18.2 (± 0.2) :1  
Type of cylinder head : Individual, inline  
Type of cylinder liners : Wet replaceable  
Type of combustion chamber : Direct combustion, Re-entrant  
Arrangement of valves : Overhead, Inline



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

16.1 Evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2014 for acceptance of the tractor for the purpose of subsidies/NABARD financing is summarized as under:

| S. No. | Characteristic  | Category<br>(Evaluative /<br>Non<br>Evaluative) | Requirements<br>as per IS: 12207-2008   | Values<br>declared by<br>the<br>applicant/<br>requirement | As<br>observed | Whether<br>meets the<br>require-<br>ments<br>(Yes/No.) |
|--------|---|---|---|---|----------------|--|
| 1      | 2   | 3   | 4   | 5   | 6              | 7  |
| 16.1.1 | PTO Performance :   |   |   |   |                |  |
| a)     | - Max. power<br>under 2 h<br>test, (kW )<br>(Natural<br>ambient<br>condition) | Evaluative                                      | Declared value to be<br>achieved with a<br>tolerance of: -5 / +10%<br>for PTO power >26 kW.<br>-7.5/+10% for PTO<br>power ≤ 26 kW or -5 /<br>+10% for Engine power<br>>26 kW. -7.5/+10% for<br>Engine power ≤ 26 kW       | 41.0  | 43.1           | Yes  |
| b)     | Power at rated<br>engine speed,<br>(kW)                                       | Non<br>Evaluative                               | -do-  | 41.0  | 41.7           | Yes  |
| c)     | Specific fuel<br>consumption<br>corresponding to<br>maximum<br>power, (g/kWh) | Non<br>Evaluative                               | ± 5%  | 285   | 268            | No   |
| d)     | Maximum<br>equivalent<br>crankshaft<br>torque, (Nm)                           | Non<br>Evaluative                               | ± 8%  | 231   | 253.08         | No   |
| e)     | Back-up<br>torque, percent  | Non<br>Evaluative                               | 10 percent, min.  | 10 percent,<br>min (R)<br>7 percent,<br>min (D)           | 29.25          | Yes  |
| f)     | Maximum operating temperature (°C)  |   |   |   |                |  |
| 1)     | Engine<br>oil   | Non<br>Evaluative                               | The declared value<br>should not exceed the<br>max. value specified by<br>the oil company and the<br>observed value under<br>high ambient condition<br>should not exceed the<br>declaration.                              | 132   | 123            | Yes  |
| 2)     | Coolant<br>(water)  | Evaluative                                      | The declared value<br>should not exceed the<br>boiling temperature of<br>coolant under the<br>pressurized or otherwise<br>and the observed value<br>under high ambient<br>condition should not<br>exceed the declaration. | * 118   | 106            | Yes  |
| g)     | Engine oil<br>consumption,<br>(g/kWh)   | Evaluative                                      | Not exceeding 1% of SFC<br>at max. power under High<br>ambient conditions   | 2.71 (R)<br>2.85 (D)                                      | 0.88           | Yes  |
| h)     | Smoke level   | Evaluative                                      | Maximum light absorption<br>coefficient of 3.25 per<br>meter or equivalent<br>BOSCH No. 5.2 or 75<br>Hatrige value (As per<br>CMVR)   | 3.25<br>per<br>meter<br>(R)                               | 0.41           | Yes  |

| 1             | 2   | 3                       | 4  | 5  | 6                 | 7    |     |
|---------------|---|-------------------------|--|--|-------------------|------|-----|
| <b>16.1.2</b> | <b>Drawbar performance :</b>  |                         |  |  |                   |      |     |
| a)            | Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)   | Non Evaluative          | Minimum 65% of static mass with ballast  | 28.30 (R)<br>24.87 (D)   | 31.36             | Yes  |     |
| b)            | Max. drawbar pull with Std-ballasted corresponding to 15 percent wheel slip, (kN)   | Evaluative              | Minimum 65% of static mass of tractor without ballast/ with standard ballast   | 21.1 (R)<br>18.7(D)  | 25.33             | Yes  |     |
| c)            | Maximum drawbar power without ballast, (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 | 34.5 (R)<br>32.8 (D)   | 34.9              | Yes  |     |
| d)            | Maximum transmission oil temperature (°C)   | Non Evaluative          | The declared value should not exceed the maximum value specified by oil company  | 130  | 88                | Yes  |     |
| <b>16.1.3</b> | <b>Power lift and hydraulic pump performance:</b>   |                         |  |  |                   |      |     |
| a)            | Maximum lifting capacity throughout the range of lift, (kN):  |                         |  |  |                   |      |     |
|               | 1)  | At hitch points         | Non Evaluative   | [Tolerance of minus 10%]   | 20 (D)            | 19.2 | 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 | 10.1 (R)<br>13(D) | 13.5 | 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 minute, (mm) | Non Evaluative          | The observed value should not exceed 50 mm   | 50 (D)   | 01                | Yes  |     |

| 1      | 2   | 3              | 4                  | 5                | 6              | 7   |
|--------|---|----------------|--------------------|------------------|----------------|-----|
| 16.1.4 | <b>Brake performance at 25 kmph:</b>  |                |                    |                  |                |     |
| a)     | Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with ballast, (m): |                |                    |                  |                |     |
| 1)     | Cold brake  | Evaluative     | 10                 | 10               | 8.88           | Yes |
| 2)     | Hot brake   | Evaluative     | 10                 | 10               | 9.04           | Yes |
| b)     | Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)      | Evaluative     | 600                | 600              | 459 to 474     | Yes |
| c)     | Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever      | Evaluative     | Yes / No           | Yes              | Yes            | Yes |
| 16.1.5 | <b>Noise measurement :</b>  |                |                    |                  |                |     |
| a)     | Maximum ambient noise emitted by the tractor dB(A)  | Evaluative     | As per CMVR        | 88               | 84             | Yes |
| b)     | Maximum noise at operator's ear level dB(A)   | Evaluative     | As per CMVR        | 98               | 97             | Yes |
| 16.1.6 | <b>Amplitude of mechanical vibrations at :</b>  |                |                    |                  |                |     |
| 1)     | Right foot rest   | Non Evaluative | 100 microns (max.) | 100 micron (max) | 40             | Yes |
|        | left foot rest  |                |                    |                  | 50             | Yes |
| 2)     | Seat (with driver seated)   |                |                    |                  | 20             | Yes |
| 3)     | Steering control wheel  |                |                    |                  | 70             | Yes |
| 16.1.7 | <b>Haulage requirements :</b>   |                |                    |                  |                |     |
| a)     | Gross mass of the trailers, (tones):  |                |                    |                  |                |     |
| 1)     | Two wheel   | Non Evaluative | --                 | 6.0              | 6.0            | Yes |
| 2)     | Four wheel  |                | --                 | 8.0              | 8.0            | Yes |
| b)     | Distance travelled / litre of fuel consumption, (km/l):   |                |                    |                  |                |     |
| 1)     | Two wheel   | Non Evaluative | --                 | 5.0 to 6.0       | 3.04 to 3.06   | No  |
| 2)     | Four wheel  |                | --                 | 5.0 to 6.0       | 2.89 to 2.91   | No  |
| c)     | Fuel consumption (ml/km/tonne):   |                |                    |                  |                |     |
| 1)     | Two wheel   | Non Evaluative | --                 | 38 to 45         | 54.40 to 54.80 | No  |
| 2)     | Four wheel  |                | --                 | 38 to 45         | 42.92 to 43.22 | No  |



| 1       | 2   | 3               | 4   | 5   | 6   | 7   |                |
|---------|---|-----------------|---|---|---|---|----------------|
| 16.1.8  | <b>Wetland cultivation :</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. | The manufacturer has recommended that the tractor is not suitable for wetland cultivation | Manufacture has not recommended the tractor for puddling operation. Hence the puddling test was not conducted | Not applicable |
|         | 1)  | Clutch assembly | -do-  |   |   |   |                |
|         | 2)  | Brake housings  | -do-  |   |   |   |                |
|         | 3)  | Front axle hubs | -do-  |   |   |   |                |
|         | 4)  | Engine Oil      | -do-  |   |   |   |                |
| 5)      | Transmission Oil  | -do-            |   |   |   |   |                |
| 16.1.9  | <b>Safety features :</b>  |                 |   |   |   |   |                |
| a)      | Guards against moving and hot parts                                       | Evaluative      | As per CMVR   | ...   | Provided  | Yes   |                |
| b)      | Lighting arrangement  | Evaluative      | As per CMVR   |   | Provided  | Yes   |                |
| c)      | Seating 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)                      | --  | Does not Meet the requirements  | No  |                |
| d)      | Technical requirements for PTO shaft                                      | Non Evaluative  | Should meet the requirements of IS: 4931 (As amended from time to time)                       | --  | Does not Meet the requirements  | No  |                |
| e)      | Dimensions of three point linkage   | Non Evaluative  | Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)              | --  | Does not Meet the requirements  | No  |                |
| f)      | Specifications of linkage   | Non Evaluative  | Should meet the requirements of IS 12953 and IS 12362 (Part 3) (As amended from time to time) | --  | Does not Meet the requirements  | No  |                |
|         | Swinging drawbar  |                 |   |   | Not Provided  | Not applicable  |                |
| 16.1.10 | <b>Labelling of tractors (Provision of labelling plate):</b>              |                 |   |   |   |   |                |
| 1)      | Make  | Evaluative      | Should conform to the requirements of CMVR along-with declared value of PTO HP                | --  | Sonalika International  | Yes   |                |
| 2)      | Model   | Evaluative      |   | --  | Worldtrac 75 RX 4WD Cabin   | Yes   |                |
| 3)      | Year of manufacture   | Evaluative      |   | --  | 2012  | Yes   |                |
| 4)      | Chassis number  | Evaluative      |   | --  | KZKDD314487W  | Yes   |                |
| 5)      | Engine number   | Evaluative      |   | --  | 4100 FLT 33B331732  | Yes   |                |
| 6)      | Declaration of PTO power, (kW)  | Evaluative      |   | --  | 41 (54.98)  | Yes   |                |

| 1       | 2  | 3              | 4                                  | 5                                 | 6                | 7   |
|---------|--|----------------|------------------------------------|-----------------------------------|------------------|-----|
| 16.1.11 | Discard limit for:                                       |                |                                    |                                   |                  |     |
| (a)     | Cylinder bore diameter, (mm)                             | Evaluative     | To be declared by the manufacturer | 100.3                             | 100.05 to 100.07 | Yes |
| (b)     | Clearance between piston & cylinder liner at skirt, (mm) | Non Evaluative | -do-                               | 0.35                              | 0.131 to 0.142   | Yes |
| (c)     | Ring end gap (mm):                                       |                |                                    |                                   |                  |     |
|         | - Top comp. ring.  | Evaluative     | -do-                               | 2.0                               | 0.55 to 0.60     | Yes |
|         | - 2 <sup>nd</sup> comp. ring.                            |                | -do-                               | 2.0                               | 0.70 to 0.95     | Yes |
|         | - Oil ring.  |                | -do-                               | 2.0                               | 0.65 to 0.70     | Yes |
| (d)     | Ring groove clearance (mm):                              |                |                                    |                                   |                  |     |
|         | - Top comp. ring.  | Evaluative     | -do-                               | 0.15                              | Tapered          | --  |
|         | - 2 <sup>nd</sup> comp. ring.                            |                | -do-                               | 0.14                              | 0.079 to 0.087   | Yes |
|         | - Oil ring.  |                | -do-                               |                                   | 0.030 to 0.032   | Yes |
| (e)     | Clearance of main bearings (mm):                         |                |                                    |                                   |                  |     |
|         | - Diametrical clearance                                  | Evaluative     | -do-                               | 0.20                              | 0.051 to 0.109   | Yes |
|         | - Crankshaft end float                                   | Evaluative     | -do-                               | 0.60                              | 0.20             | Yes |
| (g)     | Clearance of big end bearings, (mm):                     |                |                                    |                                   |                  |     |
|         | - Diametrical  | Evaluative     | To be declared by the manufacturer | 0.2                               | 0.069 to 0.090   | Yes |
|         | - Axial  | Evaluative     | -do-                               | 1.0                               | 0.25 to 0.30     | Yes |
| (h)     | Clearance between king pin and bush, (mm)                | Non Evaluative | -do-                               | 1.0                               | NA               | --  |
| (i)     | Clearance between center pin and bush, (mm)              | Non Evaluative | -do-                               | 1.0                               | NA               | -   |
| 16.1.12 | Literature   |                |                                    |                                   |                  |     |
| (a)     | Operator manual  | Evaluative     | Provided/Not Provided              | As per relevant IS Code (IS 8132) | Provided         | Yes |
| (b)     | Parts Catalogue  | Evaluative     | Provided/Not Provided              | As per relevant IS Code (IS 8132) | Provided         | Yes |
| (c)     | Workshop/ Service manual                                 | Evaluative     | Provided/Not Provided              | As per relevant IS Code (IS 8132) | Provided         | Yes |

| 16.1.12 CATEGORY OF BREAKDOWNS / DEFECTS : |                        |  |   |                 |  |
|--|------------------------|--|---|-----------------|--|
| Sl. No.                                    | Category of breakdowns | Category (Evaluative / Non Evaluative) | Requirements as per IS: 12207-2014  | 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  | Two(Mj15 &Mj 3) | Yes                                      |
| 3.   | Minor                  | Evaluative                             | Not more than five and frequency of each should not be more than two.   | None            | 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 | One             | Yes                                      |

| 16.2 Optional requirements as per Clause-4 (Table-2) of IS:12207-2014: |  |   |                  |         |
|--|--|---|------------------|---------|
| S. No.   | Characteristic   | Requirements as per IS: 12207-2014  | AS observed      | Remarks |
| 1  | 2  | 3   | 4                | 5       |
| 1  | Air cleaner oil pull over, max. oil pull over (%)        | 0.25% (max.)  | Dry type         | ..      |
| 2.   | Seating requirements                                     | Should meet the requirements of IS: 12343-1998  | Does not conform | No      |
| 3.   | Fitment of ROPS  | With a provision for fitment of ROPS. If ROPS fitted it should meet the requirement of IS: 11821-1992 | Not provided     | --      |
| 4.   | Technical requirements for PTO shaft & its Master shield | Should meet the requirements of IS: 4931 -1995  | Does not conform | No      |
| 5.   | Dimensions of three point linkage                        | Should meet the requirements of IS: 4468 (Part-I)-1997  | Does not conform | No      |
| 6.   | Specifications of linkage drawbar.                       | Should meet the requirements of IS: 12953-1990  | Does not conform | No      |
| 7.   | Specifications of swinging drawbar                       | Should meet the requirements of IS:12362 Part 3-1994.   | Not provided     | --      |
| 8.   | Accessories  | Trailer hitch, front tow hook, linkage drawbar may be provided.                                       | Provided         | Yes     |



**16.3 Conformity with following Indian Standard:**

- i) Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS: 10273-1987 (Reaffirmed in March, 2009)] : **Conforms**
- ii) Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3(third revision)[IS: 4931-1995 (Reaffirmed in March, 2009)] : **Does not conform**
- iii) Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468 (Part-I):1997 (Reaffirmed in March, 2007)/ISO 730-1:1994] : **Does not conform**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in March, 2007)]. : **Does not conform**
- v) Agricultural tractors – Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in March, 2009)]. : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : [IS 12239 (PT-1)-1996 (Reaffirmed in March, 2009)/ISO 4254-1:1989]. : **Does not conform**
- vii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) IS 12239 (PT-2)-1999 (Reaffirmed in March, 2009)]. : **Does not conform**
- viii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1 & Part-2) –2006 & 2007(Reaffirmed in March, 2009)/ ISO 3767-2:1991)]. : **Conforms**
- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Reaffirmed in March, 2009)]. : **Does not conform**
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in March, 2009)] : **Conforms**

**16.4 Salient Observations:****16.4.1 Laboratory tests:****16.4.1.1 PTO Performance:**

- i) Power variation during test caused by the Air conditioning unit was 4.99%.  
The air conditioning unit provided with tractor was disconnected during test and test was conducted without operating the Air condition unit.
- ii) During PTO test the Air Conditioning unit was delivered the hot air in operator's cabin instead of cold air which was uncomfortable to operator.
- iii) The specific fuel consumption corresponding to maximum power was measured as **268 g/kWh** against the declaration of **285 g/kWh**, which does not meet the tolerance limit of IS: 12207-2014. This should look into for necessary corrective action.
- ii) The backup torque is 29.25 %.

**16.4.1.2 Drawbar Performance test :**

- i) The malfunctioning of the AC system of the tractor was observed. During the whole drawbar test the **AC system was in OFF** condition. This should look into for necessary quality improvement of the AC system equipped with the tractor.
- ii) After completion of the 10 hrs test observed creeping of RHS rear wheel was 45 mm and water consumption up to 700 ml. This should be look into for necessary corrective action.

**16.4.1.3 Hydraulic Performance test :**

- i) The malfunctioning of the AC system of the tractor was observed .During the whole hydraulic test the **AC system was in OFF** condition. This should look into for necessary quality improvement of the AC system equipped the tractor.
- ii) During Hydraulic performance test, metallic cheeps found in the fluid line of the hydraulic pump. Hydraulic pump replaced with new one along with new hydraulic filter. Cleaning of hydraulic oil, control valve, pipe lines & strainer was carried out.

**16.4.1.4 Noise measurement :-**

- i) The observed noise at Operator's ear level was **97 dB** which is nearly the extreme limit of the requirement for the test. For the safety of the end customer use efforts may be carried out to lower the noise level.

**16.4.1.5 Mechanical Vibration:**

The amplitude of mechanical vibration on various assemblies marked as (\*) in Chapter-9 of this test report are on higher side, especially at clutch & brake pedals. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

**16.4.2 Three point linkage:**

- i) The lateral distance from lower hitch point to centre line of tractor does not meets the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action.

**16.4.4 Drawbar Linkage:**

The "DØ" of linkage drawbar (ref. fig. 1) does not meets the requirement of relevant IS. This should be looked into.

**16.4.3 Operator's Seat:**

Following minimum requirements of operator's seat are not meets to relevant IS: 12343-1998.

- Vertical distance of steering control wheel from the seat index point (SIP)
- Lateral distance of SIP from the center of clutch pedal
- Lateral distance of SIP from the center of outer brake pedal

This should be looked into for necessary corrective action.

**16.4.4 Field test (Dry land)**

**16.4.4.1** Frequent rise in coolant temperature was observed. During field test the air conditioning unit was not work satisfactorily. The expansion tank was overfilled. The fan belt was worn out and therefore water pump was also stopped to work. Accordingly for rectifying the problem applicant replaced the fan belt and engine oil along with engine oil filter before the premature servicing with new.

**16.4.4.2** During the field test inter mediate pulley (Part no. 10082201AA) was found jammed & Compressor V belt (part no. 10084581AA) was broke out. Hence these parts replaced with new one.

**16.4.2.3** Expansion tank frequently found overfilled. Malfunctioning in suction fan was also observed. The air conditioning unit was not delivered the cold air during field testing. Frequent rise in temperature of the coolant was observed & therefore locking washer (Part no. 1002390AA) replaced with new one.



**16.4.4.2 Wetland cultivation (pudding operation) :**

The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation) and therefore, the wetland cultivation (puddling operation) was not conducted. It is recommended that in all the literature this fact that the tractor is not suitable for wetland (puddling) operation should be mentioned clearly & boldly in all the relevant literature of the tractor & also a cautionary notice regarding non-suitability of tractor for puddling operation may be displayed on the bonnet of the tractor.

**16.4.5 Haulage Test :**

- i) The specific fuel consumption (ml/km/tonne) with two & four wheels trailer was observed as 54.40 to 54.80 & 42.92 to 43.22 ml/km/tonne respectively against the declaration of 38 to 45 ml/km/tonne (for both) which does not meets the requirements of IS: 12207-2014. This should look into for necessary corrective action.
- ii) The average distance travelled per litre of fuel consumption with two & four wheels trailer was observed as 3.04 to 3.06 & 2.89 to 2.91 km/lit respectively against the declaration of 5.0 to 6.0, km/lit (for both) which does not meets the requirements of IS: 12207-2014. This should look into for necessary corrective action.
- iii) The consumption of water & oil were observed as 500 ml & 150 ml for 5.94 hours. This should look into for necessary corrective action.

**16.5 Maintenance / Service Problems:**

The Air conditioning unit during the test period was not work satisfactorily. It was delivered hot air instead of cold air. The tractor was also found overheat frequently. The engine oil along with filter was replaced in premature service. The primary and secondary fuel filters was also replaced with new during drawbar performance test considered as premature servicing.

**16.6. Recommendation with regard to safety on tractor:**

The following requirements, inter alia, may be considered for incorporation on the tractor:

- i) Provision for spark arresting device in exhaust system.
- ii) The working clearance hand clutch lever should be provided as per IS: 12239 (Part-2) – 1999.
- iii) Provision of PTO shaft master shield.

**16.7 Adequacy of Literature supplied with machine:****16.7.1** Following literature were supplied after issuing the draft test reports of this tractor, in reference to our comments

- i) Operator's manual
- ii) Service manual
- iii) Spare part's catalogue

The supplied literatures are found adequate. However tyre pressure in tractor for road & field operation may be included. The literature should also be provided in national as well as regional languages.

## 17. 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 | Remark  |
|--|---|--|---|
| 10 Months  | 20 Months<br>(November , 2013 to June , 2015) | No   | Due to breakdowns occurred in different tests. Applicant delayed to rectifying the breakdown. |

TESTING AUTHORITY:


PRADIPKUMAR C. MESHAM  
SENIOR AGRICULTURAL ENGINEER



C. R. LOHI  
DIRECTOR

Test report compiled by : Sh. Nitesh Kumar Verma ,Senior Technical Assistant

## 18. APPLICANT'S COMMENTS

| Para No. | Our Reference  | Applicant's comments  |
|----------|--|---|
| 18.1     | 1.13.2 (iii), 1.13.4.1, 1.20.3, 15, 16.1.7 (b,c), 16.2.4 & 6, 16.3 (ii,iii,iv, v, vi, vii, & ix) 16.4.4, 16.4.4.2 & 3, 16.4.5 (ii & iii) 16.5 & 17 | We will look into for corrective action   |
| 18.2     | 1.20.1, 16.4.1.2, 16.4.1.3, 16.4.1.4, 16.4.2.1 & 16.4.4.1  | These are, minor non conformance and will not affect the tractor performance; however we will look into for corrective actions. |
| 18.3     | 1.20.4, 1.20.5, 16.1.9 (c,d,e & f), 16.2.3 & 4, 16.4.3 & 16.6  | We will look into for implementation of these safety features.  |



**ANNEXURE - I****TRACTOR RUN HOURS DURING TEST**

| <b>A.</b>     | <b>LABORATORY AND TRACK TESTS:</b>  | <b>HOURS</b> |
|---------------|---|--------------|
| 1.            | Running-in  | --           |
| 2.            | PTO performance test  | 18.64        |
| 3.            | Power lift and hydraulic pump performance test  | 1.91         |
| 4.            | Drawbar performance test  | 20.71        |
| 5.            | Turning ability   | 0.5          |
| 6.            | Location of centre of gravity   | 0.25         |
| 7.            | Operator's field of vision  | --           |
| 8.            | Brake test  | 3.00         |
| 9.            | Noise measurement   | 2.33         |
| 10.           | Mechanical vibration test   | 1.0          |
| 11.           | Nominal speed test  | 2.67         |
| <b>B.</b>     | <b>FIELD TEST:</b>  |              |
| 1.            | Disc ploughing  | 15.95        |
| 2.            | Rotavation  | 20.82        |
| <b>C.</b>     | <b>HAULAGE TEST:</b>  | 5.94         |
| <b>D.</b>     | Miscellaneous test and other run hours including idle run, transportation, trials, test cancellation hours and preparation for test | 16.88        |
| <b>TOTAL:</b> |   | <b>110.6</b> |

**ANNEXURE- II****BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST**

| S. No | Item                             | Disc Plough   | Rotavator              |
|-------|----------------------------------|---------------|------------------------|
| 1     | 2                                | 3             | 4                      |
| 1.    | Make                             | Not Provided  | Sonalika               |
| 2.    | Type                             | Mounted       | Mounted                |
| 3.    | No. of Disc/blades               | 03            | 54 blades in 10 flange |
| 4.    | Type of Disc/blades              | Plain concave | Hatchet                |
| 5.    | Size of bottoms/blades, (mm)     | 635           | 135 x 80 x 07          |
| 6.    | Spacing of bottoms/flanges, (mm) | 560           | 240                    |
| 7.    | Lower hitch point span, (mm)     | 930           | 710                    |
| 8.    | Mast height, (mm)                | 530           | 440                    |
| 9.    | <b>Overall dimensions, (mm):</b> |               |                        |
|       | - Length                         | 2420          | 2520                   |
|       | - Width                          | 960           | 1050                   |
|       | - Height                         | 1185          | 700                    |
| 10.   | Gross mass, (kg)                 | 375           | 490                    |