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**SONALIKA INTERNATIONAL, WORLDTRAC 90 RX 4WD TRACTOR**



सत्यमेव जयते

भारत सरकार

**GOVERNMENT OF INDIA**

कृषि एवं किसान कल्याण मंत्रालय (कृषि एवं सहकारिता विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)  
Ministry of Agriculture and Farmers Welfare (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**

Phone : 07564-234729 Fax : 07564 - 234743 E-mail [fmti-mp@nic.in](mailto:fmti-mp@nic.in) Website : <http://cfmtti.dacnet.nic.in>



T- 981/1505/2015

SONALIKA INTERNATIONAL, WORLD TRAC 90 RX 4WD TRACTOR -  
Commercial (Initial)

T- 981/1

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

1.4

1.4.1

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

1.4.2

### 1. SPECIFICATIONS

- 1.1 Tractor:**
- Make : Sonalika International
- Model : Worldtrac 90 RX 4WD
- Variant, if any : None
- Type : Four wheeled, 4WD, Standard, Agricultural Tractor.
- Year of manufacture : 2013
- Chassis number : KZLDV378951W
- Country of Origin : India
- 1.2 Engine:**
- Make : International Tractors Limited
- Model : 4105 ELT
- Type : Four stroke, water cooled, turbocharged direct injection diesel engine.
- Serial number : 4105 ELT23L330995
- Engine speed (Manufacturer's recommended production setting)(rpm):**
- Maximum speed at no load : 2175 to 2200
- Low idle speed : 650 to 750
- Speed at maximum torque : 1200 to 1400
- Rated speed, (rpm):**
- For PTO use : 2000
- For drawbar use : 2000
- 1.3 Cylinder & Cylinder Head:**
- Number : Four
- Disposition : Vertical, in-line
- Bore/stroke, (mm) : 105/118
- Capacity as specified by the applicant, (cc) : 4087
- Compression ratio, (apa) : 18.5:1 (± 0.2)
- Type of cylinder head : Individual, inline
- Type of cylinder liners : Wet, replaceable
- Type of combustion chamber : Direct injection, Re-entrant
- Arrangement of valves : Overhead, Inline

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T- 981/1505/2015	<b>SONALIKA INTERNATIONAL, WORLD TRAC 90 RX 4WD TRACTOR - Commercial (Initial)</b>
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1	2	3
5.	During field test with rotavator, the fan belt (Part No- 10071450AA) was broken & it was replaced with new one.	47.7
6.	During the preparation of haulage test for 2 wheel trailer, malfunctioning in clutch assembly was observed. To rectify the problem, the clutch assembly was dismantled and it was found the clutch release bearing & three figures of clutch housing was broken & it was replaced by new one.(Mj-11)	86.9

## 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 are summarized as under:

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	Values declared by the applicant (D)/ Requirement (R)	As observed	Whether meets the requirements (Yes/No.)
1	2	3	4	5	6	7
<b>16.1.1</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: -5 / +10% for PTO power >26 kW. -7.5/+10% for PTO power ≤ 26 kW or -5 / +10% for Engine power >26 kW. -7.5/+10% for Engine power ≤ 26 kW	56.18 (D)	54.7	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	56.18 (D)	54.7	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	265 (D)	255	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	360(D)	343	Yes
e)	Back-up torque, percent	Non Evaluative	10 percent, min.	10 percent, min(R)	31.7	Yes
f)	Maximum operating temperature, (°C)					
	1) Engine oil	Non 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)	118	Yes



T- 981/1505/2015

**SONALIKA INTERNATIONAL, WORLD TRAC 90 RX 4WD TRACTOR - Commercial (Initial)**

1	2	3	4	5	6	7
	2) Coolant (water)	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)	106	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.58 (max.) (R)	0.309	Yes
h)	Smoke level	Evaluative	Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 per meter (R)	1.04 per metre	Yes
<b>16.1.2 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	28.69 (D) 26.84 (R) Minimum	35.56	Yes
b)	Max. drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast	21.48 (D) 20.11 (R) Minimum	27.62	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 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 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.	45.0 (D) 43.8 (R) Minimum	48.6	Yes
d)	Max. transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	130 (D)	108	Yes
<b>16.1.3 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)	20.58	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	13 (D) 13.13 (R) Minimum	14.0	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	Observed value should not exceed 50 mm.	50 (D)	06	Yes

T- 98

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T- 981/1505/2015	<b>SONALIKA INTERNATIONAL, WORLD TRAC 90 RX 4WD TRACTOR - Commercial (Initial)</b>
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1	2	3	4	5	6	7
<b>16.1.4</b>	<b>Brake performance at 25 kmph:</b>					
<b>a)</b>	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):					
	1) Cold brake	Evaluative	10	10 (R)	7.64	Yes
	2) Hot brake	Evaluative	10	10 (R)	8.32	Yes
<b>b)</b>	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)	Evaluative	600	600 (R)	328 to 375	Yes
<b>c)</b>	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 (R)	Yes	Yes
<b>16.1.5</b>	<b>Noise measurement :</b>					
<b>a)</b>	Maximum ambient noise emitted by the tractor, dB(A)	Evaluative	As per CMVR	88 (R)	85	Yes
<b>b)</b>	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	98 (R)	96	Yes
<b>16.1.6</b>	<b>Amplitude of mechanical vibrations at :</b>					
	1) Left foot rest	Non Evaluative	100 microns (max)	100 (R)	90	Yes
	2) Right foot rest			100 (R)	40	Yes
	3) Seat (with driver seated)			100 (R)	60	Yes
	4) Steering wheel			100 (R)	80	Yes
<b>16.1.7</b>	<b>Haulage requirements :</b>					
<b>a)</b>	Gross mass of the trailers, (tones):					
	1) Two wheel	Non Evaluative	--	6.0 (D)	6.0	Yes
	2) Four wheel	Evaluative	--	8.0 (D)	8.0	Yes
<b>b)</b>	Distance travelled / liter of fuel consumption, (km/l):					
	1) Two wheel	Non Evaluative	--	5.0 to 6.0 (D)	3.18 to 3.26	No
	2) Four wheel	Evaluative	--	5.0 to 6.0 (D)	3.16	No
<b>c)</b>	Fuel consumption (ml/km/tonne):					
	1) Two wheel	Non Evaluative	--	38 to 45 (D)	51.18 to 52.39	No
	2) Four wheel	Evaluative	--	38 to 45 (D)	39.59 to 39.60	Yes



1	2	3	4	5	6	7
<b>16.1.8 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.	There should be no ingress of water and/or mud	The manufacturer has recommended that the tractor is not suitable for wet land cultivation	--
	1) Clutch assembly	-do-				
	2) Brake housings	-do-				
	3) Front axle hubs	-do-				
	4) Engine oil					
	5) Transmission oil					
<b>16.1.9 Safety features :</b>						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulley, silencer, hydraulic pipes (As per IS 12239 part 2)	At present no requirements	Provided	Yes
b)	Lighting arrangement (Tractor having more than 1150 mm rear track width)	Evaluative	As per CMVR	--	Provided	Yes
c)	Seating requirement (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 Meets the requirement	No
d)	Technical requirements for PTO shaft	Non-Evaluative	Should meet the requirements of IS 4931 (as amended from time to time)	--	Does not Meets the requirement	No
e)	Dimension of three point linkage	Non-Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)	--	Does not meets the requirement	No
f)	Specification of linkage and swinging drawbars	Non-Evaluative	Should meet the requirements of IS 12953 and IS 12362 (part 3) (as amended from time to time)	--	Does not meets the requirement	No
<b>16.1.10 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 90 RX 4WD	Yes
	3) Year of manufacture	Evaluative		--	2013	Yes
	4) Engine serial number	Evaluative		--	4105ELT23L330995	Yes
	5) Chassis number	Evaluative		--	KZLDV378951W	Yes
	6) Declaration of PTO power, (kW)	Evaluative		--	56.18	Yes

T- 98

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1	2	3	4	5	6	7
<b>16.1.11</b>	<b>Discard limit for:</b>					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer	105.319	105.03 to 105.07	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.45	0.138 to 0.158	Yes
(c)	<b>Ring end gap (mm):</b>					
	- Top comp. ring.	Evaluative	-do-	2.0	0.40 to 0.50	Yes
	- 2 <sup>nd</sup> comp. ring.		-do-	2.0	0.55 to 0.65	Yes
	- Oil ring.		-do-	2.0	0.40 to 0.60	Yes
(d)	<b>Ring groove clearance (mm):</b>					
	- Top comp. ring.	Evaluative	-do-	-	Tapered rings	--
	- 2 <sup>nd</sup> comp. ring.		-do-	0.150	0.085 to 0.094	Yes
	- Oil ring.		-do-	0.150	0.028 to 0.037	Yes
(e)	<b>Clearance of main bearings (mm):</b>					
	- Diametrical clearance	Evaluative	-do-	0.20	0.081 to 0.146	Yes
	- Crankshaft end float	Evaluative	-do-	0.60	0.30	Yes
(f)	<b>Clearance of big end bearings, (mm):</b>					
	- Diametrical	Evaluative	-do-	0.35	0.064 to 0.106	Yes
	- Axial	Evaluative	-do-	1.0	0.30 to 0.35	Yes
(g)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	NA	NA	NA
(h)	Clearance between centre pin and bush, (mm)	Non Evaluative	-do-	NA	NA	NA
<b>16.1.12</b>	<b>Literature (Submission to test agency)</b>					
(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
<b>16.1.13</b>	<b>CATEGORY OF BREAKDOWNS / DEFECTS :</b>					
S. 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	One (Mj 11)	Yes	
3.	Minor	Evaluative	Not more than five and frequency of each should not be more than two.	Three	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.	04	Yes	



T- 981/1505/2015

SONALIKA INTERNATIONAL, WORLD TRAC 90 RX 4WD TRACTOR -  
Commercial (Initial)

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	Whether meets the requirements (Yes/No.)
1.	Fitment of ROPS	With a provision for fitment of ROPS.	Not provided	Not applicable
		If ROPS fitted it should meet the requirement of IS: 11821-1992	Not provided	Not applicable
2.	Accessories	Trailer hitch, swinging drawbar, linkage drawbar & front too hook	Provided	Yes

**16.3 Conformity with following IS:**

- i) Guidelines for declaration of power and specific fuel consumption and labelling 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, 2009)] : **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, 2007) /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 (Part-2) 1999) (Reaffirmed in March, 2009)] : **Conforms**
- viii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays [IS: 6283 (Part-1) – 2006 (Reaffirmed in March, 2009) and IS: 6283 (Part-2)- 2007 (Reaffirmed in March, 2009)] : **Does not conform**
- ix) Guidelines 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 Tractors and 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) The specific fuel consumption corresponding to maximum power was measured as **255 g/kWh** against the declaration of **265 g/kWh**, which is under the tolerance limit of IS: 12207-2014.
- ii) The backup torque is **31.7%**.



**16.4.1.2 Drawbar performance:**

- i) During 10 hour drawbar test, creeping of LHS & RHS rear tyre over the rims was observed as 20 mm & 40 mm respectively. This may be looked into for necessary corrective action.

**16.4.1.3 Mechanical Vibration:**

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

**16.4.1.4 Three point linkage:**

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

**17.4.1.5 Specifications of Power Take-off Shaft:**

- i) The dimension "d $\phi$ " & "H" of [See Fig. 2(a)] of PTO shaft does not meet the requirement of IS: 4931:1995, this should be looked into for compliance.
- ii) The dimension "k", "m", "n", "p" & "r" of [See Fig. 2(b)] of PTO of master shield does not meet the requirement of IS: 4931:1995, this should be looked into for compliance.

**16.4.1.6 Linkage drawbar:**

The dimensions "B & C" of the three-point linkage does not meet the requirements of IS: 12953-1990 & IS: 4468- (Part-2) -1993. This should be looked into for necessary corrective action.

- 16.4.1.7**
- i) The inclination of seat towards the rear direction does not meet the requirement of IS: 12343 – 1998. This should be looked into for necessary corrective action.
  - ii) Vertical adjustment upward & downward from the mid position does not meet the requirement of IS: 12343 – 1998. This should be looked into for necessary corrective action.
  - iii) Vertical distance of SIP from foot rest does not meet the requirement of IS: 12343 – 1998. This should be looked into for necessary corrective action.

**16.4.1.8 Symbols of operator's controls and other displays:**

The differential lock, oil lubricant type & grease lubricant frequency are not identifiable with the symbols as per IS: 6283 (Part-1&2)-1998. This needs to be looked into.

**16.4.1.9 Location and operation of operator's control:**

- i) Fuel shut-off knob does not remain in "STOP" position without application of sustainable manual effort. So it does not meet the requirement of IS: 12239 (Part 2)-1996 This should be looked into for necessary corrective action.

**16.4.2 Field performance test:**

**16.4.2.1 Haulage performance:**

- i) During the preparation of haulage test for 2 wheel trailer, malfunctioning in clutch assembly was observed. To rectify the problem, the clutch assembly was dismantled and it was found the clutch release bearing & three figures of clutch housing was broken & it was replaced by new one. **(Mj-11)**
- ii) The fuel consumption (ml/km/tonne) was observed as 51.18 to 52.39 ml/km/tonne against the declaration of 38 to 45 ml/km/tonne for two wheel trailer. This does not meet the requirement of IS: 12207-2014 and therefore, should be looked into for necessary corrective action.



- iii) The average distance travelled per liter of fuel consumption with two & four wheels trailer was observed 3.18 to 3.26 & 3.16 km/lit respectively against the declaration of 5 to 6, km/lit (for both) which does not meet the requirement of IS: 12207-2014 and therefore, should be looked into for necessary corrective action.

#### 16.4.2.2 Wetland cultivation (Puddling operation):

The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation). Hence, the wetland cultivation (puddling operation) was not conducted. **Therefore, the declaration of the fact that the tractor is not suitable for Wetland cultivation (Puddling operation) should be mentioned clearly and boldly in all the literature relevant to this tractor model.**

#### 16.5 Maintenance / Service Problems:

The following noticeable maintenance or service problem was observed during the test.

- 1) The water hose pipe (Part No- 700406085A) was found leaked (3<sup>rd</sup> times). Thereafter for rectified above problem following part replaced by new one.

Sl.No	Part Description	Number
1.	Water pipe assy inlet (Part No-800406039B)	01
2.	Water pipe inlet Adaptor (Part No-703406026A)	01
3.	Water pipe assy outlet (Part No-800406040B)	01
4.	Water pipe outlet Adaptor (Part No-703406025A)	01

- 2) During field test with rotavator, the fan belt (Part No- 10071450AA) was broken & it was replaced with new one.

#### 16.6 Recommendation with regard to safety on tractor:

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

- Provision for spark arresting device in exhaust system.
- Provision for retaining the fuel shut-off lever in "STOP" position.
- The working clearance between the draft & position control lever may be provided as per IS: 12239 (Part-2) – 1999.

#### 16.7 Adequacy of Literature supplied with machine:

##### 16.7.1

The following literatures were supplied with the test tractor for reference during the test.

- Operator's manual for Sonalika International Worldtrac 75 RX 4WD, 90 RX 4WD, 75 RX 4WD Cabin, 90 RX 4WD Cabin & 75 RX, 90 RX, 75 RX Cabin, 90 RX Cabin tractors models.
- Service manual for Sonalika International Worldtrac 90 RX 4WD & Sonalika International Worldtrac 75 RX 4WD.
- Spare part's catalogue for Worldtrac & Worldtrac Hi- Tech Models 60 Rx, 75 Rx, 90 Rx & Rx models DI-39 Rx, DI-42 Rx, DI-47 Rx, DI-45 Rx Turbo, DI-50 Rx, DI-55 Rx, DI-55 Rx Turbo, DI-750 III Rx & DI-60 Rx 4- Cyl Tractor models.

- 16.7.2 The supplied literature was not found adequate as it does not covers the information on the components / assemblies such as inter cooler & EGR. Therefore, it is recommended that relevant literature may be updated & literature may be brought out as per IS: 8132-1999 (Reaffirmed in March, 2009) for the guidance of users and service personnel in national as well as regional languages for this model of tractor.





T- 981/1505/2015	SONALIKA INTERNATIONAL, WORLD TRAC 90 RX 4WD TRACTOR - Commercial (Initial)
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## 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	Remarks
10 Months	19 month (January , 2014 to August, 2015)	No	Due to breakdowns occurred in different test & applicant delayed to rectify the breakdowns.

TESTING AUTHORITY:

**PRAMOD YADAV**  
AGRICULTURAL ENGINEER

**H. L. YADAV**  
SENIOR AGRICULTURAL ENGINEER

**C.R. LOHI**  
DIRECTOR

Test Report compiled by: - **Shri. Shwetabh Singh**, Senior Technical Assistant.

## 18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
18.1	1.13.2 (ii), 1.13.2 (iii), 1.13.4.1, 1.14.1, 1.14.2, 1.20.1, 1.20.2, 1.20.3, 1.20.4, 1.20.5, 15, 16.1.6, 16.1.7, 16.1.8, 16.3 (ii), (iii) & (iv), 16.4.1.2, 16.4.1.3, 16.4.1.4, 16.4.1.5, 16.4.1.6, 16.4.1.9, 16.4.2.1, 16.5, 16.7.2 & 17	We will look into for corrective action.
18.2	16.1.9, 16.3 (v), (vi), (vii) (viii) & (ix), 16.4.17, 16.4.1.8 & 16.6	We will look into for implementation of these safety features.

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

S. No	Item	Disc Plough	Rotavator
1	2	3	4
1.	Make	Sonalika	Sonalika
2.	Type	Mounted	Mounted
3.	No. of Disc/blades	03	54 blades in 10 flange
4.	Type of Disc/blades	Plain Concave	Hatched
5.	Size of bottoms/blades, (mm)	160 (dia. of disc) & 6 thickness	220 X 85 X 8
6.	Spacing of bottoms/flanges, (mm)	555	250
7.	Lower hitch point span, (mm)	760	640
8.	Mast height, (mm)	600	510
9.	<b>Overall dimensions, (mm):</b>		
10.	- Length	2400	2480
11.	- Width	1040	920
12.	- Height	1220	1005
13.	Gross mass, (kg)	390	480

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

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	11.7
3.	Drawbar performance test	20.0
4.	Power lift and hydraulic pump performance test	3.3
5.	Turning ability	0.2
6.	Location of centre of gravity	0.1
7.	Operator's field of vision	0.1
8.	Brake test	3.0
9.	Noise measurement	2.5
10.	Mechanical vibration test	1.0
11.	Nominal speed test	3.5
<b>B.</b>	<b>FIELD TEST:</b>	
1.	Disc ploughing	15.7
2.	Rotavation	20.5
<b>C.</b>	<b>HAULAGE TEST:</b>	5.5
<b>D.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	5.7
	<b>TOTAL:</b>	<b>92.8</b>