

व्यावसायिक (वैरियंट) परीक्षण रिपोर्ट, (बैच)  
COMMERCIAL (VARIANT) TEST REPORT, (BATCH)

संख्या / No. : T-1059/1584/2017  
माह / Month : January, 2017



**INTERNATIONAL TRACTORS LIMITED,  
SONALIKA INTERNATIONAL DI-60 RX TRACTOR**



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय  
(कृषि, सहकारिता एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

(An ISO : 9001 - 2008 Certified Institute)

**Tractor Nagar, Budni (M.P.) 466 445**

E-mail : [fmti-mp@gov.in](mailto:fmti-mp@gov.in)

Website : <http://www.fmttibudni.gov.in>

Telephone : 07564 - 234729

Fax : 07564 - 234743



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**2. FUEL AND LUBRICANTS**

**2.1 Fuel** : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.836 g/cc at 15°C was used.

**2.2 Lubricants:**

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine & air cleaner oil	SAE 20W40	As recommended
2.	Transmission, differential, final drive, brake and hydraulic system oil	Tract elf 2412	Oil originally filled in the tractor was not changed
3.	Steering system	SAE-EP -80	-do-
4.	Grease	MP Grease	MP Grease

**3. ESSENTIAL TESTS**

**3.1 SPECIFICATIONS**

**3.1.1 Tractor:**  
 Make : International Tractors Limited  
 Model : Sonalika International DI - 60 RX  
 Type : Four wheeled, rear wheel drive, agricultural tractor.  
 Year of manufacture : 2016  
 Chassis serial number : AZDDF547042S3  
 Country of origin : India

**3.1.2 Engine:**  
 Make : International Tractors Ltd.  
 Model : 4100 FL  
 Type : Four stroke, naturally aspirated, water cooled, direct injection diesel engine.  
 Serial number : 4100FL63B542375F9  
 Country of origin : India  
**Engine speed (Manufacturer's recommended production setting) (rpm),:**  
 - Maximum speed at no load : 2350 to 2450  
 - Low idle speed : 600 to 700  
 - Speed at maximum torque : 1100 to 1300  
**Rated speed, (rpm):**  
 - For PTO use : 2200  
 - For drawbar use : 2200

**3.1.3 Cylinder & Cylinder Head:**  
 Number : Four  
 Disposition : Vertical, in-line  
 Bore/stroke, (mm) : 100 / 118  
 Capacity as specified by the applicant, (cc) : 3707  
 Compression ratio : 18.2(± 0.2):1  
 Type of cylinder head : Individual  
 Type of cylinder liners : Wet, replaceable  
 Type of combustion chamber : Re-entrant  
 Arrangement of valves : Overhead, Inline



## Previous Sample

## Present Sample

## 6.4 Adequacy of literature:

- |   |   |
|---|---|
| <p>i) The following literature was supplied with the tractor for reference during the test.</p> <p>a) Operator's manual</p> <p>b) Workshop manual</p> <p>c) Parts catalogue</p> | <p>a) Operator's manual</p> <p>b) Workshop manual</p> <p>c) Parts catalogue</p> |
|---|---|

## 7. SUMMARY OF OBSERVATIONS, COMMENTS &amp; RECOMMENDATIONS

- 7.1 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 IS: 12207: 2014 for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207- 2014	Values declared by the applicant/ requirement		As observed		Whether present model meets the require- ments (Yes/No.)
				Previous model	Present Model	Previous model	Present Model	
1	2	3	4	5 a	5 b	6 a	6 b	7
<b>7.1.1 PTO Performance :</b>								
a)	- Max. 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	36.3 (D)	36.3 (D)	36.3	34.6	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	266 (D)	287 (D)	266	280	Yes
<b>7.1.2 Brake performance at 25 kmph:</b>								
a)	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)	10 (R)	6.72	7.76	Yes
	2) Hot brake	Evaluative	10	10 (R)	10 (R)	7.24	7.98	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 (R)	600 (R)	160 to 200	318 to 330	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 (R)	Yes	Yes	Yes	Yes



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1	2	3	4	5 a	5 b	6 a	6 b	7
<b>7.1.3</b>	<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	--		International Tractors Ltd.		Yes
	2) Model	Evaluative		--		Sonalika International DI- 60RX		Yes
	3) Year of manufacture	Evaluative		--		2016		Yes
	4) Engine serial number	Evaluative		--		4100FL63B 542375F9		Yes
	5) Chassis number	Evaluative		--		AZDDF5470 42S3		Yes
<b>7.1.4</b>	<b>Literature (Submission to test agency)</b>							
(a)	Operator manual	Evaluative	Provided/ Not Provided	Provided		Provided		Yes
(b)	Parts Catalogue	Evaluative	Provided/ Not Provided	Provided		Provided		Yes
(c)	Workshop/ Service manual	Evaluative	Provided/ Not Provided	Provided		Provided		Yes
<b>7.1.5</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	None	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.	None	Yes			
<b>7.1.6</b>	<b>Optional requirements as per Clause-4 (Table-2) of IS: 12207-2014</b>							
S. No.	Characteristic	Requirements as per IS: 12207-2014	As observed	Whether meets the requirement (Yes/No.)				
1	Air cleaner oil pull over, max. oil pull over (%)	0.25% (max.)	Not applicable	Yes				
2.	Seating requirements	Should meet the requirements of IS: 12343-1998.	<b>Does not Meets the requirements</b>	<b>No</b>				
3.	Fitment of ROPS	With a provision for fitment of ROPS.	Not applicable	---				
		If ROPS fitted it should meet the requirement of IS: 11821-1992	Not fitted	---				



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1	2	3	4	5
4.	Technical requirements for PTO shaft	Should meet the requirements of IS: 4931 -1995	Meets the requirements	Yes
5.	Dimensions of three point linkage	Should meet the requirements of IS: 4468 (Part-I)-1997	<b>Does not Meets the requirements</b>	<b>No</b>
6.	Specifications of linkage drawbar	Should meet the requirements of IS: 12953-1990.	Meets the requirements	Yes
	Specifications of swinging drawbar	Should meet the requirements of IS: 12362 Part 3-1994.	Not provided	Not applicable
7.	Accessories	Trailer hitch, front tow hook, linkage drawbar may be provided.	Meets the requirements	Yes

**7.2 Salient Observations:**

**7.2.1 Laboratory tests:**

**7.2.1.1 PTO Performance:**

- i) The maximum PTO power in case of previous and present models was observed as **36.8 & 34.6 kW** against the declaration of **36.3 kW** respectively, which is within the specified limit.
- ii) The specific fuel consumption in case of base and variant models corresponding to maximum power was observed as **287 & 280 g/kWh** against the declaration of **266 g/kWh** respectively, which does not meet the requirement of **IS:12207:2014**. This should be looked into for necessary corrective action. is within the tolerance limit.

**7.2.1.2 Three point linkage:**

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

**7.2.1.3 Linkage drawbar:**

Some of the parameters of linkage drawbar conform to Cat.I and some of them conform to Cat.II. In view of the spirit of standardization, necessary improvements may be incorporated.

**7.2.1.4 Operator's Seat:**

Longitudinal distance from seat index point to the center of steering control wheel.

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

The working clearance around the position lever to draft control and mudguard was observed as 55 mm against the minimum requirement of 70 mm as per per IS: 12239 (Part 2)-1996 This should be looked into for necessary corrective action.

**7.3 Maintenance / Service Problems:**

No noticeable maintenance and service problems was observed during the test.

**7.4 Recommendation with regard to safety on tractor:**

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

- i) Provision of safety against accidental start of the engine.
- ii) Provision for spark arresting device in exhaust system.
- iii) Provision for retaining the fuel shut-off lever in "STOP" position.
- iv) The working clearance between the draft & position control lever may be provided as per IS: 12239 (Part-2) – 1999.
- v) Provision of PTO shaft master shield.
- vi) Cautionary notice as per para 11.2 of IS:12239 (Part-2)-1999







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- 7.5 Adequacy of Literature supplied with machine:**
- 7.5.1** Literature was supplied with the tractor for reference during the test. It is therefore, recommended that following 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.
- a) Operator's Manual  
b) Parts catalogue  
c) Service Manual
- 7.5.2** Information related to PTO, Drawbar and hydraulic performance of the tractor such as, maximum PTO power, rated PTO power, power at standard PTO speed, maximum torque, backup torque, specific fuel consumption, maximum drawbar power & pull, hydraulic pump discharge rate, hydraulic power & lifting capacities etc & all variant models should be included in the technical specification of the tractor for the guidance of the user's.

#### 8. 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	4 Month (September to December, 2016)	Yes	None

#### TESTING AUTHORITY:

 <b>C.S.RAGHUWANSHI</b> AGRICULTURAL ENGINEER	 <b>C.V.CHIMOTE</b> TEST ENGINEER	 <b>Y.K. RAO</b> SENIOR AGRICULTURAL ENGINEER
 <b>J.J.R.NARWARE</b> DIRECTOR		

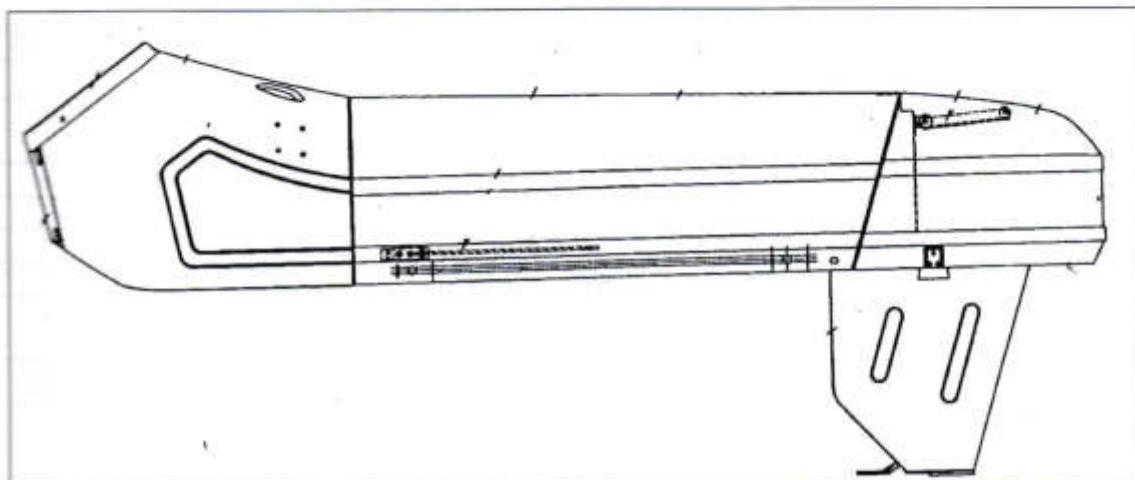
#### 9. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
9.1	Clause No. 7.2.1.2, 7.2.1.5 & 7.4	Observations will be studied & necessary action will be incorporated.

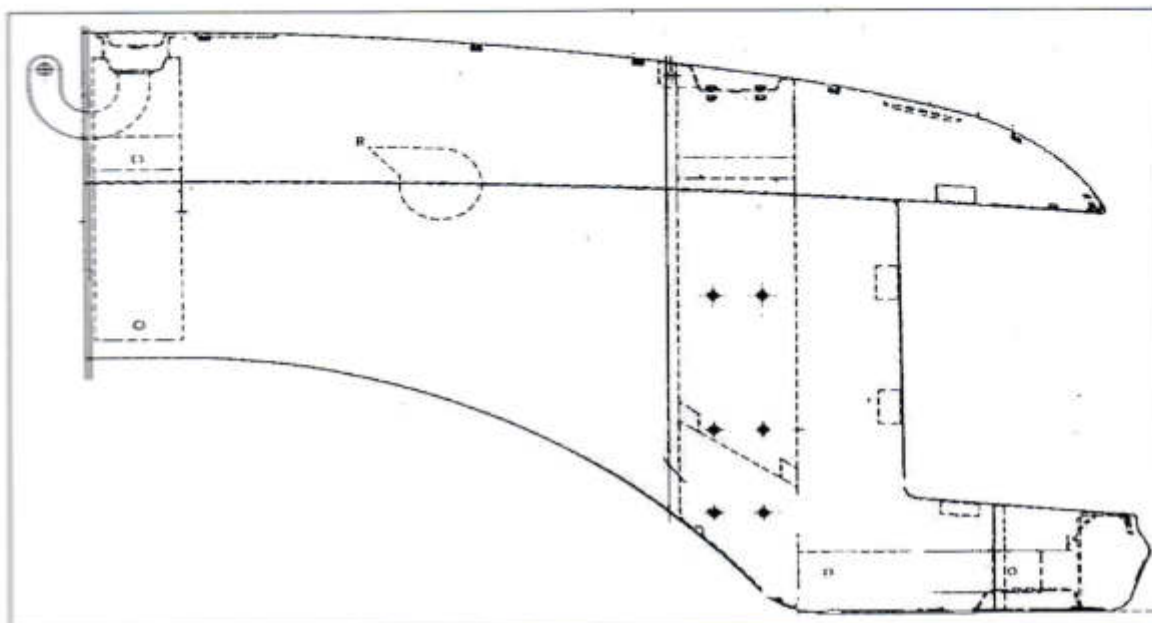
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ANNEXURE- I



COMPOUND STYLE BONNET OF SONALIKA INTERNATIONALDI-60 CM Series  
[Base Model]



MONO STYLE BONNET OF SONALIKA INTERNATIONALDI-60 RX  
[Batch (Variant) Model]



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ANNEXURE-

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	3.7
3.	Theoretical speed test	0.7
4.	Centre of gravity of test	0.2
5.	Turning ability test	0.2
6.	Operators field of vision	0.2
7.	Brake performance test	2.1
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.4
	<b>TOTAL:</b>	<b>7.5</b>