

व्यावसायिक परीक्षण रिपोर्ट, वेरियेंट (बैच)
COMMERCIAL TEST REPORT, VARIANT (Batch)

संख्या/No. : T- 1057/1582/2016
माह/Month : December ,2016



**INTERNATIONAL TRACTORS LIMITED,
SONALIKA INTERNATIONAL DI 35 DS CM SERIES TRACTOR**



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.) 466 445

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO 9001: 2008 Certified Institute)

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3. ESSENTIAL TESTS

3.1 SPECIFICATIONS

3.1.1 Tractor:

Make	: International Tractors
Model	: Sonalika international DI-35 DS CM Series
Type	: Four wheeled, Rear-wheel drive, standard, Agricultural Tractor.
Year of manufacture	: 2016
Chassis serial number	: AZJSF550008S3
Country of origin	: India

3.1.2 Engine:

Make	: International Tractors Limited
Model	: 3100 FLS
Type	: Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.

Serial number	: 3100FL63C545130F3
Country of origin	: India

Engine speed , (Manufacturer's recommended production setting),(rpm):

- Maximum speed at no load	: 2150 to 2250
- Low idle speed	: 650 to 750
- 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	: Three
Disposition	: Vertical, inline
Bore/stroke, (mm)	: 100/118
Capacity as specified by the applicant, (cc)	: 2780
Compression ratio	: 19.5 (±0.2) :1
Type of cylinder head	: Individual
Type of cylinder liners	: Wet, replaceable
Type of combustion chamber	: Re-entrant, cavity on piston crown
Arrangement of valves	: Overhead, Inline

Valve clearance (cold/hot):

- Inlet valve, (mm)	: 0.30
- Exhaust valve, (mm)	: 0.40

3.1.4 Fuel System:

Type of fuel feed system	: Gravity and force feed
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3.1.4.1 Fuel tank:

Capacity, (l)	: 54.0
Location	: Above clutch housing
Provision for draining of sediments/ water	: Not provided, however water separator is provided.
Material of fuel tank	: M.S. Sheet

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7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 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:

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	Values declared by the applicant/ (D) Requirement (R)	As Observed	Wheth er meets the require -ment (Yes /No)
1	2	3	4	5	6	7
7.1.1 PTO Performance :						
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 >35hp. -7.5/+10% for PTO power ≤ 35 hp	24.6 (D)	24.3	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	24.6 (D)	24.3	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	265(D)	249	Yes
d)	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.	130 (D)	102	Yes
	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.	120 (D)	81	Yes
7.1.2 Safety features:						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 Part 2)	--	Meets the requirement	Yes
b)	Lighting arrangement	Evaluative	As per CMVR	--	Meets the requirements	Yes
c)	Seating requirements (Tractors having more than 1150 mm track width)	Non Evaluative	Should meet the requirements of IS 12343 (as amended from time to time)	--	Does not meet 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 meet the requirement	No

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1	2	3	4	5	6	7
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS 4468 (Part 1) (as amended from time to time)	--	Does not meet the requirement	No
f)	Specifications of linkage drawbar	Non Evaluative	Should meet the requirements of IS 12953 (as amended from time to time)	--	Meets the requirement	Yes
	Specifications of swinging drawbar	Non Evaluative	Should meet the requirements of IS 12362 (Part 3) (as amended from time to time)	--	Not provided	NA
7.1.3	Labelling of tractors (Provision of labelling plate):					
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-35 DS CM Series	Yes
3)	Year of manufacture	Evaluative		--	2016	Yes
4)	Engine number	Evaluative		--	3100FL63C545130F3	Yes
5)	Chassis number	Evaluative		--	AZJ5F550008S3	Yes
6)	Declaration of PTO power, kW	Evaluative		--	24.6	Yes
7.1.4	Literature (Submission to test agency):					
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
7.1.5	CATEGORY OF BREAKDOWNS / DEFECTS :					
S. No.	Characteristic	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	

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7.1.6 Optional requirements as per Clause-4 (Table-2) of IS:12207-2014:				
S. No.	Characteristic	Requirements as per IS: 12207-2008	As observed	Whether meets the requirements (Yes/No.)
1.	Maximum oil pull over, (%)	0.25% (max.)	Test was Not conducted	----
2.	Seating requirements	Should meet the requirements of IS: 12343-1998	Does not meet the requirement	No
3.	Fitment of ROPS	With a provision for fitment of ROPS.	Not provided	No
		If ROPS fitted it should meet the requirement of IS: 11821-1992	ROPS not fitted	Not Applicable
4.	Technical requirements for PTO shaft	Should meet the requirements of IS: 4931 -1995	Does not meet the requirement	No
5.	Dimensions of three point linkage	Should meet the requirements of IS: 4468 (Part-I)-1997	Does not meet the requirement	No
6.	Specifications of linkage drawbar	Should meet the requirements of IS: 12953-1990.	Meets the requirement	Yes
	Specification of swinging drawbar	Should meet the requirements of IS: 12362 Part 3-1994.	Not provided	--
7.	Accessories	Trailer hitch, front tow hook, linkage drawbar may be provided.	provided	Yes

7.2 Salient Observations:

7.2.1 Laboratory tests:

7.2.1.1 PTO Performance:

- i) The specific fuel consumption corresponding to maximum power was measured as **249** g/kWh against the declaration of 265 g/kWh, which is within the tolerance limit of IS: 12207-2014.

7.2.1.2 Power take off shaft :

- i) The PTO master shield is not provided .This should be looked into for safety point of view on the tractor.

7.2.1.3 Three point linkage:

- i) The lateral distance of the lower hitch point from the center line of the tractor not meet the requirements of IS 4468 (Part 1) 1998.

7.3 Recommendation with regard to safety on tractor:

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

- i) The inclination towards rear direction is less and no vertical adjustment for the operator's seat is provided.
- ii) The provision of the safety start switch for the engine and the engine STOP knob .
- ii) Provision for spark arresting device in exhaust system.

7.4 Adequacy of Literature supplied with machine:

7.4.1 The following literature has been supplied by the applicant.

- i) Operator's manual
- ii) Service (workshop) Manual
- iii) Part's catalogue

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- 7.4.2 The supplied literature was found adequate however following points need to be incorporated in operator's manual:
- i) As per operator manual, manufacture recommendations about periodic maintenance of the lubricating oils is different than the declaration in the technical specification .Which needs to be reviewed for the uniformity in the various submitted literature and technical specification.
 - ii) The service manual should be developed illustrating all the aspects of service/repair limits and process
 - iii) The literature should also be developed in other regional languages

8.0 Citizen charter

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given in the citizen charter	Remark
September 2016 to December 2016 4 Months	10 Months	Yes	--

TESTING AUTHORITY:

		
NITESH KUMAR VERMA AGRICULTURAL ENGINEER	C.V.CHIMOTE TEST ENGINEER	Y.K. RAO SENIOR AGRICULTURAL ENGINEER
 J.J.R.NARWARE DIRECTOR		

9. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
9.1	3.1.22.1(i),7.2.1.2(i),7.2.1.3(i),7.4.2	Observations will be studied & necessary corrective action will be incorporated.

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ANNEXURE-I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	
2.	PTO performance test	3.7
3.	Theoretical speed test	2.7
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.8
	TOTAL:	15.0