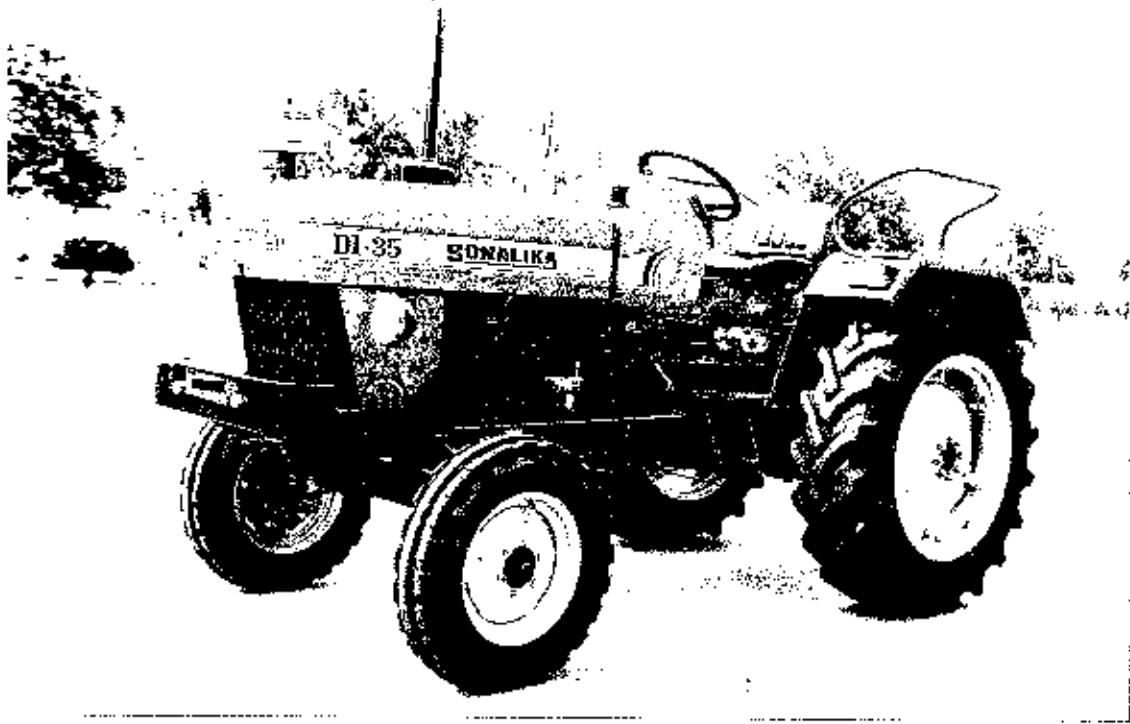


व्यावसायिक परीक्षण रिपोर्ट (प्रथम बैच परीक्षण)
COMMERCIAL TEST REPORT (1st Batch Test)

संख्या / No. : T-1471/1998/2020
माह / Month : August, 2020

(यह परीक्षण रिपोर्ट 31/08/2025 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/08/2025)



**INTERNATIONAL TRACTORS LIMITED,
SONALIKA INTERNATIONAL DI-35 SM 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, Cooperation & 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)

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

E-mail fnti-mp@nic.in

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

Telephone : 07564 - 234729, 234743

The "International Tractors Limited, Sonalika International DI-35 SM" tractor had undergone "Initial Commercial Test" at this Institute and a test report No. T- 910/1425/2014 was released in **February, 2014**. Thereafter, the firm had made modification in the technical specification of tractor and permanently incorporated and tested under supplementary test vide report No. T- 1072/1597/2017 released in **February, 2017**. Now the applicant has submitted an application vide letter no. Ref: R&D/F-18/Batch/37/DI-35 SM for batch testing of "International Tractors Limited, Sonalika International DI-35 SM" tractor.

All necessary tests as per Table-1 of clause 6.0 of IS: 5994 - 1998 (Reaffirmed in 2014) were carried out and test report released as under.

Manufacturer	:	M/s. International Tractors Limited, Vill.- Chak Gurjan, P.O.- Piplanwala, Jalandhar Road, Distt.- Hoshiarpur-146 022 (Punjab) India
Test requested by	:	The Manufacturer
Selected for test by	:	The testing authority
Place of running-in	:	At Manufacturer works
Duration of said running-in, (h):		
- Engine	:	35
- Transmission	:	Nil
Method of Selection	:	The test sample was selected randomly out of five tractors from the production line by the representative of testing authority.

Tractors Chassis serial number made available for random selection:

- i) FZJSS847609SM
- ii) FZJSS847610SM
- iii) FZJSS847611SM
- iv) FZJSS847612SM
- v) FZJSS847613SM

1. SPECIFICATIONS

1.1 Tractor:	
Make	: International Tractors Limited,
Model	: Sonalika International DI-35 SM
Brand name	: Sonalika
Variants, if any	: None
Type	: Four wheeled, rear wheel driven, standard agricultural tractor
Month & Year of manufacture	: 05/2019
Chassis number	: FZJSS847609SM
Country of origin	: India
1.2 Engine:	
Make	: International Tractors Limited
Model	: 3100FL
Type	: Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine
Serial number	: 3100FL93D843849F3
Year of manufacture	: Not available
Country of origin	: India
1.2.1 Engine speed (rpm), (Manufacturer's recommended production settings):	
- Maximum speed at no load	: 2150 to 2250
- Low idle speed	: 650 to 750
- Speed at maximum torque	: 1100 to 1300

15. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

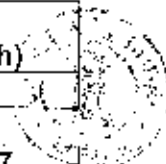
15.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluation (not-mandatory) parameter applicable for Qualifying Minimum Performance Criteria as per Clause-4 (Table-1) of IS: 12207-2019 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:-

S. No	Characteristic	Category (Evaluative/ Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant (D)/ Requirements (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
15.1.1	PTO Performance :					
a)	Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: ± 5 per cent for PTO Power & or engine power > 26 kW ± 10 per cent for PTO Power & or engine ≤ 26 kW	26.0 (D)	25.5	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	26.0 (D)	25.1	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	265 (D)	245	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	153(D)	158.4	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (D) 12 (R) Minimum	32.0	Yes
f)	Maximum operating temperature(^o 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)	104	Yes
	2) Coolant (liquid)	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)	108	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.50 (R) Maximum	1.32	Yes
h)	Smoke level, (m ¹)	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 (R) Maximum	0.11	Yes

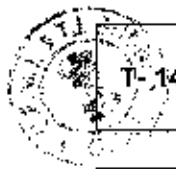


1	2	3	4	5	6	7
15.1.2	Drawbar performance:					
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	17.37(D) 17.37(R) Minimum	19.23	Yes
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without/ standard ballast	12.68(D) 12.84 (R) Minimum	14.11	Yes
c)	Maximum drawbar power without ballast, or with standard ballast as the 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 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.	19.8 (D) 20.4 (R) Minimum	21.0	Yes
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company.	130 (D)	88	Yes
15.1.3	Power lift and hydraulic pump performance :					
a)	Maximum lifting capacity throughout the range of lift, (kN):					
1)	At hitch points	Evaluative	±10 percent	14.00 (D) 7.84 (D)	14.03 10.91	Yes 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	6.00 (R) Minimum		
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) 50 (R) Maximum	30	Yes

1	2	3	4	5	6	7
15.1.4	Brake performance at 25 kmph:					
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)	7.81	Yes
2)	Hot brake	Evaluative	10	10 (R)	8.06	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	257 to 309	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
15.1.5	Noise measurement :					
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	80	Yes
b)	Maximum noise at operator's ear level : dB(A)	Evaluative	As per CMVR	96 (R)	91	Yes
15.1.6	Amplitude of mechanical vibrations at :					
1)	Left foot rest	Non Evaluative	100 microns (max)	100 Maximum (R)	43	Yes
2)	Right foot rest				79	Yes
3)	Seat (with operator)				46	Yes
4)	Steering wheel				239	No
15.1.7	Haulage requirements :					
a)	Gross mass of the trailers, (tones):					
-	Two wheel	Non	To be declared by the manufacturer	5.5	5.5	Yes
-	Four wheel	Evaluative		6.0	6.0	Yes
b)	Distance travelled / litre of fuel consumption. (km/l):					
-	Two wheel	Non	To be declared by the manufacturer	2 to 6	6.41 to 6.73	Yes
-	Four wheel	Evaluative		2 to 6	6.46 to 6.89	Yes
c)	Fuel consumption (ml/km/tonne):					
-	Two wheel	Non	To be declared by the manufacturer	20 to 50	27.05 to 28.35	Yes
-	Four wheel	Evaluative		20 to 50	24.18 to 25.75	Yes
15.1.8	Wetland cultivation :					
1)	Clutch assembly	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	No ingress of water and / or mud was observe during the ICT test vide Test report No. T- 910/1425/2014, February 2014.	Not applicable
2)	Brake housings	-do-				
3)	Front axle hubs	-do-				
4)	Engine Oil	-do-				
5)	Transmission Oil	-do-				



1	2	3	4	5	6	7
15.1.9	Safety features:					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulics pipes(as per IS-12239 Part 2)	Meet the requirements	Yes	
b)	Lighting arrangement	Evaluative	As per CMVR	Meet the requirements	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	Yes	
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meet the requirements	Yes	
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 drawbar	Evaluative	Should meet the requirements of IS 12953 (As amended from time to time)	Meet the requirements	Yes	
g)	Specifications of 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 travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 Kmph	11.70 (Meet the requirements)	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 shall 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 applicable	Not applicable	
15.1.10	Labelling of tractors (Provision of labelling plate):					
1)	Make	Evaluative	Should conform to the requirements of CMVR along with declared value of PTO in kW and year of manufacture in numerical MM YY	International Tractors Limited	Yes	
2)	Model	Evaluative		Sonalika International DI-35 SM	Yes	
3)	Month & Year of manufacture	Evaluative		05 / 2019	Yes	
4)	Engine number	Evaluative	Digit 01 12 in box No.1 for MM will represent the month and next two digit in the box No.2 for YY will represent the year of manufacturing	3100FL93D843849F3	Yes	
5)	Chassis number	Evaluative		1ZJSS847609SM	Yes	
6)	Declaration of PTO power, (kW)	Evaluative		28 (34.8)	Yes	

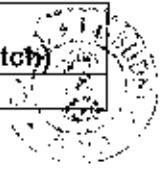


T-1471/1998/2020

INTERNATIONAL TRACTORS LIMITED, SONALIKA
INTERNATIONAL DI-35 SM TRACTOR - Commercial (1st Batch)
THIS TEST REPORT IS VALID UPTO: 31/08/2025

1	2	3	4	5	6	7
15.1.11	Discard limit for:					
a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by manufacturer	100.30	100.020 to 100.050	Yes
b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative	-do-	0.450	0.118 to 0.123	Yes
c)	Piston diameter, (mm)	Non Evaluative	-do-	99.200	99.922 to 99.929	Yes
d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	To be specified by Manufacturer	2.00	0.60 to 0.70	Yes
	- 2 nd comp. ring.			2.00	0.90 to 0.95	Yes
	- Oil ring.			2.00	0.70 to 0.85	Yes
e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	To be specified by Manufacturer	-	-Tapered-	--
	- 2 nd comp. ring.			0.15	0.040 to 0.042	Yes
	- Oil ring.			0.15	0.034 to 0.038	Yes
f)	Diametrical clearance of main bearings, (mm):					
	- Diametrical	Evaluative	To be specified by Manufacturer	0.40	0.092 to 0.135	Yes
g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	To be specified by Manufacturer	0.50	0.093 to 0.136	Yes
	- Axial			1.00	0.30	Yes
h)	Crankshaft end float, (mm)	Evaluative	To be specified by Manufacturer	0.60	0.15	Yes
i)	Clearance between king pin and bush, (mm)	Non Evaluative	To be specified by Manufacturer	1.00	0.095 to 0.142	Yes
j)	Clearance between center pin and bush, (mm)	Non Evaluative	To be specified by Manufacturer	1.00	0.094 to 0.146	Yes
15.1.12	Literature (Submission to test agency):					
a)	Operator manual	Evaluative	Literature should meet the requirement of Indian Standard : 8132	Provided	Provided	Yes
b)	Parts Catalogue			Provided	Provided	Yes
c)	Service manual			Provided	Provided	Yes
d)	Fitment of Roll Over Protective Structure (ROPS): for tractors having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard	Provided	Not Fitted	Not applicable
e)	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
f)	Optional Accessories	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

15.2	Category of breakdowns / defects (as per clause 5.0 of IS:12207-2019):					
1	Critical breakdown	Evaluative	There is no 'critical' breakdown' during the course of testing.	None	Yes	
2	Major breakdowns	Evaluative	There are not more than 1 major breakdowns and neither of them is of repetitive nature.	None	Yes	
3	Minor breakdowns	Evaluative	There are not more than 3 minor defects during the test and the frequency of each is not be more than two.	None	Yes	
4	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four that is, (1 major + 3 minor) or 4 minor breakdowns.	None	Yes	

**15.3 Salient Observations:****15.3.1 Laboratory tests:****15.3.1.1 PTO Performance Test:**

- i) The maximum PTO power was recorded as **25.5 kW** against the declaration of **26.0 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The rated PTO power was recorded as **25.1 kW** against the declaration of **26.0 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- iii) The specific fuel consumption corresponding to maximum power was recorded as **245 g/kWh** against the declaration of **265 g/kWh**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- iv) The maximum equivalent crankshaft torque was recorded as **158.4 N-m** against the declaration of **153.0 N-m**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- v) The backup torque is **32.0 %**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- vi) The drop in maximum PTO Power of **7.1%** was recorded between natural and high ambient condition, which is on higher side. Therefore, this should be looked into for necessary corrective action.

15.3.1.2 Drawbar performance test:

- i) The maximum drawbar power under unballast condition in case of previous and present sample was recorded as **24.7 kW & 21.0 kW** respectively. The drawbar power recorded in case of present sample is **17.6%** lower than the previous test sample.
- ii) The maximum drawbar pull corresponding to 15% wheel slip under unballasted condition in case of previous and present sample was recorded as **15.74 kN & 14.11 kN** respectively. The maximum drawbar pull recorded in case of present sample is **11.6%** lower than the previous test sample.

From the above, it indicate that the overall drawbar performance of the tractor was found deteriorated and this should be looked into.

- iii) During ten hour drawbar performance test, creeping of LHS & RHS rear tyre over the rims was recorded as **20 mm & 30 mm** respectively. This should be looked into for necessary corrective action.

15.3.1.3 Hydraulic performance test:

The moment about rear axle with standard frame was computed as **16.26 kN-m**, whereas, the moment about front axle was computed as **14.49 kN-m** under unballasted condition. The moment about rear axle with standard frame is on higher side as compared to the moment about front axle. Therefore, it is recommended that the lifting capacity of the hydraulic system may be reduced suitably or ballast mass recommendation may be reviewed to avoid the front lifting of the tractor.

15.3.1.4 Mechanical Vibration:

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

15.3.1.5 Specifications of three point linkage:

- i) The parameter lateral distance from lower hitch pint to centre line of tractor does not meet the requirement of IS: 4468 (Part-1) -1979 (Reaffirmed 2014). This should be looked into for necessary corrective action.
- ii) Some of the parameters of three point linkage conform to Cat. I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

**15.4 Maintenance / Service Problems:**

No noticeable maintenance / service problem was observed during the test.

15.5 Recommendation with regard to safety on tractor:

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

- i) Length of seat should be provided as per relevant standard.
- ii) Width of foot step should be provided as per relevant standard.
- iii) Inclination of back rest should be provided as per relevant standard.
- iv) Accidental start safety switch should be provided.
- v) The Fuel shut-off knob should remain in "STOP" position. This should be re-designed/ improved to enhance the safety.
- vi) Differential lock should be provided.
- vii) There should be provision for spark arresting device in exhaust system.
- viii) Provision of master shield in power take-off.
- ix) Provision for easy mounting and dismounting of operator should be provided.
- x) The working clearance between the mudguard and draft control lever should be provided as per relevant standard.

15.6 Adequacy of Literature supplied with machine:

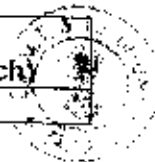
15.6.1 The following literature was supplied with the tractor for reference during the test.

- i) Operator's manual for Sonalika International DI-35 SM, DI-35 RX, DI-42 RX, DI-745 III RX, DI-45 RX TURBO, DI-52 RX, DI-55 RX, DI-55 RX TURBO, DI-60 RX MM, DI-60 RX MM SUPER, DI-60 RX TURBO, DI-750 III RX 4-CYL & DI-60 RX 4-CYL tractor models.
- ii) Spare part's catalogue for Sonalika International DI-35 SM, DI-35 RX, DI-42 RX, DI-745 III RX, DI-45 RX TURBO, DI-52 RX, DI-55 RX, DI-55 RX TURBO, DI-60 RX MM, DI-60 RX MM SUPER, DI-60 RX TURBO, DI-750 III RX 4-CYL & DI-60 RX 4-CYL tractor models.
- iii) Service manual (Part-I & II) for Sonalika International DI-35 SM, DI-35 RX, DI-42 RX, DI-745 III RX, DI-45 RX TURBO, DI-52 RX, DI-55 RX, DI-55 RX TURBO, DI-60 RX MM, DI-60 RX MM SUPER, DI-60 RX TURBO, DI-750 III RX 4-CYL & DI-60 RX 4-CYL tractor models.

15.6.2 The supplied literature was found in adequate as it does not cover the following information. Therefore, it is recommended that the relevant literature may be updated by incorporating the following information:

- i) Information related to PTO, Drawbar and hydraulic performance of the tractor such as Maximum torque, backup torque, Specific fuel consumption, Maximum drawbar Power & pull, hydraulic pump discharge rate, hydraulic power & lifting Capacities etc. should be included in the technical specification of the tractor for the guidance of the user's.
- ii) The Maintenance schedule for transmission oil, rear axle & final drive oil, hydraulic & brake oil and air cleaner oil given in operator's manual does not match with specification submitted by applicant.
- iii) List of matching implements, trailers and other farming equipments.
- iv) List of Standard fitments.
- v) List of accessories & supplied with the tractor.

15.6.3 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.

**16. Citizen charter**

Time frame for testing & evaluation as per citizen charter	Duration of Test	Whether the report released within time frame given in the citizen charter	Remark
10 Months	05 Months (February, 2020 to June, 2020)	Yes	None

TESTING AUTHORITY

PRAMOD YADAV
 AGRICULTURAL ENGINEER

C.V. CHIMOTE
 TEST ENGINEER

J.J.R. NARWARE
 DIRECTOR

The report compiled by: Shri Dev Vrat Kumar, Senior Technical Assistant.

17. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
17.1	15.6.2 (i), (ii), (iii), (iv) & (v)	Tractor literature will be updated as per your suggestions.
17.2	15.6.3	We are already publishing tractor literature in national as well as regional language.

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

LABORATORY AND TRACK TESTS		HOURS
1.	Running-in	40.0
2.	PTO Performance Test	12.2
3.	Power lift and hydraulic pump performance test	3.2
4.	Drawbar performance test	16.9
5.	Brake test	1.9
6.	Noise measurement	1.5
7.	Air cleaner oil pull over test	3.5
8.	Mechanical vibration test	1.0
9.	Theoretical speed test	0.8
B.	HAULAGE TEST	5.1
C.	Miscellaneous test and other run hours including idia run, transportation, trials and preparation for test	1.3
TOTAL:		87.4