

व्यावसायिक परीक्षण रिपोर्ट (प्रथम बैच परीक्षण रिपोर्ट) संख्या / No. : T-1466/1993/2020

COMMERCIAL TEST REPORT (First Batch Test)

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-22 4WD GRADENTRAC 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 fmti-mp@nic.in

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

Telephone : 07564 - 234729, 234743



T- 1466/1993/2020	INTERNATIONAL TRACTORS LIMITED, SONALIKA INTERNATIONAL DI – 22 4WD GARDENTRAC TRACTOR - Commercial (1 st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/08/2025

The "INTERNATIONAL TRACTORS, SONALIKA INTERNATIONAL DI-22 4WD GARDENTRAC" tractor had undergone "Initial Commercial Test" at this Institute vide test report No. T- 995/1519/2015 released in December, 2015. Now the applicant has submitted an application for batch testing of "INTERNATIONAL TRACTORS LIMITED, SONALIKA INTERNATIONAL DI-22 4WD GARDENTRAC" tractor.

All necessary tests as per Table-1 of clause 6 of IS: 5994 - 1998 (Reaffirmed in 2014) were carried out and test report released as under.

Manufacturer : M/s. International Tractors Limited,
Vill. Chak Gujran, P.O. Piplanwala,
Jalandhar Road,
Hoshiarpur(Pb). India – 146 022

Selected for test by : The testing authority
Place of running-in : At manufacturer's work place
Duration of said running-in, (h):
- Engine : 40
- Transmission : --
Method of Selection : The test sample was selected randomly out of five tractors from the production line by the representative of testing authority.

Details of tractors made available for random selection :

Sr. No.	Chassis Number
i)	EYJSS861284G22
ii)	EYJSS861321G22
iii)	EYJSS861897G22
iv)	EYJSS861828G22
v)	EYJSS861829G22

1. SPECIFICATIONS

- 1.1 Tractor:**
Make : International Tractors Limited
Model : Sonalika International DI – 22 4WD Gardentrac

Brand Name : None
Variants, if any : None
Type : Four wheeled, Four wheel driven, orchard agricultural Tractor.
Month & Year of manufacture : 07 / 19
Chassis number : EYJSS861284G22
Country of origin : India
- 1.2 Engine:**
Make : International Tractors Limited (apa)
Model : 3073 GT
Type : Four stroke, naturally aspirated, liquid cooled, indirect injection, diesel engine.
Serial number : 30/3GT93L009146F15

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) / Requirement (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: $\pm 5\%$ for PTO power or engine power >26 kW, $\pm 10\%$ for PTO power or Engine power ≤ 26 kW.	12.8 (D)	13.1	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	12.8 (D)	12.9	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	372 (D)	346	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	54 (D)	46.5	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12(D) 12 (R)	15.1	Yes
f)	Maximum operating temperature($^{\circ}$ 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)	114	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)	101	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	3.46 (R)	2.21	Yes
h)	Smoke level, (m^{-1})	Evaluative	Maximum light scattering coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 (R)	1.51	Yes



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1	2	3	4	5	6	7
15.1.2 Drawbar performance:						
a)	Maximum drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	5.9 (D) 5.83 Minimum (R)	7.61	Yes
b)	Maximum drawbar power with standard 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	9.16 (D) 9.8 Minimum (R)	12.1	Yes
c)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	130 (D)	84	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	6.0 (D)	6.39	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	3.0 (D) 3.08 Minimum (R)	4.73	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) 50 (R) Maximum	10	Yes
15.1.4 Brake performance at maximum attainable speed of 18.61 kmph:						
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with standard ballast, (m):					
	1) Cold brake	Evaluative	10	10 (R)	4.40	Yes
	2) Hot brake	Evaluative	10	10 (R)	4.50	Yes

1	2	3	4	5	6	7
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	435 to 460	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 (R)	297	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)	93	Yes
15.1.6 Amplitude of mechanical vibrations at :						
	1) Left foot rest	Non Evaluative	100 microns (max)	100(R)	43	Yes
	2) Right foot rest		-do-		95	Yes
	3) Seat (with driver seated)		-do-		70	Yes
	4) Steering wheel		-do-		183	No
15.1.7	Air cleaner oil pull over:	Evaluative	0.25 % (max.)	0.25 % (max.)	0.05	Yes
15.1.8 Haulage requirements:						
a) Gross mass of the trailers, (tones):						
	1) Two wheel	Non Evaluative	--	3.0 (D)	3.0	Yes
b) Distance travelled / litre of fuel consumption, (km/l):						
	1) Two wheel	Non Evaluative	--	4.75 to 5.66 (D)	5.27 to 5.67	Yes
c) Fuel consumption (ml/km/tonne):						
	1) Two wheel	Non Evaluative	--	58.33 to 70.12 (D)	58.8 to 63.3	Yes
15.1.9 Wetland cultivation :						
	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 recommenced for dry land operation only.	There should be no ingress of water and / or mud (R)	No ingress of water and / or mud was reported during initial commercial test of this tractor model tested vide test report No. T-995/1519/2015 released in December, 2015	Yes
	1) Clutch assembly	-do-				
	2) Brake housings	-do-				
	3) Front axle hubs	-do-				
	4) Engine Oil	-do-				
	5) Transmission Oil	-do-				



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1	2	3	4	5	6	7		
15.1.10	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 provided		Not applicable		
h)	1) Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 kmph	7,11 (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.	Not applicable		Not applicable		
15.1.11	Labelling of tractors (Provision of labelling plate):							
1)	Make	Evaluative	Should conform to the requirements of CMVR along with maximum declared value of PTO power in kW and for month & year of manufacture in numerical <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>MM</td><td>YY</td></tr></table> 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	MM	YY	INTERNATIONAL TRACTORS LIMITED		Yes
MM	YY							
2)	Model	Evaluative		Sonalika International DI - 22 4WD Gardentrac		Yes		
3)	Month & Year of manufacture	Evaluative		07 / 19		Yes		
4)	Engine number	Evaluative		3073GT93L009146 F15		Yes		
5)	Chassis number	Evaluative		EYJSS861284G22		Yes		
6)	Declaration of PTO power, kW	Evaluative		12.82		Yes		
7)	Specific fuel consumption (gm/kWh)	Evaluative	372		Yes			

1	2	3	4	5	6	7
15.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	73.96 (D)	72.996 to 73.030	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.30 (D)	0.051 to 0.080	Yes
(c)	Piston diameter at skirt, mm	Non Evaluative		72.905 to 72.880 (D)	72.949 to 72.950	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	1.5 (D)	0.25 to 0.30	Yes
	- 2 nd comp. ring.		-do-	1.5 (D)	0.35 to 0.40	Yes
	- Oil ring.		-do-	1.5 (D)	0.35 to 0.40	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	--	--Tapered--	--
	- 2 nd comp. ring.		-do-	0.20 (D)	0.036 to 0.040	Yes
	- Oil ring.		-do-	0.20 (D)	0.048 to 0.052	Yes
(f)	Diametrical clearance of main bearings (mm):	Evaluative	-do-	0.15 (D)	0.051 to 0.119	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.15 (D)	0.073 to 0.099	Yes
	- Axial	Evaluative	-do-	0.5 (D)	0.25 to 0.30	Yes
(h)	Crankshaft end float, mm	Evaluative	-do-	0.50 (D)	0.20	Yes
(i)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	Not applicable	Not applicable	--
(k)	Clearance between center pin and bush, (mm)	Non Evaluative	-do-	0.15 (D)	0.08 to 0.13	Yes
15.1.13	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
15.1.14	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
15.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
15.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes



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15.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2019):					
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the requirement (Yes/No.)
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 **13.1 kW** against the declaration of **12.8 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power was recorded as **346 g/kWh** against the declaration of **372 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as **46.5 N-m** against the declaration of **54 N-m**, which is within the permissible limit as specified in IS: 12207-2019.
- iv) The backup torque is **15.1 %** and meets the evaluative requirement of IS: 12207-2019.

15.3.1.2 Mechanical Vibration:

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

15.3.1.3 Components / Assembly Inspection

Discard limit of piston has not been specified in the specifications submitted by applicant. This should be look into for necessary corrective action.

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) The spark arrester should be provided in the exhaust system
- ii) There should be provision for safety against the accidental start
- iii) Working clearance around 2WD and 4WD engaging lever has been not provided as per the requirement.
- iv) Provision for mounting a canopy above the driver's seat.

15.6 Adequacy of Literature supplied with machine:

15.6.1

Following literature was supplied with the tractor for reference during the test.

- Service Manual for Sonalika international DI-22 Garden tractor 4WD, DI-20 Garden tractor 4WD & DI-26 Garden tractor 4WD.
- Parts Catalogue for Sonalika international DI-22 Garden tractor 4WD, DI-20 Garden tractor 4WD & DI-26 Garden tractor 4WD.
- Operator's manual for Sonalika international DI-22 Garden tractor 4WD, DI-20 Garden tractor 4WD & DI-26 Garden tractor 4WD.

15.6.2

The supplied literature was found adequate; except the following

- 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.
- Service manual does not contains information of mechanical oil immersed disc brake.

15.6.3

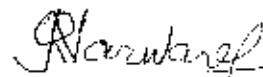
The literatures should also be brought out in national as well as other regional languages for the guidance of users and service personnel.

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	06 Months (February, 2020 to July, 2020)	Yes	-

TESTING AUTHORITY:

NITESH KUMAR VERMA
AGRICULTURAL ENGINEER

C.V. CHIMOTE
TEST ENGINEER

J.J.R. NARWARE
DIRECTOR

Test Report compiled by: Sh. Pratyush Satya, Senior Technical Assistant

17. Applicant's comments

Para No.	Our reference	Applicant's comments
17.1	15.6.2 (i), (ii)	We be updated in our literature.
17.2	15.6.3	We are already supplying tractor literature in national as well as regional languages.



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

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	40
2.	PTO Performance test	12.25
3.	Power lift and hydraulic pump performance test	4.5
4.	Drawbar performance test	13.57
5.	Air cleaner oil pull over test	3.6
6.	Brake test	1.0
7.	Noise measurement	1.50
8.	Mechanical vibration test	0.75
9.	Nominal speed test	1.08
B.	HAULAGE TEST	9.64
C.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	1.98
TOTAL:		89.87