

व्यावसायिक परीक्षण रिपोर्ट

संख्या/No. : T- 1904/2435/2024

INITIAL COMMERCIAL TEST REPORT

माह/Month : November, 2024

Application Reference No. 28/2023-24/126

(यह परीक्षण रिपोर्ट 30/11/2029 तक वैध है / THIS TEST REPORT IS VALID UPTO 30/11/2029)



Make of Agricultural Tractor : INTERNATIONAL TRACTORS LIMITED
Model : DI-60 CRDS
Manufactured by : International Tractors Limited,
Village - Chak Gujran, P.O - Piplanwala,
Jalandhar Road, Hoshiarpur - 146022 (Pb). India



भारत सरकार

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

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE & FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) 466 445

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

TRACTOR NAGAR, BUDNI (M.P.) 466 445

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IMPORTANT INFORMATION

The Government of India, Ministry of Agriculture and Farmers' Welfare has directed, vide OM No. 13-17/2021-M&T (I&P) dated 28.07.2022, that since 15th August, 2022, only mandatory tests will be carried out on a tractor unless applicant has expressly requested for optional tests as well, mentioned in the above captioned OM.

In the instant case, there is no request from the applicant to carry out the optional tests hence only Mandatory Tests, as given below, have been conducted and reported in this report: -

1. PTO performance
2. Hydraulic performance
3. Drawbar performance
4. Brake performance

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[C]	Tractor manufacturer's name and address	:	International Tractors Limited, Village - Chak Gujran, P.O - Piplanwala, Jalandhar Road, Hoshiarpur - 146022 (Pb).India
[C]	Submitted for test by (Applicant)	:	The Manufacturer
[C]	Selected for test by	:	The Ministry vides OM No. 13-17/2021 - M&T (I&P) dated 28.07.2022, has allowed the applicant to submit the test sample directly to the Institute without requiring any random selection for Initial Commercial Testing. Thus, the applicant directly submitted the test sample to the Institute for test.
[D]	Place of running-in	:	At manufacturer's works
[D]	Duration of running-in:		
	-Engine	:	30
	-Transmission	:	30
[C]	Location of test	:	Government of India, Central Farm Machinery Training and Testing Institute, P.O. - Tractor Nagar, BUDNI – 466445 (M.P.), INDIA

1. SPECIFICATIONS OF TRACTOR

1.1 Identification:

1.1.1 Denomination

[C]	Make of tractor	:	International Tractors Limited
[C]	Model	:	DI – 60 CRDS
[C]	Type	:	Rear wheel drive, Standard Agricultural Tractor
[C]	Month & year of manufacture	:	01 / 24
[D]	Country of origin	:	India

1.1.2 Numbers:

[D]	1 st Serial No. of prototype	:	KZDDK1382872S3
[C]	Serial No.	:	BZDDP1404491S3

1.2 Engine:

[D]	Manufacturer's address	:	International Tractors Limited, Vill. Chak Gujran, P.O. Piplanwala, Jalandhar Road, Hoshiarpur-146022 (Punjab).
[C]	Make	:	International Tractors Limited
[C]	Model	:	4107BM4
[C]	Type	:	Four strokes, naturally aspirated, liquid cooled, Common rail, Direct injection, diesel engine.
[C]	Serial No.	:	4107BM444A1387646F38

1.2.1 Cylinders:

[C]	Number/disposition	:	Four / vertical, inline
[D]	Bore / Stroke, (mm)	:	107 / 131
[D]	Capacity, cm ³	:	4712
[D]	Compression ratio	:	16.5:1
[D]	Arrangement of valves	:	Vertical Inline
[D]	Cylinder liners	:	Wet, replaceable
[D]	Type of combustion chamber	:	Direct Injection

1.2.2 Fuel system:

[C]	Fuel feed system	:	Gravity and force feed
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SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) / non-evaluative (non-mandatory) parameters applicable for Qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2022 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: 12207-2022	Values declared by the applicant/ (D) Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
MANDATORY TESTS: (As per Ministry's Office Memorandum No. 13-17/2021-M&T (I&P) dated 28th of July, 2022). (In the ensuing table, 'D' stands for applicant's declaration, whereas 'R' stands for requirement as per BIS test code)						
6.1.1 PTO Performance:						
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power and or engine power > 26 kW. $\pm 10\%$ for PTO power and or engine ≤ 26 kW.	41.8 (D)	42.2	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	41.8 (D)	42.2	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	Should not be more than 10% of declared value.	275 (D)	257	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non-Evaluative	$\pm 8\%$	252 (D)	237.5	Yes
e)	Back-up torque, percent	Evaluative	Should be min. 12%	12 (D) 12 (R)	17.9	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 natural ambient/high ambient condition should not exceed the declaration.	132 (D)	119	Yes
	2) Coolant	Evaluative	Observed value should not exceed the declared value or boiling point of coolant at radiator cap pressure whichever is lower. The boiling point of the coolant at radiator pressure shall be provided by the applicant.	118 (D)	102	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at Max power under natural ambient condition. The value would be based on the test conducted under natural ambient condition	2.57 Maximum (R)	0.28	Yes
h)	Smoke level, m^{-1}	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR). Max Smoke level shall be reported out of 6 readings tested as per IS 12062 and observed value should be well within the required limits.	3.25 per meter Maximum (R)	0.17	Yes

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1	2	3	4	5	6	7
6.1.2	Drawbar performance:					
a)	Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non-Evaluative	Minimum 70% of static mass of tractor with ballast.	--	--	Not applicable
b)	Max. drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	In case of tractors having total static mass \geq 1500 kg, Min 70% of static mass of tractor without ballast or with standard ballast, as the case may be. In case of light weight tractors having \leq 1500 kg total static mass of tractor, Min. 65% of static mass of tractor without ballast or with standard ballast, as the case may be.	19.1 (D) 18.64 (R) Minimum	20.74	Yes
c)	Maximum drawbar power without ballast/with standard 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 \leq 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.	33.5 (D) 33.8 (R) Minimum	34.5	Yes
d)	Maximum transmission oil temperature, ($^{\circ}$ C)	Evaluative	The declared value should not exceed the recommendation by the oil manufacturer. The observed value should not exceed the declared value throughout the drawbar test.	130 (D)	81	Yes
6.1.3	Power lift and hydraulic pump performance:					
a)	Maximum lifting capacity throughout the range of lift, (kN):					
	1) At hitch points	Evaluative	Should not be less than 90% of declared value.	18 (D) 16.20 (R) Minimum	19.62	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.	14 (D) 9.72 (R) Minimum	18.99	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	The observed value should not exceed 50 mm.	50 (D) Maximum	10	Yes

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1	2	3	4	5	6	7	
6.1.4	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)	7.11	Yes
	2)	Hot brake	Evaluative	10	10 (R)	7.30	Yes
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	Yes	Yes	
6.1.5	OPTIONAL TESTS: As the applicant has not applied for any optional tests, therefore no optional tests were conducted.						
6.1.6	Safety features:						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes [As per IS 12239 (Part2)]	Conforms	Yes		
b)	Lighting arrangement	Evaluative	As per CMVR	Conforms	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 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		
e)	Dimensions of three-point linkage	Non-Evaluative	Should meet the requirements of IS 17231: 2019 (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)	Conforms	Yes		
g)	Swinging drawbar (wherever fitted)	Non-Evaluative	Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time)	Not provided	Not applicable		
h)	Audible warning signal on tractor	Evaluative	If tractor travel speed in reverse gear exceeds 20 kmph, an audible warning signal on tractor shall get activated. A sticker to the effect that "operating the tractor beyond 20 kmph speed in reverse gear is not safe" should be prominently displayed.	Reverse Buzzer provided	Yes		

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1	2	3	4	5	6	7		
6.1.7	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, Specific fuel consumption (SFC) corresponding to maximum power in g/kWh and year of manufacture in numerical form <table border="1" style="margin: 5px auto;"><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 digits in the box No. 2 for YY will represent the year of manufacturing.	MM	YY	INTERNATIONAL TRACTORS LIMITED	Yes
	MM	YY						
	2)	Model	Evaluative		DI – 60 CRDS	Yes		
	3)	Month & Year of manufacture	Evaluative		01 / 24	Yes		
	4)	Engine number	Evaluative		4107BM444A1387 646F38	Yes		
	5)	Chassis number	Evaluative		BZDDP1404491S3	Yes		
	6)	Maximum PTO power, (kW)	Evaluative		41.8	Yes		
7)	Specific fuel consumption, (g/kWh)	Evaluative	275		Yes			
6.1.8	Literature (Submission to test agency):							
(a)	Operator manual	Evaluative	The printed literature in booklet form should be provided as per IS 8132 and should submit along with the test sample.	Provided	Yes			
(b)	Parts Catalogue	Evaluative		Provided	Yes			
(c)	Workshop/ Service manual	Evaluative		Provided	Yes			
6.1.9	Fitment of Roll Over Protective Structures (ROPS):							
	For tractor having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard.	ROPS fitted, meets the requirement of IS:11821(Part-2) as per clause 1.13 of this test report	Yes			
6.1.10	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Yes			
6.1.11	Accessories (optional)	Non Evaluative	Ballast weight, if fitted, should meet the requirement of CMVR	Provided	Yes			
6.2	CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2022):							
S. No.	Category of break-downs	Category (Evaluative / Non-Evaluative)	Requirements as per IS: 12207-2022	As observed	Whether meets the Requirement (Yes/No)			
1.	Critical	Evaluative	There is no 'critical breakdown' during the course of testing.	None	Yes			
2.	Major	Evaluative	There are not more than 2 major breakdowns and neither of them should be of repetitive nature.	None	Yes			
3.	Minor	Evaluative	There are not more than 5 minor defects during the test and neither of them should of repetitive nature.	None	Yes			
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed five that is, (2 major + 3 minor) or (1 major + 4 minor) or 5 minor breakdowns.	None	Yes			

6.3 Conformity with following IS:

- | | | | |
|-------|--|---|-------------------------|
| i) | Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS:10273 -1987 (Reaffirmed Year 2019)] | : | Conforms |
| ii) | Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed Year 2019)] | : | Conforms |
| iii) | Agricultural wheeled tractors – Rear mounted three-point linkage: Categories 1N,1, 2N, 2, 3N, 3, 4N & 4 [IS:17231-2019] | : | Does not conform |
| iv) | Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed Year 2022)] | : | Conforms |
| v) | Agricultural tractors- Operator’s seat technical requirement [IS12343 - 2021] | : | Does not conform |
| vi) | Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (Part 1) - 2018] | : | 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 Year 2019)] | : | Does not conform |
| viii) | Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133 - 2021] | : | Does not conform |
| ix) | Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays Part2 Symbols for agricultural tractors and machinery [IS: 6283(Part-1) - 2006 (Reaffirmed Year 2019) and IS: 6283 (Part-2) – 2007 (Reaffirmed Year 2019)] | : | Does not conform |
| x) | Agricultural Tractors and Machinery-Lighting device for travel on public roads (IS:14683-1999) (Reaffirmed Year 2019)] | : | Conforms |

6.4 Salient Observations:

6.4.1 Laboratory tests:

6.4.1.1 PTO performance test

During two hour max power test under high ambient condition, the average max power was observed as 42.4kW whereas in natural ambient it was recorded as 42.2kW. **Thus the power observed in natural ambient is less than the power observed under high ambient condition.** It should be looked into for corrective action.

6.4.1.2 Hydraulic performance test:

During lifting capacity test at coupled frame, the angle of rotation of mast was observed as 6.3 degree over the full range of lift against the minimum requirement of 10.0 degree which does not meet the non evaluative requirement of IS: 12224-1987. **This should be looked into necessary corrective action.**

6.4.1.3 Three-point linkage:

The following parameters does not meet the requirements of IS: 17231 (Part-I) – 2019 and needs to be looked into for necessary corrective actions:

- i) The dimensions viz. dia. of hitch pin hole & width of ball of upper & lower hitch points, lateral distance from lower hitch point to center line of tractor, distance from the end of power take off to center of lower hitch point does not meet the requirements of IS: 17231 (Part-I) – 2019. **This should be looked into for corrective action.**

6.4.1.4 Operator’s seat:

The following parameters do not meet the requirement of IS: 12343-2021.

- i) Provision for adjustment of driver’s mass has been specified as 50 to 120 kg against the requirement of 40 to 100 kg.
- ii) Longitudinal distance from SIP to the centre of Differential lock pedal was measured as 330 mm against the requirement of 410 to 720 mm.

Therefore, all of the above parameters should be looked into for necessary corrective action.

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6.4.1.5 Operator's work place:

The following parameters does not meet the requirement of IS: 12239 (Part-I) -2018.

- i) A vertical retainness on inner side of brake pedal have not been provided.
 - ii) Spark arresting device has not been provided in the exhaust system.
- Therefore, all of the above should be looked into for necessary corrective action.

6.4.1.6 PTO master shield:

PTO master shield has not been provided on tractor. Whereas it is essential requirement of IS12239 (part-II) This should be looked into for necessary corrective action.

6.5 Maintenance / Service Problems:

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

6.6 Recommendation with regard to safety on tractor:

- i) The hand accelerator lever, when moved away from the operator (i.e. forward) decreases the engine speed, which does not meet the requirement as laid down in Table - 1 of IS: 8133-2021.
 - ii) Identification of hand control by colour coding is not provided as per IS 8133-2021.
 - iii) Movement of clutch hand lever is not provided as per IS 8133-2021.
- Above parameters should be looked into for necessary corrective action.

6.7 Adequacy of Literature supplied with machine:


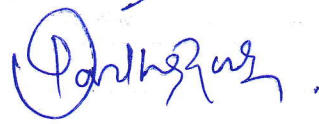

6.7.1 The following literatures were supplied with the test tractor for reference during the test: -

- a) Operator's manual for "International Tractors Ltd., DI-60 CRDS" tractor model.
- b) Part's catalogue for "International Tractors Ltd., DI-60 CRDS" tractor model.
- c) Service manual (Part-I & II) for "International Tractors Ltd., DI-60 CRDS" tractor model

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TEST CARRIED OUT AT C.F.M.T. & T.I., BUDNI (M.P.), INDIA

TESTING AUTHORITY

B.N. DIXIT AGRICULTURAL ENGINEER	
PARTHA LODH SENIOR AGRICULTURAL ENGINEER	
Dr. P.P. RAO DIRECTOR	

Draft Test Report compiled by B.N. Dixit, Agricultural Engineer.

7. APPLICANT'S COMMENTS

Para No.	Our reference	Applicants comments
7.1	6.4.1.2, 6.4.1.4 (i)	As the lifting capacity test at coupled frame was conducted in the Cat 1 hole. We are taking necessary corrective actions to overcome the problem.
7.2	6.6	We are discussing with our R&D team to amend as per the IS: 8133-2021.

ANNEXURE-I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	Applicant has declared that it has already been conducted on their work place.
2.	PTO performance test	20.7
3.	Power lift and hydraulic pump performance test	4.6
4.	Drawbar performance test	7.1
5.	Brake performance test	1.3
6.	Nominal speed test	1.1
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.2
TOTAL:		35.0