

व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (Initial)

संख्या / No. : T-1499/2026/2020
माह / Month : December, 2020

(यह परीक्षण रिपोर्ट 31/12/2023 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/12/2023)



JOHN DEERE 5050D V8 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

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Manufacturer : M/s. John Deere India Private Limited
Gat No . 166 - 167 & 271 - 291,
Off Pune - Nagar Road, Sanaswadi,
Pune– 412 208

Location of manufacturing plant : i) M/s. John Deere India Private Limited
Gat No . 166 - 167 & 271 - 291,
Off Pune - Nagar Road, Sanaswadi,
Pune– 412 208
ii) M/s. John Deere India Private Limited
Survey No. 501, Village – Khatamba
Jamgod, Dewas Bhopal Highway, Dewas
(Madhya Pradesh) 455115

Test requested by (applicant) : The manufacturer
Selected for test by : The testing authority
Place of running-in : At manufacturer's work place
Duration of said running-in, (h):
- Engine : 12
- Transmission : 18
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)	1PY5050DHLA040454
ii)	1PY5050DELA040455
iii)	1PY5050DCLA040456
iv)	1PY5050DTLA040457
v)	1PY5050DPLA040458

1. SPECIFICATIONS

1.1 Tractor:
Make : John Deere
Model : 5050D V8
Brand Name : None
Variants, if any : None
Type : Four wheeled, Four wheel driven (4WD),
General purpose, Standard Agricultural tractor.
Month & Year of manufacture : 02 / 20
Chassis number : 1PY5050DTLA040457
Country of origin : India

1.2 Engine:
Make : John Deere
Model : 3029DPY80
Type : Four stroke, Liquid cooled, Naturally aspirated, Direct injection, Diesel engine.
Serial number : PY3029D559985

1.2.1 Engine speed(Manufacturer's recommended production setting), (rpm):
- Maximum speed at no load : 2250 to 2350
- Low idle speed : 800 to 900
- Speed at maximum torque : 1100 to 1400
Rated speed, (rpm):
- For PTO use : 2100
- For drawbar use : 2100

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16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 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
16.1.1	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.	31.3 (D)	31.3	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	31.3 (D)	31.3	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	270 (D)	285	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	192 (D)	171.7	No
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 % (R)	20.6	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.	135 (D)	116	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.	120 (D)	106	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.85 (Maximum) (R)	0.42	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 (Maximum) (R)	0.45	Yes

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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	19.49 (D) 19.53 (R) Minimum	24.45	Yes
b)	Maximum drawbar pull with unballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without / standard ballast	13.73 (D) 13.76 (R) Minimum	18.50	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.	25.0 (D) 25.0 (R) Minimum	27.4	Yes
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company.	110 (D)	81	Yes
16.1.3	Power lift and hydraulic pump performance :					
a)	Maximum lifting capacity throughout the range of lift, (kN):					
	1) At hitch points	Evaluative	±10 percent	13.70 (D)	13.61	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.	12.20 (D) 7.37 (R) Minimum	12.76	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
16.1.4	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)	8.51	Yes
	2) Hot brake	Evaluative	10	10 (R)	8.64	Yes

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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)	206 to 281	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)	Yes	Yes
16.1.5	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)	94	Yes
16.1.6	Amplitude of mechanical vibrations at :					
1)	Left foot rest	Non Evaluative	100 microns (max)	100(R)	156	No
2)	Right foot rest		-do-		173	No
3)	Seat (with driver seated)		-do-		55	Yes
4)	Steering wheel		do-		61	Yes
16.1.7	Air cleaner oil pull over:					
	Maximum air cleaner oil pull over	Evaluative	0.25 % (max.)	Dry type air cleaner is fitted.	Not applicable	
16.1.8	Haulage requirements:					
a)	Gross mass of the trailers, (tones):					
1)	Two wheel	Non	--	5.0 (D)	5.0	Yes
2)	Four wheel	Evaluative	--	7.0(D)	7.0	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):					
1)	Two wheel	Non	--	4.0 to 6.0 (D)	4.64 to 4.92	Yes
2)	Four wheel	Evaluative	--	4.0 to 6.0 (D)	4.41 to 4.43	Yes
c)	Fuel consumption (ml/km/tonne):					
1)	Two wheel	Non	--	40 to 45 (D)	40.62 to 43.09	Yes
2)	Four wheel	Evaluative	--	40 to 45 (D)	32.24 to 34.54	No
16.1.9	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 recommended for dry land operation only.	There should be no ingress of water and / or mud (R)	No ingress of water and / or mud was observed	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
16.1.10	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 meets the requirements		No
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)	Meet the requirements		Yes
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	14.10 kmph (Meets the requirement)		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
16.1.11	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 MM YY 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.	John Deere		Yes
	2) Model	Evaluative		5050D V8		Yes
	3) Month & Year of manufacture	Evaluative		02 / 20		Yes
	4) Engine number	Evaluative		PY3029D55 9985		Yes
	5) Chassis number	Evaluative		1PY5050DT LA040457		Yes
	6) Declaration of PTO power, kW	Evaluative		31.3		Yes

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1	2	3	4	5	6	7
16.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	106.62(D)	106.491 to 106.513	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.32 (D)	0.120 to 0.127	Yes
(c)	Piston diameter at skirt, (mm)	Non Evaluative		106.30 (D)	106.382 to 106.390	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	0.75 (D)	0.40 to 0.45	Yes
	- 2 nd comp. ring.		-do-	2.00 (D)	0.70 to 0.75	Yes
	- Oil ring.		-do-	0.75 (D)	0.40	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	--	--Tapered--	Not applicable
	- 2 nd comp. ring.		-do-	0.25 (D)	0.046 to 0.053	Yes
	- Oil ring.		-do-	0.92 (D)	0.055 to 0.070	Yes
(f)	Diametrical clearance of main bearings (mm)	Evaluative	-do-	0.65 (D)	0.095 to 0.147	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.65 (D)	0.085 to 0.122	Yes
	- Axial	Evaluative	-do-	0.85 (D)	0.25	Yes
(h)	Crankshaft end float, mm	Evaluative	-do-	0.85 (D)	0.28	Yes
(j)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	Tapped roller bearing is provided.		Not applicable
(k)	Clearance between center pin and bush, (mm)	Non Evaluative	-do-	0.80 (D)	0.240 to 0.320	Yes
16.1.13	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
16.1.14	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
16.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
16.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

16.2 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 2 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 five that is, (2 major + 3 minor) or (1 major + 4 minor) or 5 minor breakdowns	None	Yes

16.3 Conformity with following IS:

- i) Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors [IS10273:1987 (Reaffirmed 2014)] : **Conforms**
- ii) Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 [IS:4931-1995 (Reaffirmed 2014)] : **Conforms**
- iii) Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468(Part-I):1997/ISO 730-1:1994 (Reaffirmed in Oct.,2017)] : **Conforms**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed October, 2017)] : **Conforms**
- v) Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed 2014)] : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (PT-1) 1996/ISO 4254-1:1989 (Reaffirmed October, 2017)] : **Does not conform**
- vii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (PT-2) 1999) (Reaffirmed 2014)] : **Does not conform**
- viii) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) IS: 8133-1983 (Reaffirmed 2014)] : **Conforms**
- ix) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays Part 2 Symbols for agricultural tractors and machinery [IS:6283 (Part-1)- 2006 and IS: 6283 (Part-2)-2007 (Reaffirmed 2014)] : **Does not conform**
- x) Agricultural Tractors and Machinery - Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed 2014)] : **Conforms**

16.4 Salient Observations:**16.4.1 Laboratory tests:****16.4.1.1 PTO Performance Test:**

- i) The maximum PTO power was recorded as **31.3 kW** against the declaration of **31.3 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 **285 g/kWh** against the declaration of **270 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as **171.7 N-m** against the declaration **192 N-m**, which does not meet the requirement of IS: 12207-2019 with regards to tolerance limit. Therefore, this should be looked into for necessary corrective action.
- iv) The backup torque is **20.6 %** and meets the evaluative requirement of IS: 12207-2019.
- v) The drop in maximum PTO Power of **6.1 %** was recorded between natural and high ambient condition, which is considered to be on higher side. Therefore, this should be looked into for necessary corrective action.

16.4.1.2 Drawbar performance test:

During ten hours drawbar performance test, creeping of LHS & RHS rear tyre over the rims was recorded as **Nil & 25 mm** respectively. This should be looked into for necessary corrective action.

16.4.1.3 Hydraulic performance test:

The lifting capacity with coupled frame was recorded as **12.76 kN** and the moment about rear axle was computed as **15.35 kN-m**, whereas moment about front axle is computed as **19.71 kN-m**. The moment about rear axle with coupled frame is on higher side as compared to moment about front axle. It is therefore recommended that the lifting capacity of hydraulic system may be reduced suitably or standard ballast recommendation may be reviewed to avoid front lifting of tractor.

16.4.1.4 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies / components marked as (*) in Chapter – 8 of this test report is on higher side. This calls for dampening down of vibrations especially on left & right foot rest to improve the operational comfort and service life of components.

16.4.1.5 Three point linkage:

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.

16.4.1.6 Haulage test:

Specific fuel consumption with four wheel trailer has been recorded as **32.24 to 34.54 ml/km/tonne** against the declaration of **40 to 45 ml/km/tonne**, which does not meet the requirement of IS: 12207-2019 as regards to tolerance limit. This should be looked into for necessary corrective action at production level.

16.5 Maintenance / Service Problems:

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

16.7 Recommendation with regard to safety on tractor:

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

- i) Longitudinal distance from seat index point to centre of steering control wheel should be as per relevant standard.
- ii) Longitudinal distance from seat index point to differential lock pedal should be as per relevant standard.
- iii) Working clearance between hydraulic position control lever and mudguard is less than the minimum requirement.
- iv) Vertical distance from seat index point to brake pedal is less than the minimum requirement.
- v) Grease lubricant frequency chart should be provided on the tractor.
- vi) Oil lubricant, type & frequency chart should be provided on the tractor.

16.6 Adequacy of Literature supplied with machine:

Following literatures of tractor models was supplied with the test sample for reference during the test.

- i) Operator's Manual of John Deere 5036D, 5038D, 5039D, 5042D, 5045D, 5050D, 5050D V8, 5105, 5105 4WD V2, 5205 and 5005 tractor models
- ii) Parts Catalogue Part-I, Part-II, Part-III & Part-IV of John Deere 5050D V8 tractor model.
- iii) Workshop / Repair Technical Manual Part-I, Part-II & Part-III of John Deere 5036D, 5038D, 5039D, 5042D, 5045D, 5050D, 5050D V8, 5105, 5105 4WD V2, 5205 and 5005 tractor models.

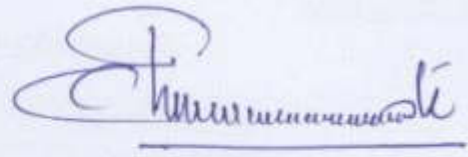
16.7 However, these literatures should be brought out in other vernacular languages of India for guidance of users.

17. CITIZEN CHARTER

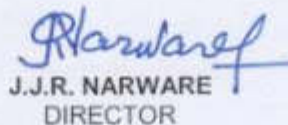
Time frame for testing & evaluation as per citizen charter	Duration of Test	Whether the report released within time frame given in the citizen charter	Remark
10 Months	07 Months (May, 2020 to November, 2020)	Yes	---

TESTING AUTHORITY:


PRAMOD YADAV
AGRICULTURAL ENGINEER



C.V. CHIMOTE
TEST ENGINEER



J.J.R. NARWARE
DIRECTOR

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18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
18.1	16.4.1.1 (iii), 16.4.1.4, 16.4.1.6 and 16.7 (v) & (vi)	Your valuable comments and suggestions for improvement are well taken. Under our policy of continuous product improvement these aspect are further being looked into and will try to eliminate these deviations soon wherever necessary.

ANNEXURE - I

BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST

S.No.	Item	Disc Plough	Rotavator	Puddler
1.	Make	Massey Ferguson	Sonalika	ACE
2.	Type	Mounted	Mounted	Mounted
3.	No. of bottom/blades	Two	36, in 6 flange	12, in 6 flange
4.	Type of bottom/blades	Plain concave	Hatchet shape	Notched
5.	Size of bottom/blades, (mm)	660	255 x 60 x 6	500
6.	Spacing of bottom/flanges, (mm)	510	250	180
7.	Lower hitch point span, (mm)	735	715	835
8.	Mast height, (mm)	540	610	510
9.	Overall dimensions, (mm):			
	- Length	1545	970	1020
	- Width	990	1780	2070
	- Height	1110	1080	1045
10.	Gross mass, (kg)	250	440	440

ANNEXURE - II

BRIEF SPECIFICATION OF HALF CAGE WHEEL

S. No.	Items	Specifications
1.	Type	Half cage wheel
2.	Dia, (mm)	1085
3.	Width, (mm)	340
4.	No. and types of lugs	12, straight lugs made up of MS-angle section welded to angle iron frame.
5.	Size of angle section, (mm)	50 x 50 x 6
6.	Length of lugs, (mm)	340
7.	Spacing of lugs, (mm)	275
8.	Weight of each cage wheels (kg)	60

ANNEXURE -III

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	12.7
3.	Drawbar performance test	15.3
4.	Power lift and hydraulic pump performance test	1.5
5.	Turning ability	0.5
6.	Location of centre of gravity	0.2
7.	Operator's field of vision	0.2
8.	Brake test	2.3
9.	Noise measurement	1.3
10.	Mechanical vibration test	1.0
11.	Theoretical speed test	1.1
B.	FIELD TEST:	
1.	Disc ploughing	10.7
2.	Rotavation	10.4
3.	Puddling (including water proof)	15.6
C.	HAULAGE TEST:	5.0
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	8.0
TOTAL:		85.8