

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

संख्या / No. : T-1523/2050/2021
माह / Month : March, 2021

(यह परीक्षण रिपोर्ट 31/03/2024 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/03/2024)



JOHN DEERE 5210 GEAR PRO 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)

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Manufacturer : M/s. John Deere India Pvt. Ltd.
Gat No . 166 - 167 & 271 - 291,
Off Pune - Nagar Road, Sanaswadi,
Pune- 412 208 (M.S.)

Location of other manufacturing plant : M/s. John Deere India Pvt. Ltd.
Survey No. 501, Village – Khatamba
Jamgod, Dewas Bhopal Highway, Dewas
(Madhya Pradesh) 455115

Test requested by (applicant) : M/s. John Deere India Pvt. Ltd.
Gat No . 166 - 167 & 271 - 291,
Off Pune - Nagar Road, Sanaswadi,
Pune- 412 208 (M.S.)

Place of running-in : At manufacture works place

Duration of said running-in, (h):

- Engine : 12

- Transmission : 12

Method of Selection : The tractor was submitted directly by the applicant for test as the ministry has exempted random selection of tractor upto 31.03.2021

1. SPECIFICATIONS

- 1.1 Tractor:**
- Make : John Deere
- Model : 5210 Gear Pro
- Brand, if any : None
- Type : Four wheeled, rear wheel driven, unit construction, standard Agricultural Tractor
- Month & Year of manufacture : 09 | 20
- Chassis serial number : 1PY5210EKLA006131
- First chassis serial number : PY3029T286511
- Country of origin : India
- Variants if any: : None
- 1.2 Engine:**
- Make : John Deere
- Model : 3029TPY74
- Type : Four stroke, turbo charged, water cooled, direct injection, diesel engine.
- Serial number : PY3029T286511
- Year of manufacture : 2020
- 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 : 1000 to 1300
- Rated speed, (rpm):**
- For PTO use : 2100
- For drawbar use : 2100

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Condition of clutch release bearing : Normal
Condition of pilot bearing : Normal
Condition of diaphragm springs. : Normal

Presence of oil in clutch housing : **None**
Any marks on fly wheel/pressure plate : **None**
Overall thickness of clutch plate,(mm) :
- Main transmission : 10.85 to 10.88 | Against discard limit of up to rivet head
- PTO : 7.74 to 7.77 | Against discard limit of up to rivet head

Height of lining over rivet head, (mm) :
- Main transmission : 2.84 to 3.21 | Against discard limit of up to rivet head
- PTO : 0.98 to 1.11 | Against discard limit of up to rivet head

14.3 Transmission gears:

Any visual damage, pitting & chipping of any transmission gear teeth : **None**
Backlash between crown wheel and Pinion, (mm) : 0.20 | Against discard limit of 0.60 mm

14.4 Brakes:

Description	Initial specified thickness of brake lining, (mm)	Measured thickness of brake lining after test, (mm)	Measured depth of oil groove of brake disc, (mm)	Minimum permissible depth of oil groove of brake disc, (mm)
Left	3.94 (on each side)	4.98 to 5.00	1.23 to 1.30	Up to oil groove depth
Right	3.94 (on each side)	4.97 to 5.01	1.17 to 1.29	

14.5 Front axle:

Any marked wear of king pins : **None**
Any marked wear of king pin bushes : **None**
Clearance between king pins and bushes, (mm) : 0.33 to 0.35 | Against discard limit of 0.80 mm
Condition of thrust bearings : Normal
Condition of bearings for stub axles (tapper roller bearing) : Normal
Condition of seals for stub axles and king pins : Normal
Clearance between centre pin and bush, (mm) : 0.38 to 0.39 | Against discard limit of 0.80 mm

14.6 Steering system:

Visual condition of the components of complete steering assembly : Normal

14.7 Starter motor & Alternator:

Presence of soil/oil in housing : **None**
Condition of bearings and other Components : Normal

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15. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustments/Defects/Breakdowns/Repairs	Tractor run hours
--	-None-	--

16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) / Non-evaluation (Non-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:

Sl. 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)	Maximum power under 2 hr test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of ± 5 percent for PTO power and or engine power > 26 kW ± 10 percent for PTO power and or engine ≤ 26 kW	31.5 (D)	31.2	Yes
b)	Power at rated engine speed, (kW)	Non-Evaluative	-do-	31.5 (D)	31.2	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+10 percent Max.	270 (D)	273	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non-Evaluative	± 8 percent	230.0 (D)	212.0	Yes
e)	Back-up torque, percent	Evaluative	12 percent	12 % (R) 12 % (D)	49.4	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.	135 (D)	116	Yes
	2) Coolant	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)	108	Yes
g)	Engine oil		Not exceeding 1% of SFC	1% of SFC (D)		

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1	2	3	4	5	6	7	
	consumption, (g/kWh)	Evaluative	at max. power under High ambient conditions	2.83 (R)	1.12	Yes	
h)	Smoke level	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 hatridge value (As per CMVR)	3.25 (D)	0.43	Yes	
16.1.2 Drawbar performance:							
a)	Max. drawbar pull with ballast, as the case may be corresponding to 15 percent wheel slip or 7 percent track slip, kN	Non-Evaluative	Minimum 70 percent of static mass with ballast	19.87 (D)	24.00	Yes	
				20.04 (R)			
b)	Max. drawbar pull without ballast as the case may be corresponding to 15 percent wheel slip or 7 percent track slip, kW	Evaluative	Minimum 70 percent of static mass of tractor without ballast or with standard ballast, as the case may be	13.83 (D)	17.85	Yes	
				14.00 (R)			
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.	25.2 (D)	27.4	Yes	
				25.0 (R)			
d)	Max. transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	110 (D)	80	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	[Tolerance of ± 10%]	19.31 (D)	19.86	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	16.57 (D)	13.56	Yes
					7.34 min (R)		
b)	Maximum drop in the height of the point of application of the force after each 5 min. interval for a total		Non-Evaluative	The observed value should not exceed 50 mm.	50	05	Yes

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	duration of 30 min/ mm					
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1	2	3	4	5	6	7	
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)	8.23	Yes
	2)	Hot brake	Evaluative	10	10 (R)	8.22	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² . (N)	Evaluative	600	600 (D) maximum (R)	164 to 220	Yes	
c)	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 (R)	Yes	Yes	
16.1.5	Noise measurement:						
a)	Maximum ambient noise emitted by the tractor at bystanders' position, dB(A)	Evaluative	88 dB(A) for >1.5 tonne GVW and 85 dB(A) for <1.5 tonne GVW (as per CMVR)	88 (Maximum) (R)	79	Yes	
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (Maximum) (R)	92	Yes	
16.1.6	Amplitude of mechanical vibrations at :						
	1)	Left foot rest	Non- Evaluative	100 microns (max)	100 (Maximum) (R)	146	No
	2)	Right foot rest				154	No
	3)	Seat (with driver seated)				57	Yes
	4)	Steering Wheel				137	No
16.1.7	Air cleaner oil pull over:	Evaluative	0.25 % (max.)	Dry type air cleaner is provided	Not applicable	Not applicable	
16.1.8	Haulage requirements:						
a)	Gross mass of the trailers, (tones):						
	1)	Two wheel	Non- Evaluative	--	5.0 (D)	5.0	Yes
	2)	Four wheel		--	7.0 (D)	7.0	Yes
b)	Distance traveled / liter of fuel consumption, (km/l):						
	1)	Two wheel	Non- Evaluative	--	4.0 to 6.0 (D)	3.94 to 4.02	Yes
	2)	Four wheel		--	4.0 to 6.0 (D)	3.76	Yes

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c)	Fuel consumption (ml/km/tonne):						
	1)	Two wheel	Non-Evaluative	--	40 to 45 (D)	50 to 51	No
	2)	Four wheel		--	40 to 45 (D)	38	Yes
1	2	3	4	5	6	7	
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	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-					
16.1.10	Safety features :						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulley, silencer, hydraulic 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		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)	Dimension of three-point linkage	Non-Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)		Meet the requirements		Yes
f)	Specification of linkage drawbars	Evaluative	Should meet the requirements of IS 12953 (as amended from time to time)		Meet the requirements		Yes
g)	Specification of Swinging drawbars	Evaluative	Should meet the requirements of IS 12362 (Part 3)		Not fitted		Not applicable
h)	1)	Maximum travelling speed at rated engine speed in reverse gears, Kmph	Evaluative	Should not exceed 20 kmph		21.06 kmph Meets the requirements with audible warning signal	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		Audible warning signal provided	Yes

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				manufacturer/dealer shall ensure the training on this aspect to operator before the delivery of tractor.		
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1	2	3	4	5	6	7
16.1.11	Labelling of tractors (Provision of labelling plate):					
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with maximum PTO power in kW and year of manufacture in numerical form MM YY Digit 01-12 in box No.1 for MM will represent the months & next two digits in box No.2 for YY will represent the year of manufacturing.	John Deere	Yes	
	2) Model	Evaluative		5210 Gear Pro	Yes	
	3) Month & Year of manufacture	Evaluative		09 20	Yes	
	4) Engine number	Evaluative		PY3029T286511	Yes	
	5) Chassis number	Evaluative		1PY5210EKLA00 6131	Yes	
	6) Declaration of PTO power, (kW)	Evaluative		31.5	Yes	
16.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer	106.77 (D)	90.896 to 90.922	Yes
(b)	Piston to cylinder liner Clearance at skirt (mm)	Non-Evaluative		0.32	0.097 to 0.115	Yes
(c)	Piston Diameter	Non-Evaluative	-do-	106.30	90.805 to 90.810	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring	Evaluative	-do-	0.75	0.30 to 0.35	Yes
	- 2 nd comp. ring		-do-	2.00	0.55 to 0.60	Yes
	- Oil ring		-do-	0.75	0.45	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring	Evaluative	-do-	0.20		--
	- 2 nd comp. ring		-do-	0.10	0.072 to 0.077	Yes
	- Oil ring		-do-	0.92	0.032 to 0.035	Yes
(f)	- Diametrical clearance of main bearings	Evaluative	-do-	0.65	0.50	Yes
(g)	Clearance of big and small end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.65	0.053 to 0.063	Yes
	- Axial	Evaluative	-do-	0.85	0.15 to 0.20	Yes
(h)	- Crankshaft end float	Evaluative	-do-	0.85	0.20	Yes
(i)	Clearance between centre pin and bush, (mm)	Non-Evaluative	-do-	0.80	0.065 to 0.115	Yes
16.1.13	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	As per relevant IS- 8132 As per relevant	Provided	Yes
(b)	Parts Catalogue	Evaluative			Provided	Yes
(c)	Workshop/service manual	Evaluative			Provided	Yes

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1	2	3	4	5	6	7
16.1.14	Fitment of Roll Over Protective Structures (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.	----	Not fitted	Not applicable
16.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor	---	Provided	Yes
16.1.16	Accessories (optional)	Non-Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	---	Not fitted	Not applicable

16.1.17 CATEGORY OF BREAKDOWNS / DEFECTS:					
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	No critical breakdown	None	Yes
2.	Major breakdowns	Evaluative	Not more than two and neither of them should be repetitive in nature	None	Yes
3.	Minor breakdowns	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

16.2 Salient Observations:

16.2.1 Laboratory tests:

16.2.1.1 PTO Performance:

- i) The maximum PTO power was recorded as **31.2 kW** against the declaration of **31.5 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 **273 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 **212.0 N-m** against the declaration of **230.0 N-m**, which is within the tolerance limit of IS: 12207-2019.
- iv) The backup torque is **49.4 %** & meets the evaluative requirement of IS12207-2019.

16.2.1.2 Drawbar performance:

- i) Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN) was recorded as **17.85 kN** against the minimum requirement of **14.00 kN**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) Maximum drawbar power without ballast condition was recorded as **27.4 kW** against the minimum requirement of **25.0 kW** which meets the evaluative requirement of IS: 12207-2019.

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16.2.1.3 Hydraulic performance:

- i) The maximum lifting capacity at hitch points was observed as **19.86 kN** against the declared value of **19.31 kN** which is within the tolerance limit as specified in the IS: 12207-2019.
- ii) Maximum lifting capacity throughout the range of lift at hitch point and standard frame was recorded as **19.86 kN & 13.56 kN** respectively against the declaration of **19.31 kN & 16.57 kN** respectively, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- iii) The moment about rear axle at hitch point & standard frame was calculated as **19.66 & 21.70 kN-m**. Whereas, the moment about front axle was calculated as **14.31 kN-m** under unballasted condition & **20.76 kN-m** under ballasted condition. The moment about rear axle at hitch point & standard frame are 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.

16.2.1.4 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies marked as (*) in Chapter-8 of this test report is on higher side, especially at the steering control wheel and foot rest. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

16.2.1.5 Three Point Linkage:

Some of the parameters of three-point linkages conform to Cat I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvements may be incorporated.

16.3 Field and haulage test:

16.3.1 Wet land cultivation (Puddling operation):

No ingress of mud/or water was noticed during puddling operation of the tractor. Hence, It meets the requirements of IS:11082-1984 (Technical requirements of agricultural tractors for wetland operation). The tractor is found suitable for wetland operation (Puddling).

16.3.2 Haulage test:

The unit fuel consumption (**ml/km/tonne**) with two-wheel trailer was recorded as **50 to 51 ml/km/tonne** against the declaration of **40.0 to 45.0 ml/km/ton** & does not meet the declaration. This should be looked into for necessary corrective action.

16.4 Maintenance / Service Problems:

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

16.5 Recommendation with regard to safety on tractor:

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

- i) Vertical distance from SIP to center line of clutch and brake pedal.
- ii) Longitudinal distance from SIP to center line of differential lock pedal.
- iii) Provision of Vertical retainness of inner side of clutch pedal.
- iv) Working clearance between position control lever and mud guard.
- v) The direction of motion of hand operated accelerator lever shall be provided as per IS:8133-1983 (reaffirmed in 2014).


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- 16.6 Adequacy of Literature supplied with machine:
 16.6.1 The following literature was supplied with the tractor for reference during the test & found adequate.
- Operator's manual for 5310, 5050E, 5210, 5055E, 5060E, 5065E, 5075E, 5405 and 5210 Gear Pro Tractors.
 - Parts Catalogue for 5210 and 5210 Gear Pro tractor.
 - Workshop / technical manual for 5310, 5050E, 5210, 5055E, 5060E, 5065E, 5075E, 5405, and 5210 Gear Pro Tractors.
- 16.6.2 These literatures may also be brought out in National & other regional languages for guidance of users.

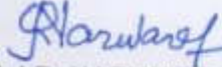
17. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	04 Month (December, 2020 to March, 2021)	Yes	None

TESTING AUTHORITY:


C.S. RAGHUWANSHI
 AGRICULTURAL ENGINEER


C. V. CHIMOTE
 TEST ENGINEER


J.J.R. NARWARE
 DIRECTOR

Test report compiled by Shri. Shivkumar Sharma, Senior Technical Assistant.

18. APPLICANT'S COMMENTS

Para no.	Our reference	Comments
18.1	16.2.1.3 (iii), 16.3.1.4, 16.3.2 & 16.5	Your valuable comments & suggestions for improvements are well taken. Under our policy of continuous product improvement these aspects are further being looked into and will try to eliminate these deviations soon wherever necessary.

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ANNEXURE - I

BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST

S. No.	Item	Disc Plough	Rotavator	Puddler
1.	Make	Massy Ferguson	Maschio	ACE
2.	Type	Mounted	Mounted	Mounted
3.	No. of bottom/blades	Two	42	12 in six flange
4.	Type of bottom/blades	Plain concave	Hatched	Notched
5.	Size of bottom/blades, (mm)	660	275 x 75 x 8	500
6.	Spacing of bottom/flanges, (mm)	510	200	180
7.	Lower hitch point span, (mm)	735	800	835
8.	Mast height, (mm)	540	600	510
9.	Overall dimensions, (mm):			
	- Length	1540	910	1020
	- Width	990	1630	2070
	- Height	1110	1070	1045
10.	Gross mass, (kg)	250	380	440

ANNEXURE –II

BRIEF SPECIFICATION OF HALF CAGE WHEEL

S. No.	Particular	Specification
1	Type	Half cage wheel
2	Outer dia., (mm)	1085
3	Width, (mm)	340
4	No. & type of lugs, (mm)	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 lug, (mm)	340
7	Spacing of lugs, (mm)	275
8	Weight of each cage wheel, (kg)	60

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ANNEXURE –III

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	18.1
3.	Drawbar performance test	17.5
4.	Power lift and hydraulic pump performance test	2.0
5.	Turning ability & steering effort	0.5
6.	Location of centre of gravity	0.5
7.	Operator's field of vision	0.5
8.	Brake test	2.2
9.	Noise measurement	1.5
10.	Mechanical vibration test	1.0
11.	Theoretical speed test	0.8
B.	FIELD TEST:	
1.	Disc ploughing	12.9
2.	Rotavation	10.5
3.	Puddling (including 5.0 hours water proof test)	15.2
C.	HAULAGE TEST:	5.3
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	1.7
	TOTAL:	90.2