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NEW HOLLAND 4010 A TRACTOR



सत्यमेव जयते

भारत सरकार

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

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO : 9001 - 2008 Certified Institute)

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T- 1019/1543/2016

NEW HOLLAND 4010 A TRACTOR Commercial (Initial)

Manufacturer

M/s. New Holland Fiat (India) Pvt. Ltd., Plot NO.-3, Udyog Kendra, Greater Noida – 201 306, Distt. Gautam Budh Nagar, (Uttar Pradesh)

Test requested by

: The manufacturer

Selected for test by

: The manufacturer

Place of running-in

: At manufacturer's works

Duration of said running-in, (h):

- Engine

: 50

- Transmission

: 50

Method of Selection

The tractor was submitted directly by the applicant for test. Hence, method of selection is not known.

1. SPECIFICATIONS

1.1 Tractor:

Make

: New Holland

Model

: 4010 A

Brand name

: NA

*Variants. If any:

:

S.No.	Variants Model	Variant Feature
1.	New Holland 4010 A1	High speed

*The variant models have not been tested at this Institute yet.

Type

: Four wheeled, Rear-wheel driven, Standard Agricultural Tractor.

Year of manufacture

: EL, i.e.(2014,November)

Chassis number

: NHN40100ZEL307819

Country of origin

: India

1.2 Engine:

Make

: SIMPSON

Model

: T-III A S325/NH.2-F1.4

Type

: Four stroke, water cooled, direct injection, naturally aspirated, diesel engine.

Serial number

: G10013

Country of origin

: India

1.2.1 Engine speed (rpm), (Manufacturer's recommended production settings):

- Maximum speed at no load

: 2130 to 2200

- Low idle speed

: 600 to 800

- Speed at maximum torque

: 1200 to 1500

Rated speed, (rpm):

- For PTO use

: 2000

- For drawbar use

: 2000

1.3 Cylinder & Cylinder Head:

Number

: Three

Disposition

: Vertical, Inline

Bore/stroke, (mm)

: 91.4 / 127 (apa)



17. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

17.1 Evaluative (mandatory) / Non-evaluative (Non-mandatory) parameters applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2014 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: 12207-2014	Values declared by the applicant / (D) Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
17.1.1 PTO Performance :						
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26 kW. -7.5/+10% for PTO power ≤ 26 kW or -5 / +10% for Engine power >26 kW. -7.5/+10% for Engine power ≤ 26 kW	26 (D)	26.4	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	26 (D)	26.4	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	265 (D)	262	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	152 (D)	149.6	Yes
e)	Back-up torque, percent	Non Evaluative	10 percent, min.	15 (D)	18.5	Yes
f)	Maximum operating temperature, (°C)					
1)	Engine oil	Non 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)	125	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.	119 (D)	90	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.64 Maximum (R)	0.35	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 per meter Maximum (R)	0.25	Yes

rd limit wear 0.2 mm above lead.

rd limit wear up mm above the lead.

t the discard 0.60 mm.

Minimum permissible height of brake lining above oil groove, (mm)	0.20
---	------

st the discard of 0.50 mm.

st the discard of 0.50 mm.

Tractor run hours	39.4
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1	2	3	4	5	6	7
17.1.2 Drawbar performance :						
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	18.0 (D)	20.21	Yes
				16.03 (R) Minimum		
b)	Max. drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast or with standard ballast, as the case may be	13 (D)	14.46	Yes
				11.51 (R) Minimum		
c)	Maximum drawbar power 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 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.	20.8(D)	22.5	Yes
				21.1(R) Minimum		
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	130 (D)	83	Yes
17.1.3 Power lift and hydraulic pump performance :						
a) Maximum lifting capacity throughout the range of lift, (kN):						
1)	At hitch points	Non Evaluative	[Tolerance of minus 10%]	10.78 (D)	11.0	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	8.69 (D) 6.21 (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 Minutes, (mm)	Non Evaluative	The observed value should not exceed 50 mm	50 (D) Maximum	06	Yes

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6	7
20.21	Yes
14.46	Yes
22.5	Yes
83	Yes
11.0	Yes
9.22	Yes
06	Yes

1	2	3	4	5	6	7	
17.1.4 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)	6.67	Yes	
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)						
	2) Hot brake	Evaluative	10	10 (R)	6.97	Yes	
c)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)						
	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever		Evaluative	600	600 (R) Maximum	202 to 221	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	Yes	Yes
17.1.5 Noise measurement :							
a)	Maximum ambient noise emitted by the tractor dB(A)						
			Evaluative	As per CMVR	88(R)	81	Yes
b)	Maximum noise at operator's ear level dB(A)						
			Evaluative	As per CMVR	96(R)	94	Yes
17.1.6 Amplitude of mechanical vibrations at:							
1)	Left foot rest		Non Evaluative	100 microns (max)	100(R)	260	No
	Right foot rest					200	No
	Seat (with driver seated)					100	Yes
	Steering wheel					70	Yes
17.1.7 Air cleaner oil pull over test :-							
Air cleaner oil pull over, max. oil pull over (%)		Non Evaluative	0.25 %(Max)	0.25 %(Max)	0.11	Yes	
17.1.8 Haulage requirements :-							
a)	Gross mass of the trailers, (tones):						
	1) Two wheel	Non Evaluative	--	4.5 (D)	4.5	Yes	
b)	Distance travelled / liter of fuel consumption, (km/l):						
	2) Four wheel	Evaluative	--	6.5 (D)	6.5	Yes	
c)	Distance travelled / liter of fuel consumption, (km/l):						
	1) Two wheel	Non Evaluative	--	4.0 to 6.0(D)	5.51 to 5.55	Yes	
d)	Fuel consumption (ml/km/tonne):						
	2) Four wheel	Evaluative	--	4.0 to 6.0(D)	4.86 to 5.01	Yes	
e)	Fuel consumption (ml/km/tonne):						
	1) Two wheel	Non Evaluative	--	25 to 50(D)	40.02 to 40.29	Yes	
f)	Fuel consumption (ml/km/tonne):						
	2) Four wheel	Evaluative	--	25 to 50(D)	30.68 to 31.61	Yes	



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1	2	3	4	5	6	7	
17.1.9	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 mud and / or water was observed	Yes
	1)	Clutch assembly	-do-				
	2)	Brake housings	-do-				
	3)	Front axle hubs	-do-				
	4)	Engine Oil	-do-				
5)	Transmission Oil	-do-					

17.1.10 Safety features :						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 (Part2))	--	Meets the requirements	Yes
b)	Lighting arrangement	Evaluative	As per CMVR	--	Meets 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	Non Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	--	Does not Meets the requirements	No
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	--	Meets the requirements	Yes
f)	Specifications of linkage	Non Evaluative	Should meet the requirements of IS 12953 and IS 12362 (Part 3) (As amended from time to time)	--	Does not Meets the requirements	No
	Swinging drawbar			--	Not Provided	Not applicable

17.1.11 Labelling of tractors (Provision of labelling plate):						
1)	Make	Evaluative	Should conform to the requirements of CMVR	-	New Holland	Yes
2)	Model	Evaluative		-	4010 A	Yes
3)	Year of Manufacture	Evaluative		-	ELi.e.2014, November	Yes
4)	Engine number	Evaluative		-	G10013	Yes
5)	Chassis number	Evaluative		-	NHN40100ZEL 307819	Yes
6)	Declaration of PTO power, (kW) (Ps)	Evaluative		-	26.0	

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6	7
gress of and / or ter was served	Yes

ets the ements	Yes
ets the ements	Yes
ot Meets the ements	No
ot Meets the ements	No
ets the ements	Yes
ot Meets the ements	No
rovided	Not applicable

Holland	Yes
10 A	Yes
2014, ember	Yes
0013	Yes
100ZEL	Yes
819	
5.0	

1	2	3	4	5	6	7
Additional information						
7)	Total Permissible Mass,(kg)			--	2525	Yes
8)	Permissible front axle load,(kg)			-	From 690 to 850	Yes
9)	Permissible rear axle load,(kg)			-	From 980 to 1675	Yes
10)	Independently braked towable mass,(kg)			-	Not Specified	Yes
11)	Towable mass with assisted braking system,(kg)			-	Not Specified	Yes
12)	Unbraked towable mass ,(kg)			-	Not Specified	Yes
13)	Inertia braked towable mass,(kg)			-	Not Specified	Yes
	Name of Manufacturer			-	New Holland Fiat (India) Pvt. Limited. Plot No. 03,Udyog Kendra ,Greater Noida- 201306	Yes
17.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer and supported by the printed literature	91.68 (D)	91.47 to 91.49	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.50 (D)	0.151 to 0.163	Yes
(c)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	1.50(D)	0.40 to 1.05	Yes
	- 2 nd comp. ring.		-do-	1.50(D)	0.40 to 1.00	Yes
	- Oil ring.		-do-	1.50(D)	0.40 to 0.50	Yes
(d)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	0.50 (D)	Tapered rings	Yes
	- 2 nd comp. ring.		-do-	0.50 (D)	0.042 to 0.078	Yes
	- Oil ring.		-do-	0.50 (D)	0.053 to 0.060	Yes
(e)	Clearance of main bearings (mm):					
	- Diametrical clearance	Evaluative	-do-	0.60 (D)	0.086 to 0.109	Yes
	- Crankshaft end float	Evaluative				0.75 (D)
(f)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.60 (D)	0.086 to 0.106	Yes
	- Axial	Evaluative	-do-	0.75 (D)	0.12	Yes
(g)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.50 (D)	0.147 to 0.246	Yes
(h)	Clearance between centre pin and bush, (mm)	Non Evaluative	-do-	0.50 (D)	0.226 to 0.309	Yes



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1	2	3	4	5	6	7
17.1.13 Literature (Submission to test agency)						
(a)	Operator manual	Evaluative	Provided/ Not Provided	As per relevant IS Code (IS 8132)	Provided	Yes
(b)	Parts Catalogue	Evaluative	Provided/ Not Provided	As per relevant IS Code (IS 8132)	Provided	Yes
(c)	Workshop/ Service manual	Evaluative	Provided/ Not Provided	As per relevant IS Code (IS 8132)	Provided	Yes
17.1.14 CATEGORY OF BREAKDOWNS / DEFECTS :						
Sl. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	As observed	Whether meets the requirements (Yes/No.)	
1.	Critical	Evaluative	No critical breakdown	None	Yes	
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature	One	Yes	
3.	Minor	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	

17.2 Optional requirements as per Clause-4 (Table-2) of IS:12207-2014:				
S.No.	Characteristic	Requirements as per IS: 12207-2014	As observed	Remarks
1.	Fitment of ROPS	With a provision for fitment of ROPS.	Not provided	Not applicable
		If ROPS fitted it should meet the requirement of IS: 11821 (As amended from time to time) or equivalent International Standards	ROPS not provided	Not applicable
2.	Accessories	Trailer hitch, front tow hook, may be provided.	Provided	Yes

17.3 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 in March, 2009)] : **Conforms**
- ii) Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3(third revision)[IS: 4931-1995 (Reaffirmed in March, 2009)] : **Does not conform**
- iii) Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468 (Part-I):1997 (Reaffirmed in March, 2007)/ISO 730-1:1994] : **Conforms**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in March, 2007)] : **Does not conform**



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6	7
Provided	Yes
Provided	Yes
Provided	Yes
Whether meets the requirements (Yes/No.)	
Yes	
Yes	
Yes	
Yes	

- v) Agricultural tractors – Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in March, 2009)]. : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : [IS 12239 (PT-1)-1996 (Reaffirmed in March, 2009)/ISO 4254-1:1989]. : **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 in March, 2009)]. : **Does not conform**
- viii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1 & Part-2) –2006 & 2007(Reaffirmed in March, 2009)/ISO 3767-2:1991)]. : **Does not conform**
- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Reaffirmed in March, 2009)]. : **Does not conform**
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in March, 2009)] : **Conforms**

17.4 Salient Observations:

17.4.1 Laboratory tests:

17.4.1.1 PTO Performance:

- i) The backup torque is 18.5%.
- ii) The specific fuel consumption corresponding to maximum power was measured as 262 g/kWh against the declaration of 265 g/kWh, which meet the requirement of IS:12207-2008 with regard to tolerance..

17.4.1.2 Drawbar performance test:

- i) During ten hours drawbar test, creeping of LHS & RHS rear tyre over the rims was observed as 32 mm & 45 mm respectively. This should be looked into for necessary corrective action.

17.4.1.3 Mechanical Vibration:

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

17.4.1.4 Operator's seat:

- i) Length of seat & Width of seat does not meet the requirements of IS: 12343-1998.
- ii) Longitudinal distance of differential lock pedal from SIP does not meet the requirements of IS: 12343-1998.
- iii) Vertical distance of SIP from foot rest does not meet the requirements of IS: 12343-1998.
- iv) Inclination of seat towards rear direction (in degrees) does not meet the requirements of IS: 12343-1998. This should be looked into for necessary corrective action

Remarks

Not applicable
Not applicable
Yes

onform

onform



- 17.4.1.5 Location and operation of operator's control:**
The working clearance around the liftomatic push button & position control lever does not meet the requirement of the IS: 12239 (Part-2)-1999. This should be looked into for necessary corrective action.
- 17.4.1.6 Three point linkage:**
i) Some of the parameters of the three point linkage conform to Cat. I and some of them conform to Cat.II. Keeping in view of the spirit of standardization, the necessary improvements may be incorporated.
- 17.4.1.7 Linkage drawbar :**
i) The length of linkage drawbar "A" & "G" refers fig.1 (B) does not meet the requirement of the IS: 12953-1995. This should be looked into for necessary corrective action.
- 17.4.1.8 Symbols of operator's control and other displays [Conformity with IS: 6283 (Part 1 & 2)-1998]:**
The symbols for following controls were not provided as per the requirements of Indian Standard and calls necessary improvement.
i) Oil lubricant, type and frequency has been not provided.
ii) Grease lubricant frequency has been not provided.
- 17.4.1.9 Recommendation with regard to safety on tractor:**
The following requirements, inter alia, may be considered for incorporation on the tractor:
i) Provision for spark arresting device in exhaust system.
ii) Provision of PTO shaft master shield.
- 17.4.2 Field performance test:**
- 17.4.2.1 During the rotavation operation the power take-off shaft got broken due to operation with rotavator in stony field. After dismantling the broken PTO shaft it has been observed that ,the damaged PTO shaft with press fitted gear (56T) bearing part no. 84548784 shaft was replaced with new one of same specification .This breakdown categorized under Major -13 (Mj-13) as IS:12207-2014.**
This breakdown has been categorized as Mj-13(Major-13) as per IS: 12207-2014 and calls for stringent quality control measures at production level.
- 17.4.2.2 Wetland cultivation (Puddling operation):**
No ingress of mud and / or water was noticed during puddling operation of the tractor and meet the requirements of IS: 11082-1984 (Technical requirements of agricultural tractors for wetland operation). Therefore, the tractor is recommended as suitable for wetland operation (Puddling).
- 17.5 Maintenance / Service Problems:**
No noticeable maintenance or service problem was observed during the test..
- 17.6 Adequacy of Literature:**
- 17.6.1** The following literatures were supplied with the test tractor for reference during the test:-
a) Operator's manual (For 3210,3510 4010 4510 & 4710 series model tractors)
b) Service Parts catalogue (For 3210,3510 4010 4510 & 4710 series model tractors)
c) Service Manual (For 3210,3510 4010 4510 & 4710 series model tractors)

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18.0 Citizen charter

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given in the citizen charter	Remark
9 Months (July ,2015 to March , 2016)	10 Months	Yes	Yes

TESTING AUTHORITY:

H.L. YADAV

SENIOR AGRICULTURAL ENGINEER

C.R. LOHI

DIRECTOR

Test Report compiled by **Shri. Chanchlesh Singh Raghuwanshi**, Senior Technical Assistant.

19. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
19.1	17.3 (ii,v,vi,vii &ix) ,17.4.1.3, 17.4.1.4,17.4.1.5	Your valuable comments & suggestions for improvements are well taken. Under our policy of continuous product improvement these aspects are further being looked into & will take appropriate actions 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
1.	Make	Field king	Shaktimaan
2.	Type	Mounted	Mounted
3.	No. of bottoms/blades	2	30, in 6 flanges
4.	Type of bottoms/blades	Plain concave	Hatchet
5.	Size of bottoms/blades,(mm)	650	110 x 50 x 5
6.	Spacing of bottoms/flanges,(mm)	560	235
7.	Lower hitch point span,(mm)	860	770
8.	Mast height (mm)	615	545
9.	Overall dimensions,(mm):		
	- Length	1850	1040
	- Width	855	1130
	- Height	1200	1000
10	Gross mass, (kg)	295	320

ANNEXURE-II**BRIEF SPECIFICATION OF FULL CAGE WHEEL**

S. No.	Items	Specification
1.	Type	Full cage wheel
2.	Outer dia. (mm)	1280
3.	Width (mm)	850
4.	No. & Type of Lugs	24, Straight lugs made of M.S. angle section welded to angle iron frame
5.	Size of angle section, (mm)	50 x 50 x 6
6.	Length of lug, (mm)	425
7.	Spacing of lug, (mm)	160
8.	Weight of each cage wheel (kg)	145

