

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

संख्या/No. : T-1643/2174/2022
माह/Month : April, 2022

[ONLINE TESTING]

(यह परीक्षण रिपोर्ट 30/04/2025 तक वैध है / THIS TEST REPORT IS VALID UPTO 30/04/2025)



MAHINDRA, 415 DI XP PLUS TRACTOR



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 & FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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1. SPECIFICATIONS

- 1.1 Tractor:**
- Make : Mahindra
Model : 415 DI XP PLUS
Brand name, if any : BHOOMIPUTRA
Type : Rear Wheel Drive, Standard Agricultural Tractor.
Month & year of manufacture : 08/21
Chassis number : MBNGAAVKBMRE01437
Country of origin : India
- 1.2 Engine:**
- Manufacturer's address : M/s. Mahindra & Mahindra Limited
(Farm Equipment Sector)
Agri Business Development Center, Khatima
Panipat Highway, Udham Singh Nagar, Vil.
Lalpur, Tehsil-Kichha, Rudrapur – 263 153
- Make : Mahindra
Model : MM27423AH
Type : Four stroke, direct injection, naturally aspirated, liquid cooled, diesel engine.
Serial number : RMD5FGA1054
Country of origin : India
- 1.2.1 Engine speed (rpm), (Manufacturer's recommended production settings):**
- Maximum speed at no load : 2150 to 2350
 - Low idle speed : 750 to 850
 - Speed at maximum torque : 1200 to 1500
- Rated speed, (rpm):**
- For PTO use : 2000
 - For drawbar use : 2000
- 1.3 Cylinder & Cylinder Head:**
- Number : Four
Disposition : Vertical, Inline
Bore/stroke, (mm) : 88.9/110
Capacity as specified by the applicant, (cc) : 2730
Compression ratio : 19.8 : 1
Type of cylinder head : Monoblock
Type of cylinder liners : Wet, replaceable
Type of combustion chamber : Re-entrant cavity on piston head
Arrangement of valves : Overhead, inline
- Valve clearance (cold/hot):**
- | | <u>Cold</u> | <u>Hot</u> |
|-----------------------|-------------|------------|
| - Inlet valve, (mm) | 0.4 | 0.3 |
| - Exhaust valve, (mm) | 0.5 | 0.4 |
- 1.4 Fuel System:**
- Type of fuel feed system : Gravity and force feed
- 1.4.1 Fuel tank:**
- Capacity, (l) : 48.5
Location : Above clutch housing
Provision for draining of sediments/ water : Provided
Material of fuel tank : Metallic

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18. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

18.1 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: 12207-2019 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
18.1.1	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.	27.9 (D)	29.2	Yes
b)	Power at rated engine speed, (kW)	Non-Evaluative	-do-	27.9 (D)	29.2	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% max.	244 (D)	251	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	179 (D)	170.3	Yes
e)	Back-up torque, percent	Evaluative	12 percent	21 (D) 12 (R)	22.4	Yes
f)	Maximum operating temperature, ($^{\circ}\text{C}$):					
	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.	130 (D)	104	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.	112 (D)	104	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. Power under High ambient conditions.	2.49 Maximum (R)	0.313	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).	3.25 per meter Maximum (R)	0.25	Yes

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1	2	3	4	5	6	7	
18.1.2	Drawbar performance :						
a)	Max. drawbar pull with ballasted corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass of tractor with ballast.	17.30 (D) 16.73 Minimum (R)	20.21	Yes	
b)	Max. drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without ballast or with standard ballast, as the case may be.	12.63 (D) 8.85 (R) Minimum	12.88	Yes	
c)	Maximum drawbar power without 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.	22.32 (D) 23.4 (R) Minimum	23.7	Yes	
d)	Maximum transmission oil temperature, (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	120 (D)	78	Yes	
18.1.3	Power lift and hydraulic pump performance:						
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Evaluative	Tolerance of ± 10%	14.6 (D)	13.84	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.	10.20 (D) 6.87 (R) Minimum	10.89	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	40	Yes

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1	2	3	4	5	6	7	
18.1.4	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)	6.38	Yes
	2)	Hot brake	Evaluative	10	10 (R)	6.36	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² , (N)		Evaluative	600	600 (R) Maximum	170 to 206	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
18.1.5	Noise measurement :						
a)	Maximum ambient noise emitted by the tractor, dB(A)		Evaluative	As per CMVR	88 (R)	84	Yes
b)	Maximum noise at operator's ear level, dB(A)		Evaluative	As per CMVR	96 (R)	92	Yes
18.1.6	Amplitude of mechanical vibrations at:						
	1)	Left foot rest	Non Evaluative	100 microns (max.)	100 (R)	144	No
	2)	Right foot rest				188	No
	3)	Seat (with driver seated)				152	No
	4)	Steering wheel				268	No
18.1.7	Air cleaner:						
	Maximum air cleaner oil pull over, (%)		Evaluative	0.25 (Max.)	0.25 (Max.)	0.09	Yes
18.1.8	Haulage requirements:						
a)	Gross mass of the trailers, (tonne):						
	Two wheel		Non Evaluative	As specified by the manufacturer	5.0 (D)	5.0	Yes
Four wheel		Non Evaluative	7.0 (D)		7.0	Yes	
b)	Distance travelled / liter of fuel consumption, (km/l):						
	Two wheel		Non Evaluative	As specified by the manufacturer	5.0 to 6.0 (D)	6.57 to 6.78	No
Four wheel		Non Evaluative	5.0 to 6.0 (D)		5.82 to 6.09	No	
c)	Fuel consumption, (ml/km/tonne):						
	Two wheel		Non Evaluative	As specified by the manufacturer	30 to 35 (D)	29.50 to 30.46	No
Four wheel		Non Evaluative	25 to 30 (D)		23.49 to 24.52	No	

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1	2	3	4	5	6	7	
18.1.9	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-					
18.1.10	Safety features :						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 (Part2))	Meets the requirement		Yes	
b)	Lighting arrangement	Evaluative	As per CMVR	Meets the requirement		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	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meets the requirement		Yes	
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 requirement		Yes	
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time)	Meets the requirement		Yes	
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirement 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	11.87 (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. The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer /dealer shall ensure the training on this aspect to operator before the delivery of tractor.	Not fitted	Not applicable	

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1	2	3	4	5	6	7		
18.1.11	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. <table border="1" style="margin-left: 20px;"><tr><td>MM</td><td>YY</td></tr></table> Digit 01 – 12 in box No.1 for MM will represent the months and next two digits in box No.2 for YY will represent the year of Manufacturing.	MM	YY	Mahindra	Yes
	MM	YY						
	2)	Model	Evaluative		415 DI XP PLUS	Yes		
	3)	Month & Year of manufacture	Evaluative		08/21	Yes		
	4)	Engine number	Evaluative		RM05FGA1054	Yes		
	5)	Chassis number	Evaluative		MBNGAAVKBMRE01	Yes		
6)	Maximum PTO power, (kW)	Evaluative	437		Yes			
			27.9	Yes				
18.1.12	Discard limit for:							
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer and supported by the printed literature	89.13	88.907 to 88.913	Yes		
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.20	0.084 to 0.089	Yes		
(c)	Piston diameter at skirt, (mm)	Non Evaluative		88.81	88.822 to 88.826	Yes		
d)	Ring end gap (mm):							
-	Top comp. ring.	Evaluative	To be specified by the manufacturer and supported by the printed literature	2.5	0.30 to 0.35	Yes		
-	2 nd comp. ring.			2.5	0.30 to 0.35	Yes		
-	Oil ring.			2.0	0.30 to 0.35	Yes		
(e)	Ring groove clearance (mm):							
-	Top comp. ring.	Evaluative	To be specified by the manufacturer and supported by the printed literature	0.30	--Tapped--	--		
-	2 nd comp. ring.			0.30	0.064 to 0.066	Yes		
-	Oil ring.			0.20	0.045 to 0.046	Yes		
(f)	Clearance of main bearings (mm):							
-	Diametrical clearance	Evaluative	To be specified by the manufacturer and supported by the printed literature	0.20	0.085 to 0.091	Yes		
-	Crankshaft end float	Evaluative		0.50	0.12	Yes		

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1	2	3	4	5	6	7	
(g)	Clearance of big end bearings, (mm):						
	-	Diametrical	Evaluative	-do-	0.20	0.094 to 0.099	Yes
	-	Axial	Evaluative	-do-	0.75	0.20 to 0.25	Yes
(h)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.30	0.097 to 0.106	Yes	
(i)	Clearance between centre pin and bush, (mm)	Non Evaluative	-do-	0.30	0.096 to 0.122	Yes	
18.1.13	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	
18.1.14	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:1182 or OECD code or equivalent International Standard		Not fitted	Not applicable	
18.1.15	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor		Provided	Yes	
18.1.16	Accessories (optional)	Non Evaluative	Ballast weight, if fitted, should meet the requirement of CMVR		Provided	Yes	

18.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2019):					
Sl. No.	Category of break-downs	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	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	None	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 (1 major + 4 minor) or 5 minor breakdowns.	None	Yes

18.3 Conformity with following IS:

- i) Guide lines for declaration of power and specific fuel consumption : Conforms and labeling of agricultural tractors (First revision) [IS10273: 1987 (Reaffirmed in January, 2019)]

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ii)	Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed in January, 2019)]	:	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 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 in January, 2019)]	:	Does not conform
vi)	Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (PT-1)-2018 /ISO 4254-1:2018]	:	Does not conform
vii)	Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (PT-2) 1999) (Reaffirmed in January, 2019)]	:	Does not conform
viii)	Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) IS: 8133- 1983 (Reaffirmed in January, 2019)]	:	Does not conform
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 in January, 2019)]	:	Conforms
x)	Agricultural Tractors and Machinery - Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in January, 2019)]	:	Conforms

18.4 Salient Observations:

18.4.1 Laboratory tests:

18.4.1.1 Operator's Seat:

- i) Width of seat has been measured as 435 mm against the minimum requirement of 450 mm.
- ii) Seat longitudinal adjustment forward and rearward from the position has been measured as ± 135 mm against the minimum requirement ± 25 mm & optimum ± 100 mm.
- iii) Longitudinal distance from seat index point to the centre of steering control wheel has been measured as 595 mm against the requirement of 425 to 525 mm.

Above parameters does not meet the requirement of IS: 12343-1998, (Re-affirmed in January, 2019). This should be looked into for necessary corrective action at production level.

18.4.1.2 Operator's work place:

Operator's work place meets the requirements of IS: 12239 (Part-I) 1996 (Reaffirmed Oct., 2017), **except the following:**

- i) Vertical retainer has not been provided on inner side of clutch pedal.
- ii) Width of foot step has been measured as 155 mm against the requirement of 200 mm.
- iii) Spark arresting device has not been provided in the exhaust system.

Above parameters does not meet the requirement of IS: 12239 (Part-I) 1996 (Reaffirmed Oct., 2017). This should be looked into for necessary corrective action at production level.

18.4.1.3 PTO master shield:

PTO master shield has not been provided on tractor. This should be looked into for necessary corrective action.

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18.4.1.4 Operator's Manual:

- i) The model of tractor has been specified as "415 DI XP Plus" vide specification sheet. Whereas, the same has been specified as "415 XP Plus" vide P. No. 3-1 to 3-3 of Operator's manual.
- ii) The oil change period of air cleaner has been specified as "after every 50 hours or earlier if required in arduous condition" vide specification sheet. Whereas, the same has been specified as "at every 250 hours or earlier" vide P. No. 21-1 of Operator's manual.

18.5 Maintenance / Service Problems:

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

18.6 Recommendation with regard to safety on tractor:

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

- i) The working clearance around draft control lever and RHS fender has been measured as 45 mm should be provided as per the requirement of IS: 12239 (Part-2) - 1999, (Reaffirmed in January, 2019)..
- ii) Fuel shut off knob should remains in stop as per the requirement of position IS:8133-1983 (Re-affirmed in January, 2019).

18.7 Adequacy of Literature supplied with machine:



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

- a) Operator Manual for "Mahindra 265 DI XP Plus & Mahindra 415 DI XP Plus" tractor models.
- b) Parts catalogue for "Mahindra 415 DI XP Plus" tractor models" tractor model.
- c) Service manual for "Mahindra 265 DI XP Plus & Mahindra 415 DI XP Plus" tractor models.

18.6.2 The operator manual may be brought out for the guidance of users and service personnel as per IS:8132-1999 incorporating, inter alia, the following:

- i) Safe hitch height while using trailer.
- ii) Coolant water ratio.

TESTING AUTHORITY:

C.V. CHIMOTE TEST ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report compiled by: **Pratyush Satya**, Senior Technical Assistant

19. APPLICANT COMMENT'S

Para No.	Our Reference	Applicant's comments
19.1	18.4.1.1(i, ii & iii), 18.4.1.2 (i, ii & iii), & 18.6 (i & ii).	Parameters will be studied and necessary action will be taken.
19.2	18.4.1.4 (i & ii) & 18.6.2	Observation will be studied and necessary corrective action for improvement in the manuals will be ensured.

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ANNEXURE-I

BRIEF SPECIFICATION OF MATCHING IMPLEMENTS AS DECLARED BY APPLICANT

S. No.	Parameters	Disc Plough	Rotavator	Puddler
1	Make	Farmking	Mahindra	Not available
2	Type	Mounted	Mounted	Mounted
3	No. of Discs / Blades	Two	30 in 5 flanges	12 (6 in 2 gangs)
4	Type of Discs / Blades	Plain concave	Hatchet	Notched
5	Size of Discs / Blades, (mm)	655	220 x 75 x 7	460
6	Spacing of Discs /Flanges, (mm)	495	240	165
7	Lower hitch point span, (mm)	760	800	680
8	Mast height, (mm)	480	640	500
9	Overall Dimensions, (mm):			
	Length	1480	970	1190
	Width	1060	1510	1810
	Height	1180	1100	1330
10	Gross Mass, (kg)	200	200	240
11	Working width (cm)	2 x 30	125	210

ANNEXURE-II

BRIEF SPECIFICATION OF HALF CAGE WHEEL AS DECLARED BY APPLICANT

Sr.No.	Items	Specification
1	Type	Half cage wheel
2	Outer dia. (mm)	1200
3	Width (mm)	360
4	No. & Type of Lugs	14, straight lugs made of MS angle section welded to angle iron frame
5	Size of angle section, (mm)	50 x 50 x 5
6	Length of lug, (mm)	360
7	Spacing of lug, (mm)	260
8	Weight of each cage wheel, (kg)	100

ANNEXURE-III

BRIEF SPECIFICATION OF TRAILER DECLARED AS MATCHING TRAILER BY APPLICANT

SI No.	Item	Trailer	Trailer
1.	Make	Kisan Engineering Works, MIDC, Awadhan Dhule, (M.S.)	
2.	Model	Kisan 1062	Not available
3.	Type of trailer	Semi - Trailer	Semi – Trailer
4.	Number of axles	Single	Double
5.	Un laden Weight of Trailer, kg	1670	2800
6.	Fully laden Weight of Trailer, Tons (Kg)	4000	5500
7.	Overall dimensions of Trailer, (mm):		
	Overall Width	1870	2140
	Overall Length	4180	5785
	Overall Height	2175	2110
	Wheel Base	Not applicable	2835
	Wheel Track	1600	1740(Front) &1765(Rear)
8.	Dimension of fitted Platform, (mm):		
	Length	3040	4225
	Width	1830	2135
	Height from ground	1190	1305
9.	Brakes of Trailer	Not Provided	Not Provided

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ANNEXURE-IV

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	60.0
2.	PTO performance test	12.6
3.	Power lift and hydraulic pump performance test	4.3
4.	Drawbar performance test	17.2
5.	Turning ability	0.5
6.	Location of centre of gravity	0.5
7.	Operator's field of vision	--
8.	Brake test	1.8
9.	Air cleaner oil pull over test	3.5
10.	Noise measurement	1.0
11.	Mechanical vibration test	0.8
12.	Nominal speed test	0.6
B.	FIELD TEST:	
1.	Disc ploughing	10.7
2.	Rotavation	10.8
3.	Puddling (including 5.0 hours water proof test)	15.1
C.	HAULAGE TEST:	5.0
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	11.8
	TOTAL:	151.2