

व्यावसायिक परीक्षण रिपोर्ट (वैरिएंट)  
COMMERCIAL TEST REPORT (Variant)

संख्या / No. : T-1498/2025/2020  
माह / Month : December, 2020

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



**INTERNATIONAL TRACTORS LIMITED, DI-42 HDM 4WD  
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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1	2	3	4
11.	Overall Dimensions, mm		
	Length	3585	3605
	Width	1720	1810
	Height	2285	2320
	Ground clearance	390	365
12.	Max Drawbar Pull with std. ballast @ 15%wheel slippage, kN	14.21	19.23
13.	Style of bonnet & fender (see annexure II)	Compound	Mono
14.	Front axle design (see annexure III)	2WD	4WD

Subsequent to the examination of the case in the light of Indian Standard IS: 12207- 2019, the following tests were considered to be carried out:-

- (i) Specification checking
- (ii) Nominal speed test
- (iii) PTO performance test (Natural ambient)
- (iv) Drawbar Performance Test
- (v) Brake Test
- (vi) Noise Measurement
- (vii) Location of Centre of Gravity
- (viii) Turning Ability

## 2. FUEL AND LUBRICANTS

**2.1 Fuel** : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.836 g/cc at 15°C was used.

### 2.2 Lubricants:

Sl. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine	SAE 20 W 40	SAE 20 W 40
2.	Gearbox, differential, rear axle, final drive, brake, & hydraulic system oil	EP-80	Oil originally filled in the tractor systems was not changed
3.	Front axle	SAE 20 W 40	
4.	Steering housing	SAE EP-80	
5.	Grease	Multipurpose Grease	MP Grease

## 3. SPECIFICATIONS

	<u>Base Model</u>	<u>Variant Model</u>
<b>3.1.1 Tractor:</b>		
Make	: International Tractors Limited	
Model	: DI 42 HDM	DI 42 HDM 4WD
Brand name	: None	None
Type	: Four wheeled, rear wheel driven, unit construction, general purpose, agricultural tractor	Four wheeled, Four wheel driven, unit construction, general purpose, agricultural tractor
Year of manufacture	: 03/2020	05/2020
Chassis number	: AYZSH920156S3	FZYDH926777S3
Country of Origin	: India	India

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## 7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 On the basis of tests conducted, the performance results have been summarized as evaluative (mandatory) and non – evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 (table-1) of Indian Standard **12207: 2019** for acceptance of 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/ requirement		As observed		Whether Variant model meets the requirements (Yes/No)
				<u>Base model</u>	<u>Variant Model</u>	<u>Base model</u>	<u>Variant model</u>	
1	2	3	4	5a	5b	6a	6b	7
<b>7.1.1</b>	<b>PTO Performance:</b>							
<b>a)</b>	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: ±5 percent for PTO power and engine power > 26 kW. ±10 percent for PTO power and or engine ≤ 26 kW.	29.5 (D)	29.5 (D)	29.9	30.0	Yes
<b>b)</b>	Power at rated engine speed, (kW)	Non Evaluative	-do-	29.5 (D)	29.5 (D)	29.9	29.6	Yes
<b>c)</b>	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+10 %	245 (D)	245 (D)	243	246	Yes
<b>d)</b>	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	197 (D)	197 (D)	190.6	192.2	Yes
<b>e)</b>	Back-up torque, percent	Evaluative	12 % Minimum	12%	20.4	20.4	22.3	Yes
<b>7.1.2</b>	<b>Drawbar performance :</b>							
<b>a)</b>	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	17.37 (D)	19.15 (D)	19.07	23.28	Yes
				17.37 (R)	18.93 (R)			
<b>b)</b>	Maximum drawbar pull with Unballasted/Std. 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.	13.53 (D)	15.1 (D)	14.21	19.23	Yes
				13.84 (R)	15.10 (R)			

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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.	23.6 (D) 23.9 (R)		24.1	25.0	Yes
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	130		77	81	Yes
<b>7.1.3 Brake performance at 25 kmph:</b>								
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with Std. ballast, (m):							
	1)	Cold brake	Evaluative	10	10 (R)	7.13	8.30	Yes
	2)	Hot brake	Evaluative	10	10 (R)	7.49	8.33	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N).	Evaluative	600	600 (R)	218 to 223	438 to 464	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	Yes	
<b>7.1.4 Noise measurement :</b>								
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	85	82	Yes	
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	96	93	Yes	
<b>7.1.5 Safety features:</b>								
a)	Guards against moving and hot parts	Evaluative	Belt drives, pullies, silencer, hydraulic pipes (As per IS 12239 (Part2))	Meets the requirement	Yes	Yes		
b)	Lighting arrangement	Evaluative	As per CMVR	Meets the requirement	Yes	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)	<b>Does not Meet the requirement</b>	<b>No</b>	<b>No</b>		
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meets the requirement	Yes	Yes		

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1	2		3	4	5a	5b	6a	6b	7
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	the	Yes		Yes
f)	Specifications of linkage drawbar		Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time)	Conformed		Meets the requirements		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 Provided		Not applicable
h)	1)	Maximum travelling speed at rated engine speed in reverse gear, (kmph)	Evaluative	Should not exceed 20 kmph	Conformed		10.89 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.  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 applicable		Not applicable		Not applicable

**7.1.6 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: 0 auto;"> <tr> <td style="padding: 2px;">MM</td> <td style="padding: 2px;">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	-	INTERNATIONAL TRACTORS LIMITED	Yes
	MM	YY							
	2)	Model	Evaluative		-	DI - 42 HDM 4WD	Yes		
	3)	Month & Year of manufacture	Evaluative		-	5/2020	Yes		
	4)	Engine number	Evaluative		-	3102FLU04C919639F 19	Yes		
	5)	Chassis number	Evaluative		-	FZYDH926777S3	Yes		
	6)	Declaration of PTO power, (kW)	Evaluative		-	29.5	Yes		
7)	Declaration of Specific fuel consumption, g/kWh	Evaluative	-	245	Yes				

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1	2	3	4	5a	5b	6a	6b	7
<b>7.1.7</b>	<b>Literature (Submission to test agency):</b>							
(a)	Operator manual	Evaluative	Provided / Not Provided	Provided	Provided	Provided	Yes	
(b)	Parts Catalogue	Evaluative	Provided / Not Provided	Provided	Provided	Provided	Yes	
(c)	Workshop/ Service manual	Evaluative	Provided / Not Provided	Provided	Provided	Provided	Yes	
<b>7.1.8</b>	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 not fitted			Not applicable	
<b>7.1.9</b>	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided			Yes	
<b>7.1.10</b>	Accessories (optional)	Non Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Provided			Yes	

<b>7.2 CATEGORY OF BREAKDOWNS / DEFECTS (as per clause 5.0 of IS:12207-2019) :</b>					
Sl. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the Requirements (Yes/No.)
1.	Critical breakdown	Evaluative	No critical breakdown	None	Yes
2.	Major breakdowns	Evaluative	Not more than two major breakdowns and neither of them of repetitive 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 (1 major + 4 minor) or 5 minor breakdowns.	None	Yes

### 7.3 Salient Observations:

#### 7.3.1 Laboratory tests:

##### 7.3.1.1 PTO Performance:

- i) The maximum PTO power was recorded as **30.0 kW** against the declaration of **29.5 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 **246 g/kWh** against the declaration of **245 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as **192.2 N-m** against the declaration of **197 N-m**, which is within the permissible limit as per requirement of IS: 12207-2014.
- iv) The backup torque is **22.3 %**.

#### 7.4 Maintenance / Service Problems:

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

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**7.5 Recommendation with regard to safety on tractor:**

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

- i) Provision of spark arrester in the exhaust system.
- ii) The working clearance between draft control lever fender should be provided as per the requirement of relevant Indian Standard.
- iii) Width of the driver seat should be as per relevant Indian Standard.
- iv) Vertical retainers on both side of the clutch pedal.
- v) Coupling to attach trailer brakes should be provided.
- vi) There should be provision of differential lock.
- vii) Master shield on PTO shaft should be provided.

**7.6 Adequacy of Literature supplied with machine:**

**7.6.1** The following literature has been supplied with the tractor for reference during the testing.

- i) Operator Manual of INTERNATIONAL TRACTORS LIMITED, DI 42 HDM, DI-42 HDM S3, DI-42 HDM 4WD tractor models.
- ii) Spare part's catalogue of INTERNATIONAL TRACTORS LIMITED, DI 42 HDM, DI-42 HDM S3, DI-42 HDM 4WD tractor models.
- iii) Service manuals (Part – I & II) of INTERNATIONAL TRACTORS LIMITED, DI 42 HDM, DI-42 HDM S3, DI-42 HDM 4WD, DI-42 HDM Power Plus, DI-47 HDM, DI-745 III HDM, DI-50 & DI-55 tractor models.

**7.6.2** The supplied literature was found adequate, **except the following:-**

- i) Recommended grade of lubricants and grease in Operator's manual were not found.
- ii) Various specifications of "INTERNATIONAL TRACTORS LIMITED, DI – 42 HDM 4WD tractor model provided in operator's manual were not matched with the technical details provided during the test.
- iii) Different images of the spares printed in the spare parts catalogue and in service manual are not clearly visible. For user comfort and resolving the service related problems printed images should be very clear.

**7.6.3** These literatures may also be brought out in national & other regional languages for the guidance of user's and service personnel.

**7.7 The decals on the test sample does not match as such specified in the technical detail and may create confusion to the buyer while selecting a model for purchase or service related issues. This calls for imposing exact decals on the tractor as specified in during the test.**

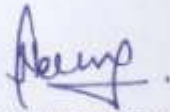
**7.8** The results of tests carried out on variant model "International Tractors Limited, DI - 42 HDM 4WD" tractor have been compared with the base model "International Tractors Limited, DI - 42 HDM" and found within the limit as specified in Indian Standard : 12207-2019.

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#### 8. 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 Months (July, 2020 to October, 2020)	Yes	---

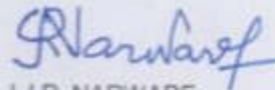
#### TESTING AUTHORITY:



NITESH KUMAR VERMA  
AGRICULTURAL ENGINEER



C.V. CHIMOTE  
TEST ENGINEER



J.J.R. NARWARE  
DIRECTOR

#### 9. Applicant's comments

Para no.	Our reference	Comments received from the applicant
9.1	7.6.2 (i),	Recommended grade of lubricants, Grease and specifications has been updated in operator manual.
9.2	7.6.2 (ii)	The matter of printing quality of the images of the spares parts catalogue will be taken care of.

#### ANNEXURE-I

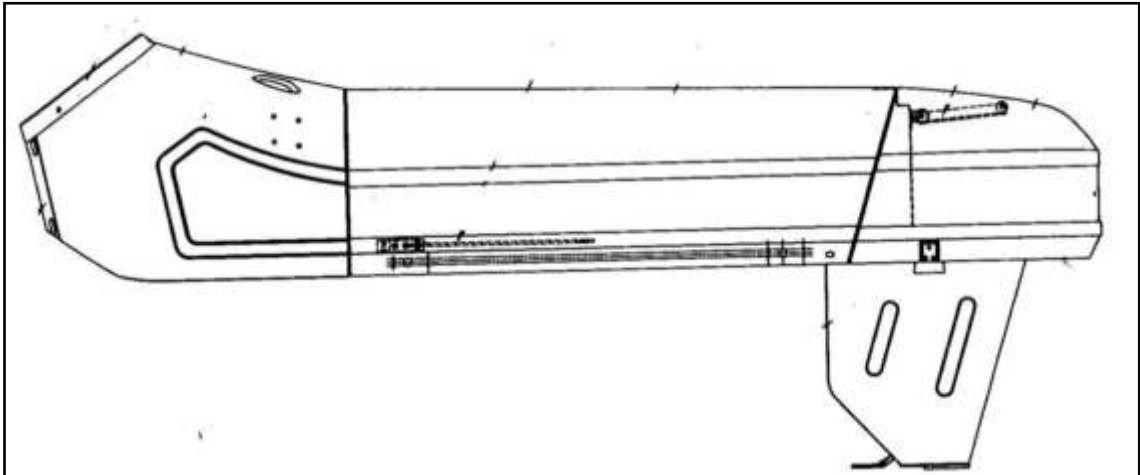
#### TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	4.00
3.	Drawbar performance test	15.55
4.	Turning ability	0.50
5.	Location of centre of gravity	0.50
6.	Brake test	1.50
7.	Noise measurement	1.50
8.	Theoretical speed test	1.00
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	2.30
	<b>TOTAL:</b>	<b>26.85</b>

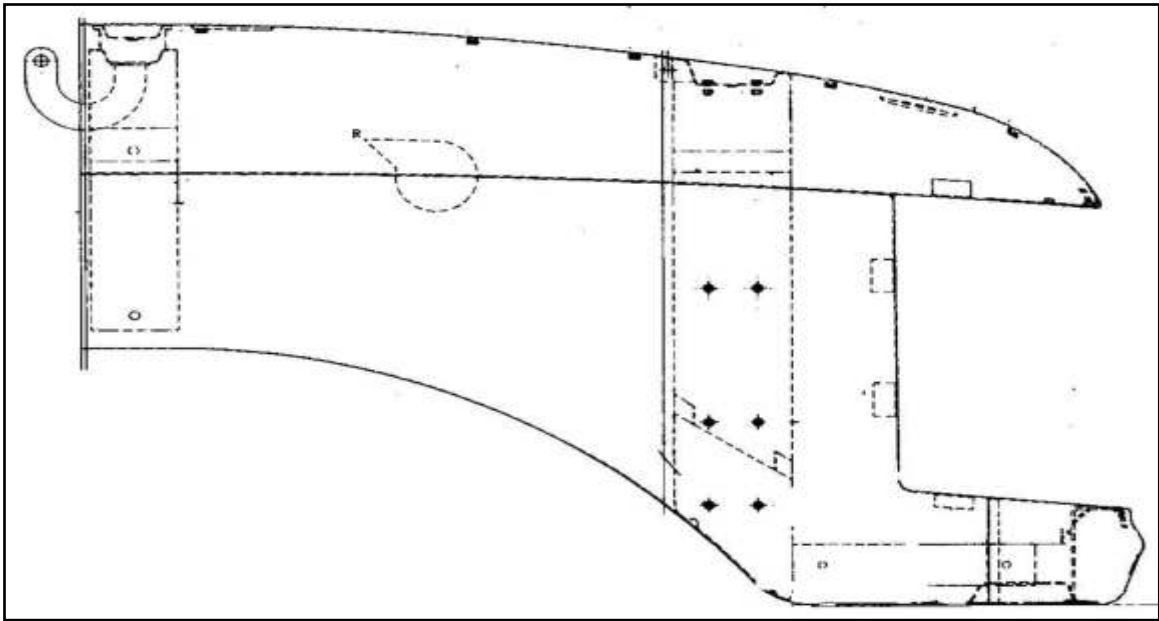


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ANNEXURE-II



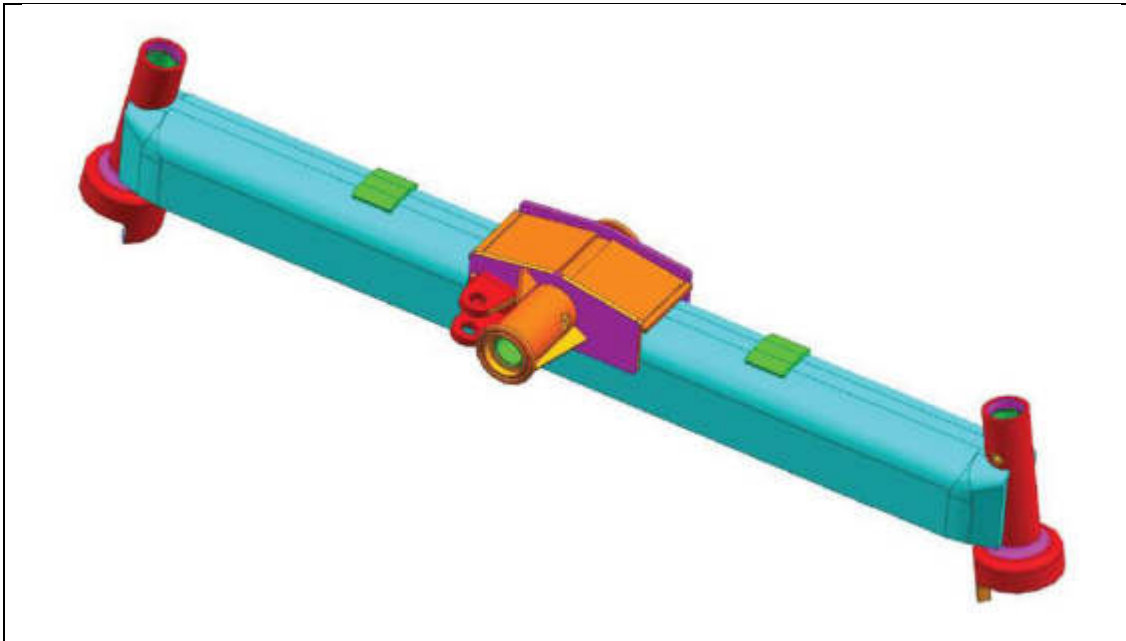
Compound style bonnet of International Tractors Limited DI 42 HDM  
[BASE MODEL]



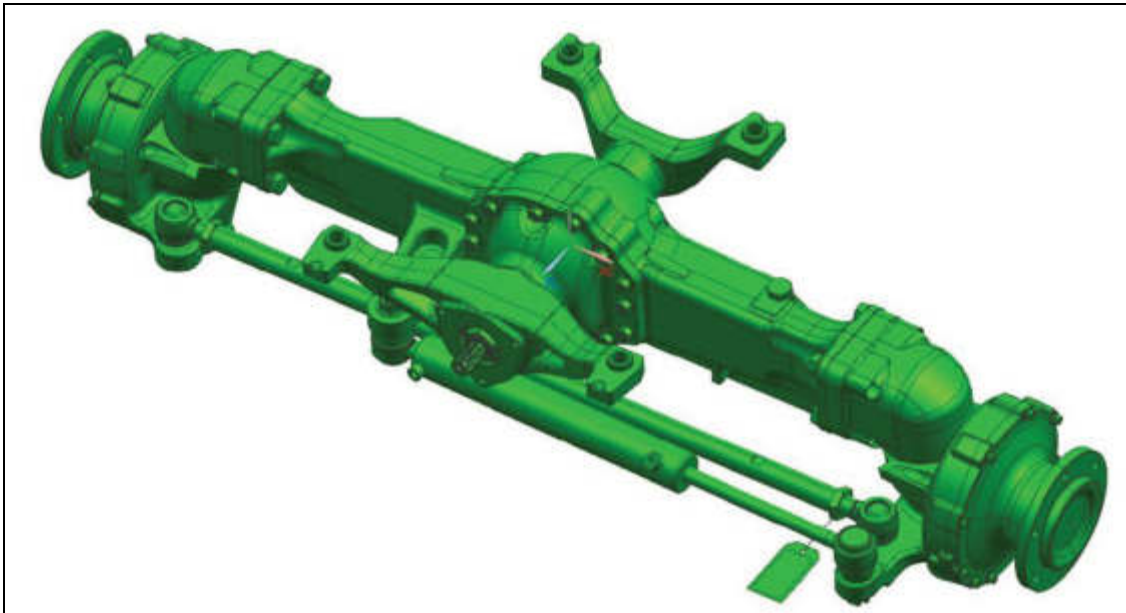
Mono style bonnet of International Tractors Limited DI 42 HDM 4WD  
[VARIANT MODEL]

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ANNEXURE-III



Front axle design of Base Model “International Tractors Limited DI 42 HDM”



Front axle design of Variant Model “ International Tractors Limited DI 42 HDM 4WD”