

व्यावसायिक तकनीकी विस्तार परीक्षण
रिपोर्ट

COMMERCIAL - TECHNICAL EXTENSION
TEST REPORT

संख्या/No. : T-1532/2060/2021

माह/Month : April, 2021



NEW HOLLAND 4010 A TRACTOR



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, CO-OPERATION AND FARMERS WELFARE)

(Mechanization & Technology Division)

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T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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Manufacturer : **M/s. CNH Industrial (India) Pvt. Limited,**
Plot NO.-3, Udyog Kendra,
Greater Noida – 201 306,
Distt. Gautam Budh Nagar,
Uttar Pradesh

Month: April	Test Report No. T-1532/2060/2021	Year : 2021
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T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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Type of Test : **COMMERCIAL (Technical Extension)**

Test code/Procedure : IS: 5994-1998 (Reaffirmed in 2014) and IS: 12207-2019.

Period of Test : July, 2020 to March, 2021

Test Report No. : **T-1532/2060/2021**

Month/Year : **April, 2021**

- i) The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.
- ii) The data given in this report pertain to the particular machine was selected randomly from production line by the representative of testing authority for test.
- iii) The results presented in this report do not in any way attribute to the durability of the machine.
- iv) This report should not be reproduced in part or full without prior permission of the Director, Central Farm Machinery Training and Testing Institute, Budni (M.P.).
- v) This is a Technical Extension test report and should be read in conjunction with the Initial Commercial Test Report of “**NEW HOLLAND 4010 A**” Tractor bearing report no. **T-1019/1543/2016** released in **March, 2016** and it’s administrative extension report no. **T-1404/1931/2020** released in **March, 2020**.

SELECTED CONVERSIONS		
Sl. No	Units	Conversion Factor
1	Force:	
	1 kgf	9.80665 N 2.20462 lbf
2	Power:	
	1 Mechanical horse power	1.01387 Metric horse power 745.7 W
	1 Metric horse power	735.5 W
	1 kW	1.35962 Metric horse power
3	Pressure:	
	1 psi	6.895 kPa
	1 kgf/cm ²	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm ²
	1 mm of Hg	1.3332 m-bar

ABBREVIATIONS	
apa	As per applicant
TDC	Top Dead Centre
IS	Indian Standard
LHS /RHS	Left Hand Side/ Right Hand Side
Hg	Mercury
Temp.	Temperature
N.R.	Not recorded
rpm	Revolutions per minute
O.D/I.D	Outer diameter/ Inner diameter
N.A.	Not available/Not applicable
PTO	Power take-off
R.H.	Relative Humidity
SIP	Seat Index Point

CONTENTS

	<u>PAGE</u>
1. Scope of Test	05
2. Fuel & Lubricants	06
3. Essential Tests	06
3.1 Specifications	06
3.2 Nominal Speed Test	15
3.3 PTO Performance Test	15
4. Other Applicable Test	
4.1 Turning ability	17
5. Adjustments, Defects And Breakdowns	17
6. Summary of Observations, Comments & Recommendations	17
7. Citizen Charter	20
8. Applicant's comments	20
ANNEXURE –I	20
ANNEXURE –II	21

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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1. SCOPE OF TEST

The “**NEW HOLLAND 4010 A**” tractor had undergone “Initial Commercial Test” at this Institute vide test report No. **T-1019/1543/2016** released in **March, 2016** and its Administrative extension test report no. **T-1404/1931/2020** was released in **March, 2020**. Now the applicant has submitted an application no. PD-L118120 dated 14.02.2019 for the technical extension of **NEW HOLLAND 4010 A**” tractor model for the changes made in the base model. Applicant had also informed vide letter No. PD- PV 210014 dated 04.03.2021 cut off chassis number of base model “NEW Holland 4010 A” tractor i.e. NHN40100 ZKK489273.

The major differences in the Base model and test sample submitted for the Technical Extension are listed below:-

S.No	Parameters	Base Model (T-1019/1543/2016)				Present Sample			
1	2	3				4			
1.	Nominal speeds (kmph)								
	-Forward	2.58 to 28.19				2.50 to 30.79 Variation of -3.1 to +9.2%)			
	-Reverse	3.10 to 11.32				2.50 to 9.20 (Variation of -19.4 to -18.7)			
2.	Fitment of one step down rear tyre of size 12.4-28, and 12 PR as Optional feature	Not provided				Provided			
3.	Name, brand and coolant/water ratio of the coolant	Zero R 1:25				Ambra Agri Flu-OT 1:4			
4.	Fitment of the differential lock	Provided				Not provided (as optional feature)			
5.	Type of front axle (as per annexure-I)	Fixed				Adjustable (as optional feature)			
6.	Recommendation of Road Ballast mass, kgf	Front		Rear		Front		Rear	
		Cl	Water	Cl	Water	Cl	Water	Cl	Water
		60	Nil	80	205	60	Nil	285	Nil
7.	Water separator	Not provided				Provided			

Subsequent to the examination of the case in the light of clause 3.2.5, 6.1 & 6.2 of Indian Standard 12207: 2019, the following tests were considered to be carried out:

- Specifications checking
- Nominal speed test
- Two hour maximum PTO power test under normal ambient condition
- Turning ability test

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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Manufacturer : M/s. CNH Industrial (India) Pvt. Limited
Plot N0.-3, Udyog Kendra,
Greater Noida – 201 306,
Distt. Gautam Budh Nagar, Uttar Pradesh

Test requested by : The manufacturer
Selected for test by : The testing authority
Place of running-in : At manufacturer's works
Duration of said running-in, (h):
- Engine : 50
- Transmission : 50
Method of Selection : The test sample was selected randomly out of Five tractors from the production line by the representative of testing authority.

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:

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine & Air cleaner	SAE 20W40	Oil originally filled in the tractor systems were not changed
2.	Transmission, Hydraulic and brake system	SAE EP80	--do--
3.	Steering system	SAE EP80	--do--
4.	Grease	NL GI 2	MP Grease

3. ESSENTIAL TESTS

3.1 SPECIFICATIONS

The following are the brief specifications of the tractor. However, for detail specifications, the test report No. **T-1019/1543/2016** released in **March, 2016** should be referred.

3.1.1 Tractor:	<u>Previous sample</u>	<u>Present sample</u>
Make	NEW HOLLAND	
Model	4010 A	
Brand name	None	
Type	Four wheeled, rear wheel driven, unit construction, Standard Agricultural Tractor	
Month & Year of manufacture	11/2014	01/2020
Chassis number	NHN40100ZEL307819	NHN 40100ZLA499092
Country of origin	India	

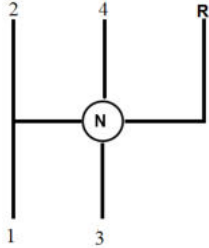

3.1.2 Engine:	<u>Previous sample</u>	<u>Present sample</u>
Make	Simpson	
Model	T IIIA S325/NH.2-F1.4	
Type	Liquid cooled, Four stroke, Naturally aspirated Direct injection Diesel engine	
Serial number	G10013	S325 K68487
Year of manufacture	NA	NA
Country of origin	India	India

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

- Maximum speed at no load	: 2130-2200
- Low idle speed	: 600-800
- Speed at maximum torque	: 1200-1500

	<u>Previous sample</u>	<u>Present sample</u>
Rated speed, (rpm):		
- For PTO use	2000	
- For drawbar use	2000	
3.1.3 Cylinder & Cylinder Head:		
Number	Three	
Disposition	Vertical inline	
Bore/stroke, (mm)	91.4/127	
Capacity as specified by the applicant, (cc)	2500	
Compression ratio	18.5± 0.3:1	
Type of cylinder head	Mono block	
Type of cylinder liners	Dry, replaceable	
Type of combustion chamber	Re entrant cavity on piston crown	
Arrangement of valves	Overhead	
Valve clearance (cold/hot):		
- Inlet valve, (mm)	0.30/0.25	
- Exhaust valve, (mm)	0.30/0.25	
3.1.4 Fuel System:		
Type of fuel feed system	Gravity and force feed	
3.1.4.1 Fuel tank:		
Capacity, (l)	61.0	61.0
Location	Above clutch housing	
Provision for draining of sediments/ water	Provided	
Material of fuel tank	HDPE	
3.1.4.2 Water separator:		
Make	Not provided	Hilux
Type	NA	Gravity separation, transparent inverted funnel
Location	NA	On LHS of engine between fuel tank & fuel feed pump
Capacity, (l)	NA	0.45
3.1.4.3 Fuel feed pump:		
Make	Bosch, India	
Type	Plunger with hand primer	
Model/Group combination No.	9440030030 FP/KSG22AD45/2	F002A50 038 FP/KSG22AD104
Provision of sediment bowl	Provided	
Method of drive	Through camshaft of fuel injection pump	
3.1.4.4 Fuel filters:		
Make	New Holland	New Holland
Model/Group combination No.	F 002C70 009	F002H20138
Number	Two	Two
Type of elements:		
- Primary	Paper	Paper
- Secondary	Paper	Paper
Capacity of final stage filter, (l)	0.50	0.40
3.1.4.5 Fuel Injection pump:		
Make	Bosch	
Model/Group combination No.	F002 AOZ 451 PES 3A80D320RS2000	
Type	Inline plunger	
Serial number	45719794	96052985
Method of drive	Through timing gear	

	<u>Previous sample</u>	<u>Present sample</u>
3.1.4.6 Fuel injectors:		
Make :	Bosch, India	
Model/Group combination No.:		
Holder Number :	F002 C70 009	
Nozzle Number :	DSLA 146P 1007	
Type :	Multi hole (Five holes)	
Manufacturer's production pressure setting, (MPa) :	22.6.0+0.8	23.0+0.8
Injection timing :	13+0/-2 degree BTDC	
Firing order :	1-2-3	
3.1.4.7 Governor:		
Make :	Bosch India	
Model/Group combination No.:	RSV375...1000A4C1410R	
Type :	Mechanical, centrifugal variable speed	
Rated engine speed, (rpm) :	2000	
Governed range of engine speed, (rpm)	600 to 2200	
3.1.5 Air intake system:		
3.1.5.1 Pre-cleaner:		
Make :	New Holland (apa)	
Type :	Centrifugal with transparent dust collector	
Location :	Above main air cleaner with inlet tube outside the bonnet.	
3.1.5.2 Air cleaner:		
Make :	Sietz Technology India Pvt. Ltd.	
Type :	Oil bath	
Location :	In front of radiator under the bonnet	
Range of suction pressure at maximum power, (kPa) :	1.9 to 2.0	2.1 to 2.3
Capacity of oil bath (l) :	0.6	
Oil change period :	After every 50 hours in normal operating condition.	
3.1.6 Exhaust System:		
Type of silencer :	Updraft cylindrical having muffler assembly under the bonnet.	
Position of silencer outlet with respect to SIP, (mm):		
- Vertical :	890	1000
- Longitudinal :	1310	1280
- Lateral :	460 (on LHS)	400 (On LHS)
Range of exhaust gas pressure at maximum power (kPa) :	7.5 to 8.0	52.6 to 54.4
Provision of spark arresting device :	Not provided	
Provision against entry of rain water :	A bend is provided at the top of silencer	
3.1.7 Lubricating system:		
Type :	Force feed cum splash	
Oil sump capacity,(l) :	7.0	7.60
Total lub oil capacity, (l) :	7.6	8.05
Oil change period :	First change after 50 hours and subsequently after every 300 hours of operation.	
Type of cooling device, (if any) :	Not provided	
3.1.7.1 Filters:		
Make :	Not available	
Type :	Full flow, Spin-on, canister through away,	
Number :	One	

	<u>Previous sample</u>	<u>Present sample</u>
3.1.7.2 Pump:		
Type	Gear	Rotary
Method of drive	Through timing gear	
Pressure release setting, (kPa)	343.2 to 448.2 (apa)	
Minimum permissible pressure, (kPa)	176 (apa)	68(apa)
3.1.8 Cooling system:		
Type	Forced circulation of liquid	
Brand name of the coolant	Zero R	Ambra Agri Flu-OT
Coolant water ratio	1:25	1:4
3.1.8.1 Details of Pump	: Centrifugal, semi open impeller of 69.7 mm dia. having six vanes, and driven through crankshaft pulley by a 'V'-belt common to alternator.	
3.1.8.2 Details of fan	: Suction type, having six metallic blades of 380 mm diameter and mounted on water pump shaft.	
Means of temperature control	Thermostat	
Bare radiator capacity, (l)	1.70	1.60
Coolant expansion tank capacity,(l)	0.62	0.55
Total coolant capacity, (l)	6.95	7.55
Radiator cap pressure, (kPa)	88	88
3.1.9 Starting System:		
Type	Electrical, 12V DC	
3.1.10 Transmission System:		
3.1.10.1 Clutch:		
Make	LUK, India	
Type	Single Dry friction plate	
No. of friction plate, (s)	One	One
Size, (mm):	280/165.4 ø	
Method of operation	By a pedal on LHS of operator's seat	
3.1.10.2 Gear box		
Make	CNH	
Type	Mechanical Constant mesh	
No. of speeds:		
- Forward	08	
- Reverse	02	
Location of gear shifting levers	: Side shift arrangement with main gear shift lever on RHS and range selector lever on LHS of operator's seat.	
Gear shifting pattern		
	<u>Gear selection lever</u>	<u>Range selection lever</u>
Oil capacity (l)	23.0	22.0
	(Common with differential, final drive,hydraulic and brake system)	
Oil changing period	: Change after every 1200 hours of operation.	

- 3.1.10.3 Differential Unit:**
- | | |
|--|--|
| Type | : Crown wheel and bevel pinion, with differential unit accommodated inside the differential housing. |
| Reduction through crown wheel & bevel pinion | : 3.91:1 (43/11 T) |
| Oil capacity (l) | : 23.0 22.0
(Common with gearbox, rear axle, final drive, brakes and hydraulic system). |
| Oil changing period | : Change after every 1200 hours of operation. |
| Differential lock : | |
| Type | : Pin Type |
| Location | : RHS of differential housing LHS of differential housing |
| Method of operation | : By pressing a foot pedal provided on RHS of operator seat. |
- 3.1.10.4 Rear axle & final drive:**
- | | |
|----------------------------------|---|
| Type | : Epicyclic reduction unit accommodated inside the portal housing on both sides after brake system. |
| Reduction through final drive | : 6.55: 1
(Sun: 11T, Planets-24T & Ring gear-61T) |
| Oil capacity of final drive, (l) | : 23.0 22.0
(Common with gearbox, differential, brakes and hydraulic system). |
| Oil changing period | : Change after every 1200 hours of operation. |
- 3.1.11 Power lift (Hydraulic system):**
- | | |
|--------------------------------------|---|
| - Make | : MITA |
| - Type | : Open centre, live, ADDC |
| - No. and type of internal cylinder | : One , single acting |
| - Type of linkage lock for transport | : Hydraulic, response control valve in it's fully closed position acts as transport lock. |
- 3.1.11.1 Hydraulic pump:**
- | | |
|--------------------------------|--|
| - Make & Model | : Dynamics |
| - Type | : Tandem Gear |
| - Location & drive | : On RHS of engine, through timing gears. |
| No. & Type of filter | : One, replaceable paper canister throw away type |
| Hydraulic oil capacity, (l) | : 23.0 22.0
(common with gear box, differential, final drive and brake system) |
| Oil change period | : Change after every 1200 hours of operation. |
| Provision for external tapping | : Provided |
| Method of draft sensing | : Through top link |
- Details of control levers :

SI. No.	Control level	Functions
1.	Position control lever (Yellow)	To control depth of the implement
2.	Draft control lever (Red)	To control the draft of the implement
3.	Lift-o-matic button (Black)	To raise the implement quickly without altering the position of control lever 1 & 2
4.	Sensitivity control knob	For adjusting the sensitivity of hydraulic system when working in draft control.
5.	Response control knob	Varies the speed of drop of lower links.
6.	Diverter valve	To the external supply port

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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3.1.14 Drawbar:

3.1.14.1 Linkage Drawbar [Refer Fig. 1]:

Notation	As per IS: 12953-1995 (Reaffirmed in October, 2017), (Cat. I)/(Cat.II) (mm)	As measured, (mm)		Remarks in case of <u>Present model</u>
		<u>Previous sample*</u>	<u>Present sample</u>	
A	683 ± 1.5 / 825 ± 1.5	824	684	Conforms to Cat. I
B	75 (min) / 75 (min)	76.4	75.80	Conforms to Cat. I & II
C	30 (min) / 30 (min)	34.6	30.10	Conforms to Cat. I & II
D \varnothing	21.79 to 22.00 / 27.79 to 28.00	27.8	28.00	Conforms to Cat. II
E	39.0 (min) / 49.0 (min)	49.1	54.40	Conforms to Cat. I & II
F \varnothing	12.0 (min) / 12.0 (min)	12.2	12.00	Conforms to Cat. I & II
G	15.0 (min) / 15.0 (min)	16.6	16.30	Conforms to Cat. I & II
H \varnothing	25 ± 1 / 25 ± 1	24.8	24.90	Conforms to Cat. I & II
J	80 ± 1.5 / 80 ± 1.5	79.8	79.80	Conforms to Cat. I & II
No. of holes	7 / 9	09	07	Conforms to Cat. I

*Test results have been taken from Admin. Ext. report no. T-1404/1931/2020.

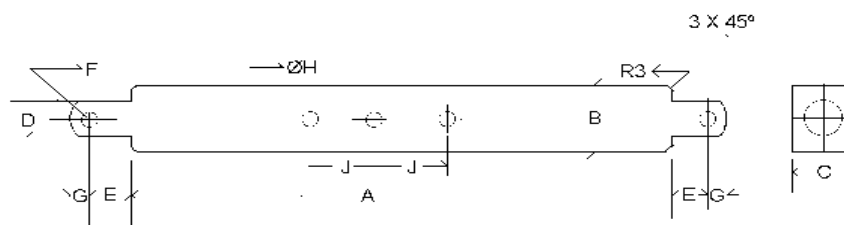


Fig. 1: DIMENSIONAL NOTATIONS FOR LINKAGE DRAWBAR

3.1.14.2	Swinging drawbar	:	<u>Previous sample</u>		<u>Present sample</u>
					Not provided
3.1.15	Power take-off shaft:				
	Type	:	Type-I		Type-I, Not Independent
	Method of engaging	:	By a hand lever provided on LHS of operator seat.		
	No. of shaft(s)	:	One		
	PTO speed corresponding to rated engine speed, (rpm)	:	536 & 680 (Economy)		
	Distance behind rear axle, (mm)	:	325		335
	Engine to PTO speed ratio	:	3.73 : 1 & 2.94 : 1(Economy)		
	Whether the PTO shaft is capable of transmitting the full power of engine	:	Yes		
	Other PTO speed corresponding to Rated engine speed				Multispeed PTO Provided
			---		1 st : 159, 2nd:240, 3rd: 354, 4th: 525 and Reverse: 159

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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3.1.15.2 Specifications of Power Take-Off Shaft: [Refer Fig. 2]

Specification	As per IS:4931-1995 (Type-I) (Reaffirmed in 2014),	As observed		Remarks in case of Present model
		Previous sample	Present sample	
1	2	3	4	5
Nominal speed (rpm)	540 ± 10	540 rpm of PTO shaft corresponds to 2014 rpm of engine.		Conforms
No. of splines	6	6		Conforms
Direction of rotation	Clockwise	Clockwise		Conforms
Location	The position of the centre of the end of PTO shaft shall be within 50mm to right or left of the centre line of the tractor	In the centre line of tractor		Conforms
Dimensions (mm) (Refer Fig. 2):				
DØ	34.79 ± 0.06	34.84	34.74	Conforms
dØ	28.91 ± 0.05	28.86	28.94	Conforms
BØ	29.4 ± 0.1	29.30	29.40	Conforms
AØ (Optional)	8.3 ± 0.5	NA	NA	Not applicable
W	8.69 – 0.09 – 0.16	8.54	8.60	Conforms
a	7	7	7	Conforms
b (Optional)	25 ± 0.5	NA	NA	--
c	38	38	38	Conforms
X	30°	30 ⁰	30 ⁰	Conforms
B	76 (min)	86.9	79.0	Conforms
h	450 to 675	585	595	Conforms

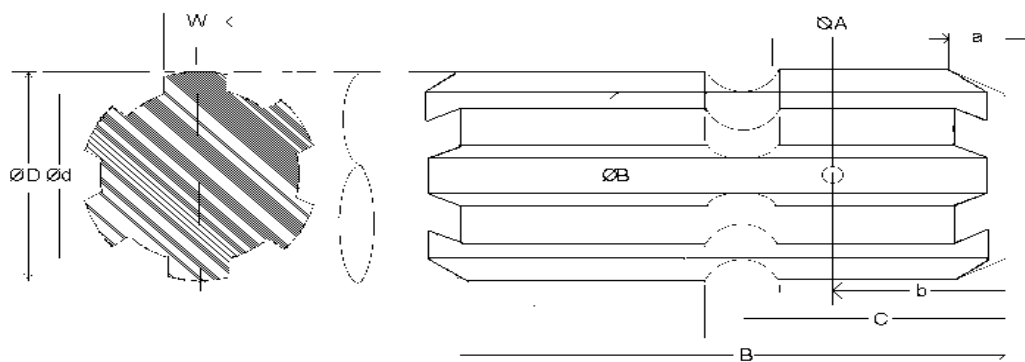


Fig. 2: DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT

		<u>Previous sample</u>	<u>Present sample</u>
3.1.15.2 Power Take-off Master Shield	:	Not provided	Not provided
3.1.16 Towing hitch:			
3.1.16.1 Front			
Type	:	Clevis	
Location	:	On front standard ballast weight	
Height above ground level, (mm)	:	680	625
Type of adjustment	:	Fixed	
Dia of pin hole, (mm)	:	29.3	30.5
Width of clevis, (mm)	:	118.5	121.3

	<u>Previous sample</u>	<u>Present sample</u>
3.1.16.2 Rear		
Type	Clevis	
Location	At the rear of differential housing	
Height above ground level, (mm)		
- Maximum	755	770
- Minimum	455	470
- No. of positions	06	12
- Type of adjustment	By changing and reversing the position of hitch on its mounting bracket	
Distance of hitch point, (mm):		
-From rear wheel centre	420	430
-From power take-off shaft end	95	95
Dia of pin hole, (mm)	29.8	33.1
Width of clevis, (mm)	72.3	70.3
3.1.17 Steering:		
Make	Ognibene	
Type	Open centre, Hydrostatic	
Location of control wheel	Above clutch housing	
Method of operation	Manually by steering control wheel	
Diameter of steering control wheel, (mm)	370	375
Make & type of pump	Dynamics and tandem gear	
Location	On RHS of engine	
Method of drive	Through timing gears	
Make, type & number of hydraulic ram cylinder	Ognibene, double acting, Single	
Location of ram cylinder	In front of front axle on LHS	
Steering oil capacity, (l)	0.97	0.95
3. 1.18 Brakes:		
3.1.18.1 Service Brake:		
Make	New Holland (apa)	
Type	Mechanical, oil immersed disc brake.	
Location	Inside the trumpet housing at rear axle shaft before final reduction.	
No. of discs	Three (on each wheel side)	
Area of liners. (cm ²)	690.0	691.4
	(on each wheel side)	
Material of liners	Organic (apa)	
Method of operation	Independent / combined pedal operation by right foot	
3.1.18.2 Parking Brake:		
Type	Pawl and ratchet arrangement	
Method of operation	By locking the service brake in position through a hand lever provided on RHS of operator's seat.	
3.1.19 Wheel Equipment:		
3.1.19.1 Steered Wheel(s):		
Make	Good Year	
Number	Two	
Type of tyre	Pneumatic, ribbed	
Size	6.00-16	
Ply rating	8	
Maximum permissible load on each tyre at inflation pressure recommended for road work, (kgf)	450 at 220 kPa (as per ITTAC manual)	

	<u>Previous sample</u>	<u>Present sample</u>
Recommended inflation pressure, kPa :		
- for field work :	230	
- for transport :	230	
Std. Track width, (mm) :	1250	1240
Method of changing track width :	By reversing the wheel disc.	
Make & size of rim :	SSWL & 4.5 EX16	WIL & 4.5 EX16
3.1.19.2 Driving wheel:		
Make :	Good Year	Good Year
Number :	Two	
Type of tyre :	Pneumatic, traction	
Size :	13.6-28	
Ply rating :	12	
Maximum permissible load on each tyre at inflation pressure recommended for road work, (kgf) :	1340 at 140 kPa (as per ITTAC manual)	
Recommended inflation pressure, (kPa)		
- for field work :	110	
- for transport :	140	
Std. Track width, (mm) :	1330	1330
Method of changing track width :	By changing and reversing the position of disc on off-set wheel rim lugs	
Make & size of rim :	Wheels India Ltd., & W 12X28	
3.1.19.3 Wheel base, (mm) :	1925	1910
Method of changing wheel base, if any :	None	

3.1.20 Labelling of tractor as per IS: 10273-1987 (Reaffirmed in March, 2014):

Locations of Labeling plate:- It is riveted on LHS of axle support and provides the following information:

Name of Manufacturer	:	CNH Industrial (India) Pvt. Limited,
Make	:	New Holland
Model	:	4010 A
Month & Year of manufacture	:	01/2020
Engine Serial Number	:	S325 K68487
Chassis Serial Number	:	NHN 40100ZLA499092
Maximum PTO Power, kW	:	26.0
Specific fuel consumption, g/kWh	:	265
Additional information		
Total Permissible Mass,(kg)	:	2525
Permissible front axle load,(kg)	:	850
Permissible rear axle load,(kg)	:	1675
Name of Manufacturer formally known as	:	New Holland Fiat (India) Pvt. Limited.

		<u>Previous sample</u>	<u>Present sample</u>
3.1.21	Mass of standard ballasted tractor, (kg):		
	- Front :	730	730
	- Rear :	1075	1100
	- Total :	1805	1830
3.1.22	Over all dimensions:		
	- Length :	3400	3410
	- Width :	1695	1720
	- Height (with exhaust pipe) :	2260	2250
	Minimum ground clearance, (mm) :	375	380

(Below rear hitch mounting bracket)

- 3.1.23** **Optional features, if any** : Provided as under
- 3.1.23.1** **Fitment of adjustable front axle** : As per annexure IV
- 3.1.23.2** **Fitment of differential lock** : Not Provided
- 3.1.23.3** **Fitment of one step down rear tyre size**
- Make : JK tyre
- Number : 02
- Type of tyre : Pneumatic Traction
- Size : 12.4-28
- Ply rating : 12
- Maximum permissible load on each tyre at inflation pressure recommend for road work, (kgf) : 1160 at 140 kPa (as per ITTAC manual)
- Rim size on which it fitted : WIL, W11x28

3.2 NOMINAL SPEED TEST

Move-ment	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when tractor is with:			Variation in nominal speed (%) with standard tyre fitment
				Standard fitment of 13.6-28 tyres size with 610 mm of radius index, (kmph).		optional fitment of 12.4-28 tyres size with 590 mm of radius index, (kmph) as	
				<u>Previous sample</u>	<u>Present sample</u>	<u>Previous sample</u>	
	1	2	3	4		5	6
Forward	L1	178.19	183.90	2.58	2.50	2.42	-3.10
	L2	118.68	120.56	3.88	3.77	3.64	-2.84
	L3	81.42	82.75	5.65	5.56	5.38	-1.59
	L4	59.32	54.98	7.74	8.35	8.07	+7.88
	H1	50.08	49.92	9.19	9.19	8.89	0.00
	H2	33.08	33.15	13.90	13.88	13.42	-0.14
	H3	22.43	22.44	20.51	20.50	19.81	-0.05
	H4	18.33	14.92	28.19	30.79	29.77	+9.22
Reverse	RL	148.35	183.93	3.10	2.50	2.42	-19.35
	RH	40.74	49.88	11.32	9.20	8.89	-18.73

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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3.3 PTO PERFORMANCE TEST

S. No.	Particulars	<u>Previous sample</u>	<u>Present sample</u>
(i)	Date(s) of test	04.11.2015 to 05.11.2015	28.8.2020
(ii)	Tractor run at this Institute prior to start of PTO test, (h)	4.4	4.61
(iii)	Dynamometer test bench used	Fuchino ESF 1000 S Eddy Current	

The results of PTO performance test of **Previous & Present sample** are tabulated in Table-1

Table-1

	Power, (kW)	Speed, (rpm)		Fuel Consumption			Specific energy, (kWh/l)
		PTO	Engine	(l/h)	(kg/h)	(kg/kWh)	
1	2	3	4	5	6	7	8
a) Maximum power – 2 hours test:							
Previous sample	26.4	536	1999	8.27	6.91	0.262	3.20
Present sample	26.5	536	1999	8.27	6.91	0.261	3.20

*** Under high ambient conditions**

Sl. No.	Parameters	<u>Previous sample</u>		<u>Present sample</u>
		Natural Ambient	High Ambient	Natural Ambient (MAX. Power 2 hours)
i)	No load maximum speed, (rpm)	2145	2137	2130
ii)	Equivalent crankshaft torque at maximum power, (Nm)	126.23	120.35	126.49
iii)	Equivalent crankshaft torque at rated engine speed, (Nm)	126.23	120.35	126.49
iv)	Maximum equivalent crank shaft torque, (Nm)	149.58	142.49	--
v)	Engine speed at maximum equivalent crankshaft torque, (rpm)	1250	1302	--
vi)	Backup torque, (%)	18.5	18.4	--
vii)	Smoke level at 80 % of max. power	0.25	-	--
viii)	Range of atmospheric condition :			
	- Temperature, (°C)	27 to 30	42 to 44	28
	- Pressure, (kPa)	98.1 to 98.6	99.1 to 99.9	97.9 to 98.0
	- Relative humidity, (%)	43 to 69	5 to 22	52 to 55
ix)	Maximum Temperature, (°C):			
	- Engine oil	108	125	111
	- Coolant	75	90	84
	- Fuel	47	61	43
	- Air intake	34	50	30
	- Exhaust gas	676	625	668
x)	Pressure at maximum power:			
	- Intake air, (kPa)	1.9 to 2.0	1.4 to 1.5	2.1 to 2.3
	- Exhaust gas, (kPa)	7.5 to 8.0	10.1 to 10.8	52.7 to 54.4
xi)	Consumptions:			
	Lub. Oil, (g/kWh)	--	0.35	--
	-Coolant (% of total coolant capacity)	--	NIL	--

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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4.0 OTHER APPLICABLE TESTS

4.1 TURNING ABILITY

Characteristics	Minimum turning diameter (m)		Minimum clearance diameter,(m)	
	LHS	RHS	LHS	RHS
Brake applied	6.02	5.99	6.22	6.19
Brakes released	6.54	6.68	6.76	6.88

5. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustment/Defect/Breakdown and Repairs	Category of Breakdown	Tractor run hours
1.	Nil	--	-

6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1	On the basis of test 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 for the applicable features for this tractor model.							
Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant/ requirement		As observed		Whether present model meets the requirements (Yes/No)
				Previous sample	Present sample	Previous sample	Present sample	
1	2	3	4	5 a	5 b	6 a	6 b	7
6.1.1	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.	26.0	26.0	26.4	26.5	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	26.0	26.0	26.4	26.5	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	$+ 10\%$ Max.	265	265	262	261	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	152	152	149.6	152.88	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	15 (D)	15 (D)	18.5	20.9	Yes
				12 (R)	12 (R)			

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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1	2	3	4	5	6	7	
6.1.2	Safety features :						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pullies, 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 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)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	-	Does not meet the requirements	No	
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	--	
h)	1) Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 Kmph	-	9.20 (Meet the requirements)	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.	NA	Not required	Not applicable	
6.1.3	Labeling of tractors (Provision of labeling plate):						
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO in kW and 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		NEW HOLLAND	Yes	
	2) Model	Evaluative				4010 A	Yes
	3) Month & Year of manufacture	Evaluative			--	01/2020	Yes
	4) Engine number	Evaluative			--	S325 K68487	Yes
	5) Chassis number	Evaluative			--	NHN 40100ZLA49 9092	Yes
	6) Declaration of PTO power, kW	Evaluative				26.0	Yes
	7) Declaration of Specific Fuel Consumption power, g/kWh	Evaluative				265	Yes

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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1	2	3	4	5	6	7
6.1.4	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
(d)	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	Not fitted	Not Applicable	Not Appli cable
(e)	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided	Provided	Yes
(f)	Accessories (optional)	Non Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Provided	Provided	Yes

6.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per Clause 5.0 of IS:12207-2019) :					
S. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the Requirements (Yes/No.)
1.	Critical	Evaluative	There is no 'critical breakdown' during the course of testing.	None	Yes
2.	Major	Evaluative	There are not more than 2 major breakdowns and neither of them is of repetitive nature.	None	Yes
3.	Minor	Evaluative	There are not more than 5 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 + 3minor) or (1 major + 4 minor) or 5 minor breakdown.	None	Yes

6.3 Salient Observations:

6.3.1 Laboratory tests:

6.3.1.1 PTO Performance Test:

- i) The maximum PTO power was recorded as 26.5 kW against the declaration of 26.0 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 261 g/kWh against the declaration of 265 g/kWh, which is within the tolerance limit of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as 152.88 N-m against the declaration of 152.0 N-m, which is within the permissible limit as specified in IS: 12207-2019.
- iv) The backup torque is **20.9%**.

6.4 This tractor model meets the evaluative requirements of **IS: 12207-2019**.

T-1532/2060/2021	NEW HOLLAND 4010 A TRACTOR - Commercial (Technical Extension)
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7. 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	9 Months (July, 2020 to March, 2021)	Yes	--None--

TESTING AUTHORITY:


NITESH KUMAR VERMA
 AGRICULTURAL ENGINEER


C.V. CHIMOTE
 TEST ENGINEER


P.K. PANDEY
 DIRECTOR

Report compiled by Sh. Pratyush Satya, Senior Technical Assistant

8. Applicant's comments

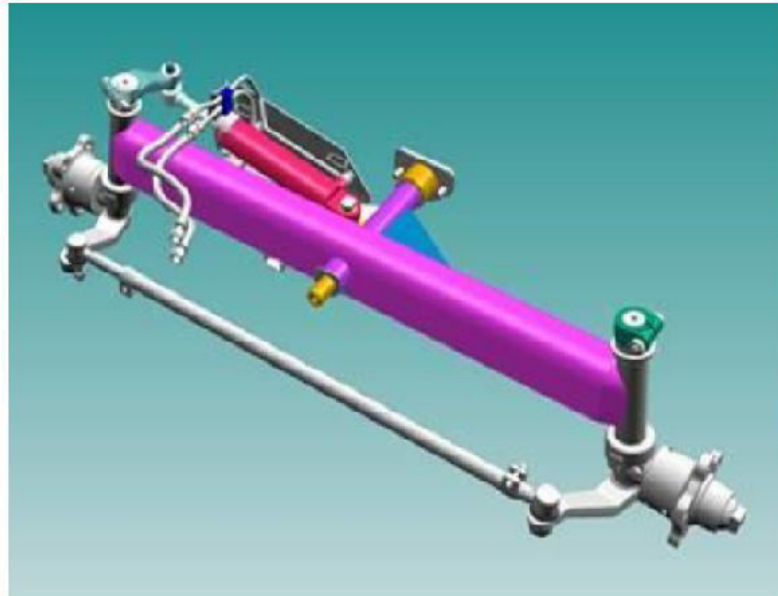
Para no.	Our reference	Comments received from the applicant
-	-	Nil

ANNEXURE- I

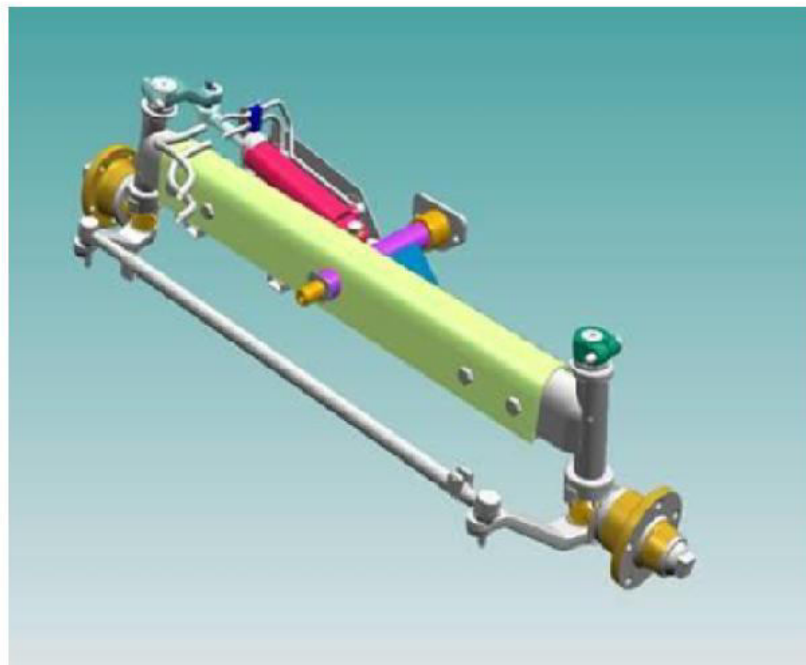
TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	<u>HOURS</u>
1.	Running –in	--
2.	Nominal speed test	0.86
3.	PTO Performance Test	16.18
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	3.23
Total		20.27

ANNEXURE- II



Fixed type front axle (standard fitment)



Adjustable type front axle (Optional fitment)