

व्यावसायिक परीक्षण रिपोर्ट  
वैरिएंट ( प्रथम बैच परीक्षण )  
COMMERCIAL TEST REPORT  
Variant (1<sup>st</sup> Batch Test)

संख्या /No. : T- 1253/1780/2019

माह/Month : July, 2019

(यह परीक्षण रिपोर्ट 31/07/2024 तक वैध है / THIS TEST REPORT IS VALID UPTO 31/07/2024)



## NEW HOLLAND, 3600 – 2 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 Agricultural, Cooperation & Farmer's Welfare,

Mechanization & Technology Division

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

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T- 1253/1780/2019	NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1 <sup>st</sup> Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/07/2024

**Manufacturer** : M/s. CNH Industrial (India) Pvt. Ltd,  
Plot No.-3, Udyog Kendra,  
Greater Noida – 201 306,  
Distt. Gautam Budh Nagar  
(Uttar Pradesh)

Month: July	Test Report No. T-1253/1780/2019	Year : 2019
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T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
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Type of Test : **COMMERCIAL- Variant (First Batch Test )**  
 Test code/Procedure : IS: 5994-1998 (Reaffirmed in 2014) and  
 IS: 12207-2014  
 Period of Test : January, 2019 to May, 2019  
 Test Report No. : **T- 1253/1780/2019**  
 Month/Year : **July, 2019**

- 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 randomly selected from the 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 1<sup>st</sup> Batch (Variant) test report of “**New Holland 3600-2**” tractor and therefore, should be read in conjunction with the Test Report of commercial (Variant) model i.e. “**New Holland 3600-2**” tractor bearing report No. **T- 705/1211/2010** released in January, 2010 and the Base (2<sup>nd</sup> Batch test) model “**New Holland 3630 TX**” tractor bearing **No. T- 1167/1694/2018** released in June, 2018 from which the said variant (Batch) model was derived.

### SELECTED CONVERSIONS

Sl. No	Units	Conversion Factor	A B B R E V I A T I O N S	
<b>1.</b>	<b>Force:</b>		Apa	As per applicant
	1 kgf	9.80665 N	TDC	Top Dead Centre
		2.20462 lbf		IS
<b>2.</b>	<b>Power:</b>		LHS/RHS	Left Hand Side/ Right Hand Side
	1 mechanical horsepower	1.01387 metric horsepower	Hg	Mercury
		745.7 W	Temp.	Temperature
	1 metric horsepower	735.5 W	N.R.	Not recorded
	1 kW	1.35962 metric horsepower	Rpm	Revolutions per minute
<b>3.</b>	<b>Pressure:</b>		O.D/I.D	Outer diameter/ Inner diameter
	1 psi	6.895 kPa	N.A.	Not available/ Not applicable
	1 kgf/cm <sup>2</sup>	98.067 kPa = 735.56 mm of Hg	PTO	Power take-off
	1 bar	100 kPa = 10 N/cm <sup>2</sup>	R.H.	Relative Humidity
	1 mm of Hg	1.3332 m-bar		

T- 1253/1780/2019	NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1 <sup>st</sup> Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/07/2024

## CONTENTS

<b>S. No.</b>	<b>Particulars of test</b>	<b><u>PAGE</u></b>
1.	Scope of Test	05
2.	Fuel & Lubricants	06
3.	Essential Tests	06
	3.1 Specifications	06
	3.2 Nominal Speed	18
	3.3 PTO Performance Test	18
4.	Other Applicable Tests	23
	4.1 Noise Measurement	23
5.	Adjustments, Defects, Breakdowns and Repairs	24
6.	Comparison of Specification and Performance Characteristics of Previous Sample and Present Sample	25
7.	Summary of Observations, Comments & Recommendations	29
8.	Citizen Charter	32
9.	Applicant Comments	32
	<b>ANNEXURE – I</b>	<b>33</b>

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

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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 testing authority  
Place of running-in : At manufacturer's works  
Duration of said running-in, (h):  
- Engine : 50  
- Transmission : Nil

**Method of Selection** : The test sample was selected randomly out of  
Five tractors from the production line by the  
representative of testing authority.

### 1. SCOPE OF TEST

The tractor model "New Holland 3600-2" tractor had undergone Commercial (Variant) 1<sup>st</sup> Batch test vide test report number T-705/1211/2010 (January, 2010). This tractor model is a variant of "New Holland 3630 TX" (2<sup>nd</sup> batch test) tractor bearing test report no. T- 1167/1694/2018, released in June, 2018, derived on the basis of following differences in the technical specifications as per IS: 12207:2014.

The major features of Base model and Variant model were listed below:

S. No.	Parameters	Base Model Test Report No. (T- 1167/1694/2018) June	Variant Model
1	2	3	4
1.	Make & Model of tractor	New Holland & 3630 TX	New Holland & 3600-2
2.	<b>Number of speeds:</b>		
	-Forward	8	12
	-Reverse	2	3
	Addition of speed module	There were two ranges	Additional third creeper range added without change in earlier speed ratio.
3.	<b>Range of speed ,(kmph):</b>		
	-Forward	3.08 to 30.85	1.0 to 30.91
	-Reverse	4.33 to 15.59	1.40 to 15.58
4.	<b>Location of gear shifting lever</b>		
	-Main	In-front of operator seat	RHS of operator seat
	-Range selector	In-front of operator seat	LHS of operator seat
5.	Ground PTO speed	Not provided	Provided
6.	Bare radiator capacity, (l)	4.15	3.70
7.	Total cooling capacity, (l)	10.33	7.85
8.	Steering oil cooler	Not provided	Provided
9.	Mass of standard ballasted tractor [front/rear/total] (kgf)	795/1230/2025	820/1280/2100

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

Subsequent to the examination of the case in the light of **Indian Standard: 12207 -2014**, the following tests were considered to be carried out:

- Specification checking in full
- Nominal speed test
- PTO performance test
- Noise measurement test

## 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
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
1.	Air cleaner oil	SAE 20W40	As recommended
2.	Engine		
3.	Steering Housing	SAE EP-140	As recommended
4.	Gearbox, differential, rear axle, rear final drive & hydraulic system oil	SAE EP-80	Oil originally filled in the tractor was not changed
5.	Grease	NLG1-2	MP Grease

## 3. ESSENTIAL TESTS

### 3.1 SPECIFICATIONS

**3.1.1 Tractor:**

Make : New Holland  
 Model : 3600-2  
 Brand name : None  
 Type : Four wheeled, Rear-wheel driven, General Purpose, Agricultural Tractor.  
 Year of manufacture : JJ (i.e. September, 2018)  
 Chassis number : NHN36000ZJJ441185  
 Country of origin : India

**3.1.2 Engine:**

Make : IVECO (apa)  
 Model : 8035.05D.937  
 Type : Four strokes, liquid cooled, naturally aspirated, direct injection, diesel engine.  
 Serial number : 242645DX  
 Year of manufacture : 2016  
 Country of origin : India

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

- Maximum speed at no load : 2750 ± 50
- Low idle speed : 650 ± 50
- Speed at maximum torque : 1400 ± 200

**Rated speed, (rpm):**

- For PTO use : 2500
- For drawbar use : 2500

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**3.1.3 Cylinder & Cylinder Head:**

Number	: Three
Disposition	: Vertical, Inline
Bore/stroke, (mm)	: 104 / 115 (apa)
Capacity as specified by the applicant, (cc)	: 2931
Compression ratio	: 18 (± 0.5) : 1
Type of cylinder head	: Monoblock
Type of cylinder liners	: Dry, replaceable
Type of combustion chamber	: Omega shape on piston head (apa)
Arrangement of valves	: Overhead, Inline
<b>Valve clearance (cold/hot):</b>	
- Inlet valve, (mm)	: 0.3 / 0.3
- Exhaust valve, (mm)	: 0.3 / 0.3

**3.1.4 Fuel System:**

Type of fuel feed system	: Gravity and force feed
--------------------------	--------------------------

**3.1.4.1 Fuel tank:**

Make	: Simplast (apa)
Capacity, (l)	: 60.5
Location	: Above clutch housing
Provision for draining of sediments/ water	: Not Provided
Material of fuel tank	: HDPE

**3.1.4.2 Water separator:**

Make	: Hilux
Type	: Inverted funnel gravity separation
Location	: RHS of engine, between fuel tank and fuel feed pump.

**3.1.4.3 Fuel feed pump:**

Make	: Iveco (apa)
Type	: Diaphragm
Model/Group combination No.	: Not available
Provision of sediment bowl	: Not provided
Method of drive	: Through timing gear

**3.1.4.4 Fuel filters:**

Make	: New Holland (apa)
Model/Group combination No.	: NA
Number	: Two
<b>Type of elements:</b>	
- Primary	: Paper
- Secondary	: Paper
Capacity of final stage filter, (l)	: 0.45

**3.1.4.5 Fuel Injection pump:**

Make	: Bosch, India
Model/Group combination No.	: 0460423080, VE3/12F1250L1187
Type	: Rotary
Serial number	: 8570269
Method of drive	: Through timing gear

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

- 3.1.4.6 Fuel injectors:**
- Make : Bosch, India  
 Model/ group combination no. :  
 Holder Number : 0432193414  
 Nozzle Number : DSLA 133P5619  
 Type : Multi hole (six holes)  
 Manufacturer's production pressure : 26 to 27.2  
 setting, (MPa)  
 Injection timing : 1.5 ± 0.2 mm plunger lift at TDC  
 Firing order : 1 - 2 - 3
- 3.1.4.7 Governor:**
- Make : Bosch, India  
 Model/Group combination No. : Inbuilt with Fuel Injection Pump  
 Type : Rotary  
 Governed range of engine speed, (rpm) : 600 to 2800
- 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 inlet tube, outside the bonnet
- 3.1.5.2 Air cleaner:**
- Make : New Holland (apa)  
 Type : Oil bath  
 Location : In front of radiator, under the bonnet  
 capacity : 1.0  
 Range of suction pressure at maximum : 4.0  
 power, (kPa)  
 Service / maintenance schedule : After every 50 hours of operation
- 3.1.6 Exhaust System:**
- Make : New Holland  
 Type of silencer : Updraft (Cylindrical)  
**Position of silencer outlet with respect to SIP, (mm):**  
 - Vertical : 1052  
 - Longitudinal : 1315  
 - Lateral : 180 (on LHS)  
 Range of exhaust gas pressure at : 3.5 to 3.6  
 maximum power (kPa )  
 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 : Forced feed-cum-splash  
 Oil sump capacity, (l) : 7.0  
 Total lub oil capacity, (l) : 8.0  
 Oil change period : First change after 50 hours and subsequently  
 after every 300 hours of operation  
 Type of cooling device, (if any) : **Not provided**



T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

<b>3.1.7.2</b>	<b>Filters:</b>	
	Type	: Spin-on, throw away, paper element
	Number	: One
<b>3.1.7.3</b>	<b>Pump:</b>	
	Type	: Gear
	Method of drive	: Through cam lobe of FIP shaft / Camshaft
	Pressure release setting, (kPa)	: 294.2 (apa)
	Minimum permissible pressure, (kPa)	: 39 (apa)
<b>3.1.8</b>	<b>Cooling system:</b>	
	Type	: Forced circulation of liquid
	Brand name of the coolant	: Zero R anticorrosive additive
	Coolant water ratio	: 1:25 (apa)
<b>3.1.8.1</b>	<b>Details of Pump</b>	: Centrifugal, semi open impeller of 96.0 mm of outer diameter having seven vanes, and driven through crankshaft pulley by a cogged 'V'-belt common to alternator
<b>3.1.8.2</b>	<b>Details of fan</b>	: Suction type, having four metallic blades of 395.0 mm of outer diameter and mounted on water pump shaft.
	Means of temperature control	: Thermostat
	Bare radiator capacity, (l)	: 3.70
	Coolant expansion tank capacity,(l)	: 0.9
	Total coolant capacity, (l)	: 7.9
	Radiator cap pressure, (kPa)	: 88
<b>3.1.9</b>	<b>Starting System:</b>	
	Type	: Electrical,12 V, DC
	Aid for cold starting	: None
	Any other device provided for easy starting	: None
<b>3.1.10</b>	<b>Electrical System:</b>	
<b>3.1.10.1</b>	<b>Battery:</b>	
	Make and model	: Exide Express & MHD 1000
	Number	: One
	Type	: Lead Acid
	Capacity and rating	: 12V, 100 Ah at 20 hour discharge rating
	Location	: In front of radiator, under the bonnet.
<b>3.1.10.2</b>	<b>Starter:</b>	
	Make	: Spark Minda
	Model	: N1039-1357
	Type	: Pre-engaging, solenoid operated
	Power rating	: Not available
	Serial number	: Not available
<b>3.1.10.3</b>	<b>Generator:</b>	
	Make	: Bosch
	Model	: F00 G90 511
	Type	: Alternator
	Serial number	: Not available
	Output rating	: 14V, 55 amp
	Method of drive	: Through crank shaft pulley by a cogged V-belt common to water pump shaft.

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**3.1.10.4 Voltage regulator** : In-built with alternator

**3.1.10.5 Details of lights:**

Description	No. & capacity of bulb	Height of the centre of beam above ground level, (mm)	Size, (mm)	Distance between centre of the beam and outside edge of tractor at standard rear track setting, (mm)
<b>Present Sample:</b>				
<b>Front Lights:</b>				
- Head lights	2, 12V, 35/35W	1020	85 x 145	545
- Parking lights	2, 12V, 5W	1325	60 x 65	220
- Turn Indicators-cum-hazard lights	2, 12V, 21W	1325	70 x 65	135
<b>Rear lights:</b>				
- Tail-cum-brake light	2, 12V, 21/5W	1330	65 x 65	210
- Turn Indicators-cum-hazard lights	2, 12V, 21W	1330	70 x 65	120
Plough light (on RHS mudguard)	1, 12V, 35W	1330	125Ø	195
Reflectors (Red)	02	1440	30 x 55	400
Registration plate Light	Part of rear RHS combination lamp assembly			

**3.1.10.6 Main switch** : Key turn type, having three position viz:  
i) OFF  
ii) 'Circuit' ON  
iii) START

**3.1.10.7 Light switch** : Rotary type having four positions viz.  
i) OFF  
ii) Parking lights + Dash board lights 'ON'  
iii) Head lights (short beam) + (ii)  
iv) Head lights (long beam) + (ii)

**3.1.10.8 Horn:**  
Make : Nikko-Auto  
Type : 2B, Electromagnetically vibrated diaphragm  
Location : In front of radiator, under the bonnet

**3.1.10.9 Fuse box** : Contains Fifteen number of fuses of following capacity:

Capacity	15 A	10 A
No. of fuse	03	03

**3.1.10.10 Details of other electrical accessories:**

**3.1.10.10.1 Starting safety switch** : Engine will not start unless the main gear shifting lever is in neutral position.

**3.1.10.10.2 Flasher Unit:**  
Make : Interface  
Capacity:  
- Turn signal : 12V, 21W x 2 + 2W x 1  
- Hazard signal : 12V, 21W x 4 + 2W x 2  
Flashes/min. : 85

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**3.1.10.10.3 Seven pin trailer socket** : Provided

**3.1.11 Instrument panel details:**

- i)** Engine speed-cum- cumulative digital run hour meter (0 – 32 x 100 rpm)
- ii)** Water temperature gauge (with colour zone)
- iii)** Lubricating oil pressure indicator light
- iv)** Fuel level gauge (with colour zones).
- v)** Battery charging warning indicator light
- vi)** Main switch key turn type
- vii)** Light switch rotary type
- viii)** Turn indicator light switch (Two way)
- ix)** Hazard light switch
- x)** Parking light 'ON' indicator light
- xi)** Head light long beam "ON" indicator light
- xii)** Turn indicator-cum-hazard indicator light tell-tale
- xiii)** Hand accelerator lever
- xiv)** Rear view mirror
- xv)** Steering control wheel
- xvi)** Horn push button
- xvii)** Engine stop by key turn off

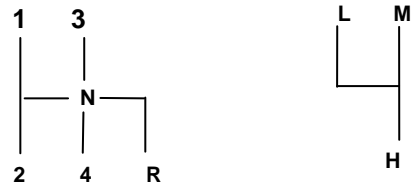
**3.1.12 Transmission System:**

**3.1.12.1 Clutch:**

- Make : Luk, India
- Type : Dual, Diaphragm dry friction
- No. of friction plate(s) : Two
- Size, (mm): -Transmission : 280 Φ /168 Φ
- PTO : 280 Φ/165 Φ
- Method of operation: - : By pressing the foot pedal provided on LHS of operator's seat.
- PTO : By a hand lever provided on RHS beneath the dashboard

**3.1.12.2 Gear box:**

- Make : New Holland
- Type : Mechanical, combination of constant mesh and semi synchromesh gears
- Model : Not provided
- No. of speeds:** - Forward : 12
- Reverse : 03
- Location of gear shifting levers : Side shift
- Main gear shift lever : On RHS of operator's seat
- Range selection lever : On LHS of operator's seat
- Gear shifting pattern :



**Main gear shifting lever**

**Range selection lever**

- Oil capacity (l) : 28.0 (Common with differential, brake and hydraulic system)
- Oil changing period : Change after every 1200 hours of operation.

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**3.1.12.3 Rear differential :**

- Type : Crown wheel & bevel pinion with differential unit accommodated inside the differential housing
- Reduction through crown wheel & bevel pinion : 3.357:1 (47/14 T)
- Oil capacity, (l) : 28.0 (Common with gearbox, brake and hydraulic system)
- Oil changing period : Change after every 1200 hours of operation.

**Differential lock:**

- Type : Pin type
- Location : On RHS of differential housing
- Method of drive : RHS foot pedal operated

**3.1.12.4 Rear axle & final drive:**

- Make : New Holland
- Type : Bull gear pinion
- Reduction through final drive : 5.636 : 1 (62/11 T)
- Oil capacity of final drive, (l) : 3.50 (on each side)
- Oil changing period : Change after every 1200 hours of operation.

**3.1.13 Power lift (Hydraulic system):**

- Make : New Holland
- 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 fully closed position act as transport lock

**3.1.13.1 Hydraulic pump:**

- Make & Model : Dynamatic (apa)
- Type : Gear
- Location : On RHS of engine.
- Method of drive : Through timing gears
- No. & Type of filter : One, spin-on throw away type
- Hydraulic oil capacity, (l) : 28.0 (Common with transmission, differential & brake system).
- Oil change period : Change after every 1200 hours of operation.
- Provision for external tapping : Provided

**Details of control :**

Sl. No.	Control	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	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 divert the oil path.

- Method of draft sensing : Through top link

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR</b> <b>Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

### 3.1.13.2 Three point linkage:

Sl. No.	Observations	As per IS: 4468- (Part-1) -1997, (Reaffirmed in Oct., 2017) (Cat.I / Cat.II), (mm)	As measured (mm)	Remarks
I.	<b>Upper hitch points:</b>			
	a)	Dia of hitch pin hole	19.30 to 19.50 / 25.70 to 25.90	25.75 Conforms to Cat. -II
	b)	Width of ball	44.0 (max.) / 51.0 (max)	44.0 Conforms to Cat. -I
II.	<b>Lower hitch points:</b>			
	a)	Dia of hitch pin hole	22.40 to 22.65 / 28.70 to 29.00	29.0 Conforms to Cat. -II
	b)	Width of ball	34.8 to 35.0 / 44.8 to 45.0	44.90 -do-
III.	Lateral distance from lower hitch point to centre line of tractor	359 / 435	435	-do-
IV.	Lateral movement of lower hitch points	100 (min) /125 (min)	150	Conforms to Cat I & II
V.	Distance from end of power take-off to centre of lower hitch point (lower links in horizontal position)	450 to 575 / 550 to 625	655	<b>Does not conform</b>
VI.	Transport height	820 (min)/ 950 (min)	1050	Conforms to Cat I & II
VII.	Power range (Without force)	560 (min)/ 650 (min)	633,690	-do-
VIII.	Leveling adjustment	100 (min)/ 100 (min)	282	-do-
IX.	Lower hitch point tyre clearance	100 (min)/ 100 (min)	170	-do-
X.	Lower hitch point height	200 (max) /200(max)	200	-do-

### 3.1.13.4

#### Drawbar:

#### 3.1.13.4.1 Linkage Drawbar [Refer Fig. 1 (B)]:

Notation	As per IS: 12953-1995 Reaffirmed in (Oct,2017) (Cat. I)/(Cat.II) (mm)	As measured, (mm)	Remarks
A	683 ± 1.5 / 825 ± 1.5	824	Conforms to Cat. – II
B	75 (min) / 75 (min)	77.0	Conforms to Cat. – I & II
C	30 (min) / 30 (min)	31	Conforms to Cat. – I & II
D $\emptyset$	21.79 to 22.00 / 27.79 to 28.00	27.92	Conforms to Cat. – II
E	39.0 (min) / 49.0 (min)	64.7	Conforms to Cat. – I & II
F $\emptyset$	12.0 (min) / 12.0 (min)	12.2	Conforms to Cat. – I & II
G	15.0 (min) /15.0 (min)	14.2	<b>Does not conform</b>
H $\emptyset$	25 ± 1 / 25 ± 1	25	Conforms to Cat. – I & II
J	80 ± 1.5 / 80 ± 1.5	80.5	Conforms to Cat. – I & II
No. of holes	7 / 9	09	Conforms to Cat. – II

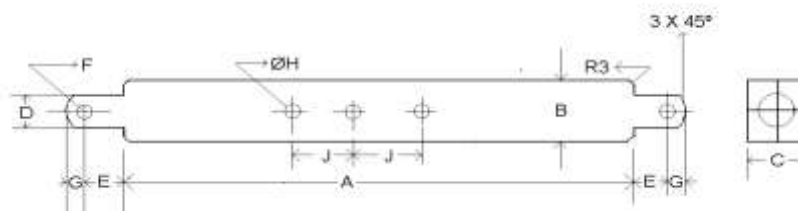
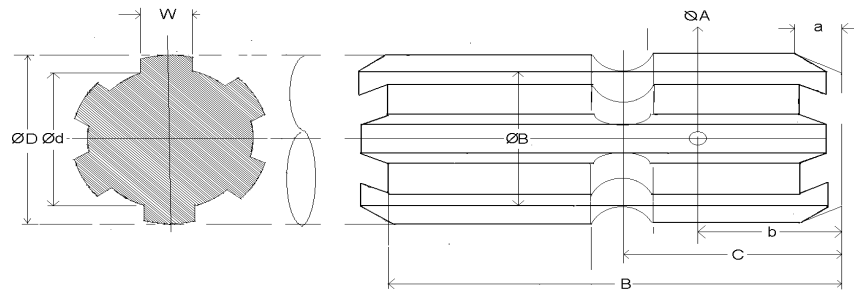


Fig. 1 (B): DIMENSIONAL NOTATIONS FOR LINKAGE DRAWBAR

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

- 3.1.13.4.2 **Swinging drawbar** : **Not provided**
- 3.1.13.4.3 **Provision to attach trailer brake valve assembly** : **Not provided**
- 3.1.14 **Power take-off shaft:**
- Type : Type-I, 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 of 2500 (rpm) : 686
- Distance behind rear axle, (mm) : 260
- Engine to PTO speed ratio : 3.643
- Whether the PTO shaft is capable of transmitting the full power of engine : Yes
- 3.1.14.2 **Power take-off proportional to ground speed:**
- Indicate 540 or 1000 rev/min : 540 rev/min
- Travelling distance for one revolution of take-off shaft, (m) : 0.311 m
- Number of power take-off shaft revolutions for one revolution of (rear) driving wheels : 12.94
- Direction of rotation with forward gear engaged (viewed from behind tractor) : Clockwise

<b>3.1.14.1 Specifications of Power Take-Off Shaft: [ Refer Fig. 2 (a) ]</b>			
<b>Specification</b>	<b>As per IS: 4931-1995 (Reaffirmed in 2014), Type-1</b>	<b>As observed</b>	<b>Remarks</b>
Nominal speed (rpm)	540 ± 10	540 rpm of PTO corresponds to 1967 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
<b>Dimensions (mm) (See Fig. 2):</b>			
D∅	34.79 ± 0.06	34.80	Conforms
d∅	28.91 ± 0.05	28.02	<b>Does not conform</b>
B∅	29.4 ± 0.1	29.41	Conforms
A∅ (Optional)	8.3 ± 0.1	8.40	Conforms
W	8.69 – 0.09 - 0.16	8.58	Conforms
a	7	7	Conforms
b (Optional)	25 ± 0.5	25.3	Conforms
c	38	38	Conforms
X	30°	30	Conforms
B	76 (min)	85	Conforms
h	450 to 675	640	Conforms



**Fig. 2 (a) : DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT**

<b>3.1.14.2</b>	<b>Power Take-off Master Shield</b>	: Not provided
<b>3.1.15</b>	<b>Towing hitch:</b>	
<b>3.1.15.1</b>	<b>Front:</b>	
	Type	: Clevis
	Location	: At front of front engine support.
	Height above ground level,(mm)	: 670 (fixed)
	Type of adjustment	: None
	Width of clevis, (mm)	: 118.3
	Dia of pin hole, (mm)	: 28.6
<b>3.1.15.2</b>	<b>Rear:</b>	
	Type	: Clevis
	Location	: At rear of differential housing
	Height above ground level, (mm):	
	- Maximum	: 745
	- Minimum	: 465
	No. of position	: 04
	- Type of adjustment	: By changing and reversing the position of hitch on its mounting bracket
	Distance of hitch point,(mm):	
	- From rear axle centre	: 390
	- From power take-off shaft end	: 135
	Dia of pin hole, (mm)	: 36.3
	Width of clevis, (mm)	: 91.4
<b>3.1.16</b>	<b>Steering:</b>	
	Make	: Rane
	Type	: Mechanical, Recirculating ball with single drop arm
	Location	: Above clutch housing
	Diameter of steering control wheel, (mm)	: 450
	Steering oil cooler	: Provided
	Steering oil capacity, (l)	: 0.70
	Oil change period	: Change after every 1200 hours of operation.
<b>3.1.17</b>	<b>Brakes:</b>	
<b>3.1.17.1</b>	<b>Service Brake:</b>	
	Make	: JMI
	Type	: Mechanical, oil immersed multidisc
	Location	: Inside the trumpet housing at the rear axle shaft.
	No. of discs	: Three (on each wheel side)
	Area of liners. (cm <sup>2</sup> )	: 695 (on each wheel side)
	Material of liners	: Prendo Abex HDT 303 (apa)
	Method of operation	: Individual / combine pedal operation by right foot.

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

- 3.1.17.2 Parking Brake:**  
Type : Pawl & ratchet arrangement for locking service brake discs.  
Method of operation : By locking the service brake discs through a separate hand lever provided on RHS of operator's seat.
- 3.1.18 Wheel Equipment:**
- 3.1.18.1 Steered Wheel(s):**  
Make : MRF, Shakti  
Number : Two  
Type of tyre : Pneumatic, ribbed  
Size : 6.00-16  
Ply rating : 8  
Maximum permissible loading : 560  
capacity of each tyre at 340 kPa pressure, kgf  
**Recommended inflation pressure, kPa :**  
- for field work : 340  
- for transport : 340  
Track width, (mm) : 1350 (Std.), 1490, 1550, 1710, 1780 & 1900  
Method of changing track width : By reversing the wheel disc and extending the telescopic front axle.  
Make & size of rim : WIL & 4.50E x 16
- 3.1.18.2 Driving wheel:**  
Make : MRF, Shakti Life  
Number : Two  
Type of tyre : Pneumatic, traction  
Size : 14.9 -28  
Ply rating : 12  
Maximum permissible loading : 1536  
capacity of each tyre at 140 kPa pressure, (kgf)  
**Recommended inflation pressure, (kPa )**  
- for field work : 110  
- for transport : 140  
Track width, (mm) : 1350,1425 (**Std**), 1555, 1635, 1765, 1825 & 1955  
Method of changing track width : By reversing the wheel disc and changing position of wheel disc on offset rim lugs.  
Make & size of rim : SSWIL & W13 x 28
- 3.1.18.3 Wheel base, (mm)** : 2040  
Method of changing wheel base, if any : **None**
- 3.1.19 Operator's seat:**  
Make : Harita seating system Ltd.  
Type : Cushioned seat with backrest  
Type of suspension : Two, Helical coil springs  
Type of damping : One, Hydraulic shock absorber  
**Range of adjustment,(mm):**  
- Vertical : Nil  
- Lateral : Nil  
- Longitudinal : ± 75



T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**3.1.20 Provision for safety and comfort of operator:**

**3.1.20.1 Conformity with IS: 12343-1998: (Reaffirmed in 2014)**

Operator's seat meets the requirements, **except the following:**

<u>Previous sample</u>	<u>Present sample</u>
i) Width of seat does not meet the requirement.	i) Length and Width of seat does not meet the requirement.
ii) Longitudinal adjustment provided operators seat i.e. forward & rearward from the mid position was observed as $\pm 25$ mm against the minimum & optimum requirement of $\pm 25$ mm & $\pm 100$ mm respectively.	ii) Longitudinal distance from centre of differential lock pedal to seat index point is less than the minimum requirement.

**3.1.20.2 Conformity with IS: 6283 (Part-1) – 2006 (Reaffirmed in 2014) & IS: 6283 (Part-2) – 2007 (Reaffirmed in 2014):**

Controls are identifiable with symbols meets the requirements. **except the following:**

- Meets the requirement. i) Oil lubricant, type & frequency has not been provided.

**3.1.20.3 Conformity with IS:8133-1983 (Reaffirmed in 2014), except the following:**

Location and movement of various controls meets the requirement.

**3.1.20.4 Conformity with IS: 12239 (Part-1)-1996 (Reaffirmed in October, 2017):**

Meets the requirements of IS:12239 (Part-1)-1996, **except the following:**

<u>Previous sample</u>	<u>Present sample</u>
i) Spark arrester is not provided in the exhaust system.	i) Vertical retainness is not provided on the inner side of pedals.
	ii) Spark arrester is not provided in the exhaust system.

**3.1.20.5 Conformity with IS:12239 (Part-2)-1999 (Re-affirmed in 2014):**

Meets the requirements of IS:12239 (Part-2)-1999, **except the following:**

<u>Previous sample</u>	<u>Present sample</u>
i) PTO Master shield has not been provided.	i) The working clearance around the draft control lever is less than the minimum requirement.
	ii) PTO Master shield has not been provided.

**3.1.20.6 Conformity with IS: 14683 – 1999 (Re-affirmed in 2014) :**

All lighting arrangements meet the requirements of IS: 14683-1999.

**3.1.20.7 Rear view mirror:**

Rear view mirror has been provided.

**3.1.20.8 Slow moving emblem:**

Slow moving emblem has been provided.

**3.1.21 Location of labelling:** - The labelling plate riveted on outside of LHS mudguard, provides the following information.

Name of Manufacturer	<b>CNH Industrial India Private Limited.</b>
Make	New Holland
Model	3600-2
Engine Number	242645DX
Chassis Number	NHN36000ZJJ441185
Maximum P.T.O Power, kW	33.6
Specific fuel consumption, g/kWh (g/hph)	235.6 (175.7)

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

<b>3.1.23</b>	<b>Mass of tractor with standard ballast,kg:</b>	<b>Previous sample</b>	<b>Present sample</b>
	- Front	: 825	820
	- Rear	: 1235	1280
	- Total	: 2060	2100
<b>3.1.24</b>	<b>Over all dimensions (mm):</b>		
	- Length	: 3460	3455
	- Width	: 1820	1830
	- Height	: 2375	2375
	Minimum ground clearance	: 445 (Below rear hitch mounting bolt)	382 (Below rear hitch mounting bracket)
<b>3.1.25</b>	<b>Number of external lubricating points:</b>		
	- Oiling	: Nil	Nil
	- Grease cups	: 02	02
	- Grease nipples	: 11	12
<b>3.1.26</b>	<b>Colour of tractor:</b>		
	Chassis & engine	: Black	Black
	Bonnet	: Blue	Blue
	Mudguard	: Blue	White
	Rim & Disc	: White	White

### 3.2 NOMINAL SPEED TEST

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when fitted with 14.9-28 size tyres of 640 mm rolling index (kmph)		Variation in nominal speed in case of present sample (%)
		Previous sample (T- 705/1211/2010)	Present sample	Previous sample (T- 705/1211/2010)	Present sample	
Forward	L1	605.8	604.83	1.00	1.00	0.00
	L2	410.6	409.64	1.47	1.47	0.00
	L3	280.5	280.63	2.15	2.15	0.00
	L4	217.3	217.01	2.78	2.78	0.00
	M1	195.7	196.10	3.08	3.08	0.00
	M2	133.1	133.20	4.53	4.52	-0.22
	M3	90.8	90.81	6.64	6.64	0.00
	M4	70.3	70.33	8.58	8.57	-0.12
	H1	54.4	54.41	11.09	11.08	-0.09
	H2	36.9	36.90	16.34	16.35	0.06
	H3	25.2	25.27	23.90	23.85	-0.21
	H4	19.5	19.56	30.89	30.91	0.06
Reverse	LR	429.8	430.29	1.40	1.40	0.00
	MR	139.3	139.40	4.33	4.32	-0.23
	HR	38.7	38.72	15.59	15.58	-0.06

### 3.3 PTO PERFORMANCE TEST

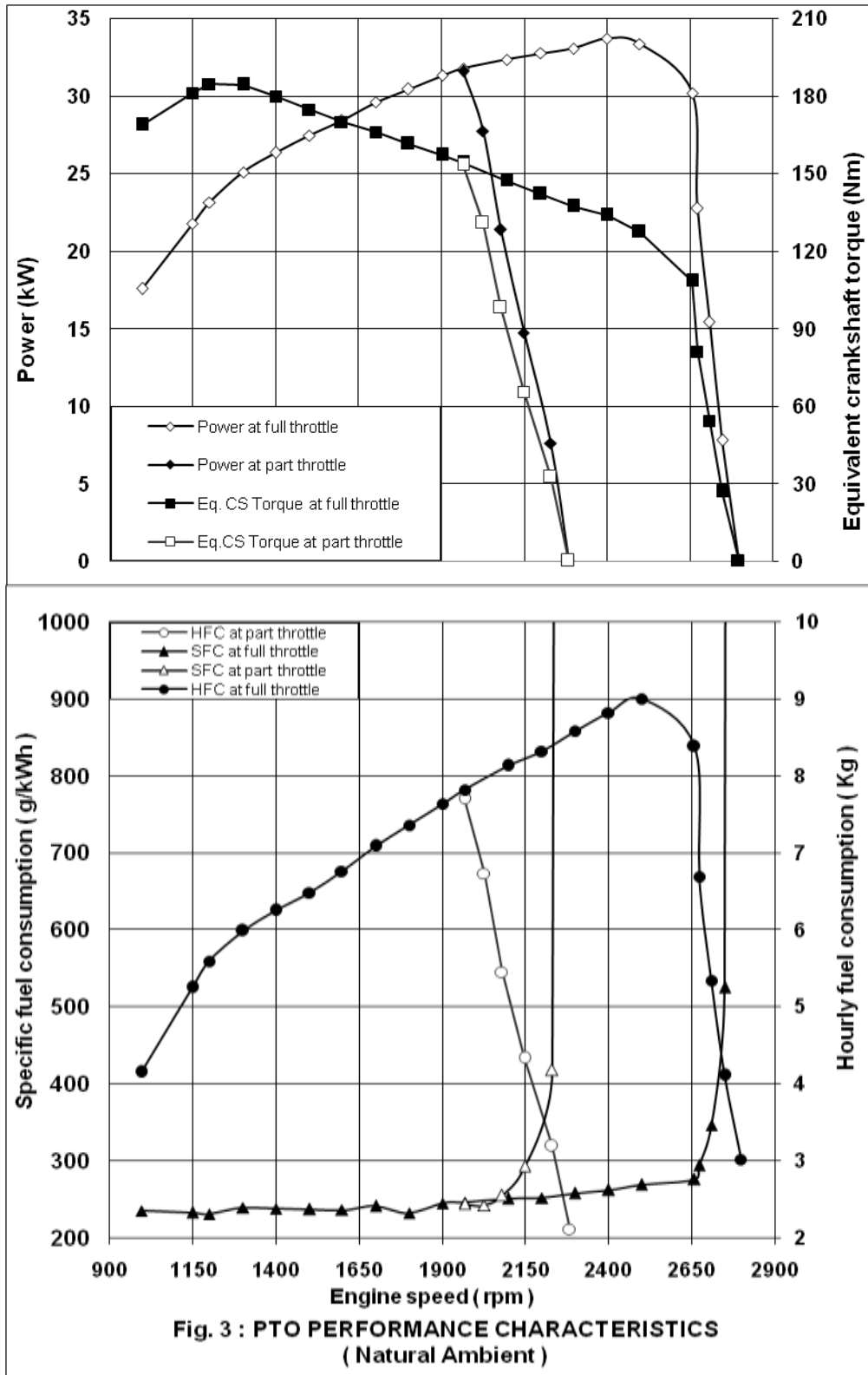
S. No.	Particulars	Previous sample (T- 705/1211/2010)	Present sample
1	Date(s) of test	27.08.2009 & 31.08.09	14.05.2019 & 15.05.2019
2	Tractor run at this Institute prior to start of PTO test, (h)	3.1	2.9
3	Dynamometer test bench used	Eddy Current, Fuchino ESF 1000S	SAJ – AG 250 Eddy current

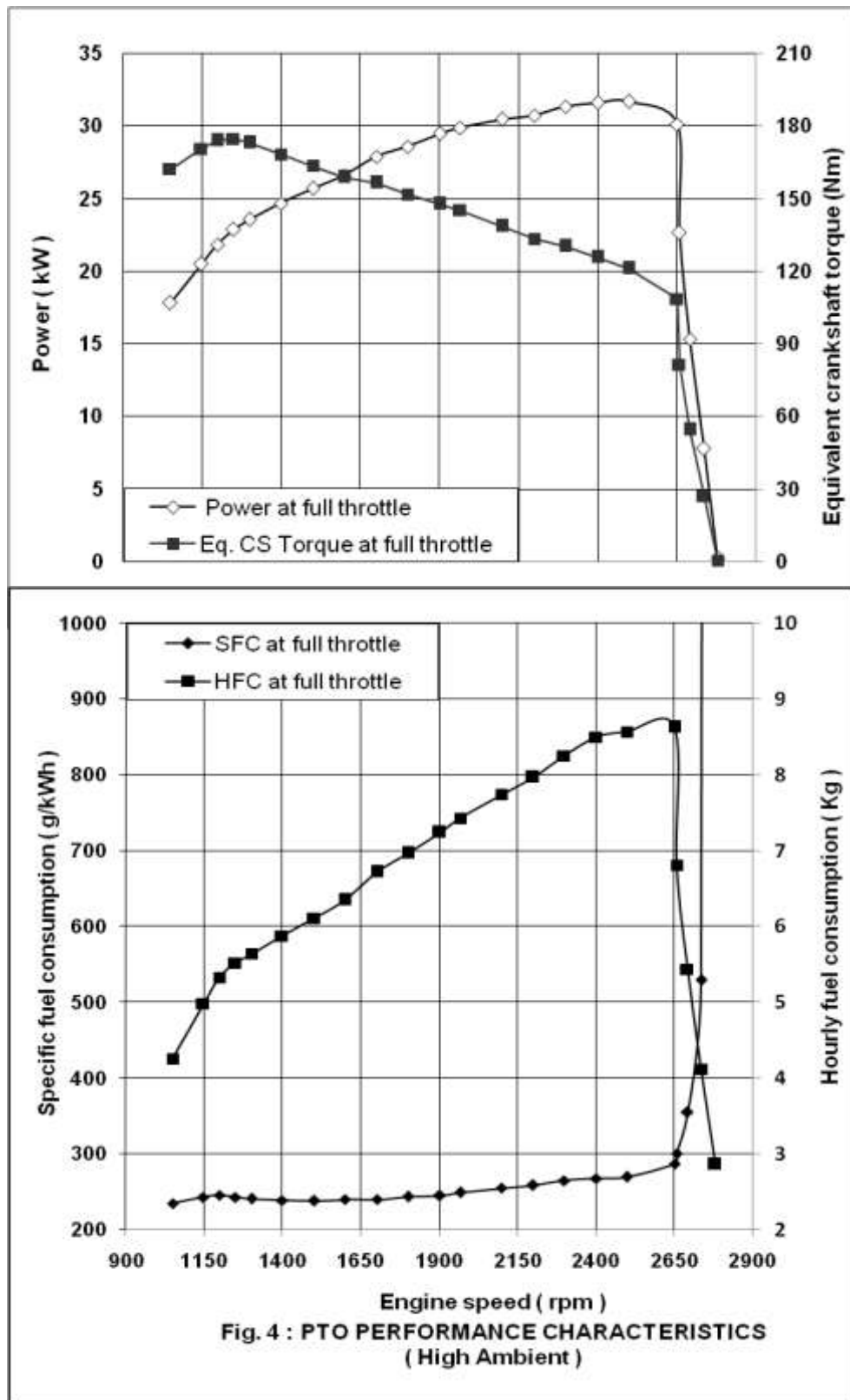
T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

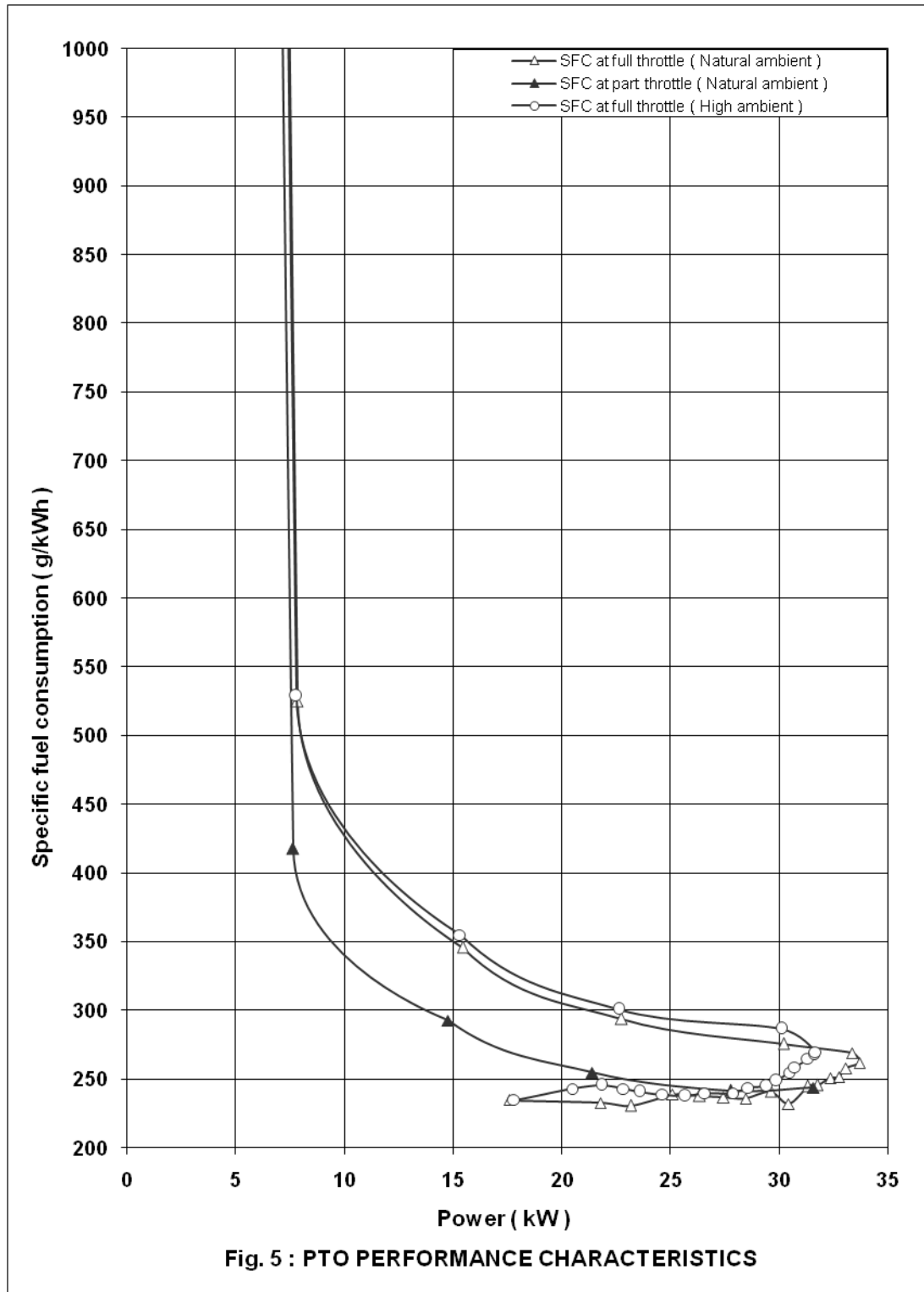
**Table-1**

Test sample	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
<b>a) Maximum power – 2 hours test (under natural ambient condition):</b>							
Previous sample	32.5	686	2498	10.28	8.63	0.266	3.16
	29.8	686	2499	9.69	8.14	0.273	3.08
Present sample	33.7	659	2401	10.55	8.82	0.262	3.19
	31.7	686	2499	10.25	8.57	0.270	3.09*
<b>b) Power at rated engine speed (2500 rpm):</b>							
Previous sample	29.8	686	2499	9.69	8.14	0.273	3.08
Present sample	33.4	686	2499	10.77	9.00	0.269	3.10
	31.7	686	2499	10.25	8.57	0.270	3.09*
<b>c) Power at standard power take-off speed (540 ± 10 rpm):</b>							
Previous sample	27.1	540	1967	8.13	6.83	0.252	3.33*
Present sample	31.6	540	1967	9.21	7.70	0.244	3.43
	29.9	540	1967	8.89	7.43	0.248	3.36*
<b>d) Varying loads at rated engine speed:</b>							
<b>i) Torque corresponding to maximum power available at rated engine speed:</b>							
Present sample	33.4	686	2499	10.77	9.00	0.269	3.10
<b>ii) 85% of the torque obtained in (i):</b>							
Present sample	30.2	730	2659	10.03	8.38	0.277	3.01
<b>iii) 75% of the torque obtained in (ii):</b>							
Present sample	22.8	734	2674	8.00	6.69	0.293	2.85
<b>iv) 50% of the torque obtained in (ii):</b>							
Present sample	15.4	744	2710	6.39	5.34	0.347	2.41
<b>v) 25% of the torque obtained in (ii):</b>							
Present sample	7.8	755	2750	4.91	4.11	0.527	1.59
<b>vi) Unloaded:</b>							
Present sample	0.2	768	2798	3.61	3.02	15.1	0.06
<b>e) Varying loads at part throttle:</b>							
<b>i) Torque corresponding to maximum power available at standard PTO speed (540 ± 10 rpm):</b>							
Present sample	31.6	540	1967	9.21	7.70	0.244	3.43
<b>ii) 85% of the torque obtained in (i):</b>							
Present sample	27.8	556	2026	8.04	6.73	0.242	3.46
<b>iii) 75% of the torque defined in (ii):</b>							
Present sample	21.4	571	2080	6.52	5.45	0.255	3.28
<b>iv) 50% of the torque defined in (ii):</b>							
Present sample	14.8	590	2149	5.17	4.33	0.293	2.86
<b>v) 25% of the torque defined in (ii):</b>							
Present sample	7.6	612	2230	3.81	3.19	0.420	1.99
<b>vi) Unloaded:</b>							
Present sample	0.1	627	2284	2.52	2.11	21.1	0.04

\* Under high ambient conditions.







T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

	<u>Previous sample</u>		<u>Present sample</u>	
	<u>Natural Ambient</u>	<u>High Ambient</u>	<u>Natural Ambient</u>	<u>High Ambient</u>
-No load maximum engine speed (rpm)	: 2721	2721	2798	2780
-Equivalent crankshaft torque at maximum power, (Nm )	: 124.1	114.0	134.0	121.1
-Maximum equivalent crankshaft torque (Nm)	: --	160.6	184.6	174.7
-Engine speed at maximum equivalent crankshaft torque (rpm)	: --	1064	1199	1250
- Backup torque, (%)	: --	40.9	37.8	44.3
Smoke level, maximum light absorption coefficient, (per meter)	: --	--	0.22	--
<b>- Range of atmospheric conditions:</b>				
Temperature (°C)	: 27	41 to 44	26 to 29	42 to 45
Pressure, (kPa)	: 97.9	98.3 to 98.7	98.2 to 98.7	99.5 to 99.8
Relative humidity (%)	: 63 to 67	36 to 54	48 to 51	18 to 34
<b>-Maximum temperatures, (°C):</b>				
Engine oil	: 97	106	120	129
Coolant	: 78	96	105	117
Fuel	: 40	54	60	74
Air intake	: 28	45	32	48
Exhaust gas	: 521	540	644	648
<b>-Pressure at maximum power:</b>				
Intake air, ( kPa )	: NR	4.9 to 5.1	3.5 to 3.6	4.0 to 4.1
Exhaust gas, ( kPa )	: 3.20	3.60	4.0	3.9 to 5.1
<b>-Consumptions :</b>				
Lub oil, (g/kWh )	: --	0.37	--	0.30
Coolant (% of total coolant capacity)	: --	0.50	--	1.91

#### 4. OTHER APPLICABLE TESTS

##### 4.1. NOISE MEASUREMENT

4.1.1 Noise at bystander's position:	<u>Previous sample</u>	<u>Present sample</u>
Date of test	: 30.12.2009	20.02.2019
Type of track	: Concrete	Concrete
Background noise level, dB (A)	: 62	54
<b>Atmospheric conditions:</b>		
Temperature, (°C)	: 22	30
Pressure, (kPa)	: 99.5	98.3
Relative humidity, (%)	: 71	35.0
Wind velocity, (m/s)	: 2.7	1.5

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**TEST DATA:-**

	Gear	Travelling speed before acceleration, (kmph)		Noise level, dB (A)	
		<u>Previous sample</u>	<u>Present sample</u>	<u>Previous sample</u>	<u>Present sample</u>
1.	L1	0.84	0.84	83	83
2.	L2	1.23	1.24	83	82
3.	L3	1.81	1.81	82	82
4.	L4	2.35	2.37	83	82
5.	M1	2.60	2.63	83	81
6.	M2	3.80	3.85	83	81
7.	M3	5.62	5.63	83	81
8.	M4	7.26	7.23	83	81
9.	H1	9.23	9.39	82	81
10.	H2	13.79	13.73	83	81
11.	H3	19.45	20.27	83	81
12.	H4	25.45	26.04	85	82

**4.1.2 Noise at operator's ear level:**

	<u>Previous sample</u>	<u>Present sample</u>
Date of test	: 30.12.2009	27.05.2019
Type of track	: Concrete	Concrete
Background noise level, dB(A)	: 62	53
<b>Atmospheric conditions:</b>		
Temperature, (°C)	: 29	36
Pressure, (kPa)	: 99.2	98.0
Relative humidity, (%)	: 47	30
Wind velocity, (m/s)	: 2.3	1.5

**TEST DATA:**

Gear	Drawbar pull at which the tractor develops the maximum noise level, (kN)	Corresponding travelling speed, (kmph)		Noise level dB (A)		
		<u>Previous sample</u>	<u>Present sample</u>	<u>Previous sample</u>	<u>Present sample</u>	
L3	--	10.69 to 14.88	---	2.25 to 2.06	-	93
L4	--	8.00 to 15.12	-	3.00 to 2.57	--	94
M1	14.42 to 15.94	12.63 to 14.33	2.95 to 2.83	3.14 to 2.90	95	94
M2	12.71 to 15.26	8.01 to 13.66	4.42 to 4.18	4.83 to 4.47	95	94
M3	14.83	14.61 to 14.71	5.86	6.06 to 5.79	96	95
M4*	8.18 to 11.73	10.81 to 11.02	8.79 to 8.02	8.43 to 8.27	96	95
H1	7.15 to 8.99	2.30 to 9.49	11.42 to 10.67	12.29 to 10.75	96	95

\* Gear corresponds to the nominal travelling speed nearest to 7.5 kmph.

**5. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS**

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



T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR</b> <b>Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**6. COMPARISON OF SPECIFICATION AND PERFORMANCE CHARACTERISTICS OF PREVIOUS SAMPLE (TEST REPORT No. T – 705/1211/2010 (January, 2010)) AND PRESENT SAMPLE**

6.1	Specification:	<u>Previous sample</u>	<u>Present sample</u>
6.1.1	<b>Tractor:</b>		
	Make	: New Holland	New Holland
	Model	: New Holland 3600-2	New Holland 3600-2
6.1.2	<b>Engine:</b>		
	Make	: IVECO	IVECO (apa)
	Model	: 8035.05D	8035.05D.937
	Bore/Stroke, (mm)	: 104/115 (apa)	104/115 (apa)
	Specified cubic capacity, (cu.cm)	: 2931	2931
	Rated engine speed (rpm)	: 2500	2500
6.1.2.1	<b>Fuel system:</b>		
	Make & model of fuel feed pump	: Not specified	IVECO & Not specified
	Make & model of fuel filters	: Not specified	New Holland & NA
	Make and model of fuel injection pump	: Bosch India & 0460413028X, VE311F1250L814-6	Bosch India & 0 460 423 080, VE3/12F1250L1187
	Make & model of fuel injectors	: Bosch India & KBEL83835 986	Bosch, India, 0432193414 (Holder no.) DSLA 133P5619 (Nozzle no.)
	Type of injector	: Multi hole (six holes)	Multi hole (six holes)
	Manufacturer's production pressure setting, (MPa)	: 26 to 27.2	26 to 27.2
	Injection timing	: 6.0 ± 1degree BTDC	1.5 ± 0.2 mm plunger lift at TDC
	Make & model of governor	: Bosch ,India & Inbuilt with FIP	
6.1.2.2	<b>Cooling system:</b>		
	Total cooling capacity, (l)	: 9.00	7.85
6.1.2.3	<b>Lubricating system:</b>		
	Total lubricating oil capacity,(l)	: 7.40	8.0
6.1.3	<b>Transmission:</b>		
6.1.3.1	<b>Clutch:</b>		
	Type of clutch plate:	: Dual, Diaphragm dry friction	
	Size, OD/ID, (mm):	Transmission : 279.9 / 167.9 Φ PTO : 279.7 / 165.4 Φ	
6.1.3.2	<b>Gear Box:</b>		
	<b>No. of speeds:</b>		
	- Forward	: 12	12
	- Reverse	: 03	03

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

6.1.3.3	Reduction ratio of transmission:					Remarks
	Movement	Gear	Previous sample	Present sample	Variation (%)	
Forward	L1		605.8	604.83	0.00	Within limit
	L2		410.6	409.64	-0.16	-do-
	L3		280.5	280.63	-0.23	-do-
	L4		217.3	217.01	0.05	-do-
	M1		195.7	196.10	-0.13	-do-
	M2		133.1	133.20	0.20	-do-
	M3		90.8	90.81	0.08	-do-
	M4		70.3	70.33	0.01	-do-
	H1		54.4	54.41	0.04	-do-
	H2		36.9	36.90	0.02	-do-
	H3		25.2	25.27	0.00	-do-
	H4		19.5	19.56	0.28	-do-
	Reverse	LR		429.8	430.29	0.31
MR			139.3	139.40	0.11	-do-
HR			38.7	38.72	0.07	-do-

Range of speed, (kmph) :	Previous sample	Present sample
- Forward :	1.00 to 30.89	1.00 to 30.91 (variation -0.44 to 0.19 % )
- Reverse :	1.40 to 15.59	1.40 to 15.58 (variation -0.23 to -0.06 % )

<b>6.1.4 Service Brake:</b>	
Make :	JMI
Type :	Mechanical, oil immersed multidisc
No. of friction disc :	03 (on each wheel side)
Area of liners, (cm <sup>2</sup> ) :	695 (each wheel side)

<b>6.1.5 Wheel equipment:</b>	
<b>Make &amp; Size of tyres :</b>	
- Front :	MRF & 6.00-16
- Rear :	MRF & 14.9-28
<b>Standard Track width, (mm):</b>	
- Front :	1340
- Rear :	1435

<b>6.1.5.1 Wheel base, (mm) :</b>	2035	2040
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<b>6.1.6 Overall dimensions, (mm):</b>	
- Length :	3460
- Width :	1820
- Height :	2375
- Ground clearance, (mm) :	445 (below rear hitch mounting bracket)
	382 (below rear hitch mounting bracket)

<b>6.1.7 Operational mass of standard ballasted tractor, (kg):</b>	
- Front :	825
- Rear :	1235
- Total :	2060
	820
	1280
	2100

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

6.1.8	<b>Conformity with following IS:</b>	<u>Previous sample</u>	<u>Present sample</u>
i)	Guide lines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS 10273:1987 (Reaffirmed in 2014.)]	Conformed	Conforms
ii)	Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3 (third revision)[IS: 4931-1995 (Reaffirmed in 2014.)]	<b>Did not conform</b>	<b>Does not Conform</b>
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 Oct., 2017.)]	<b>Did not conform</b>	<b>Does not conform</b>
iv)	Drawbar for agricultural tractors - Link type [IS 12953:1990 (Reaffirmed in Oct., 2017.)]	Conformed	<b>Does not conform</b>
v)	Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in 2014.)]	<b>Did not conform</b>	<b>Does not conform</b>
vi)	Guide for safety & comfort of operator of agricultural tractor Part 1 general requirement (first revision) [IS: 12239 (Part-1) 1996/ISO 4254-I: 1989. (Reaffirmed in Oct., 2017.)]	<b>Did not conform</b>	<b>Does not conform</b>
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 2014.)]	<b>Did not conform</b>	<b>Does not conform</b>
viii)	Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) [(IS: 8133-1983) (Reaffirmed in 2014.)]	Conformed	Conforms
ix)	Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – symbols for operator controls and other displays. Part – 2: Symbols for agriculture tractors and [IS:6283 (Part-1)-2006 and IS: 6283 (Part-2)-2007 (Reaffirmed in 2014)].	Conformed	<b>Does not conform</b>
x)	Agricultural tractor and machinery lighting device for travel on public roads [(IS: 14683-1999) (Reaffirmed in 2014.)]	Conformed	Conforms
<b>6.2</b>	<b>Performance Characteristics:</b>	<u>Previous Sample</u>	<u>Present Sample</u>
	<b>-Vide test report no. T – 705/1211/2010(Jan)</b>		
<b>6.2.1</b>	<b>PTO Performance:</b>		
	Maximum Power, (kW)	32.5	33.7
	Power at Rated engine speed,(kW)	32.5	33.4
	Specific fuel consumption corresponding to maximum power, (g/kWh)	266	262
	<b>Maximum temperatures (degree):</b>		
	Engine oil	106	129
	Coolant	96	122
	<b>Lub oil consumption, (g/kWh)</b>	0.37	0.30
	<b>Coolant (% of total coolant capacity)</b>	0.50	1.91

**6.3 Salient Observations:**

**6.3.1 Laboratory test:**

	<u>Previous Sample</u>	<u>Present Sample</u>
<b>6.3.1.1 PTO Performance:</b>		
<b>i)</b>	The maximum PTO power was recorded as <b>32.5 kW</b> against the declaration of <b>33.8 kW</b> , which meets the requirement of IS: 12207-2014 with regard to tolerance limit.	<b>i)</b> The maximum PTO power was recorded as <b>33.7 kW</b> against the declaration of <b>33.6 kW</b> , which meets the requirement of IS: 12207-2014 with regard to tolerance limit.
<b>ii)</b>	The specific fuel consumption corresponding to maximum power was recorded as <b>266 g/kWh</b> against the declaration of <b>239 g/kWh</b> , Which does not meet the requirement of IS: 12207-2008 with regard to tolerance limit. This should be looked into for necessary corrective action.	<b>ii)</b> The specific fuel consumption corresponding to maximum power was recorded as <b>262 g/kWh</b> against the declaration of <b>239 g/kWh</b> . Which does not meet the requirement of IS: 12207-2014 with regard to tolerance limit. This should be looked into for necessary corrective action.
<b>iii)</b>	The drop in maximum power in high ambient condition in comparison to natural ambient condition was recorded as <b>8.3%</b> . This should be looked into.	<b>iii)</b> The drop in maximum power in high ambient condition in comparison to natural ambient condition was recorded as <b>5.9%</b> . This should be looked into.
<b>iv)</b>		The backup torque is <b>37.8 %</b>
<b>6.3.1.2 Noise measurement:</b>		
- Maximum noise at bystanders position, dB (A)	:	85   83
- Maximum noise at operator's ear level dB (A)	:	96   95
<b>6.4 Adequacy of literature:</b>		
Following combined literature tractor models were supplied with the test sample for reference during the test.		Following combined literature of New tractor models were supplied with the test sample for reference during the test.
<b>a)</b> Operator's manual of New Holland 3600-2 TX tractor model		<b>a)</b> Service manual Part - 1 of 3600-2/3630 TX SUPER, 3630S TIER 3, 3600-2 TX/3630 TX SUPER with TIER 3 Engine.
<b>b)</b> Warranty booklet		<b>b)</b> Service manual Part - 2 of 3600-2/3630 TX SUPER, 3630S TIER 3, 3600-2 TX/3630 TX SUPER with TIER 3 Engine.
<b>c)</b> In addition to the above, it is recommended that spare parts catalogue & workshop manual may be brought out as per IS: 8132-1999 (Reaffirmed in Oct.2004) for the guidance of users and service personnel in national as well as other regional languages.		<b>c)</b> Service Parts catalogue <b>Part-1 &amp; 2</b> of NH3630 TX T3A, SUPER PLUS NH 3600-2, TX T3A ALLROUNDER PLUS+, NH 3630 TXA1, NH 3600-2 ALLROUNDER PLUS+.

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

### 7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 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
<b>7.1.1</b>	<b>PTO Performance :</b>					
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	33.6 (D)	33.7	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	33.6 (D)	33.4	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	239 (D)	262	<b>No</b>
d)	Maximum operating temperature under 2hr max. power test, (°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)	129	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)	117	Yes

<b>7.1.2</b>	<b>Noise measurement :</b>					
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88(R)	83	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96(R)	95	Yes
<b>7.1.3</b>	<b>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
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)	--	<b>Does not meet the requirements</b>	<b>No</b>
d)	Technical requirements for PTO shaft	Non Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	--	<b>Does not meet the requirement</b>	<b>No</b>

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

1	2	3	4	5	6	7
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	--	<b>Does not meet the requirements</b>	<b>No</b>
f)	Specifications of linkage drawbar	Non Evaluative	Should meet the requirements of IS 12953 and IS 12362 (Part-3) (As amended from time to time)	--	<b>Does not meet the requirements</b>	<b>No</b>
	Swinging drawbar			--	Not Provided	--

<b>7.1.4</b>	<b>Labelling of tractors (Provision of labelling plate):</b>						
	1)	Make	Evaluative	Should conform to the requirements of CMVR	--	New Holland	Yes
	2)	Model	Evaluative		--	3600-2	Yes
	3)	Engine number	Evaluative		--	242645DX	Yes
	4)	Chassis number	Evaluative		--	NHN36000ZJJ441 185	Yes
	5)	Declaration-on of PTO power, (kW)	Evaluative		--	33.6	Yes

<b>7.1.6</b>	<b>CATEGORY OF BREAKDOWNS / DEFECTS :</b>				
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	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 5 minor breakdowns.	None	Yes

<b>7.2</b>	<b>Optional requirements as per Clause-4 (Table-2) of IS:12207-2014:</b>				
S.No.	Characteristic	Requirements as per IS: 12207-2014		As observed	Remarks
1.	Fitment of ROPS	With a provision for fitment of ROPS.		Provided	Yes
		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

<b>7.1.4</b>	<b>Literature (Submission to test agency)</b>					
(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

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**7.3 Salient Observations:**

**7.3.1 Laboratory tests:**

**7.3.1.1 PTO Performance:**

- i) The maximum PTO power in case of previous & present sample was observed as **32.5 & 33.7 kW** respectively against the declaration of **33.8 kW & 33.6 kW** respectively, which is within the specified limit.
- ii) The specific fuel consumption in case of previous & present sample corresponding to maximum power was observed as **266 & 262 g/kWh** respectively against the declaration of **239**, Which does not meet the requirement of **IS: 12207-2014** with regard to tolerance limit. This should be looked into for necessary corrective action.
- iii) The backup torque is **37.8 %**
- iv) The drop in maximum power in high ambient condition in comparison to natural ambient condition was recorded as **5.9%**. This should be looked into.

**7.3.1.2 Operator's seat as per IS: 12343 -1998 (Reaffirmed in 2014).**

- i) Length and Width of seat does not meet the requirement.
- ii) Longitudinal distance from centre of differential lock pedal to seat index point is less than the minimum requirement.

**7.3.1.3 Power take off shaft:**

- i) The dimension "dØ" of PTO shaft does not meet the requirement of the IS: 4931 - 1995 (Reaffirmed: 2014). This should be looked into for necessary corrective action.

**7.3.1.4 Three point linkage:**

- i) Distance form end of power take off to centre of lower hitch point (lower link in horizontal position) does not meet the requirement of the IS: 4468: (Part-I)-1997 (Reaffirmed Oct., 2017). This should be looked into for necessary corrective action.

**7.3.1.5 Linkage drawbar:**

- i) The dimension "G" of linkage drawbar does not meet the requirement of the IS 12953:1990 (Reaffirmed in Oct., 2017). This should be looked into for necessary corrective action.

**7.4 Maintenance / Service Problems:**

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

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

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

- i) Spark arrester should be provided in the exhaust system.
- ii) The working clearance around the draft control lever is less than the minimum requirement.
- iii) PTO Master shield has not been provided.
- iv) There should be provision to attach trailer brake valve.
- v) Vertical retainness should be provided on both side of foot pedals.
- vi) Oil lubricant, type & frequency has not been provided.

**7.6 Adequacy of Literature:**

**7.6.1** Following literature of following tractor models were supplied with the test sample for reference during the test.

- a) Operator's manual of New Holland 3630 TX & 3600-2 TX tractor model
- b) Service manual Part 1 & Part - 2 of 3600-2/3630 TX SUPER, 3630S TIER 3, 3600-2 TX/3630 TX SUPER with TIER 3 Engine.
- c) Service Parts catalogue Part - 1 & Part 2 of NH3630 TX T3A, SUPER PLUS NH 3600-2, TX T3A ALLROUNDER PLUS+, NH 3630 TXA1, NH 3600-2 ALLROUNDER PLUS+.

**7.6.2** The supplied literature was found adequate; except the following

T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

- a) Engine oil and transmission oil time schedule given in operator's manual does not match with specifications submitted by applicant.
- b) Coolant brand recommended in operator's & service manual for cooling system does not match with specifications submitted by applicant.
- c) Scheduled servicing & routine maintenance chart is not provided in service manual.

**7.6.3** The literature should be brought out in national as well as other regional languages of India for guidance of users.

### 8. CITIZEN CHARTER

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given in the citizen charter	Remark
05 Months (January, 2019 to May , 2019)	05 Months	Yes	---

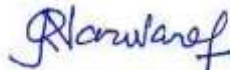
#### TESTING AUTHORITY:



**C.S. RAGHUWANSHI  
AGRICULTURAL ENGINEER**



**C.V. CHIMOTE  
TEST ENGINEER**



**J.J.R. NARWARE  
DIRECTOR**

The report compiled by: **Vithato Keyho**, Senior Technical Assistant

### 9.0 APPLICANT COMMENT'S

Para No.	Our Reference	Applicant's comments
<b>9.1</b>	7.3.1.1 (ii), (iv), 7.3.1.2, 7.3.1.3, 7.3.1.4, 7.3.1.5 , 7.5 & 7.6	Your valuable comments & suggestions for improvements are well taken. Under our policy of continuous product improvement these aspects are further being looked into and will try to eliminate these deviations soon wherever necessary



T- 1253/1780/2019	<b>NEW HOLLAND, 3600 – 2 TRACTOR Commercial- Variant (1<sup>st</sup> Batch Test)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2024</b>

**ANNEXURE – I**

**TRACTOR RUN HOURS DURING TEST**

<b>A.</b>	<b>LABORATORY AND TRACK TESTS</b>	<b>HOURS</b>
1.	Running-in	--
2.	Nominal speed test	1.4
3.	PTO performance test	10.9
4.	Noise measurement	2.2
<b>C.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.8
	<b>TOTAL:</b>	<b>15.3</b>