



NEW HOLLAND 7510 - TRACTOR



सत्यमेव जयते

भारत सरकार

GOVERNMENT OF INDIA

कृषि मंत्रालय (कृषि एवं सहकारिता विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)
Ministry of Agriculture (Deptt. of Agri. & Co-op, Mechanization & Technology Division)

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO : 9001 - 2008 Certified Institute)

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५ **Tractor Nagar, Budni (M.P.) 466 445**

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Manufacturer : M/s. New Holland Fiat (India) Pvt. Ltd.,
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 manufacturer
Place of running-in : At manufacturer's works
Duration of said running-in, (h):
- Engine : 50
- Transmission : 50
Method of Selection : The tractor was submitted directly by the
applicant for test. Hence, method of
selection is not known.

1. SPECIFICATIONS

1.1 Tractor:

Make : New Holland
Model : 7510
Brand name : NA

*Variants. If any:

S.No.	Variants Model	Variant Feature
1	New Holland 7510 2WD	24+24 Transmission,2WD
2	New Holland 7510 8+8	8+8 Transmission,2WD
3	New Holland 7510 4WD	24+24 Transmission,4WD
4	New Holland 7510 12+12	12+12 Transmission,4WD

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

Type : Four wheeled, Rear-wheel driven,
Standard Agricultural Tractor.
Year of manufacture : March, 2014 (L403)
Chassis number : NH1279779
Country of origin : India

1.2 Engine:

Make : IVECO (apa)
Model : 8035.45*720
Type : Four stroke, water cooled, turbocharged,
intercooled, direct injection, diesel engine.
Serial number : 125615D
Country of origin : India

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

- Maximum speed at no load : 2450 to 2600
- Low idle speed : 600 to 700
- Speed at maximum torque : 1100 to 1500

Rated speed, (rpm):

- For PTO use : 2300
- For drawbar use : 2300



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	<p>Replace new hydraulic pump Make –Rexroth ,Bosch group (Made In India) Model/group combination no:-AZPW10019LH030PBS0593 E 061 100 600 Sr no :-301206475 This breakdown/defect has been categorized in major (Mj-15) breakdown as per IS:12207-2014</p>	
2.	<p>After above repairing/replacing hydraulic pump, during hydraulic pump performance test, the "O" ring situated at pump outlet & outlet pipe elbow was leaked & oil slashed. So damaged hydraulic pump outlet mounting adopter "O" ring was replaced with new one (part no. 14457580). This breakdown/defect has been categorized in minor (Mn-18) breakdown as per IS:12207-2014</p>	4.8
3.	<p>After completion of 10 hour drawbar test, the RHS rear tyre got puncture due to creeping of tyre over the rim. So, the RHS rear wheel tube was repaired and refitted.</p>	43.3
4.	<p>During ten hours drawbar test, creeping of LHS & RHS rear tyre over the rims was observed as 35 mm & 90 mm respectively. This should be looked into for necessary corrective action.</p>	43.3

16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 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
16.1.1	PTO Performance :					
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26 kW. -7.5/+10% for PTO power ≤ 26 kW or-5 / +10% for Engine power >26 kW. -7.5/+10% for Engine power ≤ 26 kW	50 (D)	50.2	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	50 (D)	50.2	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	260 (D)	263	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	285 (D)	306.7	Yes
e)	Back-up torque, percent	Non Evaluative	10 percent, min.	30.0 (D)	47.1	Yes



1	2	3	4	5	6	7
f)	Maximum operating temperature, ($^{\circ}\text{C}$)					
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)	120	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)	103	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.67 Maximum (R)	0.438	Yes
h)	Smoke level	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 per meter Maximum (R)	0.54	Yes
16.1.2 Drawbar performance :				26.0 (D)		Yes
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	23.4 (R) Minimum	27.93	Yes
b)	Max. drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast or with standard ballast, as the case may be	20 (D) 16.6 (R) Minimum	20.93	Yes
c)	Maximum drawbar power with standard ballast, (kW).	Evaluative	Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft.	40 (D) 40.2(R) Minimum	41	Yes
d)	Maximum transmission oil temperature ($^{\circ}\text{C}$)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	132 (D)	106	Yes

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1	2	3	4	5	6	7	
16.1.3	Power lift and hydraulic pump performance :						
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Non Evaluative	[Tolerance of minus 10%]	24.52 (D)	23.05	Yes
	2)	With the standard frame	Evaluative	The lift capacity should at least be 24 kg/PTO kW. and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft	18.50 (D)	21.92	Yes
					11.82 (R) Minimum		
b)	Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 Minutes, (mm)		Non Evaluative	The observed value should not exceed 50 mm	50 (D) Maximum	45	Yes
16.1.4	Brake performance at 25 kmph:						
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	6.51	Yes
	2)	Hot brake	Evaluative	10	10 (R)	6.66	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)		Evaluative	600	600 (R) Maximum	217 to 251	Yes
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever		Evaluative	Yes / No	Yes	Yes	Yes
16.1.5	Noise measurement :						
a)	Maximum ambient noise emitted by the tractor dB(A)		Evaluative	As per CMVR	88(R)	87	Yes
b)	Maximum noise at operator's ear level dB(A)		Evaluative	As per CMVR	98(R)	98	Yes
16.1.6	Amplitude of mechanical vibrations at:						
	1)	Left foot rest	Non Evaluative	100 microns (max)	100(R)	30	Yes
	2)	Right foot rest				30	Yes
	3)	Seat (with driver seated)				170	No
	4)	Steering wheel				210	No
16.1.7	Haulage requirements :						
a)	Gross mass of the trailers, (tones):						
	1)	Two wheel	Non Evaluative	--	7.0 (D)	7.0	Yes
	2)	Four wheel	Non Evaluative	--	8.0 (D)	8.0	Yes



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1	2	3	4	5	6	7
b)	Distance travelled / liter of fuel consumption, (km/l):					
	1) Two wheel	Non Evaluative	--	5.0 to 6.0(D)	3.94 to 4.05	Yes
	2) Four wheel		--	4.0 to 6.0(D)	3.76to 3.87	Yes
c)	Fuel consumption (ml/km/tonne):					
	1) Two wheel	Non Evaluative	--	25 to 50(D)	35.23 to 36.27	Yes
	2) Four wheel		--	25 to 50(D)	32.34 to 33.24	Yes
16.1.8	Wetland cultivation :					
	Sealing for the following assemblies:	Evaluative	The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only.	There should be no ingress of water and/or mud	Manufacture has not recommended the tractor for puddling operation. Hence the puddling test was not conducted	Not applicable
	1) Clutch assembly	-do-				
	2) Brake housings	-do-				
	3) Front axle hubs	-do-				
	4) Engine Oil	-do-				
	5) Transmission Oil	-do-				
16.1.9	Safety features :					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pullies, silencer, hydraulic pipes (As per IS 12239 (Part 2))	--	Conforms	Yes*
*Remark: The guards against moving and hot parts are not fully guarded. The year of manufacturer of the test sample is before the date of implementation of relevant IS 12207-2014. Therefore, for prospective effects of implementation of Indian standard this conforms to IS 12239 (Part 2) – 1999 (Reaffirmed in March, 2009).						
b)	Lighting arrangement	Evaluative	As per CMVR	--	Meets the requirements	Yes
c)	Seating requirements (Tractors having more than 1150 mm rear track width)	Non Evaluative	Should meet the requirements of IS: 12343 (As amended from time to time)	--	Does not meet the requirements	No
d)	Technical requirements for PTO shaft	Non Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	--	Meets 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)	--	Meet the requirements	Yes
f)	Specifications of linkage	Non Evaluative	Should meet the requirements of IS 12953 and IS 12362 (Part 3) (As amended from time to time)	--	Meet the requirements	Yes
	Swinging drawbar			--	Not Provided	Not applicable



1	2	3	4	5	6	7
16.1.10	Labelling of tractors (Provision of labelling plate):				New Holland	Yes
	1) Make	Evaluative	Should conform to the requirements of CMVR	--	7510	Yes
	2) Model	Evaluative		--	L403	Yes
	3) Year of mfg	Evaluative		--	125615D	Yes
	4) Engine number	Evaluative		--	NH1279779	Yes
	5) Chassis number	Evaluative		--	50 (67)	Yes
	6) Declaration of PTO power, (kW) (Ps)	Evaluative				
16.1.11	Discard limit for:			104.204 (D)	104.04	Yes
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer and supported by the printed literature	0.50 (D)	0.180 to 0.187	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative				
(c)	Ring end gap (mm):		-do-	1.50(D)	0.45	Yes
	- Top comp. ring.	Evaluative	-do-	1.50(D)	0.60 to 0.65	Yes
	- 2 nd comp. ring.		-do-	1.80(D)	0.45 to 0.55	Yes
	- Oil ring.					
(d)	Ring groove clearance (mm):		-do-	--	Taper rings	--
	- Top comp. ring.	Evaluative	-do-	0.40 (D)	0.070 to 0.059	Yes
	- 2 nd comp. ring.		-do-	0.40 (D)	0.056 to 0.069	Yes
	- Oil ring.					
(e)	Clearance of main bearings (mm):			0.50 (D)	0.119 to 0.148	Yes
	- Diametrical clearance	Evaluative	-do-	0.50 (D)	0.15	Yes
	- Crankshaft end float	Evaluative				
(f)	Clearance of big end bearings, (mm):		-do-	0.50 (D)	0.089 to 0.102	Yes
	- Diametrical	Evaluative	-do-	0.75 (D)	0.40	Yes
	- Axial	Evaluative				
(g)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.40 (D)	0.079 to 0.103	Yes
(h)	Clearance between centre pin and bush, (mm)	Non Evaluative	-do-	0.50 (D)	0.074 to 0.083	Yes
16.1.12	Literature (Submission to test agency)			As per relevant IS Code (IS 8132)	Provided	Yes
(a)	Operator manual	Evaluative	Provided/Not Provided	As per relevant IS Code (IS 8132)	Provided	Yes
(b)	Parts Catalogue	Evaluative	Provided/Not Provided	As per relevant IS Code (IS 8132)	Provided	Yes
(c)	Workshop/ Service manual	Evaluative	Provided/Not Provided	As per relevant IS Code (IS 8132)	Provided	Yes



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1	2	3	4	5	6
16.1.13 CATEGORY OF BREAKDOWNS / DEFECTS :					
Sl. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	As observed	Whether meets the requirements (Yes/No.)
1.	Critical	Evaluative	No critical breakdown	None	Yes
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature	One	Yes
3.	Minor	Evaluative	Not more than five and frequency of each should not be more than two.	One	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.	Two	Yes
16.2 Optional requirements as per Clause-4 (Table-2) of IS:12207-2014:					
S.No.	Characteristic	Requirements as per IS: 12207-2014	As observed	Remarks	
1.	Fitment of ROPS	With a provision for fitment of ROPS. If ROPS fitted it should meet the requirement of IS: 11821 (As amended from time to time) or equivalent International Standards	Not provided ROPS not provided Provided	Not applicable Not applicable Yes	
2.	Accessories	Trailer hitch, front tow hook, may be provided.			

- 16.3 Conformity with following IS:**
- i) Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS: 10273-1987 (Reaffirmed in March, 2009)] : Conforms
 - ii) Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3(third revision)[IS: 4931-1995 (Reaffirmed in March, 2009)] : Conforms
 - iii) Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468 (Part-I):1997 (Reaffirmed in March, 2007)/ISO 730-1:1994] : Conforms
 - iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in March, 2007)]. : Conforms
 - v) Agricultural tractors – Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in March, 2009)]. : Does not conform
 - vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : Does not conform
[IS 12239 (PT-1)-1996 (Reaffirmed in March, 2009)/ISO 4254-1:1989].



- vii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) IS 12239 (PT-2)-1999 (Reaffirmed in March, 2009)]. : Does not conform
- viii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1 & Part-2) –2006 & 2007(Reaffirmed in March, 2009)/ ISO 3767-2:1991)]. : Conforms
- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Reaffirmed in March, 2009)]. : Conforms
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in March, 2009)] : Conforms

16.4 Salient Observations:

16.4.1 Laboratory tests:

16.4.1.1 PTO Performance:

- i) The backup torque is 47.1%.
- ii) The power at rated engine speed as 50.2 kW against the declaration of 50.0 kW, which is within the tolerance limit of IS: 12207-2014.
- iii) The specific fuel consumption corresponding to maximum power was measured as 263 g/kWh against the declaration of 260 g/kWh, which is within the tolerance limit of IS: 12207-2014.

16.4.1.2 Drawbar performance test:

- i) After completion of 10 hour drawbar test, the RHS rear tyre got puncture due to creeping of tyre over the rim. So, the RHS rear wheel tube was repaired and refitted.
- ii) During ten hours drawbar test, creeping of LHS & RHS rear tyre over the rims was observed as 35 mm & 90 mm respectively. This should be looked into for necessary corrective action.

16.4.1.3 Hydraulic performance:

- i) During the hydraulic performance test, pump relief valve test the flow of hydraulic in inline tester was fluctuating .so the manufacture following changes

- a) Hydraulic pump filter replaced with new one.
- b) The suction line & strainer was cleaned.
- c) The hydraulic pump assembly cover was remove & it was observed that (Part no. 8273918) key gear drive (01 no's) of hydraulic pump driven shaft found broken, also the hub ,(Part no. 5118570) (01 nos.) having internal scratch. After closed inspection it was seen that the hydraulic pump assembly is blocked condition.

After above condition the applicant was replaced the hydraulic pump with same specification as:-

Replace new hydraulic pump
 Make –Rexroth ,Bosch group (Made In India)
 Model/group combination no:-AZPW10019LH030PBS0593
 E 061 100 600
 Sr no :-301206475

This breakdown/defect has been categorized in major (Mj-15) breakdown as per IS:12207-2014



- ii) After above repairing/replacing hydraulic pump, during hydraulic pump performance test, the "O" ring situated at pump outlet & outlet pipe elbow was leaked & oil slashed.
So damaged hydraulic pump outlet mounting adopter "O" ring was replaced with new one (part no. 14457580). This breakdown/defect has been categorized in minor (**Mn-18**) breakdown as per IS:12207-2014.
- iii) The moment about rear axle with standard frame was calculated as **36.17 kN-m** whereas, the moment about front axle was calculated as **20.06 kN-m** under standard ballasted condition and **26.54 kN-m** under ballasted condition. The moment about rear axle is on higher side as compared to the moment about front axle even under ballasted condition. It is, therefore, recommended that the lifting capacity of the hydraulic system may be reduced suitably.

16.4.1.4 Mechanical Vibration:

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

16.4.1.5 Location and operation of operator's control:

Working clearance between draft & position lever does not meet the requirement of the IS: 12279 (Part-2)-1999. This should be looked into for necessary corrective action.

16.4.2.1 Wetland cultivation (Puddling operation):

The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation) and therefore, the wetland cultivation (puddling operation) was not conducted. It is recommended that in all the literature (puddling operation) was not conducted. It is recommended that (puddling) operation should be mentioned clearly & boldly in all the relevant literature of the tractor & also a cautionary notice regarding non-suitability of tractor for puddling operation may be displayed on the bonnet of the tractor.

16.5 The text provided with year code is unit no. instead of year of manufacture on the label plate of the tractor. This does not fulfill Labelling of tractors (Provision of labelling plate). In this respect applicant provided corrected labelling plate with indication of year of manufacturing clearly and given undertaking to provide the same on the production line.

16.6 **Maintenance / Service Problems:**
No noticeable maintenance or service problem was observed during the test

16.7 **Recommendation with regard to safety on tractor:**
The following requirements, inter alia, may be considered for incorporation on the tractor:

- Provision for spark arresting device in exhaust system.
- Provision of PTO shaft master shield.
- Guard for insulation to avoid inadvertent contact during normal operation with an exposed hot element that may cause harm/discomfort to operator in the normal operating position. The relaxation for evaluative parameter for conforming the same is given as per para 16.1.9(a)

16.8 Adequacy of Literature:

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

- Operator's manual (For 7510,6510 & 6010 excel series model tractors)
- Service Parts catalogue (For 7510,6510 & 6010 excel series tractor models)
- Service Manual (For 7510,6510 & 6010 excel series tractor models)

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- 16.8.2 Information on variant models & their feature at a glance shall also be included in the operator's manual
- 16.8.3 The literature should be brought out in national as well as other regional languages of India for guidance of users.

17.0 Citizen charter

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given in the citizen charter	Remark
8 Months (July,2014 to March, 2015)	10 Months	Yes	Yes

TESTING AUTHORITY:-


P. C MESHARAM
 AGRICULTURAL
 ENGINEER


A.K. SINGH
 SENIOR AGRICULTURAL
 ENGINEER


C.R. LOHI
 DIRECTOR

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

18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
18.1	16.3 (v),(vi),(vii), 16.4.1.2, 16.4.1.3 (i),(ii),(iii), 16.4.1.1, 16.4.1.5, 16.5 & 16.7 (i),(ii).	Your valuable comments & suggestions for improvements are well taken. Under our policy of continuous product improvement these aspects are further being looked into & will take appropriate actions to eliminate these deviations soon wherever necessary.