



## CAPTAIN, 120 DI 4WD TRACTOR



भारत सरकार

### GOVERNMENT OF INDIA

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

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

**(An ISO : 9001-2008 Certified Institute)**

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T-865/1376/2013

CAPTAIN, 120 DI 4WD TRACTOR- Commercial (Variant)

1	2	3	4
4.	Hydraulic system	HP 140/ Hydrol 68 / EP-140	-do-
5.	Front Differential unit, Front axle and front final drive	SAE 90	-do-
6.	Steering gear box	SAE 90	-do-
7.	Grease	Servo JML MP-3	Servo Grease MP

### 3. ESSENTIAL TESTS

#### 3.1 SPECIFICATIONS

3.1.1	Tractor:	<u>Base model</u>	<u>Variant model</u>
	Make	: M/s. Captain Tractors Pvt. Ltd. (apa)	Captain
	Model	: DI 2600 4WD	CAPTAIN 120 DI 4WD
	Type	: Four wheel driven, Agricultural Tractor	
	Year of manufacture	: 2010	2012
	Chassis serial number	: 10042600	B12080001
	Tractor number	: K 0314	Not specified
	Country of origin	: India	India
3.1.2	Engine:		
	Make	: Field Marshal	Field Marshal
	Model	: FH-785	FH-785
	Type	: Four stroke, naturally aspirated, Air cooled, direct injection, diesel engine.	
	Serial number	: DB 5155	FE 08415
	Country of origin	: India	India
	<b>Engine speed (rpm), (Manufacturer's recommended production setting),:</b>		
	- Maximum speed at no load	: 2650 to 2850	2650 to 2850
	- Low idle speed	: 900 to 1100	900 to 1100
	- Speed at maximum torque	: 1330 to 1530	1330 to 1530
	<b>Rated speed, (rpm):</b>		
	- For PTO use	: 2600	2600
	- For drawbar use	: 2600	2600
3.1.3	Cylinder & Cylinder Head:		
	Number	: One	One
	Disposition	: Vertical	Vertical
	Bore/stroke, (mm)	: 85/110	85/110
	Capacity as specified by the applicant, (cc)	: 624	624
	Compression ratio	: 17 :1	17 :1
	Type of cylinder head	: Monoblock, Cast aluminum alloy with fins	Monoblock, Cast aluminum alloy with fins
	Type of cylinder liners	: Dry, Integral with cylinder block with cast iron fins.	Dry, Integral with cylinder block with cast iron fins.

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

- 7.1 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: 2008 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: 12207-2008	Values declared by the applicant/ requirement		As observed		Whether Variant model meets the requirements (Yes/No.)
				Base model	Variant Model	Base model	Variant model	
1	2	3	4	5 a	5 b	6 a	6 b	7
<b>7.1.1 PTO Performance :</b>								
a)	- Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >35hp. -7.5/+10% for PTO power ≤ 35 hp	5.8	5.8	6.1	6.0	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	5.8	5.8	5.8	5.9	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	332	332	323	347	Yes
<b>7.1.2 Labelling of tractors (Provision of labelling plate):</b>								
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	CAPTAIN		CAPTAIN Tractors Pvt. Ltd.		Yes
2)	Model	Evaluative		DI 2600 4WD		CAPTAIN 120 DI 4WD		Yes
3)	Year of manufacture	Evaluative		2010		2012		Yes
4)	Engine serial number	Evaluative		DB 5155		FE08415		Yes
5)	Chassis number	Evaluative		10042600		B12080001		Yes
6)	Declaration of PTO power, kW	Evaluative		5.8		5.8		Yes

**7.2 Salient Observations:****7.2.1 Laboratory tests:****7.2.1.1 PTO Performance:**

- The maximum power was observed as **6.0 kW** against the declaration of **5.8 kW**, which meet the requirement of IS: 12207-2008 with regard to tolerance.
- The specific fuel consumption corresponding to maximum power was measured as **347 g/kWh** against the declaration of **323 g/kWh**, which meets the requirement of IS:12207-2008 with regard to tolerance.

**7.2.1.2 Hydraulic performance:**

During the hydraulic performance test, the hydraulic pressure pipe to distributor (at junction position with distributor) was leaked .so hydraulic pressure pipe (Part no. 011430.00) replace with new one.

**7.2.1.3 Three point linkage:**

- The diameter of hitch pin hole of upper hitch point ,transport height & power/movement range of tractor does not meets the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action.
- Some of the parameters of the three point linkage conform to Cat. I and some of them conform to Cat.II. Keeping in view of the spirit of standardization, the necessary improvements may be incorporated.

**7.2.1.4 Linkage drawbar:**

Some of the parameters of linkage drawbar conform to Cat.I and some of them conform to Cat.II. In view of the spirit of standardization, necessary improvements may be incorporated.

**7.2.1.5 Location and operation of operator's control:**

The working clearance around the position lever to draft control and mudguard was observed as 30 mm against the minimum requirement of 70 mm as per per IS: 12239 (Part 2)-1996 This should be looked into for necessary corrective action.

**7.3 Maintenance / Service Problems:**

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

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

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

- Provision of safety against accidental start of the engine.
- Provision for spark arresting device in exhaust system.
- Provision for retaining the fuel shut-off lever in "STOP" position.
- Provision of PTO shaft master shield.

**7.5 Adequacy of Literature supplied with machine:****7.5.1** Literature was supplied with the tractor for reference during the test.

- Operator's manual (for Captain 120 DI and Captain 120 DI 4WD Tractor)
- Spare parts catalogue (for Captain 120 DI and Captain 120 DI 4WD Tractor)

**16.7.2** Information related to PTO , Drawbar and hydraulic performance of the tractor such as, maximum engine power, rated engine power, maximum torque, backup torque, specific fuel consumption, maximum drawbar power & pull, hydraulic pump discharge rate, hydraulic power & lifting capacities etc should be included in the technical specification of the tractor for the guidance of the user's.



T-865/1376/2013

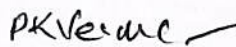
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The results of the tests carried out on variant model "CAPTAIN, 120 DI 4WD" have been compared with those on base model "CAPTAIN, DI 2600 4WD" and found within the limit, as specified in Indian Standard: 12207-2008.

#### 8. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	5 Months (October 2012 to February, 2013)	Yes	None

#### TESTING AUTHORITY:

  
**P. K. VERMA**  
 SENIOR AGRICULTURAL ENGINEER

  
**C.R LOHI**  
 DIRECTOR

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

#### 9. Applicant's Comments

Para No.	Our Reference	Applicants comments
9.1	7.21.2	Necessary action will be taken to improve the quality at production level.
9.2	7.2.1.3 & 4	Adequate changes will be done to meet the standards.
9.3	7.2.1.5	Will consider same for operator comfort.

#### ANNEXURE-I

#### TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	8.9
3.	Theoretical speed test	1.3
4.	Hydraulic performance test	7.8
5.	Brake performance test	1.8
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.2
	<b>TOTAL:</b>	<b>20.0</b>