ADMINISTRATIVE EXTENSION REPORT **COMB- 243/2761/2021**
प्रशानिक विस्तार रिपोर्ट **October, 2021**

COMMERCIAL TEST REPORT **COMB-232/2683/2021**
व्यावसायिक परीक्षण रिपोर्ट **March, 2021**

TEST REPORT IS VALID UPTO : 31st MARCH, 2028

DASMESH-726 DLX,
SELF PROPELLED PADDY COMBINE HARVESTER
(TRACK TYPE)

भारत सरकार
Government of India
कृषि एवं किसान कल्याण मंत्रालय
Ministry of Agriculture and Farmers Welfare
कृषि एवं किसान कल्याण विभाग
Department of Agriculture and Farmers Welfare
उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
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4.5 As per the document **H Series H4CTIC3N 56kW BSII CEV Service Manual from Ashok Leyland (The Engine Manufacturer)** page no. 10.09, the specification (Measurements in mm for Main bearing and big end bearing are given as

DESCRIPTION	SPECIFICATION (Measurement in mm)
	H4CTIC3N BSIII-56kW
Crankshaft end play (Maximum permissible clearance)	0.05-0.22 (0.4 limit)
Diameter clearance between main journal and bearing (Maximum permissible clearance)	0.039 -0.90 (0.13 limit)
Connecting rod side clearance (Maximum permissible clearance)	0.20 -0.52 (limit 0.6)
Diametrical clearance between connecting rod big end bearing & crank pin (Maximum permissible clearance)	0.031 – 0.082 (limit 0.12)

5. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS AS PER IS 15806: 2018 (Complete evaluation including originally tested sample and sample inspected/tested for administrative extension)

S. No	Characteristics		Category (Evaluative/ Non evaluative)	Requirement (R)/ Declaration (D)	Tolerance	Observed	Remarks
1	2		3	4	5	6	7
I.	**Prime mover performance**						
	a)	Max. Power (absolute) Average max. Power observed during 2 hrs. Max. Power test in natural ambient condition, kW	Evaluative	55	±5%	54.8	Conforms
	b)	Max. Power observed during test after adjusting the no load engine speed as per recommendation of the manufacturer for field work, kW	Evaluative	55	±5% of declared value	54.0	Conforms
	c)	Power at rated engine speed, kW (under natural ambient condition)	Non evaluative	55	±5% of declared value	53.2	Conforms

	d)	Specific fuel consumption corresponding to average maximum power under 2h maximum power test, g/kWh.	Evaluative	245	+5% (max)	242.2	Conforms
	e)	Max. Smoke density at 80% load between the speed at max. Power & 55% of speed at max. Or 1000 rpm whichever is higher	Evaluative	As per central motor vehicles rules (CMV) rules	Nil	1.68 m^{-1}	Conforms
	f)	Max. Crank shaft torque, (Nm) observed during the test after no load engine speed is adjusted as per manufacturer's recommendation for field work	Evaluative	350	±8% of declared value	338	Conforms
	g)	Back up torque, %	Evaluative	7 % min.	Nil	32.29	Conforms
	h)	Max. Operating temperature, ^0C i) Engine oil ii) Coolant	Evaluative	 i) 120 (Max) ii) 108 (Max)	Should not exceed the declared value	 i) 99.4 ii) 98.3	 Conforms Conforms
	i)	Lubrication oil consumption, g/kWh	Evaluative	Not exceeding 1 % of SFC at maximum power (high ambient)	Nil	0.174	Conforms

II. Brake performance at 24 km/h or maximum speed whichever is less							
	a)	Max. Stopping distance at a force equal to or less than 600 N on brake pedal (m)-(cold brake and hot brake)	Evaluative	As per requirement of CMVR	--	Not applicable, as Hydro static transmission does not require any separate/separate/conventional brake system /conventional brake system	Conforms
	b)	Max. Force exerted on brake pedal to achieve declaration of 2.5 m/sec^2	Evaluative	As per requirement of CMVR	--		
	c)	Effectiveness of parking brake at a force of 600 N at foot pedal or 400 N at hand lever	Evaluative	As per requirement of CMVR	--		

III. Mechanical vibration							
	a)	Operator's platform	Non evaluative	120 µm max.	Nil	246	**Does not conform**
	b)	Steering control wheel	Non evaluative	150 µm max.	Nil	Not available	--
	c)	Seat with driver seated	Non evaluative	120 µm max.	Nil	201	**Does not conform**
IV. Air cleaner oil pull over							
	a)	Air cleaner oil pull over in % when tested in accordance with IS 8122 part (II) 2000	Evaluative	0.20 max.	Nil	Dry type air cleaner is provided hence test is not applicable	---
V. Noise measurement							
	a)	Max. ambient noise emitted by combine at by standards position dB (A)	Evaluative	88 dB (A) as per CMVR	Nil	84	Conforms
1		**2**	**3**	**4**	**5**	**6**	**7**
	b)	Max. noise at operator's ear level dB (A)	Evaluative	98 dB (A) as per CMVR	Nil	96	Conforms
VI. Header lifting Test							
	a)	Satisfactory completion of header lifting test	Evaluative	-	Nil	Satisfactorily completed	Conforms
VII. Discard limit [AS per the document **H Series H4CTIC3N 56kW BSII CEV Service Manual from Ashok Leyland (The Engine Manufacturer)**]							
	a)	Cylinder bore diameter, mm	Evaluative	104.15	Should not exceed the values declared by the manufacturer	104.02	Conforms
	b)	Piston diameter, mm	Evaluative	103.755	-do-	103.92	Conforms
	c)	Piston to cylinder liner clearance at skirt	Evaluative	0.172	-do-	0.11	Conforms
	d)	Ring end gap, mm i) Top compression ring ii) 2nd compression ring iii) Oil ring	Evaluative	 1.2 1.2 1.2	-do-	 i) 0.40 ii) 0.50 iii) 0.40	Conforms

	e)	Ring groove clearance, mm 1. Top compression ring 2. 2nd compression ring 3. Oil ring	Evaluative	0.7 0.2 0.1	-do-	Tapered ring ii) 0.05 iii) 0.05	Conforms
	f)	Diametrical and axial clearance of big end bearing, mm Diametrical Axial	Evaluative	0.12 0.6	-do-	0.09 0.40	Conforms
	g)	Diametrical and axial clearance of main bearings, mm Diametrical Crank shaft end float	Evaluative	0.13 0.4	-do-	0.09 0.16	Conforms --
	h)	Thickness of brake lining, mm	Evaluative	--	-do-	**Not applicable**	--
	i)	Thickness of clutch plate, mm	Evaluative	--	-do-	**Not applicable**	--
VIII. Field performance							
	a)	Suitability for crops	Evaluative	Wheat & paddy (Wheel type) Paddy (Track type)	Nil	paddy	Conforms
	b)	Average processing losses (%)	Evaluative Rice	Max (of average) 4%	Nil	Rice (max) 2.4%	Conforms
	c)	Threshing efficiency	Evaluative	≥98 percent for wheat & Paddy	Nil	98.4% for Paddy	Conforms
	d)	Cleaning efficiency	Evaluative	≥96 percent for wheat & Paddy	Nil	96.5% for Paddy	Conforms
	e)	Grain breakage in main grain tank	Evaluative	≤ 2.5 percent	Nil	1.31% for Paddy	Conforms
	f)	Non collectable losses	Evaluative	*i)* ≤ 2.5 percent for wheat & Paddy & grain *ii)* ≤ 4.0 percent for Soybean	Nil	0.3% For Paddy	Conforms
X. Safety requirement							
	a)	Guards against all moving parts	Evaluative	Belt and chain drives, pulleys hydraulic pipes around operators work place	--	Provided	Conforms

	b)	Lighting arrangement	Evaluative	As per CMVR	-	NA	Conforms
	c)	Grain tank cover	Evaluative	Essential	-	Provided	Conforms
	d)	Spark arrester in engine's exhaust in case naturally aspirated engine	Evaluative	Essential		Turbo charger provided in Exhaust system	**Not applicable**
	e)	Stone trap before concave bars	Evaluative	Essential	-	Provided	Conforms
	f)	Rear view mirror	Evaluative	Essential	-	Provided	Conforms
	g)	Fire extinguisher	Evaluative	Essential	-	Provided	Conforms
	h)	Slip clutch at following drives –					
		i) Cutting platform auger	Evaluative	Essential		Provided	Conforms
		ii) Undershot conveyor drive	Non evaluative	Essential	-	Provided	Conforms
		iii) Grain & tailing elevator	Non evaluative	Essential		Provided	Conforms
	i)	Anti slip surfaces at operator platform & ladder & proper gripping for the control levers.	Evaluative	Essential	-	Provided	Conforms
	j)	Working clearance around the controls	Non evaluative	As per IS:12239(Part 1)	-	Provided	Conforms
	k)	Labelling of control gauges and all operating controls	Evaluative	Essential	-	Provided	Conforms
XI	**Material of construction** :						
	i)	Knife guard should conform to IS: 6024 -1983	Non evaluative	Should have maximum hardness 163HB	-	**Not available**	--
	ii)	Knife blade as per IS :6025-1982	Non evaluative	It must have Chemical composition as C=0.70-0.95 % Mn= 0.30-0.50%	-	C=0.5896 Mn= 0.4409	**Does not conform** Conforms

	iii)	Knife back should meet the requirement of IS:10378-1982	Non evaluative	The knife back shall be manufactured from Carbon Steel having minimum carbon content of 0.35 %	--	C=0.0894	**Does not conform**

XVII. Break down (critical, major & minor)

Sr. No.	Category of breakdowns	Category (Evaluative/ Non evaluative)	Requirements as per IS 15806:2018	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 breakdown	Evaluative	In no case total no of (major + minor) breakdowns exceed five	None	Yes

6. SUMMARY OF OBSERVATIONS COMMENTS AND RECOMMENDATIONS

6.1 The grain tank cover was not provided in the test sample tested vide test report 232/2683/2021, (Para. 21.6). Now, it is provided and conforms the requirement of IS: 15806-2018.

6.2 Slip clutch at cutting platform auger was not provided in the test sample tested vide test report 232/2683/2021, [Para 21.5(ii)]. Now, it is provided and conforms the requirement of IS:15806-2018.

6.3 Slip clutch at grain and tailing auger was not provided in the test sample tested vide test report No. Comb-232/2683/2021, [Para 21.5(iii)]. Now, it is provided and conforms the requirement of IS: 15806-2018.

6.4 As per test report No. Comb.- 202/2346/2019 Para 2.8 (i)(ii) 21.8 No symbol was provided as per IS : 6283 (Part-1)-2006, & IS : 6283 (Part-II)- 2007 on the sample tested. Now, applicant has provided the symbols as per Indian standards on combine harvester which conforms the requirements of IS: 15806-2018, Labelling of control gauges and all operating controls.

6.5 Rear view mirror was not provided in the sample tested vide test No. Comb-232/2683/2021, [Para 21.7]. Now, it is provided and conforms the requirement of IS: 15806-2018.

6.6 The evaluative parameters of prime mover performance in the test sample tested vide test report Comb.-232/2683/2021, [Para 21.1 (i ti iv)] was reported as 'Does not conform'. As per the declared values of the engine performance from the '**Annexure XII**' of engine test report no. **CD0EQ0080 dated 23.02.2021 issued by the International Centre for Automotive Technology (iCAT), [A division of NATRIP implementation society (NATIS), Govt of India,] Manesar, Gurugram** 122050, (Haryana), which was also referred during the test as reported on page no.30 of 59 of test report Comb.-232/2683/2021, it is evident that all the evaluative parameters of prime mover performance conforms the requirements.

6.7 Measured axial clearance of big end bearing was exceeds the declaration 0.09 mm and did not meet the requirement of IS: 15806-2018 as per test report No Comb.- 202/2346/2019 [21.1(v)]. The applicant provided the **"H Series H4CTIC3N 56kW BSII CEV Service Manual from Ashok Leyland (The Engine Manufacturer)"** . It was refered and the corrections of the discard limits are incorporated as per the printed literature. Now it conforms the requirements of IS:15806-2018

6.7 The effect of the modifications on the performance has been examined and considered that, the modifications are not going to affect the results of the original test. The original test report, therefore, applies to the modified combine harvester, also.

6.8 The following documents were submitted by applicant during testing.

i) Engine test report no. CD0EQ0080 dated 23.02.2021 issued by the International Centre for Automotive Technology (iCAT), [A division of NATRIP implementation society (NATIS), Govt of India,] Manesar, Gurugram 122050, (Haryana),

ii) Ashok Leyland H Series H4CTIC3N 56kW BSII CEV Service Manual.

TESTING AUTHORITY

Er. G.R. AMBALKAR AGRICULTURAL ENGINEER	Ambalkar
Dr. MUKESH JAIN **DIRECTOR**	22-10-2021

7. APPLICANT'S COMMENTS

No specific comments received from the applicant.