

व्यावसायिक परीक्षण रिपोर्ट

संख्या/ No.: COMB-267/2837/2022

COMMERCIAL TEST REPORT (FIRST BATCH)

माह/Month: April, 2022

THIS TEST REPORT VALID UP TO : 30th April, 2027



BALKAR B-525, TRACTOR MOUNTD COMBINE HARVESTER



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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- vii) IS:15806-2018 - Recommendation on selected performance and other characteristics : Conforms for evaluative parameters

16. SELECTED PERFORMANCE AND OTHER CHARACTERISTICS

Swaraj 855FE tractor was fitted as Prime mover. This Swaraj 855FE tractor is reported to have been tested by CFMTTI, Budni, vide their test report No. T-1461/1988/2020, July, 2020. PTO performance of tractor (prime mover of this combine) to the extent it is reported in the CFMTTI Test report is reproduced for readers' information. Readers are advised to refer to T-1461/1988/2020, July, 2020 in respect of Swaraj 855FE tractor, issued by CFMTTI, Budni, for detailed information.

16.1 Acceptance criteria for performance characteristics as per clause 4.1 of IS: 15806-2018

Sl. No	Characteristics	Category (Evaluative/ Non evaluative)	Requirement (R) / Declaration (D)	Tolerance	Observed	Remarks
I.	Prime mover performance (Tractor PTO Performance)					
a)	Max. Power / (absolute) average max. power observed during 2 h max. power test in natural ambient condition, kW	Evaluative	33.8 (D)	Declared value to be achieved with a tolerance of: ± 5 percent for PTO power and or engine power > 26 kW ± 10 percent for PTO power and or engine ≤ 26 kW	33.4	Conforms
b)	Power at rated engine speed, kW	Non-evaluative	33.8 (D)	Declared value to be achieved with a tolerance of: ± 5 percent for PTO power and or engine power > 26 kW ± 10 percent for PTO power and or engine ≤ 26 kW	33.4	Conforms
c)	Specific fuel consumption corresponding to average maximum power under 2 h maximum power test, g/kWh	Evaluative	257 (D)	± 5 %	249	Conforms

d)	Max. Smoke density (Bosch no.) at 80% load between the speed at max. Power and 55% of speed at max power or 1000 rpm whichever is higher	Evaluative	As per Central Motor Vehicles (CMV) rules.	3.25 Per meter (Max.) (R)	0.37	Conforms
e)	Back up torque, %	Evaluative	12 (R)	Nil	28.2	Conforms
f)	Max. Operating temperature, °C i) Engine oil ii) Coolant	Evaluative	130 115	Nil	97 93	Conforms
g)	Lubrication oil consumption, g/kWh	Evaluative	Not exceeding 1 % of SFC at maximum power under high ambient	Nil	0.18	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 requirements of CMVR (R)	Nil	Cold- 8.90 m Hot- 8.90 m	Conforms
b)	Max. Force exerted on brake pedal to achieve deceleration of 2.5 m/sec ²	Evaluative	≤ 600 N (R)	Nil	Cold -120 N Hot -128 N	Conforms
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 (R)	Nil	Effective	Conforms

III. Mechanical vibration (Amplitude of vibration)

a)	Operator's platform	Non evaluative	120 μm max. (R)	Nil	276	Does not conform
b)	Steering control wheel	Non evaluative	150 μm max. (R)	Nil	224	Does not conform
c)	Seat with driver seated	Non evaluative	120 μm max. (R)	Nil	208	Does not conform

IV. Air cleaner oil pull over

a)	Max. oil pull over in % when tested in accordance with IS 8122 (part 2)	Evaluative	0.20 percent max. (R)	Nil	0.20	Conforms
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V. Noise measurement							
	a)	Max. ambient noise emitted by combine at bystanders position, dB (A)	Evaluative	As per CMV Rules 88 dB(A) Max. (R)	Nil	85.5	Conforms
	b)	Max. noise at operator's ear level, dB (A)	Evaluative	As per CMV Rules 98 dB (A) Max. (R)	Nil	95.5	Conforms
VI. Header lifting test							
	a)	Satisfactory completion of header lifting test	Evaluative	--	Nil	Satisfactorily completed	Conforms
VII. Discard limit							
	Relevant discard limit of Swaraj 855 FE tractor prime mover are reported in test report no. T- 1121/1647/2017 which meets all evaluative requirements of IS: 12207-2014.						
VIII. Field performance							
	As per O.M No. 13-13/2020 M&T (I&P) dated 28th October 2021, regarding revision of BIS test code IS: 15806-2018, no field test will be conducted if no major break downs were observed in the field test during ICT test. Hence test field was not conducted. However the performances of the test sample tested vide test report COMB-142/1726/2015, April, 2015, meets the evaluative requirements of the IS: 15806-2018 for field performance.						
IX. Safety requirement							
	a)	Guards against all moving parts/drives and hot parts	Evaluative	Belt and chain drives, pulleys hydraulic pipes (Around operators work place) (R)	--	Provided	Conforms
	b)	Lighting arrangement	Evaluative	Essential per CMVR (R)	--	Provided	Conforms
	c)	Grain tank cover	Evaluative	Essential (R)	--	Provided	Conforms
	d)	Spark arrester in engine's exhaust in case naturally aspirated engine	Evaluative	Essential (R)	--	Provided	Conforms
	e)	Stone trap before concave bars	Evaluative	Essential (R)	--	Provided	Conforms
	f)	Rear view mirror	Evaluative	Essential (R)	--	Provided	Conforms
	g)	Fire extinguisher	Evaluative	Essential (R)	--	Provided	Conforms

	h)	Slip clutch at following drives – i) Cutting platform auger	Evaluative	Essential (R)	--	Provided	Conforms
		ii) Undershot conveyor drive	Non-Evaluative	Optional		Provided	Conforms
		iii) Grain & tailing elevator	Non-Evaluative	Optional		Provided	Conforms
	i)	Anti slip surfaces at operator platform & ladder & proper gripping for the control levers.	Evaluative	Essential (R)	--	Provided	Conforms
	j)	Working clearance around the controls	Evaluative	--	--	Provided	Conforms
	k)	Labelling of control gauges all operating controls	Evaluative	Essential(R)	--	Provided	Conforms
XI Material of construction							
	i)	Knife guard should conform to IS: 6024 -1983	Non evaluative	Should have maximum hardness 163 HB (R)	--	Hardness 203	Does not conform
	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% (R)	--	C= 0.51 Mn= 0.42	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 % (R)	--	C=0.16	Does not conform

		Previous Sample	Present Sample
iv) IS:6283 (Part-1)-2006	:	Does not conform	Conforms
v) IS:6283 (Part-2)-2007	:	Does not conform	Conforms
vi) IS: 8133-1983	:	Conforms	Conforms
vii) IS: 15806-2018	:	Does not conform	Conforms the evaluative requirements

18. COMMENTS AND RECOMMENDATIONS

- 18.1** The combine harvester model; Balkar B-525 was tested for initial commercial test vide test report no. **COMB-142/1726/2015, released in April, 2015**, with John Deere 5055 E, V3 tractor. Thereafter applied for the administrative extension as per the provisions laid down in IS: 15806-2018 with permanent change in prime mover/tractor from John Deere E, V3 to John Deere 5310 V3 as the tractor manufacturer discontinued the said model John Deere 5055 E, V3 . The administrative extension was granted vide test report no. **COMB-238/2756/2021, October, 2021**.
- 18.2** The present sample submitted by the applicant is with the SWARAJ 855 prime mover/ tractor. The changes in the maximum PTO power of the prime movers/tractors of earlier tested combine harvester tested vide test report no. **COMB-238/2756/2021, October, 2021** and present sample is observed as 7.14 percent decrease of declared power. It is within the limit of ± 10 percent specified in the Table 2 (Sl. No. (i)) of IS: 15806- 2018.
- 18.3** **Mechanical vibration**
The amplitude of mechanical vibration of components marked as (*) in chapter 13 of this report are observed on higher side. This calls for providing suitable remedial measures to dampen the vibration in order to improve the operational comfort and service life of various components & sub-assemblies.
- 18.4** **Hardness and chemical composition**
i) Hardness & chemical composition of knife blade, knife guard, knife back and SMS blades are not within the limits specified in their respective IS: 6025-1982. It should be looked into for corrective action at regular production level.

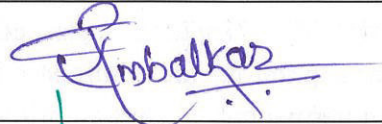

18.5 Literature supplied with the machine

The following literature are provided during test.

- i) Operators and service manual for combine harvester
- ii) Spare parts catalogue
- iii) Tractor test report

However, the operator manual should be updated as per IS:8132-1999

TESTING AUTHORITY

Er. G.R. AMBALKAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 05-04-2022

19. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's comments
19.1	18.3	We will ensure that mechanical vibration of the machine should be within limit in regular production.
19.2	18.4	Hardness and chemical composition of the knife blade and knife back is very near to the requirement however we will make arrangement to match the composition as per requirement.
19.3	18.5	Service manual will be updated as per required standard.