O/C

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : Imp-553/1409
माह / Month : March , 2012

POWER OPERATED BRUSH CUTTER "GREAVES-GSC G 530"

सत्यमेव जयते

भारत सरकार
कृषि मंत्रालय
(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & COOPERATION)

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
ट्रैक्टर नगर, सिरसा रोड, हिसार -125001 (हरियाणा)

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE
TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)

Telephone : 01662- 276824, 276172
Website : http://nrfmtti/dacnet.nic.in

Telefax No. : 01662-276984
E-Mail : fmti-nr@ nic.in

8. **ENGINE PERFORMANCE TEST**

In reference to the Ministry's letter No. 7-23/2011-(I &P) dated 20.4.2011, the engine test has not been carried out separately and the test performance parameters in respect of LE40F-5A self aspirated petrol engine of 1.25 kW @6500 rpm as submitted by the manufacturer vide their type approval No. e11*97/685A*2004/126*118*00 issued by VCA on 12th March, 2009 with regards to the emission of pollution pursuant to Directive 97/96/EC as amended by 2004/12/EC have been presumed and reported in test report as VCA is a vehicle approval authority of united kingdom and the principle manufacturer M/s Liny Sahne Yang Jia Power Co. Ltd. Shandong, China has an attestation of conformity No.1003 606 36 093 in respect of their product Brush Cutter and Brush Trimmer vide test report No. BJ5000933101 from TUVSUD Product Service GmbH an international certifying agency.

8. 1 **Engine performance (apa):**

Maximum power , kW	:	1.25 @6500 rpm
Rated power, kW	:	1.25 @ 6500 rpm
Specific fuel consumption corresponding to maximum power g/hph	:	730
Maximum equivalent crank shaft torque, Nm	:	1.9

8.2 Initial setting and discards limits(apa):-

S.No.	Components	Initial setting , mm	Discard limit, mm
1.	Cylinder bore dia	40	42
2.	Piston dia	40	38
3.	Ring end gap, top compression ring	0.2	0.3
4.	Ring groove clearance top compression ring	1.5	0.4
5.	Diametrical clearance of big end bearings	0.04	0.25
6.	Axial clearance of big end bearings	0.108	N.A.
7.	Crank shaft end float	0.1 to 0.25	N.A.

9. **RUNNING IN**

Brush cutter was run for 1.0 hours for running in and initial adjustments prior to field tests as per recommendation of the manufacturer.

10. FIELD TEST

The brush cutter was operated in field for 15 and 5 hours in wheat and grass cutting respectively. During the tests different available varities of wheat and grass were harvested to assess the performance of brush cutter with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The crop and atmospheric conditions during field tests are given in Annexure-I for wheat crop. The crop parameters recorded during the tests with wheat crop are as under.

S. No.	Parameters	Range of parameters
1.	Plant height (cm)	68.0 to 90.5
2.	Plant population (number of tillers/m²)	185 to 390
3.	Moisture (%) Grain Straw	 5.0 to 6.0 11.5 to 12.3
4.	Straw grain ratio	1.18:1.00 to 4.14:1.00

The data of field performance tests are given in Annexure-II and III for wheat and grass cutting respectively and summarized as under.

S. No.	Observations	Range of observations	
		Wheat cutting	Grass cutting
1.	Speed of operation, km/h	0.224 to 0.271	0.390 to 0.448
2.	Area covered, ha/h	0.020 to 0.037	0.027 to 0.029
3.	Fuel Consumption l/h l/ha	 0.492 to 0.789 12.023 to 34.700	 0.600 to 0.940 22.22 to 34.18
4.	Post harvest losses (kg/ha)	10.8 to 76.3	--
5.	Shattering losses (kg/ha)	19.8 to 48.1	--
6.	Total losses (kg/ha)	34.3 to 105.2	--

10.1 Rate of work and fuel consumption

i) During the tests rate of work varied from 0.020 to 0.037 ha/h and 0.027 to 0.029 ha/h in wheat and grass cutting respectively.

ii) The fuel consumption varied from 0.492 to 0.789 l/h and 0.600 to 0.940 l/h in wheat and grass cutting respectively.

iii) The fuel consumption per unit area harvested varied from 12.023 to 34.700 l/ha and 22.22 to 34.18 l/ha in wheat and grass cutting respectively.

15. **COMMENTS AND RECOMMENDATIONS**

i) Rate of work of brush cutter was found from 0.020 to 0.037 ha/h in wheat cutting and 0.027 to 0.029 ha/h in grass cutting during the field tests.

ii) Fuel consumption ranged from 0.492 to 0.789 l/h for wheat cutting and from 0.600 to 0.940 l/h in grass cutting during the field tests.

iii) Stubble height is 4.5 cm to 10.3 cm in wheat cutting and 2.0 cm to 3.0 cm in grass cutting.

iv) Wear of blade is 0.22% after 15 hours of wheat cutting.

v) Total losses ranged from 34.3 kg/ha to 105.2 kg/ha in wheat cutting. The losses are considered to be on high side and calls for improvement in the cutting and conveying units so that the losses could be minimized.

vi) Working of brush cutter was found satisfactory in wheat as well as grass cutting. Implement could complete 20 hours of testing without any breakdown.

16. **LITERATURE**

Operator cum service manual spare part list and tool kit has been supplied by the manufacturer. However, operator's cum service manual should be prepared bilingual in English and Hindi for the guidance of end users as per requirements of IS : 8132-1983

TESTING AUTHORITY

(R.M. TIWARI) AGRIL. ENGINEER (W/S)	
(P. K. CHOPRA) (SENIOR AGRICULTURAL ENGINEER)	
(A. N. MESHRAM) **DIRECTOR**	

S. No.	Our reference	Applicant's comments
1.	Para 15 comments and recommendations (v)	We will take up with Brush cutter supplier to improve the conveying unit to bring down the wheat losses.
2.	Para 16 Literature	We are already on the job for introducing English, Hindi and in regional languages for end users.