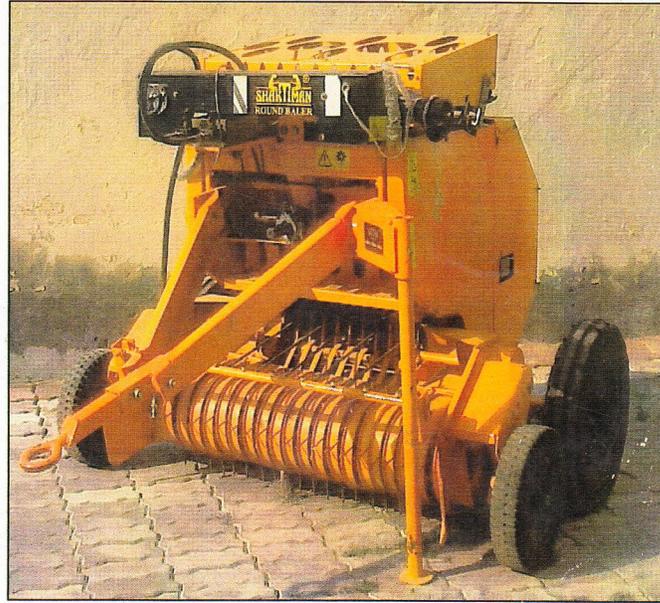


प्रतिपूरक परीक्षण रिपोर्ट
SUPPLEMENTARY TEST REPORT

संख्या / No. : IMP-648/1584
माह / Month: March, 2014



TRACTOR OPERATED BALER
"SHAKTIMAN-SRB 60"



सत्यमेव जयते

भारत सरकार
कृषि मंत्रालय
(कृषि एवं सहकारिता विभाग)



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

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Country of origin	:	India
Recommended tractor power, hp (apa)	:	25 to 55
Recommended forward travelling speed of machine, kmph(apa)	:	2.0 to 8.0
pto speed for operation, rpm	:	540±10
Standard pto speed		
Working width of machine, m	:	1.305
Bale size, mm (observed) (LxD)	:	660x600
Avg. weight of bale observed, kg	:	15.07 to 17.43
Crop recommended for	:	Paddy straw

5. FIELD TEST

The Baler operated by ACE 550 DI tractor at engine throttle setting corresponding to 1750 rpm was tested in the field for 15.16 hours in paddy straw field after the field harvesting by the combine harvester to assess field performance of baler with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction etc. The details of tractor used for field operation are given in Para 5.1.2 and Annexure I. The tractor pto speed was maintained at 540 rpm during operation. The performance of machine is represented in Annexure-II and the summary of the field performance parameters are given in Table-5.

Table 1 : Summary of field performance :-

S.No.	Parameters	Observed values
1.	Tractor used	ACE 550 DI
2.	Type of straw	Paddy Straw
3.	Avg. Straw moisture, %	25.50 to 26.0
4.	Avg. Speed of operation, kmph	1.87 to 2.00
5.	Area covered, ha/h	0.449 to 0.575
6.	Time required for one hectare, h	1.74 to 2.23
7.	Field efficiency, %	64.23 to 79.19

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8.	Fuel consumption	
		l/h
		l/ha
		l/t
9.	Avg. Weight of each bale, kg	19.20 to 29.50
10.	Percentage of coefficient of variation in weight	8.70 to 13.93
11.	Bale size (L x D), mm	(640x590) to (650x640)
12.	No. of bales per hour	46 to 60
13.	Output of bale, t/h	1.090 to 1.430
14.	Straw recovery, %	92.22 to 97.40
15.	Bale density, kg/m ³	55.61 to 136.0
16.	Power consumption, kW	1.4 to 9.0 (Avg. 3.7)
17.	No. of winding	14 to 21
18.	Time between two bales, sec	53.4 to 173.80

5.1 Rate of work and fuel consumption

The rate of work for paddy straw was recorded as 0.449 to 0.575 ha/h at the forward speed 1.87 to 2.00 kmph

The time required to cover one hectare was recorded as 1.74 to 2.23

The fuel consumption is 2.468 to 2.793 l/h.

The number of bales output recorded as 46 to 60 bales/h with bale weight ranging from 19.20 to 29.50 kg

5.2 Quality of work :

The field efficiency and straw recovery varied from 64.23 to 79.19 and 92.22 to 97.40% respectively.

Straw output was recorded as 1.090 to 1.430 t/h with bale density from 55.61 to 136.0 kg/m³.

No. of windings observed as 14 to 21

Percentage of coefficient of variation in weight of a bale is observed from 8.70 to 13.93%.

6. Effectiveness of sealing :-

After completion of field test in straw of paddy crop, the machine was dismantled, check sealing provided against ingress of dust/other foreign material in sub assemblies. The sealing's provided have been found effective as to ingress of dust/straw was not noticed inside the sub assemblies.

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7. EASE OF HANDLING DURING OPERATION

The telescopic universal shaft has the provision to adjust the length of drive shaft which is adequate.

The implement do not have provision to vary pick up unit shaft speed to regulate input of bailing material keeping in view the moisture content in the existing unit, it is done by varying the engine pto speed.

Towing hook has enough vertical and horizontal adjustment to suit the different tractors.

8. LABOUR REQUIREMENTS

Prior to each test, about 2 man –h were required for daily maintenance of tractor and baler for operation otherwise one skilled operator is enough to operate tractor with baler.

9. DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS

No any breakdown is observed during entire field test.

10. SAFETY DEVICES:-

1. Protection shield for bale chamber drive, reel drive, hydraulic drive and linkages.
2. Safety cover for PTO shaft.
3. Shear bolt for bale roller shaft (gear output shaft of RHS)

11. COMMENTS AND RECOMMENDATIONS

1. Quality of bale was observed to be satisfactory.
2. The field efficiency and straw recovery varied from 64.23 to 79.19 & 92.22 to 97.40% respectively, which is considered normal.
3. Maneuverability of tractor with baler was found to be satisfactory and also the quality of work was observed to be satisfactory.
4. The pto power requirement of baler was observed as 1.4 to 9.0 kW (Avg. 3.7 kW) bailing of paddy straw which is 4.84% to 31.14% (Avg. 12.80%) pto power of the tractor.
5. Two supporting Pneumatic ribbed, wheels are provided for transportation as well as for maintaining the ground clearance of pick up tines during operation of the machine.
6. The weight of individual bale varies at different moisture content of straw.
7. The supplementary test report should be read in conjunction with its early report no. IMP-622/1539 Sep, 2013.