

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : IMP- 609/1490
माह / Month : March, 2013



**TRACTOR DRAWN ROUND BALER
"BR-6080"**



सत्यमेव जयते

भारत सरकार
कृषि मंत्रालय
(कृषि एवं सहकारिता विभाग)

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

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1.	Drive shaft	04
2.	Bale density rod	02
3.	Gearbox output shaft	01
4.	Tailgate closing hook	02
5.	Tailgate latching hook	02
C	Annually point	
1.	Jack	01
Total point		21

Oiling points:-

S.No.	Oiling point	Number
A	Daily point	
1.	Chain drive	07
2.	Bale roll chain automatic oil	02
B	Weekly point	
1.	Pick up pivot plates	02
2.	Conveyor chain stretch slot	02
C	Annually point	
1.	Gear box	01
Total point		14

6. FIELD TEST

The Baler operated by New Holland 5500 tractor at engine throttle setting corresponding to 1968 rpm was tested in the field for 35.92 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 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 5 : Summary of field performance :-

S.No.	Parameters	Observed values
1.	Tractor used	New Holland 5500
2.	Type of straw	Paddy straw
3.	Straw moisture, %	14.0 to 30.0
4.	Avg. Speed of operation, kmph	2.60 to 3.59
5.	Area covered, ha/h	0.695 to 0.895
6.	Time required for one hectare, h	1.12 to 1.44
7.	Field efficiency, %	58.40 to 66.89

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8.	Fuel consumption	
		l/h
		2.960 to 3.367
		l/ha
		3.393 to 4.336
		l/t
		1.360 to 3.436
9.	Avg. Weight of each bale, kg	148 to 212.00
10.	Percentage of coefficient of variation in weight of the bale	1.83 to 7.23
11.	Bale size (L x D), mm	(1.25x1.25) to (1.40x1.35)
12.	No. of bales per hour	6 to 12
13.	Straw output, t/h	0.932 to 2.476
14.	Straw recovery, %	87.10 to 94.34
15.	Bale density, kg/m ³	77.35 to 137.71
16.	No of winding	8 to 30
17.	Power consumption, kW	5.38



6.1 Rate of work and fuel consumption

The rate of work for paddy straw was recorded as 0.695 to 0.895 ha/h at the forward speed 2.60 to 3.59 kmph.

The time required to cover one hectare was recorded as 1.12 to 1.44 h with field efficiency of 58.40 to 66.89 %.

The fuel consumption is 2.960 to 3.367 l/h.

6.2 Quality of work :

The number of bales output recorded as 06 to 12 bales/h with bale weight ranging from 148 to 212.2 kg.

The straw recovery is ranged from 87.10 to 94.34 % respectively.

Straw output was recorded as 0.932 to 2.476 kg/h along with the bale density of 77.35 to 137.71 kg/m³.

No. of winding on a bale is observed from 8 to 30. The coefficient of variation of a bale weight is observed from 1.83 to 7.23 %.

7. Effectiveness of sealing :-

After completion of field test in straw of paddy crop, the machine was dismantled, to check sealing provided against ingress of dust/other foreign material in sub assemblies. The sealing provided has been found effective as no ingress of dust/straw was noticed inside the sub assemblies.

8 EASE OF HANDLING DURING OPERATION

1. The cardan shaft has the provision to adjust the length of drive shaft which is adequate.
2. 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.
3. Towing hook has enough vertical & horizontal adjustment to suit the different tractors.

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4. At the end of the ejection of bale unit, the dust accumulated at the mating surfaces of the tailgate with bale chamber require to be cleaned otherwise its locking of latch hook is difficult.

9 LABOUR REQUIREMENTS

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

10 DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS.

No breakdown was observed during 35.92 hrs of field operation under test.

11. Special feature:-

- i) Hydraulic bale ejector system having a tailgate lock-out valve, by using it tailgate lock in any position to allow easy access during servicing.
- ii) Twine auto wrappings system.
- iii) No. of wrappings can be set to 14, 18, 22 no. with easy adjustments.
- iv) The fully automatic buzzer system for indication of wrapping and binding system.
- v) Provision for adjusting the density of baler.
- vi) Density indicator is provided to show the operator the progress of bailing of straw/hey inside the bale chamber.
- vii) The baler tongue is easily adjustable for transported and field condition.
- viii) Machine having Wide Pick Up (WPU) unit which are feeding a straw uniformly, for good quality of bale formation.
- ix) Gravity feed automatic oil supplier to lubricate the main chain, pick up and packer chain automatically.
- x) Electrical system provided with electronic control box for automatic control of twine wrapping, bale alarm & acoustic signal when the tailgate latches (optional).
- xi) Twine wrapping system actuated by both manually & electronic by providers electronic actuator optionally.
- xii) Bale counter provided for indication of work progress by counting number of bale.

12. SAFETY DEVICES:-

- i) A shear bolt is provided at propeller shaft, pick up unit.
- ii) An overload spring provided at feeder unit.
- iii) Guard rail provided at the front of machine.
- iv) Safety covers for pto shaft.

13 COMMENTS AND RECOMMENDATIONS

1. Quality of bale was observed to be satisfactory.
2. The field efficiency and straw recovery varied from 58.40 to 66.89 and 87.10 to 94.34 % respectively, which is considered normal.
3. 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.

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4. Maneuverability of tractor with baler was found to be satisfactory and also the quality of work was observed to be satisfactory.
5. Dimensions of splined end of power input shaft do not comply with the IS: 4931-2004. This should be incorporated at regular production level.
6. At the end of the ejection of bale unit, the dust accumulated at the mating surfaces of the tailgate with bale chamber require to be cleaned otherwise locking of latch hook is difficult.
7. The pto power requirement of baler was observed as 5.38 kW for bailing of paddy straw which is 14.54 % pto power of the tractor.
8. Two supporting Pneumatic ribbed, tubeless pick up reel wheels are provided for transportation.
9. The evenness in weight of bale was observed as 92.77 to 98.17% which is considered as normal.

