

**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> MARCH, 2026**



**DEVELOP 628 HAPPY SEEDER  
(TRACTOR MOUNTED)**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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**6.7 Hardness:** The surface hardness of furrow opener was recorded as under:

Sl. No.	Hardness as per IS: 6813-2000 (HB)	Hardness as observed, HB (Hardened zone is not separately provided on furrow opener)	Remarks
1	350 to 450	367 to 397	Conforms

### 6.8 Chemical Composition

A piece of furrow opener was got analyzed for chemical composition. The results of chemical analysis which is given below:

Constituents	As per IS: 6690-1981		Composition As observed (% of weight)	Remarks
	Carbon Steel	Silicon Manganese Steel		
Carbon ( C )	0.70-0.85	0.50 to 0.60	1.2917	<b>Does not conform</b>
Silicon (Si)	0.10-0.40	1.5 to 2.00	1.3778	<b>Does not conform</b>
Manganese (Mn)	0.50-1.0	0.50 to 1.0	1.4434	<b>Does not conform</b>
Sulphur (S)	0.5(Max)	0.5(Max)	0.0000	Conforms
Phosphorous (P)	0.5(Max)	0.5(Max)	0.0226	Conforms

### 7. FIELD PERFORMANCE TEST

The JABBAL-88, Happy Seeder was operated for 26.11 hours for sowing of wheat seed & SSP fertilizer under varying soil and moisture condition in well-prepared seedbed. Total five test trials were conducted (refer **Annexure-XIII**).

The tractor Swaraj 855 FE was used during the test and reported data are summarized in ensuing table.

**Table: Summary of field performance results :**

Sl. No.	Parameters	Range
1	Type of soil	Sandy loam
2	Soil moisture (%)	21 to 22
3	Gear used of tractor	L-1
4	Avg. speed of travel (km/h)	1.84 to 1.90
5	Avg. Wheel slip (%)	4.40 to 7.28
6	Variety of crop	Wheat HD-2967
7	Avg. depth (cm)	
	- Seed	3.9 to 4.04
	- Fertilizer	4.12 to 4.25
8	Avg. seed spacing (cm)	1.76 to 1.87
9	Area covered (ha/h)	0.272 to 0.336
10	Time required for one ha (h)	2.98 to 3.68
11	Seed rate (kg/ha)	110.5 to 115.1
12	Fertilizer rate (kg/ha)	109.2 to 113.6
13	Field efficiency (%)	65.1 to 77.6
14	Avg. draft (kN)	3.62
15	Avg. Drawbar power requirement (kW)	1.88



16	Avg. P.T.O. power requirement (kW)	7.45
17	Fuel consumption	
	l/h	2.75 to 3.00
	l/ha	8.39 to 11.04

### 7.1 Rate of work

- The average area covered was recorded as 0.272 to 0.336ha/h at average operating speed 1.84 to 1.92 km/h
- The field efficiency of seed cum fertilizer drill was recorded as 65.1 to 77.6%.

### 7.2 Quality of work

- The average depth of sowing the seed was recorded as 3.9 to 4.04 cm.
- The average depth of placing the fertilizer was recorded as 4.12 to 4.25 cm.
- The average number of seeds per meter row length was recorded as 53.5 to 54.9
- The average spacing between seeds was recorded as 1.76 to 1.87 cm.
- The deviation of seed from centre line was observed as 3.9 to 4.7 mm.

### 7.3 Metering rate

#### 7.3.1 Wheat

The seed rate of Wheat was recorded 110.5 to 115.1 kg/ha.

#### 7.3.3 Fertilizer

The fertilizer rate of was recorded 109.2 to 113.6 kg/ha.

### 7.4 Power requirement

7.4.1 The average draft observed during Wheat sowing was 3.62 kN.

7.4.2 The Drawbar power requirement during Wheat sowing was 1.88 kW.

7.4.3 The average P.T.O power requirement during Wheat sowing was 7.45 kW.

### 7.5 Rate of wear of furrow opener on mass basis (for 26.11 hours of field operation):

Furrow opener No	Initial Mass (g)	Final Mass (g) after 26.11 h	Percent Wear (%)		
			Loss of mass (g) after 26.11 h	Percent (Wear)	Wear Per hour
1	2779.0	2756.3	22.7	0.82	0.03
2	2906.8	2884.7	22.1	0.76	0.03
3	2880.0	2860.0	20.0	0.69	0.03
4	2873.0	2859.9	13.1	0.46	0.02
5	2858.0	2837.2	20.8	0.73	0.03

Remark: The hourly rate of wear on mass basis was observed as 0.02 to 0.03%.



**7.6 Rate of wear of flail blade on Mass basis (for 26.11 hours of field operation)**

Flail Blade	Initial Mass (g)	Final Mass (g) after 26.11 h	Percent Wear (%)		
			Loss of mass (g) after 26.11 h	Percent (Wear)	Wear Per hour
1.	950.7	940.2	10.5	1.10	0.04
2.	906.7	897.8	8.9	0.98	0.04
3.	912.7	900.0	12.7	1.39	0.05
4.	914.2	901.3	12.9	1.41	0.05
5.	966.8	957.4	9.4	0.97	0.04

**Remark: The hourly rate of wear on mass basis was observed as 0.04 to 0.05.%.**

**7.7 Labor requirement**

One skilled operator was required to operate the tractor and one more labour is needed for filling the seed and fertilizer box, to check the furrow openers and seed tubes against chocking.

**8. EASE OF OPERATION AND ADJUSTMENT**

No noticeable difficulty was observed during operation and adjustment of Happy seeder

**9. DEFECTS, BREAKDOWNS, ADJUSTMENTS AND REPAIRS**

No noticeable defect occurred in the Happy Seeder during the test

**10. CONFORMITY TO INDIAN STANDARDS**

Cl. No	Requirement as per IS: 6813: 2000	Observations	Remarks	
Cl 4	Type	Tractor mounted	--	
Cl 5.1	Size	10 x 236 mm (Adjustable)	--	
Cl 6.1	<b>Material: -</b>			
	<b>Component Requirement</b>			
	Frame and toolbar	MS	MS	Conforms
	Wheel	MS, Cast iron	MS	Conforms
	Axle & shaft	MS	MS	Conforms
	Seed box	MS, GI sheet, Seasoned wood, Plastic, Fiberglass, Reinforced plastics.	MS	Conforms
	Tynes	MS, carbon steel	Carbon steel	Conforms
	Boot	MS, carbon steel	MS	Conforms
	Furrow Opener	High Carbon Steel	High carbon steel	Conforms
Seed tubes	Steel Ribbon/Plastic/ Rubber	Plastic	Conforms	



	d) Press wheel	Provided	conform Conforms
	e) Area recorder	Not provided	Does not conform
<b>CI 12</b>	<b>WORKMANSHIP &amp; FINISH</b>		
<b>CI 12.1</b>	The welding shall be satisfactory in all aspects and should not be brittle.	Satisfactory	Conforms
<b>CI 12.2</b>	The components shall be free from rust and shall have a protective coating to prevent surface deterioration in transit and storage.	The components are free from rust and have a protective coating to prevent surface deterioration in transit and storage.	Conforms
<b>CI 12.3</b>	The components should be free from pits, burrs and other defects that may be detrimental for their use.	The components are free from pits, burrs and other defects.	Conforms

<b>CI 14</b>	<b>MARKING &amp; PACKING:</b>		
<b>CI 14.1</b>	Each drill shall be marked with the following particulars: a) Indication of the source of Manufacture b) Model, code and serial number c) Type d) Size e) Type of seeds (suitability) f) Mass	Sticker is provided. But not as per requirement.	Does not conform in toto

### 11. COMMENTS & RECOMMENDATIONS

- 11.1** The three point linkage system of the seed cum fertilizer drill does not conform to IS:4468 (Part 1):1997. This should be looked into.
- 11.2** **The seed and fertilizer box should be provided with self-locking mechanism on being opened.**
- 11.3** Accessories like covering device, row marker and area recorder may also be provided.
- 11.4** The chemical composition of inverted T shoe type furrow opener does not meet, in full, the requirement of IS: 6690-1981. This should be looked into for corrective action.
- 11.5** No provision against overload on power take off drive shaft is provided. It **MUST** be looked into.
- 11.6** Safety guard in power take off drive shaft is not provided. It **MUST** be looked into.
- 11.7** **It is recommended that a permanent metallic calibration plate indicating the metering position and quantity of seed and fertilizer should be attached under the top cover of the seed box.**



- 11.8 The grade of gear box oil is not specified. It MUST be specified.
- 11.9 The variation in dropping of seed among different furrow openers was observed to be too high and therefore needs to be looked into for improvement in design.
- 11.10 The variation in dropping due to box filling at  $\frac{3}{4}$ <sup>th</sup>,  $\frac{1}{2}$ <sup>nd</sup> and  $\frac{1}{4}$ <sup>th</sup> of rated capacity and mechanical damage of seed were excessive and calls for improvement in the design.
- 11.11 The percentage of visible damage to seed drill is high ,hence its MUST be looked in to for improvement in design.
- 11.12 Variation in the quantity of seed dropping due to change in the speed was excessive and this MUST be looked in for improvement in the design.
- 11.13 The labeling plate is provided on the machine but without adequate information. It is therefore recommended that, a labeling plate with following information may be provided on the machine
- I. Name of manufacturer and trade mark, if any
  - II. Make
  - III. Model
  - IV. Year of manufacturer
  - V. Serial No.
  - VI. Recommended power source, (kW)
  - VII. Seed to be sown
- 11.14 **Technical Literature**  
No technical literature was provided for reference during the testing, therefore, it is recommended to provide operator's manual, , service manual and Parts catalogue. And operator's manual should be brought out as per IS: 8132- 1999.

**TESTING AUTHORITY**

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	<i>Ren</i>
P. K. PANDEY DIRECTOR	<i>P. K. Pandey</i>

**12. APPLICANT'S COMMENTS**

In future we will improve the product, as recommended.