

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या/ No.: IMP- 1060/2947/2022  
माह/ Month: December, 2022

**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> December, 2029**



**UNIVERSAL, BEUMDH-14 (LIFT MODEL)  
OFFSET DISC HARROW 7×7 TRACTOR OPERATED  
(MOUNTED TYPE)**



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

**Northern Region Farm Machinery Training and Testing Institute**

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**Page 1 of 19**

Table 2

Constituents	As per IS: 9442-1980	Composition as observed (% of weight)	Remarks
		Plain disc	
Carbon (C)	0.70 to 0.80	0.71	Conforms
Silicon (Si)	0.10 to 0.40	0.26	Conforms
Manganese (Mn)	0.60 to 1.00	1.00	Conforms
Sulphur (S)	0.05 (max)	0.013	Conforms
Phosphorous (P)	0.05 (max)	0.017	Conforms

### 5. RUNNING-IN

The harrow was running-in for 1.0 hour before field performance test.

### 6. FIELD PERFORMANCE TEST

The field tests was conducted for 28.26 hours in different soil moisture conditions to assess the performance of the implement with Swaraj 744.

The no load engine speed of tractor was adjusted to 1700 rpm and observations are summarized in Table-3.

#### SUMMARY OF FIELD PERFORMANCE TEST

Table 3

Sr. No.	Parameters	Range	
i)	Prime mover	Swaraj 744	
ii)	Gear used	H-1	
iii)	Type of soil	Sandy loam	
iv)	Bulk density of soil (g/cc)	1.21 to 1.35	
v)	Soil moisture (%)	12.0 to 13.4	
vi)	Speed of operation (kmph)	7.12 to 7.82	
vii)	Wheel slippage (%)	4.29 to 5.25	
viii)	Depth of cut (cm)	10.06 to 10.36	
ix)	Width of cut (cm)	146 to 149	
x)	Area covered (ha/h)	0.813 to 0.926	
xi)	Time required for one ha (h)	1.08 to 1.23	
xii)	Field efficiency (%)	77.45 to 84.51	
xiii)	Fuel consumption		
		l/h	3.56 to 4.50
		l/ha	3.84 to 5.45
xiv)	Implement draft (kgf)	574.2	

## Wear of discs

Sr. No.	Initial mass (g)	Final mass (g)	Loss of mass (g)	Percentage of wear	
				After 29.26 hrs.	Per hour
Plain disc					
1.	8340	8265	75	0.90	0.03
2.	7880	7805	75	0.95	0.03
3.	8400	8315	85	1.01	0.03
4.	8040	7960	80	1.01	0.03
5.	7840	7750	90	1.14	0.04
6.	8060	7980	80	0.99	0.03

The hourly percentage wear of discs on mass basis was recorded as 0.03 to 0.04 %.

## 7. EASE OF OPERATION &amp; ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of disc harrow.

## 8. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable defect observed.

## 9. CRITICAL TECHNICAL SPECIFICATION

Vide Ministry's communication no. 13-9/2019 M & T (I&P) dated 26.04.2019

Sr. No.	Parameters	Specifications	Observed	Remarks
1	Number disc in each gang	Four (Min.)	7	Conforms
2	Power source	Tractor operated	Tractor operated	Conforms
3	Type of disc	Plain or notched	Plain	Conforms
4	Diameter of disc, mm	455 to 660	607	Conforms
5	Gang angle, deg	Up to 24	Front- 8 to 22 Rear- 10 to 24	Conforms
6	Bevel angle, deg	30 or 40	30	Conforms
7	Length of spool, mm	175 or 225±2	225.90	Conforms
8	Hardness of disc, HRC	38 to 45	42 to 43	Conforms
9	Thickness of beveled edge, mm	0.5 to 1.5	1.35	Conforms
10	Width of beveled edge, mm	22 (Max.)	20.5	Conforms
11	Thickness of disc, mm	5.0 (Min.)	5.0	Conforms
12	Type of center hole	Square/Circular with key	Circular	Conforms
13	Concavity	82.5±5	84.6	Conforms
14	Scraper	Must be provided	Provided	Conforms
15	Material of disc	Carbon steel EN 45 equivalent to SAE 1070 grade and Boron steel EN 10083 (30 MnCr B5)	Carbon steel	Conforms



16	Hardness of HRC	38 (Min.) 48 (Boron steel)	42 to 43	Conforms
17	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and Address of manufacture, Country of origin, Make, Model, Year of manufacture, Serial number, Type, Size, required size of prime mover (kW), Weight (kg)	Name and Address of manufacture, Serial number, Model, Year of manufacture	<b>Partially Conforms</b>
18	Literature	Operator manual, Service manual and parts catalogue should be provided.	Provided	Conforms


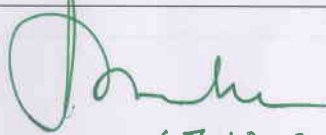
### 10. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATION

**10.1** The specification of plain spool partially conform, to the requirements of IS: 7230-1974. This should be looked into for corrective action.

**10.2** The labeling plate should be provided with following information.

- i) Make
- ii) Model
- iii) Serial number
- iv) Year of manufacture
- v) Size of implement
- vi) Required size of prime mover (kW)
- vii) Name and address of manufacturer
- viii) Country of origin
- ix) Weight (kg)

### TESTING AUTHORITY

Dr. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 07.12.2022

### 11. APPLICANT'S COMMENTS

We will improve all the required parameters at our production level.