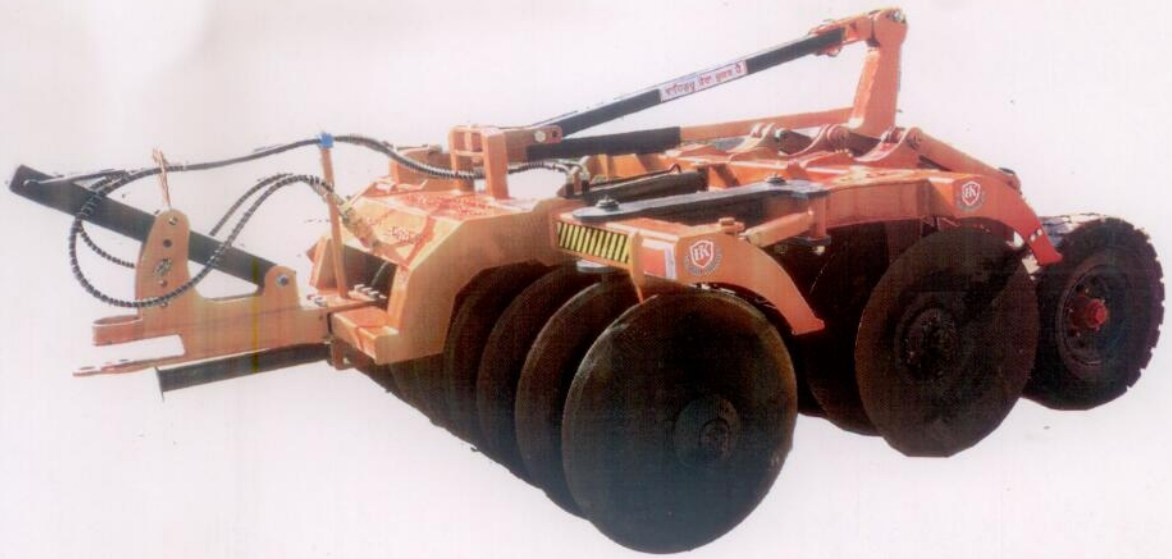
व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL TEST REPORT

संख्या/ **No.: IMP-1041/2651/2021**

माह/**Month : January, 2021**

THIS TEST REPORT VALID UP TO : 31st JANUARY, 2028



B.K & BROTHERS OFFSET DISC HARROW TRACTOR OPERATED (TRAILED TYPE)

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

Northern Region Farm Machinery Training and Testing Institute

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

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[ISO 9001:2015 CERTIFIED]

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4. HARDNESS AND CHEMICAL COMPOSITION OF DISCS

4.1 The hardness of discs was determined. The results of hardness test are tabulated in Table-1.

Table-1

Sr. No.	Hardness		Remarks
	As per IS: 4366 (Part-I)-1985	As observed	
		Plain disc	
1	38 to 45 HRC	43.8	Conforms
2		42.6	
3		44.1	
4		43.2	

4.2 Chemical composition

Table-2

Constituents	As per IS: 9442-1980	Composition as observed (% of weight)	Remarks
		Plain disc	
Carbon (C)	0.70 to 0.80 ±0.04	0.4180	**Does not conform**
Silicon (Si)	0.10 to 0.40 ±0.03	0.3056	Conforms
Manganese (Mn)	0.60 to 1.00 ±0.04	0.8102	Conforms
Sulphur (S)	0.05 (max) +0.005	0.0470	Conforms
Phosphorous (P)	0.05 (max) +0.005	0.0212	Conforms

5. FIELD PERFORMANCE TEST

The field tests was conducted for 25.73 hours in different soil moisture conditions to assess the performance of the implement with Mahindra Arjun 555 DI.
The no load engine speed of tractor was speed adjusted to 2000 rpm and observations are summarized in Table-3.

SUMMARY OF FIELD PERFORMANCE TEST

Table-3

Sr. No.	Parameters	Range
i)	Tractor used	Mahindra Arjun 555 DI
ii)	Gear used	H-1
iii)	Type of soil	Sandy loam
iv)	Average bulk density of soil (g/cc)	1.540 to 1.800
v)	Average soil moisture (%)	6.17 to 11.83
vi)	Average speed of operation (kmph)	5.78 to 7.36
vii)	Average wheel slippage (%)	3.24 to 11.58
viii)	Average depth of cut (cm)	6.17 to 7.11
ix)	Average width of cut (cm)	188 to 202
x)	Average area covered (ha/h)	0.960 to 1.220

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SUMMARY OF FIELD PERFORMANCE TEST

Table-3

Sr. No.	Parameters	Range
i)	Tractor used	Mahindra Arjun 555 DI
ii)	Gear used	H-I
iii)	Type of soil	Sandy loam
iv)	Average bulk density of soil (g/cc)	1.540 to 1.660
v)	Average soil moisture (%)	6.17 to 11.85
vi)	Average speed of operation (kmph)	
vii)	Average wheel slippage (%)	
viii)	Average depth of cut (cm)	
ix)	Average width of cut (cm)	188 to 202
x)	Average area covered (ha/h)	0.960 to 1.220

xi)	Average time required for one ha (h)	0.82 to 1.04
xii)	Average field efficiency (%)	75 to 88
xiii)	Average fuel consumption	
	- l/h	5 to 5.74
	- l/ha	4.10 to 5.96
xiv)	Average implement draft (kgf)	640
xv)	Average drawbar power used (kW)	12.83

Wear of discs

Sr. No.	Initial mass (g)	Final mass (g)	Loss of mass (g)	Percentage of wear	
				After 25.73 hr.	Per hour
Plain disc					
1.	9900	9800	100	1.01	0.04
2.	9340	9240	100	1.07	0.04
3.	10040	9920	120	1.2	0.05
4.	10120	10020	100	0.99	0.04
5.	9220	9120	100	1.08	0.04
6.	9420	9280	140	1.49	0.06
7.	10200	10080	120	1.18	0.05
8.	10740	10600	140	1.30	0.05
9.	9920	9740	180	1.81	0.07
10.	10200	10080	120	1.18	0.05
11.	10000.6	9820	181	1.81	0.07
12.	10160	10020	140	1.38	0.05
13.	9920	9800	120	1.21	0.05
14.	10400	10260	140	1.35	0.05
15.	9200	9060	140	1.52	0.06
16.	9880	9740	140	1.42	0.06
17.	9880	9700	180	1.82	0.07
18.	10020	9840	180	1.80	0.07

The hourly percentage wear of discs on mass basis was recorded as 0.04 to 0.07 %.

6. EASE OF OPERATION & ADJUSTMENTS

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

7. DEFECTS, BREAKDOWNS AND REPAIRS

No noticeable defect observed.

8. CRITICAL TECHNICAL SPECIFICATION

Deferred till 31.03.2021 vide Ministry O.M. No 13-13/2020 M&T, (I&P) dated 22.12.2020.

9. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATION

9.1 The specification of disc harrow does not conform, in full, to the requirement of IS:6635-1972. This should be looked into for corrective action.

9.2 The specification of plain spool does not conform, in full, to the requirements of IS:7230-1974. This should be looked into for corrective action.

9.3 The specification for agricultural tillage disc does not conform, in full, to the requirements of IS:4366 (Pt-I)-1985. This should be looked into for corrective action.

9.4 The chemical composition of disc does not meet in full, to the requirement of IS:9442-1980. This should be looked into for corrective action.

9.5 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 etc.
ix) Weight (kg)

9.6 In the labeling plate, Make is indicate as "B.K & brothers Agri. Works", whereas the letter head suggests it to be "B.K. brothers", this needs to be clarified.

9.7 **Adequacy of literature**

No technical literature provided by the applicant during the test. The following literature, therefore, MUST be provided as per IS:8132-1999.

i) Operator's manual
ii) Service manual
iii) Parts catalogue

TESTING AUTHORITY

SANJAY KUMAR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

Draft test report compiled by Girdhari Lal, Technician.

10. APPLICANT'S COMMENTS

No comments received from the applicant.