

REPORT NO.  
IMP/FMT&TC, Dr. PDKV,  
AKOLA/2024-25/19/303

IMPLEMENT : TRACTOR DRAWN NINE TINE RIGID TYPE  
CULTIVATOR  
(MODEL: SA9CL)

TYPE:  
COMMERCIAL

MONTH & YEAR :  
FEBRUARY & 2025

Test Report Released: 17/02/2025

Test report valid up to: 29/02/2032



## COMMERCIAL TEST REPORT



### TRACTOR DRAWN NINE TINE RIGID TYPE CULTIVATOR (MODEL: SA9CL)



**FARM MACHINERY TESTING AND TRAINING CENTRE,  
DEPARTMENT OF FARM POWER AND MACHINERY,  
Dr. PANJABRAO DESHMUKH KRISHI VIDYAPEETH,  
AKOLA (M.S.)-444 104**

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*(The Institute is approved Testing Center of Agriculture & Cooperation, Ministry of Agriculture, GOI vide letter No. 8-1/2004-My(I&P) Dated 30<sup>th</sup> March 2012-Addendum)*

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MANUFACTURER

: M/S. SANDEEP AGRO WORKS,  
NEAR BULDHANA URBAN  
WEAROUSE, AKOLA ROAD, AKOT  
DIST. AKOLA (M.S.) 444 101

ward / Outward

No. PI /FMTT&PC/ 192 /..... /2025

Dated..... 21/02/2025

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Report No.	Month:	Year:
IMP/FMT&TC, Dr. PDKV, AKOLA/2024-25/19/305	February	2025

**FARM MACHINERY TESTING AND TRAINING CENTRE,  
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Test Report Released: 17/02/2025

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Type of test : **Commercial**

Test code procedure : IS: 6638- 1972 (Reaffirmed 2001) (Tractor mounted spring loaded cultivators)  
IS: 7565 (Part-I) – 1975 (Reaffirmed 1999) (Tines for tractor operated cultivators: Part-1 Rigid type tines)  
IS: 3342: 1998 (Second revision) Soil working equipment - cultivators, animal drawn - specifications

Period of test : June, 2024 to June, 2024

Test Report No. : IMP/FMT&TC, Dr. PDKV, AKOLA/2024-25/19/305

Month & Year : February & 2025

- i) The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.
- ii) The data given in this report pertains to the particular machine submitted by the applicant for test.
- iii) The results presented in this report do not in any way attribute to durability of the machine.
- iv) The report should not be produced in part or full without prior permission of the Head, Department of Farm Power and Machinery, Dr. PDKV, Akola (M.S.)-444104.

**SELECTED CONVERSIONS**

Sr. No.	Units	Conversion Factor
1	<b>Force</b>	
	1 kgf	9.807 N
		2.205 lbf
2	<b>Power</b>	
	1 hp	1.014 metric hp (Ps) 745.7 W
	1 Ps	735 W
	1 kW	1.360 Ps
3	<b>Pressure</b>	
	1 psi	6.895 kPa
	1 kgf/cm <sup>2</sup>	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm <sup>2</sup>
	1 mm of Hg	1.333 m-bar

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Test Report Released: 17/02/2025

Test report valid up to: 29/02/2032

TYPE OF MACHINE : TRACTOR DRAWN NINE TINE RIGID TYPE  
CULTIVATOR

MAKE : SARJA™

MODEL : SA9CL

MANUFACTURER BY : M/S. SANDEEP AGRO WORKS, NEAR  
BULDHANA URBAN WEAROUSE, AKOLA  
ROAD, AKOT DIST. AKOLA (M.S.) 444 101

TEST REQUESTED BY : M/S. SANDEEP AGRO WORKS, NEAR  
BULDHANA URBAN WEAROUSE, AKOLA  
ROAD, AKOT DIST. AKOLA (M.S.) 444 101

TEST CONDUCTED BY : FARM MACHINERY TESTING AND  
TRAINING CENTRE, DEPARTMENT OF  
FARM POWER AND MACHINERY,  
Dr. PANJABRAO DESHMUKH KRISHI  
VIDYAPEETH, AKOLA (M.S.) PIN -444 104

## CONTENTS

SR. NO.	TITLE	PAGE NO.
1	SCOPE OF TEST	6
2	METHOD OF SELECTION	6
3	TEST PROCEDURE/CODES	6
4	SPECIFICATIONS	7-10
5	LABORATORY TEST	11
6	CONFORMITY OF INDIAN STANDARD	11-15
7	FIELD PERFORMANCE TEST	15-16
8	WEAR ANALYSIS OF REVERSIBLE SHOVEL	17
9	EASE OF OPERATION AND ADJUSTMENT	17
10	DEFECTS, BREAKDOWNS AND REPAIRS	17
11	CRITICAL TECHNICAL SPECIFICATIONS	17-19
12	SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS	19-20
13	APPLICANTS COMMENTS	20
	ANNEXURE (I – III)	21-23



## 1. SCOPE OF TEST

The test were carried out to check and assess the following:-

### 1.1 Laboratory Test:

- Checking of specifications
- Hardness of soil-engaging parts
- Chemical analysis of critical components
- Wear analysis of critical components
- Requirements against the relevant Indian Standards

### 1.2 Field Test:

- Quality of work
- Rate of work
- Labour requirement
- Power requirement
- Ease of operation and adjustments
- Break downs and repairs

## 2. METHOD OF SELECTION

The machine was randomly selected from the sample size of ten numbers of tractor drawn nine tine rigid type cultivator (Model: SA9CL) at the manufacturing unit of M/s. Sandeep Agro Works, Near Buldhana Urban Wearouse, Akola Road, Akot Dist. Akola (M.S.) 444 101.

## 3. TEST PROCEDURE/CODE

The implement was tested in accordance with following Indian Standards

IS: 6638- 1972 (Reaffirmed 2001) (Tractor Mounted Spring loaded Cultivators),

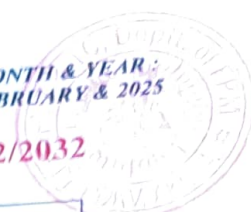
IS: 7565 (Part-I) – 1975 (Reaffirmed 1999) (Tines for tractor operated cultivators: Part-1 Rigid type tines),

IS: 3342: 1998 (Second revision) Soil working equipment - cultivators, animal drawn - specifications

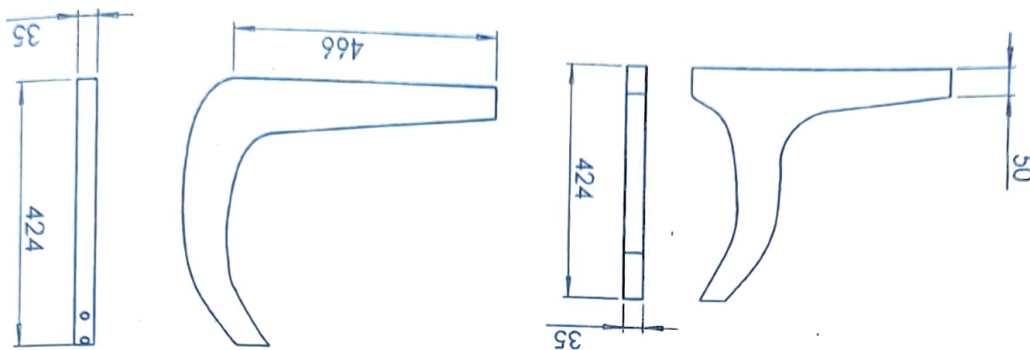


#### 4. SPECIFICATIONS

4.1	<b>General</b>	
	Name of manufacturer	: M/s. Sandeep Agro Works, Near Buldhana Urban Warehouse, Akola road, Akot, Dist. Akola (M.S.) 444 101
	Name of machine	: Tractor drawn Nine Tine Rigid Type Cultivator
	Type	: Tractor drawn Rigid Type Cultivator
	Make	: SARJA™
	Model	: SA9CL
	Serial No.	: BE-1025
	Size, mm	: 9 x 225
	Year of Manufacture	: 2023
	Power source as recommended	: 35 hp and above tractor
Power source as used, kW	: 45, Farmtrac - 45	
4.2	<b>Constructional details (Refer Fig 4)</b>	
	Main frame details: <ol style="list-style-type: none"><li>1) A main frame of 2148 (L) x 455 (W) mm in size and rectangular shape constructed as described below</li><li>2) Front and rear support of 72.20 x 72.70 mm size MS angle welded to obtain to square beams of a length of 2148 mm.</li><li>3) Two cross MS angle 64.89 x 66.47 x 5.91 mm fixed between front and rear square beam of length 312 mm each and place at two ends of a square beams frame.</li></ol>	



4.3

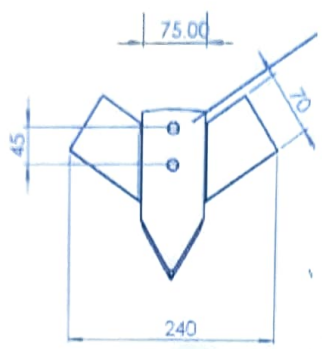


**Fig 1 Tines of cultivator**

No. of tines	:	9
Type	:	Rigid
Arrangement	:	It is fixed to main frame by using nuts and bolts, four tines on front row and five tines on rear row
Material	:	Mild Steel
Projected length, mm	:	405
Width at top/bottom, mm	:	90.80/48.00
Number & size of holes on each tine for fixing sweep, mm	:	2 & 13.54 for each tine
Centre to centre distance between the holes, mm	:	48.67
No.; type and size of bolts for tightening shovel to the tine, mm	:	2; Hexagonal and 12.65 $\phi$
Method of fixing	:	Each rigid tine is bolted with main frame by using nuts and bolts





4.4	Sweep	
 <p data-bbox="665 693 813 735"><b>Fig 2 Sweep</b></p>		
	No. of sweeps	: 9
	Type	: Duck foot
	Material	: High Carbon Alloy Steel
	Thickness, mm	: 11.06
	Method of fixing	: Each tine is tightened with the help of two hexagonal head bolts and nuts (87.84 mm in length x 12.34 in diameter) bolted at the lower end of each tine.
4.5	Braces	
	Material	: Mild Steel
	Size, (L x B x T) mm	: 690 x 64.27 x 15.63
4.6	Overall dimensions, (L x B x H) mm	: 2148 x 710 x 1030
4.7	Operational mass, kg	: 275
4.8	Colour of implement	: Gray



4.10

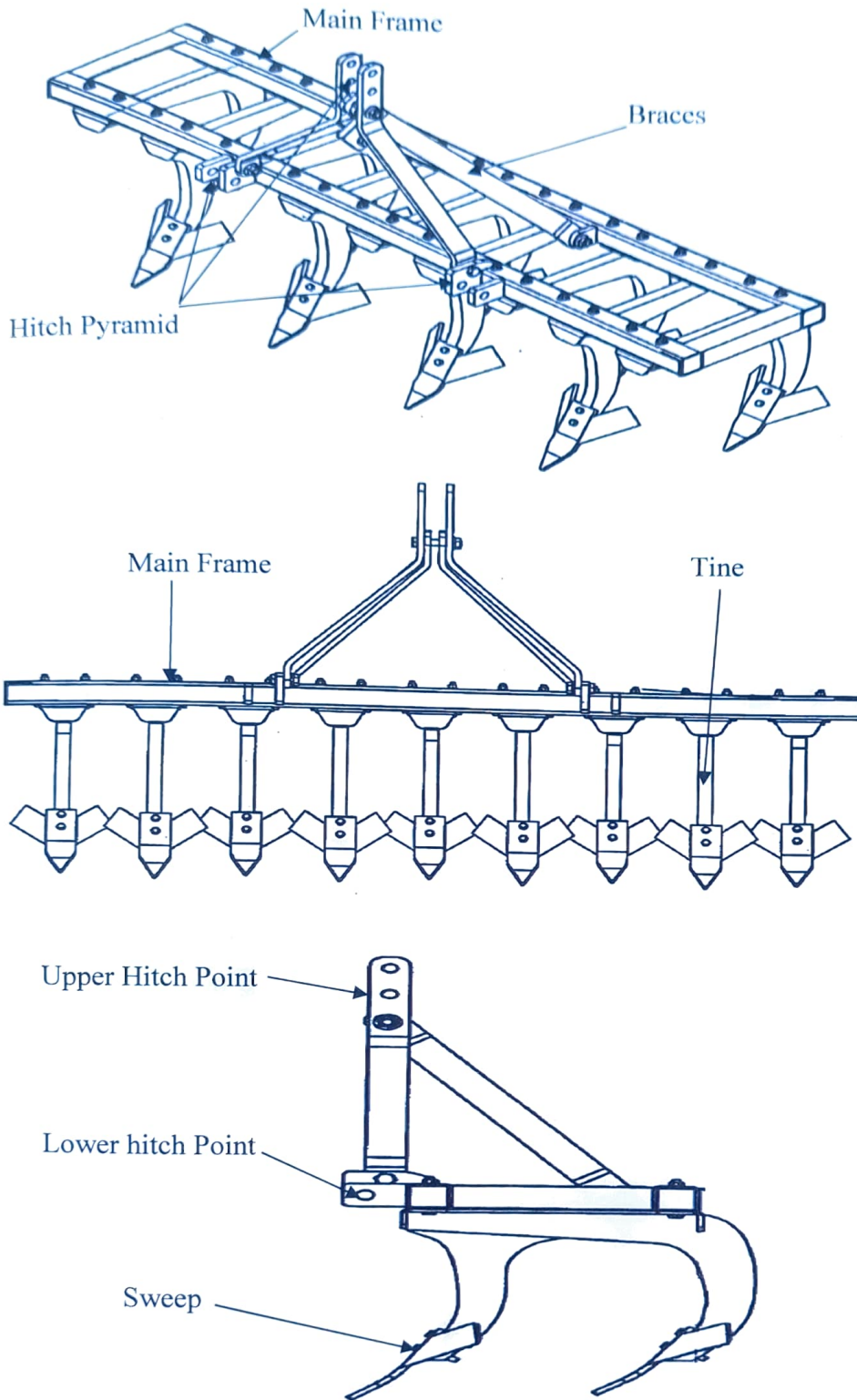


Fig 3 Views of nine tine rigid type cultivator



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## 5. LABORATORY TEST

### 5.1 Hardness:

Analysed the hardness of shovel and sweep and results are shown in Clause No. 6.4.6

### 5.2 Chemical composition:




The piece of shovel and sweep was analysed for its chemical composition. The results of chemical analysis are given in Clause No. 6.4.6

## 6. CONFORMITY TO BUREAU OF INDIAN STANDARDS

Clause No.	Requirements as per IS: 6638:1972 (Part-I)-1988 (Reaffirmed -2001)	Observations	Conformity to IS
<b>6.1</b>	<b>Material</b>		
6.1.1	Frame	Mild steel	Mild steel
6.1.2	Tine	Carbon steel	Mild steel
6.1.3	Hitch	Mild steel	Mild steel
6.1.4	Bracings	Mild steel	Mild steel
6.1.5	Hitch pin	Carbon steel	Carbon steel
<b>6.2</b>	<b>Size</b>		
6.2.1	<b>Working size</b> The working size of the cultivator shall be determined by multiplying the number of tines and row spacing express in meter.	Working size of cultivator for 9 tines and 0.23 meter row spacing is 2.25 meter.	Conforms
6.2.2	<b>Nominal size</b> The nominal size of the cultivator shall be determined by multiplying the number of spaces between rows and row spacing and express in meter.	Nominal working size of cultivator with 8 spaces and 0.23 meter row spacing is 1.84 meter.	Conforms
<b>6.3</b>	<b>Dimensional requirements</b>		
6.3.1	Centre to centre distance between tool bars shall be 450 mm, Min.	312	Does not conform

12.13	Vide letter No. 418/Chapter No.155/14 A, Dated 27/04/2018, it is mandatory to emboss the report No. i.e. <b>Tractor drawn / Nine Tine Rigid Type Cultivator/IMP/FMT&amp;TC, Dr. PDKV, Akola/2024-25/19/305</b> on every cultivator during its mass production.
12.14	Vide letter No. 13-24/2018-M&T (I&P), dated 19th September 2018 Govt. of India, Ministry of Agriculture and Farmer Welfare (Mechanization & Technology Division), the validity of the commercial test report of tractor operated machinery is 7 years.
12.15	The applicant/manufacture should follow the guideline issued vide letter No. 13-30/2023-M&T (I&P) (124416), Dated 12th September 2023 & letter No. 13-30/2023 M&T (I&P), Dated 27th July 2023 Govt. of India, Ministry of Agriculture and Farmer Welfare (Mechanization & Technology Division).
12.16	It is the sole responsibility of manufacturer to supply the quality machine same as the test prototype provided for testing including suggested modifications, comments and recommendation. This is a test report and not any kind of recommendations of this model of tractor drawn nine tine rigid type cultivator.

### TESTING AUTHORITY

<b>Er. R. R. Gajbhiye</b> Test Engineer	
<b>Dr. A. K. Kamble</b> Asstt. Agril. Engineer	
<b>Dr. A. V. Gajakos</b> PI & Head, Deptt. of FPM	

*This test report compiled by*

*Er. R. R. Gajbhiye (Test Engineer) FMT&TC, Deptt. of FPM, CAET, Dr. PDKV, Akola*

### 13. APPLICANT'S COMMENTS

We will follow the summary of observations, comments and recommendations provided in clause number 12.1 to 12.16 of a draft copy of the test report of tractor drawn nine tine rigid type cultivator (Model: SA9CL) by FMT&TC, Dr. PDKV, Akola. during mass production of this model.