

REPORT NO.
IMP/FMT&TC, Dr. PDKV,
AKOLA/2024-25/20306

IMPLEMENT: TRACTOR OPERATED HYDRAULIC
REVERSIBLE 3 BOTTOM MB PLOUGH
(MODEL:SA3RP)

TYPE: MONTH & YEAR:
COMMERCIAL FEBRUARY & 2025

Test Report Released: 17/02/2025

Test Report Valid Up To: 29/02/2032



COMMERCIAL TEST REPORT



**TRACTOR OPERATED HYDRAULIC REVERSIBLE
3 BOTTOM MB PLOUGH
(MODEL:SA3RP)**



**FARM MACHINERY TESTING AND TRAINING CENTRE,
DEPARTMENT OF FARM POWER AND MACHINERY,
Dr. PANJABRAO DESHMUKH KRISHI VIDYAPEETH,
AKOLA (M.S.)-444 104
E-mail: fmtt28@gmail.com**

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

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**MANUFACTURER : M/S. SANDEEP AGRO
WORKS, NEAR BULDHANA
URBAN WEAR HOUSE,
AKOLA ROAD AKOT, DIST.
AKOLA (M.S.) - 444 101**

Inward / Outward

No. PI/FMTT&PC/1931..... 2025

Dated..... 21/02...../2025

Report No.: IMP/FMT&TC, Dr. PDKV, AKOLA/2024-25/20/306 **Month:** February **Year:** 2025

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

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

Type of test : **Commercial**

Test code referred 1) IS:6288-1971 (Reaffirmed 2019) - Test code for mould board plough
2) IS:10691-1983 (Reaffirmed 2021) - Test code for share for tractor operated mould board ploughs

Period of test : May, 2024 to May, 2024

Test Report No. : IMP/FMT&TC, Dr. PDKV, AKOLA/2024-25/20/306

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.)- 444 104.

SELECTED CONVERSIONS

Sr. No.	Units	Conversion Factor
1	Force	
	1 kgf	9.87 N
		2.205 lbf
2	Power	
	1 hp	1.014 metric hp (Ps)
		745.7 W
	1 Ps	735W
	1 kW	1.36 Ps
3	Pressure	
	1 psi	6.895 kPa
	1 kgf/cm ²	98.067 kPa = 735.56 mm of Hg

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TYPE OF MACHINE : TRACTOR OPERATED HYDRAULIC
REVERSIBLE 3 BOTTOM MOULD BOARD
PLOUGH

MAKE : SARJA™

MODEL : SA3RP

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

TEST REQUESTED BY : M/S. SANDEEP AGRO WORKS, NEAR
BULDHANA URBAN WEAR HOUSE,
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

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1. SCOPE OF TEST

The test was 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 sample was randomly selected from the ten sample of tractor operated hydraulic reversible 3 bottom mould board plough (Model: SA3RP) from the manufacturing unit of M/s. Sandeep Agro Works, Near Buldhana Urban Wear House, Akola Road Akot, Dist. Akola (M.S.) - 444 101 for its testing to this center.

3. TEST PROCEDURE/CODES

The following test codes were followed for the testing of hydraulic reversible mould board plough.

- 1) IS:6288-1971 (Reaffirmed in 2019) - Test code for mould board plough
- 2) IS:10691-1983 (Reaffirmed Feb. 2021)-Test code for share for tractor operated mould board ploughs

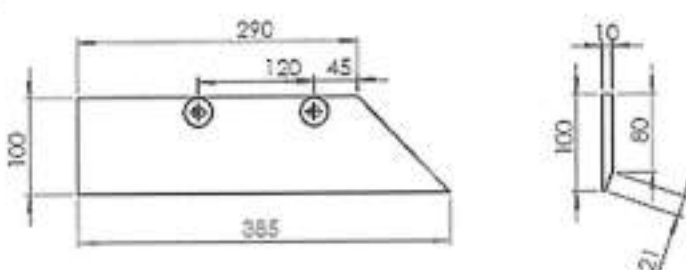
4. SPECIFICATIONS

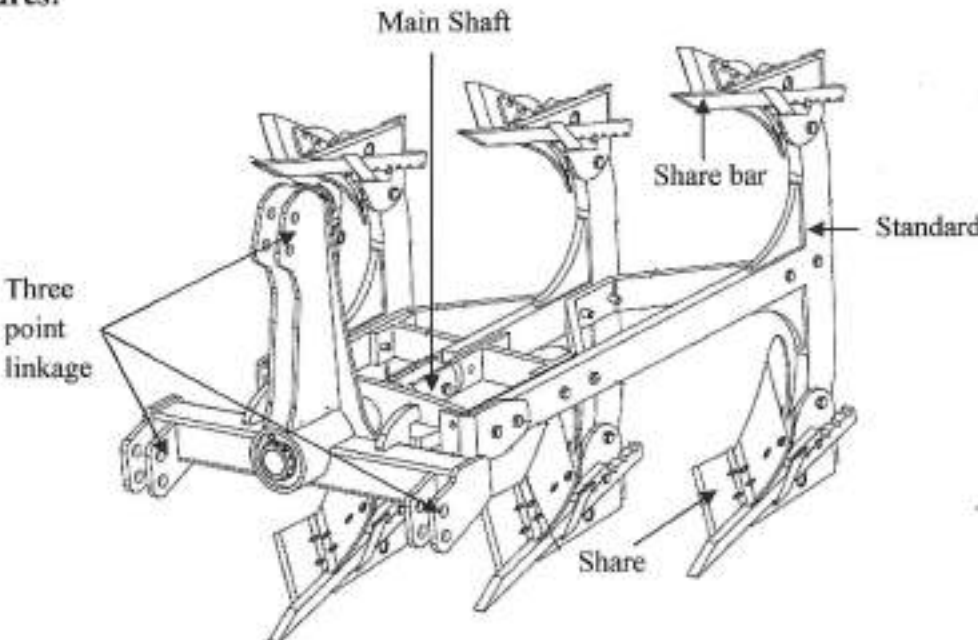
4.1	General		
	Name of implement	:	Tractor Operated Hydraulic Reversible 3 Bottom Mould Board Plough
	Name and address of manufacturer	:	M/s. Sandeep Agro Works, Near Buldhana Urban Wear House, Akola Road Akot, Dist. Akola (M.S.) - 444 101
	Name and address of applicant	:	M/s. Sandeep Agro Works, Near Buldhana Urban Wear House, Akola Road Akot, Dist. Akola (M.S.) - 444 101
	Type of Implement	:	Tractor Operated Hydraulic Reversible 3 Bottom Mould Board Plough
	Make	:	SARJA™
	Model	:	SA3RP
	Serial No.	:	BE-1007
	No. of bottoms and size, mm	:	3 x 303
	Year of manufacture	:	2024
	Power source as recommended	:	26.11 kW (35 hp) and above
4.2	Frame		
	Constructional Details:		
	It is fabricated from M.S. flats which serves as standard. Hitch pyramid and reverse mechanism of plough are also fitted on frame.		
	Particular	Size, mm	Quantity, No.
	MS flat (Main frame)	1775 x 90 x 35	1
		495 x 90 x 35	1
		370 x 90 x 35	1
	MS flat (for fixing shaft and middle support of frame)	182 x 75 x 20	2
		144 x 75 x 15	2

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		557 x 160 x 20	1
	M.S. flat (Side support)	1560 x 75 x 20	1
		1113 x 75 x 20	1
		275 x 126 x 12	2
4.3	Standard		
a)	Numbers	:	3; each standard has one bottom, out of which one side of the standard is used at a time
b)	Material	:	Mild steel
c)	Type	:	Curved M.S. flat bolted with the main frame.
d)	Dimensions, mm		
	- Projected length	:	590
	- Curved length	:	510
	- Width	:	
	-At end	:	55.99
	-At middle	:	94.41
	- Thickness	:	36.10
e)	No., size & spacing of holes for fixing frog, mm	:	3, (16.95 ϕ -2 holes & 12.80 ϕ - 1 hole)& 90.0, to 180.0
f)	No. & size of holes for fixing the frame, mm	:	2 & 16.95 ϕ
g)	Method of fixing	:	Bolted and welded to M.S. flat with the main frame
4.4	Plough Bottoms		
a)	Numbers	:	Six, out of which only three are engaged in the soil at a time.
b)	Type	:	Two-way (reversible)
c)	Size of plough, mm	:	3 x 303
d)	Vertical suction, mm	:	18.32
e)	Horizontal suction, mm	:	7.75

	f)	Constructional details	:	It consists of mould board, share, share-bar, shin and landside bolted and welded with frog.
4.4.1	Mould Board			
	a)	Numbers	:	Six
	b)	Type	:	General-purpose
	c)	Material	:	Mild steel
	d)	Dimensions, mm:-		
		- Length	:	475
		- Width	:	257
		- Thickness	:	8.24
	e)	No. & size of hole on mould board, mm	:	3 & 9.46 ϕ
	f)	Method of fixing mould board	:	It is fixed to frog with four countersunk nut bolts to share.
4.4.2	Share			
	a)	Type	:	Type - 6
	b)	Constructional details	:	It is made up of low carbon steel flat having trapezoidal shape
	c)	Method of fixing share to the bottom	:	Bolted to frog with three countersunk nut bolts and welded to share bar and mould board.
	d)	No. & size of holes on share, mm	:	2 & 9.23 ϕ
	e)	Dimensions		 <p>(All dimensions are in mm)</p> <p>Fig 1 (A) Dimensions of share as observed</p>

	c)	No. and Size of high pressure pipe line fitted on the cylinder, mm	: 2 Nos. and Length 20.43, outer diameter 25.36 ϕ
	d)	Size of connecting arm, mm	: 30.16 ϕ x 142.60
	e)	Stroke length, mm	: 120.00
4.5.4	Distributor		
	a)	Type	: Trigger type
	b)	Overall Size, mm	: 85.18 x 95.07 x 35.06
	c)	No. and size of hose pipes between tractor and distributor, mm	: 2 Nos. and Length 1158, Outer diameter- 18.41 ϕ
4.6	Hitch Pyramid (Refer 5.6)		
	a)	Type	: Three point linkage
	b)	Constructional details	: The hitch pyramid is fabricated from two M.S. flats to form an upper hitch point and a M.S. rectangular pipe to form lower hitch points. Both the upper and lower hitch points are welded on a hollow shaft of reversing mechanism.
	c)	Size of upper hitch, mm	: 538 x 250 x 172
	d)	Size of cross bar, mm	: 780 x 100 x 100
4.7	Figures: 		
	Fig 4 Isometric view of hydraulic reversible three bottom M.B. plough		

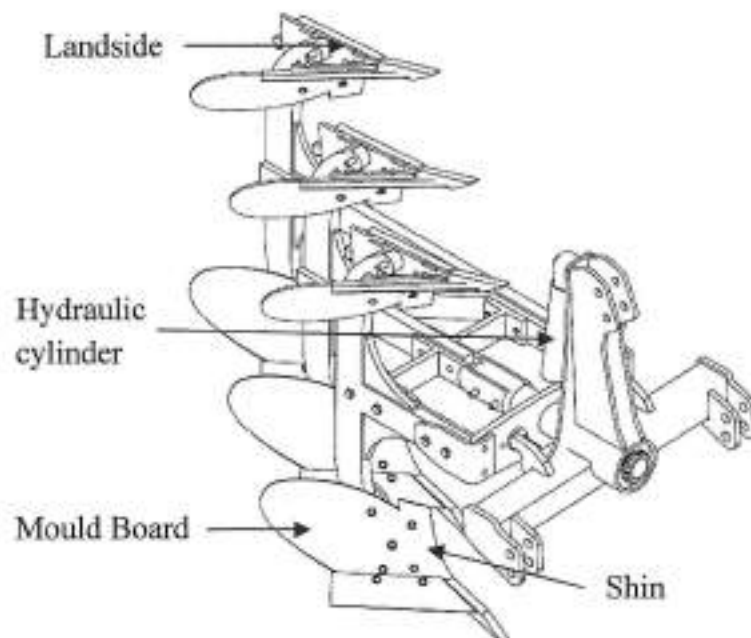


Fig 5 Views of hydraulic reversible three bottom M.B. plough

4.8	Overall dimensions, mm		
	a)	Length	: 1860
	b)	Width	: 960
	c)	Height	: 1190
4.9	Total mass, kg		: 420
4.10	Colour of implement		: Silver ash

5. CONFORMITY TO BUREAU OF INDIAN STANDARDS

Clause No.	Requirements as per IS: 10691 – 1983	Observation	Conformity to IS
1	2	3	4
5.1	TYPES		
	On the basis of the dimensions, the share shall be of following 7 types		
	a) Type 1'	Withstanding, share and shape-wise, falls under Type-6 but its dimensions does not meet the	Does not conform
	b) Type 2'		
	c) Type 3'		
	d) Type 4'		
	e) Type 5'		



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11.13	Vide letter No. 13-22/2020-M&T (I&P), dated 12 th December 2023 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.
11.14	The applicant/manufacture should follow the guideline issued vide letter No. 13-30/2023-M&T (I&P) (124416), Dated 12 th September 2023 & letter No. 13-30/2023 M&T (I&P), Dated 27 th July 2023 Govt. of India, Ministry of Agriculture and Farmer Welfare (Mechanization & Technology Division).
11.15	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 recommendations. This is a test report not any kind of recommendations of tractor operated hydraulic reversible three bottom mould board plough.

TESTING AUTHORITY:

Er. R. R. Gajbhiye Test Engineer	
Dr. A. K. Kamble Asstt. Agril. Engineer	
Dr. A. V. Gajakos 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*

12. APPLICANT'S COMMENTS

We will follow the summary of observations comments and recommendations provided in clause number 10.1 to 10.15 in a draft test report of tractor-operated hydraulic reversible 3 bottom MB plough (Model: SA3RP) by FMT&TC, Dr. PDKV, Akola, during mass production of this model.