

(यह परीक्षण रिपोर्ट 30/06/2025 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 30/06/2025)



## SWARAJ 724 XM ORCHARD NARROW TRACK TRACTOR



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय  
कृषि, सहकारिता एवं किसान कल्याण विभाग  
मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Department of Agriculture, Cooperation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान  
ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

(An ISO : 9001 - 2015 Certified Institute)

Tractor Nagar, Budni (M.P.) 466 445

E-mail [fmti-mp@nic.in](mailto:fmti-mp@nic.in)

Website : <http://www.fmttibudni.gov.in>

Telephone : 07564 - 234729, 234743



T-1449/1976/2020

**SWARAJ 724 XM ORCHARD NARROW TRACK TRACTOR**  
**Commercial - Variant (First Batch Test)**

**(THIS TEST REPORT IS VALID UP TO 30/06/2025)**

### 3. ESSENTIAL TESTS

#### 3.1 SPECIFICATIONS

##### 3.1.1 Tractor:

Make : Swaraj  
Model : 724 XM ORCHARD NARROW TRACK  
Brand name : Swaraj  
Type : Four wheeled, rear wheel driven, unit construction, Orchard, Agricultural Tractor  
Month & Year of manufacture : 01 & 20  
Chassis number : MBNAB43AALTA84908  
Country of origin : INDIA

##### 3.1.2 Engine:

Make : M/s. Swaraj Engines Limited  
Model : RV2XM+3A  
Type : Four stroke, Liquid cooled, naturally aspirated, direct injection, diesel engine  
Serial number : 38.1366/SBA00134  
Year of manufacture : 2018  
Country of origin : India

##### 3.1.2.1 Engine speed (rpm), (Manufacturer's recommended production settings):

- Maximum speed at no load : 1880 to 2020  
- Low idle speed : 580 to 700  
- Speed at maximum torque : 1000 to 1400  
**Rated speed, (rpm):**  
- For PTO use : 1800  
- For drawbar use : 1800

##### 3.1.3 Cylinder & Cylinder Head:

Number : Two  
Disposition : Vertical, Inline  
Bore/stroke, (mm) : 100/116 (apa)  
Capacity as specified by the applicant, (cc) : 1823 (apa)  
Compression ratio : 20.4 ± 0.5:1  
Type of cylinder head : Individual  
Type of cylinder liners : Wet, replaceable  
Type of combustion chamber : Re-entrant cavity on piston head  
Arrangement of valves : Overhead, inline  
**Valve clearance (cold/hot):**  
- Inlet valve, (mm) : 0.25  
- Exhaust valve, (mm) : 0.35

##### 3.1.4 Fuel System:

Type of fuel feed system : Gravity and force feed





Maximum temperatures ( <sup>o</sup> c):	Previous Sample	Present sample
Engine oil	96	98
Coolant	78	82

### 6.2.2 Brake performance test at Max. attainable speed (kmph) (max):

parameters	Cold		Hot	
	Cold	Hot	Cold	Hot
Maximum Stopping distance, (m)	7.95	8.25	3.6	3.8
Maximum force exerted on the brake	315 to 350		130 to 150	
Pedal effort required to achieve deceleration of 2.5 m/sq sec, (N)	315 to 350		130 to 150	
Whether parking brake is effective at a force of 600N at foot pedal (s) or 400 N at hand lever	Effective		Effective	

### 6.3 Salient Observations:

### 6.4 Adequacy of literature:

The following combined literature tractor models were supplied with the test sample for reference during the test.

- |                      |                      |
|----------------------|----------------------|
| a) Operator's manual | a) Operator's manual |
| b) Workshop manual   | b) Workshop manual   |
| c) Parts catalogue   | c) Parts catalogue   |

## 7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of **Indian standard: 12207-2019** for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant / (D) Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
<b>7.1.1</b>	<b>PTO Performance :</b>					
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: ±5 percent for PTO power and engine power >26kW. ±10 percent for PTO power and or engine ≤ 26 kW.	15.9 (D)	14.9	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	15.9 (D)	14.7	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10 percent Max.	268 (D)	261	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	98 (D)	97.4	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (R)	25.0	Yes



<b>T-1449/1976/2020</b>	<b>SWARAJ 724 XM ORCHARD NARROW TRACK TRACTOR Commercial - Variant (First Batch Test)</b>
<b>(THIS TEST REPORT IS VALID UP TO 30/06/2025)</b>	

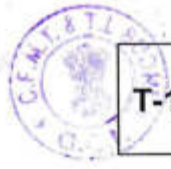
1	2	3	4	5	6	7
<b>7.1.2</b>	<b>Brake performance at 25 kmph:</b>					
<b>a)</b>	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):					
	1) Cold brake	Evaluative	10	10 (R)	3.6	Yes
	2) Hot brake	Evaluative	10	10 (R)	3.8	Yes
<b>b)</b>	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)	Evaluative	600	600 (R)	130 to 150	Yes
<b>c)</b>	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever, N	Evaluative	Yes / No	Yes	318	Yes
<b>7.1.3</b>	<b>Safety features :</b>					
<b>a)</b>	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 (Part2))	Provided		Yes
<b>b)</b>	Lighting arrangement	Evaluative	As per CMVR	Provided		Yes
<b>c)</b>	Seating requirements (Tractors having more than 1150 mm rear track width)	Non Evaluative	Should meet the requirements of IS: 12343 (As amended from time to time)	<b>Does not meet the requirements</b>		<b>No</b>
<b>d)</b>	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meets the requirements		Yes
<b>e)</b>	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	<b>Does not meet the requirements</b>		<b>No</b>
<b>f)</b>	Specifications of linkage drawbar	Non Evaluative	Should meet the requirements of IS 12953	Meets the requirements		Yes
<b>g)</b>	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)	Not fitted		Not applicable
<b>h)</b>	1) Maximum travelling speed at rated engine speed in reverse gear, (kmph)	Evaluative	Should not exceed 20 kmph	8.67 kmph (Meets the requirements)		Yes
	2) Audible warning signal on tractor	Evaluative	As soon as the travelling speed in reverse gear reaches to 20 kmph, an audible warning signal on tractor shall be activated. The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer/dealer shall ensure the training on this aspect to operator before the delivery of tractor.	<b>Not applicable</b>		---



T-1449/1976/2020	<b>SWARAJ 724 XM ORCHARD NARROW TRACK TRACTOR</b> <b>Commercial - Variant (First Batch Test)</b>
	<b>(THIS TEST REPORT IS VALID UP TO 30/06/2025)</b>



1	2	3	4	5	6	7	
<b>7.1.4</b>	<b>Labelling of tractors (Provision of labelling plate):</b>						
1)	Make	Evaluative	Should conform to the requirements of CMVR along with maximum PTO Power in kW and year of manufacture in numerical form.  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>MM</td> <td>YY</td> </tr> </table> Digit 01 – 12 in box No.1 for MM will represent the months and next two digits in box No.2 for YY will represent the year of manufacturing.	MM	YY	Swaraj	Yes
MM	YY						
2)	Model	Evaluative		724 XM ORCHARD NARROW TRACK	Yes		
3)	Engine number	Evaluative		38.1366/SBA00134	Yes		
4)	Chassis number	Evaluative		MBNAB43AALT A84908	Yes		
5)	Declaration of PTO power, (kW)	Evaluative		15.9	Yes		
6)	Month & Year of manufacturing	Evaluative	01, 2020	Yes			
<b>7.1.5</b>	<b>Literature (Submission to test agency)</b>						
(a)	Operator manual	Evaluative	Provided / Not Provided	Provided	Yes		
(b)	Parts Catalogue	Evaluative	Provided / Not Provided	Provided	Yes		
(c)	Workshop/ Service manual	Evaluative	Provided / Not Provided	Provided	Yes		
<b>7.1.6</b>	<b>CATEGORY OF BREAKDOWNS / DEFECTS :</b>						
Sl. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the Requirements (Yes/No.)		
1.	Critical	Evaluative	No critical breakdown	None	Yes		
2.	Major	Evaluative	Not more than one and neither of them should be repetitive in nature	None	Yes		
3.	Minor	Evaluative	Not more than three and frequency of each should not be more than two.	None	Yes		
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four, that is, (1 major + 3 minor) or 4 minor breakdowns.	None	Yes		
<b>7.2</b>	<b>Optional requirements as per Clause-4 (Table-2) of IS:12207-2019:</b>						
S.No.	Characteristic	Requirements as per IS: 12207-2019	As observed	Remarks			
1.	Fitment of roll Over protective structures (ROPS): for tractor having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS 11821 or OECD code or equivalent International standard	ROPS not provided	Not applicable		
2.	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided	Yes		
3.	Accessories (optional)	Non Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Provided	Yes		



**T-1449/1976/2020**

**SWARAJ 724 XM ORCHARD NARROW TRACK TRACTOR  
Commercial - Variant (First Batch Test)**

**(THIS TEST REPORT IS VALID UP TO 30/06/2025)**

- 7.5 **Recommendation with regard to safety on tractor:**  
 The following requirements, inter alia, may be considered for incorporation on the tractor:
- i) There should be provision for spark arresting device in exhaust system.
  - ii) The working clearance around position control lever & draft control should be provided as per IS: 12239 (Part-2) – 1999.
  - iii) There should be provision of safety switch against accidental start of engine.
  - iv) There should be provision to attach trailer brake valve.
  - vi) Provision of fuel shut-off knob in such that it does automatically remain in stop position without the application of sustains manual effort.
  - vii) Provision of differential lock.

7.6 **Adequacy of Literature:**

7.6.1 The following literatures of tractor models were supplied with the test sample for reference during the test.

- a) Operator manual for Swaraj 724 XM ORCHARD NARROW TRACK tractor
- b) Parts Catalogue for Swaraj 724 XM ORCHARD NARROW TRACK tractor
- c) Service manual for Swaraj 724 XM ORCHARD NARROW TRACK tractor

The result of the test carried out on Variant model "Swaraj 724 XM ORCHARD NARROW TRACK" have been compared with those on base model "Swaraj 724 XM ORCHARD" vide test report No. T-1179/1706/2018 (August) and found within the limit, as specified in Indian Standard: 12207-2019.

**8. CITIZEN CHARTER**

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	02, Months (April, 2020 to May,2020)	Yes	None

**TESTING AUTHORITY:**



**SHWETABH SINGH**  
AGRICULTURAL ENGINEER



**C.V. CHIMOTE**  
TEST ENGINEER



**J.J.R. NARWARE**  
DIRECTOR





T-1449/1976/2020	SWARAJ 724 XM ORCHARD NARROW TRACK TRACTOR Commercial - Variant (First Batch Test)
	(THIS TEST REPORT IS VALID UP TO 30/06/2025)

### 9. APPLICANT COMMENT'S

Para No.	Our Reference	Applicant's comments
9.1	3.1.20.1, 3.1.20.3, 3.1.20.4, 3.1.20.5, 7.3.1.3, 7.3.1.4 & 7.5	These requirements are being revisited for necessary corrective action at our end.
9.2	7.3.1.2, 7.3.1.5 & 7.3.1.7	Study & trials are under process for necessary corrective action.

### ANNEXURE – I

### TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	--
2.	PTO performance test	7.80
3.	Nominal speed test	0.50
4.	Brake performance test	1.00
5.	Turning Ability	0.50
4.	Steering Effort	0.50
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.25
<b>TOTAL:</b>		<b>10.55</b>