व्यावसायिक परीक्षण रिपोर्ट (प्रथम बैच) संख्या/No. ः T-1594/2125/2021

COMMERCIAL TEST REPORT (1st Batch) माह/Month [:] October, 2021 [ONLINE TESTING]

(यह परीक्षण रिपोर्ट 31/10/2026 तक वैध है/THIS TEST REPORT IS VALID UPTO 31/10/2026)



SWARAJ 742 FE TRACTOR



भारत सरकार कृषि एवं किसान कल्याण मंत्रालय (कृषि, सहकारिता एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA MINISTRY OF AGRICULTURE AND FARMERS WELFARE (DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE) केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान ट्रैक्टर नगर, बुदनी (म.प्र.)466 445 CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE (An ISO 9001: 2015 Certified Institute) TRACTOR NAGAR, BUDNI (M.P.) 466 445 Web site: fmttibudni.gov.in E-mail: fmti-mp@nic.in, Telephone:07564-234729, 234743

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	SWARAJ 742 FE TRACTOR – Commercial (1 st Batch)
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"Swaraj 742 FE" tractor had undergone initial commercial test at this institute and report number **T-1122/1648/2017** was released in December, 2017, it's administrative extension report no. **T-1352/1879/2020**, released in March, 2020 and it's Technical Extension report no. **T-1593/2124/2021** was released in October, 2021. Now the applicant has submitted an application no. 28/2020-21/45 dated 11.01.2021 for 1st batch testing of "Swaraj 742 FE" tractor. The performance results of the test sample submitted for the batch testing were evaluated as per IS: 12207-2019 and test report is released as under.

Manufacturer	:	M/s. Mahindra & Mahindra Ltd. Farm Equipment Sector, Swaraj Division Phase- IV, Industrial Area, S.A.S. Nagar, Mohali, Punjab – 160 055
Test requested by (applicant) Selected for test by	:	The manufacturer Applicant
Place of running-in	:	At manufacturer's works
Duration of said running-in (h): - Engine - Transmission Method of Selection	:	28 32 Due to Covid-19 Pandemic, it was not possible to conduct the random selection. Nor was possible for applicant to facilitate the random selection. As a last resort, applicant requested to allow the direct submission of Test Sample, which was allowed.
1. SPECIFIC	ATI	ONS
Tractor:	-	Quanti
Make Model	:	Swaraj 742 FF
Variants if any	:	None
	-	

1.1	Tractor:		
	Make	:	Swaraj
	Model	:	742 FE
	Variants if any	:	None
	Brand name	:	Swaraj
	Туре	:	Four wheeled, rear wheel driven, general purpose agricultural tractor.
	Month & Year of manufacture	:	01/21
	Chassis number	:	MBNBJ49AGMCA27194
	Country of Origin	:	India
1.2	Engine:		
	Make	:	M/s. Swaraj Engines Limited
	Model	:	SK342NR
	Туре	:	Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine.
	Serial number	:	42.4001/SDA02356
	Engine speed (Manufacturer's recomme	end	ed production setting, (rpm) :
	 Maximum speed at no load,(rpm) 	:	2100 to 2200
	- Low idle speed, (rpm)	:	580 to 700
	- Speed at maximum torque, (rpm)	:	1000 to 1400
	Rated speed, (rpm):		2000
	- For PTO use - For drawbar use		2000 2000
		•	2000

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE - BUDNI

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15. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

15.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluative (not-mandatory) parameter applicable for qualifying Minimum Performance Criteria as per Clause-4 (Table-1) of **IS: 12207-2019** for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

S. 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 requiremen ts (Yes/No.)
1		2	3	4	5	6	7
15.1.1	PTC	D Performan	ce:				
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)		Evaluative	Declared value to be achieved with a tolerance of: \pm 5% for PTO power or engine power >26 kW, \pm 10% for PTO power or Engine power \leq 26 kW.	28.18 (D)	27.0	Yes
b)	eng (kW		Non Evaluative	-do-	28.18 (D)	27.0	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)		Evaluative	+ 10% Max.	265 (D)	279	Yes
d)	equ crar	kimum ivalent nkshaft jue, (Nm)	Non Evaluative	± 8%	167 (D)	161.0	Yes
e)	torq	k-up ue, percent	Evaluative	12 percent, min.	12 percent, min (R)	24.8	Yes
f)	Max	kimum opera	ting temper	ature, (^o C)			
	1)	Engine oil	Evaluative	The declared value should not exceed the max. value specified by the oil company and the observed value under high ambient condition should not exceed the declaration.	130 (D)	100	Yes
	2)	Coolant	Evaluative	The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration.	115 (D)	91	Yes
g)	Engine oil consumption, (g/kWh)		Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.79 (Max.) 1% of SFC (D)	0.89	Yes
h)	(g/kWh) Smoke level, (m ⁻¹)		Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 per meter Max.	0.08	Yes

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1	2	3	4	5	6	7
15.1.2	Drawbar perform	nance :			•	•
a)	Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	19.43 (D) 19.19 (R) (Min.)	22.79	Yes
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)		Minimum 70% of static mass of tractor without ballast	13.87 (D) 13.63 (R) (Min.)	15.68	Yes
C)	Maximum drawbar power without ballast, (kW).		Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft.	23.0 (D) 21.6 (R) (Min.)	24.3	Yes
d)	Max. transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	110 (D)	81.0	Yes
15.1.3	Power lift and h					
a)			hout the range of lift, (kN			
	1) At hitch points	Evaluative	±10%	16.5 (D)	17.84	Yes
	2) With the standard frame	Evaluative	The lift capacity should at least be 24 kg/PTO kW. and it should be 21.5	10.78 (D) 6.35 (R)	12.66	Yes
			kg/engine kW where the tractor is not provided with a PTO shaft	(Min.)		
b)	Maximum drop in the height of the point of application of		Observed value	50 (D)	107	
	the force after each 5 minutes interval for a total duration of 30 minute, (mm)	Non Evaluative	should not exceed 50 mm.	50 (Max.)		Νο
15.1.4	Brake performa					
a)	road ballast, (m):	•	a force, equal to or less t	han 600 N on	brake pe	edal with
	1) Cold brake	Evaluative	10	10	7.07	Yes
•	2) Hot brake	Evaluative	10	10	7.14	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (Max.)	201 to 259	Yes

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C) Whether parking brake is effective at force of 600 N at force pedal(s) or 400 N at hand lever, N Evaluative hand Yes / No Yes (R) Yes Yes Yes 15.1.5 Noise measurement: a) Maximum ambient noise emitted by the tractor, dB(A) Evaluative As per CMVR 88 (Max.) 86 (Max.) Yes Yes b) Maximum noise at operator's ear level. dB(A) Evaluative As per CMVR 96 (Max.) 95 (Max.) Yes 15.1.6 Amplitude of mechanical vibrations at : 10 Leff foot rest Park (Max.) 116 No No 100 microns (Max.) 100 116 No 2) Right foot rest Wheel Non 100 microns (max) 100 176 No No 4) Steering Wheel Non 100 microns (max) 0.25% (max.) 0.25% (0.0) 0.11 Yes 15.1.7 Air Cleaner Max. oil pull over, (%b) Evaluative (max) 0.25% (max.) 0.25% (0.0) 0.11 Yes 1) Two wheel Non 2) Four wheel Non 2) Four wheel Non 2) Four wheel No 30 to 40 (D) 4.67 to 4.65 to 4.28 No	1		2	3	4	5	6	7
at foot pedal(s) or 400 N at hand at 15.1.5 Noise measurement: a) Maximum ambient noise emitted by the tractor, dB(A) Evaluative As per CMVR 88 (Max.) 86 Yes b) Maximum noise at operator's ear level, dB(A) Evaluative As per CMVR 96 95 Yes 15.1.6 Amplitude of mechanical vibrations at : 1) Left foot rest Verset Non 100 microns (Max.) 100 116 No 2) Right foot rest Verse Non 100 microns (max) 100 176 No 4) Steering Verse Non 100 microns (max) 100 48 Yes 15.1.7 Air Cleaner Kas pecified by (Max.) 0.25% (max.) 0.11 Yes 15.1.7 Air Cleaner Steering Non Non As specified by (max) 0.25% (max.) 0.11 Yes 15.1.8 Haulage requirements : (%) As specified by (b) 5.0 (D) 5.0 Yes 1) Two wheel Non As specified by the manufacturer 4.0 to 5.0 4.67 to (D) 4.78	C)	brak	e is effective	Evaluative	Yes / No	Yes (R)	Yes	Yes
400 N at and								
lever, N Noise measurement: a) Maximum ambient noise emitted by the tractor, dB(A) Evaluative As per CMVR 88 (Max.) 86 (Max.) Yes b) Maximum noise at operator's ear level, dB(A) Evaluative As per CMVR 96 (Max.) 95 (Max.) Yes 15.1.6 Amplitude of mechanical vibrations at : 1) 100 microns driver seated beliable 100 100 116 No No 2) Right foor rest driver seated Wheel Non driver seated beliable Non driver seated beliable 100 microns foor max) 100 176 Max.) No 15.1.7 Air Cleaner Non Wheel Non Evaluative 0.25% (max.) 0.25% foor (Max.) 0.11 Yes 15.1.8 Haulage requirements : (%) As specified by the manufacturer 5.0 (D) 5.0 Yes 1) Two wheel 2) Non Evaluative As specified by the manufacturer 30 to 40 (D) 4.67 to (D) 4.78 2) Four wheel Non Evaluative As specified by the manufacturer 30 to 40 (D) 41.8 to (D) No 1) Two wheel 2) Four wheel								
15.1.5 Noise measurement: a) Maximum ambient: Evaluative in the tractor, dB(A) As per CMVR 88 (Max.) 86 Yes b) Maximum noise at interactor, dB(A) Evaluative interactor, dB(A) As per CMVR 96 95 Yes 15.1.6 Amplitude of mechanical vibrations at : 100 microns 100 116 No 2) Right foot rest interaction in the interaction only. There in the interaction in the interaction in the interaction only. There in the interaction in the inte								
noise emitted by the tractor, dB(A) Non Non Maximum noise at (Max.) Maximum noise at (Max.) Non b) Maximum noise at operator's ear level, dB(A) Evaluative As per CMVR 96 95 Yes 15.1.6 Amplitude of mechanical vibrations at : 1) Left foot rest Non 100 microns 100 116 No 2) Right foot rest Evaluative (with Non 100 microns 100 176 No 4) Steering Non 100 microns 100 176 No (Max.) Haulage requirements : 1) Two wheel Evaluative (max.) 0.25% 0.11 Yes 4) Steering Non 100 microns 100 6.0 (D) 5.0 (P)	15.1.5		,	t:	I		1	
the tractor, dB(A) As per CMVR 96 95 Yes b) operator's ear level, dB(A) As per CMVR 96 95 Yes 15.1.6 Amplitude of mechanical vibrations at : 1) Left foot rest Valuative Non 100 microns 100 116 No 2) Right foot rest Valuative Evaluative (max) (Max.) 124 No 3) Seat (with Value Non 100 microns 100 176 No 4) Steering Non 100 microns 100 48 Yes 51.7.7 Air Cleaner (max.) 0.25% 0.11 Yes (%) Two wheel Non As specified by 5.0 (D) 5.0 Yes 1) Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 1) Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 2) Four wheel Non As specified by 4.0 to 0.0 4.	a)			Evaluative	As per CMVR		86	Yes
operator's ear level, dB(A) Non (Max.) (Max.) 15.1.6 Amplitude of mechanical vibrations at : 1 (Max.) 100 116 No 2) Right foot rest driver seated) Evaluative (max) (Max.) 124 No 3) Seat driver seated) Evaluative Evaluative (max) (Max.) 124 No 4) Steering Wheel Non 100 microns 100 176 No 4) Steering Wheel Non 100 microns 100 48 Yes 15.1.7 Air Cleaner Max. oil pull over, (%) Evaluative 0.25% (max.) 0.25% (max.) 0.11 Yes 1) Two wheel Non Evaluative As specified by the manufacturer 5.0 (D) 5.0 Yes 1) Two wheel Non Evaluative As specified by the manufacturer 4.0 to 5.0 4.67 to (D) 4.78 No 2) Four wheel Non Evaluative As specified by the manufacturer 30 to 40 (D) 35.5 to 35.9 Yes 1) Two whee		the ti	ractor, dB(A)					
15.1.6 Amplitude of mechanical vibrations at : 1) Left foot rest Non 100 microns 100 116 No 2) Right foot rest Evaluative (max) (Max.) 124 No 3) Seat (with Non 100 microns 100 176 No 4) Steering Non 100 microns 100 48 Yes 4) Steering Non 100 microns 100 48 Yes (%) Air Cleaner (max.) 0.25% (Max.) 0.11 Yes 15.1.7 Air Cleaner (max.) 0.25% 0.11 Yes (%) Two wheel Non As specified by 5.0 (D) 5.0 Yes 1) Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 2) Four wheel Non As specified by 5.0 to 6.0 4.65 to No 2) Four wheel Non As specified	b)	oper	ator's ear	Evaluative	As per CMVR		95	Yes
1) Left foot rest Right foot rest 2) Non Evaluative Right foot rest 2) Non Evaluative Right foot rest 2) Non Evaluative Rest 2) 100 microns (max) 100 (Max.) 116 No (Max.) 3) Seat diver seated) Evaluative Evaluative 100 microns (max) 100 176 No 4) Steering Wheel Non Evaluative 100 microns (max) 100 48 Yes 15.1.7 Air Cleaner Coross mass of the trailers, (tones): 0.25% (max.) 0.25% 0.11 Yes 15.1.8 Haulage requirements : Gross mass of the trailers, (tones): 0.25% (max.) 0.25% 0.01 5.0 Yes 1) Two wheel 2) Non Evaluative As specified by the manufacturer 5.0 (D) 5.0 Yes 2) Four wheel Non Evaluative As specified by the manufacturer 30 to 40 (D) 41.8 to 42.8 No 2) Four wheel Non Evaluative As specified by the manufacturer 30 to 40 (D) 41.8 to 42.8 No 2) Four wheel Non Evaluative As specified by the requirement of 1	15.1.6			anical vibrat	ions at :			
L) High root root Non (Unitary) (Unita				Non		100	116	No
orgen driver seated) Wheel Evaluative Non (max) (Max.) Monon 4) Steering Wheel Non 100 microns 100 48 Yes 15.1.7 Air Cleaner (max) (Max.) 0.25% 0.11 Yes (%) Gross mass of the trailers, (tones): 0.25% (max.) 0.25% 0.11 Yes 1) Two wheel Non Evaluative 0.25% (max.) 0.25% (max.) 0.25% 1) Two wheel Non As specified by the manufacturer 5.0 (D) 5.0 Yes 1) Two wheel Non As specified by the 4.0 to 5.0 4.67 to Yes 2) Four wheel Non As specified by the 4.0 to 5.0 4.67 to Yes 1) Two wheel Non As specified by the 30 to 40 (D) 41.8 to No 2) Four wheel Non As specified by the 30 to 40 (D) 41.8 to No 1) Two wheel Non As specified by t		2)	Right foot rest	Evaluative	(max)	(Max.)	124	No
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VerticationEvaluative(max)(Max.)15.1.7Air CleanerMax. oil pull over, (%)Evaluative0.25% (max.)0.25% (max.)0.11Yes11Two wheel (%)Non Evaluative0.25% (max.)0.25% (max.)0.11Yes11Two wheel (%)Non EvaluativeAs specified by the manufacturer5.0 (D)5.0Yes11Two wheel (D)Non EvaluativeAs specified by manufacturer6.0 (D)6.0Yes11Two wheel (D)Non (Mn/1):As specified by (D)4.0 to 5.0 (D)4.67 to (D)Yes12Four wheel (D)Non (C)Four wheel (D)Non (D)4.0 to 5.0 (D)4.65 to (D)No11Two wheel (D)Non (C/Km/tonne):No (D)41.8 to (D)NoNo13Four wheel (D)EvaluativeAs specified by manufacturer30 to 40 (D)41.8 to (D)42.815.1.9Wetland cultivation :The ingress in the identified assemblies:There ingress in the identified assemblies should essentially meet the requirement of 1S: no ingress of water and/or mud wasNo ingress of wetland cultivation, it may be recommended for dry land operation only.No ingressNo ingress			/		· · · /	· · · /	40	Maa
15.1.7 Air Cleaner Max. oil pull over, (%) Evaluative 0.25% (max.) 0.25% (max.) 15.1.8 Haulage requirements : 0.25% (max.) 0.11 Yes a) Gross mass of the trailers, (tones): 1 Two wheel Non As specified by 5.0 (D) 5.0 Yes b) Distance travelled / litre of fuel consumption, (km/l): 1 Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 1) Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 1) Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 1) Two wheel Non As specified by 4.0 to 5.0 4.67 to Yes 2) Four wheel Non As specified by 30 to 40 (D) 41.8 to No 1) Two wheel Non Evaluative Manufacturer 30 to 40 (D) 41.8 to No 2) Four wheel Non Evaluative The identified assemblies should essentially meet the requirement of IS: There should be no ingress and/or		4)		-			48	Yes
Max. oil pull over, (%)Evaluative0.25% (max.)0.25% (max.)0.11Yes15.1.8Haulage requirements : Gross mass of the trailers, (tones):Gross mass of the trailers, (tones):As specified by the manufacturer5.0 (D)5.0Yes1)Two wheelNon EvaluativeAs specified by the manufacturer5.0 (D)6.0Yesb)Distance travelled / litre of fuel consumption, (km/l):1)Two wheelNon EvaluativeAs specified by the manufacturer4.0 to 5.04.67 to (D)Yes2)Four wheelNon EvaluativeAs specified by the manufacturer4.0 to 5.04.67 to (D)4.782)Four wheelNon EvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelNon EvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluative EvaluativeThe identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.There ingress of water and/or mud was observed and/or mud was observed during ICTNo3)Front axle hubs-do- noli-do- may be recommended only.There ingress of water and/or mud was observed during ICT5)Transmission oil-do- noldo- may be recommended only.There ingress of mudNo	1517	Air (Lvaluative	(max)	(IVIAX.)		
(%) (max.) 15.1.8 Haulage requirements : (max.) a) Gross mass of the trailers, (tones): 1) Two wheel Non 2) Four wheel Non 2) Four wheel Non 1) Two wheel Non 2) Four wheel Non 2) Four wheel Non 2) Four wheel Non 1) Two wheel As specified by 1) Two wheel Non 1) Two wheel Non 1) Two wheel Non 2) Four wheel Non 2) Four wheel Non 10 Two wheel Non 2) Four wheel Non 3) Font wheel Non 3) Font wheel C/c/mode 10	13.1.7			Evaluative	0.25% (max.)	0.25%	0.11	Yes
a) Gross mass of the trailers, (tones): 1) Two wheel Non 2) Four wheel Non 2) Four wheel Non 2) Four wheel Non 2) Four wheel Non 1) Two wheel Non 2) Four wheel Non 1) Two wheel Non 2) Four wheel Non 2) Four wheel Non 2) Four wheel Evaluative Non Evaluative As specified by 1) Two wheel Non 1) Two wheel Non 1) Two wheel Non 1) Two wheel Non 2) Four wheel Non 1) Two wheel Non 2) Four wheel Non 1) Two wheel Non 2) Four wheel Evaluative 10 Clutch -do- 11) Clutch -do- housings -do			en pan erer,				••••	
1)Two wheel Pour wheelNon EvaluativeAs specified by the manufacturer5.0 (D)5.0Yesb)Distance travelled / litre of fuel consumption, (km/l):As specified by the manufacturer6.0 (D)6.0Yes1)Two wheelNon EvaluativeAs specified by the manufacturer4.0 to 5.04.67 to (D)Yes2)Four wheelNon EvaluativeAs specified by the manufacturer5.0 to 6.04.65 to (D)Noc)Fuel consumption (cc/km/tonne):1)Two wheelNon EvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelNon EvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No1)Two wheelNon EvaluativeThe identified assembly30 to 40 (D)35.5 to 35.9Yes15.1.9Wetland cultivation :The ingress in the identified assembly given in ingress in the identified assembly given in housingsThe ingress of mud water and/or mud was of water and/or mud was of water 	15.1.8		age requireme	nts :				
Non Evaluativethe manufacturer6.0 (D)6.0Yesb)Distance travelled / litre of fuel consumption, (km/l): 1)Two wheel EvaluativeNon EvaluativeAs specified by the manufacturer4.0 to 5.04.67 to (D)Yesb)Distance travelled / litre of fuel consumption, (km/l): 1)As specified by the manufacturer4.0 to 5.04.67 to (D)Yesc)Four wheelNon EvaluativeAs specified by manufacturer4.0 to 6.04.67 to (D)Yesc)Fuel consumption (cc/km/tonne): 1)Non EvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No 42.8c)Four wheelNon EvaluativeThe identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.There should be no ingress of water and/or mud was observed during ICT vide report no. T- 1122/1648Yes	a)	Gros	s mass of the tra	ailers, (tones	<u> </u>		•	
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1)Two wheelNonAs specified by the manufacturer4.0 to 5.04.67 to 4.78Yes2)Four wheelEvaluativemanufacturer(D)4.78No2)Four wheelEvaluativemanufacturer5.0 to 6.0 (D)4.65 to 4.70No1)Two wheelNonAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeThe sembles:30 to 40 (D)35.5 to 35.9Yes15.1.9Wetland cultivation :The sembles:InterviewThe assembles should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.No ingress of water and/or mud was observed during ICT wide report no. T- 1122/1648		2)	Four wheel	-		6.0 (D)	6.0	Yes
Non 2)Non Four wheelNon Evaluativethe manufacturer(D)4.782)Four wheelEvaluativemanufacturer5.0 to 6.0 (D)4.65 to 4.70Noc)Fuel consumption (cc/km/tonne):As specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeManufacturer30 to 40 (D)35.5 to 35.9Yes15.1.9Wetland cultivation :The identified assemblies:The identified assembly meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.There should be no ingress of water and/or mud was observed during ICT vide report no. T- 1122/1648	b)	Dista	nce travelled / li	itre of fuel co	nsumption, (km/l):		•	
2)Four wheelEvaluativemanufacturer5.0 to 6.0 (D)4.65 to (A.70No (D)c)Fuel consumption (cc/km/tonne):1)Two wheelNonAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelNonEvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeThe sealing for the following assemblies:The sealing for the sealing for the assemblyThe sealing for the requirement of IS: 11082. No water ingress in the identified assembly given in column2.There should be no ingress of water and/or mud was observed during ICT vide report no. T- 1122/1648Yes		1)	Two wheel			4.0 to 5.0		Yes
c)Fuel consumption (cc/km/tonne):(D)4.701)Two wheelNonAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeAs specified by the manufacturer30 to 40 (D)41.8 to 42.8No2)Four wheelEvaluativeThe identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.No ingress of water and/or mud was observed during ICT vide report no. T- 1122/1648Yes				-		· · · /		
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Non 2)Non Four wheelNon Evaluativethe manufacturer42.82)Four wheelEvaluativemanufacturer30 to 40 (D)35.5 to 35.9Yes15.1.9Wetland cultivation :The identified assemblies:The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.No ingress of water and/or mud was of water and/or mud was observed during ICT vide report no. T- 1122/1648	c)			c/km/tonne):	A successive states and the second	00 to 10 (D)	44.0.1-	N
15.1.9Wetland cultivation :35.915.1.9Wetland cultivation :The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assemblyNo ingress of water and/or mud was of water and/or mud was of water of water of water and/or mud was of water and/or mud wasYes					the		42.8	
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following assemblies:assemblies should essentially meet the requirement of IS:No ingress in the identified assembly given in column-2.No ingress of should be no ingress of should be no ingress of water and/or mud was observed during ICT vide report no. T- 1122/16481Clutch assembly-do- housings-do- column-2.There should be no ingress of water and/or mud was observedNo ingress of water and/orYes	15.1.9							
Ionowing assemblies:essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2.No ingress of water and/orYes2)Brake housings-do- housings-do- column-2.There ingress in the identified assembly given in column-2.There should be no ingress of water and/orThere should be no ingress of water and/orYes3)Front axle hubs-do- housings-do- column-2.If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only.There should be no ingress of water and/or mudYes				Evaluative				
1)Clutch assembly-do- nousingsItoganemic of no. to water ingress in the identified assembly given in column-2.There should be no ingress of water and/or mud was of should be no ingress of water and/or mud was observed during ICT vide report no. T- 1122/1648There ingress of water and/or mud was observed during ICT vide reportYes			•					
2)Brake housings-do- housingsingress in the identified assembly given in column-2.should be no ingresswater and/or mud was observed during ICT vide report no. T- 1122/1648Yes2)Brake housings-do- housings-do- column-2.If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operationshould be no ingress of water and/or mudYes				da	requirement of IS	5:		
2)Brake housings-do- column-2.assembly given in column-2.be no ingresswater and/or3)Front axle hubs-do- hubs-do- wetland cultivation, it may be recommended for dry land operation only.be no ingress of water and/or mud was observed during ICT vide report no. T- 1122/1648		1)		-00-				Yes
3)Front axle hubs-do-it action is requirements of wetland cultivation, it may be recommended for dry land operation only.of water and/or mudit during ic observed during ICT vide report no. T- 1122/1648		2)	Brake	-do-	assembly given in column-2.	h be no	and/or	100
4)Engine oil-do- -do-may be recommended for dry land operation only.mudduring ic i vide report no. T- 1122/1648			Front axle hubs		the requirements c	of water	observed	
5) Transmission -do- oil -do- oil -do- onlydo- onlydo- onlydo-		4)	Engine oil	-do-	may be recommende	d mud		
		5)		-do-		n	no. Ť-	

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1	2	3	4	5	6	7
15.1.10	Safety features :					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulley, silencer, hydraulic pipes (As per IS 12239 part 2)		Meets the require ment	Yes
b)	Lighting arrangement	Evaluative	As per CMVR		Meets the require ment	Yes
c)	Seating requirement (Tractors having more than 1150 mm rear track width)	Non- Evaluative	Should meet the requirements of IS 12343 (as amended from time to time)		Does not meet the require ment	No
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS 4931 (as amended from time to time)		Meets the require ment	Yes
e)	Dimension of three point linkage	Non- Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)		Does not meet the require ment	Νο
f)	Specification of linkage drawbar	Evaluative	Should meet the requirements of IS 12953 and IS 12362 (part 3) (as amended from time to time)		Meets the require ment	Yes
g)	Specifications of Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)		Not fitted	Not appli cable
h)	1) Maximum travelling speed at rated engine speed in reverse gears, (kmph)	Evaluative	Should not exceed 20 Kmph	11.39	11.39 (meets the requireme nt)	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. Not applicable		Not applicable	Not appli cable

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1		2		3			4	5	6	7
15.1.11	Labe	 Iling of tracto	rs (F	-	of la	belling plat	•			
	1)	Make	(-	Evaluati			onform to the	SWA	RAJ	Yes
	2)	Model		Evaluati			nts of CMVR	742	FE	Yes
	3)	Month & Y	ear	Evaluati			th declared	01/2		Yes
	,	of manufactu	ire				FO in kW and			
	4)	Engine num	ber	Evaluati	ve		anufacture in nerical	42.4001	/SDA0	Yes
	,	U				MM	YY	2356		
	5)	Chassis		Evaluati	ve		2 in box No.1	MBNBJ4	19AG	Yes
		number				for MM will	represent the	MCA271	94	
	6)	Declaration of		Evaluati	ve		next two digit	28.1	18	
		maximum P	0				No.2 for YY			Yes
		power, (kW)					ent the year of facturing			
15.1.12	Disca	ard limit for:				IIIallui	lacturing			
(a)	Cyline		ore	Evaluat	ive		110.225 (D)	109.94	15 to	Yes
(4)		eter, (mm)	010		ive	To be		109.9		100
(b)	Clear		en	Non		specified by		0.091 to		Yes
(~)		n & cylinder I		Evaluat		the manufactur	0.50		5.000	
		rt, (mm)				er				
(c)		end gap (mm):	1		I	1	1		
. ,	•	0.1.								
	- To	p comp. ring				-do-	1.75	0.45 to	0.50	Yes
	- 2 nd	comp. ring		Evaluativ	Evaluative		1.75	0.50 to	0.55	Yes
	- Oil	ring				-do-	1.75	0.35 to	0.45	Yes
(d)	Ring	groove clear	ance	e (mm):						
	- To	p comp. ring					Tappere			
		comp. ring		Evaluati	ve	-do-	0.25	0.065 to		Yes
		ring				-do-	0.25	0.059 to	0.061	Yes
(e)		ance of main	bea	rings (mr	n):	1				
		ametrical		Evaluative		-do-	0.30	0.081 to	0.107	Yes
		arance					0.50		_	
		ankshaft end f		Evaluati			0.50	0.2	2	Yes
(f)		ance of big e	na b				0.00	0.000.1	0.400	V
		ametrical		Evaluativ		-do-	0.30	0.093 to		Yes
(r)	- Ax		<u></u>	Evaluativ	е	-do-	0.60	0.3	0	Yes
(g)	Clear			Non		da	0.60	0 062 +-	0 104	Vee
	(mm)	pin and bus	b 11,	Evaluati	ve	-do-	0.60	0.063 to	0.104	Yes
(h)	Clear		en							
(1)		e pin and bu		Non		-do-	0.80	0.150 to	0 208	Yes
	(mm)	•	J.,	Evaluati	ve	u0-	0.00	0.100 10	0.200	100
	()					1				I
15.1.13	Litera	ature (Submis	sio	n to test a	aen	cv)				
(a)		rator manual		aluative		vided/Not	Provided	Provid	ded	Yes
()	240					rovided				
(b)	Part	s Catalogue	Ev	aluative		vided/Not	Provided	Provid	ded	Yes
			_ ,		Provided					
(C)	V	/orkshop/	Εv	aluative		vided/Not	Provided	Provid	ded	Yes
. ,		vice manual				rovided				

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1	2	3	4	5	6	7
15.1.14	Fitment of Roll Over Protective Structure (ROPS): for tractors having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard	Not Provided	Not fitted	Not appli- cable
15.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
15.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

15.2	CATEGORY OF	BREAKDOWN	S / DEFECTS :		
S. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the require- ments (Yes/No.)
1.	Critical	Evaluative	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major	Evaluative	There are not more than 1 major breakdowns and neither of them is of repetitive nature	None	Yes
3.	Minor	Evaluative	There are not more than 3 minor defects during the test and the frequency of each is 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

15.2 Salient Observations:

15.2.1 Laboratory tests:

15.2.1.1 PTO Performance Test:

- i) The maximum PTO power was recorded as 27.0 kW against the declaration of **28.2 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power was recorded as 279 g/kWh against the declaration of 265 g/kWh, which is within the tolerance limit of IS: 12207-2019

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iii) The backup torque is 24.8%, which meets the evaluative requirement of IS: 12207-2019.

15.2.1.2 Drawbar performance test:

During ten hours drawbar test creeping of LHS and RHS rear tyre over the rims was recorded as 25 and 50 mm. This should be looked into for necessary corrective action.

15.2.1.3 Hydraulic performance test:

The Cumulative drop in height of lift during lift load maintenance test was recorded as 107 mm against the maximum limit of 50 mm. This should be looked into for necessary corrective action.

15.2.1.4 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies marked as (*) in Chapter – 9 of this test report is on higher side. This calls for dampening down of vibrations especially on left & right foot rest and operator's seat to improve the operational comfort and service life of components.

15.2.1.5 Three point linkage:

The dimension of lateral distance from lower hitch point to centre line of tractor does not meet the requirement of IS: 4468 -1997 (Part-1). This should be looked into for necessary corrective action.

15.3 Maintenance / Service Problems:

No noticeable maintenance or service problem was observed during the test.

15.4 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) There should be provision of differential lock.
- iii) The fuel shut-off knob should remain in stop position.
- iv) The working clearance between the position and draft control lever should be provided as per IS: 12239 (Part-2) 1999.

15.5 Adequacy of Literature supplied with machine:

- **15.5.1** The following literature was supplied with test sample for reference during the test.
 - a) Operator's manual for Swaraj 742 FE tractor model
 - b) service manual for Swaraj 742 FE tractor model
 - c) Spare part's catalogue for Swaraj 742 FE tractor model

The above manual/catalogue submitted by the applicant was found not found adequate and following discrepancies found:

- As per supplied service manual, the steering oil capacity is mentioned common with transmission, however it have separate reservoir fitted with tractor. The same discrepancy was found in supplied spare parts catalogue.
- ii) In supplied service manual, the type of clutch is mentioned as "Single" in place of "Duel clutch".
- iii) In supplied service manual, type of gear box is mentioned as "Constant mesh" while the tractor model is fitted with "sliding mesh gears".
- iv) In supplied service manual, maximum PTO power was mentioned as 31.33 kW while the same is mentioned as 28.18 kW in technical specifications.
- v) In supplied operator's manual, engine air cleaner is specified as "Dry type" in place of "oil bath type".

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- vi) In supplied operator's manual, make of fuel filters is mentioned as "Mico" however it is fitted with "Bosch" make.
- vii) In supplied spare parts catalogue, type of brakes is mentioned as "Dry" in place of "oil immersed brakes.
- However, these literatures should also be brought out in other vernacular languages of India for guidance of users.
 - Printing quality of the images in the literature may be improved for the easy approach and understanding of the users and keeping paper quality in view printing may be done on both side of paper.

TESTING AUTHORITY:

C.V. CHIMOTE TEST ENGINEER	Thumant
Y.K.RAO SENIOR AGRICULTURAL ENGINEER	left
P.K. PANDEY DIRECTOR	43n- Mosh

Draft test report is compiled by: NITESH KUMAR VERMA, AGRICULTURAL ENGINEER

16. Applicant's comments

Para Our reference no.		Comments received from the applicant	
16.1	15.2.1.2, 15.2.1.3,15.2.1.4 & 15.2.1.5	These requirements are being revisited for necessary corrective action at our end.	
16.2	1.20.1, 1.20.3, 1.20.4, 1.20.5 & 15.4	and a man and and a second sec	
16.3	15.5.1 & 15.5.2	Necessary suggested changes will be incorporated in literatures.	

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<u>ANNEXURE - I</u>

TRACTOR RUN HOURS DURING TEST

Α.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	
2.	PTO performance test	10.64
3.	Power lift and hydraulic pump performance test	3.34
4.	Drawbar performance test	18.55
5.	Brake test	1.75
6.	Noise measurement	1.50
7.	Mechanical vibration test	1.00
8.	Nominal speed test	0.35
9.	Air cleaner oil pull over test	3.50
В.	HAULAGE TEST:	5.27
C.	Miscellaneous test and other run hours including idle	4.96
	run, transportation, trials and preparation for test	
	TOTAL:	50.86

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