



भारत सरकार / Government of India

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान / Northern Region Farm Machinery Training and Testing Institute

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[ISO - 9001 : 2015 CERTIFIED]

TECHNICAL SPECIFICATIONS FOR SELF PROPELLED WALK BEHIND/RIDE ON TYPE PADDY TRANSPLANTER

1.1	General:		
	Name and address of manufacturer	:	
	Name and address of applicant	:	
	Name of the machine	:	
	Type	:	
	Make	:	
	Model	:	
	Size of transplanter, mm	:	
	Serial No. /Chassis No.	:	
	Month and year of manufacture	:	
Country of origin	:		
1.2	Details of prime mover:		
	Name & address of manufacturer	:	
	Type	:	
	Make	:	
	Model	:	
	Serial no.	:	
	Country of origin	:	
	Rated power in rating test of engine , kW	:	
	Rated engine speed, rpm	:	
	Maximum speed at no load, rpm	:	
	Low idle speed, rpm	:	
	Speed at maximum torque	:	
	Recommended no load engine speed for field operation, rpm	:	
	Whether the prime mover has already been tested at authorized testing center (YES/NO)	:	
If yes, then specify the valid test report No. and upload copy of the test report along with the Application Form	:		
1.2.1	Cylinder:		
	Number	:	
	Disposition	:	
	Bore / Stroke, mm	:	
	Capacity, cc	:	
Compression ratio	:		

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	Type of cylinder liner	:	
	Type of cylinder head	:	
	Arrangement of valves	:	
	Valve clearance in cold condition, mm:		
	-Inlet	:	
	-Exhaust	:	
	No. of compression rings	:	
	No. of oil rings	:	
1.2.2	Fuel supply system:		
	Type	:	
	Type of fuel filter	:	
	Provision of water separator	:	
	Type of ignition device	:	
1.2.2.1	Fuel tank:		
	Capacity, l	:	
	Location of fuel tank	:	
	Material of fuel tank	:	
1.2.2.2	Carburetor:		
	Type	:	
	Make	:	
	Product identification no.	:	
1.2.2.3	Governor:		
	Make (apa)	:	
	Type	:	
	Governed range of engine speed, rpm	:	
	Rated engine speed, rpm	:	
1.2.2.4	Fuel injection pump (If applicable)		
	Type	:	
	Make	:	
	Model/Group combination No.	:	
	Sr. No.	:	
	Method of drive	:	
1.2.2.5	Fuel Injector (If applicable)		
	Type	:	
	Make	:	
	Model/Group combination No.	:	
	Sr. No.	:	
	Injection pressure, Mpa	:	
	Injection timing	:	
1.2.3	Air intake system:		
1.2.3.1	Pre-cleaner:		
	Type	:	
	Make	:	
	Model/Group combination No.	:	

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1.2.3.2	Air cleaner:		
	Type of air cleaner	:	
	Recommended grade of oil	:	
	Recommended service schedule, h	:	
	Location	:	
1.2.3.3	Exhaust:		
	Type of silencer	:	
	Provision against entry of rain water	:	
	Location	:	
1.2.3.4	Lubrication system:		
	Type	:	
	Engine sump capacity, l	:	
	Maximum permissible oil temperature, °C	:	
	Provision of oil level checking	:	
	Recommended grade of lubricating oil,	:	
	Oil change period, h	:	
	Minimum permissible lube oil pressure, kg/cm ²	:	
1.2.3.5	Cooling system:		
	Type	:	
	Details of blower:		
	Dia., mm	:	
	Number of fins	:	
	Size of fins, mm:		
	-Height	:	
	-Width (top/bottom)	:	
	-Thickness	:	
	Radiator (if applicable):		
	Make	:	
	Type of radiator cap	:	
	Radiator cap pressure, kgf/cm ²		
	Means of temperature control	:	
	Type of thermostat	:	
	Bare radiator capacity, l	:	
	Total coolant capacity, l	:	
	Means of grill cleaning, if any	:	
Recommended grade of coolant	:		
Coolant water ratio	:		
1.2.4	Electrical system:		
1.2.4.1	Starting system:		
	Make	:	
	Type	:	
	Aid for cold starting	:	
	Any other device for easy starting	:	

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1.2.4.2	Spark plug:		
	Make	:	
	Model	:	
	Type	:	
	Gap of spark plug electrodes, mm	:	
1.2.4.3	Starter motor:		
	Make	:	
	Type	:	
	Model/ Group combination No.	:	
	Capacity/Power, kW	:	
	Location	:	
1.2.4.4	Alternator:		
	Make	:	
	Model/Group combination No.	:	
	Output rating	:	
	Location	:	
	Method of drive	:	
1.2.4.5	Voltage regulator	:	
1.2.4.6	Battery:		
	Make	:	
	Model/Type No.	:	
	Type	:	
	Capacity	:	
	No. & location	:	
1.2.4.7	Lighting system:		

Details of lights:

Description	No. & capacity of bulb	Height above ground to the centre of beam (mm)	Size of beam, (mm)	Distance from centre of the beam to outside edge of combine (mm)

1.2.4.8	Horn	:	
1.2..5	Engine mounting frame:		
	Type	:	
	Shape	:	

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	Size, mm	:	
	Thickness of sheet, mm	:	
	Method of fixing	:	
1.3	Transmission system:		
	Make	:	
	Model	:	
	Type	:	
	Description	:	
	Location	:	
	No. of speeds (Froward & Reverse)	:	
	Method of drive	:	
	Method of gear shifting	:	
	Oil capacity, l	:	
	Recommended grade of oil	:	
	Oil change period, h	:	
	Nominal speed:		

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed of ----- rpm when fitted with ----- size of tyre of ----- mm radius index. (kmph)	
		Variator setting		Variator setting	
		Minimum	Maximum	Minimum	Maximum
Forward	1				
	2				
	3				
Reverse	1				
	2				

1.3.1	Main clutch:		
	Make	:	
	Type	:	
	Location	:	
	Mode of operation	:	
	Location	:	
1.3.2	Rear wheel clutch/Steering clutch:		
	Function	:	
	Make	:	
	Type	:	
	Location	:	
	No. & size of pressure plate	:	
	No. & size of friction plate	:	
	Mode of operation	:	

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1.3.3	Planting clutch:		
	Function	:	
	Make	:	
	Type	:	
	Mode of operation	:	
	Location of lever	:	
1.3.4	Final drive:		
	Make	:	
	Type	:	
	First reduction details:		
	No. of teeth on 1 st pinion shaft	:	
	No. of teeth on 1 st crown shaft	:	
	Speed reduction ratio	:	
	Second reduction details:		
	No. of teeth on 2 nd pinion shaft	:	
	No. of teeth on 2 nd crown shaft	:	
	Speed reduction ratio	:	
	Lubrication	:	
	No. and type of bearing	:	
1.4	Wheel equipment (drive wheel):		
	Type (2WD/4WD)	:	
1.4.1	Front wheel (if applicable):		
	Type	:	
	Number	:	
	Dia. of wheel, mm	:	
	No. of lugs	:	
	Size of lugs (H x W x T), mm	:	
	Track width, mm	:	
	Wheel mounting	:	
1.4.2	Rear wheel:		
	Type	:	
	Number	:	
	Dia. of wheel, mm	:	
	No. of lugs	:	
	Size of lugs (H x W x T), mm	:	
	Track width, mm	:	
	Wheel mounting	:	
	Wheel base	:	
	Details of differential lock	:	
	Details of torque multiplier	:	
1.5	Brakes:		
1.5.1	Service brakes:		
	Type	:	

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	Location	:	
	Method of operation	:	
1.5.2	Parking brake:		
	Type	:	
	Location	:	
	Method of operation	:	
1.6	Hydraulic system:		
	Hydraulic pump:		
	Type	:	
	Make and model	:	
	Number	:	
	Drive details	:	
	No. of teeth on drive gear	:	
	No. of teeth on driven gear	:	
	Speed reduction ratio	:	
	Location	:	
	Capacity, l	:	
	Recommended grade of oil	:	
	Oil change period, h	:	
	No. of hydraulic cylinder	:	
	Internal dia. of cylinder tube, mm	:	
	Dia. of cylinders rod, mm	:	
	Stroke of piston, mm	:	
	Relief valve setting, MPa (Kg/cm ²)	:	
Details of distributor	:		
Details of hydraulic lock	:		
1.7	Steering:		
	Make	:	
	Type	:	
	Material	:	
	Size, mm		
	Peripheral length	:	
	Dia.	:	
	Height of centre of handle grip from ground level, mm	:	
	Method of fixing	:	
	Handle grip size (L x Dia.), mm	:	
	Method of adjustment of height	:	
	Range of height adjustment, mm	:	
	Outer dia. of steering control wheel, mm (if applicable)	:	
Details of hydraulic system	:		
Method of operation	:		

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1.8	Planting mechanism:		
	Type	:	
	No. of rows	:	
	Spacing of rows, mm	:	
	Method of changing row to row spacing	:	
	Range of hill to hill spacing, mm	:	
	Method of changing hill spacing	:	
	Number of seedlings per hill	:	
	Arrangement for adjusting the number of seedling per hill	:	
	Provision for planting depth adjustment	:	
	Provision for independent operation of pair of planting claw & seedling feed	:	
	Provision for automatic leveling of seedling platform	:	
	Recommended grade of lubricant	:	
	Grease/oil changing period, h	:	
1.8.1	Planting Finger:		
	Type	:	
	Number	:	
	Material	:	
	No. of speeds available for fingers	:	
	Size, mm	:	
	Width of jaw/beak, mm	:	
	Length of beak, mm	:	
Total length of planting finger, mm	:		
1.9	Seedling Feeding system:		
1.9.1	Seedling platform assembly:		
	Type	:	
	Material	:	
	Size (L x W), mm	:	
	Number of compartment	:	
	Size each component (L x W), mm	:	
	Inclination of tray	:	
	Seedling platform drive	:	
	Provision of left and right movement of tray	:	
	Platform Extension:		
	No. of extensions	:	
	Type	:	
	Material	:	
	Size, mm	:	
1.9.2	Longitudinal feeding system:		
	Type	:	
	Material	:	
	Details of star wheels:		

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	No. of star wheel	:	
	Size of star wheel, mm		
	Dia.	:	
	No. of teeth	:	
	Details of belts (if applicable):		
	No. of belts	:	
	Seedling mat contact area, cm ²	:	
	Method of drive	:	
1.9.3	Seedling support rod/stay-bars/retainer:		
	Type	:	
	Number	:	
	Size (L x Dia.), mm	:	
	Method of fixing	:	
1.9.4	Cross feed system:		
	Type	:	
	Size of shaft, mm	:	
	Speed of seedling platform, m/s	:	
	Method of changing speed	:	
	Stroke length of cross feed platform, mm	:	
	No. of strokes per min.	:	
	Recommended grade of lubricant	:	
	Grease changing period, h	:	
1.10	Floating system:		
	Type	:	
	Number	:	
	Material	:	
	Location	:	
	Method of fixing	:	
	Float adjustment for planting depth	:	
	Provision for automatic depth control	:	
	Details of float:		
	Parameters	Center float	Side float
	Length, mm		
	Maximum width, mm		
	Minimum width, mm		
	Mass, kg		
	Ground contact area, m ²		
	Angle of curvature, deg.		
1.11	Spare seedling carrier:		
	Type	:	
	Material	:	
	Location	:	
	Number	:	
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	Size (L x W), mm	:	
1.12	Operator's seat (if applicable):		
	Type	:	
	Method of suspension	:	
	Method of dampening	:	
	Adjustment, mm:		
	Horizontal	:	
	Vertical	:	
1.13	Details of safety provisions	:	
1.14	Details of controls and instrument panel	:	
1.15	Overall dimensions, mm:		Transportation Field
	Length	:	
	Width	:	
	Height	:	
1.16	Ground clearance, mm	:	
1.17	Mass, kg	:	
1.18	Colour of machine	:	
1.19	Marking/ Labeling Plate:		

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**SELECTED PERFORMANCE AND OTHER CHARACTERISTICS AS PER DRAFT IS
(TO BE DECLARED BY THE APPLICANT)**

S. No	Characteristics	Category (Evaluative/ Non evaluative)	Requirement	Tolerance	Declaration by applicant	Remarks
1.	Engine performance (diesel/gasoline):					
a)	Maximum power under 2 h test, kW	Evaluative	To be declared by the manufacturer	Declared value to be achieved with a tolerance of ± 10 percent		
b)	Power at rated engine speed, kW	Non evaluative	-do-	do-		
c)	Specific fuel consumption corresponding to maximum power, g/kWh	Evaluative	-do-	+5 percent		
d)	Maximum equivalent crankshaft Torque, Nm	Non - evaluative	To be declared by the manufacturer	-5 percent		
e)	Back up torque, %	Non-evaluative	7% 5 %, minimum	Nil	-	
f)	Maximum operating temperature, °C:					
	i) Engine oil	Evaluative	To be declared by the manufacturer	Nil	The declared Value should not exceed maximum value specified by the oil company. Manufacturer/applicant shall supply the recommendation of oil company along with the application form.	

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	ii) Coolant/ cylinder liner in case of air cooled engine	Evaluative	To be declared by the manufacturer	Nil	Observed value should not exceed the declared value.	
	g) Lubricating oil consumption, g/kWh	Evaluative	Not exceeding 1% of SFC at maximum power under high ambient conditions	Nil	The value would be based on the test conducted under high ambient condition	The observed value under the high ambient condition should not exceed maximum safe value specified by the oil company which will be provided by the applicant
	h) Maximum coolant (water) consumption (percent of total coolant capacity)	Non - evaluative	Coolant consumption should not exceed 25% of the total coolant capacity	Nil		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.
	j) Smoke level	Evaluative	Maximum Light absorption coefficient of 3.25/m or Equivalent BOSCH No. 5.2 or 75 Hatridge value (as per CMVR)		Maximum smoke level shall be reported out of 6 readings tested as per IS 12062 for diesel engine and IS 7347 for Gasoline Engines. The observed value should be well within the required limits	The value would be based on the test conducted under high ambient condition
2.	Parking brakes:	Evaluative	No rotation of drive wheels at a slope of	Yes / No	Based on the test conducted 'Yes/No' as applicable	

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			18 percent facing up and facing down		may be indicated.	
3.	Air Cleaner Oil Pull Over:	Evaluative	0.25 %, Max		Maximum percentage of oil pull over (mass basis)	

4. Noise level:

i)	Maximum ambient noise emitted by the paddy transplanter, dB (A)	Evaluative	85	Yes	The observed value should be within the permissible limit	
ii)	b) Maximum noise at operators' ear level dB(A)	Evaluative	96	Yes	The observed value should be within the permissible limit	

5. Amplitude of Mechanical Vibration at:

a)	Steering handle grips/ Steering control wheel	Non - evaluative	100μ Max	Nil	-	
b)	Gear lever (s)	Non - evaluative	100μ Max	Nil	-	
	- Transmission	Non - evaluative	100μ Max	Nil	-	
	- Planting	Non - evaluative	100μ Max	Nil	-	
c)	Clutch/brake lever(s) / Pedal (s)	Non - evaluative	100μ Max	Nil	-	
d)	Accelerator lever/ knob	Non - evaluative	100μ Max	Nil	-	
e)	Operators seat	Non - evaluative	100μ Max	Nil	-	
f)	Foot rest	Non - evaluative	100μ Max	Nil	-	

6. Field requirements:

a)	Variation in seedling trays consumption per hectare (%)	Non - evaluative	5% Max	Nil		
b)	Variation in number of hills per meter of row length (%)	evaluative	5% Max	Nil		
c)	Transplanting faults in					

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	1 m ² , (%)					
	i) Missed hills	Evaluative	5 % 3% Max	Nil		
	ii) Floating seedlings	Evaluative	3% Max	Nil		
	iii) Buried seedlings	Evaluative	2% Max	Nil		
	iv) Damaged seedlings	Evaluative	2% Max	Nil		
	v) Total faults	Evaluative	10% Max	Nil		
d)	Variation in number of seedlings per hill	Non - evaluative	15% Max	Nil		
e)	Variation in Avg. Planting depth, (cm)	Non - evaluative	15% Max	Nil		

7. Effectiveness of sealings:

a)	Engine oil	Evaluative	The entry of mud/ water should not take place in components /sub-assemblies	Yes / No		
b)	Hydraulic oil	Evaluative		Yes / No		
c)	Transmission oil	Evaluative		Yes / No		
d)	Clutch assembly	Evaluative		Yes / No		
e)	Planting gear box oil	Evaluative		Yes / No		
f)	Planting arms	Evaluative		Yes / No		

8. Discard limits:

a)	Cylinder bore	Evaluative			Such component and values where discard limit specified by the manufacturer exceed should only be mentioned	
b)	Piston clearance	Evaluative				
c)	Ring end gap	Evaluative				
d)	d) Diametrical clearance of big end Bearing	Evaluative				
e)	e) Axial clearance of big end Bearing	Evaluative				
f)	f) Ring groove clearance	Evaluative				
g)	g) Thickness of clutch lining	-do-		Up to rivet head		
h)	h) Diametrical clearance of main bearings	-do-				
j)	j) Axial clearance of main bearings	-do-				

9. Safety Requirements:

a)	Provision of guards on moving parts	Evaluative	Yes			
b)	Location and direction of exhaust emission to be away from the operator	-do-	Yes			
c)	Covers on hot parts	-do-	Yes			
d)	Provision of headlights	Non-evaluative	Yes			

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10.	Literature (submission to test agency):						
	a)	Operator manual	evaluative	Provided			
	b)	Parts catalogue	evaluative	Provided			
	c)	Workshop/service manual	evaluative	Provided			
11.	Labelling of machine (provision of labelling plate):						
	a)	Name of manufacturer	evaluative	Metallic plate shall be welded/riveted permanently on the machine at place where it can be easily identified.			
	b)	Country of origin	evaluative				
	c)	Make	evaluative				
	d)	Model	evaluative				
	e)	Year of manufacture	evaluative				
	f)	Engine serial number	evaluative				
	g)	Chassis serial number	evaluative				
	h)	Size of machine	evaluative				
	j)	Maximum engine power, kW	evaluative				
	k)	Specific fuel consumption, g/kWh	evaluative				

Place:

Signature-----

Date:

Name of the applicant-----

Designation-----

Address-----

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