



MAHINDRA, B-275 DI MKM (Brand Name: Bhoomiputra) TRACTOR



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½df"kJ l gdfj rk , oa fdI ku dY; k.k foHkkx] e' khutdj .k , oa i kS] kfxdh i Hkkx½

GOVERNMENT OF INDIA

Ministry Of Agriculture and Farmers Welfare
(Deptt. of Agricultural, Cooperation & Farmer's Welfare, Mechanization & Technology Division)

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CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO 9001: 2015 Certified Institute)

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T- 1241/1768/2019	MAHINDRA, B-275 DI MKM (Brand Name: Bhoomiputra) TRACTOR Commercial (Supplementary)
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Manufacturer : M/s. Mahindra & Mahindra Limited
(Farm Equipment Sector)
Akurli Road, Kandivli (E)
Mumbai – 400 101

Month : May	Test Report No. T- 1241/1768/2019	Year: 2019
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Type of Test : **COMMERCIAL (Supplementary)**

Test code/Procedure : IS: 5994-1998 (Reaffirmed in 2014) and
IS: 12207-2014

Period of Test : March, 2018 to January, 2019

Test Report No. : **T- 1241/1768/2019**

Month/Year : **May, 2019**

- 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 pertain to the particular machine randomly selected from the production line by the representative of testing authority for tests.
- iii) The results presented in this report do not in any way attribute to the durability of the machine.
- iv) This report should not be reproduced in part or full without prior permission of the Director, Central Farm Machinery Training and Testing Institute, Budni (M.P.)
- v) This is a supplementary test report and, should be read in conjunction with the Test Report of base model i.e. **“MAHINDRA, B275 DI MKM (Brand Name: Bhoomiputra) TRACTOR”** bearing test report No. **T- 727/1234/2010 (July, 2010)**.

SELECTED CONVERSIONS

Sl. No	Units	Conversion Factor	A B B R E V I A T I O N S	
1.	Force:		Apa	As per applicant
	1 kgf	9.80665 N	TDC	Top Dead Centre
		2.20462 lbf	IS	Indian Standard
2.	Power:		LHS/RHS	Left Hand Side/ Right Hand Side
	1 mechanical horsepower	1.01387 metric horsepower	Hg	Mercury
		745.7 Metric horse power	Temp.	Temperature
	1 metric horsepower	735.5 W	N.R.	Not recorded
	1 kW	1.35962 metric horsepower	Rpm	Revolutions per minute
3.	Pressure:		O.D/I.D	Outer diameter/ Inner diameter
	1 psi	6.895 kPa	N.A.	Not available/ Not applicable
	1 kgf/cm ²	98.067 kPa = 735.56 mm of Hg	PTO	Power take-off
	1 bar	100 kPa = 10 N/cm ²	R.H.	Relative Humidity
	1 mm of Hg	1.3332 m-bar		

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1. SCOPE OF TEST

The “**MAHINDRA, B275 DI MKM (Brand Name: Bhoomiputra)**” tractor had undergone “Initial Commercial Test” at this Institute vide test report **No. T-727/1234/2010** was released in **July, 2010**. The firm has made following changes in the technical specification of tractor and had requested vide letter No. Nil dated 29.06.2017 for supplementary testing of “**MAHINDRA, B275 DI MKM (Brand Name: Bhoomiputra)**” tractor.

The applicant has informed that the last chassis cut off number of tractor model “**Mahindra B-275 DI MKM (Brand name: Bhoomiputra)**” generated on production line is RYBT00010 (April, 2014).

The major features of Base model and supplementary model are listed below:

S. No.	Parameters	Previous Sample (T-727/1234/2010 & July, 2010)	Present sample
1	2	3	4
1.	Tractor:		
	- Make	Mahindra	Mahindra
	- Model	B-275 DI MKM	B-275 DI MKM
2.	Fuel injectors:		
	Make	Bosch, India	Bosch, India
	Model/Group combination No.	F 002 C7Z 142	Not available
	Holder no.	F 002 C70 007	F 002 C70 007
	Nozzle no.	F 002 C40 673	DSLA144P1754
3.	Air intake system:		
	Pre-cleaner:		
	Make	Conel	PAI Automobile (apa)
	Air cleaner:		
	Make	Conel	PAI Automobile (apa)
	Size of paper filter element OD/ID/length, (mm)	125.2/84.2/115.8	130.0 / 85.6/115.0
4.	Exhaust System:		
	Position of silencer outlet with respect to SIP, (mm):		
	- Vertical	900	860
	- Longitudinal	1570	1565
	- Lateral	190 (on RHS)	175 (on RHS)
Range of exhaust gas pressure at maximum power, (kPa)	9.7 to 10.7	2.9 to 3.6	
5.	Cooling system:		
	Type	Forced circulation of coolant	
	Coolant as recommended	Lubzs	Mobile coolz
6.	Differential lock	Provided	Not provided
7.	Towing hitch (Rear):		
	Height above ground level, (mm):		
	- Maximum	540	700
	- Minimum	400	350
	No. of positions	04	14
Type of adjustment	By changing the position of hitch on its mounting bracket	By changing and reversing hitch and changing position on mounting bracket	

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1	2	3	4
8.	Make of steering	XLO INDIA	Rane
9.	Brake system:		
	- Make	TVS-Girling	Not available
	- Type	Mechanical, dry disc brake	Mechanical, oil immersed disc brake
	- No. of disc	02 (on each wheel side)	03 (on each wheel side)
	- Area of lining on each wheel side, (cm ²)	604.97 (on each wheel side)	715.68 (on each wheel side)
10.	Nominal Speed:		
	- Forward	2.79 to 28.30	2.79 to 28.18 (Variation from – 0.6 to +0.2)
	- Reverse	4.23 to 12.34	4.23 to 12.24 (Variation from -0.8 to 0.0)
11.	Capacity of liquids, (l):		
	- Bare radiator capacity	1.80	1.80
	- Capacity of expansion flask	0.90	0.80
	- Total coolant capacity	6.50	6.15
	- Total lub oil capacity	5.65	5.50
	- Transmission oil capacity	23.0 (Common with gear box, differential & rear axle)	35.0 (common with gear box, differential, rear axle, final drive, brake & hydraulic system)
	- Hydraulic oil capacity	10.0	35.0 (common with gear box, differential, rear axle, final drive, brake & hydraulic system)
12.	Lubricants:		
	Engine & Air cleaner oil	20W40	15W40
	Gear box, differential & rear axle	EP 90	MTRAC 30
	Hydraulic system	VG 100	MTRAC 30

Subsequent to the examination of the case in light of clause 3.2.4 (b), 6.1 & 6.2 of Indian Standard **IS: 12207-2014**, the following tests were considered to be carried out:-

- Specification Checking
- Nominal Speed
- Two-hour maximum PTO power performance test under natural ambient condition
- Brake Test

Manufacturer	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Akurli Road, Kandivli (E) MUMBAI – 400 101
Location of other manufacturing plants (apa)	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Akurli Road, Kandivli (E) MUMBAI – 400 101
	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Hingna Road, Hingna MIDC, NAGPUR- 440 016, (Maharashtra)
	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Agri Business Development Centre, Khatima Panipat Highway, Udham Singh Nagar, Vil- Lalpur, Tehsil-Kichha, RUDRAPUR-263153 (Uttanchal)
	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Agri Development Centre, Vil-Mehla Tehsil-Dudu Jaipur- Ajmer Road, JAIPUR-303 007 (Rajasthan)
	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Near Bidar “T” Junction , Mahindra Nagar, Zaheerabad- 502 220 Medak District (Telangana)
	Mahindra Research Valley-AS, Mahindra World City, Plot No. 41/1, Anjur P.O.: Chengalpattu- 603004 Kanchipuram- district (Tamil Nadu)
Test requested by (applicant)	: M/s. Mahindra & Mahindra Limited (Farm Equipment Sector) Akurli Road, Kandivli (E) Mumbai – 400 101
Test requested by (applicant)	: The manufacturer
Place of running-in	: At manufacturer’s works
Duration of said running-in, (h):	
- Engine	: 15
- Transmission	: 30
Method of Selection	: The test sample was selected randomly out of five tractors from the production line by the representative of testing authority.

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2. FUEL AND LUBRICANTS

2.1 Fuel : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.836 g/cc at 15°C was used.

2.2 Lubricants:

Sl. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine & Air cleaner oil	15W40	As recommended
2.	Gear box, differential & rear axle	MTRAC 30	Oil originally filled in the tractor was not changed
	Hydraulic system	MTRAC 30	-do-
4.	Steering system	SAE 140	--do--
4.	Grease	MP3 Lithium base	As recommended

3. ESSENTIAL TESTS

3.1. SPECIFICATIONS

		<u>Previous sample</u>	<u>Present sample</u>
3.1.1 Tractor:			
Make	: Mahindra		Mahindra
Model	: B-275 DI MKM		B275 DI MKM
Variants, if any	: None		None
Brand name	: Bhoomiputra		Bhoomiputra
Type	: Four-wheel, Rear-wheel driven, standard agricultural tractor		
Year of manufacture	: 2009		HH (November, 2017)
Chassis number	: RMLW00026		MBNAAADGLHRH000 24
Country of Origin	: INDIA		INDIA
3.1.2 Engine:			
Make	: Mahindra		
Model	: MDI 1895 3A		MDI 1895 3A
Type	: Four stroke, natural aspirated, water cooled, direct injection, diesel engine		
Serial number	: RMLW00026		RHH2DBN8574
Engine speed (Manufacturer's recommended production setting)(rpm) :			
- Maximum speed at no load	: 2075 to 2175		2075 to 2175
- Low idle speed	: 750 to 850		750 to 850
- Speed at maximum torque	: 1300 to 1500		1300 to 1500
Rated speed, (rpm):			
- For PTO use	: 1900		1900
- For drawbar use	: 1900		1900
3.1.3 Cylinder & Cylinder Head:			
Number	:		Three
Disposition	:		Vertical, Inline
Bore/stroke, (mm)	:		88.9/110 (apa)
Capacity as specified by the applicant, (cc)	:		2048
Compression ratio, (apa)	:		20.2 : 1
Type of cylinder head	:		Mono block
Type of cylinder liners	:		Wet, replaceable
Type of combustion chamber	:		Re-entrant bowl
Arrangement of valves	:		Overhead, Inline

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		<u>Previous sample</u>	<u>Present sample</u>
Valve clearance (cold/hot) :			
- Inlet valve, (mm)	:	0.40 / 0.30	
- Exhaust valve, (mm)	:	0.50 / 0.40	
3.1.4 Fuel System:			
Type of fuel feed system	:	Gravity and force feed	
3.1.4.1 Fuel tank:			
Capacity, (l)	:	49.0	47.3
Location	:	Above the clutch housing	
Provision for draining of sediments/ water	:	Not provided	Provided
Material of fuel tank	:	Metallic	
3.1.4.2 Water separator	:	Not provided	
3.1.4.3 Fuel feed pump:			
Make	:	Bosch, India	
Type	:	Plunger	
Model/Group combination No.	:	FP / KS 22AD 62, 9 440 030 029	FP / KSG 22AD 108, F 002 A50 040
Provision of sediment bowl	:	Provided (Metallic)	
Method of drive	:	Through camshaft of the fuel injection pump	
Location	:	Mounted on fuel injection pump	
3.1.4.4 Fuel filters:			
Make	:	Bosch, India	
Model/Group combination No.	:	F 002 H20 117	
Number	:	Two	
Type of element :			
- Primary	:	Cloth	
- Secondary	:	Paper	
Capacity of final stage filter, (l)	:	0.50	0.50
3.1.4.5 Fuel Injection pump:			
Make	:	Bosch, India	
Model/Group combination No.	:	E 040 236 200, F 002 A0Z 748	F 002 A0Z 748, PES3A85D320RS2000
Type	:	Inline, Plunger	
Serial number	:	992002	75848534
Method of drive	:	Through timing gears	
3.1.4.6 Fuel injectors:			
Make	:	Bosch, India	
Model/Group combination No.	:	F 002 C7Z 142	N.A.
Nozzle holder number	:	F 002 C70 007	F 002 C70 007
Nozzle number	:	F 002 C40 673	DSLA144P1754
Type	:	Multi hole (five holes)	
Manufacturer's production pressure setting, (Mpa)	:	25.0+0.8	
Injection timing	:	7.5 ± 1 degree before TDC	
Firing order	:	1 – 3 – 2	
3.1.4.7 Governor:			
Make	:	Bosch, India	
Model/Group combination No.	:	RSV400...950A5C1605R	
Type	:	Mechanical, centrifugal, variable speed	
Governed range of engine speed, (rpm)	:	750 to 2175	750 to 2175
Rated engine speed, (rpm)	:	1900	1900

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3.1.5	Air intake system:	<u>Previous sample</u>	<u>Present sample</u>
3.1.5.1	Pre-cleaner:		
	Make	: Conel	PAI Automobile (apa)
	Type	: Centrifugal, cyclonic	with transparent dust collector
	Location	: Above main air cleaner inlet tube,	outside the bonnet
3.1.5.2	Air cleaner:		
	Make	: Conel	PAI Automobile (apa)
	Type	: Combination of oil bath & dry type paper element	
	Location	: On RHS of engine,	under the bonnet
	Capacity, (l)	: 0.50	0.60
	Range of suction pressure at maximum power, (kPa)	: 2.5 to 2.7	2.4 to 2.5
	Type & number of element	: Paper, one	Paper, one
	Size of paper filter element OD/ID/length, (mm)	: 125.2/84.2/115.8	130.0 / 85.6/115.0
	Vacuum Indicator	: Not provided	Not provided
	Maintenance schedule	: i) Change oil after every 50 hours or earlier if required in arduous condition. ii) Change dry paper filter first after 50 hours and thereafter every 600 hours of operation.	
3.1.6	Exhaust System:		
	Type of silencer	: Updraft, (Cylindrical)	Updraft, (Cylindrical)
	Position of silencer outlet with respect to SIP, (mm):		
	- Vertical	: 900	860
	- Longitudinal	: 1570	1565
	- Lateral	: 190 (on RHS)	175 (on RHS)
	Range of exhaust gas pressure at maximum power, (kPa)	: 9.7 to 10.7	2.9 to 3.6
	Provision of spark arresting device	: None	
	Provision against entry of rain water	: A bend is provided at the top of silencer.	
3.1.7	Lubricating system:		
	Type	: Forced feed-cum-splash	
	Oil sump capacity,(l)	: 4.80	5.00
	Total lub oil capacity, (l)	: 5.65	5.50
	Oil change period	: First change after 250 hours and subsequently after every 250 hours of operation.	
	Cooling device, (if any)	: None	
3.1.7.1	Filters:		
	Make	: Popular (apa)	Mahindra
	Type	: Full flow, spin on, replaceable paper element	
	Number	: One	
3.1.7.2	Pump:		
	Make	: Mahindra (apa)	Precision Autowares (apa)
	Type	: Eccentric lobe, Internal gear	
	Method of drive	: Through cam shaft of engine	
	Pressure release setting,(kPa)	: 206.0 to 241.3	
	Minimum permissible pressure, (kPa)	: 100	
3.1.8	Cooling system:		
	Type	: Forced circulation of coolant	
	Coolant as recommended	: Lubzs	Mobile coolz
	Coolant water ratio	: 0.05:1	

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	<u>Previous sample</u>		<u>Present sample</u>
3.1.8.1 Details of Pump	: Centrifugal, semi-open impeller of 82.4 mm diameter having seven numbers of vanes, and driven through crankshaft pulley by a cogged 'V'-belt common to alternator.		
3.1.8.2 Details of fan	: Suction type having six numbers of polypropylene blades of 395 mm diameter and mounted on water pump shaft.		
Means of temperature control	:		Thermostat
Bare radiator capacity, (l)	:	1.80	1.80
Capacity of expansion flask, (l)	:	0.90	0.80
Total coolant capacity, (l)	:	6.50	6.15
Radiator cap pressure, (kPa)	:		88
3.1.9 Starting System:			
Type	:		12 V, DC, Electrical
Aid for cold starting	:		None
Any other device provided for easy starting	:		None
3.1.10 Electrical System:			
3.1.10.1 Battery:			
Make and model	:	Standard furukawa & 75D31LMF	Exide & 95D31 LMF
Number	:		One
Type	:		Lead Acid
Capacity and rating	:	12V,80 Ah at 20 hours discharge rate	
Location	:	On RHS of clutch housing in separate metallic box.	
3.1.10.2 Starter:			
Make	:		Autolek
Model	:	STM – 1105V	STMRV - 1105
Type	:	Pre-engaging, solenoid operated	
Power rating	:	12V & 1.9 kW	12V & Not provided
Serial number	:		Not available
3.1.10.3 Generator:			
Make	:	PMP	Autolek
Model	:	7006	ALT 4005H
Type	:		Alternator
Output rating	:	12.V, 35 Ampere	
Method of drive	:	Through water pump pulley by a cogged "V" belt.	
Serial number	:	009K8620	Not Available
3.1.10.4 Voltage regulator	:		In-built in alternator
3.1.10.5 Details of lights:			

Description	No. & capacity of bulbs	Height of the centre of beam above ground level,(mm)	Size of beam, (mm)	Distance between centre of the beam and outside edge of tractor at standard rear track setting, (mm)
1.	2.	3.	4.	5.
Previous sample:				
Front lights:				
- Head lights	2, 12V, 60/55W	990	145 ϕ	515
- Parking lights	2, 12V, 5W	1250	75 x 20	55
- Turn Indicators-cum-hazard light	2, 12V, 21W	1280	75 x 55	55

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1.	2.	3.	4.	5.
Rear lights:				
- Tail-cum-Parking lights	2, 12V, 5W	1240	75 x 65	30
-Brake light	2, 12V, 21W	1240	50 x 65	152
-turn-cum-hazard indicator	1, 12V, 55W	1240	50 x 65	25
-Plough light (on RHS mudguard)	1, 12V, 55W	1350	110 φ	340
- Reflectors (Red)	2	1240	50 x 65	30
-Registration plate light	Part of rear parking light			
Present sample:				
Front lights:				
- Head lights	2, 12V, 60/55W	1040	130 φ	480
- Parking lights	2, 12V, 5W	1290	40 x 60	145
- Turn Indicators-cum-hazard light	2, 12V, 21W	1290	75 x 60	95
Rear lights:				
-Stop light	2, 12V, 21W	1255	45 x 65	185
-parking light	2, 12V, 5W	1255	40 x 65	145
- Turn Indicators-cum-hazard light	2, 12V, 21W	1255	40 x 65	100
Reflectors (Red)	2	1255	40 x 60	145
-Registration plate light	In built in rear combination lamp assembly			
-Plough light	1, 12V, 55W	1360	110 φ	400

		<u>Previous sample</u>	<u>Present sample</u>
3.1.10.6	Main switch	: Key turn type, having three positions viz: OFF, Circuit ON and START	
3.1.10.7	Light switch	: Rotary type having five positions viz. i) OFF ii) Parking lights + Dash board lights iii) Head lights (short beam) + (ii) iv) Head lights (long beam) + (ii) v) Head light (short beam) only	: Rotary type having four positions viz. i) Off ii) Parking lights + Dash board lights iii) Head lights (short beam) + (ii) iv) Head lights (long beam) + (ii)
3.1.10.8	Horn:		
	Make	: Minda	
	Type	: 12V, 2B, Electromagnetically vibrated diaphragm	
	Location	: In front of radiator, under the bonnet	: Mounted on timing cover under bonnet
3.1.10.9	Fuse box	: Contains 06 number of fuses having following capacities:	

Capacity	5A	10A	15A	20A
Number	2	1	1	2

3.1.10.10 Details of other electrical accessories:

3.1.10.10.1 Flasher Unit:

Make	:	Interface
Capacity:		
- Turn signal	:	12V, 21W x 2 + 2W x 1
- Hazard signal	:	12V, 21W x 4 + 2W x 2
-Flashes/min.	:	85

3.1.10.10.2 **Slow moving triangle** : Provided
 3.1.10.10.3 **Safety device** : **Not provided**
 3.1.10.10.4 **Seven pin trailer socket** : Provided

	<u>Previous sample</u>	<u>Present sample</u>
3.1.11 Instrument panel details:		
i) Engine speed cum-cumulative run hour meter (0-25) x 100 rpm	Provided	Provided
ii) Lubricating oil pressure indicator	Provided	Provided
iii) Water temperature gauge (with colour zones)	Provided	Provided
iv) Fuel level gauge (with colour zones).	Provided	Provided
v) Main switch (key-turn type)	Provided	Provided
vi) Light switch (Rotary type)	Provided	Provided
vii) Hazard light switch	Provided	Provided
viii) Turn-cum-hazard indicator lights	Provided	Provided
ix) Battery charging warning indicator.	Provided	Provided
x) Head lamp (Long beam) 'ON' indicator light	Provided	Provided
xi) Plough light switch	Provided	Provided
xii) Parking brake light indicator	Provided	Provided
xiii) Turn indicator switch	Provided	Provided
xiv) Horn push button	Provided	Provided
xv) Fuel shut-off knob	Provided	Provided
xvi) Hand accelerator lever	Provided	Provided
xvii) Steering control wheel	Provided	Provided
xviii) Mobile charging socket	Provided	Provided
xiv) Rear view mirror	Provided	Provided

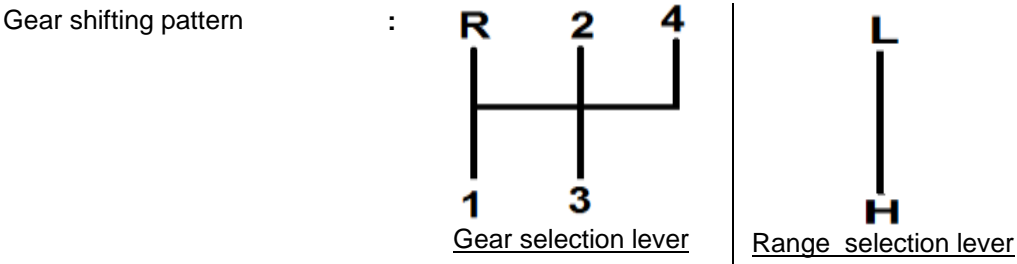
3.1.12 Transmission System:

	<u>Previous sample</u>	<u>Present sample</u>
3.1.12.1 Clutch :		
Make :	Valeo	
Type :	Single, dry friction plate, Diaphragm type	
No. of friction plate(s) :	One	
Size, OD/ID, (mm) :	280/170 φ	279.9/170.4 φ
Method of operation :	By pressing the foot pedal provided on LHS of operator's seat.	

3.1.12.2 Gear box:	
Make :	Mahindra
Model :	Combination of sliding and constant mesh gears.
Type :	Mechanical, Sliding mesh gears

No. of speeds:
 - Forward : 08
 - Reverse : 02

Location of gear shifting levers : Both levers are in front of operator's seat



Oil capacity, (l) : 23.0 (Common with differential & rear axle) | 35.0 (common with differential, rear axle, final drive, brake & hydraulic system)

Oil changing period : After every 1000 hours of operation

3.1.12.3 Differential unit:		<u>Previous sample</u>	<u>Present sample</u>
Type	:	Crown wheel & bevel pinion with differential unit, accommodated inside the differential housing.	
Reduction through crown wheel & bevel pinion	:	4.182:1 (46/11T)	
Oil capacity of final drive, (l)	:	23.0 (common with gearbox and rear axle.)	35.0 (common with gearbox, final drive, brake, rear axle & hydraulic system)
Oil changing period	:	After every 1000 hours of operation	
Differential lock	:	Provided	Not provided
Type	:	Dog clutch	--
Method of operation	:	By depressing the pedal provided on RHS of operator's seat	--
3.1.12.4 Rear axle & final drive:			
Type	:	Bull gear and pinion type final reduction unit accommodated inside the differential housing.	
Reduction through final drive	:	3.583:1 (43T/12T)	
Oil capacity of final drive, (l)	:	23.0 (Common with gearbox & differential)	35.0 (common with gearbox, differential, brake & hydraulic system)
Oil changing period	:	After every 1000 hours of operation	
3.1.13 Power lift (Hydraulic System) :			
- Make	:	Mahindra	
- Type	:	Open centre, live, ADDC	
- No. and type of cylinder	:	One ,single acting	
- Type of linkage lock for transport	:	Hydraulic, isolating valve in fully closed position act as transport lock.	
3.1.13.1 Hydraulic pump:			
- Make	:	Rexroth	
- Type	:	Gear	
- Location & drive	:	RHS of engine, through timing gears.	
No. & Type of filter(s)	:	Three	
		i) Wire mesh strainer at suction.	
		ii) Full flow spin on paper element type on LHS of engine.	
		iii) Orifice filter on distributor.	
Hydraulic oil capacity, (l)	:	10.0	35.0 (common with gearbox, differential, final drive, rear axle & brake system)
Oil change period	:	After every 1000 hours of operation.	
Provision for external tapping	:	Provided	
		<u>Previous sample</u>	<u>Present sample</u>
Details of control levers	:	i) Position control lever (Black)	
		ii) Draft control lever (Red)	
		iii) A knob on distributor for transport lock	
Method of draft sensing	:	Through top link	

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3.1.13.2 Three-point linkage:

S. No.	Observations		As per IS: 4468- (Part-1) -1997, (Reaffirmed in Oct., 2017) (Cat.I / Cat.II), (mm)	As measured (mm)		Remarks in case of present sample
				Previous sample	Present sample	
i.	Upper hitch points:					
	a)	Dia of hitch pin hole	19.30 to 19.50 / 25.70 to 25.90	25.83	25.88	Conforms to Cat. II
	b)	Width of ball	44.0 (max.) / 51.0 (max.)	50.90	50.60	Conforms to Cat. I & II
ii.	Lower hitch points:					
	a)	Dia of hitch pin hole	22.40 to 22.65 / 28.70 to 29.00	29.00	28.94	Conforms to Cat. II
	b)	Width of ball	34.8 to 35.0 / 44.8 to 45.0	45.0	44.8	Conforms to Cat. II
iii.	Lateral distance from lower hitch point to centre line of tractor.		359 / 435	435	364	Does not conform
iv.	Lateral movement of lower hitch points		100 (min) / 125 (min)	150	125	Conforms to Cat. I & II
v.	Distance from end of power take-off to centre of lower hitch point (lower links in horizontal position)		450 to 575 / 550 to 625	565	480	Conforms to Cat. I
vi.	Transport height		820 (min)/ 950 (min)	925	900	Conforms to Cat. I
vii.	Power range (without force)		560(min)/ 650 (min)	580	570	Conforms to Cat. I
viii.	Levelling adjustment		100 (min)/ 100 (min)	325	375	Conforms to Cat. I & II
ix.	Lower hitch point clearance		100 (min)/ 100 (min)	250	185	Conforms to Cat. I & II
x.	Lower hitch point height		200 (max)/ 200 (max)	200	200	Conforms to Cat. I & II

3.1.13.3 Drawbar:

3.1.13.3.1 Linkage Drawbar [Refer Fig. 1(B)]:

Notation	As per IS: 12953-1990 (Reaffirmed in Oct., 2017) (Cat. I) / (Cat. II), (mm)	As measured, (mm)		Remarks in case of present sample
		Previous sample	Present sample	
A	683 ± 1.5/825 ± 1.5	824.0	683.0	Conforms to Cat. I
B	75 (min)/75 (min)	75.0	75.0	Conforms to Cat. I & II
C	30 (min) / 30 (min)	31.8	35.4	Conforms to Cat. I & II
D∅	21.79 to 22.0/27.79 to 28.0	27.8	27.8	Conforms to Cat. II
E	39.0 (min)/49.0 (min)	52.2	54.0	Conforms to Cat. I & II
F∅	12.0 (min)/12.0 (min)	12.5	12.4	----do----
G	15.0 (min)/15.0 (min)	17.2	15.7	----do----
H∅	25 ± 1/25 ± 1	25.2	24.5	----do----
J	80 ± 1.5/80 ± 1.5	80.0	80.0	----do----
No. of holes	7/9	09	07	Conforms to Cat. I

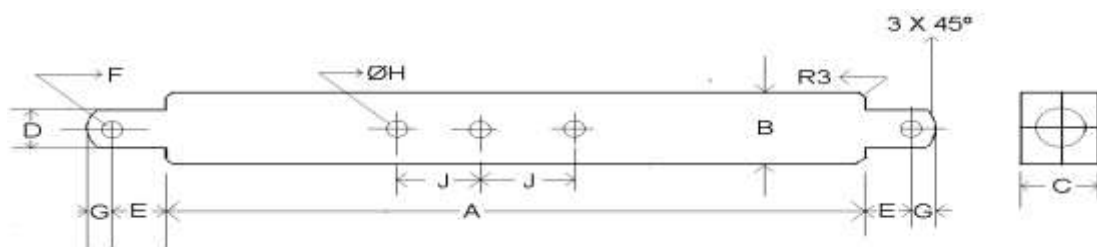


Fig. 1: **DIMENSIONAL NOTATIONS FOR LINKAGE DRAWBAR**

3.1.13.3.2	Swinging drawbar	:	Not provided
3.1.14	Power take-off shaft:		Previous sample Present sample
	Type	:	Type-I, Not independent
	Method of engaging	:	By a hand lever provided on LHS of operator's seat
	No. of shaft(s)	:	One
	PTO speed corresponding to rated engine speed, (rpm)	:	543
	Distance behind rear axle, (mm)	:	355
	Engine to PTO speed ratio	:	3.500: 1
	Weather the PTO shaft is capable of transmitting full power of the engine.	:	Yes
	Other speeds, if any	:	None

3.1.14.1 Specifications of Power Take-Off Shaft:

Specification	As per IS:4931-1995 (Type-I) (Reaffirmed in : 2014)	As observed		Remarks
		Previous sample	Present sample	
Nominal speed (rpm)	540 ± 10	540 rpm of pto shaft corresponding to 1890 rpm of engine		Conforms
No. of splines	6	06	06	Conforms
Direction of rotation	Clockwise	Clockwise	Clockwise	Conforms
Location	The position of the centre of the end of PTO shaft shall be within 50 mm to right or left of the centre line of the tractor	Centrally located	Centrally located	Conforms
Dimensions (mm) [See Fig. 2(A)]:				
DØ	34.79 ± 0.06	34.76	34.73	Conforms
dØ	28.91 ± 0.05	28.55	28.74	Does not conform
BØ	29.4 ± 0.1	29.43	29.30	Conforms
AØ (Optional)	8.3 ± 0.1	8.30	8.3	-do-
W	8.69 – 0.09/-0.16	8.58	8.6	-do-
A	7	8.5	7	-do-
b (Optional)	25 ± 0.5	25.5	25.5	-do-
C	38	38	38	-do-
X	30°	30°	30°	-do-
B	76 (min)	83	84	-do-
H	450 to 675	560	555	-do-

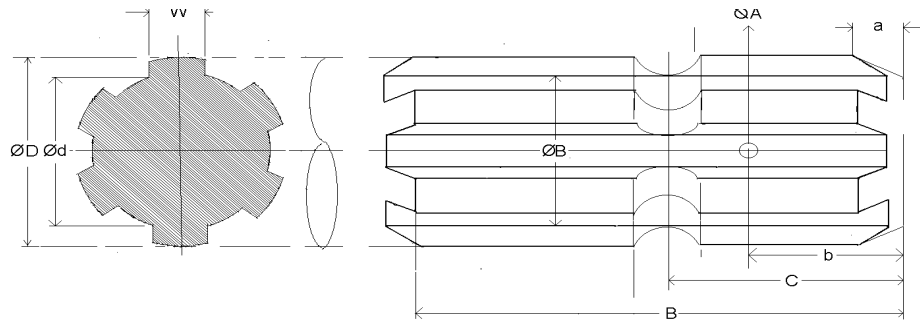


Fig. 2: DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT

	<u>Previous sample</u>	<u>Present sample</u>
3.1.14.2 Power Take-off Master Shield	:	Not provided
3.1.15 Towing hitch:		
3.1.15.1 Front	:	Not provided
3.1.15.2 Rear:		
Type	:	Clevis
Location	:	At the rear of transmission housing
Height above ground level, (mm):		
- Maximum	: 540	700
- Minimum	: 400	350
No. of position	: 04	14
- Type of adjustment	: By changing the position of hitch on its mounting bracket	By changing and reversing hitch and changing position on mounting bracket
Distance of hitch point, (mm):		
- From rear axle centre	: 525	460
- From power take-off shaft end	: 85	105
-Dia of pin hole, (mm)	: 28.6	32
Width of clevis, (mm)	: 75.0	80
3.1.16 Steering:		
Make	: XLO INDIA	Rane
Type	: Mechanical, worm & roller having single drop arm.	
Location	: Above the clutch housing	
Method of operation	: Manually through steering control wheel.	
Diameter of steering control wheel, (mm)	: 420	
Steering oil capacity, (l)	: 0.45	0.45
Lubricant change period	: Change after every 500 hours of operations.	
3.1.17 Brakes:		
3.1.17.1 Service Brake:		
Make	: TVS - Girlling	Not available
Type	: Mechanical, dry disc brake	
Location	: On differential half axle shaft, outside the differential housing.	
No. of disc (s)	: Two (on each wheel side)	Three (on each wheel side)
Area of liners. (cm ²)	: 604.97 (on each wheel side)	715.68 (on each wheel side)
Material of liners	: Non asbestos, (apa)	
Method of operation	: Manual, Individual or combined pedal operation by right foot.	

3.1.17.2	Parking Brake:		Previous sample		Present sample
	Type	:	Toggle link locking mechanism		
	Method of operation	:	Service brake act as a parking brake when locked in position by a hand lever provided on RHS of the operators seat.		
3.1.18	Wheel Equipment:				
3.1.18.1	Steered Wheel(s):				
	Make	:	MRF, Shakti		Apollo, Krishak
	Number	:	Two		
	Type of tyre	:	Pneumatic, ribbed		
	Size	:	6.00-16		
	Ply rating	:	8		
	Maximum permissible loading capacity of each tyre at 250 kPa pressure, (kgf)	:	406 (apa)		
	Recommended inflation pressure, (kPa):				
	- for field work	:	167		
	- for transport	:	196		
	Track width, (mm)	:	1220 (std.) & 1420		1240 (std.) & 1450
	Method of changing track width	:	By reversing the wheel discs		
	Make & size of rim	:	WIL & 4.5 E x 16		SSWL & 4.5 E x 16
3.1.18.2	Driving wheel (s):				
	Make	:	MRF, Shakti		Good year
	Number	:	Two		
	Type of tyre	:	Pneumatic, traction		
	Size	:	12.4 – 28		
	Ply rating	:	12		
	Maximum permissible loading capacity of each tyre at 150 kPa pressure, (kgf)	:	1148		
	Recommended inflation pressure, (kPa):				
	- for field work	:	118		
	- for transport	:	137		
	Track width, (mm)	:	1360 (std), 1440,		1350 (std.), 1450, 1550, 1580, 1680, 1780 & 1900
	Method of changing track width	:	By reversing the wheel disc and by changing position of wheel disc on offset rim lugs.		
	Make & size of rim	:	WIL & W11 x 28		
3.1.18.3	Wheel base, (mm)	:	1875		1870
	Method of changing wheel base, if any	:	None		
3.1.19	Operator's seat:				
	Make	:	Polar (apa)		Not available
	Type	:	Cushioned with back rest		
	Type of suspension	:	Two helical coil springs		
	Type of dampening	:	Hydraulic shock absorber		
	Range of adjustment, (mm):				
	- Vertical	:	Nil		
	- Lateral	:	Nil		
	- Longitudinal	:	± 92		± 130

- 3.1.20 Provision for safety and comfort of operator in case previous & present sample**
- 3.1.20.1 Conformity with IS: 12343-1998 (Reaffirmed in 2014):**
All parameters meets the minimum requirements of IS: 12343-1998, (Re-affirmed in 2014), **except the following:**
- | <u>Previous sample</u> | <u>Present sample</u> |
|--|--|
| i) Width of seat. | i) Width & length of seat. |
| ii) Longitudinal distance from SIP to center line of steering control wheel. | ii) Longitudinal distance from SIP to center line of steering control wheel. |
- 3.1.20.2 Conformity with IS: 6283 (Part-1) – 2006 (Re-affirmed in 2014) & IS: 6283 (Part-2) – 2007 (Re-affirmed in 2014) :**
Controls are identifiable with symbols as per IS: 6283 (Part-1) – 2006 (Re-affirmed in 2014) & IS: 6283 (Part-2) – 2007 (Re-affirmed in 2014), **except the following:**
- | | |
|--|---|
| i) Oil lubricant, type & frequency. | i) Grease and oil lubricant, type & frequency |
| ii) Power take-off (ON-OFF) lever. | -- |
| iii) Horn | -- |
| iv) Colour code for engine revolution guage. | -- |
- 3.1.20.3 Conformity with IS:8133-1983 (Re-affirmed in 2014), except the following:**
Location and movement of various controls meets the requirement of IS:8133-1983 (Re-affirmed in 2014), **except the following:**
- | | |
|---|--|
| i) Safety against the accidental start of tractor was not provided. | i) Safety against the accidental start of tractor is not provided. |
| ii) Indication for power take-off engaged position not marked. | ii) Fuel shut-off lever does not remain in stop position. |
| -- | iii) Differential lock has not been provided. |
- 3.1.20.4 Conformity with IS: 12239 (Part-1)-1996 (Re-affirmed in October, 2017):**
Meets the requirements of IS: 12239 (Part-1)-1996 (Re-affirmed in October, 2017), **except the following:**
- | | |
|--|---|
| i) Provision of spark arresting device in the exhaust system. | i) Provision of spark arresting device in the exhaust system. |
| ii) Vertical retainness was not provided on both side of clutch pedal. | ii) -- |
| iii) -- | iii) Width of step |
- 3.1.20.5 Conformity with IS:12239 (Part-2)-1999 (Re-affirmed in October, 2017):**
Meets the requirements of IS: 12239 (Part-2)-1999, except the following,
- | | |
|---|--|
| i) PTO master shield has not been provided. | i) PTO master shield has not been provided. |
| ii) Working clearance between draft control lever & mud guard has not been provided. | ii) Working clearance between draft control lever & mud guard has not been provided. |
| iii) Minimum Cautionary notice as per clause 11.2 of above referred standard has not been provided. | iii) The drive wheels are not guarded fully. |
- 3.1.20.6 Conformity with IS:10703 -1992 (Re-affirmed in 2001):**
Meets the requirements of IS: 10703 -1992 (Re-affirmed in 2001)
- 3.1.20.7 Conformity with IS: 14683 – 1999 (Re-affirmed in 2014) :**
All lighting requirements conform to IS: 14683-1999.
- 3.1.20.8 Rear view mirror:**
Rear view mirror has been provided
- 3.1.20.9 Slow moving emblem:**
Slow moving emblem has been provided.

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3.1.21 Labelling of tractor as per IS: 10273-1987 (Reaffirmed in 2014):

Location of labelling plate:-The labelling plate is riveted on inner side of LHS of mudguard provides the following information:

Name of Manufacturer	: MAHINDRA & MAHINDRA LTD. FARM EQUIPMENT SECTOR (INDIA)
Make	: Mahindra
Model	: B 275 DI MKM
Year of manufacture	: HH
Engine Serial Number	: RHH2DBN8574
Chassis Serial Number	: MBNAAADGLHRH00024
Maximum PTO Power, Kw(hp)	: 24.3 (32.5)
Specific fuel consumption, g/kWh	: 238

3.1.22 Mass of tractor with standard ballast, (kg):	<u>Previous sample</u>	<u>Present sample</u>
- Front	720	730
- Rear	1110	1040
- Total	1830	1770

3.1.23 Over all dimensions, (mm):	<u>Previous sample</u>	<u>Present sample</u>
- Length	3290	3255
- Width	1675	1680
- Height (with exhaust pipe)	2200	2195
Minimum ground clearance, (mm)	315	315
	(Below front axle ballast weight)	(Below front axle ballast weight)

3.1.24 Number of external lubricating points:	<u>Previous sample</u>	<u>Present sample</u>
- Oiling	:	Nil
- Grease cups	:	02
- Grease nipples	:	17

3.1.25 Colour of tractor:	<u>Previous sample</u>	<u>Present sample</u>
Chassis & engine	:	Red
Bonnet	:	Red
Mudguard	:	Red
Wheel discs & rims	:	Red

3.2 NOMINAL SPEED TEST

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when fitted with 12.4-28 size tyres of 590 mm radius index, (kmph)	Nominal speed at rated engine speed when fitted with 12.4-28 size tyres of 590 mm radius index, (kmph)	Variation in nominal speed (%) In case of present sample
		<u>Previous sample</u>	<u>Present sample</u>	<u>Previous sample</u>	<u>Present sample</u>	
Forward	L1	151.63	151.60	2.79	2.79	0.0
	L2	88.76	88.82	4.76	4.75	-0.2
	L3	61.46	61.46	6.88	6.89	+0.2
	L4	43.39	43.58	9.74	9.72	-0.2
	H1	51.98	52.21	8.13	8.08	-0.6
	H2	30.43	30.58	13.89	13.82	-0.5
	H3	21.07	21.20	20.06	19.95	-0.6
	H4	14.93	15.00	28.30	28.18	-0.4
Reverse	LR	100.01	99.99	4.23	4.23	0.0
	HR	34.25	34.53	12.34	12.24	-0.8

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3.3 PTO PERFORMANCE TEST

Date(s) of test : 04.04.2018
 Tractor run at the Institute prior to start of PTO test (h) : 5.46
 Type of dynamometer bench : SAJ AG-250 Eddy current

3.1 Maximum power two hours test under natural ambient condition was conducted. The results of Power take-off performance test under natural ambient & high ambient of **Previous & Present sample** are tabulated in **Table-2**.

Table-1

	Power, (kW)	Speed, (rpm)		Fuel Consumption			Specific energy, (kWh/l)
		PTO	Engine	(l/h)	(kg/h)	(kg/kWh)	
a) Maximum power – 2 hours test (under natural ambient condition):							
Previous sample	24.2	557	1950	6.78	5.67	0.234	3.57
Present sample	23.9	543	1901	7.22	6.02	0.252	3.31
b) Power at rated engine speed (1900 rpm):							
Previous sample	24.1	543	1900	6.77	5.66	0.235	3.56
Present sample	23.9	543	1901	7.22	6.02	0.252	3.31

	<u>Previous sample</u>		<u>Present sample</u>
	<u>Natural ambient</u>	<u>High ambient</u>	<u>Natural ambient</u>
-No load maximum engine speed, (rpm) :	2118	2118	2100
-Equivalent crankshaft torque at maximum power, (Nm) :	118.6	112.3	120.1
-Maximum equivalent crankshaft torque, (Nm) :	131.5	126.0	--
-Engine speed at maximum Equivalent crankshaft torque, (rpm) :	1400	1449	--
- Backup torque, (%) :	10.9	12.2	
Smoke level , maximum light absorption coefficient (per meter) :	0.80	--	--
Range of atmospheric conditions:			
- Temperature, (deg. C) :	25 to 28	41 to 45	43 to 44
- Pressure, (kPa) :	99.3 to 99.6	100.0 to 100.4	99.3
- Relative humidity, (%) :	34 to 39	16 to 20	20 to 21
Maximum temperatures (°C):			
-Engine oil :	82	96	94
-Coolant :	91	105	92
-Fuel :	47	60	54
-Air intake :	37	53	64
-Exhaust gas :	612	615	628

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Pressure at maximum power:	<u>Previous sample</u>	<u>Present sample</u>
- Intake air, (kPa) :	2.5 to 2.7	2.6 to 2.7
- Exhaust gas,(kPa) :	9.7 to 10.7	12.8 to 13.5
		2.5 to 2.9
		2.4 to 3.1

Consumptions:

- Lub. Oil, (g/kWh) :	--	1.09	--
- Coolant , (% of total coolant capacity) :	--	1.15	--

4. OTHER APPLICABLE TESTS

4.1 BRAKE TEST

4.1.1 Service brake:

4.1.1.1 Cold brake test:

Date of test	: 02.05.2018 & 28.12.2018
Type of track	: Concrete
Maximum attainable speed (kmph):	
- With standard ballasted	: 31.2
- With road ballasted	: 31.2

		At Maximum attainable speed (kmph)			
Standard ballasted Tractor	Braking device control force, (N)	501	398	296	193
	Mean deceleration, (m/sec ²)	3.42	3.18	2.91	2.50
	Stopping distance, (m)	10.87	11.82	12.91	15.02
With road ballasted Tractor	Braking device control force, (N)	483	389	295	202
	Mean deceleration, (m/sec ²)	3.40	3.14	2.88	2.50
	Stopping distance, (m)	11.06	11.97	13.05	15.02
		At 25 kmph travel speed			
Standard ballasted Tractor	Braking device control force, (N)	497	393	289	185
	Mean deceleration, (m/sec ²)	3.29	3.12	2.94	2.50
	Stopping distance, (m)	7.57	7.74	8.21	9.65
With road ballasted Tractor	Braking device control force, (N)	474	381	288	194
	Mean deceleration, (m/sec ²)	3.21	3.05	2.94	2.50
	Stopping distance, (m)	7.68	7.90	8.19	9.65

4.1.1.2 Brake fade test:

		At Maximum attainable speed (kmph)			
With road Ballasted Tractor	Braking device control force,(N)	453	373	293	213
	Mean deceleration, (m/sec ²)	3.31	3.03	2.81	2.50
	Stopping distance, (m)	11.23	12.40	13.38	15.02
		At 25 kmph travel speed			
With road Ballasted Tractor	Braking device control force, (N)	508	408	307	206
	Mean deceleration, (m/sec ²)	3.12	3.01	2.87	2.50
	Stopping distance, (m)	7.74	8.00	8.40	9.65

Max. deviation of tractor from its original course, (m) : **None**

Abnormal vibration : **None**

The brakes were heated by : **Self-braking**

4.1.2 Parking brake test:

Particulars	Parked on 18 percent slope		12 percent slope with trailer mass of 1.77 tonnes.	
	Facing Up	Facing Down	Facing Up	Facing Down
Braking device control force, (N)	205	220	120	150
Efficacy of parking brake	----- Effective -----			

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5. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustment/Defect/Breakdown and Repairs	Tractor run hours
	-----None-----	

6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 Evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of **IS: 12207-2014 for acceptance of the tractor for the purpose of subsidies/NABARD financing** for the applicable features for this tractor model.

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207- 2014	Values declared by the applicant/ requirement		As observed		Whether present model meets the requirem ents (Yes/No.)
				Previous sample	Present sample	Previous sample	Present sample	
1	2	3	4	5 a	5 b	6 a	6 b	7
6.1.1	PTO Performance :							
a)	Maximum power under 2 hours test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26 kW. - 7.5/+10% for PTO power ≤ 26 Kw or -5 / +10% for Engine power >26 kW. - 7.5/+10% for Engine power ≤ 26 kW	24.27 (D)	24.27 (D)	24.2	23.9	Yes
b)	Power at rated engine speed, (kW)	Non-Evaluative	-do-	24.27 (D)	24.27 (D)	24.1	23.9	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non-Evaluative	+ 5%	238 (D)	238 (D)	234	252	No
6.1.2	Brake performance at 25 kmph :							
a)	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 (R)	10 (R)	7.20	7.68	Yes	
	2) Hot brake	Evaluative	10 (R)	10 (R)	7.90	7.74	Yes	
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600 (R)	600 (R)	305 to 350	194 to 206	Yes	
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever	Evaluative	Yes/No	Yes	Yes	Yes	Yes	Yes

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1	2	3	4	5 a	5 b	6 a	6 b	7
6.1.3	Labelling of tractors (Provision of labeling plate):							
	1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	-	-	Mahindra	Yes
	2)	Model	Evaluative		-	-	B 275 DI MKM	Yes
	3)	Year of manufacture	Evaluative		-	-	HH (November, 2017)	Yes
	4)	Engine number	Evaluative		-	-	RHH2DBN8574	Yes
	5)	Chassis number	Evaluative		-	-	MBNAAADGLH RH00024	Yes
	6)	Declaration of PTO power, (kW)	Evaluative		-	-	24.3 (32.5)	Yes
	7)	Specific fuel consumption , g/kWh	Evaluative		-	-	238	Yes
6.1.4	Literature (Submission to test agency):							
	(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

6.2	Conformity with following IS:	Previous sample	Present sample
i)	Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors [IS10273: 1987 (Reaffirmed 2014)]	Conformed	Conforms
ii)	Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 [IS:4931-1995 (Reaffirmed 2014)]	Did not conform	Does not conform
iii)	Agricultural wheeled tractors - Three-point linkage: Part 2 Category 1N (Narrow Hitch) [IS 4468 (Part-2):1993/ ISO 730-2:1979 (Reaffirmed 2014)]	Conformed	Does not conform
iv)	Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed 2007)]	Conformed	Conforms
v)	Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (Reaffirmed 2014)]	Did not Conform	Does not conform
vi)	Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements: [IS 12239 (PT-1) 1996/ISO 4254-1:1989 (Reaffirmed Oct., 2017)]	Did not Conform	Does not conform
vii)	Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (IS 12239 (PT-2) 1999) (Reaffirmed 2014)]	Did not conform	Does not conform

Previous sample | Present sample

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ix)	Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays Part 2 Symbols for agricultural tractors and machinery [IS:6283 (Part-1)- 2006 and IS: 6283 (Part-2)-2007 (Reaffirmed 2014)]	: Did not conform	Does not conform
x)	Agricultural Tractors and Machinery - Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed 2014)]	: Conformed	Conforms

6.3 Salient Observations:

6.3.1 Laboratory tests:

6.3.1.1 PTO Performance:

- i) The maximum power was recorded as **24.2 & 23.9 kW** in case of previous & present sample respectively against the declaration of **24.3 kW**, which meets the requirement of IS: 12207-2014 with regard to tolerance.
- ii) The specific fuel consumption corresponding to maximum power in case of previous and present sample was measured as **234 & 252 g/kWh** respectively against the declaration of **238 g/kWh**, which does not meet the requirement of IS: 12207-2014 with regard to tolerance. This should be looked into.

6.3.1.2 Three point linkage:

- i) The lateral distance from lower hitch point to centre line of tractor does not meet the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action.
- ii) Some of the parameters conform to Cat. I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

6.3.1.3 Power take off Shaft:

The dimension “dφ” of Power Take-Off Shaft does not meet the requirements of IS: 4931-1995. This should be looked into for necessary corrective action.

6.3.1.4 PTO Master shield:

PTO master shield has not provided on tractor as per the requirements of IS: 4931-1995. This should be looked into.

6.3.1.5 Operator’s work place:

Operator’s work place meets the requirements of IS: 12239 (part-I) 1996 (Reaffirmed in 2014), except the, width of step, working clearance around the draft control lever & mudguard and provision of spark arresting device in the exhaust system.

6.3.1.6 Location and operation of Controls:

Location and movement of various controls meets the requirement of IS: 8133-1983 (Re-affirmed in 2014), except the following:

- i) Safety switch while starting the engine is not provided.
- ii) Control for stop the engine is provided but it does not remain in the stop position without application of sustained manual effort.
- iii) Differential lock is not provided.

6.4 Maintenance / Service problems:

No noticeable maintenance or service problems, observed during the test.

6.5 Recommendation with regard to safety on tractor:

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The following requirements, inter alia, may be considered for incorporation on the tractor as per relevant Indian Standards:

- i) There should be provision for spark arresting device in exhaust system.
- ii) The fuel shut-off knob should remain in stop position.
- iii) The working clearance between the draft control lever and mudguard should be provided as per IS: 12239 (Part-2) – 1999.
- iv) PTO shaft master shield should be provided to avoid the accident.
- v) The lateral distance from lower hitch point to center line of tractor should be provided as per the requirement of relevant Indian Standard.
- vi) Provision of differential lock in tractor.
- vii) The drive wheels should be fully guarded.

6.6 Adequacy of Literature supplied with machine:

6.6.1 The following literatures were supplied with the test tractor for reference during the test:-

- a) Operator's manual for Mahindra B275 DI MKM (Bhoomiputra) tractor.
- b) Parts catalogue for Mahindra B275 DI MKM (Bhoomiputra) tractor.
- c) Service manual for Mahindra B275 DI MKM (Bhoomiputra) tractor.

6.6.2 The supplied literature was found adequate; however, these literatures should be brought out in national as well as other regional languages of India for guidance of users.

7. 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	10 Months (March, 2018 to January, 2019)	Yes	--

TESTING AUTHORITY:



PRAMOD YADAV
AGRICULTURAL ENGINEER



C.V. CHIMOTE
TEST ENGINEER



J.J.R. NARWARE
DIRECTOR

This test report is compiled by **Shri. Shivkumar Sharma**, Senior Tech. Assistant

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8. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
8.1	6.3.1.2 (i & ii), 6.3.1.3, 6.3.1.4, 6.3.1.5, 6.3.1.6 & 6.5 (ii, iii, iv, v, vi & vii)	These being studied & corrective action would be taken in near future.

ANNEXURE-I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	<u>HOURS</u>
1.	Running - in	---
2.	PTO Performance Test	5.0
3.	Theoretical Speed Test	1.4
4.	Brake Test	1.5
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	--
	TOTAL:	7.9