



**SONALIKA, DI-35 HDM (BRAND NAME:RX) 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)

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T-1240/1767/2019

SONALIKA, DI-35 HDM (BRAND NAME: RX) TRACTOR -  
Commercial (Supplementary)

**Manufacturer** : M/s. International Tractors Limited,  
Vill. Chak Gujran, P.O. Piplanwala,  
Jalandhar Road,  
HOSHIARPUR- 146 022 (Punjab)

**Month: May**

**Test Report No. T-1240/1767/2019**

**Year : 2019**



**GOVERNMENT OF INDIA**  
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<b>T-1240/1767/2019</b>	<b>SONALIKA, DI-35 HDM (BRAND NAME: RX) TRACTOR - Commercial (Supplementary)</b>
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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 : October, 2018 to January, 2019

Test Report No. : **T- 1240/1767/2019**

Month/Year : **May, 2019**

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- 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 submitted by the applicant for test.
  - 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. **“SONALIKA, DI-35 HDM (BRAND NAME: RX) TRACTOR”** bearing No.**T-1089/1614/2017** released on **May, 2017**.
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Sl. No	Units	Conversion Factor
<b>1.</b>	<b>Force:</b>	
	1 kgf	9.80665 N 2.20462 lbf
<b>2.</b>	<b>Power:</b>	
	1 Mechanical power	1.01387metric horse power 745.7 W
	1 Metric horse power	735.5 W
	1 kW	1.35962 Metric horse power
<b>3.</b>	<b>Pressure:</b>	
	1 psi	6.895 kPa
	1 kgf/cm <sup>2</sup>	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm <sup>2</sup>
	1 mm of Hg	1.3332 m-bar

<b>ABBREVIATIONS</b>	
Apa	As per applicant
TDC	Top Dead Centre
IS	Indian Standard
LHS/RHS	Left Hand Side/ Right Hand Side
Hg	Mercury
Temp.	Temperature
N.R.	Not recorded
Rpm	Revolutions per minute
O.D/I.D	Outer diameter/ Inner diameter
N.A.	Not available/ Not applicable
PTO	Power take-off
R.H.	Relative Humidity

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### 1. SCOPE OF TEST

The “**SONALIKA, DI-35 HDM**” tractor had undergone “Initial Commercial Test” at this Institute vide test report No. **T-1089/1614/2017** was released on **May, 2017**. The firm has made the following changes in the technical specifications of tractor and had requested vide letter No. R&D/F-18/19/Supplementary/DI-35 HDM, dated: 08/11/2017, for **Supplementary** testing of “**SONALIKA DI-35 HDM**” tractor.

The applicant informed that the last chassis cut off number of tractor model “**SONALIKA, DI-35 HDM**” and engine model number “**3100FLU**” generated on production line is **JYAS764666S3** and **3100FLU83H755413F1** respectively.

The major features of Base model and Supplementary model are listed below :-

S. No.	Parameters	Previous Sample (T-1089/1614/2017 May, 2017)	Present Sample
1.	<b>Tractor:</b>		
	Make	Sonalika	Sonalika
	Model	DI-35 HDM	DI-35 HDM
2.	Model group combination number of fuel injection pump	EA40302800	F002A3ZF19, PES3A90D320RS3500
3.	Model group combination number of governor	E042 247 400	RSV350...900A1C1821R
4.	Speed reduction through rear final drive	4.583 : 1 (55/12T)	4.154 : 1 (54/13T)
5.	<b>Power take-off shaft:</b>		
	PTO speed corresponding to rated engine speed, (rpm)	621	579
	Engine to PTO speed ratio	2.898:1	3.111:1
6.	Declared maximum PTO power under two hour test, kW	24.6	26.0
7.	Declared maximum power at rated engine speed, kW	24.6	26.0
8.	Declared specific fuel consumption corresponding to maximum power, (g/kWh)	238	250
9.	Declared maximum equivalent crankshaft torque, Nm	145.2	167
10.	Type of silencer	Updraft, (Elliptical)	Updraft, (Cylindrical)

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
- Visibility test

T-1240/1767/2019	<b>SONALIKA, DI-35 HDM (BRAND NAME: RX) TRACTOR - Commercial (Supplementary)</b>
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Manufacturer : **M/s. International Tractors Limited**  
**Village – Chak Gurjan, P.O. Piplanwala,**  
**Jalandhar Road, Hoshiarpur-146 022 (Punjab)**

Location of other manufacturing plants (apa) : **M/s. International Tractors Limited**  
**Village – Chak Gurjan, P.O. Piplanwala,**  
**Jalandhar Road, Hoshiarpur-146 022 (Punjab)**

**Test requested by (applicant)** : The manufacturer  
Selected for test by : Applicant  
Place of running-in : At manufacturer's works

Duration of said running-in, (h):  
- Engine : 20  
- Transmission : 20

**Method of Selection** : The tractor was submitted directly by the applicant for test. Hence method of selection is not known.

## 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:

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine	SAE 20W40	As recommended
2.	Transmission , Hydraulic system	SAE-EP-80	Oil originally filled in the tractor was not changed
3.	Grease	Multipurpose grease	--do--

## 3. ESSENTIAL TESTS

### 3.1. SPECIFICATIONS

	<u>Previous sample</u>	<u>Present sample</u>
<b>3.1.1 Tractor:</b>		
Make	:	Sonalika
Model	:	DI-35 HDM
Brand name	:	RX
Type	:	Four wheeled, rear wheel driven, general purpose agricultural tractor.
Year of manufacture	:	UE (July, 2015)   GJ (August, 2018)
Chassis Serial number	:	EYASU509437S3   JYASG764937S3
Country of Origin	:	India
<b>3.1.2 Engine:</b>		
Make	:	Sonalika
Model	:	3100FLU (apa)   3100FLU (apa)
Type	:	Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.
Serial number	:	3100FLU536501562F18   3100FLU83H756840F18
<b>Engine speed (Manufacturer's recommended production setting)(rpm) :</b>		
- Maximum speed at no load	:	1900 to 2000
- Low idle speed	:	700 to 800
- Speed at maximum torque	:	1000 to 1200

		<u>Previous sample</u>		<u>Present sample</u>
<b>Rated speed, (rpm):</b>				
- For PTO use	:			1800
- For drawbar use	:			1800
<b>3.1.3 Cylinder &amp; Cylinder Head:</b>				
Number	:			Three
Disposition	:			Vertical, inline
Bore/stroke, (mm)	:			100.0 / 118.0
Capacity as specified by the applicant, (cc)	:			2780
Compression ratio, (apa)	:			18.2 (±0.2) :1
Type of cylinder head	:			Individual, Inline
Type of cylinder liners	:			Wet, replaceable
Type of combustion chamber	:			Re-entrant cavity on piston crown
Arrangement of valves	:			Overhead, inline
<b>Valve clearance (cold/Hot):</b>				
- Inlet valve, (mm)	:			0.30 / 0.30
- Exhaust valve, (mm)	:			0.40 / 0.40
<b>3.1.4 Fuel System:</b>				
Type of fuel feed system	:			Gravity and force feed
<b>3.1.4.1 Fuel tank:</b>				
Capacity, (l)	:	54.0		52.80
Location	:			Above clutch housing.
Provision for draining of sediments/ water	:			Provided
Material of fuel tank	:			Metallic
<b>3.1.4.2 Water separator:</b>				
Make	:			Hilux
Type	:			Gravity separation, inverted funnel
Location	:			On LHS of engine, between fuel tank and fuel feed pump.
Capacity, (l)	:	0.55		0.40
<b>3.1.4.3 Fuel feed pump:</b>				
Make	:			Bosch, India
Type	:			Plunger
Model/Group combination No.	:	FP/KSG 22AD 105, F002A50040		FP/KSG 22AD 105, F002A50040
Provision of sediment bowl	:			Provided (Metallic)
Method of drive	:			Through camshaft of fuel injection pump
<b>3.1.4.4 Fuel filters:</b>				
Make	:			Bosch, India
Model/Group combination No.	:			F002H20109
Number	:			Two
-Primary	:			Cloth
-Secondary	:			Paper
Capacity of final stage filter, (l)	:	0.45		0.50
<b>3.1.4.5 Fuel Injection pump:</b>				
Make	:			Bosch, India
Model/Group combination No.	:	EA40302800		F002 A3Z F19, PES 3A 90D 320RS 3500
Type	:			Inline, Plunger
Serial number	:	55400562		85538605
Method of drive	:			Through timing gears
<b>3.1.4.6 Fuel injectors:</b>				
Make	:			Bosch, India
Holder no.	:	F002C70552		F002C70552
Nozzle no.	:	DSL A148P1549		DSL A148P1549

		<u>Previous sample</u>	<u>Present sample</u>
Type	:	Multihole (Five holes)	
Manufacturer's production pressure setting, (MPa)	:	25.0 ± 8	
Injection timing	:	12 ± 2 degree before TDC	
Firing order	:	1 - 3 - 2	
<b>3.1.4.7 Governor:</b>			
Make	:	Bosch, India	
Model/Group combination No.	:	E042247400	RSV350...900A1C 1821R
Type	:	Mechanical, centrifugal, variable speed	
Rated engine speed, (rpm)	:	1800	
Governed range of engine speed (rpm)	:	700 to 2000	
<b>3.1.5 Air Intake system:</b>			
<b>3.1.5.1 Pre-cleaner</b>	:	<b>Not provided</b>	
<b>3.1.5.2 Air cleaner:</b>			
Make	:	Donaldson	Luman
Type	:	Dry	
Location	:	In front of radiator under the bonnet	
Range of suction pressure at maximum power, (kPa)	:	3.7 to 3.9	4.2 to 6.6
<b>Detail of element:</b>			
		<b>Primary</b>	<b>Secondary</b>
-Size (OD/ID), mm	:	127.3/85.4	83.1/66.5
-Length, mm	:	310	300
-No. of elements	:	One	One
-Type	:	Paper element	Paper element
Provision of vacuume indicator	:	Provided on dashboard	
Provision of dust unloading valve	:	Provided	
Oil change period/ Maintenance schedule	:	i) Clean filter when clogging indicator glows. ii) Replace element after every 500 hrs.	Clean after 300 hours or when clog indicator glows Replace the element after 3 cleaning or 900 hours which one first.
<b>3.1.6 Exhaust System:</b>			
Type of silencer	:	Updraft (Elliptical)	Updraft (Cylindrical)
Position of silencer outlet with respect to SIP, (mm):			
- Vertical	:	890	895
- Longitudinal	:	1390	1415
- Lateral	:	570 (on RHS)	450 (on RHS)
Range of exhaust gas pressure at maximum power, (kPa)	:	7.7	2.0 to 2.7
Provision of spark arrestor	:	<b>None</b>	
Provision against entry of rain water.	:	A bend is provided at the end of the silencer	
<b>3.1.7 Lubricating system:</b>			
Type	:	Force feed-cum-splash	
Oil sump capacity, ( l )	:	7.00	7.35
Total lub oil capacity, ( l )	:	7.50	8.25
Oil change period	:	First change after 50 hours and subsequently after every 250 hours of operation.	
Cooling device, (if any)	:	<b>None</b>	



	<u>Previous sample</u>	<u>Present sample</u>
<b>Filters:</b>		
Type	Full flow, spin-on, replaceable	
Number	One	
<b>Pump:</b>		
Type	Gear	
Method of drive	Through timing gears	
Pressure release setting, (kPa)	392 ± 49	
Minimum permissible pressure, (kPa)	150	200
<b>3.1.8 Cooling system:</b>		
Type	Forced circulation of water	Forced circulation of coolant
Name of the coolant & ratio of coolant water	--	Veedol mixed in the ratio of 30:70 (apa)
Details of pump	Centrifugal, semi-open impeller of 90.0 mm diameter, having twelve number of vanes and driven through crankshaft pulley by a cogged V-belt common to alternator.	
Details of fan	Suction type having four numbers of metallic blades of 380 mm diameter and mounted on water pump shaft.	
Means of temperature control	Thermostat	
Bare radiator capacity, ( l )	4.45	2.90
Capacity of expansion flask, ( l )	--	1.20
Total coolant capacity, ( l )	10.25	8.50
Radiator cap pressure, (kPa)	88	90
<b>3.1.9 Starting System:</b>		
Type	12V, DC, Electrical	
Aid for cold starting	None	
Any other device provided for easy starting.	None	
<b>3.1.10 Electrical System:</b>		
<b>3.1.10.1 Battery:</b>		
Make & Model	AMCO & A88TMF	AMARON & TR550D31R
Type	Lead acid	
Capacity and rating	12V, 88 Ah at 20 hours discharge rating	12V, 80 Ah at 20 hours discharge rating
Location	In front of radiator under bonnet	
<b>3.1.10.2 Starter:</b>		
Make	Lucas - TVS	Autolek
Model	Not available	Not available
Type	Pre-engaging, Solenoid operated.	
Capacity and rating	12V	12V, 2.5 kW (apa)
Serial Number	260024094A	Not available
<b>3.1.10.3 Generator:</b>		
Make	Lucas - TVS	Autolek
Model	Not available	Not available
Type	Alternator	
Serial number	Not available	
Output rating	Not available	12V, 36 Ah
Method of drive	Through crankshaft pulley by a 'V' belt common to water pump.	
<b>3.1.10.4 Voltage regulator</b>	In built in alternator	In built in alternator

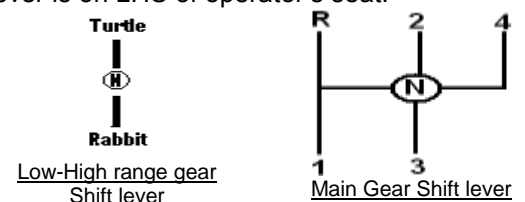
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### 3.1.10.5 Details of lights:

Description	No. & capacity of bulb	Height of the centre of beam above ground level, (mm)	Size, (mm)	Distance between centre of the beam and outside edge of tractor at standard rear track setting, (mm)
<b>Previous Model:</b>				
<b>Front Lights:</b>				
- Head lights	2, 12V, 60/55W	1125	160 x 100	722
- Parking lights	2, 12V, 5W	1280	65 x 65	255
- Turn-cum-hazard Indicators	2, 12V, 21W	1280	70 x 65	190
Reflectors (white)	2	1280	30 x 55	300
<b>Rear lights:</b>				
-Brake light-cum-parking light	2, 12V, 21/5W	1290	65 x 65	255
Turn indicator-cum-hazard warning light	2, 12V, 21W	1290	70 x 65	190
Reflectors (Red)	2	1290	30 x 55	300
Registration plate light	Part of rear parking light			
Plough light	1, 12V, 35W	1530	120 $\phi$	280
<b>Present Model:</b>				
<b>Front Lights:</b>				
- Head lights	2, 12V, 60/55W	1140	155 x 95	730
- Parking lights	2, 12V, 5W	1310	85 x 110	220
-Turn cum hazard light	2, 12V, 21W	1310	85 x 110	90
Reflectors	02 Nos.	1310	50 $\phi$	155
<b>Rear lights:</b>				
-Tail light	2, 12V, 21/5W	1270	85 x 110	210
Turn indicator cum hazard light	2, 12V, 21W	1270	85 x 110	80
- Reflectors	2 Nos.	1270	50 $\phi$	150
Registration plate light	Part of rear tail light assembly			
- Plough light	1, 12V, 55 W	1420	120 $\phi$	380

### 3.1.11 Instrument panel details:-

- |   |                        |                       |
|---|------------------------|-----------------------|
|   | <b>Previous sample</b> | <b>Present sample</b> |
| i) Engine speed-cum-cumulative run hour meter (0-30x 100 rpm) | Provided               | Provided              |
| ii) Lubricant oil pressure guage/indicator with colour zone   | Provided               | Provided              |
| iii) Battery volt meter guage with colour zone (8 to 16 V)    | Provided               | Provided              |
| iv) Coolant temperature guage (with colour zones)             | Provided               | Provided              |
| v) Fuel level guage (with colour zones)                       | Provided               | Provided              |
| vii) Light switch (Rotary type)                               | Provided               | Provided              |
| viii) Battery charging warning indicator lamp                 | Provided               | Provided              |
| ix) Turn indicator/ hazard lights (Tell-tale)                 | Provided               | Provided              |
| x) Turn indicator light switch                                | Provided               | Provided              |
| xi) Parking brake indicator                                   | Provided               | Provided              |
| xii) Air cleaner clogging indicator                           | Provided               | Provided              |
| xiii) Hazard light switch                                     | Provided               | Provided              |
| xiv) Head lamp (long beam) 'ON' indicator light               | Provided               | Provided              |
| xv) Fuel shut-off knob  | Provided               | Provided              |
| xvi) Horn push button   | Provided               | Provided              |
| xvii) Hand accelerator lever                                  | Provided               | Provided              |
| xviii) Steering control wheel                                 | Provided               | Provided              |
| xix) Rear View mirror   | Provided               | Provided              |
| xx) Mobile charging socket                                    | Provided               | Provided              |

		<u>Previous sample</u>	<u>Present sample</u>
<b>3.1.12</b>	<b>Transmission System</b>		
<b>3.1.12.1</b>	<b>Clutch:</b>		
	Make	:	Amrep
	Type	:	Dry friction plate
	No. of friction plate, (s)	:	One
	Size, (mm)	:	280 $\phi$ /165 $\phi$
	Method of operation	:	By pressing foot pedal provided on LHS of operator's seat
	Material of lining	:	Cerametallic
<b>3.1.12.2</b>	<b>Gear box:</b>		
	Make	:	Sonalika
	Type	:	Mechanical, constant mesh gears
	<b>No. of speeds:</b>		
	- Forward	:	08
	- Reverse	:	02
	Location of gear shifting levers	:	Main gear shift lever provided on RHS of operator's seat & Low-High range gear shift lever is on LHS of operator's seat.
	Gear shifting pattern	:	
	Oil capacity, (l)	:	46.5 (common with differential, hydraulic rear axle and final drive).
	Oil changing period	:	45.0 (common with differential, hydraulic rear axle and final drive).
		:	First change after 1000 hours of operation and subsequently after every 1800 hours of operation.
<b>3.1.12.3</b>	<b>Nominal Speed:</b>		
	- Forward	:	2.23 to 28.52
	- Reverse	:	2.28 to 31.46
		:	2.39 to 8.91
		:	3.11 to 12.02
<b>3.1.12.4</b>	<b>Differential unit:</b>		
	Type	:	Crown wheel and bevel pinion, with differential assembly accommodated inside the differential housing.
	Reduction through crown wheel and bevel pinion	:	3.166 : 1 (38/12 T)
	Oil capacity, (l)	:	3.166 : 1 (38/12 T)
		:	46.5 (common with gear box, hydraulic, final drive and rear axle).
		:	45.0 (common with gear box, hydraulic, final drive and rear axle).
	Oil changing period	:	First change after 1000 hrs of operation and subsequent after every 1800 hours of operation.
	<b>Differential lock:</b>		<b>Not provided</b>
<b>3.1.12.5</b>	<b>Rear axle &amp; final drive:</b>		
	Type	:	Bull gear and pinion type final reduction unit accommodated inside the differential housing.
	Reduction through final drive	:	4.583 : 1 (55/12T)
	Oil capacity of final drive, (l)	:	4.154 : 1 (54/13T)
		:	46.5 (common with gear box, differential and hydraulic).
		:	45.0 (common with gear box, differential and hydraulic).
	Oil change period	:	First change after 1000 hrs of operation and subsequent after every 1800 hours of operation.

<b>3.1.13 Power lift (hydraulic system):</b>		<b><u>Previous sample</u></b>	<b><u>Present sample</u></b>
Make	:	Sonalika (apa)	
Type	:	Open centre, Live, ADDC	
No. and type of cylinder	:	One, single acting	
Type of linkage lock for transport	:	Hydraulic, response control valve in it's fully closed position acts as transport lock.	
<b>3.1.13.1 Hydraulic pump:</b>			
- Make	:	Eaton	Rexroth
- Type	:	Gear	
- Location & drive	:	On R.H.S. of engine driven through timing gears	
No. & type of filters	:	Two,	
		i)	Fine wire mesh strainer at suction line, on RHS of gearbox.
		ii)	Full flow, Spin-on paper element type, in the suction line on RHS of engine.
Hydraulic oil capacity, (l)	:	46.5 (common with gear box, differential, final drive and rear axle)	45.0 (common with gear box, differential, final drive and rear axle)
Oil change period	:	First change after 1000 hrs of operation and subsequent after every 1800 hours of operation.	
Provision for external tapping	:	Provided	Provided
Details of control levers:		i) Position control lever	
		ii) Draft control lever	
		iii) Response control cum transport lock lever	
Method of draft sensing	:	Through top link	

**3.1.13.2 Three point linkage:**

S. No	Observations	As per IS: 4468- (Part-1) -1997, Re-affirmed (Oct., 2017) (Cat.I / Cat.II), (mm)	As measured, (mm)		Remarks in case of <b><u>Present sample</u></b>	
			<b><u>Previous sample</u></b>	<b><u>Present sample</u></b>		
1	2	3	4	5	6	
<b>I.</b>	Upper hitch points:					
	a)	Dia of hitch pin hole	19.30 to 19.50 / 25.70 to 25.90	25.87	19.40/ 27.70	Conform to cat -I
	b)	Width of ball	44.0 (max.) / 51.0 (max.)	32.1	32.9/ 42.1	Conform to cat -I & II
<b>II.</b>	Lower hitch points:					
	a)	Dia of hitch pin hole	22.40 to 22.65 / 28.70 to 29.00	28.94	28.90	Conform to cat -II
	b)	Width of ball	34.8 to 35.0 / 44.8 to 45.0	44.82	44.8	Conform to cat -II
<b>III.</b>	Lateral distance from lower hitch point to centre line of tractor.		359 / 435	364	363	<b>Does not conform</b>
IV.	Lateral movement of lower hitch points		100 (min) / 125 (min)	190	300	Conform 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	515	510	Conform to cat -I
VI.	Transport height		820 (min)/ 950 (min)	990	990	Conform to cat -I & II
VII.	Power range (without force)		560(min)/ 650 (min)	585	595	Conform to cat -I

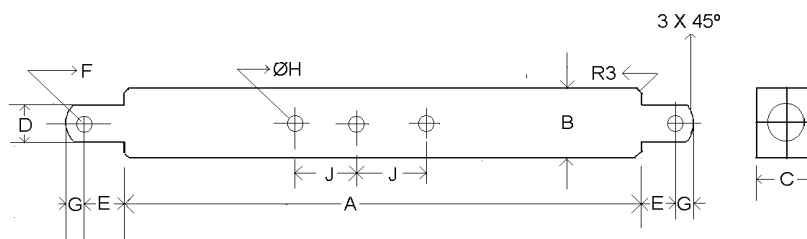
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1	2	3	4	5	6
VIII.	Leveling adjustment	100 (min)/ 100 (min)	475	345	Conform to cat -I & II
IX.	Lower hitch point clearance	100 (min)/ 100 (min)	160	180	Conform to cat -I & II
X.	Lower hitch point height	200 (max)/ 200 (max)	200	200	Conform to cat -I & II

**3.1.13.3 Drawbar:**

**3.1.13.3.1 Linkage Drawbar [Refer Fig.1 ] :**

Notation	As per IS: 12953-1990, Re-affirmed (Oct., 2017) <b>(Cat.I) / (Cat.II), (mm)</b>	As measured, (mm)		Remarks in case of <b>Present model</b>
		<b>Previous sample</b>	<b>Present sample</b>	
A	683 ± 1.5/825 ± 1.5	684	682	Conform to cat -I
B	75 (min)/75 (min)	75	75	Conform to cat -I & II
C	30 (min) / 30 (min)	30	30	Conform to cat -I & II
D $\varnothing$	21.79 to 22.0/27.79 to 28.0	27.9	21.8	Conform to cat -I
E	39.0 (min)/49.0 (min)	63.4	66.0	Conform to cat -I & II
F $\varnothing$	12.0 (min)/12.0 (min)	12.0	12.0	Conform to cat -I & II
G	15.0 (min)/15.0 (min)	23.4	21.7	Conform to cat -I & II
H $\varnothing$	25 ± 1/25 ± 1	25	25	Conform to cat -I & II
J	80 ± 1.5/80 ± 1.5	80.0	80.2	Conform to cat -I & II
No. of holes	7/9	7	7	Conform to cat -I



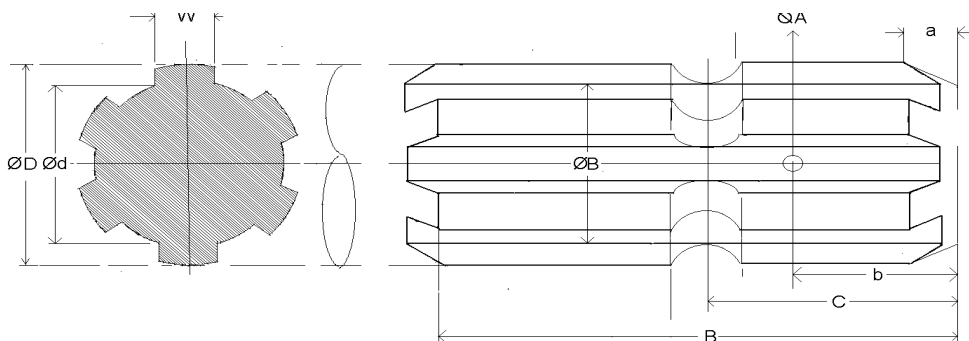
**Fig. 1: DIMENSIONAL NOTATIONS FOR LINKAGE TYPE DRAWBAR**

	<u>Previous sample</u>		<u>Present sample</u>
<b>3.1.13.3.2 Swinging drawbar</b>	:		<b>Not provided</b>
<b>3.1.14 Power take-off shaft:</b>			
Type	:		Type-I,
Method of engaging	:		Not independent
No. of shaft,(s)	:		One
PTO speed corresponding to rated engine speed, (rpm):	:		579
Distance behind rear axle, (mm)	:		355
Engine to PTO speed ratio	:		3.111:1
Whether the PTO shaft is capable of transmitting the full power of engine	:		Yes

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**3.1.14.1 Specifications of Power Take-Off Shaft:**

Specification	As per IS: 4931-1995 (Type-I / Type II) Re-affirmed in 2014	As observed		Remarks in case of <b>Present sample</b>
		<b>Previous sample</b>	<b>Present sample</b>	
Nominal speed, (rpm)	540 ± 10 / 1000 ± 25	540 rpm of PTO shaft corresponds to 1565 rpm of engine.	540 rpm of PTO shaft corresponds to 1680 rpm of engine.	Conforms
No. of splines	6 / 21	6	6	Conforms
Direction of rotation	Clockwise	Clockwise	Clockwise	Conforms
Location	The position of the centre of the end of pto shaft shall be within 50mm to right or left of the centre line of the tractor.	Centrally located	Centrally located	Conforms
<b>Dimensions, (mm) [See Fig.2]:</b>				
DØ	34.79 ± 0.06 / 34.67 ± 0.2	34.82	34.82	Conforms
dØ	28.91 ± 0.05 / 31.1 (min.)	28.90	28.86	Conforms
BØ	29.4 ± 0.1 / (29.35 ± 0.05)	29.50	29.36	Conforms
AØ (optional)	8.3 ± 0.1 / 8.3	Not applicable	NA	--
W	8.69 - 0.09 - 0.16 / 2.494 - 0.125 - 0.188	8.69	8.60	Conforms
a	7 / 5	7	7	Conforms
b (optional)	25 ± 0.5 / NA	Not applicable	NA	--
c	38 / 25.5	38	38	Conforms
X	30° / 30°	30°	30°	Conforms
B	76 (min) / 64 (min.)	78.7	80	Conforms
h	450 to 675 / 450 to 675	605	605	Conforms



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

**3.1.14.2 Power Take-off Master Shield:** : **Not provided**

3.1.15 Towing hitch:		<b>Previous sample</b>	<b>Present sample</b>
3.1.15.1 Front	:		
Type	:	Clevis	Clevis
Location	:	At font of engine	support bracket
Height above ground level, (mm)	:	600	635
Type of adjustment	:	None (Fixed)	None (Fixed)
Dia of pin hole, (mm)	:	41.0	30.7
Width of clevis, (mm)	:	144.0	145.0

		<u>Previous sample</u>	<u>Present sample</u>
<b>3.1.15.2</b>	<b>Rear</b>		
	Type	Clevis	
	Location	At rear of transmission housing	
	<b>Height above ground level, (mm):</b>		
	- Maximum	830	822
	- Minimum	450	455
	- No. of positions	10	10
	- Type of adjustment	By changing the position of hitch and reversing it on its mounting bracket.	
	<b>Distance of hitch point, (mm):</b>		
	-From rear wheel centre	505	490
	-From power take-off shaft end	150	140
	Dia of pin hole, (mm)	34.2	34.2
	Width of clevis, (mm)	86.0	85.3
<b>3.1.16</b>	<b>Steering:</b>		
	Make	ZF, India	Rane
	Type	Mechanical, worm and screw having single drop arm.	
	Location of control wheel	Above clutch housing	
	Method of operation	Manually by a steering control wheel.	
	Diameter of steering control wheel, (mm)	430	
	Steering oil capacity, (l)	0.50	0.60
	Lubricant change period	First after 250 hours and subsequent after every 1000 hours of operation.	
<b>3.1.17</b>	<b>Brakes:</b>		
<b>3.1.17.1</b>	<b>Service Brake:</b>		
	Make	M/s Excel	
	Type	Mechanical, Dry disc brake	
	Location	On rear half axle shaft outside the differential housing	
	No. of disc(s)	Two (on each wheel side)	
	Area of liners, (cm <sup>2</sup> )	815.4 (each wheel side)	
	Material of liners	Non-asbestos (apa)	
	Method of operation	Independent / combined pedal operation by right foot.	
<b>3.1.17.2</b>	<b>Parking Brake:</b>		
	Type	Pawl and ratchet arrangement for locking service brakes.	
	Location & Method of operation	Service brake acts as parking brake when locked in position by a hand lever provided on RHS of operator's seat.	
<b>3.1.18</b>	<b>Wheel Equipment:-</b>		
<b>3.1.18.1</b>	<b>Steering Wheel (s):</b>		
	Make	Good year	CEAT, Ayushman
	Number(s)	Two	Two
	Type of tyre	Pneumatic, ribbed	Pneumatic, ribbed
	Size	6.00-16	6.00-16
	Ply rating	8	8
	Maximum permissible loading capacity of each tyre at 250 kPa pressure, (kgf)	470	470
	<b>Recommended inflation pressure, kPa :</b>		
	- for field work	250	250
	- for transport	250	250
	Track width, (mm)	1310 (std) & 1500	1310 (Std.) & 1480
	Method of changing track width	By reversing the wheel	
	Make & size of rims	AMW & 4.50 E x 16	WIL, G4.50E x 16

3.1.18.2 Drive wheel (s):		<u>Previous sample</u>	<u>Present sample</u>
Make	:	Good year	CEAT, Ayushman
Number	:	Two	Two
Type of tyre	:	Pneumatic, traction	Pneumatic, traction
Size	:	13.6 – 28	13.6 - 28
Ply rating	:	12	12
Maximum permissible loading capacity of each tyre at 150 kPa pressure, (kgf)	:	1395	1395
<b>Recommended inflation pressure, (kPa):</b>			
- For field work	:	110	110
- For transport	:	150	150
Track width, (mm)	:	1360 (std.), 1420, 1550, 1580, 1690, 1770 and 1900	1350 (Std.), 1420, 1540, 1580, 1670, 1770 & 1880
Method of changing track width	:	By reversing the wheel disc and changing position of disc on offset rim lugs.	
Make & size of wheel rim	:	CWPL & W12 x 28 (standard fitment) WIL & W11 x 28 (optional fitment)	WIL & W12 x 28
3.1.18.3 Wheel base, (mm)		1970	1970
Method of changing wheel base, if any, and range		None	
3.1.19 Operator's seat:			
Make	:	Sonalika (apa)	
Type	:	Cushioned with back rest	
Type of Suspension	:	Two helical springs	
Type of Damping	:	Hydraulic shock absorber	
<b>Range of adjustment, (mm):</b>			
Vertical	:	Nil	Nil
Lateral	:	Nil	Nil
Longitudinal	:	± 80	± 45
3.1.20 Provision for safety and comfort of operator:			
3.1.20.1 Operator's Seat:			
Meet the minimum requirements of IS: 12343-1998, (Re-affirmed in 2014), except the following:			
<u>Previous sample</u>		<u>Present sample</u>	
Meets the all minimum requirements		i)	Width of seat.
--		ii)	Inclination of back rest.
--		iii)	Longitudinal distance from SIP to the center of steering control wheel.
3.1.20.2 Conformity with IS: 6283 (Part-1)-2006 & IS: 6283 (Part-2)- 2007(Re-affirmed in 2014):			
Meet the requirements of IS: 6283 (Part-1)-2006 & IS: 6283 (Part-2)- 2007.			
3.1.20.3 Conformity with IS : 8133-1983 (Re-affirmed in 2014):			
Location and movement of various controls meets the requirement of IS: 8133-1983 except the following:			
i)	Safety switch for starting of engine.	i)	Safety switch for starting of engine.
ii)	Differential lock was not provided.	ii)	Differential lock is not provided.
iii)	Fuel shut-off knob does not remain in stop position.	iii)	Fuel shut-off knob does not remain in stop position.
3.1.20.4 Conformity with IS:12239 (Part-1)-1996 (Re-affirmed in October, 2017):			
Meet the requirements of IS: 12239 (Part-1) – 1996, except the following:			
i)	Provision of spark arresting device in the exhaust system.	i)	Provision of spark arresting device in the exhaust system.



**3.1.20.5 Conformity with IS:12239 (Part-2)-1999 (Re-affirmed in 2014):**Meet the requirements of IS:12239 (Part-2)-1999, **except the following:**

<u>Previous sample</u>	<u>Present sample</u>
i) Master shield for PTO shaft was not provided.	i) Master shield for PTO shaft is not provided.
ii) The working clearance around the hydraulic draft control lever.	ii) Working clearance between position control lever & draft control lever and draft control lever & mudguard.
iii) Minimum cautionary notice as per clause 11.2 of above referred standard	--

**3.1.20.6 Conformity with IS: 14683 – 1999 (Re-affirmed in 2014):**

All lighting arrangements meet the requirements of IS: 14683-1999 in both previous &amp; present model.

**3.1.20.7 Rear view mirror:**

Rear view mirror is provided in both previous &amp; present model.

**3.1.20.8 Slow moving emblem:**

Slow moving emblem is provided in both previous &amp; present model.

	<u>Previous sample</u>	<u>Present sample</u>
<b>3.1.21 Mass of unballasted tractor, (kg):</b>		
- Front	: 830	830
- Rear	: 1140	1140
- Total	: 1970	1970
<b>3.1.22 Over all dimensions, (mm):</b>		
- Length	: 3590	3600
- Width	: 1710	1730
- Height (with exhaust pipe)	: 2235	2300
Minimum ground clearance, (mm)	: 385 (below transmission housing drain plug)	390 (below transmission housing drain plug)

**3.1.23 Labelling of tractor as per IS: 10273-1987 (Reaffirmed in 2014):****Locations of labelling plate:-** The labelling plate is riveted on RHS of fender and provides the following information:

<b>Name of Manufacturer</b>	:	INTERNATIONAL TRACTORS LIMITED
<b>Make</b>	:	SONALIKA
<b>Model</b>	:	DI-35 HDM
<b>Year of manufacture</b>	:	GJ
<b>Engine Serial Number</b>	:	3100FLU83H756840F18
<b>Chassis Serial Number</b>	:	JYASG764937S3
<b>Maximum PTO Power, kW</b>	:	26.0
<b>Specific fuel consumption, g/kWh</b>	:	250

**3.1.24 Number of external lubricating points:**

- Oiling	:	Nil	Nil
- Grease cups	:	02	02
- Grease nipples	:	20	21

**3.1.25 Colour of tractor:**

Chassis & engine	:	Black	Black
Sheet metal:			
Mudguard	:	Blue	Blue
Bonnet	:	Blue	Blue
Rim & disc	:	Silver grey	Silver grey

**3.1.26 Optional features:**

Rear tyre size & ply rating	:	12.4-28 & 12 PR	12.4-28 & 12 PR
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## 3.2 NOMINAL SPEED TEST

a) Nominal speed for standard fitment tyre size -13.6-28

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when fitted with <b>13.6-28</b> size tyres <b>610</b> mm radius index, (kmph).	Nominal speed at rated engine speed when fitted with <b>13.6-28</b> size tyres <b>610</b> mm radius index, (kmph).	Variation in nominal speed (%) in <b>Present sample</b> and <b>Previous sample</b>
		<u>Previous sample</u>	<u>Present sample</u>	<u>Previous sample</u>	<u>Present sample</u>	
Forward	L1	185.97	181.87	2.23	2.28	+2.2
	L2	128.35	119.56	3.23	3.46	+7.1
	L3	81.61	79.47	5.07	5.21	+2.8
	L4	54.14	50.91	7.65	8.12	+6.1
	H1	49.95	47.00	8.29	8.80	+6.2
	H2	34.52	30.90	11.99	13.39	+11.7
	H3	21.97	20.51	18.86	20.17	+7.0
	H4	14.51	13.16	28.52	31.46	+10.3
Reverse	RL	173.52	133.29	2.39	3.11	+30.1
	RH	46.45	34.43	8.91	12.02	+34.9

b) Nominal speed for optional fitment tyre size -12.4-28

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when fitted with <b>12.4-28</b> size tyres <b>590</b> mm radius index, (kmph)	Computed nominal speed at rated engine speed when fitted with <b>12.4-28</b> size tyres <b>590</b> mm radius index, (kmph)	Variation in nominal speed (%) in <b>Present sample</b> and <b>Previous sample</b>
		<u>Previous sample</u>	<u>Present sample</u>	<u>Previous sample</u>	<u>Present sample</u>	
Forward	L1	185.97	181.91	2.15	2.20	+2.3
	L2	128.35	119.52	3.12	3.35	+7.4
	L3	81.61	79.49	4.88	5.03	+3.1
	L4	54.14	50.95	7.21	7.85	+8.9
	H1	49.95	47.06	7.80	8.50	+9.0
	H2	34.52	30.92	11.20	12.94	+15.5
	H3	21.97	20.52	17.78	19.50	+9.7
	H4	14.51	13.16	26.64	30.41	+14.2
Reverse	RL	173.52	133.12	2.30	3.01	+30.9
	RH	46.45	34.45	8.36	11.62	+39.0

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### 3.3 PTO PERFORMANCE TEST

S. No.	Particulars	Previous sample	Present sample
1	Date(s) of test	22.07.2016 & 26.07.2016	12.12.2018
2	Tractor run at this Institute prior to start of PTO test, (h)	5.80	1.85
3	Dynamometer test bench used	Fuchino ESF 1000 S	SAJ-AG 250 Eddy Current.

Maximum power at 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**

Tractor	Power, (kW)	Speed, (rpm)		Fuel Consumption			Specific energy, (kWh/ l)
		PTO	Engine	(l/h)	(kg/h)	(kg/kWh)	
<b>a) Maximum power – 2 hours test (under natural ambient condition):</b>							
<b>Previous sample</b>	24.6	621	1800	7.02	5.86	0.238	3.50
<b>Present sample</b>	26.4	579	1801	7.40	6.19	0.234	3.57

S. No.	Parameters	Previous sample		Present sample Natural Ambient (Max. power Two Hours)
		Natural Ambient	High Ambient	
	-No load maximum engine speed, (rpm)	1974	1974	1947
	-Equivalent crankshaft torque at maximum power, (Nm)	130.5	125.6	139.8
	-Maximum equivalent crankshaft torque, (Nm)	145.2	138.5	--
	-Engine speed at maximum equivalent crankshaft torque, (rpm)	1151	1151	--
	- Back up torque, (%)	11.3	10.3	--
	- <b>Smoke level</b> , maximum light absorption coefficient, (per meter)	0.06	--	--
	<b>- Range of atmospheric conditions:</b>			
	Temperature, (°C)	26 to 28	41 to 44	25 to 26
	Pressure, (kPa)	97.2 to 97.6	98.4 to 98.8	99.04 to 99.58
	Relative humidity, (%)	60 to 69.5	28.7 to 47.4	45 to 46
	<b>- Maximum temperatures, (°C):</b>			
	Engine oil	102	113	90
	Coolant	87	98	80
	Fuel	47	61	46
	Air intake	34	48	35
	Exhaust gas	499	504	486
	<b>- Pressure at maximum power:</b>			
	Intake air, (kPa)	3.7 to 3.9	3.8	4.2 to 6.6
	Exhaust gas, (kPa)	7.7	7.0	2.0 to 2.7
	<b>- Consumptions:</b>			
	Lub oil, (g/kwh)	--	0.38	--
	Coolant (% of total coolant capacity)	--	4.76	--

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#### 4. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

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

#### 5. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

**5.1** On the basis of test conducted the performance results have been summarized as evaluative (mandatory) and non – evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 table-1 of Indian Standard **12207: 2014** for acceptance of 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 requirements (Yes/No.)
				Previous sample	Present sample	Previous sample	Present sample	
<b>5.1.1 PTO Performance :</b>								
<b>a)</b>	- Max. power under 2 h 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	24.6 (D)	26.0 (D)	24.6	26.4	Yes
<b>b)</b>	Power at rated engine speed, (kW)	Non Evaluative	-do-	24.6 (D)	26.0 (D)	24.6	26.4	Yes
<b>c)</b>	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	265 (D)	250 (D)	238	234	Yes
<b>5.1.2 Safety features :</b>								
<b>a)</b>	Guards against moving and hot parts	Evaluative	Belt drives, pulley, silencer, hydraulic pipes (As per IS 12239 (part 2)		--	Meets the requirement		Yes
<b>b)</b>	Lighting arrangement (Tractor having more than 1150 mm rear track width)	Evaluative	As per CMVR		--	Meets the requirement		Yes
<b>c)</b>	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)		--	<b>Does not meet the requirement</b>		<b>No</b>
<b>d)</b>	Technical requirements for PTO shaft	Non-Evaluative	Should meet the requirements of IS 4931 (as amended from time to time)		--	Meets the requirement		Yes
<b>e)</b>	Dimension of three point linkage	Non-Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)		--	<b>Does not meet the requirement</b>		<b>No</b>
<b>f)</b>	Specification of linkage and swinging drawbars	Non-Evaluative	Should meet the requirements of IS 12953 and IS 12362 (part 3) (as amended from time to time)		--	Meets the requirement		Yes
<b>5.1.3 Labeling of tractors (Provision of labeling plate) :</b>								
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--		SONALIKA		Yes
	2) Model	Evaluative		--		DI – 35 HDM		Yes
	3) Year of manufacture	Evaluative		--		GJ		Yes
	4) Engine number	Evaluative		--		3100FLU83H756840F18		Yes
	5) Chassis number	Evaluative		--		JYASG764937S3		Yes
	6) Declaration of PTO power, kW	Evaluative		--		26.0		Yes
	7) Specific fuel consumption, g/kWh	Evaluative		--		250		Yes

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<b>5.1.4 Literature (Submission to test agency) :</b>						
<b>(a)</b>	Operator manual	Evaluative	Provided/ Not Provided	Provided	Provided	Yes
<b>(b)</b>	Parts Catalogue	Evaluative	Provided/Not Provided	Provided	Provided	Yes
<b>(c)</b>	Workshop/ Service manual	Evaluative	Provided/Not Provided	Provided	Provided	Yes

<b>5.2 Conformity with following IS:</b>	<u><b>Previous sample</b></u>	<u><b>Present sample</b></u>
<b>i)</b> Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS 10273:1987 (Reaffirmed in 2014)] :	Conformed	Conforms
<b>ii)</b> Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS: 4931-1995 (Reaffirmed in 2014)] :	Conformed	Conforms
<b>iii)</b> Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468 (Part-2):1993 (Reaffirmed in October, 2017)/ISO 730-1:1994] :	<b>Did not conform</b>	<b>Does not conform</b>
<b>iv)</b> Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in October, 2017)] :	Conformed	Conforms
<b>v)</b> Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in 2014)] Tractors having more than 1150 mm rear track width. :	Conformed	<b>Does not conform</b>
<b>vi)</b> Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : [IS 12239 (PT-1)-1996 (Reaffirmed in October, 2017)/ISO 4254-1:1989] :	Conformed	<b>Does not conform</b>
<b>vii)</b> Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) IS 12239 (PT-2)-1999 (Reaffirmed in 2014)] :	<b>Did not conform</b>	<b>Does not conform</b>
<b>viii)</b> Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1 & Part-2) –2006 & 2007 (Reaffirmed in March, 2014)/ ISO 3767-2:1991]] :	Conformed	Conforms
<b>ix)</b> Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Reaffirmed in 2014)] :	<b>Did not conform</b>	<b>Does not conform</b>
<b>x)</b> Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in March, 2014)] :	Conformed	Conforms

**5.3 Salient Observations:**

**5.3.1 Laboratory tests:**

**5.3.1.1 PTO Performance:**

- i)** The maximum power was recorded as **24.6 & 26.4 kW** in case of previous & present sample respectively against the declaration of **24.6 kW & 26.0 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 **238 & 234 g/kWh** respectively against the declaration of **265 & 250 g/kWh**, which meets the requirement of IS: 12207-2014 with regard to tolerance.

**5.3.1.2 Three point linkage:**

- i) The lateral distance from lower hitch point to center line of tractor does not meet the requirement of IS: 4468 (Part-1)-1997 (Re-affirmed in October, 2017). 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.

**5.3.1.3 Linkage drawbar:**

Some of the parameters of linkage drawbar conform to Cat.I and some of them conform to Cat.II. In view of the spirit of standardization, necessary improvements may be incorporated.

**5.3.1.4 Operator's work place:**

Operator's work place meets the requirements of IS-12239(part-I)-1996 (Re-affirmed in 2014), except the provision of spark arresting device in the exhaust system & master shield.

**5.3.1.5 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.

**5.4 Maintenance / Service problems:**

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

**5.5 Recommendation with regard to safety on tractor:**

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

- i) Width of operator's seat.
- ii) Inclination of back rest of operator's seat towards rear direction.
- iii) Longitudinal distance from SIP to center line of steering control wheel.
- iv) Provision of spark arresting device in exhaust system.
- v) Provision of master shield in power take-off.
- vi) There should be provision against accidental start or safety switch.
- vii) Stopper lever should remain in the stop position without application of sustained manual effort.
- viii) Colour zone for engine revolution gauge.
- ix) There should be provision for differential lock.
- x) Working clearance around the PC & DC lever and DC & Mudguard respectively.
- xi) Maximum actuating force to operate hand lever of hydraulic power lift should be within limit as per IS: 10703-1992 (Re-affirmed in Oct. 2017).

**5.6 Adequacy of Literature supplied with machine:****5.6.1** The following literatures were supplied with the test tractor for reference during the test:-

- a) Operator's manual for Sonalika DI – 35 HDM tractor model.
- b) Service Manual for Sonalika DI – 35 HDM tractor model.
- c) Spare parts Catalogue for Sonalika DI – 35 HDM tractor model.

**5.6.2** The supplied literature was found adequate. Except the following:

- a) Engine oil filter, air cleaner oil filter, transmission & hydraulic oil scheduling maintenance given in operator's manual does not match with specification submitted by applicant.
- b) The lubricants produced/ marketed by various Indian manufacturers, if deemed suitable, may be recommended for their use in the tractor, shall also be included in the Operator Instruction Book.
- c) Specification of coolant is not specified in Operator Instruction Book.

T-1240/1767/2019	SONALIKA, DI-35 HDM (BRAND NAME: RX) TRACTOR - Commercial (Supplementary)
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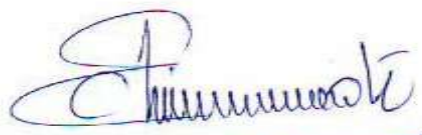
#### 6. CITIZEN CHARTER

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	04 Months (October, 2018 to January 2019)	Yes	None

#### TESTING AUTHORITY:



**PRAMOD YADAV**  
AGRICULTURAL ENGINEER



**C.V. CHIMOTE**  
TEST ENGINEER



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

Test report compiled by **Shri ShivKumar Sharma**, Senior Technical Assistant.

#### 7. APPLICANT'S COMMENTS

Nil

**ANNEXURE -I****TRACTOR RUN HOURS DURING TEST**

<b>A.</b>	<b>LABORATORY AND TRACK TESTS:</b>	<b>HOURS</b>
1.	Running-in	--
2.	PTO performance test	3.0
3.	Nominal speed test	1.1
<b>B.</b>	Miscellaneous test and other run hours including idle run, transportation, preparation for test and trial runs.	0.8
	<b>TOTAL:</b>	<b>4.9</b>