



**JOHN DEERE, 5060E V2 TRACTOR**



सत्यमेव जयते

भारत सरकार

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

**GOVERNMENT OF INDIA**

**MINISTRY OF AGRICULTURE AND FARMERS WELFARE**

**(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)**

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

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|                  |  |
|------------------|--|
| T-1106/1632/2017 | JOHN DEERE, 5060E V2 TRACTOR –<br>Commercial- (First Batch Test) |
|------------------|--|

**Manufacturer** : M/s. John Deere India Pvt. Ltd.  
Gat No. 166 - 167 & 271 - 291,  
Off Pune-Nagar Road, Sanaswadi,  
PUNE- 412 208 (M.S.)

|                   |                                  |            |
|-------------------|----------------------------------|------------|
| Month : September | Test Report No. T-1106/1632/2017 | Year: 2017 |
|-------------------|----------------------------------|------------|

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|                         |  |
|-------------------------|--|
| <b>T-1106/1632/2017</b> | <b>JOHN DEERE, 5060E V2 TRACTOR –<br/>Commercial- (First Batch Test )</b>                  |
| Type of Test            | : COMMERCIAL (First Batch Test )   |
| Test code/Procedure     | : IS: 5994-1998 (Reaffirmed in 2009), IS: 9253-2001(Reaffirmed in 2007) and IS: 12207-2014 |
| Period of Test          | : February, 2017 to August , 2017  |
| Test Report No          | : T-1106/1632/2017   |
| Month/Year              | : September, 2017  |

- 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 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 batch test report and, should be read in conjunction with the Test Report of base model i.e. "JOHNDEERE 5060E V2" Tractor bearing No. T-834/1343/2012 (June).

| SELECTED CONVERSIONS |                       |                                   |
|----------------------|-----------------------|-----------------------------------|
| Sl. No               | Units                 | Conversion Factor                 |
| 1                    | <b>Force:</b>         |                                   |
|                      | 1 kgf                 | 9.80665 N<br>2.20462 lbf          |
|                      |                       |                                   |
| 2                    | <b>Power:</b>         |                                   |
|                      | 1 hp                  | 1.01387 metric hp (Ps)<br>745.7 W |
|                      | 1 Ps                  | 735.5 W                           |
|                      | 1 kW                  | 1.35962 Ps                        |
|                      |                       |                                   |
| 3                    | <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                      |

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





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|                                  |   |
|----------------------------------|---|
| Manufacturer                     | : M/s. John Deere India Private Limited<br>Gat No#166 - 167 & 271 - 291,<br>Off. Pune- Nagar Road, Sanaswadi,<br>Pune- 412 208 (M.S.)   |
| Test requested by (applicant)    | : The manufacturer  |
| Selected for test by             | : The manufacturer  |
| Place of running-in              | : At manufacturer's works   |
| Duration of said running-in (h): |   |
| - Engine                         | : 12  |
| - Transmission                   | : 18  |
| Method of Selection              | : The test sample was selected randomly out of<br>five tractors from the production line by the<br>representative of testing authority. |

## 1. SPECIFICATIONS

|   |   |
|---|---|
| <b>1.1 Tractor:</b>   |   |
| Make  | : John Deere  |
| Model   | : 5060E V2  |
| Variants, if any  | : None  |
| Type  | : Four wheeled, rear wheel driven, standard<br>Agricultural Tractor             |
| Year of manufacture   | : BM-G (December, 2016)   |
| Chassis number  | : 1PY5060EAGA002501   |
| Country of Origin   | : India   |
| <b>1.2 Engine:</b>  |   |
| Make  | : John Deere  |
| Model   | : 3029HPY48   |
| Type  | : Four stroke, turbocharged, liquid cooled,<br>direct injection, diesel engine. |
| Serial number   | : PY3029H083047   |
| <b>Engine speed (Manufacturer's recommended production setting), (rpm):</b> |   |
| - Maximum speed at no load,   | : 2575 to 2650  |
| - Low idle speed  | : 800 to 875  |
| - Speed at maximum torque   | : 1700 to 1900  |
| <b>Rated speed, (rpm):</b>  |   |
| - For PTO use   | : 2400  |
| - For drawbar use   | : 2400  |
| <b>1.3 Cylinder &amp; Cylinder Head:</b>                                    |   |
| Number  | : Three   |
| Disposition   | : Vertical, inline  |
| Bore/stroke, (mm)   | : 106.5 / 110   |
| Capacity as specified by the applicant, (cc)                                | : 2940  |
| Compression ratio   | : 18.7:1  |
| Type of cylinder head   | : Monoblock   |
| Type of cylinder liners   | : Wet, replaceable  |
| Type of combustion chamber  | : Direct injection  |
| Arrangement of valves   | : Overhead, inline  |
| <b>Valve clearance (cold):</b>  |   |
| - Inlet valve, (mm)   | : 0.35  |
| - Exhaust valve, (mm)   | : 0.45  |
| <b>1.4 Fuel System:</b>   |   |
| Type of fuel feed system  | : Force feed  |



T-1106/1632/2017

**JOHN DEERE, 5060E V2 TRACTOR –  
Commercial- (First Batch Test )**

|   |   |
|---|---|
| <b>1.4.1 Fuel tank:</b>                           |   |
| Capacity, ( l )                                   | : 67.5  |
| Location  | : Behind operator's seat  |
| Provision for draining of sediments / water       | : Not Provided  |
| Material of fuel tank                             | : Plastic   |
| <b>1.4.2 Fuel feed pump:</b>                      | : Gravity and forced feed   |
| <b>1.4.3 Water separator :</b>                    |   |
| Make  | : Hilux   |
| Model/Group combination No.                       | :   |
| Type  | : Transparent, inverted funnel type   |
| Location  | : In between fuel tank & fuel filter  |
| Capacity (l)                                      | : 0.43  |
| <b>1.4.4 Fuel filters:</b>                        |   |
| Make  | : John Deere (apa)  |
| Model/Group combination No                        | : 32303 15F08   |
| Number(s)   | : One   |
| Type of elements                                  | : One paper element, full flow canister throw away  |
| Capacity of final stage filter, (l)               | : 0.12  |
| <b>1.4.5 Fuel Injection pump:</b>                 |   |
| Make  | : Stanadyne, made in USA  |
| Model/Group Combination No.                       | : DB4327-6164   |
| Type  | : Rotary  |
| Serial number & Part No.                          | : 100244040 & RE- 546808  |
| Method of drive                                   | : Through timing gears  |
| <b>1.4.5 Fuel injector(s):</b>                    |   |
| Make  | : Stanadyne, made in Italy  |
| Holder Number                                     | : 170315 39012  |
| Nozzle Number                                     | : Italy 09-15 SDSLA 143M 39472  |
| Type  | : Muthole (five holes)  |
| Manufacturer's production pressure setting, (MPa) | : 25.5 to 26.3  |
| Injection timing                                  | : $8 \pm 1$ degree before TDC   |
| Firing order                                      | : 1 - 2 - 3   |
| <b>1.4.6 Governor:</b>                            |   |
| Make  | : Stanadyne, Made in USA  |
| Model/Group Combination No.                       | : Inbuilt with fuel injection pump  |
| Type  | : Mechanical, centrifugal, variable speed   |
| Rated engine speed, (rpm)                         | : 2400  |
| Governed range of engine speed, (rpm)             | : 800 to 2650   |
| <b>1.4.7 Fuel Cooler:</b>                         |   |
| Make  | : John Deere  |
| Part no.  | : SJ25216   |
| Overall dimensions                                | : Length - 245 mm, Height - 165 mm, Thickness - 32.5 mm. Eight numbers of heat exchange tubes having 10 rows of fins were provided.   |
| Location and operation                            | : Aluminum type heat exchanger is provided in front of the radiator, under the bonnet. The excess (or unused / return) fuel coming from the fuel injection pump, nozzles and fuel filter is cooled and returned to the fuel tank. |





|       |   |   |   |
|-------|---|---|---|
| 1.5   | <b>Air Intake System:</b>                                     |   |   |
| 1.5.1 | Pre cleaner   | : | Not provided  |
| 1.5.2 | <b>Air cleaner:</b>   |   |   |
|       | Make  | : | Donaldson   |
|       | Type  | : | Dry   |
|       | Location  | : | In front of radiator, under the bonnet  |
|       | Range of suction pressure at maximum power, (kPa)             | : | 4.8   |
|       | <b>Details of elements:</b>                                   |   |   |
|       | - Size (OD/ID), (mm)  | : | <u>Secondary element</u>   <u>Primary element</u><br>81.48 / 64.22   137.55 / 85.34   |
|       | - Length, (mm)  | : | 320   330   |
|       | - Type  | : | Polyester felt   Cellulose fiber paper  |
|       | - No. of elements   | : | Two   |
|       | Vacuum indicator  | : | Provided on dash board  |
|       | Dust unloading valve  | : | Provided  |
|       | Maintenance schedule  | : | Cleaning of air cleaner is required to be carried out as and when indicated by air restriction indicator, every 250 hours or at least once in a year.<br>Replace primary & Secondary elements at least once in a year (apa).  |
| 1.5.3 | <b>Charge Air Cooler (CAC):</b>                               |   |   |
|       | Make  | : | John Deere (apa)  |
|       | Part Number   | : | RE 263969   |
|       | Overall dimensions  | : | Length – 500 mm, Height – 275 mm, Thickness – 65 mm. Eleven numbers of heat exchange tubes were provided.   |
|       | Location and operation  | : | Charge air cooler is provided in front of the radiator, under the bonnet. Air drawn from the secondary filter element of air cleaner was supplied to turbocharger. The turbocharger forces pressurized air to charge air cooler through hose. The air flows from charge air cooler to cylinder head through hose. |
| 1.6   | <b>Exhaust System:</b>  |   |   |
|       | Type of silencer  | : | Updraft (cylindrical), having horizontal expansion chamber under the bonnet.  |
|       | <b>Position of silencer outlet with respect to SIP, (mm):</b> |   |   |
|       | - Vertical  | : | 930   |
|       | - Longitudinal  | : | 1235  |
|       | - Lateral   | : | 370 on LHS  |
|       | Range of exhaust gas pressure at maximum power, (kPa )        | : | 125 to 126  |
|       | Provision of spark arresting device                           | : | None  |
|       | Provision against entry of rain water                         | : | A bend is provided at the top of silencer.  |
| 1.6.1 | <b>Turbocharger:</b>  |   |   |
|       | Make  | : | John Deere  |
|       | Model   | : | 673583053-090 DUC M A   |
|       | Type  | : | Waste gate having 6 vanes in compressor unit and 12 numbers in turbine unit of outlet vanes.  |
|       | Boost Pressure  | : | 93 kPa (apa)  |
|       | Speed at rated engine speed, (rpm)                            | : | 156000  |
|       | Method of lubrication   | : | Force feed lubrication from main oil gallery of engine.   |
|       | Location  | : | Above engine, under the bonnet  |



|               |   |  |
|---------------|---|--|
| <b>1.7</b>    | <b>Lubricating system:</b>                  |  |
|               | Type  | : Forced feed-cum-splash   |
|               | Oil sump capacity, ( l )                    | : 8.10   |
|               | Total lub oil capacity, ( l )               | : 8.80   |
|               | Oil change period                           | : First change after 100 hours and subsequently after every 250 hours of operation.  |
|               | Type of cooling device / inter-cooler       | : Plate type oil cooler having six numbers of plates are provided.   |
| <b>1.7.1</b>  | <b>Filters:</b>                             |  |
|               | Make  | : Johndeere  |
|               | Type  | : Full flow, spin on throw away type   |
|               | Number                                      | : One  |
| <b>1.7.2</b>  | <b>Pump:</b>                                |  |
|               | Type  | : Gear   |
|               | Method of drive                             | : Through timing gears   |
|               | Pressure release setting, ( kPa)            | : 345 (apa)  |
|               | Minimum permissible pressure, (kPa)         | : 275, at rated engine speed (apa)   |
| <b>1.8</b>    | <b>Cooling system:</b>                      |  |
|               | Type  | : Forced circulation of coolant  |
|               | Coolant as recommended                      | : John Deere "Pre-Diluted COOLANT" having 20/80 mixture of ethylene glycol and de-ionized water.   |
|               | Details of Pump                             | : Centrifugal, semi-open impeller of 94.73 mm diameter having six numbers of vanes, and driven through crankshaft pulley by a cogged "V"-belt common to alternator.    |
|               | Details of fan                              | : Suction type having eleven polypropylene blades of 410 mm diameter and mounted on water pump shaft.  |
|               | Additional cooling device                   | : Viscous drive fluid clutch is mounted on cooling fan provided in the system. The viscous clutch is a temperature-controlled hydraulic fan clutch with speed control. |
|               | Means of temperature control                | : Thermostat   |
|               | Bare radiator capacity, ( l )               | : 4.18   |
|               | Expansion flask capacity, ( l )             | : 1.08   |
|               | Total coolant capacity, ( l )               | : 8.5  |
|               | Radiator cap pressure, (kPa)                | : 98   |
| <b>1.9</b>    | <b>Starting System:</b>                     |  |
|               | Type  | : 12 V, DC, Electrical   |
|               | Aid for cold starting                       | : None   |
|               | Any other device provided for easy starting | : None   |
| <b>1.10</b>   | <b>Electrical System:</b>                   |  |
| <b>1.10.1</b> | <b>Battery:</b>                             |  |
|               | Make and model                              | : EXIDE & MHD880   |
|               | Type  | : Lead acid  |
|               | Capacity and rating                         | : 12V, 88 Ah at 20 hrs discharge rate  |
|               | Location                                    | : In front of radiator, under the bonnet.  |





**T-1106/1632/2017** **JOHN DEERE, 5060E V2 TRACTOR – Commercial- (First Batch Test )**

- 1.10.2 Starter:**  
 Make : Lucas TVS  
 Model : M14  
 Type : Pre-engaging, solenoid operated  
 Power rating : 12V, 2.5 kW  
 Serial Number : 26258598
- 1.10.3 Generator:**  
 Make : Bosch ,India  
 Model : GCMI  
 Type : Alternator  
 Output rating : 14V, 22-43 Amp  
 Method of drive : Driven through crank shaft pulley by cogged V-belt common to water pump  
 Serial number : 01241100008
- 1.10.4 Voltage regulator** : In-built in alternator
- 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>Front Lights:</b>                    |  |   |            |  |
| - Head lights                           | 2, 12V, 60/ 55W                            | 1260  | 95 x 155   | 780  |
| - Parking lights                        | 2, 12V, 5W                                 | 1510  | 82 x 65    | 245  |
| - Turn Indicators-cum-hazard indicators | 2, 12V, 21W                                | 1510  | 90 x 65    | 155  |
| <b>Rear lights:</b>                     |  |   |            |  |
| - Parking-cum-Brake lights              | 2, 12, V, 21/5W                            | 1480  | 80 x 85    | 345  |
| - Turn Indicators-cum-hazard indicators | 2, 12V, 21W                                | 1480  | 80 x 80    | 165  |
| - Plough light (On RHS mudguard)        | 1, 12V, 55W                                | 1500  | 75 x 135   | 255  |
| - Reflector(s) (Red)                    | 2  | 1570  | 30 x 85    | 480  |
| Registration plate Light                | In built in rear combination lamp assembly |   |            |  |

- 1.10.6 Main switch** : Key turn type, having three positions viz: **OFF, Circuit ON** and **START**
- 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 lights (short beam) only
- 1.10.8 Horn:**  
 Make : Addon  
 Type : 2B, Electromagnetically vibrated diaphragm  
 Location : In front of radiator, under the bonnet



1.10.9 Fuse box : Contains 15 number of fuses following capacities

| Capacity | 05 A | 10A | 15A | 20A | 25A | 30A |
|----------|------|-----|-----|-----|-----|-----|
| Numbers  | 04   | 02  | 02  | 03  | 03  | 01  |

1.10.10 Details of other electrical accessories:

1.10.10.1 Flasher Unit:

Make : Macurex

Capacity:

- Turn signal : 12V, 21W x 2 + 2W x 1

- Hazard signal : 12V, 21W x 4 + 2W x 2

Flashes/Min : 85

1.10.10.2 Safety switch

: Starter will not operate unless :

(i) The gear shift lever is not in park position,

(ii) The range shift lever is not in the neutral position and

(iii) PTO lever is not in OFF position.

1.11 Instrument panel details:

i) Engine speed-cum-digital cumulative run-hour meter (0-30 x 100 rpm)

ii) Coolant temperature gauge (with colour zones)

iii) Fuel level gauge (with colour zones)

iv) Lubricating oil pressure indicator lamp

v) Light switch (Rotary type)

vi) Main switch (key-turn type)

vii) Horn push button

viii) Battery charging warning indicator lamp

ix) Turn signal indicator-cum-hazard indicator tell-tale

x) Turning indicator light switch and hazard warning light switch

xi) Head light (long beam) indicator lamp

xii) Air flow restriction indicator

xiii) Fuel shut-off knob

xiv) Mobile charging socket

xv) Hand accelerator lever

xvi) Steering control wheel

xvii) Rear view mirror

1.12 Transmission System:

1.12.1 Clutch:

Make : LUK, India

Type : Dual, dry friction plates & pads diaphragm type.

No. of friction plate(s) : Two

Size, (OD/ID) (mm):

Transmission : 280  $\Phi$  /167  $\phi$  mm dia. and having four pads of 27.5 cm<sup>2</sup> area of each pad

PTO : 280  $\Phi$  /167  $\phi$  mm dia. and having three pads of 27.0 cm<sup>2</sup> area of each pad

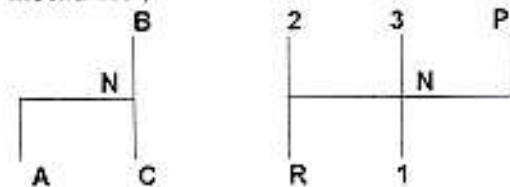
Method of operation:

Main transmission clutch : By a pedal, on LHS

PTO clutch : By land lever on LHS of operator seat

**1.12.2 Gear box:**

Make : John Deere (apa)  
 Type : Mechanical, constant mesh Collar shift  
 Gear shifting pattern :

Range shift leverGear shift lever

Location of gear shifting levers : Main gear shift lever is on RHS of the operator's seat & range shift lever is on LHS of the operator's seat.

**No. of speeds:**

- Forward : 9  
 - Reverse : 3  
 Oil capacity, (l) : 36.00 (Common with hydraulic, differential, brake system, rear axle and final drive)  
 Oil changing period : First change after 1100 hours and subsequently after every 1250 hours of operation.

**1.12.3 Nominal Speed:**

| Movement | Gear No. | No. of engine revolutions for one revolution of driving wheel | Nominal speed at rated engine speed when fitted with 16.9-30 size tyres of 695 mm radius index, (kmph) |
|----------|----------|---|--|
| Forward  | A1       | 271.29  | 2.32   |
|          | A2       | 148.31  | 4.25   |
|          | A3       | 124.82  | 5.03   |
|          | B1       | 114.91  | 5.47   |
|          | B2       | 62.77   | 10.02  |
|          | B3       | 52.90   | 11.89  |
|          | C1       | 41.80   | 15.06  |
|          | C2       | 22.87   | 27.52  |
|          | C3       | 19.25   | 32.63  |
| Reverse  | AR       | 161.27  | 3.90   |
|          | BR       | 68.37   | 9.19   |
|          | CR       | 24.89   | 25.29  |

**1.12.4 Differential:**

Type : Crown wheel and bevel pinion with differential unit accommodated inside the differential housing.  
 Reduction through crown wheel and pinion : 3.417 : 1 (41/12T)  
**Differential lock**  
 Type : Dog clutch  
 Method of operation : By depressing a pedal provided on RHS of operator's seat





**1.12.5 Rear axle and Final drive:**  
 Type : Planetary reduction unit  
 Reduction through final drive : 6.857 : 1 (Sun gear -14T, planet-33T & ring gear -82T)  
 Oil capacity of final drive, ( l ) : 36.0 (common with hydraulic, differential and brake system)  
 Oil changing period : First change after 1100 hours and subsequently after every 1250 hours of operation.

**1.13 Power lift (Hydraulic System):**  
 Make : John Deere (apa)  
 Type : Open centre, live, ADDC  
 No. and type of cylinder : One, single acting  
 Type of linkage lock for transport : Hydraulic, a "Rate-of-drop knob" in fully closed position acts as a transport lock.

**1.13.1 Hydraulic pump:**  
 -Make : Eaton  
 -Type : Tandem Gear  
 -Location & drive : On RHS of engine, through timing gears.  
 No. & type of filter(s) : One, spin-on throw away type filter.  
 Hydraulic oil capacity, (l) : 36.0 (common with hydraulic, differential, brake system rear axle and final drive)  
 Oil change period : First change after 1100 hours and subsequently after every 1250 hours of operation.  
 Provision for external tapping : Provided  
 Details of control levers:  
 i) Position control lever  
 ii) Draft control lever  
 iii) Rate-of-drop knob  
 iv) Pre-selector knob  
 Method of draft sensing : Through top link

**1.13.2 Three point linkage:**

| Sl. No.                        | Observations          | As per IS: 4468- (Part-I) 1997 (Category I / II), (mm) | As measured, (mm) | Remarks             |
|--------------------------------|-----------------------|--|-------------------|---------------------|
| 1                              | 2                     | 3  | 4                 | 5                   |
| <b>I. Upper hitch points:</b>  |                       |  |                   |                     |
| a)                             | Dia of hitch pin hole | 19.30 to 19.50/<br>25.70 to 25.90                      | 25.45 & 25.20     | Does not conform    |
| b)                             | Width of ball         | 44.0 (max)   | Not applicable    | --                  |
|                                |                       | 51.0 (max)   | 32.25             | Does not conform    |
| <b>II. Lower hitch points:</b> |                       |  |                   |                     |
| a)                             | Dia of hitch pin hole | 22.40 to 22.65/<br>28.70 to 29.00                      | 28.70             | Conforms to Cat. II |
| b)                             | Width of ball         | 34.8 to 35.0   | Not applicable    | --                  |
|                                |                       | 44.8 to 45.0   | 35.20             | Does not conform    |

| T-1106/1632/2017 |   | JOHN DEERE, 5060E V2 TRACTOR –<br>Commercial- (First Batch Test ) |         |                         |
|------------------|---|---|---------|-------------------------|
| 1                | 2   | 3   | 4       | 5                       |
| III.             | Lateral distance from lower hitch point to centre line of tractor                                       | 359/435   | 359     | Conforms to Cat. I      |
| IV.              | Lateral movement of lower hitch points  | 100 (min)/<br>125 (min)   | 210     | --do--                  |
| V.               | Distance from end of power take-off to centre of lower hitch point (lower links in horizontal position) | 450 to 575/<br>550 to 625   | 560     | Conforms to Cat. I & II |
| VI.              | Transport height (without force)  | 820 (min) /<br>950 (min)  | 985     | --do--                  |
| VII.             | Power range   | 560 (min)/<br>650 (min)   | 655,600 | Conforms to Cat. I & II |
| VIII.            | Leveling adjustment   | 100 (min)/<br>100 (min)   | 260     | Conforms to Cat. I & II |
| IX.              | Lower hitch point tyre clearance  | 100 (min)/<br>100 (min)   | 190     | --do--                  |
| X.               | Lower hitch point height  | 200 (max) /<br>200 (max)  | 200     | --do--                  |

### 1.13.3 Linkage geometry [Refer Fig.1(a)]:

The following are dimensions observed, corresponding to 695 mm as tyre dynamic radius index:

| S. No. | Parameter  | Notation | Dimension or range, (mm) | Setting used during test, (mm) |
|--------|--|----------|--------------------------|--------------------------------|
| 1      | 2  | 3        | 4                        | 5                              |
| 1.     | Length of lower link   | A        | 830                      | 830                            |
| 2.     | Length of lift arm   | B        | 230                      | 230                            |
| 3.     | Length of lift rods  | C        | 475 to 575               | 545                            |
| 4.     | Length of top link   | D        | 550 to 705               | 600                            |
| 5.     | Distance of lift rod connection point from pivot point of lower link | E        | 430                      | 430                            |
| 6.     | Distance of lower link pivot point from rear wheel axis:             |          |                          |                                |
|        | - Horizontally   | F        | 165, behind              | 165, behind                    |
|        | - Vertically   | G        | 175, below               | 175, below                     |
| 7.     | Distance of upper link pivot point from rear wheel axis:             |          |                          |                                |
|        | - Horizontally   | H        | 415 & 417, behind        | 417, behind                    |
|        | - Vertically   | J        | 270, 240 and 205, above  | 240 above                      |
| 8.     | Distance of lift arm pivot point from rear wheel axis:               |          |                          |                                |
|        | - Horizontally   | K        | 180, behind              | 180, behind                    |
|        | - Vertically   | L        | 300, above               | 300, above                     |
| 9.     | Height of lower hitch points relative to the rear wheel axis:        |          |                          |                                |
|        | - In high position   | M        | 95 to 290                | 160, above                     |
|        | - In low position  | N        | -570 to -290             | 495, below                     |
| 10.    | Height of lower link hitch points when locked in transport position  | --       | 290, Above               |                                |



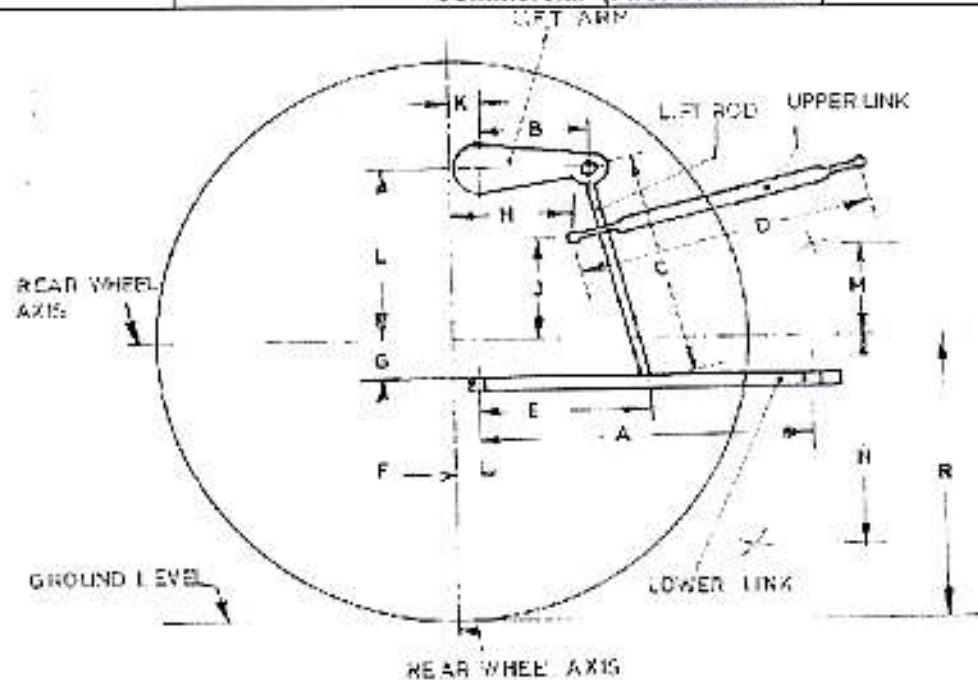


Fig.1 (a) DIMENSIONAL NOTATIONS FOR TABLE OF LINKAGE GEOMETRY

1.13.4 Drawbar:

1.13.4.1 Linkage Drawbar [Refer Fig.1(b)]:

| Notation        | As per IS: 12953-1990<br>(Cat. I)/ (Cat. II), (mm) | As measured,<br>(mm) | Remarks                 |
|-----------------|--|----------------------|-------------------------|
| A               | $683 \pm 1.5/825 \pm 1.5$                          | 682                  | Conforms to cat-I       |
| B               | 75 (min)/75 (min)                                  | 75                   | Conforms to Cat. I & II |
| C               | 30 (min) / 30 (min)                                | 30.28                | --do--                  |
| D $\varnothing$ | 21.79 to 22.0/27.79 to 28.0                        | 28                   | Conforms to cat-II      |
| E               | 39.0 (min)/49.0 (min)                              | 63.1                 | Conforms to Cat. I & II |
| F $\varnothing$ | 12.0 (min)/12.0 (min)                              | 12.0                 | --do--                  |
| G               | 15.0 (min)/15.0 (min)                              | 22.0                 | --do--                  |
| H $\varnothing$ | $25 \pm 1/25 \pm 1$                                | 24                   | --do--                  |
| J               | $80 \pm 1.5/80 \pm 1.5$                            | 80.34                | --do--                  |
| No. of holes    | 7/9  | 7                    | Conforms to cat-I       |

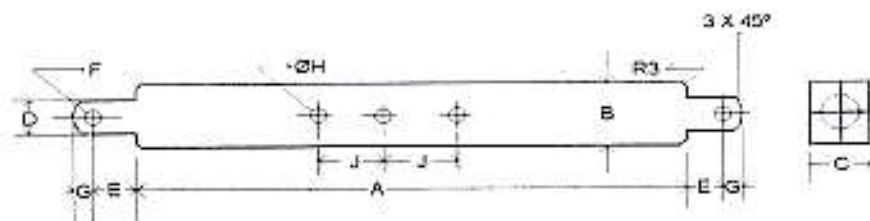


Fig. 1 (b) DIMENSIONAL NOTATIONS FOR LINKAGE TYPE DRAWBAR

1.13.4.2 Swinging drawbar

: Not provided

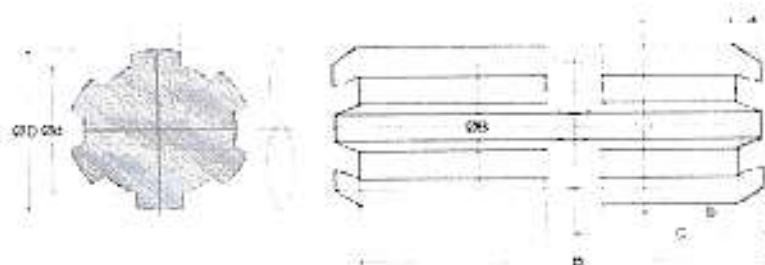


**1.14 Power take-off shaft:**

|   |   |
|---|---|
| Type  | : Type-I, 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)                      | : 546   |
| Other speeds, if any  | : None  |
| Distance behind rear axle, (mm)   | : 430   |
| Engine to PTO speed ratio   | : 4.400 : 1   |
| Whether the PTO shaft is capable of transmitting the full power of engine | : Yes   |

**1.14.1 Specification of power take-off shaft:**

| Specification                         | As per IS: 4931-1995 (Type-I)   | As observed   | Remarks          |
|---------------------------------------|---|---|------------------|
| 1                                     | 2   | 3   | 4                |
| Nominal speed, (rpm)                  | 540 ± 10  | 540 rpm of PTO shaft corresponds to 2376 rpm of engine. | Conforms         |
| No. of splines                        | 6   | 6   | Conforms         |
| Direction of rotation                 | Clockwise   | Clockwise   | --do--           |
| 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                                       | --do--           |
| <b>Dimensions, (mm) (See Fig. 2):</b> |   |   |                  |
| D $\varnothing$                       | 34.79 ± 0.06  | 34.8  | --do--           |
| d $\varnothing$                       | 28.91 ± 0.05  | 27.95   | Does not conform |
| B $\varnothing$                       | 29.4 ± 0.1  | 30.0  | Does not conform |
| A $\varnothing$ (Optional)            | 8.3 ± 0.1   | 8.28  | Conform          |
| W                                     | 8.69 – 0.09<br>– 0.16   | 8.60  | --do--           |
| a                                     | 7   | 7   | --do--           |
| b (optional)                          | 25 ± 0.5  | 25.27   | --do--           |
| c                                     | 38  | 36.40   | Does not conform |
| X                                     | 30°   | 30°   | Conform          |
| B                                     | 76 (min)  | 80.34   | Conform          |
| h                                     | 450 to 675  | 683   | Does not conform |

**Fig.2: DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT****1.14.2 PTO Master Shield**

: Not provided



|               |  |   |
|---------------|--|---|
| <b>1.15</b>   | <b>Towing hitch:</b>                     |   |
| <b>1.15.1</b> | <b>Front</b>                             | : Not provided  |
| <b>1.15.2</b> | <b>Rear:</b>                             |   |
|               | Type                                     | : Clevis  |
|               | Location                                 | : At rear of transmission housing.  |
|               | <b>Height above ground level, (mm):</b>  |   |
|               | - Maximum                                | : 750   |
|               | - Minimum                                | : 555   |
|               | Number of positions                      | : 5   |
|               | Type of adjustment                       | : By changing the position the hitch on its mounting bracket.                           |
|               | <b>Distance of hitch point, (mm):</b>    |   |
|               | - From rear axle centre                  | : 530   |
|               | - From power take-off shaft end          | : 100   |
|               | Dia of pin hole, (mm)                    | : 32.28   |
|               | Width of clevis, (mm)                    | : 73.90   |
| <b>1.16</b>   | <b>Steering:</b>                         |   |
|               | Make of distributor                      | : Danfoss   |
|               | Type                                     | : Open centre, Hydrostatic  |
|               | Location                                 | : Above clutch housing  |
|               | Method of operation                      | : Manual, by steering control wheel   |
|               | Diameter of steering control wheel, (mm) | : 410   |
|               | Type & make of pump                      | : Eaton, Gear (Tandem)  |
|               | Location                                 | : On RHS of engine  |
|               | Method of drive                          | : Through timing gears  |
|               | Number & Type                            | : One and double acting   |
|               | Lubricant capacity (l)                   | : 36.0 (In common with gear box, differential, rear axle and final drive)               |
|               | Oil change period,                       | : First change after 1100 hours and subsequently after every 1250 hours of operation    |
| <b>1.17</b>   | <b>Brakes:</b>                           |   |
| <b>1.17.1</b> | <b>Service Brake:</b>                    |   |
|               | Make                                     | : John Deere (apa)  |
|               | Type                                     | : Hydraulic assisted, Oil immersed disc brake.  |
|               | Location                                 | : On half axle shaft accommodated outside the rear axle housing before final reduction. |
|               | No. of friction disc(s)                  | : One (on each wheel side)  |
|               | Area of liners, (cm <sup>2</sup> )       | : 494.24 (on each wheel side)   |
|               | Material of liners                       | : Paper lining (apa)  |
|               | Method of operation                      | : Independent or combined pedal operation by right foot.                                |
|               | Oil capacity, (l)                        | : 36.0 (common with gearbox, hydraulic, differential, rear axle and final drive)        |
|               | Oil change period                        | : First change after 1100 hours and subsequently after every 1250 hours of operation    |

**1.17.2 Parking Brake:**

|                                |  |
|--------------------------------|--|
| Type                           | : Park pawl  |
| Location & method of operation | : Inboard of final drive & gear shift lever in 'PARK' position act as the parking brake. |

**1.18 Wheel Equipment:****1.18.1 Steered Wheel(s):**

|  |                     |
|--|---------------------|
| Make   | : MRF Shakti        |
| Number(s)  | : Two               |
| Type of tyre(s)  | : Pneumatic, ribbed |
| Size   | : 6.50 - 20         |
| Ply rating   | : 8                 |
| Maximum permissible loading capacity of each tyre at 200 kPa pressure, (kgf) | : 550               |

**Recommended inflation pressure, (kPa):**

|                                |                              |
|--------------------------------|------------------------------|
| - for field work               | : 200                        |
| - for transport                | : 200                        |
| Standard track width, (mm)     | : 1365 (std), 1445           |
| Method of changing track width | : By reversing the wheels.   |
| Make & size of wheel rim       | : Wheels India & 5.00 F x 20 |

**1.18.2 Drive wheel(s):**

|  |                       |
|--|-----------------------|
| Make   | : MRF Shakti life     |
| Number(s)  | : Two                 |
| Type of tyre(s)  | : Pneumatic, traction |
| Size   | : 16.9 – 30           |
| Ply rating   | : 12                  |
| Maximum permissible loading capacity of each tyre at 130 kPa inflation pressure, (kgf) | : 1900                |

**Recommended inflation pressure, (kPa):**

|                                |  |
|--------------------------------|--|
| - For field work               | : 100  |
| - For transport                | : 130  |
| Track width, (mm)              | : 1405 (std), 1525, 1615, 1735 and 1815  |
| Method of changing track width | : By reversing the wheel disc & changing the position of wheel disc on off-set rim lugs. |
| Make & size of wheel rim       | : Wheels India & W15L x 30   |

**1.18.3 Wheel base, (mm)** : 2055

|   |        |
|---|--------|
| Method of changing wheel base, if any, and range. | : None |
|---|--------|

**1.19 Operator's seat:**

|                    |                              |
|--------------------|------------------------------|
| Make               | : Harita seating system ltd. |
| Type               | : Cushioned                  |
| Type of suspension | : Two helical coil springs   |
| Type of dampening  | : Hydraulic shock absorber   |

**Range of adjustment, (mm):**

|                |        |
|----------------|--------|
| - Vertical     | : Nil  |
| - Lateral      | : Nil  |
| - Longitudinal | : ± 65 |



**1.20 Provision for safety and comfort of operator:****1.20.1 Conformity with IS: 12343 – 1998:**

Operator's seat meets the requirements of IS: 12343-1998 (Reaffirmed in March, 2009), **except the following:**

- i) Width of seat.
- ii) Inclination of seat back rest.
- iii) Longitudinal distance from seat index point to the centre of differential lock pedal & centre of steering control pedal.

**1.20.2 Conformity with IS: 6283 (Part 1&2)-1998 (Reaffirmed in March, 2009):**

Controls are identifiable with symbols as per IS: 6283 (Part 1&2)-1998 (Reaffirmed in Dec. 2004), **except the following:-**

- i) Oil lubricant, type and frequency

**1.20.3 Conformity with IS: 8133-1983 (Reaffirmed in March, 2009):**

Location and movement of various controls meets the requirement of IS: 8133-1983 (Reaffirmed in Oct. 2004).

**1.20.4 Conformity with IS:10703-1992 (Reaffirmed in March, 2007):**

Meets the requirements of IS: 10703-1992.

**1.20.5 Conformity with IS: 12239 (Part-I)- 1996 (Reaffirmed in March, 2007):**

Meets the requirements of IS: 12239 (Part-1)-1996 - **except the following:**

Spark arrester has not been provided in the exhaust system.

**1.20.6 Conformity with IS: 12239 (Part-2)-1999:**

Meets the requirements of IS: 12239 (Part-2)-1999, **except the following:**

- i) Working clearance between position control lever & draft control lever does not meet the requirement of the above referred standard.
- ii) PTO master shield has not been provided.

**1.20.7 Conformity with IS: 14683-1999 (Reaffirmed in March, 2009):**

Lights provided on tractor meets the requirement of IS: 14683-1999

**1.20.8 Rear view mirror:**

Rear view mirror has been provided

**1.21 Labelling of tractor as per IS: 10273-1987 (Reaffirmed in Oct. 2004):**

The labelling plate is riveted on LHS of front axle support bracket and provides the following information:

|  |   |
|--|---|
| Name of Manufacturer                     | John Deere India Pvt. Ltd., Pune, India |
| Make                                     | John Deere                              |
| Model                                    | 5060E V2                                |
| Year of manufacture                      | BM-G (December, 2016)                   |
| Chassis Serial Number                    | 1 PY5060EAGA002501                      |
| Engine Serial Number                     | PY3029H083047                           |
| Maximum P.T.O Power, kW (hp)             | 39 (53.03)                              |
| Specific fuel consumption, g/kWh (g/hph) | 280 (205.84)                            |



**1.22 Ballast Mass, (kg):**

| Particulars |                           | As used during drawbar test | As used during field test |                 | As used during Haulage test |
|-------------|---------------------------|-----------------------------|---------------------------|-----------------|-----------------------------|
|             |                           |                             | Dry land                  | Puddling        |                             |
| Front       | C.I. weight               | 330                         | 230                       | 230             | 230                         |
|             | Water                     | NIL                         | NIL                       | NIL             | NIL                         |
| Rear        | C.I. weight               | 500                         | 290                       | Full cage wheel | 290                         |
|             | Water                     | 360                         | 360                       |                 | NIL                         |
|             | Additional weight, if any | NIL                         | NIL                       | NIL             | NIL                         |

**1.23 Masses:**

| Particulars |   | Mass of the tractor without operator but with all the liquid reservoirs full, (kg) |      |       |
|-------------|---|--|------|-------|
|             |   | Front  | Rear | Total |
| i)          | Without ballast   | 755*   | 1415 | 2165  |
| ii)         | With ballast as used during drawbar performance test                            | 1180   | 2185 | 3365  |
| iii)        | With ballast as used during haulage test with trailer hitch, canopy and drawbar | 1055   | 1670 | 2725  |

\* Difference is due to weight transfer from rear to front.

**1.24 Overall dimensions, (mm):**

| Condition       | Length, (mm) | Width, (mm) | Height, (mm)      |                      | Ground Clearance, (mm)<br>(Below hitch mounting bracket) |
|-----------------|--------------|-------------|-------------------|----------------------|--|
|                 |              |             | With exhaust pipe | Without exhaust pipe |  |
| Without ballast | 3505         | 1835        | 2295              | 1710                 | 450  |

**1.25 Number of external lubricating points:**

- Oiling : Nil
- Grease cups : 02
- Grease nipples : 09 Nos

**1.26 Colour of tractor:**

- Chassis, engine and Sheet metal : Green
- Rim & disc : Yellow

**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 oil   | SAE 15W-40   | SAE 15W-40   |
| 2.     | Transmission, Hydraulic, Steering housing, brake system, rear axle and final drive oil | John Deere Hy Guard  | Oil originally filled in the tractor was not changed |
| 3.     | Grease   | John Deere high temperature Extreme pressure Non-clay grease | Servo grease MP                                      |





## 3. PTO PERFORMANCE TEST

Date(s) of test : 04.04.2017 & 05.04.2017  
 Tractor run at the Institute prior to start of PTO test, (h) : 3.9  
 Type of dynamometer bench used : Eddy current Fuchino ESF- 1000 S

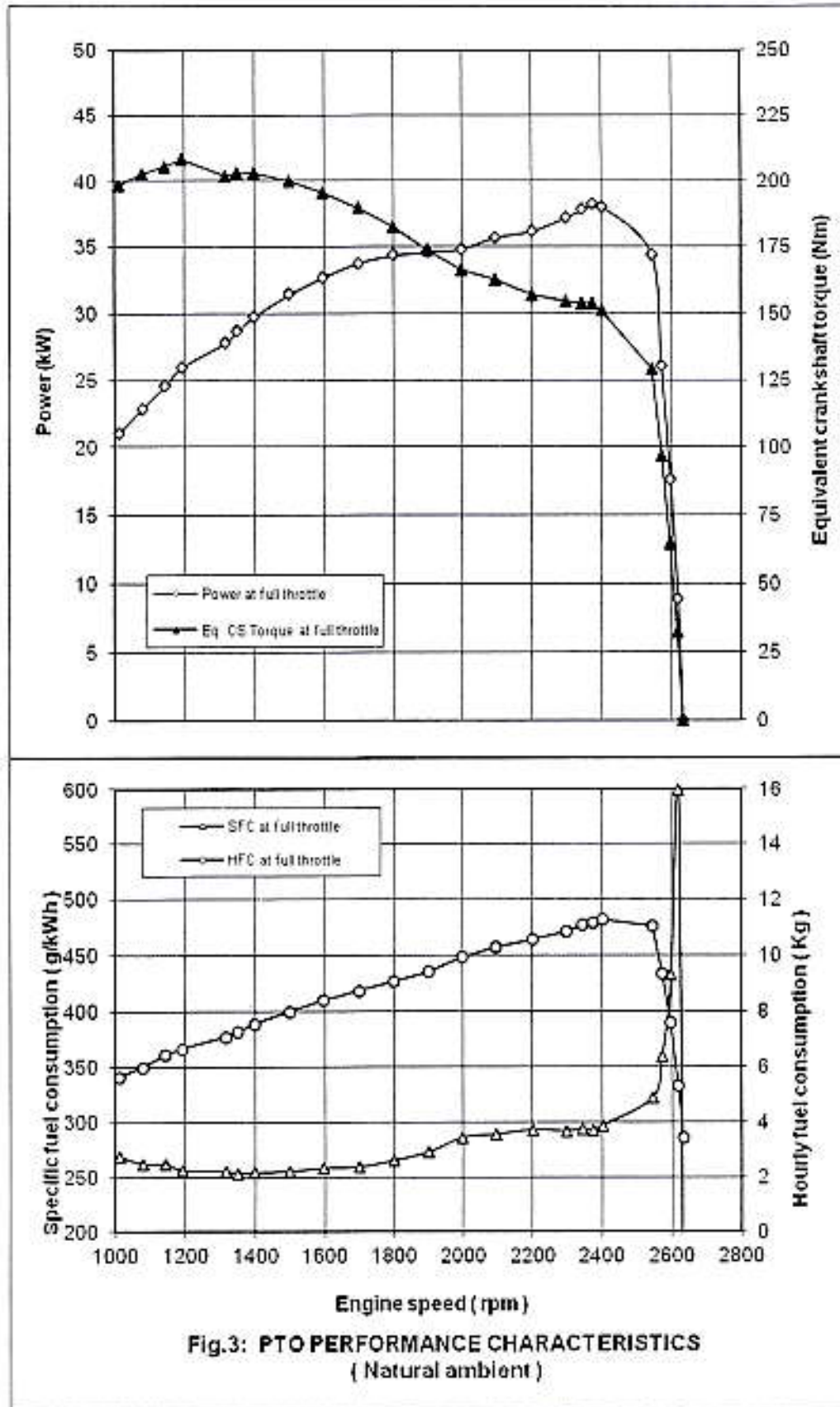
3.1 The results of power take-off performance are tabulated in Table-1 and graphically represented in Fig. 3, 4 and 5.

Table – 1

| Power, (kW)  | Speed, (rpm) |        | Fuel consumption |        |                     | Specific energy, (kWh/l) |
|--|--------------|--------|------------------|--------|---------------------|--------------------------|
|  | PTO          | Engine | (l/h)            | (kg/h) | Specific, (kg/ kWh) |                          |
| 1  | 2            | 3      | 4                | 5      | 6                   | 7                        |
| <b>a) Maximum power - 2 hours test:</b>  |              |        |                  |        |                     |                          |
| 38.2   | 539          | 2373   | 13.38            | 11.19  | 0.293               | 2.86                     |
| 36.1   | 539          | 2373   | 13.0             | 10.87  | 0.301               | 2.78*                    |
| <b>b) Power at rated engine speed (2400 rpm):</b>  |              |        |                  |        |                     |                          |
| 38.0   | 546          | 2402   | 13.49            | 11.28  | 0.297               | 2.82                     |
| 36.1   | 546          | 2402   | 13.15            | 10.99  | 0.304               | 2.75*                    |
| <b>c) Power at standard power take-off speed ( 540 ± 10 rpm):</b>  |              |        |                  |        |                     |                          |
| 38.2   | 539          | 2373   | 13.38            | 11.19  | 0.293               | 2.86                     |
| 36.1   | 539          | 2373   | 13.0             | 10.87  | 0.301               | 2.78*                    |
| <b>d) Varying loads at rated engine speed:</b>   |              |        |                  |        |                     |                          |
| <b>i) Torque corresponding to maximum power available at rated engine speed:</b>   |              |        |                  |        |                     |                          |
| 38.0   | 546          | 2402   | 13.49            | 11.28  | 0.297               | 2.82                     |
| <b>ii) 85% of the torque obtained in ( i ):</b>  |              |        |                  |        |                     |                          |
| 34.4   | 578          | 2543   | 13.23            | 11.06  | 0.322               | 2.59                     |
| <b>iii) 75% of the torque obtained in (ii):</b>  |              |        |                  |        |                     |                          |
| 26.1   | 584          | 2570   | 11.20            | 9.36   | 0.359               | 2.33                     |
| <b>iv) 50% of the torque obtained in (ii):</b>   |              |        |                  |        |                     |                          |
| 17.6   | 590          | 2596   | 9.09             | 7.60   | 0.433               | 1.93                     |
| <b>v) 25% of the torque obtained in (ii) :</b>   |              |        |                  |        |                     |                          |
| 8.9  | 595          | 2618   | 6.34             | 5.30   | 0.599               | 1.40                     |
| <b>vi) Unloaded:</b>   |              |        |                  |        |                     |                          |
| 0  | 598          | 2631   | 4.50             | 3.42   | 0                   | 0                        |
| <b>e) Varying loads at standard PTO speed ( 540 ± 10 rpm):</b>   |              |        |                  |        |                     |                          |
| The varying load test at standard PTO speed was not conducted as the maximum PTO power of tractor was observed at 539 PTO rpm , which is within the range of standard PTO speed of 540 ± 10 rpm. |              |        |                  |        |                     |                          |

\* Under High ambient conditions.





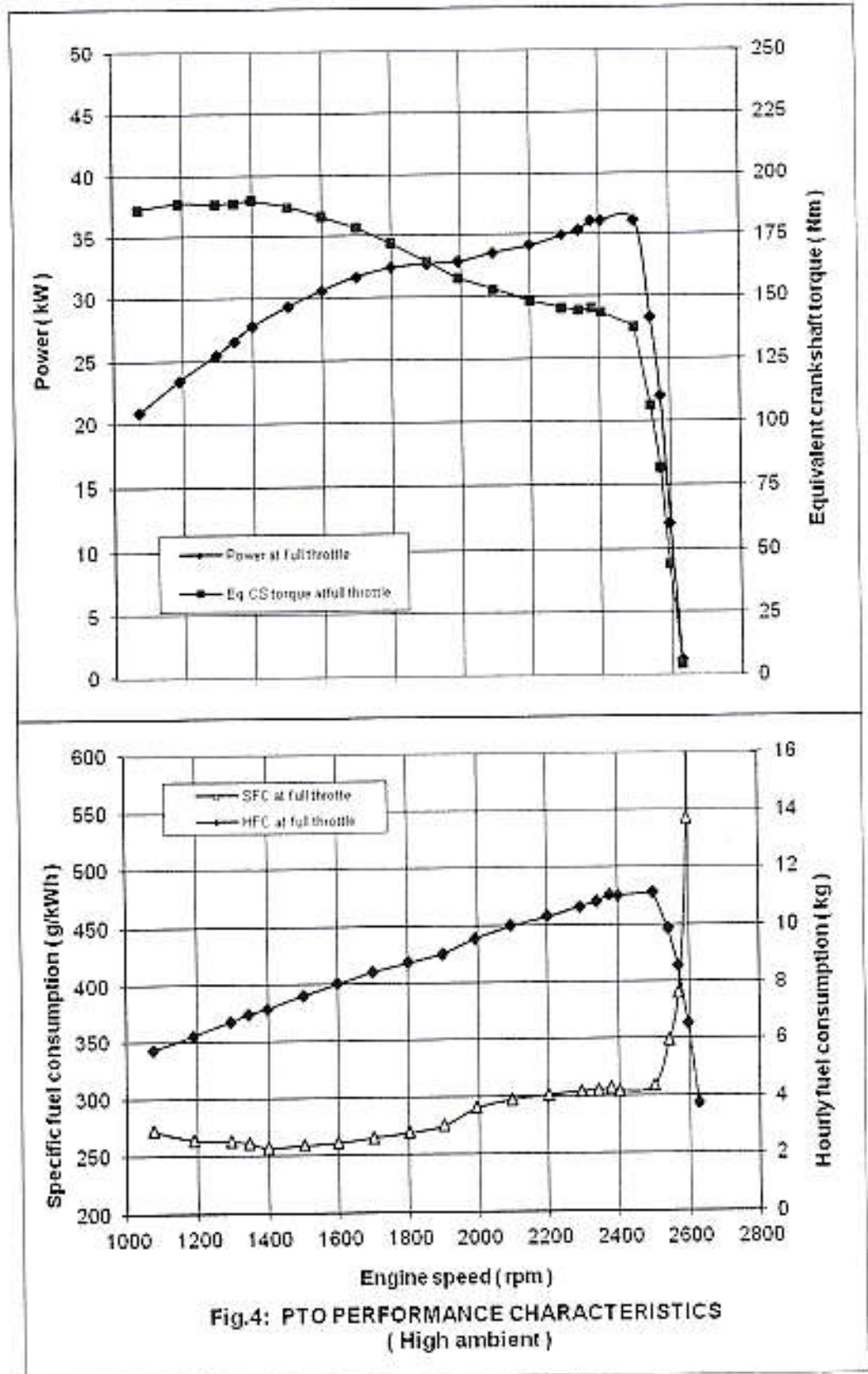
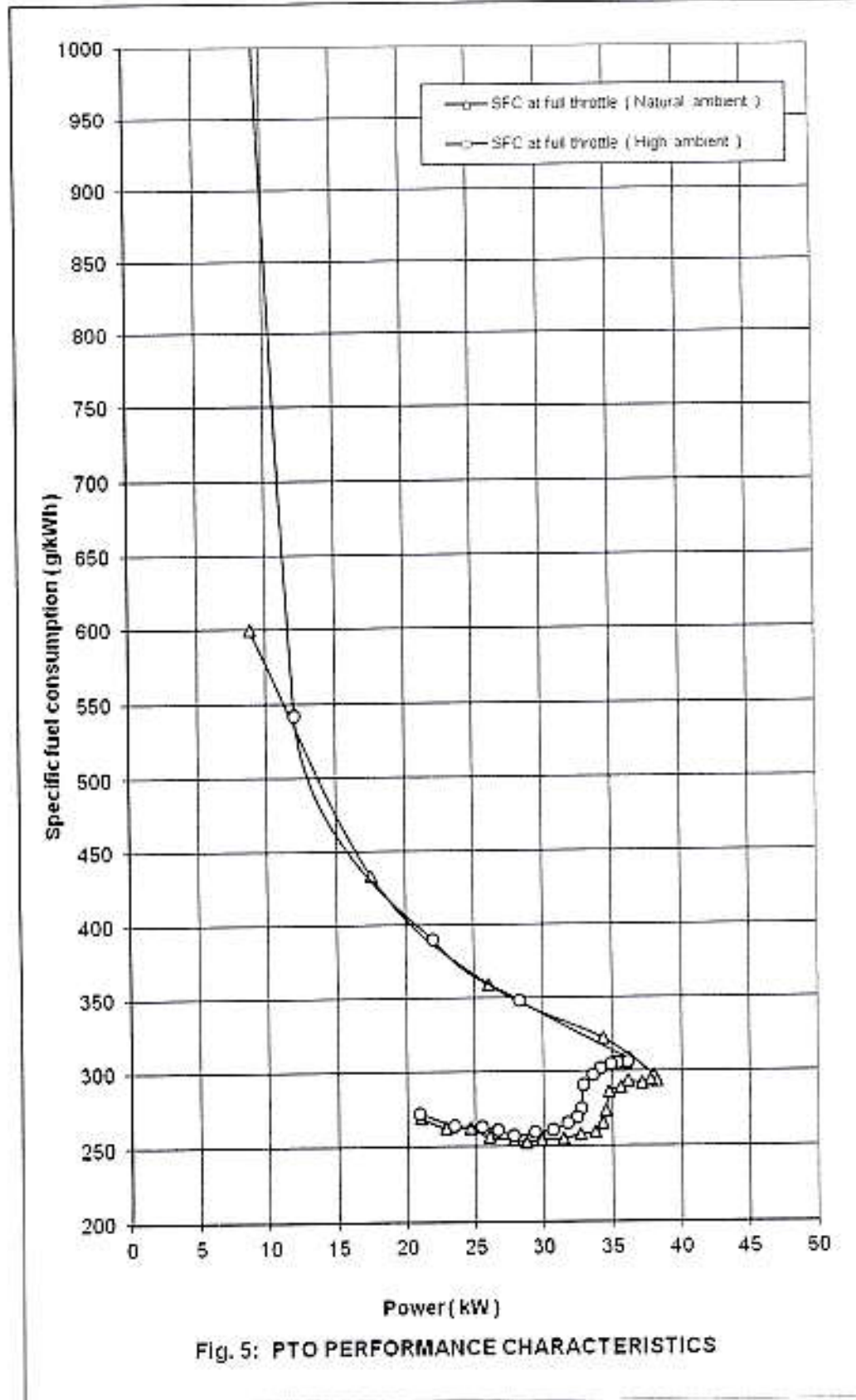


Fig.4: PTO PERFORMANCE CHARACTERISTICS  
( High ambient )







|   | <u>Natural ambient</u> | <u>High ambient</u> |
|---|------------------------|---------------------|
| -No load maximum engine speed, (rpm) :                                  | 2631                   | 2627                |
| -Equivalent crankshaft torque at maximum power, (Nm) :                  | 153.9                  | 145.4               |
| -Maximum equivalent crankshaft torque, (Nm) :                           | 208.3                  | 189.9               |
| -Engine speed at maximum Equivalent crankshaft torque, (rpm) :          | 1192                   | 1399                |
| - Backup torque (%) :   | 35.4                   | 30.6                |
| <b>Smoke level</b> , maximum light absorption coefficient (per meter) : | 0.80                   | --                  |
| <b>-Range of atmospheric conditions:</b>                                |                        |                     |
| Temperature, (°C) :   | 26 to 31               | 42 to 45            |
| Pressure, (kPa) :   | 98.3 to 98.7           | 99.1 to 100         |
| Relative humidity, (%) :  | 46 to 66               | 19 to 23            |
| <b>-Maximum temperatures, (°C):</b>                                     |                        |                     |
| Engine oil :  | 108                    | 121                 |
| Coolant :   | 86                     | 115                 |
| Fuel :  | 41                     | 53                  |
| Air intake :  | 34                     | 52                  |
| Exhaust gas :   | 419                    | 415                 |
| <b>-Pressure at maximum power:</b>                                      |                        |                     |
| Intake air, ( kPa ) :   | 4.8                    | 4.5 to 4.7          |
| Exhaust gas, ( kPa ) :  | 125 to 126             | 114 to 115          |
| <b>-Consumptions:</b>   |                        |                     |
| Lub oil, (g/kWh) :  | --                     | 0.24                |
| Coolant (% of total coolant capacity) :                                 | --                     | Nil                 |

#### 4. DRAWBAR PERFORMANCE TEST

Date(s) of test : 11.07.2017, 12.07.2017 , 18.07.2017 & 23.07.2017

Tractor run at the Institute prior to start of Drawbar test, (h) : 27.6

Type of track : Concrete

##### Height of drawbar, (mm):

- Without ballast : 500 mm  
- With ballast : 475 mm

- 4.1 The results of drawbar performance test consisting of maximum power and pull without ballast/with ballast and ten hours test are tabulated in **Table - 2** The results of the tests with ballast, are also represented graphically in **Fig.6 & 7**

Table - 2

**DRAWBAR PERFORMANCE TEST**

| Gear  | Travel Speed, (km/h) | Draw-bar power, (kW) | Draw-bar pull, (kN) | Engine Speed, (rpm) | Wheel Slip, (%) | Fuel consumption |       | Specific Energy, (kWh/l) | Atmospheric conditions |                |          | Temperature (°C) |           |                 | Max. sustained pull, (kN) |          |
|---|----------------------|----------------------|---------------------|---------------------|-----------------|------------------|-------|--------------------------|------------------------|----------------|----------|------------------|-----------|-----------------|---------------------------|----------|
|   |                      |                      |                     |                     |                 | (kg/kWh)         | (l/h) |                          | Temp (°C)              | Pressure (kPa) | R.H. (%) | Fuel             | Trans oil | Coolant (water) |                           | Eng. oil |
| 1   | 2                    | 3                    | 4                   | 5                   | 6               | 7                | 8     | 9                        | 10                     | 11             | 12       | 13               | 14        | 15              | 16                        | 17       |
| <b>i) Maximum power test (Tractor unballasted):</b> |                      |                      |                     |                     |                 |                  |       |                          |                        |                |          |                  |           |                 |                           |          |
| A1  | 2.17                 | 10.6                 | 17.51               | 2584                | 14.7            | 0.651            | 8.25  | 1.28                     | 30                     | 98.0           | 65       | 37               | 75        | 88              | 97                        | 18.65    |
| A2  | 3.90                 | 19.2                 | 17.76               | 2551                | 15.3            | 0.478            | 10.98 | 1.75                     | 29                     | 98.1           | 67       | 36               | 81        | 90              | 101                       | 18.62    |
| A3  | 4.65                 | 22.9                 | 17.73               | 2542                | 14.8            | 0.463            | 12.68 | 1.81                     | 30                     | 98.1           | 72       | 37               | 81        | 91              | 103                       | 18.52    |
| B1  | 5.07                 | 24.6                 | 17.46               | 2537                | 14.8            | 0.431            | 12.68 | 1.94                     | 28                     | 98.2           | 71       | 36               | 81        | 90              | 102                       | 18.25    |
| B2  | 9.84                 | 30.9                 | 11.30               | 2451                | 5.6             | 0.366            | 13.53 | 2.28                     | 26                     | 98.3           | 74       | 34               | 77        | 90              | 101                       | 16.58    |
| B3  | 11.87                | 33.2                 | 10.06               | 2456                | 4.3             | 0.341            | 13.54 | 2.45                     | 27                     | 98.4           | 79       | 34               | 59        | 89              | 100                       | 14.10    |
| <b>ii) Maximum power test (Tractor ballasted):</b>  |                      |                      |                     |                     |                 |                  |       |                          |                        |                |          |                  |           |                 |                           |          |
| A1  | 2.14                 | 15.5                 | 25.93               | 2574                | 15.1            | 0.520            | 9.64  | 1.61                     | 29                     | 97.8           | 67       | 35               | 78        | 88              | 99                        | 27.40    |
| A2  | 3.84                 | 27.0                 | 25.32               | 2519                | 15.0            | 0.417            | 13.47 | 2.0                      | 28                     | 97.9           | 65       | 35               | 78        | 92              | 105                       | 26.41    |
| A3  | 4.64                 | 29.3                 | 22.73               | 2450                | 10.8            | 0.385            | 13.49 | 2.17                     | 27                     | 97.9           | 70       | 36               | 63        | 90              | 102                       | 26.42    |
| B1  | 5.07                 | 30.2                 | 21.42               | 2428                | 9.6             | 0.372            | 13.44 | 2.25                     | 26                     | 98.1           | 76       | 34               | 77        | 90              | 102                       | 25.27    |
| B2  | 9.95                 | 30.6                 | 11.08               | 2453                | 4.1             | 0.368            | 13.47 | 2.27                     | 25                     | 98.2           | 77       | 33               | 63        | 90              | 100                       | 16.54    |
| B3  | 11.85                | 32.4                 | 9.83                | 2450                | 3.6             | 0.354            | 13.72 | 2.36                     | 25                     | 98.2           | 76       | 32               | 53        | 90              | 98                        | 13.85    |



Contd..Table-2

| G<br>e<br>a<br>r   | Travel<br>Speed,<br>(km/h) | Draw-<br>bar<br>power,<br>(kW) | Draw-<br>bar<br>pull,<br>(kN) | Engine<br>Speed,<br>(rpm) | Wheel<br>Slip,<br>(%) | Fuel consumption |       | Specific<br>Energy,<br>(kW/h/l) | Atmospheric conditions |                        |                |                | Temperature (°C) |                    |                    | Max.<br>sust-<br>ained<br>pull,<br>(kN) |
|--|----------------------------|--------------------------------|-------------------------------|---------------------------|-----------------------|------------------|-------|---------------------------------|------------------------|------------------------|----------------|----------------|------------------|--------------------|--------------------|---|
|  |                            |                                |                               |                           |                       | (kg/<br>kWh)     | (l/h) |                                 | Temp<br>(°C)           | Pre-<br>ssure<br>(kPa) | R.H.<br>(%)    | Fuel           | Trans.<br>oil    | Coolant<br>(water) | Eng-<br>ine<br>oil |   |
| 1  | 2                          | 3                              | 4                             | 5                         | 6                     | 7                | 8     | 9                               | 10                     | 11                     | 12             | 13             | 14               | 15                 | 16                 | 17                                      |
| <b>iii) Five hours test at 75 percent of pull obtained at max. Power (ballasted wheeled tractor):</b>  |                            |                                |                               |                           |                       |                  |       |                                 |                        |                        |                |                |                  |                    |                    |   |
| A3   | 5.06                       | 24.0                           | 17.05                         | 2546                      | 6.4                   | 0.413            | 11.86 | 2.02                            | 28<br>to<br>29         | 97.4<br>to<br>97.6     | 64<br>to<br>89 | 36<br>to<br>39 | 50<br>to<br>84   | 89<br>to<br>90     | 96<br>to<br>101    | --                                      |
| <b>iv) Five hours test at pull corresponding to 15 percent wheel slip (ballasted wheeled tractor):</b> |                            |                                |                               |                           |                       |                  |       |                                 |                        |                        |                |                |                  |                    |                    |   |
| A2   | 3.97                       | 28.0                           | 25.33                         | 2525                      | --                    | 0.398            | 13.33 | 2.10                            | 25<br>to<br>27         | 97.5<br>to<br>97.8     | 80<br>to<br>89 | 31<br>to<br>34 | 50<br>to<br>83   | 89<br>to<br>91     | 100<br>to<br>104   | --                                      |

i) The coolant (water) and lub oil consumption during 10 hours test were observed as 4.73 ml/h and nil ml/h respectively.

ii) Tyre Creeping, (mm):

- LHS : 35

- RHS : 25

iii) Maximum temperatures during entire drawbar test, (°C):

Engine oil : 105

Coolant (Water) : 93

Transmission oil : 84

Fuel : 39



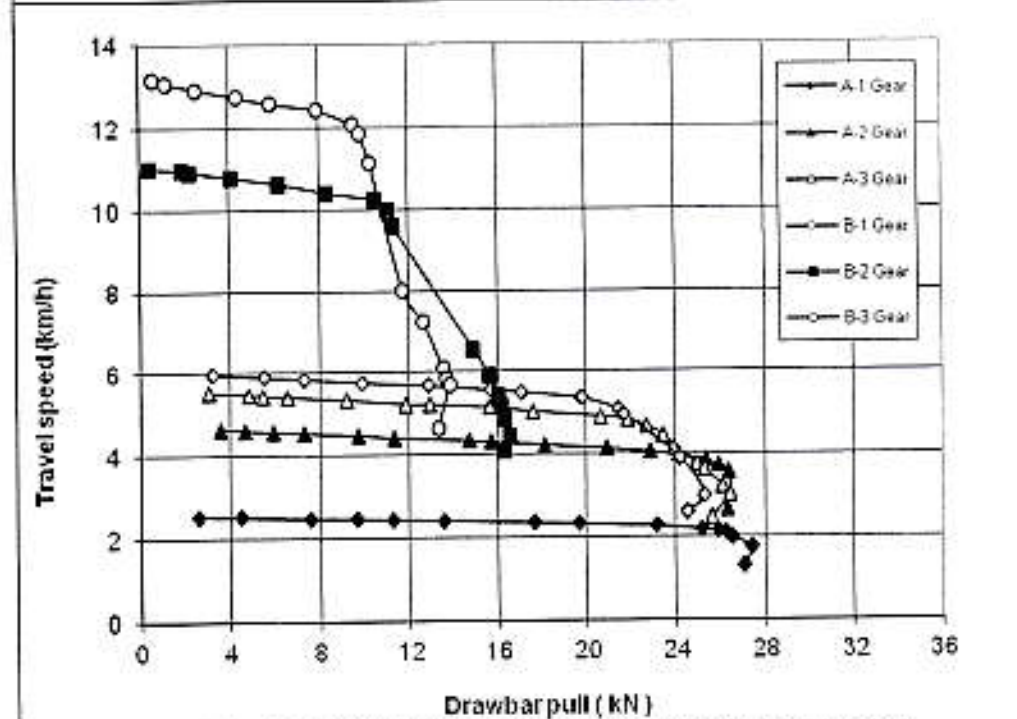
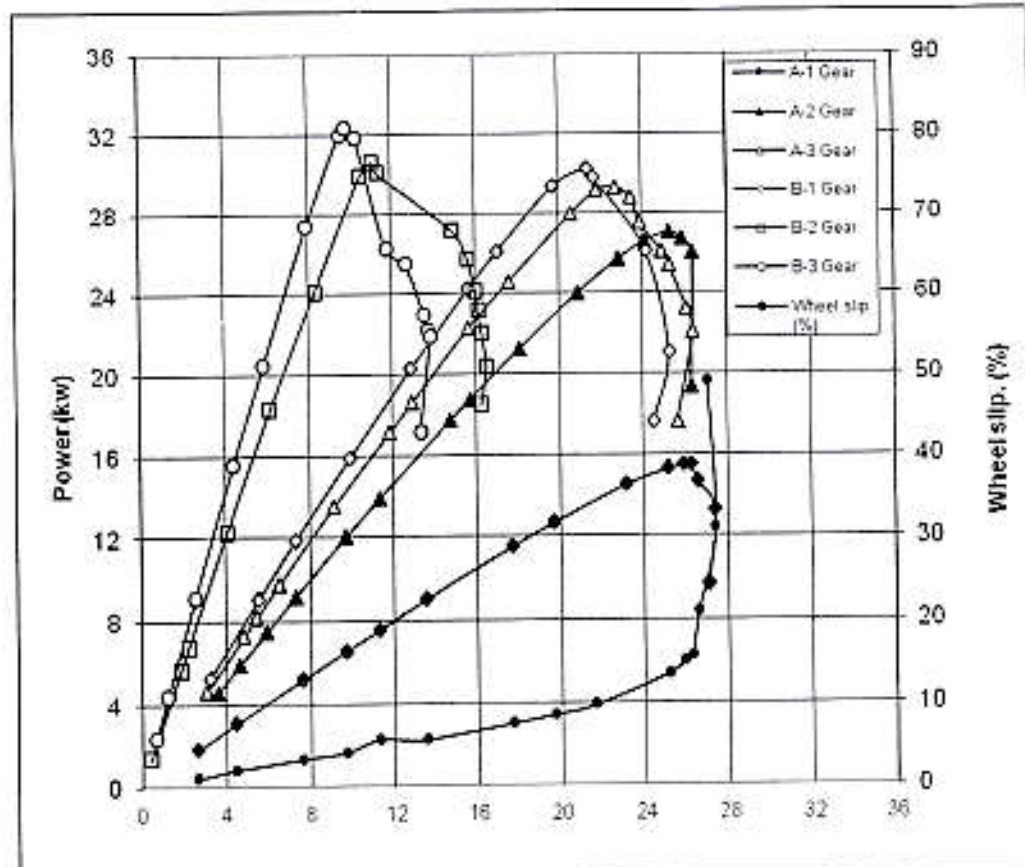
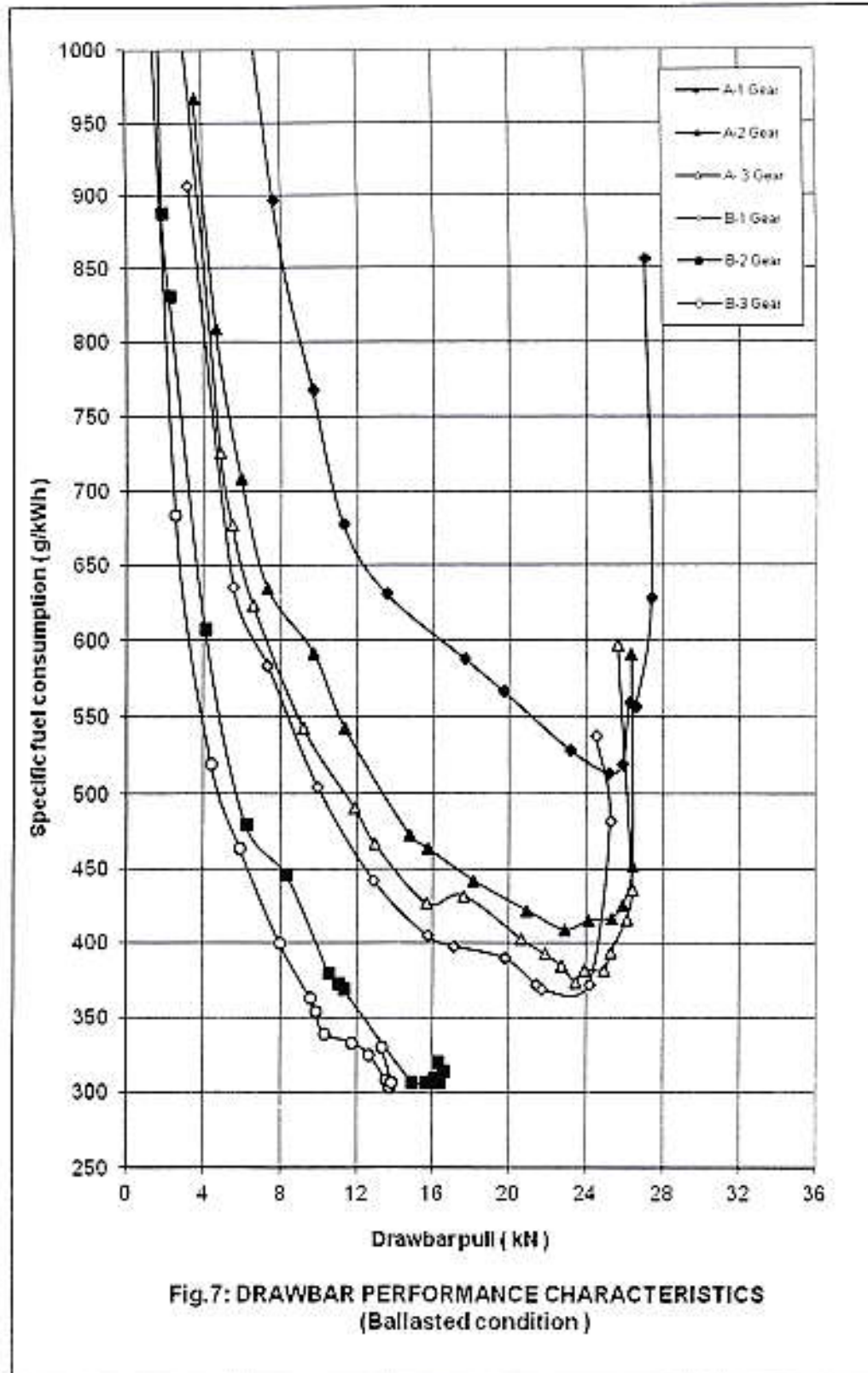


Fig. 6: DRAWBAR PERFORMANCE CHARACTERISTICS  
(Ballasted condition)





### 5. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE TEST

Date(s) of test : 01.05.2017 & 03.05.2017

Tractor run at the Institute prior to start of hydraulic test, (h) : 3.6

Pump speed at rated engine speed, (rpm) : 2400 (apa)

#### 5.1 Hydraulic power test:

Pump delivery rate at minimum pressure and rated engine speed, (lpm) : 29.3

Maximum hydraulic power, ( kW) : 7.0

Pump delivery rate at maximum hydraulic power, (lpm) : 24.6

Pressure at maximum hydraulic power, (MPa) : 17.0

Sustained pressure of the open relief valve, (MPa) : 19.5

#### Tapping point:

a) Relief valve test : External circuit

b) Pump performance test : At pump outlet

Temperature of hydraulic fluid, (°C) : 60 to 66

#### 5.2 Lifting capacity test:

| Test                  | Height of lower hitch point above ground in down position, (mm) | Vertical movement, with lifting forces, (mm) | Maximum corrected force exerted through full range, (kN) | Maximum corresponding pressure, (MPa) | Moment about rear axle, (kN-m) | Maximum tilt angle of mast from vertical (degrees) |
|-----------------------|---|--|--|---------------------------------------|--------------------------------|--|
| At hitch points       | 200   | 610  | 18.33  | 17.55                                 | 18.24                          | --   |
| On the standard frame | 200   | 620  | 14.07  | 17.55                                 | 22.58                          | 16.1   |

#### 5.3 Maintenance of lift load:

Force applied at the frame, (kN) : 12.66

Temperature of hydraulic fluid at the start of test, (°C) : 60

#### Test data:

|   |    |    |    |    |    |    |
|---|----|----|----|----|----|----|
| Elapsed time (minute)                   | 5  | 10 | 15 | 20 | 25 | 30 |
| Cumulative drop in height of lift, (mm) | 18 | 21 | 21 | 21 | 21 | 21 |





## 6. BRAKE TEST

## 6.1 Service brake:

## 6.1.1 Cold brake test:

Date of test: : 22.02.2017  
 Type of track : Concrete  
 Maximum attainable speed (kmph):  
 - Unballasted : 35  
 - Ballasted : 35

At maximum attainable travel speed

|                        |  |       |       |       |       |
|------------------------|--|-------|-------|-------|-------|
| Unballasted tractor    | Braking device control force, (N)        | 498   | 393   | 289   | 184   |
|                        | Mean deceleration, (m/sec <sup>2</sup> ) | 3.48  | 3.26  | 3.17  | 2.50  |
|                        | Stopping distance, (m)                   | 13.66 | 14.50 | 14.91 | 18.90 |
| Road Ballasted tractor | Braking device control force, (N)        | 535   | 421   | 308   | 194   |
|                        | Mean deceleration, (m/sec <sup>2</sup> ) | 3.38  | 3.02  | 2.93  | 2.50  |
|                        | Stopping distance, (m)                   | 14.13 | 15.63 | 16.16 | 18.90 |

At 25 kmph travel speed

|                        |  |      |      |      |      |
|------------------------|--|------|------|------|------|
| Unballasted tractor    | Braking device control force, (N)        | 500  | 395  | 289  | 184  |
|                        | Mean deceleration, (m/sec <sup>2</sup> ) | 3.87 | 3.31 | 2.84 | 2.50 |
|                        | Stopping distance, (m)                   | 6.28 | 7.28 | 8.50 | 9.65 |
| Road Ballasted tractor | Braking device control force, (N)        | 574  | 458  | 342  | 226  |
|                        | Mean deceleration, (m/sec <sup>2</sup> ) | 3.45 | 3.18 | 2.97 | 2.50 |
|                        | Stopping distance, (m)                   | 7.08 | 7.58 | 8.11 | 9.65 |

## 6.1.2 Brake fade test:

At maximum attainable travel speed

|                        |  |       |       |       |       |
|------------------------|--|-------|-------|-------|-------|
| Road Ballasted tractor | Braking device control force, (N)        | 543   | 436   | 329   | 222   |
|                        | Mean deceleration, (m/sec <sup>2</sup> ) | 3.29  | 3.09  | 2.74  | 2.50  |
|                        | Stopping distance, (m)                   | 14.29 | 15.29 | 17.27 | 18.90 |

At 25 kmph travel speed

|                        |  |      |      |      |      |
|------------------------|--|------|------|------|------|
| Road Ballasted tractor | Braking device control force, (N)        | 579  | 472  | 364  | 257  |
|                        | Mean deceleration, (m/sec <sup>2</sup> ) | 3.26 | 2.78 | 2.72 | 2.50 |
|                        | Stopping distance, (m)                   | 7.59 | 8.66 | 8.88 | 9.65 |

Max. deviation of tractor from its : None  
 original course, (m)  
 Abnormal vibration : None  
 The brakes were heated by : Self braking

## 6.2 Parking brake test:

| Particulars                       | Parked on 18 percent slope |             | Parked on 12 percent slope with trailer of 2.16 tonnes. |             |
|-----------------------------------|----------------------------|-------------|---|-------------|
|                                   | Facing up                  | Facing down | Facing up   | Facing down |
| Braking device control force, (N) | 228                        | 246         | 347   | 357         |
| Efficacy of parking brake         | ----- Effective -----      |             |   |             |

## 7. NOISE MEASUREMENT

### 7.1 Noise at bystander's position:

Date of test : 20.02.2017  
 Type of track : Concrete  
 Background noise level, dB(A) : 51  
**Atmospheric conditions:**  
 Temperature, (°C) : 34  
 Pressure, (kPa) : 97  
 Relative humidity, (%) : 39  
 Av. wind velocity, (m/s) : 2.6

#### Test data:

| S. No. | G e a r | Traveling speed before acceleration, (kmph) | Noise level, dB(A) |
|--------|---------|---|--------------------|
| 1.     | A1      | 2.36  | 82                 |
| 2.     | A2      | 4.32  | 82                 |
| 3.     | A3      | 5.13  | 82                 |
| 4.     | B1      | 5.53  | 82                 |
| 5.     | B2      | 10.12                                       | 81                 |
| 6.     | B3      | 12.07                                       | 81                 |
| 7.     | C1      | 15.12                                       | 81                 |
| 8.     | C2      | 24.09                                       | 81                 |
| 9.     | C3      | 28.36                                       | 81                 |

### 7.2 Noise at operator's ear level:

Date of test : 11.07.2017  
 Type of track : Concrete  
 Background noise level, dB(A) : 56  
**Atmospheric conditions:**  
 Temperature, (°C) : 31  
 Pressure, (kPa) : 98  
 Relative humidity, (%) : 60  
 Av. Wind velocity, (m/s) : 1.7

#### Test data:

| Gear | Drawbar pull at which the tractor develops the max. noise level.(kN ) | Corresponding traveling speed, (kmph) | Noise level dB(A) |
|------|---|---------------------------------------|-------------------|
| A1   | 8.94 to 16.78   | 2.43 to 2.22                          | 92                |
| A2   | 8.44 to 13.26   | 4.44 to 4.26                          | 95                |
| A3   | 11.03 to 17.73  | 5.18 to 4.65                          | 93                |
| *B1  | 3.45 to 16.46   | 5.97 to 5.36                          | 92                |
| B2   | 11.40 to 11.42  | 9.69 to 9.62                          | 95                |
| B3   | 10.07 to 10.12  | 11.82 to 11.68                        | 95                |

\* Gear corresponds to the nominal travelling speed nearest to 7.5 kmph.





### 8. MECHANICAL VIBRATION MEASUREMENT

Date of test : 08.10.2010  
Type of test surface : Concrete

| Sl. No. | Measuring points             |        | Vibration, microns |      |   |      |
|---------|------------------------------|--------|--------------------|------|---|------|
|         |                              |        | At no load         |      | At load corresponding to 85% of maximum PTO power |      |
|         |                              |        | HD                 | VD   | HD  | VD   |
| i)      | Foot rest                    | Left   | 70                 | 250* | 70  | 480* |
|         |                              | Right  | 80                 | 200* | 370*  | 200* |
| ii)     | Steering wheel               |        | 90                 | 110* | 100   | 140* |
| iii)    | Seat                         | Back   | 30                 | 20   | 50  | 50   |
|         |                              | Bottom | 50                 | 90   | 60  | 50   |
| iv)     | Mudguard                     | Left   | 40                 | 20   | 60  | 70   |
|         |                              | Right  | 30                 | 60   | 70  | 40   |
| v)      | Head light                   | Left   | 40                 | 40   | 100   | 130* |
|         |                              | Right  | 220*               | 150* | 90  | 150* |
| vi)     | Battery base, centre         |        | 170*               | 130* | 240*  | 280* |
| vii)    | Tail light                   | Left   | 90                 | 70   | 160*  | 120* |
|         |                              | Right  | 120*               | 130* | 190*  | 240* |
| viii)   | Plough light                 |        | 180*               | 240* | 120*  | 150  |
| ix)     | Gear shifting lever          |        | 160*               | 130* | 30  | 110  |
| x)      | Accelerator lever            | Hand   | 20                 | 60   | 220*  | 270* |
|         |                              | Foot   | 70                 | 120* | 410*  | 540* |
| xi)     | Brake pedal                  | Left   | 40                 | 120* | 140*  | 240* |
|         |                              | Right  | 60                 | 40   | 200*  | 100  |
| xii)    | Clutch pedal                 |        | 30                 | 70   | 70  | 100  |
| xiii)   | Main hydraulic control lever |        | 90                 | 120* | 250*  | 40   |
| xiv)    | PTO engaging lever           |        | 20                 | 20   | 60  | 40   |
| xv)     | Differential lock lever      |        | 30                 | 60   | 30  | 40   |

\* The amplitude of mechanical vibration is on higher side.

### 9.0 FIELD TEST

9.1 The major breakdown were not observed in the field testing during ICT of this tractor model of tested vide test report no.T-834/1343/2012,(June).So, as per the provision of laid down in clause 7.2 of IS:12207-2014,the filed test during the batch testing of this tractor model was not conducted.

### 10. HAULAGE TEST

#### Type of trailer:

|   | Two wheel<br>(Single axle) | Four wheel<br>(Double axle) |
|---|----------------------------|-----------------------------|
| Gross mass of trailer, (tonnes)                               | 5.0                        | 7.5                         |
| Height of trailer hitch above ground level, (mm)              | 525                        | 540                         |
| Gear used during the test for negotiating slopes upto 8%      | C-3                        | C-3                         |
| Average travel speed, (kmph)                                  | 30.41 to 31.09             | 30.63 to 31.57              |
| <b>Average fuel consumption:</b>                              |                            |                             |
| - (lh)  | 8.96 to 9.02               | 9.03 to 9.35                |
| - (ml/km/tonne)   | 58.02 to 58.51             | 39.32 to 39.49              |
| Average distance traveled per litre of fuel consumption, (km) | 3.41 to 3.44               | 3.37 to 3.39                |
| <b>General observations:</b>                                  |                            |                             |
| Effectiveness of brakes                                       | Effective                  | Effective                   |
| Maneuverability of tractor-trailer Combination                | Satisfactory               | Satisfactory                |



## 11. COMPONENTS / ASSEMBLY INSPECTION

The engine and other assemblies were dismantled after 45.9 hours of tractor operation at this Institute.

## 11.1 Engine:

## 11.1.1 Cylinder bore:

| Cylinder No. | Cylinder bore diameter, (mm) |                 |                 |                 |                 |                 | Maximum permissible limit, (mm) |
|--------------|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------------------------|
|              | Top position                 |                 | Middle position |                 | Bottom position |                 |                                 |
|              | Thrust side                  | Non-thrust side | Thrust side     | Non-thrust side | Thrust side     | Non-thrust side |                                 |
| 1.           | 106.47                       | 106.49          | 106.48          | 106.49          | 106.49          | 106.48          | 106.62                          |
| 2.           | 106.48                       | 106.49          | 106.48          | 106.49          | 106.49          | 106.48          |                                 |
| 3.           | 106.48                       | 106.48          | 106.48          | 106.48          | 106.48          | 106.48          |                                 |

## 11.1.2 Piston:

| Piston No. | Piston diameter, (mm)            |                 |             |                 |             | Max. permissible wear limit | Piston to cylinder liner clearance at skirt, (mm) |  |
|------------|----------------------------------|-----------------|-------------|-----------------|-------------|-----------------------------|---|--|
|            | Top (above top compression ring) |                 | At skirt    |                 | As observed |                             | Discard limit                                     |  |
|            | Thrust Side                      | Non-thrust side | Thrust side | Non-thrust side |             |                             |   |  |
| 1.         | 104.745                          | 104.757         | 106.391     | **              | 106.30      | 0.099                       | 0.32  |  |
| 2.         | 104.885                          | 104.730         | 106.385     | **              |             | 0.105                       |   |  |
| 3.         | 104.732                          | 104.736         | 106.380     | **              |             | 0.100                       |   |  |

\*\* Not measured due to piston design features.

## 11.1.3 Ring end gap:

| Rings                      | Ring end gap, (mm) |             |             |                |             |             |                |             |             | Max. Permissible end gap limit, (mm) |
|----------------------------|--------------------|-------------|-------------|----------------|-------------|-------------|----------------|-------------|-------------|--------------------------------------|
|                            | Cylinder No. 1     |             |             | Cylinder No. 2 |             |             | Cylinder No. 3 |             |             |                                      |
|                            | Top                | Mid-<br>dle | Bot-<br>tom | Top            | Mid-<br>dle | Bot-<br>tom | Top            | Mid-<br>dle | Bot-<br>tom |                                      |
| 1 <sup>st</sup> comp. ring | 0.50               | 0.45        | 0.50        | 0.45           | 0.45        | 0.50        | 0.40           | 0.45        | 0.45        | 0.75                                 |
| 2 <sup>nd</sup> comp. ring | 0.75               | 0.75        | 0.75        | 0.70           | 0.70        | 0.75        | 0.70           | 0.70        | 0.70        | 2.00                                 |
| Oil ring                   | 0.50               | 0.50        | 0.50        | 0.45           | 0.50        | 0.50        | 0.45           | 0.45        | 0.45        | 0.75                                 |

## 11.1.4 Ring side clearance:

| Rings                            | Ring side clearance, (mm) |           |            | Max. Permissible clearance Limit, (mm) |
|----------------------------------|---------------------------|-----------|------------|--|
|                                  | Piston-I                  | Piston-II | Piston-III |  |
| 1 <sup>st</sup> Compression ring | - Taper Rings -           |           |            | ---                                    |
| 2 <sup>nd</sup> Compression ring | 0.046                     | 0.060     | 0.055      | 0.25                                   |
| Oil ring                         | 0.070                     | 0.070     | 0.074      | 0.92                                   |

## 11.1.5 Main bearings:

| Bearing No. | Diametrical Clearance, (mm) | Crankshaft end Float, (mm) | Max. permissible clearance limit, (mm) |                      |
|-------------|-----------------------------|----------------------------|--|----------------------|
|             |                             |                            | Diametrical clearance                  | Crankshaft end float |
| 1.          | 0.108 to 0.128              | 0.30                       | 0.65                                   | 0.85                 |
| 2.          | 0.114 to 0.127              |                            |  |                      |
| 3.          | 0.109 to 0.198              |                            |  |                      |
| 4.          | 0.097 to 0.120              |                            |  |                      |

**11.1.6 Big end bearings:**

| Bearing No. | Clearance, (mm) |       | Max. permissible clearance limit, (mm) |       |
|-------------|-----------------|-------|--|-------|
|             | Diametrical     | Axial | Diametrical                            | Axial |
| 1.          | 0.098           | 0.40  | 0.32                                   | 0.65  |
| 2.          | 0.084 to 0.092  | 0.40  |  |       |
| 3.          | 0.094 to 0.102  | 0.40  |  |       |

**11.1.7 Valve, guides and timing gears: Observation**

Any marked sign of overheating of valves : None

Pitting of seat/faces of valves : None

Any visual damage to the teeth of timing gears : None

**Spring Rate, (N/mm):**

Intake valve spring : 32.86 to 33.52 | Against discard limit of 17.0 N/mm

Exhaust valve spring : 32.54 to 32.70

**Clearance between valve guide and valve stem, (mm):**

Intake : 0.020 to 0.027 | Against discard limit of 0.16 mm

Exhaust : 0.026 to 0.033

**11.2 Clutch:**

Any marked wear on clutch friction plate(s) : None

Condition of clutch release bearing : Normal

Condition of pilot bearing : Normal

Condition of springs and release levers : Normal

Presence of oil in clutch housing : None

Any marks on fly wheel/pressure plate : None

**Overall thickness of clutch plate, (mm):**

- Transmission : 10.76 to 10.81 | Against discard limit of wear upto rivet head

- PTO : 7.65 to 7.69

**Height of lining over rivet head, (mm):**

- Transmission : 2.75 to 2.85 | Against discard limit of wear upto rivet head

- PTO : 0.62 to 0.93

**11.3 Transmission gears:**

Any visual damage, pitting &amp; chipping of any transmission gear teeth : None

Backlash between crown wheel and Pinion, (mm) : 0.32 | Against discard limit of 0.60 mm

**11.4 Brakes:**

| Description | Initial specified thickness of brake disc, (mm) | Measured thickness of brake disc after test, (mm) | Measured height of lining over oil groove, (mm) | Minimum permissible thickness, (mm) |
|-------------|---|---|---|-------------------------------------|
| Left        | Not specified                                   | 4.97 to 4.99                                      | 1.18 to 1.33                                    | Wear upto oil groove                |
| Right       | Not specified                                   | 4.94 to 4.97                                      | 1.08 to 1.27                                    |                                     |





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|  |                    |                                  |
|--|--------------------|----------------------------------|
| <b>11.5 Front axle:</b>  | <b>Observation</b> |                                  |
| Any marked wear of king pins                                     | : None             |                                  |
| Any marked wear of king pin bushes                               | : None             |                                  |
| Clearance between king pins and bushes,(mm)                      | : 0.174 to 0.250   | Against discard limit of 0.80 mm |
| Condition of thrust bearings                                     | : Normal           |                                  |
| Condition of bearings for stub axles                             | : Normal           |                                  |
| Condition of seals for stub axles and king pins                  | : Normal           |                                  |
| Clearance between centre pin and bush, (mm)                      | : 0.082 to 0.114   | Against discard limit of 0.80 mm |
| <b>11.6 Steering system:</b>                                     |                    |                                  |
| Visual condition of the components of complete steering assembly | : Normal           |                                  |
| <b>11.7 Starter motor &amp; Alternator:</b>                      |                    |                                  |
| Presence of soil/oil in housing                                  | : None             |                                  |
| Condition of bearings and other Components                       | : Normal           |                                  |

**12. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS**

| S. No. | Adjustments/Defects/Breakdowns/Repairs | Tractor run hours |
|--------|--|-------------------|
|        | -None-                                 |                   |

**13. COMPARISON OF SPECIFICATION AND PERFORMANCE CHARACTERISTICS OF PREVIOUS SAMPLE (TEST REPORT No. T-834/1343/2012,June) AND PRESENT SAMPLE**

|   | <u>Previous sample</u>                      | <u>Present sample</u>                            |
|---|---|--|
| <b>13.1 Specification:</b>                        |   |  |
| <b>13.1.1 Tractor:</b>                            |   |  |
| Make  | : JOHNDEERE                                 | JOHNDEERE  |
| Model   | : 5060E V2                                  | 5060E V2   |
| <b>13.1.2 Engine:</b>                             |   |  |
| Make  | : JOHNDEERE                                 | JOHNDEERE  |
| Model   | : 3029HPY37                                 | 3029HPY48  |
| Bore/Stroke, (mm)                                 | : 106.5/110                                 | 106.5/110  |
| Specified cubic capacity, (cc)                    | : 2940                                      | 2940   |
| Rated engine speed (rpm)                          | : 2400                                      | 2400   |
| <b>13.1.2.1 Fuel system:</b>                      |   |  |
| Make & model of fuel feed pump                    | : John Deere                                | John Deere                                       |
| Make & model of fuel filters                      | : Johndeere& RE60021                        | Johndeere & 32306                                |
| Make and model of fuel injection pump             | : Stanadyne ,Made In USA & DB4327-6164      | Stanadyne ,Made In USA & G6 DB4327-6164,RE546808 |
| Make & model of fuel injectors                    | : Stanadyne ,Made in Italy& 39012           | Stanadyne ,Made in Italy& 39012                  |
| Type of injector                                  | : Multi hole (Five holes)                   | Multi hole (Five holes)                          |
| Manufacturer's production pressure setting, (MPa) | : 25.5 to 26.3                              | 25.5 to 26.3                                     |
| Injection timing                                  | : 6.5± 1 degree BTDC                        | 8 ± 1 degree BTDC                                |
| Make & model of governor                          | : Stanadyne ,Made In USA & Inbuilt with FIP | Stanadyne ,Made In USA & Inbuilt with FIP        |
| <b>13.1.2.2 Lubricating system:</b>               |   |  |
| Total lubricating oil capacity, ( l )             | : 8.60                                      | 8.82   |





|          |   | Previous sample                                      | Present sample                             |
|----------|---|--|--|
| 13.1.3   | <b>Transmission:</b>  |  |  |
| 12.1.3.1 | <b>Clutch:</b>  |  |  |
|          | Type of clutch plate  | : Dual, dry friction plates                          |  |
|          | Size, (mm),(OD/ID)  |  |  |
|          | - Main transmission   | : 280 ø  | 280 /167 ø                                 |
|          | -PTO  | : 280 ø  | 280 /167 ø                                 |
| 13.1.3.2 | <b>Gear Box:</b>  |  |  |
|          | <b>No. of speeds:</b>   |  |  |
|          | - Forward   | : 9  | 9  |
|          | - Reverse   | : 3  | 3  |
|          | <b>Range of speed, (kmph) :</b>   |  |  |
|          | - Forward   | : 2.32 to 32.66                                      | 2.32 to 32.63                              |
|          | - Reverse   | : 3.90 to 25.29                                      | 3.90 to 25.29                              |
| 13.1.4   | <b>Service Brake:</b>   |  |  |
|          | Type  | : Hydraulic assisted, Oil immersed multi disc brakes |  |
|          | No. of friction disc  | : One on each wheel side                             |  |
|          | Area of liners, (cm <sup>2</sup> )  | : 493.5 (on each wheel side)                         | 494.2 (on each wheel side)                 |
| 13.1.5   | <b>Wheel equipment:</b>   |  |  |
|          | <b>Make &amp; Size of tyres</b>   |  |  |
|          | - Front   | : 6.50-20, 8 PR                                      | 6.50-20, 8 PR                              |
|          | - Rear  | : 16.9-28, 12 PR                                     | 16.9-28, 12 PR                             |
|          | <b>Standard Track width, (mm):</b>  |  |  |
|          | - Front   | : 1375   | 1365                                       |
|          | - Rear  | : 1410   | 1405                                       |
| 13.1.5.1 | <b>Wheel base, (mm)</b>   | : 2045   | 2055                                       |
| 13.1.6   | <b>Overall dimensions, (mm):</b>  |  |  |
|          | - Length  | : 3530   | 3505                                       |
|          | - Width   | : 1860   | 1835                                       |
|          | - Height (at steering wheel)  | : 2285   | 2295                                       |
|          | - Ground clearance, (mm) (below trailer hitch mounting bracket)   | : 470 ((below trailer hitch mounting bracket)        | 450 (below trailer hitch mounting bracket) |
| 13.1.7   | <b>Operational mass (kg),(unballast):</b>   |  |  |
|          | - Front   | : 750  | 740  |
|          | - Rear  | : 1370   | 1435                                       |
|          | - Total   | : 2120   | 2175                                       |
| 13.1.8   | <b>Conformity with following IS:</b>  |  |  |
| i)       | Guide lines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS 10273:1987 (Reaffirmed in March, 2009)]               | : Conformed  | Conforms                                   |
| ii)      | Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3 (third revision)[IS: 4931-1995 (Reaffirmed in March, 2009)]  | : Did not Conform                                    | Does not conform                           |
| iii)     | Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468(Part-I):1997/ISO 730-1:1994 (Reaffirmed in March, 2007)] | : Did not Conform                                    | Does not conform                           |
| iv)      | Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in March, 2007)]   | : Conformed  | Conforms                                   |



|  | Previous sample   | Present sample   |
|--|-------------------|------------------|
| v) Agricultural tractors - Operator's seat technical requirement [IS 12343 -1998 (First revision) (Reaffirmed in March, 2009)]   | : Did not Conform | Does not conform |
| vi) Guide for safety & comfort of operator of agricultural tractor Part 1 general requirement (first revision) [IS: 12239 (Part-1) 1996/ISO 4254-1: 1989. (Re-affirmed in March, 2007)]  | : Did not conform | Does not conform |
| vii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (PT-2) 1999) (Re-affirmed in March, 2009.)  | : Did not conform | Does not conform |
| viii) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133-1983) (Re-affirmed in March, 2009)   | : Conformed       | Conforms         |
| ix) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – symbols for operator controls and other displays. Part – 2: Symbols for agriculture tractors and machinery [IS :5283 (Part-I&II)-1998 (Reaffirmed in March, 2009) /ISO3767-2: 1991] | : Did not conform | Does not conform |
| x) Agricultural tractor and machinery lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in March, 2009)  | : Conformed       | Conforms         |
| <b>13.2 Performance Characteristics:</b>   |                   |                  |
| <b>13.2.1 PTO Performance:</b>   |                   |                  |
| Maximum Power, (kW) (observed)   | : 39.8            | 38.2             |
| Power at Rated engine speed,(kW)   | : 38.6            | 38.0             |
| Specific fuel consumption corresponding to maximum power, (g/kWh)  | : 276             | 293              |
| Maximum equivalent crankshaft torque,(Nm)  | : 212.5           | 208.3            |
| Back up torque, (%)  | : 18.9            | 35.4             |
| <b>Maximum temperatures (degree):</b>  |                   |                  |
| Engine oil   | : 123             | 121              |
| Coolant  | : 97              | 115              |
| Fuel   | : 47              | 53               |
| Air intake   | : 45              | 52               |
| Exhaust gas  | : 798             | 415              |
| Lub oil consumption, (g/kWh)   | : 1.87            | 0.24             |
| <b>13.2.2 Drawbar performance :</b>  |                   |                  |
| Maximum power with unballasted tractor, (kW)   | : 34.0            | 33.2             |
| Maximum pull with unballasted Tractor, (kN)  | : 15.44           | 17.76            |
| Maximum transmission oil temperature (deg. C)  | : 86              | 84               |
| <b>13.2.3 Hydraulic performance:</b>   |                   |                  |
| Hydraulic pump discharge at minimum pressure and rated engine speed (l/min.)   | : 27.06           | 29.3             |
| Maximum hydraulic power, (kW)  | : 6.41            | 7.0              |
| Sustained pressure of the open relief valve, (MPa)   | : 18.5            | 19.5             |





|   | Previous sample | Present sample |
|---|-----------------|----------------|
| <b>Maximum lifting capacity, (kN):</b>                            |                 |                |
| - At the hitch point :  | 17.37           | 18.33          |
| - At the standard frame :   | 13.83           | 14.07          |
| Total drop in height of lift during load maintenance test, (mm) : | 02              | 21             |

**13.2.4 Brake performance test at 25 kmph speed (max).**

| Parameter  | Previous Sample |      | Present Sample |      |
|--|-----------------|------|----------------|------|
|  | Cold            | Hot  | Cold           | Hot  |
| Maximum Stopping distance, (m)   | 7.74            | 8.20 | 7.08           | 7.59 |
| Maximum force exerted on the brake   | 241 to 249      |      | 226 to 257     |      |
| Pedal effort required to achieve deceleration of 2.5 m/sq sec, (N)                             | Effective       |      | Effective      |      |
| Weather parking brake is effective at a force of 600N at foot pedal (s) or 400 N at hand lever | Effective       |      | Effective      |      |

**13.2.5 Noise measurement:**

|   |    |    |
|---|----|----|
| - Maximum noise at bystanders position, dB(A) : | 82 | 82 |
| - Maximum noise at operator's ear level dB(A) : | 96 | 95 |

**13.2.6 Mechanical vibration:**

|  |           |           |
|--|-----------|-----------|
| Maximum amplitude of vibration at (microns): |           |           |
| - Foot rest – LHS & RHS :                    | 100 & 100 | 480 & 370 |
| - Steering wheel :                           | 80        | 140       |
| - Driver's seat, (driver in seat): :         | 90        | 90        |

**13.2.7 Haulage Test:**

|   | Two wheel trailer | Four wheel trailer | Two wheel trailer | Four wheel trailer |
|---|-------------------|--------------------|-------------------|--------------------|
| -Gross mass of trailer, (tonnes) :                    | 5.0               | 7.5                | 5.0               | 7.5                |
| - Average speed, (kmph) :                             | 29.19 to 29.41    | 30.06              | 30.41 to 31.09    | 30.63 to 31.57     |
| -Distance traveled per litre of fuel consumed, (km) : | 4.06 to 4.11      | 3.76 to 3.78       | 3.41 to 3.44      | 3.37 to 3.39       |
| - Average fuel consumption (cc/km/tonne) :            | 48.66 to 49.26    | 32.26 to 35.46     | 58.0 to 58.51     | 39.32 to 39.49     |

**13.2.8 Wetland cultivation (Puddling Operation)**

Whether requirement of IS : 11082-1984 are meet in full : Meets the requirement

**13.3 Salient Observations:**

**13.3.1 Laboratory test:**

| Previous Sample   | Present Sample                     |
|---|------------------------------------|
| i) No abnormal observation was found in previous test sample. | No abnormal observation was found. |

**13.4 Adequacy of literature:**

|  |   |
|--|---|
| i) The following literature was supplied with the tractor for reference during the test. | The following literature was supplied with the tractor for reference during the test. |
| a) Operator's manual   | a) Operator's manual  |
| b) Workshop manual   | b) Workshop manual  |
| c) Parts catalogue   | c) Parts catalogue  |





13.5 Qualifying performance (comparable limit) for batch model in comparison to ICT model (please refer clause 7.6 of IS:12207-2014):

| 1<br>S. No. | 2<br>Characteristic   | 3<br>Requirements<br>as per IS: 12207-2014  |  | 5<br>As observed |       | 6<br>Whether<br>meets<br>the<br>require-<br>ments<br>(Yes/No) |
|-------------|---|---|--|------------------|-------|---|
|             |   | Column – 4 of Table-1   | 4<br>Clause 7.6  |                  |       |   |
| 13.5.1      | <b>Drawbar performance:</b>   |   |  |                  |       |   |
| a)          | Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)  | Minimum 65% of static mass with ballast   | The performance shall be within 7.5 of ICT or limit specified under column 3 which ever is higher  | 22.05            | 25.93 | Yes   |
| b)          | Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)   | Minimum 65% of static mass of tractor with out/ standard ballast  |  | 15.44            | 17.7  | Yes   |
| c)          | Maximum drawbar power without ballast, (kW).  | Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg<br>Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor<br>Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft. |  | 34.0             | 33.2  | Yes   |
| d)          | Maximum transmission oil temperature (°C)   | The declared value should not exceed the maximum value specified by oil company.  |  | 86               | 84    | Yes   |
| 13.5.2      | <b>Power lift and hydraulic pump performance :</b>  |   |  |                  |       |   |
| a)          | Maximum lifting capacity throughout the range of lift, (kN):  |   |  |                  |       |   |
|             | 1)  | At hitch points   | [Tolerance of minus 10%]   | 17.37            | 18.33 | Yes   |
|             | 2)  | With the standard frame   | The lift capacity should at least be 24 kg/PTO kW. and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft | 13.83            | 14.07 | Yes   |
| b)          | Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 minute, (mm) |   | The observed value should not exceed 50 mm   | 02               | 21    | Yes   |



## 14. SUMMARY OF OBSERVATIONS, COMMENTS &amp; RECOMMENDATIONS

- 14.1 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 are summarized as under:-

| S. No. | Characteristic  | Category<br>(Evaluative /<br>Non<br>Evaluative) | Requirements<br>as per IS: 12207-<br>2014   | Values<br>declared by<br>the<br>applicant<br>(D) /<br>Requirement<br>(R) | As<br>observed | Whether<br>meets<br>the<br>requirements<br>(Yes/No) |
|--------|---|---|---|--|----------------|---|
| 1      | 2   | 3   | 4   | 5  | 6              | 7   |
| 14.1.1 | <b>PTO Performance :</b>  |   |   |  |                |   |
| a)     | 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 >25 kW, -7.5/+10% for PTO power ≤ 25 kW or -5 / +10% for Engine power >25 kW -7.5/+10% for Engine power ≤ 25 kW.       | 39.0 (D)   | 38.2           | Yes   |
| b)     | Power at rated engine speed, (kW)                                 | Non Evaluative                                  | -do-  | 39.0 (D)   | 38.2           | Yes   |
| c)     | Specific fuel consumption corresponding to maximum power, (g/kWh) | Non Evaluative                                  | + 5%  | 280 (D)  | 293            | Yes   |
| d)     | Maximum equivalent crankshaft torque, (Nm)                        | Non Evaluative                                  | ± 8%  | 195 (D)  | 208.3          | Yes   |
| e)     | Back-up torque, percent   | Non Evaluative                                  | 10 percent, min.  | 10 (D)   | 22.3           | Yes   |
| f)     | <b>Maximum operating temperature(°C)</b>                          |   |   |  |                |   |
|        | 1) Engine oil   | Non Evaluative                                  | The declared value should not exceed the max. value specified by the oil company and the observed value under high ambient condition should not exceed the declaration.                           | 135 (D)  | 121            | Yes   |
|        | 2) Coolant (liquid)   | Evaluative                                      | The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration. | 120 (D)  | 115            | Yes   |
| g)     | Engine oil consumption, (g/kWh)                                   | Evaluative                                      | Not exceeding 1% of SFC at max. power under High ambient conditions   | 3.09 (R)   | 0.24           | Yes   |
| h)     | Smoke level   | Evaluative                                      | Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)   | 3.25 per metre (R)   | 0.80           | Yes   |





**JOHN DEERE, 5060E V2 TRACTOR – Commercial- (First Batch Test)**

| 1   | 2   | 3                       | 4   | 5  | 6          | 7     |     |
|---|---|-------------------------|---|--|------------|-------|-----|
| <b>14.1.2 Drawbar performance:</b>                        |   |                         |   |  |            |       |     |
| a)  | Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)  | Non Evaluative          | Minimum 65% of static mass with ballast   | 20.46<br>Minimum (R)   | 25.93      | Yes   |     |
|   |   |                         |   | 21.92 (D)  |            |       |     |
| b)  | Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)   | Evaluative              | Minimum 65% of static mass of tractor with out/ standard ballast  | 13.51<br>Minimum (R)   | 17.76      | Yes   |     |
|   |   |                         |   | 15.44 (D)  |            |       |     |
| c)  | Maximum drawbar power without ballast, (kW).  | Evaluative              | Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft. | 28.5<br>Minimum (R)  | 33.2       | Yes   |     |
|   |   |                         |   | 31.2 (D)   |            |       |     |
| d)  | Maximum transmission oil temperature (°C)   | Non Evaluative          | The declared value should not exceed the maximum value specified by oil company   | 110 (D)  | 84         | Yes   |     |
| <b>14.1.3 Power lift and hydraulic pump performance :</b> |   |                         |   |  |            |       |     |
| a)  | <b>Maximum lifting capacity throughout the range of lift, (kN):</b>   |                         |   |  |            |       |     |
|   | 1)  | At hitch points         | Non Evaluative  | [Tolerance of minus 10%]   | 17.5 (D)   | 18.33 | Yes |
|   | 2)  | With the standard frame | Evaluative  | The lift capacity should at least be 24 kg/PTO kW, and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft | 12.9 (D)   | 14.07 | Yes |
|   |   |                         |   | 9.0<br>Minimum (R)   |            |       |     |
| b)  | Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 minute. (mm) | Non Evaluative          | The observed value should not exceed 50 mm  | 50 (D)   | 21         | Yes   |     |
| <b>14.1.4 Brake performance at 25 kmph:</b>               |   |                         |   |  |            |       |     |
| a)  | <b>Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):</b>                           |                         |   |  |            |       |     |
|   | 1)  | Cold brake              | Evaluative  | 10   | 10 (R)     | 7.08  | Yes |
|   | 2)  | Hot brake               | Evaluative  | 10   | 10 (R)     | 7.59  | Yes |
| b)  | Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)  | Evaluative              | 600   | 600 (R)  | 222 to 226 | 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 (R)  | Yes        | Yes   |     |





| 1      | 2   | 3              | 4   | 5  | 6   | 7   |
|--------|---|----------------|---|--|---|-----|
| 14.1.5 | <b>Noise measurement :</b>  |                |   |  |   |     |
| a)     | Maximum ambient noise emitted by the tractor dB(A)                        | Evaluative     | As per CMVR   | 88 (R)   | 82  | Yes |
| b)     | Maximum noise at operator's ear level dB(A)                               | Evaluative     | As per CMVR   | 98 (R)   | 95  | Yes |
| 14.1.6 | <b>Amplitude of mechanical vibrations at :</b>                            |                |   |  |   |     |
| 1)     | Left foot rest  | Non Evaluative | 100 microns (max)   | 100(R)   | 480   | No  |
| 2)     | Right foot rest   |                | -do-  |  | 370   | No  |
| 3)     | Seat (with driver seated)   |                | -do-  |  | 90  | Yes |
| 4)     | Steering wheel  |                | do-   |  | 140   | No  |
| 14.1.7 | <b>Haulage requirements :</b>   |                |   |  |   |     |
| a)     | <b>Gross mass of the trailers, (tones):</b>                               |                |   |  |   |     |
| 1)     | Two wheel   | Non            | --  | 5.0 (D)  | 5.0   | Yes |
| 2)     | Four wheel  | Evaluative     | --  | 7.5 (D)  | 7.5   | Yes |
| b)     | <b>Distance travelled / litre of fuel consumption, (km/l):</b>            |                |   |  |   |     |
| 1)     | Two wheel   | Non            | --  | 4 to 6 (D)   | 3.41 to 3.44  | No  |
| 2)     | Four wheel  | Evaluative     | --  | 4 to 6 (D)   | 3.37 to 3.39  | No  |
| c)     | <b>Fuel consumption (ml/km/tonne):</b>                                    |                |   |  |   |     |
| 1)     | Two wheel   | Non Evaluative | --  | 30 to 50 (D)                                       | 58.0 to 58.5  | No  |
| 2)     | Four wheel  |                | --  | 30 to 50 (D)                                       | 39.3 to 39.5  | Yes |
| 14.1.8 | <b>Wetland cultivation :</b>  |                |   |  |   |     |
|        | Sealing for the following assemblies:                                     | Evaluative     | The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2. If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only. | There should be no ingress of water and/or mud (R) | No ingress of mud and / or water was observed during ICT test vide test no.T-834/1343/ 2012, (June) | Yes |
| 1)     | Clutch assembly   | -do-           |   |  |   |     |
| 2)     | Brake housings  | -do-           |   |  |   |     |
| 3)     | Front axle hubs   | -do-           |   |  |   |     |
| 4)     | Engine Oil  | -do-           |   |  |   |     |
| 5)     | Transmission Oil  | -do-           |   |  |   |     |
| 14.1.9 | <b>Safety features :</b>  |                |   |  |   |     |
| a)     | Guards against moving and hot parts                                       | Evaluative     | As per CMVR   | --   | Meet the requirements   | --  |
| b)     | Lighting arrangement  | Evaluative     | As per CMVR   | --   | Meet the requirements   | Yes |
| c)     | Seating requirements (Tractors having more than 1150 mm rear track width) | Non Evaluative | Should meet the requirements of IS: 12343 (As amended from time to time)  | -  | Does not meet the requirements  | No  |
| d)     | Technical requirements for PTO shaft                                      | Non Evaluative | Should meet the requirements of IS: 4931 (As amended from time to time)   | -  | Does not meet the requirements  | No  |



| T-1106/1632/2017 |  | JOHN DEERE, 5060E V2 TRACTOR -<br>Commercial- (First Batch Test) |   |        |                                |     |  |
|------------------|--|--|---|--------|--------------------------------|-----|--|
| 1                | 2  | 3  | 4   | 5      | 6                              | 7   |  |
| e)               | Dimensions of three point linkage                            | Non Evaluative   | Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)              | -      | Does not meet the requirements | No  |  |
| f)               | Specifications of linkage                                    | Non Evaluative   | Should meet the requirements of IS 12353 and IS 12362 (Part 3) (As amended from time to time) | -      | Meet the requirements          | Yes |  |
|                  | Swinging drawbar   |  |   | -      | Not Provided                   | Yes |  |
| <b>14.1.10</b>   | <b>Labelling of tractors (Provision of labelling plate):</b> |  |   |        |                                |     |  |
|                  | 1) Make  | Evaluative   | Should conform to the requirements of CMVR along-with declared value of PTO HP                | --     | John Deere                     | Yes |  |
|                  | 2) Model   | Evaluative   |   | --     | 5060 E V2                      | Yes |  |
|                  | 3) Year of manufacture                                       | Evaluative   |   | --     | BM-G (December, 2016)          | Yes |  |
|                  | 4) Engine number   | Evaluative   |   | --     | PY3029H083047                  | Yes |  |
|                  | 5) Chassis number  | Evaluative   |   | --     | 1PY5060EAGA0 02501             | Yes |  |
|                  | 6) Declaration of PTO power, kW(hp)                          | Evaluative   |   | --     | 39.0 (53.03)                   | Yes |  |
| <b>14.1.11</b>   | <b>Discard limit for:</b>                                    |  |   |        |                                |     |  |
| (a)              | Cylinder bore diameter, (mm)                                 | Evaluative   | To be specified by Manufacturer   | 106.62 | 106.47 to 106.49               | Yes |  |
| (b)              | Clearance between piston & cylinder liner at skirt, (mm)     | Non Evaluative   |   | 0.32   | 0.099 to 0.105                 | Yes |  |
| (c)              | <b>Ring end gap (mm):</b>                                    |  |   |        |                                |     |  |
|                  | - Top comp. ring.  | Evaluative   | -do-  | 0.75   | 0.40 to 0.50                   | Yes |  |
|                  | - 2 <sup>nd</sup> comp. ring.                                |  | -do-  | 2.00   | 0.70 to 0.75                   | Yes |  |
|                  | - Oil ring.  |  | -do-  | 0.75   | 0.45 to 0.50                   | Yes |  |
| (d)              | <b>Ring groove clearance (mm):</b>                           |  |   |        |                                |     |  |
|                  | - Top comp. ring.  | Evaluative   | -do-  | NA     | Taper Rings                    | --  |  |
|                  | - 2 <sup>nd</sup> comp. ring.                                |  | -do-  | 0.25   | 0.046 to 0.080                 | Yes |  |
|                  | - Oil ring.  |  | -do-  | 0.92   | 0.070 to 0.074                 | Yes |  |
| (e)              | <b>Clearance of main bearings (mm):</b>                      |  |   |        |                                |     |  |
|                  | - Diametrical clearance                                      | Evaluative   | -do-  | 0.65   | 0.097 to 0.198                 | Yes |  |
|                  | - Crankshaft end float                                       | Evaluative   |   | 0.85   | 0.30                           | Yes |  |
| (f)              | <b>Clearance of big end bearings, (mm):</b>                  |  |   |        |                                |     |  |
|                  | - Diametrical  | Evaluative   | -do-  | 0.65   | 0.084 to 0.102                 | Yes |  |
|                  | - Axial  | Evaluative   | -do-  | 0.85   | 0.40                           | Yes |  |
| (g)              | Clearance between king pin and bush, (mm)                    | Non Evaluative   | -do-  | 0.80   | 0.170 to 0.250                 | Yes |  |
| (h)              | Clearance between center pin and bush, (mm)                  | Non Evaluative   | -do-  | 0.80   | 0.082 to 0.114                 | Yes |  |





| T-1106/1632/2017                           |                       | JOHN DEERE, 5060E V2 TRACTOR –<br>Commercial- (First Batch Test ) |   |             |   |
|--|-----------------------|---|---|-------------|---|
| 14.1.12 CATEGORY OF BREAKDOWNS / DEFECTS : |                       |   |   |             |   |
| S. No.                                     | Category of Breakdown | Category (Evaluative / Non Evaluative)                            | Requirements as per IS: 12207-2014  | As observed | Whether meets the requirement (Yes/No.) |
| 1.   | Critical breakdown    | Evaluative  | No critical breakdown   | None        | Yes                                     |
| 2.   | Major breakdowns      | Evaluative  | Not more than two and neither of them should be repetitive in nature.   | None        | Yes                                     |
| 3.   | Minor breakdowns      | Evaluative  | Not more than five and frequency of each should not be more than two.   | None        | Yes                                     |
| 4.   | Total breakdowns      | Evaluative  | In no case, the total number of breakdowns should exceed five, that is, (2 major + 3 minor) or 5 minor breakdowns | None        | Yes                                     |

#### 14.2 Salient Observations:

##### 14.2.1 Laboratory tests:

##### 14.2.1.1 PTO Performance:

- i) The backup torque is 35.4 %.
- ii) The maximum power was recorded as **39.8 & 38.2 kW** in case of previous & present sample respectively against the declaration of **39.0 kW**, which meets the requirement of IS: 12207-2014 with regard to tolerance.
- iii) The specific fuel consumption corresponding to maximum power in case of previous and present sample was measured as **276 & 293 g/kWh** respectively against the declaration of **280 g/kWh**, which meets the requirement of IS: 12207-2014 with regard to tolerance.

##### 14.3.1.2 Drawbar Performance:

- i) The maximum drawbar power under unballasted condition was observed as **34.0 kW & 33.2 kW** in case of previous & present sample respectively against the declaration of **31.2 kW**. Which meets the requirement of IS: 12207-2014 with regard to tolerance.
- ii) The maximum drawbar pull under unballasted condition was observed as **15.44 kN & 17.76 kN** in case of previous & present sample respectively.

##### 14.2.1.3 Hydraulic performance:

- i) The moment about rear axle with standard frame was calculated as **22.58 kN-m**. Whereas, the moment about front axle was calculated as **14.91 kN-m** under unballasted condition and **23.78 kN-m** under ballasted condition. The moment about rear axle is on higher side as compared to the moment about front axle even under ballasted condition. It is, therefore, recommended that the lifting capacity of the hydraulic system may be reduced suitably or ballast recommendation may be reviewed to avoid the front lifting of the tractor.

##### 14.3.1.4 Mechanical Vibration:

The amplitude of mechanical vibration at various locations of the tractor marked with \* were found on higher side. This calls for dampening down of vibrations to improve the service life of components.

##### 14.3.1.5 Operator's seat:

Width of seat & inclination of seat back rest does not meet the requirement of IS: 12343-1988. This should be looked into for necessary corrective action.





- 14.2.1.6 Three Point Linkage:**
- Diameter of upper hitch point hole of Cat-II. & the width of ball of lower hitch point does not meet the requirement of Cat-I as per IS: 4468 (Part-I -1997). This should be looked into for necessary corrective action.
  - Some of the parameters conform to Cat I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvements may be incorporated.
- 14.2.1.7 Power take-off shaft:**  
The dimension "d $\emptyset$ " & "B $\emptyset$ " of Power Take-Off shaft does not meet the requirements of IS: 4931-1995. This should be looked into for necessary corrective action.
- 14.2.1.8 Symbols of operator's controls and other displays:**  
Some of the controls / display such as oil lubricant type & frequency are not identifiable with the symbols as per IS: 6283 (Part 1&2)-1998. This needs to be looked into for necessary corrective action.
- 14.2.2 Field performance:**
- 14.2.2.1 Wetland operation:**  
No ingress of mud and / or water was observed during ICT test vide test no.T-834/1343/2012, (June)
- 14.2.2.2 Haulage performance:**
- The distance travelled / litre of fuel consumption with two wheel trailer & four wheel trailer was observed as 3.41 to 3.44 km/l & 3.37 to 3.39 km/l respectively against the declaration of 4.00 to 6.00 km/l. This does not meet the requirement of IS: 12207-2014 and therefore, should be looked into for necessary corrective action.
  - The fuel consumption with two wheel trailer was observed as 58.02 to 58.51 ml/km/tonne against the declaration of 30 to 50 ml/km/tonne. This does not meet the requirement of IS: 12207-2014 and therefore, should be looked into for necessary corrective action.
- 14.3 Maintenance / Service problems:**  
No noticeable maintenance and service problems was observed during the test. However, provision for draining of sediments / water should be provided in the fuel system.
- 14.4 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:
- Provision of spark arresting device in exhaust system.
  - "Minimum cautionary notice" as per clause 11.2 of IS:12239 (part-2)-1999
  - The working clearance around main gear shifting lever may be provided as per the requirement of IS: 12239 (part-2)-1999.
  - Provision of Front tow hook.
- 14.5 Adequacy of Literature:**
- 14.5.1** The following literatures were supplied with the test tractor for reference during the test:-
- Operator's manual (For 5050E, 5055E, 5060E V2, 5065E & 5075E model tractors)
  - Technical manual For 5050E, 5055E, 5060E V2, 5065E & 5075E model tractors).
  - Parts Catalogue (For 5050E, 5055E, 5060E V2, 5065E & 5075E model tractors).
- 14.5.2** 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.



## 15. 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  | 07 Months<br>(February, 2017 to August, 2017) | Yes  | None    |

TESTING AUTHORITY:

  
C.S RAGHUWANSHI  
AGRICULTURAL ENGINEER

  
C. V. CHIMOTE  
TEST ENGINEER

  
Y.K. RAO  
SENIOR AGRICULTURAL  
ENGINEER

  
J.J.R. NARWARE  
DIRECTOR

## 16. APPLICANT'S COMMENTS

| Para No. | Our Reference | Applicant's comments                                |
|----------|---------------|---|
| 16.1     | 14.1.6        | We will take necessary actions to reduce vibration. |
| 16.2     | 14.2.1.3      | We will take necessary action.                      |

**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   | 12.2         |
| 3.        | Power lift and hydraulic pump performance test   | 1.8          |
| 4.        | Drawbar performance test   | 17.5         |
| 5.        | Brake test   | 1.8          |
| 6.        | Noise measurement  | 0.4          |
| 7.        | Mechanical vibration test  | 0.6          |
| 8.        | Theoretical speed test   | 0.8          |
| <b>B.</b> | <b>HAULAGE TEST:</b>   | 5.3          |
| <b>C.</b> | Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test | 5.5          |
|           | <b>TOTAL:</b>  | <b>45.9</b>  |