

# MF 2700E

Series Tractors Models: 2705E / 2706E

# **SERVICE MANUAL**

FROM MASSEY FERGUSON

# **Workshop Service Manual**



2705E 2706E



| 1 Genera | al  | 1-1  |
|----------|---|------|
| 1.1      | Introduction  | 1-3  |
|          | 1.1.1 The service manual                                      | 1-3  |
|          | 1.1.2 Replacement parts                                       | 1-3  |
|          | 1.1.3 Units of measurement                                    | 1-3  |
|          | 1.1.4 Serial number plate                                     |      |
|          | 1.1.5 Engine identification                                   | 1-4  |
|          | 1.1.6 Chassis number  | 1-5  |
| 1.2      | Specifications  | 1-6  |
|          | 1.2.1 Engine specifications                                   | 1-6  |
|          | 1.2.2 Electrical specifications                               | 1-7  |
|          | 1.2.3 Power take-off specifications                           | 1-7  |
|          | 1.2.4 Mechanical transmission specifications                  | 1-7  |
|          | 1.2.5 Hydrostatic transmission specifications                 |      |
|          | 1.2.6 Power take-off specifications                           |      |
|          | 1.2.7 Hydraulic specifications                                |      |
|          | 1.2.8 Fuel specifications                                     |      |
|          | 1.2.9 Operating slope angle                                   |      |
|          | 1.2.10 Capacities   |      |
|          | 1.2.11 Lubrication specifications                             |      |
|          | 1.2.12 Tire inflation pressures                               |      |
|          | 1.2.13 Maximum load capacity                                  |      |
| 1.3      | General dimensions  |      |
|          | 1.3.1 Dimensions  |      |
|          | 1.3.2 Major components  |      |
| 1.4      | Lubrication / fill points                                     |      |
|          | 1.4.1 Lubrication and maintenance chart                       |      |
|          | 1.4.2 Lubrication fill and drain locations - mechanical       |      |
|          | 1.4.3 Lubrication fill and drain locations - hydrostatic      |      |
| 1.5      | General precautions for disassembly and installation          |      |
|          | 1.5.1 Precautions for disassembling and installing            |      |
|          | 1.5.2 Precautions when installing according to standard parts |      |
| 1.6      | Tightening torque chart                                       | 1-19 |
| 1.7      | Conversion table  | 1-21 |
| 1.8      | Safety introduction   | 1-22 |
| _        | 1.8.1 Safety alert symbol                                     |      |
|          | 1.8.2 Safety messages   |      |
|          | 1.8.3 Informational messages                                  |      |
|          | 1.8.4 Safety signs  |      |
| 1.9      | Operation   |      |
| _        | 1.9.1 Prepare for operation                                   |      |
|          | 1.9.2 Roll over protective structure                          |      |
|          | 1.9.3 General information                                     |      |
|          | 1.9.4 Personal protective equipment                           |      |
|          | 1.9.5 Seat instruction  | 1-28 |
|          | 1.9.6 Shield and guards                                       |      |
|          | 1.9.7 Power take-off safety                                   |      |
|          | 1.9.8 Exhaust warning   | 1-30 |
|          | 1.9.9 Agricultural chemicals                                  |      |
|          | 1.9.10 Travel on public roads                                 | 1-30 |



|   | 1 10   | Maintenance   | 1_32  |
|---|--------|---|-------|
|   | 1.10   | 1.10.1 General maintenance information                                |       |
|   |        | 1.10.2 Fire prevention and first aid                                  |       |
|   |        | 1.10.3 High pressure leaks  |       |
|   |        | 1.10.4 Engine safety  |       |
|   |        | 1.10.5 Battery safety   |       |
|   |        | 1.10.6 Tire safety  |       |
|   |        | 1.10.7 Replacement parts  |       |
|   |        | 1.10.7 hepiacement parts  | 1-30  |
| 2 | Fnaine | , Fuel And Exhaust System   | 2 1   |
| _ | _      | <u>-</u>  |       |
|   | ۷.۱    | Electronic diagnostic tool  |       |
|   |        | 2.1.1 Engine service tool software license                            |       |
|   |        | 2.1.2 Connecting the electronic diagnostic tool                       |       |
|   | 2.2    | Component Access  |       |
|   |        | 2.2.1 Opening the engine cover  |       |
|   |        | 2.2.2 Closing the engine cover  |       |
|   | 2.3    | Removing the engine   | . 2-5 |
|   | 2.4    | Installing the engine   | 2-13  |
|   | 2.5    | Radiator  | 2-18  |
|   |        | Air cleaner system  |       |
|   |        | -   |       |
|   | 2.7    | Fuel tank   |       |
|   |        | 2.7.1 Fuel filters  |       |
|   |        | 2.7.2 Draining water from the fuel filter                             |       |
|   |        | 2.7.3 Replacing the fuel filter                                       |       |
|   |        | 2.7.4 Bleeding the fuel system  |       |
|   |        | 2.7.5 Fuel tank   |       |
|   | 0.0    | 2.7.6 Removing the fuel tank  |       |
|   | 2.8    | Engine service manual   |       |
|   |        | 2.8.1 Insert the engine service manual here                           |       |
|   | 2.9    | Diagnostic troubleshooting codes and procedures                       |       |
|   |        | 2.9.1 Insert the diagnostic troubleshooting codes and procedures here | 2-30  |
| _ |        |   |       |
| 3 |        | rain System   |       |
|   | 3.1    | Transmission  | 3-3   |
|   |        | 3.1.1 Separating the engine from the front transmission               | 3-3   |
|   |        | 3.1.2 Separating the front and mid transimission housings             |       |
|   |        | 3.1.3 Separating the mid and rear transimission housings              |       |
|   |        | 3.1.4 Separating the front and rear transmission housings             |       |
|   |        | 3.1.5 Installing the front transmission housing                       |       |
|   |        | 3.1.6 Assembling the transmission housings                            |       |
|   |        | 3.1.7 Removing the lift cylinder housing                              |       |
|   |        | 3.1.8 Separating the rear axle from the rear transmission housing     |       |
|   |        | 3.1.9 Assembling the rear axle and the rear transmission housing      |       |
|   |        | 3.1.10 Transmission structure   |       |
|   |        | 3.1.11 Transmission components  |       |
|   |        | 3.1.12 Forward and reverse gear layout                                |       |
|   |        | 3.1.13 Forward and reverse gear assembly precautions                  |       |
|   | 3.2    | Clutch system   |       |
|   |        | 3.2.1 Clutch dimensions   |       |
|   |        | 3.2.2 Removing the clutch   |       |
|   |        | 3.2.3 Inspecting the clutch disc                                      |       |
|   |        | 3.2.4 Inspecting the pressure plate assembly                          |       |
|   | _      | 3.2.5 Clutch housing vent hose  |       |
|   | 3.3    | Release bearing   |       |
|   |        | 3.3.1 Removing the release bearing                                    |       |
|   |        | 3.3.2 Inspecting the release bearing                                  | 3-41  |
|   |        |   |       |



|         | 3.3.3 Installing the release bearing                      | 3-41          |
|---------|---|---------------|
| 21      | Clutch assembly   |               |
| 3.4     |   |               |
|         | 3.4.1 Removing the clutch assembly                        |               |
|         | 3.4.2 Installing the clutch assembly                      |               |
|         | 3.4.3 Adjusting the clutch pedal                          |               |
| A F .   | 3.4.4 Clutch housing plug                                 |               |
|         | Troubleshooting - clutch                                  |               |
| 3.6     | Clutch pack and gear                                      |               |
|         | 3.6.1 Clutch pack components                              |               |
|         | 3.6.2 Disassembling the reverse clutch                    |               |
|         | 3.6.3 Forward and reverse gear components                 |               |
|         | 3.6.4 Main change gears                                   |               |
|         | 3.6.5 Assembling the main change gear precautions         |               |
|         | 3.6.6 Main shift lever                                    |               |
|         | 3.6.7 Assembling the main shift lever precautions         |               |
|         | 3.6.8 Range change gears                                  |               |
|         | 3.6.9 Assembling the range change gears                   |               |
|         | 3.6.10 Shift linkage                                      |               |
|         | 3.6.11 Lever linkage                                      |               |
| 3.7     | Input gears   |               |
|         | 3.7.1 Disassembling the input gear                        |               |
|         | 3.7.2 Power take-off gear system                          |               |
|         | 3.7.3 Main gear assembly                                  |               |
|         | 3.7.4 Assembling the input gear                           |               |
| 3.8     | Power take-off  |               |
|         | 3.8.1 Removing the input cover                            |               |
|         | 3.8.2 Rear power take-off assembly                        |               |
|         | 3.8.3 Disassembling the power take-off clutch pack        |               |
|         | 3.8.4 Assembling the power take-off precautions           |               |
|         | 3.8.5 Assembling precautions for the power take-off shaft |               |
| 3.9     | Four-wheel drive gears                                    |               |
|         | 3.9.1 Assembling the four-wheel drive                     | . 3-73        |
| 3.10    | Hydrostatic transmission                                  | . 3-75        |
|         | 3.10.1 Hydrostatic controls                               | . 3-75        |
|         | 3.10.2 Hydrostatic transmission layout                    | . 3-76        |
|         | 3.10.3 Change lever assembly                              | . 3-77        |
|         | 3.10.4 Hydrostatic transmission pedal                     | . 3-78        |
|         | 3.10.5 Adjusting the hydrostatic transmission pedal       | . 3-79        |
|         | 3.10.6 Hydrostatic transmission system                    |               |
|         | 3.10.7 Hydrostatic transmission damper input system       |               |
|         | 3.10.8 Hydrostatic transmission component overview        |               |
|         | 3.10.9 Hydrostatic transmission control unit              |               |
|         | 3.10.10 Hydrostatic transmission hydraulic diagram        |               |
|         | 3.10.11 Removing the hydrostatic transmission unit        |               |
|         | 3.10.12 Disassembling the hydrostatic transmission unit   |               |
|         | 3.10.13 Inspecting the hydrostatic transmission unit      |               |
|         | 3.10.14 Assembling the hydrostatic transmission unit      |               |
|         | 3.10.15 Installing the hydrostatic transmission unit      |               |
|         | 3.10.16 Adjusting the auto cruise system                  | J-11J         |
| Platfor | n   | <i>∆</i> _1   |
|         | Platform  |               |
| 4.1     |   |               |
|         | 4.1.1 Front floor system                                  |               |
|         | 4.1.3 Removing the fender                                 |               |
|         | 4.1.4 Fender  |               |
|         | 4.1.5 Installing the fender                               |               |
|         | The installing the lender                                 | <del></del> / |

4



| -   |        |   |      |
|-----|--------|---|------|
|     |        | 4.1.6 Floor mat and steps                                     | 4-8  |
|     |        | 4.1.7 Seat  |      |
|     |        | 4.1.8 Checking the seat switch                                |      |
|     |        | 4.1.9 Front grill head lamp                                   |      |
|     | 42     | Console   |      |
|     |        | 4.2.1 Removing the console                                    |      |
|     |        | 4.2.2 Installing the console                                  |      |
|     | 12     | Roll over protective structure                                |      |
|     | 4.3    |   |      |
|     |        | 4.3.1 Removing the Roll Over Protective Structure             |      |
|     |        | 4.3.2 Installing the Roll Over Protective Structure           |      |
|     | 4.4    | Steering wheel 4  |      |
|     |        | 4.4.1 Removing the steering wheel                             |      |
|     |        | 4.4.2 Installing the steering wheel                           | -18  |
|     | _      |   |      |
| 5 A | xles . |   | 5-1  |
|     | 5.1    | Rear axle   | 5-3  |
|     |        | 5.1.1 Three-point linkage                                     | 5-3  |
|     |        | 5.1.2 Rear axle assembly guidelines                           |      |
|     |        | 5.1.3 Rear axle information                                   |      |
|     |        | 5.1.4 Rear axle view  |      |
|     |        | 5.1.5 Special tools   |      |
|     | 5 2    | Differential lock   |      |
|     | J.2    | 5.2.1 Differential lock system                                |      |
|     |        | 5.2.2 Disassembling the rear differential                     |      |
|     |        | 5.2.3 Assembling the rear differential                        |      |
|     |        | 5.2.4 Hydrostatic transmission settings                       |      |
|     |        | 5.2.5 Disassembling the rear axle differential lock and brake |      |
|     | F 2    |   |      |
|     |        | Ring gear and pinion gear tooth pattern 5                     |      |
|     | 5.4    | Front axle  |      |
|     |        | 5.4.1 Removing the front axle                                 |      |
|     |        | 5.4.2 Installing the front axle                               |      |
|     |        | 5.4.3 General information - front axle                        | -20  |
|     |        | 5.4.4 Front axle construction                                 | -20  |
|     |        | 5.4.5 Specifications - front axle                             | -22  |
|     |        | 5.4.6 Front wheel drive shaft - 4WD                           | -23  |
|     |        | 5.4.7 Front axle components                                   | -24  |
|     |        | 5.4.8 Inspecting the front axle                               | -26  |
|     |        | 5.4.9 Front axle hydraulics                                   |      |
|     |        | 5.4.10 Assembling the front axle                              | -29  |
|     |        | 5.4.11 Disassembling the pinion carrier assembly              |      |
|     |        | 5.4.12 Inspecting the pinion carrier assembly                 |      |
|     |        | 5.4.13 Assembling the pinion carrier assembly                 |      |
|     |        | 5.4.14 Disassembling the differential gears                   |      |
|     |        | 5.4.15 Assembling the differential gears                      |      |
|     |        | 5.4.16 Final drive wheel components                           |      |
|     |        | 5.4.17 Removing the wheel shaft seal/cover                    |      |
|     |        | 5.4.18 Installing the wheel shaft seal/cover                  |      |
|     |        | 5.4.19 Removing the front axle center section                 |      |
|     |        | 5.4.20 Installing the front axle center section               |      |
|     |        | 5.4.21 Removing the front axle housing oil seal               |      |
|     |        | 5.4.22 Installing the front axle housing oil seal             |      |
|     |        | 5.4.23 Disassembling the final drive housing                  |      |
|     |        | 5.4.24 Inspecting the bearing cover shaft                     |      |
|     |        | 5.4.25 Inspecting the drag arm bushing                        |      |
|     |        | 5.4.26 Inspecting the final drive housing shaft               |      |
|     |        | 5.4.27 Assembling the final drive housing                     |      |
|     |        | 5.4.28 Front axle assembly                                    |      |
|     |        | 0.1.20 Tront axio abborribly                                  | · +Z |



|   |         | 5.4.29 Adjusting the front wheel alignment                | 5-44   |
|---|---------|---|--------|
|   |         | 5.4.30 Steering free play                                 |        |
|   |         | 5.4.31 Front axle troubleshooting                         |        |
|   |         |   |        |
| 6 | Brake   | System  | 6-1    |
|   | 6.1     | Brakes  | . 6-3  |
|   |         | 6.1.1 Brake system  |        |
|   |         | 6.1.2 Brake information                                   |        |
|   |         | 6.1.3 Checking the brake adjustment                       |        |
|   |         | 6.1.4 Adjusting the brakes                                |        |
|   |         | 6.1.5 Inspecting the brake discs and the separator plates |        |
|   |         | 6.1.6 Brake disc wear limit                               |        |
|   |         | 6.1.7 Separator plate wear limit                          |        |
|   |         | 6.1.8 Brake troubleshooting                               | 6-7    |
| 7 | Flectri | ical System   | 7_1    |
| • |         |   |        |
|   | 7.1     | Wiring diagrams   |        |
|   |         | 7.1.1 Wire color chart                                    |        |
|   |         | 7.1.3 Engine wiring diagram                               |        |
|   | 7 2     | Wiring harness  |        |
|   | 7.2     | 7.2.1 Wiring harness layout                               |        |
|   | 7 2     | Fuses, relays, and diodes                                 |        |
|   | 7.3     | 7.3.1 Main fuse box                                       |        |
|   |         | 7.3.2 Relay locations                                     |        |
|   |         | 7.3.3 Diode location                                      |        |
|   | 74      | Instruments and controls                                  |        |
|   | ,       | 7.4.1 Instrument panel components                         |        |
|   |         | 7.4.2 Indicators and gauges                               |        |
|   |         | 7.4.3 Instrument panel indicator inputs                   |        |
|   |         | 7.4.4 Instrument panel connection                         |        |
|   |         | 7.4.5 Removing the instrument panel                       |        |
|   |         | 7.4.6 Installing the instrument panel                     | . 7-21 |
|   |         | 7.4.7 Instrument panel layout                             |        |
|   |         | 7.4.8 Handling the engine control unit                    |        |
|   | 7.5     | Switches  |        |
|   |         | 7.5.1 Neutral start safety switches                       |        |
|   |         | 7.5.2 Combination switch                                  |        |
|   |         | 7.5.3 Start switch  |        |
|   |         | 7.5.4 Adjusting the seat switch                           |        |
|   | 76      |   |        |
|   | 7.0     | <b>Sensors</b>  |        |
|   |         | 7.6.2 Fuel gauge sender                                   |        |
|   | 77      | Electronic diagnostic tool                                |        |
|   | 7.7     | 7.7.1 Engine service tool software license                |        |
|   |         | 7.7.2 Connecting the electronic diagnostic tool           |        |
|   |         | 7.7.2 Commodating the electronic diagnostic tool          | . , 01 |
| 8 | Hydra   | ulic System   | 8-1    |
|   |         | Hydraulic system overview                                 |        |
|   |         | Hydraulc schematic  |        |
|   |         | Power shuttle components                                  |        |
|   |         | General service procedures                                |        |
|   | 0.4     | 8.4.1 Changing the hydraulic oil                          |        |
|   |         | 8.4.2 Oil cooler and the main clutch lubrication          |        |
|   | 2 5     | Suction filter  |        |
|   | 0.5     | - CHOUCH HILL   | 0 12   |



|     | 8.6     | Gear pump   | 8-14              |
|-----|---------|---|-------------------|
|     |         | 8.6.1 Main pump   | 8-14              |
|     |         | 8.6.2 Sub pump  | 8-15              |
|     |         | 8.6.3 Power steering cylinder                                 |                   |
|     |         | 8.6.4 Main cylinder   | 8-18              |
|     | 8.7     | Valves  | 8-20              |
|     |         | 8.7.1 Main relief valve                                       | 8-20              |
|     |         | 8.7.2 Steering orbit roll                                     | 8-23              |
|     |         | 8.7.3 Slow return valve                                       |                   |
|     |         | 8.7.4 Assembling the slow return valve precautions            | 8-24              |
|     |         | 8.7.5 Safety valve  | 8-25              |
|     |         | 8.7.6 Assembling the slow return valve precautions            |                   |
|     |         | 8.7.7 Power takeoff control valve                             | 8-26              |
|     |         | 8.7.8 Assembling the power take-off control valve precautions | 8-27              |
|     |         | 8.7.9 Assembling precautions for the reduce valve             | 8-27              |
|     |         | 8.7.10 Reduce valve specifications                            | 8-27              |
|     |         | 8.7.11 External auxiliary hydraulics                          | 8-27              |
|     |         | 8.7.12 Auxiliary control valve                                | 8-29              |
|     |         | 8.7.13 Disassembling the auxliliary control valve             | 8-31              |
|     |         | 8.7.14 Assembling the auxiliary control valve                 | 8-31              |
|     |         | 8.7.15 Removing the auxiliary control valve                   | 8-32              |
|     |         | 8.7.16 Installing the auxiliary control valve                 |                   |
|     |         | 8.7.17 Auxiliary hydraulics outlet                            | 8-32              |
|     |         | 8.7.18 Removing the external hydraulic pressure               |                   |
|     | 8.8     | Hydraulic control linkage                                     | 8-36              |
|     |         | 8.8.1 Position control link and lever                         |                   |
|     |         | 8.8.2 Adjusting the position control lever                    | 8-37              |
|     |         | 8.8.3 Position control lever operation                        | 8-37              |
|     |         | 8.8.4 Draft control link and lever, if equipped               | 8-38              |
|     |         | 8.8.5 Adjusting the draft control, if equipped                |                   |
|     | 8.9     | Three-point lift linkage and drawbar                          |                   |
|     |         | 8.9.1 Three-point linkage                                     |                   |
|     |         | 8.9.2 Drawbar dimensions                                      |                   |
|     | 8 10    | Hydraulic system troubleshooting                              |                   |
|     | 0110    | 8.10.1 Testing the power takeoff clutch pack pressure         |                   |
|     |         | 0.10.1 Testing the power takeon diaton pack pressure          | 047               |
| 9 9 | Steerii | ng System   | 9_1               |
|     |         | Hydrostatic steering  |                   |
|     | 9.1     |   |                   |
|     |         | 9.1.1 Hydrostatic steering components                         |                   |
|     |         | 9.1.2 Integral orbit roll components                          |                   |
|     |         | 9.1.3 Disassembling the steering unit                         |                   |
|     |         | 9.1.4 Inspecting the steering unit                            | 00                |
|     |         |   |                   |
|     |         | 9.1.6 Assembling the gerotor side of the steering unit        |                   |
|     |         | 9.1.7 Flow control valve                                      |                   |
|     |         | 3.1.6 Steering system troubleshooting                         | y <del>-</del> 13 |
| 10  | Index   | C   | dex-1             |
|     |         |   |                   |



# 1. General

| 1.1 | Introduction  | 1-3  |
|-----|---|------|
|     | 1.1.1 The service manual                                      |      |
|     | 1.1.2 Replacement parts                                       |      |
|     | 1.1.3 Units of measurement                                    |      |
|     | 1.1.4 Serial number plate                                     |      |
|     | 1.1.5 Engine identification                                   |      |
|     | 1.1.6 Chassis number  |      |
| 12  | Specifications  |      |
|     | 1.2.1 Engine specifications                                   |      |
|     | 1.2.2 Electrical specifications                               |      |
|     | 1.2.3 Power take-off specifications                           |      |
|     | 1.2.4 Mechanical transmission specifications                  |      |
|     | 1.2.5 Hydrostatic transmission specifications                 |      |
|     | 1.2.6 Power take-off specifications                           |      |
|     | 1.2.7 Hydraulic specifications                                |      |
|     | 1.2.8 Fuel specifications                                     |      |
|     | 1.2.9 Operating slope angle                                   |      |
|     | 1.2.10 Capacities   |      |
|     | 1.2.11 Lubrication specifications                             |      |
|     | 1.2.12 Tire inflation pressures                               |      |
|     | 1.2.13 Maximum load capacity                                  |      |
| 1 2 | ·   |      |
| 1.3 | General dimensions  |      |
|     | 1.3.1 Dimensions  |      |
|     | 1.3.2 Major components  |      |
| 1.4 | Lubrication / fill points                                     |      |
|     | 1.4.1 Lubrication and maintenance chart                       |      |
|     | 1.4.2 Lubrication fill and drain locations - mechanical       |      |
|     | 1.4.3 Lubrication fill and drain locations - hydrostatic      | 1-15 |
| 1.5 | General precautions for disassembly and installation          | 1-16 |
|     | 1.5.1 Precautions for disassembling and installing            |      |
|     | 1.5.2 Precautions when installing according to standard parts |      |
| 1.6 | Tightening torque chart                                       |      |
|     | Conversion table  |      |
|     |   |      |
| 1.8 | Safety introduction   |      |
|     | 1.8.1 Safety alert symbol                                     |      |
|     | 1.8.2 Safety messages   |      |
|     | 1.8.3 Informational messages                                  |      |
|     | 1.8.4 Safety signs  | 1-22 |
| 1.9 | Operation   | 1-24 |
|     | 1.9.1 Prepare for operation                                   | 1-24 |
|     | 1.9.2 Roll over protective structure                          | 1-24 |
|     | 1.9.3 General information                                     | 1-24 |
|     | 1.9.4 Personal protective equipment                           | 1-28 |
|     | 1.9.5 Seat instruction  |      |
|     | 1.9.6 Shield and guards                                       |      |
|     | 1.9.7 Power take-off safety                                   |      |
|     | 1.9.8 Exhaust warning   |      |
|     | 1.9.9 Agricultural chemicals                                  |      |
|     | 1.9.10 Travel on public roads                                 |      |
|     |   |      |

#### Table of contents



| 1.10 | Maintenance                           | 32 |
|------|---------------------------------------|----|
|      | .10.1 General maintenance information | 32 |
|      | .10.2 Fire prevention and first aid   | 33 |
|      | .10.3 High pressure leaks             | 34 |
|      | 1.10.4 Engine safety                  | 35 |
|      | .10.5 Battery safety                  | 36 |
|      | .10.6 Tire safety                     | 37 |
|      | .10.7 Replacement parts               | 38 |



#### 1.1 Introduction

#### 1.1.1 The service manual

Read the table of contents and basic layout. Become familiar with all parts of this service manual. This service manual gives the technician very important information.

Machine movement when in normal use determines right-hand and left-hand.

This manual covers general safety practices for this machine.

The photos, illustrations, and data used in this manual were current at the time of printing. Inline production changes can make machines vary from the information in the service manual. The manufacturer reserves the right to redesign and change the machine as necessary without notification.



#### WARNING:

In some of the illustrations and photos used in this manual, shields or guards may have been removed for clarity. Never operate the machine with any shields or guards removed. If the removal of shields or guards is necessary to make a repair, they must be replaced before operation.

#### 1.1.2 Replacement parts

To receive prompt efficient service, remember to have the following information:

Correct part description and part number Model number of the machine Serial number of the machine

#### 1.1.3 Units of measurement

Measurements are given in metric units followed by the equivalent in US units. Hardware sizes are given in millimeters for metric hardware and inches for US hardware.

#### 1.1.4 Serial number plate

The serial number plate (1) is located below the operator seat.

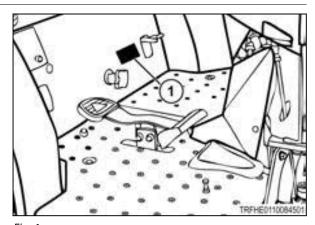


Fig. 1



The serial number plate contains the model number and serial number.

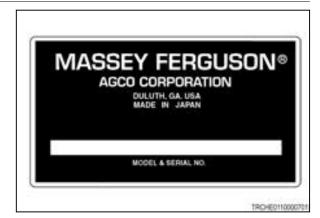


Fig. 2

#### 1.1.5 Engine identification

The engine identification plate (1) is located on the left-hand side of the engine.

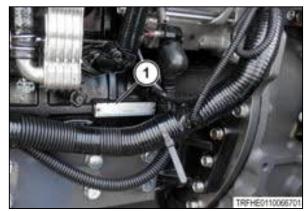


Fig. 3

The engine identification plate contains the engine model number (1), the engine serial number (2), and the month(s)/year(s) (3) the engine was assembled.

| Engine model number:         |  |
|------------------------------|--|
| Engine serial number:        |  |
| Assembled month(s)/ year(s): |  |

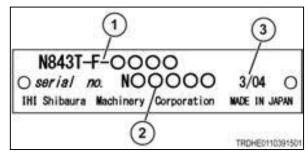


Fig. 4



#### 1.1.6 Chassis number

The chassis number (1) is stamped in right-hand side of the front frame.

Chassis number:

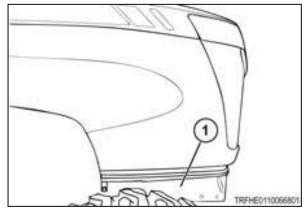


Fig. 5

1-5



# 1.2 Specifications

## 1.2.1 Engine specifications

|   | 2705E mechanical  | 2705E hydrostatic                  | 2706E mechanical                  | 2706E hydrostatic                  |  |
|---|---|------------------------------------|-----------------------------------|------------------------------------|--|
| Туре  | Water-cooled, in-line overhead valve, turbocharged diesel |                                    |                                   |                                    |  |
| Model   | N4L   | DI-T                               | N4L[                              | DI-TA                              |  |
| Make  |   | IHI SHIBAURA Ma                    | chinery Corporation               |                                    |  |
| Number of cylinders                               |   | 4                                  | 4                                 |                                    |  |
| Combustion system                                 |   | In-direct inje                     | ction system                      |                                    |  |
| Compression ratio                                 |   | 18                                 | 3.0                               |                                    |  |
| Injection   |   | Inline injed                       | tion pump                         |                                    |  |
| Bore  |   | 84 mm                              | (3.31 in)                         |                                    |  |
| Stroke  |   | 100 mm                             | (3.94 in)                         |                                    |  |
| Displacement                                      |   | 2216 cm³ (                         | 135.23 in <sup>3</sup> )          |                                    |  |
| Rated speed                                       | 2600 rpm  |                                    |                                   |                                    |  |
| Low idle speed                                    |   | 975 to 1                           | 025 rpm                           |                                    |  |
| High idle speed                                   | 2705 to 2755 rpm  |                                    |                                   |                                    |  |
| Maximum torque at rpm                             | 160 Nm (118 lbf ft)<br>@ 1600 rpm                         | 192 Nm 141.6 lbf<br>ft) @ 1600 rpm | 160 Nm (118 lbf ft)<br>@ 1600 rpm | 192 Nm 141.6 lbf<br>ft) @ 1600 rpm |  |
| Engine horse power (estimated gross)              | 36.4 kW (48.8 hp) @ 2600 rpm                              |                                    | 42.7 kW (57.3 hp) @ 2600 rpm      |                                    |  |
| PTO horse power (estimated)                       | 30.9 kW (41.4 hp)<br>@ 578 rpm                            | 29.1 kW (39.0 hp)<br>@ 578 rpm     | 36.3 kW (48.7 hp)<br>@ 578 rpm    | 34.2 kW (45.9 hp)<br>@ 578 rpm     |  |
| Engine cooling                                    | Water cooling   |                                    |                                   |                                    |  |
| Fan   | 430 mm (16.93 in)/ 8 blades                               |                                    |                                   |                                    |  |
| Air cleaner                                       | Dual stage, dry element                                   |                                    |                                   |                                    |  |
| Air intake  | Engine cover grille                                       |                                    |                                   |                                    |  |
| Cold starting aid                                 | Glow plug   |                                    |                                   |                                    |  |
| Firing order                                      | 1-3-4-2   |                                    |                                   |                                    |  |
| Valve clearance<br>(cold) - intake and<br>exhaust | 0.2 mm (0.008 in)   |                                    |                                   |                                    |  |



### 1.2.2 Electrical specifications

|  | 2705E<br>mechanical       | 2705E<br>hydrostatic | 2706E<br>mechanical | 2706E<br>hydrostatic |
|--|---------------------------|----------------------|---------------------|----------------------|
| System voltage                                 |                           | 12                   | volt                |                      |
| Grounding                                      | Negative                  |                      |                     |                      |
| Battery cold cranking amperage @ 18° C (64° F) | 680 cca                   |                      |                     |                      |
| Battery JIS type                               | 115D31R                   |                      |                     |                      |
| Battery holder                                 | Length: 305 mm (12 in)    |                      |                     |                      |
|  | Width: 172 mm (6.8 in)    |                      |                     |                      |
|  | Height: 200 mm (7.9 in)   |                      |                     |                      |
| Alternator rating                              | 90 ampere                 |                      |                     |                      |
| Starter rating                                 | 12 volt / 2.0 kW (2.7 hp) |                      |                     |                      |

### 1.2.3 Power take-off specifications

|                | 2705E mechanical                   | 2705E hydrostatic | 2706E mechanical | 2706E hydrostatic |  |
|----------------|------------------------------------|-------------------|------------------|-------------------|--|
| Туре           | Engine driven                      |                   |                  |                   |  |
| Control        | PTO selector switch                |                   |                  |                   |  |
| Clutch         | PTO over-running clutch            |                   |                  |                   |  |
| PTO shaft type | 35 mm (1.38 in) diameter, 6 spline |                   |                  |                   |  |
| Output         | Clockwise rotation                 |                   |                  |                   |  |

## 1.2.4 Mechanical transmission specifications

|                      | 2705E mechanical           | 2706E mechanical |  |
|----------------------|----------------------------|------------------|--|
| Primary transmission | Gear type                  |                  |  |
| Range transmission   | 2-speed range              |                  |  |
| Gear speeds          | 8 gears (forward, reverse) |                  |  |
| Clutch               | Single stage dry type      |                  |  |

### 1.2.5 Hydrostatic transmission specifications

|                      | 2705E hydrostatic | 2706E hydrostatic |  |
|----------------------|-------------------|-------------------|--|
| Primary transmission | HST, gear         |                   |  |
| Range transmission   | 3-speed range     |                   |  |
| Gear speeds          |                   |                   |  |
| Clutch               | No                | ne                |  |

1-7



## 1.2.6 Power take-off specifications

|                | 2705E mechanical                   | 2705E hydrostatic | 2706E mechanical | 2706E hydrostatic |
|----------------|------------------------------------|-------------------|------------------|-------------------|
| Туре           | Engine driven                      |                   |                  |                   |
| Control        | PTO selector switch                |                   |                  |                   |
| Clutch         | PTO over-running clutch            |                   |                  |                   |
| PTO shaft type | 35 mm (1.38 in) diameter, 6 spline |                   |                  |                   |
| Output         | Clockwise rotation                 |                   |                  |                   |

## 1.2.7 Hydraulic specifications

|                            | 2705E<br>mechanical                       | 2705E<br>hydrostatic                        | 2706E<br>mechanical | 2706E<br>hydrostatic |  |
|----------------------------|---|---|---------------------|----------------------|--|
| Main hydraulic system      |   |   | ,                   |                      |  |
| Pump                       |   | Transmissio                                 | on mounted          |                      |  |
| Maximum output             |   | 47.8 l/min (12.                             | 6 gal/min (US))     |                      |  |
| Pressure                   |   | 16.18 mPa                                   | (2346.8 psi)        |                      |  |
| Steering system            |   |   |                     |                      |  |
| Туре                       |   | Hydro                                       | static              |                      |  |
| Pump                       |   | Transmission mounted                        |                     |                      |  |
| Maximum output             | 2   | 26.5 l/min (7 gal/min (US)) @ 2600 rpm      |                     |                      |  |
| Pressure                   | Rel                                       | Relief valve setting 11.77 mPa (1706.8 psi) |                     |                      |  |
| Rear linkage               | ,   |   |                     |                      |  |
| Type                       | Three-point hitch                         |   |                     |                      |  |
| Size                       |   | Category I and II                           |                     |                      |  |
| Control                    | Operated by single position control lever |   |                     |                      |  |
| Relief valve setting       | 15.7 mPa (2275.7 psi)                     |   |                     |                      |  |
| Lift Capacity              | 1   |   |                     |                      |  |
| Measured at ball ends      | 1200 kg (2645 lb)                         |   |                     |                      |  |
| Measured at 610 mm (24 in) |   | 1100 kg                                     | (2425 lb)           |                      |  |

## 1.2.8 Fuel specifications

|                    | 2705E mechanical           | 2705E hydrostatic | 2706E mechanical | 2706E hydrostatic |
|--------------------|----------------------------|-------------------|------------------|-------------------|
| Туре               | Ultra low Sulfur fuel only |                   |                  |                   |
| Above 4 °C (39 °F) | No. 2-D                    |                   |                  |                   |
| Below 4 °C (39 °F) | No. 1-D                    |                   |                  |                   |



## 1.2.9 Operating slope angle

|              | 2705E mechanical | 2705E hydrostatic | 2706E mechanical | 2706E hydrostatic |
|--------------|------------------|-------------------|------------------|-------------------|
| Up/down      | 20 degrees       |                   |                  |                   |
| Side to side | 20 degrees       |                   |                  |                   |

# 1.2.10 Capacities

|                              | 2705E mechanical        | 2705E hydrostatic | 2706E mechanical | 2706E hydrostatic |
|------------------------------|-------------------------|-------------------|------------------|-------------------|
| Fuel tank                    |                         | 53.0 L (14        | l gal (US))      |                   |
| Engine crankcase with filter | 5.8 L (1.53 gal (US))   |                   |                  |                   |
| Cooling system               | 6.3 L (1.66 gal (US))   |                   |                  |                   |
| Reserve tank                 | 1.0 L (0.26 gal (US))   |                   |                  |                   |
| Hydraulic system             | 38.0 L (10.04 gal (US)) |                   |                  |                   |
| Front drive axle             |                         | 8.5 L (2.2        | 1 gal (US))      |                   |

## 1.2.11 Lubrication specifications

|  | 2705E mechanical                        | 2705E hydrostatic   | 2706E mechanical                                    | 2706E hydrostatic |
|--|---|---------------------|---|-------------------|
| Lubrication fitting  | Massey Fer                              | guson M-1105 or equ | uivalent lithium base g                             | rease No. 2       |
| Engine oil   |   |                     | ent in the correct SAE<br>PI service classification | •                 |
| Recommended Vise   | cosity:                                 |                     |   |                   |
| Between -10 and 40 °C (5 to 104 °F)                                |   | SAE10               | DVV-30  |                   |
| Between -20 to 40 °C (-4 to 104 °F)                                | SAE0W-30 / SAE5W-30                     |                     |   |                   |
| 0 °C (32 °F) and above   | SAE15W-40 / SAE20W-40                   |                     |   |                   |
| Engine coolant   | 50/50 mixture ethylene glycol and water |                     |   |                   |
| Freezing protection (original factory fill)                        | -34 °C (-29 °F)                         |                     |   |                   |
| Transmission and differential housing (including hydraulic system) | AGCO Permatran 821XL                    |                     |   |                   |
| Front axle   |   | AGCO Perm           | atran 821XL   |                   |

### 1.2.12 Tire inflation pressures

| Tire type | Tire location | Tire size | Pressure         |
|-----------|---------------|-----------|------------------|
| Ag        | Front         | 9.5-16-6  | 207 kPa (30 psi) |
|           | Rear          | 13.6-28-6 | 152 kPa (22 psi) |
| Ag        | Front         | 9.5-16-6  | 207 kPa (30 psi) |

1-9





| Tire type | Tire location | Tire size     | Pressure         |
|-----------|---------------|---------------|------------------|
|           | Rear          | 16.9-24-6     | 124 kPa (18 psi) |
| Turf      | Front         | 27×10.50-15-4 | 207 kPa (30 psi) |
|           | Rear          | 44×18.00-20-4 | 138 kPa (20 psi) |
| R4        | Front         | 10-16.5NHS-6  | 310 kPa (45 psi) |
|           | Rear          | 17.5L-24-6    | 138 kPa (20 psi) |

## 1.2.13 Maximum load capacity

|                     | 2705E<br>mechanical | 2705E<br>hydrostatic | 2706E<br>mechanical | 2706E hydrostatic |  |
|---------------------|---------------------|----------------------|---------------------|-------------------|--|
| Front axle capacity | 1000 kg (2205 lb)   |                      |                     |                   |  |
| Rear axle capacity  | 1000 kg (2205 lb)   |                      |                     |                   |  |
| Total capacity      | 2000 kg (4409 lb)   |                      |                     |                   |  |



## 1.3 General dimensions

## 1.3.1 Dimensions

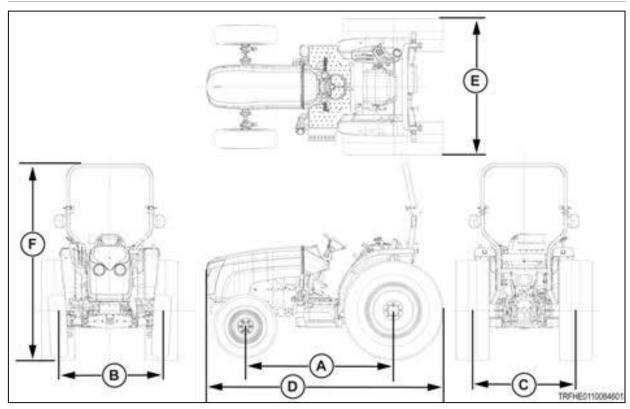


Fig. 6

|                                |                   | 2705E               | 2706E               |      |
|--------------------------------|-------------------|---------------------|---------------------|------|
| Tire<br>Front                  |                   | R1-2<br>9.5-16      |                     |      |
|                                |                   |                     |                     | Rear |
| А                              | Wheelbase         | 1980 mm             | 1980 mm (77.95 in)  |      |
| В                              | Front wheel tread | 1340 mm (52.76 in)  |                     |      |
| С                              | Rear wheel tread  | 1440 mm (56.69 in)  |                     |      |
| D                              | Length            | 3370 mm (132.68 in) |                     |      |
| Е                              | Width             | 1890 mm             | 1890 mm (74.41 in)  |      |
| F                              | Height            | 2645 mm (           | 2645 mm (104.13 in) |      |
| Turning radius (with brake)    |                   | 2.5 m (98.42 in)    |                     |      |
| Turning radius (without brake) |                   | 2.9 m (114.17 in)   |                     |      |
| Ground clearance               |                   | 380 mm (14.96 in)   |                     |      |
| Wei                            | ght               |                     |                     |      |
| Mechanical transmission        |                   | 1740 kg ( lb)       |                     |      |
| Hydrostatic transmission       |                   | 1760 k              | 1760 kg ( lb)       |      |



#### 1.3.2 Major components

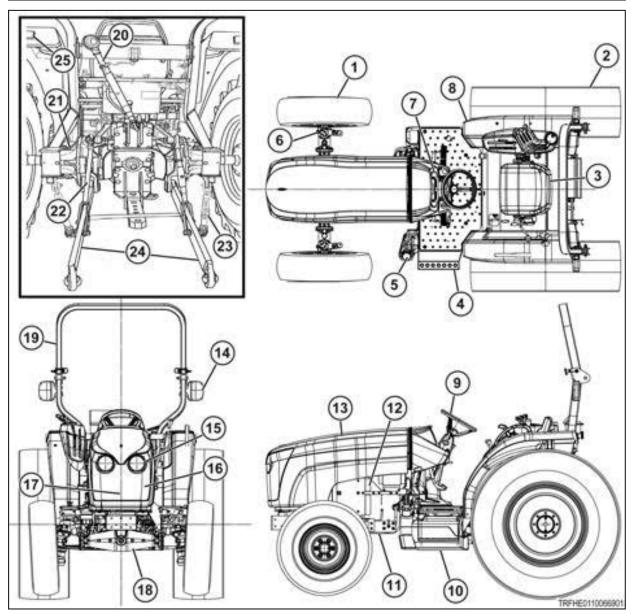


Fig. 7

- (1) Front wheel
- (2) Rear wheel
- (3) Operator's seat
- (4) Foot step
- (5) Fuel tank filler
- (6) Steering cylinder
- (7) Instrument panel
- (8) Fender
- (9) Steering wheel
- (10) Transmission
- (11) Front wheel drive shaft
- (12) Engine
- (13) Engine cover

- (14) Turn/hazard lamp
- (15) Head lamp
- (16) Front grill
- (17) Battery
- (18) Front axle
- (19) Roll over protective structure (ROPS)
- (20) Lift arm
- (21) Rear axle
- (22) Lift rod
- (23) Stabilizer
- (24) Lower links
- (25) Reflector

Thank you so much for reading.

Please click the "Buy Now!"

button below to download the complete manual.



After you pay.

You can download the most perfect and complete manual in the world immediately.

Our support email: ebooklibonline@outlook.com