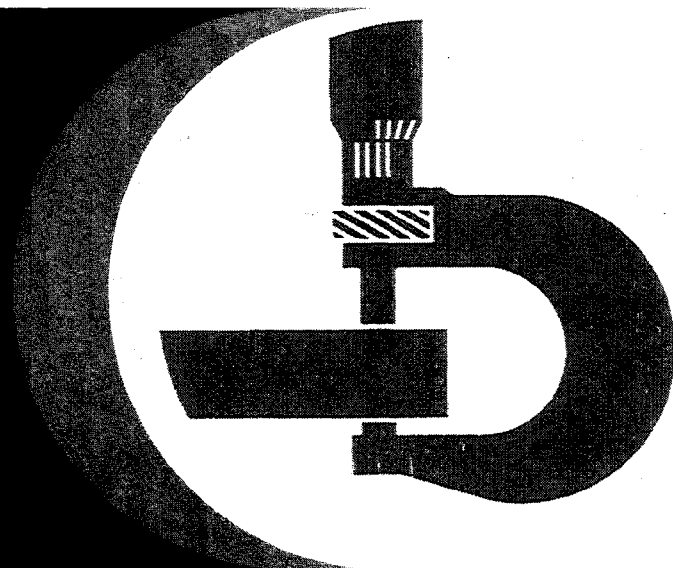


**1640, 1840, 2040  
and 2040 S Tractors**



**John Deere Werke Mannheim  
John Deere Ibérica S.A. Getafe  
TM4363 (Aug-86)**

**PRINTED IN GERMANY  
ENGLISH**

# 1640, 1840, 2040 and 2040 S Tractors

Technical Manual

TM-4363

## CONTENTS

### SECTION 10 – GENERAL

- Group 00 – Specifications and special tools
- Group 05 – Pre-delivery, delivery and after-sales inspections
- Group 10 – Lubrication and periodic service
- Group 15 – Engine and tractor tune-up
- Group 20 – Tractor separation (tractors without increased lifting capacity)
- Group 25 – Tractor separation (tractors with increased lifting capacity)

### SECTION 20 – ENGINE

- Group 00 – Specifications
- Group 05 – Radiator

### SECTION 30 – FUEL AND AIR INTAKE SYSTEM

- Group 00 – Specifications and special tools
- Group 05 – Diagnosing malfunctions
- Group 10 – Fuel tank and water trap
- Group 15 – Cold weather starting aids
- Group 20 – Speed control linkage
- Group 25 – Air cleaner

### SECTION 40 – ELECTRICAL SYSTEM

- Group 00 – Specifications and special tools
- Group 05 – Description, diagnosing malfunctions and tests
- Group 10 – Wiring harnesses
- Group 15 – Controls and instruments
- Group 20 – Lighting system
- Group 25 – Wiring diagrams
- Group 30 – Starting motor
- Group 35 – Alternator

### SECTION 50 – POWER TRAIN

- Group 00 – Specifications and special tools
- Group 05 – Description, operation and lubricating system
- Group 10 – Clutch operating linkages
- Group 15 – Engine clutches
- Group 20 – Hi-Lo shift unit
- Group 25 – Creeper transmission
- Group 30 – Transmission shift linkage
- Group 35 – Synchronized transmission and transmission oil pump
- Group 40 – Collar shift transmission and transmission oil pump
- Group 45 – Differential
- Group 50 – Final drives
- Group 55 – Independent PTO
- Group 60 – Continuous-running PTO
- Group 61 – Front PTO
- Group 65 – Mechanical front wheel drive

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**CONTENTS (Contd.)****SECTION 60 – STEERING SYSTEM AND BRAKES**

- Group 00 – Specifications and special tools
- Group 05 – Hydrostatic steering (operating pressure: 12000 kPa; 120 bar; 1740 psi)
- Group 06 – Hydrostatic steering (operating pressure: 15000 kPa; 150 bar; 2180 psi)
- Group 10 – Power steering
- Group 15 – Manual steering
- Group 20 – Brakes

**SECTION 70 – HYDRAULIC SYSTEM**

- Group 00 – Specifications and special tools
- Group 05 – Description, diagnosing malfunctions and pressure tests
- Group 10 – Oil reservoir, filter, valves and oil cooler
- Group 15 – Hydraulic pumps
- Group 20 – Rockshaft
- Group 21 – Front hitch
- Group 25 – Selective control valves (spool type)
- Group 30 – Selective control valves (poppet valve type)
- Group 35 – Hose couplers
- Group 40 – Remote cylinder
- Group 45 – Selective control valves (for tractors manufactured in Spain)

**SECTION 80 – MISCELLANEOUS**

- Group 00 – Specifications and special tools
- Group 05 – Front axle
- Group 10 – Belt pulley
- Group 15 – Front and rear wheels
- Group 20 – Axla trailer hitch

**SECTION 90 – OPERATOR'S CAB**

- Group 00 – Specifications and special tools
- Group 05 – Air conditioning system
- Group 10 – Cab ventilation and heating
- Group 15 – Operator's seats
- Group 20 – OPU cab
- Group 25 – SG2 cab
- Group 30 – Roll guard

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## Section 10

# General

### CONTENTS OF THIS SECTION

#### GROUP 00 – SPECIFICATIONS AND SPECIAL TOOLS

	Page
Specifications . . . . .	00-3
Serial numbers . . . . .	00-3
Model numbers . . . . .	00-3
Engine . . . . .	00-3
Engine clutch . . . . .	00-4
Cooling system . . . . .	00-4
Fuel system . . . . .	00-5
Electrical system . . . . .	00-5
Synchronized transmission . . . . .	00-6
Collar shift transmission . . . . .	00-6
Hi-Lo shift unit . . . . .	00-6
Creeper transmission . . . . .	00-6
Differential and final drives . . . . .	00-7
Differential lock . . . . .	00-7
PTO . . . . .	00-7
Mechanical front wheel drive . . . . .	00-7
Hydrostatic steering . . . . .	00-8
Power steering . . . . .	00-8
Manual steering . . . . .	00-8
Foot brakes . . . . .	00-8
Handbrake . . . . .	00-8
Hydraulic system . . . . .	00-8
Capacities . . . . .	00-8
Travel speeds . . . . .	00-9
Front and rear wheels . . . . .	00-9
Dimensions and weights . . . . .	00-9
Predelivery, delivery and after-sales inspections . . . . .	00-10
Lubrication and service . . . . .	00-11
Tune-up . . . . .	00-13
Tractor separation . . . . .	00-14
Standard torques . . . . .	00-16
Special tools . . . . .	00-18

#### GROUP 05 – PREDELIVERY, DELIVERY AND AFTER-SALES INSPECTIONS

	Page
Tractor storage . . . . .	05-1
Predelivery inspection . . . . .	05-2
Delivery inspection . . . . .	05-11
After-sales inspection . . . . .	05-11

#### GROUP 10 – LUBRICATION AND SERVICE

Lubrication and service . . . . .	10-1
-----------------------------------	------

#### GROUP 15 – TUNE-UP

Preliminary engine testing . . . . .	15-1
Dynamometer test . . . . .	15-1
Testing compression pressure . . . . .	15-2
Tune-up . . . . .	15-2
Checking tractor operation . . . . .	15-7
Standard torques . . . . .	15-8

#### GROUP 20 – TRACTOR SEPARATION (Tractors without Increased Lifting Capacity)

Separating between engine and tractor front end . . . . .	20-1
Removal and installation of engine . . . . .	20-7
Removal and installation of clutch housing . . . . .	20-11
Removal and installation of final drives . . . . .	20-15
Removal and installation of rockshaft . . . . .	20-21
Removal and installation of operator's cab . . . . .	20-24

**GROUP 25 – TRACTOR SEPARATION (Tractors  
with Increased Lifting Capacity)**

	Page
Special tools . . . . .	25-1
Torques for hardware . . . . .	25-5
Capacities . . . . .	25-7
Standard torques . . . . .	25-7
Important notes . . . . .	25-9
Removing tractor front end . . . . .	25-10
Installing tractor front end . . . . .	25-18
Separating between engine and clutch housing . . . . .	25-20
Joining tractor between engine and clutch housing . . . . .	25-28
Removing engine . . . . .	25-31
Installing engine . . . . .	25-32
Removing clutch housing . . . . .	25-33
Installing clutch housing . . . . .	25-34
Removing transmission . . . . .	25-35
Installing transmission . . . . .	25-41
Removing final drives . . . . .	25-44
Installing final drives . . . . .	25-52
Removing rockshaft . . . . .	25-55
Installing rockshaft . . . . .	25-56
Removing front wheel drive axle . . . . .	25-58
Installing front wheel drive axle . . . . .	25-60
Removing SG2 cab . . . . .	25-63
Installing SG2 cab . . . . .	25-73
Removing front hitch . . . . .	25-76
Installing front hitch . . . . .	25-79
Removing front PTO . . . . .	25-81
Installing front PTO . . . . .	25-83

# Group 00

# Specifications and Special Tools

## Specifications

### Serial Numbers

The engine serial number is stamped into the plate located on the lower front right-hand side of the cylinder block.

*NOTE: When ordering engine parts, quote all digits of serial number stamped on the plate.*

The plate showing the tractor serial number is located on the right-hand side of the front axle carrier.

*NOTE: When ordering tractor spare parts (excluding engine parts), quote all numbers and letters of serial number stamped on the plate.*

A plate showing the tractor type, transmission serial number, cone point measurement etched into pinion face of differential drive shaft as well as reduction of differential is located on the right-hand side of the transmission case.

### Model Numbers

The fuel injection pump, fuel injection nozzles, alternator, starting motor, hydrostatic steering valve, compressor of air conditioning system (when equipped) and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

### Engine

Number of cylinders .....	.4	
Cylinder liner bore .....	106.5 mm (4.19 in.)	
Stroke .....	110 mm (4.33 in.)	
Displacement .....	3920 cm <sup>3</sup> (239 cu.in.)	
Compression ratio		
1640, 1840 and 2040 up to engine serial no. 571869 CD and		
2040 S up to engine serial no. 547536 CD .....	16.8 : 1	
1640 and 2040 from engine serial no. 571870 CD and		
2040 S from engine serial no. 547537 CD .....	17.4 : 1	
Maximum torque		
1640 at 1200 rpm .....	205 Nm	150 ft-lb
1840 and 2040 at 1300 rpm .....	230 Nm	170 ft-lb
2040 S at 1400 rpm .....	245 Nm	180 ft-lb

Firing order.....	1 - 3 - 4 - 2
Valve clearance (engine hot or cold)	
Intake valve.....	.035 mm                      0.014 in.
Exhaust valve.....	.045 mm                      0.018 in.
Fast idle speed.....	2610 to 2660 rpm
Slow idle speed.....	700 to 800 rpm
Rated engine speed.....	2500 rpm
Working speed range	
1640.....	1200 to 2500 rpm
1840 and 2040.....	1300 to 2500 rpm
2040 S.....	1400 to 2500 rpm
Flywheel horsepower at engine rated speed — 2500 rpm	
According to DIN 70020, 1640.....	.46 kW                      62 hp
1840 and 2040.....	.51 kW                      70 hp
2040 S.....	.55 kW                      75 hp
PTO* horsepower at engine rated speed — 2500 rpm	
According to DIN 70020, 1640.....	.41 kW                      56 hp
1840 and 2040.....	.46 kW                      63 hp
2040 S.....	.50 kW                      68 hp
According to DIN SAE J816b, 1640.....	.40 kW                      54 hp
1840 and 2040.....	.45 kW                      60 hp
2040 S.....	.48 kW                      65 hp
Lubrication system.....	Full internal force feed system, with full flow filter
<b>Engine Clutch</b> .....	Single dry disk with torsion damper or dual-stage dry disk, foot-operated
<b>Cooling System</b>	
Type.....	Pressurized system with centrifugal pump
Temperature regulation.....	Thermostat

\* With the engine run in (above 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation  $\pm 5\%$ .



## Fuel System

Type .....	Direct injection
Fuel injection pump timing to engine .....	TDC
Fuel injection pump type .....	Distributor type
1640	
Up to engine serial no. 531584 CD .....	Roto Diesel No. R 3443 F 630
From engine serial no. 531585 CD .....	Roto Diesel No. R 3443 F 980
1840 and 2040	
Up to engine serial no. 530063 CD .....	Roto Diesel No. R 3443 F 640
From engine serial no. 530064 CD .....	Roto Diesel No. R 3443 F 970
2040S	
Up to engine serial no. 531047 CD .....	Roto Diesel No. R 3443 F 140
From engine serial no. 531048 CD .....	Roto Diesel No. R 3443 F 950
Air cleaner .....	Dry-type air cleaner with secondary (safety) element

## Electrical System

Batteries .....	2 x 12 volts, 55 Ah
Tractors with SG2 cab .....	2 x 12 volts, 55 or 66 Ah
Alternator with internal regulator	
Tractors without operator's cab .....	14 volts, 33 or 55 amps.
Tractors with operator's cab .....	14 volts, 55 amps.
Starting motor .....	12 volts, 3 kW (4 HP)
Battery terminal grounded .....	negative

## Synchronized Transmission

Type .....	Synchronized transmission
Gear selections .....	8 forward and 4 reverse
Gear shifting .....	Two forward groups and one reverse group Synchronized forward and reverse shifting within groups

## Collar Shift Transmission

Type .....	Helical gears
Gear selections .....	8 forward, 4 reverse speeds
Gear shifting .....	Two forward ranges, One reverse range

## Hi-Lo Shift Unit

Type .....	Hydraulic gear reduction unit which can be shifted under load with "wet" multiple disk clutch and brake packs
Travel speed decreases in each gear by .....	Approx. 20 %
Shifting to reduced (Lo) speed .....	Preloaded cup springs
Shifting to normal (Hi) speed .....	Hydraulic

## Creeper Transmission

Type .....	Synchronized reduction unit
Travel speed decreases in low (l) and reverse ranges by .....	approx. 79 %
Shifting both ranges .....	Mechanical and not under load

## Differential and Final Drives

Type of differential .....	Spiral bevel gears
Type of final drive .....	Planetary reduction drive

### Differential Lock

Operation ..... Hand or foot operated  
 Disengage ..... Will disengage automatically as soon as traction has equalized

### PTO

#### INDEPENDENT PTO

Type ..... Independent of transmission, can be engaged and disengaged under load  
 PTO clutch ..... Hydraulically operated "wet" disk clutch  
 PTO brake ..... Hydraulically operated "wet" disk brake

#### CONTINUOUS – RUNNING PTO

Type ..... Independent of transmission, with engine dual stage clutch

#### PTO SPEEDS (in rpm)

Engine speed	540 rpm shaft	1000 rpm shaft
800	180* or 210**	335
2400* or 2040**	540	1000
2500	565* or 660**	1040
2660	600* or 705**	1110

### Mechanical Front Wheel Drive

Type ..... Engaged hydraulically, under full load with "wet" disk clutch  
 Control ..... Electrical/hydraulic solenoid switch  
 Engagement ..... Preloaded cup springs  
 Disengagement ..... Hydraulic

\* Up to tractor serial no. 507867 L  
 \*\* From tractor serial no. 507868 L

**Hydrostatic Steering** . . . . . Without mechanical linkage between steering valve and the front wheels

**Power Steering** . . . . . Hydraulically operated steering linkage

**Manual Steering** . . . . . Recirculating ball bearing type

**Foot Brakes** . . . . . Self-adjusting, hydraulically operated "wet" disk brakes

**Handbrake** . . . . . Mechanically operated band-type locking brake acting on the differential

## Hydraulic System

Type . . . . . Closed center, constant pressure system

Standby pressure\* . . . . . 19000 kPa      190 bar      2760 psi

Operating pressure\*\* . . . . . 17000 kPa      170 bar      2470 psi

Hydraulic pump . . . . . 4 or 8-piston pump with variable displacement

## Capacities

### Fuel tank

Plastic tank . . . . . 95 liters      25.1 U.S.gals.

Metal tank . . . . . 90 liters      23.8 U.S.gals.

### Cooling system

Without operator's cab . . . . . 13 liters      3.4 U.S.gals.

With operator's cab . . . . . 15 liters      4.0 U.S.gals.

### Engine crankcase

Without filter change . . . . . 8 liters      2.1 U.S.gals.

With filter change . . . . . 8.5 liters      2.25 U.S.gals.

### Transmission - Hydraulic system (including oil reservoir and oil cooler)

#### Synchronized transmission

##### Initial filling

1640, 1840 and 2040 . . . . . 59 liters      15.6 U.S. gals.

1640 and 2040 with heavy-duty final drives and 2040 S . . . 64 liters      16.9 U.S. gals.

##### Oil change

1640, 1840 and 2040 . . . . . 51 liters      13.5 U.S. gals.

1640 and 2040 with heavy-duty final drives and 2040 S . . . 56 liters      14.8 U.S. gals.

On tractors for Canada only:

\* 15500 kPa      155 bar      2250 psi

\*\* 14000 kPa      140 bar      2050 psi

Collar shift transmission

Initial filling

1640, 1840 and 2040 .....	47 liters	12.4 U.S. gals.
1640 and 2040 with heavy-duty final drives .....	52 liters	13.75 U.S. gals.

Oil change

1640, 1840 and 2040 .....	39 liters	10.3 U.S. gals.
1640 and 2040 with heavy-duty final drives .....	44 liters	11.6 U.S. gals.

Oil reservoir .....	4 liters	1.1 U.S. gals.
---------------------	----------	----------------

Oil cooler .....	2 liters	0.5 U.S. gals.
------------------	----------	----------------

Mechanical front wheel drive

Front axle housing

up to serial no. 449 999 L .....	5.3 liters	1.4 U.S. gals.
from serial no. 450 000 L .....	5.0 liters	1.3 U.S. gals.

Wheel hub housing, each

up to serial no. 449 999 L .....	0.75 liters	0.2 U.S. gals.
from serial no. 450 000 L .....	0.75 liters	0.2 U.S. gals.

Belt pulley .....	1 liter	0.3 U.S. gals.
-------------------	---------	----------------

**Travel Speeds** ..... see Operator's Manual

**Front and Rear Wheels**

Tires, tread widths, tire pressures and ballast weights ..... see Operator's Manual

**Dimensions and Weights** ..... see Operator's Manual

## Predelivery, Delivery and After-Sales Inspections

### ENGINE SPEEDS

Slow idle .....	700 to 800 rpm
Fast idle .....	2610 to 2660 rpm
Rated speed .....	2500 rpm

### FAN BELT

The fan belt should have 19 mm (3/4 in.) flex with 90 N (20 lb) pull midway between crankshaft and alternator or water pump (use a spring scale).

### COMPRESSOR BELT

The compressor belt should have 19 mm (3/4 in.) flex with 60 N (13 lb) pull midway between pulleys.

### BATTERIES

Specific gravity at an electrolyte temperature of 20° C (68° F)

Normal and arctic conditions .....	1.28
Tropical conditions .....	1.23

### CLUTCH OPERATING ASSY.

#### Tractors without Cab or with OPU

Clutch pedal free travel .....	approx. 25 mm 1 in.
--------------------------------	------------------------

#### Tractors with SG2 Cab

Slave cylinder operating rod, stroke .....	8.5 to 12.0 mm 5/16 to 15/32 in.
--------------------------------------------	-------------------------------------

### FRONT WHEEL TOE-IN

Tractors without front wheel drive .....	3 to 6 mm	0.12 to 0.25 in.
Tractors with MFWD .....	0 to 3 mm	0 to 0.12 in.

### TORQUES FOR HARDWARE

Front wheel rim to hub		
Tractors without front wheel drive .....	180 Nm	130 ft-lb
Tractors with MFWD .....	300 Nm	220 ft-lb
Axle knees to axle center, cap screws .....	400 Nm	300 ft-lb

#### Tractors with Hydrostatic Steering

Tie rod clamps, cap screws		
Cap screw (M 10) .....	55 Nm	40 ft-lb
Cap screw (M 12) .....	90 Nm	65 ft-lb
Tie rod tube, cap screw .....	55 Nm	40 ft-lb

#### Tractors with Power Steering or Manual Steering

Outer clamp of tie rod, cap screw .....	90 Nm	65 ft-lb
Inner clamp of tie rod, cap screw .....	55 Nm	40 ft-lb

Rear wheels		
Rear wheels to axle . . . . .	400 Nm	300 ft-lb
Wheel disk to hub (rack-and-pinion axle) . . . . .	400 Nm	300 ft-lb
4-post roll guard		
Roll guard to fender, cap screws . . . . .	120 Nm	85 ft-lb
U-bolt hex. nuts . . . . .	130 Nm	95 ft-lb
2-post roll guard		
To final drive housings, cap screws . . . . .	230 Nm	170 ft-lb
Both supports to crossbar, cap screws . . . . .	230 Nm	170 ft-lb
Rear wheel fenders to final drive housings, hex. nuts . . . . .	130 Nm	95 ft-lb

## Lubrication and Service

### CAPACITIES

Engine crankcase		
Without filter change . . . . .	8 liters	2.10 U.S. gals.
With filter change . . . . .	8.5 liters	2.25 U.S. gals.
Cooling system		
Without cab . . . . .	13 liters	3.4 U.S. gals.
With cab . . . . .	15 liters	4.0 U.S. gals.
Transmission – Hydraulic system (including oil reservoir and oil cooler)		
Synchronized transmission		
Initial filling		
1640, 1840 and 2040 . . . . .	59 liters	15.6 U.S. gals.
1640 and 2040 with heavy-duty final drives and 2040 S . . . . .	64 liters	16.9 U.S. gals.
Oil change		
1640, 1840 and 2040 . . . . .	51 liters	13.5 U.S. gals.
1640 and 2040 with heavy-duty final drives and 2040 S . . . . .	56 liters	14.8 U.S. gals.
Collar shift transmission		
Initial filling		
1640, 1840 and 2040 . . . . .	47 liters	12.4 U.S. gals.
1640 and 2040 with heavy-duty final drives . . . . .	52 liters	13.75 U.S. gals.
Oil change		
1640, 1840 and 2040 . . . . .	39 liters	10.3 U.S. gals.
1640 and 2040 with heavy-duty final drives . . . . .	44 liters	11.6 U.S. gals.
Oil reservoir . . . . .	4 liters	1.1 U.S. gals.
Oil cooler . . . . .	2 liters	0.5 U.S. gals.
Mechanical front wheel drive		
Front axle housing		
up to serial no. 449 999 L . . . . .	5.3 liters	1.4 U.S. gals.
from serial no. 450 000 L . . . . .	5.0 liters	1.3 U.S. gals.
Wheel hub housing, each		
up to serial no. 449 999 L . . . . .	0.75 liters	0.2 U.S. gals.
from serial no. 450 000 L . . . . .	0.75 liters	0.2 U.S. gals.
Belt pulley . . . . .	1 liter	0.3 U.S. gals.

**SERVICE INTERVALS**

Checking crankcase oil level .....	every	10 hours
Changing engine oil .....	every	200 hours
Changing engine oil filter .....	every	200 hours
Checking transmission/hydraulic system oil level .....	every	50 hours
Changing transmission/hydraulic system oil filter .....	every	500 hours
Changing transmission/hydraulic oil .....	every	1000 hours
Changing hydrostatic steering filter .....	every	1000 hours
Cleaning hydraulic pump strainer .....	every	1000 hours
Checking FWD oil level .....	every	100 hours
FWD oil change .....	every	1000 hours
Cleaning and packing front wheel bearings .....	every	1000 hours
Lubricating grease fittings		
Universal joints of FWD .....	every	50 hours
In wet and muddy conditions .....	every	10 hours
Front axle and front axle bearings .....	every	50 hours
In wet and muddy conditions .....	every	10 hours
Clutch throw-out bearing grease fitting (when equipped) .....	every	100 hours
Rear axle bearings .....	every	500 hours
In wet and muddy conditions .....	every	10 hours
Three point hitch .....	every	200 hours



## Tune-Up

PTO horsepower\* at 2500 rpm rated engine speed

According to DIN 70020, 1640 .....	.41 kW	56 hp
1840 and 2040 .....	.46 kW	63 hp
2040 S.....	.50 kW	68 hp
According to SAE J 816 b, 1640 .....	.40 kW	54 hp
1840 and 2040 .....	.45 kW	60 hp
2040 S.....	.48 kW	65 hp

Slow idle ..... 700 to 800 rpm

Fast idle ..... 2610 to 2660 rpm

Rated engine speed ..... 2500 rpm

Air intake system vacuum ..... 3.5 to 6.0 kPa 35 to 60 mbar 14 to 25 in.  
water head

Air cleaner restriction warning  
switch closes at a vacuum of ..... 5.5 to 6.5 kPa 55 to 65 mbar 22 to 26 in.  
water head

Radiator cap high pressure valve  
opens at..... .40 to 50 kPa 0.4 to 0.5 bar 6 to 7 psi

Radiator cap low pressure valve  
opens at..... .0 to 4 kPa 0 to 0.4 bar 0 to 0.6 psi

### FAN BELT

Fan belt should have 19 mm (3/4 in.) flex with 90 N (20 lb) pull midway between crankshaft and alternator or water pump (use a spring scale).

### COMPRESSOR BELT

Compressor belt should have 19 mm (3/4 in.) flex with 60 N (13 lb) pull midway between pulleys.

\* With the engine run in (more than 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation  $\pm 5\%$ .

## Tractor Separation

### TORQUES FOR HARDWARE (Tractors without Increased Lifting Capacity)

Front axle carrier to engine block		
front attaching cap screws (4 used) . . . . .	230 Nm	170 ft-lb
rear attaching cap screws (2 used) . . . . .	180 Nm	130 ft-lb
Front axle carrier to oil pan, cap screws . . . . .	400 Nm	300 ft-lb
Hydraulic pump drive shaft, cap screws. . . . .	50 Nm	35 ft-lb
Jointed shaft flange to front axle drive hub (tractors with MFWD), cap screws		
up to serial no. 449 999 L . . . . .	35 Nm	25 ft-lb
from serial no. 450 000 L . . . . .	75 Nm	55 ft-lb
Drag link* to bell crank or steering arm, slotted nut** . . . . .	75 Nm	55 ft-lb
Clutch housing to engine block		
cap screws . . . . .	230 Nm	170 ft-lb
hex. nuts . . . . .	230 Nm	170 ft-lb
Oil pan to clutch housing, cap screws . . . . .	230 Nm	170 ft-lb
Clutch housing to transmission, cap screws . . . . .	160 Nm	120 ft-lb
Transmission case drain plugs . . . . .	135 Nm	100 ft-lb
Retainer of hydraulic lines to clutch housing, cap screw . . . . .	45 Nm	32 ft-lb
Final drive housings to transmission case, cap screws . . . . .	120 Nm	85 ft-lb
Rockshaft housing to transmission case, cap screws . . . . .	120 Nm	85 ft-lb
Rear wheels to rear axle . . . . .	400 Nm	300 ft-lb
Wheel disk to hub (on tractors equipped with rack-and-pinion axle) . . . . .	400 Nm	300 ft-lb
Rear wheel fenders to final drive housings, hex. nuts . . . . .	130 Nm	95 ft-lb
4-post roll guard		
Roll guard to fender, cap screws . . . . .	120 Nm	85 ft-lb
U-bolt hex. nuts . . . . .	130 Nm	95 ft-lb
2-post roll guard		
to final drive housings, cap screws . . . . .	230 Nm	170 ft-lb
both supports to crossbar, cap screws . . . . .	230 Nm	170 ft-lb

\* On tractors with power or manual steering

\*\* **NOTE:** If cotter pin cannot be inserted when tightening to the specified torque, turn nut to next slot and secure with cotter pin.

Basic weight to front axle carrier, cap screws . . . . .	400 Nm	300 ft-lb
Drawbar to transmission case, cap screws . . . . .	120 Nm	85 ft-lb
<b>OPU Cab</b>		
Cab to rubber bearing block, slotted nuts* . . . . .	10 to 20 Nm	7 to 14 ft-lb
Rubber bearing block to bearing and pivot brackets, cap screws . . . . .	50 Nm	35 ft-lb
Bearing pivot bracket to final drive housing, cap screws . . . . .	100 Nm	70 ft-lb
Bearing bracket to battery box, cap screws . . . . .	50 Nm	35 ft-lb
Battery box to flywheel housing, upper cap screw . . . . .	200 Nm	145 ft-lb
lower cap screws . . . . .	100 Nm	70 ft-lb
<b>SG2 Cab</b>		
Cab to rubber bearing blocks, hex. nuts . . . . .	200 Nm	145 ft-lb

\* NOTE: Insert cotter pin within specified torque.