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 lift capacity)
  Group 25 — Tractor separation (tractors with increased lift 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 — General information, 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 systems
  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 56 — Front PTO
  Group 60 — Mechanical front wheel drive
CONTENTS (Contd.)

SECTION 60 — STEERING SYSTEM AND BRAKES
Group 00 — Specifications and special tools
Group 05 — Hydrostatic steering (operating pressure: 12 000 kPa; 120 bar; 1740 psi)
Group 06 — Hydrostatic steering (operating pressure: 15 000 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 (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 — Axia trailer hitch

SECTION 90 — OPERATOR’S CABS
Group 00 — Specifications and special tools
Group 05 — Air conditioning system
Group 10 — Ventilation and heating
Group 15 — Operator’s seats
Group 20 — OPU cab
Group 25 — SG2 cab
Group 30 — Roll guard
## Section 10

**General**

### CONTENTS OF THIS SECTION

<table>
<thead>
<tr>
<th>GROUP 00 – SPECIFICATIONS AND SPECIAL TOOLS</th>
<th>GROUP 05 – PREDELIVERY, DELIVERY AND AFTER-SALES INSPECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td>Tractor storage</td>
</tr>
<tr>
<td>Serial numbers</td>
<td>Predelivery inspection</td>
</tr>
<tr>
<td>Model numbers</td>
<td>Delivery inspection</td>
</tr>
<tr>
<td>Engine</td>
<td>After-sales inspection</td>
</tr>
<tr>
<td>Engine clutch</td>
<td></td>
</tr>
<tr>
<td>Cooling system</td>
<td></td>
</tr>
<tr>
<td>Fuel system</td>
<td></td>
</tr>
<tr>
<td>Electrical system</td>
<td></td>
</tr>
<tr>
<td>Synchronized transmission</td>
<td></td>
</tr>
<tr>
<td>Collar shift transmission</td>
<td></td>
</tr>
<tr>
<td>Hi-Lo shift unit</td>
<td></td>
</tr>
<tr>
<td>Creeper transmission</td>
<td></td>
</tr>
<tr>
<td>Differential and final drives</td>
<td></td>
</tr>
<tr>
<td>Differential lock</td>
<td></td>
</tr>
<tr>
<td>PTO</td>
<td></td>
</tr>
<tr>
<td>Mechanical front wheel drive</td>
<td></td>
</tr>
<tr>
<td>Hydrostatic steering</td>
<td></td>
</tr>
<tr>
<td>Power steering</td>
<td></td>
</tr>
<tr>
<td>Manual steering</td>
<td></td>
</tr>
<tr>
<td>Foot brakes</td>
<td></td>
</tr>
<tr>
<td>Handbrake</td>
<td></td>
</tr>
<tr>
<td>Hydraulic system</td>
<td></td>
</tr>
<tr>
<td>Capacities</td>
<td></td>
</tr>
<tr>
<td>Travel speeds</td>
<td></td>
</tr>
<tr>
<td>Front and rear wheels</td>
<td></td>
</tr>
<tr>
<td>Dimensions and weights</td>
<td></td>
</tr>
<tr>
<td>Pre-delivery, delivery and after-sales inspections</td>
<td></td>
</tr>
<tr>
<td>Lubrication and service</td>
<td></td>
</tr>
<tr>
<td>Tune-up</td>
<td></td>
</tr>
<tr>
<td>Tractor separation</td>
<td></td>
</tr>
<tr>
<td>Standard torques</td>
<td></td>
</tr>
<tr>
<td>Special tools</td>
<td></td>
</tr>
</tbody>
</table>

### GROUP 10 – LUBRICATION AND SERVICE

- Lubrication and service

### GROUP 15 – TUNE-UP

- Preliminary engine testing
- Dynamometer test
- Testing compression pressure
- Tune-up
- Checking tractor operation
- Standard torques

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

- Separating between engine and tractor front end
- Removal and installation of engine
- Removal and installation of clutch housing
- Removal and installation of final drives
- Removal and installation of rockshaft
- Removal and installation of operator’s cabs
### GROUP 25 — TRACTOR SEPARATION (Tractors with Increased Lift Capacity)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special tools</td>
<td>10-25-1</td>
</tr>
<tr>
<td>Torques for hardware</td>
<td>10-25-5</td>
</tr>
<tr>
<td>Capacities</td>
<td>10-25-7</td>
</tr>
<tr>
<td>Standard torques for hardware</td>
<td>10-25-7</td>
</tr>
<tr>
<td>Important notes</td>
<td>10-25-9</td>
</tr>
<tr>
<td>Removing tractor front end</td>
<td>10-25-10</td>
</tr>
<tr>
<td>Installing tractor front end</td>
<td>10-25-18</td>
</tr>
<tr>
<td>Separating between engine and clutch housing</td>
<td>10-25-20</td>
</tr>
<tr>
<td>Joining tractor between engine and clutch housing</td>
<td>10-25-28</td>
</tr>
<tr>
<td>Removing engine</td>
<td>10-25-31</td>
</tr>
<tr>
<td>Installing engine</td>
<td>10-25-32</td>
</tr>
<tr>
<td>Removing clutch housing</td>
<td>10-25-33</td>
</tr>
<tr>
<td>Installing clutch housing</td>
<td>10-25-34</td>
</tr>
<tr>
<td>Removing transmission</td>
<td>10-25-35</td>
</tr>
<tr>
<td>Installing transmission</td>
<td>10-25-41</td>
</tr>
<tr>
<td>Removing final drives</td>
<td>10-25-44</td>
</tr>
<tr>
<td>Installing final drives</td>
<td>10-25-52</td>
</tr>
<tr>
<td>Removing rockshaft</td>
<td>10-25-55</td>
</tr>
<tr>
<td>Installing rockshaft</td>
<td>10-25-56</td>
</tr>
<tr>
<td>Removing front wheel drive axle</td>
<td>10-25-58</td>
</tr>
<tr>
<td>Installing front wheel drive axle</td>
<td>10-25-60</td>
</tr>
<tr>
<td>Removing SG2 cab</td>
<td>10-25-63</td>
</tr>
<tr>
<td>Installing SG2 cab</td>
<td>10-25-73</td>
</tr>
<tr>
<td>Removing front hitch</td>
<td>10-25-76</td>
</tr>
<tr>
<td>Installing front hitch</td>
<td>10-25-79</td>
</tr>
<tr>
<td>Removing front PTO</td>
<td>10-25-81</td>
</tr>
<tr>
<td>Installing front PTO</td>
<td>10-25-83</td>
</tr>
</tbody>
</table>
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 digits 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$^3$ 239 cu.in.
Compression ratio ............................................... 16.8 : 1
Maximum torque at 1600 rpm .................................. 270 Nm 199 ft-lb
Firing order ...................................................... 1 - 3 - 4 - 2
Valve clearance (engine hot or cold)
  Intake valve .................................................. 0.35 mm 0.014 in.
  Exhaust valve ................................................ 0.45 mm 0.018 in.
Specifications and Special Tools

Fast idle speed ........................................ 2610 to 2660 rpm
Slow idle speed .......................................... 700 to 800 rpm
Rated engine speed .................................... 2500 rpm
Working speed range ................................... 1600 to 2500 rpm
Flywheel horsepower at engine rated speed — 2500 rpm
According to DIN 70020 .................................. .60 kW 82 hp
PTO* horsepower at engine rated speed — 2500 rpm
According to DIN 70020 .................................. .54 kW 74 hp
According to SAE J816b. ................................ .54 kW 72 hp
Lubrication system ...................................... Full internal force feed system with full flow filter

Engine Clutch ........................................... Single dry disk clutch with torsion damper, foot-operated

Cooling System
Type ...................................................... Pressurized system with centrifugal pump
Temperature regulation ................................ Thermostat

Fuel System
Type ..................................................... Direct injection
Fuel injection pump timing to engine ..................... TDC
Fuel injection pump type ................................ Distributor type
up to engine serial no. 526 865 CD ......................... Roto Diesel No. R 3443 F 680
from engine serial no. 526 866 CD ......................... Roto Diesel No. R 3443 F 910
Air cleaner ............................................. Dry-type air cleaner with secondary (safety) element

* 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 ±5%.
Electrical System

Batteries ......................................................... 2 x 12 volts, 55 Ah
  Tractors with SG2 cab ........................................... 2 x 12 volts, 55 Ah 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 (1) 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**

- **Type**: Independent of transmission, can be engaged and disengaged under load

**PTO speeds with engine speed of:**

- 2400 rpm* or 2040 rpm** ........................................ 540 rpm
- 2400 rpm .......................................................... 1000 rpm
  (changing PTO stub shaft or handshift change)

**PTO clutch**: Hydraulically operated "wet" disk clutch

**PTO brake**: Hydraulically operated "wet" disk brake

**PTO SPEEDS (in rpm)**

<table>
<thead>
<tr>
<th>Engine speed</th>
<th>540 rpm shaft</th>
<th>1000 rpm shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>180* or 210**</td>
<td>335</td>
</tr>
<tr>
<td>2400* or 2040**</td>
<td>540</td>
<td>1000</td>
</tr>
<tr>
<td>2500</td>
<td>565* or 660**</td>
<td>1040</td>
</tr>
<tr>
<td>2660</td>
<td>600* or 705**</td>
<td>1110</td>
</tr>
</tbody>
</table>

**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. 507 867 L
** From tractor serial no. 507 868 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: 102 liters (26.9 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 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: 64 liters (16.9 U.S.gals.)
  - Oil change: 56 liters (14.8 U.S.gals.)
- Collar shift transmission:
  - Initial filling: 52 liters (13.75 U.S.gals.)
  - Oil change: 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.)

* 15500 kPa (155 bar, 2250 psi)
** 14000 kPa (140 bar, 2050 psi)
Capacities (Contd.)

Mechanical front wheel drive

Front axle housing
- up to serial no. 449 999 L .................................................. 6.5 liters 1.7 U.S.gals.
- from serial no. 450 000 L .................................................. 7.0 liters 1.85 U.S.gals.

Wheel hub housing, each
- up to serial no. 449 999 L .................................................. 1.0 liter 0.3 U.S.gals.
- from serial no. 450 000 L .................................................. 0.75 liter 0.2 U.S.gals.

Belt pulley ................................................................. 1.0 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 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 tied rod, cap screw ................................. 90 Nm 65 ft-lb
Inner clamp of tie rod, cap screw .................................. 55 Nm 40 ft-lb
TORQUES FOR HARDWARE (Contd.)

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

SG2 cab rubber mounting blocks, hex. nuts ......................... 200 Nm 145 ft-lb

Lubrication and Service

CAPACITIES

Engine crankcase
- without filter change ................................................ 8 liters 2.1 U.S.gals.
- with filter change .................................................. 8.5 liters 2.25 U.S.gals.

Hydraulic clutch operating system ............................. 300 cm³ 10.5 fl.oz.

Cooling System

without operator’s cab .............................................. 13 liters 3.4 U.S.gals.
with operator’s cab ................................................ 15 liters 4.0 U.S.gals.

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

Synchronized transmission
- Initial filling .......................................................... 64 liters 16.8 U.S.gals.
- Oil change ........................................................... 56 liters 14.8 U.S.gals.

Collar shift transmission
- Initial filling .......................................................... 52 liters 13.75 U.S.gals.
- Oil change ........................................................... 44 liters 11.6 U.S.gals.

Mechanical front wheel drive

Front axle housing
- up to serial no. 449 999 L ............................................ 6.5 liters 1.7 U.S.gals.
- from serial no. 450 000 L .............................................. 7.0 liters 1.85 U.S.gals.

Wheel hub housing, each
- up to serial no. 449 999 L ............................................ 1.0 liter 0.3 U.S.gals.
- from serial no. 450 000 L .............................................. 0.75 liter 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 fuel filter ................................... every 10 hours
- Changing fuel filter .................................... every 1000 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 MFWD oil level .............................. every 100 hours
- MFWD oil change ....................................... every 1000 hours
- Cleaning and packing front wheel bearings .......... every 1000 hours
- Lubricating grease fittings
  - Mechanical front wheel drive universal-jointed shaft ........ 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
  - Front hitch ......................................... every 200 hours
  - Front PTO drive shaft ............................... every 200 hours
Tune-Up

PTO horsepower* at 2500 rpm rated engine speed

According to DIN 70020 .................................................. 0.54 kW 74 hp
According to SAE J 816b .................................................. 0.54 kW 72 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 0.04 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).

COMPRESSION 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 ± 5%.
### Tractor Separation

**TORQUES FOR HARDWARE (TRACTORS WITHOUT INCREASED LIFTING CAPACITY)**

<table>
<thead>
<tr>
<th>Component Description</th>
<th>Torque (Nm)</th>
<th>Torque (ft-lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front axle carrier to engine block</td>
<td></td>
<td></td>
</tr>
<tr>
<td>front attaching cap screws (4 used)</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>rear attaching cap screws (2 used)</td>
<td>180</td>
<td>130</td>
</tr>
<tr>
<td>Front axle carrier to oil pan, cap screws</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>Hydraulic pump drive shaft, cap screws</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>Jointed shaft flange to front axle drive hub (tractors with MFWD), cap screws</td>
<td>75</td>
<td>55</td>
</tr>
<tr>
<td>Drag link* to bell crank or steering arm, slotted nut**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clutch housing to engine block</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cap screws</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>hex. nuts</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>Oil pan to clutch housing, cap screws</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>Clutch housing to transmission, cap screws</td>
<td>160</td>
<td>120</td>
</tr>
<tr>
<td>Transmission case drain plugs</td>
<td>135</td>
<td>100</td>
</tr>
<tr>
<td>Retainer of hydraulic lines to clutch housing, cap screw</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td>Final drive housings to transmission case, cap screws</td>
<td>120</td>
<td>85</td>
</tr>
<tr>
<td>Rockshaft housing to transmission case, cap screws</td>
<td>120</td>
<td>85</td>
</tr>
<tr>
<td>Rear wheels to rear axle</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>Wheel disk to hub (on tractors equipped with rack-and-pinion axle)</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>4-post roll guard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll guard to fender, cap screws</td>
<td>120</td>
<td>85</td>
</tr>
<tr>
<td>U-bolt hex. nuts</td>
<td>130</td>
<td>95</td>
</tr>
<tr>
<td>2-post roll guard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To final drive housings, cap screws</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>Both supports to crossbar, cap screws</td>
<td>230</td>
<td>170</td>
</tr>
</tbody>
</table>

* 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. **
<table>
<thead>
<tr>
<th>Component Description</th>
<th>Torque</th>
<th>Foot-lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic weight to front axle carrier, cap screws</td>
<td>400 Nm</td>
<td>300 ft-lb</td>
</tr>
<tr>
<td>Drawbar to transmission case, cap screws</td>
<td>120 Nm</td>
<td>85 ft-lb</td>
</tr>
</tbody>
</table>

**OPU Cab**

<table>
<thead>
<tr>
<th>Component Description</th>
<th>Torque</th>
<th>Foot-lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cab to rubber bearing block, slotted nuts</td>
<td>10 to 20 Nm</td>
<td>7 to 14 ft-lb</td>
</tr>
<tr>
<td>Rubber bearing block to bearing and pivot brackets, cap screws</td>
<td>50 Nm</td>
<td>35 ft-lb</td>
</tr>
<tr>
<td>Bearing pivot bracket to final drive housing, cap screws</td>
<td>100 Nm</td>
<td>70 ft-lb</td>
</tr>
<tr>
<td>Bearing bracket to battery box, cap screws</td>
<td>50 Nm</td>
<td>35 ft-lb</td>
</tr>
<tr>
<td>Battery box to flywheel housing, upper cap screw</td>
<td>200 Nm</td>
<td>145 ft-lb</td>
</tr>
<tr>
<td>Battery box to flywheel housing, lower cap screw</td>
<td>100 Nm</td>
<td>70 ft-lb</td>
</tr>
</tbody>
</table>

**SG2 Cab**

<table>
<thead>
<tr>
<th>Component Description</th>
<th>Torque</th>
<th>Foot-lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cab to rubber bearing blocks, cap screws and hex. nuts</td>
<td>200 Nm</td>
<td>145 ft-lb</td>
</tr>
</tbody>
</table>

*NOTE: Insert cotter pin within specified torque.*
## Standard Torques

Recommended torques in Nm, mkp and ft-lb for UNC and UNF cap screws

<table>
<thead>
<tr>
<th>Head marking (Identifying strength)</th>
<th>or 10.9*</th>
<th></th>
<th></th>
<th>or 12.9**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread-O.D. [in.]</td>
<td>Nm</td>
<td>mkp</td>
<td>ft-lb</td>
<td>Nm</td>
</tr>
<tr>
<td>1/4</td>
<td>15</td>
<td>1.5</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>5/16</td>
<td>30</td>
<td>3</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>3/8</td>
<td>50</td>
<td>5</td>
<td>35</td>
<td>70</td>
</tr>
<tr>
<td>7/16</td>
<td>80</td>
<td>8</td>
<td>55</td>
<td>110</td>
</tr>
<tr>
<td>1/2</td>
<td>120</td>
<td>12</td>
<td>85</td>
<td>170</td>
</tr>
<tr>
<td>9/16</td>
<td>180</td>
<td>18</td>
<td>130</td>
<td>240</td>
</tr>
<tr>
<td>5/8</td>
<td>230</td>
<td>23</td>
<td>170</td>
<td>320</td>
</tr>
<tr>
<td>3/4</td>
<td>400</td>
<td>40</td>
<td>300</td>
<td>580</td>
</tr>
<tr>
<td>7/8</td>
<td>600</td>
<td>60</td>
<td>445</td>
<td>930</td>
</tr>
<tr>
<td>1</td>
<td>910</td>
<td>91</td>
<td>670</td>
<td>1400</td>
</tr>
<tr>
<td>1-1/8</td>
<td>1240</td>
<td>124</td>
<td>910</td>
<td>1980</td>
</tr>
<tr>
<td>1-1/4</td>
<td>1700</td>
<td>170</td>
<td>1250</td>
<td>2800</td>
</tr>
</tbody>
</table>

**NOTE:** A variation of ± 10% is permissible for all torques indicated in this chart.

Torque figures indicated above and in the Specification sections of this manual are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

* Tempered steel high strength bolts and cap screws
** Tempered steel extra high strength bolts and cap screws
### Recommended torques in Nm, mkp and ft-lb for metric cap screws

<table>
<thead>
<tr>
<th>Head marking (Identifying strength)</th>
<th>8.8*</th>
<th>10.9**</th>
<th>12.9***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread-O.D. (mm)</td>
<td>Nm</td>
<td>mkp</td>
<td>ft-lb</td>
</tr>
<tr>
<td>M5</td>
<td>7</td>
<td>0.7</td>
<td>5</td>
</tr>
<tr>
<td>M6</td>
<td>10</td>
<td>1</td>
<td>8.5</td>
</tr>
<tr>
<td>M8</td>
<td>30</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>M10</td>
<td>50</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>M12</td>
<td>100</td>
<td>10</td>
<td>75</td>
</tr>
<tr>
<td>M14</td>
<td>160</td>
<td>16</td>
<td>120</td>
</tr>
<tr>
<td>M16</td>
<td>240</td>
<td>24</td>
<td>175</td>
</tr>
<tr>
<td>M20</td>
<td>480</td>
<td>48</td>
<td>355</td>
</tr>
<tr>
<td>M24</td>
<td>820</td>
<td>82</td>
<td>605</td>
</tr>
<tr>
<td>M30</td>
<td>1640</td>
<td>164</td>
<td>1210</td>
</tr>
<tr>
<td>M36</td>
<td>2850</td>
<td>285</td>
<td>2110</td>
</tr>
</tbody>
</table>

**NOTE:** A variation of ± 10% is permissible for all torques indicated in this chart.

Torque figures indicated above and in the Specification sections of this manual are valid for non-greased- or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

* Regular bolts and cap screws
** Tempered steel high strength bolts and cap screws
*** Tempered steel extra high strength bolts and cap screws

### Recommended torques in Nm, mkp and ft-lb for pipe and hose connections

<table>
<thead>
<tr>
<th>Thread size</th>
<th>with O-rings</th>
<th>with cone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nm</td>
<td>mkp</td>
</tr>
<tr>
<td>3/8-24 UNF</td>
<td>7.5</td>
<td>0.75</td>
</tr>
<tr>
<td>7/16-20 UNF</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>1/2-20 UNF</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>9/16-18 UNF</td>
<td>15</td>
<td>1.5</td>
</tr>
<tr>
<td>3/4-16 UNF</td>
<td>25</td>
<td>2.5</td>
</tr>
<tr>
<td>7/8-14 UNF</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>1-1/16-12 UNC</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td>1-3/16-12 UNC</td>
<td>70</td>
<td>7</td>
</tr>
<tr>
<td>1-5/16-12 UNC</td>
<td>80</td>
<td>8</td>
</tr>
<tr>
<td>1-5/8-12 UNC</td>
<td>110</td>
<td>11</td>
</tr>
<tr>
<td>1-7/8-12 UNC</td>
<td>150</td>
<td>15</td>
</tr>
</tbody>
</table>
## Special Tools

### Tune-Up

<table>
<thead>
<tr>
<th>Tools</th>
<th>Description and Part No.</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FKM 10002</td>
<td>Measuring air intake system vacuum</td>
</tr>
</tbody>
</table>

**Fig. 1 — Pressure Gauge Set**

![Pressure Gauge Set](L30515A)

**Vacuum gauge and connector**

<table>
<thead>
<tr>
<th>Vacuum gauge and connector</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>FKM 10310</td>
<td>Measuring air intake system vacuum</td>
</tr>
</tbody>
</table>

**Consisting of:**

1. Vacuum gauge FKM 10242
2. T-piece FKM 10308
3. Connector FKM 10309

**Fig. 2 — Vacuum Gauge and Connectors**

![Vacuum Gauge and Connectors](L106472)
BUY NOW
Then Instant Download the Complete Manual
Thank you very much!