

Jd 3640 Service Sec Wat

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3640 Tractor



Technical Manual



**John Deere Werke Mannheim
John Deere Ibérica S.A. Getafe
TM-4419**

Printed in Germany (English)



3640 TRACTOR TECHNICAL MANUAL TM-4419

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- 20 – Transmission shift linkage
- 25 – Synchronized transmission and transmission oil pump
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80 – Miscellaneous

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90 – SG2 Cab

- 05 – Air conditioning system
- 10 – Cab ventilation and heating
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- 20 – SG2 cab

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SECTION CONTENTS IN GROUPS – OPERATION AND TESTS

220 – ENGINE

- 05 – Radiator
- 10 – Tests

230 – FUEL AND AIR INTAKE SYSTEM

- 05 – Fuel tank, auxiliary tank and water trap
- 10 – Cold weather starting aids
- 15 – Speed control linkage
- 20 – Air filter

240 – ELECTRICAL SYSTEM

- 05 – Operation, diagnosing malfunctions, wiring diagrams
- 10 – Testing circuits and components
- 15 – Lighting system
- 20 – Starting motor
- 25 – Alternator

250 – POWER TRAIN

- 05 – Clutch operating linkage
- 10 – Engine clutch
- 15 – Hi-Lo shift unit
- 20 – Transmission shift linkage
- 25 – Synchronized transmission and transmission oil pump
- 30 – Differential
- 35 – Final drives
- 40 – Independent PTO
- 45 – Front PTO
- 50 – Front wheel drive u.j. drive shaft and disk clutch

260 – STEERING SYSTEM AND BRAKES

- 05 – Hydrostatic steering
- 10 – Hydraulic brakes
- 15 – Handbrake
- 20 – Hydraulic trailer brake

270 – HYDRAULIC SYSTEM

- 05 – Operation and tests
- 10 – Hydraulic pumps
- 15 – Rockshaft
- 20 – Front hitch
- 25 – Selective control valves (spool type)
- 30 – Quick couplers
- 35 – Remote cylinder

290 – SG2 CAB

- 05 – Air conditioning system
- 10 – Cab ventilation and heating

3640 TRACTOR TECHNICAL MANUAL TM-4419 (FEB-86)

SECTION CONTENTS IN GROUPS

10 – GENERAL

- 05 – Specifications
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- 15 – Lubrication and service
- 20 – Tune-up
- 25 – Tractor separation

20 – ENGINE – REPAIR

- 05 – Radiator

30 – FUEL AND AIR INTAKE SYSTEM – REPAIR

- 05 – Fuel tank, auxiliary tank and water trap
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- 15 – Speed control linkage
- 20 – Air filter

40 – ELECTRICAL SYSTEM – REPAIR

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- 15 – Lighting system
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- 35 – Final drives
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60 – STEERING SYSTEM AND BRAKES – REPAIR

- 05 – Hydrostatic steering
- 10 – Hydraulic brakes
- 15 – Handbrake
- 20 – Hydraulic trailer brake

70 – HYDRAULIC SYSTEM – REPAIR

- 05 – Valves
- 10 – Hydraulic pumps
- 15 – Rockshaft
- 20 – Front hitch
- 25 – Selective control valves (spool type)
- 30 – Quick couplers
- 35 – Remote cylinder

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SECTION CONTENTS IN GROUPS

80 – MISCELLANEOUS

- 05 – Front and rear wheels
- 10 – AXLA trailer hitch
- 15 – Trailer hitch (height adjustable)

90 – SG2 CAB – REPAIR

- 05 – Air conditioning system
- 10 – Cab ventilation and heating
- 15 – Operator's seat
- 20 – SG2 cab

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SPECIFICATIONS

SERIAL NUMBER PLATES

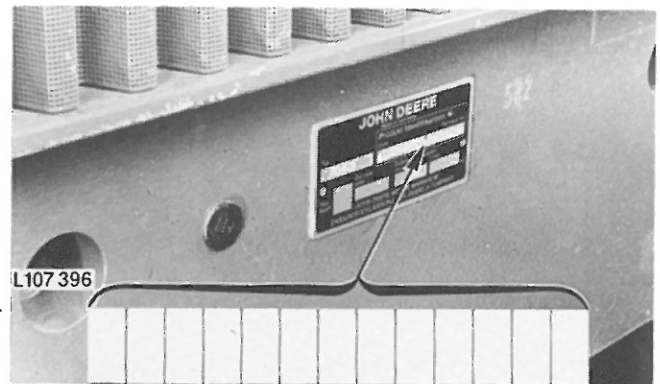
The following illustrations show the serial number plates for tractor major components. The letters and figures on these plates are required for warranty claims and when ordering replacement parts.

TECHDA-LA71005AE-180385

PRODUCT IDENTIFICATION NUMBER

The product identification number plate is located on right-hand side of front axle carrier. The chassis number is stamped in front axle carrier next to the number plate.

NOTE: When ordering tractor parts (excluding engine parts), quote all letters and figures of serial number stamped on this plate.

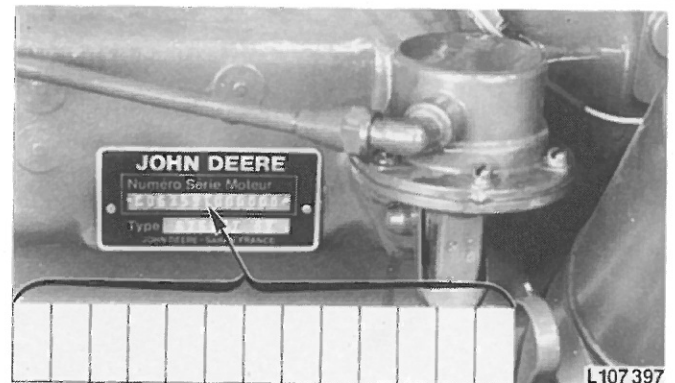


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ENGINE SERIAL NUMBER

The engine serial number plate is located on right-hand side of engine block.

NOTE: When ordering engine parts, quote all figures on this plate.

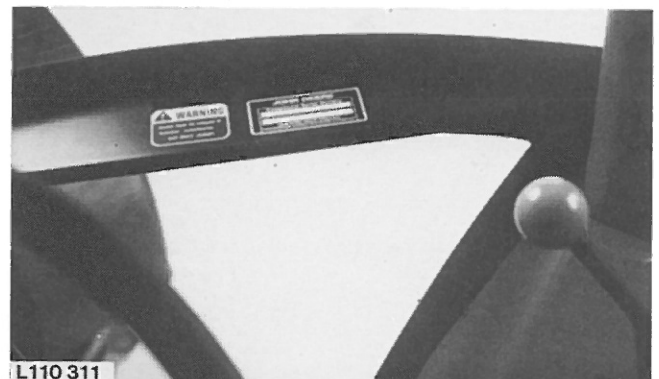


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TRANSMISSION SERIAL NUMBER

The transmission serial number plate is located on right-hand crossmember of cab and on right-side of transmission case.

NOTE: In addition to serial number of transmission and transmission type, this serial number plate also specifies differential and front wheel drive gear ratios.



L110311-LA71005AE-040485

Specifications

FRONT WHEEL DRIVE AXLE SERIAL NUMBER

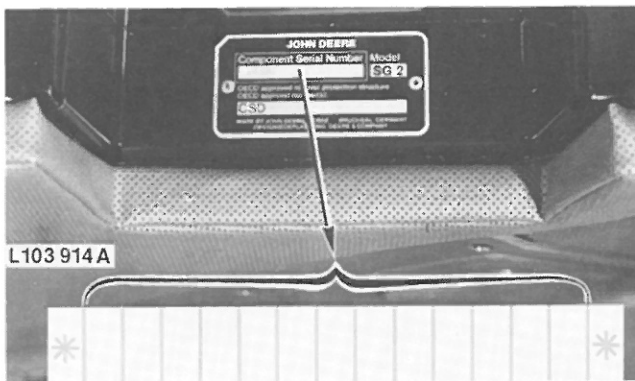
The front wheel drive axle serial number plate is located on rear of right-hand axle half.



L103913A-LA71005AE-180385

OPERATORS CAB SERIAL NUMBER

With operator's cab door open, cab serial number plate is visible in roof recess as you enter the cab.



L103914A-LA71005AE-180385

MODEL SERIAL NUMBERS

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

TECHDA-LA71005BE-180385

Specifications

ENGINE

Number of cylinders	6
Cylinder liner bore	106.5 mm (4.19 in.)
Stroke	110 mm (4.33 in.)
Displacement	5883 cm ³ (359 cu.in.)
Compression ratio	17.4 : 1
Max. torque at 1400 rpm	390 Nm (285 ft-lb)
Firing order	1-5-3-6-2-4
Valve clearance (engine hot or cold)	
– Intake valve	0.35 mm (0.014 in.)
– Exhaust valve	0.45 mm (0.018 in.)
Slow idle speed	700 to 800 rpm
Fast idle speed	2510 to 2610 rpm
Rated engine speed	2400 rpm
Working speed range	1400 to 2400 rpm
Engine speed for PTO operation	2175 rpm
Flywheel horsepower at engine rated speed of 2400 rpm	
– According to DIN 70 020	82 kW (112 hp)
PTO* horsepower at engine rated speed of 2400 rpm	
– According to DIN 70020; 50 MOE	74 kW (100 hp)
– According to SAE J 816 b; 80 MOE	71 kW (95 hp)
PTO* horsepower at engine speed of 2175 rpm	
– According to DIN 70020	72 kW (98 hp)
Lubrication system	Full internal force feed system with full flow filter

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

TECHDA-LA71005CE-180385

Specifications

ENGINE CLUTCH

- Type Single dry disk clutch with torsion damper, foot-operated

COOLING SYSTEM

- Type Pressurized system with centrifugal pump
- Temperature regulation Two thermostats

FUEL SYSTEM

- Type Direct injection
- Fuel injection pump timing to engine TDC
- Fuel injection pump type Distributor type with two pistons
Stanadyne no. DB2 4378
- Air cleaner Dry-type air cleaner with secondary (safety) element

ELECTRICAL SYSTEM

- Batteries 2 x 12 volt, 88 Ah
- Alternator with internal regulator 14 volt, 55 amps.
- Starting motor 12 volt, 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

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 hydraulic
- Shifting to normal (Hi) speed preloaded cup springs

TECHDA-LA71005DE-180385

Specifications

DIFFERENTIAL AND FINAL DRIVES

- Type of differential spiral bevel gears
- Type of final drive planetary reduction drive

DIFFERENTIAL LOCK

- Operation hand or foot operated
- Disengaged automatically as soon as traction has equalized

PTO

- Type independent of transmission, can be engaged and disengaged under load
- PTO speeds at engine speed of 2175 rpm 540/1000 rpm, shiftable
- PTO clutch hydraulically operated "wet" disk clutch
- PTO brake hydraulically operated "wet" disk brake

FRONT PTO

- Type independent of transmission, can be engaged and disengaged under load
- Control electrical/hydraulic solenoid switch
- PTO speed at an engine speed of 2175 rpm 1000 rpm
- PTO clutch hydraulically operated "wet" disk clutch
- PTO brake hydraulically operated "wet" disk brake

PTO SPEEDS

at engine speed	540 rpm shaft	1000 rpm shaft
- 800 rpm	198 rpm	368 rpm
- 2175 rpm	540 rpm	1000 rpm
- 2400 rpm	595 rpm	1104 rpm
- 2500 rpm	620 rpm	1149 rpm
- 2610 rpm	648 rpm	1200 rpm

TECHDA-LA71005EE-180385

Specifications

FRONT WHEEL DRIVE

- Type engaged hydraulically under load with "wet" disk clutch
- Control electrical/hydraulic solenoid switch
- Drive engagement preloaded cup springs
- Drive disengagement hydraulic

HYDROSTATIC STEERING

- Type without mechanical linkage between steering valve and front wheels

FOOT BRAKES

- Rear brake self-adjusting, hydraulically operated "wet" disk brakes
- Propeller shaft brake self-adjusting, hydraulically operated disk brake

HANDBRAKE

- Type mechanically operated band-type locking brake acting on the differential

HYDRAULIC SYSTEM

- Type closed, constant pressure system
- System pressure when pump pistons idle 19000 kPa (190 bar; 2760 psi)
- Operating pressure 17000 kPa (170 bar; 2470 psi)
- Hydraulic pump 8-piston pump with variable displacement

ROCKSHAFT

- Type with quick coupling (hook-type) draft links
- Regulation load control, load-and-depth control, float position
- Control via draft links

FRONT HITCH controlled by selective control valve

GROUND TRAVEL SPEEDS see Operator's Manual

TECHDA-LA71005FE-180385

Specifications

FRONT AND REAR WHEELS

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

DIMENSIONS AND WEIGHTS see Operator's Manual

CAPACITIES

Fuel tank	134.0 liters (35.4 U.S. gal.)
– Auxiliary tank	52.0 liters (13.7 U.S. gal.)
Cooling system	19.0 liters (5.0 U.S. gal.)
Crankcase with filter	11.5 liters (3.0 U.S. gal.)
Transmission/hydraulic system (including oil reservoir and oil cooler)	
– Initial filling	55.0 liters (14.5 U.S. gal.)
– Oil change	47.0 liters (12.4 U.S. gal.)
Front wheel drive	
– Front axle housing	7.0 liters (1.85 U.S. gal.)
– Wheel hub housing, each	0.75 liters (0.2 U.S. gal.)

TECHDA-LA71005GE-180385

STANDARD TORQUES FOR HARDWARE

Recommended torques in Nm and ft-lb
for hose and pipeline connections

A	B		C	
	Nm	ft-lb	Nm	ft-lb
3/8-24 UNF	7,5	5,5	8	6
7/16-20 UNF	10	7	12	9
1/2-20 UNF	12	9	15	11
9/16-18 UNF	15	11	25	18
3/4-16 UNF	25	20	45	35
7/8-14 UNF	40	30	60	45
1-1/16-12 UNC	60	45	100	75
1-3/16-12 UNC	70	50	120	90
1-5/16-12 UNC	80	60	140	105
1-5/8-12 UNC	110	80	190	140
1-7/8-12 UNC	150	110	220	160

L 110 192

A–Thread size

B–With O-rings

C–With cone

L110192-LA71005AE-260385

Specifications

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

A	10.9 C		12.9 D	
	B		B	
	Nm	ft-lb	Nm	ft-lb
1/4	15	10	20	15
5/16	30	20	40	30
3/8	50	35	70	50
7/16	80	55	110	80
1/2	120	85	170	120
9/16	180	130	240	175
5/8	230	170	320	240
3/4	400	300	580	425
7/8	600	445	930	685
1	910	670	1400	1030
1-1/8	1240	910	1980	1460
1-1/4	1700	1250	2800	2060

L 110 193

A-Head marking (identifying strength)
B-Thread O.D. (in.)

C-Tempered steel high strength bolts and cap screws
D-Tempered steel extra high strength bolts and cap screws

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.

Specifications

Recommended torques in Nm and ft-lb for metric cap screws

A	8.8 C		10.9 D		12.9 E	
	Nm	ft-lb	Nm	ft-lb	Nm	ft-lb
M5	7	5	9	6,5	10	8,5
M 6	10	8,5	15	10	20	15
M 8	30	20	40	30	40	30
M 10	50	35	80	60	90	70
M 12	100	75	140	100	160	120
M 14	160	120	210	155	260	190
M 16	240	175	350	260	400	300
M 20	480	355	650	480	780	575
M 24	820	605	1150	850	1350	995
M 30	1640	1210	2250	1660	2700	1990
M 36	2850	2110	4000	2950	4700	3465

L 110 194

A-Head marking
(identifying strength)
B-Thread O.D. (mm)

C-Tempered steel high strength
bolts and cap screws
D-Tempered steel extra high
strength bolts and cap screws

NOTE: A variation of $\pm 10\%$ 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.

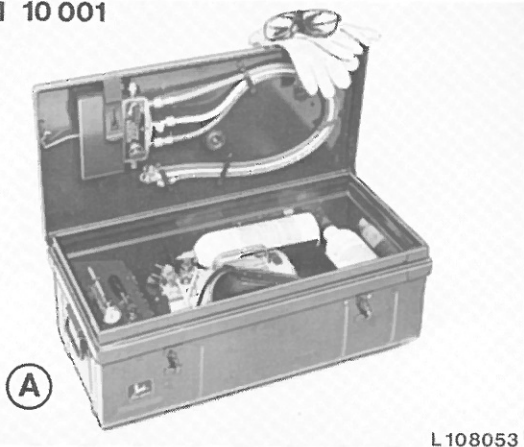
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Group 10 PREDELIVERY, DELIVERY AND AFTER-SALE INSPECTIONS

SPECIAL TOOLS

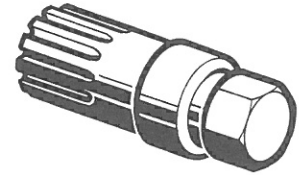
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L108053

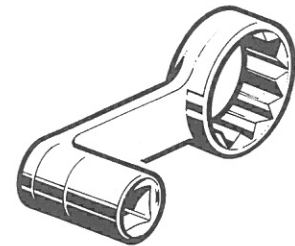
- A-Checking refrigerant lines for leaks
- B-Turning engine for checking valve clearance
- C-Checking specified torques of cab mountings

JDE - 83



(B)

KJD 10 138



(C)

L108562

L108053,L108562-LA71010AE-121184

SPECIFICATIONS

ENGINE SPEEDS

– Slow idle speed	700 to 800 rpm
– Fast idle speed	2510 to 2610 rpm
– Rated engine speed	2400 rpm

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 both pulleys.

BATTERIES

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

– Normal and arctic conditions	1.28
– Tropical conditions	1.23

TOE-IN

– Front wheel toe-in	2 to 5 mm (5/64 to 13/64 in.)
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BRAKES

– To check brake setting, load each brake pedal for 1 minute with	270 N (60 lb)
– Lowering of a brake pedal within 1 minute at a load of 270 N (60 lb) max	approx. 25 mm (1 in.)
– Handbrake lever setting (third or fourth notch)	110 N (25 lb)

Predelivery, Delivery and After-Sale Inspections

CAPACITIES

Engine crankcase	
– with filter change	11.5 liters (3.0 U.S. gal.)
Front wheel drive	
– Front axle housing	7.0 liters (1.85 U.S. gal.)
– Wheel hub housings, each	0.75 liters (0.2 U.S. gal.)

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TORQUES FOR HARDWARE

Steel disk to front wheel hub	300 Nm (220 ft-lb)
Steel disk to front wheel rim	250 Nm (185 ft-lb)
On tractors with flanged rear axle	
– Rear wheels to rear axle	400 Nm (300 ft-lb)
– Steel disk to rear wheel rim	250 Nm (180 ft-lb)
On tractors with rack-and-pinion axle	
– Rear wheel rim to wheel hub	400 Nm (300 ft-lb)
– Pinion shaft – wheel sleeve to wheel hub	215 Nm (160 ft-lb)
– Sleeve attaching screws to wheel hub	400 Nm (300 ft-lb)

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Cab rubber mounting blocks	
– Cap screws and hex. nuts	200 Nm (145 ft-lb)
– Hydraulic hitch	
– Hex. socket screws	160 Nm (120 ft-lb)
– Cap screws	230 Nm (170 ft-lb)
– Hex. nuts	335 Nm (245 ft-lb)

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PREDELIVERY INSPECTION

The John Deere delivery receipt, when properly filled out and signed by the dealer and customer, verifies that the predelivery and delivery services were satisfactorily performed. When delivering this tractor, give the customer his copy of the delivery receipt and the operator's manual. Explain their purpose to him.

To promote complete customer satisfaction, a pre-delivery inspection including mending of possible shipping damage and giving the finishing touches to the tractor is of prime importance to the dealer.

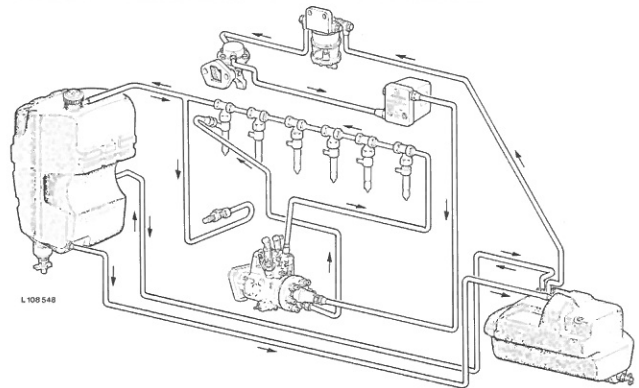
After the first 100 operating hours an inspection should be performed by the dealer to make sure that the tractor is in proper operating condition.

The predelivery and after-sales inspection check lists in the operator's manual will be completed by the dealer when the inspections are being performed. He will then forward them to the sales branch service department.

INSPEK-LA71010DE-091184

CHECKING FUEL LINES FOR LEAKS

Refer to Technical Manual "Engines" in the event of malfunctions.



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EXAMINING ENGINE FOR LEAKS

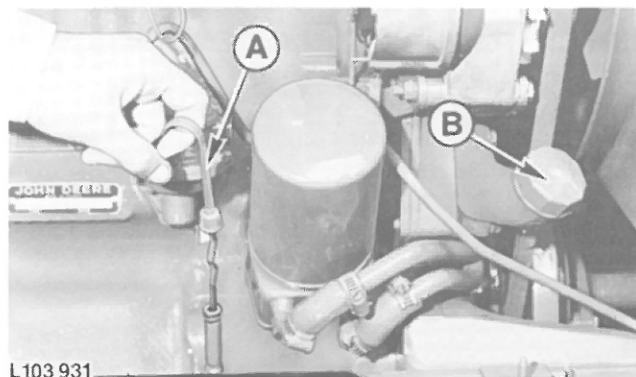
Refer to Technical Manual "Engines" in the event of malfunctions.

INSPEK-LA71010EE-091184

CHECKING OIL LEVEL IN ENGINE CRANKCASE

If necessary, add oil to bring oil level to top mark on dipstick. Use JOHN DEERE Torq-Gard Supreme engine oil SAE 10W-20 or an equivalent oil (see Group 15).

- A—Oil dipstick
- B—Filler cap



L103 931

L103931-LA71010AE-091184

CHECKING COOLANT LEVEL

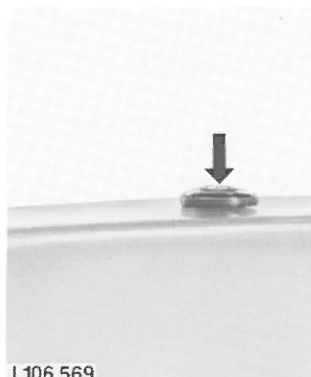
Coolant must reach up to marking plate in radiator.

JOHN DEERE engine cooling fluid is filled into the cooling system at the factory. It protects the engine against corrosion and against frost down to -36°C (-35°F).

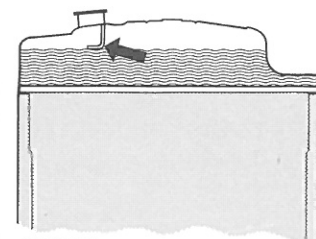
IMPORTANT: Use only JOHN DEERE engine cooling fluid in the cooling system, independent of the season.

If no JOHN DEERE engine cooling fluid is available, use a mixture of 50% ethylene-glycol antifreeze/ anti-corrosion inhibitor and 50% clear, soft water. This guarantees engine protection against corrosion and frost down to -36°C (-35°F).

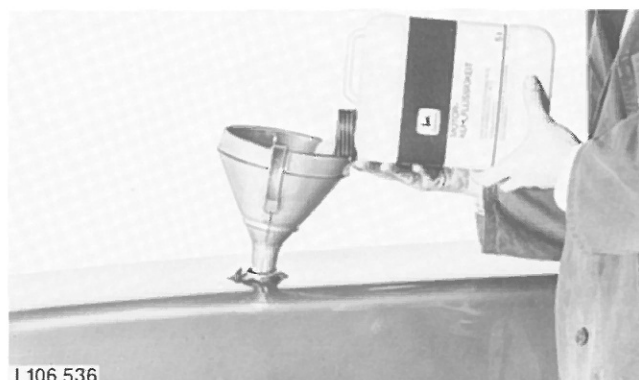
Never use any cooling system sealing additives.



L106 569



L106 538



L106 536

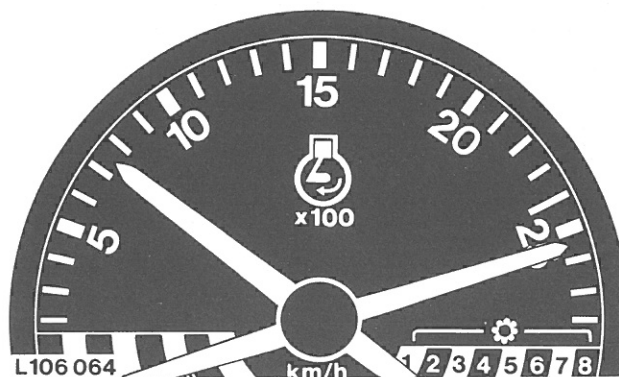
L106569,L106538,L106536-LA71010AE-091184

CHECKING ENGINE IDLE SPEEDS

Warm up engine to operating temperature and check speeds.

- Slow idle speed: 700 to 800 rpm
- Fast idle speed: 2510 to 2610 rpm

See Technical Manual "Engines" or Section 30, Group 15, for adjustment.



L106 064

L106064-LA71010AE-091184