

**1133, 1144, 1155,
1157 and 1158
Combines**



**John Deere Werke Zweibrücken
TM4476**

Printed in Germany (English)

**SUMMARY OF MOST IMPORTANT SPECIFICATIONS
1133, 1144, 1155, 1157, 1158**

SPECIFICATIONS

4239, 6359 Engines	
Valve clearance, intake valve	0.35 mm (0.014 in.)
Valve clearance, exhaust valve	0.45 mm (0.018 in.)
Compression	2100 kPa (21 bar; 300 psi)
Max. difference in compression pressure between cylinders	350 kPa (3.5 bar; 50 psi)
Opening pressure of a new injection nozzle	25100 to 25800 kPa (251 to 258 bar; 3650 to 3750 psi)
Minimum opening pressure of a used nozzle	24100 kPa (241 bar; 3500 psi)
Maximum difference in opening pressure	700 kPa (7 bar; 100 psi)
Fast idle	2675 + 50 rpm
Slow idle	1200 + 50 rpm
Air Intake System	
Air cleaner restriction indicator light will glow at a vacuum of	500 mm (20 in.) waterhead
Cooling System	
Thermostat opening temperature	71 to 82°C (160 to 180°F)
Electrical System	
Battery voltage	12 volts
Alternator output current (at 14 volts) - 1133, 1144	55 amps
- 1155, 1157, 1158	95 amps
Hydraulic System	
Hydraulic pump delivery - 1133, 1144	32.4 liters/min (8.5 gpm)
- 1155, 1157, 1158	38.4 liters/min (10 gpm)
Pressure relief valve setting	13800 to 14500 kPa (138 to 145 bar; 2000 to 2100 psi)

SPECS-Z/BI/AE-111189

**SUMMARY OF MOST IMPORTANT SPECIFICATIONS
1133, 1144, 1155, 1157, 1158**

SPECIFICATIONS (Continued)

Steering System	
Pressure relief valve setting	10500 kPa (105 bar; 1520 psi)
Safety valve setting	15000 to 16500 kPa (150 to 165 bar; 2175 to 2390 psi)
Clutch	
Minimum thickness of clutch disk	7 mm (0.28 in.)
Wheels	
Wheel bolt torques	
- Front wheels	420 Nm (304 ft-lb)
- Rear wheels	180 Nm (130 ft-lb)
CAPACITIES	
Engine lubrication system	
- 1133, 1144, 1155	8.5 liters (2.25 U.S.gal.)
- 1157	11.5 liters (3.05 U.S.gal.)
- 1158	13 liters (3.4 U.S.gal.)
Transmission with differential	
- 1133, 1144	12 liters (3.25 U.S.gal.)
- 1155, 1157, 1158	6.6 liters (1.75 U.S.gal.)
Final drive (each), 1155, 1157, 1158	2.1 liters (0.55 U.S.gal.)
Complete hydraulic system	
- 1133, 1144, 1155	15 liters (4.0 U.S.gal.)
- 1157, 1158	25 liters (6.6 U.S.gal.)
Engine cooling system	
- 1133, 1144, 1155	22 liters (5.8 U.S.gal.)
- 1157, 1158	25 liters (6.6 U.S.gal.)
Refrigerant capacity (air conditioning)	1950 g (68.8 oz.)
Compressor oil charge	320 cm ³ (19.5 cu.in.)
Fuel tank capacity	
- 1133, 1144	110 liters (29 U.S.gal.)
- 1155, 1157, 1158	175 liters (46 U.S.gal.)

SPECS-Z/BI/AE-111189

Combines 1133, 1144, 1155, 1157 and 1158 TECHNICAL MANUAL TM-4476 (JAN-90)

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Section 10 GENERAL

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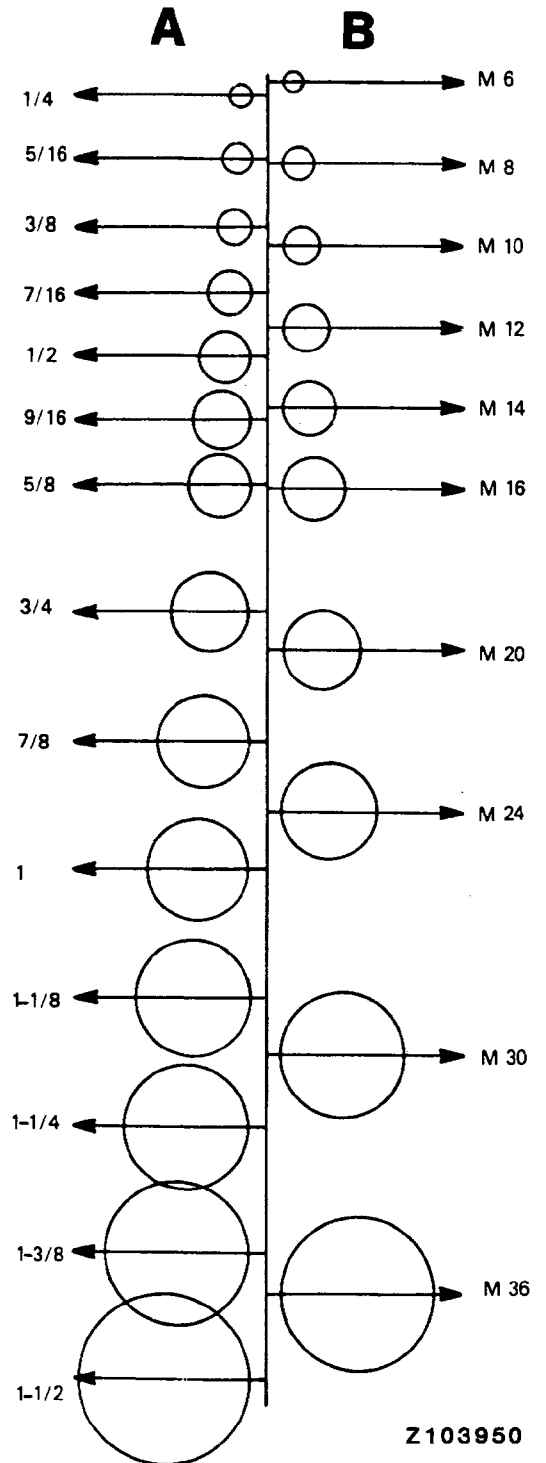
Metric and inch threads	10-05-1
Standard torques	10-05-2

x	x	1133
x	x	1144
x	x	1155
x	x	1157
x	x	1158

METRIC AND INCH THREADS

The adjacent chart compares the diameters of "metric" and "inch" threads.

A-Inch thread
B-Metric thread



Z103950

Z103950-Z121005AE-011084

Specifications





STANDARD TORQUES – GENERAL

All specified torques are only valid for non-greased or non-oiled threads.

A variation of $\pm 10\%$ is permissible for all torques specified below.

TECH-ZI21005AE-011084

**RECOMMENDED TORQUES FOR
UNC AND UNF CAP SCREWS**

B A			10.9			12.9
	Nm	ft-lb	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		

Z103947

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

10.9 – Tempered steel high
strength cap screws

12.9 – Tempered steel extra
high strength cap screws

Z103947-ZI21005AE-011084

Specifications

RECOMMENDED TORQUES FOR METRIC CAP SCREWS

A B	8.8		10.9		12.9	
	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

Z 103948

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

8.8-Regular cap screws
10.9-Tempered steel high
strength cap screws

12.9-Tempered steel extra
high strength cap screws

Z103948-ZI21005AE-011084

RECOMMENDED TORQUES FOR PIPE AND HOSE 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

Z 103949

A-Thread size

B-With O-ring

C-With cone

Z103949-ZI21005AE-011084

ENGINE REMOVAL AND INSTALLATION

CONTENTS OF THIS SECTION

NOTE: Combine engines are included in a separate engine technical manual. The details in this section apply specifically to combine engine installation.

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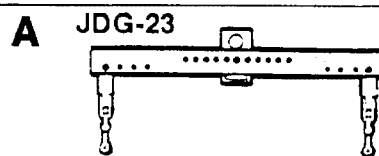
Special tools	20-10-1
Electrical connections	20-10-1
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Heater hose connections	20-10-3
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Lifting engine	20-10-5
Engine installation	20-10-5

	1133	1144	1155	1157	1158
Special tools	x	x	x		
Electrical connections	x	x	x		
Fuel lines	x	x	x		
Speed control linkage	x	x	x		
Hydraulic control valve connections	x	x	x		
Drive belts	x	x	x		
Separate engine from combine frame	x	x	x		
Lifting engine	x	x	x		
Engine installation	x	x	x		
Special tools				x	x
Electrical connections				x	x
Fuel lines				x	x
Speed control linkage				x	x
Hydraulic control valve connections				x	x
Heater hose connections				x	x
Drive belts				x	x
Separate engine from combine frame				x	x
Lifting engine				x	x
Engine installation				x	x

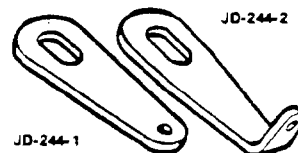
REMOVAL AND INSTALLATION – 4 CYLINDER ENGINE

SPECIAL TOOLS

A-JDG-23 Lifting bracket
 B-JD-244 Lifting eyes



B JD-244



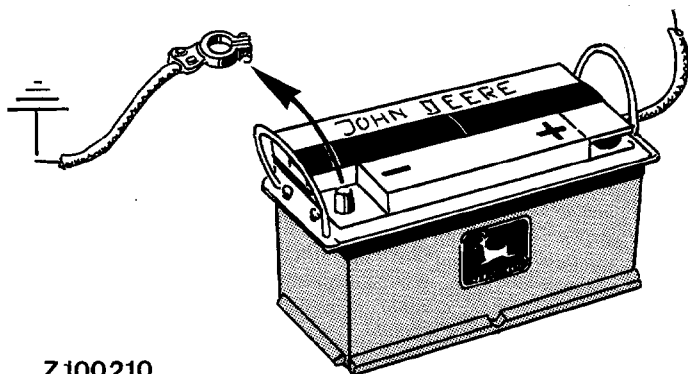
Z103901

Z103901-ZI22005AE-151188

PREPARATIONS

IMPORTANT: Lower feeder conveyor to ground to relieve pressure in hydraulic system.

Disconnect ground (-) and positive (+) cables at the battery and remove battery.

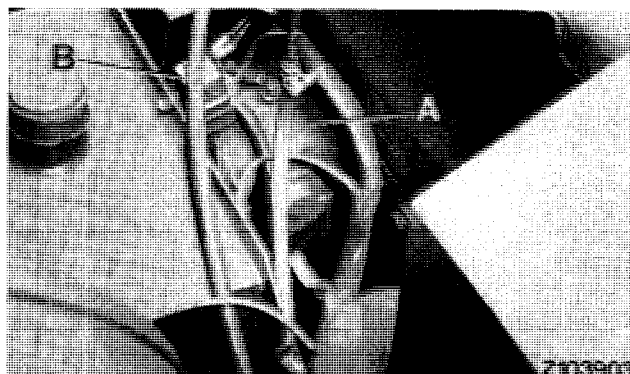


Z100210

Z100210-ZI82005AE-111189

ELECTRICAL CONNECTIONS – STARTING MOTOR

Remove all cable connections at starting motor (A) and starting circuit relay (B).

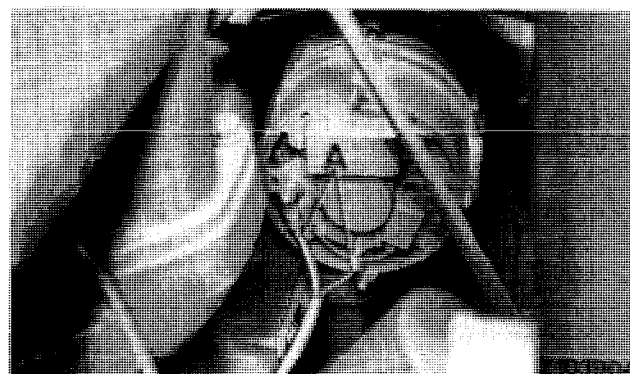


Z103903

Z103903-ZI22005AE-011084

ELECTRICAL CONNECTIONS – ALTERNATOR

Remove both connections (A) at alternator.

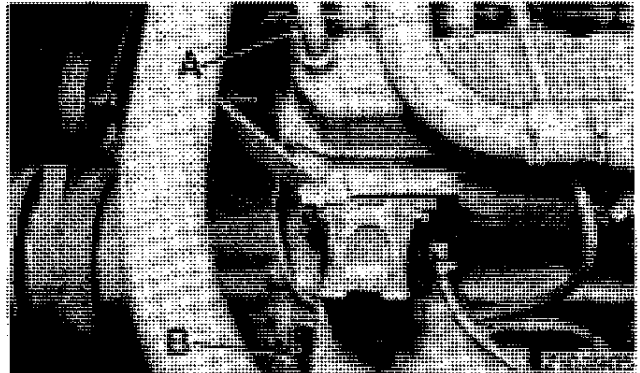


Z103904-ZI22005AE-011084

VARIOUS SENDING UNIT CONNECTIONS

Remove connectors at coolant temperature sending unit (A), at engine oil pressure sending unit (B) and at air intake sending unit.

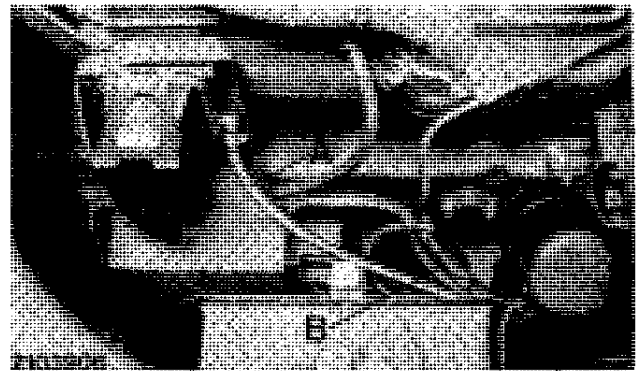
If installed, remove connector of cold start aid.



Z103905-Z122005AE-011084

FUEL LINES

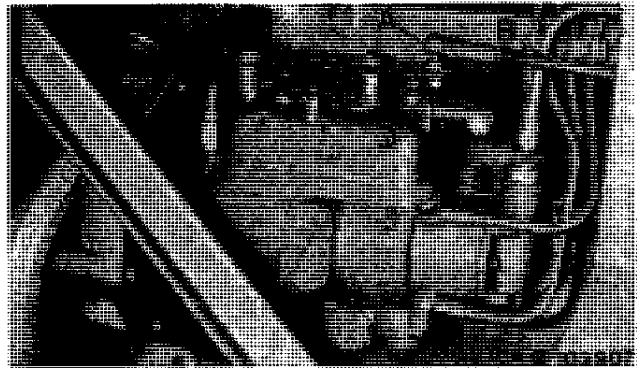
Disconnect fuel inlet line (A) and return line (B). On engines with cold start aid, remove return line at cold aid.



Z103906-Z122005AE-011084

SPEED CONTROL LINKAGE

Open wire seal at ball joint (A) and separate linkage (B) at fuel injection pump.

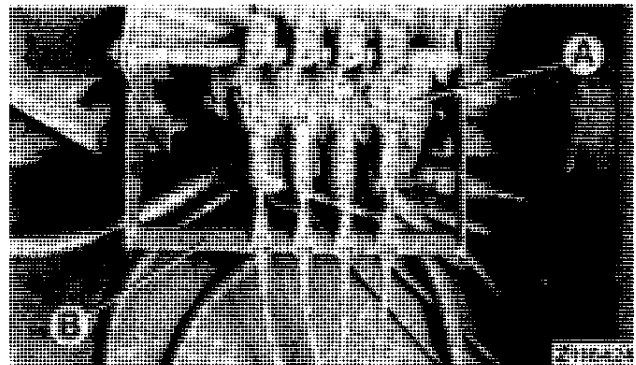


Z103907-Z122005AE-011084

HYDRAULIC CONTROL VALVE

Disconnect cables at control valve (A) and bracket (B). Disconnect all hoses with the exception of the pressure line from the hydraulic pump and the return line to hydraulic reservoir.

Seal all openings immediately with plastic plugs.

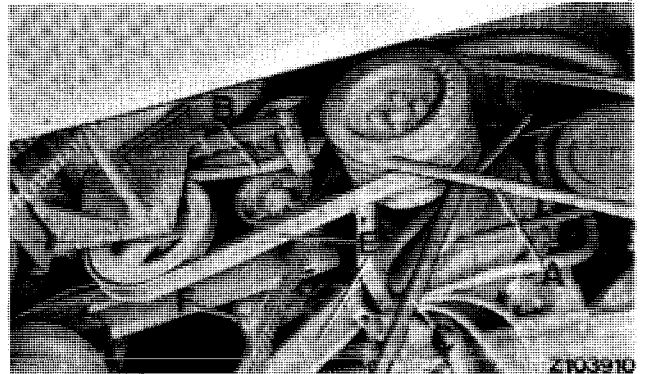


Z116424-Z182005AE-111189

DRIVE BELTS

Remove straw chopper V-belt (A), unloading auger drive belt (B), ground drive belt (C) and flat belt (D). Remove both belt guides (E).

Remove cotter pin of belt tensioner pulley bracket (F).

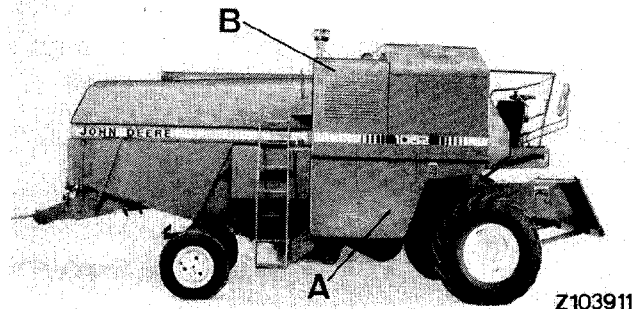


- A—Chopper V-belt
- B—Unloading auger drive belt
- C—Ground drive belt
- D—Flat belt
- E—Belt guide
- F—Pulley bracket

Z103910-Z122005AE-011084

REMOVE GUARDS

Remove right-hand side panel (A) and right-hand engine cover (B).

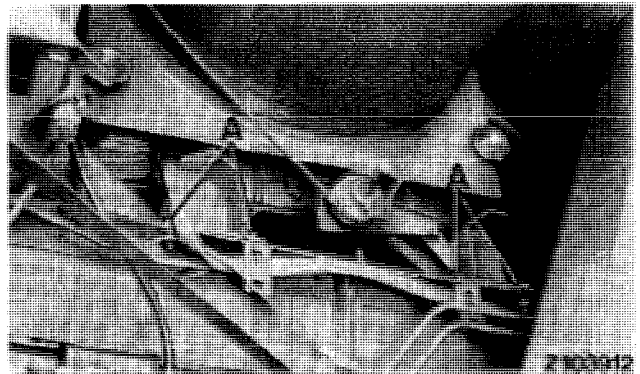


Z103911-Z122005AE-011084

SEPARATE ENGINE FROM COMBINE FRAME

IMPORTANT: Before removal mark position of engine on combine. Mark position on combine and engine mountings both laterally and longitudinally. These markings are essential for correct alignment when reinstalling engine.

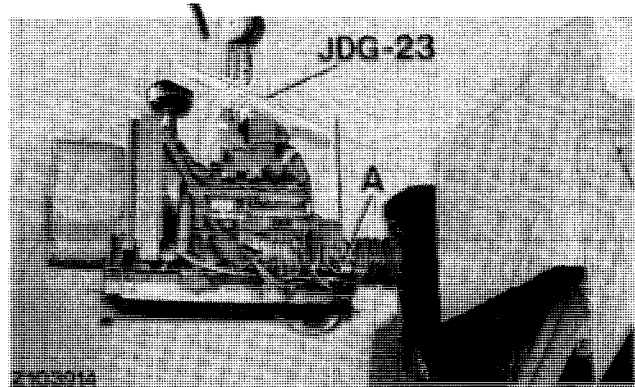
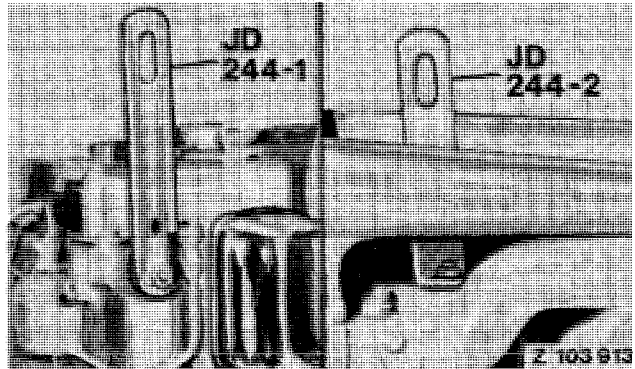
Remove four mounting bolts (A) of engine mounting on right and left-hand sides.



Z103912-Z122005AE-011084

LIFTING ENGINE

Attach lifting eyes JD244-1 and JD244-2 to engine. Attach lifting bracket JDG-23 to lifting eyes. Lift engine with a hoist and slide to right out of combine. At the same time pull tension pulley on the left hand side from bracket (A).



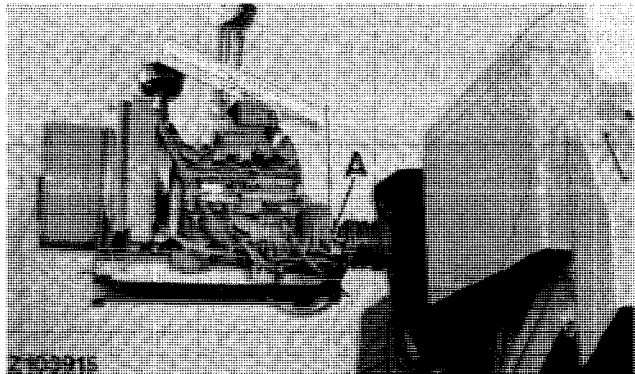
Z103913,Z103914-Z122005AE-011084

ENGINE INSTALLATION

Install engine in reverse removal procedure. While installing engine, place tension pulley on bracket (A). After installing engine, check levels of engine oil and coolant. Align engine with markings carried out during engine removal.

After engine test run, check all attaching screws again for tightness. Check all drive belts (ground drive, hydraulic pump drive, separator drive and unloading auger drive) for correct adjustment, true running and tension.

In the position "Fast Idle" the stop control lever of the fuel injection pump must slightly contact its stop; if not, readjust speed control linkage.



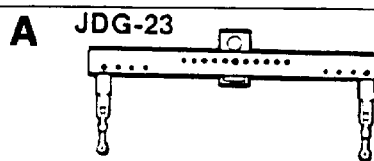
Z103915-Z122005AE-011084

REMOVAL AND INSTALLATION – 6 CYLINDER ENGINE

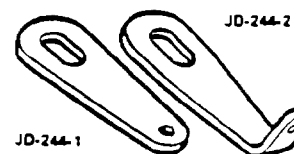
Group 10

SPECIAL TOOLS

A-JDG-23 Lifting bracket
B-JD-244 Lifting eyes



B JD-244



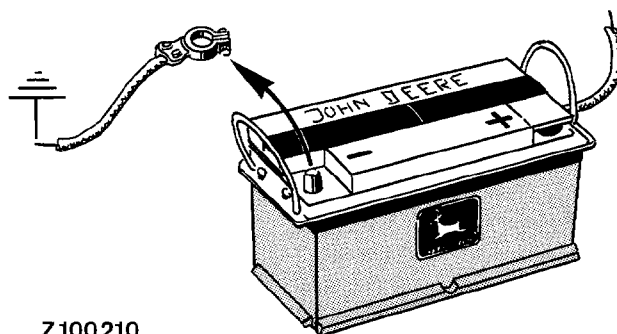
Z103901

Z103901-Z122005AE-151188

PREPARATIONS

IMPORTANT: Lower feeder conveyor to ground to relieve pressure in hydraulic system.

Disconnect ground (-) and positive (+) cables at the battery and remove battery.

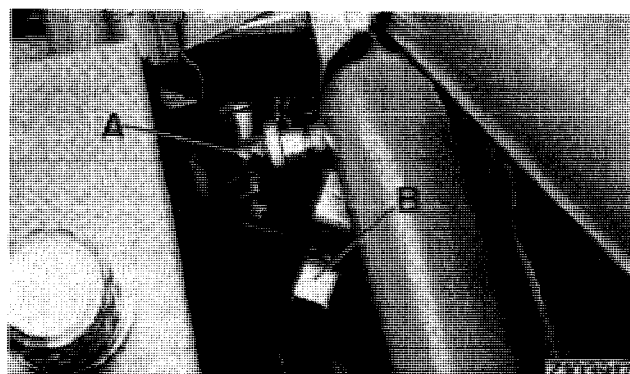


Z100210

Z100210-Z182005AE-111189

ELECTRICAL CONNECTIONS – STARTING MOTOR

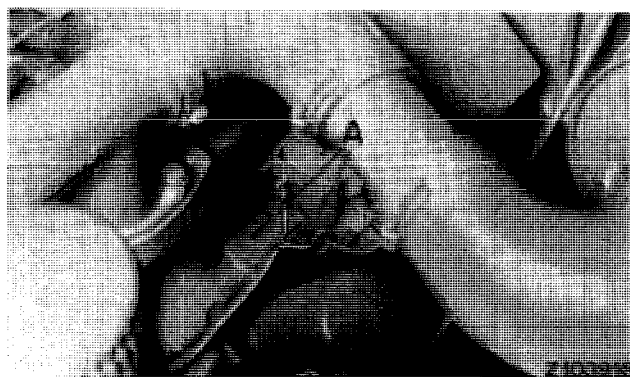
Remove all cable connections at starting motor (A) and starting circuit relay (B).



Z103917-Z122010AE-011084

ELECTRICAL CONNECTIONS – ALTERNATOR

Remove both connections (A) at alternator.

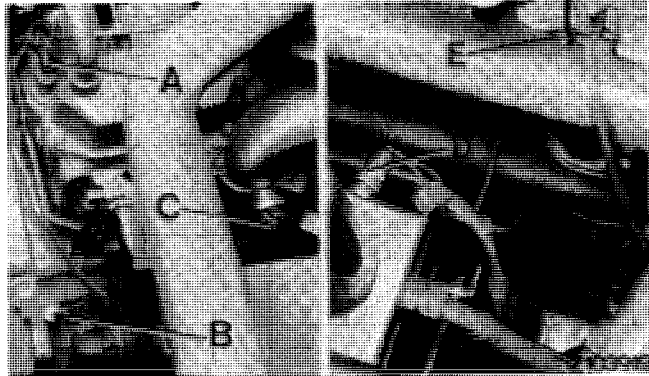


Z103918-Z122010AE-011084

VARIOUS SENDING UNIT CONNECTIONS

Remove connectors of following sending units:

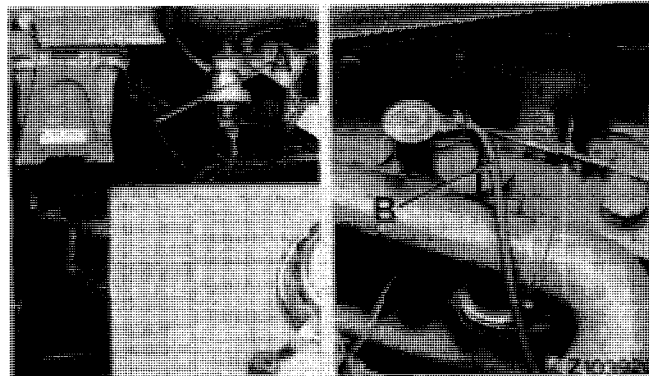
- A–Coolant temperature sending unit
- B–Engine oil pressure sending unit
- C–Air intake sending unit
- E–Cold start aid connector



Z103919-Z122010AE-011084

FUEL LINES

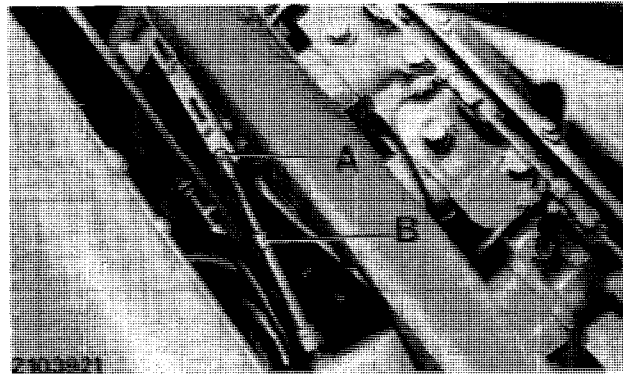
Disconnect fuel inlet line (A) and return hose (B) at cold start aid, or directly at return line



Z103920-Z122010AE-011084

SPEED CONTROL LINKAGE

Open wire seal at ball joint (A) and separate linkage (B) at fuel injection pump.

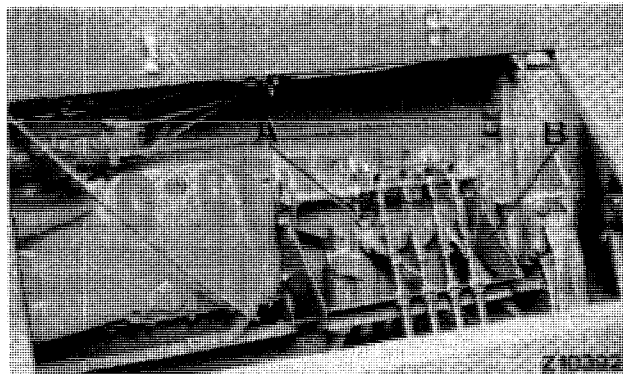


Z103921-Z122010AE-011084

HYDRAULIC CONTROL VALVE

Disconnect cables at control valve (A) and bracket (B). Disconnect all hose connections with the exception of the pressure line from the hydraulic pump and the return line to hydraulic reservoir.

Seal all openings immediately with plastic plugs.



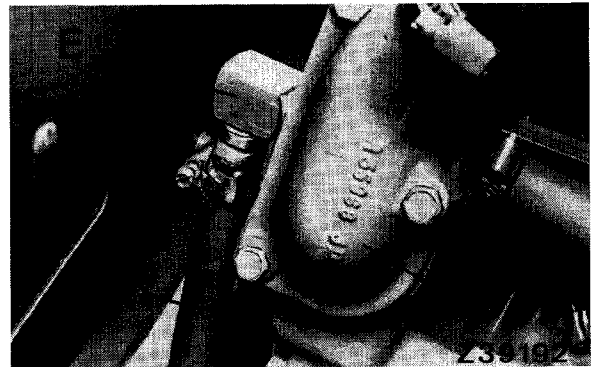
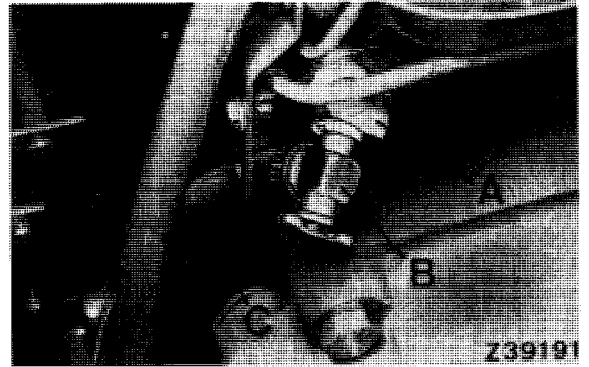
Z103922-Z182010AE-111189

HEATER HOSE CONNECTIONS

On combines with cab disconnect heater hoses.

1. Close heater valve (B), remove hose clamp and remove supply hose (C).
2. Disconnect return hose (F) from angle fitting (E) and plug openings of angle fitting.
3. Close all openings with plastic plugs.

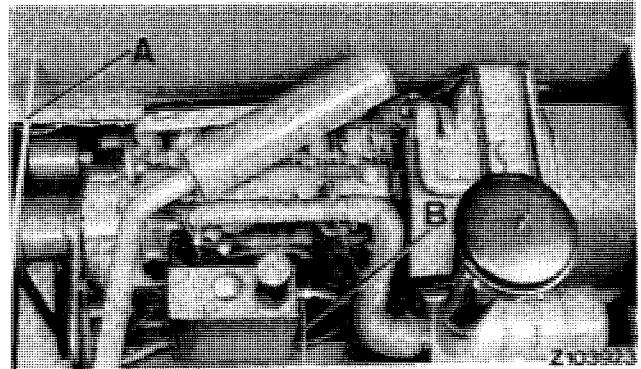
A—Hose fitting
B—Heater valve
C—Supply hose
D—Thermostat housing
E—Angle fitting
F—Return hose



Z39191, Z39192-ZI22010AE-011084

ENGINE COMPARTMENT BRACES

Remove braces (A) and (B).



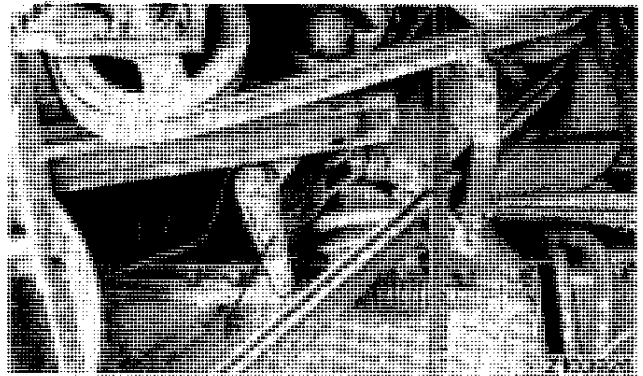
Z103923-ZI22010AE-011084

DRIVE BELTS

Remove compressor drive belt (A), unloading auger drive belt (B), ground drive belt (C) and flat belt (D). Remove both belt guides (E).

Remove cotter pin of belt tensioner pulley bracket (F).

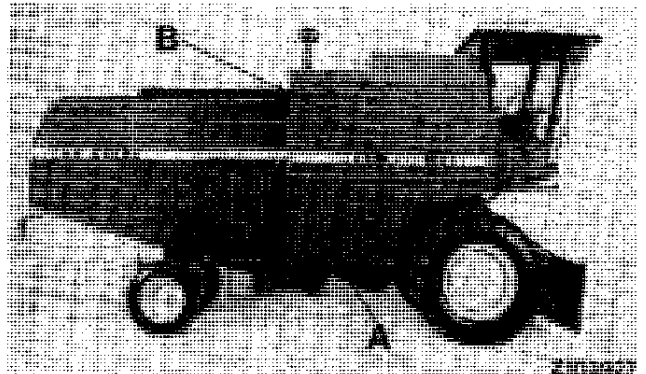
- A–Compressor belt
(air conditioning system)
- B–Unloading auger drive belt
- C–Ground drive belt
- D–Flat belt
- E–Belt guide
- F–Pulley bracket



Z103925,Z103926-Z182010AE-111189

REMOVE GUARDS

Remove right hand side panel (A) and right hand engine cover (B).

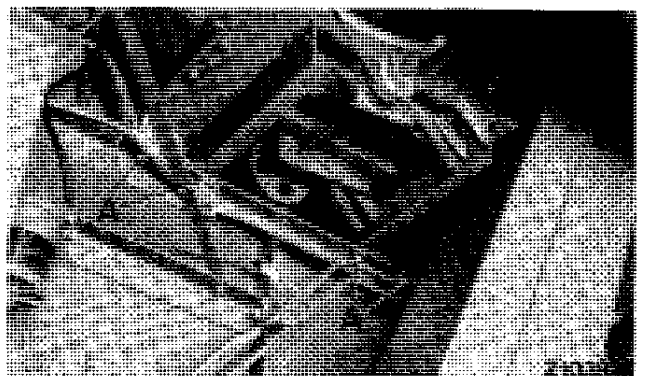


Z103927-Z122010AE-011084

SEPARATE ENGINE FROM COMBINE FRAME

IMPORTANT: Before removal mark position of engine on combine. Mark position on combine and engine mountings both laterally and longitudinally. These markings are essential for correct alignment when reinstalling the engine.

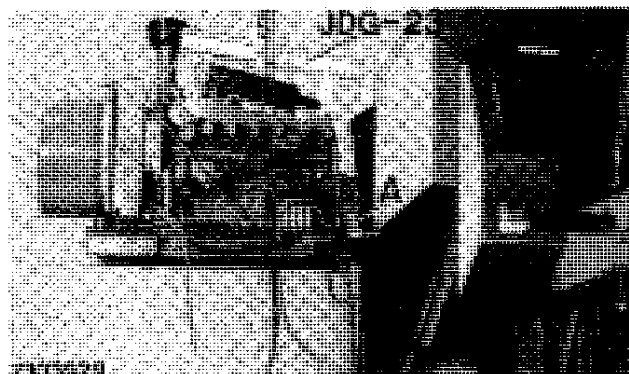
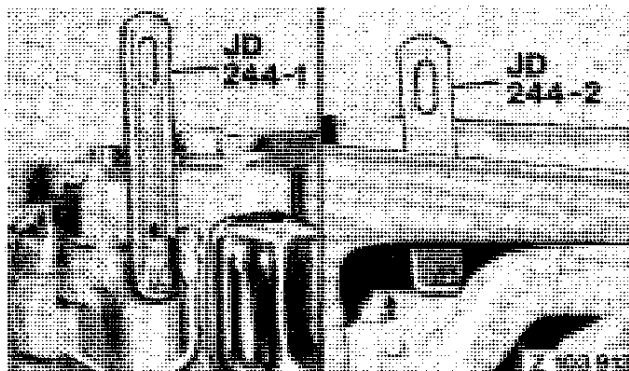
Remove four mounting bolts (A) of engine mounting on right and left hand sides.



Z103928-Z122010AE-011084

LIFTING ENGINE

Attach lifting eyes JD244-1 and JD244-2 to engine. Attach lifting bracket JDG-23 to lifting eyes. Lift engine with a hoist and slide to right out of combine. At the same time pull tension pulley on the left hand side from bracket (A).



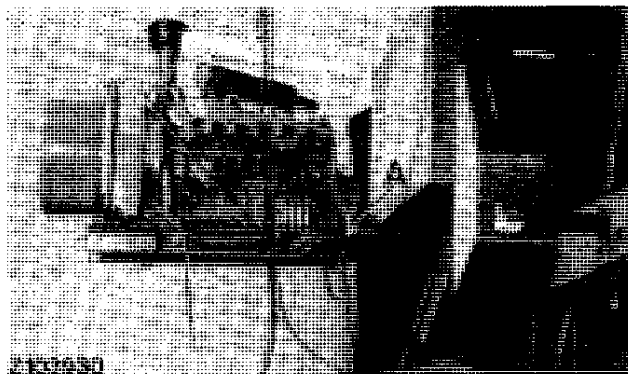
Z103913, Z103929-Z122010AE-011084

ENGINE INSTALLATION

Install engine in reverse sequence of removal. While installing engine, place tension pulley on bracket (A). After installing engine, check levels of engine oil and coolant. Align engine with markings carried out during engine removal.

After engine test run, check all attaching screws again for tightness. Check all drive belts (compressor drive, ground drive, hydraulic pump drive, separator drive and unloading auger drive) for correct adjustment, true running and tension.

In the position "Fast Idle" the stop control lever of the fuel injection pump must slightly contact its stop; if not, readjust speed control linkage.



Z103900-Z122010AE-011084