

**1166, 1169H, 1174, 1177,
1177 Hydro/4,
1188, 1188 Hydro/4
Combines**



**John Deere Werke Zweibrücken
TM-4452**

Printed in Germany (English)

SUMMARY OF MOST IMPORTANT SPECIFICATIONS 1166, 1169H, 1174, 1177, 1177 HYDRO/4, 1188, 1188 HYDRO/4

SPECIFICATIONS

6466 Engine

Valve clearance, intake valve	0.45 mm (0.018 in.)
Valve clearance, exhaust valve	0.70 mm (0.028 in.)
Compression	2450 to 2850 kPa (24.5 to 28.5 bar; 355 to 415 psi)
Max. difference in compression pressure between cylinders	350 kPa (3.5 bar; 50 psi)
Opening pressure of a new injection nozzle	27900 kPa (279 bar; 4050 psi)
Minimum opening pressure of a used nozzle	26200 kPa (262 bar; 3800 psi)
Maximum difference in opening pressure	350 kPa (3.5 bar; 50 psi)
Fast idle	2400 ± 50 rpm
Slow idle	1200 ± 50 rpm

6359 Engine

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
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SUMMARY OF MOST IMPORTANT SPECIFICATIONS

1166, 1169H, 1174, 1177, 1177 HYDRO/4, 1188, 1188 HYDRO/4

SPECIFICATIONS (Continued)

Cooling System

Thermostat opening temperature	71 to 82°C (160 to 180°F)
Radiator cap valve opening pressure	100 to 120 kPa (1.0 to 1.2 bar; 14 to 17 psi)

Electrical System

Battery voltage	12 volts
Alternator output current (at 14 volts)	65 amps

Hydraulic System

Hydraulic pump delivery (except 1169H)	
– main circuit	40 liters/min (10.5 gpm)
– steering circuit	12 liters/min (3.2 gpm)
Hydraulic pump delivery (1169H)	
– main circuit	29 liters/min (7.6 gpm)
– secondary circuit	10.5 liters/min (2.8 gpm)
– leveling system	21 liters/min (5.5 gpm)
Pressure relief valve setting	
– in mechanical control valve	13800 to 14500 kPa (138 to 145 bar; 2000 to 2100 psi)
– in electro-magnetic control valve	17200 to 18000 kPa (172 to 180 bar; 2500 to 2610 psi)
– in leveling system	16600 to 17400 kPa (166 to 174 bar; 2400 to 2520 psi)

Steering System

Pressure relief valve setting	13500 kPa (135 bar; 1960 psi)
Shock valve setting	18000 to 19500 kPa (180 to 195 bar; 2610 to 2830 psi)

Clutch

Minimum thickness of clutch disk	7 mm (0.28 in.)
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Wheels

Wheel bolt torques	
– Front wheels (except 1169H)	420 Nm (304 ft-lb)
– Front wheels (1169H)	550 Nm (400 ft-lb)
– Rear wheels	180 Nm (130 ft-lb)

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SUMMARY OF MOST IMPORTANT SPECIFICATIONS

1166, 1169H, 1174, 1177, 1177 HYDRO/4, 1188, 1188 HYDRO/4

CAPACITIES

Engine lubrication system	
– 1177 Hydro/4, 1188, 1188 Hydro/4	20 liters (5.3 U.S.gal.)
– 1177	17 liters (4.5 U.S.gal.)
– 1166, 1174, 1169H	13 liters (3.4 U.S.gal.)
Hydrostatic ground speed drive	24 liters (6.3 U.S.gal.)
Transmission with differential	6.6 liters (1.75 U.S.gal.)
Final drive (each)	2.2 liters (0.6 U.S.gal.)
Complete hydraulic system	25 liters (6.6 U.S.gal.)
Clutch and brake operating assembly	1.5 liters (0.4 U.S.gal.)
Chain transmission (cutting platform drive)	0.5 liters (0.13 U.S.gal.)
Hydrostatic reel drive	12 liters (3.17 U.S.gal.)
Cylinder drive reduction gear	1.9 liters (0.5 U.S.gal.)
Engine cooling system	
– 1177 Hydro/4, 1188, 1188 Hydro/4	34 liters (9.0 U.S.gal.)
– 1166, 1169H, 1174, 1177	30 liters (8.0 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	300 liters (80 U.S.gal.)

SPECS-ZI4IIAE-010788

Combines 1166, 1169H, 1174, 1177, 1177 Hydro/4, 1188, 1188 Hydro/4 TECHNICAL MANUAL TM4452 (Apr-90)

CONTENTS OF SECTIONS

SECTION 10 – GENERAL

Group 05 – Specifications

SECTION 20 – ENGINE REPAIR

Group 01 – Engine pulley
Group 05 – Removing 6466 engine
Group 06 – Removing 6359 engine
Group 10 – Cooling system

SECTION 30 – FUEL SYSTEM

Group 05 – Fuel system
Group 10 – Speed control and engine shut-off components

SECTION 40 – ELECTRICAL EQUIPMENT REPAIR

Group 05 – Connectors
Group 10 – Electrical system components
Group 15 – Low shaft speed monitor system
Group 20 – Harvest performance monitor
Group 25 – Electromagnetic transmission brake
Group 30 – Starting motor (John Deere)
Group 31 – Starting motor (Bosch)
Group 35 – Alternator
Group 40 – Dial-A-Matic
Group 45 – Sidehill leveling system

SECTION 50 – POWER TRAIN

Group 02 – Variable ground speed drive
Group 05 – Posi-Torq ground drive – upper unit
Group 10 – Posi-Torq ground drive – lower unit
Group 15 – Clutch operating assembly
Group 20 – Engine clutch
Group 25 – Hydrostatic drive, oil and filter change (Sauer)
Group 26 – Hydrostatic drive, oil and filter change (Eaton)
Group 30 – Hydrostatic drive, variable pump (Sauer)
Group 31 – Hydrostatic drive, variable pump (Eaton)
Group 35 – Hydrostatic drive, fixed-displacement motor (Sauer)
Group 36 – Hydrostatic drive, fixed-displacement motor (Eaton)
Group 40 – Hydrostatic drive, oil cooler
Group 45 – Transmission with differential
Group 50 – Final drives
Group 55 – Final drives (rice combine)
Group 60 – Final drives (sidehill combine)

SECTION 60 – BRAKES, REAR AXLE AND STEERING

Group 05 – Parking brake
Group 10 – Brake operating assembly
Group 15 – Foot brakes (internal slave cylinder)
Group 16 – Foot brakes (external slave cylinder)
Group 18 – Foot brakes (sidehill combine)
Group 20 – Hydrostatic steering
Group 25 – Rear axle
Group 30 – Rear axle (sidehill combine)

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CONTENTS OF SECTIONS – CONTD.

SECTION 70 – HYDRAULIC SYSTEM

Group 05 – Hydraulic lines
Group 10 – Dual hydraulic pump
Group 11 – Triple hydraulic pump
Group 15 – Mechanical four-spool control valve
Group 16 – Mechanical seven-spool control valve
Group 18 – Leveling system control valve
Group 20 – Electro-magnetic control valve
Group 25 – Hydraulic cylinders
Group 30 – Hydraulic reverser motor
Group 35 – Hydrostatic reel drive
Group 40 – Hydraulic accumulator/header pressure gauge

SECTION 80 – MISCELLANEOUS

Group 05 – Bearings and shafts
Group 10 – Drive belts
Group 15 – Drive chains

SECTION 90 – OPERATOR'S PLATFORM WITH CAB

Group 05 – Cab ventilation system
Group 10 – Safe handling of refrigerants
Group 15 – Air conditioning system service
Group 20 – Air conditioning compressor
Group 25 – System components
Group 26 – Air conditioning with integrated condenser cooling
Group 30 – Cab heating system
Group 35 – Operator's cab
Group 40 – Platform control levers
Group 45 – Steering column
Group 50 – Operator's seat

SECTION 100 – CUTTING PLATFORMS AND CORN HEADS

Refer to Technical Manual for harvesting units (TM-4468)

SECTION 110 – FEEDER HOUSE

Group 05 – Feeder house drive
Group 10 – Feeder house
Group 15 – Chain transmission – cutting platform drive
Group 20 – Hydraulic reverser

SECTION 120 – SEPARATOR AND CLEANING UNIT

Group 05 – Separator drive
Group 10 – Beater
Group 15 – Variable cylinder drive – upper unit
Group 20 – Variable cylinder drive – lower unit
Group 21 – Variable cylinder drive – mechanically adjustable
Group 25 – Cylinder drive reduction gear
Group 30 – Threshing cylinder
Group 35 – Concave
Group 40 – Straw walkers
Group 45 – Cross shaker
Group 50 – Fan, variable fan drive
Group 55 – Cleaning shoe with sieves

SECTION 130 – ELEVATORS, GRAIN TANK AND UNLOADING AUGERS

Group 05 – Tailings auger and elevator
Group 10 – Clean grain auger and elevator

SECTION 140 – SPECIAL EQUIPMENT

Group 05 – Straw chopper countershaft
Group 10 – Straw chopper
Group 15 – Straw spreader

SECTION 220 – ENGINE COOLING SYSTEM OPERATION

Group 05 – Cooling system

SECTION 230 – FUEL AND AIR INTAKE SYSTEM OPERATION

Group 05 – Air intake system
Group 10 – Fuel system

CONTENTS OF SECTIONS – CONTD.

SECTION 240 – ELECTRICAL SYSTEM – OPERATION AND TESTS

Group 05 – General information
Group 10 – Circuit plan, wiring diagram and wiring harnesses
Group 15 – Circuit testing
Group 20 – Checking individual components
Group 25 – Checking electro-magnetic control valve
Group 30 – Checking speed monitor system
Group 35 – Checking harvest performance monitor
Group 40 – Starting motor
Group 45 – Alternator
Group 50 – Checking Dial-A-Matic header height control

SECTION 250 – POWER TRAIN – OPERATION AND TESTS

Group 05 – Posi-Torq ground drive
Group 10 – Clutch operating assembly
Group 15 – Clutch
Group 20 – Hydrostatic ground speed drive
Group 25 – Testing hydrostatic drive (Sauer)
Group 26 – Testing hydrostatic drive (Eaton)
Group 30 – Transmission

SECTION 260 – BRAKES, STEERING AND REAR AXLE – OPERATION AND TESTS

Group 05 – Full disk brakes
Group 06 – Partial disk brakes
Group 10 – Hydrostatic steering
Group 15 – Hydrostatic steering – diagnosing malfunctions
Group 20 – Testing hydrostatic steering

SECTION 270 – HYDRAULIC SYSTEM – OPERATION AND TESTS

Group 05 – Hydraulic circuits
Group 10 – Mechanical four-spool control valve
Group 11 – Mechanical seven-spool control valve
Group 15 – Electro-magnetic control valve
Group 20 – Testing hydraulic system

SECTION 290 – OPERATOR'S PLATFORM AND CAB – OPERATION AND TESTS

Group 05 – Cab ventilation – operation and tests
Group 10 – Air conditioning system operation
Group 15 – Air conditioning system tests

Introduction

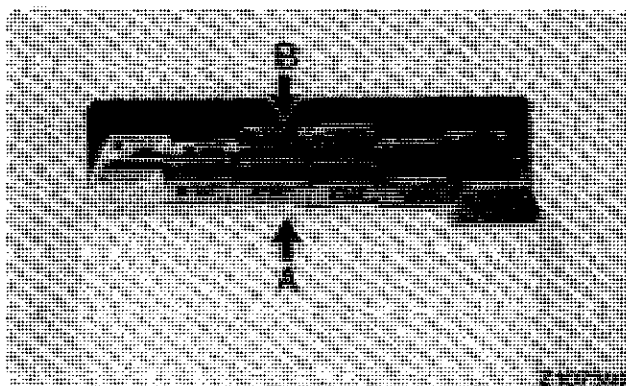
TECHNICAL MANUAL TABS

INTRODUCTION

To fully utilize this manual, you must understand how it is organized. Only two tab colors are used – green and yellow, each representing a different type of information. Spend a minute reading this now and save many minutes of searching later.

A–Green Tabs

B–Yellow Tabs



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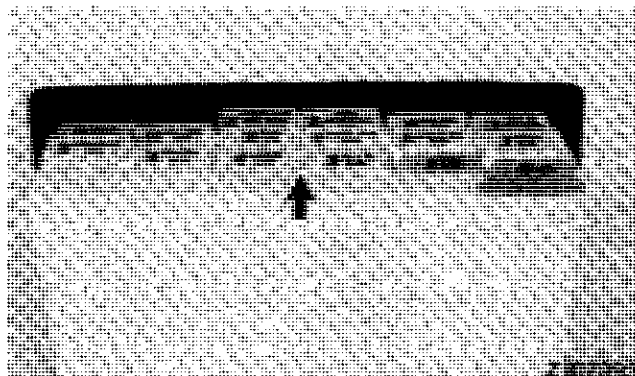
GREEN TAB SECTIONS

The green tab sections are REPAIR sections, telling you how to repair components of the various systems.

Repair of a component includes:

- Removal from machine (if necessary)
- Disassembly
- Inspection
- Replacement of parts
- Assembly
- Adjustment
- Installation on machine (if necessary)

The numbers used for the repair (green tab) sections are part of an overall service publication numbering system. The numbers identify the same sections in the parts catalog, flat rate manual, service information bulletins, and service training courses.



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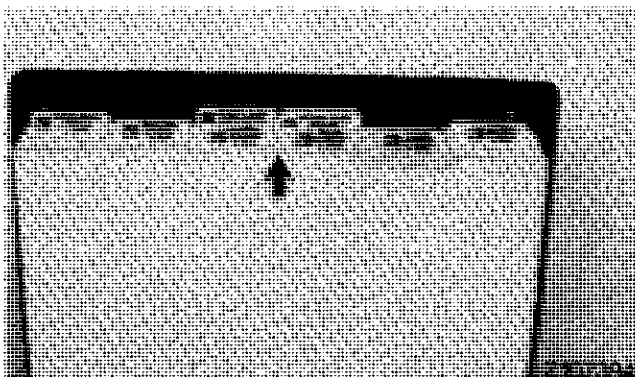
YELLOW TAB SECTIONS

Each yellow tab section contains information on:

- System Operation
- System Tests

System operation explains how the system and its components work.

System tests tell you how to test the system and diagnose the problem.



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TAB POSITIONS

Each green tab and its corresponding yellow tab have the same tab position. This helps you to quickly locate the related information.

A—Green tab

- Section 70
- Hydraulic Repair

B—Yellow tab

- Section 270
- Hydraulic Operation/Tests

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THREE-STEP PROCEDURE

Use the following three-step procedure to locate the desired information.

1. Determine the type of information you need. Is it?

A—Repair

B—Operation

C—Tests

2. Go to the appropriate section tab:

Green – for Repair

Yellow – for Operation or Tests

3. Use the Table of Contents on the first page of each section to locate the information.

Z107396,Z107397-Z1305AE-011085

Section 10 GENERAL

CONTENTS OF THIS SECTION

GROUP 05 – SPECIFICATIONS

Standard torques – general	10-05-1
Recommended torques for UNC and UNF cap screws	10-05-1
Recommended torques for metric cap screws	10-05-2
Recommended torques for pipe and hose connections	10-05-2
Metric and inch threads	10-05-3

1166	1169H	1174	1177	1177HY4	1188	1188HY4
x	x	x	x	x	x	x
x	x	x	x	x	x	x
x	x	x	x	x	x	x
x	x	x	x	x	x	x
x	x	x	x	x	x	x

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.

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RECOMMENDED TORQUES FOR UNC AND UNF CAP SCREWS

B A		 10.9		 12.9
	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

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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

Z103948

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

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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

Z103949

A—Thread size

B—With O-ring

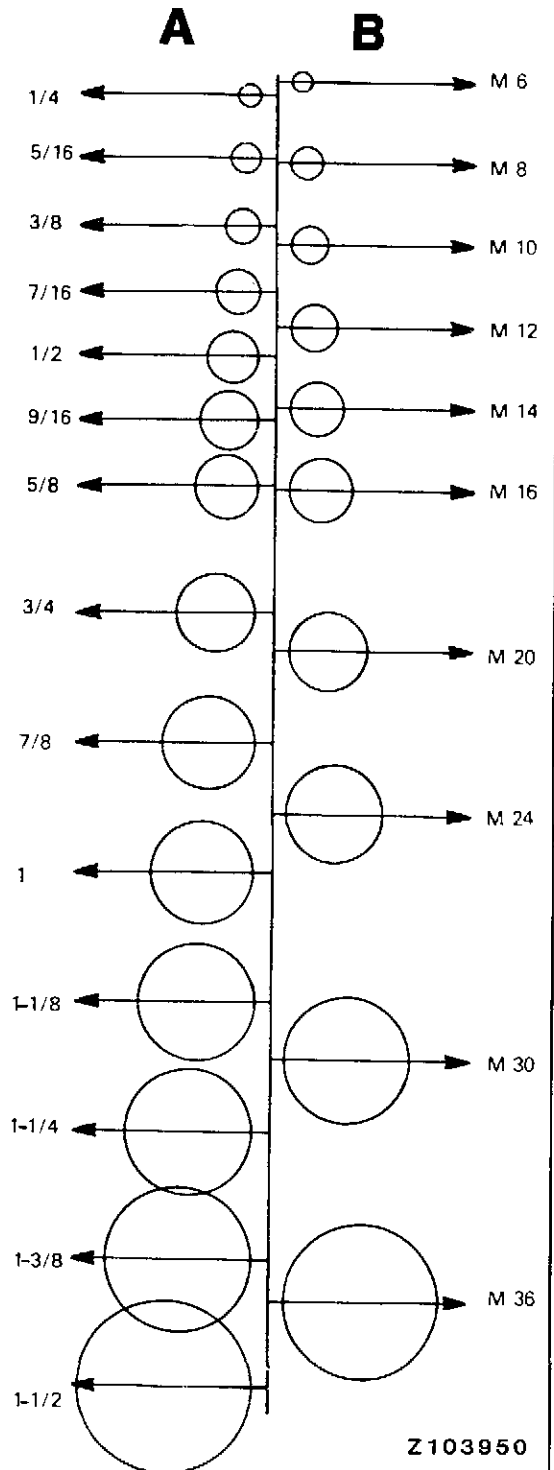
C—With cone

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METRIC AND INCH THREADS

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

A-Inch thread
B-Metric thread



Z103950-Z121005AE-011084

Section 20

ENGINE REPAIR

CONTENTS OF THIS SECTION

NOTE: Only engine removal and installation is described in this Technical Manual. For engine repair, refer to relevant Technical Manuals.

GROUP 01 – ENGINE PULLEY

Special tools	20-01-1
Torques for hardware	20-01-1
Engine pulley removal	20-01-2
Engine pulley installation	20-01-2

GROUP 05 – REMOVING 6466 ENGINE

Special tools	20-05-1
Preparations	20-05-1
Remove air conditioning unit	20-05-2
Remove muffler and air cleaner	20-05-3
Disconnect heater hoses	20-05-4
Remove electro-magnetic control valve	20-05-5
Remove drive belts	20-05-6
Lift off engine	20-05-7
Engine repair	20-05-7
Engine installation	20-05-7

GROUP 06 – REMOVING 6359 ENGINE

Special tools	20-06-1
Preparations	20-06-1
Lift off engine	20-06-6
Engine repair	20-06-6
Engine installation	20-06-6

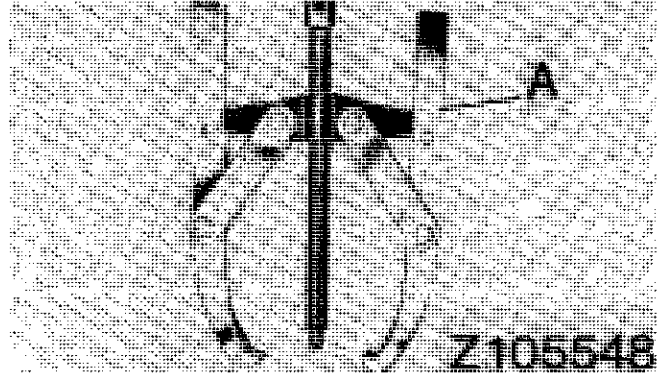
GROUP 10 – COOLING SYSTEM

Engine radiator components	20-10-1
Rotary screen components	20-10-2
Rotary screen drive components	20-10-3

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SPECIAL TOOLS

A – Puller
(D-01204AA)



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TORQUES FOR HARDWARE

Belt pulley to engine shaft, attaching screws	78 Nm (57 ft-lb)
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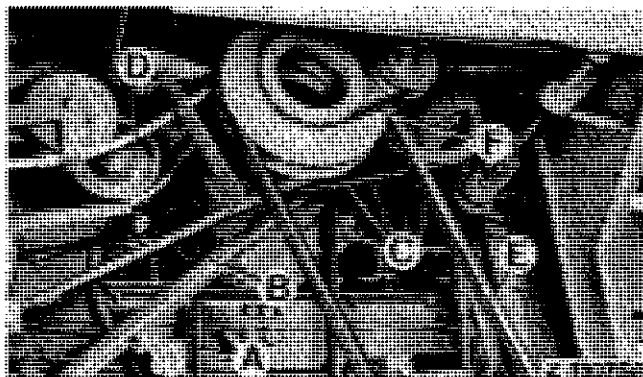
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REMOVE DRIVE BELTS

- A—Drive belt (Posi Torq or variable ground speed drive)
- B—Separator drive belt
- C—Hydraulic pump drive belt
- D—Grain tank unloading auger drive belt
- E—Straw chopper drive belt
- F—Air conditioning system drive belt



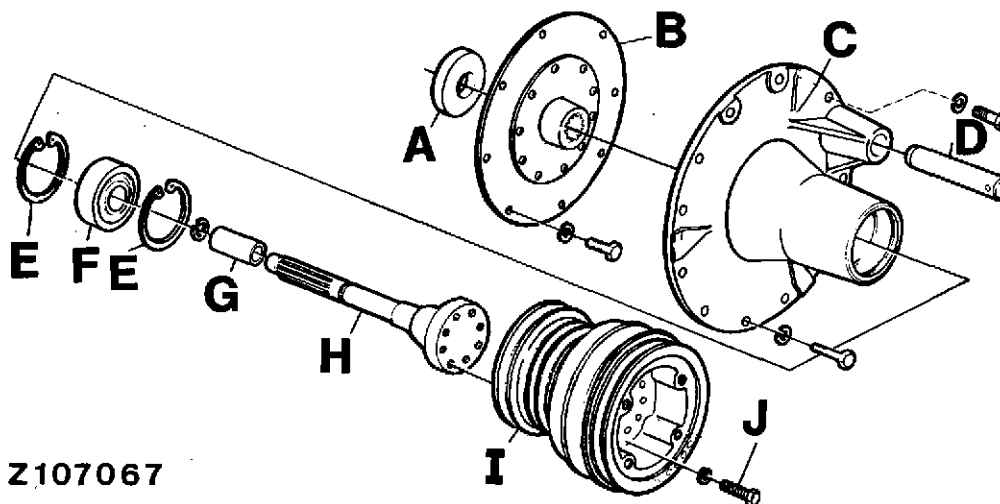
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ENGINE PULLEY REMOVAL

Remove indirectly flanged pulley, using special tool D-01204AA.

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ENGINE PULLEY INSTALLATION



Z107067

A - Centering ring
B - Driven disk
C - Flywheel housing

D - Shaft
E - Snap ring

F - Ball bearing
G - Spacer

H - Shaft
I - Belt pulley
J - Cap screw

Assemble and install engine pulley in reverse sequence of disassembly and removal. Tighten cap screws (J) to 78 Nm (57 ft-lb).

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