

Radial Piston Pumps

**John Deere Waterloo Works
CTM7 (28FEB97)**

LITHO IN U.S.A.
ENGLISH

Introduction

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Use this component technical manual in conjunction with the machine technical manual. An application listing in the introduction identifies product-model/component type-model relationship. See the machine technical manual for information on component removal and installation, and gaining access to the components.

This manual is divided in two parts: repair and operation and tests. Repair sections contain necessary instructions to repair the component. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

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GROUP 20—2000 SERIES PUMPS - REPAIR
GROUP 25—3000 SERIES PUMPS - REPAIR

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GROUP 105—1000 SERIES PUMPS - OPERATION AND TESTS
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**Thanks very much for your reading,
Want to get more information,
Please click here, Then get the complete
manual**

JustClickHere 

NOTE:

**If there is no response to click on the link above,
please download the PDF document first, and then
click on it.**

**Have any questions please write to me:
admin@servicemanualperfect.com**

Contents

INDX

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



DX,ALERT -19-03MAR93

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-UN-07DEC68

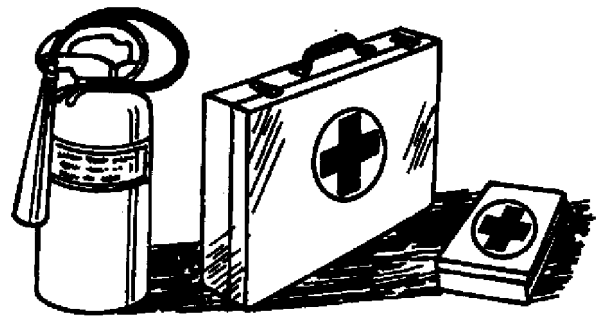
05
1

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



DX,FIRE2 -19-03MAR93

TS291
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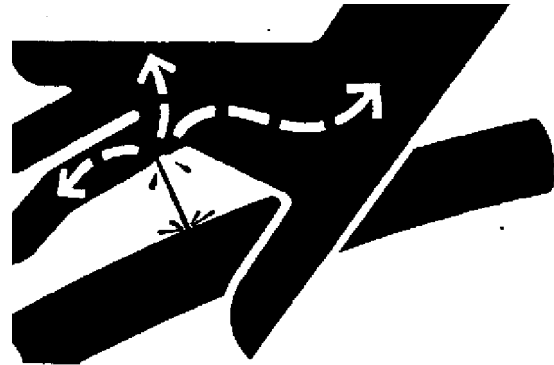
AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



DX,FLUID -19-03MAR93

X9811
-UN-23AUG88

05
2

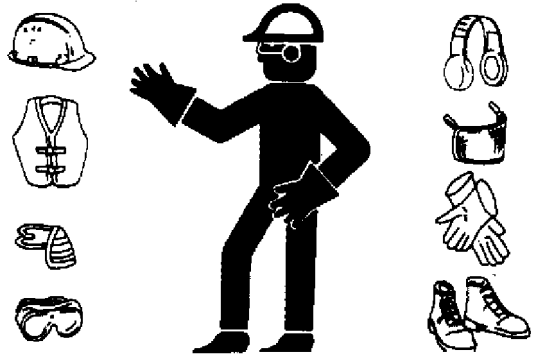
WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



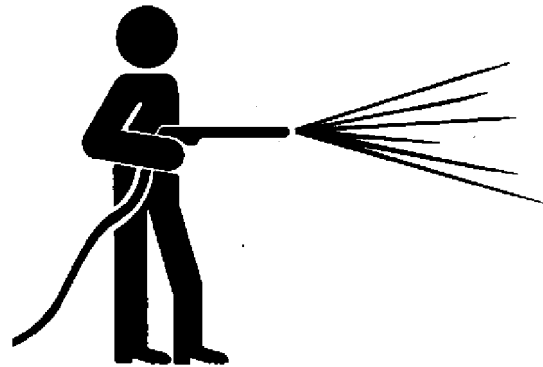
DX,WEAR -19-10SEP90

TS206 -UN-23AUG88

WORK IN CLEAN AREA

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



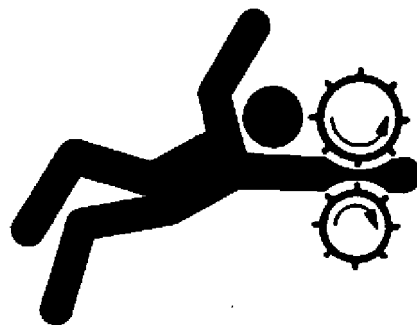
DX,CLEAN -19-04JUN90

T6642EJ -UN-18OCT88

SERVICE MACHINES SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

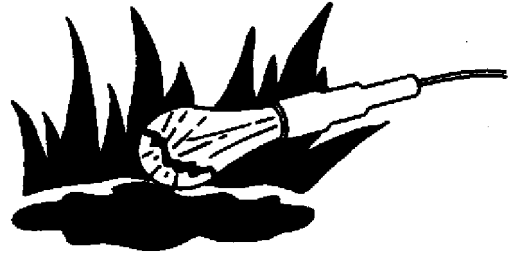


DX,LOOSE -19-04JUN90

TS228 -UN-23AUG88

ILLUMINATE WORK AREA SAFELY

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



DX,LIGHT -19-04JUN90

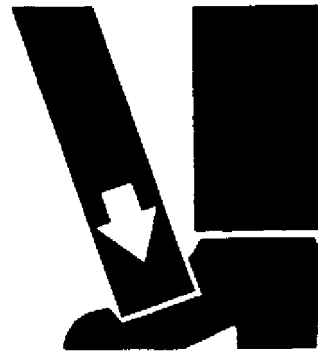
TS223 -UN-23AUG88

305

USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



DX,LIFT -19-04JUN90

TS226 -UN-23AUG88

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.



DX,TORCH -19-03MAR93

TS953 -UN-15MAY90

05
4

USE PROPER TOOLS

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



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TS779

DX,REPAIR -19-04JUN90

DISPOSE OF WASTE PROPERLY

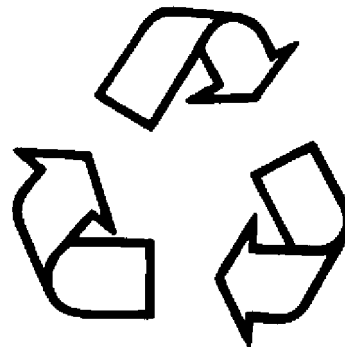
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



-UN-26NOV90
TS1133

DX,DRAIN -19-03MAR93

LIVE WITH SAFETY

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



DX,LIVE -19-25SEP92

TS231 -19-07OCT88

05

Safety

05
6

NON-SERIALIZED HYDRAULIC PUMPS— 1000 AND 2000 SERIES (PR)

Some 1000 and 2000 Series pumps will not have a serial number plate. A model number (A) will be stamped on the hub of the pump housing. This will aid in pump identification, however, design changes for non-serialized pumps are usually tied to the application or vehicle serial number.

Non-serialized and serialized 1000 Series pumps have different model numbers, however, the designs are the same.

Non-serialized 2000 Series pumps have different designed pressure compensator valves (stroke control valves) and pump shaft rotary assemblies than serialized pumps. Although the designs are somewhat different, the function is the same. NON-SERIALIZED and SERIALIZED 2000 Series pump differences will be called out in this technical manual.

All current designed John Deere Radial Piston Hydraulic Pumps have serial number plates.



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-JUN-22/JAN90
R39691

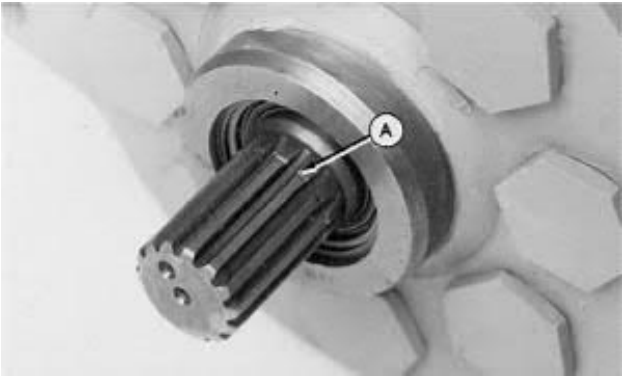
RX,CTM710.1 -19-17FEB97

PUMP DISPLACEMENT—1000 SERIES (PR)

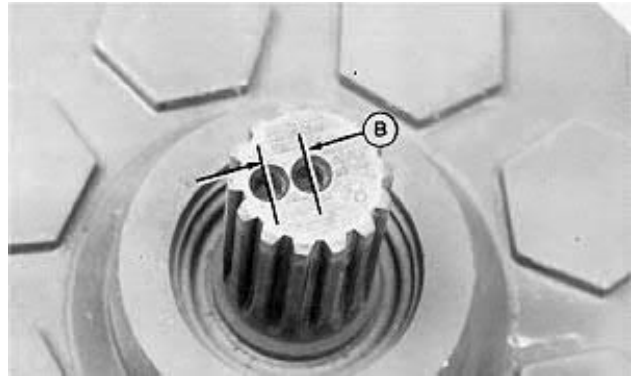
All 1000 Series four piston pumps have a displacement of 11 cm³ (0.7 in.³) and eight piston versions have a displacement of 23 cm³ (1.4 in.³).

RX,CTM710.2 -19-17FEB97

PUMP DISPLACEMENT—2000 SERIES (PR)



R40103 -JUN-23JAN90



R40148 -JUN-23JAN90

The pump shaft eccentric cam and piston bore determines the displacement of the pump. Displacement can be identified by the number of grooves (A) machined at the base of the shaft splines and on single bank pumps by the measured distance (B) between the centering marks on the end of the pump shaft.

NOTE: Centering mark measurements are from center-to-center.

SINGLE BANK			DOUBLE BANK	
Grooves (A)	Displacement	Distance (B) Between Marks	Grooves (A)	Displacement
0	40 cm ³ (2.4 in. ³)*	6.5 mm	1	100 cm ³ (6 in. ³)
2	40 cm ³ (2.4 in. ³)**	6.5 mm	0	130 cm ³ (8 in. ³)
1	50 cm ³ (3 in. ³)	8.0 mm		
0	65 cm ³ (4 in. ³)	8.7 mm		

* Non-Serialized

** Serialized

PUMP DISPLACEMENT— 3000 SERIES (HPR)

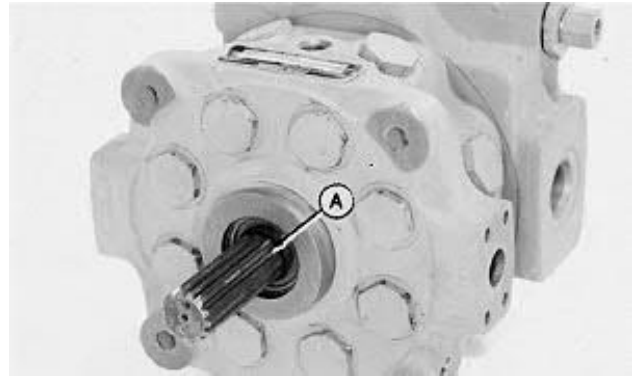
The pump shaft eccentric cam controls the displacement of the pump. Displacement can be determined by the number of grooves (A) machined on the shaft at the base of the splines.

SINGLE BANK

2—40 cm³ (2.4 in.³)
1—52 cm³ (3 in.³)
0—65 cm³ (4 in.³)

DOUBLE BANK

1—104 cm³ (6 in.³)
2—115 cm³ (7 in.³)
0—130 cm³ (8 in.³)

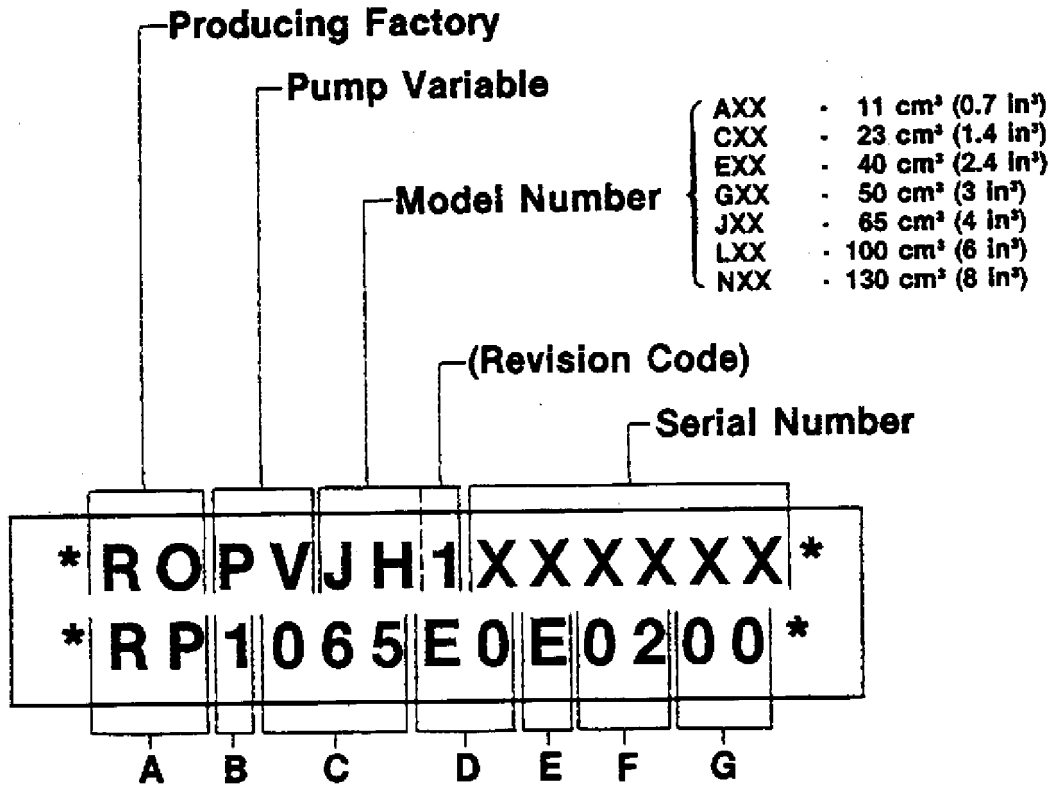


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R39693

RX,CTM710,4 -19-19FEB97

HYDRAULIC PUMP SERIAL NUMBER PLATE—1000 AND 2000 SERIES (PR)

10
4



A—Radial Pump (RP)
B—Frame Size
C—Displacement
(cm³/rev)

D—Ports in Primary (and
Secondary) Housings
E—Rotation
(E)-Either
(R)-Right
(L)-Left

F—Stroke Control
Valve Option

G—Not Currently Used

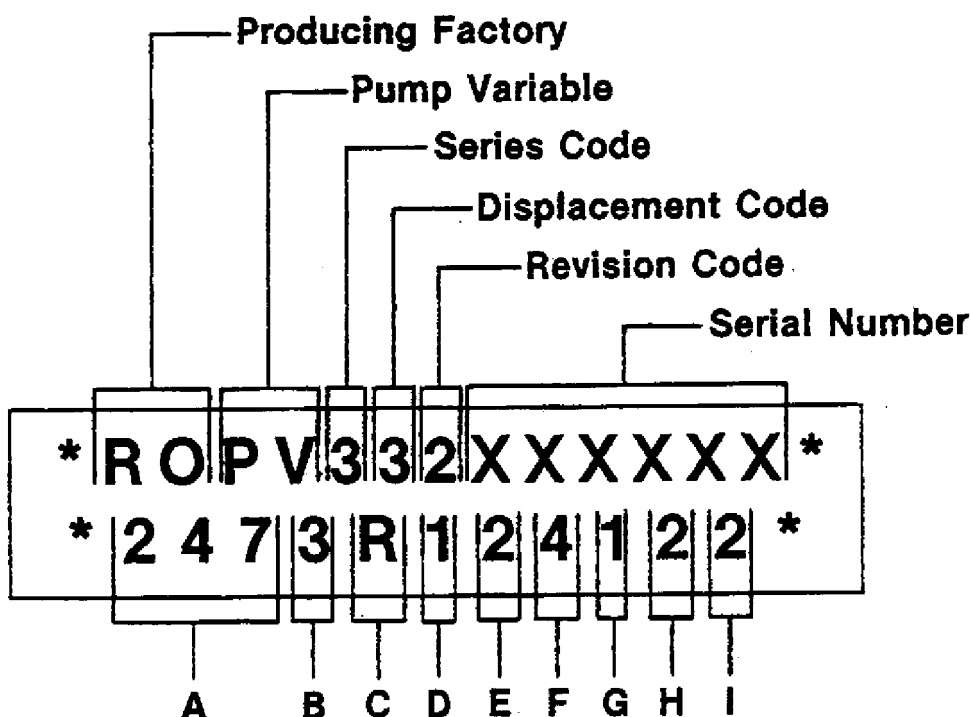
The serial number plate on a 1000 Series hydraulic pump is located on the top of the pump housing cover. For 2000 Series pumps, the serial number plate is located on the top right side (viewing from

the shaft end). The information on the serial number plate may be used to identify repair information in this component technical manual.

RX,CTM710.5 -19-17/FEB97

R39942 -19-21/APR89

HYDRAULIC PUMP SERIAL NUMBER PLATE—3000 SERIES (HPR)



- A—Master Machine Code (247)**
- B—Displacement (per rev)**
 - 1-40 cm³ (2.4 in.³)
 - 2-52 cm³ (3 in.³)
 - 3-65 cm³ (4 in.³)
 - 4-Not Currently Used
 - 5-104 cm³ (6 in.³)
 - 6-115 cm³ (7 in.³)
 - 7-130 cm³ (8 in.³)
- C—Manufacturing Unit (R)**
- D—Output Drive**
 - 1-None
 - 2-Auxiliary SAE “B” Drive
 - 3-Through Drive
 - 4-Auxiliary Gear Pump
 - 5-Not Currently Used

- E—Inlet Port**
 - 1-Four Bolt Flange
 - 2-O-Ring Port
- F—Pressure Setting**
 - 1-10 000 kPa (100 bar) (1450 psi)
 - 2-16 000 kPa (160 bar) (2300 psi)
 - 3-17 500 kPa (175 bar) (2550 psi)
 - 4-19 000 kPa (190 bar) (2750 psi)
 - 5-22 500 kPa (225 bar) (3250 psi)

- G—Control Type**
 - 1-Pressure Compensated
 - 2-Not Currently Used
 - 3-Pressure Compensated External Control
 - 4-Load Sense 1035 kPa (10 bar) (150 psi)
 - 5-Load Sense 2070 kPa (20 bar) (300 psi)
 - 6-Load Sense 3005 kPa (30 bar) (450 psi)
- H—Input Drive**
 - 1-SAE “C” Mount
 - 2-John Deere Mount

- I—Destroke**
 - 1-None
 - 2-Manual
 - 3-Electric (6v) (Normally Closed)
 - 4-Electric (12V) (Normally Closed)
 - 5-Electric (12V) (Normally Open)
 - 6-Electric (24V) (Normally Open)

The serial number plate on a 3000 Series pump is located on the top-center of the pump. Pump identity can be determined by the information (configuration code) on the second line of the serial number plate.

Some pumps will have a part number stamped on the SECOND LINE of the serial number plate instead of the information shown above.

The information on the serial number plate may be used to identify repair information in this component technical manual.

General/Pump Specifications (Basic)

BASIC PUMP SPECIFICATIONS—1000 SERIES

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6

	11 cm ³ (0.7 in. ³)	23 cm ³ (1.4 in. ³)
Number of Pump Housings	1	1
Number of Pistons	4	8
Pump Housing Bore ID	17.28—17.29 mm (0.6802—0.6808 in.)	17.28—17.29 mm (0.6802—0.6808 in.)
Piston OD	17.26—17.27 mm (0.6795—0.6799 in.)	17.26—17.27 mm (0.6795—0.6799 in.)
Rated Speed (rpm)	2500	2500
Rated Flow (gpm)	6.75	13.5
Rated Pressure *		
at No Flow (psi)	2750	2750
at Max Flow (psi)	2000	2000
Overall Dimensions		
Height (in.)	8.70	8.70
Width (in.)	9.67	9.67
Length (in.)	9.15	**9.15

* See Machine Manual for proper setting

** 11.55 for pump with through drive

RX,CTM710.7 -19-19FEB97

General/Pump Specifications (Basic)

BASIC PUMP SPECIFICATIONS—2000 SERIES

	40 cm³ (2.4 in.³)	50 cm³ (3 in.³)	65 cm³ (4 in.³)	100 cm³ (6 in.³)	130 cm³ (8 in.³)
Number of Pump Housings	1	1	1	2	2
Number of Pistons	8	8	8	16	16
Pump Housing Bore ID	22.223—22.233 mm (0.8749—0.8753 in.)	22.223—22.233 mm (0.8749—0.8753 in.)	24.483—24.493 mm (0.9639—0.9643 in.)	22.223—22.233 mm (0.8749—0.8753 in.)	24.483—24.493 mm (0.9639—0.9643 in.)
Piston OD	22.200—22.210 mm (0.8740—0.8744 in.)	22.200—22.210 mm (0.8740—0.8744 in.)	24.460—24.470 mm (0.9630—0.9634 in.)	22.200—22.210 mm (0.8740—0.8744 in.)	24.460—24.470 mm (0.9630—0.9634 in.)
Rated Speed (rpm)	2500	2500	2500	2500	2200
Rated Flow (gpm)	23.3	30.2	39.5	64.9	80.0
Rated Pressure *					
No Flow (psi)	2550	2550	2550	2550	2400
Max Flow (psi)	2300	2300	2300	2300	2000
Overall Dimensions					
Height (in.)	9.50	9.50	9.50	9.50	9.50
Width (in.)	9.66	9.66	9.66	9.66	9.66
Length (in.)	9.02**	9.02***	9.02***	13.45	13.45

* See Machine Manual for correct setting

** 12.48 for pump with through drive option

*** 11.76 for pump with auxiliary charge pump option

RX,CTM710.8 -19-19FEB97

General/Pump Specifications (Basic)

BASIC PUMP SPECIFICATIONS—3000 SERIES

10
8

	40 cm ³ (2.4 in. ³)	52 cm ³ (3 in. ³)	65 cm ³ (4 in. ³)	104 cm ³ (6 in. ³)	115 cm ³ (7 in. ³)	130 cm ³ (8 in. ³)
Number of Pump Housings	1	1	1	2	2	2
Number of Pistons	8	8	8	16	16	16
Pump Housing Bore ID	25.395—25.405 mm (0.9998—01.0001 in.)	same	same	same	same	same
Piston OD	25.363—25.373 mm (0.9985—0.9989 in.)	same	same	same	same	same
Rated Speed (rpm)	3000	3000	2800	3000	2800	2800
Rated Flow (gpm)	34.8	45.3	53.3	90.7	94.2	106.4
Rated Pressure *						
No Flow (psi)	3250	3250	3250	3250	3250	3250
Max Flow (psi)	3000	3000	3000	3000	3000	3000
Overall Dimensions						
Height (in.)	9.96**	9.96**	9.96**	9.96**	9.96**	9.96**
Width (in.)	11.32	11.32	11.32	11.32	11.32	11.32
Length (in.)	11.84***	11.84***	11.84***	17.72	17.72	17.72

* See Machine Manual for correct setting

** 9.49 for non-unitized pumps (top line of serial number plate seventh digit from left is a "2")

*** 13.61 for pump with auxiliary SAE "C" through drive shaft 14.58 for pump with auxiliary charge pump option

RX,CTM710,9 -19-19FEB97

PUMP APPLICATION CHART—JOHN DEERE AGRICULTURAL EQUIPMENT

Machine Model Number	1000 Series		2000 Series—Single Bank		2000 Series—Double Bank
	11 cm ³ m ³ 100 cm ³ 1	23 cm ³ 30 cm ³	40 cm ³	50 cm ³	65

Row Crop and Utility Tractors

2510			X*		
3010			X	X	
4010			X	X	
5010			X	X	
1020	X	X			
1520	X	X			
2020	X	X			
2520			X*		
3020			X	X	
4000				X	X
4020				X	X
4320				X	X
4520				X	X
4620				X	X
5020				X	
1530		X			
2030		X	X		
2630		X	X		
4030			X		
4230				X	X
4430				X	X
4630				X	X
6030				X	
2040		X			
2240		X			
2440		X	X		
2640		X	X		
2840			X		
2940			X		
4040				X	X
4240				X	X
4440				X	X
4640				X	X
4840				X	

* Replacement pump—original pump is a four piston 2000 series pump

General/Application Charts

10
10

Machine Model Number	1000 Series		2000 Series—Single Bank			2000 Series—Double Bank	
	11 cm ³	23 cm ³	40 cm ³	50 cm ³	65 cm ³	100 cm ³	130 cm ³
Row Crop and Utility Tractors							
2150		X					
2155		X					
2255		X					
2350		X	X				
2355N		X	X				
2550		X	X				
2555		X	X				
2750		X	X				
2755		X	X				
2855N			X				
2950			X				
2955			X				
3150			X				
3155			X				
4050					X		
4055					X		
4250					X		
4255					X		
4450					X		
4455					X		
4555						X	
4650						X	
4755						X	
4850						X	
4955						X	
4560						X	
4760						X	
4960						X	
Four Wheel Drive Tractors							
7020				X			
7520				X			
8430						X	
8630						X	
8440						X	
8640						X	
8450						X	
8650						X	
8850							X

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