

**SERVICE MANUAL**

**TRACTORS**

C50, C60

C70, C80

C90, C100

7-70900

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

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# C50, C60, C70, C80, C90 and C100 Tractors

## Service Manual Don 7-70900

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Reprinted



# Section

# 1001

1001

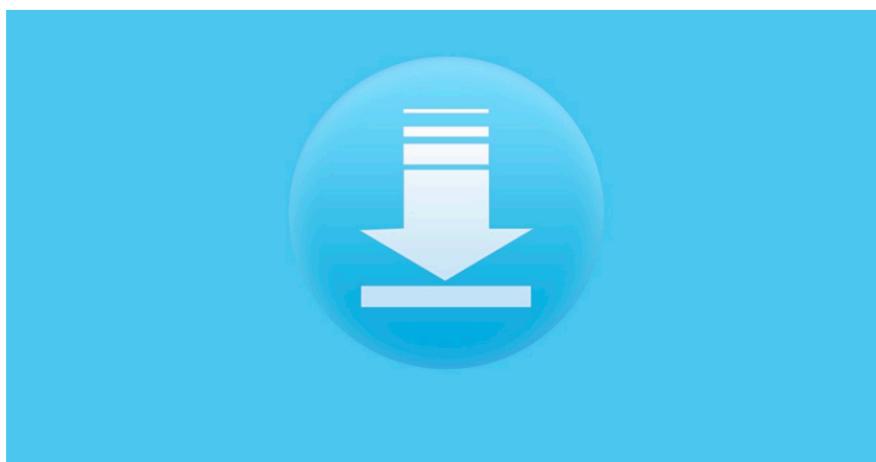
SAFETY, GENERAL INFORMATION  
AND TORQUE SPECIFICATIONS

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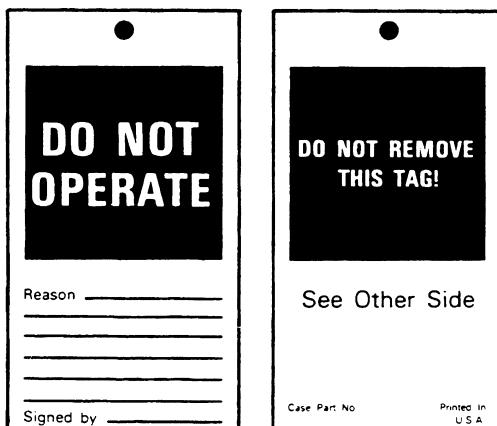
## SAFETY



**This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.** The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the warning tag shown below on the key for the key switch when servicing or repairing the machine. One warning tag is supplied with each machine. Additional tags Part Number 331-4614 are available from your service parts supplier.



**WARNING: Before starting engine, study Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.**  
**It is your responsibility to understand and follow manufacturers instructions on machine operation, service, and to observe pertinent laws and regulations. Operator's and Service Manuals may be obtained from your J.I.Case dealer.**



**WARNING: If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.**



**WARNING: Read the operators manual to familiarize yourself with the correct control functions.**



**WARNING: Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.**



**WARNING: This is one a man machine, no riders allowed.**



**WARNING: When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.**



**WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.**



**WARNING: When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.**



**WARNING: Use insulated gloves or mittens when working with hot parts.**



**CAUTION: Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.**



**CAUTION: Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. If hydraulic oil under pressure does penetrate the skin, seek medical treatment immediately. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Make a replacement of any tube or hose that is damaged or thought to be damaged. DO NOT use your hand to check for leaks, use a piece of cardboard or wood.**



**CAUTION: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.**



**CAUTION: When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).**



**CAUTION: Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands.**



**CAUTION: When servicing or repairing the machine. Keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use oil absorbing material and or shop cloths as required. Use safe practices at all times.**



**CAUTION: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this Service Manual.**



**DANGER: Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the doors and get outside air into the area.**



**DANGER: When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent that battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.**



**DANGER: Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operator's Manual. Failure to follow these instructions can cause serious injury or death.**

## GENERAL INFORMATION

### Cleaning

Clean all metal parts except bearings, in mineral spirits or by steam cleaning. Do not use caustic soda for steam cleaning. After cleaning dry and put oil on all parts. Clean oil passages with compressed air. Clean bearings in kerosene, dry the bearings completely and put oil on the bearings.

### Inspection

Check all parts when the parts are disassembled. Replace all parts that have wear or damage. Small scoring or grooves can be removed with a hone or crocus cloth. Complete visual inspection for indications of wear, pitting and the replacement of parts necessary will prevent early failures.

### Bearings

Check bearings for easy action. If bearings have a loose fit or rough action replace the bearing. Wash bearings with a good solvent or kerosene and permit to air dry. DO NOT DRY BEARINGS WITH COMPRESSED AIR.

### Needle Bearings

Before you press needle bearings in a bore always remove any metal protrusions in the bore or edge of the bore. Before you press bearings into position put petroleum jelly on the inside and outside diameter of the bearings.

### Gears

Check all gears for wear and damage. Replace gears that have wear or damage.

### Oil Seals, O-Rings And Gaskets

Always install new oil seals, o-rings and gaskets. Put petroleum jelly on seals and o-rings.

### Shafts

Check all shafts that have wear or damage. Check the bearing and oil seal surfaces of the shafts for damage.

### Service Parts

Always install genuine Case service parts, when ordering refer to the Parts Catalog for the correct part number of the genuine Case replacement items. Failures due to the use of other than genuine Case replacement parts are not covered by warranty.

### Lubrication

Only use the oils and lubricants specified in the Operators or Service Manual. Failures due to the use of non specified oils and lubricants are not covered by warranty.

## STANDARD TORQUE DATA FOR NUTS AND BOLTS

**NOTE:** A "click type" torque wrench is recommended for the bolt torques listed below.

### Chart 1 (Plain Nuts/Bolts)

BOLT SIZE (mm)	TYPE 8.8				TYPE 10.9			
	MIN		MAX		MIN		MAX	
	lb ft	Nm	lb ft	Nm	lb ft	Nm	lb ft	Nm
<b>M4</b>	3.0	4.0	3.4	4.5	4.3	5.8	4.8	6.5
<b>M5</b>	4.8	6.5	5.5	7.5	7.0	9.5	7.8	10.5
<b>M6</b>	8.2	11.0	9.2	12.5	11.8	16.0	13.3	18.0
<b>M8</b>	20.0	27.0	22.5	31.0	28.7	39.0	32.3	44.0
<b>M10</b>	40.0	54.0	45.0	61.0	56.0	77.0	64.0	87.0
<b>M12</b>	69.0	94.0	78.0	106.0	100.0	134.0	110.0	151.0
<b>M14</b>	110.0	150.0	125.0	170.0	160.0	215.0	180.0	240.0
<b>M16</b>	175.0	235.0	190.0	260.0	245.0	335.0	275.0	375.0
<b>M20</b>	345.0	470.0	390.0	530.0	480.0	650.0	540.0	730.0
<b>M22</b>	475.0	640.0	530.0	720.0	655.0	890.0	735.0	1000.0
<b>M24</b>	600.0	810.0	675.0	915.0	830.0	1125.0	930.0	1265.0
<b>M30</b>	1190.0	1615.0	1340.0	1815.0	1645.0	2235.0	1855.0	2515.0
<b>M36</b>	2080.0	2825.0	2340.0	3175.0	2875.0	3900.0	3235.0	4390.0

### Chart 2 (Phosphate Coated Nuts/Bolts)

BOLT SIZE (mm)	TYPE 8.8				TYPE 10.9			
	MIN		MAX		MIN		MAX	
	lb ft	Nm	lb ft	Nm	lb ft	Nm	lb ft	Nm
<b>M4</b>	2.3	3.0	2.6	3.4	3.2	4.4	3.6	4.9
<b>M5</b>	3.6	4.9	4.1	5.6	5.2	7.1	5.9	8.0
<b>M6</b>	6.2	8.3	6.9	9.4	8.9	12.0	10.0	13.5
<b>M8</b>	15.0	20.3	16.9	23.3	21.5	29.2	24.2	32.8
<b>M10</b>	30.0	41.0	34.0	46.0	42.0	58.0	48.0	65.0
<b>M12</b>	52.0	71.0	59.0	80.0	75.0	101.0	83.0	113.0
<b>M14</b>	83.0	113.0	94.0	126.0	120.0	161.0	135.0	180.0
<b>M16</b>	131.0	176.0	143.0	195.0	185.0	251.0	205.0	280.0
<b>M20</b>	259.0	353.0	293.0	400.0	360.0	490.0	405.0	550.0
<b>M22</b>	355.0	480.0	400.0	540.0	490.0	665.0	550.0	750.0
<b>M24</b>	450.0	608.0	506.0	686.0	625.0	845.0	700.0	950.0
<b>M30</b>	893.0	1211.0	1005.0	1361.0	1235.0	1675.0	1390.0	1885.0
<b>M36</b>	1560.0	2119.0	1755.0	2381.0	2156.0	2925.0	2425.0	3295.0

## Chart 3 (Zinc or Cadmium Plated Nuts/Bolts)

BOLT SIZE (mm)	TYPE 8.8				TYPE 10.9			
	MIN		MAX		MIN		MAX	
	lb ft	Nm	lb ft	Nm	lb ft	Nm	lb ft	Nm
M4	2.6	3.5	2.9	3.9	3.7	5.0	4.1	5.6
M5	4.1	5.6	4.6	6.3	5.9	8.0	6.6	9.0
M6	7.0	9.5	7.8	10.6	10.0	13.6	11.3	15.3
M8	17.0	23.1	19.1	25.9	24.4	33.1	27.4	37.2
M10	34.0	46.0	38.3	52.0	48.0	65.0	54.0	74.0
M12	59.0	80.0	66.0	90.0	85.0	114.0	94.0	128.0
M14	94.0	128.0	106.0	145.0	136.0	183.0	153.0	205.0
M16	149.0	200.0	161.0	220.0	208.0	285.0	235.0	320.0
M20	293.0	400.0	330.0	450.0	408.0	555.0	460.0	620.0
M22	400.0	545.0	450.0	615.0	555.0	755.0	625.0	850.0
M24	510.0	690.0	575.0	780.0	705.0	955.0	790.0	1075.0
M30	1010.0	1375.0	1140.0	1545.0	1400.0	1900.0	1580.0	2140.0
M36	1770.0	2400.0	1990.0	2700.0	2445.0	3315.0	2750.0	3730.0



# Section

# 1002

1002

## GENERAL SPECIFICATIONS AND TORQUES

**C50, C60, C70, C80, C90  
and C100 Tractors**

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## GENERAL SPECIFICATIONS

### Capacities

#### TRANSMISSION/HYDRAULIC (HY-TRAN PLUS ®) OIL CAPACITY

2WD Tractors .....	34 Litres	9.0 US gal
MFD Tractors .....	36.5 Litres	9.6 US gal

### Steering Specifications

#### TRACK ADJUSTMENT

Toe-in .....	0 to 5 mm	0 to 0.20 inch
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### Transmission Specifications

#### CLUTCH

##### C50/60/70 Tractors

Maximum Clutch Plate Thickness .....	10.4 mm	0.41 inch
Clutch Plate Diameter .....	305 mm	12 inch
Number of Friction Plate Pads .....		5 each side

##### C80/90/100 Tractors

Maximum Clutch Plate Thickness .....	10.4 mm	0.41 inch
Clutch Plate Diameter .....	310 mm	12.20 inch
Number of Friction Plate Pads .....		7 each side
Pressure Plate and Friction Plate Spline Lubricant .....		MOLYKOTE D321R or equivalent

#### SPEED TRANSMISSION

Speed Transmission Rear Synchronizer End Play .....	0.05 to 0.30 mm	0.002 to 0.012 inch
Speed Transmission Front Synchronizer End Play .....	0.05 to 0.30 mm	0.002 to 0.012 inch

#### RANGE TRANSMISSION

Pinion Bearing End Play (Maximum) .....	0.076 mm	0.003 inch
Synchronizer Running Clearance .....	0.4 to 0.6 mm	0.016 to 0.024 inch
Selector Fork Running Clearance .....		
Standard Transmission .....	0.45 mm	0.018 inch
Forward/Reverse Transmission .....	0.05 mm	0.002 inch

#### REAR AXLE

Planetary Gear/Planetary Gear Carrier Shimming .....	refer to Section 6012
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#### DIFFERENTIAL

Differential Lock Selector Ring Clearance (Engaged Position) .....	0.025 to 0.90 mm	0.001 to 0.035 inch
Ring Gear to Pinion Backlash .....	0.152 to 0.304 mm	0.006 to 0.012 inch
Ring Gear to Differential Housing Run-out .....	0 to 0.102 mm	0 to 0.004 inch
Differential Bearing Rolling Pull .....	2.0 to 6.5 kg	4.5 to 14.5 lb

#### PTO CLUTCH

##### Standard Clutch

Number of Friction Plates .....	5
Number of Steel Separator Plates (2 between each Friction Plate) .....	8

##### Heavy Duty Clutch

Number of Friction Plates .....	6
Number of Steel Separator Plates .....	5

## Hydraulic Specifications

### HYDRAULIC PUMP

	C50/60	C70/80/90/100
Hydraulic pump - Standard capacity	N/A	59 L/min (15.6 US gpm)
Hydraulic pump - High capacity	62 L/min (16.4 US gpm)	540/750 PTO - 66 L/min (17.4 US gpm) 540/1000 PTO - 68 L/min (18.0 US gpm)
Flow to Remotes - Standard capacity hydraulic pump	N/A	48 L/min (12.7 US gpm)
Flow to Remotes - High capacity hydraulic pump	49 L/min (12.9 US gpm)	540/750 PTO - 55 L/min (14.2 US gpm) 540/1000 PTO - 57 L/min (15.0 US gpm)
Pump gear (No. of teeth) - Standard capacity hydraulic pump		540/750 PTO - 19 teeth 540/1000 PTO - 23 teeth
Pump gear (No. of teeth) - High capacity hydraulic pump	N/A	540/750 PTO TYPE - 17 teeth 540/1000 PTO TYPE - 20 teeth
Pump mounting plate thickness - Standard capacity hydraulic pump		5.31 to 5.43 mm (0.209 to 0.213 inch)
Pump mounting plate thickness - High capacity hydraulic pump		7.86 to 7.98 mm (0.309 to 0.314 inch)

Steering Relief Valve Pressure.....	141 to 148 bar	2050 to 2150 psi
Pilot Relief Valve Pressure .....	172 bar	2494 psi
Priority Flow Divider (Flow at all engine speeds).....	10.5 to 12 L/min	2.8 to 3.2 US gpm
Auxiliary Remote Detent Kick-out Pressure .....	144.7 to 172.3 bar	2100 to 2500 psi
Steering Relief Valve Pressure.....	141 to 148 bar	2050 to 2150 psi
Forward/Reverse Regulator Pressure.....	22 bar	320 psi
Powershift Regulator Pressure.....	22 bar	320 psi
MFD Regulator Pressure.....	22 bar	320 psi
PTO Pressure.....	15 to 17 bar	220 to 250 psi
Steering Regulator Return Flow .....	10.5 to 12 L/min	2.8 to 3.2 US gpm
Oil Cooler Flow .....	10.5 to 12 L/min	2.8 to 3.2 US gpm
Hydraulic Oil Type .....		Case Hy-Tran ® Plus
Hydraulic Oil Test Temperature .....	49 °C	120° F

#### FLOW DIVIDER SPRING

Free Length.....	60.23 mm	2.37 inch
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#### PTO PRESSURE REGULATOR VALVE SPRING

Free Length.....	45.44 mm	1.79 inch
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#### OIL COOLER/LUBRICATION SYSTEM BYPASS VALVE SPRING

Free Length.....	48.00 mm	1.88 inch
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#### PTO CONTROL SPOOL ASSEMBLY

##### Heavy Duty Spring

Free Length.....	37.77 mm	1.49 inch
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##### Light Duty Spring

Free Length.....	46.99 mm	1.85 inch
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##### Return Spring

Free Length.....	70.61 mm	2.78 inch
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#### UNLOADING VALVE SPRING

Free Length.....	39.88 mm	1.57 inch
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