

Maxxum Tractors

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Section 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. 11 C

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 keyswitch 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.





B004


 **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 15 2


 **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** 15 3 A


 **WARNING: Read the operator's manual to familiarize yourself with the correct control functions.** 16 27

 **WARNING: When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.** 16 4

 **WARNING: Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.** 18 55

 **WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.** 17 14

 **WARNING: This is one man machine, no riders allowed.** 35 8

 **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.** 17 15



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 an 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 the 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 Operator's 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

Where no special torque data is specified, the following torque figures should be applied. Threads should be lubricated with engine oil or chassis grease.

TORQUE SPECIFICATIONS $\pm 10\%$									
SIZE	GRADE 8.8			GRADE 10.9			GRADE 12.9		
	lb-ft	Nm	kg/m	lb-ft	Nm	kg/m	lb-ft	Nm	kg/m
5 mm	4	5.5	0.56	5.5	7.5	0.76	6.6	9	0.92
6 mm	6.6	9	0.92	9.2	12.5	1.27	11	15	1.53
8 mm	16.5	22.5	2.3	23	31.5	3.2	26.5	36	3.67
10 mm	32	44	4.5	45	62	6.3	55	75	7.65
12 mm	57	77.5	7.9	81	110	11.2	95	130	13.2
14 mm	88	120	12.2	125	170	17.3	155	210	21.4
16 mm	140	190	19.4	195	265	27	236	320	32.6
18 mm	192	260	26.5	269	365	37.2	320	435	44.3
20 mm	273	370	37.7	383	520	53	457	620	63.2
22 mm	369	500	51	516	700	71.4	619	840	85.6
24 mm	471	640	65.2	665	900	92	796	1080	110
27 mm	702	950	97	996	1350	137.7	1195	1620	165.2
30 mm	955	1300	132.5	1328	1800	183.6	1593	2160	220.3

TORQUE DATA FOR HYDRAULIC FITTINGS

FITTINGS, CONNECTIONS AND PLUGS

Diameter x Pitch	Newton / Metres	Pounds / Feet	Kilogram / Metres
10 mm x 1	20	14.5	2
12 mm x 1.5	35	26	3.6
14 mm x 1.5	45	33.2	4.6
16 mm x 1.5	60	44	6.1
18 mm x 1.5	70	51	7.1
22 mm x 1.5	100	73	10.2
27 mm x 2	200	147	20.4
33 mm x 2	280	207	28.6
42 mm x 2	380	281	38.8

NUTS FOR TUBES AND HOSES

Diameter x Pitch	Newton / Metres	Pounds / Feet	Kilogram / Metres
16 mm x 1.5	20	14.5	2
18 mm x 1.5	35	26	3.6
20 mm x 1.45	45	33.2	4.6
24 mm x 1.5	60	44	6.1

FLANGES

Diameter x Pitch	Newton / Metres	Pounds / Feet	Kilogram / Metres
8 mm x 1.5	28	21	2.9
10 mm x 1.5	55	41	5.6
12 mm x 1.75	90	67	9.2
14 mm x 2	145	107	14.8
16 mm x 2	230	170	23.5

Section

1002

SPECIFICATIONS

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GENERAL SPECIFICATIONS

Capacities

Engine Oil Capacity (with Filter Change)	15 Litres	15.8 US Quarts
Engine Oil Capacity (without Filter Change)	14.3 Litres	15.1 US Quarts
Cooling System (with Cab)	20.8 Litres	22 US Quarts
Cooling System (without Cab)	18.9 Litres	20 US Quarts
Transmission/Hydraulic System	76 Litres	80.3 US Quarts
MFD Axle - Differential	6.5 Litres	6.8 US Quarts
MFD Axle - Planetaries	0.9 Litres	0.9 US Quarts
Fuel Tank - Standard	130 Litres	137 US Quarts
Fuel Tank - Optional	170 Litres	180 US Quarts

Electrical Specifications

Type of System 12 Volts, negative ground

Batteries

Number of Batteries Required	1 or 2
Voltage of the Battery	12 Volts
Reserve Capacity	170 minutes
Cold Cranking Capacity (SAE) at - 18°C (0.4°F)	700 Amperes

Starter Motor

Manufacturer	Bosch
No-Load Test at 27°C (80.6°F)	
Volts	11.5 V
Current Draw	170 Amperes maximum
Armature Speed	8000 rpm minimum
Brush Length	8.55 mm minimum 0.336 inch minimum
Armature Runout	0.03 mm maximum 0.001 inch maximum
Commutator Diameter	42.5 mm minimum 1.67 inch minimum
Armature End Play	0.10 to 0.30 mm 0.004 to 0.012 inch

Alternator

Manufacturer	Bosch
Output (Part No A187623)	14 Volts At 95 Amperes
Output (Part No A187873)	14 Volts AT 65 Amperes
Resistance of Rotor Winding (A187623)	3.0 Ohms ± 0.3 Ohms
Resistance of Rotor Winding (A187873)	2.8 Ohms ± 0.2 Ohms
Stator Winding	0.1 Ohms
Brush Length Wear Limit	14 mm 0.55 inch
Maximum Rotor Shaft Run-out	0.051 mm 0.002 inch

Steering Specifications

Front Axle - 2WD		
Toe-in Adjustment	2 to 8 mm	0.79 to 0.314 inch
Front Axle - MFD		
Toe-in Adjustment	0 to 2 mm	0 to 0.79 inch
Steering Hand Pump		
Type	Danfoss	
Model		
2WD	OSPC 100 LSR	
MFD	OSPC 160 LS	
Rated Flow		
2WD	10 l/min	2.6 US/gpm
MFD	16 l/min	4.2 US/gpm
Rotor - Stator Wear Limit	0.127 mm	0.005 inch
Rotor - Stator Thickness Difference	0.051 mm	0.002 inch

Transmission Specifications

Torque Limiter		
Belleville Spring Free Height	10.82 to 11.33 mm	0.425 to 0.444 inch
Rear Axles		
Axle Shaft Bearing Pre-load	3.4 to 5.7 Nm	30 to 50 lb inch
MFD Axle		
Pinion Shaft Rotating Torque	1.7 to 2.2 Nm	15 to 20 lb in
Crown wheel Backlash	0.15 to 0.25 mm	0.006 to 0.010 inch
Swivel Pin Bearing End Float	0.1 to 0.2 mm	0.003 to 0.008 inch
Planetary and Wheel Hub Lubricant	SAE 85W140 Gear Lubricant	
Planetary and Wheel Hub Capacity	1 Litre	1.05 US Quart
Swivel Housing End Play	0 to 0.1 mm	0 to 0.003 inch
Pinion Bearing Pre-load	92 to 137 N	20.7 to 30.8 lb
Pinion Bearing/Differential Bearing Total Pre-load ...	92 to 137 N + 31 to 47 N	20.7 to 30.8 lb + 7 to 10.5 lb
Bevel Gear Backlash	0.17 to 0.24 mm	0.007 to 0.009 inch
Differential Plate Thickness		
Separator Plates	1.47 to 1.53 mm	0.057 to 0.06 inch
Friction Plates	1.57 to 1.63 mm	0.061 to 0.064 inch
Thrust Plates	2.77 to 2.83 mm	0.109 to 0.111 inch
Lubricants		
Planetary and Wheel Hub		
Type	Case SAW 85W-140 EP Gear Oil (MS 1316)	
Capacity	1 Litre per Hub	1.05 US Quarts
Axle		
Type	Case SAE 85W-140 EP Gear (MS 1316)	
Capacity	6 Litres	6.3 US Quarts
Grease	Case 251 H EP or equivalent Multi-Purpose Lithium Grease	
MFD Clutch		
MFD Clutch Friction Plate Thickness	2.45 to 2.60 mm	0.096 to 0.102 inch
MFD Clutch Separator Plate Thickness	2.16 to 2.31 mm	0.085 to 0.090 inch
Belleville Washer Free Height	11.00 mm	0.433 inch
MFD Clutch Assembly End Play	1.00 mm	0.039 inch
MFD Bearing Housing End Play	0.025 to 0.102 mm	0.001 to 0.004 inch
MFD Idler Gear End Play	0.025 to 0.102 mm	0.001 to 0.004 inch

Range Transmission

Intermediate Shaft End Play	0.025 to 0.102 mm	0.001 to 0.004 inch
Shuttle Shaft End Play	0.025 to 0.102 mm	0.001 to 0.004 inch
Friction Plate Minimum Thickness	2.40 mm	0.094 inch
Separator Plate Minimum Thickness	2.10 mm	0.082 inch

Powershift Transmission

Friction Plate Thickness	2.45 to 2.60 mm	0.96 to 0.102 inch
Steel Separator Plate Thickness	2.11 to 2.31 mm	0.083 to 0.091 inch
Input Shaft Diameter	44.99 to 45.00 mm	1.772 to 1.773 inch
1st Gear Inside Diameter	50.009 to 50.02 mm	1.968 to 1.970 inch
3rd Gear Inside Diameter	50.009 to 50.025 mm	1.968 to 1.971 inch
Dropshaft Diameter (2nd Gear)	44.389 to 44.404 mm	1.748 to 1.749 inch
Dropshaft Diameter (4th Gear)	39.985 to 40.000 mm	1.594 to 1.574 inch
2nd Gear Inside Diameter	57.117 to 57.137 mm	2.248 to 2.249 inch
4th Gear Inside Diameter	45.009 to 45.025 mm	1.772 to 1.773 inch

Differential and Differential Lock

Transmission Oil	HY-TRAN PLUS (MS 1207)
Ring Gear and Pinion Backlash	0.15 to 0.30 mm 0.0059 to 0.011 inch

Differential Lock Clutch Plate Thickness

Friction Plate	1.98 to 2.13 mm	0.078 to 0.083 inch
Separator Plate	1.05 to 1.18 mm	0.041 to 0.046 inch
Piston Return Plate	4.11 to 4.23 mm	0.161 to 0.166 inch

Parking Brake

Friction Plate Thickness	6.25 to 6.40 mm	0.246 to 0.251 inch
Backing Plate Thickness	2.16 to 2.31 mm	0.085 to 0.090 inch

Hydraulic Specifications

Remote Flow (minimum) at 34.5 bar (500 psi)	60 l/min	16 US/gpm
Remote Flow (minimum) at 138 bar (2000 psi)	57 l/min	15 US/gpm
Charge Pump Flow	102 to 121 l/min	27 to 32 US gpm
Charge Pump Pressure	3.4 to 4.8 bar	50 to 70 psi
Differential Lock Pressure (engaged)	17.9 to 20.0 bar	260 to 290 psi
Differential Lock Pressure (disengaged)	17.9 to 20.0 bar	260 to 290 psi
Forward and Reverse Lubrication Pressure	1.4 to 2.1 bar	20 to 30 psi
Forward and Reverse Pressure	17.9 to 20.0 bar	260 to 290 psi
Hydraulic Oil Specification	CASE HY-TRAN PLUS (MS 1207)	
Hydraulic Oil Test Temperature	50°C	122°F
Low Pressure Standby	27.5 to 41.4 bar	399 to 600 psi
MFD Pressure	17.9 to 20.0 bar	260 to 290 psi
PFC Hydraulic Pump Maximum Pressure	190 bar \pm 3.4 bar	2755 \pm 50 psi
PTO Pressure (engaged)	17.9 to 20.0 bar	260 to 290 psi
PTO Pressure (disengaged)	17.9 to 20.0 bar	260 to 290 psi
Powershift Pressure	17.9 to 20.0 bar	260 to 290 psi

NOTE: The differences between pressure readings for each gear must be no more than 0.7 bar (10 psi).

Regulated Pressure P1	17.9 to 20.0 bar	260 to 290 psi
Steering pressure (maximum)	172 ± 3.4 bar	2495 ± 50 psi

NOTE: The steering cylinder pressure could be up to 6.9 bar (100 psi) more than the steering maximum pressure.

Draft and Position Control

Position Sensing Connecting Rod Length	159 mm	6.259 inch
Hitch Drop Rate Time		1.8 to 2 seconds
Transmission Test Oil Temperature	50°C	122°F

Lift Arm

Rockshaft Bearing Diameter - Large End	69.825 to 69.774 mm	2.749 to 2.747 inch
Rockshaft Bearing Diameter - Small End	60/300 to 60.249 mm	2.374 to 2.372 inch
Rockshaft Bearing Bushing - Large End	70.0104 to 70.002 mm	2.76 to 2.756 inch
Rockshaft Bearing Bushing - Small End	60.566 to 60.465 mm	2.384 to 2.38 inch
Cylinder Bore Diameter	105.0 to 105.07 mm	4.13 to 4.136 inch

Remote Valves

Remove Valve Type	Double acting	Single acting for front hitch
Maximum Number of Remote Valves		4
Remove Valve System Oil Pressure	190 bar	2755 psi
Maximum Oil Flow to Remote Valves	57 l/min	15 US/gpm
Spool Centering Spring Free Length	60.05 mm	2.364 inch
Flow Control Outer Spring Free Length (Single acting)	54.33 mm	2.138 inch
Flow Control Inner Spring Free Length (Single acting)	67.71 mm	2.665 inch

SINGLE REMOTE CIRCUIT PRIORITY VALVE: Port load check valve on raise circuit. Break-away couplers.

DUAL, TRIPLE AND QUAD remote valve circuits. Priority on first remote. Port load check valves on raise or lower circuits. Break-away couplers.

TRACTORS WITH FRONT HITCH. Priority on first remote. Single acting remote valve. Port load check valve on lower circuit.

Shuttle Valve

Circuit Pressure		
Forward Circuit Pressure	17.9 to 20.0 bar	260 to 290 psi
Reverse Circuit Pressure	17.9 to 20.0 bar	260 to 290 psi

Modulation Outer Spring

Free Length	97.81 mm	3.85 inch
Outside Diameter	18.14 mm	0.714 inch

Modulation Inner Spring (Early Machines)

Free Length	96.62 mm	3.80 inch
Outside Diameter	12.55 mm	0.494 inch

Modulation Inner Spring (Later Machines)

Free Length	72.97 mm	2.873 inch
Outside Diameter	12.88 mm	0.507 inch

Inching Spool Spring

Free Length	40.95 mm	1.612 inch
Outside Diameter	8.00 mm	0.315 inch

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Inching Spool Cap/Plug Spring

Free Length	19.3 mm	0.76 inch
Outside Diameter	6.73 mm	0.265 inch

Sequencing Spool Spring

Free Length	59.28 mm	2.334 inch
Outside Diameter	12.77 mm	0.503 inch

Air Conditioning Specifications

Refrigerant

Type	R-12, to Case Specification B6	
Boiling Point at Atmosphere Pressure	-30°C	-22°F
System Capacity	2.13 kg	4.69 lb

Compressor

Type	5 Horizontal Pistons Operating on a Cam Plate	
Manufacturer	SANDEN (Sankyo)	
Model	SD 508 IID	
Bore	35 mm	1.38 inch
Stroke	28.6 mm	1.13 inch
Displacement per Revolution	133 cc	8.42 inch ³
Clutch Voltage	12 Volt	
Clearance Between Front Plate and Pulley Air Gap	0.4 to 0.8 mm	0.016 to 0.031 inch

Drive Belt Tension

New Belt	422 to 516 N	95 to 116 lb
Used Belt	400 to 489 N	90 to 110 lb

Compressor Lubrication

Type	Positive Pressure	
Lubricant	Suniso 5GS, Texaco Capella WF100, or Shell Clavus 129	

Capacity (Compressor only)

.....	170 ml	6 fl oz
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System Lubrication

Lubricant	See Compressor Lubricant	
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Capacities (Add to Compressor)

Receiver - Drier	29.6 ml	1 fl oz
Condenser	59.2 ml	2 fl oz
Evaporator	59.2 ml	2 fl oz
Hoses (Total)	29.6 ml	1 fl oz

High Pressure Switch

Location	Discharge Hose from Compressor	
Operation	Closed by Excessive Pressure	
Cut-Out Pressure	25.1 to 26.4 bar	365 to 385 psi

Low Pressure Switch

Location	Evaporator Outlet in the Cab Roof	
Operation	Closed by Low Pressure	
Cut-Out Pressure	0.27 to 0.41 bar	4 to 6 psi

Temperature Control Switch

Location	Cab Roof, Sensor in Evaporator	
Cut-Out Temperature	2°C	35.6°F
Cut-In Temperature (Variable)	6 to 7°C	43 to 45°F
Cut-In Temperature (Variable) cont	16 to 21°C	61 to 70°F

SPECIAL TORQUES

Starter Motor		
Drive Housing Nuts	4.5 to 6.0 Nm	3 to 4 lb ft
Starter Motor Mounting Bolts	43 Nm	32 lb ft
Alternator		
Alternator Mounting Bolts	24 Nm	18 lb ft
Pulley Retaining Nuts	68 Nm	50 lb ft
2WD Steering Cylinder and Axle		
Wheel Bearing Retaining Nut	100 Nm	74 lb ft
Front Wheel Nuts	300 Nm	221 lb ft
Steering Arm Clamping Bolt	280 Nm	206 lb ft
Axle Pivot Pin Retaining Nut and Bolt	150 Nm	111 lb ft
Steering Cylinder to Mounting Bracket	380 to 420 Nm	280 to 310 lb ft
Steering Cylinder Mounting Bracket Bolts	330 Nm	244 lb ft
Steering Cylinder Ball Joint (L.H. Side)	400 Nm	295 lb ft
Cylinder Mounting Bracket to Axle Bolts	460 Nm	339 lb ft
Steering Nut (R.H. Side)	200 Nm	148 lb ft
MFD Steering Cylinder and Axle		
King Pin Retaining Bolts		
8.8 Grade Bolt (with Washers)	137 Nm	101 lb ft
10.9 Grade Bolt (without Washers)	190 Nm	140 lb ft
Track Rod to Steering Cylinder	300 Nm	221 lb ft
Ball Joint to Swivel Housing	230 Nm	170 lb ft
Differential Housing to Axle		
12 mm Bolts (with Washers)	120 Nm	88 lb ft
12 mm Self Locking Bolts	169 Nm	125 lb ft
Ring Gear Bolts (Use Loctite 270)	78 Nm	57 lb ft
Differential Bearing Cap Bolts		
Self Locking Bolts	266 Nm	196 lb ft
Locking Nuts	156 Nm	115 lb ft
Steering Cylinder Bolts	90 Nm	66 lb ft
Wheel Carrier to Swivel Housing Bolts	220 Nm	162 lb ft
Planetary Carrier to Wheel Hub Studs	70 Nm	52 lb ft
Planetary Carrier to Wheel Hub Screws	80 Nm	59 lb ft
Planetary Ring Gear Retaining Bolts	220 Nm	162 lb ft
Wheel Hub Drain/Filler Plug	60 Nm	44 lb ft
Front Weight Carrier Retaining Bolts	610 to 730 Nm	450 to 539 lb ft
Axle Pivot Pin Allen Screw and Locknut	150 Nm	110 lb ft
Front Wheel Nuts	185 to 221 Nm	137 to 163 lb ft
Transmission		
Engine to Transmission Mounting Bolts		
(16 mm)	335 to 375 Nm	247 to 277 lb ft
(12 mm)	134 to 151 Nm	99 to 111 lb ft
Speed Input Shaft and Dropshaft Bearing Covers		
Without Shims to Seat Bearings	9 Nm	80 lb in
Without Shims to Measure Shim Cap	2.8 Nm	25 lb in
With Shims when installed	40 to 46 Nm	29 to 34 lb ft
Dropshaft Retaining Bolt	101 to 113 Nm	75 to 83 lb ft
Front Bearing Carrier Plate Retaining Bolts	70 to 79 Nm	52 to 58 lb ft

Creep		
Dropshaft Gear Retaining Bolt	101 to 103 Nm	75 to 76 lb ft
MFD Drive shaft		
Drive shaft Retaining Bolts	39 to 44 Nm	29 to 32 lb ft
MFD Clutch		
MFD Clutch Mounting Bolts	265 Nm	195 lb ft
Pinion Shaft Bolt	265 Nm	195 lb ft
Hydraulic PTO		
PTO Housing Retaining Bolts	195 to 250 Nm	144 to 185 lb ft
Lower Link Sensing Bar Retaining Bolts	610 to 730 Nm	450 to 539 lb ft
Oil Baffle Plate Retaining Bolts	37 to 43 Nm	27 to 32 lb ft
PTO Valve Retaining Bolts	73 to 87 Nm	54 to 64 lb ft
PTO Clutch Hub Retaining Bolts	101 to 113 Nm	75 to 83 lb ft
Output Shaft Cover Retaining Bolts	73 to 87 Nm	54 to 64 lb ft
Clutch Hub Seal Carrier Retaining Bolts	37 to 43 Nm	27 to 32 lb ft
Differential and Differential Lock		
Ring Gear Retaining Bolts	256 Nm	189 lb ft
Differential Lock Clutch Cage Retaining Bolts		
10 mm	62 Nm	46 lb ft
12 mm (12 Poing Flange Type)	130 Nm	96 lb ft
Differential Bearing Carrier Retaining Bolts	77 to 87 Nm	57 to 64 lb ft
Parking Brake		
Parking Brake Housing Mounting Bolts		
12 mm	125 to 150 Nm	92 to 110 lb ft
16 mm	310 to 380 Nm	229 to 280 lb ft
Bellcrank Pivot Bolts	270 to 310 Nm	199 to 229 lb ft
Hydraulics		
Hydraulic Pump Mounting Bolts	134 to 151 Nm	99 to 111 lb ft
Compensator - Draft Control Valve Retaining Screw	50 Nm	37 lb ft
Solenoid Valve Installation Torque	15 to 25 Nm	11 to 18 lb ft
Draft Control Valve Port Housing Screws	62 Nm	46 lb ft
Draft Control Valve Side Housing Screws	32 Nm	24 lb ft
Remote Valve Retaining Nuts		
12 mm	61 to 69 Nm	45 to 51 lb ft
10 mm	35 to 40 Nm	26 to 30 lb ft
Load Check Valve Body	34 to 41 Nm	25 to 30 lb ft
Load Check Valve End Cap	34 to 41 Nm	25 to 30 lb ft
Load Check Poppet Spring Retainer	4 to 5 Nm	3 to 4 lb ft
Flow Control Spindle Housing Plug	41 to 47 Nm	30 to 35 lb ft
Flow Control Spindle Rotating Torque	0.9 to 1.1 Nm	8 to 10 lb ins
Check Valve Body	16 to 19 Nm	12 to 14 lb ft
Check Valve Plug	4 to 4.5 Nm	3 to 3.5 lb ft
Lever Kickout Adjusting Plug Locking Nut	36 to 42 Nm	27 to 31 lb ft
Main Spool Detent Stud	12 to 16 Nm	9 to 12 lb ft
Detent Housing Retaining Screws	5 to 7 Nm	4 to 5 lb ft

Shuttle Valve

Forward Solenoid Valve	15 to 25 Nm	11 to 18 lb ft
Reverse Solenoid Valve	15 to 25 Nm	11 to 18 lb ft
Differential Solenoid Valve	10 to 20 Nm	7 to 15 lb ft
Modulation Solenoid Valve	10 to 20 Nm	7 to 15 lb ft
Shuttle Valve Mounting Screws	73 to 87 Nm	54 to 64 lb ft
Modulation Plug	47 to 54 Nm	35 to 40 lb ft
Inching Spool Plug	70 to 80 Nm	52 to 59 lb ft
Sequencing Spool Plug	34 to 41 Nm	25 to 30 lb ft
Pressure Switch	0.8 to 1.0 Nm	7 to 9 lb ins

Air Conditioning

Compressor Cylinder Head Bolts	30 to 34 Nm	22 to 25 lb ft
Compressor Rotor Shaft Nut	34 to 41 Nm	25 to 30 lb ft

Tube and Hose Fittings (¼ inch fittings without o-rings)

Steel to Steel	16 to 20 Nm	12 to 15 lb ft
Brass or Copper to Steel	15 to 20 Nm	11 to 15 lb ft
Aluminium to Steel	12 to 18 Nm	9 to 13 lb ft

Section 1002

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SPECIFICATIONS

For Maxxum Tractors From P.I.N JJF1030000

GENERAL SPECIFICATIONS

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GENERAL SPECIFICATIONS

Capacities (5120/5220)

Engine Oil Capacity (with Filter Change)	10.4 Litres	2.7 US Gal
Engine Oil Capacity (without Filter Change)	9.5 Litres	2.5 US Gal
Cooling System (with Cab)	17.6 Litres	4.6 US Gal
Cooling System (without Cab)	15.7 Litres	4.1 US Gal
Transmission/Hydraulic System	76 Litres	20.0 US Gal
MFD Axle - Differential	6.5 Litres	1.7 US Gal
MFD Axle - Planetaries	0.9 Litres	0.2 US Gal
Fuel Tank - Standard	135 Litres	35.7 US Gal
Fuel Tank - Optional	170 Litres	45.0 US Gal

Capacities (5130/5230, 5140/5240 and 5150/5250)

Engine Oil Capacity (with Filter Change)	15 Litres	4.0 US Gal
Engine Oil Capacity (without Filter Change)	14.3 Litres	3.8 US Gal
Cooling System (with Cab)	20.8 Litres	5.5 US Gal
Cooling System (without Cab)	18.9 Litres	5.0 US Gal
Transmission/Hydraulic System	76 Litres	20.0 US Gal
MFD Axle - Differential	6.5 Litres	1.7 US Gal
MFD Axle - Planetaries	0.9 Litres	0.2 US Gal
Fuel Tank - Standard	135 Litres	35.7 US Gal
Fuel Tank - Optional	170 Litres	45.0 US Gal

Electrical Specifications

Type of System 12 Volts, Negative Ground

Batteries

Number of Batteries Required	1 or 2
Voltage of the Battery	12 Volts
Reserve Capacity	170 minutes
Cold Cranking Capacity (SAE) at - 18°C (0.4°F)	700 Amperes

Starter Motor

Manufacturer	Bosch	
No-Load Test at 27°C (80.6°F)		
Volts	11.5 V	
Current Draw (5120/5220)	125 Amperes maximum	
Armature Speed (5120/5220)	7000 rpm minimum	
Current Draw (5130/5230, 5140/5240 and 5150/5250)	170 Amperes maximum	
Armature Speed (5130/5230, 5140/5240, 5150/5250)	8000 rpm	
Brush Length	8.55 mm minimum	0.336 inch minimum
Armature Runout	0.03 mm maximum	0.001 inch maximum
Commutator Diameter	42.5 mm minimum	1.67 inch minimum
Armature End Play (5120/5220)	0.10 to 0.40 mm	0.004 to 0.016 inch
Armature End Play (5130/5230, 5140/5240 and 5150/5250)	0.10 to 0.30 mm	0.004 to 0.012 inch

Alternator

Manufacturer	Bosch
Output (Part No A187623) at 6000 rpm	14 Volts at 95 Amperes
Output (Part No A187873) at 6000 rpm	14 Volts at 65 Amperes
Resistance of Rotor Winding (A187623)	3.0 Ohms \pm 0.3 Ohms
Resistance of Rotor Winding (A187873)	2.8 Ohms \pm 0.2 Ohms
Resistance of Stator Winding (A187623)	0.055 Ohms \pm 0.005 Ohms
Resistance of Stator Winding (A187873)	0.1 Ohms \pm 0.01 Ohms
Brush Length Wear Limit	14 mm 0.55 inch
Maximum Rotor Shaft Run-out	0.051 mm 0.002 inch

Steering Specifications

Front Axle - MFD

Toe-in Adjustment	0 to 2 mm	0 to 0.79 inch
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Steering Hand Pump

Type (30 km/h Tractors)	Danfoss
Model	OSPC 160 LS
Rated Flow	16 l/min 4.2 US gal/min
Rotor - Stator Wear Limit	0.127 mm 0.005 inch
Rotor - Stator Thickness Difference	0.051 mm 0.002 inch
Type (40 km/h Tractors)	Eaton
Model	263-3047-081
Displacement96ml/rev 5.9 in ³ /rev
Gerotor Thickness	13.26 mm 0.522 inch

Transmission Specifications

Torque Limiter

Belleville Spring Free Height (25 mm Width)	10.82 to 11.33 mm	0.426 to 0.446 inch
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MFD Axle

Pinion Shaft Rotating Torque	1.7 to 2.2 Nm	15 to 20 lb in
Crown wheel Backlash	0.15 to 0.25 mm	0.006 to 0.010 inch
Swivel Pin Bearing End Float	0.1 to 0.2 mm	0.004 to 0.008 inch
Planetary and Wheel Hub Lubricant	Case SAE 85W140 Gear Lubricant	
Planetary and Wheel Hub Capacity	1 Litre	0.26 US Gal
Swivel Housing End Play	0 to 0.1 mm	0 to 0.004 inch
Pinion Bearing Pre-load	92 to 137 N	20.7 to 30.8 lbf
Pinion Bearing/Differential Bearing Total Pre-load	92 to 137 N + 31 to 47 N	20.7 to 30.8 lbf + 7 to 10.5 lbf

Bevel Gear Backlash	0.17 to 0.24 mm	0.007 to 0.009 inch
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Differential Plate Thickness

Separator Plates	1.47 to 1.53 mm	0.057 to 0.06 inch
Friction Plates	1.57 to 1.63 mm	0.061 to 0.064 inch
Thrust Plates	2.77 to 2.83 mm	0.109 to 0.111 inch

Lubricants

Planetary and Wheel Hub

Type	Case SAE 85W-140 EP Gear Oil (MS 1316)
Capacity	1 Litre per Hub 0.26 US Gal

Axle

Type	Case SAE 85W-140 EP Gear (MS 1316)
Capacity	6 Litres 1.6 US Gal
Grease	Case 251 H EP or equivalent Multi-Purpose Lithium Grease

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MFD Clutch

MFD Clutch Friction Plate Thickness	2.45 to 2.60 mm	0.096 to 0.102 inch
MFD Clutch Separator Plate Thickness	2.16 to 2.31 mm	0.085 to 0.091 inch
Belleville Washer Free Height	11.00 mm	0.433 inch
MFD Clutch Assembly End Play	1.00 mm	0.039 inch
MFD Bearing Housing End Play	0.025 to 0.102 mm	0.001 to 0.004 inch
MFD Idler Gear End Play	0.025 to 0.102 mm	0.001 to 0.004 inch

Range Transmission

Intermediate Shaft End Play	0.025 to 0.102 mm	0.001 to 0.004 inch
Shuttle Shaft End Play	0.025 to 0.102 mm	0.001 to 0.004 inch
Friction Plate Minimum Thickness	2.40 mm	0.094 inch
Separator Plate Minimum Thickness	2.10 mm	0.082 inch

Powershift Transmission

Friction Plate Thickness	2.45 to 2.60 mm	0.96 to 0.102 inch
Steel Separator Plate Thickness	2.11 to 2.31 mm	0.083 to 0.091 inch

Differential and Differential Lock

Ring Gear and Pinion Backlash	0.15 to 0.30 mm	0.0059 to 0.011 inch
Friction Plate	1.98 to 2.13 mm	0.078 to 0.084 inch
Separator Plate	1.05 to 1.18 mm	0.041 to 0.046 inch
Piston Return Plate	4.11 to 4.23 mm	0.162 to 0.167 inch

Rear Axles

Axle Shaft Bearing Pre-load	3.4 to 5.7 Nm	30 to 50 lb inch
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Parking Brake

Friction Plate Thickness	6.25 to 6.40 mm	0.246 to 0.252 inch
Backing Plate Thickness	2.16 to 2.31 mm	0.085 to 0.091 inch

Lubricants

Transmission Oil	Case HY-TRAN PLUS® (MS 1207)
Transmission Oil with Additive (Use for the first 1000 hours after installation of new brake friction plates)	Case HY-TRAN PLUS® (MS1223)

Hydraulic Specifications

Remote Flow (minimum) at 34.5 bar (500 psi)	60 l/min	15.9 US gal/min
Remote Flow (minimum) at 13.8 bar (200 psi)	57 l/min	15.1 US gal/min
Charge Pump Flow	117 to 136 l/min	31 to 36 US gal/min
Charge Pump Pressure	3.4 to 4.8 bar	50 to 70 psi
Differential Lock Pressure (engaged)	19.3 to 21.4 bar	280 to 310 psi
Differential Lock Pressure (disengaged)	19.3 to 21.4 bar	280 to 310 psi
Forward and Reverse Lubrication Pressure at 900 rpm	0.3 to 0.8 bar	5 to 12 psi
Forward and Reverse Lubrication Pressure at 2200 rpm	1.0 to 1.7 bar	15 to 25 psi
Forward and Reverse Pressure	19.3 to 21.4 bar	280 to 310 psi
Hydraulic Oil Specification	Case HY-TRAN PLUS®	
Hydraulic Oil Test Temperature	49°C	120°F
Low Pressure Standby	27.5 to 41.4 bar	399 to 600 psi
MFD Pressure	19.3 to 21.4 bar	280 to 310 psi
PFC Hydraulic Pump Maximum Pressure	186.6 to 193.4 bar	2700 to 2805 psi
PTO Pressure (engaged)	19.3 to 21.4 bar	280 to 310 psi
PTO Pressure (disengaged)	19.3 to 21.4 bar	280 to 310 psi
Powershift Pressure	19.3 to 21.4 bar	280 to 310 psi
NOTE: The difference between pressure readings for each gear must not be more than 0.7 bar (10 psi).		
Regulated Pressure P1	19.3 to 21.4 bar	280 to 310 psi
Steering pressure (maximum)	168.6 to 175.4	2445 to 2545 psi
NOTE: The steering cylinder pressure could be up to 6.9 bar (100 psi) more than the steering maximum pressure.		

Draft and Position Control

Position Sensing Connecting Rod Length	159 mm	6.26 inch
Hitch Drop Rate Time		1.8 to 2 seconds
Transmission Test Oil Temperature	49°C	120°F

Lift Arm

Rockshaft Bearing Diameter - Large End	69.825 to 69.774 mm	2.749 to 2.747 inch
Rockshaft Bearing Diameter - Small End	60.300 to 60.249 mm	2.374 to 2.372 inch
Rockshaft Bearing Bushing - Large End	70.104 to 70.002 mm	2.760 to 2.756 inch
Rockshaft Bearing Bushing - Small End	60.566 to 60.465 mm	2.384 to 2.381 inch
Cylinder Bore Diameter	105.0 to 105.07 mm	4.134 to 4.137 inch

Remote Valves

Type	Double Acting	Single Acting for Front Hitch
Maximum Number of Remote Valves		4
Remote Valve System Oil Pressure	189.6 bar	2750 psi
Maximum Oil Flow to Remote Valves	57 l/min	15.1 US gal/min
Spool Centering Spring Free Length	60.05 mm	2.364 inch
Flow Control Outer Spring Free Length (Single acting)	54.33 mm	2.139 inch
Flow Control Inner Spring Free Length (Single acting)	67.71 mm	2.666 inch

SINGLE REMOTE CIRCUIT PRIORITY VALVE: Port load check valve on raise circuit. Break-away couplers.

DUAL, TRIPLE AND QUAD REMOTE VALVE CIRCUITS: priority on first remote. port load check valves on raise or lower circuits. break-away couplers

TRACTORS WITH FRONT HITCH: Priority on first remote. Single acting remote valve. Port load check valve on lower circuit.

Shuttle/PTO Valve

Circuit Pressure		
Forward Circuit Pressure (5150).....	19.3 to 21.4 bar	280 to 310 psi
Reverse Circuit Pressure (5150).....	19.3 to 21.4 bar	280 to 310 psi
Modulation Spring (Outer)		
Free Length	107.34 mm	4.23 inch
Outside Diameter	20.09 to 20.35 mm	0.791 to 0.801 inch
Test Length	88.60 mm	3.49 inch
Test Load	37.23 to 45.51 N	8.83 to 10.23 lbf
Modulation Spring (Inner)		
Free Length	78.36 mm	3.09 inch
Outside Diameter	13.05 to 13.31 mm	0.504 to 0.524 inch
Test Length	39.5 mm	1.56 inch
Test Load	96.08 to 117.42 N	21.6 to 26.4 lbf
Inching Spool Return Spring		
Free Length	91.73 mm	3.61 inch
Outside Diameter	20.44 to 20.70 mm	0.805 to 0.815 inch
Test Length	26.67 mm	1.05 inch
Test Load	40.03 to 48.93 N	9.0 to 11.0 lbf
PTO Spool Return Spring		
Free Length	100.44 mm	3.95 inch
Outside Diameter	21.97 to 22.23 mm	0.865 to 0.875 inch
Test Length	26.67 mm	1.05 inch
Test Load	104.08 to 127.22 N	23.85 to 29.15 lbf
Feathering Spring (Low Pressure)		
Free Length	25.22 mm	0.99 inch
Outside Diameter	10.84 to 11.10 mm	0.427 to 0.437 inch
Test Length	14.86 mm	0.59 inch
Test Load	22.14 to 27.06 N	4.98 to 6.08 lbf
Feathering Spring (High Pressure)		
Free Length	23.63 mm	0.93 inch
Outside Diameter	11.45 to 11.71 mm	0.451 to 0.461 inch
Test Length	16.25 mm	0.64 inch
Test Load	86.1 to 105.2 N	19.35 to 23.65 lbf
Detent Spring (Inner)		
Free Length	15.79 mm	0.622 inch
Outside Diameter	8.50 to 8.76 mm	0.335 to 0.345 inch
Test Length	12.29 mm	0.484 inch
Test Load	68.06 to 83.18 N	15.3 to 18.7 lbf
Detent Spring (Outer)		
Free Length	38.87 mm	1.53 inch
Outside Diameter	10.66 to 10.92 mm	0.420 to 0.430 inch
Test Length	17.40 mm	0.685 inch
Test Load	12.01 to 14.67 N	2.7 to 3.3 lbf
Accumulator (European Powershift Tractors Only)		
Capacity	0.32 Litres	0.34 US quarts
Maximum Working Pressure	210 bar	3045 psi

Air Conditioning Specifications

Refrigerant

Type	R-12, to Case Specification B6
Boiling Point at Atmosphere Pressure	-30°C -22°F
System Capacity	2.13 kg 4.69 lb

Compressor

Type	5 Horizontal Pistons Operating on a Cam Plate
Manufacturer	SANDEN (Sankyo)
Model	SD 508 HD
Bore	35 mm 1.38 inch
Stroke	28.6 mm 1.13 inch
Displacement per Revolution	133 cc 8.42 inch ³
Clutch Voltage	12 Volt
Clearance Between Front Plate and Pulley	0.4 to 0.8 mm 0.016 to 0.031 inch

Drive Belt Tension

New Belt	422 to 516 N	95 to 116 lb
Used Belt	400 to 489 N	90 to 110 lb

Compressor Lubrication

Type	Positive Pressure
Lubricant	Suniso 5GS, Texaco Capella WF100, or Shell Clavus 129

Capacity (Compressor only) 170 ml 6 fl oz

System Lubrication

Lubricant	See Compressor Lubricant
Capacities (Add to Compressor)	
Receiver - Drier	29.6 ml 1 fl oz
Condenser	59.2 ml 2 fl oz
Evaporator	59.2 ml 2 fl oz
Hoses (Total)	29.6 ml 1 fl oz

High Pressure Switch

Location	Discharge Hose from Compressor
Operation	Closed by Excessive Pressure
Cut-Out Pressure	25.1 to 26.4 bar 365 to 385 psi

Low Pressure Switch

Location	Evaporator Outlet in the Cab Roof
Operation	Closed by Low Pressure
Cut-Out Pressure	0.27 to 0.41 bar 4 to 6 psi

Temperature Control Switch

Location	Cab Roof, Sensor in Evaporator
Cut-Out Temperature	2°C 35.6°F
Cut-In Temperature (Variable)	6 to 7°C and 16 to 21°C 43 to 45°F and 61 to 70°F

Temperature Control Switch

Location	Cab Roof, Sensor in Evaporator
Cut-Out Temperature	2°C 35.6°F
Cut-In Temperature (Variable)	6 to 7°C and 16 to 21°C 43 to 45°F and 61 to 70°F

SPECIAL TORQUES

Starter Motor		
Drive Housing Nuts	4.5 to 6.0 Nm	3 to 4 lb ft
Starter Motor Mounting Bolts	43 Nm	32 lb ft
Alternator		
Alternator Mounting Bolts	24 Nm	18 lb ft
Pulley Retaining Nuts	68 Nm	50 lb ft
MFD Steering Cylinder and Axle		
King Pin Retaining Bolts		
8.8 Grade Bolt (with Washers)	137 Nm	101 lb ft
10.9 Grade Bolt (without Washers)	190 Nm	140 lb ft
Track Rod to Steering Cylinder	300 Nm	221 lb ft
Ball Joint to Swivel Housing	230 Nm	170 lb ft
Differential Housing to Axle		
12 mm Bolts (with Washers)	120 Nm	88 lb ft
12 mm Self Locking Bolts	169 Nm	125 lb ft
Ring Gear Bolts (Use Loctite 270)	78 Nm	57 lb ft
Differential Bearing Cap Bolts		
Self Locking Bolts	266 Nm	196 lb ft
Locking Nuts	156 Nm	115 lb ft
Steering Cylinder Bolts	90 Nm	66 lb ft
Wheel Carrier to Swivel Housing Bolts	220 Nm	162 lb ft
Planetary Carrier to Wheel Hub Studs	70 Nm	52 lb ft
Planetary Carrier to Wheel Hub Screws	80 Nm	59 lb ft
Planetary Ring Gear Retaining Bolts	220 Nm	162 lb ft
Planetary Cover Plate Screws	34 Nm	25 lb ft
Wheel Hub Drain/Filter Plug	60 Nm	44 lb ft
Front Weight Carrier Retaining Bolts	610 to 730 Nm	450 to 539 lb ft
Axle Pivot Pin Allen Screw and Locknut	150 Nm	110 lb ft
Front Wheel Nuts	185 to 221 Nm	137 to 163 lb ft
Transmission		
Engine to Transmission Mounting Bolts		
(16 mm)	220 to 250 Nm	162 to 184 lb ft
(12 mm)	134 to 151 Nm	99 to 111 lb ft
Speed Input Shaft and Dropshaft Bearing Covers		
Without Shims to Seat Bearings	9 Nm	80 lb in
Without Shims to Measure Shim Gap	2.8 Nm	25 lb in
With Shims when installed	40 to 46 Nm	29 to 34 lb ft
Dropshaft Retaining Bolt	101 to 113 Nm	75 to 83 lb ft
Front Bearing Carrier Plate Retaining Bolts	70 to 79 Nm	52 to 58 lb ft
Rear Wheel Retaining Nuts	450 to 500 Nm	332 to 369 lb ft
Creep		
Dropshaft Gear Retaining Bolt	130 Nm	96 lb ft
MFD Drive Shaft		
Drive shaft Retaining Bolts	39 to 44 Nm	29 to 32 lb ft
MFD Clutch		
MFD Clutch Mounting Bolts	265 Nm	195 lb ft
Pinion Shaft Bolt	265 Nm	195 lb ft

Hydraulic PTO		
PTO Housing Retaining Bolts	195 to 250 Nm	144 to 185 lb ft
Lower Link Sensing Bar Retaining Bolts	610 to 730 Nm	450 to 539 lb ft
Oil Baffle Plate Retaining Bolts	37 to 43 Nm	27 to 32 lb ft
PTO Valve Retaining Bolts	73 to 87 Nm	54 to 64 lb ft
PTO Clutch Hub Retaining Bolts	101 to 113 Nm	75 to 83 lb ft
Output Shaft Cover Retaining Bolts	73 to 87 Nm	54 to 64 lb ft
Clutch Hub Seal Carrier Retaining Bolts	37 to 43 Nm	27 to 32 lb ft
Differential and Differential Lock		
Ring Gear Retaining Bolts	335 to 375 Nm	247 to 277 lb ft
Differential Lock Clutch Cage Retaining Bolts		
10 mm	62 Nm	46 lb ft
12 mm (12 Point Flange Type)	130 Nm	96 lb ft
Differential Bearing Carrier Retaining Bolts	77 to 87 Nm	57 to 64 lb ft
Parking Brake		
Parking Brake Housing Mounting Bolts		
12 mm	125 to 150 Nm	92 to 110 lb ft
16 mm	310 to 380 Nm	229 to 280 lb ft
Bellcrank Pivot Bolts	270 to 310 Nm	199 to 229 lb ft
Hydraulics		
Hydraulic Pump Mounting Bolts	134 to 151 Nm	99 to 111 lb ft
Compensator - Draft Control Valve Retaining Screw	50 Nm	37 lb ft
Solenoid Valve Installation Torque	15 to 25 Nm	11 to 18 lb ft
Draft Control Valve Port Housing Screws	62 Nm	46 lb ft
Draft Control Valve Side Housing Screws	32 Nm	24 lb ft
Remote Valve Retaining Nuts		
12 mm	61 to 69 Nm	45 to 51 lb ft
10 mm	35 to 40 Nm	26 to 30 lb ft
Load Check Valve Body	34 to 41 Nm	25 to 30 lb ft
Load Check Valve End Cap	34 to 41 Nm	25 to 30 lb ft
Load Check Poppet Spring Retainer	4 to 5 Nm	3 to 4 lb ft
Flow Control Spindle Housing Plug	41 to 47 Nm	30 to 35 lb ft
Flow Control Spindle Rotating Torque	0.9 to 1.1 Nm	8 to 10 lb ins
Check Valve Body	16 to 19 Nm	12 to 14 lb ft
Check Valve Plug	4 to 4.5 Nm	3 to 3.5 lb ft
Lever Kickout Adjusting Plug Locking Nut	36 to 42 Nm	27 to 31 lb ft
Main Spool Detent Stud	12 to 16 Nm	9 to 12 lb ft
Detent Housing Retaining Screws	5 to 7 Nm	4 to 5 lb ft
Drop Rate Screw Locknut	15 Nm	11 lb ft
Charge/Lubrication Pump Mounting Bolts	134 to 151 Nm	99 to 112 lb ft
Shuttle/PTO Valve Retaining Screws	73 to 87 Nm	54 to 64 lb ft
Forward Solenoid Valve	12 to 18 Nm	9 to 13 lb ft
Reverse Solenoid Valve	12 to 18 Nm	9 to 13 lb ft
Differential Lock Solenoid Valve	12 to 18 Nm	9 to 13 lb ft
PTO/Inching Spool End Cap Retaining Screws	10 to 12 Nm	7 to 9 lb ft
PTO Spool End Plug	47 to 54 Nm	35 to 40 lb ft
Inching Spool End Plug	47 to 54 Nm	35 to 40 lb ft
PTO Piston Detent End Plug	34 to 41 Nm	25 to 30 lb ft
Forward/Reverse Spool End Plug	34 to 41 Nm	25 to 30 lb ft
Modulator Piston End Plug	47 to 54 Nm	35 to 40 lb ft
Modulator Spool End Plug	34 to 41 Nm	25 to 30 lb ft
Forward Pressure Test Fitting	8 to 14 Nm	6 to 10 lb ft
7/16-20 Blanking Plugs	8 to 14 Nm	6 to 10 lb ft
9/16-18 Blanking Plugs	20 to 27 Nm	15 to 20 lb ft

1002-10

Air Conditioning

Compressor Cylinder Head Bolts	30 to 34 Nm	22 to 25 lb ft
Compressor Rotor Shaft Nut	34 to 41 Nm	25 to 30 lb ft
Low Pressure Switch	13.6 to 20.3 Nm	10 to 15 lb ft

Tube and Hose Fittings (¼ inch fittings without o-rings)

Steel to Steel	16 to 20 Nm	12 to 15 lb ft
Brass or Copper to Steel	15 to 20 Nm	11 to 15 lb ft
Aluminium to Steel	12 to 18 Nm	9 to 13 lb ft

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Section 2002

2002

ENGINE REMOVAL

For 5130 and 5140 Series Tractors

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SPECIFICATIONS

Air Conditioning Compressor Drive Belt Tension		
New Belt	422 to 516 N	95 to 115 lb
Used Belt	400 to 489 N	90 to 110 lb

SPECIAL TORQUES

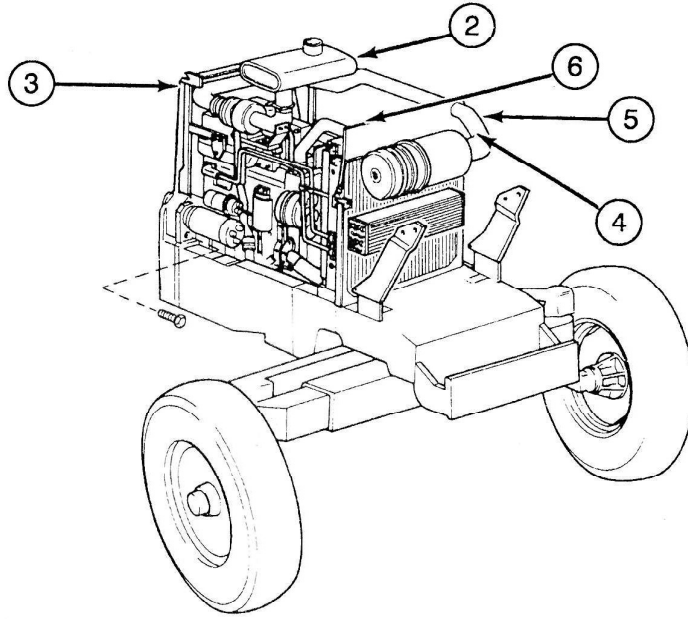
Side Rail Bolts	134 to 151 Nm	99 to 111 lb ft
Engine to Frame Mounting Bolts	335 to 375 Nm	247 to 277 lb ft

SPECIAL TOOLS

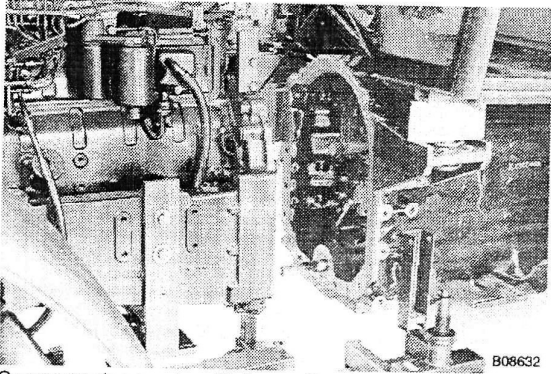


1. BELT TENSION GAUGE
CAS 10808

ENGINE REMOVAL

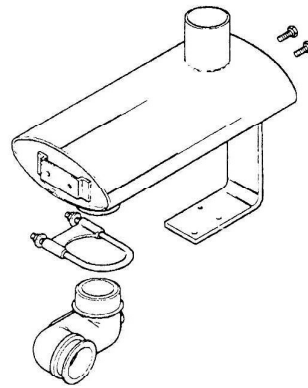


STEP 1

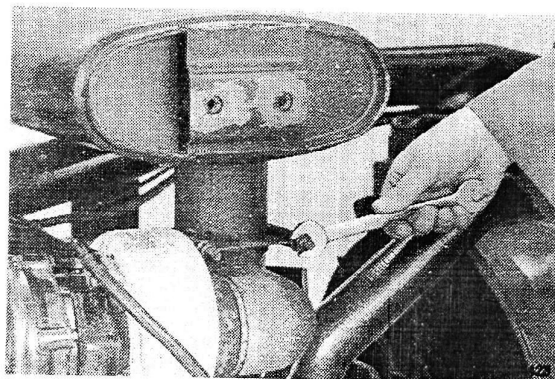


Separate the tractor. Refer to Section 6002.

STEP 2

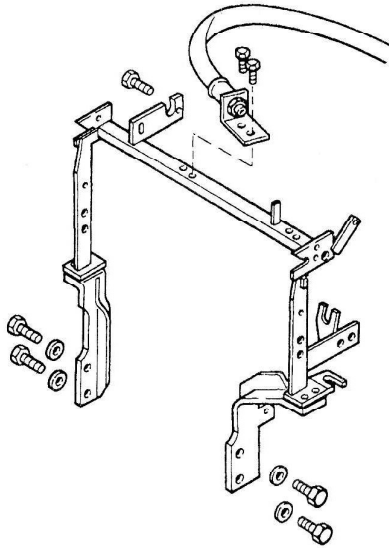


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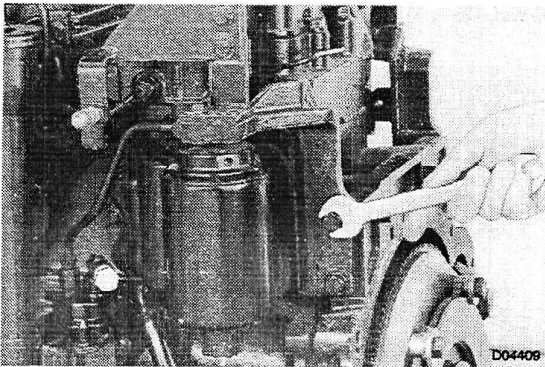


Loosen or remove parts attaching the exhaust. Remove the exhaust.

STEP 3



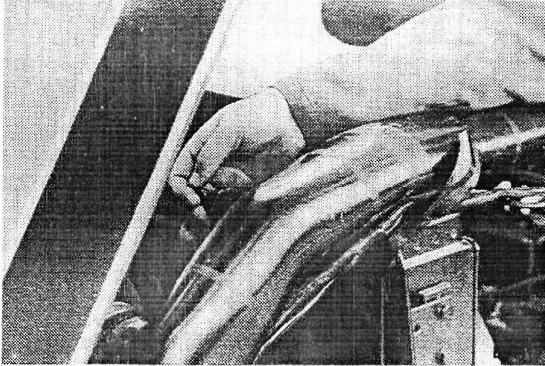
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Remove all parts attaching the rear hood bracket. Remove the rear hood bracket from the engine.

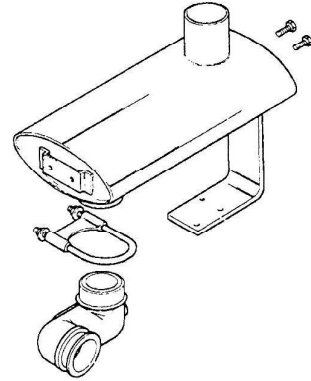
STEP 4



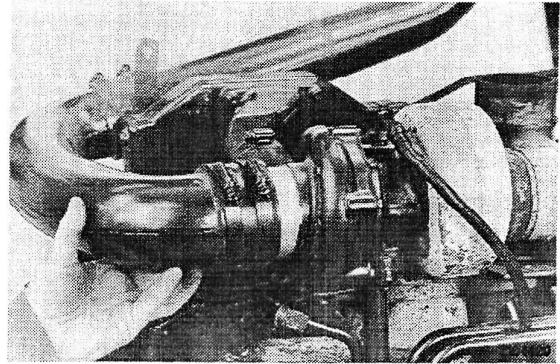
D04408

Disconnect the air filter restriction switch.

STEP 5



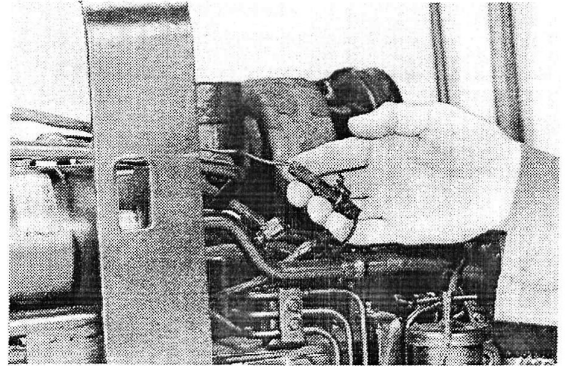
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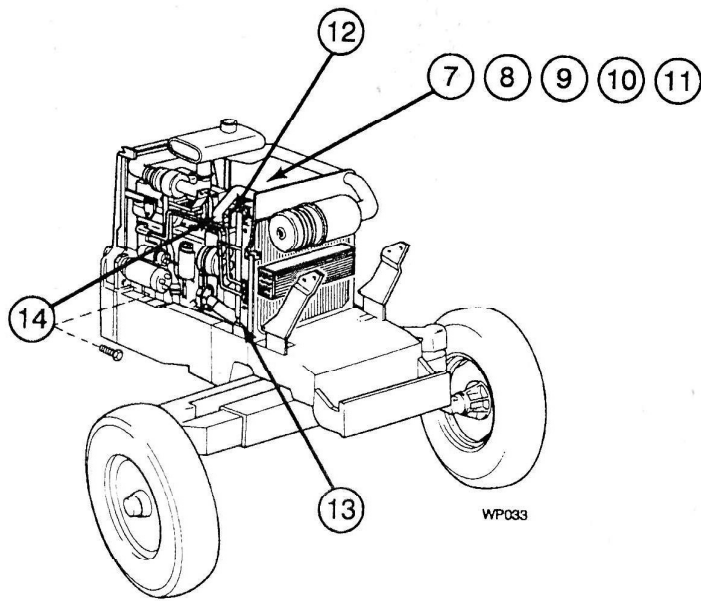
Loosen the clamp and remove the air inlet tube from the machine.

STEP 6

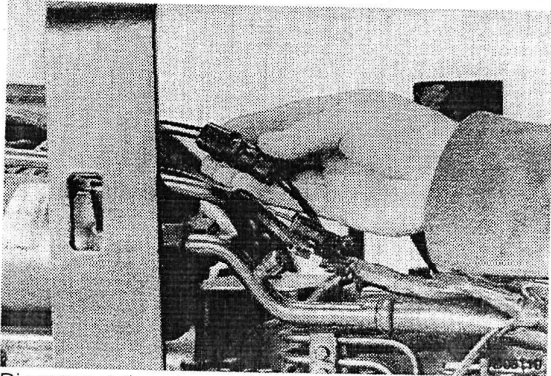


D04408

Disconnect the air conditioning compressor clutch electrical connector.

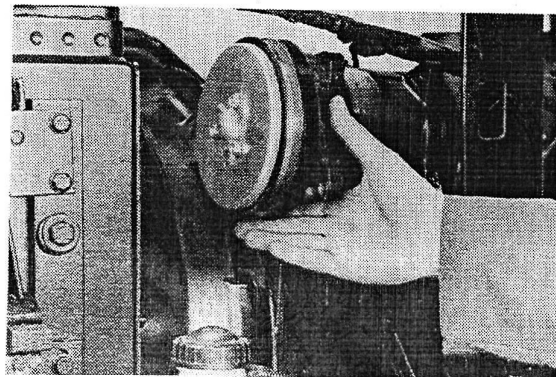
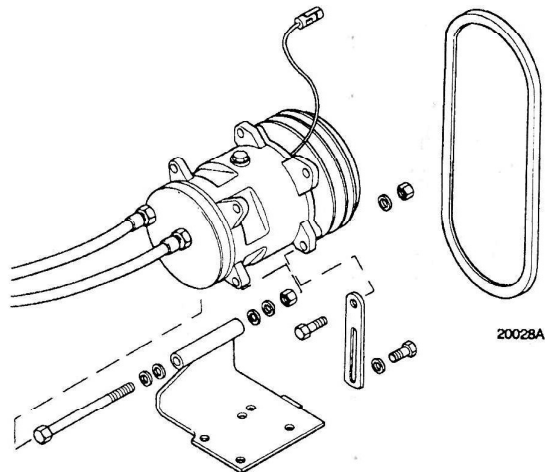


STEP 7



Disconnect the air conditioning high pressure switch connector.

STEP 8



Loosen or remove all parts attaching the air conditioning compressor. Carefully remove the compressor from the engine. Secure the compressor in a safe horizontal position.

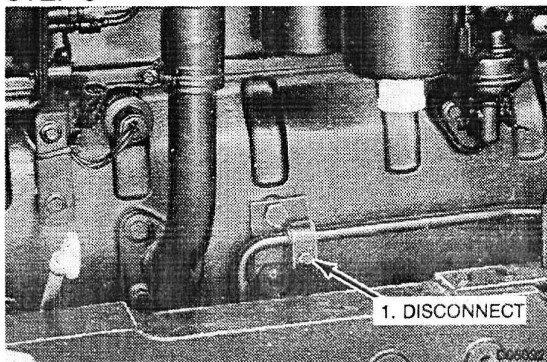
STEP 8 (Con't)

For Engine Installation, measure the compressor belt tension using belt tension gauge, CAS 10808. Test the belt tension half way between the compressor and the fan pulleys to the following specifications :

New Belt..... 422 to 516 N 95 to 115 lb ft
 Used Belt..... 400 to 489 N 90 to 110 lb ft

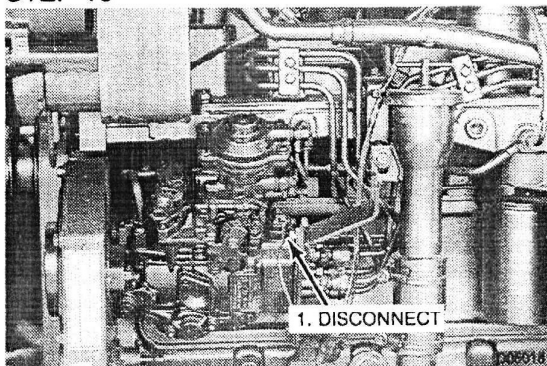
Tighten the pivot bolt and adjusting bracket bolt when the belt tension is correct.

STEP 9



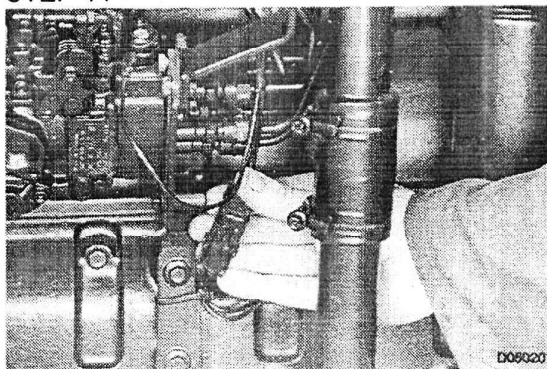
Disconnect the left hand steering tube bracket.

STEP 10



Disconnect the injection pump fuel shutoff lead.

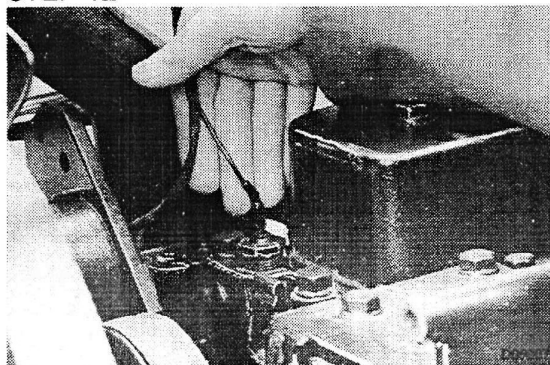
STEP 11



Disconnect the oil pressure switch.

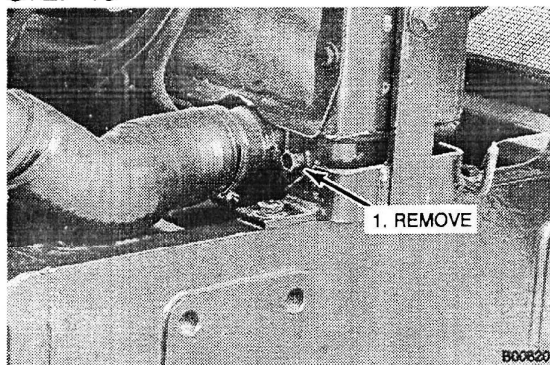
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STEP 12



Disconnect the coolant temperature switch.

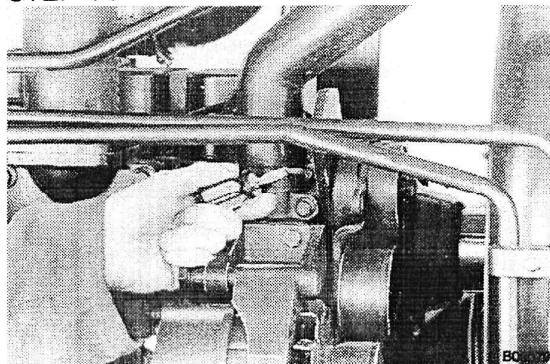
STEP 13



Put a suitable container with a capacity of at least 17.6 litres (4.6 US Galls) under the tractor. Remove the drain plug and drain the coolant. After draining install and tighten the drain plug.

NOTE : For Engine Installation, fill the radiator with coolant to the correct level.

STEP 14



Loosen the clamp and remove the top coolant hose.